


TRANSNET



port terminals

ANNEXURE A

EEAM-Q-008 CORROSSION PROTECTION

REVISION Ver. 17	REFERENCE EEAM-Q-008	
---------------------	-------------------------	---

DOCUMENT TYPE: SPECIFICATION	AUTHORISATION DATE: Date signed by CEO
------------------------------	--

TITLE: SPECIFICATION FOR CORROSION PROTECTION	PAGE 0 of 13
--	--------------

COMPILED BY: EQUIPMENT ENGINEERING AND ASSET MANAGEMENT (GENERAL MANAGER)	REVIEWED BY: SENIOR MANAGER (PROJECT MANAGER)	REVIEWED BY: SENIOR MANAGER (ASSET MANAGER)
--	--	--

ACCEPTED BY: CHIEF FINANCIAL OFFICER	AUTHORIZED BY: CEO
---	---------------------------

FUTURE REVISION RECORD NUMBER	DESCRIPTION OF REVISION	APPROVAL	DATE
-1-			18/06/2008

CONTENTS		
		Page
1.0	SCOPE	03
2.0	TYPES OF CORROSION PROTECTION TO BE USED	03
3.0	PROPRIETARY ITEMS	04
4.0	SURFACE PREPARATION	04
5.0	JOINTS AND MATING SURFACES OF MEMBERS	07
6.0	PAINTING PROCEDURES	08
7.0	COLOUR CODES	09
8.0	FIELD TOUCH-UP PAINTING	11
9.0	GENERAL	12
10.0	MAINTENANCE PAINTING OF STRUCTURES	13

KEYWORDS SPECIFICATION	DATE OF LAST REVIEW: N/A DATE OF NEXT REVIEW: 18/06/2008
---------------------------	---

DETAIL CONTENTS

Title		Page
1. Scope		3
2. Types Of Corrosion Protection To Be Used		3
3. Proprietary Items		4
4. Surface Preparation		4
5. Joints And Mating Surfaces Of Members		7
6. Painting Procedures		8
7. Colour Codes		9
7.1.1 Mobile equipment (cranes, loaders etc.)		9
7.1.2 Industrial buildings, conveyor structures		9
7.1.3 General		9
7.1.4 Pipe lines		11
7.1.5 Colour bands for pipes		11
8. Field Touch-Up Painting		11
9. General		12
10. Maintenance Painting Of Structures		13

June 2008

1. SCOPE

- 1.1. This specification covers Transnet Port Terminals requirements for protective coating of iron and steel structures, electrical motors, gear boxes etc. against corrosion and must be read in conjunction with the main specification as well as the following (latest editions):-

SABS 064	"Preparation of steel surfaces for coating"
SABS 763	"Hot-dip (galvanized) zinc coatings"
SABS 1091	"National colour standards for paint"
BS 5493	"Code of practice for protective coating of iron and steel structures against corrosion"

2. TYPES OF CORROSION PROTECTION TO BE USED

- 2.1. The coatings specified in this specification are chosen according to BS 5439, Table 3, part 9, to ensure that the condition of the surface will be at least RE2 on the European scale of degree of rust, after 10 years in a environment of frequent salt spray, chemicals and polluted coastal atmosphere. During the 10 years, the normal maintenance painting will be done.
- 2.2. The paint manufacturer shall guarantee the paint for at least 10 years.
- 2.3. Should a tenderer wish to offer coating systems other than those specified, as an alternative, he shall submit full technical details and a list comparing all appropriate details of the alternatives proposed, with the original specified.
- 2.4. Tenderers must ensure that the different coats they offer in their tenders are compatible with each other.
- 2.5. The coating of proprietary items must be done according to Clause 3.
- 2.6. All galvanized components including bolts and nuts but excluding walkway gratings, must be painted with the specified system, unless otherwise approved.

The following coating systems must be used unless otherwise specified in the main specification:-

Substrate	Coat No	Generic Description	Approved Brand Products	Dry Film Thickness (µm)
3CR12 steel	1	Surface tolerant epoxy primer	DULUX /SIGMA Sigmacover primer INTERNATIONAL (PLASCON) Intergard 269 STONCOR (CHEMRITE COATINGS) Carboline 193 Primer	65-75
	2	Two component recoatable, polyurethane finish (Gloss)	DULUX / SIGMA Sigmadur gloss INTERNATIONAL (PLASCON) Interthane 990 STONCOR (CHEMRITE COATINGS) Carboline 134	65-75
Galvanized Steel	1	Surface tolerant epoxy primer	DULUX /SIGMA- Sigmacover primer INTERNATIONAL (PLASCON) Intergard 269 STONCOR (CHEMRITE COATINGS) Carboline 193 Primer	65-75
	2	Two component recoatable, polyurethane finish (Gloss)	DULUX /SIGMA- Sigmadur gloss INTERNATIONAL (PLASCON) Interthane 990 STONCOR (CHEMRITE COATINGS) Carboline 134	65-75

Substrate	Coat No	Generic Description	Approved Brand Products	Dry Film Thickness (µm)
Mild steel	1	Two component self curing inorganic zinc ethyl silicate OR two component zinc rich polyamide cured	DULUX /SIGMA- Sigma MC60 OR Sigma-cover primer	65-75

	epoxy primer	INTERNATIONAL (PLASCON) Interzinc 233 OR Interzinc 52 or 53	
		STONCOR (CHEMRITE COATINGS) Carbo Zinc 11 OR Carbo-line 658 Primer	
2	Flexible recoatable high build polyamide cured MIO epoxy	DULUX/SIGMA – Sigmacover CM MIO	125-150
		INTERNATIONAL (PLASCON) Interseal 010 MIO	
		STONCOR (CHEMRITE COATINGS) Carboline 190 HB M.I.O. or Carboline 193 M.I.O.	
3	Two component recoatable, polyurethane finish (Gloss)	DULUX/SIGMA Sigmadur gloss	65-75
		INTERNATIONAL (PLASCON) Interthane 990	
		STONCOR (CHEMRITE COATINGS) Carboline 134	

- 2.7. The paint manufacturer's recommendations for the application of the different coating systems, curing time before handling or application of subsequent coats, health and safety recommendations etc. must be carefully adhered to.
- 2.8. Paint contractors must have a quality management system which must be submitted to the Engineer for approval before commencement of the work.
- 2.9. Galvanizing shall be done to SABS 763 heavy duty hot dip galvanizing to a thickness of at least 85µm. Electroplated components in zinc or cadmium are not acceptable.
- 2.10. All mounting bolts, nuts, washers and brackets as well as all fixing bolts, studs nuts and washers shall be of stainless steel. Fixing rivets shall be of either stainless steel or brass.
- 2.11. High tensile bolts for friction grip joints must not be galvanised and must be primed and painted after installation. High tensile bolts must be certified.
- 2.12. The full paint system shall be applied to all surfaces which are to be covered with wear pads, linings etc.
- 2.13. For steelwork which will be transported over long distances and erected on site the two pack epoxy primers is preferred.

3. PROPRIETARY ITEMS

- 3.1. Proprietary items such as gearboxes, motors, brakes etc. must either be painted according to this specification or where the coating system is equal to or exceeds this specification sufficient proof of the coating system applied must be provided. Items which are nearly equal to this specification shall be given a finishing coat according to this specification's thicknesses and final colours and to the following procedure:-
 - 3.1.1. A cross cut test must be done to SABS SM159 to determine if the original coating adheres correctly to the substrate;
 - 3.1.2. The original coating shall be rubbed down to remove any smooth finishing to form a suitable key for the finish coat and any damaged areas prepared and patch primed with a suitable primer;
 - 3.1.3. The item must then be detergent washed to remove any foreign matter, taking care that no dust, solvent etc. contaminates any working part of the item;
 - 3.1.4. A test shall be done on the existing coat to ensure that the finish coat will not react with and cause undue dissolving and lifting of the existing coat. This can be done by applying a small quantity of the finishing coat thinners.
 - 3.1.4.1. Should any undue dissolving or lifting occur, a suitable intermediate or barrier coat must be applied before the finishing coat is applied.
 - 3.1.5. Proprietary items which failed the cross cut test and which generally have inadequate protection shall be dismantled and the full corrosion protection specification applied.

4. SURFACE PREPARATION

- 4.1. All steel surfaces shall be detergent washed and fresh water rinsed to remove all oil, grease and surface contaminants before shot blasting.
- 4.2. Sharp edges shall be radiused and major roughness of welds shall be removed by grinding. Welding spatter and flux shall be removed.
- 4.3. Components manufactured from hot rolled steel sections and steel plate shall be blast cleaned to base metal in accordance with SABS 064 grade SA2½ - very thorough blast cleaning, to remove all mill scale, rust, weld spatter etc.
 - 4.3.1. "Sharp" chilled iron shot, chilled iron grit, or granular abrasive slag is to be used to produce a proper degree of surface roughness.
 - 4.3.2. Blast profile shall be determined by micrometer profile gauge, Keane-Tator surface profile comparator or Testex press-o-film.
 - 4.3.3. The profile height shall be between 40 and 50µm at any point.
- 4.4. Good quality blast cleaning and spray painting equipment shall be used. Air used for spraying and blast cleaning shall be free from all traces of oil, water and salinity. Water and oil traps must be fitted to all equipment.
- 4.5. Wheel abrading equipment shall not be used unless an angular profile the same as clause 4.3.3 is achieved.
- 4.6. When wet blasting is done the primer shall be applied before oxidization starts or surface contamination occurs.
- 4.7. Components manufactured from 3CR12 steel shall be lightly abraded. The components shall then be passivated by using a mixture of 10 - 15% nitric acid in water which is rinsed off after 10 - 15 minutes. The surface shall be neutralized to pH 7 before it is coated.
- 4.8. Hot-dip galvanized components, galvanized bolts and nuts etc. shall be lightly abraded with a galvanizing pre-cleaner. The components shall then be washed with detergent and water and washed down with clean water until a water break free surface is achieved. Allow to dry thoroughly.

5. JOINTS AND MATING SURFACES OF MEMBERS

- 5.1. Mating (faying) surfaces of members which have to be joined by high tensile steel bolts in friction grip shall be cleaned according to Clause 4 and painted with primer only.
 - 5.1.1. After being assembled joints so formed shall be seal welded and painted or after the intermediate coat was applied the edges shall be sealed with an approved brand of paintable flexible sealant or mastic (e.g. Butyl rubber, polyurethane sealer or two component epoxy), by means of a suitable caulking gun.
- 5.2. All rivets, bolts, welds, sharp edges etc. must be covered with a "stripe coat" of the primer or intermediate coat specified to ensure the correct dry film thickness on sharp edges, as well as sealing of bolt threads to head etc.
- 5.3. All other mating surfaces must be sealed with an approved brand of flexible Butyl rubber, paintable Silicone, polyurethane sealer or two component epoxy sealer, and joined while still wet. All excess compounds must be completely removed.

6. PAINTING PROCEDURES

- 6.1. Directly before the application of paint, the area to be painted shall be degreased with a suitable degreaser and left to dry.
- 6.2. Paint shall only be applied under the following conditions:-

- 6.2.1. There is adequate light.
- 6.2.2. The steel temperature is between 5 and 50°C and at least 3°C above the dew point of the air.
- 6.2.3. The relative humidity of the air is between the limits specified by the paint supplier.
- 6.2.4. Wind does not interfere with the method used and sand and dust cannot be blown onto wet paint.
- 6.3. Steelwork shall be supported on trestles, at least 900 mm off the ground for painting purposes.
- 6.4. An adequate number of test readings shall be taken per square meter in order to determine the dry film thickness.
 - 6.4.1. The paintwork shall be acceptable if the average of the test readings taken falls within or exceeds the ranges given.
 - 6.4.2. Paintwork shall not be acceptable if any single test reading is less than the specified minimum thickness.
- 6.5. An ultrasonic or electronic magnetic flux thickness measurement gauge shall be used, but in case of dispute, destructive testing shall be applied. The painted steelwork shall present a clean, neat appearance of uniform colour and gloss as applicable to the paint used. Each coat of paint shall be applied as a continuous, even film of uniform thickness. More than one application of paint may be required to achieve the dry film thicknesses specified or to obliterate the colour of the previous coating.
- 6.6. The use of thinners or solvents at any stage of the work is prohibited, unless specified by the paint manufacturer.
- 6.7. Precautions shall be taken to prevent coatings from being applied to equipment nameplates, instrument glasses, signs etc.

