

SPECIFIC AND GENERAL NOTES

1. DIMENSIONS AND EQUIPMENT DETAIL

The Engineer’s design incorporates specific pumping equipment, standard pipe specials, reflux valves and valves, etc. The Engineer’s acceptance of the Contractor’s offered equipment shall not relieve the Contractor from his responsibility to alter all the piping drawings accordingly, should the offered equipment not correspond to that of the Engineer’s design,

Stated openings for any penstock or channel gate shall be interpreted as the overall free opening available. Channel and gate frames shall not be permitted to encroach on the stated overall free opening. The frame shall either be cast into the concrete or bolted depending on installation requirements.

Prior to the final design of the civil structural infrastructure, the successful Tenderer, shall submit all relevant information of equipment offered, with respect to openings, boxouts, pedestal support and pedestal fixing.

The Engineer has assumed a final gasket dimension of 3 mm in detailing and dimensioning the pipe work detailed.

2. IDENTIFICATION

Pipe items are numbered sequentially and include for a coding system of each component, which includes all pipe work, valves, etc and such numbering shall form part of a structure.

It shall be a requirement that each pipe item listed shall be marked, legibly, indelibly and durable, such that permanent damage to protective coatings does not occur.

3. ABBREVIATIONS

General
F/F – Face to Face dimensions,
IF – Insulating flange,
WT – Pipe wall thickness,
FA – Flange adaptor,
FC – Flexible coupling, and
MWP – Maximum working pressure.

Material
GMS – Galvanised mild steel pipe work,
MS – Mild steel
HD – Heavy duty galvanised mild steel pipe work,
CI – Cast iron, and
SS – Stainless steel 304L

Coatings
FBE – Fusion bonded epoxy coating,
EP – Two pack epoxy coating,
GS – Galvanised steel, and
CM – Cement mortar lined

4. STEEL PIPE ITEMS AND COUPLINGS

Design of Pipes

Unless otherwise specified in the Schedule of Quantities or on the Pipe Item Schedule, the minimum pipe wall thickness to prevent buckling of straight pipe due to internal sub–atmospheric pressures, shall not be less than the following:

Outside Diameter (mm)	Minimum Wall Thickness (mm)
219,1 to 558,8	4
609,6 to 660,4	5
711,2 to 812,8	6
863,7 to 1092	8
1118 to 1245	10
1397 to 1620	12
1708 to 1860	14
2020 to 2220	16

Material

All pipe items shall be manufactured using grade 300 WA steel as prescribed within SANS 1431 : 2007. All welds shall be in accordance API 1104,

5. FLANGES AND GASKETS

Flanges offered shall be in accordance with SANS 1123, however unless specified differently. The specified classes shall indicate and signify the following:–

Class	Working Pressure	Table SANS 1123
6	600 kPa	600/3,*
10	1 000 kPa	1 000/3*,
16	1 600 kPa	1 600/3*,
25	2 500 kPa	2 500/3,
40	4 000 kPa	4 000/3

- * Donates that flat faced flanges are used,
- Operating pressures in excess of 1 000/3, flanges shall be of the raised type design,

Testing pressures shall be 1,5x working pressure, for all flanges, pipe work and flexible couplings.

Equipment such as valves, flow meters, pump sets, etc supplied with type flanges in accordance with BS type shall not relieve the Contractor from ensuring mating flanges are drilled accordingly.

In the event of allowing installation flexibility, selected pipe items shall be specified to be provided with a loose flange. Dimensions for such items "loose flange" are longer than necessary. The rate for such items shall include cost for reducing the length as indicated on the drawings.

Blank flanges for pipes >= 400mm Ø shall be provided with a minimum of two lifting handles approved by the Engineer.

Gaskets for pressure ratings up to and including 2 500kPa, shall be cut from material manufactured in accordance with the BEP J59 specification or equivalent. Gaskets for pressure ratings in excess of 2 500kPa up to and including 4 000 kPa, shall be cut from material manufactured in accordance with the BS 2815 B specification.

Gaskets for pressure rating up to and including 1 600 kPa shall be 3 mm thick CAF full faced gaskets. Gaskets for pressure ratings in excess of 1 600 kPa shall be 3 mm thick CAF ring gaskets.

6. SUPPORTS

Supports or anchor supports shall be required for various pipe items. Tenderer’s shall submit with the Tender details of proposed supports and anchors forming part of the workshop drawing submission, if not detailed by the Engineer.

Site welds that shall cause damage to factory corrosion protective coatings shall not be permitted.

Anchor bolts in concrete shall be a minimum of 16 mm Ø 316 stainless steel.

7. BOLTS

Each flange connection shall be provided with suitable bolt unit of standard bolt length, nut and two washers and ring gasket, and flange adaptors.

All bolts, nuts and washers shall be hot dipped galvanised in according to SANS EN 10240 : 1997 and SANS ISO 1461 : 1999.

Bolt, after torque and assembly, shall protrude beyond the nuts by a minimum of three (3) threads.

8. VALVES

All valves shall be flanged with a minimum rating of PN10. Gearbox positions for all butterfly type valves shall be right hand with right hand projection unless stated differently on the drawings.

Gate and resilient seal type valves shall be designed and manufactured in accordance with SANS 664, equipped with hand wheels, unless specified differently. These valves shall be supplied with the pressure reducers and / or gears to enable functioning at the specified pressures.

8. SURFACE PREPARATION

The surfaces prior to corrosion protection shall be as specified below :–



All surfaces exposed to wet/submerged conditions shall be blasted and cleaned in accordance with SA 3. Surfaces considered and identified to be "dry conditions" shall be blasted and cleaned to SA 2 ½.

9. Linings and Coatings

Linings and coatings shall be in accordance with Particular Specifications PE : Lining and Coating of Steel Pipes and Specials. The corrosion protection shall be two pack Epoxy and donated "C" on pipe item list unless specified differently.

10. Stainless Steel Weld Protection

- The corrosion protection of welds will entail pickling and passivating. The following procedure shall apply:
- Blast clean with non–metallic grit, or grind or wire brush, using dedicated grinders or stainless steel wire brushes to achieve the required smooth profile or remove scale.
 - Pickle with a thixotropic paste containing 15 – 20% nitric acid and hydrofluoric acid, for a contact time of 15 to 20 minutes. Rinse copiously with clean water.
 - Repeat the above process, if necessary to remove all discoloration.
 - Passivate with 10% nitric acid, or proprietary passivating paste, for a contact time of 10 to 15 minutes, keeping the surface wet during this period.
 - Rinse copiously with clean potable water until washings are neutral.

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