Addendum No. 2
RAS Pump Replacement Phase 2
Capital Project No. 1859

This Addendum No. 2, dated May 16, 2019, to the Invitation to Bid: RAS Pump Replacement Phase 2, Capital Project No. 1859, bid opening May 29, 2019 at 10:00 am, supersedes all contrary and conflicting information in the above-mentioned instructions, specifications, and contract documents which are hereby supplemented or revised in certain particulars as follows:

AD2-1 General Information

The District submits this Addendum to provide new information and to change existing information for potential respondents.

AD2-2

Minutes and sign-in sheet of the mandatory pre-bid meeting held on May 8, 2019 are attached to this addendum.

AD2-3 Specification Section 01010 Summary of Work

Item 1 of 2, paragraph 3.1, following the first sentence, insert the following: "The following tasks are project requirements and shall be included in the Contractor's bid, whether or not they are specifically shown elsewhere on the drawings or in the specifications."

Item 2 of 2, delete the following paragraph "Provide and install anchors in the concrete sump fill for attachment of the Owner supplied pump bases and install Owner supplied pump rails and pumps." And replace with the following: "Install Owner supplied stainless steel anchors (four per pump) in the concrete sump fill for attachment of the Owner supplied pump bases. Install Owner supplied 8"x10" eccentric reducers, pump rails, pumps, lifting chains, and other appurtenances supplied with the pumps. Touch-up damaged pump paint using Owner supplied paint."

AD2-4 Specification Section 02615 Ductile Iron Pipe And Fittings

2.03 FITTINGS, following paragraph 2.03.F.3, insert the following: "G. Provide two 10" diameter MJ 11-1/4 bends and two 10" diameter 22-1/2 bends. See paragraph 3.03.B.5 of this Section."

AD2-5 Specification Section 15101 Valves, Hydrants, and Appurtenances

Item 1 of 3, paragraph 2.02.A.8, delete the words "with manufacturer's standard epoxy coating system" and replace with the words "with 12 mils minimum DFT of manufacturer's standard submerged duty coating system, fusion bonded epoxy if available".

Item 2 of 3, paragraph 2.03.K, delete the words "or traveling nut type".

Item 3 of 3, 2.10.B.2, insert the following after this item: "3. Provide valve stem extension with 2" nut adaptor bottom coupling and 2" nut operator on top of the stem. Nut operator shall be 6" below the top of valve box. Stems and couplings shall be painted carbon steel or stainless steel."

AD2-6 Specification Section 16480 Variable Frequency Drives

Item 1 of 10, paragraph 1.4.B.4, delete the words "(if used)".

Item 2 of 10, paragraph 1.4.D, delete this item and replace with the following: "D. Harmonics: The existing ABB ACS500 drives are not known to impact the existing RRWRD power supply - MCC, transformer, plant system. Any new harmonic issues on RRWRD's power supply system resulting from the new VFDs shall be investigated and remediated by the VFD manufacturer, at the VFD manufacturer's cost. Changes required shall be submitted to RRWRD prior to implementation."

Item 3 of 10, paragraph 2.1.A, delete the words "Subject to compliance with requirements, provide products by one of the following:" and insert "Provide one of the following standard, latest model products:".

Item 4 of 10, paragraphs 2.1.D.1 and 2.1.D.2 shall remain unchanged but paragraph 2.1.D shall be deleted and replaced with the following: "D. VFD Description: Variable frequency power converter, factory standard unit, packaged in a wall mountable ventilated enclosure. The solid state VFD shall be fed power through an existing TCI Sine Guard Three Phase Line Reactor. The VFD manufacturer shall provide a dv/dt output filter suitable for the application and suitable to their equipment, in a wall mountable enclosure. Filters shall be standard latest edition units manufactured by Mirus International, MTE Corporation, or Trans-Coil Inc. (TCI). Contractor shall mount filter on wall above the VFD along with conduit between the VFD and filter."

Item 5 of 10, delete paragraph 2.1.K.12 in its entirety.

Item 6 of 10, delete paragraph 2.1.S in its entirety.

Item 7 of 10, paragraph 2.2.C, delete the word "door".

Item 8 of 10, paragraph 2.3, delete this item and replace with the following: "A. As noted, the power supply to each VFD will be routed through an existing TCI Sine Guard Line Reactor and the output shall be routed through a VFD manufacturer provided dv/dt filter. Information on the dv/dt filters shall be included with the VFD shop drawing submittal."

Item 9 of 10, paragraphs 3.2.A and 3.2.B, at the beginning of each paragraph insert the following sentence: "This paragraph is only applicable when harmonic distortion is caused by addition of the VFD equipment to the existing electrical system and shall provide a basis for remediation actions as necessary."

Item 10 of 10, paragraph 3.4.B, delete all text following the word "height" and insert the following "as shown on the drawings."

AD2-7 Specifications Section III

Add the attached pump shop drawing information, which delineates the materials supplied by RRWRD on this project, prior to the Section11304 specifications.

AD2-8 Sheet 2 of 11

General Notes, Restoration:

Item 1 of 2, modify note 2 to read as follows, "All disturbed lawn areas shall be graded level and seeded per the requirements in Section 02480 of the Contract documents."

Item 2 of 2, delete note 4 in its entirety and replace with the following, "4. Excavations in paved areas shall be backfilled with trench backfill in accordance with Section 208 of the IDOT Standard Specifications for Road and Bridge Construction in Illinois, Current Edition (IDOT Standard Specifications) to a depth of 12" below the proposed finished grade. The remaining 12" shall be backfilled with 6" of compacted subbase granular material Type C (in accordance with Section 311 of the IDOT Standard Specifications) and 6" of compacted aggregate surface course Type A (in accordance with Section 402 of the IDOT Standard Specifications). Trench backfill shall be in accordance with Article 1003.04 or 1004.05 of the IDOT Standard Specifications. Subbase granular material Type C shall be in accordance with Article 1004.04 of the IDOT Standard Specifications, with a CA-6 gradation. Aggregate surface course Type A shall be reclaimed asphalt pavement (RAP) with 100% of the RAP material passing the 1-1/2" sieve and shall be reasonably well graded from coarse to fine."

AD2-9 Sheet 8 of 11

Conduit And Wire Schedule, delete in its entirety and replace with the attached two documents,

Conduit And Wire Schedule – Typical For Each of Five (5) Pump House Areas

Conduit And Wire Schedule – Aeration Building Typical For Each of 14 VFDs

AD2-10 Sheet 10 of 11

Item 1 of 2, on the Operating Floor Plan, in two places delete the words "ABB 550", in one place delete the words "ABB ACS 500 5 Hp or", and in one place delete the words "ABB ACS 500".

Item 2 of 2, Notes, VFD's:

Delete Note 5 in its entirety and replace with the following, "5. The old panels' pump disconnect and the Hand-Off-Computer switch shall remain. The Manual Speed Adjust rheostat and the Vibration Reset pushbutton shall be removed. The resultant panel cover holes shall be sealed. Remove the disconnected wires."

This information shall be taken into consideration by bidders when preparing the bid. Bidders shall acknowledge all project addenda on Proposal Form. This addendum and attachments will be emailed to all plan holders as well as posted on District's website at www.rrwrd.dst.il.us.

END OF ADDENDUM NO. 2

Issued May 16, 2019

Rock River Water Reclamation District

Christopher T. Baer, P.E.
Engineering Manager

I:\District Projects\RAS Pump Replace - Repair 1859\Engineering\Specs\Phase 2 Specs opening 20190529\Addendum 2 dated 20190516

RAS PUMP REPLACEMENT PROJECT

CAPITAL PROJECT NO. 1859

PRE-BID MEETING – MAY 8, 2019

GENERAL:

Sign-in sheet is attached for this mandatory pre-bid meeting.

Bids due at 10:00 A.M. Wednesday, May 29, 2019 at the Rock River Water Reclamation District (RRWRD) office, at which time bids will be opened and read aloud. Conditional bids will not be read. Recommendation for contract award will be made at the June 4, 2019 Special Board meeting.

Bid packages are to include proposal on District bid form, equipment questionnaire form, bid security on District form (5% of bid amount), completed Fair Employment Practices Affidavit on District form, and Contractor's statement of qualifications. Apparent low bidder to submit their Schedule of Values, with subcontracted work identified, before 10:00 am on Friday May 31, 2019.

This is a lump sum contract; bid shall include all work associated with the project to provide a complete functional system. Contractor shall perform at least 25% of the project with their own forces. Warranty is 2 years from acceptance of the work.

Written questions should be submitted to RRWRD no later than noon on May 22, 2019 to allow time to address by addendum. An addendum will be issued with this meeting's notes, sign-in sheet, and other modifications as necessary.