7. COLOUR CODES

Machinery and equipment shall be painted in the following final colours:-

Area	Colour	Code No. [SABS 1091 and International No's]
7.1.1	Mobile equipment (cranes, loaders etc.)	
	a) Structure, machinery and electrical houses, operator's cabins, chutes, hoppers etc.	Transnet Red RAL 3020
	b) Undercarriage, travel bogies, rubber tyred rims	Transnet Red RAL 3020
7.1.2	Industrial buildings, conveyor structures	
	a) Roofs and canopies	Pantone cool grey 10 RAL 7037 (Staubgrau)
	b) Painted walls	Pantone cool grey 3 RAL 7035 (Lightgrau) or SABS 1091 G62 (Pale grey)
	c) Steel columns, rafters, trusses	Pantone cool grey 5 RAL 7004 (Signalgrau)
7.1.3	General	
	a) Guards	Golden yellow SABS 1091-B49 RAL 1003
	b) Sheaves	Orange RAL 2008
	c) Cable reels (Stainless steel)	Orange RAL 2008
	Machine buffers and parts of machine which could constitute a serious hazard	Golden Yellow (High Gloss) with Luminous green stripes in chevron pattern SABS B49 and Luminous green

Area	Colour	Code No. [SABS 1091 and International No's]
e) Any exposed rotating part of machinery, electrical Switch-gear (other than starting and stopping devices and emergency stop control), electrical services e.g. conduit and allied fittings	Light Orange (High Gloss)	SABS 1091 B26 BS 381C-557
f) Low voltage switchgear panels where orange is not aesthetically acceptable	Light grey	SABS 1091-G29 BS 381C-631
g) Medium voltage cable trays, switchgear and motors (3,3 kV and up)	Oxford Blue	SABS FO2 BS 381C-105 RAL5003
h) Starting devices, low voltage cable trays and switchgear	Mid brunswick green (high gloss)	BS 381C-228 SABS1091-EO4 RAL6005
i) Portnet Logo	Transnet White	RAL 3012
j) Parts of stationary machinery (Electrical, motors, gearboxes, brakes, transformers, etc.)	Light Grey	SABS G29 BS 381C-631
k) Hand levers, hand wheels, oiling points, handrails on walkways, ladders	Golden Yellow (High Gloss)	SABS 1091 B49 BS 381C-356
l) Stopping devices, grease points, motor fan covers and danger signs (not symbolic safety signs for which see SABS 1186)	Signal red (High Gloss)	SABS 1091 A11 BS 381C-537 RAL3001
m) Walkways (non slip surfaces) (galvanized gratings not to be painted)	Shop floor green	
n) Informatory signs and notices (not symbolic safety signs for which see SABS 1186)	White on Emerald Green (High Gloss)	White on SABS 1091 E14 BS 381C- 228

Area	Colour	Code No. [SABS 1091 and International No's]
7.1.4 Pipe lines		
a) Reclaim water piping	Aluminium	
b) Slurry pipe lines	Dark admiralty grey	SABS 1091-G12
c) Fire protection piping	Signal red	SABS 1091-A11
d) Washwater drain pipes	Light grey	SABS 1091-G29
e) Instrument air	White with Strong blue band	White and SABS 1091-F11
f) Plant air	White with Flag blue band	White and SABS 1091-FO4
g) Potable water	Grass green	SABS 1091-D14

7.1.5 Colour bands for pipes shall be 75 mm wide for pipe sizes up to 150 mm diameter and 100 mm wide for 150 mm and above. The colour bands shall be applied to the pipe flanges, valves, junctions, walls or structures etc. in such a manner that the pipe may be easily identifiable. On straight sections the maximum spacing shall be 100 x the pipe diameter.

8. FIELD TOUCH-UP PAINTING

8.1. Damaged and unpainted areas, fasteners, welds, etc. shall be cleaned by wire brushing with hand tool or power tool in a manner which will minimize damage to sound paint. Grinding will not be allowed. Rust spots shall be cleaned to bright metal. Thick edges of old paint abutting on bare metal surfaces shall be feathered by scraping and sanding.

8.1.1. Where welding is required on areas already coated with the coating system, the coat should be stepped back for ± 30 mm around the weld area.

8.2. The paint shall be applied to match the original coats in accordance with the manufacturer's recommendations for the specific paint system.

Note: Inorganic zinc primers shall not be re-covered with an inorganic primer, but only with an organic zinc primer.

8.3. Areas of damaged galvanizing shall be repaired with an approved cold galvanizing product or metal sprayed by the wire spraying process with Zinc, and then touched up with the specific paint system.

9. GENERAL

9.1. All walkways, floors, maintenance platforms etc. must be painted with a durable, non skid coating of the appropriate colour.

9.2. Exposed machined surfaces must be coated with a strippable corrosion inhibitor (e.g. Tectyl).

9.3. Where different materials will be in contact with each other and galvanic corrosion can occur the contact areas of the materials must be isolated from each other or the joints made water proof to prevent ingress of moisture.

9.4. All components must be designed with corrosion prevention in mind and specifically the following:-

- 9.4.1. No entrapment of dirt, product, moisture etc.
 - 9.4.2. No areas must be inaccessible for maintenance such as too narrow gaps etc.
 - 9.4.3. Large flat areas rather than complicated shapes and profiles.
 - 9.4.4. No sharp corners and discontinuous welds.
- 9.5. Parts of equipment which are exposed to high temperatures must be coated with the following system:-

Coat No	Generic Description	Approved Brand Products	Dry Film Thickness (µm)
1	Two component self curing inorganic zinc ethyl silicate	DULUX /SIGMA-Sigma MC60 INTERNATIONAL (PLASCON) Interzinc 233 STONCOR (CHEMRITE COATINGS) Carbo Zinc 11	65-75
2	Single component high temperature moisture curing silicone with aluminum flakes	DULUX/SIGMA – Sigmatherm Silicate INTERNATIONAL (PLASCON) Intertherm 50 STONCOR (CHEMRITE COATINGS) Carboline 1248	40

10. MAINTENANCE PAINTING OF STRUCTURES

- 10.1. Areas which are only lightly corroded must be cleaned by means of high pressure water blasting or wire brushing by power tool and the following system applied:-

Coat No	Generic Description	Approved Brand Products	Dry Film Thickness (µm)
1	Surface tolerant two pack epoxy primer with aluminum pigments	Dulux/SIGMA Aluprimer STONCOR (CHEMRITE COATINGS) Carbomastic 15 INTERNATIONAL (PLASCON) Intergard 468,	125-150
2	Same as first coat OR micaceous iron oxide (MIO) epoxy	DULUX/SIGMA – Sigmacover CM MIO	125-150

		INTERNATIONAL (PLASCON) Interseal 010 MIO	
		STONCOR (CHEMRITE COATINGS) Carboline 190 HB M.I.O. or Carboline 193 M.I.O.	
3	Two component recoatable, polyurethane finish (Gloss)	DULUX/SIGMA Sigmadur gloss	65-75
		INTERNATIONAL (PLASCON) Interthane 990	
		STONCOR (CHEMRITE COATINGS) Carboline 134	

10.1.1. Alternatively, the Noxyde paint system can be used, consisting of two to three coats of water based Noxyde paint to achieve a DFT of 350 to 400 microns. Where the Noxyde system is used on areas other than slightly corroded structural areas, the following additional requirements must be observed:

- 10.1.1.1. Very smooth surfaces (e.g. 3CR12, stainless steel or hot-dip galvanized components, bolts, nuts and fittings, and HT bolts): Parts must be thoroughly degreased using OptiDegreaser, washed down with potable water, and immediately when dry, a single coat of OptiPrimeAqua applied.
- 10.1.1.2. Paintable flexible sealant/mastic: Only sealant approved by the paint manufacturer may be used, and an initial coat of OptiPrimeAqua applied over it before the further coats of Noxyde are applied.
- 10.1.1.3. Bolted/rivited connections: After blasting or and/or cleaning as required, apply a coat of OptiPrimeAqua and an additional stripe coat of Noxyde, in contrasting colour, to all bolt/nut and plate edges and crevices.

- 10.2. The adhesion of old coatings must be verified by doing a cross cut adhesion test on selected areas.
- 10.3. The compatibility of the new paint system on the old coating must be tested and guaranteed in writing by the paint supplier.
- 10.4. The work and coating system must be guaranteed for a minimum of 12 months.
- 10.5. All heavily corroded areas must be shot blasted to minimum SA2 and the three coat system indicated in clause 2.6 applied.
- 10.6. Areas where the old coating is still sound need only be high pressure cleaned with a suitable solvent and coated with one of the primers suggested in clause 10.2 (as tie coat) and then with one of the top coats suggested in clause 2.6 to get the appropriate colour and finish. The minimum dry film thickness of this tie coat must be 75 microns and top coat must be 50 microns, but the previous coating colour shall be completely obliterated to present a uniform colour.

Note: Inorganic zinc primers shall not be re-covered with an inorganic primer, but only with an organic zinc primer.

- 10.7. Repairs to the insides of all the enclosed sections of the booms as well as the insides of the crane legs, sill beams, cross beams, pylon cross bracing members etc. shall be done as above but the top coat need not be applied.

***** END OF SPECIFICATION HE 9/2/8 [Version 17] *****


TRANSNET



port terminals

ANNEXURE B

EEAM-Q-002 SPECIFICATION - HYDRAULIC EQUIPMENT

REVISION 1	REFERENCE EEAM-Q-002 (ORIGINAL SPECIFICATION –HE9.2.2 Ver6)		
DOCUMENT TYPE: SPECIFICATION			
TITLE: SPECIFICATION FOR HYDRAULIC EQUIPMENT		PAGE 0 of 08	
COMPILED BY: PROJECT ENGINEER ()	REVIEWED BY: CAPITAL PROJECTS MANAGER (DAN REDDY)	REVIEWED BY: ASSET MANAGER/SHEQR MANAGER ()	
AUTHORISED BY: GENERAL MANAGER – EQUIPMENT ENGINEERING & ASSET MANAGEMENT (HAMILTON NXUMALO)			
FUTURE REVISION RECORD NUMBER	DESCRIPTION OF REVISION	APPROVAL	DATE
-1-	Clause 12.7.2 (Specify steel as “braided”)		18/05/05
CONTENTS			
			Page
1.0	GENERAL		03
2.0	DIAGRAMS AND MANUALS		03
3.0	GENERAL DESIGN REQUIREMENTS		04
4.0	GENERAL CIRCUIT DESIGN REQUIREMENTS		05
5.0	INSTALLATION REQUIREMENTS		06
6.0	PUMPS AND MOTORS		06
7.0	CYLINDERS		06
8.0	VALVES		06
9.0	FLUID RESERVOIRS		07
10.0	FILTERS		07
11.0	SEALING DEVICES		08
12.0	PIPING, FITTINGS AND FASTENERS		08
13.0	SERVICE LIFE OF HYDRAULIC EQUIPMENT		08
KEYWORDS DESIGN, HYDRAULICS, SERVICE		DATE OF LAST REVIEW: N/A	
		DATE OF NEXT REVIEW: 09/2005	

DETAIL CONTENTS

Title		Page
1. General		2
2. Diagrams and Manuals		2
3. General Design Requirements		3
4. General Circuit Design Requirements		4
5. Installation Requirements		5
6. Pumps And Motors		5
7. Cylinders		5
8. Valves		5
9. Fluid Reservoirs		6
10. Filters		6
11. Sealing Devices		7
12. Piping, Fittings And Fasteners		7
13. Service Life Of Hydraulic Equipment		8

1. **GENERAL**

1.1 The Tenderer must note that the equipment will be required to work under humid and corrosive conditions and must supply details of design features. To meet these conditions over an extended service life, the maximum working pressure of the system must be limited to 20 MPa.

2. **DIAGRAMS AND MANUALS**

2.1 Graphical diagrams showing each piece of hydraulic equipment including all interconnecting lines, by means of graphical symbols as specified in B.S. 1917/Latest Edition or I.S.O. must be submitted with the tender.

2.2 Final diagrams form part of the drawings that must be supplied according to Specification HE9/2/9. Please refer to HE9/2/9 for details on the requirements for these drawings and delivery times.

2.3 All diagrams should bear TPT's standard drawing numbering system and should be included in the main drawing index.

2.4 A descriptive text shall be supplied with each diagram and should include the following:

2.4.1 Each item of equipment must have a distinct identification letter or number.

2.4.2 Identification of all hydraulic equipment by name, catalogue number, serial or design number and manufacturer's name.

