

## SCOPE OF WORK

### SCOPE

Note that all Engineering specifications and National standards are to be complied with.

The scope consists of supplying pipes with the following specifications including delivery and off loading at dedicated site (RWPS Pipe yard at Tailings):

General Specifications: ( As per SABSI 123)

Diameter(mm): 450NB

Table: 1000/3

Flange Diameter: 615mm

PCD: 565

Nr & diameter of bolts: 20 x M24

Diameter of holes: 26mm

Length: 9.14m

Wall thickness: 6mm

8mm Natural black rubber on flanges as per technical specifications

3mm Lina cure 40 rubber inside the pipe as technical specifications

Colour: Admiral Grey. All painting over and under coat as per technical specifications

Quantity: Maximum pipes that amounts to the total budget granted.

Delivery Schedule (Must be delivered and invoiced before each date)

	12-16 Feb 2024	26 Feb - 01 March 2024	11-15 March 2024
450 NB, PCD 565, Flange 1000/3, 20 Holes	57	57	57

## **2.2** ORDER OF PRECEDENCE

Any ambiguity or contradiction between documents and drawings must be brought to the attention of the engineer during the tender phase. The order of precedence will be:

1. Statutory laws and Regulations,
2. Technical Specification and scope of work
3. Bill of Quantities, (BOQ)

Unless communicated otherwise in writing by the engineer.

## **2.3** TECHNICAL SPECIFICATION

### **2.3.1** STANDARD SPECIFICATIONS AND REGULATIONS

All new equipment offered in the tender, whether specified in detail or not, shall comply with the latest applicable recommendations of the South African National Standards (SANS) and the latest applicable recommendations of the Foskor Engineering specifications

#### PAINT (UNDER AND OVERCOAT)

- a) Only the following Foskor approved paint manufactures (Brands) may be used:

Stoncor Africa (Pty) Ltd, Chloorkop

Phone (01 1) 254-5500 Fax: (01 1) 310-1847

O'Grady Coating Manufacturers (Pty) Ltd, Mpumalanga

Phone: (013) 246 2570 Fax: (013) 246 2573 (Orders) / (013)

246 1797 (Admin) Sigma Coatings (Pty) Ltd, Alrode (Head Office):

Phone: (011) 389-4800 Fax: (01 1) 3894832

Phalaborwa: 0823379494

- b) Surfaces shall be prepared in accordance with the paint manufacturers specifications and the supplementary requirements of this scope, where:
- All sharp edges shall be dressed to a radius of not less than 3 mm.
  - All steel surfaces shall be dry abrasive blasted to remove all old paint, grit, oil, grease, rust, mill scale, surface contaminants or corrosion products of any kind and shall be free of any moisture.
  - Prior to the application of the primer, all steel surfaces shall be prepared in accordance with SANS 10064 The preparation of steel surfaces for coating.
  - Within 60 minutes after dry abrasive blasting, all steel surfaces shall be blown down, brushed and/or vacuum cleaned to remove all loose particles and primed.
- c) Mixing and application shall be in accordance with paint manufacturer requirements and supplemented by the requirements of this scope, where.
- Unless specified otherwise, the colour of all surfaces shall be light admiralty grey in accordance with SANS 1091 National Colour Standard, colour code E46 (NCS colour code 2312-B58G)
  - Primer or overcoat shall be thoroughly mixed using a power driven mixer for at least 3 minutes before application and frequently during application to maintain contents in suspension.
  - Paint brushes and rollers shall be clean, dry and free of any solvents before use.
  - Primer and overcoats shall be evenly applied, the whole surface to be painted must form a smooth, continuous and unbroken coating.