PROJECT SCHEDULE:

Shop drawing submittals are expected early in the project for main materials. For scheduling, assume two weeks RRWRD review time for each submittal.

Contractor's schedule shall consider plant operations, requiring return sludge systems to remain functional throughout the project except as specifically indicated.

The project shall be fully complete, including all restoration and close out documentation, by July 31, 2020. Liquidated damages shall be $300 per calendar day for completion following this final completion deadline.

Pay requests should be submitted to the District by the 5th day of the month for consideration at that month's Board meeting. Retention is 10% of each pay application. Certified payroll and waivers of lien are required for each application for payment.

Sequencing is critical to maintain operation of the treatment systems throughout the project. Contractor shall attempt to return at least one final clarifier to serviceable condition as soon as practical.

Existing system outages necessary to complete work shall be requested at least 7 days in advance of the planned outage. Outage requests shall include a detailed schedule and sequence of activities; request shall verify that all required materials are on site. Additional time may be necessary in order to prepare for taking a process off line, such as for reducing sludge inventories prior to shut down of four clarifiers' return piping for connections.

PROJECT:

Project generally consists of:

Schedule, shop drawings, O&M manuals, and as-built mark-up drawings.

Install and start up all new Contractor supplied materials and equipment as well as the RRWRD supplied pumping equipment.

Contractor to provide their own equipment for completion of work; RRWRD's existing equipment and facilities are not available for Contractor use.

Disconnect power and water supplies to each of 5 existing pump houses and associated equipment. Remove water piping, backflow preventer, and electric as shown.

Remove existing wood frame fiberglass batt insulated, metal sided building and support curbing and slabs; properly dispose of all demolished materials off-site.

Ten existing return activated sludge pumps, piping, and controls shall be removed and properly disposed-of off site. The 10 motors shall be removed and turned over to RRWRD.

RRWRD will initially drain each Final Clarifier to the level indicated on drawings. Contractor is responsible for providing their own pumping equipment, power supply, hoses, and labor to complete tank draining and to keep work areas dry. Water can enter the tanks from precipitation, leaking process gates, groundwater from pressure relief valves, and miscellaneous leaks. Drainage water shall be pumped to the Drain Sump Chamber, not to adjacent tanks or weir troughs.

Shore slab and remove the top 9"+/- thick triangular shaped concrete slab and steel from top of the original 7" thick elevated slab; minimize damage to 7" slab. Saw cut edges and chip out upper 2"+/- of the 7" slab per details and cut off dowels from 9" slab into the 7" slab. Chip out full depth portion of slab surrounding proposed pump hatches to allow new reinforcement to be tied to existing reinforcing steel using mechanical connectors as shown.

Making new openings in the existing final clarifier slabs shall be performed in conjunction with the concrete repair work. The new pump hatch openings shall not be larger than necessary. The new hatches are supplied by RRWRD along with the pumps.

Excavate plant water main, remove six fire hydrants, install six 4" gate valves with boxes, provide and install fittings and 2" yard hydrants. Along with the fire hydrants, remove 1"+/- seal water connection and piping that fed the pump house; plug if section of pipe at the corporation stop is not removed.

Ten new return activated sludge pumps, pump bases, pump rails, pump retrieval cables, submersible power/control cables, and pump panels shall be provided by RRWRD and installed to by the Contractor. Two of the existing return sludge lineshaft pumps should be replaced at a time.

These pumps typically operate 24 hours per day, 7 days per week. Proper scheduling of outages is critical to the plant's operation.

All new electrical conduit shall be PVC coated rigid metal.

All new electrical panels and boxes shall be NEMA 4X stainless steel.

All new electrical wire shall be type THWN copper wire.

Provide and install fourteen (14) new VFDs in the Aeration Building, as indicated and specified. Conduits from the existing panels to new VFDs shall be replaced and holes patched. This task requires modifications to existing panels and additional equipment outage planning for RSP-5, RSP-6, WSP-1, and WSP-2.

Existing wiring from the VFDs to the pump house junction chamber shall be re-used with termination strips installed in a new junction box where the existing one 2" and two 4" conduits terminate at the removed pump house.

Existing wiring from MCC-8 in Aeration Building to VFD panels and from VFD panels to removed pump house flight drive motors can be re-used, with new termination strips added in the new NEMA 4X junction box required as part of this project. New wiring is required from the new pump house area junction box to new boxes required near each motor.

Existing reversing switches for each of the associated flight drive motors shall be replaced along with new NEMA 4X stainless steel boxes, located near the drive motors as indicated.

Control wiring shall be installed and labeled by Contractor. Terminations in existing plant control system PLC cabinets will be performed by RRWRD. New wiring that is required to and from the new pump house area junction boxes to the new pump control panels, along with all terminations in the new panels, shall be performed by Contractor.

Restoration around the pump house and work area shall include filling all excavations with compacted crushed stone; Contractor shall minimize the amount of pavement removed. Disturbed paved areas shall be restored with compacted asphalt millings. Disturbed grass areas shall be restored with 6" of top soil, seeding with an IDOT Class 1 seed mix, fertilizing, and mulching.

MISCELLANEOUS:

Contractor will be issued two gate fobs for duration of the project; Fobs need to be returned prior to final payment. Contractor shall coordinate access for their employees and their subcontractors. No contractor deliveries to be received by RRWRD.

Contractor parking and staging areas are shown on the drawings. Site trailer shall be located where indicated. Contractor toilet and wash facilities shall be located within the designated areas. A source for 480-volt electric power is available in this area but requires Contractor to install a meter and pay RRWRD for power used. RRWRD's cost is approximately $0.08 per kW-Hr.

Project status meetings shall be conducted by the Contractor on-site every other week. Minutes of the meetings shall be Contractor prepared and submitted to all attendees.

This is a process related equipment replacement project necessary to continue meeting our NPDES permit; a building permit with the City of Rockford will not be obtained.

RRWRD will likely hire a testing agency to monitor quality assurance for portions of the work. Contractor is responsible for their own quality control, testing, and monitoring.

PRE-BID MEETING QUESTIONS AND ANSWERS

1. What is anticipated delivery date for District supplied equipment?

   We anticipate pumping equipment delivery the end of August 2019.

2. Are control drawings being issued?

   Please refer to the conduit and wire schedule on sheet 8 of 11 and also refer to the pump control panel drawing included with the pump information in this addendum.

3. Are drawings available for the old VFD panels in the Aeration Building that show existing wiring?

   Drawings can be requested for the existing VFD cabinets but will not be issued as part of the Contract documents and accuracy is not guaranteed.

4. Is shoring of the excavations required?

   Excavation shoring will be necessary in some of the congested site areas. Limited space is available between existing duct banks, pipes, pavement, and structures, all of which need to be protected. The existing 14" diameter pipes are approximately 12' below grade.

5. Is pavement restoration required in the previously disturbed area north of RSP-5 and RSP-6?

   Since a fire hydrant is to be removed and replaced with a yard hydrant and isolation valve in this general area, the previously disturbed roadway area north of RSP-5 and RSP-6 shall be restored with 6" compacted subbase granular material Type C and 6" of compacted aggregate surface course Type A. These materials shall be per definitions included in Addendum 2.

PRE-BID MEETING - ATTENDANCE SHEET
RAS PUMP REPLACEMENT PHASE 2
CAPITAL PROJECT NUMBER 1859

DATE: MAY 8, 2019

NAME	COMPANY	TELEPHONE	FAX	E-MAIL
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AD2-9 Sheet 8 of 11

Conduit And Wire Schedule – Typical for Each of Five (5) Pump House Areas

Conduit And Wire Schedule – Aeration Building Typical for Each of 14 VFDs

CONDUIT AND WIRE SCHEDULE - AERATION BUILDING TYPICAL FOR EACH OF 14 VFDs

CONDUIT		CONDUCTORS	DESCRIPTION	
NUMBER	SIZE		FROM	TO
	1"	3-#10 PWR	VFD PANEL -LINE REACTOR IN OLD PANEL	VFD
		3-#10 PWR	VFD TO OLD PANEL	PASS THROUGH
	1"	3-#10 PWR, 1-#10 GRD	OLD PANEL PASS THROUGH	DV/DT FILTER
		3-#10 PWR	DV/DT FILTER	OLD PANEL -CONTACTOR
	1"	6-#16 CTL, 1-#10 GND	OLD PANEL -FUSE AND RELAYS	VFD
	1"	2-3/#18, 6-#14, CTL, ANALOG	OLD PANEL -TERM. STRIP AND RELAYS	VFD
EXISTING	4"	USE EXISTING #6 PUMP POWER WIRES	OLD PANEL -CONTACTOR	NEW JB AT PUMP HOUSES

