.1 House the motor in an air-filled watertight chamber.

.2 Design the motor for continuous duty, and capable of sustaining 3 starts per hour.

.3 The pump/motor assembly is to be CSA approved as one unit.

.4 Provide motors suitable for speed control from a pulse-width modulated variable frequency controller. Accordingly, motors shall be capable of operating at 10% of their design RPM without additional cooling.

.5 Supply motors with three (3) 100 ohm platinum temperature detectors (RTDs) in the stator windings, in accordance with Section 11205.

2.8 Seals

.1 Provide dual independent pump seals which effectively prevent the pumped liquid from entering the motor cavity.

.2 Approved manufacturers are:

.1 Durametallic

.2 John Crane

.3 Five Star

.4 Chesterton

.3 Provide dual independent seals with an oil chamber for the shaft sealing system. Design the oil chamber to accommodate oil expansion due to temperature fluctuations.

.4 Provide seals which are maintenance and adjustment free, and capable of being easily inspected and replaced.

2.9 Bearings

.1 The pump shaft rotates on permanent oil- or grease-lubricated bearings.

.2 Provide duplex thrust (angular contact), anti-friction type bearings.

.3 Provide bearings with a minimum B-10 bearing life of 80,000 hours.

2.10 Spare Parts

.1 In addition to the requirements in Section 11300, provide the following spare parts:

.1 One seal set

.2 One set of motor bearings

.3 One set of pump bearings.

.4 One impeller

2.11 Protective Coatings

.1 Shop prime and finish in accordance with Section 09905.

3. EXECUTION

3.1 Installation Training

.1 Install pumps as per manufacturer's recommendations on the methods and precautions to be followed in the installation of the pump.

.2 Installer shall certify the understanding of the installation of the pump by completing Form 101, illustrated in Section 01650.

.3 Ensure that the pump is installed and aligned in accordance with Section 11020, as required to provide satisfactory service

.4 Installer to fulfill the requirements for a successful installation as documented by Form 102, illustrated in Section 01650.

3.2 Testing

.1 Ensure that each pump, including all component parts, operates as intended.

.2 Installer to fulfill the requirements for successful testing of the equipment as documented by Form 103, illustrated in Section 01650.

3.3 Commissioning

.1 Conform to the requirements of Section 01735.

END OF SECTION

DETAILED PUMP SPECIFICATION

Description: Raw Sewage Pumps

Tag Number: P-102, P-103, P-104

Design Conditions:

Liquid:	Raw Sewage
Liquid temperature:	10 to 20°C
Solids content:	0 to 500 mg/L
NPSHA:	17.5 m
Atmospheric pressure:	101 kPa
Minimum solids passing:	75 mm

Rating Point:

Rating Point Design Flow	56 L/s
Rating Point TDH	8.4 m

Construction:

Suction Connection:	200 mm
Discharge Connection:	200 mm
Flange Rating:	Class 125
Seals:	Internal Seal
Impeller Type:	Two or three vane, non-clog
Impeller Material:	Cast Iron
Casing Material:	Cast Iron

Driver

Drive Type:	Direct Coupled, Variable Speed
Motor Type:	Submersible
Voltage/Phase/Frequency:	600 V/3 phase/60 Hz
Maximum Motor Speed:	1755 RPM
Power	11.2 kW

Accessories:

Slip on discharge flange
Guide rails and upper guide bar holder
Discharge elbow
Cable
Lifting chain, cable and grip eye –Flygt Model

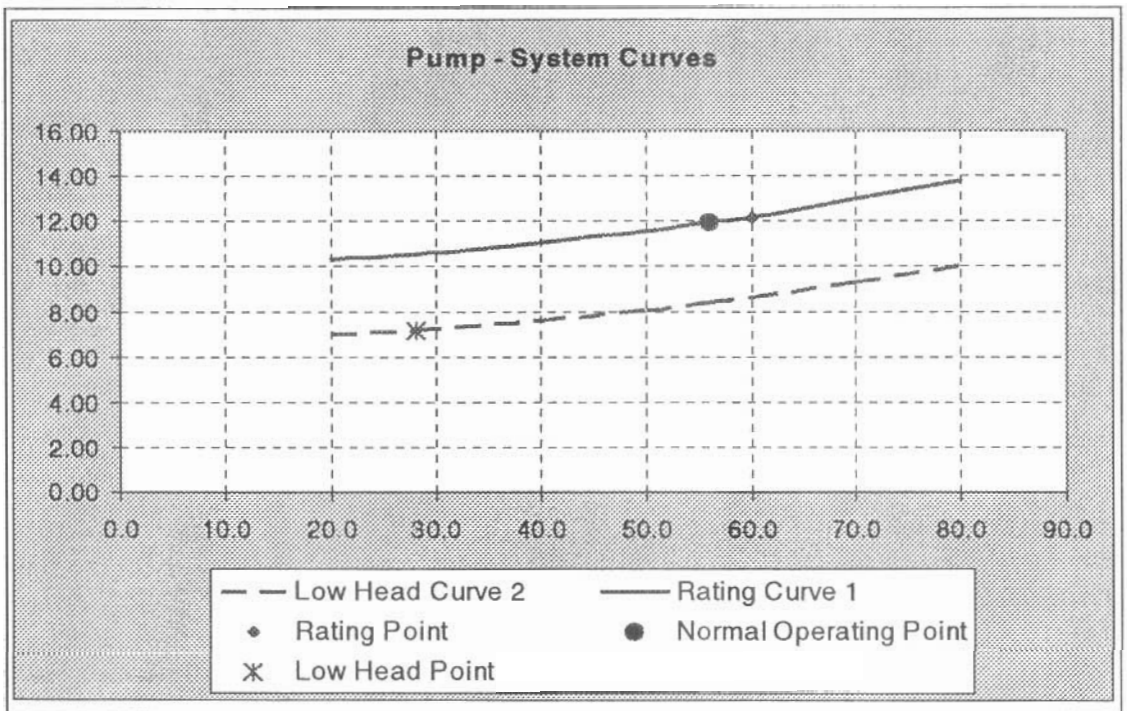
Design Standard:

