

## **SCOPE OF WORK**

GROOTVLEI

Title:	Grootvlei Power Station Scope of
	Work for Belt Splicing and Pulley
	Lagging Repair

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**Grootvlei Power** 

Station

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#### 1. INTRODUCTION

Grootvlei Power Station coal handling plant uses conveyor belts to transport coal from the coal stockyard to the mill bunkers, where the coal is further conveyed to the milling plant for further processing. There are two types of conveyor belts used which are steel Cord and Textile/Plied Reinforced Conveyor Belt. The belts get torn or damaged for various technical reasons. The repair of conveyor belts requires either full replacement or putting an insert depending on the extent of damage and the condition of the existing conveyor belt.

This scope of work outlines the requirements for conveyor belts splicing, pulley repairs and inspections to be conducted by the Contractor during the breakdowns and or as and when required. The Contractor must be responsible for conducting the splicing which will comply to the relevant splicing standards and/or pulley lagging standards.

## 2. SUPPORTING CLAUSES

#### 2.1 SCOPE

The scope covers splicing of all conveyor belts and lagging of conveyor pulleys for coal handling plant at Eskom Grootvlei Power Station.

### 2.1.1 Purpose

The purpose of this scope of work is to outline requirements and specifications for successful and quality repair, and or replacement of the conveyor belts and lagging of conveyor pulleys. This scope of work is an input to the commercial process to acquire services necessary to fulfil effective splicing repairs of conveyor belts and lagging of conveyor pulleys.

### 2.1.2 Applicability

This document is applicable to Grootvlei Power Station and all other stakeholders partaking in the commercial process for acquiring services for belt and pulley repairs. The following Power Station sections and functions are identified in the following applicability matrix:

	ALL	HEAD OF DEPARTMENT	HEAD OF FUNCTION	SYSTEM ENGINEERS	SUPERVISORS	ADMINISTRATION	AUXILIARY	CIVIL	CONTROL & INSTRUMENTATION	ELECTRICAL	MECHANICAL	PROJECTS	SUPPORT	TRAINING	SHIFTS	OTHER (SPECIFY):
Operating																
Maintenance							Х				Х					
Engineering							X				X					
Risk Management											Х					Quality
Human Resources																
Finance																Procurement
Contractors				·			Х				Х	·	·			Tenderer

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#### 2.1 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

#### 2.2.1 Normative

- [1] 240-55864585: Textile Ply Belt Splicing Quality Control Standard
- [2] 240-120532564: Splicing and Repairs of Steel Cord and Textile/Plied Reinforced Conveyor Belting
- [3] SANS 485:2009 Edition 1: Conveyor Belting Splicing of steel cord conveyor belting.
- [4] SANS 484-1:2009 Edition 1: Conveyor Belting Step splicing for multiply textile reinforced rubber covered conveyor belting Hot-splicing method.
- [5] SANS 484-2:2009 Edition 1: Conveyor Belting Step splicing for multiply textile reinforced rubber covered conveyor belting Cold-splicing method.
- [6] 240-55864509 Ceramic Lagging for Pulleys Standard
- [7] SANS 1669 2: 2016 Rubber Lagging for Pulleys Standard

#### 2.2.2 Informative

N/A

#### 2.1 DEFINITIONS

Definition	Description
Employer	Eskom Holdings SOC Ltd, Grootvlei Power Station, or representatives/staff of Eskom Holdings SOC Ltd or Grootvlei Power Station.
Employer Requirements Meeting	A kick-off meeting held after or concurrently with the Witness of Stripping meeting where the Service Provider clarifies all the user requirements of the Employer. This meeting will also serve to clarify any ambiguity or apparent contradictions between the actual SOW which needs to be executed and this SOW.
Contractor	The supplier company who receives purchase order(s) from the Employer to execute this SOW.
Service Manager	The Employer representative nominated in this SOW who will be the primary point of contact of the Employer for the Service Provider.
Splicer Supervisor	Team leader for Contractor who is trained to execute the splice
Splicer	Contractor representative who is trained to execute the splice.