GND = GROUND ST = SEAL TIGHT P = PWR = POWER C = CTL = CONTROL

CONDUIT AND WIRE SCHEDULE - TYPICAL FOR EACH OF FIVE (5) PUMP HOUSE AREAS

CONDUIT		CONDUCTORS	DESCRIPTION	
NUMBER	SIZE		FROM	TO
	1-1/4"	6-#6 PWR, 2-#6 GRD, 2-#12 PWR, 1-#12 GRD	NEW JUNCTION BOX AT PUMP HOUSE	EAST PUMP CONTROL PANEL
	1-1/4"	3-#6 PWR, 1-#6 GRD, 2-#12 PWR, 1-#12 GRD	EAST PUMP CONTROL PANEL	WEST PUMP CONTROL PANEL
	3/4"	2-#12 PWR, 1-#12 GRD	NEW JUNCTION BOX AT GRADE LEVEL*	NEW JUNCTION BOX AT PUMP HOUSE
	3/4"	2-#12 PWR, 1-#12 GRD	NEW JUNCTION BOX AT PUMP HOUSE	EAST PUMP CONTROL PANEL
	3/4"	2-#12 PWR, 1-#12 GRD	EAST PUMP CONTROL PANEL	WEST PUMP CONTROL PANEL
	3/4"	16-#14 CTL	NEW JUNCTION BOX AT PUMP HOUSE**	EAST PUMP CONTROL PANEL
	3/4"	8-#14 CTL	EAST PUMP CONTROL PANEL	WEST PUMP CONTROL PANEL
	2"	SUB. PUMP CABLE	EAST PUMP CONTROL PANEL	WETWELL/PUMP
	2"	SUB. PUMP CABLE	WEST PUMP CONTROL PANEL	WETWELL/PUMP
	3/4"	2-#12 PWR, 1-#12 GND	NEW JUNCTION BOX AT PUMP HOUSE	RECEPTACLE BOX
	1"	6-#12 PWR, 1-#12 GND, 6#12 CTL	NEW JUNCTION BOX AT PUMP HOUSE	JUNCTION BOX NEAR FLIGHT DRIVES
	3/4"	6-#12 CTL	JUNCTION BOX NEAR FLIGHT DRIVES	SWITCH BOX NEAR FLIGHT DRIVES
	3/4" + ST	3-#12 PWR, 1-#12 GND	JUNCTION BOX NEAR FLIGHT DRIVES	LONGITUDINAL FLIGHT DRIVE MOTOR
	3/4" + ST	3-#12 PWR, 1-#12 GND	JUNCTION BOX NEAR FLIGHT DRIVES	CROSS FLIGHT DRIVE MOTOR
	1"	6-#12 PWR, 1-#12 GND, 6#12 CTL	NEW JUNCTION BOX AT PUMP HOUSE	JUNCTION BOX NEAR FLIGHT DRIVES
	3/4"	6-#12 CTL	JUNCTION BOX NEAR FLIGHT DRIVES	SWITCH BOX NEAR FLIGHT DRIVES
	3/4" ST	3-#12 PWR, 1-#12 GND	JUNCTION BOX NEAR FLIGHT DRIVES	LONGITUDINAL FLIGHT DRIVE MOTOR
	3/4" ST	3-#12 PWR, 1-#12 GND	JUNCTION BOX NEAR FLIGHT DRIVES	CROSS FLIGHT DRIVE MOTOR

NOTES: PROVIDE A PULL STRING ALONG WITH THE WIRES IN EACH CONDUIT.

GND = GROUND ST = SEAL TIGHT P = PWR = POWER C = CTL = CONTROL

* CONNECT NEW POWER WIRES TO EXISTING #10 WIRES, FROM 4" CONDUIT.

** USE EXISTING CONTROL WIRES BETWEEN JUNCTION BOX AND VFD PANEL (OLD MOTOR THERMAL SWITCH, OLD VIBRATION SWITCH, ETC) FOR NEW PUMP MOTOR THERMAL SWITCH TO VFD AND FOR NEW PUMP SEAL LEAK AND SWITCH POSITIONS TO VFD BOX THEN TO PLANT CONTROL SYSTEM.

Insert 14 pages of RRWRD pump supply related information.

Bill of Materials
RAS Pumping Equipment
Rock River WRD

11- ABS XFP201G-CB2.2-PE120/8EX-8" pump with a 16 HP motor, 460V, 3 phase, 880 RPM capable of delivering 2000 GPM AT 16' TDH. The pump comes complete with 49' of power cable. **Pump has hardened hydraulics**. The pump has an 8" discharge. Hydrostatic Test, Non-Witnessed Pump Performance Test at full speed duty point and Certified Balance report

10- Guide rail base assemblies w/8" integral elbow with anchor bolts for bases

10- 8" x 10" eccentric reducers

10- Stainless Steel Upper guide brackets

10- Stainless Steel Kellum grips

10- 25' lengths of Stainless Steel lifting chain

2- Repair kits to include all bearings, seals and O-Rings

1- Gallon of touch up paint

10- 21' sections of 2" 316 SS guide pipe (domestic)

10 – 36" x 41" USF 300# aluminum access hatch for wet well

10- Simplex Control panels

8- Man-day for startup assistance

1- Lot of freight to jobsite

SULZER

Submersible Sewage Pump Type ABS XFP

XFP 201G-CB2 | 8", 8 Pole, 3-Phase, 60 Hz, PE3

Submersible Motor Specifications, PE3 Frame

Motor Design		NEMA design B, squirrel cage induction
Motor Type		Fully enclosed Premium Efficiency submersible, IP68 protection rating
Motor Efficiency Standard and Rating		IEC 60034-30 [2], IE3 rating
Motor Efficiency Test Protocol		IEC 60034-2-1
Insulation Material		Class H, 180°C (356°F), copper windings
Motor Filling Medium		Air
Temperature Rise		Class A
Maximum Fluid Temperature		40°C (104°F) continuous, 50°C (122°F) intermittent
Cooling System	OPT	Closed-loop, non-toxic glycol/water mixture (⅓ / ⅔)
Motor Protection	Thermal	Normally closed bimetallic switch in each phase, connected in series, 140°C (284°F) +/- 5°C (41°F) opening temperature
	Leakage	Moisture detection probe in seal sensing chamber (for use with appropriate relay)
Sensing Chamber Filling Medium		Air
Bearing Type	Upper	Single row deep groove ball bearing, permanently lubricated
	Lower	Double row angular contact ball bearing, permanently lubricated
Motor Starter Types		Suitable for use with direct-on-line (DOL), electronic soft starters, and PWM type Variable Frequency Drives [1]
Maximum Starts per Hour		15, evenly spaced
Inverter Duty Rating		Motors meet NEMA MG1, part 31 requirements
Maximum Submergence		20 meters (65 feet)
Available Voltages		208, 230, 460, 600 (consult factory for other voltages)
Voltage Tolerance from Rated		+/-10%
Agency Approvals		Factory Mutual, CSA
Explosion Proof Rating		NEC 500 Class 1, Division 1, Group C & D, Class T3C max surface temp

The picture above may differ from the actual product
For illustrative purposes only.

[1] Output filters may be required on VFDs. See document **DS-E00-001** for details.
[2] Eight pole motors are not covered by the 1.0, 2008-10 edition of the IEC standard, however the PE series of motors are constructed and tested in accordance with the IEC 60034-30 standard.

Motor Ratings, PE3 Frame

Motor Model	Input Power (P1)	Rated Power Output (P2)	Nominal RPM	Rated Voltage	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	NEMA Service Factor	Motor Efficiency at % Load			Power Factor at % Load		
									100	75	50	100	75	50
PE 120/8	13.5 kW	12 kW 16 HP	875	208 230 460 600	52.3 47.3 23.7 18.1	274 247 124 95	G	1.3	89.2	89.7	88.2	.714	.656	.542

DS-E01-039 REV: 3 DATE: 10/16 Specifications Subject to Change Without Notice

FM Approvals CSA
Scan For More Info

Cable Data, PE3 Frame

	Motor	Motor Voltage	Cable Qty	Cable Type [3]	Cable Nominal Outside Diameter +/- .5mm (.02")	
					Power	Ground
Power Cable	PE 120/8	208 volt	1	G-GC 6-3	26.7mm (1.05")	Integrated w/ Power
		~~230 volt~~	~~1~~	~~G-GC 6-3~~	~~26.7mm (1.05")~~	~~Integrated w/ Power~~
		460 volt	1	SOOW 8/4+16/3	24.4mm (0.96")	Integrated w/ Power
		~~600 volt~~	~~1~~	~~SOOW 10/7~~	~~20.7mm (0.82")~~	~~Integrated w/ Power~~
	Motor Monitoring Type [4]		**Cable Qty**	**Cable Type**	**Cable Nominal Outside Diameter +/- .5mm (.02")**	
Control Cable	Std monitoring w/ SOOW Power Cable		N/A	Integrated w/ Power	Integrated w/ Power	
	~~Std monitoring w/ G-GC Power Cable~~		~~1~~	~~SOOW 16/4~~	~~10.6mm (0.42")~~	
Cable Length	Standard: 15m (49 feet)		Optional: 20m (65 feet), 30m (98 feet); Consult Factory for longer lengths			

[3] Type SOOW power cables have integrated control wires. [4] See motor protection on page 1.