#### RUBBER LINING

- a) Only rubber that conforms to the following specifications and requirements may be used:
- All rubber products must comply to SANS 1198 for the manufacture of rubber sheeting for rubber lining
  - Unless otherwise specified, all rubber sheeting shall be
    - Abrasion and Acid resistance
    - Minimum heat resistant of 90 degrees Celsius
    - Shore hardness: Between 50 and 60
    - Minimum Tensile strength 18 MPa
    - Minimum elongation @ Break 500%
    - Minimum thickness 8.0 mm
  - As specified in clause 5.4 of SANS 1198, rubber lining used shall have resistance against ozone, abrasion, tear, wear, water, oil and hydrocarbons.
  - The rubber lining shall be such that the contractor is prepared to state that it will satisfy the physical conditions specified (Abrasive, tear and wear resistance) with regards to extended service life and deterioration by prolonged contact with pulp and slurry.  
(RUBBER SHEET SPECIFICATION TO BE INCLUDED IN OFFICIAL QUOTATION)
- b) Surfaces shall be prepared in accordance with the specifications and requirements of the rubber and adhesive supplier, SANS 1201 for The application of rubber linings to pipes, pipe

fittings and vessels, SANS 10064 The preparation of steel surfaces for coating and the supplementary requirements of this scope, where:

- a. All sharp edges shall be dressed to a radius of not less than 3 mm, surfaces shall be free of any other sharp protrusions and any damage shall be ground to a suitable finish for rubber lining.
  - b. All welds shall be ground smooth and flush on the side to be rubber lined.
  - c. All surfaces contaminated by oil shall be cleaned by live steam, flame or solvent prior to dry abrasive grit blasting.
  - d. All steel surfaces shall be dry abrasive grit blasted to remove all old paint, grit, rust, mill scale, surface contaminants or corrosion products of any kind and shall be free of any moisture.
- c) The application of adhesive shall be prepared in accordance with the specifications and requirements of the rubber and adhesive manufacturer and the supplementary requirements of this scope, where:
- a. Steel surfaces to be rubber lined shall be blown down, brushed and/or vacuum cleaned to remove all loose particles and the adhesive applied within the following time span after surface preparation.
 

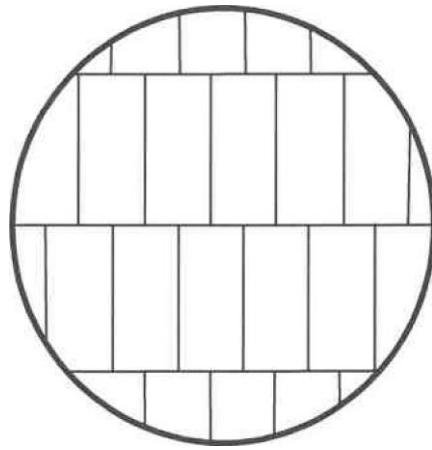
Relative Humidity	Maximum Time Span
Over 90%	No application
86-90% I hour	
80-85% 4 hours	
50-79% 8 hours	
50 or below	24 hours
  - b. Adhesive shall be thoroughly mixed using a power driven mixer for at least 5 minutes before application and frequently during application to maintain contents in suspension.
  - c. Brushes and rollers shall be clean, dry and free of any solvents before use.
  - d. Adhesive shall be evenly applied. Adhesive must form a smooth, continuous and unbroken coating.

DESCRIPTION	NATURAL RUBBER-153
COLOUR	BLACK
TENSILE STRENGTH	20 MPa
ELONGATION @ BREAK	600%
SPECIFIC GRAVITY	1 .08
HARDNESS SHORE	500

- d) The preparation and application of rubber lining shall be in accordance with the specifications and requirements of the rubber and adhesive manufacturer, SANS 1201 for The application of rubber linings to pipes, pipe fittings and vessels and the supplementary requirements of this scope, where:
- a. Take care to ensure that air is not trapped between rubber and casing. If strings (Only cotton) are used for venting, ends will be trimmed so as not to extend onto flange faces.
  - b. Panel lay-up must be staggered so that no area of the lining has more than two layers of sheet stock. Where three sheet comers must come together, the overlay shall be cut down before application of the third sheet. Every effort shall be made to avoid four layer overlaps including staggering alternate panels.