FLYGT- Model NP 3153

DETAILED PUMP SPECIFICATION

Acceptable Products:
KSB, Barnes

System Curve: RWW Pump



	Rating Curve 1	Low Head Curve 2		**Tag Numbers**
Flow (L/s)	TDH (m)	TDH (m)	Comments	P-102, P-103, P-104
20.0	10.32	6.98		
28.0	10.55	7.18	Low Head Point	
40.0	11.03	7.60		
50.0	11.55	8.06		
56.0	11.92	8.38	Rating Point	
60.0	12.20	8.62		
70.0	12.95	9.28		
80.0	13.82	10.04		
56.0	11.92		Normal Operating Point	

Notes:
1. Pumps operate as lead/lag.

END OF SECTION

PROGRESSIVE CAVITY PUMPS

1. GENERAL

1.1 Work Included

.1 This section specifies the supply and supervision of installation, testing and commissioning of positive displacement progressive cavity (PC) pumps, complete with electric motors and all specified appurtenances, mounted on a common base plate.

.2 PC pumps are self-priming, positive displacement, progressing cavity type specifically designed for pumping stabilized and/or unstabilized sludges generated from municipal wastewater where a minimum of abrasive material is present.

1.2 Submittals

.1 Shop Drawings: Submit in accordance with Section 01300 and Section 11005.

.2 Operation and Maintenance Data: Provide data for incorporation in the Operation and Maintenance Manual as specified in Section 01730. Include complete operation description together with general arrangement and detailed drawings, wiring diagrams for power and control schematics, parts catalogue with complete list of repair and replacement parts with Section drawings illustrating the connections and identifying numbers.

1.3 Coordination

.1 Coordinate design, supply and installation of pumps and motors.

1.4 Shipment, Protection, and Storage

.1 Ship pre-assembled to the degree that is practical.

.2 Identify special storage requirements. Store on site until ready for incorporation into the work using methods recommended by the manufacturer to prevent damage, undue stress or weathering.

2. PRODUCTS

2.1 Description

.1 Select and install pumps specifically for continuous or intermittent duty pumping of and suitable for exposure to concentrated solids derived from the treatment of municipal wastewater such as primary, secondary and digested sludges and scum; and other abrasive and fibrous material in concentration as great as 10 percent.

2.2 Acceptable Manufacturers

.1 Moyno Robbins and Myers Inc.
.2 Netzsch Nemo

.3 Bornemann Pumps Inc.
.4 Monoflo Dresser Pump
.5 Seepex Industries

2.3 Capacities and Performance

.1 Supply pumps for continuous operation.

2.4 Materials

.1 Fabricate rotor of high-carbon, high-chrome tool steel, plated with minimum Brinnell hardness of 550 or 1 percent aluminum nitriding steel, hardened in excess of Rockwell 70 C.

.2 Fabricate stator of Buna-N synthetic rubber with a Shore durometer hardness of 60, bonded to a steel tube.

.3 Fabricate pump body of cast iron

.4 Fabricate shaft sleeve of stainless steel, type 416 or 420, Brinnell hardness of 450 minimum.

2.5 Rotor and Stator

.1 Minimum two-stage design employing a convoluted rotor operating in a similarly convoluted stator.

.2 Configure convolutions to form a cavity between the rotor and stator progressing from the pump's inlet to discharge port with the operation of the rotor.

.3 Fit the rotor and stator so that at the point of contact the stator material is sufficiently compressed to form a good seal and to prevent leakage from the discharge back to the inlet end of the pumping chamber.

2.6 Rotor Drive Train (Type 1)

.1 Drive the pump rotor through a connecting rod with the connecting rod coupled to an input shaft.