#### 2.2 Disclosure Classification

**Controlled disclosure:** controlled disclosure to external parties (either enforced by law, or discretionary).

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#### 2.3 Abbreviations

Abbreviation	Description
MSDS	Material Safety Data Sheet
NDT	Non-Destructive Testing
QCP	Quality Control Plan
SANS	South African National Standard
soc	Standard Occupational Classification
sow	Scope of Work
TBD	To be Determined

## 2.4 Roles and Responsibilities

## 2.4.1 System Engineer

- Develop and maintain the maintenance and design base
- Review and authorize all QCPs for all maintenance activities specified in this SOW
- Provide technical quality assurance at every stage of the commercial process and eventual execution of this SOW.
- Apply requirements of specified standards during the repair or splicing of a belt to ensure strict quality control of the process and thereby providing quality assurance on behalf of Eskom.
- Attends to quality intervention points and perform inspections.

#### 2.4.2 Eskom Quality Inspector:

- Ensures technical quality requirements are met and Quality Management processes/ procedures are followed.
- Attends to quality intervention points and perform inspections.

## 2.4.3 Contractor:

- Executes splicing and repair on conveyor belts.
- Ensure compliance to the requirements outlined in this standard,
- Comply with all Eskom Life-Saving Rules and other safety requirements referenced herein.
- Execute the SOW with due regard for Employer, safety, health, environmental and quality requirements specified herein.
- The Service Provider and their sub-suppliers are required to have suitable premises with the
  required tools, and equipment to be able to conduct the SOW. Eskom reserves the right to
  inspect the workshop premises at any time during the duration of the services/contract (with
  prior notice of at least 24 hours) to ensure that it is suitable and is kept up to standard. The
  Service Provider shall acknowledge receipt of request and confirm availability.

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Never divulge information that is regarded as confidential or privileged or which may be regarded
as bringing disrepute or perceived to potentially bring disrepute to the Employer, to third parties
under any circumstances.

Obey all laws pertaining to the National Key Points Act. It is expressly forbidden to take
photographs of anything while inside the Employer premises unless prior permission has been
granted in writing to do so.

## 2.4.4 Employer Supervisor:

- Assists with application of permits to work.
- Assists with lowering of counterweights and other preparations for splicing repairs and lagging of pulleys
- Assist with commissioning after completion of works.

#### 2.5 PROCESS FOR MONITORING

This SOW will be monitored for effectiveness through the QCPs which are developed for each maintenance activity and the performance monitoring of the conveyor belts.

#### 2.6 RELATED/SUPPORTING DOCUMENTS

N/a

## 3. SCOPE OF WORK

## 3.1.Pre-Work Information Exchange

- 3.1.1 The Employer shall provide the Contractor with full specifications of the belt being spliced. The specifications/datasheet shall be enough for Contractor to comprehensively collect and transport the necessary materials, equipment, and tools to site. See **Appendix A & B** for detailed example of information/data to be provided by the Employer to the Contractor for textile plied belt and steel cord belts.
- 3.1.2 The Contractor shall provide the Employer with a design of the splice for the conveyor with a drawing indicating dimensions of the splice prior to arriving on site. This drawing shall be approved by the Employer prior to splicing the belt.
- 3.1.3 The Contractor shall submit to the Employer a list of tools, materials, and equipment for executing the work and shall be approved by the Employer prior to arrival onsite. See **Appendix C & D** for minimum tools and materials required for splicing textile belts and Steel chord belts.
- 3.1.4 The Contractor shall provide the Employer with a quality control plan. The Quality control plant shall be approved by the Employer prior to splicing the conveyor belt. No work shall be done if no QCP is not approved.

