Golf Course Irrigation Pump Replacement

2019 Bid Specs

BRIDGES OF

POPLAR CREEK COUNTRY CLUB
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(Have Basket Strainers and Column Pipes match specs sizes for new pump.)

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General Requirements:

- The contractor shall provide all labor, materials, equipment, and transportation necessary to remove and reinstall both motors, and replace both vertical turbine pumps.
- The Contractor shall be responsible for all machine-shop work and transportation to and from said shop.
- The project will include all crane work and rigging to remove/reinstall the motors and pumps at the pump station.
- All motors and pumps shall be removed in one operation and reinstalled in one operation.
Scope of work:

- Removal of motors and pumps (2)
- Removal of pressure management pump.
- Sandblast and paint discharge heads.
- Replace check valves on each pump
- Reinstall motors and new pumps
- Reinstall new pressure management pump.
- Change starter, overloads, and fuses in control panel to accommodate larger pressure management pump.
- Install mechanical seal on pumps.
- Ensure satisfactory start-up and operation.
Pump Data Sheet - Turbine 60 Hz

Company: The Bridges of Poplar Creek
Customer: 
Date: 10/10/2018

**Pump:**
- **Size:** 12CLC (stages: 5)
- **Type:** Lineshaft
- **Synch Speed:** 1800 rpm
- **Dia:** 8.5 in
- **Curve:** E6412CFPC1

**Dimensions:**
- **Suction:** ---
- **Discharge:** ---
- **Dia:** 8.5 in
- **Vertical Turbine:**
- **Eye Area:** 11.8 in
- **Max Lateral:** 1 in
- **Thrust K Factor:** 7.5 lb/ft

**Search Criteria:**
- **Flow:** 800 US gpm
- **Head:** 320 ft
- **Near Miss:** ---
- **Static Head:** 0 ft

**Pump Selection Warnings:**
The pump's head at the design flow rate is below the design point head value.

--- Duty Point ---
- **Flow:** 800 US gpm
- **Head:** 320 ft
- **Eff:** 88%
- **Power:** 73.4 hp
- **NPSHr:** 10.2 ft
- **Speed:** 1770 rpm

--- Design Curve ---
- **Shutoff Head:** 442 ft
- **Shutoff dP:** 191 psi
- **Min Flow:** 215 US gpm
- **BEP:** 88.3% @ 858 US gpm
- **NOL Power:** 76.1 hp @ 985 US gpm

--- Max Curve ---
- **Max Power:** 81.2 hp @ 994 US gpm

--- Fluid ---
- **Name:** Water
- **SG:** 1
- **Vapor Pressure:** 0.256 psi a
- **Density:** 62.4 lb/ft³
- **Atm Pressure:** 14.7 psi a
- **Viscosity:** 1.1 cP
- **Temperature:** 60 °F

--- Pump Limits ---
- **Temperature:** ---
- **Sphere Size:** 0.94 in
- **Wkg Pressure:** ---

--- Motor ---
- **Standard:** NEMA
- **Size:** 100 hp
- **Enclosure:** WPI
- **Speed:** 1800 rpm
- **Frame:** 404
- **Sizing Criteria:** Max Power on Design Curve

**Equipment Specs**

Suction Size-8in,10in Discharge Sizes-6in,8in,10in. Curves are certified for water at 60°F only. Consult factory for performance with any other fluid.

**Performance Evaluation:**

<table>
<thead>
<tr>
<th>Flow (US gpm)</th>
<th>Speed (rpm)</th>
<th>Head (ft)</th>
<th>Efficiency (%)</th>
<th>Power (hp)</th>
<th>NPSHr (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>960</td>
<td>1770</td>
<td>274</td>
<td>87.4</td>
<td>75.9</td>
<td>11.6</td>
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<tr>
<td>800</td>
<td>1770</td>
<td>320</td>
<td>88</td>
<td>73.4</td>
<td>10.2</td>
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<tr>
<td>640</td>
<td>1770</td>
<td>354</td>
<td>84.7</td>
<td>67.5</td>
<td>10</td>
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<tr>
<td>480</td>
<td>1770</td>
<td>381</td>
<td>76.3</td>
<td>60.3</td>
<td>10</td>
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<tr>
<td>320</td>
<td>1770</td>
<td>401</td>
<td>60.6</td>
<td>53.3</td>
<td>10</td>
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Selected from catalog: Goulds Lineshaft.60, Vers 3.67.1
<table>
<thead>
<tr>
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<th>Count</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>45S50-12</td>
</tr>
</tbody>
</table>

Product photo could vary from the actual product

Product No.: 98924591
Multi-stage submersible pump for raw water supply, groundwater lowering and pressure boosting. The pump is suitable for pumping clean, thin, non-aggressive liquids without solid particles or fibers.

