SOUTH VALLEY WATER RECLAMATION FACILITY
WEST JORDAN, UTAH

PROJECT 5

PROJECT NO. 10548A10

ADDENDUM NO. 3
TO THE
CONTRACT DOCUMENTS

APRIL 22, 2019

Digitally signed by Brad D. Jeppson
Contact Info: Carollo Engineers, Inc.
Date: 2019.04.22 12:02:00 -06'00'

REGISTERED PROFESSIONAL ENGINEER
No. 4775621-2202
BRAD D. JEPPSON
STATE OF UTAH

7090 SOUTH UNION PARK AVENUE, SUITE 600 • MIDVALE, UTAH 84047 • P. 801.233.2500 • F. 801.233.2501

Bidders on the above named project are hereby notified that the Bidding Documents are modified as indicated below. Bidders are required to acknowledge receipt of this Addendum in the space provided on the Document 00300 - Bid Form.

This Addendum shall become part of the Contract and provisions of the Contract apply.

SPECIFICATIONS

The following sections are modified as indicated below.

1. SECTION 00300 - BID FORMS
    a. Replace the Bid Bond Form (page 9) in its entirety with the attached Bid Bond (project reference is corrected to be Project 5).
2. SECTION 11224A - SURFACE-MOUNTED FLOATING PROPELLER MIXERS
    a. The Memorandum of Agreement (MOA) has been fully executed by the Vendor and South Valley Water Reclamation Facility. Replace current MOA in Appendix A in its entirety with the attached executed MOA.
3. SECTION 11224B - REPLACEMENT VERTICAL MIXER IMPELLERS
    a. The Memorandum of Agreement (MOA) has been fully executed by the Vendor and South Valley Water Reclamation Facility. Replace current MOA in Appendix A in its entirety with the attached executed MOA.
4. SECTION 11312VC - HORIZONTAL RECESS IMPELLER CENTRIFUGAL PUMPS
    a. Paragraph 3.02 B. Manufacturer Services table:
        1) Change source testing from “Witnessed” to “Non-Witnessed.”
5. SECTION 11312P - SUBMERSIBLE AXIAL FLOW PROPELLER PUMPS
    a. Replace this specification in its entirety with the attached specification.
6. SECTION 11323 - GRIT REMOVAL SYSTEM
    a. The Memorandum of Agreement (MOA) has been fully executed by the Vendor and South Valley Water Reclamation Facility. Replace current MOA in Appendix A in its entirety with the attached executed MOA.
7. SECTION 11324 - GRIT WASHER/DEWATERING UNITS
    a. The Memorandum of Agreement (MOA) has been fully executed by the Vendor and South Valley Water Reclamation Facility. Replace current MOA in Appendix A in its entirety with the attached executed MOA.
8. SECTION 15115 - GATE VALVES
    a. Add attached Section 15115 - Gate Valves in its entirety.
9. SECTION 16305 - ELECTRICAL SYSTEM STUDIES
    a. Remove this specification in its entirety, the electrical system studies will be performed by Engineer.

DRAWINGS

The following drawings are modified, as indicated below.

1. Drawing G-11, Equipment Schedules
   a. Replace mixed liquor return isolation butterfly valves with gate valves. Modify the following rows of the Valve Schedule (changes shown in red text):

TAG NO.	LOCATION	ZONE	TYPE	SERVICE	SIZE (INCH)	OPERATOR	DESCRIPTION
VAL-16.201	BIO 2	AX-1	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
VAL-16.202	BIO 2	AN-3	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
VAL-16.301	BIO 3	AX-1	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
VAL-16.302	BIO 3	AN-3	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
VAL-16.401	BIO 4	AX-1	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
VAL-16.402	BIO 4	AN-3	GATE	MLR	36	MANUAL	MIXED LIQUOR RETURN ISOLATION VALVE
* FLAP GATE SIZING SHALL BE COORDINATED WITH THE MLR PUMP DISCHARGE PIPING.							

b. MLR Pump discharge flap gates currently shown on Mechanical Drawings are added to the valve schedule for clarity (these are not additional flap gates). Add the following to the Valve Schedule:

TAG NO.	LOCATION	ZONE	TYPE	SERVICE	SIZE (INCH)	OPERATOR	DESCRIPTION
-	BIO 2	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
-	BIO 2	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
-	BIO 3	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
-	BIO 3	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
-	BIO 4	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
-	BIO 4	OX-10	FLAP	MLR	*	-	FLAP GATE ON MLR PUMP DISCHARGE
* FLAP GATE SIZING SHALL BE COORDINATED WITH THE MLR PUMP DISCHARGE PIPING.							

2. Drawing M16-03
   a. Replace Keynote 6 with the following:
      1) "New 36" knife gate valve per specification Section 15112 - Butterfly Valves."
3. Drawing M16-04
   a. Replace Keynote 1 with the following:
      1) "36" Knife gate valve per Specification Section 15112 - Butterfly Valves."
4. Drawing M16-05
   a. Replace Keynote 1 with the following:
      1) "36" knife gate valve with valve stem/handwheel per specification Section 15112 - Butterfly Valves."
   b. Add the following to Keynote 6 after "…Flange-mounted 45 elbow"
      1) "Diameter to match wall pipe. Coordinate sizing with pump supplier."
5. Drawing M16-07
   a. Replace Key Tag 2 with the following:
      1) "Knife Gate Valve VAL 16.402."

b. Replace Key Tag 3 with the following:
    1) "Knife Gate Valve VAL 16.401."

6. Drawing M21-16
    a. Add new Keynote 13, pointing to the outdoor foul air duct, with the following text:
        1) “14 gauge thickness for all outdoor FA duct. TYP.”

7. Drawing PI16-02
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXD-602.
        2) BRXE-602.

8. Drawing PI16-03
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXF-602.

9. Drawing PI16-15
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXD-603.
        2) BRXE-603.

10. Drawing PI16-16
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXF-603.

11. Drawing PI16-28
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXD-604.
        2) BRXE-604.

12. Drawing PI16-29
    a. Add new Keynote 3 adjacent to the following FVNR block(s). Keynote 3: “Replace existing motor starter.”
        1) BRXF-604.

RESPONSES TO SELECTED BIDDER QUESTIONS

Information is provided below to selected bidder questions which would be deemed helpful to share with all bidders.

1. Question: Will Bioreactors 2 and 4 be completely drained (within an inch) of the floor or should the contractor assume that pumps will be required to remove excess water from the grit?
    a. Response: The Contractor is responsible for means and methods of cleaning Bioreactors No. 2 & 4 (per Addendum 2, Contractor is NOT responsible for cleaning Bioreactor No. 3).
        i. The floors of the bioreactors are not sloped towards the drain significantly and there is a tendency for water to pool in spots. With that said, the SVWRF has never used brooms in the bioreactors to clean the floors. We have always used water hoses to push solids on the floors towards the drain. SVWRF has never used pumps to remove water from the bioreactors. There are small stainless steel plates on the intermediate channel walls that can be removed to help move water towards the drain. Once the majority of solids are removed, water can be pushed towards the drain. In general, the floor will self-drain in most places to less than 1 inch of water. However, there will likely be pockets of floor area that pond and they may be deeper than 1 inch. These can generally be squeegeed away.
    b. This information is provided only to describe the Owner's experience. Nothing in this response shall be understood to dictate the Contractor's means and methods.
2. Question: Does cleaning the bioreactors require that they be broom clean?
    a. Response: See response above.
3. Question: Can SVWRF provide drawings/data on the Existing AWWA Butterfly Valves?
    a. Response: See attached submittal information on the existing butterfly air valves.

ATTACHMENTS

- Section 00300 - Bid Bond Form (page 9)
- Section 11224A - Surface-Mounted Floating Propeller Mixers MOA
- Section 11224B - Replacement Vertical Mixer Impellers MOA
- Section 11312P - Submersible Axial Flow Propeller Pumps
- Section 11323 - Grit Removal System MOA
- Section 11324 - Grit Washer/Dewatering Units MOA
- Section 15115 - Gate Valves
- Submittal Information on Existing Butterfly Air Valves

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That _____as Principal, and _____as Surety, are held and firmly bound unto the South Valley Water Reclamation Facility hereinafter called "OWNER," in the sum of _____dollars, for the payment of which sum, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled "South Valley Water Reclamation Facility – Project 5".

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" and the "Instruction to Bidder" enters into a written Agreement on the form of agreement bound with said Contract documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, and performs in all other respects the agreement created by this bid, then this obligation shall be null and void, otherwise it shall remain in full force and effect. The Surety stipulates and agrees that the obligation of said Surety shall in no way be impaired or affected by an extension of the time within which the OWNER may accept such bid and Surety further waives notice of any such extension. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Principal and Surety shall pay all costs incurred by said OWNER in such suit, including reasonable attorney's fees and costs to be fixed by the court.

SIGNED AND SEALED, this _____day of _____, 20_____

_____ (SEAL) _____ (SEAL)

(Principal) (Surety)

By: _____ By: _____

(Signature) (Signature)

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

- END OF BID FORMS -

MEMORANDUM OF AGREEMENT

For Supply of Aqua-Aerobic Surface-Mounted Propeller Mixers

South Valley Water Reclamation Facility and Aqua-Aerobic

The purpose of this Memorandum of Agreement (MOA) is to document the agreement between the South Valley Water Reclamation Facility (OWNER) and Aqua Aerobic (VENDOR) to supply the Aqua Aerobic Surface-Mounted Propeller Mixers ("Equipment") for Project 5 (Project) at the South Valley WRF.

This MOA references other documents, which are considered integral parts of this MOA. All requirements embodied in the referenced final bid documents are inseparable requirements of this MOA.

This MOA is intended to create a binding commitment between VENDOR and OWNER for acquisition of the "Equipment" by Owner's Contractor from VENDOR pursuant to the terms of this MOA, subject to the limitations set forth herein.

AGREEMENT

I. Duties of Vendor

VENDOR shall have the following duties under this agreement:

1. Provide final coordination with Owner's Project Manager in their completion of the final design of the "Equipment."

2. Provide equipment supply bids to the general contractors bidding on the Project that are identical to, and in accordance with the project plans and specifications, and this MOA.

3. Prepare submittals to Owner's Contractor consistent with Specification 01330 - Submittal Procedures, project plans, and this MOA. The initial submittals shall be delivered to Owner's Contractor within eight (8) weeks after execution of the Purchase Order between VENDOR and Contractor. Resubmittals, if any, shall be delivered to the Owner's Contractor within two (2) weeks of receipt of any review comments from Owner.

4. Deliver the "Equipment" consistent with the project plans and specifications, according to a schedule mutually agreed upon with Owner's Contractor and no later than 12 weeks from approval of submittals unless expressly stated otherwise.

5. Assist Owner's Contractor to startup, test and put into operation the Equipment to meet all specified requirements.

6. Provide preliminary operation and maintenance (O&M) manuals with storage and installation requirements prior to delivery of equipment. Provide preliminary and final O&M manuals and training to Owner for operation of "Equipment" in accordance with the specification requirements.

7. Meet other commercial warranty and risk management requirements set forth in this MOA.

II. Owner Obligations

Owner is undertaking the Project and will competitively bid the public works contract following completion of plans and specifications and obtaining of permit/founding. Project will including installation of the "Equipment" according to the contract documents. Owner agrees that subject to the conditions below, it shall award the public works construction contract to the lowest responsible and responsive bidder. As a result of this MOA, Owner shall accommodate the "Equipment" and shall require Owner's selected Contractor to install the "Equipment." Owner shall require its Contractor to enter into a purchase order with VENDOR to acquire VENDOR's "Equipment" solely from VENDOR. Owner shall further require that the selected Contractor obtain "Equipment" from VENDOR in full compliance with the Price and Payment Terms set forth in this MOA.

This obligation to obtain equipment from VENDOR shall be conditioned upon the award of the construction contract for the Project, and the favorable result of any legal challenge to this process which could result in a court order or judgment preventing Owner from either executing the construction contract for the Project or requiring Owner's Contractor to install VENDOR's "Equipment." If Owner fails to proceed with the Project, is prevented from entering into the construction contract, or is prevented by legal proceedings from designating VENDOR's "Equipment" for inclusion in Owner's Project, Owner shall not be liable to Vendor for any damages including, but not limited to restocking, proposal preparation and contracting costs VENDOR, or loss of prospective profit.

III. Scope of Services

The scope of supply and services shall be in accordance with the project plans and specifications. VENDOR agrees to supply the "Equipment" as set forth in the plans and specifications without any modifications.

IV. Price

1. The VENDOR "Equipment" shall be manufactured, assembled, insured, crafted, delivered, and maintained prior to acceptance for the base bid of

$ 103,973.84 dollars (for base bid)

in US currency

a. The price set forth herein shall reflect shipping D.A.P. to OWNER. Owner's Contractor will not accept C.O.D. shipments. VENDOR shall be responsible for payment of all charges for handling, shipping, packaging, wrapping, bags, container, boxing, crating, labeling, customs and duties, taxes (including all sales tax), insurance and other related matters. VENDOR shall cause all VENDOR "Equipment" to be insured for the full value during all phases of packaging and delivery and such insurance shall remain in place until such time as Owner's Contractor has accepted products. The Contractor must notify VENDOR within five (5) working days of delivery if there were any apparent shipment shortages or damages incurred in shipment. This notification requirement does not release VENDOR of responsibility from material shortages or damages that are discovered upon full inventory and installation of the equipment.

VENDOR agrees to offer all responsible bidders on the Project the equipment and services in accordance with scope of services and supply set forth herein, and as more specifically set forth in the specifications, at the proposed price and without additional terms and conditions inconsistent with this MOA. Any such additional terms and conditions offered to proposing contractors, not inconsistent with the terms of this MOA, shall be those customary to the public works marketplace in Utah and offered at no additional cost.

V. Payment Terms

VENDOR shall agree to the conditions for payment as outlined in Article 15 of Section 00700. Prior to payment, but after delivery of the "Equipment" to the site, VENDOR shall visually inspect and certify in writing to Owner and Contractor that all pieces of the VENDOR "Equipment" have arrived on site undamaged and are in good working order.

VENDOR agrees to provide the scope of services and supply at the proposed price on the following payment terms:

- 10% upon delivery of submittals (net 30 days)
- 70% upon delivery of equipment (net 30 days)
- 20 % upon start-up of equipment (net 30 days)

The partial payments set forth above shall be due only upon full and complete performance of each benchmark task listed above for all equipment and services required pursuant to the specifications.

A 5% retention will be withheld by Owner from each of the payments listed above. Such 5% retention shall be provided to Owner's Contractor for payment following substantial completion of the Project as defined in Specification Section 00700.

VI. Terms and Conditions

1. Owner's Contractor will visually inspect shipment(s) from VENDOR upon receipt at construction site to determine whether they conform to the requirements of this MOA. Notwithstanding these provisions for inspection, VENDOR acknowledges that the "Equipment" is not reasonably subject to mere visual inspections to ascertain whether the equipment fully conforms to the specifications and that testing after installation is required

prior to final acceptance of the equipment. Owner's Contractor shall be required to schedule performance testing to provide for presence of VENDOR.

2. Operations Manual and Training: VENDOR shall be responsible to provide an operations and maintenance manual and training to Owner's employees as is set forth in Specification Sections 01782 (O&M Data) and 01330 (Submittal Procedures). All costs associated with provision of the operations and maintenance manual and employee training shall be included in the price set forth above.

3. Price Escalation: The costs included in this MOA shall remain in effect and are not subject to escalation unless Owner's Contractor does not accept delivery of equipment prior to 6 months after NTP has been issued to the Contractor. After such time, pricing is subject to an escalation clause based on the Metal Miner's Stainless Steel Index, at the expense of the contractor, computed from 6 months after NTP until the accepted delivery date.

4. Warranty: VENDOR expressly warrants that all goods and services included in VENDOR's proposal shall conform to all specifications, drawings and samples. In case of inconsistencies between documentation, specification details shall prevail. Goods and services shall be free from material defects of workmanship and made to the specifications and requirements of this agreement. For purposes of this warranty, any parts not meeting the foregoing quality shall be deemed defective. VENDOR and its supplier(s) shall provide warranties on all equipment provided as set forth in the specifications. The foregoing warranty provisions shall also be applicable to equipment or software supplied to VENDOR by a third party entity and provided to Owner's Contractor via this MOA. Any warranties provided by third party equipment or software supplier shall be assigned to the Owner after final acceptance. All equipment or software supplied under this MOA shall have a one (1) year warranty from Final Acceptance Date as detailed in Specification Section 01740 - Warranties and Bonds.

5. Liens, Claims And Encumbrances: VENDOR warrants and represents that all the goods when delivered will be free and clear of all liens, claims, encumbrances and infringements of any patents, trademarks, copyrights or franchise rights.

6. Independent Contractor: VENDOR or persons under contract to VENDOR in the performance of services on this MOA, including services provided on OWNER property, shall perform work as independent contractors. VENDOR shall provide insurance to cover its work and its employees as required by the OWNER's Contractor. Further, neither party to this MOA is the agent or legal representative of the other party for any purpose, nor shall the actions of either party under this MOA create a partnership, joint venture or relationship of principal and agent between the parties. VENDOR shall maintain the following forms of insurance coverage for all work done on OWNER property, and similarly require its subcontractors doing work on OWNER properly to maintain similar insurance, including: (1) Public Liability and Property Damage Insurance, including contractual liability, both general and automobile, in the amount of at least $1,000,000 per occurrence for general liability, and $1,000,000 per occurrence combined single limit for bodily injury and property damage for automobile liability (2) Workers' Compensation Insurance as required by law and for not less than $1,000,000. With the exception of Worker's Compensation Insurance Owner and Owner's Contractor shall be added as additional insureds to such policies.

7. Indemnification: VENDOR agrees to indemnify, protect, hold harmless and defend Owner and Owner's Contractor, and their officers, agents, employees, volunteers. and boards, from any and all claims or liabilities arising from any liability imposed for injury, as defined in Specification 00700-7.18, Indemnification, whether arising during or after completion of the work hereunder, or in any manner, directly or indirectly caused, claimed occasioned or contributed to, by reason of any negligent act or omission of VENDOR, excepting for claims or liabilities arising from active negligence of Owner or Owner's Contractor. VENDOR shall also indemnify, protect, hold harmless and defend Owner and Owner's Contractor for claims or liabilities arising by reason of claimed infringements of any patents, trademarks, copyrights or franchise rights, in connection with or incident to or arising out of the performance of this contract.

8. Assignment: Assignment by VENDOR of its responsibilities under this MOA, will not be binding upon Owner or Owner's Contractor unless such assignment has had prior written approval of Owner, which approval shall be solely within the discretion of Owner. Failure to obtain approval of any assignment, including an involuntary assignment to creditors, shall constitute a breach of this MOA, which may lead to termination.

9. Modifications: No modification to this MOA, nor any waiver of any rights, shall be effective unless agreed to in writing by both Parties.

10. Liquidated Damages: Owner's Contractor will include liquidated damage penalties in the Purchase Order agreement with VENDOR. Such damages are only applicable if directly related to VENDOR's failure to deliver the equipment within the time period stipulated in this MOA, failure to support the startup of the equipment, or failure of the equipment during the startup where any such failures result in a delay to the critical path of the construction project schedule. If VENDOR's delivery or performance is late and it has no impact on Owner's Contractors overall schedule, then VENDOR shall not be liable for liquidated damages. If more than one party is responsible for assessment of liquidated damages, then VENDOR shall be liable only for its portion of the total liquidated damages. VENDOR shall be required to pay liquidated damages only if the Owner requires the Owner's Contractor to pay liquidated damages. The amount of such damages shall not exceed twenty-five (25) percent of the total equipment contract price as listed in Article IV- Price of this MOA.

11. Notices: All notices under this MOA shall be in writing and shall be considered delivered and effective on the earlier of actual receipt or (i) the day following transmission if sent by facsimile when followed by written confirmation by overnight carrier or certified United States mail; or (ii) one (1) day after dispatch if sent by private overnight carrier (e.g., DHL, Federal Express); or (iii) five (5) days after posting if sent by certified mail. Notice shall be sent to the following persons:

MEMORANDUM OF AGREEMENT

For Supply of Aqua-Aerobic Surface-Mounted Propeller Mixers

South Valley Water Reclamation Facility and Aqua-Aerobic

VENDOR

Contact Name:	Alan Rice - Aqua-Aerobic Systems
Address:	6306 N. Alpine Road Loves Park, IL 61111
Phone:	815-639-4553
E-mail:	ARice@Aqua-Aerobic.com

Contractor:

Contact Name:	Unknown
Address	
Phone:	
E-Mail:	

Owner:

Contact Name:	Taigon Worthen, P.E.
Address	South Valley Water Reclamation Facility 7495 South 1300 West West Jordan, UT 84084
Phone:	(801) 566-7711
E-Mail:	tworthen@svwater.com

12. Severability: If any portion of this MOA is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this MOA and the Parties shall seek in good faith to agree to substitute for the invalid provision a valid provision that most closely approximates its terms.