2.4.3 Size of pipes (outside or inside diameter of pipes and wall thicknesses).

2.4.4 Diameter of each cylinder and length or stroke.

2.4.5 Pump input (kW power required) and speed.

2.4.6 Pressure range and/or setting of all pressure operated components.

2.4.7 The delivery at maximum working pressure for fixed displacement pumps.

2.4.8 Reservoir capacity.

2.4.9 Recommended fluid type and viscosity range as well as cleanliness limits.

2.4.10 Nominal capacity, speed range and torque rating of each hydraulic motor.

2.4.11 Quantity, capacity and type of strainers and/or filters.

2.4.12 Pressure test points.

2.4.13 Identification of directional control valve spool positions.

2.4.14 Flow rate and/or setting of flow controlling or operated components.

2.4.15 Clear identification of all port connections, with the same identification as that marked on the equipment.

2.4.16 Sequence of operations.

2.4.17 Bleed points.

2.5 The service requirements, details and other information for all hydraulic equipment must be incorporated into the manuals as described in HE9/2/9.

2.6 All valves and accessories shall be plainly identified with the same identification as shown on the diagram.

3 GENERAL DESIGN REQUIREMENTS

3.1 All hydraulic system components shall be compatible with the hydraulic fluid used.

3.2 Under conditions of continuous operation, the pump inlet temperature of the fluid must not exceed 65°C. The equipment shall operate satisfactorily in an ambient temperature range of 5°C to 45°C. (Relative humidity 100 %).

3.3 A pressure relief valve capable of relieving the maximum flow at the outlet of the pump shall be provided on the delivery side of the pump and there shall be no other valves between the pump and this relief valve. Where control valves in a closed position or any other circumstances which could result in an excessive hydraulic pressure in any component or circuit, pressure overload must be provided.

3.4 Hydraulic equipment shall be so designed that there is no external fluid leakage or ingress of air into it.

3.4.1 Where the design is such that the ingress of moisture into the hydraulic fluid cannot be completely prevented, the design shall

ensure that moisture is extracted from the system by means of a dryer device.

- 3.4.2 Bleed points shall be provided to release air which would otherwise cause malfunctioning of the system.
- 3.5 Each individual component in a hydraulic circuit shall be capable of functioning satisfactorily after being subjected to a static pressure of 50 % in excess of the maximum working pressure.
- 3.6 Piping shall not be used to support valves or other equipment where such mounting would over stress the piping.
- 3.7 All short stroke cylinder rods shall be protected by means of suitable bellows On longer stroke cylinders where this is not feasible, full details shall be submitted by the Tenderer on exactly what steps will be taken to minimise the effect of the aggressive environment on the cylinder rods.
- 3.8 Cylinders, motors and pumps shall be mounted in such a way that replacement of seals can be done in situ and without removing other equipment.

4 GENERAL CIRCUIT DESIGN REQUIREMENTS

- 4.1 All the hydraulic equipment and piping shall be so located or protected as to prevent damage from external forces and adverse atmospheric conditions. All piping must be insulated electrically from the structure.
- 4.1 Hydraulic circuits shall be designed so that load variations and changes in fluid temperature will not cause variations in the cycle time inconsistent with the service intended.
- 4.2 Where pressure testing points are necessary, they shall be provided in accessible positions.
- 4.3 All equipment and piping shall be accessible and shall be mounted in a position that will permit adequate maintenance and adjustment. Components must be removable without undue loss of fluid.
- 4.4 Hydraulic circuits shall be so designed that any failure of a pipe or joint in a circuit will not endanger the operation. All cylinders used for hoisting/luffing motions shall be fitted with burst pipe protection devices directly on the cylinder ports.
- 4.5 Hydraulic circuits for hoisting/luffing shall be fully redundant in terms of both the actuators and hydraulic supply. When a cylinder/pump fails, the motion must still be functional at full load but a reduced speed.

5 INSTALLATION REQUIREMENTS

- 5.1 All openings in hydraulic equipment shall be sealed, and all hydraulic reservoirs shall be thoroughly cleaned prior to installation.
- 5.2 The bores of all piping and fittings shall be cleaned to ensure that all scale, swarf and foreign matter are removed prior to final assembly.
- 5.3 Hydraulic power packs shall be mounted on a common base with a drip pan fixed underneath the machine to catch leaks and spills.

6 PUMPS AND MOTORS

- 6.1 Positive displacement pumps and motors are preferred.
- 6.2 Means are to be provided for filling or draining pump motor casings in accordance with the manufacturer's specifications.
- 6.3 When drive shafts of hydraulic pumps or motors are subjected to side loading, approval of the drive shall be obtained from the supplier of this equipment.

7 CYLINDERS

- 7.1 Cylinder shafts shall be of high quality stainless steel and protected by bellows against dust.
- 7.2 Double seals shall be used on all cylinders.
- 7.3 The end caps of big hydraulic cylinders shall be bolted to the cylinders to enable easy replacement of the seals.
- 7.4 All valves shall be suitable for continuous use in a highly corrosive marine environment, preferably stainless steel construction. Details to be provided with tender.

8 VALVES

- 8.1 Wherever possible, valves should be mounted so that their removal and replacement can be made without disconnecting pipe fittings.
- 8.2 Adjustable valves shall be such that their settings, when made, will be maintained against vibration.
- 8.3 Variable flow control valves shall show the direction of operation for increase and decrease of throughput.

- 8.4 Electrically operated control valves and other hydraulic control equipment shall be grouped and fitted in IP65 panels (as per electrical specifications). All pipes shall enter the panel from the sides or bottom only and through suitable pipe glands.

9 FLUID RESERVOIRS

- 9.1 The capacity of the fluid reservoirs shall be sufficient to contain all the fluid that can flow from the system into the reservoir, and maintain the fluid level at a safe working height to prevent cavitation in the pump during the operation cycle.
- 9.2 Reservoirs shall be equipped with flush mounted or protected fluid level indicators. They must be provided with markings indicating high and low levels with pump(s) running and high level with pump(s) stopped.
- 9.3 Reservoirs shall be constructed to prevent entry of foreign matter, including fluid contamination and moisture.
- 9.4 Both fluid intake and return points shall terminate sufficiently below the minimum fluid level to prevent aeration.
- 9.5 Ample and accessible provision shall be made for complete cleaning and filling of reservoirs. The bottom of the reservoir must be shaped in such a way that emptying and cleaning is easily facilitated.
- 9.6 Filler holes shall have strainers which do not unduly restrict the filling process, fixed such that hand tools are required for removal, and shall also be provided with well fitting caps. The breather hole on the reservoir must be protected by an air cleaner with replaceable filter.

10 FILTERS

- 10.1 The system shall have a "Rosean Tell-Tale", "Fawcett" or similar, full flow, hydraulic filter with electric light or mechanical flag indication. This filter may be fitted either in the intake, pressure or return lines (subject to the filter's limitations), and shall have a 10 μ m filtration. Hydraulic coping valves and sensitive servo valves shall be supplied with hydraulic fluid via a 5 μ m pressure line filter. A mesh, with 0,16 mm aperture (or finer), screen shall be fitted to the pump intake except when the main filter is fitted at that point.
- 10.2 Where swash-plate type hydraulic pumps are used, a 6 μ m pressure line filter shall be fitted.
- 10.3 All filters shall be easily accessible for replacement without draining the reservoir and/or system.
- 10.4 Junctions shall be provided in the hydraulic system for the testing of both the circuit and the hydraulic pump.

- 10.5 A suitable magnet should also be fitted in the bottom of the reservoir between the return side of the reservoir and the suction strainers. Magnets shall be easily removable for service.

11 SEALING DEVICES

- 11.1 All sealing devices shall be of materials which are compatible with the hydraulic fluid and operating conditions.

12 PIPING, FITTINGS AND FASTENERS

- 12.1 Where-ever practical, rigid piping must be used in lieu of flexible hoses.
- 12.2 Due to the corrosive conditions copper alloy, nickel alloy or stainless steel piping must be used.
 - 12.2.1 Copper alloy piping must comply with the latest version of BS 2871 Part 2.
 - 12.2.2 Nickel alloy piping must comply with the latest version of BS 3074.
 - 12.2.3 Stainless steel piping must comply with the latest version of BS 3605 Part 1.
- 12.3 Flexible hoses and couplings shall be in accordance with the requirements of B.S.2640 or B.S.3832/Latest.
- 12.4 Piping between actuating and control devices shall be as short as possible and pipes must be removable without dismantling equipment, components or adjacent piping. All rigid piping shall be securely supported to minimise vibration or movement. The length and method of supporting flexible piping shall be such as to avoid sharp flexing and straining, particularly at end fittings.
- 12.5 All hydraulic connectors and adaptors shall have dimensions complying with the latest version of BS 5200.
- 12.6 Only compression fittings must be used throughout (no capillary fittings).
- 12.7 All fittings and couplings shall be corrosion resistant, preferably brass, CUPRO-NICKEL alloy or stainless steel. Surface treated steel fittings are not acceptable.
 - 12.7.1 Copper and copper alloy fittings must conform to the latest version of BS 2051 Part 1 or Part 2.
 - 12.7.2 Braided Stainless steel fittings must conform to the latest version of BS4368.

- 12.8 All saddles and other accessories for fixing the hydraulic components to a structure shall be corrosion resistant and UV stabilised (where applicable). All threaded and other fasteners shall be stainless steel.
- 12.9 Long pipe runs shall be broken up into sections by flanged connections and manual shut-off valves where necessary.

13 SERVICE LIFE OF HYDRAULIC EQUIPMENT

- 13.1 All hydraulic equipment shall be designed to last the design life of the machines they are fitted on.
- 13.2 The following minimum service intervals shall be guaranteed unless otherwise specified:-
- | | |
|--|---------|
| 13.2.1 Filter change: | 5 000h |
| 13.2.2 Hydraulic oil changes: | 10 000h |
| 13.2.3 Overhauls of pumps, motors and cylinders: | 10 000h |

---oOo---

END OF SPECIFICATION HE 9/2/2 [Version6]

---oOo---


TRANSNET



port terminals

ANNEXURE C

EEAM-Q-009 QUALITY MANAGEMENT

REVISION 0	REFERENCE EEAM-Q-009		
DOCUMENT TYPE SPECIFICATION		AUTHORISATION DATE: Date signed by CEO	
TITLE: QUALITY MANAGEMENT SPECIFICATION FOR SUPPLIER/CONSTRUCTION		PAGE 1 of 14	
COMPILED BY:	REVIEWED BY:	REVIEWED BY:	
SENIOR MANAGER (QUALITYMANAGER)	SENIOR MANAGER (PROJECT MANAGER)	SENIOR MANAGER (GENERAL MANAGER)	
ACCEPTED BY:		AUTHORIZED BY:	
CHIEF FINANCIAL OFFICER		CEO	
FUTURE REVISION RECORD NUMBER	DESCRIPTION OF REVISION	APPROVAL	DATE 01/03/2010
-1-			
CONTENTS			
1.0 QUALITY MANAGEMENT SPECIFICATION FOR SUPPLIER/CONSTRUCTION			

KEYWORDS SPECIFICATION	DATE OF LAST REVIEW: N/A
	DATE OF NEXT REVIEW: 01/03 2010

DETAILS CONTENTS

Title		Page
-------	--	------

1. Table of Contents		2

Table of Contents

1.	Introduction	1
2.	Definitions	1
3.	Applicable Documents	2
3.1	General.....	2
3.2	Statutory Regulations	2
3.3	Codes and Standards.....	2
4.	Quality System	3
4.1	General.....	3
4.2	Supplier/Contractor Quality System Requirements	3
4.3	Supplier/Contractor Documentation Requirements	3
5.	Quality Assurance	3
5.1	Project Quality Plan	3
5.2	Procedures	4
5.2.1	Document Control	4
5.2.2	Design Control	5
5.2.3	Procurement.....	5
5.3	Supplier/Contractor Audits.....	5
5.4	Transnet Port Terminals Audit.....	5
6.	Inspection and Testing	5
6.1	General.....	5
6.2	Quality Control Plans	6
6.3	Inspection Points	6
6.4	Revision to Quality Control Plans	6
6.5	Kick Off Meeting	7
6.6	Schedule of Inspection	7
6.7	Field Inspection Checklists	7
6.8	Inspection Notification	7
6.9	Inspection and Testing	7
6.10	Inspection Release.....	8
6.11	Special Processes	8
6.12	Welding Procedures	8
6.13	Material Traceability	9
6.14	Material Certification	9
7.	Non Conforming Products	10
7.1	General.....	10
7.2	Corrective and Preventative Action	10
8.	Concession Requests and Technical Queries	10
8.1	Concession Requests	10
8.2	Technical Queries.....	10
9.	Inspection, Measuring and Test Equipment	11
9.1	Calibration	11
9.2	Use of Inspection, Measuring and Test Equipment.....	11
9.3	Verification of Previous Test Results.....	11
10.	Quality Records	12
	Annexure A - Sample Quality Control Plan	13
	Annexure B – Request for Concession	13

1. Introduction

This Specification outlines the minimum requirements to ensure that products and services supplied to Transnet Port Terminals are manufactured, provided, constructed or installed in accordance with all specified requirements as defined in the Contract, all associated specifications, drawings, codes and standards.