## INCORRECT LAY

## CORRECT LAY

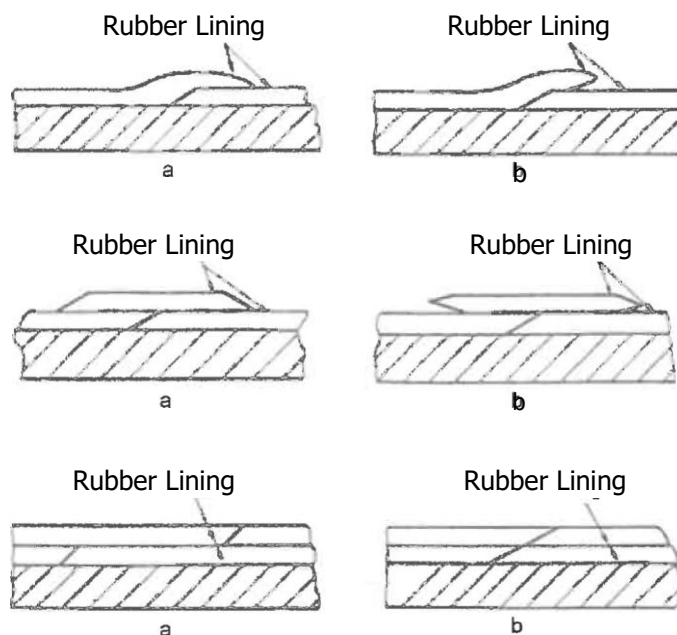


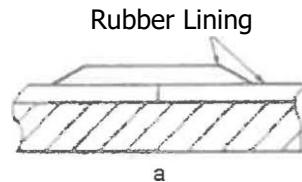
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- c. All edges and seams shall be laid straight, and all lapped seams shall be made by overlapping adjacent sheets by not less than 50 mm. Overlapping edges shall be grinded down so as to give a smooth, neat appearance with no exposed epoxy. The number of seams shall be kept to a minimum, consistent with good workmanship. The bond between adjacent sheets of overlap shall be such that separation cannot occur.
- d. Butt seams may be used only where lapped seams are impractical. Butt seams shall be covered with a cap strip 100 mm wide and must have 45 degree bevelled edges.

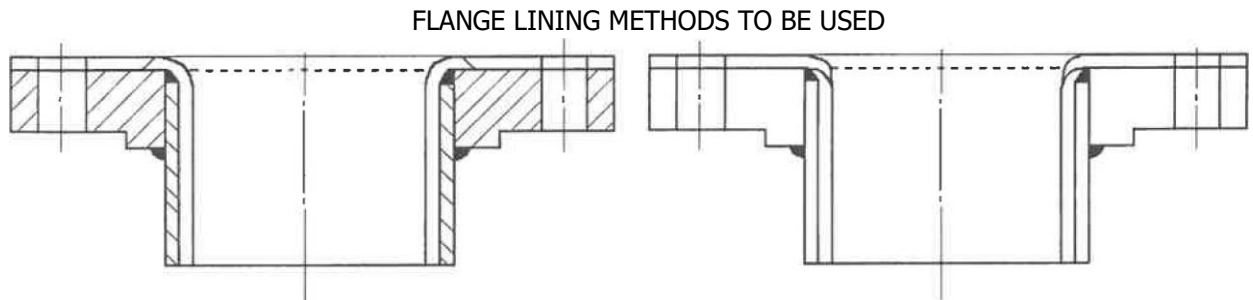
### JOINING OF SEAMS AND EDGES

CORRECT (a) INCORRECT (b)





- e. The rubber lining shall extend out on all flanges.