13. Entire Agreement: This MOA supersedes all proposals, oral or written, all negotiations, conversations or discussions between the Parties and contains the entire understanding and agreement of the Parties relating to this subject matter. In the event of a conflict between the terms and conditions of this MOA and its attachments, this MOA shall control.

This Memorandum of Agreement is hereby entered into between the Owner and VENDOR. By signing this Memorandum of Agreement, the undersigned asserts that they have the authority to enter into this agreement.

MEMORANDUM OF AGREEMENT

For Supply of Aqua-Aerobic Surface-Mounted Propeller Mixers

South Valley Water Reclamation Facility and Aqua-Aerobic

Owner
South Valley Water Reclamation Facility

4/1/19
Date

Jerry Knight Board Chair.
Name/Title

Manufacturer
Aqua-Aerobic

3/14/19
Date

William Decker, VP & Gm
Equipment & Services Group
Name/Title

Approved as to Form:

Attorney

MEMORANDUM OF AGREEMENT

For Supply of Repalcement Impellers for Existing Enviropax ANCO Platform-Mounted Vertical Shaft Mixers

South Valley Water Reclamation Facility and Enviropax

The purpose of this Memorandum of Agreement (MOA) is to document the agreement between the South Valley Water Reclamation Facility (OWNER) and Enviropax (VENDOR) to supply replacement impellers for existing Enviropax ANCO platform-mounted vertical shaft mixers ("Equipment") for Project 5 (Project) at the South Valley WRF.

This MOA references other documents, which are considered integral parts of this MOA. All requirements embodied in the referenced final bid documents are inseparable requirements of this MOA.

This MOA is intended to create a binding commitment between VENDOR and OWNER for acquisition of the "Equipment" by Owner's Contractor from VENDOR pursuant to the terms of this MOA, subject to the limitations set forth herein.

AGREEMENT

I. Duties of Vendor

VENDOR shall have the following duties under this agreement:

1. Provide final coordination with Owner's Project Manager in their completion of the final design of the "Equipment."

2. Provide equipment supply bids to the general contractors bidding on the Project that are identical to, and in accordance with the project plans and specifications, and this MOA.

3. Prepare submittals to Owner's Contractor consistent with Specification 01330 - Submittal Procedures, project plans, and this MOA. The initial submittals shall be delivered to Owner's Contractor within eight (8) weeks after execution of the Purchase Order between VENDOR and Contractor. Resubmittals, if any, shall be delivered to the Owner's Contractor within two (2) weeks of receipt of any review comments from Owner.

4. Deliver the "Equipment" consistent with the project plans and specifications, according to a schedule mutually agreed upon with Owner's Contractor and no later than 16 weeks from approval of submittals unless expressly stated otherwise.

5. Assist Owner's Contractor to startup, test and put into operation the Equipment to meet all specified requirements.

6. Provide preliminary operation and maintenance (O&M) manuals with storage and installation requirements prior to delivery of equipment. Provide preliminary and final O&M manuals and training to Owner for operation of "Equipment" in accordance with the specification requirements.

7. Meet other commercial warranty and risk management requirements set forth in this MOA.

MEMORANDUM OF AGREEMENT

For Supply of Repalcement Impellers for Existing Enviropax ANCO Platform-Mounted Vertical Shaft Mixers

South Valley Water Reclamation Facility and Enviropax

II. Owner Obligations

Owner is undertaking the Project and will competitively bid the public works contract following completion of plans and specifications and obtaining of permit/founding. Project will including installation of the "Equipment" according to the contract documents. Owner agrees that subject to the conditions below, it shall award the public works construction contract to the lowest responsible and responsive bidder. As a result of this MOA, Owner shall accommodate the "Equipment" and shall require Owner's selected Contractor to install the "Equipment." Owner shall require its Contractor to enter into a purchase order with VENDOR to acquire VENDOR's "Equipment" solely from VENDOR. Owner shall further require that the selected Contractor obtain "Equipment" from VENDOR in full compliance with the Price and Payment Terms set forth in this MOA.

This obligation to obtain equipment from VENDOR shall be conditioned upon the award of the construction contract for the Project, and the favorable result of any legal challenge to this process which could result in a court order or judgment preventing Owner from either executing the construction contract for the Project or requiring Owner's Contractor to install VENDOR's "Equipment." If Owner fails to proceed with the Project, is prevented from entering into the construction contract, or is prevented by legal proceedings from designating VENDOR's "Equipment" for inclusion in Owner's Project, Owner shall not be liable to Vendor for any damages including, but not limited to restocking, proposal preparation and contracting costs VENDOR, or loss of prospective profit.

III. Scope of Services

The scope of supply and services shall be in accordance with the project plans and specifications. VENDOR agrees to supply the "Equipment" as set forth in the plans and specifications without any modifications.

IV. Price

l. The VENDOR "Equipment" shall be manufactured, assembled, insured, crafted, delivered, and maintained prior to acceptance for the base bid of

$ 40,500.00 dollars (for base bid) [not including taxes]

in US currency [Note: if taxes are required, add $2,760.55 for a total of $43,260.55]

if any applicable additive bid item/bid alternate is selected. This total amount shall be inclusive of all payments for the vendor's costs including those costs set forth below:

Base Bid Cost – 6 mixer impellers for existing mixers	$ $40,500
Bid Alternate – N/A **To be exercised at Owners option**	$ N/A

a. The price set forth herein shall reflect shipping D.A.P. to OWNER. Owner's Contractor will not accept C.O.D. shipments. VENDOR shall be responsible for payment of all charges for handling, shipping, packaging, wrapping, bags, container, boxing, crating, labeling, customs and duties, taxes (including all sales tax), insurance and other related matters . VENDOR shall cause all VENDOR "Equipment" to be insured for the full value during all phases of packaging and delivery and such insurance shall remain in place until such time as Owner's Contractor has accepted products. The Contractor must notify VENDOR within five (5) working days of delivery if there were any apparent shipment shortages or damages incurred in shipment. This notification requirement does not release VENDOR of responsibility from material shortages or damages that are discovered upon full inventory and installation of the equipment.

VENDOR agrees to offer all responsible bidders on the Project the equipment and services in accordance with scope of services and supply set forth herein, and as more specifically set forth in the specifications, at the proposed price and without additional terms and conditions inconsistent with this MOA. Any such additional terms and conditions offered to proposing contractors, not inconsistent with the terms of this MOA, shall be those customary to the public works marketplace in Utah and offered at no additional cost.

V. Payment Terms

VENDOR shall agree to the conditions for payment as outlined in Article 15 of Section 00700. Prior to payment, but after delivery of the "Equipment" to the site, VENDOR shall visually inspect and certify in writing to Owner and Contractor that all pieces of the VENDOR "Equipment" have arrived on site undamaged and are in good working order.

VENDOR agrees to provide the scope of services and supply at the proposed price on the following payment terms:

- 10% upon delivery of submittals (net 30 days)
- 80% upon delivery of equipment (net 30 days)
- 10 % upon start-up of equipment (net 30 days)

The partial payments set forth above shall be due only upon full and complete performance of each benchmark task listed above for all equipment and services required pursuant to the specifications.

A 5% retention will be withheld by Owner from each of the payments listed above. Such 5% retention shall be provided to Owner's Contractor for payment following substantial completion of the Project as defined in Specification Section 00700.

VI. Terms and Conditions

1. Owner's Contractor will visually inspect shipment(s) from VENDOR upon receipt at construction site to determine whether they conform to the requirements of this MOA. Notwithstanding these provisions for inspection, VENDOR acknowledges that the

"Equipment" is not reasonably subject to mere visual inspections to ascertain whether the equipment fully conforms to the specifications and that testing after installation is required prior to final acceptance of the equipment. Owner's Contractor shall be required to schedule performance testing to provide for presence of VENDOR.

2. Operations Manual and Training: VENDOR shall be responsible to provide an operations and maintenance manual and training to Owner's employees as is set forth in Specification Sections 01782 (O&M Data) and 01330 (Submittal Procedures). All costs associated with provision of the operations and maintenance manual and employee training shall be included in the price set forth above.

3. Price Escalation: The costs included in this MOA shall remain in effect and are not subject to escalation unless Owner's Contractor does not accept delivery of equipment prior to 20 months after NTP has been issued to the Contractor. After such time, pricing is subject to an escalation clause of 3% per year, at the expense of the contractor, computed from 20 months after NTP until the accepted delivery date.

4. Warranty: VENDOR expressly warrants that all goods and services included in VENDOR's proposal shall conform to all specifications, drawings and samples. In case of inconsistencies between documentation, specification details shall prevail. Goods and services shall be free from material defects of workmanship and made to the specifications and requirements of this agreement. For purposes of this warranty, any parts not meeting the foregoing quality shall be deemed defective. VENDOR and its supplier(s) shall provide warranties on all equipment provided as set forth in the specifications. The foregoing warranty provisions shall also be applicable to equipment or software supplied to VENDOR by a third party entity and provided to Owner's Contractor via this MOA. Any warranties provided by third party equipment or software supplier shall be assigned to the Owner after final acceptance. All equipment or software supplied under this MOA shall have a one (1) year warranty from Final Acceptance Date as detailed in Specification Section 01740 - Warranties and Bonds.

5. Liens, Claims And Encumbrances: VENDOR warrants and represents that all the goods when delivered will be free and clear of all liens, claims, encumbrances and infringements of any patents, trademarks, copyrights or franchise rights.

6. Independent Contractor: VENDOR or persons under contract to VENDOR in the performance of services on this MOA, including services provided on OWNER property, shall perform work as independent contractors. VENDOR shall provide insurance to cover its work and its employees as required by the OWNER's Contractor. Further, neither party to this MOA is the agent or legal representative of the other party for any purpose, nor shall the actions of either party under this MOA create a partnership, joint venture or relationship of principal and agent between the parties. VENDOR shall maintain the following forms of insurance coverage for all work done on OWNER property, and similarly require its subcontractors doing work on OWNER properly to maintain similar insurance, including: (1) Public Liability and Property Damage Insurance, including contractual liability, both general and automobile, in the amount of at least $1,000,000 per occurrence for general liability, and $1,000,000 per occurrence combined single limit for bodily injury and property damage for automobile liability (2) Workers' Compensation Insurance as required by law and for not less than $1,000,000. With the exception of

Worker's Compensation Insurance Owner and Owner's Contractor shall be added as additional insureds to such policies.

7. Indemnification: VENDOR agrees to indemnify, protect, hold harmless and defend Owner and Owner's Contractor, and their officers, agents, employees, volunteers. and boards, from any and all claims or liabilities arising from any liability imposed for injury, as defined in Specification 00700-7.18, Indemnification, whether arising during or after completion of the work hereunder, or in any manner, directly or indirectly caused, claimed occasioned or contributed to, by reason of any negligent act or omission of VENDOR, excepting for claims or liabilities arising from active negligence of Owner or Owner's Contractor. VENDOR shall also indemnify, protect, hold harmless and defend Owner and Owner's Contractor for claims or liabilities arising by reason of claimed infringements of any patents, trademarks, copyrights or franchise rights, in connection with or incident to or arising out of the performance of this contract.

8. Assignment: Assignment by VENDOR of its responsibilities under this MOA, will not be binding upon Owner or Owner's Contractor unless such assignment has had prior written approval of Owner, which approval shall be solely within the discretion of Owner. Failure to obtain approval of any assignment, including an involuntary assignment to creditors, shall constitute a breach of this MOA, which may lead to termination.

9. Modifications: No modification to this MOA, nor any waiver of any rights, shall be effective unless agreed to in writing by both Parties.

10. Liquidated Damages: Owner's Contractor will include liquidated damage penalties in the Purchase Order agreement with VENDOR. Such damages are only applicable if directly related to VENDOR's failure to deliver the equipment within the time period stipulated in this MOA, failure to support the startup of the equipment, or failure of the equipment during the startup where any such failures result in a delay to the critical path of the construction project schedule. If VENDOR's delivery or performance is late and it has no impact on Owner's Contractors overall schedule, then VENDOR shall not be liable for liquidated damages. If more than one party is responsible for assessment of liquidated damages, then VENDOR shall be liable only for its portion of the total liquidated damages. VENDOR shall be required to pay liquidated damages only if the Owner requires the Owner's Contractor to pay liquidated damages. The amount of such damages shall not exceed ten (10) percent of the total equipment contract price as listed in Article IV- Price of this MOA.

11. Notices: All notices under this MOA shall be in writing and shall be considered delivered and effective on the earlier of actual receipt or (i) the day following transmission if sent by facsimile when followed by written confirmation by overnight carrier or certified United States mail; or (ii) one (1) day after dispatch if sent by private overnight carrier (e.g., DHL, Federal Express); or (iii) five (5) days after posting if sent by certified mail. Notice shall be sent to the following persons:

MEMORANDUM OF AGREEMENT

For Supply of Repalcement Impellers for Existing Enviropax ANCO Platform-Mounted Vertical Shaft Mixers

South Valley Water Reclamation Facility and Enviropax

VENDOR

Contact Name:	Brett Lees
Address:	Enviropax, Inc. 3609 South West Temple Salt Lake City, Utah 84115
Phone:	801-263-8880
E-mail:	blees@enviropax.com

Contractor:

Contact Name:	Unknown
Address	
Phone:	
E-Mail:	

Owner:

Contact Name:	Taigon Worthen, P.E.
Address	South Valley Water Reclamation Facility 7495 South 1300 West West Jordan, UT 84084
Phone:	(801) 566-7711
E-Mail:	tworthen@svwater.com

12. Severability: If any portion of this MOA is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this MOA and the Parties shall seek in good faith to agree to substitute for the invalid provision a valid provision that most closely approximates its terms.

13. Entire Agreement: This MOA supersedes all proposals, oral or written, all negotiations, conversations or discussions between the Parties and contains the entire understanding and agreement of the Parties relating to this subject matter. In the event of a conflict between the terms and conditions of this MOA and its attachments, this MOA shall control.

This Memorandum of Agreement is hereby entered into between the Owner and VENDOR. By signing this Memorandum of Agreement, the undersigned asserts that they have the authority to enter into this agreement.

MEMORANDUM OF AGREEMENT

For Supply of Repalcement Impellers for Existing Enviropax ANCO Platform-Mounted Vertical Shaft Mixers

South Valley Water Reclamation Facility and Enviropax

Owner
South Valley Water Reclamation Facility

4/1/19
Date

Jerry Knight Board Chair.
Name/Title

Manufacturer
Enviropax

3/7/19
Date

Brett Lees, President
Name/Title

Approved as to Form:

Attorney

SECTION 11312P

SUBMERSIBLE AXIAL FLOW PROPELLER PUMPS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: The requirements for vertically suspended, submersible, axial, centrifugal, propeller pumps.

B. Tag numbers: As specified in Pump Schedule.

1.02 REFERENCES

A. American Bearing Manufacturers Association (ABMA):
   1. 9 - Load Ratings and Fatigue Life for Ball Bearings.
   2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
   2. B16.5 - Pipe Flanges and Flanged Fittings.

C. ASTM International (ASTM):
   1. A48 - Standard Specification for Gray Iron Castings.
   2. A108 - Standard Specification for Steel Bars, Carbon and Alloy, Cold-Finished.
   3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   4. A582 - Standard Specification for Free-Machining Stainless Steel Bars.
   5. B148 - Standard Specification for Aluminum-Bronze Sand Castings.
   6. B505 - Standard Specification for Copper-Base Alloy Continuous Castings.
   7. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
   8. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
   9. F594 - Standard Specification for Stainless Steel Nuts.

D. American Water Works Association (AWWA):
   1. C200 - Steel Water Pipe 6 Inch and Larger.

E. FM Global (FM).

F. Hydraulic Institute (HI):
   1. 1.1-1.5 - Rotodynamic (Centrifugal) Pumps - Nomenclature and Definitions.
   2. 9.1-9.5 - General Pump Standards for Types, Definitions, Application, and Sound Measurements and Decontamination.

G. National Electrical Code (NEC).

H. National Electrical Manufacturers Association (NEMA).

I. Underwriters Laboratories, Inc. (UL).

1.03 DEFINITIONS

A. Pump head (Total Dynamic Head, TDH), flow capacity, pump efficiency, net positive suction head available (NPSHa), and net positive suction head required (NPSHr): As defined in HI 1.1-1.5, and 9.1-9.5 and as modified in the Specifications.

B. Suction head: Gauge pressure available at pump intake flange or bell in feet of fluid above atmospheric; average when using multiple suction pressure taps, regardless of variation in individual taps.

1.04 SYSTEM DESCRIPTION

A. Submersible pumps and components:
   1. Submersible non-clog axial flow pump.
   2. Submersible electric motor.
   3. Motor drive.
   4. Bearings.
   5. Seals.
   6. Pump discharge pipe including discharge supports.
   7. Submersible cable.
   8. Submersible cable support and protection.
   9. Necessary controls and instrumentation.
   10. Taps.
   11. Lifting eyes.
   12. Lifting cable.
   13. Similar type items as specified and as required for complete operational units ready for use as specified and installed as indicated on the Drawings.

B. Pump is installed by lowering the 1-piece motor/pump unit onto the discharge pipe supplied by the manufacturer and onto the mounting plate or coupling ring device.

C. Design requirements:
   1. Pump performance characteristics:
      a. As specified in the Pump Schedule.
      b. Performance tolerances shall be the same as the test tolerances specified in Section 15958 - Mechanical Equipment Testing.
   2. Motor characteristics: As specified in Pump Schedule.

D. Maintenance and repair shall be performed by lifting the pump/motor unit off of the discharge pipe. It shall not be necessary for maintenance personnel to enter the wet well.

E. Product requirements as specified in Section 01600 - Product Requirements and Section 15050 - Common Work Results for Mechanical Equipment.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

C. Shop drawings: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

D. Calculations: As specified in Section 15050 - Common Work Results for Mechanical Equipment:
   1. Torsional analysis: Submit when scheduled and as specified in Section 15050 - Common Work Results for Mechanical Equipment.

E. Vendor operation and maintenance manuals: As specified in Section 01782 - Operation and Maintenance Data.

F. Commissioning submittals:
   1. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
   2. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pump: One of the following or equal:
   1. KSB, Amaline series.

2.02 MATERIALS

A. General: When materials are referenced in this Section or on the pump schedule, the compositions shall be the UNS Alloys, Types or Grades in this article unless specified or scheduled otherwise.

B. Carbon steel: C 1035.

C. Cast Iron: ASTM A48, Class 35 B minimum.

D. Nickel cast iron: ASTM A48, Class 35 minimum with 3 percent nickel added.

E. Steel: ASTM A108, Grade or UNS Alloy as specified or scheduled.

F. Stainless steel: ASTM A276 or ASTM A582, Type or UNS Alloy as specified or scheduled.

G. Bronze: ASTM B505 or ASTM B584, UNS Alloy C83600.

H. Zincless bronze: ASTM B505 or ASTM B584, Leaded Tin Bronze, UNS Alloy C92700.

I. Aluminum bronze: ASTM B148, ASTM B505 or ASTM B584, UNS Alloy C95200.

J. Fasteners: Stainless Steel, ASTM F593 or ASTM F594, type or grade as specified.

2.03 PUMP CASINGS

A. Type: 2-piece; pump and motor casing bolted together; machined seal faces with Nitrile or Buna N rubber O-ring seal; Type 304 stainless steel bolting.

B. Material: As scheduled.

C. Construction: Of sufficient strength, weight, and thickness to provide accurate alignment and water tightness.

D. Design working pressure: Minimum 1.10 times maximum shutoff total dynamic head with maximum installable impeller diameter at maximum operating speed plus maximum suction static head; suitable for submergence in up to 65 feet of water.

2.04 IMPELLERS

A. Type: As scheduled.

B. Material: Cast iron, Class 35B.

C. Maximum number of vanes: As scheduled.

D. Water passages: Smooth, able to prevent clogging by stringy or fibrous materials and to pass a minimum 4-inch diameter solid.

E. Method of securing to shafts: Keyed and secured by bronze nut or Allen head bolt locked in place, but readily removable without use of special tools.

F. Rotation: Clockwise looking from driver, unless otherwise indicated on the Drawings.

G. Balance: As specified in Section 15050 - Common Work Results for Mechanical Equipment to meet the vibration criteria as specified in Section 15958 - Mechanical Equipment Testing.

2.05 WEAR RINGS

A. Provide one of the following systems:
   1. Wear ring system:
      a. General: Used to provide efficient sealing between the volute and suction inlet of the impeller.
      b. Volute wear ring:
         1) Material: Steel coated with Nitrile rubber.
         2) Fitted to the volute inlet.
      c. Impeller wear ring:
         1) Material: Type 316 stainless steel.
         2) Heat-shrunk fitted onto the suction inlet of the impeller.

2.06 PUMP SHAFTS

A. Material: As scheduled in this Section, turned, ground, and polished. Shall be completely isolated from the pumped liquid.

B. Strength: Able to withstand minimum 1.5 times maximum operating torque and other loads.

C. Resonant frequency: As specified in Sections 15050 - Common Work Results for Mechanical Equipment and 15958 - Mechanical Equipment Testing.