2. Definitions

Term, Abbreviation	Meaning
Data	All drawings/documents/data/information and DP's required to be supplied under the Contract
Data Pack (DP)	A compilation of manufacturing data, certification, inspection and testing records prepared by the Supplier/Contractor to verify compliance with the Contractual requirements.
Employer	For the purposes of this document, the term Employer has the same meaning as applied to the term Client.
Field Inspection Checklist (FIC)	A document that details the checks, requirements and test parameters for each type of equipment to permit field installation and pre- commissioning of the equipment.
TPT	Transnet Port Terminals is the Employer's Nominated Agent in terms of the Conditions of Contract.
Inspection Release Report (IRR)	A document issued to the Supplier/Contractor by TPT advising release of the Materials for shipment. This does not relieve the Supplier/Contractor of its obligations in accordance with the Terms and Conditions of the Contract.
Inspection Waiver Report (IWR)	A document issued to the Supplier/Contractor by TPT advising that TPT has waived final inspection for the materials listed in this document. The issue of this Report does not preclude further inspection by TPT, is issued without prejudice and does not relieve the Supplier/ Contractor from the guarantees and obligations included in the Contract/ Contract.
Project Quality Plan (PQP)	A document prepared by the Supplier/Contractor providing relevant information applicable to the installation and maintenance of the specific equipment, including consumables (eg. oils etc)
Quality Control Plan (QCP)*	A document that outlines the Supplier/Contractor's strategy, methodology, resources allocation, Quality Assurance and Quality Control coordination activities to ensure that Goods and Services supplied meet or exceed the requirements defined in the Contract, drawings, codes and standards.
Supplier/Contractor	A document outlining specific manufacturing / construction inspection and testing requirements, including responsibilities, test acceptance criteria, nomination of witness and hold points. For the purposes of this document, the term Supplier/Contractor has the same meaning as applied to the term Sub-Supplier/Sub-Contractor
Supplier/Contractor Data Requirements	This refers to the documentation required to be submitted by the relevant Supplier / Contractor in terms of the Contract.
Technical Query Note (TQN)	These requirements are generally tailored to suit the particular Scope of Work, although it also addresses the manner in which the documentation is required to be submitted, eg Hard copy, Electronic copy etc
	This refers to a document used by the Supplier/Contractor to formally clarify a Technical Query related to the scope of supply. This should not be used where a non-conformance has already been initiated.

3. Applicable Documents

3.1 General

All work performed shall comply with the requirements of this Specification, the documentation referenced in the Contract and the latest revision/edition of the relevant Codes and Standards referenced herein.

3.2 Statutory Regulations

Occupational Health & Safety Act, Act No 85, of 1993 and Regulations as amended.

3.3 Codes and Standards

Document No.	Title
ISO 9001	International Standard Series Quality Systems
EEAM-Q-013	Punch Listing Standard

4. Quality System

4.1 General

The Supplier/Contractor shall be responsible for all quality activities necessary to ensure the Work meets the requirements specified in the Contract, and shall manage and coordinate all Quality aspects of Work in accordance with the requirements of this Specification, and the Supplier/Contractor's PQP and QCP's once reviewed and approved by TPT.

The Supplier/Contractor shall ensure that all Sub-Suppliers/Sub-Contractors also conform with the requirements of this Specification.

4.2 Supplier/Contractor Quality System Requirements

The Supplier/Contractor shall have, maintain and demonstrate its use to TPT, its documented Quality Management System. The Supplier/Contractors Quality Management System should be in accordance with the International Standard ISO 9001.

The Supplier/Contractor shall submit its Quality System documentation to TPT at the time of tender and at Contract Phases as detailed below:

- Project Quality Plan
- Quality Policy
- Index of Procedures to be used
- Programme of internal and external audits

4.3 Supplier/Contractor Documentation Requirements

The Supplier/Contractor shall develop and maintain a comprehensive register of documents that will be generated throughout the project, and shall include all quality related documents. The register shall be submitted to TPT for review.

TPT shall indicate those documents required to be submitted for information/review and/or acceptance and this shall be indicated in the Supplier/Contractors' Document Register. The register shall indicate the dates of issue of the documents taking into account sufficient time to allow TPT review/acceptance cycle prior to the document being required for use.

5. Quality Assurance

5.1 Project Quality Plan

Where specified, the Supplier/Contractor shall submit a PQP to TPT within 28 days after the Contract start date. The PQP shall detail how the Supplier/Contractor's Quality System will be applied to the Scope of Work specified in the Contract, and shall address the following:

- Satisfying the technical and quality requirements of the Supplier/Contractor's Scope of Work, and relevant elements of the applicable ISO 9001 standard
- include all quality activities relevant to the Scope of Work, identifying all procedures, reviews, audits, controls and records used to control and verify compliance with the specified Contractual requirements

Include a listing of all special processes (eg. welding and non-destructive testing, cube testing etc) envisaged for use, including confirmation of personnel certification as required

- Include all proposed method statements (for site based work activities)
- Include a description of the Supplier/Contractor's project organisation, with key positions and responsibilities identified and individuals named. The organisation structure shall also indicate the resources committed to the management / coordination of QA / QC activities
- Include a listing of all Quality Control Plans (QCP's), and associated Field Inspection Checklists (FIC's), as applicable
- Identify in the Project Quality Plan any Sub-Supplier/Sub-Contractor work. Sub-Supplier/Sub-Contractor plans shall be approved by the Supplier/Contractor, and a copy forwarded to the TPT
- Include the proposed Authorised Inspection Authority (where applicable - for pressurised equipment and systems)
- Include a schedule of proposed quality records

The PQP shall be controlled and re-submitted for approval when required to incorporate any change necessary during the Contract duration to ensure that the document is maintained as an effective control, change management and records. The change management will be done to an agreed policy or procedure.

Note: Where the Supplier/Contractor is required to provide a PQP, no work shall commence until the PQP is approved by TPT.

5.2 Procedures

The Supplier/Contractor's PQP and procedures shall address the system elements and activities appropriate to the Scope of Work, in compliance with the specified Quality Standard.

Where specified, the Supplier/Contractor shall submit copies of Quality Procedures for review. In addition, the Supplier/Contractor shall ensure that copies of all Procedures relevant to the Scope of Work are available for reference by TPT at each work location.

These will include, as applicable, the following:

5.2.1 Document Control

The Supplier/Contractor's Project Quality Plan shall provide a description of how TPT provided, Supplier/Contractor and Sub-Supplier/Sub-Contractor documents are to be managed. The description shall address as a minimum:

- Management tools and databases
- Receipt, registration and maintenance
- Internal and external distribution to Employer, third parties and Sub-Contractors
- Management of Codes, Standards and Specifications

-
- Internal review and approval routines and authorities
 - How it is ensured that the correct revisions of documents are available at the point of use including retention periods for all documentation.

5.2.2 Design Control

Where the Supplier/Contractor is responsible for any aspect of design related to their Scope of Work, the Quality Plan shall describe the Supplier/Contractor's methods and procedures for the control of these design activities.

5.2.3 Procurement

Where the Supplier/Contractor is responsible for any aspect of procurement related to their Scope of Work, the Quality Plan shall describe the Supplier/Contractor's methods and procedures for the control of these activities.

5.3 Supplier/Contractor Audits

The Supplier/Contractor shall:

- Carry out audits in accordance with its Quality System at its own and Sub-Supplier/Sub-Contractor's facilities to ensure project quality requirements are being achieved
- Include a QA Audit Schedule in the Supplier/Contractor PQP submitted to TPT prior to commencement of the Scope of Work. The Audit Schedule shall include all audits to be implemented by the Supplier/Contractor and Sub-Supplier/Sub-Contractor during the execution of the Contract
- Where stipulated in the Contract, perform an audit within three months after the Contract start date and thereafter at a minimum frequency of three months. Audit reports shall be submitted to TPT at the completion of each Audit. Where unsatisfactory performance is evident, additional audits shall be performed by the Supplier/Contractor as directed by TPT.

5.4 Transnet Port Terminals Audit

TPT reserves the right to perform quality audits or participate as an observer in Supplier/Contractor audits to verify compliance with the Contractual requirements. The Supplier/Contractor shall within a time frame as agreed upon, correct any adverse audit finding advised by TPT.

6. Inspection and Testing

6.1 General

TPT may, at its discretion perform surveillance inspection at the Supplier/Contractor's premises, SubSupplier/Sub-Contractor's premises or at the location of the Scope of Work.

Dependent on the nature of the Scope of Work and the frequency of inspections TPT may elect to have inspection personnel resident at the place of manufacture, fabrication, or assembly.

The Supplier/Contractor shall ensure free entry and access is given to TPT, certifying authorities and statutory authorities to inspect the Scope of Work and review procedures and quality records at all parts of the Supplier/Contractor's and Sub-Supplier/Sub-Contractor's premises, or at the location of the Scope of Work while any work or test is in progress.

The Supplier/Contractor shall provide TPT with all necessary tools, calibrated measuring equipment, safety equipment and workspace to verify or witness tests in progress.

While TPT is at the Supplier/Contractor's premises, the Supplier/Contractor shall provide, free of charge, reasonable facilities including office facilities and reasonable access to a telephone, facsimile machine and computer connection point.

The Supplier/Contractor shall provide notice in writing in within a time frame time as agreed upon, to allow the attendance of TPT and other representatives at nominated witness and hold points.

6.2 Quality Control Plans

The Supplier/Contractor shall prepare and submit QCP's to TPT for review in accordance with the requirements of the Contract and PQP.

QCP's shall identify all inspection, test and verification requirements to meet the Contractual obligations, specifications, drawings and related details including destructive and non-destructive testing, witness and hold points.

The Supplier/Contractor shall not commence fabrication or manufacture prior to review and approval of the applicable QCP by the TPT.

QCP's shall include reference to all tests specified in the Contract Document.

A typical format for an QCP is shown in Appendix A. The Supplier/Contractor may use its own format providing all information shown in Appendix A is included.

6.3 Inspection Points

The QCP shall identify points in the fabrication, manufacturing and/or installation process that are selected for inspection and shall be denoted by the following inspection codes:

- Hold Point (H) Inspection point in the manufacturing cycle, beyond which work shall not proceed without the specified activity, work or function being witnessed. Holding points require written notification to TPT.
- Witness Point (W) An inspection point in the manufacturing cycle that will be witnessed or verified. If TPT confirms it is unable to attend after being provided with the written notification then manufacture may proceed. Witness points require written notification to TPT.
- Review Point (R) A point at which products and quality records are verified and endorsed. Review points are not notifiable points.
- Surveillance (S) An inspection point in the manufacturing cycle during which any activity, work or function is observed. No formal notification is required.

The Supplier/Contractor shall maintain the status of testing and inspection by progressively having the QCP's signed off.

6.4 Revision to Quality Control Plans

Revision of the QCP shall be subject to the same submission, review and acceptance routines as described for the original QCP issue

6.5 Kick Off Meeting

After the Contract start date, and prior to manufacture, TPT will require a Kick Off Meeting with the Supplier/Contractor to discuss fully the implications of meeting TPT quality requirements. This meeting may be held as part of the Contract kick-off meeting for each package or may be a separate meeting, subject to the critical or complex nature of the work. This requirement for a pre-inspection meeting may be repeated when sub-Supplier/Contractors of key equipment are engaged.

After mobilization of the Contractor, and prior to the commencement of any construction activities, TPT will arrange for a Quality kick-off meeting to discuss fully the implications of meeting the projects' quality requirements. This meeting may be held as part of the formal kick-off meeting for each contractor, or may be a separate meeting subject to the critical or complex nature of the work.

6.6 Schedule of Inspection

The Supplier/Contractor shall submit a Schedule showing the proposed dates for inspections and tests nominated in the QCP where witness and hold points are required. The Schedule shall be regularly updated with progress and issued to TPT to show the current inspection and test status.

6.7 Field Inspection Checklists

For site installation and construction activities, the Supplier/Contractor shall prepare Field Inspection Checklists (FIC's) to permit inspection and testing of installed equipment and constructed facilities in accordance with the respective QCP's.

FIC's shall be provided to TPT for initial review, and shall be used to record the results of inspection and testing (where applicable), and on completion be submitted to TPT to confirm satisfactory completion of the tests and inspections at nominated QCP witness and hold points.

6.8 Inspection Notification

The Supplier/Contractor shall notify TPT in writing at least two calendar weeks prior to the advent of inspections or tests that require witnessing.

For inspections or tests within the country, arrangements shall be confirmed at least two working days before the event. For inspection and tests outside of the country, arrangements shall be confirmed at least seven working days before the event.