The pump is made entirely of Stainless steel DIN W.-Nr. EN 1.4301 and suitable for horizontal and vertical installation.
The pump is fitted with a built-in non-return valve.
The motor is a 3-phase motor of the canned type with a sand shield, liquid-lubricated bearings and pressure-equalizing diaphragm.

**Liquid:**
- Pumped liquid: Water
- Maximum liquid temperature: 104 °F
- Liquid temperature during operation: 68 °F
- Density: 62.29 lb/ft³

**Technical:**
- Actual calculated flow: 40.1 US gpm
- Resulting head of the pump: 331.8 ft
- Shaft seal for motor: HM/CER
- Curve tolerance: ISO9906:2012 3B
- Motor version: T40

**Materials:**
- Pump: Stainless steel EN 1.4301, AISI 304
- Impeller: Stainless steel EN 1.4301, AISI 304
- Motor: Stainless steel DIN W.-Nr. 1.4301, AISI 304

**Installation:**
- Maximum ambient pressure: 870.23 psi
- Pump outlet: 2"NPT
- Motor diameter: 4 inch

**Electrical data:**
- Motor type: MS4000
- Rated power - P2: 5 HP
<table>
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<th>Count</th>
<th>Description</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Main frequency: 60 Hz</td>
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<tr>
<td></td>
<td></td>
<td>Rated voltage: 3 x 440-460 V</td>
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<tr>
<td></td>
<td></td>
<td>Service factor: 1.15</td>
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<tr>
<td></td>
<td></td>
<td>Rated current: 8.65-8.65 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Starting current: 550-590 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cos phi - power factor: 0.83-0.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rated speed: 3460-3470 rpm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enclosure class (IEC 34-5): IP68</td>
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<tr>
<td></td>
<td></td>
<td>Insulation class (IEC 85): F</td>
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<tr>
<td></td>
<td></td>
<td>Built-in temperature transmitter: No</td>
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<tr>
<td>Others:</td>
<td></td>
<td>ErP status: EuP Standalone/Prod.</td>
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<tr>
<td></td>
<td></td>
<td>Net weight: 71.2 lb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gross weight: 127 lb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shipping volume: 7.06 ft³</td>
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<tr>
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<td></td>
<td>Country of origin: US</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Custom tariff no.: 8413.70.2004</td>
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### General information:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Product name:</td>
<td>45S50-12</td>
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<tr>
<td>Product No.:</td>
<td>98924591</td>
</tr>
<tr>
<td>EAN:</td>
<td>5712603665573</td>
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</table>

### Technical:

| Actual calculated flow:       | 40.1 US gpm         |
| Resulting head of the pump:  | 331.8 ft            |
| Stages:                      | 12                  |
| Impeller reduc.:             | NONE                |
| Shaft seal for motor:        | HM/CER              |
| Curve tolerance:             | ISO9906:2012 3B     |
| Model:                       | A                   |
| Valve:                       | YES                 |
| Motor version:               | T40                 |

### Materials:

- **Pump:** Stainless steel
  - EN 1.4301
  - AISI 304
- **Impeller:** Stainless steel
  - EN 1.4301
  - AISI 304
- **Motor:** Stainless steel
  - DIN W.-Nr. 1.4301
  - AISI 304

### Installation:

- Maximum ambient pressure: 870.23 psi
- Pump outlet: 2"NPT
- Motor diameter: 4 inch

### Liquid:

- Pumped liquid: Water
- Maximum liquid temperature: 104 °F
- Liquid temperature during operation: 68 °F
- Density: 62.29 lb/ft³

### Electrical data:

- Motor type: MS4000
- Applic. motor: NEMA
- Rated power - P2: 5 HP
- KVA code: J
- Main frequency: 60 Hz
- Rated voltage: 3 x 440-460 V
- Service factor: 1.15
- Rated current: 8.65-8.65 A
- Starting current: 550-590 %
- Cos phi - power factor: 0.83-0.80
- Rated speed: 3460-3470 rpm
- Axial load max: 992 lb
- Enclosure class (IEC 34-5): IP68
- Insulation class (IEC 85): F
- Motor protection: NONE
- Thermal protec: external
- Built-in temperature transmitter: No
- Motor Number: 96405811