D. Deflection: Maximum 0.002 inches under operating conditions.

E. Construction:
   1. Pump and motor shaft shall be a solid continuous shaft.
   2. Couplings shall not be accepted.
   3. The use of intermediate gear boxes or gear speed reducers shall not be accepted.

2.07 PUMP DISCHARGE PIPE (THIMBLE)

A. Pump discharge pipe: Diameter and material as scheduled.

B. Shall be permanently mounted and allow pump to be installed onto the pipe by lowering it to the bottom until it rests on a pump base plate or coupling ring device.

C. Design working pressure: Design to withstand a design working pressure not less than 1.20 times the maximum shutoff total dynamic head with the maximum diameter impeller at the maximum operating speed plus the maximum suction static head.

D. Lengths and connections: Design discharge pipe length and connections as indicated on the Drawings.

2.08 MECHANICAL SEALS

A. Provide dual tandem mechanical seal system consisting of 2 totally independent seal assemblies with oil for seal lubrication and cooling.
   1. Shaft sealing system shall be capable of withstanding volute pressure up to 1.5 times pump shutoff head.
   2. No seal damages shall result from operating the pumping unit in its liquid environment, from running pump dry, or from reverse pump operation.
   3. Seals shall be maintenance free and shall not require adjustment.

B. Oil chamber:
   1. Provide oil chamber for shaft sealing system. Design oil chamber to ensure that air is left in the oil chamber to absorb the expansion of the oil due to temperature variations.
   2. Provide drain and inspection plug, with positive anti-leak seal, easily accessible from the outside.
   3. Oil in oil chamber shall be FDA approved, paraffin type, colorless, odorless, and non-toxic.

4. Provide capacitive type leakage sensor for the detection of water in the oil chamber or a moisture sensor in the lower motor chamber to detect any fluid in the motor.

C. Upper seal:
   1. Tungsten carbide positively-driven rotating seal and tungsten carbide stationary seal as specified in Section 15050 - Common Work Results for Mechanical Equipment.
   2. Located between the oil chamber and motor housing.

D. Lower seal:
   1. Located between pump and oil chamber. Shall be independent of the impeller hub.
   2. Tungsten Carbide rotating and stationary seals as specified in Section 15050 - Common Work Results for Mechanical Equipment.

E. Springs and other hardware: Stainless steel, 300 or 400 series.

2.09 BEARINGS

A. Pump shaft shall rotate on a minimum of 3 permanently sealed, grease lubricated bearings:
   1. Upper bearing for radial forces.
   2. Two lower bearings for combined axial and radial forces.

B. Bearing type: Anti-friction meeting ABMA standards.

C. For pumps 50 horsepower and larger, provide lower bearing with independent thermal sensor to monitor the bearing temperature. If a high temperature occurs, the sensor shall activate an alarm and shut down the motor.

D. Bearing lubrication system shall be sized sufficiently to safely absorb heat energy normally generated in bearing under maximum ambient temperature of 60 degrees Celsius when pump scheduled for dry running.
   1. Bearing Life: Minimum L10 life of 100,000 hours at rated design point or 24,000 hours in accordance with ABMA 9 or 11 at bearing design load imposed by pump shutoff with maximum sized impeller at rated speed, whichever provides longest bearing life in intended service.

2.10 MOTORS AND POWER CABLES

A. Motors: Features as specified and as scheduled.
   1. Provide motors that are rated suitable for continuous operation in 40 degrees Celsius ambient temperature at project site altitude.
   2. Horsepower:
      a. As scheduled.
      b. Listed motor horsepower is the minimum to be supplied.
         1) Increase motor horsepower if required to prevent motor overload while operating at any point on the supplied pump operating head-flow curve, including runout.
         2) However, variable frequency drives, generator, and other electrical equipment are sized for scheduled motor horsepower.

3. The motor shall be capable of continuous operation under load with the motor submerged, partially submerged or exposed, without derating the motor.
4. The motor shall be designed for continuous duty handling pumped media of 40 degrees Celsius and capable of a minimum of 15 evenly spaced starts per hour.
5. Motor cooling system:
    a. Design to provide adequate cooling:
        1) At the maximum operating speed.
        2) With motor submerged.
        3) With motor dry.
    b. Pump/motor shall be cooled by the passage of the pumped fluid past the motor housing within the wet well.
    c. Provide capability to relieve entrapped air from the system.
    d. Spray systems, air moving equipment or other secondary cooling systems are not acceptable.
6. Motor sealing: Design motor case and seals to withstand 65 feet of submergence.
7. Provide a moisture detection sensor in the stator chamber and the cable entry chamber. If leakage is detected, the sensor shall activate an alarm and shut down the motor.
8. Thermal protection:
    a. Automatic reset motor stator temperature detectors, 1 switch in each phase.
    b. If any detector is activated, the sensor shall activate an alarm and shut down the motor.
    c. The thermal detectors shall activate when the stator temperature exceeds 135 degrees Celsius.
9. Explosion proof motors:
    a. Squirrel cage induction motor, moisture resistant, UL or FM listed for Class 1, Groups C and D, Division 1 service, whether submerged or un-submerged.
    b. Insulation: Class H, moisture resistant, able to withstand 40 degrees Celsius ambient temperature plus 80 degrees Celsius temperature rise.
    c. All electrical parts in air filled water tight housing.
10. Other requirements as scheduled.

B. Power cables:
1. Submersible to same water depth as motor casing.
2. Type SPC with Hypalon/Buna N jacket.
3. Insulation rated for 90 degrees Celsius.
4. Non-wicking fillers.
5. Length: Sufficient to connect to junction box (without the need of splices) as indicated on the Drawings or 30 feet, whichever is greater.
6. Sized to conform to NEC, ICEA, and CSA specifications.
7. Provide stainless steel cable and stainless steel wire braid sleeve to support power cable from underside of wet well roof slab or access frame.

C. Cable entry seal and junction chamber:
1. Cable entry seal design shall not require specific torque requirements to insure a watertight and submersible seal.
2. Cable entry seal shall consist of dual cylindrical elastomer grommets, flanked by stainless steel washers.

3. The cable entry seal shall provide strain relief for the cable.
4. The cable entry junction chamber shall be separate from the motor chamber to prevent foreign material from gaining access to the top of the pump.
5. Provide a moisture detection sensor in the cable junction chamber. If leakage is detected, the sensor shall activate an alarm and shut down the pump/motor.

2.11 LIFTING DEVICES

A. General: Provide lifting devices suitable for discharge can installation as scheduled in this Section and as indicated on the Drawings.

B. Materials:
1. Wet pit: Square Type 304 stainless steel guide rails, lifting cable or chain and wall supports; Type 316 stainless steel anchor bolts and fasteners.

C. Lifting device:
1. Type: Chain or cable attached to lifting eye on the pump casing.
2. Length: Able to lower pump from top of wet well to operating position as indicated on the Drawings plus 5 additional feet of length.
3. Retainer: Provide Type 316 stainless steel locking hook or clasp at top of wet well to securely retain the upper end of the lifting chain or cable during pump operation.

2.12 ANTI VORTEX CONE

A. Each submersible pump shall have an anti-vortex cone provided by the manufacturer to provide proper flow conditions to the pump inlet.
1. The cone:
a. Sized and designed properly by the manufacturer for each pump installation.
b. Constructed of Type 316 stainless steel, minimum thickness of 1/4-inch.
c. Anchored to the floor of the basin under the pump by a minimum of four 1/2-inch stainless steel anchor bolts.
2. The pump supplier shall submit the design of the anti-vortex cones for approval.
a. However, the pump supplier will accept full responsibility for the design of the cone.

2.13 CONTROLS

A. Control module:
1. Each pump shall be provided with its own pump protection relay module, furnished by the pump supplier, with contacts rated 5A at 120 VAC. Provide relay with both normally open and normally closed contacts to change state upon detection of moisture or temperature. Relay shall accept 120 VAC power.
2. Contractor shall install the pump protection relay module in the local control panel as indicated on the Drawings.

2.14 SPARE PARTS AND SPECIAL TOOLS

A. Spare parts: Provide 1 of the following for each size or type of pump; deliver as specified in Section 01600 - Product Requirements:
1. Upper bearing set.

2. Lower bearing set.
3. Upper and lower mechanical seal set.
4. Casing seal gaskets or O-rings.
5. Power cable entry seal set.

B. Special tools: Deliver 1 set for every furnished pump type and size needed to assemble and disassemble pump system.

PART 3 EXECUTION

3.01 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
1. Provide certificates:
   a. Manufacturer's Certificate of Source Testing.
   b. Manufacturer's Certificate of Installation and Functionality Compliance.
2. Manufacturer's Representative onsite requirements:
   a. Installation: 1 trip, 5-day minimum.
   b. Functional Testing: 2 trips, 2-day minimum each.
3. Training:
   a. Maintenance: 4 hours per session, 2 sessions.
   b. Operation: 2 hours per session, 2 sessions.
4. Process operational period:
   a. As required by Owner or Contractor.

C. Source testing: As specified in Pump Schedule.

D. Functional testing: As specified in Pump Schedule.

3.02 PUMP SCHEDULE

A. As scheduled here and as shown in the Drawings:

Tag Numbers	**16.261, 16.262, 16.361, 16.362, 16.461, 16.462**
General Characteristics:	
Service	Mixed Liquor Return
Quantity	6
Max. Noise, dBA at 3 Feet	85
Torsional Analysis	Required
Minimum Pumped Fluid Degrees Fahrenheit	40
Normal Pumped Fluid Degrees Fahrenheit	70
Max. Pumped Fluid Degrees Fahrenheit	80
Installation Configuration	Wet Pit

Tag Numbers	16.261, 16.262, 16.361, 16.362, 16.461, 16.462
Pump Characteristics:	
Impeller Type	Axial
Impeller, Maximum Number Vanes	4
Pass Minimum Sphere Size, Inch	4
Speed Control	VFD
Maximum Pump Speed, rpm	880
Minimum Pump Speed, rpm	--
Rated Design Point: (at Maximum rpm)	
Flow, gpm	10,500
Head, Feet	3.5
Minimum Efficiency, Percent	65
Pump Materials:	
Pump and Motor Casing	Cast Iron
Discharge Pipe	C1035 Carbon Steel
Shaft	C1035 Carbon Steel
Shaft Key	316 Stainless Steel
Water Jacket	Cast Iron
Motor Characteristics:	
Motor Drive	As specified in Section 16222 - Low Voltage Motors up to 500 Horsepower
Maximum Driver Speed, rpm	900
Motor Horsepower, Minimum	25
Voltage/Phases/hertz	460/3/60
Service Factor	1.15
Full Load Current, Amperes	--
Locked Rotor Current, Amperes	--
Motor Efficiency (At 100 Percent Load)	86
Power Factor (At 100 Percent Load)	0.80
Enclosure Type	Can Submersible
NEMA Design Type	B
Source Testing:	
Test Witnessing	Not Witnessed
Performance Test Level	1

Tag Numbers	16.261, 16.262, 16.361, 16.362, 16.461, 16.462
Vibration Test Level	1
Noise Test Level	1
Functional Testing:	
Performance Test Level	2
Vibration Test Level	2
Noise Test Level	2

END OF SECTION

MEMORANDUM OF AGREEMENT

For Supply of Eutek HeadCell Grit Removal Units

South Valley Water Reclamation Facility and Hydro International, Inc.

The purpose of this Memorandum of Agreement (MOA) is to document the agreement between the South Valley Water Reclamation Facility (Owner) and Hydro International. Inc. (Hydro or Vendor) to supply the Eutek HeadCell Grit Removal Units for Project 5 - Grit Handling Facility (Project).

This MOA references other documents, which are considered integral parts of this MOA. All requirements embodied in the referenced final bid documents are inseparable requirements of this MOA.

This MOA is intended to create a binding commitment between Hydro and Owner for acquisition of the Eutek HeadCell Grit Removal Units by Owner's Contractor from Hydro pursuant to the terms of this MOA, subject to the limitations set forth herein. This MOA will be assigned to the Contractor awarded the bid by the Owner (Owner's Contractor) upon the award of the bid thereto.

AGREEMENT

I. Duties of Vendor

Hydro shall have the following duties under MOA:

1. Provide final coordination with Owner's Engineer (Carollo Engineers, Inc.) in their completion of the final design of the Eutek HeadCell Grit Removal Units.

2. Provide an equipment supply bid to the Owner that will be included as a line item in the bid documents issued to contractors bidding on the Project that is in accordance with the project plans and specifications and this MOA.

3. Prepare submittals to Owner's Contractor consistent with Specification 01330 - Submittal Procedures, project plans, and this MOA. The initial submittals shall be delivered to Owner's Contractor within six (6) weeks after assignment of this MOA to the Owner's Contractor and subsequent execution of the Purchase Order between Hydro and Contractor. Resubmittals, if any, shall be delivered to the Owner's Contractor within two (2) weeks of receipt of any review comments from Owner.

4. Be ready to deliver the Eutek HeadCell Grit Removal Units consistent with the project plans and specifications, according to a schedule mutually agreed upon in the Purchase Order executed between Hydro with Owner's Contractor and no later than 16 weeks from approval of submittals unless expressly stated otherwise.

5. Assist Owner's Contractor to startup, test and put into operation the Equipment to meet all specified requirements.

6. Provide preliminary operation and maintenance (O&M) manuals with storage and installation requirements prior to delivery of equipment. Provide preliminary and final O&M manuals and training to Owner for operation of Eutek HeadCell Grit Removal Unit in accordance with the specification requirements.

7. Meet other commercial warranty and risk management requirements set forth in this MOA.

II. Owner Obligations

Owner is undertaking the Project and will competitively bid the public works contract following completion of plans and specifications and obtaining of permit. Project will include the installation of the Eutek HeadCell Grit Removal Units in the new grit handling facility. Owner agrees that subject to the conditions below, it shall award the public works construction contract to the lowest responsible and responsive bidder. As a result of this MOA, Owner require the selected Owner's Contractor to install the Eutek HeadCell Grit Removal Unit. Owner shall assign this MOA to its selected Contractor and Owner's Contractor shall enter into a purchase order with Hydro to acquire Hydro's Eutek HeadCell Grit Removal Unit solely from Hydro.

This obligation to obtain equipment from Hydro shall be conditioned upon the award of the construction contract for the Project, and the favorable result of any legal challenge to this process which could result in a court order or judgment preventing Owner from either executing the construction contract for the Project or requiring Owner's Contractor to install Hydro's Eutek HeadCell Grit Removal Unit. If Owner fails to proceed with the Project, is prevented from entering into the construction contract, or is prevented by legal proceedings from designating Hydro's Eutek HeadCell Grit Removal Unit for inclusion in Owner's Project, Owner shall not be liable to Vendor for any damages including, but not limited to restocking, proposal preparation and contracting costs of Hydro, or loss of prospective profit.

III. Scope of Services

The scope of supply and services shall be in accordance with the project plans and specifications. Hydro agrees to supply the Eutek HeadCell Grit Removal Units as set forth in the plans and specifications without any modifications.

IV. Price

I. The Eutek HeadCell Grit Removal Units shall be manufactured, assembled, insured, crafted, delivered, and maintained prior to acceptance for the base bid of $ 481,342.55 dollars in US currency plus an additional payment of $219,243.78 dollars if bid alternate is selected. This total amount shall be inclusive of all payments for the vendor's costs including those costs set forth below:

Base Cost – 2 Units	$ 481,342.55
Bid Alternate – 1 Unit **To be exercised at Owner's option**	$ 219,243.78

a. The price set forth herein shall reflect shipping D.A.P. to OWNER. Owner's Contractor will not accept C.O.D. shipments. Hydro shall be responsible for payment of all charges for handling, shipping, packaging, wrapping, bags, container, boxing, crating, labeling, customs and duties, taxes (including all sales tax), insurance and other related matters . Hydro shall cause all Eutek HeadCell Grit Removal Units to be insured for the full value during all phases of packaging and delivery and such insurance shall remain in place until such time as Owner's Contractor has accepted products. The Contractor must notify Hydro within five (5) working days of delivery if there were any apparent shipment shortages or damages incurred in shipment. This notification requirement does not release Hydro of responsibility from material shortages or damages that are discovered upon full inventory and installation of the equipment.

Hydro agrees to offer all responsible bidders on the Project the equipment and services in accordance with scope of services and supply set forth herein, and as more specifically set forth in the specifications, at the proposed price and without additional terms and conditions inconsistent with this MOA. Any such additional terms and conditions offered to Owner's Contractor, not inconsistent with the terms of this MOA, shall be delineated in the subsequent Purchase Order and shall be those customary to the public works marketplace in Utah and offered at no additional cost.

V. Payment Terms

Hydro shall agree to the conditions for payment as outlined below. Prior to payment, but after delivery of the Eutek HeadCell Grit Removal Unit to the site, Hydro shall visually inspect and certify in writing to Owner and Owner's Contractor that all pieces of the Eutek HeadCell Grit Removal Units have arrived on site undamaged and are in good working order.

Hydro agrees to provide the scope of services and supply at the proposed price on the following payment terms:

- 10% upon delivery of submittals (net 30 days)
- 80% upon delivery of equipment (net 30 days)
- 10 % upon start-up of equipment (net 30 days)

The partial payments set forth above shall be due only upon full and complete performance of each benchmark task listed above for all equipment and services required pursuant to the specifications.

A 5% retention will be withheld by Owner or Owner's Contractor from each of the payments listed above. Such 5% retention shall be provided to Owner's Contractor for payment following substantial completion of the Project as defined in Specification Section 00700-Article 14.

VI. Terms and Conditions

1. Owner's Contractor will visually inspect shipment(s) from Hydro upon receipt at construction site to determine whether they conform to the requirements of this MOA. Notwithstanding these provisions for inspection, Hydro acknowledges that the Eutek HeadCell Grit Removal Unit is not reasonably subject to mere visual inspections to

ascertain whether the equipment fully conforms to the specifications and that testing after installation is required prior to final acceptance of the equipment. Owner's Contractor shall be required to schedule performance testing to provide for presence of Hydro.

2. Operations Manual and Training: Hydro shall be responsible to provide an operations and maintenance manual and training to Owner's employees as is set forth in Specification Section 01330. All costs associated with provision of the operations and maintenance manual and employee training shall be included in the price set forth above.

3. Price Escalation: The costs included in this MOA shall remain in effect and are not subject to escalation unless Owner's Contractor does not accept delivery of equipment prior to 20 months after NTP has been issued to the Contractor. After such time, pricing is subject to an escalation clause of 3% per year, at the expense of the contractor, computed from 20 months after NTP until the accepted delivery date.

4. Warranty: Hydro expressly warrants that all goods and services included in Hydro's proposal shall conform to all specifications, drawings and samples. In case of inconsistencies between documentation, specification details shall prevail. Goods and services shall be free from material defects of workmanship and made to the specifications and requirements of this agreement. For purposes of this warranty, any parts not meeting the foregoing quality shall be deemed defective. Hydro and its supplier(s) shall provide warranties on all equipment provided as set forth in the specifications. The foregoing warranty provisions shall also be applicable to equipment or software supplied to Hydro by a third party entity and provided to Owner's Contractor via this MOA. Any warranties provided by third party equipment or software supplier shall be assigned to Owner after final acceptance. All equipment or software supplied under this MOA shall have a two (2) year warranty from Final Acceptance Date as detailed in Specification Section 00700 – Article 13.

5. Liens, Claims And Encumbrances: Hydro warrants and represents that all the goods when delivered will be free and clear of all liens, claims, encumbrances and infringements of any patents, trademarks, copyrights or franchise rights.

6. Independent Contractor: Hydro or persons under contract to Hydro in the performance of services on this MOA, including services provided on OWNER property, shall perform work as independent contractors. Hydro shall provide insurance to cover its work and its employees as required by the OWNER's Contractor. Further, neither party to this MOA is the agent or legal representative of the other party for any purpose, nor shall the actions of either party under this MOA create a partnership, joint venture or relationship of principal and agent between the parties. Hydro shall maintain the following forms of insurance coverage for all work done on OWNER property, and similarly require its subcontractors doing work on OWNER properly to maintain similar insurance, including: (1) Public Liability and Property Damage Insurance, including contractual liability, both general and automobile, in the amount of at least $1,000,000 per occurrence for general liability, and $1,000,000 per occurrence combined single limit for bodily injury and property damage for automobile liability (2) Workers' Compensation Insurance as required by law and for not less than $1,000,000. With the exception of Worker's Compensation Insurance Owner, Owner's Engineer, and Owner's Contractor shall be added as additional insureds to such policies.

7. Indemnification: Hydro agrees to indemnify, protect, hold harmless and defend Owner, Owner's Engineer, and Owner's Contractor, and their officers, agents, employees, volunteers. and boards, from any and all claims or liabilities arising from any liability imposed for injury, as defined in Specification 00700-7.18, Indemnification, whether arising during or after completion of the work hereunder, or in any manner, directly or indirectly caused, claimed occasioned or contributed to, by reason of any negligent act or omission of Hydro, excepting for claims or liabilities arising from active negligence of Owner, Owner's Engineer, or Owner's Contractor. Hydro shall also indemnify, protect, hold harmless and defend Owner, Owner's Engineer, and Owner's Contractor for claims or liabilities arising by reason of claimed infringements of any patents, trademarks, copyrights or franchise rights, in connection with or incident to or arising out of the performance of this MOA.