Inspection notifications shall include the following essential information:

- Contract Number
- Location of Inspection or Test
- Nature of Inspection or Test
- Date and Time of Inspection or Test
- Name and telephone number of the Supplier/Contractor's Representative.

6.9 Inspection and Testing

The Supplier/Contractor is responsible for the conduct of all Supplier/Contractor inspections and tests, and includes:

- Documenting inspection and tests result in the QCP's and relevant FIC's
- Progressively inspecting the quality of the Scope of Work performed, including that of all Sub-Supplier/Sub-Contractors
- Inspecting to meet all Contractual requirements, in number, type and form
- Inspecting day to day activities, material receipts, issue of material for installation, in-process inspections, and final inspections.

Completed original QCP's and FIC's shall be submitted to TPT in the DP

6.10 Inspection Release

At completion of the Scope of Work, either in total or in phases, TPT may issue an Inspection Release Report (IRR) or a waiver of inspection.

The issue of either an inspection release or waiver of inspection does not relieve the Supplier/Contractor of its obligations under the Contract. The Supplier/Contractor shall ensure a copy of the release note and final expediting release note for transport, where appropriate, is attached to the delivery docket and accompanies the Work to the designated destination indicated in the Contract. Items delivered to TPT without a copy of these documents may not be accepted.

A copy of the inspection release or waiver of inspection shall be included in the DP.

6.11 Special Processes

It is the Supplier/Contractor's responsibility to ensure that all processes which require prequalified procedures and/or work methods are tested and qualified before work begins. This typically covers such activities as welding, non-destructive testing, special fabrication techniques and painting. Unless specified such procedures are the Supplier/Contractor's responsibility and do not require submission to TPT before work begins. When such procedures are requested, no work shall commence until procedures are approved by TPT.

It is the Supplier/Contractor's responsibility to ensure all operators are qualified for the processes in accordance with the procedure and/or applicable standards. Records of qualification of operators shall be maintained by the Supplier/Contractor and made available to TPT when requested.

Records of qualification of procedures and processes shall be maintained by the Supplier/Contractor in accordance with the applicable procedure or code.

6.12 Welding Procedures

Where the Supplier/Contractor's Scope of Work includes fabricated weldments, Welding Procedure Specifications (WPS) defining the method, preparation and sequences to be adopted to achieve a satisfactory welded joint shall be provided for all weld types required in the execution of the Supplier/Contractor's Scope of Work. The procedure shall only be submitted to TPT when requested in the Contract.

WPS shall include all welding essential and non-essential variables for each process used, including appropriate test results and shall comply with the standard or code pertaining to welding required in the execution of the Supplier/Contractor's Scope of Work.

When requested in the Contract a suitably marked "weld map" shall be completed by the Supplier/Contractor for all items to be fabricated. A summary of WPS shall be prepared and when used, shall be identified on the weld map.

Where TPT approval is required, fabrication shall not commence until written approval of WPS and Welding Procedure Qualification Records (WPQR) is received by the Supplier/Contractor. No welding fabrication will be accepted that is not covered by an TPT approved WPS/WPQR.

Welding Procedure Qualification (WPQ) tests may be witnessed by TPT and/or an independent inspection authority. Testing of the specimens prepared during the WPQ Tests shall be carried out by an independent approved testing laboratory independent of the Supplier/Contractor. In certain instances, a certificate to EN 10204 3.1 B may be required which will be clarified at Tender review and clarification stage.

Where actual weld deposit analysis and weld metal physical properties are required for procedure qualification, the information shall be taken from the procedure qualification tests. Data listed in the catalogues of the manufacturer of welding consumables is not acceptable.

Welders/welding operators shall be qualified in accordance with the relevant welding code prior to commencing production fabrication. Specific Welder Qualifications (WQ's) records will be reviewed by TPT in the Supplier/Contractor's works and should NOT be submitted for review.

A register of welders qualified to work shall be maintained by the Supplier/Contractor.

6.13 Material Traceability

Where, and to the extent that material traceability is required, the Contractor shall provide its procedures for the maintenance of material identification throughout all phases of manufacture. Methods of identification, routines for re-stamping or stencilling as appropriate shall be defined and agreed with the Employer.

Adequate records shall be maintained throughout construction enabling traceability of key materials from final product back to original material certificates. The material traceability records shall form part of the DP

The Contractor shall prepare a schedule of materials and equipment that are subject to traceability requirements.

6.14 Material Certification

Where specified in the Contract the following certificates shall be provided to TPT and included in the DP.

- Type A: A Supplier/Contractor's certificate of compliance with the Contract. This certifies that the goods or services are supplied in compliance with the Contract without mention of any test results (EN10204 certificate 2.1).
- Type B: A certificate issued by a laboratory or test facility independent of the Supplier/Contractor's works. It shall quote test results carried out on the product supplied and state whether compliance with the relevant technical standard, code etc has been complied with. (EN 10204 certificate 3.1 B).
- Type C: The same as Type B, the tests are to be witnessed by a third party (EN 10204 certificate 3.1C).

7. Non Conforming Products

7.1 General

The Supplier/Contractor shall establish and maintain procedures to control material or products that do not meet the specified requirements.

All Supplier/Contractor product and/or materials identified as not conforming to requirements shall be dealt with promptly as follows:

- If the Supplier/Contractor discovers material or product which is not in accordance with the requirements of the Contract, i.e. a non conformance (NCR), the Supplier/Contractor shall promptly initiate the non-conformance procedure in terms of the Supplier/Contractor's Quality Management System, advise TPT promptly, and provide a copy of the NCR to TPT
- If TPT or it's agent identifies a non conformance an TPT NCR may be raised.
- Originals of all closed out NCR's shall be included in the DP.

7.2 Corrective and Preventative Action

If the Supplier/Contractor proposes a disposition of any non conforming materials or product which varies from the requirements of the Specification or Contract, such a proposal shall be submitted in writing to TPT whose decision on the proposal shall be obtained in writing before the non conforming material or product is covered up or incorporated into the Works, or is the subject of any other disposition.

The disposition of non-conformances which do not vary the requirements of the Contract, specification or drawings may be approved by the Supplier/Contractor following discussion and agreement with TPT.

8. Concession Requests and Technical Queries

8.1 Concession Requests

Where a Supplier/Contractor requests a Concession to deviate from the requirements of the Contract or specified requirements, the Supplier/Contractor shall raise the request with TPT using the format as shown in Annexure B.

The Concession Requests shall clearly identify all elements of the proposed deviation together with any resulting technical, commercial and/or schedule impacts.

Completed original Concession Requests shall be included in the DP.

8.2 Technical Queries

For clarification of technical issues (only), Supplier/Contractor may submit a Technical Query Note (TQN) to TPT in accordance with the Contract.

The TQN shall clearly identify all elements of the query, and all supporting documentation and/or drawings shall be attached where appropriate.

Completed original TQN's shall be included in the DP.

9. Inspection, Measuring and Test Equipment

9.1 Calibration

The Supplier/Contractor, including its Sub-Supplier/Sub-Contractors shall ensure the calibration of test and measuring equipment is performed and maintained in accordance with the relevant Supplier/Contractor procedures and/or the equipment manufacturer's specifications.

Where calibration is required by an external laboratory, the Supplier/Contractor shall ensure that the facility selected for calibration possesses current certification. Calibration certificates shall contain a statement that the test equipment is accurate to within specified tolerances.

The Supplier/Contractor should establish the frequency of calibration for each item of equipment (including jigs, fixtures or templates) and record the details in a 'Measuring and Test Equipment Register' (or similar).

9.2 Use of Inspection, Measuring and Test Equipment

The Supplier/Contractor shall ensure that authorised equipment users:

- Use the equipment in accordance with manufacturers instructions, and accepted industry practices
- Ensure the equipment is covered by a current calibration certificate
- Conduct the measurements or tests in accordance with the equipment manufacturer's specifications or other relevant specification
- Prior to commencement of each inspection or test activities:
 - Identify the measurements to be made
 - Determine the accuracy required
 - Select the appropriate inspection, measuring or test equipment for the scope of work.

9.3 Verification of Previous Test Results

Where the calibration status of the equipment is unknown, expired or has doubtful accuracy, the equipment shall immediately be quarantined, and tagged according to Supplier/Contractor's Quality System procedures. The Supplier/Contractor shall then arrange for either in-house or external calibration, and:

- review all previous test results associated with the suspect equipment
- identify the inspections, measurements or tests required to re-validate the results
- ensure that suitable re-testing is performed with calibrated equipment
- document the results of the re-testing on the respective inspection and test documentation.

10. Quality Records

Supplier/Contractors shall maintain Quality Records necessary to provide objective evidence that demonstrates and verifies achievement of the QA / QC requirements associated with the Scope of Work. All Quality Records, including original source material test certificates and non destructive test reports, shall be retained by the Supplier/Contractor during the project, and be provided to TPT at the times, and in the quantities specified in the Contract.

The Supplier/Contractor shall collate all quality records in the DP and submit the DP to TPT in accordance with the Contract and all referenced standards and specifications. This DP shall be compiled progressively, and shall be available for review at all phases of manufacture or construction activities.

The Scope of Work shall not be complete until the Supplier/Contractor's DP including the quality records from Sub-Supplier/Sub-Contractors have been reviewed and accepted by TPT.

The DP shall be compiled progressively during the execution of the Scope of Work and shall be made available for review by TPT as required.



Annexure A - Sample Quality Control Plan

Quality Control Plan No.: _____ Contract No.: _____ Supplier / Contractor: _____	Rev: _____ Description: _____ Location: _____	Date Issued: _____ Item No.: _____
--	---	---

Activity No.	Activity Description	Procedure Ref./Code Specification	Specification Acceptance Criteria	Verifying Doc./Report Certification	Verification / Witness					
					Supplier / Contractor		TPT		Employer	
					Action	Sign	Action	Sign	Action	Sign
Rev.	Date	Reason for Revision	Drawn	Checked						

Action:
 H - Hold, Mandatory Hold Point R - Review (Verify) Only
 W - Witness S - Surveillance
NOTE: H&W points require formal notification to TPT.

Annexure B - Request for Concession

Request for Concession		No: _____ of 2	
A. SUPPLIER/CONTRACTOR SUPPLIED INFORMATION			
SUPPLIER/CONTRACTOR NAME: _____		CONTRACT NO.: _____	
SUPPLIER/CONTRACTOR CONCESSION NO.: _____		DATE: _____	
Required concession applicable to: (Item/Material/Equipment/Area)			
Description of Concession — Revised Requirements: _____			
Justification: _____			
(NOTE: This concession will be rejected if the following information is not provided):			
(i) VALUE OF BENEFIT TO CLIENT	(ii) AGREE TO AN EXTENSION OF THE WARRANTY	YES	NO
S/R	IF "YES" WHAT PERIOD?		
			(iii) ANY IMPACT ON SCHEDULE?
			NO
			YES
			CF "YES" \ WHAT PERIOD?
References:			
Original Requirements	reference:		
	Rev.: Specification	N	Rev.:
Drawing No.:	Rev.: Specification	O.	Rev.:
Drawing No.:	Rev.: Specification	:	Rev.:
Attached applicable	documentation:	N	
Requested by:			
(Supplier/Contractor) Name: _____		Signature _____	
		D	
Note: Sections B to F on Page 2			

Request for Concession No:			
B. SITE ADMINISTERED CONTRACT?	Yes <input type="checkbox"/>	Nn <input type="checkbox"/>	Go to "D"
Possible QC implications:			
Recommendations Recommended <input type="checkbox"/>	Rejected <input type="checkbox"/>		
Site Construction Manager: _____ Signature: _____ Date: _____			
Site Engineer: _____ Signature: _____ Date: _____			
C. RECOMMENDATION BY CONTRACT ADMINISTRATOR: Name: _____			
Signature _____		Date: _____	
D. RECOMMENDATION BY ENGINEERING:			
<input type="checkbox"/> Recommended	<input type="checkbox"/> Rejected	<input type="checkbox"/> Conditional, with the following	
recommendations:			
Package Engineer: _____ Signature: _____ Date: _____			
Lead Discipline Engineer: _____ Signature: _____ Date: _____			
Engineering Manager: _____ Signature: _____ Date: _____			
Comments:			
E. PROJECT MANAGER DISPOSITION: Accepted <input type="checkbox"/> Rejected <input type="checkbox"/>			
Name: _____		Signature _____	
		Date: _____	
F. EMPLOYER DISPOSITION: Accepted <input type="checkbox"/> Rejected <input type="checkbox"/>			