### Others:

- ErP status: EuP Standalone/Prod.
- Net weight: 71.2 lb
- Gross weight: 127 lb
- Shipping volume: 7.06 ft³
- Country of origin: US
<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom tariff no.:</td>
<td>8413.70.2004</td>
</tr>
</tbody>
</table>
98924591 45S50-12 60 Hz

Note! All units are in [mm] unless otherwise stated.
Disclaimer: This simplified dimensional drawing does not show all details.
## MECHANICAL SEAL ASSY, FLOWTRONEX DISCHARGE HEAD 1-3/16" SHAFT

**REV-12/22/06 RJS**

NOTE: WATERTRONICS PN. 92-87-3011 IS A KIT THAT INCLUDES ALL ITEMS LISTED BELOW

### 6" - 8" & 10" DISCHARGE

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>QTY</th>
<th>CODE</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>50</td>
<td>46-24-1362</td>
<td>DRIVE COLLAR 1-3/16&quot;</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>50</td>
<td>03-20-5812</td>
<td>S.S. SOCKET HEAD CAP SCREW (5/16 X 1-1/4&quot;)</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>50</td>
<td>03-20-2520</td>
<td>S.S. SOCKET HEAD CAP SCREW (1/4-20 X 2&quot;)</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>50</td>
<td>45-05-1400</td>
<td>S.S. KEEP NUT (1/4-20)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>50</td>
<td>46-24-1364</td>
<td>O-RING RETAINER 1-3/16&quot;</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>50</td>
<td>46-22-0217</td>
<td>O-RING</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>50</td>
<td>46-22-1165</td>
<td>3/4 S.S. SHAFT SLEEVE 1-3/16&quot;</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>50</td>
<td>01-07-5822</td>
<td>BOLT 5/8 X 2-1/4 S.S.</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>50</td>
<td>58-10-0916</td>
<td>PLUG BLACK PLASTIC DOME 9/16&quot;</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>50</td>
<td>42-45-0058</td>
<td>WASHER 5/8 S.S.</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>50</td>
<td>46-22-1505</td>
<td>BEARING HOUSING TOP</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>50</td>
<td>46-22-6309</td>
<td>SEALED BALL BEARING</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>50</td>
<td>46-22-0175</td>
<td>SNAP RING 1-3/4&quot;</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>50</td>
<td>46-22-1507</td>
<td>ADAPTER PLATE, FLOWTRONEX HEAD</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>50</td>
<td>NPN</td>
<td>GASKET SEAL / DISCHARGE HEAD</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>50</td>
<td>03-07-1014</td>
<td>S.S. PPHMS (10-32 X 1-1/4)</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>50</td>
<td>87-15-3916</td>
<td>JOHN CRANE MECHANICAL SEAL 1-1/2&quot;</td>
</tr>
<tr>
<td>18</td>
<td>1</td>
<td>50</td>
<td>46-22-0150</td>
<td>SNAP RING 1-1/2&quot;</td>
</tr>
</tbody>
</table>

**Equipment Specs**
FLANGES, BOLTS, NUTS AND GASKETS ARE SUPPLIED BY OTHERS.

Installation Requirements
Refer to drawing SS-974 entitled Silent Check Valve Flange Installation Requirements for mating flanges.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>NAME</th>
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<tbody>
<tr>
<td>1</td>
<td>BODY</td>
</tr>
<tr>
<td>2</td>
<td>SEAT</td>
</tr>
<tr>
<td>3</td>
<td>DISC</td>
</tr>
<tr>
<td>4</td>
<td>SPRING</td>
</tr>
<tr>
<td>5</td>
<td>BUSHING</td>
</tr>
<tr>
<td>6</td>
<td>RETAINING SCREWS</td>
</tr>
</tbody>
</table>

SEE DRAWING NO. VM-1402-M FOR STANDARD MATERIALS OF CONSTRUCTION.

