PROJECT OVERVIEW & INDEX VOLUME 1

BCC CONTRACT NO. S.2015/963

WEIR ENGINEERING PTY LTD
A.C.N. 000 373 339

Weir EnviTech

SCSQ

BRISBANE CITY COUNCIL

DEPARTMENT OF WATER AND SEWAGE

PUMPWELL NO. 1
EAGLE FARM STATION

OPERATION AND MAINTENANCE
INSTRUCTION MANUAL

WEIR ENGINEERING JOB NO. 15140
BCC CONTRACT NO. S.20/95/963

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BRISBANE CITY COUNCIL
DEPARTMENT OF WATER SUPPLY AND SEWAGE

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Volume 1 Project Overview and Index

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BRISBANE CITY COUNCIL
Dept. Water Supply and Sewage
Pumpwell No. 1, Eagle Farm Pump Station

BCC Contract No.: S.20/95/96
Vertical Sewage Pump
Operation and Maintenance Manual

REVISIONS/AMENDMENT CERTIFICATE

It is certified that the amendments promulgated in the undermentioned Amendment List have been incorporated in this copy of the Publication.

Amendment List		Topic/Set	*Amendment Effect	Amended By	Date
No.	Date of Issue	Affected			
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***Note: Insert brief details of page(s) amended, inserted or cancelled.**

1.3 High Voltage Induction Motor

The High Voltage Induction Motor for driving the pump is manufactured by Crompton Greaves in Mumbai, India. The motor is a 6.6kV, 10-pole vertical flange mounted machine rated at 2,000kW, 50Hz providing adequate torque to meet the specified pump duty over the entire speed range.

The motor design is of the totally enclosed type with water-cooled heat exchangers mounted on either side of the machine. (CACW – Closed Air Circuit, Water cooled)

For detailed information on the High Voltage Induction Motor, Refer to Volume 5 of this manual.

1.4 Pump Instrumentation

The instrumentation supplied with this project is provided to monitor the operational state of both the high voltage induction motor and the SRA 900/1000 Double Volute Vertical Sewage pump.

The instrumentation supplies control/monitoring signals directly to the Brisbane City Council pump control system.

The following pump parameters are monitored:

- Bearing and pump casing vibration.
- Bearing temperatures.
- Motor winding temperatures.
- Pump and motor speed.
- Pump reverse rotation.
- Moisture build-up in the motor casing and heat exchangers.

1.5 Pump Controls

The Pump Control System was supplied, installed and commissioned by others.

All control actions, sequencing and data logging derived from the pump instrumentation is carried out by the Pump control system.

Section 1 Project Overview

This project incorporates the manufacture, testing, installation and commissioning of three (3) new sewage pumps for the Brisbane City Council. They are installed in Pumpwell No 1 at the Councils Eagle Farm Pump Station. The scope of supply includes the pumps, drive motor, variable frequency drive unit and associated instrumentation. The pump power supply and control system was supplied by others.

1.1 Vertical Sewage Pumps

The vertical sewage pumps (Model SRA 900/1000) are manufactured by Weir Engineering a their Dandenong works facility. They are a vertical mounted, single stage, bottom entry double volute centrifugal design in general compliance with the Specification. The pumps are capable of variable speed operation and will deliver a flow of 2100l/s of sewage at a 70m head when operating at 593rpm.

Each pump is fitted with an impeller of "non-ragging" design to ensure that spheres of up to 150mm diameter and other solids consistent with raw sewage can be passed through the pump without blockage. The pump is driven through a Gridflex flexible coupling with over torque shear protection set up to operate in the event that a larger object becomes jammed in the pump.

For detailed information on the Vertical Sewage Pump, Refer to Volume 2 of this manual.

1.2 Perfect Harmony Drive

The pump is driven by a Variable Voltage, Variable Frequency (VVVF) power electronic drive unit manufactured by Robicon in the U.S.A. Power supply is taken at 11kV and supplied to the motor at 6.6kV. The design utilises a transformer with 6 phase shifted secondary windings feeding power cells in a series configuration to produce a very high quality, low harmonic, variable frequency power output to the motor.

The Perfect Harmony Drive is rated for a loading of 2,600HP. It incorporates 'state of the art' vector speed control technology to meet the Specification requirement of steady state speed regulation to within ±1 rpm.

For detailed information on the Perfect Harmony Drive, Refer to Volume 4 of this manual.

Volume 6 Pump System Instrumentation

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