TRANSNET



port terminals

ANNEXURE D

EEAM-Q-016 Gen Requirements And Conditions

 <p>Transnet Port Terminals</p>	<p style="text-align: center;">REFERENCE</p> <p style="text-align: center;">EEAM-Q-016</p> <p style="text-align: center;">(ORIGINAL SPECIFICATION –HE9.2.2 Ver7)</p>	<p style="text-align: center;">REVISION</p> <p style="text-align: center;">1</p>																																					
<p>DOCUMENT TYPE:</p> <p style="text-align: center;">SPECIFICATION</p>																																							
<p>TITLE:</p> <p style="text-align: center;">SPECIFICATION FOR GENERAL REQUIREMENTS AND CONDITIONS</p>		<p style="text-align: right;">PAGE 0 of 16</p>																																					
<p>COMPILED BY:</p> <p>PROJECT ENGINEER ()</p>	<p>REVIEWED BY:</p> <p>CAPITAL PROJECTS MANAGER (DAN REDDY)</p>	<p>REVIEWED BY:</p> <p>ASSET MANAGER/SHEQR MANAGER ()</p>																																					
<p>AUTHORISED BY:</p> <p>GENERAL MANAGER – EQUIPMENT ENGINEERING & ASSET MANAGEMENT (HAMILTON NXUMALO)</p>																																							
<p>FUTURE REVISION RECORD NUMBER</p>	<p>DESCRIPTION OF REVISION</p>	<p>APPROVAL</p>	<p>DATE</p>																																				
<p style="text-align: center;">-1-</p>	<p>Clause 10.6 revised by removing microfilm and removed clause 10.9</p>		<p>23/05/2005</p>																																				
<p>CONTENTS</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 85%;"></th> <th style="text-align: right; width: 15%;">Page</th> </tr> </thead> <tbody> <tr><td>1.0 SCOPE</td><td style="text-align: right;">04</td></tr> <tr><td>2.0 GENERAL</td><td style="text-align: right;">04</td></tr> <tr><td>3.0 STATEMENT OF COMPLIANCE</td><td style="text-align: right;">05</td></tr> <tr><td>4.0 COPYRIGHT OF PLANS, DIAGRAMS AND DOCUMENT</td><td style="text-align: right;">06</td></tr> <tr><td>5.0 DESIGN CALCULATIONS</td><td style="text-align: right;">06</td></tr> <tr><td>6.0 CERTIFICATION</td><td style="text-align: right;">06</td></tr> <tr><td>7.0 CONTRACT MANAGEMENT</td><td style="text-align: right;">07</td></tr> <tr><td>8.0 QUALITY MANAGEMENT</td><td style="text-align: right;">08</td></tr> <tr><td>9.0 SITE SURVEY BY CONTRACTOR</td><td style="text-align: right;">09</td></tr> <tr><td>10.0 DRAWINGS AND SCHEMATICS</td><td style="text-align: right;">10</td></tr> <tr><td>11.0 SITE BOOKS</td><td style="text-align: right;">11</td></tr> <tr><td>12.0 CO-ORPERATION WITH OTHER PARTIES</td><td style="text-align: right;">11</td></tr> <tr><td>13.0 CUSTOMES AND PORT REGULATIONS</td><td style="text-align: right;">12</td></tr> <tr><td>14.0 INSTRUCTION OF SAPO'S PERSONNEL</td><td style="text-align: right;">12</td></tr> <tr><td>15.0 OPERATING AND MAINTENANCE INSTRUCTION MANUALS AND PART CATALOGUES</td><td style="text-align: right;">12</td></tr> <tr><td>16.0 RECOMMENDED SPARES</td><td style="text-align: right;">15</td></tr> <tr><td>17.0 GAURANTEE AND GAURANTEE PERIOD</td><td style="text-align: right;">15</td></tr> </tbody> </table>					Page	1.0 SCOPE	04	2.0 GENERAL	04	3.0 STATEMENT OF COMPLIANCE	05	4.0 COPYRIGHT OF PLANS, DIAGRAMS AND DOCUMENT	06	5.0 DESIGN CALCULATIONS	06	6.0 CERTIFICATION	06	7.0 CONTRACT MANAGEMENT	07	8.0 QUALITY MANAGEMENT	08	9.0 SITE SURVEY BY CONTRACTOR	09	10.0 DRAWINGS AND SCHEMATICS	10	11.0 SITE BOOKS	11	12.0 CO-ORPERATION WITH OTHER PARTIES	11	13.0 CUSTOMES AND PORT REGULATIONS	12	14.0 INSTRUCTION OF SAPO'S PERSONNEL	12	15.0 OPERATING AND MAINTENANCE INSTRUCTION MANUALS AND PART CATALOGUES	12	16.0 RECOMMENDED SPARES	15	17.0 GAURANTEE AND GAURANTEE PERIOD	15
	Page																																						
1.0 SCOPE	04																																						
2.0 GENERAL	04																																						
3.0 STATEMENT OF COMPLIANCE	05																																						
4.0 COPYRIGHT OF PLANS, DIAGRAMS AND DOCUMENT	06																																						
5.0 DESIGN CALCULATIONS	06																																						
6.0 CERTIFICATION	06																																						
7.0 CONTRACT MANAGEMENT	07																																						
8.0 QUALITY MANAGEMENT	08																																						
9.0 SITE SURVEY BY CONTRACTOR	09																																						
10.0 DRAWINGS AND SCHEMATICS	10																																						
11.0 SITE BOOKS	11																																						
12.0 CO-ORPERATION WITH OTHER PARTIES	11																																						
13.0 CUSTOMES AND PORT REGULATIONS	12																																						
14.0 INSTRUCTION OF SAPO'S PERSONNEL	12																																						
15.0 OPERATING AND MAINTENANCE INSTRUCTION MANUALS AND PART CATALOGUES	12																																						
16.0 RECOMMENDED SPARES	15																																						
17.0 GAURANTEE AND GAURANTEE PERIOD	15																																						

DETAIL CONTENTS

Title	Page
1. Scope	3
2. General	3
3. Statement Of Compliance	3
4. Copyright Of Plans, Diagrams And Document	4
5. Design Calculations	5
6. Certification	5
7. Contract Management	5
8. Quality Management	6
9. Site Survey By Contractor	8
10. Drawings And Schematics	9
11. Site Books	10
11.1.1 Site instruction book	10
11.1.2 Site diary book	10
12. Co-Operation With Other Parties	10
13. Customs And Port Regulations	10
14. Instruction Of TPTs Personnel	11
15. Operating And Maintenance Instruction Manuals And Parts Catalogue	11
15.1	11
15.2 Copy of The Preliminary Set of Manuals/handbooks	11
15.3 Copy of The Final Set of Handbooks	11
15.4 Supplied Manuals	11
15.5 The Maintenance Instruction	11

Manual		
15.6 The Workshop Reference Manual		12
15.7 The Operator's Manual		13
15.8 The Parts Catalogue		13
15.9 The Training Manual		13
15.10 Final Manuals		13
16. Recommended Spares		14
17. Guarantee And Guarantee Period		14

1. SCOPE

- 1.1. This specification covers Sapo's general requirements and conditions for the design, supply, erection and commissioning of port equipment and structures and must be read in conjunction with the main specification.

2. GENERAL

- 2.1. Each Tenderer shall provide Sapo with sufficient proof of having suitable experience regarding the designing and/or manufacturing of similar equipment, proven in practise and applied in circumstances similar to those intended by Sapo. To this end, complete and detailed reference lists shall be submitted with the tender.
- 2.2. The equipment in general and the intended operation of the equipment to be supplied, shall be in full compliance with the Occupational Health and Safety Act, Act 85 of 1993, as amended.
- 2.3. The tenderer must submit an offer in accordance with the main specification, and may only then submit alternative offers. Full details as requested in these tender documents should be submitted for each alternative offer. Full details of the differences or deviation from the main offer shall also be submitted.
- 2.4. The Tenderer shall submit a complete list of proposed sub-contractors and suppliers of major components with his tender.
 - 2.4.1. The list of sub-contractors must contain sufficient detail to enable SAPO to grant approval for the respective sub-contracting.
- 2.5. A complete list of major components shall be submitted with the tender, containing sufficient details like make, description, rating, standard of design and manufacture, etc. to enable Sapo's Engineers to decide about its suitability in terms of local conditions, availability, past experiences, etc.
- 2.6. To enable Sapo to apply life-cycle costing in comparison of offers, a complete list of major components to be replaced during the life of the equipment shall be submitted, indicating for each item the expected mean time between failures, based on past experience, and total cost of replacement, including labour and material. Any additional material that can assist Sapo to apply life cycle costing can be submitted by the Tenderer.
- 2.7. The equipment as made and supplied shall be complete in every respect, of modern design using most advanced technology extensively supported by reputable local companies, and be designed and built to applicable recognised standards and good engineering practices.
- 2.8. All components to be fitted shall have been tested for reliability and extended lifetime in conditions to be expected.

- 2.9. The Tenderer shall complete the Schedule of Prices. The lump sum quoted for each category shall be deemed to cover all costs of the design, materials, plant and labour of each item to complete the work according to the drawings and specifications.
- 2.10. All special tools, software and devices essential for the effective operation and/or maintenance of the plant and equipment, shall be listed, detailed and quoted for separately in the Schedule of Prices.
- 2.11. Further to clause 11 of the E5M (1980), the Contractor shall comply with all Municipal regulations regarding the inspection of any portion of the Works. The Contractor shall further provide the Engineer with documented proof of compliance when so requested by the Engineer.
- 2.12. All handbooks, training manuals, wording on drawings and equipment designation labels shall be in English and the Contractor shall ensure that the correct and accurate translation of English is used throughout.
- 2.13. The works will only be accepted (and the certificate of acceptance issued) when the works has been successfully commissioned and tested, and all final drawings, manuals and other documents required in terms of the contract has been delivered to SAPO and accepted by SAPO
- 2.14. Where "tonne", "ton" or the abbreviation "t" is used, it shall be taken as meaning "metric ton" which is equivalent to 1 000kg or approximately 2 204,62 pound mass.

3. **STATEMENT OF COMPLIANCE**

- 3.1. All tenders are to be accompanied by a separate clause by clause statement of compliance to the requirements of the main specification, as well as to all its annexures, completed and signed by the Tenderer. A general statement that equipment offered is in compliance with the specification is not acceptable.
- 3.2. Every statement of non-compliance or partial compliance shall be fully defined by the Tenderer.
- 3.3. Where a simple statement of compliance against a particular clause could be insufficient to describe exactly what is being offered, a description, fully explaining the Tenderer's offer, shall be submitted with the tender.

4. **COPYRIGHT OF PLANS, DIAGRAMS AND DOCUMENTS**

- 4.1. The contractor will grant to Sapo a non-exclusive licence, in accordance with the provisions of section 22 of the Copyright Act 1978 (Act 98 of 1978), (a) to copy any plan, diagram, drawing, specification, bill of

quantities, design calculation or other similar document made other than under the direction or control of Sapo, by the Contractor in connection with the installation, (b) to make free and unrestricted use thereof for its own purposes, (c) to provide copies thereof to consultants to be used by them for the purpose of the consultancy and (d) to provide other parties with copies for tenders invited by it. The Contractor, further more, if any plan, diagram, drawing, specification, bill of quantities, design calculations or other similar document made, other than under the direction or control of Sapo, by any principal or sub-contractor of the Contractor, is used in connection with the installation, shall cause such principal or sub-contractor to grant to Sapo a similar non-exclusive licence in respect of such plan, diagram, drawing, specification, bill of quantities, design calculation or other similar document. The provisions of this clause shall not apply to documents made, in the case of equipment to be supplied in connection with the manufacturing process of the equipment supplied but only to the equipment supplied itself. No separate or extra payment shall be due by Sapo in respect of any non-exclusive licence granted in terms of this clause.

5. DESIGN CALCULATIONS

- 5.1. Tenders must be accompanied by a preliminary design analysis and drawings for structural work. The design calculations and drawings shall be sufficiently comprehensive for Transnet Engineers to make a fair and accurate assessment of the essential details and general qualities of the scheme offered. The various loading combinations used for the analysis of the structure must be detailed and submitted with the tender.
- 5.2. At the completion of the Works, the Contractor shall supply as part of the contract, one set of clearly set out, edited and bound, final complete design, stability and stress analysis for all structural items.
- 5.3. Designs based on computer analysis must include properly drawn up, indexed and reference diagrams of all bending moments, shear and axial forces and deflections for all the loading cases. A number reference drawing to facilitate reading of computer printouts must be included.

6. CERTIFICATION

- 6.1. Where applicable, the Contractor shall for each piece of equipment fully completed and taken over by Sapo, submit the necessary certificate of classification and/or certification by a recognised testing authority in compliance with requirements of applicable standards and rules.