Pump Data

Discharge Size	8" flanged, compatible with 8" class 125 ANSI flanges										
Suction Size (Wet-Pit / Dry-Pit)	8" flanged / 8" flanged, compatible with 8" class 125 ANSI flanges, threaded for 8x3/4-10 UNC screws, 33mm (1.3") deep										
Volute Pressure Rating	10 bar (145 psi)										
Impeller Type	Semi-Open, 2-vane, Contrablock, w/ Seal Protection System										
Impeller Code	.2	.1									
Impeller Diameter, mm (in.)	300 (11.8)	330 (13.0)									
Solids Passage Size, mm (in.)	125 (4.92)	125 (4.92)									
Min. Recommended Flow, GPM [5]	825	925									

[5] Recommend minimum continuous flow. Consult factory for applications below this flow rate.

Materials of Construction

	Standard	Optional
Power/Control Cable Jacket	Chlorinated Polyethylene (CPE)	
Lifting Hoop	Stainless Steel 1.4401 (AISI 316)	
Cable Connection Chamber	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Motor Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Cooling Jacket	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Intermediate Housing	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Seal Plate/Cooling Chamber	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
Pump and Motor Shaft	Stainless Steel 1.4021 (AISI 420)	
Impeller	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [6]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Wear Parts Bottom/Wear Plate	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B) [6]	Duplex Stainless Steel 1.4470 (ASTM A890, CD3MN Grade 4A)
Volute	Cast Iron EN-GJL-250 (ASTM A-48, Class 35B)	
External Hardware	Stainless Steel 1.4401 (AISI 316)	
O-Rings and Cable Glands	Nitrile (Buna-N)	Viton®
Mechanical Seals Lower	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	Silicon Carbide / Silicon Carbide, Viton®, 316 SS
Mechanical Seals Upper	Silicon Carbide / Silicon Carbide, Nitrile, 316 SS	
Coating/Protection	Two-part epoxy, blue, 120µm (4.7 mil) DFT	Two-part epoxy, blue, 400µm (15.7 mil); Wet-end liquid ceramic coating, 500µm (19.7 mil); Zinc Anodes

[6] Hardening of bottom edge of impeller vane and wear plate surface available. Consult factory for details.

General Data (Standard Materials of Construction & Cable Length)

	PE 120/8
Overall Height	1349mm (53.1")
≈ Pump Weight (Non-Cooled)	420 kg (926 lb)

DS-E01-039 REV: 3 DATE: 10/16 Specifications Subject to Change Without Notice

SULZER	Massblatt XFP 201G-CB2 Nassinstallation Dimension sheet WET-WELL Installation Dimensioni Installazione sommersa Hoja de dimensiones instalación sumergida Plan d'encombrement Installation noyee	No: AN-M.22.604 - 03 Drawn: 05/08/10 D.Whelan Issue Date: 09/05/2013 Änderungen vorbehalten Technical changes reserved Con riserva di modifiche Con reserva de modificaciones Sous réserve de modification

50 Hz

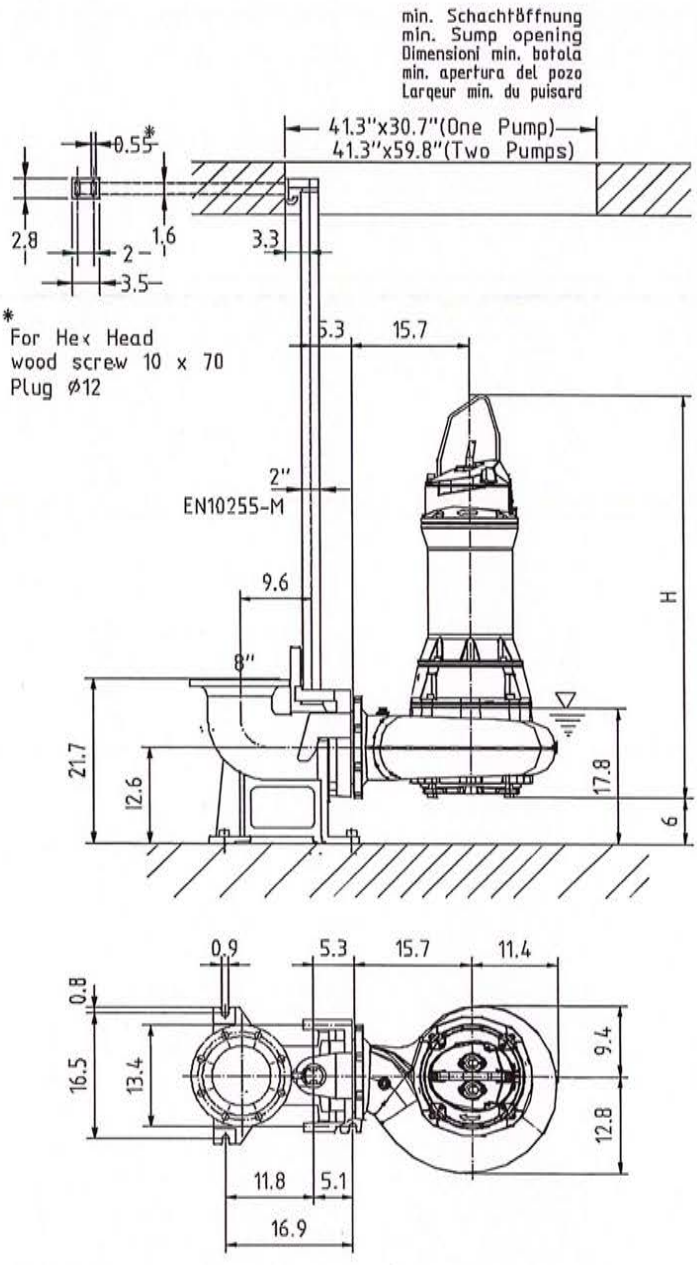
Typ Type Tipo	Gewicht Weight Poids N.C.J. (lbs)	Gewicht Weight Poids W.C.J. (lbs)	Height H (")
PE 90/6	891	1001	53.1
PE 110/6	891	1001	53.1
PE 140/6	935	1023	53.1

60 Hz

Typ Type Tipo	Gewicht Weight Poids N.C.J. (lbs)	Gewicht Weight Poids W.C.J. (lbs)	Height H (")
PE 130/6	904	1001	53.1
PE 160/6	935	1023	53.1
PE 200/6	1058	1156	54.6
PE 120/8	926	1023	53.1

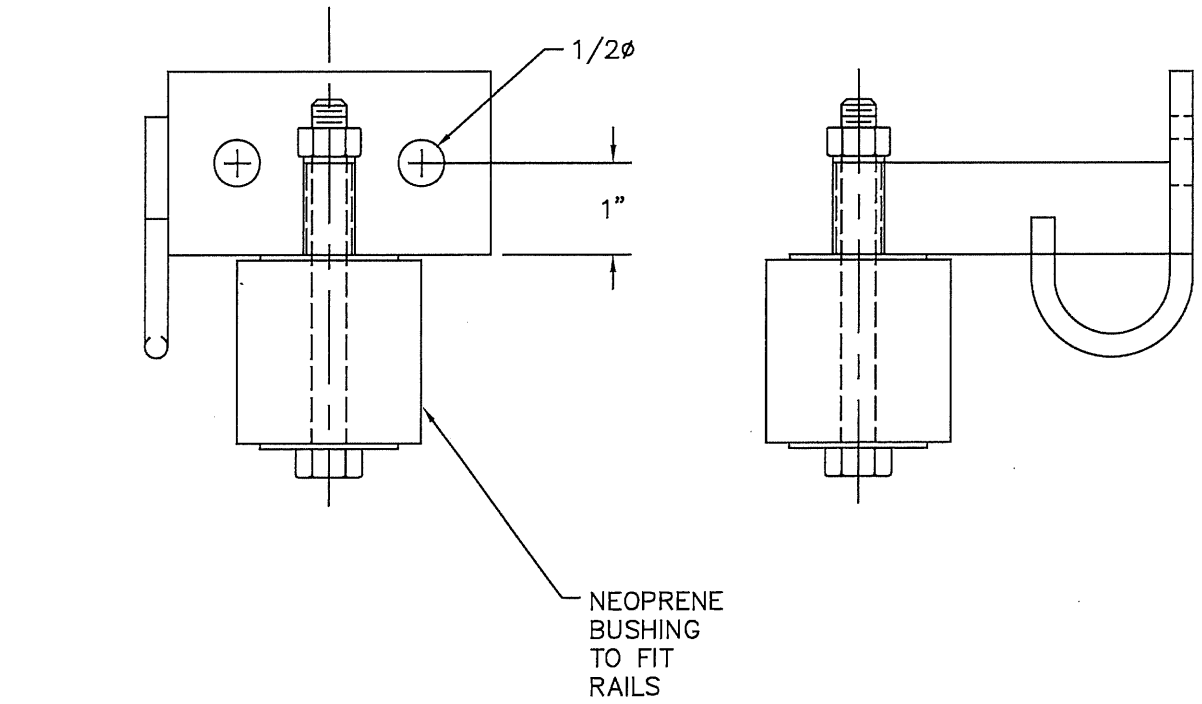
N.C.J. = No Cooling Jacket
W.C.J. = With Cooling Jacket