.2 Couple the connecting rod to the rotor and input shaft through machined crowned gear type joints.

.3 Machine balls and sockets from chrome alloy tool steel, designed to withstand shock and thrust reversal.

.4 Protect each gear joint against the entrance of dirt, sludge, and other foreign objects by a sealed steel shell.

.5 Positively secure the gear joint to the connecting rod to ensure against failure when the pump is in operation.

.6 Maintain shaft angularity of less than 1.5 degrees.

.7 Provide input shaft with bearings and housing.

2.7 Rotor Drive Train (Type 2)

.1 Drive pump rotor through a solid tapered connecting rod with the connecting rod coupled to an input shaft.

.2 Couple the connecting rod to the rotor and input shaft through carden type universal joints.

.3 Assemble universal joint with two stainless steel rods, grease lubricated and sealed in a rubber boot.

.4 Maintain shaft angularity of less than 1.5 degrees.

.5 Provide input shaft with bearings and housing.

2.8 Rotor Drive Train (Type 3)

.1 Drive pump rotor through a flexible torsion bar drive which is connected to the input shaft with a Morse taper and to the rotor via a Morse taper or a forged flange.

.2 Provide flexible shaft of forged stainless steel with SAE radii to ensure no stress buildup at the connection points.

.3 Machined shafts are not acceptable.

.4 Coat shaft with Olefin coating at least 3 mm thick.

.5 Provide input shaft with bearings and housing.

2.9 Casing

.1 Provide pump casing of three piece construction to allow front pull out of rotor. Provide with a cleanout opening on each side of the inlet fitting.

.2 Provide cleanout opening located immediately opposite the rotor/connecting rod joint to allow access for maintenance.

.3 Provide suction with a 12 mm tap to permit installation of a water lubrication system.

2.10 Bearings

.1 Provide grease lubricated thrust and radial bearings designed for all loads imposed by the service.

2.11 Motor and Drive Unit

.1 Pumps are V-belt driven; provide belts, sheaves, and guards.

.2 Maximum speed reduction ratio for the V-belt is 4:1.

.3 Provide gear motors or gear reducers, designed in accordance with AGMA 6019-E (Class II) or AGMA 6010-E (Service Factor 1.25), where greater speed reduction is specified.

.4 Design V-belt drive equipment to transmit 150 percent of the maximum torque under the full range of operating conditions.

.5 Provide energy-efficient, low noise electric motors in compliance with Section 11205.

.6 Provide variable frequency drives and controllers in compliance with Division 16.

.7 For VFD-driven units, the pump manufacturer is responsible for the provision of the fixed V-belt reduction between the motor and pump.

.8 Provide reduction ratio as required to operate the pump at its maximum operating speed when the motor is operating at its nominal rated full speed in accordance with specifications.

.9 Mount pump and motor along with associated drive appurtenances on a one-piece, fabricated steel base plate in the horizontal "U" configuration with full drip lip, grout holes, drains, etc.

2.12 Mounting

.1 Manufacture pump bases of cast iron or fabricated steel.

.2 Provide a sufficient number of grouting holes, a minimum of one at the centre and one at each corner, of sufficient size to allow for the pouring of grout into the annular space.

.3 Bases are to have square corners in all three directions, with parallel surfaces.

.4 Provide motor mounting blocks so that one size greater motor frame may be accommodated by replacing the mounting blocks.

2.13 Protective Coatings

.1 Shop prime and finish coat equipment in accordance with Section 09905.

2.14 Spare Parts

.1 IN addition to the requirements in Section 11300, provide the following spare parts for each size PC pump:

.1 1 - stator assembly
.2 1 - rotor
.3 1 - connecting rod

.4 1 - set connecting rod joint assemblies
.5 2 - sets of mechanical seals
.6 2 - sets of drive pins, washers, and retention screws
.7 1 - set V-belts
.8 1 - screw wrench
.9 1 - bearing assembly
.10 1 - spare pump

.2 Provide a list of all spare parts which would be expected to be required under normal conditions, for a period of five years. Provide a price for these parts.

3. EXECUTION

3.1 Installation

.1 Ensure that each pump is installed in accordance with Section 11020 as required to provide satisfactory service.

.2 Install pumps as per manufacturer's recommendations on the methods and precautions to be followed in the installation of the pump.

.3 Installer shall certify the understanding of the installation of the pump by completing Form 101, illustrated in Section 01650.

.4 Installer to fulfill the requirements for a successful installation as documented by Form 102, illustrated in Section 01650.

3.2 Testing

.1 Ensure that each pump, including all component parts, operates as intended.

.2 Installer to fulfill the requirements for satisfactory performance of the equipment as documented by Form 103, illustrated in Section 01650.

.3 Refer to Section 11300 for testing requirements.

3.3 Commissioning

.1 Conform to the requirements of Section 01735.