7. CONTRACT MANAGEMENT

- 7.1. The Tenderer shall submit a full set of financial statements, as required in terms of the Companies Act, for the last three financial years. This shall

include the financial statements, auditor's report and chairman's report of the Tenderer and proposed main sub-contractors.

- 7.2. The Tenderer shall submit an organogram of the company with his tender which shall show all posts down to supervisory level for all personnel who will be directly involved with this contract and down to managerial level for all other posts in the Tenderer's organisation.
- 7.3. The Tenderer shall submit a C.V. of all personnel who will be directly involved with the management and execution of this contract down to supervisory level. This shall include qualifications and past experience.
- 7.4. The successful Tenderer shall be prepared to commit himself in writing to providing Sapo with an adequate, experienced and stable project team for the duration of the contract. Every effort must be exercised by the Contractor to minimise replacement of individual project members in order to ensure optimum contract management continuity. Prior advice and full motivation must be submitted to Sapo before the replacement of any of the Contractor's key personnel involved with the project.
- 7.5. The Tenderer shall submit a detailed barchart showing all major activities and identifying all major milestones to be achieved in this contract. This barchart will be critically analysed by Sapo as it will show whether Tenderers are able to plan the project efficiently. This barchart will be taken into account when evaluating offers received.
- 7.6. The Contractor shall submit a fully detailed schedule within two weeks after the official contract showing all activities from a Work Breakdown Structure commencing from date of contract to the final commissioning and acceptance based on the initial barchart submitted with the tender.
- 7.7. The Tenderer shall submit details of resource management which will be applied to this contract for:
 - 7.7.1. Manpower
 - 7.7.2. Finance
 - 7.7.3. Equipment
 - 7.7.4. Material supply
- 7.8. This should be in sufficient detail to establish where the above resources will be obtained and how they will be managed during the duration of the contract.
- 7.9. It is a requirement of this contract that the Contractor will employ a full time, fully experienced site manager who has been delegated sufficient authority to manage the contract efficiently on site during erection and commissioning.

8. **QUALITY MANAGEMENT**

- 8.1. The Contractor shall be required to install and operate a quality

management system which conforms to the requirements of SABS ISO 9001/9002.

- 8.2. The Tenderer must submit a detailed statement of his quality system with this tender which shall include the following:-
 - 8.2.1. Statement of quality management policy and objectives.
 - 8.2.2. Statement of the design control system with emphasis on design review procedures and customer requirements evaluation.
 - 8.2.3. Statement of the documentation and change control procedures.
 - 8.2.4. Statement of the quality control procedures that will apply to purchased materials.
 - 8.2.5. Statement of the quality control plan for all components manufactured or supplied so that inspection is carried out to ensure conformance to the specification.
 - 8.2.6. Statement of the quality control procedure that will apply to installation and painting on site.
- 8.3. The sole responsibility for ensuring that the components supplied conform to the specification shall rest with the Contractor.
- 8.4. The Contractor shall notify the Engineer of all inspections at least 3 working days in advance of such inspections. The Engineer reserves the right to have an inspector present at such inspections. The Contractor shall have the relevant quality control plans available at such inspections. The Engineer shall give the Contractor 24 hour notice in writing of his intention to attend the inspections.
 - 8.4.1. Where the contract provides for tests on the premises of the Contractor or of his sub-contractor, the Contractor shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be a requisite and as may be reasonable demanded to carry out such tests efficiently. All gauges, templates, tools and other equipment required to check the accuracy of the work shall be calibrated at regular intervals by a laboratory approved by the National Calibration Services of the Council for Scientific and Industrial Research of South Africa, or by the respective authority in the country of origin of the equipment
 - 8.4.2. As and when the equipment has passed these tests, the Engineer shall furnish the Contractor a certificate in writing to this effect.
 - 8.4.3. If as a result of such an inspection, examination or test the Engineer decides that such equipment is defective or not in accordance with the requirements, he shall notify the Contractor accordingly, stating in writing his objections and reasons therefore. The Contractor shall timeously make good the defect

to ensure that the equipment complies with the requirements. Thereafter, if required by the Engineer, the tests shall be repeated under the same terms and conditions save that all reasonable expenses to which Sapo may be put by the repetition of the tests will be deducted from the contract sum.

- 8.4.4. Unless the Engineer otherwise directs, no equipment or materials are to be delivered to site until the Engineer issues an inspection certificate in respect of such equipment. The Contractor shall be responsible for the reception on site of all equipment delivered for the purpose of the contract.
- 8.5. SAPO reserves the right to conduct a quality assurance audit on the Contractor's quality control system at regular intervals.
- 8.6. If required by the Engineer the Contractor shall produce evidence to show that both his welding procedures and welders have passed all the relevant tests required in terms of BS 5135 and SABS 044 Parts III and IV.
- 8.7. The Contractor shall hold design review meetings during the planning phases of this contract. This will be to establish all customer requirements and to provide approval in principle for design interfaces for all designs and specifications to ensure that quality is designed into the final product.
- 8.8. The Contractor shall not change any design or specification feature which has any of the following impacts without formal approval by the Engineer:
 - 8.8.1. Financial
 - 8.8.2. Interface with other equipment or installations
 - 8.8.3. Safety
 - 8.8.4. Departure from customer requirements

9. **SITE SURVEY BY CONTRACTOR**

- 9.1. Immediately after award of the contract, and prior to final design, the successful Tender shall survey the complete site of final operation of the equipment tendered for. This survey shall serve to confirm dimensions and for relative positions of all items and equipment that will interface with the equipment tendered for, e.g. rail gauges, conveyor position relative to rails, location of electrical power supply points, location and dimensions of any obstacle protruding into the operations envelope, etc.
- 9.2. It will be the contractor's responsibility to ensure that equipment supplied in terms of the contract will interface successfully with existing items and equipment.
- 9.3. Any major deviation from data supplied by Sapo in the tender documents shall be brought under the attention of the Engineer. Any potential impact

of a commercial or technical nature shall be discussed and finalised with the Engineer, prior to final design of the equipment.

- 9.4. The Tenderer shall allow in all respects in his tender for this requirement to survey the operation site and confirm tender data.

10. **DRAWINGS AND SCHEMATICS**

- 10.1. On the contract being placed, the Contractor shall at once prepare and must submit two copies of black line paper prints of the general arrangements, working drawings and schematics for approval by the Engineer. These drawings and schematics must be submitted in a systematic manner, accompanied by an index sheet of all the drawings and schematics in question. Approval in principle by the Engineer must be obtained prior to commencement of fabrication or construction. Time required for preparation and approval of these drawings must be included in the Tenderer's program.
- 10.2. Drawings which are submitted for the Engineer's formal approval shall bear the signature and designation of the Tenderer's "responsible professional Engineer".
- 10.3. General arrangement drawings shall show the complete structural layout arrangements with plan views, elevations, cross sections, location and sizes of members, erection details, cladding details, services where applicable, etc.
- 10.4. Notwithstanding any formal approval in principal of drawings and schematics submitted to Sapo, the sole responsibility for the adequacy of the design, fabrication and installation or erection as well as accuracy of workmanship and quality of all materials, shall rest entirely with the Contractor who will be required to rectify any defects.
- 10.5. The Contractor's fabrication shop drawings and detailed drawings are not required for approval except when the Engineer requests such drawings specifically for approval or to assist him in the inspection of the structure at any stage.
- 10.6. At the completion of the Works, the Contractor shall supply as part of the contract two sets of paper prints and a set of latest AUTOCAD version files in the DXF format of the general arrangement, manufacturing and detailed working drawings and schematics, showing every portion of the work as actually made for the equipment, giving all wording in English and all dimensions in Metric units.
- 10.7. The drawings and schematics shall comply with the applicable SABS, British, VDE or ISO standards. The official Sapo title block with the Sapo serial No. and numbering system must be included in the lower right hand corner.
 - 10.7.1. The Contractor will be advised regarding numbering and detailing of drawings.

- 10.8. Prints and CAD files must be delivered not later than 2 months after completion of the commissioning of the equipment.

11. **SITE BOOKS**

- 11.1. The Contractor shall supply and have available at the site office at all times, the following site books:

11.1.1. Site instruction book:

This shall be a suitable carbon copy book, size A4, with two detachable sheets for receiving and recording instructions in triplicate issued by the Engineer or his authorised representative.

11.1.2. Site diary book:

This shall be a suitable carbon copy book, size A4, with two detachable sheets for a page to a day and all events affecting the Works, such as arrivals of plans, breakdown of machinery, weather conditions etc., must be entered. The plant, labour and material on site must be recorded as well as work performed.

Entries will be made by the Contractor (or his appointed agent) and signed by both parties daily. The diary may be used to establish the validity of claims for extension of time.

- 11.2. These site books will remain the property of Sapo and will be used for reference purposes and during the guarantee period.

12. **CO-OPERATION WITH OTHER PARTIES**

- 12.1. Departments of Transnet and other contractors may be working in the confines of the contract work site and in the general area surrounding it during the course of the contract. The Contractor shall make reasonable allowance in all tendered rates for the necessity to interface with the activities of other contractors and Transnet, and to allow for access and safe working conditions.

- 12.2. The success of the project depends on the effective co-operation of all contractors on site, and the Contractor will if necessary be required to discuss his programme on a day to day basis with the Engineer's Deputy to ensure effective co-ordination.

13. **CUSTOMS AND PORT REGULATIONS**

- 13.1. The Works are situated within a Customs controlled area and the Contractor and his staff shall observe all Customs regulations within the

port area.

- 13.2. The Works are sited within a promulgated port area and the Contractor and his staff shall observe all Port Regulations within the port area. Copies of the Harbour Regulations are obtainable from the Port admin offices.
- 13.3. The fullest collaboration between the Contractor, Sapo and the Engineer is essential in regard to the working of the port.

14. INSTRUCTION OF SAPO'S PERSONNEL

- 14.1. Sapo's personnel concerned with operating, and maintenance will be made available for instruction by the Contractor in their various functions at the Port concerned.
- 14.2. The necessary formal lecturing on the working, adjustment, maintenance and fault finding procedures shall be arranged for at the Port concerned.
- 14.3. Details of alternative and additional official courses offered shall be specified at tender stage i.e. full procedures, duration, place of training, competence and qualifications of personnel to be trained.

15. OPERATING AND MAINTENANCE INSTRUCTION MANUALS AND PARTS CATALOGUE

- 15.1. The Contractor will be required to furnish three final copies of each manual/handbook supplied in terms of the contract.
- 15.2. One copy of the preliminary set of manuals/handbooks must be available on site one month prior to commissioning.
- 15.3. One copy of the final set of handbooks will be kept in the workshop and the Contractor must cover every page of this set with translucent plastic.
- 15.4. The following manuals shall be supplied as part of the contract:
 - 15.4.1. Maintenance Instruction Manual.
 - 15.4.2. Workshop Reference Manual.
 - 15.4.3. Operator's Manual.
 - 15.4.4. Parts Catalogue.
 - 15.4.5. Training Manual.
- 15.5. The *Maintenance Instruction Manual* shall include:
 - 15.5.1. Safety instructions to be observed by maintenance and operating personnel.

- 15.5.2. A general description with illustrations and flow diagrams of the works, indicating all major items, with a functional description of these items.
 - 15.5.3. Full detail of all faultfinding procedures (electrical and mechanical).
 - 15.5.4. Detailed periodic maintenance programmes in respect of the whole of the works, including electrical components and structural work.
 - 15.5.5. Comprehensive data and procedure descriptions (suitably illustrated) on routine maintenance, including intervals, tasks, wear tolerances and lubrication detail.
 - 15.5.6. A list of all equipment that require lubrication must be compiled under the following headings.
 - 15.5.7. Name, description, location.
 - 15.5.8. Recommended lubricant.
 - 15.5.9. Frequency of lubrication.
 - 15.5.10. A list of all PLC fault codes and their probable causes.
 - 15.5.11. Diagrams of all electrical, pneumatic and hydraulic circuits.
- 15.6. The *Workshop Reference Manual* shall include:
- 15.6.1. Safety instructions to be observed by maintenance and operating personnel.
 - 15.6.2. Complete data and procedures on the repair and overhaul of all items of the works.
 - 15.6.3. Detailed diagrams of all electrical, pneumatic and hydraulic circuits.
 - 15.6.4. A list of all PLC fault codes and their probable causes.
 - 15.6.5. A complete listing of the PLC programs.
 - 15.6.6. Data necessary for condition monitoring purposes, like the number of teeth on gears, number of balls/rollers in bearings etc.
 - 15.6.7. Detailed Supplier data sheets on all standard equipment that forms part of the works.
 - 15.6.8. Design, installation, inspection and performance or load test certificates as required by law (including Act 85 of 1993).
 - 15.6.9. Completed commissioning document for the works.