- f. The ambient temperature during lining application shall be maintained between 10 °C and 35 °C and the relative humidity shall not exceed 90%. The temperature of the surface being cemented shall be at least 15 °C above the dew point.
- g. The Steam heated Vulcanizer Autoclave used needs to reach and maintain temperatures -160° Celsius.
- h. Please note that an AutoClave needs to be used. Pipes must NOT be sun/air/cutting torch. The correct heating/curing methods must be used for drying and curing process.
- i. Double linings shall be lined such that item "d" (above) is accomplished for the outer lining only. Seams of the underlying lining shall be butt joints and shall not be within 150 mm of the lapped seams of the overlay (Top) lining, unless approved by a Foscort representative.
- j. Internal flanges shall be completely lined, including the bolt holes.
- k. After cure, all flange faces shall be ground smooth and even.
- l. High-voltage spark tests, in accordance with the requirements of BS 6374, shall be made before and after vulcanizing. A minimum of 15 kV and a maximum of 40 kV shall be used. These tests shall consist of grounding the steel members, and passing a searching electrode across the entire lined surface. If any defects are revealed, proper repairs shall be made, and the repaired area shall be retested to ensure that the defect has been eliminated.
- m. Lining shall be checked for blisters, physical damage, looseness of splices, etc. Defective areas shall be repaired and the lining shall be retested and inspected after cure.
- n. All air blisters shall be removed from between the lining and the metal surface. Any air not removed by rolling shall be removed with a hypodermic needle. Each needle puncture is to be capped with a patch. All patches must have 45 degree bevelled edges and be circular with a diameter of at least 50 mm. This repair procedure shall be the absolute last resort. Every effort shall be made to prevent an entrapment when stitching the lining in place.
- e) All pipe openings to be closed using a sheet of hard-board with minimum thickness of 4 mm securely fixed to the pipe flange. Hard-board to cover entire flanged area.

### 2.3.2 STANDARD FOSKOR SPECIFICATIONS

All relevant FOSKOR specifications, COP's and Safety Standards are applicable to this Contract.

### 3. PROJECT URGENCY

Project urgency is defined below:

Delivery as per delivery schedule included in paragraph 2.1 on page 2

### 4. DELIVERY OF MATERIALS AND EQUIPMENT

All pipes will be delivered and off loaded to the pipe yard Tailings department on Foskop. All transport and off-loading of pipes etc to remain the contractor's responsibility.

TAKE NOTE - Foskop pays for material delivered to Foskop site only!

NB: The contractor/ consultant must clearly state in his tender submission if there is an exclusion on the Foskop scope (As per the site meeting procurement scope and site meeting minutes) Failure to state the exclusion will mean that the full Foskop scope is still applicable.

### 5. BATTERY ( BOUNDARY) LIMITS - INCLUSIONS AND EXCLUSIONS

List the boundaries in terms of equipment (Foskop plant specific). Up to where is it Foskop's responsibility and where/what is the contractor's responsibility.

WHO WILL SUPPLY THE FOLLOWING?					
NOT APPLICABLE c CONTRACTOR FOSKOR, FREE OF CHARGE FC = FOSKOR, AT COST TO CONTRACTOR					
1 .Sanitary -		2.Transport		3.Electrical	
1 .1 Water on site and toilet facilities / janitorial services		2.1 Labour	c	3.1 Generators	
1.2 Potable connection int	N/A	2.2 Materials	c	3.2 Electrical Extensions	NIA
1.3 Connection to construction water su I		2.3 Equipment	c	3.3 COC Site Establishment	
1.4 Change rooms		2.4 All TMMS		3.4 Temporary lighting	
				3.5 Electrical connection point	
				3.6 Connection to Electrical supply	
				3.7 Electric panel + distributing wiring	
				3.8 Power for tools on site for existing Foskop electrical supply point (Welding plugs and 220v plugs	

				Electrical and Instrumentation Installation	
4. Quality -	c	5. Security		6. Lifting and Rigging	c
4.1 Plan, Management, QA, QC	c	5.1 Site Security		6.1 All rigging equipment (Slings, Chain blocks, tilters, etc	C
4.2 All quality test Civil, Paint, Mechanical, etc	c	5.2 FOSKOR ID Card		6.2 Rigger	c
4.3 Sampling and laboratory testing	c			6.3 Mobile cranes	
7. Medicals		8. Communication devices - All communication devices like laptops, computers, networks, radios, cell phones, etc.	C	9. PPE	c
7.1 Entry and Exit				9.1 Supply, Issue, inspect and manage	C
7.2 First aid box at place of work					
10 Site Surveys		11. safety File - FOSKOR will issue template		12 Training & Authorizations	NIA