END OF SECTION

DETAILED PUMP SPECIFICATION

Description: WAS Pump

Tag Number: P-205 and P-206

Design Conditions :

Liquid:	Waste Activated Sludge
Liquid temperature:	10 to 20°C
Solids content:	0 to 10,000 mg/L
Atmospheric pressure:	101 kPa
Solids passing:	50 mm

Rating Point:

Rating Point Design Flow	0.95 L/s
Rating Point TDH (Nominal)	2.96 m

Construction:

Suction Connection:	75 mm
Discharge Connection:	75 mm
Flange Rating:	Class 125
Seals:	Single Mechanical
Rotor Material:	High Grade Carbon Steel
Stator Material:	Buna-N
Casing Material:	Cast Iron ASTM A48

Driver:

Drive Type:	Direct Coupled and Variable Speed Motor
Motor Type:	TEFC
Voltage/Phase/Frequency:	600 V/3-phase/60 Hz
Motor Size:	2.25 kW
Motor Synchronous Speed:	1750 RPM
Maximum Pump Speed:	300 RPM

Accessories:

Discharge - annular pressure sensor, gauge and high pressure shut-off
No flow alarm

Design Standard:

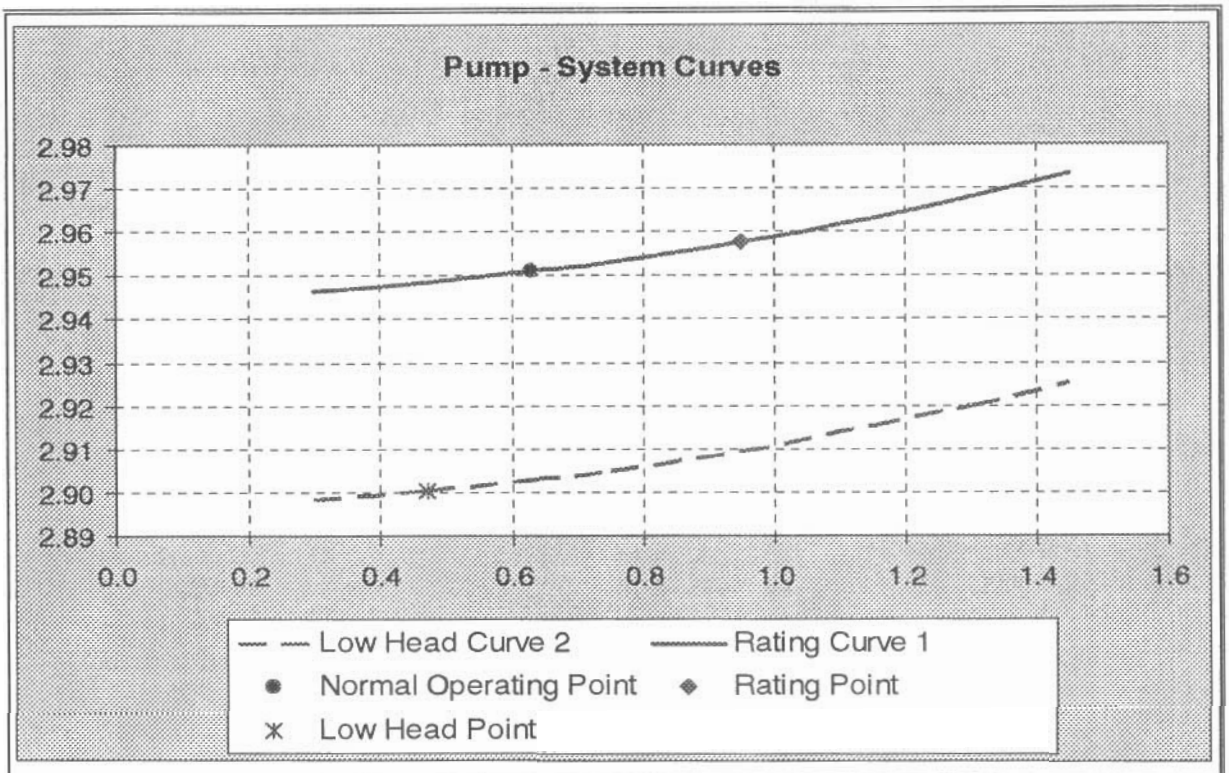
Moyno – Model B1ECDQ3AA

Acceptable Products:

DETAILED PUMP SPECIFICATION

Netzsch-Nemo, Monoflo, Seepex, Bornemann Pumps

System Curve: WAS Pump



Flow (L/s)	Rating Curve 1 TDH (m)	Low Head Curve 2 TDH (m)	Comments
0.3	2.95	2.90	
0.5	2.95	2.90	Low Head Point
0.6	2.95	2.90	
0.8	2.95	2.91	
1.0	2.96	2.91	Rating Point
1.2	2.96	2.92	
1.3	2.97	2.92	
1.5	2.97	2.93	
0.6	2.95		Normal Operating Point

Tag Numbers
P-205, P-206

Notes:

END OF SECTION

DETAILED PUMP SPECIFICATION

Description: TWAS Pump

Tag Number: P-405

Design Conditions :

Liquid:	Thickened Waste Activated Sludge
Liquid temperature:	10 to 20°C
Solids content:	0 to 100,000 mg/L
Atmospheric pressure:	101 kPa
Solids passing:	50 mm

Rating Point:

Rating Point Design Flow	1.7 L/s
Rating Point TDH (Nominal)	7.4 m

Construction:

Suction Connection:	75 mm
Discharge Connection:	75 mm
Flange Rating:	Class 125
Seals:	Single Mechanical
Rotor Material:	High Grade Carbon Steel
Stator Material:	Buna-N
Casing Material:	Cast Iron ASTM A48

Driver:

Drive Type:	Direct Coupled and Variable Speed Motor
Motor Type:	TEFC
Voltage/Phase/Frequency:	600 V/3-phase/60 Hz
Motor Size:	2.25 kW
Motor Synchronous Speed:	1750 RPM
Maximum Pump Speed:	300 RPM

Accessories:

Discharge - annular pressure sensor, gauge and high pressure shut-off
No flow alarm

Design Standard:

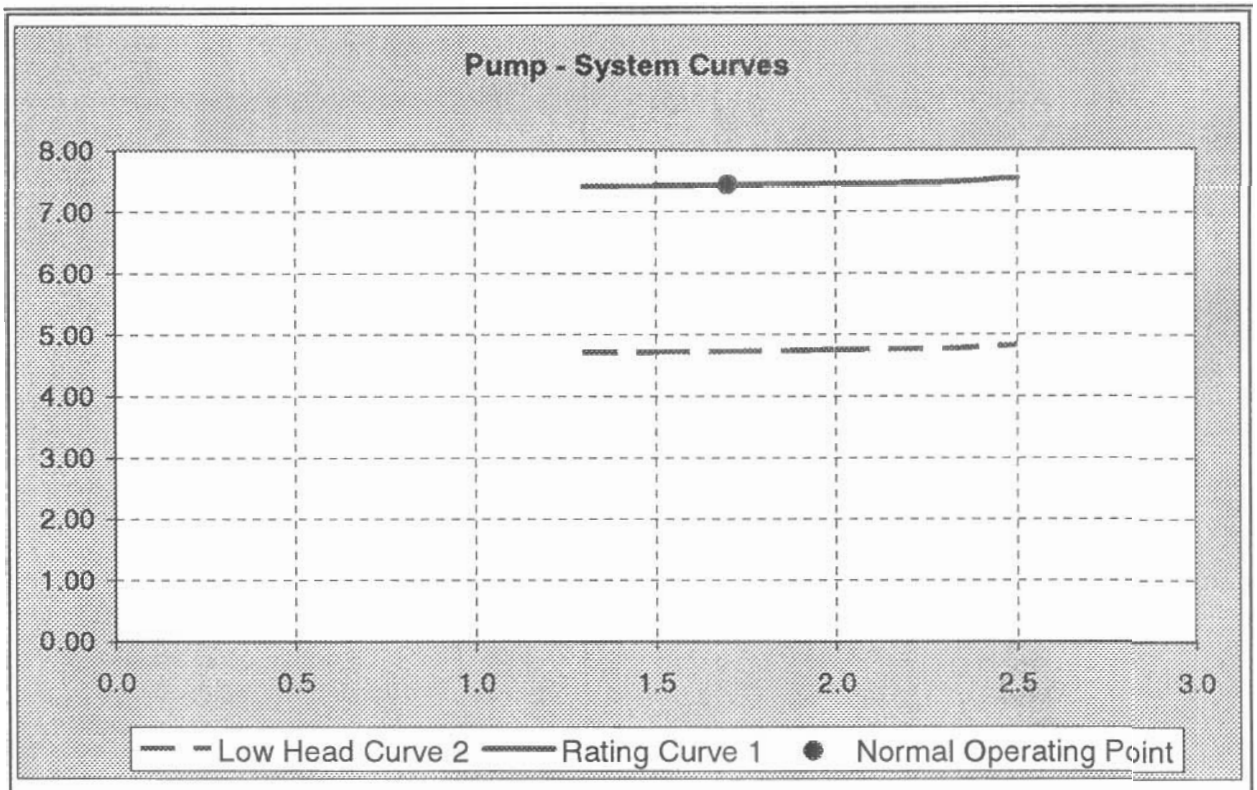
Moyno – Model B1ECDQ3AA

Acceptable Products:

DETAILED PUMP SPECIFICATION

Netzsch Nemo, Monoflo, Seepex, Bornemann Pumps

System Curve: TWAS Pump



Flow (L/s)	Rating Curve 1 TDH (m)	Low Head Curve 2 TDH (m)	Comments
1.3	7.41	4.71	
1.5	7.42	4.72	
1.7	7.43	4.73	
1.9	7.45	4.74	
2.0	7.45	4.75	
2.3	7.47	4.77	
2.5	7.54	4.83	
1.7	7.43		Normal Operating Point

Tag Numbers
P-405

Notes:
1. Pumps to operate as duty/standby.