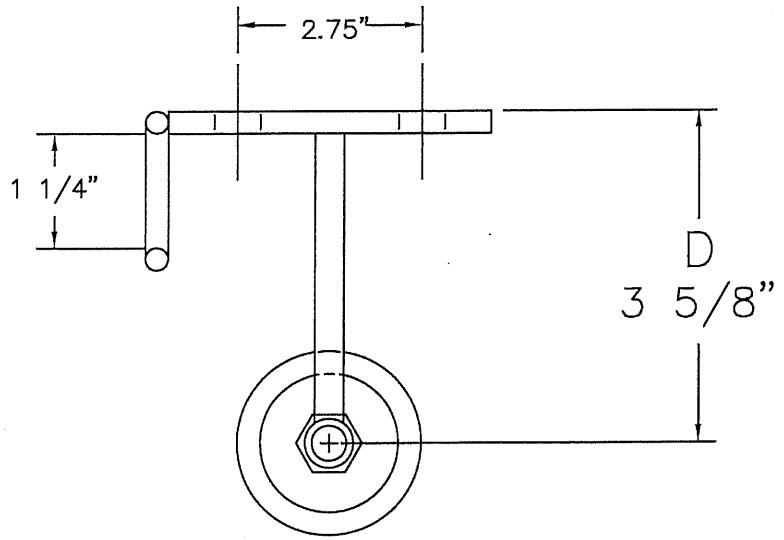
U.S.



Gewicht: Beinhaltet Pumpe,Halterung(Fussstuck) und Kabel (50 Hz = 10 m; 60 Hz = 15 m)
Weight: includes pump, slider bracket and cable (50 Hz = 10 m; 60 Hz = 15 m)
Peso: include pompa, pezzo intermedio a cavo (50 Hz = 10 m; 60 Hz = 15 m)
Peso: Incluye bomba, soporte deslizante y cable (50 Hz = 10 m; 60 Hz = 15 m)
Poids : incluant la pompe, le coulisseau et le cable (50 Hz = 10 m; 60 Hz = 15 m)

Guss-Allgemeintoleranzen nach DIN1680 - GTB16
General tolerances for castings in acc. to DIN1680-GTB16
Tolleranze generali delle fusioni secondo DIN1680-GTB16
Tolerancias generales para la fundicion seg. de DIN1680-GTB16
Tolérance geñefale de la fonderie selon DIN1680-GTB16





P/N 41686001

ABS PUMPS, INC. MERIDEN, CT		
SCALE NONE	2" SINGLE RAIL	STANDARD
DATE 3/3/93	UPPER GUIDE BRACKET ABS	APPROVED BY
REVISED 7/6/01	MATERIAL: STAINLESS STEEL	DWG. NO. 41686001

Standard Duty Support Grips

Single Eye, Single Weave, Tin-Coated Bronze and Stainless Steel.

IMPORTANT:
Read all breaking strength, safety and technical data relating to this product.

Refer to pages X-33 and X-34.

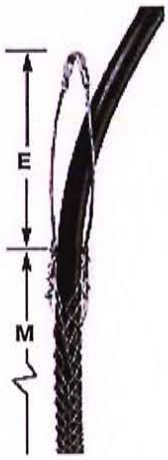
Single Eye, Closed Mesh

For permanent support when cable end is available to be installed through grip.

Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. Tin-Coated Bronze	Approx. Breaking Strength Lbs. Stainless Steel	Working Load Lbs. Tin-Coated Bronze	Working Load Lbs. Stainless Steel	E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
.50"-.62" (1.27-1.57)	530	1,370	53	137	7" (17.78)	10" (25.40)	**02201013**	**02401013**
.63"-.74" (1.60-1.88)	790	2,060	79	206	8" (20.32)	10" (25.40)	**02201014**	**02401014**
.75"-.99" (1.90-2.51)	1,020	2,060	102	206	8" (20.32)	13" (33.02)	**02201015**	**02401015**
1.00"-1.24" (2.54-3.15)	1,610	2,678	161	268	9" (22.86)	14" (35.56)	**02201017**	**02401017**
1.25"-1.49" (3.17-3.78)	1,610	4,490	161	449	10" (25.40)	15" (38.10)	**02201018**	**02401018**
1.50"-1.74" (3.81-4.42)	1,610	4,492	161	449	12" (30.48)	17" (43.18)	**02201019**	**02401019**
1.75"-1.99" (4.44-5.05)	2,150	5,000	215	500	14" (35.56)	19" (48.26)	**02201020**	**02401020**
2.00"-2.49" (5.08-6.32)	3,260	8,940	326	894	16" (40.64)	21" (53.34)	**02201021**	**02401021**
2.50"-2.99" (6.35-7.59)	3,260	8,947	326	895	18" (45.72)	23" (58.42)	**02201022**	**02401022**
3.00"-3.49" (7.62-8.86)	4,900	13,420	490	1,342	21" (53.34)	25" (63.50)	**02201023**	**02401023**
3.50"-3.99" (8.89-10.13)	4,900	—	490	—	24" (60.96)	27" (68.58)	**02201024**	—

Single Eye, Split Mesh, Lace Closing

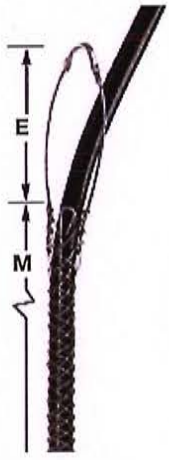
For permanent support when cable end is not available.



Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. Tin-Coated Bronze	Approx. Breaking Strength Lbs. Stainless Steel	Working Load Lbs. Tin-Coated Bronze	Working Load Lbs. Stainless Steel	E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
.50"-.62" (1.27-1.57)	530	1,370	53	137	7" (17.78)	10" (25.40)	**02202013**	**02402013**
.63"-.74" (1.60-1.88)	790	2,066	79	207	8" (20.32)	10" (25.40)	**02202014**	**02402014**
.75"-.99" (1.90-2.51)	1,020	2,060	102	206	8" (20.32)	13" (33.02)	**02202015**	**02402015**
1.00"-1.24" (2.54-3.15)	1,610	2,670	161	267	9" (22.86)	14" (35.56)	**02202017**	**02402017**
1.25"-1.49" (3.17-3.78)	1,610	4,490	161	449	10" (25.40)	15" (38.10)	**02202018**	**02402018**
1.50"-1.74" (3.81-4.42)	1,610	4,490	161	449	12" (30.48)	17" (43.18)	**02202019**	**02402019**
1.75"-1.99" (4.44-5.05)	2,150	4,375	215	437	14" (35.56)	19" (48.26)	**02202020**	**02402020**
2.00"-2.49" (5.08-6.32)	3,260	8,947	326	895	16" (40.64)	21" (53.34)	**02202021**	**02402021**
2.50"-2.99" (6.35-7.59)	3,260	8,940	326	894	18" (45.72)	23" (58.42)	**02202022**	**02402022**
3.00"-3.49" (7.62-8.86)	4,900	13,420	490	1,342	21" (53.34)	25" (63.50)	**02202023**	**02402023**
3.50"-3.99" (8.89-10.13)	4,900	13,420	490	1,342	24" (60.96)	27" (68.58)	**02202024**	**02402024**

Single Eye, Split Mesh, Rod Closing

For support when cable end is not available.