## 3.2. Site Work Preparation

- 3.2.1. The Contractor shall determine, in conjunction with the engineer/supervisor, the position of the splicing workstation to ensure the best possible splice,
- 3.2.2. The Contractor shall verify the brand name, age, type, class and width of the belts to be spliced from the Employer's records, and
- 3.2.3. The Employer to apply for permit to work prior to the start of working. No work shall start without a permit to work.
- 3.2.4. The Contractor shall do a risk assessment prior to starting work. Thorough assessment of risks and hazards. The Contractor is expected to inform the Employer of any hazards and risk related to safety

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3.2.5. The Employer to remove belt tension through take-up system and Contractor to clamp belt on both sides of the splice. The Contractor may also in some cases, as decided by the Employer, remove the tension in the belt due to unforeseen circumstances such as manpower issues. Enough belt slack must be provided between the belt clamps, The Employer to prepare area for splicing, remove idler frame, conveyor canopies, if necessary,

3.2.6. The Contractor supervisor shall take a humidity reading before commencing with the splice preparation. A proper tent cover shall be erected over the splice workstation, heaters shall be provided by the splicing Contractor to dry the air inside the tent cover, or there is enough reason to expect rain or fog during the splicing exercise if the humidity is exceeding 70%.

#### 3.3. Other Service Works

- 3.1.5 The Contractor provides belt splicing equipment such as presses and ancillary equipment, splice tools, special tools, and consumables for the effective execution of the Service. The Employer will only provide Contractor with a conveyor belt. It is expected that all equipment and materials to be used be maintained regularly (Refer to Appendix E for recommended period of inspection as per 240-120532564 standard).
- 3.1.6 The equipment must be inspected before being dispatched to Grootvlei Power Station. The Employer reserves the right to request any calibration certificates and material datasheets used during the service, each certification and material datasheets shall be kept and readily available.
- 3.1.7 In addition to the repair of the breakdown/repair service, the Contractor will also conduct a thorough inspection to determine the root cause of the failure. Where necessary, the Contractor will recommend corrective actions to the Employer.
- 3.1.8 The Contractor shall provide Employer with a completed quality control procedure (QCP) and work report / job card for each, and every job undertaken, and this must include technical specifications, findings, space for the Employer to sign off and comment and include any other relevant information required by the Employer. As a minimum the QCP shall include information such as the number of steps, length of steps, overall length of the splice for plied belt, cord cleaning length, cord arrangement, bias for steel cord. The completed QCP will be handed over immediately after completing the job to the Employer upon completion for filing.
- 3.1.9 The Contractor's Engineer, Competent Person or Site representative will conduct on-site investigative fault-finding surveys, in conjunction with the site maintenance personnel, on all conveyor belts. The service will need to be provided as and when required. This shall be performed by a competent person and reports containing the results of the survey and recommendations to address the findings, to improve the plant health, must be submitted to the Employer within one week after such survey is done. For requested inspection on a steel chord belt, the Contractor must supply a report to Employer with the following minimum information:
  - Number of splices on belt
  - Splice number for each splice
  - Distance between splices
  - Splice condition (Specific note to be taken of blistering, splices pulling loose or skew splices)
  - Edge damage (Note size and extent, note any exposed chords, note remaining belt width at edge damage)
  - Cover damage (Note size and extent, note any exposed chords)
  - All damage to belt to be documented with pictures as well as description

#### 3.2.1 Inspection of steel cord conveyor belting

• The works will include the implementation of a Non-Destructive Testing (Eddy current

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Testing/Magnetic Flux Leakage) method for steel cord conveyor belts.

- The inspection must provide the Employer with a comprehensive understanding of the condition of the internal conveyor belt structure.
- The Eddy Current Analysis technique will be employed.
- The condition of each steel cord must be accurately measured for the length of the whole conveyor and all damage, fraying and pitting corrosion must be identified.
- The condition of all belt splices must be individually inspected and analyzed.
- A detailed report, showing the results of the analysis must be generated and submitted to the Employer.
- The report must include, but is not limited to, recommendations regarding potential belt failures, end of life predictions and corrective actions

## **3.2.2** Inspections of fabric ply conveyor belting

- The condition of the belting is monitored through basic visual inspection.
- For requested inspection on a fabric belt, Contractor must supply a report to Employer with the following minimum information:
- Number of splices on belt
- Splice number for each splice
- Distance between splices
- Splice condition (Specific note to be taken of blistering, splices pulling loose or skew splices)
- Edge damage (Note size and extent, note any exposed plies, note remaining belt width at edge damage)
- Cover damage (Note size and extent, note any exposed plies)
- All damage to belt to be documented with pictures as well as description
- Remaining extra length available on take-up
- The report must include, but is not limited to, recommendations regarding potential belt failures, end of life predictions and corrective actions.