8. Assignment: Assignment by Hydro of its responsibilities under this MOA, will not be binding upon Owner or Owner's Contractor unless such assignment has had prior written approval of Owner, which approval shall be solely within the discretion of Owner or Owner's Contractor. Failure to obtain approval of any assignment by Hydro, including an involuntary assignment to creditors, shall constitute a breach of this MOA, which may lead to termination. Owner shall assign its rights under this Moa to the Owner's Contractor as noted elsewhere herein and Hydro shall execute the assignment without modification.

9. Modifications: No modification to this MOA, nor any waiver of any rights, shall be effective unless agreed to in writing by both Parties.

10. Liquidated Damages: Owner's Contractor will include liquidated damage penalties in the Purchase Order with Hydro. Such damages are only applicable if directly related to Hydro's failure to deliver the equipment within the time period stipulated in this MOA, failure to support the startup of the equipment, or failure of the equipment during the startup where any such failures result in a delay to the critical path of the construction project schedule. If Hydro's delivery or performance is late and it has no impact on Owner's Contractors overall schedule, then Hydro shall not be liable for liquidated damages. If more than one party is responsible for assessment of liquidated damages, then Hydro shall be liable only for its portion of the total liquidated damages. Hydro shall be required to pay liquidated damages only if the Owner requires the Owner's Contractor to pay liquidated damages. The amount of such damages shall will accrue at $500 dollars per day and not exceed twenty-five (25) percent of the total equipment contract price as listed in Article IV- Price of this MOA.

11. Notices: All notices under this MOA shall be in writing and shall be considered delivered and effective on the earlier of actual receipt or (i) the day following transmission if sent by facsimile when followed by written confirmation by overnight carrier or certified United States mail; or (ii) one (1) day after dispatch if sent by private overnight carrier (e.g., DHL, Federal Express); or (iii) five (5) days after posting if sent by certified mail. Notice shall be sent to the following persons:

MEMORANDUM OF AGREEMENT

For Supply of Eutek HeadCell Grit Removal Units

South Valley Water Reclamation Facility and Hydro International, Inc.

VENDOR

Contact Name:	Dara Rolfe
Address:	Hydro International 2925 NW Alocek Drive - Suite 140 Hillsboro, OR 97124
Phone:	(866) 615-8130
E-mail:	drolfe@hydro-int.com

Contractor:

Contact Name:	NAME
Address	ADDRESS
Phone:	PHONE
E-Mail:	EMAIL

Owner:

Contact Name:	Taigon Worthen, P.E.
Address	South Valley Water Reclamation Facility 7495 South 1300 West West Jordan, UT 84084
Phone:	(801) 566-771
E-Mail:	tworthen@svwater.com

12. Severability: If any portion of this MOA is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this MOA and the Parties shall seek in good faith to agree to substitute for the invalid provision a valid provision that most closely approximates its terms.

13. Entire Agreement: This MOA supersedes all proposals, oral or written, all negotiations, conversations or discussions between the Parties and contains the entire understanding and agreement of the Parties relating to this subject matter. In the event of a conflict between the terms and conditions of this MOA and its attachments, this MOA shall control.

This Memorandum of Agreement is hereby entered into between the Owner and Hydro. By signing this Memorandum of Agreement, the undersigned asserts that they have the authority to enter into this MOA.

MEMORANDUM OF AGREEMENT

For Supply of Eutek HeadCell Grit Removal Units

South Valley Water Reclamation Facility and Hydro International, Inc.

Owner	**Vendor**
South Valley Water Reclamation Facility	Hydro International, Inc.
3/31/19	11/21/18
Date	Date
Jerry Knight Board Chair.	Adam Neumyer MD Area
Name/Title	Name/Title

Approved as to Form:

Attorney

End of MOA

MEMORANDUM OF AGREEMENT

For Supply of Huber Coanda Fine Grit Washers

South Valley Water Reclamation Facility and Huber Technology, Inc.

The purpose of this Memorandum of Agreement (MOA) is to document the agreement between the South Valley Water Reclamation Facility (Owner) and Huber Technology, Inc. (Huber or Vendor) to supply the Coanda Fine Grit Washers for Project 5 - Grit Handling Facility (Project).

This MOA references other documents, which are considered integral parts of this MOA. All requirements embodied in the referenced final bid documents are inseparable requirements of this MOA.

This MOA is intended to create a binding commitment between Huber and Owner for acquisition of the Coanda Fine Grit Washers by Owner's Contractor from Huber pursuant to the terms of this MOA, subject to the limitations set forth herein. This MOA will be assigned to the contractor awarded the bid by the Owner (Owner's Contractor) upon the award of the bid thereto.

AGREEMENT

I. Duties of Vendor

Huber shall have the following duties under this MOA:

1. Provide final coordination with Owner's Engineer (Carollo Engineers, Inc.) in their completion of the final design of the Coanda Fine Grit Washers.

2. Provide an equipment supply bid to the Owner that will be included as a line item in the bid documents issued to general contractors bidding on the Project that is in accordance with the project plans and specifications and this MOA.

3. Prepare submittals to Owner's Contractor consistent with Specification 01330 - Submittal Procedures, project plans, and this MOA. The initial submittals shall be delivered to Owner's Contractor within six (6) weeks after assignment of this MOA to the Owner's Contractor and subsequent execution of the Purchase Order between Huber and Contractor. Resubmittals, if any, shall be delivered to the Owner's Contractor within two (2) weeks of receipt of any review comments from Owner.

4. Be ready to deliver the Coanda Fine Grit Washers consistent with the project plans and specifications, according to a schedule mutually agreed upon in the Purchase Order executed between Huber with Owner's Contractor and no later than 30 weeks from approval of submittals unless expressly stated otherwise.

5. Assist Owner's Contractor to startup, test and put into operation the Equipment to meet all specified requirements.

6. Provide preliminary operation and maintenance (O&M) manuals with storage and installation requirements prior to delivery of equipment. Provide preliminary and final O&M manuals and training to Owner for operation of Coanda Fine Grit Washers in accordance with the specification requirements.

7. Meet other commercial warranty and risk management requirements set forth in this MOA.

II. Owner Obligations

Owner is undertaking the Project and will competitively bid the public works contract following completion of plans and specifications and obtaining of permit. Project will include the installation of the Coanda Fine Grit Washers in the new grit handling facility. Owner agrees that subject to the conditions below, it shall award the public works construction contract to the lowest responsible and responsive bidder. As a result of this MOA, Owner shall require the selected Owner's Contractor to install the Coanda Fine Grit Washers. Owner shall assign this MOA to its selected Contractor and Owner's Contractor shall enter into a purchase order with Huber to acquire Huber's Coanda Fine Grit Washers solely from Huber.

This obligation to obtain equipment from Huber shall be conditioned upon the award of the construction contract for the Project, and the favorable result of any legal challenge to this process which could result in a court order or judgment preventing Owner from either executing the construction contract for the Project or requiring Owner's Contractor to install Huber's Coanda Fine Grit Washers. If Owner fails to proceed with the Project, is prevented from entering into the construction contract, or is prevented by legal proceedings from designating Huber's Coanda Fine Grit Washers for inclusion in Owner's Project, Owner shall not be liable to Vendor for any damages including, but not limited to restocking. proposal preparation and contracting costs of Huber, or loss of prospective profit.

III. Scope of Services

The scope of supply and services shall be in accordance with the project plans and specifications. Huber agrees to supply the Coanda Fine Grit Washers as set forth in the plans and specifications without any modifications.

IV. Price

I. The Coanda Fine Grit W ashers shall be ma nufactured, assembled, insured, crafted, delivered, and maintained prior to acceptance for the base bid of $531,418 dollars in US currency plus an additional payment of $240,279 dollars if bid alternate is selected. This total amount shall be inclusive of all payments for the vendor's costs including those costs set forth below:

Base Cost – 2 Units	$ 531,418
Bid Alternate – 1 Unit **To be exercised at Owner's option**	$ 240,279

a. The price set forth herein shall reflect shipping D.A.P. to OWNER. Owner's Contractor will not accept C.O.D. shipments. Huber shall be responsible for payment of all charges for handling, shipping, packaging, wrapping, bags, container, boxing, crating, labeling, customs and duties, taxes (including all sales tax), insurance and other related matters. Huber shall cause all Coanda Fine Grit Washers to be insured for the full value during all phases of packaging and delivery and such insurance shall remain in place until such time as Owner's Contractor has accepted products. The Contractor must notify Huber within five (5) working days of delivery if there were any apparent shipment shortages or damages incurred in shipment. This notification requirement does not release Huber of responsibility from material shortages or damages that are discovered upon full inventory and installation of the equipment.

Huber agrees to offer all responsible bidders on the Project the equipment and services in accordance with scope of services and supply set forth herein, and as more specifically set forth in the specifications, at the proposed price and without additional terms and conditions inconsistent with this MOA. Any such additional terms and conditions offered to Owner's Contractor, not inconsistent with the terms of this MOA, shall be delineated in the subsequent Purchase Order and shall be those customary to the public works marketplace in Utah and offered at no additional cost.

V. Payment Terms

Huber shall agree to the conditions for payment as outlined below. Prior to payment, but after delivery of the Coanda Fine Grit Washers to the site, Huber shall visually inspect and certify in writing to Owner and Owner's Contractor that all pieces of the Coanda Fine Grit Washers have arrived on site undamaged and are in good working order.

Huber agrees to provide the scope of services and supply at the proposed price on the following payment terms:

- 10% upon delivery of submittals (net 30 days)
- 80% upon delivery of equipment (net 30 days)
- 10 % upon start-up of equipment (net 30 days)

The partial payments set forth above shall be due only upon full and complete performance of each benchmark task listed above for all equipment and services required pursuant to the specifications.

A 5% retention will be withheld by Owner or Owner's Contractor from each of the payments listed above. Such 5% retention shall be provided to Owner's Contractor for payment following completion of the Project as defined in Specification Section 00700-Article 14.

VI. Terms and Conditions

1. Owner's Contractor will visually inspect shipment(s) from Huber upon receipt at construction site to determine whether they conform to the requirements of this MOA. Notwithstanding these provisions for inspection, Huber acknowledges that the Coanda Fine Grit Washers are not reasonably subject to mere visual inspections to ascertain

whether the equipment fully conforms to the specifications and that testing after installation is required prior to final acceptance of the equipment. Owner's Contractor shall be required to schedule performance testing to provide for presence of Huber.

2. Operations Manual and Training: Huber shall be responsible to provide an operations and maintenance manual and training to Owner's employees as is set forth in Specification Section 01782. All costs associated with provision of the operations and maintenance manual and employee training shall be included in the price set forth above.

3. Price Escalation: The costs included in this MOA shall remain in effect and are not subject to escalation unless Owner's Contractor does not accept delivery of equipment prior to 20 months after NTP has been issued to the Contractor. After such time, pricing is subject to an escalation clause of 3% per year, at the expense of the contractor, computed from 20 months after NTP until the accepted delivery date.

4. Warranty: Huber expressly warrants that all goods and services included in Huber's proposal shall conform to all specifications, drawings and samples. In case of inconsistencies between documentation, specification details shall prevail. Goods and services shall be free from material defects of workmanship and made to the specifications and requirements of this agreement. For purposes of this warranty, any parts not meeting the foregoing quality shall be deemed defective. Huber and its supplier(s) shall provide warranties on all equipment provided as set forth in the specifications. The foregoing warranty provisions shall also be applicable to equipment or software supplied to Huber by a third party entity and provided to Owner's Contractor via this MOA. Any warranties provided by third party equipment or software supplier shall be assigned to Owner after final acceptance. All equipment or software supplied under this MOA shall have a two (2) year warranty from Final Acceptance Date as detailed in Specification Section 00700 – Article 13.

5. Liens, Claims And Encumbrances: Huber warrants and represents that all the goods when delivered will be free and clear of all liens, claims, encumbrances and infringements of any patents, trademarks, copyrights or franchise rights.

6. Independent Contractor: Huber or persons under contract to Huber in the performance of services on this MOA, including services provided on Owner property, shall perform work as independent contractors. Huber shall provide insurance to cover its work and its employees as required by the Owner's Contractor. Further, neither party to this MOA is the agent or legal representative of the other party for any purpose, nor shall the actions of either party under this MOA create a partnership, joint venture or relationship of principal and agent between the parties. Huber shall maintain the following forms of insurance coverage for all work done on Owner property, and similarly require its subcontractors doing work on Owner properly to maintain similar insurance, including: (1) Public Liability and Property Damage Insurance, including contractual liability, both general and automobile, in the amount of at least $1,000,000 per occurrence for general liability, and $1,000,000 per occurrence combined single limit for bodily injury and property damage for automobile liability (2) Workers' Compensation Insurance as required by law and for not less than $1,000,000. With the exception of Worker's Compensation Insurance Owner, Owner's Engineer, and Owner's Contractor shall be added as additional insureds to such policies.

7. Indemnification: Huber agrees to indemnify, protect, hold harmle ss and defend Owner, Owner's Engineer, and Owner's Contr actor, and their officers, agents, employees, volunteers. and boards, from any and all claims or liabilities arising from any lia bility imposed for injury, as defined in Specifi cation 00700-6.14, Indemnification, whether arising during or after completion of the wor k hereunder, or in an y manner, directly or indirectly caused, claimed occasioned or contributed to, by reason of any negligent act or omission of Huber, excepting for claims or liabilities arising from a ctive negligence of Owner, Owner's Engineer, or Owner's Contractor. Huber shall also indemnify, protect, hold harmless and defend Owner, Owner's Engineer, and Owner's Contractor for claims or liabilities arising by reason of claimed infringements of any patents, trademarks, copyrights or franchise rights, in connection with or incident to or arising out of the performance of this MOA.

8. Assignment: Assignment by Huber of its re sponsibilities under this MOA, will n ot be binding upon Owner or Owner's Contractor unless such assignment has had prior written approval of Owner, which approval shall be solely within the discretion of Owner or Owner's Contractor. Failure to obtain approval of any assignment by Huber, including an involuntary assignment to creditors, shall constitute a breach ofthis MOA, which may lead to termination. Owner shall assign its rights under this MOA to the Owner's Contractor as noted elsewhere herein and Huber shall execute the assignment without modification.

9. Modifications: No mo dification to this MOA, nor any waiver of a ny rights, sha ll be effective unless agreed to in writing by both Parties.

10. Liquidated Damages: Owner's Contractor will include liquidated damage penalties in the Purchase Order with Huber. Such damages are only applicable if directly related to Huber's failure to deliver the equipment within the time period stipulat ed in this MOA, fa ilure to support the startup of the equipment, or failure of the equipment during the startup where any such failures result in a delay to the critical path of the construction project schedule. If Huber's delivery or performance is late a nd it has no impact on Owner's Contractors overall schedule, then Huber shall not be liabl e for liquidated damages. If more than one party is responsible for assessment of liquidated damages, then Huber shall be liable only for its portion of the total liquidated damages. Huber shall be required to pay liquidated damages only if the Owner requires the Owner's Contractor to pay liquidated damages. The amount of such damages will accrue at $500 dollars per day and shall not ex ceed twenty-five (25) percent of the total equipment contract price as listed in Article IV- Price of this MOA.

11. Notices: All notices under this MOA shall be in writing and shall be considered delivered and effective on the earlier of actual receipt or (i) the day following transmission if sent by facsimile when followed by written confirmation by overnight carrier or certified United States mail; or (ii) one (1) day after dispatch if sent by private overnight carrier (e.g., DHL, Federal Express); or (iii) fiv e (5) days after posting if sent by certified mail. Notice shall be sent to the following persons:

MEMORANDUM OF AGREEMENT

For Supply of Huber Coanda Fine Grit Washers

South Valley Water Reclamation Facility and Huber Technology, Inc.

VENDOR

Contact Name:	Josey Chan TECHNOLOGY
Address:	Huber ~~International~~, Inc
	9375 North Cross Center Court, Suite A
H	untsville, NC 28078
Phone:	(704) 990-2052
E-mail:	josey.chan@hhusa.net

Owner's Contractor:

Contact Name:	NAME
Address	ADDRESS
Phone:	PHONE
E-Mail:	EMAIL

Owner:

Contact Name:	Taigon Worthen, P.E.
Address	South Valley Water Reclamation Facility
7	495 South 1300 West
We	st Jordan, UT 84084
Phone:	(801) 566-771
E-Mail:	tworthen@svwater.com

12. Severability: If any portion of this MOA is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this MOA and the Paties shall seek in good faith to agree to substitute for the invalid provision a valid provision that most closely approximates its terms.

13. Entire Agreement: This MOA supersedes all proposals, oral or written, all negotiations, conversations or discussions between the Parties and contains the entire understanding and agreement of the Parties relating to this subject matter. In the event of a conflict between the terms and conditions of this MOA and its attachments, this MOA shall control.

This Memorandum of Agreement is hereby entered into between the Owner and Huber. By signing this Memorandum of Agreement, the undersigned asserts that they have the authority to enter into this MOA.

MEMORANDUM OF AGREEMENT

For Supply of Huber Coanda Fine Grit Washers

South Valley Water Reclamation Facility and Huber Technology, Inc.

Owner
South Valley Water Reclamation Facility

4/1/19
Date

Jerry Knight Board Chair.
Name/Title

Vendor TECHNOLOGY
Huber ~~International~~, Inc.

02/25/2019
Date

John LEWIS
Name/Title

REGIONAL SALES DIRECTOR.

Approved as to Form:

Attorney

End of MOA

SECTION 15115

GATE VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Gate valves.

B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. C515 - Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Services.

B. ASTM International (ASTM):
   1. B98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves.

C. Commissioning submittals: For valves larger than 16 inches:
   1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

B. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of valves comply in accordance with all provisions of AWWA C550.

PART 2 PRODUCTS

2.01 GATE VALVES

A. Knife gate valves:
   1. Manufacturers: One of the following or equal:
      a. DeZurick SPX.
      b. ITT Fabri-Valve.
   2. Design:
      a. Size and configuration: Indicated on the Drawings.

b. Suitable for submerged conditions with service under pressures equal to and less than 150 pounds per square inch gauge.
c. Full round port, metal seated, raised face design.
d. Flanged wafer design drilled and tapped to ASME Class 125/150 standard.
e. Rounded gate with beveled edge, finish-ground to 32 RMS, maximum, on both sides.
f. Body to incorporate guides and jams to assist in seating.
g. Materials:
    1) Body: Cast or ductile iron or cast steel, with Type 316 stainless steel lining or cast Type 316 stainless steel.
    2) Wetted components (including gate): Type 316 stainless steel.
    3) Yoke sleeve: Type 316 stainless steel.
    4) Packing: PTFE.
h. Outside screw and yoke (OS&Y) with handwheel operator.
i. 4.Where valves will be submerged, torque tubes or extended bonnets shall be used to install actuators at deck or walkway level. Tubes or bonnets shall be made by the valve manufacturer and shall be designed to maintain torsion at the valve and not transfer it into the walkway.

PART 3 EXECUTION

3.01 FIELD APPLIED COATING OF VALVE EXTERIOR

A. Match color and be compatible with manufacturer's coating system and as specified in Section 09960 - High-Performance Coatings.
    1. When shop applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
    2. When shop applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services: For valves larger than 16-inches.
    1. Provide certificates:
        a. Manufacturer's Certificate of Installation and Functionality Compliance.

C. Functional testing:
    1. Valves:
        a. Test witnessing: Witnessed.
        b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

BOWEN COLLINS & Associates, Inc.
Consulting Engineers

SHOP DRAWING REVIEW

Submittal No.: **29**

To: **South Valley Water Reclamation Facility** **7495 South 1300 West** **West Jordan, Utah 84084** Attention: **Hugh Hedges, P. E.**	Owner: **South Valley Water Reclamation Facility** Project: **Project 4D**
Date: **May 5, 2008**	Project No.: **177-06-04**
Item of Equipment or Material: **Butterfly Valves for Air Diffuser Drops**	Specification Section: **15202 – Butterfly Valves**

Subject submittal has been reviewed and review action is as shown below:

Submittal No.	Subject	No. of Copies	No. Exception Taken	Make Corrections Noted	Amend and Resubmit	Rejected Resubmit
29	**Butterfly Valves**	**1**		**X**		

Remarks: See attached sheet ( ), or indicate here: None ( )

1. Provide lever type operators for valves 4" and smaller. (MCN)
2. All other items NET.

Corrections or comments made relative to submittals during this review do not relieve the contractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design contract documents. The contractor is responsible for confirming and correlating all qualities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades, and performing his work in a safe and satisfactory manner.	Sincerely, Robert Mayers, P. E.