END OF SECTION

HORIZONTAL, END-SUCTION CENTRIFUGAL PUMPS

1. GENERAL

1.1 Description

.1 This section specifies the supply, installation, testing and commissioning of horizontal, end suction, single stage, centerline discharge, frame mounted, centrifugal pumps and motors for pumping effluent water.

1.2 Submittals

.1 Shop Drawings: Submit in accordance with Section 01300 and Section 11005. In addition to the requirements in Section 11300, provide mill certificates confirming hardness of casings, suction pieces, impellers, wear plates and shaft sleeves.

.2 Operation and Maintenance Data: Provide data for incorporation in the Operation and Maintenance Manual as specified in Section 01730. Include complete operation description together with general arrangement and detailed drawings, wiring diagrams for power and control schematics, parts catalogue with complete list of repair and replacement parts with Section drawings illustrating the connections and identifying numbers.

1.3 Coordination

.1 Coordinate design, supply and installation of pumps and motors.

1.4 Shipment, Protection, and Storage

.1 Ship pre-assembled to the degree that is practical.

.2 Identify special storage requirements. Store on site until ready for incorporation into the work using methods recommended by the manufacturer to prevent damage, undue stress or weathering.

2. PRODUCTS

2.1 Description

.1 Provide pumps complete with electric motor, baseplate and all specified appurtenances.

.2 Provide pumps and electric motors designed for fixed speed operation.

.3 All wetted parts shall be permanently marked with the material of construction.

.4 Stainless steel parts shall be cast to the ASTM A744 standard.

.5 The fluid temperature is expected to range from 10°C to 20°C.

.6 Conform to the general requirements of Section 11005, unless otherwise specified.

2.2 Acceptable Manufacturers

.1 Flowserve
.2 Aurora
.3 Paco
.4 Wemco

2.3 Capacities and Performance

.1 Specific pumps are listed in the detailed specification sheets at the end of this section Required performance data and system curves are presented.

2.4 Materials

.1 Provide cast iron pumps, bronze fitted, end suction, suitable for specified service.

.2 Operating parts to be accessible without disturbing piping or motor connections.

.3 Fabricate impeller of cast bronze.

.4 Fabricate wear rings of cast bronze.

.5 Fabricate shaft of stainless steel, Grade 303.

.6 Fabricate shaft sleeve of stainless steel, ASTM A276, Type 416 or 420, Brinnell Hardness of 450, minimum.

.7 Fabricate casing of cast iron, class 30, ASTM A48, with no less than 3 percent nickel.

.8 Manufacture pump bases of cast iron or fabricated steel.

2.5 Wear Rings

.1 Provide rear and front wearing ring for casing, attached by screwed fasteners.

2.6 Impellers

.1 Provide impeller both statically and dynamically balanced.

.2 Provide enclosed, single suction type impeller trimmed to meet specified conditions.

.3 Secure impeller to shaft with bolt and lockwasher.

.4 To accommodate higher capacities, provide pump with an impeller which is less than 85 percent of the volute cutwater diameter.

2.7 Shaft

.1 Pump shaft to be suitably stress relieved and turned to final dimensions.

.2 Design shaft such that the dynamic deflection does not exceed 0.05 mm at the operating conditions for the given pump.

.3 Calculate bearing loads based on the maximum hydraulic thrust encountered through the full operating range of the pump in the process fluid as well as any mechanical loading as applied by shaft weight

2.8 Bearings

.1 Provide bearings with a B-10 life of 50,000 hours

.2 Provide permanently lubricated ball bearing frame and bearing assembly which is completely removable without disturbing pipe connection or volute case

.3 Bearing assembly to be either of the following:

.1 Permanently lubricated and sealed rubber cushioned ball bearings similar to Fafnir super quiet "O" series; mounted in heavy-duty gray iron frame

.2 Bronze sleeve type bearings; oil lubricated with oil level indicator for motors up to 5 hp

2.9 Seal

.1 Provide mechanical seals in accordance with data sheet following this section.

.2 Provide seals rated for continuous service at 120°C.

2.10 Couplings

.1 Provide flexible heavy-duty type couplings suitable for start-stop operation and to permit angular misalignment without transmitting backlash

.2 Provide couplings with sufficient gap between the pump and motor shafts to allow complete withdrawal and removal of the pump backhead frame and impeller without disturbing the motor when the coupling is removed

.3 Provide pump with safety approved removable expanded metal stop guard, primed and painted "warning" yellow in accordance with Section 11005.

2.11 Motor and Drive unit

.1 Electric motors are specified in Section 11205.

.2 Unless otherwise noted, motors as supplied by the motor manufacturer, are energy efficient, low noise electric motors, 600/3/60 VAC, TEFC, 1800 3600 r/min.