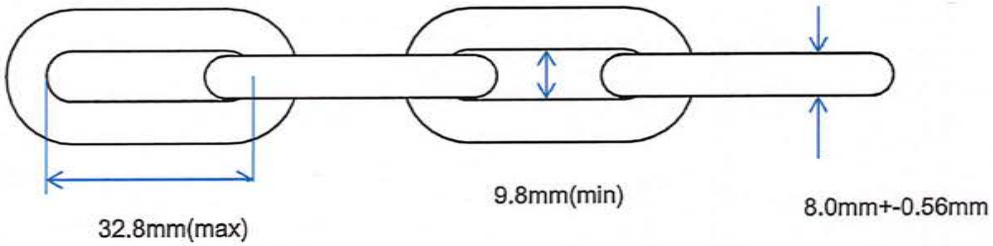


Cable Diameter Range Inches (cm)	Approx. Breaking Strength Lbs. Tin-Coated Bronze	Approx. Breaking Strength Lbs. Stainless Steel	Working Load Lbs. Tin-Coated Bronze	Working Load Lbs. Stainless Steel	E Inches (cm)	M Inches (cm)	Tin-Coated Bronze	Stainless Steel
.50"-.62" (1.27-1.57)	790	1,050	79	105	7" (17.78)	8.5" (21.59)	**02203013**	**02403013**
.63"-.74" (1.60-1.88)	790	2,050	79	205	8" (20.32)	8.5" (21.59)	**02203014**	**02403014**
.75"-.99" (1.90-2.51)	1,020	2,050	102	205	8" (20.32)	10.5" (26.67)	**02203015**	**02403015**
1.00"-1.24" (2.54-3.15)	1,610	2,650	161	265	9" (22.86)	12.5" (31.75)	**02203017**	**02403017**
1.25"-1.49" (3.17-3.78)	1,610	4,500	161	450	10" (25.40)	14.5" (36.83)	**02203018**	**02403018**
1.50"-1.74" (3.81-4.42)	1,610	4,500	161	450	12" (30.48)	15.5" (39.37)	**02203019**	**02403019**
1.75"-1.99" (4.44-5.05)	2,150	6,000	215	600	14" (35.56)	16.5" (41.91)	**02203020**	**02403020**
2.00"-2.49" (5.08-6.32)	3,260	8,950	326	895	16" (40.64)	19.5" (49.53)	**02203021**	**02403021**
2.50"-2.99" (6.35-7.59)	3,260	7,750	326	775	18" (45.72)	21.5" (54.61)	**02203022**	**02403022**
3.00"-3.49" (7.62-8.86)	5,750	8,500	575	850	21" (53.34)	23.5" (59.69)	**02203023**	**02403023**
3.50"-3.99" (8.89-10.13)	5,750	—	575	—	24" (60.96)	25.5" (64.77)	**02203024**	—

Note: E-Eye length. M-Mesh length at nominal diameter.

Dimensions in Inches (mm)

Trade Size		Material Diameter		Working Load Limit (Max.)		Proof Test ** (Min.)		Minimum Breaking Force **		Inside Length (Max.)		Inside Width (Min.)	
in	mm	in	mm	lbs	kg	lbs	kN	lbs	kN	in	mm	in	mm
5/16	8	0.315	8.0	2,400	1,090	4,800	21.4	9,600	42.8	1.29	32.8	0.38	9.8



Working Load Limit(Max): 2400lbs (1090kg)

Proof Test(Min): 4800lbs (21.4kN)

STAINLESS STEEL CHAIN 5/16”

Stainless Steel Quick Links

Maillon Rapide MADE IN FRANCE

Quick Links are not to be used for overhead lifting. DO NOT OVERLOAD. Stay within the Working Load Limit (WLL).

No. 7350S Quick Links
Stainless Steel

Item No.	7350S-1 3/8	7350S-1 9/16	7350S-1 7/8	7350S-2 1/4	7350S-2 15/16	7350S-3 1/8	7350S-4 1/8
Lenghth Overall	1 3/8	1 9/16	1 7/8	2 1/4	2 15/16	3 1/8	4 1/8
Weight per 100	2	2 1/2	5	9	19	25	57
Working Load Lt.	100	154	374	552	1,410	1,590	2,560
Trade Size	1/8	5/32	3/16	1/4	5/16	3/8	1/2
Jaw Opening	3/16	7/32	1/4	9/32	3/8	7/16	19/32

No. 7350ST Quick Links
Stainless Steel

Item No.	7350ST-316	7350ST-317	7350ST-318	7350ST-319	7350ST-320	7350ST-321	7350ST-322
Lenghth Overall	1 3/8	1 9/16	1 7/8	2 1/4	2 15/16	3 1/8	4 1/8
Weight per 100	1 3/4	2 1/2	4 1/2	8	17	23	51
Working Load Lt.	132	176	440	660	1,540	1,760	2,860
Trade Size	1/8	5/32	3/16	1/4	5/16	3/8	1/2
Jaw Opening	3/16	7/32	1/4	9/32	3/8	7/16	19/32

No. 7351S Wide Jaw Quick Links
Stainless Steel

Item No.	7351S-1 13/16	7351S-2 7/16	7351S-2 3/4	7351S-3 7/16	7351S-3 3/4	7351S-4 7/8	7351S-5 9/16	7351S-6 5/16
Lenghth Overall	1 13/16	2 7/16	2 3/4	3 7/16	3 3/4	4 7/8	5 9/16	6 5/16
Weight per 100	2 1/2	6	10	22	29	65	101	153
Working Load Lt.	440	880	1,280	2,160	2,855	4,850	6,835	8,820
Trade Size	1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8
Jaw Opening	3/8	1/2	9/16	11/16	3/4	15/16	1 1/16	1 1/8

No. 7360S Delta Shaped Quick links
Stainless Steel

Item No.	7360S-1 1/4	7360S-1 9/16	7360S-1 7/8	7360S-2 3/16	7360S-2 3/8	7360S-2 15/16	7360S-3 3/8	7360S-3 11/16
Lenghth Overall	1 1/4	1 9/16	1 7/8	2 3/16	2 3/8	2 15/16	3 3/8	3 11/16
Weight per 100	2 1/4	5 1/2	9 1/2	21	27	62	98	149
Working Load Lt.	330	715	990	1,695	2.160	3,860	5,400	6,945
Height Overall	1 7/16	1 7/8	2 3/16	2 7/8	3 1/8	4 1/8	4 13/16	5 7/16
Trade Size	1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8
Jaw Opening	3/16	1/4	9/32	13/32	7/16	19/32	21/32	3/4

STAINLESS STEEL WELDED PIPE

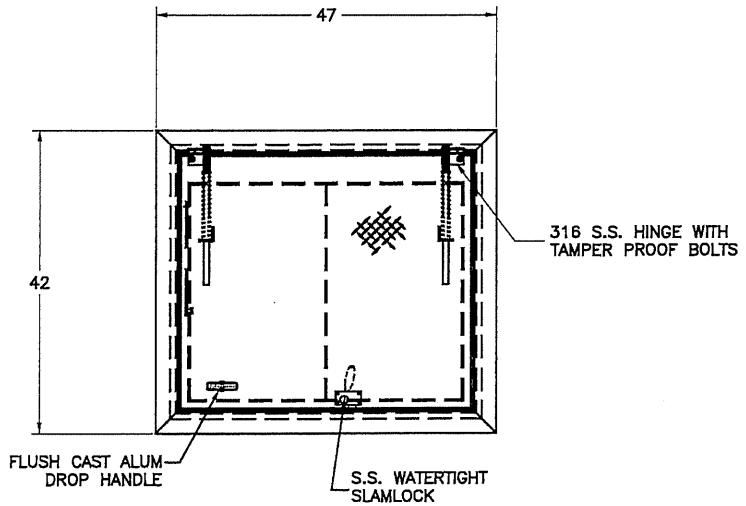
TYPE 316 SCHEDULES 40S, 80S ALLOWABLE WORKING PRESSURE

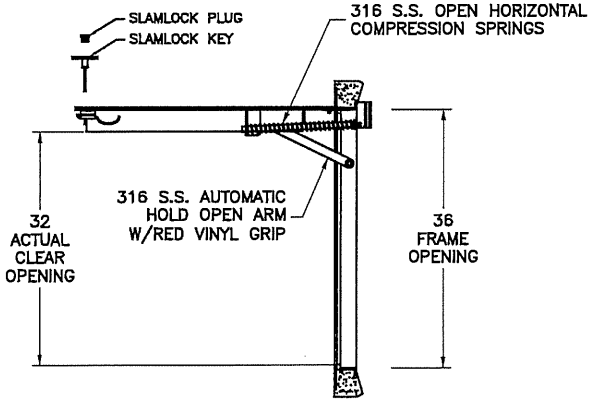
ALLOWABLE WORKING PRESSURES
FOR A-312 WELDED PIPE