#### 3.4. Emergency Works

- 3.1.10This refers to emergency breakdowns requiring immediate action to be taken. It is a corrective maintenance (retro-active strategy) whereby action is only taken when a system or component failure has occurred. The Contractor will be responsible for arranging all the resources (this include but is not limited to manpower, presses, tools, and consumables) required attending to breakdowns. The Contractor shall provide a 24-hour per day, 7-day per week standby service for emergencies/breakdowns/defects of conveyor belt after the Contractor's regular working hours and the Contractor must be on site within 210 minutes of a call out as and when required.
- 3.1.11The Contractor shall ensure that there is always a team readily available to attend any breakdown they will be called out for

## 3.5. Equipment Specifications & Material Storage

#### 3.1.12PRESS

- The press shall be capable of exerting the required pressure and maintaining a controlled temperature to suit the range of belting constructions to be repaired as detailed in the preceding sections under splicing,
- The platens shall be of suitable design to ensure uniform loading across the surface of the belting,

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 The press shall be checked at regular intervals with a straight edge to ensure platen flatness and for even temperature distribution (Refer to Appendix E for recommended period of inspection as per 240-120532564 standard)

- The platens shall be at least 100 mm wider than the belting to be repaired and the overlap of the platens on to the portion of the belt outside the repair area shall be a minimum of 50 mm,
- For the edge repair, the mould bars (sidebars) shall be slightly thinner (one millimeter) than the belting to be repaired to constrain the repair width and to prevent the repair spreading under pressure.

## 3.1.13SHELF LIFE OF MATERIALS

- Materials used for covers complies with the requirements as defined in SANS 1366 and SANS 1173,
- All material should be stored at an ideal temperature of between 16°C to 18°C.
- · Solutions are marked with "Expiry Dates".
- Rubber marked with "Manufacturing Date".
- Batch numbers of the products must be recorded on the relevant Quality Control documentation, and
- The datasheet identifies all the possible rubber compound tests that are required to determine suitability with conveyor belting used in ESKOM

#### 3 GUARANTEE OF SERVICES

- The Contractor shall guarantee his workmanship and materials for a minimum period of three (3) years following the completion of the splice.
- For steel cord belting there shall be a one (1) year guarantee against visual evidence of oxidation/corrosion of the steel cords.
- All repairs done on conveyor belting shall carry the same guarantee as the parent belt.

## 4 DOCUMENTATION SUBMISSION AND RECORDING

- Quality Control Plan (QCP)
- Material Safety Data Sheets (MSDS)
- Equipment Calibration Certificates
- Method Statement

### 5 AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation
	Auxiliary Plant Engineering Manager
	Auxiliary Plant Maintenance Manager
	Engineering Manager
	Auxiliary Plant Maintenance Technician
	Bulk Materials Handling Specialist
	Documentation Centre

Grootvlei Power Station Scope of Work for Belt Splicing and

Pulley Repair Scope of Work

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## 6 REVISIONS

Date	Rev.	Compiler	Remarks
March 2025	1		Document issued for the market – Addressing comments from the squad check.
July 2025			Revision of scope of work to Addressing comments during the squad check.

## 7 DEVELOPMENT TEAM

The following people were involved in the development of this document:

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## **8 ACKNOWLEDGEMENTS**

Andrew Matlala

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# APPENDIX A: INFORMATION TO BE PROVIDED BY THE EMPLOYER TO THE CONTRACTOR FOR TEXTILE PLIED BELTING