125 LB. CLASS

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>MODEL NO.*</th>
<th>CWP (P.S.I.)</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1408</td>
<td>200</td>
<td>13 3/8</td>
<td>6 1/2</td>
</tr>
<tr>
<td>10</td>
<td>1410</td>
<td>200</td>
<td>16</td>
<td>8 1/4</td>
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</table>

250 LB. CLASS

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>MODEL NO.*</th>
<th>CWP (P.S.I.)</th>
<th>A</th>
<th>B</th>
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<tbody>
<tr>
<td>8</td>
<td>1458</td>
<td>400</td>
<td>13 3/8</td>
<td>6 1/2</td>
</tr>
<tr>
<td>10</td>
<td>1460</td>
<td>400</td>
<td>16</td>
<td>8 1/4</td>
</tr>
</tbody>
</table>

* MODEL NUMBERS REFLECT BRONZE TRIM.
Average Turbine Pump Buildup

Date: 9/4/98  Rev: ___  By: Steven Hutson Jr.
Job Name: Poplar Creek GC
Job #: 8023C  Serial #: 8023C-1.2
Shop #: C.O.#

Section A
Motor: New Style Newman
Motor SN: 75
HP: 1800
RPM: Starting: XL
Oil Cap: Grease
Gal. Shipped: 0
CD: 31.97
BD: 16.5
SRC: 1.1875
NRR: No
Volts/Phase: 460-3P
Freq: 60Hz
Headshaft: 1.1875 X 39.5
Gib Key: 1/4 x 1-3/4
Motor Base Bolts: (4) 5/8 X 1-1/2

Section B
Discharge Head: 616F-VFD PB 1.1875 X 4.5
Slinger Ring: 1.1875
Pump Base Bolts: (4) 1 X 3-1/2

Section C
Top Shaft: 1.1875 X 69
Top Column: 6 X 47.5 FLG
Inter-Shaft: N/A
Inter-Column: N/A
Inter-Column: N/A

All Columns Threaded and Coupled
Spider Bearings
Hanger-Flange

Section D
Bowl Assy: IDP 12M75
Stages: 5
Trim: 9.17 OD
GPM: 775
TDH: 320 PS
Bowl Shaft Thread: 1.1875 X 1.75 X 75.125
Basket Strainer: 9.5 x 14.5 Cone

Section E
Length From Base to Bottom of Strainer: 10 Ft. 0 In.

Misc. Specifications
PM Pump is 3 Hp
Build 2 Like Pumps
Motors to Have Space Heaters

All Flowtronex-PSI Vertical Turbine Pumps are assembled with the following materials unless otherwise noted:
Standard-wall - 6TPI - butt thread column pipe
418SS - 10TPI - shafting and couplings on a 6-inch stickup
Bronze spider bearings with rubber inserts
Grade 5 plated bolts
Galvanized basket strainers.

As Built Specs
Customer: Poplar Creek GC
Project: J-8023C-01,02
Service: Steven Hutson Jr
Date: 4 Sep 1998
Impeller: Enclosed

Ingersoll-Dresser Pumps

Pump: 12M75
Stages: 5
Bowl Mat.: CI/LINED
Imp. Mat.: BRONZE
Shaft Mat.: 416SS

Flow (USGPM): 775.0
SG: 1.00
Head (FEET): 320
RPM: 1770

Guarantees are based on shop test when handling clear fresh water at a temperature of not over 65 F.
Curves are approximate. Pump is guaranteed for one set of conditions, capacity, head, and efficiency.

As Built Specs
PRESSURE MAINTENANCE PUMP BUILD-UP

JOB NAME: Poplar Creek GC
JOB NUMBER: J-8023C
PUMP MANF: Grundfos
MOTOR MANF: Grundfos

GPM: 26  PSI: 130  TDH: 300
VAC: 460  HZ: 60  PHASE: 3

BY: Steven Hutson
DATE: 9/4/98
S.O.: XXXX

As Built Specs

<table>
<thead>
<tr>
<th>S.F. Amps</th>
<th>S.F.</th>
<th>RPM</th>
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<table>
<thead>
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<th>MOTOR HP</th>
<th>MODEL #</th>
<th>MOTOR SERIAL #</th>
<th>PUMP SERIAL #</th>
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<tbody>
<tr>
<td>3</td>
<td>25S30-15</td>
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</table>

FLOWTRONEX PSI
Pumping System
10717 HARRY HINES BLVD., DALLAS, TEXAS 75220, USA 1-800-527-0539