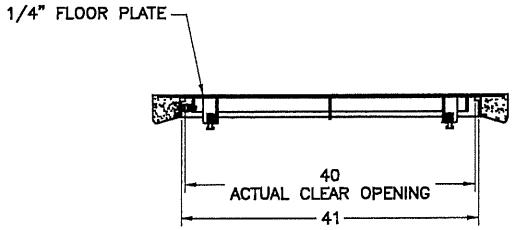
TYPE 316
Schedules 40S, 80S

TEMPERATURE °F.			- 425 to 300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
MAX. STRESS			20000	19300	17900	17000	16700	16300	16100	15900	15700	15500	15400	15300	14500	12400	9800	7400	5500	4100	3100	2300	1700	1300
NOM. PIPE SIZE	SCH. NO.	NOM. WALL.	ALLOWABLE WORKING PRESSURES PSIG																					
⅛	40S	.109	3633	3506	3252	3088	3034	2961	2925	2889	2652	2816	2798	2780	2634	2253	1780	1344	999	745	563	418	309	238
	80S	.147	4900	4729	4386	4165	4092	3994	3945	3896	3847	3798	3773	3749	3553	3038	2401	1813	1348	1005	760	564	417	319
¼	40S	.113	3013	2908	2697	2561	2516	2456	2426	2396	2365	2335	2320	2305	2185	1868	1477	1115	829	618	467	347	256	196
	80S	.154	4107	3963	3675	3491	3429	3347	3308	3265	3224	3183	3162	3142	2977	2546	2012	1519	1129	842	637	472	349	267
1	40S	.133	2832	2733	2535	2407	2365	2308	2280	2251	2223	2195	2161	2166	2053	1756	1368	1048	779	581	439	326	241	184
	80S	.179	3811	3678	3411	3240	3183	3106	3068	3030	2992	2954	2935	2916	2763	2383	1888	1410	1048	781	591	438	324	248
1¼	40S	.140	2361	2279	2113	2007	1972	1925	1901	1877	1854	1830	1818	1807	1712	1464	1157	874	649	484	366	272	201	153
	80S	.191	3222	3109	2883	2738	2690	2628	2593	2561	2529	2497	2481	2465	2336	1997	1579	1192	886	660	499	370	274	209
1½	40S	.145	2137	2062	1912	1816	1784	1742	1720	1699	1677	1656	1645	1635	1549	1325	1047	791	588	438	331	246	182	139
	80S	.200	2947	2844	2638	2505	2461	2402	2373	2343	2314	2284	2269	2255	2137	1827	1444	1091	811	604	457	339	251	192
2	40S	.154	1816	1752	1625	1543	1516	1480	1462	1443	1425	1407	1398	1389	1316	1126	890	672	499	372	281	209	154	118
	80S	.218	2570	2480	2300	2185	2146	2095	2069	2043	2018	1992	1979	1966	1863	1593	1259	951	707	527	398	296	218	167
2½	40S	.203	1977	1908	1769	1680	1651	1611	1592	1572	1552	1532	1522	1512	1433	1226	969	732	544	405	306	227	168	129
	80S	.276	2688	2594	2406	2285	2244	2191	2164	2137	2110	2083	2070	2056	1949	1667	1317	995	739	551	417	309	228	175
3	40S	.216	1728	1688	1547	1469	1443	1408	1391	1374	1356	1339	1331	1322	1253	1071	847	639	475	354	266	199	147	112
	80S	.300	2400	2316	2148	2040	2004	1956	1932	1908	1884	1860	1848	1836	1740	1488	1176	888	660	492	372	276	204	156
3½	40S	.226	1582	1527	1416	1345	1321	1289	1274	1258	1242	1226	1218	1210	1147	981	775	585	435	324	245	182	134	103
	80S	.318	2226	2146	1992	1892	1859	1814	1792	1770	1747	1725	1714	1703	1614	1360	1091	824	612	456	345	256	189	145
4	40S	.237	1475	1423	1320	1253	1231	1202	1187	1172	1158	1143	1135	1128	1069	914	723	546	406	302	229	170	125	96
	80S	.337	2097	2023	1877	1782	1751	1709	1688	1667	1646	1625	1615	1604	1520	1300	1027	776	577	430	325	241	178	136
5	40S	.258	1299	1253	1162	1104	1084	1058	1045	1032	1019	1006	1000	993	941	805	636	480	357	266	201	149	110	84
	80S	.375	1887	1821	1689	1604	1576	1538	1519	1501	1482	1463	1453	1444	1368	1170	925	698	519	387	293	217	160	123
6	40S	.280	1183	1142	1059	1006	988	964	953	941	929	917	911	905	858	734	580	438	325	243	183	138	101	77
	80S	.432	1826	1762	1634	1552	1525	1488	1470	1452	1433	1415	1406	1397	1324	1132	895	676	502	374	283	210	155	119
8	40S	.322	1045	1009	936	889	873	852	841	831	821	810	805	800	758	648	512	387	287	214	162	120	89	68
	80S	.500	1623	1566	1453	1380	1355	1323	1307	1290	1274	1258	1250	1242	1177	1006	795	601	446	333	252	187	138	106
10	40S	.365	951	917	851	808	794	775	765	758	746	737	732	727	689	589	466	352	261	195	147	109	81	62
	80S	.500	1302	1257	1166	1107	1087	1061	1048	1035	1022	1009	1003	996	944	807	638	482	358	287	202	150	111	85
12	40S	.375	824	795	737	700	688	671	663	655	646	638	634	630	597	511	404	305	226	169	128	95	70	54
	80S	.500	1098	1060	983	933	917	895	884	873	862	851	845	840	796	681	538	406	302	225	170	126	93	71
14	40S	.375	750	724	671	638	626	611	604	596	589	581	578	574	544	465	366	278	206	154	116	86	64	49
	80S	.500	1000	965	895	850	835	815	805	795	785	775	770	765	725	620	490	370	275	205	155	115	85	65
16	40S	.375	656	633	587	558	548	535	528	522	515	509	505	502	476	407	322	243	180	135	102	75	56	43
	80S	.500	875	844	783	744	731	713	704	696	687	678	674	669	634	543	429	324	241	179	136	101	74	57
18	40S	.375	583	563	522	496	487	475	470	464	458	452	449	446	423	362	266	216	160	120	90	67	50	38
	80S	.500	778	751	696	661	649	634	626	618	611	603	599	595	584	482	381	288	214	159	121	89	68	51
20	40S	.375	525	507	470	446	438	428	423	417	412	407	404	402	381	326	257	194	144	108	81	60	45	34
	80S	.500	700	676	627	595	585	571	564	557	550	543	539	536	508	434	343	259	193	144	109	81	60	46
24	40S	.375	438	422	392	372	365	357	352	348	343	339	337	335	317	271	214	162	120	90	68	50	37	28
	80S	.500	583	563	522	496	487	475	470	464	458	452	449	446	423	362	286	216	160	120	90	67	50	38

The Allowable Stress Values used are as shown in Appendix "A" of ANSI B31.3-1993 for welded pipe to ASTM A-312 having a weld joint factor of .80.
The Stress Values at all temperatures above 1000F apply only when the carbon is 0.04% or higher.

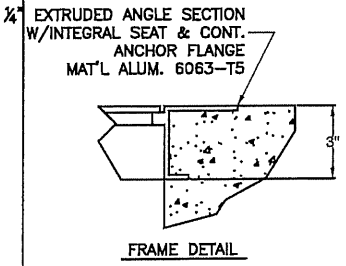






SELECTED FEATURES
1. OPEN HORIZONTAL SPRINGS
2. SLAMLOCK
3. BITUMINOUS COATING

NOTES
1. MATERIAL: ALUMINUM
2. FINISH: MILL
3. LOADING: 300 PSF
4. 316 SS NUTS & BOLTS
5. AREA OF FRAME IN CONTACT WITH CONCRETE TO BE PAINTED WITH BITUMINOUS COATING
6. APPROX HATCH WT: 93.25 LBS



FRAME DETAIL

INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M

BREAK ALL SHARP CORNERS & EDGES TO 0.01

TOLERANCES UNLESS OTHERWISE SPECIFIED
FRACTIONAL
INCHES = ± 1/16
1/16 = ± 1/32
1/32 = ± 1/64

U.S.F. FABRICATION INC.
HIALEAH, FL

HATCH APS 300 36 X 41 ALUM

DWN. BY:	SCALE:	SHEET:	DATE:
BOB	1:24	1 OF 1	04/22/19
CHK. BY:	DWG #:	SHEET SIZE:	REV:
BOB	1000125254	A	0

NOTE:
AS AN AUTOMATED DRAWING, THE DESIGN HAS NOT BEEN REVIEWED BY USFF ENGINEERING AND IS THEREFORE TO BE USED FOR REFERENCE ONLY. USFF RESERVES THE RIGHT TO ADJUST DIMENSIONS TO INSURE ADHERENCE TO CUSTOMER REQUIREMENTS AND PROPER OPERATION OF THE PRODUCT.

