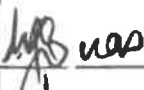


THE SCOPE OF WORK FOR SECTION 18&19

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1 INTRODUCTION

Necsa's Pelindaba site is surrounded by a security fence which is patrolled. The patrol road is currently a mixture of dirt and concrete sections. During a recent assessment of the dirt sections, it was found to be rocky and not easily driven. Furthermore, there are no clear standby and turnaround points. Due to these findings, it became necessary to convert the dirt sections to concrete sections. This document will outline the specifications and the bill of quantities for the new concrete sections.

2 TERMS AND ABBREVIATIONS

ECSA: Engineering Council of South Africa

Engineer: Engineering representative for Necsa

Necsa: The South African Nuclear Energy Corporation

3 REFERENCES

The Contractor complies with following standards and requirements:

SANS 2001-CC1: Concrete Works (Structural)

SANS 920: Steel Bars for Concrete Reinforcement

SANS 1024: Welded Steel Fabric for Reinforcement of Concrete

SABS 1200 G: Standardized Specification for Civil Engineering Construction: Concrete (Structural)

SHEQ-INS-0825: Necsa Requirements for Construction

SHEQ-INS-5450: Health, Safety and Environmental Requirements for Contractors

Drawing 00-C240-00: Road Around Necsa Perimeter Fence New Concrete Paving: Typical Construction Details

Drawing 7371-12-90-C21500: Necsa Perimeter Fence. New Security Road and Fence: Site Layout Plan

4 SCOPE OF WORK FOR SECTION 18&19

1. The addition of a sub base stabilised with cement.
2. The laying of a reinforced concrete road with dimensions given in the drawings 00-C240-00 and 7371-12-90-C21500.
3. The repair of any culverts which are damaged during construction.

Refer to Annexure 1 for the Bill of Quantities.

5 SAFETY

5.1 Necsa Safety Requirements

The Contractor shall comply with the safety regulations set out by Necsa in document SHEQ-INS-0825 and SHEQ-INS-5450.

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5.2 Safety and Liability

The Government assumes no responsibility for injuries or damages suffered by the Contractor, its officers, agents or employees, while engaged in the performance of this Contract. The Contractor agrees to take reasonable measures to provide for the safety and security of its own workforce, and for the safety and security of all others present at the work site while engaged in the performance of this Contract. The Contractor shall ensure that employees are supplied and use proper personal safety equipment (i.e. hardhats, eye protection, proper hearing protection, gloves, and safety boots) and follow safe work procedures, which protect Contractor employees and Necsa personnel in the vicinity of the job site. The Contractor shall establish a safety zone around the work area and establish a safety system to prevent worker injuries. The Contractor shall assume any liability for any injury incurred by Contractor personnel while working on site. On a daily basis, the Contractor shall install warning markers and other devices to prevent injuries to vehicles, pedestrians, and others who may be on site.

6 PROGRAMME

The project shall take no longer than 12 months after the date that the Contract is awarded. Once the Contract is awarded, the Contractor must provide a level five (05) detailed programme/schedule for acceptance by the employer. Necsa with a detailed schedule.

6.1 Final Inspection:

The Contractor shall notify Necsa when the project is ready to be handed over. A final inspection will be performed by Necsa and any remaining items of work will be identified on a "snag list". Based on the snag list, Necsa will determine if any supplemental inspections are required. Snag list items shall be corrected and/or repaired in a timely manner at no cost to Necsa. Once the snag list items have been corrected and completed to the satisfaction of Necsa, final payment will be considered after the complete construction is taken over by Necsa.

7 PERFORMANCE SPECIFICATION

7.1 Site Preparation

Where necessary, the site shall be prepared by the Contractor. This includes preparation for taking occupation of sections of the site, provision of Contractor's welfare facilities, clearing of vegetation to allow construction.

7.2 Concrete Pathway

7.2.1 Sub Grade

The sub base shall be G5 material stabilised with 3% cement to 98% of MOD.ASHTO density. The sub base shall be 150 mm thick.