BOWEN COLLINS & Associates, Inc.
Consulting Engineers

SHOP DRAWING REVIEW

	Submittal No.: **29**
To: **South Valley Water Reclamation Facility** **7495 South 1300 West** **West Jordan, Utah 84084** Attention: **Hugh Hedges, P. E.**	Owner: **South Valley Water Reclamation Facility** Project: **Project 4D**
Date: **May 5, 2008**	Project No.: **177-06-04**
Item of Equipment or Material: **Butterfly Valves for Air Diffuser Drops**	Specification Section: **15202 – Butterfly Valves**

Subject submittal has been reviewed and review action is as shown below:

Submittal No.	Subject	No. of Copies	No. Exception Taken	Make Corrections Noted	Amend and Resubmit	Rejected Resubmit
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Remarks: See attached sheet ( ), or indicate here: None ( )

1. Provide lever type operators for valves 4" and smaller. (MCN)
2. All other items NET.

Corrections or comments made relative to submittals during this review do not relieve the contractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design contract documents. The contractor is responsible for confirming and correlating all qualities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of other trades, and performing his work in a safe and satisfactory manner.	Sincerely, Robert Mayers, P. E.

Allstate
CONSTRUCTION

Transmittal

DATE: 30Apr09
SUBMITTAL NO: 029.0
NEW X RE ____ SUBMITTAL

TO: South Valley Water Reclamation Facility
7495 South 1300 West
West Jordan, Utah 84084

Attn: Taigon Worthen

FROM: ALLSTATE CONSTRUCTION INC.
415 WEST 9800 SOUTH
SANDY, UTAH 84070

PROJECT: 4D

SUBMITTAL FOR: X SHOP DRAWINGS X MATERIAL DATA
____ SAMPLES ____ O & M MANUALS
____ PROPOSED SUBSTITUTION
____ OTHER _____

THE FOLLOSING ITEMS ARE HEREBY SUBMITTED FOR REVIEW AND ACTION:

DESCRIPTION

7 Sets 6-8" BioReactor Valves Section 15200-15230

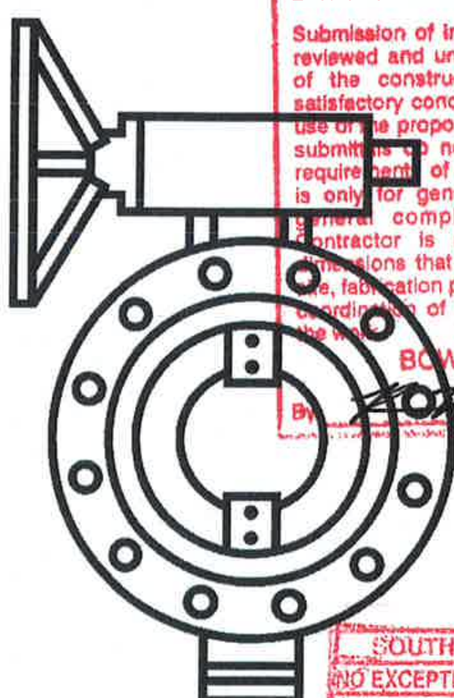
ALLSTATE CONSTRUCTION INC.

RWE
SIGNATURE OF CONTRACTOR

PRATT

Henry Pratt Company

#29



SUBMITTAL REVIEW

☐ NO EXCEPTION TAKEN ☑ MAKE CORRECTIONS NOTED

☐ REJECTED - RESUBMIT ☐ REVISE AND RESUBMIT

Submission of information by the contractor is evidence that it reviewed and understands the intent and specific requirements of the construction documents, and that it verified that satisfactory conditions do or will exist for proper installation and use of the proposed product. Corrections or comments made on submittals do not relieve the contractor from compliance with requirements of the construction documents. Engineer's review is only for general conformance to the design concept and general compliance with the construction documents. Contractor is responsible for clearances, quantities, and dimensions that shall be confirmed and coordinated at the job site, fabrication processes, construction methods and conditions, coordination of trades, safety, and satisfactory performance of the work.

BOWEN, COLLINS & ASSOCIATES

By: [signature] Date: 05/05/08

SOUTH VALLEY WATER RECLAMATION FACILITY			
NO EXCEPTIONS TAKEN		AMEND-RESUBMIT	
MAKE CORRECTIONS NOTED	X	REJECTED-RESUBMIT	
REVIEWED BY	[signature]	DATE	5-16-08
RECOMMENDED BY	[signature]	DATE	5/19/08

CORRECTIONS OR COMMENTS MADE ON CONTRACTOR'S SHOP DRAWINGS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. THIS SHOP DRAWING HAS BEEN REVIEWED FOR CONFORMANCE WITH THE DESIGN CONCEPT AND GENERAL COMPLIANCE WITH THE CONTRACT

PRATT
Henry Pratt Company

401 South Highland Avenue
Aurora IL, 60506-5563
Phone: 630-844-4000
Fax: 630-844-4160

Product Submittal : APRIL 25, 2008
Customer : ALLSTATE CONSTRUCTION

Customer PO# : 080401019
Pratt Order # : 1112800 HP
Project : S. Valley Water Reclamation Facility

SCOPE OF SUPPLY

****Contact for Technical Questions:** Kertrina Justice, Account Representative
kjustice@henrypratt.com
630.844.4042

LINE	QTY	TAG/LOCATION	DESCRIPTION	PAINT	DRAWING
1.0	7	LOCATION BIOREACTOR #1 (2), BIOREACTOR #2 (5)	4" 150B FLG BFV MDT2S HW W/2" NUT & IND OL E/E	**INT/EXT/OPER:** AMERCOAT 370 EPOXY (A-69636A) (Min. 4 MILS)	**G.A.:** GA-11624 **C.S.:** GA-11486
2.0	31	LOCATION BIOREACTOR #1 (6), BIOREACTOR #2 (5) LOCATION BIOREACTOR #3 (11) BIOREACTOR #4 (9)	6 150B FLG BFV MDT2S HW/NUT E/E	**INT/EXT/OPER:** AMERCOAT 370 EPOXY (A-69636A) (Min. 4 MILS)	**G.A.:** GA-11624 **C.S.:** GA-11486
3.0	5	BIOREACTOR #1(3), BIOREACTOR #4(1), JUNCTION #1(1)	8 150B FLG BFV MDT2S HW/NUT OL E/E	**INT/EXT/OPER:** AMERCOAT 370 EPOXY (A-69636A) (Min. 4 MILS)	**G.A.:** GA-11624 **C.S.:** GA-11486

C.S. Cross Section **G.A.** General Arrangement

PRATT
Henry Pratt Company

401 South Highland Avenue
Aurora IL, 60506-5563
Phone: 630-844-4000
Fax: 630-844-4160

Also included in this submittal:
Certificate of Conformance
Detail Submittal Highlights
Catalog Cuts
Paint Data

C.S. Cross Section **G.A.** General Arrangement

PRATT
Henry Pratt Company

401 S. Highland Avenue
Aurora, IL 60506-5563
www.henrypratt.com
Phone: (630) 844-4000
Toll Free: 877-436-7977
Fax: (630) 844-4124

TO: Ronald Ebert
Allstate Construction
445 W. 9800 South
Sandy, UT 84070

REF: Your P.O. #: 080401019
Pratt Order #: 1112800 HP
Project: S. Valley Water Reclamation Facility

CERTIFICATE OF CONFORMANCE

BUTTERFLY VALVE

We hereby certify that the valves identified herein will be manufactured in accordance with referenced specifications and applicable sections of AWWA C-504-06, and that the valves will be shop operated three (3) times to verify that the complete assembly is workable.

Bob Newkirk
Director, Quality Assurance-HPCO
(630) 844-4159

Date:

PRATT
Henry Pratt Company

Submittal Detail Highlights

The Henry Pratt Company is presenting this submittal package based upon our best interpretation through plans, specifications and field input.

We are requesting your feedback on correctness and confirmation of presented data.

Please note the items below that are checked. We feel these items are critical and require special attention.

- ☐ Electric Operated Valves – Service, (O/C, Mod.), Voltage, Nema Ratings
- ☐ Flange Drill Pattern – (250# & 300# Valves), 125/150 OR 250
- ☐ Elevation Data Or Dimensions – Bonnets, Torque Tubes, Floorstands, Extension Stems (*Note*: Floorstands must have a sound mounting structure with capability of withstanding torsional load)
- ☐ Valve Class, Pressure Rating (150,250,300), AWWA, Industrial
- ☐ Paint – Holiday Free, Mil Thickness
- ☐ Tag Number – Confirm correctness, add tag numbers where missing
- ☐ Other:

_____

_____

_____

☐ Please Note Exceptions:

_____

_____

_____

Please sign and date confirming your review.

_____ _____

Signature Date

Thank you for considering The Henry Pratt Company.

_____

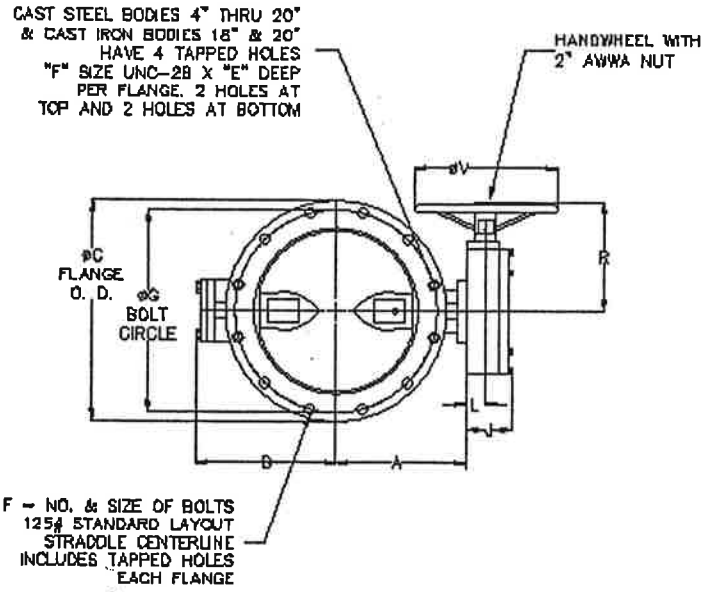
Account Representative

401 South Highland Avenue • Aurora, Illinois 60506-5563 • www.henrypratt.com
phone: 630-844-4000 • fax: 630-844-4124

Item #1, 2, 3

VALVE SIZE	A	B	C	D	E	F	G
3	4-3/4	3-7/8	7-1/2	5	3/4	4--5/8	8
4	5-1/2	4-1/8	9	5	15/16	8--5/8	7-1/2
6	6-1/2	5-1/8	11	5	1	8--3/4	9-1/2
8	7-3/4	6-1/2	13-1/2	6	1-1/8	8--3/4	11-3/4
10	9	9-7/8	16	8	1-3/16	12-7/8	14-1/4
12	10-1/2	11-3/8	19	8	1-1/4	12--7/8	17
14	11-7/8	12-5/8	21	8	1-3/8	12--1	18-3/4
16	13-1/2	14-1/2	23-1/2	8	1-7/16	16--1	21-1/4
18	14-3/8	15-3/8	25	8	1-9/16	18--1 1/8	22-3/4
20	16	17	27-1/2	8	1-11/16	20--1 1/8	25

ACTUATOR SIZE	J	L	M	N	P	Q	R	V	NUMBER OF TURNS
MDT-2S	4-11/16	2	2-1/8	2	4-1/2	4-1/2	9-1/2	8	32
MDT-3S	5-5/8	2-7/16	3-1/4	3-5/32	5-5/8	5-3/8	11	12	30
MDT-4S	6-3/8	2-27/32	3-3/8	4	7-5/16	6-3/4	12	12	40



ACTUATOR POSITION 1

NOTES:

1. ALL DIMENSIONS SHOWN IN INCHES.
2. "D" DIMENSION ±1/16" FOR 3" THRU 10" VALVES. "D" DIMENSION ±1/8" FOR 12" THRU 20" VALVES.
3. FOR BOLTS SMALLER THAN ø1-3/4, BOLT HOLES WILL BE 1/8" LARGER THAN DIAMETER OF BOLT. FOR BOLTS ø1-3/4 OR LARGER, BOLT HOLES WILL BE 1/4" LARGER THAN DIAMETER OF BOLT.
4. DIMENSIONS AND DRILLING OF END FLANGES CONFORM TO THE AMERICAN CAST IRON FLANGE STANDARDS, CLASS 125 (B16.1).
5. VALVES MANUFACTURED & TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-504 LATEST REVISION, CLASS 150B.
6. RECOMMENDATION FOR MATING FLANGES: WHERE INSULATING BUSHINGS ARE USED, IT IS NECESSARY THAT BOLT HOLES BE DRILLED OVERSIZE BY AN AMOUNT EQUAL TO TWO TIMES THE INSULATING SLEEVE THICKNESS TO MAINTAIN THE SAME MINIMUM CLEARANCE FOR BOLTS.

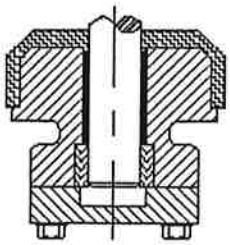
REV	DATE	BY	DESCRIPTION	APP.

PRATT — HENRY PRATT COMPANY AURORA, IL

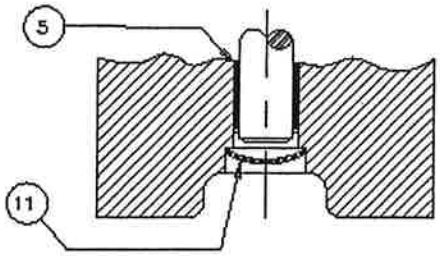
2FII BUTTERFLY VALVE
MDT HW w) 2" AWWA NUT

SCALE NONE DATE 8-15-06
DRAWN BY JH CHECKED BY
APPROVED GA=BORDER
DRW. NO. GA-11624 REV. A

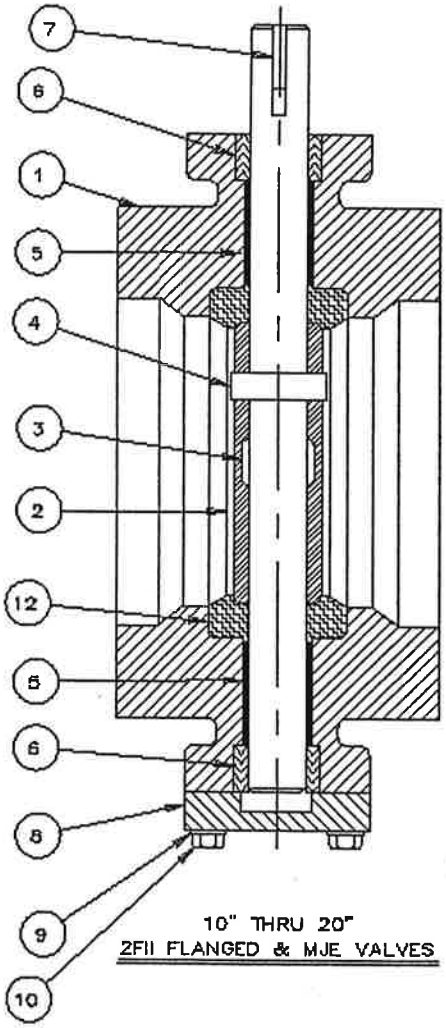
Item #1



10" THRU 20"
MKII WAFER VALVES



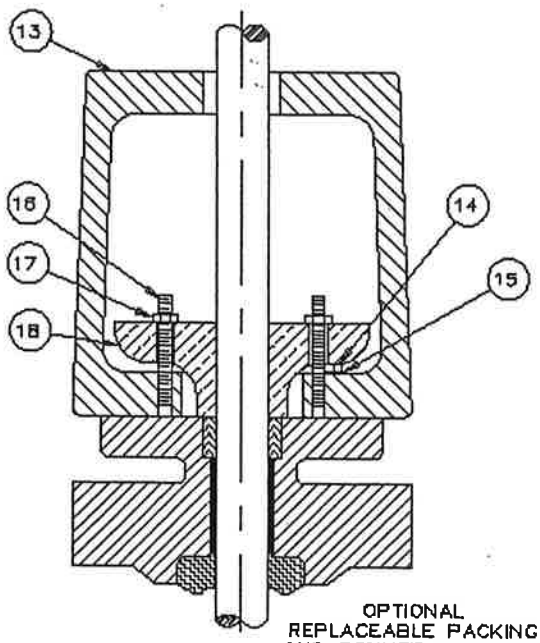
3" THRU 8" VALVES



10" THRU 20"
2FII FLANGED & MJE VALVES

MATERIAL OPTIONS AS CHECKED

ITEM NO.	DESCRIPTION	MATERIALS	✓
1	BODY	CAST IRON ASTM A-48 CLASS 40 (MKII ONLY)	
		CAST IRON ASTM A-126 CLASS B * ⚠	
		DUCTILE IRON ASTM A-536 (65-45-12)	✓
2	DISC	CAST IRON ASTM A-126 CLASS B STAINLESS STEEL EDGE TYPE 316 (DUCTILE IRON MAY BE SUBSTITUTED)	
		DUCTILE IRON ASTM A-536 (65-45-12) STAINLESS STEEL EDGE TYPE 316	
		STAINLESS STEEL ASTM A-351 GRADE CF8M	✓
⚠ 3	SHAFT	STAINLESS STEEL ASTM A-276 TYPE 304	✓
		STAINLESS STEEL ASTM A-276 TYPE 316	
		STN. STL. A-564 TYPE 630 COND. H-1150	
⚠ 4	SQUEEZE PIN	STAINLESS STEEL ASTM A-276 TYPE 304	✓
		STAINLESS STEEL ASTM A-276 TYPE 316	
		STN. STL. A-564 TYPE 630 COND. H-1150	
5	BEARING	NYLATRON GS	✓
		RULON LR (HIGH TEMPERATURE ONLY)	
8	PACKING	RUBBER BUNA-N	✓
		RUBBER (EPDM)	
7	KEY	AISI C1045 COLD DRAWN STEEL	
8	COVER	CAST IRON ASTM A-48 CLASS 40	
9	LOCKWASHER	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
10	CAP SCREW	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
11	EXP. PLUG	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
12	SEAT	RUBBER BUNA-N	✓
		RUBBER (EPDM)	
13	BONNET	CAST IRON ASTM A-48 CLASS 40	
14	CAP SCREW	CARBON STEEL SAE GRADE 2 (ZINC PLATED)	
15	LOCKWASHER	CARBON STEEL	
16	THD. STUD	STAINLESS STEEL TYPE 304	
17	HEX NUT	STAINLESS STEEL TYPE 304	
18	GLAND	BRONZE ASTM B-584 ALLOY C86400	



OPTIONAL
REPLACEABLE PACKING
AND BONNET ASSEMBLY

* DUCTILE IRON MAY BE SUBSTITUTED FOR 3" & 4" BODIES

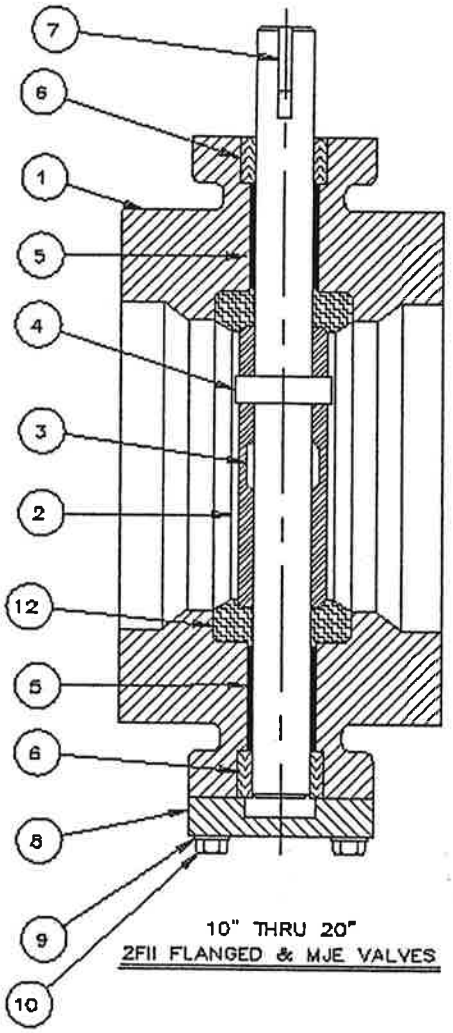
REV	DATE	BY	DESCRIPTION	APP
⚠	4-16-07	SB	ADDED NOTE	
⚠	8-8-08	CEC	ADDED 3 & 4 HP250	JR

PRATT™ HENRY PRATT COMPANY AURORA, ILL.