ORDE	R NO:					
BUSI	NESS UNIT:	JOB NO:				
SPLIC	CER NAME:	CONTRACTOR:				
CON	/EYOR NO:	SPLICE NO:				
SPLIC	DE TYPE: DATE:					
1	Title, number, date and issue of this Docume	nt:				
2	Location of conveyor:	Incline conveyor/surface conveyor*				
3	Contact person on site:					
4	Tel no:					
	Fax no					
5	Belt width:					
6	Belt class:					
7	Belt manufacturer:					
8	Original belt (parent belt)					
9	No. of plies					
10	Splice length	TBD by Contractor				
11	Insert spec					
12	Cover thickness:					
13	Тор					
	Bottom					
	Cover material:					
14	Тор					
	Bottom					
	Weather conditions					
15	Splice type Aged to Aged:					
16	New to aged					
17	Estimated time of arrival at site required					
Signed:		Date:				

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# APPENDIX B: INFORMATION TO BE PROVIDED BY THE EMPLOYER TO THE CONTRACTOR FOR STEER CORD BELTING

ORDER NO:						
BUSIN	INESS UNIT:	JOB NO:				
SPLIC	ER NAME:	CONTRACTOR:				
CONV	EYOR NO:	SPLICE NO:				
SPLIC	E LENGTH:SPLICE TYPE	PE: DATE:				
1	Title, number, date and issue of this Docum	ent:				
2	Location of conveyor:	Incline conveyor/surface conveyor*				
3	Contact person on site:					
4	Tel no :					
	Email :					
5	Belt width:					
6	Belt class:					
7	Belt manufacturer:					
8	Original belt (parent belt)					
9	No. of cords					
10	Cord diameter					
11	Splice length	TBD by Contractor				
12	Insert spec					
13	Cover thickness:					
14	Тор					
	Bottom					
	Cover material:					
15	Тор					
	Bottom					
	Weather conditions					
16	Splice type Aged to Aged:					
17	New to aged					
18	Estimated time of arrival at site required					
Signe	d:	Date:				

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## APPENDIX C: EQUIPMENT & TOOL LIST FOR TEXTILE & TEXTILE PLIED BELTING

	Condition	checked
	Yes	No
Vulcanising press		
Roller stitchers (2, 4, 12 and 50 mm)		
Wire brush (rotary)		
Polisher		
Rubber mallet		
Soft hand brushes		
Ratchet rope puller and pulling cables		
Chalk		
Chalk string		
AW		
Stanley knife (or equivalent)		
Stanley blades (or equivalent)		
Saddler's knife (shoemaker)		
Saddler's pliers		
Cutting knife (straight blade, Don Carlos or equivalent)		
Paring knife (offset blade)		
G clamps		
Whetstone		
Steel rule		
5m Tape measure		
Rubber hardness meter		
Buffing attachments		
Edge irons		
Set square		
Belt and press support frames		
Solution application brushes		
Ply knife		
Ply lifter		
Grip tongs (eccentric clamp)		
Rope sling		

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## APPENDIX D: MINIMUM EQUIPMENT & TOOL LIST FOR STEEL CORD SPLICE

	Condition	Checked
	Yes	No
Vulcanising press		
Pressure roller		
Pressure roller (double acting)		
Wire cutter or cable shear		
Wire brush (rotary)		
Polisher		
Rubber mallet		
Standard mallet		
Soft hand brush		
Hand vice/eccentric clamp/frog clamp		
Ratchet rope puller and pulling cables		
Cutting pliers		
Chalk		
Chalk string		
Awl		
Pricker roller		
Scribing knife		
Saddler's knife		
Saddler's pliers		
Cutting knife (straight blade, Don Carlos or equivalent)		
Paring knife (offset blade)		
Scissors		
Screw clamps		
Whetstone		
Steel rule		
5m Tape measure		
Rubber hardness meter		
Hand drill		
Buffing attachments		
Edge irons		
Set square		
Belt support frames (6 off)		

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## APPENDIX E: CALIBRATION AND TESTING OF WORKIG EQUIPMENT

ITEM	ACTIVITY	RECOMMENDED INTERVAL
Hygrometer (Humidity Meter)	Calibration	Annually
Thermocouple gauges	Calibration	Quarterly
Platen	Temp. stability	Quarterly
Pressure gauges	Calibration	Quarterly
Cylinders	Press test, even load spread	Annually
Electrics	Correct contact and safety	Annually
Thermostat	Calibration	Quarterly
Rubber Hardness meter	Calibration	Annually