7.2.2 Concrete

The concrete shall be 30MPa in strength with a stone size of 19mm. It shall comply with SANS 1200G. The concrete shall be 150 mm thick. The concrete shall have a broom sweep finish. The concrete shall be cured using Polyethylene sheets for 7 days after casting. The laying of the concrete shall always start at the lowest point of the section of road and continue upward. The concrete shall be laid with the

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dimensions specified in the drawing 00-C240-00. Three test cubes per concrete batch shall be cast and tested to show compliance.

7.2.3 Steel Mesh

The steel mesh shall be 193 steel mesh as defined by SANS 1024. The placement of the steel mesh is shown on the drawing 00-C240-00.

7.2.4 Steel Reinforcement

The steel reinforcement used shall be Y10 bars complying with SANS 920. The lengths and placement of the steel is shown on the drawing 00-C240-00.

7.2.5 Dowel Bars

The dowel bars shall be R16 rods.

7.2.6 Joint

The joint shall be formed or sawed into the concrete within 24 hours of casting. The joint shall be filled with non-absorbent material such as Ethacord. The joint shall be sealed with highway sealant.

7.2.7 Expansion Joints

The expansion joints shall occur every 13.5m and shall be constructed as shown in the drawings. A maximum of 15m is allowed between expansion joints.

7.2.8 Construction Joints

The construction joints shall occur every 27m and shall be constructed as shown in the drawings. A maximum of 30m is allowed between construction joints.

7.3 Culverts

Any culverts which are damaged during construction shall be repaired to their original state. At no point during construction may the security measures relating to the culvert be removed without prior written approval from Necsa.

7.4 Inspection Points

7.4.1 Hold Points

At these points, the Contractor shall wait for approval from the Engineer to continue construction. Failure to accommodate these hold points shall result in the repetition of the work subsequent to the hold points at the Contractor's cost.

- After the re-compaction of the soil before the placement of the sub base.
- After the reinforcement has been placed before the concrete has been thrown.

7.4.2 Witness Points

At these points, the Engineer shall witness the following action.

- The first section of concrete thrown at the beginning of the project.

7.5 Warranty:

The Contractor shall warrant that the work performed conforms to this document and is free from any defect in equipment, material, design, finish or workmanship performed by or that is the responsibility of the Contractor. This warranty shall continue for a period of 2 years from the date of final acceptance. If possession or partial acceptance of any work product occurs before final acceptance of the entire project, this warranty

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shall continue for a period of 3 years from the date that the company accepts or takes possession of or partially accepts such product. The Contractor shall remedy at the Contractor's expense any loss of or damage to company owned or controlled or personal property when such loss or damage is incurred as the result of the Contractor's failure to conform to Contract requirements, any defect in materials, design or workmanship, or is the result of Contractor's negligence. The Contractor's warranty with respect to a work product being replaced or repaired shall run for a period of one year from the date that such replacement or repair is accepted.

8 ADDITIONAL REQUIREMENTS

8.1 Traffic Control:

The Contractor is responsible to ensure that pathways remain open to security patrols during construction. The Contractor shall submit a plan for maintaining traffic flow during construction at a pre-construction meeting, if applicable. Barricades shall be required whenever safe access to paved areas is prevented by construction activities or as otherwise necessary to ensure the safety of security vehicular patrols. Barricades shall be securely placed, clearly visible with adequate illumination to provide reasonable visual warning of the hazard during both day and night. It is recommended that persons working on pathways or providing traffic control be issued reflective safety vests to enhance personal safety. Travel to and from the project site shall be restricted to a route approved by Necsa.

8.2 Use of Explosives

The Contractor shall be responsible for obtaining written approval from the appropriate local officials and Necsa for transportation and use of explosives during construction. The Contractor shall maintain a daily log of explosives in inventory and daily usage by quantity. This log shall be available at the explosives storage location and subject to review by the client or his representative. The Contractor shall also notify Necsa in advance of any planned demolition work that will occur. The Contractor will notify Necsa in advance if demolition or rock breaking.