2.12 Protective Coatings

.1 Coatings to be in accordance with Section 09905.

.2 Shop prime all equipment.

.3 Preparation and primer to be compatible with the coatings specified in Section 09905.

2.13 Casings

.1 Construct pump casing of one piece casting, single stage with integral suction and discharge nozzles; provide venting petcock at high point of volute.

.2 Provide tapped gauge openings on suction and discharge nozzles on flanged connection

.3 Test casing for 1200 kPa working pressure.

.4 Provide venting petcock at high point of volute.

2.14 Bases FROM SCREW IMPELLER PUMP

.1 Provide bases with grouting holes, a minimum of one at the centre and one at each corner, of sufficient size to allow for the pouring of grout into the annular space.

.2 Ensure bases have square corners in all three directions, with parallel surfaces.

.3 Provide motor mounting blocks so that one size greater motor frame may be accommodated by replacing the mounting blocks.

2.15 Spare Parts

.1 In addition to the spare parts required in Section 11300, provide the following:

.1 1 - set of all bearing assemblies.

.2 1 - shaft sleeve.

.3 1 - set of all pump gasket.

.4 1 - set of mechanical seals.

3. EXECUTION

3.1 Installation

.1 Ensure that each pump is installed in accordance with Section 11020 as required to provide satisfactory service.

.2 Install pumps as per manufacturer's recommendations on the methods and precautions to be followed in the installation of the pump

.3 Installer shall certify the understanding of the installation of the pump by completing Form 101, illustrated in Section 01650.

.4 Installer to fulfill the requirements for a successful installation as documented by Form 102, illustrated in Section 01650.

3.2 Testing

.1 Ensure that each pump, including all component parts, operates as intended.

.2 Installer to fulfill the requirements for satisfactory performance of the equipment as documented by Form 103, illustrated in Section 01650.

.3 Refer to Section 11300 for testing requirements.

3.3 Commissioning

.1 Conform to the requirements of Section 01735.

END OF SECTION

DETAILED PUMP SPECIFICATION

Description: EFF Pumps

Tag Number: P-501 and P-502

Design Conditions :

Liquid:	Effluent Water
Liquid temperature:	10 to 20°C
Solids content:	<1 mg/L
Atmospheric pressure:	101 kPa

Rating Point:

Rating Point Design Flow	6.65 L/s
Rating Point TDH (Nominal)	5.8 m

Construction:

Suction Connection:	75 mm
Discharge Connection:	50 mm
Flange Rating:	Class 150
Seals:	Single Mechanical
Impeller Material:	Ductile Cast Iron
Casing Material:	Ductile Cast Iron

Driver:

Drive Type:	Direct Coupled and Constant Speed Motor
Motor Type:	TEFC
Voltage/Phase/Frequency:	600 V/3-phase/60 Hz
Motor Size:	1.12 kW
Motor Synchronous Speed:	1750 RPM
Maximum Pump Speed:	1750 RPM

Accessories:

Discharge - annular pressure sensor, gauge

Design Standard:

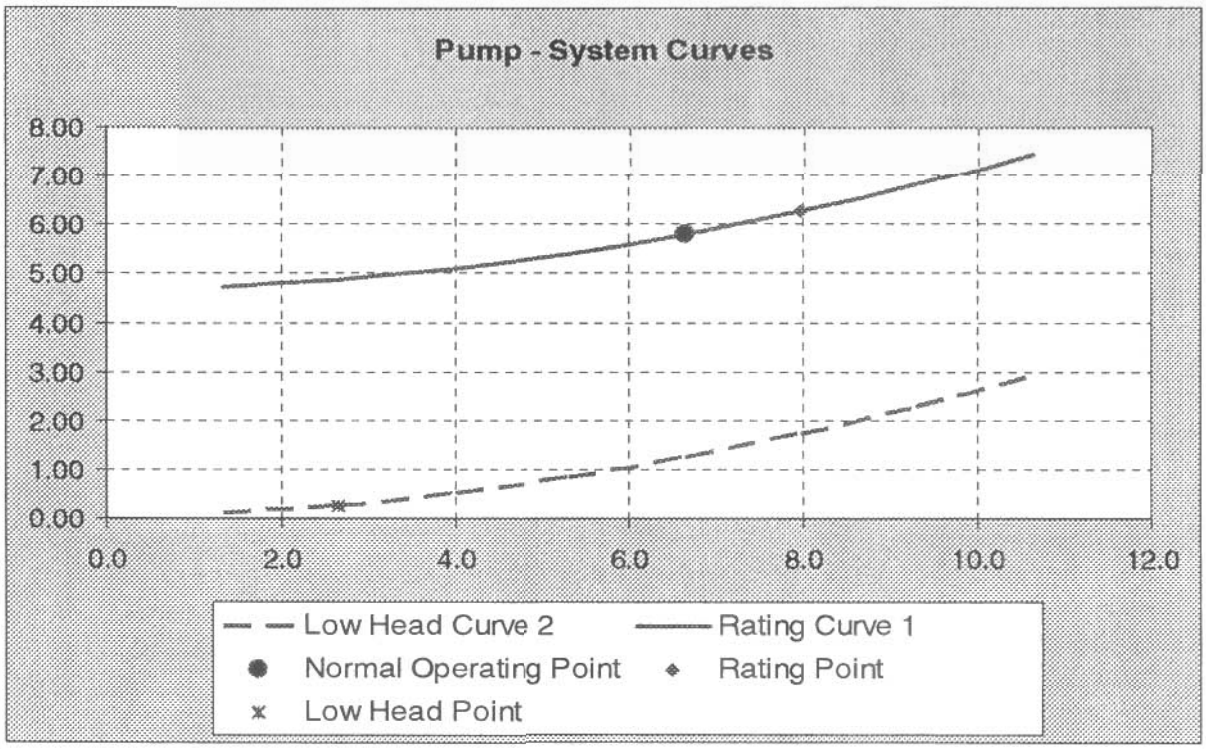
Flowserve – Model # 1K3x2-62RV M3ST

Acceptable Products:

Goulds, Worthington, Crane

DETAILED PUMP SPECIFICATION

System Curve:



Flow (L/s)	Rating Curve 1 TDH (m)	Low Head Curve 2 TDH (m)	Comments	Tag Numbers P-501 & P-502
1.3	4.71	0.12		
2.7	4.85	0.27		
4.0	5.09	0.51		
5.3	5.40	0.83		
6.7	5.79	1.24		
8.0	6.27	1.72		
9.3	6.82	2.28		
10.6	7.44	2.93		
6.7	5.79		Normal Operating Point	

Notes:
1. Pumps operate as duty/standby.
2. Pumps deliver to FEW tank.

END OF SECTION

PRIMARY INFLUENT FILTRATION

1. GENERAL

1.1 Section Includes

.1 This section specifies the design, manufacture, supply, factory testing, delivery, and supervision of installation, testing and commissioning of a primary influent filtration system. The system consists of stainless steel tank, belt filter, motor and gear drive, air lance cleaning system, air compressor, control panel, and conveyor/compactor system.

.2 Supply and install the filtration system complete and operational as shown and specified herein.

1.2 Submittals

.1 Shop Drawings: Submit in accordance with Section 01300 and Section 11005:

.2 Operating and Maintenance Data: Provide for incorporation in operation and maintenance manual as specified in Section 01730. Include complete description of operation together with general arrangement and detailed drawings, wiring diagrams for power and control schematics, parts catalogues with complete list of repair and replacement parts with section drawings illustrating the connections and identifying numbers.

1.3 System Design Information

.1 Shop drawings showing general arrangements and layouts, overall dimensions, connection and mounting details, cross-sections and weights, make and model numbers, and a complete materials list. Include specifications, catalogue cuts, details of pumps and valves, and descriptive literature. Include electrical schematics and control schematics. Provide information for all components including the following specific details:

.2 Design information indicating predicted solids capture, backwash run times, backwash water requirements, headloss and other pertinent information.

.3 Characteristics of the proposed belt, including but not limited to, media material, nominal pore size, and pore size range.

.4 Weir lengths and elevations and water levels over the weirs at average and peak flow conditions.

.5 Operating level setpoints to start and stop a belt cleaning cycle.

.6 Maximum flow at which overflow is expected and corresponding headloss at that overflow condition.

.7 Calculations and background data including sizing calculations and data indicating conformance of the system with the specified filtration requirements.

.8 A graph or graphs characterizing the headloss expected through the system that meet the following requirements:

.9 Provide headloss through a belt based on a clean water condition.

1.4 System Construction Information

.1 Installation instructions indicating assembly and mounting requirements, alignment and assembly tolerances, and points of connection for ancillary services.

.2 List of which components and materials will be shipped pre-assembled and a parts list for other components and materials. Weights and physical dimensions shall be indicated for each part, assembly and package to be shipped.

1.5 Operating Information

.1 Detailed operating description for the entire system.

.2 Indicate cleaning requirements.

.3 Operating characteristics of all electrical and control equipment; operating voltage and amperage tolerances; ancillary electrical services required.

1.6 Coordination

.1 Coordinate all installation requirements and requirements and location of anchors with the Contractor.

1.7 Shipment, Protection, and Storage

.1 Ship equipment pre-assembled to the degree which is practicable.

.2 Provide storage instructions indicating specific requirements to ensure there is no weathering, corrosion, contamination, mechanical damage, distortion, or any other deterioration of the components.

.3 Identify all other special storage requirements.

2. PRODUCTS

2.1 Description

.1 Provide a complete primary influent filtration system, consisting of the following components:

a. Welded steel tank

b. Inlet, outlet and overflow nozzles