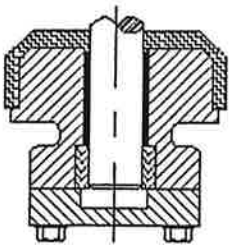
CROSS SECTION
PARTS AND MATERIALS LIST
BONDED SEAT BUTTERFLY VALVES
⚠ and 3" & 4" HP250

SCALE NONE DATE 10-27-05
DRAWN BY ES CHECKED BY RCB
APPROVED GA-BORDER
DRWG. NO. GA-11486 REV 2 A/c

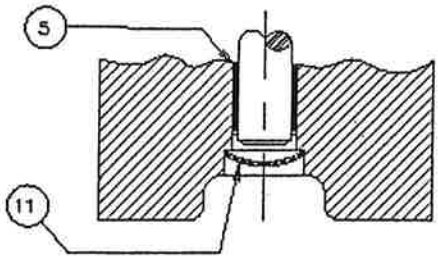
Item #2



10" THRU 20"
2FII FLANGED & MJE VALVES



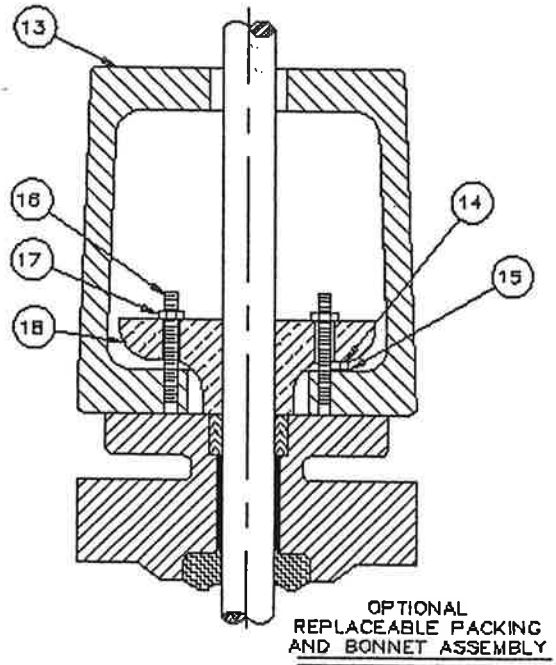
10" THRU 20"
MKII WAFER VALVES



3" THRU 8" VALVES

MATERIAL OPTIONS AS CHECKED

ITEM NO.	DESCRIPTION	MATERIALS	✓
1	BODY	CAST IRON ASTM A-48 CLASS 40 (MKII ONLY)	
		CAST IRON ASTM A-126 CLASS B * ⚠	✓
		DUCTILE IRON ASTM A-536 (65-45-12)	
2	DISC	CAST IRON ASTM A-126 CLASS B STAINLESS STEEL EDGE TYPE 316 (DUCTILE IRON MAY BE SUBSTITUTED)	
		DUCTILE IRON ASTM A-536 (65-45-12) STAINLESS STEEL EDGE TYPE 316	
		STAINLESS STEEL ASTM A-351 GRADE CF8M	✓
⚠ 3	SHAFT	STAINLESS STEEL ASTM A-276 TYPE 304	✓
		STAINLESS STEEL ASTM A-276 TYPE 316	
		STN. STL. A-564 TYPE 630 COND. H-1150	
⚠ 4	SQUEEZE PIN	STAINLESS STEEL ASTM A-276 TYPE 304	✓
		STAINLESS STEEL ASTM A-276 TYPE 316	
		STN. STL. A-564 TYPE 630 COND. H-1150	
5	BEARING	NYLATRON GS	✓
		RULON LR (HIGH TEMPERATURE ONLY)	
6	PACKING	RUBBER BUNA-N	✓
		RUBBER (EPDM)	
7	KEY	AISI C1045 COLD DRAWN STEEL	
8	COVER	CAST IRON ASTM A-48 CLASS 40	
9	LOCKWASHER	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
10	CAP SCREW	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
11	EXP. PLUG	STAINLESS STEEL TYPE 304	✓
		STAINLESS STEEL TYPE 316	
12	SEAT	RUBBER BUNA-N	✓
		RUBBER (EPDM)	
13	BONNET	CAST IRON ASTM A-48 CLASS 40	
14	CAP SCREW	CARBON STEEL SAE GRADE 2 (ZINC PLATED)	
15	LOCKWASHER	CARBON STEEL	
16	THD. STUD	STAINLESS STEEL TYPE 304	
17	HEX NUT	STAINLESS STEEL TYPE 304	
18	GLAND	BRONZE ASTM B-584 ALLOY C86400	



OPTIONAL
REPLACEABLE PACKING
AND BONNET ASSEMBLY

* DUCTILE IRON MAY BE SUBSTITUTED FOR 3" & 4" BODIES

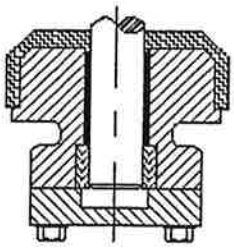
REV	DATE	BY	DESCRIPTION	APP.
⚠	4-16-07	SB	ADDED NOTE	
⚠	8-8-08	DEC	ADDED 3 & 4 HP250	JR

PRATT® HENRY PRATT COMPANY AURORA, ILL.

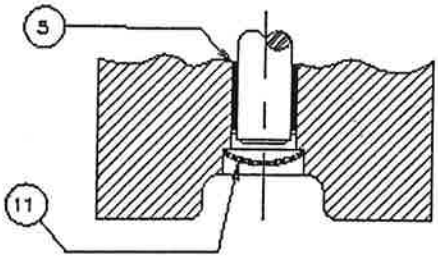
CROSS SECTION
PARTS AND MATERIALS LIST
BONDED SEAT BUTTERFLY VALVES
⚠ and 3" & 4" HP250

SCALE NONE DATE 10-27-05
DRAWN BY CS CHECKED BY RCB
APPROVED GA-BORDER
DRWG. NO. GA-11486 REV. 2 A/e

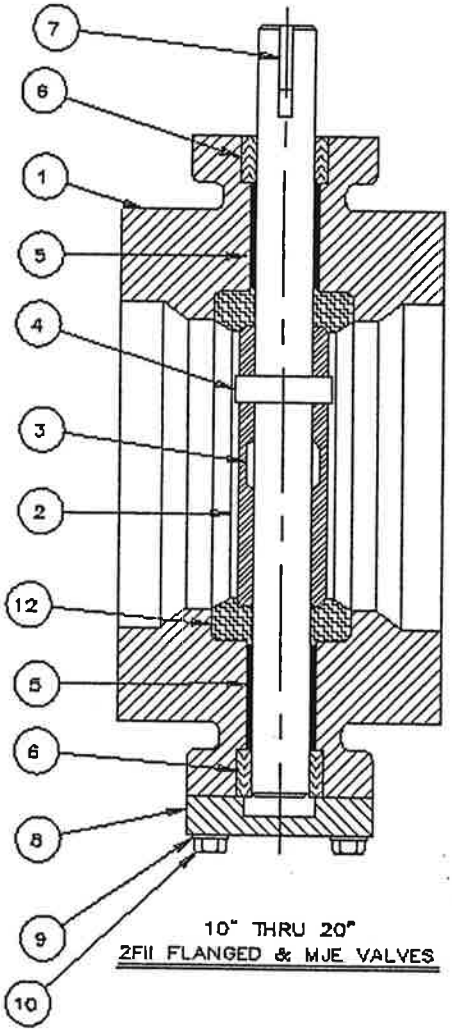
Item #3



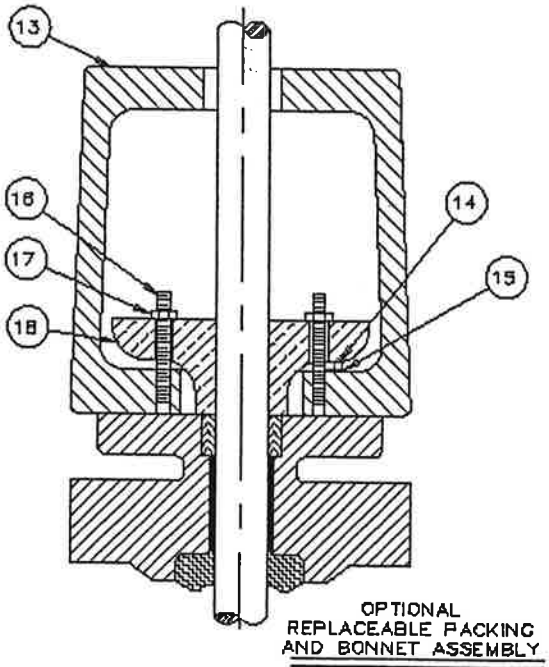
10" THRU 20"
MKII WAFER VALVES



3" THRU 8" VALVES



10" THRU 20"
2FII FLANGED & MJE VALVES



OPTIONAL
REPLACEABLE PACKING
AND BONNET ASSEMBLY

MATERIAL OPTIONS AS CHECKED

	ITEM NO.	DESCRIPTION	MATERIALS	✓
	1	BODY	CAST IRON ASTM A-48 CLASS 40 (MKII ONLY)	
			CAST IRON ASTM A-126 CLASS B * ⚠	✓
			DUCTILE IRON ASTM A-536 (65-45-12)	
	2	DISC	CAST IRON ASTM. A-126 CLASS B STAINLESS STEEL EDGE TYPE 316 (DUCTILE IRON MAY BE SUBSTITUTED)	✓
			DUCTILE IRON ASTM A-536 (65-45-12) STAINLESS STEEL EDGE TYPE 316	
			STAINLESS STEEL ASTM A-351 GRADE CF8M	
⚠	3	SHAFT	STAINLESS STEEL ASTM A-276 TYPE 304	✓
			STAINLESS STEEL ASTM A-276 TYPE 316	
			STN. STL. A-564 TYPE 630 COND. H-1150	
⚠	4	SQUEEZE PIN	STAINLESS STEEL ASTM A-276 TYPE 304	✓
			STAINLESS STEEL ASTM A-276 TYPE 316	
			STN. STL. A-564 TYPE 630 COND. H-1150	
	5	BEARING	NYLATRON GS	✓
			RULON LR (HIGH TEMPERATURE ONLY)	
	6	PACKING	RUBBER BUNA-N	✓
			RUBBER (EPDM)	
	7	KEY	AISI C1045 COLD DRAWN STEEL	
	8	COVER	CAST IRON ASTM A-48 CLASS 40	
	9	LOCKWASHER	STAINLESS STEEL TYPE 304	✓
			STAINLESS STEEL TYPE 316	
	10	CAP SCREW	STAINLESS STEEL TYPE 304	✓
			STAINLESS STEEL TYPE 316	
	11	EXP. PLUG	STAINLESS STEEL TYPE 304	✓
			STAINLESS STEEL TYPE 316	
	12	SEAT	RUBBER BUNA-N	✓
			RUBBER (EPDM)	
	13	BONNET	CAST IRON ASTM A-48 CLASS 40	
	14	CAP SCREW	CARBON STEEL SAE GRADE 2 (ZINC PLATED)	
	15	LOCKWASHER	CARBON STEEL	
	16	THD. STUD	STAINLESS STEEL TYPE 304	
	17	HEX NUT	STAINLESS STEEL TYPE 304	
	18	GLAND	BRONZE ASTM B-584 ALLOY C86400	

* DUCTILE IRON MAY BE SUBSTITUTED FOR 3" & 4" BODIES

REV	DATE	BY	DESCRIPTION	APP.
⚠	4-16-07	SB	ADDED NOTE	
⚠	8-8-08	DEC	ADDED 3 & 4 HP250	JR

PRATT® HENRY PRATT COMPANY AURORA, ILL.

CROSS SECTION
PARTS AND MATERIALS LIST
BONDED SEAT BUTTERFLY VALVES
⚠ and 3" & 4" HP250

SCALE NONE DATE 10-27-05
DRAWN BY ES CHECKED BY RCB
APPROVED GA-BORDER
DRWG. NO. GA-11486 REV 2

PAINT SYSTEM SUMMARY

SYSTEM PART NO.	A069636A	A069636B	A069636C	A069636D	A069636E
ALTERNATE SYSTEM	NO	NO	NO	NO	NO
MULTIPLE COAT SYSTEM	YES	YES	YES	YES	YES
MANUFACTURER	AMERON	AMERON	AMERON	AMERON	AMERON
MANUFACTURER'S DESIGNATION	AMERCOAT 370	AMERCOAT 370	AMERCOAT 370	AMERCOAT 370	AMERCOAT 370
USE CATEGORY	INT/EXT F	INT/EXT F	INT/EXT F	INT/EXT F	INT/EXT F
SUBMERSIBLE	YES	YES	YES	YES	YES
MIN. TOTAL DRY MIL THICKNESS	SEE NOTE 1	SEE NOTE 1	SEE NOTE 1	SEE NOTES 1 AND 2	SEE NOTE 1
SURFACE PREPARATION	SSPC-SP10	SSPC-SP10	SSPC-SP10	SSPC-SP10	SSPC-SP5
COLOR (IF SPECIFIED)	RED	WHITE	PEARL GRAY	WHITE	RED
CLASS I INSPECTION	NO	NO	NO	NO	NO
OTHER	VOC 2.50-3.0 LBS/GAL ANSI/NSF STD 61 VOS 63% +/- 3% TEMPERATURE RESIDENCE 250°F DRY CONTINUOUS	VOC 2.50-3.0 LBS/GAL ANSI/NSF STD 61 VOS 63% +/- 3% TEMPERATURE RESIDENCE 250°F DRY CONTINUOUS	VOC 2.50-3.0 LBS/GAL ANSI/NSF STD 61 VOS 63% +/- 3% TEMPERATURE RESIDENCE 250°F DRY CONTINUOUS	VOC 2.50-3.0 LBS/GAL ANSI/NSF STD 61 VOS 63% +/- 3% TEMPERATURE RESIDENCE 250°F DRY CONTINUOUS	VOC 2.50-3.0 LBS/GAL ANSI/NSF STD 61 VOS 63% +/- 3% TEMPERATURE RESIDENCE 250°F DRY CONTINUOUS

NOTES: 2

1) MINIMUM THICKNESS SHALL BE PER THE SHOP ORDER JDE SCREEN AND GENERAL ARRANGEMENT DRAWING WHICH MUST INDICATE THE SAME MINIMUM NUMBER OF MILS.

2) FOR MULTIPLE COLOR SYSTEMS, FIRST COLOR LISTED SHALL BE APPLIED FIRST TO A THICKNESS OF 1/2 THE TOTAL REQUIRED MIL THICKNESS, FOLLOWED BY THE SECOND COLOR MAKING UP THE SECOND 1/2 OF REQUIRED MIL THICKNESS.

3) AWWA C-550 APPROVED 3

PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS							
		3	8/9/08	SD	SS	6			
AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5			
		1	10/29/03	SJR	SS	4			
DRAWN: SD	CHKD BY: SS	REV	DATE	BY	APP	REV	DATE	BY	APP
SCALE	DATE: 8/9/08	APPROVED				LAST MODIFIED			

PART NO. A-69636

PART NO.	2308405	2308406	2308407
ALTERNATE SYSTEM	NO	NO	NO
MANUFACTURER	AMERON	AMERON	AMERON
MANUFACTURER'S DESIGNATION	370K70046	370K30000	370K20130
MAT'L CATEGORY	PE	PE	PE
MIN. NO. OF COATS	1	1	1
MIN. TOTAL DRY MIL THICKNESS	4	4	4
THEORETICAL COVERAGE SQ FT / GAL / MIL	1011	1011	1011
COLOR (IF SPECIFIED)	OXIDE RED	WHITE	PEARL GREY

PRATT
Henry Pratt Company

HENRY PRATT COMPANY

MATERIAL SPECIFICATIONS

AMERON
AMERCOAT 370
(FACTORY ACCELERATED)

REV	DATE	BY	APP	REV	DATE	BY	APP
3	8/9/08	SD	SS	6			
2	7/1/05	SD	SS	5			
1	10/29/03	SJR	SS	4			

PART NO. A-69636

DRAWN	SD	CHKD BY	SS
SCALE		DATE	8/9/08

APPROVED

LAST MODIFIED

AMERON INTERNATIONAL
Performance Coatings & Finishes

Amercoat® 370

Fast-dry multi-purpose epoxy

Product Data

- High performance, corrosion resistance
- Fast drying, fast curing epoxy composition
- Application over wide range of surface temperatures from 20°F (-7°C) to 120°F (60°C)
- Self-priming, high-build coating
- Primer for wide range of topcoats
- Excellent shop primer for corrosion resistance
- Compatible with inorganic zinc silicate primers
- No lead pigments added
- VOC compliant
- Suitable for immersion in fresh and salt water
- Compatible with compromised surface preparation

Amercoat 370 forms an excellent corrosion barrier and is suitable for most industrial and marine new construction, repair, and field maintenance applications.

The fast curing properties of Amercoat 370 make it especially beneficial as a shop-applied coating where fast-drying and handling of coated parts are required.

Amercoat 370 is user-friendly and can be applied by a variety of spray application methods.

Typical Uses

Tank exteriors, structural steel, and piping in chemical plants, refineries, pulp and paper mills, offshore platforms, ship hulls, ballast tank service, anticorrosive under antifoulings and other structures exposed to severe weathering or salt spray.

Typical Properties

Physical

Abrasion (ASTM D4060) 1 kg load/1000 cycles CS-17 wheel	250 mg weight loss
Adhesion, Elcometer (ASTM D4541)	>1000 psi

Performance

Salt spray – 1 coat @ 6 mils 3000 hours exposure	
face corrosion (ASTM B117)	None
face blistering (ASTM B117)	None
Humidity (condensation) (ASTM D4585) 3000 hours exposure	
face corrosion	None
Steam cleanable	Yes
Chemical resistance – Condition after 1 year immersion	
salt water	Excellent
fresh water	Excellent

NSF

Qualifications

1. NSF Standard 61* - For use in drinking (CLD 23);
   Amercoat 370
   - Colors: White, Oxide Red, and Light buff
   - Number of Coats: 2-4
   - Maximum Field Use Dry Film Thickness (in mils) : 24
   - Maximum Thinner: 12.5% Amercoat #65 Thinner
   - Recoat/Cure Time: 0.5 hours / 7 days
   - Tanks 10,000 gallons or greater
   - Valves 4 inches diameter or greater

   **Certain restrictions do apply*

Physical Data

Finish	Flat	
Color	Pearl gray, light buff, white, oxide red	
Components	2	
Curing mechanism	Solvent release and chemical reaction between components	
Volume solids (calculated)	63% ± 3%	
Dry film thickness per coat	4-6 mils (100 - 150 microns)	
Coats	1 or 2	
Coverage	ft²/gal	m²/L
1 mil (25 microns)	1011	24.9
5 mils (125 microns)	202	5
VOC	lb/gal	g/L
mixed	2.5	300
mixed/thinned (½ pt/gal)	2.8	335
mixed/thinned (1pt/gal)	3.0	359
Temperature limit	°F	°C
continuous (dry)	200	93
intermittent (dry)	250	121
Flash point (SETA)	°F	°C
cure	82	28
resin	82	28
Amercoat 927	60	16
Amercoat 12	2	-17
Amercoat 101	145	63

Application Data

Applied over	Primed or prepared steel
Surface preparation	
new steel	SSP-SP6
primed steel	See specific primer
previously painted or pitted steel	SSPC-SP10
Primer	Dimetcote®
Method	Airless or conventional spray
Mixing ratio (by volume)	4 parts resin to 1 part cure

PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS								PART NO.	A-69636
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AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5					
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DRAWN	SD	CHKD BY	SS	REV	DATE	BY	APP	REV	DATE	BY	APP		
SCALE		DATE	8/9/08	APPROVED				LAST MODIFIED					

Application Data Continued

Environmental conditions

Temperature	°F	°C
air and surface	20 to 120	-7 to 49
material (minimum)	40	4

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation.

Thinner	
below 60°F	Amercoat 927
over Dimetcote or above 60°F	Amercoat 101
Equipment cleaner	Thinner or Amercoat 12

Amercoat 370 Chemical Resistance Guide

Environment	Splash and Spillage	Fumes and Weather
Acidic	F	G
Alkaline	E	E
Solvents	E	E
Salt solutions		
Acidic	G	VG
Neutral	E	E
Alkaline	E	E
Water	E	E

F-Fair G-Good E-Excellent VG-Very Good

This chart shows typical resistance of Amercoat 370. Contact your Ameron representative for your specific requirements.

Systems Using Amercoat 370

1st Coat	2nd Coat	3rd Coat
Amercoat 370	–	–
Amercoat 370	Amershield™ 450HS	–
Dimetcote 21-9, 21-5	370	Amershield, 450HS
Amercoat 68HS	370	Amershield, 450HS, 3203
Amercoat 370	370	698HS, 70ESP, 635, 279, 275E

Confirm compliance with VOC regulations before using coating systems. For immersion service, apply 2 coats at a minimum of 8 mils total DFT.

Over Dimetcote or Amercoat 68HS primer, a mist coat and thinning with Amercoat 101 may be required to prevent application bubbling.

Application Data Summary

See Application Instructions for complete information on surface preparation, environmental conditions, application procedures and equipment. To obtain maximum performance, apply as recommended. Adhere to all safety precautions during storage, handling, application and drying periods.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of each component.

This product is for professional use only. Not for residential use.