8.3 Physical Security at Worksite:

The Contractor is responsible for providing security protection during construction as required to adequately safeguard its employees and equipment. Security personnel may be hired through Necsa Security to guard the workforce and equipment during the construction period as they are working on the project. Necsa shall perform background checks of the local security personnel hired to ensure they are not a threat to Necsa. Necsa's perimeter patrol security shall prevent unauthorised people on site. Actions required in order to comply with security requirements shall not form an acceptable basis for failing to complete the work in the required time period. Necsa assumes no liability for damage to work in place caused by theft, vandalism, natural phenomena, or other events. Similarly, Necsa assumes no liability for Contractor-owned or leased equipment on site, materials on site, and other property of the Contractor or Subcontractors. The Contractor shall submit for approval of the Client at a pre-construction meeting its proposed means of providing project security to prevent unauthorised access to equipment, facilities, materials and documents, and to safeguard them against damage and theft. The Contractor shall be responsible for physical security of all materials, supplies, and

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equipment of every description, including property which may be client-furnished or owned, for all areas occupied jointly by the Contractor and the client as well as for all work performed.

8.4 Hazardous Materials

Should the Contractor encounter hazardous materials during the construction period of this Contract, it shall immediately stop all work activities in the area where the hazardous material is discovered. The Contractor shall then notify Necsa; identify the area of danger, and discontinue work in that area until given approval from Necsa to continue work activities. Hazardous material is considered to be explosive devices, toxic waste or other material hazardous to health and safety of the workforce and environment. The Contractor shall secure the area from daily traffic until it is safe to resume normal activities.

8.5 Site Clean-Up and Restoration:

The Contractor shall ensure the work site and areas around the work site are free of any debris and materials upon completion of work each day, as well as at the completion of the job. The Contractor shall remove and properly dispose of all materials and equipment at the completion of the job. Upon completion of work, the work site shall be restored, insofar as is reasonably possible, to its condition prior to work, including replacement of vegetation, sidewalks, grading, drainage, and similar conditions affected by work during the performance of this Contract

8.6 Notification of Noncompliance:

Necsa will promptly notify the Contractor of any detected noncompliance with the requirements contained herein. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to promptly comply, Necsa may issue an order stopping all or part of the work until satisfactory corrective action is taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages. Failure to recognize and correct non-compliant work/materials in a timely manner (3-5 days) will be considered grounds for termination.

8.7 Removal of Unacceptable and Unauthorized Work:

All work which does not conform to the requirements contained herein, or in the referenced documents will be considered unacceptable. Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to the final acceptance of the work, shall be remedied or removed immediately and replaced in an acceptable manner.

9 ANNEXURE 1: BILL OF QUANTITIES

The Bill of Quantities is split up into numbered sections which is shown on drawing 7371-12-90-C21500. The Contractor's claim for payment shall be based on the final re-measured quantities multiplied by the bill rates. The Sections, as named in the following tables, include the Turnaround and Standby Points as shown on the drawing.

Section	Section Length	Subbase G5 Stabilised with Cement			30 MPa Concrete			Y10 Bar			193 Steel Mesh			R16 Dowel Rods			Non-Absorbant Fill Material			Highway Sealant		
		Unit	Unit	Cost	Unit	Unit	Cost	Unit	Unit	Cost	Unit	Unit	Cost	Unit	Unit	Cost	Unit	Unit	Cost	Unit	Unit	Cost
		[m]	[m³]	R	[m³]	[m]	R	[m]	[m²]	R	[m²]	[m]	R	[m]	[m³]	R	[m³]	[m³]	R	[m³]	[m³]	R
18	180		108		116.06			1120.0	731.6			25.2			0.010					0.010		
19	1137		682.2		728.54			6800.0	4442.1			176.4			0.060					0.060		
Total	1317		790.2		844.608			7920	5173.7			201.6			0.0701					0.0701		