- 15.7. The *Operator's Manual* must detail the safe and efficient operation of the works, and must include the following:
 - 15.7.1. Safety instructions to be observed by the operating personnel.
 - 15.7.2. Start-up procedure.
 - 15.7.3. Shut-down procedure.
 - 15.7.4. Storm anchoring procedure if applicable.
 - 15.7.5. Diagram showing the lay-out of controls and operator meters and displays.
 - 15.7.6. Detail of the use of the controls and interpretation of the meters and displays.
 - 15.7.7. Detailed check-lists for the daily, weekly and monthly inspections to be performed by the operator.
 - 15.7.8. A list of all fault codes that could be displayed at operator, with a description and detail of what action should be taken by operator when such a code is displayed.
- 15.8. The *Parts Catalogue* shall comprehensively list all parts of the works with full descriptions, locations, re-order numbers and supplier, and will include illustrated diagrams of assemblies showing all parts of the assembly. A list of suppliers and their contact detail shall also be included.
- 15.9. The *Training Manual*:
 - 15.9.1. Comprehensive pictures and text shall be provided to enable SAPOt Academy (NPA's division responsible for training) to compile final training manuals for operator training, including first line maintenance.
 - 15.9.2. Pictures and text shall be in digital format supplied on CD Rom to enable Sapo to edit the content.
 - 15.9.3. To assist the Contractor in compiling the necessary information, the following requirements must be complied with for all major parts of the equipment.
 - 15.9.3.1. Identify (i.e. description and picture of) the part and describe where the part can be found on the equipment.
 - 15.9.3.2. Explain the function of the part; and
 - 15.9.3.3. Describe what the operator has to do to keep the part in good working order.
- 15.10. All final manuals shall be supplied by the Contractor as soon as possible after the works has been successfully commissioned, in order for the works to be accepted (see clause 2.13).

16. RECOMMENDED SPARES

- 16.1. A complete priced list of recommended mechanical and electrical spares to enable SAPO to operate and maintain the installation efficiently for its useful life and to obtain spares as required must be submitted by the Contractor not later than one month after the finalisation of the design. This list of recommended spares must include full details on the source or supplier in each and every case.
- 16.2. Spares for the equipment must be classified as:
 - 16.2.1. Initial spares which are the major assemblies and critical single items that have been established from experience as being necessary to maintain the installation fully operational after commissioning for a period of twelve months.
 - 16.2.2. Recommended maintenance spares which are the spares that the Contractor recommends as necessary for the maintenance of the installation over and above the initial spares described above, and include all wearing items and slow moving contingency (insurance) spares.
- 16.3. Each spare part must be comprehensively described, and Contractors must furnish the manufacturer's part number as well as any applicable international item number.
- 16.4. Tenderers shall state:
- 16.5. Whether all essential renewable parts for all the equipment will be readily available in the Republic of South Africa.
- 16.6. What after sales service and operational instruction can be offered to Sapo.

17. GUARANTEE AND GUARANTEE PERIOD

- 17.1. The Contractor shall guarantee that all components and material supplied are new and fit the specified purpose for which they are purchased and are free from any defects in design, workmanship and material and are in strict accordance with the specifications and drawings, unless otherwise agreed in writing by Sapo.
- 17.2. The Contractor shall agree to replace without charge to Sapo any defective items discovered within 12 months from the date of acceptance, provided that the equipment has been operated and maintained in accordance with the Contractor's written operating instructions; normal wear and tear excluded.
- 17.3. During the guarantee period the Contractor shall have a branch or local agent at or near the Port with full time personnel available for guarantee

repairs. Spare parts and equipment must also be available from the branch or agent.

---oOo---

END OF SPECIFICATION HE 9/2/9 [Version 7]

---oOo---

TRANSNET



port terminals

ANNEXURE E

TIMMS CONTRACTOR'S COMPLIANCE FILE ASSESSMENT CHECKLIST



CONTRACTOR'S COMPLIANCE FILE ASSESSMENT CHECKLIST

Project Manager:	
Project name:	
Client:	
Contractor Details:	

No.	items	Approved	Not Approved
1	Principal Contractors Organogram		
2	Letter Of Good Standing With Compensation Fund		
3	Notification Letter Of Construction Work ~ Department Of Labour (If Applicable)		
4	Appointments		
5	Induction: Employees And Visitors: Staff Medical Certificates		
6	Principal Contractor's SHEQ Policy		
7	Health & Safety Plan, Integrated Legal Register, Client Specification.		
8	Fall Protection Plan (If Applicable)		
9	Risk Assessments: Method Statements: Safe Operating Procedures		
10	Incidents / Accidents Register And Investigation Reports		
11	Emergency Contact Telephone Numbers		
12	Business Continuity Plan Including Emergency Plan		
13	Documented Proof Of Daily Toolbox Safety Talks/ DSTI		
14	Inspections Checklist		
15	All Registers		
16	Welfare Facilities		
17	Electrical Compliance		
18	Mandatarly Agreement		
19	Communication Plan		
20	Training Records and Competency Certificates		
21	General		
22	Insurance Covering Letter		



CONTRACTOR'S COMPLIANCE FILE REVIEW			
Date	Print Full Name	Designation	Signature
Status			
Approved			
Not Approved			
Reasons for not approving			

TRANSNET



port terminals

ANNEXURE G

Nameplate of Excavator and Cab

Annexure G
Excavator no. 1



Figure 1: Excavator name plate

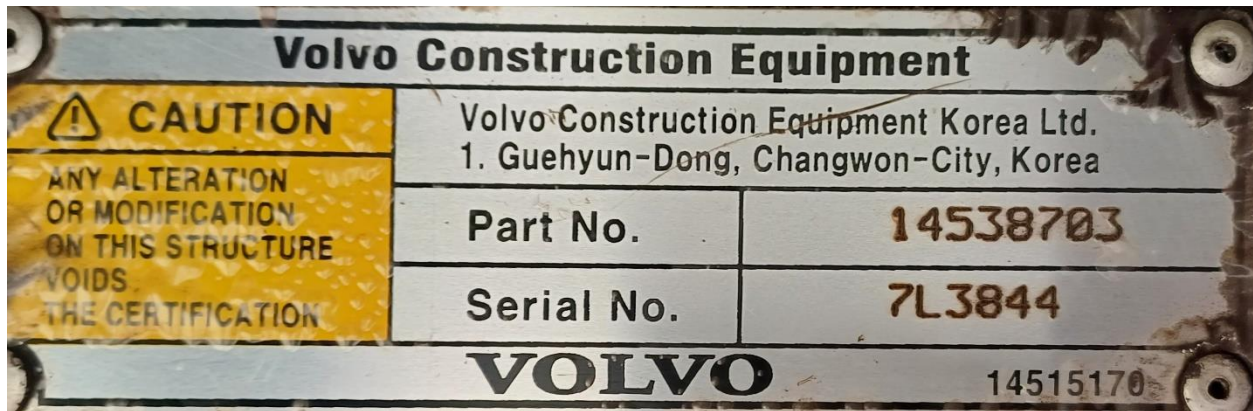


Figure 2: Cab name plate

Excavator no. 2

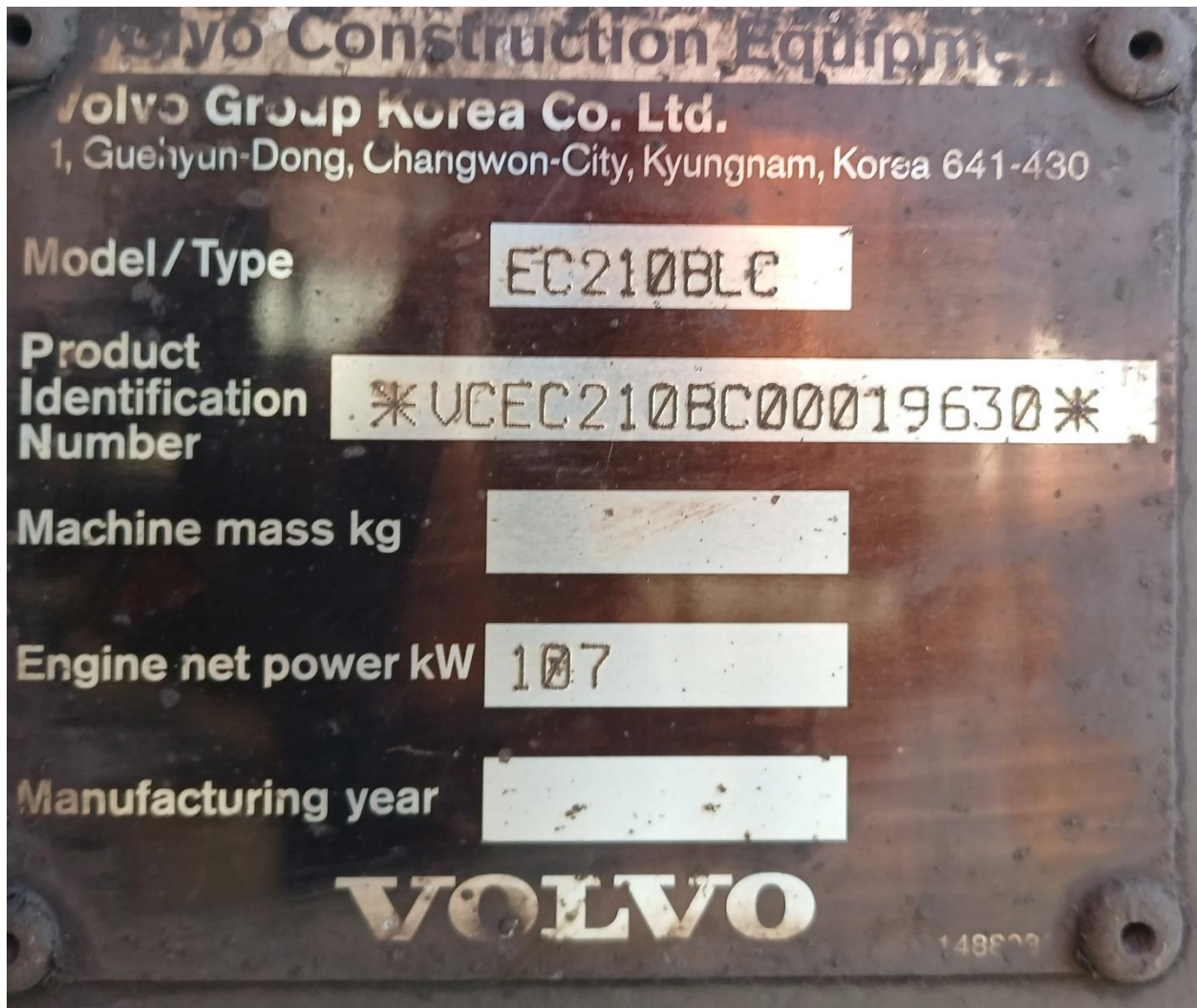


Figure 3: Excavator name plate

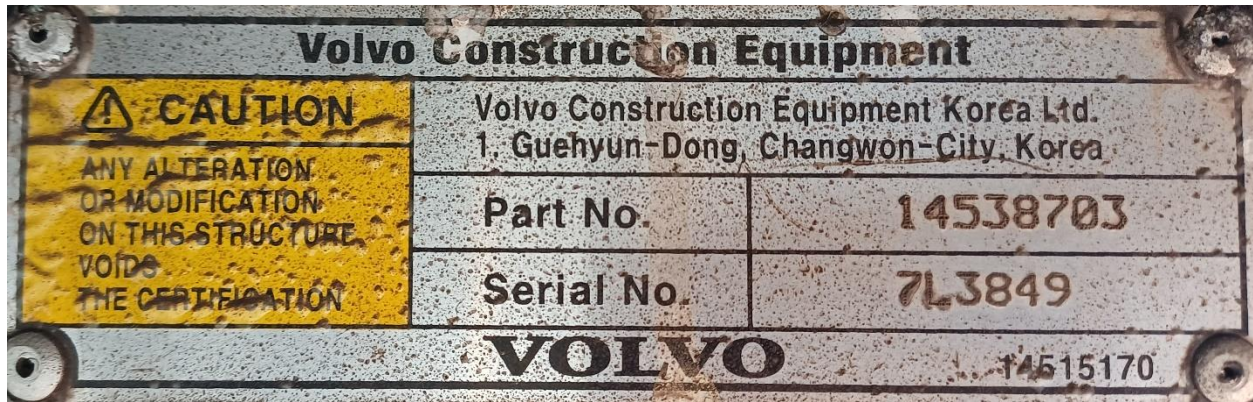


Figure 4: Cab name plate