Warranty

Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

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Any recommendation or suggestion relating to the use of the products made by Ameron, whether in its technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Pot Life and Dry Times

Temperature (°F/°C)	Pot-Life (Hours)	Touch Dry (Min.)	Through Dry (Hours)	Recoat (Hours)
20/-7	—	90	20	2½
32/0	—	60	9	2
40/4	7	45	7	2
50/10	6	30	4½	1½
60/16	5	22	2¾	1
70/21	4	15	1⅛	½
80/27	3	12	1¼	½
90/32	2	10	1	⅛

Topcoat or recoat time (days) (maximum)

	°F/°C			
	90/32	70/21	50/10	20/-7
450HS, Amershield™	14	30	45	60

Amercoat 370

non-immersion	6 months – Clean surface required *(clean and roughen if exceeded)*
immersion 698HS, 70ESP, 635, 279, 275E	1 month – Clean surface *(clean and roughen if exceeded)* Apply while 370 is tacky, soft to fingernail*

* *Failure to apply antifoulings while coating is still tacky or soft to fingernail may result in poor adhesion and eventual delamination.*

If maximum topcoat time is exceeded, either clean and roughen the Amercoat 370 surface or clean and apply a tack coat of Amercoat 370 before topcoating with Amercoat 450HS, Amershield or antifouling.

Time before service @ 8 mils (hours)

	°F/°C				
Amercoat 370	90/32	70/21	50/10	32/0	20/-7
non-immersion**	6	12	24	96	120
immersion	12	24	48	168	NR

NR=Not recommended

***Cure to full physical properties.*

Shipping Data

Packaging units	1 gal	5 gal
cure	0.2 gal in 1-qt can	1 gal in 1-gal can
resin	0.8 gal in 1-gal can	4 gal in 5-gal can

Shipping weight (approx)	lb	kg
1-gal unit		
cure	1.9	0.9
resin	14.2	6.5
5-gal can		
cure	8.6	3.9
resin	70.4	32

Shelf life when stored indoors at 40 to 100°F (4 to 38°C)
cure and resin 1 year from shipment date

Numerical values are subject to normal manufacturing tolerances, colors and testing variances. Allow for application losses and surface irregularities.

This product is photochemically reactive as defined by the South Coast Air Quality Management District's Rule 102 or equivalent regulations.

Limitation of Liability

Ameron's liability on any claim of any kind, including claims based upon Ameron's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. In no event shall Ameron be liable for consequential or incidental damages.

AMERON INTERNATIONAL

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PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS								PART NO.	A-69636
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AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5					
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AMERON INTERNATIONAL
Performance Coatings & Finishes

Amercoat® 370

Fast-dry multi-purpose epoxy

Application Instructions

Adhere to all application instructions, precautions, conditions and limitations during storage, handling, application and drying periods to obtain the maximum performance. For conditions outside the requirements or limitations described, contact your Ameron representative.

Surface Preparation

Coating performance is, in general, proportional to the degree of surface preparation. Surface must be clean, dry, undamaged and free of all contaminants prior to coating.

Welds should be continuous with no overlapping steel surfaces or rough edges. Remove all weld spatter.

Steel, non-immersion – Remove all loose rust, dirt, grease or other contaminants by one of the following depending on the degree of cleanliness required: SSPC-SP2, 3, 6, 7 or 11. Water blasting is also acceptable.

Steel, immersion – For more severe service and immersion, clean to SSPC-SP10. The choice of surface preparation will depend on the system selected and end-use service conditions.

Blast to achieve a surface profile not to exceed 3 mils (75 microns) as indicated by a Keane-Tator Surface Profile Comparator Testex Tape. Increase coating thickness if profile greater than 3 mils.

Primed steel – Prepare surface in accordance with application instructions for the specific primer being used. Be sure primer is clean and dry when Amercoat 370 is applied. Remove all loose rust, dirt, moisture, grease or contaminants.

Repair – Prepare damaged areas to original surface preparation specifications, feathering edges of intact coating. Thoroughly remove dust or abrasive residue before touch up.

Application Equipment

The following is a guide; suitable equipment from other manufacturers may be used. Changes in pressure, hose and tip size may be needed for proper spray characteristics.

Airless spray – Standard equipment such as Graco Bulldog Hydra-Spray or larger with a 0.015- to 0.021-inch (0.38 mm to 0.53 mm) fluid tip.

Conventional spray – Industrial equipment, such as DeVilbiss, MBC or JGA gun with 78 or 765 air can and "E" fluid tip, or Binks No. 18 or 62 gun with a 66x63PB nozzle set up. Separate air and fluid pressure regulators, mechanical pot agitator, and a moisture and oil trap in the main air supply line are recommended.

Environmental Conditions

Temperature	°F	°C
air and surface	20 to 120	-7 to 49
material	40	4

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation.

Application Procedure

Amercoat 370 is packaged in two components in the proper proportions which must be mixed together before use.

1. Flush equipment with thinner or Amercoat 12 before use.
2. Stir each component thoroughly, then combine and mix until uniform.
3. If thinning is necessary for workability, add Amercoat 927 below 60°F or Amercoat 101 at 60°F and above. Thin in quantities up to 1 pint per gallon of Amercoat 370.
4. Do not mix more material than will be used within 4 hours at 70°F (21°C). Pot life is shortened by higher temperatures. Thinning may be necessary for workability periodically throughout pot life.

Pot Life and Dry Times

Temperature (°F/°C)	Pot-Life (Hours)	Touch Dry (Min.)	Through Dry (Hours)	Recoat (Hours)
20/-7	—	90	20	2½
32/0	—	60	9	2
40/4	7	45	7	2
50/10	6	30	4½	1½
60/16	5	22	2¾	1
70/21	4	15	1⅓	½
80/27	3	12	1¼	½
90/32	2	10	1	⅓

Topcoat or recoat time (days) (maximum)

	°F/°C 90/32	70/21	50/10	20/-7
Amercoat 450HS, Amershield*	14	30	45	60

Amercoat 370
non-immersion — 6 months – Clean surface required
Immersion — 1 month – Clean surface
Amercoat 698HS, 70ESP, 635, 279, 275E — Apply while Amercoat 370 is tacky, soft to fingernail*

** Failure to apply antifoulings while coating is still tacky or soft to fingernail may result in poor adhesion and eventual delamination.*

If maximum topcoat time is exceeded, either clean and roughen the Amercoat 370 surface or clean and apply a tack coat of Amercoat 370 before topcoating with Amercoat 450HS, Amershield or antifouling.

Time before service @ 8 mils (hours)

Amercoat 370	°F/°C 90/32	70/21	50/10	32/0	20/-7
non-immersion**	6	12	24	96	120
immersion	12	24	48	168	NR

NR=Not recommended

***Cure to full physical properties.*

5. When applying by conventional spray, use adequate air pressure and volume to ensure proper atomization.
6. When applying over inorganic zinc or zinc rich primers, a "mist coat" 1-1½ mils wet,/full coat technique may be required to minimize bubbling. This will depend on the age of the Dimetcote, surface roughness and conditions during curing. When applying Amercoat 370 over Dimetcote at 60°F and above, use Amercoat 101 thinner up to 1 pint per gallon. For potable water tanks, use only Amercoat 65 thinner.

Formerly Amercoat 3303

PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS								PART NO.	A-69636
		3	8/9/08	SD	SS	6					
AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5					
		1	10/29/03	SJR	SS	4					
DRAWN	SD	CHKD BY	SS	REV	DATE	BY	APP	REV	DATE	BY	APP		
SCALE		DATE	8/9/08	APPROVED				LAST MODIFIED					

7. Normal recommended dry film thickness is 5 mils (125 microns). Total dry film thickness must not exceed 15 mils (375 microns).
8. The application of a wet film thickness of 7 to 8 mils (175 to 200 microns) will normally provide 5 mils (125 microns) of dry film.
9. Clean all equipment with thinner or Amercoat 12 immediately after use.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of each component. Safety precautions must be strictly followed during storage, handling and use.

CAUTION – Improper use and handling of this product can be hazardous to health and cause fire or explosion.

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Consult your supervisor. Proper ventilation and protective measures must be provided during application and drying to keep spray mists and vapor concentrations within safe limits and to protect against toxic hazards. Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interiors and buildings.

This product is to be used by those knowledgeable about proper application methods. Ameron makes no recommendation about the types of safety measures that may need to be adopted because these depend on application environment and space, of which Ameron is unaware and over which it has no control.

If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use the product.

Note: Consult Code of Federal Regulations Title 29, Labor, parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable federal, state and local regulations on safe practices in coating operations.

This product is for professional use only. Not for residential use.

Warranty

Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

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Limitation of Liability

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PRATT Henry Pratt Company — HENRY PRATT COMPANY

AMERON
AMERCOAT 370
(FACTORY ACCELERATED)

MATERIAL SPECIFICATIONS

REV	DATE	BY	APP	REV	DATE	BY	APP
3	8/9/08	SD	SS	6			
2	7/1/05	SD	SS	5			
1	10/29/03	SJR	SS	4			

PART NO. A-69636

DRAWN	SD	CHKD BY	SS	APPROVED	LAST MODIFIED
SCALE		DATE	8/9/08		

Application Data Continued

Environmental conditions

Temperature	°F	°C
air and surface	20 to 120	-7 to 49
material (minimum)	40	4

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation.

Thinner	
below 60°F	Amercoat 927
over Dimetcote or above 60°F	Amercoat 101
Equipment cleaner	Thinner or Amercoat 12

Amercoat 370 Chemical Resistance Guide

Environment	Splash and Spillage	Fumes and Weather
Acidic	F	G
Alkaline	E	E
Solvents	E	E
Salt solutions		
Acidic	G	VG
Neutral	E	E
Alkaline	E	E
Water	E	E

F-Fair G-Good E-Excellent VG-Very Good

This chart shows typical resistance of Amercoat 370. Contact your Ameron representative for your specific requirements.

Systems Using Amercoat 370

1st Coat	2nd Coat	3rd Coat
Amercoat 370	–	–
Amercoat 370	Amershield™	–
Amercoat 370	450HS	–
Dimetcote 21-9, 21-5	370	Amershield, 450HS
Amercoat 68HS	370	Amershield, 450HS, 3203
Amercoat 370	370	698HS, 70ESP, 635, 279, 275E

Confirm compliance with VOC regulations before using coating systems. For immersion service, apply 2 coats at a minimum of 8 mils total DFT.

Over Dimetcote or Amercoat 68HS primer, a mist coat and thinning with Amercoat 101 may be required to prevent application bubbling.

Application Data Summary

See Application Instructions for complete information on surface preparation, environmental conditions, application procedures and equipment. To obtain maximum performance, apply as recommended. Adhere to all safety precautions during storage, handling, application and drying periods.

Safety Precautions

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Pot Life and Dry Times

Temperature (°F/°C)	Pot-Life (Hours)	Touch Dry (Min.)	Through Dry (Hours)	Recoat (Hours)
20/-7	—	90	20	2½
32/0	—	60	9	2
40/4	7	45	7	2
50/10	6	30	4½	1½
60/16	5	22	2¾	1
70/21	4	15	1½	½
80/27	3	12	1¼	½
90/32	2	10	1	¼

Topcoat or recoat time (days) (maximum)

	°F/°C			
	90/32	70/21	50/10	20/-7
450HS, Amershield™	14	30	45	60

Amercoat 370	
non-immersion	6 months – Clean surface required *(clean and roughen if exceeded)*
immersion 698HS, 70ESP, 635, 279, 275E	1 month – Clean surface *(clean and roughen if exceeded)* Apply while 370 is tacky, soft to fingernail*

* *Failure to apply antifoulings while coating is still tacky or soft to fingernail may result in poor adhesion and eventual delamination.*

If maximum topcoat time is exceeded, either clean and roughen the Amercoat 370 surface or clean and apply a tack coat of Amercoat 370 before topcoating with Amercoat 450HS, Amershield or antifouling.

Time before service @ 8 mils (hours)

Amercoat 370	90/32	70/21	50/10	32/0	20/-7
non-immersion**	6	12	24	96	120
immersion	12	24	48	168	NR

NR=Not recommended

Cure to full physical properties.

Shipping Data

Packaging units	1 gal	5 gal
cure	0.2 gal in 1-qt can	1 gal in 1-gal can
resin	0.8 gal in 1-gal can	4 gal in 5-gal can

Shipping weight (approx)	lb	kg
1-gal unit		
cure	1.9	0.9
resin	14.2	6.5
5-gal can		
cure	8.6	3.9
resin	70.4	32

Shelf life when stored indoors at 40 to 100°F (4 to 38°C)
cure and resin 1 year from shipment date

Numerical values are subject to normal manufacturing tolerances, colors and testing variances. Allow for application losses and surface irregularities.

This product is photochemically reactive as defined by the South Coast Air Quality Management District's Rule 102 or equivalent regulations.

Limitation of Liability

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AMERON INTERNATIONAL

370 PDS

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AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5					
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AMERON INTERNATIONAL
Performance Coatings & Finishes

Amercoat® 370

Fast-dry multi-purpose epoxy

Application Instructions

Adhere to all application instructions, precautions, conditions and limitations during storage, handling, application and drying periods to obtain the maximum performance. For conditions outside the requirements or limitations described, contact your Ameron representative.

Surface Preparation

Coating performance is, in general, proportional to the degree of surface preparation. Surface must be clean, dry, undamaged and free of all contaminants prior to coating.

Welds should be continuous with no overlapping steel surfaces or rough edges. Remove all weld spatter.

Steel, non-immersion – Remove all loose rust, dirt, grease or other contaminants by one of the following depending on the degree of cleanliness required: SSPC-SP2, 3, 6, 7 or 11. Water blasting is also acceptable.

Steel, immersion – For more severe service and immersion, clean to SSPC-SP10. The choice of surface preparation will depend on the system selected and end-use service conditions.

Blast to achieve a surface profile not to exceed 3 mils (75 microns) as indicated by a Keane-Tator Surface Profile Comparator Testex Tape. Increase coating thickness if profile greater than 3 mils.

Primed steel – Prepare surface in accordance with application instructions for the specific primer being used. Be sure primer is clean and dry when Amercoat 370 is applied. Remove all loose rust, dirt, moisture, grease or contaminants.

Repair – Prepare damaged areas to original surface preparation specifications, feathering edges of intact coating. Thoroughly remove dust or abrasive residue before touch up.

Application Equipment

The following is a guide; suitable equipment from other manufacturers may be used. Changes in pressure, hose and tip size may be needed for proper spray characteristics.

Airless spray – Standard equipment such as Graco Bulldog Hydra-Spray or larger with a 0.015- to 0.021-inch (0.38 mm to 0.53 mm) fluid tip.

Conventional spray – Industrial equipment, such as DeVilbiss, MBC or JGA gun with 78 or 765 air can and "E" fluid tip, or Binks No. 18 or 62 gun with a 66x63PB nozzle set up. Separate air and fluid pressure regulators, mechanical pot agitator, and a moisture and oil trap in the main air supply line are recommended.

Environmental Conditions

Temperature	°F	°C
air and surface	20 to 120	-7 to 49
material	40	4

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation.

Application Procedure

Amercoat 370 is packaged in two components in the proper proportions which must be mixed together before use.

1. Flush equipment with thinner or Amercoat 12 before use.
2. Stir each component thoroughly, then combine and mix until uniform.
3. If thinning is necessary for workability, add Amercoat 927 below 60°F or Amercoat 101 at 60°F and above. Thin in quantities up to 1 pint per gallon of Amercoat 370.
4. Do not mix more material than will be used within 4 hours at 70°F (21°C). Pot life is shortened by higher temperatures. Thinning may be necessary for workability periodically throughout pot life.

Pot Life and Dry Times

Temperature (°F/°C)	Pot-Life (Hours)	Touch Dry (Min.)	Through Dry (Hours)	Recoat (Hours)
20/-7	—	90	20	2½
32/0	—	60	9	2
40/4	7	45	7	2
50/10	6	30	4½	1½
60/16	5	22	2¾	1
70/21	4	15	1½	½
80/27	3	12	1¼	½
90/32	2	10	1	⅓

Topcoat or recoat time (days) (maximum)

	°F/°C 90/32	70/21	50/10	20/-7
Amercoat 450HS, Amershield*	14	30	45	60

Amercoat 370
non-immersion — 6 months – Clean surface required
immersion — 1 month – Clean surface
Amercoat 698HS, 70ESP, 635, 279, 275E — Apply while Amercoat 370 is tacky, soft to fingernail*

** Failure to apply antifoulings while coating is still tacky or soft to fingernail may result in poor adhesion and eventual delamination.*

If maximum topcoat time is exceeded, either clean and roughen the Amercoat 370 surface or clean and apply a tack coat of Amercoat 370 before topcoating with Amercoat 450HS, Amershield or antifouling.

Time before service @ 8 mils (hours)

Amercoat 370	°F/°C 90/32	70/21	50/10	32/0	20/-7
non-immersion**	6	12	24	96	120
immersion	12	24	48	168	NR

NR=Not recommended

***Cure to full physical properties.*

5. When applying by conventional spray, use adequate air pressure and volume to ensure proper atomization.
6. When applying over inorganic zinc or zinc rich primers, a "mist coat" 1-1½ mils wet./full coat technique may be required to minimize bubbling. This will depend on the age of the Dimetcote, surface roughness and conditions during curing. When applying Amercoat 370 over Dimetcote at 60°F and above, use Amercoat 101 thinner up to 1 pint per gallon. For potable water tanks, use only Amercoat 65 thinner.

Formerly Amercoat 3303

PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS									PART NO.	A-69636
		3	8/9/08	SD	SS	6						
AMERON AMERCOAT 370 (FACTORY ACCELERATED)		2	7/1/05	SD	SS	5						
		1	10/29/03	SJR	SS	4						
DRAWN	SD	CHKD BY	SS	REV	DATE	BY	APP	REV	DATE	BY	APP	
SCALE		DATE	8/9/08	APPROVED				LAST MODIFIED				

7. Normal recommended dry film thickness is 5 mils (125 microns). Total dry film thickness must not exceed 15 mils (375 microns).
8. The application of a wet film thickness of 7 to 8 mils (175 to 200 microns) will normally provide 5 mils (125 microns) of dry film.
9. Clean all equipment with thinner or Amercoat 12 immediately after use.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of each component. Safety precautions must be strictly followed during storage, handling and use.

CAUTION – Improper use and handling of this product can be hazardous to health and cause fire or explosion.

Do not use this product without first taking all appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Consult your supervisor. Proper ventilation and protective measures must be provided during application and drying to keep spray mists and vapor concentrations within safe limits and to protect against toxic hazards. Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interiors and buildings.

This product is to be used by those knowledgeable about proper application methods. Ameron makes no recommendation about the types of safety measures that may need to be adopted because these depend on application environment and space, of which Ameron is unaware and over which it has no control.

If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use the product.

Note: Consult Code of Federal Regulations Title 29, Labor, parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable federal, state and local regulations on safe practices in coating operations.

This product is for professional use only. Not for residential use.

Warranty

Ameron warrants its products to be free from defects in material and workmanship. Ameron's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Ameron's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Ameron in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Ameron of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

Ameron makes no other warranties concerning the product. No other warranties, whether express, implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply. In no event shall Ameron be liable for consequential or incidental damages.

Any recommendation or suggestion relating to the use of the products made by Ameron, whether in its technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitation of Liability

Ameron's liability on any claim of any kind, including claims based upon Ameron's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. **In no event shall Ameron be liable for consequential or incidental damages.**

AMERON INTERNATIONAL

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Ameron B.V. • J. F Kennedylaan 7, 4191 MZ Geldermalsen, The Netherlands • (31) 345-587-587

PRATT Henry Pratt Company	HENRY PRATT COMPANY	MATERIAL SPECIFICATIONS								PART NO.	A-69636
AMERON AMERCOAT 370 (FACTORY ACCELERATED)		3	8/9/08	SD	SS	6					
		2	7/1/05	SD	SS	5					
		1	10/29/03	SJR	SS	4					
DRAWN	SD	CHKD BY	SS	REV	DATE	BY	APP	REV	DATE	BY	APP		
SCALE		DATE	8/9/08	APPROVED				LAST MODIFIED					

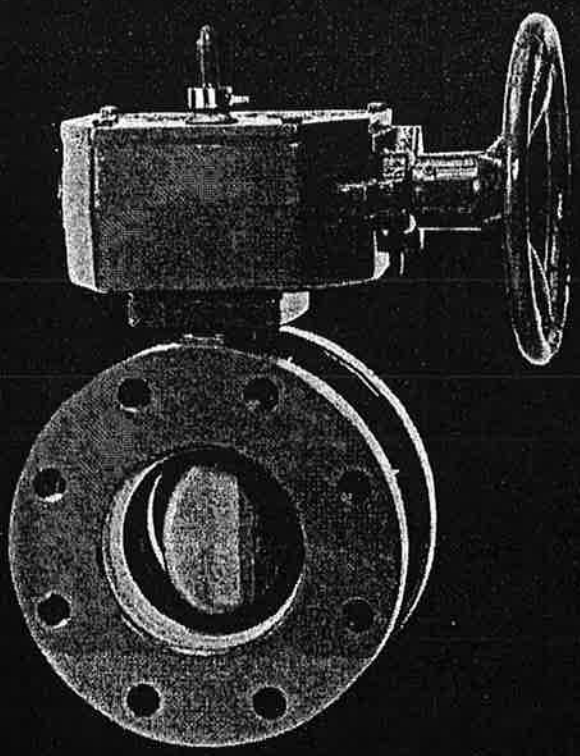
PRATT

Henry Pratt Company

AWWA

Butterfly Valves

3 through 20 inches



Valves for the 21st Century

Since 1901

PRATT

SCOPE OF LINE: AWWA IN-PLANT RUBBER SEATED BUTTERFLY VALVES

Model 2FII Butterfly Valve

Model 2FII Flanged Butterfly Valve

Sizes: 3 through 20 inches
Body Style: Flanged x flanged ends
Other Body Style Options:
- Mechanical joint
- Victaulic
- Flanged & mechanical joint
- Push-on
- Push-on & flanged

Pressure Class:
- Class 150B per AWWA Standard C504

Working Pressure: 150 psig
Flanges:
- Flat faced and drilled in accordance with ANSI B16.1, Class 125 standards.