#### WHO WILL SUPPLY THE FOLLOWING?

N/A = NOT APPLICABLE  
 C = CONTRACTOR  
 FF = FOSKOR, FREE OF CHARGE  
 FC = FOSKOR, AT COST TO CONTRACTOR

		Ensure file conform/ populate to FOSKOR standards		12.1 All Required Training	
				12.2 Authorisation - As per FOSKOR COP	
13. Site Establishment		14. Waste management on site		15. Painting - All Equipment and tools paint, labour, etc	C

13.1 Site office/s with suitable facilities for daily "Green Area" meetings, and lunch area		14.1 Transport all waste to Foskor designated waste sites		15.1 All pipes to be painted OFF site	C
13.2 Site establishment s ace					
16 Scaffolding		17 Labour	c	18. Compressed air	
16.1 Scaffolding Supply & Erect		17.1 All labour as per Scope of Work to execute task including management	c	18.1 Sandblasting or flash blast	
16.2 Scaffolds be managed b the Contractor				18.2 Compressor	
16.3 Cherry Picker's - only if and when available by re-booking				18.3 Air for power tools - If available	
16.4 Cherry Picker's DriverTrained and authorized driver					
19	c	20. Storage and inventory control	c	21 Consumables	
19.1 Fuel Supply	C	20.1 Protective coverings	c	21.1 Welding rods	
19.2 Fuel storage		20.2 Storage area and inventory control		21.2 Bolts & Nuts	WA
19.3 Fuel fire protection				21.3 Etc	
19.4 Refuelling	c				
22 Tools & Equipment	NIA	23 Certificates •	C	24 Training	WA
22.1 All Portable electrical Equipment		Supply All certificates as required	C	All required training and training manuals as required to ensure that Foskor can train its workforce and operate the plant] equipment safely	
22.2 Hot Work Equip as per Foskor COP - Welding Machines, Gas Cutting, Grinding , Gauging , etc				All related quality documents to be supplied to Superintendent office for safekeeping	C
22.3 Tools as required to execute the task	c				
WHO WILL SUPPLY THE FOLLOWING?					



N/A = NOT APPLICABLE C = CONTRACTOR FF = FOSKOR, FREE OF CHARGE FC = FOSKOR, AT COST TO CONTRACTOR					
				25 Mechanical	

#### 5.1 ADDITIONAL BOUNDARIES

- Take vigilant of the roaming animals, be wary of any signage about potential animals around the vicinity through tailings communications. All offloading vehicles must be escorted by the Tailings dam Rehabilitation Team 2.9.2
- All deliveries must take place between 07h00 and 15h00 Monday to Thursday and between 07h00 and 13h00 on Fridays

#### 6. QUALITY

- 6.1 The service provider must provide the necessary quality management systems and plans to ensure that the quality of his work complies with the requirements of this scope of work
- i. The service provider shall during delivery of pipes be expected to hand over rubber sheeting specification sheet.
  - it. Any change requests / additional work resulting due to inadequate quality management system will be to the account of the service provider
  - iii. Foskor might appoint a third party for Quality Control Inspections
  - iv. All pipes will be inspected and signed off by both parties (Foskor and Supplier) to indicate that specification sheet was available and that the pipe construction complies to the requirements of this scope when pipes is delivered to Foskor:
    - a. Quality communication — What needs to be reported to whom and at what frequency
  - v. Foskor may appoint a third party to measure and control Foskor's interest in the terms of quality in this contract and the service provider is expected to work in conjunction with this company
  - vi. Hold points will be discussed and finalized with the successful service provider based on the approved Quality plan