STACON

ENGINEERING SUBMITTALS

TYPICAL OF (10) TEN PANELS

FILE

JOB NAME-	ROCK RIVER WRD RAS
QUOTE NO -	48675AA Rev:
DATE-	05/02/2019
CUSTOMER	FLOW-TECHNICS, INC

ELECTRICAL SERVICE

[X] 480V THREE PHASE (3 HOT + GRD)
[ ] 240V HI LEG DELTA THREE PHASE (3 HOT + N + GRD)
[ ] 208Y/120V THREE PHASE (3 HOT + N + GRD)
[ ] 120/240V SINGLE PHASE (2 HOT + N + GRD)
[ ] 120V (HOT + N + GRD)

(1) SURGE PROTECTION DEVICES AND POWER TRAIN REQUIREMENTS ARE BASED ON SERVICE SELECTION AS STATED ABOVE. UNLESS CONFIRMED OTHERWISE BY THE CUSTOMER ANY MISSING, INCORRECT OR DAMAGED COMPONENTS DUE TO A DIFFERENT SERVICE CONFIGURATION ARE NOT THE PANEL MANUFACTURER'S RESPONSIBILITY.

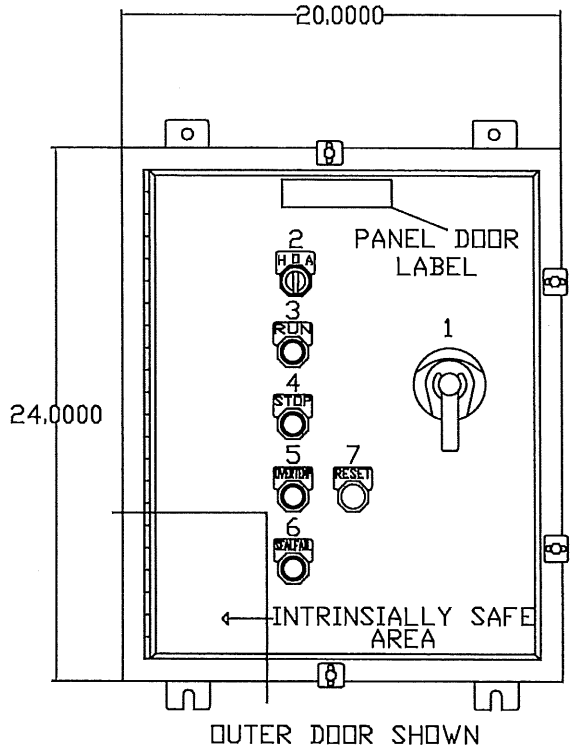
CONTROL SYSTEM

TYPE OF CONTROL PANEL -	SIMPLEX CONTROL PANEL
SENSING DEVICE -	REMOTE
NUMBER OF MOTORS -	1
MOTOR H.P.-	16.1HP (FLA 23.6A)
ENCLOSURE:	
MATERIAL -	316 STAINLESS STEEL
NEMA RATING -	4X
SIZE -	24' X 20" X 10"
MODIFICATIONS -	NONE
MOUNTING STYLE -	WALL MOUNT

PRODUCTION REQUIREMENT

[ ] APPROVAL WAIVED
[ ] APPROVED AS SUBMITTED
[ ] DRAWINGS APPROVED AS NOTED, "PROVIDE CLEAR AND PRECISE COMMENTS"

APPROVAL SIGNATURE:_____



OUTER DOOR SHOWN

NOTE: LABEL SHOWN (" PUMP RSP-1" TO 10)

1 - MB MOTOR BREAKER
2 - HOA HAND-OFF-AUTO SWITCH
3 - RL1 PUMP RUN LIGHT
4 - PL1 PUMP STOP LIGHT
5 - PL2 PUMP OVERTEMP LIGHT
6 - PL3 PUMP MOISTURE LIGHT
7 - PMRR PUMP MONITOR RELAY RESET

ROCK RIVER WRD RAS			
QUOTE NO.	DATE	DRAWN BY	REVISION
48675AA	05/02/2019	RMJ	

STACON
2525 SOUTH OBT
APOPKA, FLORIDA
32703

STACON

TYPICAL OF (10) TEN PANELS

BILL OF MATERIAL | BY: RMJ

QUOTE NO.	**48675AA**	**PROFILE:**	**Date: 05/02/2019**	**Rev:**
JOB NAME	**ROCK RIVER WRD RAS**		**SN:**	
CUSTOMER	**FLOW-TECHNICS, INC**		**PO: 6262**	

QTY	LEGEND	DESCRIPTION	MFG.	PART #	Check Off
1		ENCLOSURE (4X 316SS) 24x20x10	HOFFMAN	A24H2010SS6LP	[ ]
1		SUB PANEL	HOFFMAN	A24P20	[ ]
1	GS	ENCLOSURE DOOR GROUNDING STRAP	ERICO	556610	[ ]
1	PDB	POWER DIST. BLOCK 175 A. (1-6) Line [2/0 to 14] – Load [4 to 14]	BUSSMANN	16021-3	[ ]
1	N	ISOLATED NEUTRAL BLOCK 175 A. (1-4) Line [2/0 to 14] – Load [4 to 14]	BUSSMANN	16220-1	[ ]
1	MB	MOTOR BREAKER	SQD	HDL36040	[ ]
1	OP M	OPERATOR MECHANISM *5-1/2" to 21-3/8 MOUNTING DEPTH* (H or J – FRAME) (4X HANDLE)	SQD	9421LZL250C43	[ ]
1	CCB	CONTROL BREAKER	SQD	QOU115	[ ]
1	GB	GROUND BUSS (#4-14)	SQD	PK7GTA	[ ]
16	TS	TERMINAL STRIP	SQD	9080-GR6	[ ]
1	F1	FUSE	BUSSMANN	KTK-R-5 / 600V	[ ]
1		FUSE HOLDER (1 POLE) [CLASS CC]	BUSSMANN	BCM603-1PQ	[ ]
1	HOA	HAND-OFF-AUTO SELECTOR	SQD	9001SKS43B	[ ]
1		(NO, NC) CONTACT	SQD	9001-KA1	[ ]
1		(NO) CONTACT	SQD	9001-KA2	[ ]
1 1	P/B	PUSH BUTTON (NC) CONTACT	SQD SQD	9001-SKR1U 9001-KA3	[ ] [ ]
1	RL1	RUN LIGHT (RED) (120VAC)	SQD	9001SKP38LRR9	[ ]
1	PL1	PILOT LIGHT (GREEN) (120VAC)	SQD	9001SKP38LGG9	[ ]
1	PL2	PILOT LIGHT (RED) (120VAC)	SQD	9001SKP38LRR9	[ ]
1	PL3	PILOT LIGHT (AMBER) (120VAC)	SQD	9001SKP38LYA9	[ ]
4	**R1-4**	**CONTROL RELAY (120VAC, 11 PIN)**	**IDEC**	**RR3PA-ULAC120V**	**[ ]**
5		11 PIN SOCKET	IDEC	SR3P-05	[ ]
1	PMR1	PUMP MONITOR RELAY (ADD .1Uf 1000V CAPACITOR TO PMR1 PINS 7-8)	MPE ILLINOIS CAP	PMR1 104MSR102K	[ ]

1	**ISB**	**INTRINSICALLY SAFE BARRIER (DUAL CHANNEL)**	**STAHL**	**9002/13-280-110-001**	**[ ]**
1	**ISB**	**INTRINSICALLY SAFE BARRIER (SINGLE CHANNEL)**	**STAHL**	**9001/02-175-050-101**	**[ ]**
1	SPD	SURGE PROTECTION DEVICE (120V / 1 PHASE) [1 POLE DIN RAIL]	BUSSMANN	BSPM1120S2G	[ ]

PACKING LIST

Quote#: 48675AA	**Date: 05/02/2019**	**Rev:**

SPARE PARTS

QTY	LEGEND	DESCRIPTION	MFG	PART #	
1	F1	FUSE	BUSSMANN	KTK-R-5 / 600V	[ ]