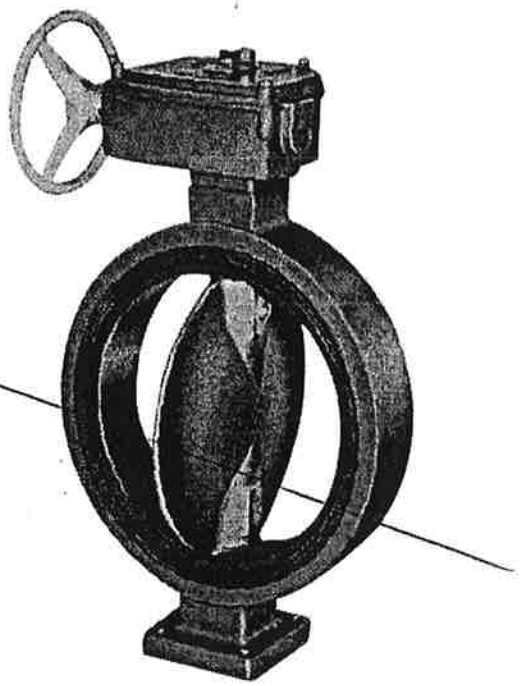
Rubber Seat: Bonded seat-in-body
Actuation Options:
- Pratt hand lever
- MDT manual actuator with AWWA nut, handwheel or chainwheel
- Pratt Dura-Cyl hydraulic or pneumatic cylinder
- Pratt Positron electric actuator

Monoflange MKII Wafer Butterfly Valve

Sizes: 3 through 20 inches
Body Style: Wafer-type
Pressure Class:
- Class 150B per AWWA Standard C504

Working Pressure: 150 psig
Rubber Seat:
- Bonded seat-in-body extends over inner surface to form self-gasketing feature

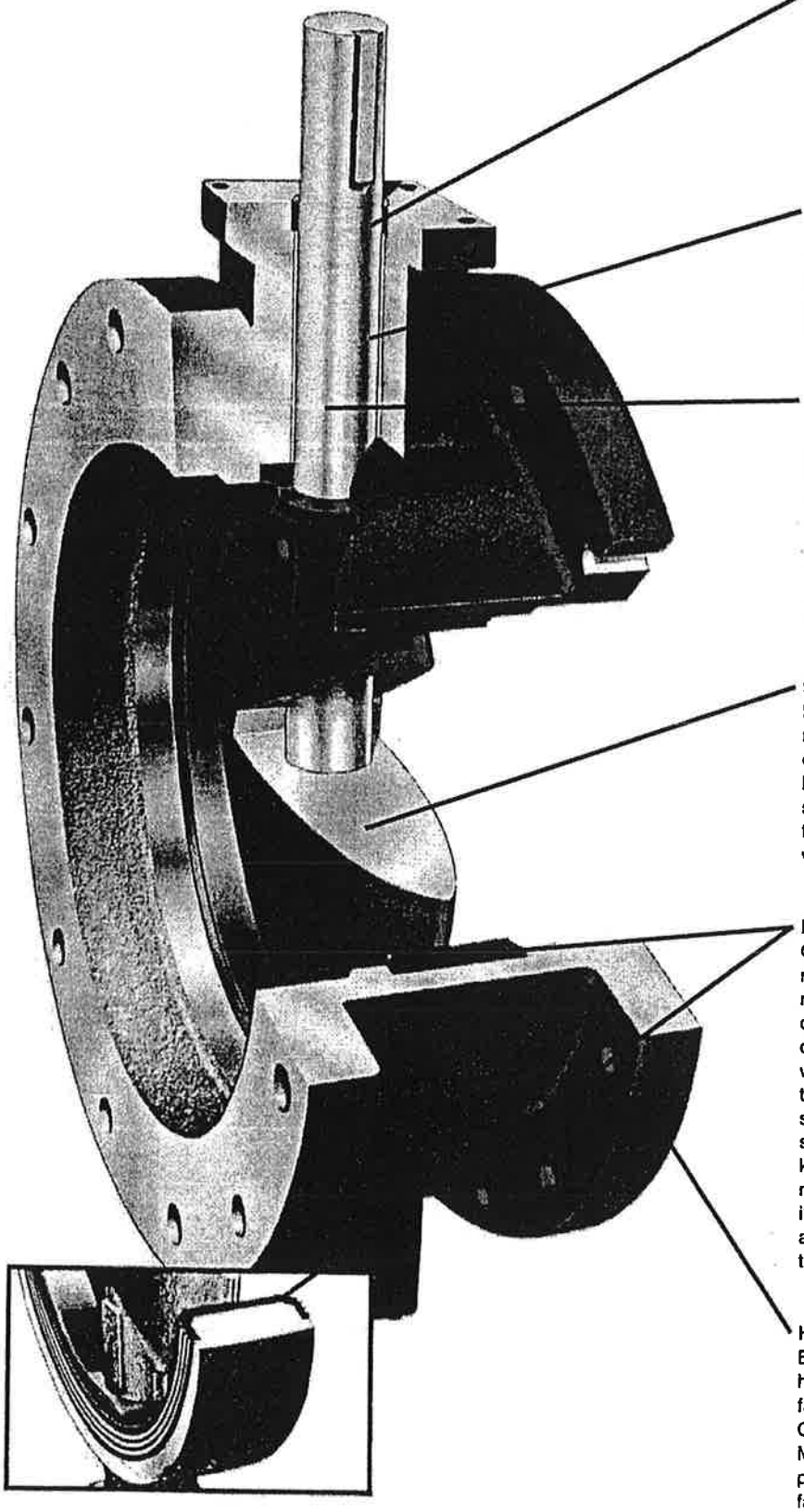
Actuation Options:
- Pratt hand lever
- MDT manual actuator with AWWA nut, handwheel or chainwheel
- Pratt Dura-Cyl hydraulic or pneumatic cylinder
- Pratt Positron electric actuator



Monoflange MKII Butterfly Valve

Please see the outside back cover for a listing of other Pratt products

Design Details: Models 2FII and MKII



Self Adjusting Permanent Packing
Chevron type packing increases sealing force as line pressure increases. The self adjusting packing bears on turned, ground and polished stainless steel, minimizing wear and assuring long life. Packing is accessible for replacement without dismantling the valve per AWWA Standard C504.

Lifetime Bearings
Pratt's chemically inert nylon bearings are sized to meet or exceed AWWA specification pressure loads. They are self-lubricating, require no periodic maintenance and are designed to outlast the life of the pipeline.

Corrosion Resistant Shafts
The shafts in Pratt's rubber seated butterfly valves, 3" through 20", are constructed of centerless, ground ASTM A276 type 304 or type 316 stainless steel bar and thus are not susceptible to corrosion as are carbon steel or other similar materials. Shafts are one-piece, through-shaft construction, sized to meet or exceed the requirements of AWWA Standard C504 for Class 150B butterfly valves.

Streamlined Discs
Pratt's lens-shaped discs are designed to minimize pressure drop and turbulence. In the full open position, the disc creates no more friction loss than a 45° elbow. Discs are secured to shafts by stainless steel pins to transmit required torques and withstand stresses imposed under a variety of operating conditions.

Body Seat
Our standard seats are constructed of Buna N rubber and bonded to the valve body in Pratt's manufacturing facility using a unique thermal process. This molding process ensures that the disc-to-seat interference will not cause excessive wear or abrasion under normal operating conditions. On the wafer type MKII bodies, the rubber seat covers the entire inner surface plus the outside face of the valve body to provide a self-gasketing feature. Pratt's seat-in-body design minimizes the effects of corrosive buildup on the inside of the valve because deposits are swept away by the hard sealing edge of the disc each time the valve is exercised.

Heavy Duty Bodies
Both Monoflange MKII and Model 2FII bodies are heavy duty cast iron. Model 2FII flanges are fully faced and drilled in accordance with ANSI B16.1, Class 125 standard for cast iron flanges. Monoflange MKII bodies incorporate an overlapping seat which also forms a gasket for the flange face. The actuator mounting trunnion is machined and drilled for a 4-bolt connection.

Features and Benefits of Pratt Models 2FII and MKII

Feature	Benefit
Seat-in-body design Seat molded in recessed body cavity, protected by metal on 3 sides	- Reduces seat failure due to corrosive buildup in the valve and pipeline. No hardware to loosen. No periodic maintenance required. Rubber protected from flow media to increase seat life.
Valve withstood proof-of-design testing of 100,000 cycles - AWWA only requires 10,000 cycle proof-of-design testing	- Proven reliability over the life of the valve
Through-disc pinning	- Provides a tight disc-to-shaft pin connection, greatly reducing the possibility of loosening through vibration
Symmetrical lens-shaped disc	- Higher C_V : lower head loss results in energy savings for customer's system
Nonmetallic bearings	- Prevents galvanic corrosion and provides lower coefficient of friction
Chevron V-type packing	- Self-adjusting, lasts the life of the valve

Valve Size	C_V	Valve Size	C_V	Valve Size	C_V
3"	323	10"	4458	16"	11413
4"	575	12"	6420	18"	14444
6"	1294	14"	8738	20"	17832
8"	2300	C_V values for the 2FII and MKII in the full open position			

Standard Material	Type of Material: Body	Disc	Shaft
0255	Cast Iron	Cast Iron 316 edge	SS, Type 304
Other materials available upon request.			

Specifications for Materials of Construction

Cast Iron:
ASTM A48, Class 40 (MKII body)
ASTM A126, Class B (2FII body)

Stainless Steel:
ASTM A276 Type 304 (Shaft)

SUGGESTED SPECIFICATION FOR THE PRATT RUBBER SEATED BUTTERFLY VALVE, SIZES 3 THROUGH 20 INCHES

General
Butterfly valves shall be manufactured in accordance with the latest revision of AWWA C504, Class 150B and conform to NSF Standard 61. The manufacturer shall have produced AWWA butterfly valves for a minimum of five years. All valves shall be either Henry Pratt Model 2FII or Monoflange MKII and comply with the following details.

Valve Bodies
Valve bodies shall be constructed of ASTM A126, Class B cast iron for flanged valves or ASTM A48, Class 40 for wafer style. Flanged valves shall be fully faced and drilled in accordance with ANSI Standard B16.1, Class 125.

Valve Seats
Rubber body seats shall be of one piece construction, simultaneously molded and bonded into a recessed cavity in the valve body. Seats may not be located on the disc or be retained by segments and/or screws. For wafer style valves, the seat shall cover the entire inner surface of the valve body and extend over the outside face of the valve body to form a flange gasket.

Valve Bearings
Valve bearings shall be of a self-lubricating, nonmetallic material to effectively isolate the disc-shaft assembly from the valve body. Metal-to-metal thrust bearings in the flow stream are not allowed.

Valve Disc
The disc shall be a lens-shaped design to afford minimal pressure drop and line turbulence. Materials of construction shall be:

- ASTM A126, Class B cast iron disc with a stainless steel type 316 edge

Discs shall be retained by stainless steel pins which extends through the full diameter of the shaft to withstand the specified line pressure up to valve rating and the torque required to operate the valve. Disc stops located in the flow stream are not allowed.

Valve Shafts
Valve shafts shall be of stainless steel type 304. At the operator end of the valve shaft, a packing gland utilizing "V" type chevron packing shall be utilized. "O" ring and "U" cup packing is not allowed.

Painting
All surfaces of the valve interior shall be clean, dry and free from grease before painting. The valve surfaces except for disc edge, rubber seat and finished portions shall be evenly coated with asphalt varnish in accordance with Federal Specification TT-C-494 and AWWA Standard C504. The exterior valve surfaces and actuator shall be evenly coated with a suitable primer to match field coatings.

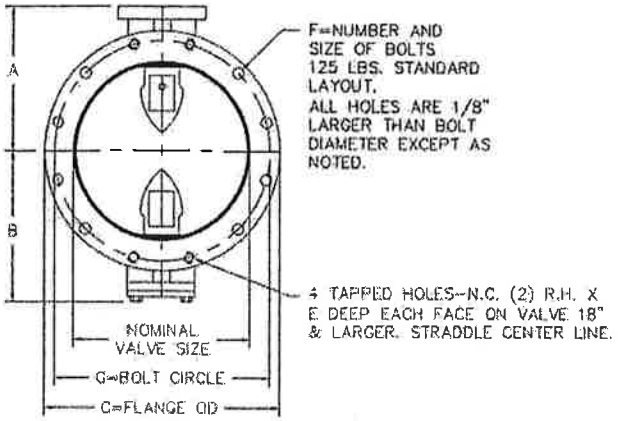
Testing
Hydrostatic and seat leakage tests shall be conducted in strict accordance with AWWA Standard C504.

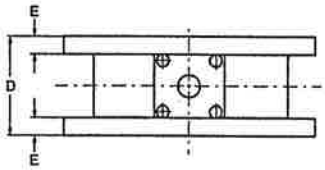
Proof of Design
The manufacturer furnishing valves under the specification shall be prepared to provide Proof of Design Test reports to illustrate that the valves supplied meet the design requirements of AWWA C504.

Manual Actuators: Manual actuators shall be of the traveling nut, self-locking type and shall be designed to hold the valve in any intermediate position between fully open and fully closed without creeping or fluttering. Actuators shall be equipped with mechanical stop-limiting devices to prevent overtravel of the disc in the open and closed positions. Actuators shall be fully enclosed and designed to produce the specified torque with a maximum pull of 80 lb. on the handwheel or chainwheel. Actuator components shall withstand an input of 450 Ft. Lbs. at extreme operator position without damage. Manual actuators shall conform to AWWA C504 and shall be Pratt MDT or an approved equal.

Powered Actuators: Refer to Pratt's Butterfly Valve Actuator brochure for suggested specifications and detailed information regarding cylinder actuators and electric actuators.

Dimensional Data: Model 2FII, Flanged Butterfly Valve



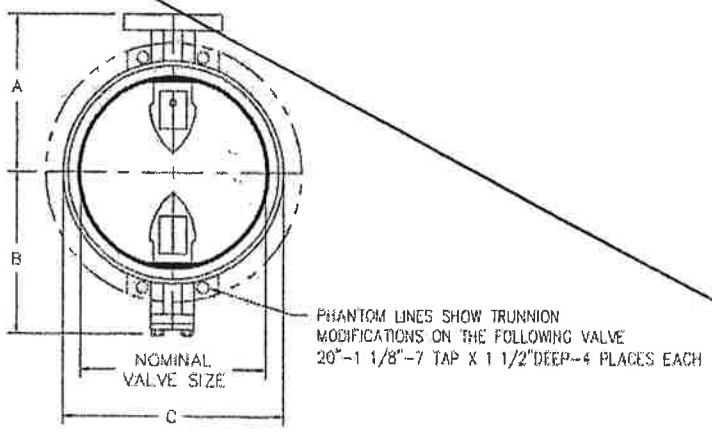


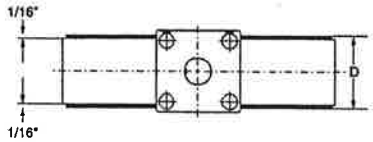
— Available in sizes 3 through 20 inches

Nominal Valve Size	A	B	C	D	E	F	G
3	4¾	3¼	7½	5	¾	4-⅝	6
4	5½	3½	9	5	15/16	8-¾	7½
6	6½	5⅛	11	5	1	8-¾	9½
8	7¾	6½	13½	6	1⅛	8-¾	11¾
10	9	9⅞	16	8	1 3/16	12-⅞	14¼
12	10½	11⅞	19	8	1¼	12-⅞	17
14	11⅞	12¾	21	8	1⅜	12-1	18¾
16	13½	14¾	23½	8	1 7/16	16-1	21¼
18	14¾	15¼	25	8	1 5/16	16-1¼	22¾
20	16	16¾	27½	8	1 11/16	20-1¼	25

All dimensions shown in inches

Dimensional Data: Monoflange MKII Wafer Butterfly Valve





— Available in standard sizes.

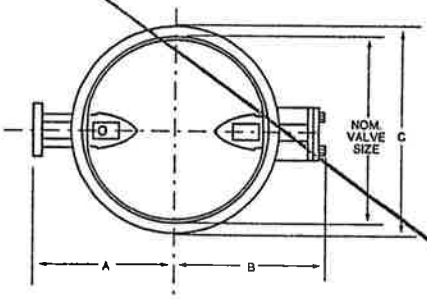
— 24" MKII available upon request.

VALVE SIZE (in.)	DISC O.D. (in.)	MINIMUM MATING PIPE I.D. (in.)*
3	3.089	2.41
4	4.074	3.44
6	6.070	5.38
8	8.078	7.53
10	10.098	9.62
12	12.108	11.64
14	13.339	12.86
16	15.336	14.79
18	17.370	16.75
20	19.380	18.71

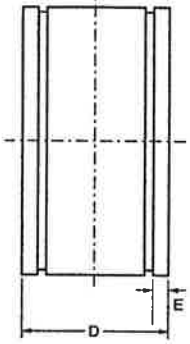
Nominal Valve Size	A	B	C	D
3	4¾	3¼	5¼	2 1/16
4	5½	3½	6¾	2 1/16
6	6½	5⅛	8⅝	2 15/16
8	7¾	6½	10 7/8	3 1/16
10	9	9⅞	13¼	3 3/16
12	10½	11 5/16	16	3 3/16
14	11⅞	12¾	17⅝	3 11/16
16	13½	14⅜	20¼	4 3/16
18	14⅜	15¼	21½	4 11/16
20	16	16 13/16	23¾	5 3/16

All dimensions shown in inches.

Dimensional Data: Model 2VII Victaulic End Butterfly Valve



— Available in sizes 4 through 20 inches.



INSTALLATION DETAIL

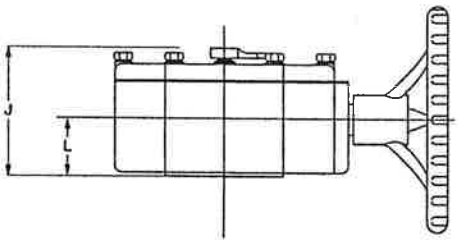
NOTE: VICTAULIC COUPLINGS, GLANDS, AND GASKETS FURNISHED BY OTHERS

Nominal Valve Size	A	B	C	D	E
4	5½	3½	5 5/16	8⅛	¾
6	6½	5⅛	7½	8½	¾
8	7¾	6½	9¾	8⅝	⅞
10	9	9⅞	12	8	15/16
12	10½	11 5/16	14¼	8	15/16
14	11⅞	12 11/16	16 7/16	8	15/16
16	13½	14 5/16	18½	8	1 3/16
18	14⅜	15 3/16	20 15/16	8	1¼
20	16	16 13/16	22⅞	8	1 3/16

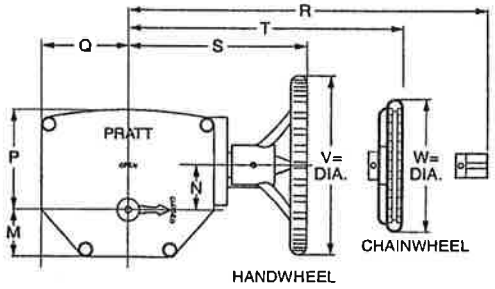
All dimensions shown in inches.
"D" dimension ± 1/16" for 4" thru 10" valves.
"D" dimension ± ⅛" for 12" thru 20" valves.

Actuator Dimensional Data for Models 2FII and MKII

Pratt MDT Manual Actuator



All dimensions shown in inches



Valve Size	MDT Size	J	L	M	N	P	Q	R	S	T	V	W	# Turns to Close
3 to 12"	MDT-2	4 11/16	2	2⅛	2	4½	4¼	7⅝	7⅞	7⅞	8	9⅛	32
14, 16"	MDT-3	5⅝	2 7/16	3¼	3 3/32	5⅝	5¾	9¼	10½	10	12	9¼	30
18, 20"	MDT-4	6⅜	2 27/32	3⅜	4	7 5/16	6¾	10½	11½	11	12	9⅛	40

For further information regarding manual actuators, refer to Pratt's Butterfly Valve Actuator brochure.