

**TRANSNET NATIONAL PORTS AUTHORITY
PORT OF RICHARDS BAY
A DIVISION OF TRANSNET LIMITED**

**SUPPLY AND DELIVERY OF PONTOON CONNECTORS FOR THE
INFRASTRUCTURE DEPARTMENT- TRANSNET NATIONAL PORTS
AUTHORITY, PORT OF RICHARDS BAY**

TRANSNET NATIONAL PORTS AUTHORITY

TECHNICAL SPECIFICATION FOR THE SUPPLY AND DELIVERY OF PONTON CONNECTORS FOR THE INFRASTRUCTURE DEPARTMENT – PORT OF RICHARDS BAY

1. SCOPE OF WORK

The work covered by this part of the contract consists of the following:

Supply and Delivery of Pontoon Connectors for the Infrastructure Department-
Transnet National Ports Authority, Port of Richards Bay.

2. TO BE SUPPLIED BY THE SERVICE PROVIDER

The Service Provider shall supply and deliver pontoon connectors for the Infrastructure Department in the Port of Richards Bay within a period of six (6) months.

The material shall conform to the specified quality and standards as outlined in this specification.

3. TO BE SUPPLIED BY TRANSNET NATIONAL PORTS AUTHORITY

None.

4. ADVANCE PAYMENT FOR MATERIAL SUPPLIED BY THE SERVICE PROVIDER

No advance payments will be made by TNPA for materials supplied by the Contractor. Payment will be made upon successful delivery and verification of material compliance.

5. GENERAL

No amendment or variation of, or addition to this agreement shall be of any force or effect unless reduced to writing and signed by both parties.

The Delivery notes will be signed with the front page retained by Transnet

representative at the delivery site and the duplicate must be kept by the Service Provider and submitted with the invoices as evidence.

6. WORK SPECIFICATION

6.1 PONTOON CONNECTORS

The Service Provider shall supply and deliver:

- 65 x connectors, each connector shall meet the following requirements:
 - Tensile Force = 750 kN
 - Compressive Force = 140 kN
 - Pre-load on Assy. = 140 kN
 - Angle of rotation = 6.05°
 - Contain a 36 mm diameter x 690 mm long (685 mm minimum length) carbon steel wire cable with the following material properties:
 - Ref 6 x 36 IWRC
 - Tensile strength not less than 810 Kn
 - Yield strength not less than 680 kN
 - The ability to elongate more than 10% of the original size.
 - The ends of the wire cable shall be crimped within 316L stainless steel threaded tie rods to a depth of 120mm. The threaded tie rods shall have a tensile strength not less than 550 MPa, yield strength not less than 305 MPa and the dimensions of the threaded tie rods be as per the drawing number 1500 (Section D-D).
 - The wire cable and a section of the tie rods (as per drawing number 1500) shall be vulcanized (as per drawing number 1500) with a natural rubber sleeve that complies with the following material properties:
 - A hardness of 68-75° shore A (DIN 53505) with a 3 second delay.
 - Tensile strength not less than 20 MPa.
 - The ability to elongate no less than 400% of the original size.
 - Conform to the material properties outlined in drawing number 1500.
 - The dimensions of the rubber shall be as per drawing number 1500.

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DESCRIPTION OF THE WORKS: TECHNICAL SPECIFICATION FOR THE SUPPLY AND DELIVERY OF PONTOON CONNECTORS FOR THE INFRASTRUCTURE DEPARTMENT- TRANSNET NATIONAL PORTS AUTHORITY, PORT OF RICHARDS BAY

- 130 x 316L stainless steel M56 lock nuts.
- 130 x 316L stainless steel M56 retainer nuts.
- 130 x 316L stainless steel M56 flat washers with a thickness of 4mm.
- 130 x 316L stainless steel end plates with an outer diameter of 180 mm, inner diameter of 60 mm and a thickness of 30 mm.
- 65 x rubber bearings of 24 kg mass and which meet the following requirements:
 - A hardness of 68-75° shore A (DIN 53505) with a 3 second delay.
 - Tensile strength not less than 20 MPa.
 - The ability to elongate not less than 400% of its original length.
 - Rubber shall be UV resistant.
 - Rubber shall be fabric reinforced to achieve a bearing compressive stiffness of 15.5 kN/mm (at 140 kN the deflection should be 9mm ± 10%) and rotational stiffness at 6.05° not exceeding 50kN.
 - Bearing compression set test shall be conducted as outlined in drawing number 1500.
 - Conform to the material properties outlined in drawing number 1500.

All dimensions must be as per the attached drawing number 1500 (where applicable).

All 316L Stainless steels shall meet the following material properties:

- Tensile strength of 550MPa
- Yield strength of 305 MPa
- Ability to elongate at least 40% of its original length.

7. QUALITY REQUIREMENTS AND DOCUMENTS RETURNED UPON DELIVERY

- Laboratory load test results and certificate indicating the pontoon connector test specimen results and a quality assurance certificate, for the supplied pontoon connectors, signed off by a certified competent person.
- Laboratory load test results and certificate indicating the natural rubber test specimen Shore A results and a quality assurance certificate, for the supplied natural rubber, signed off by a certified competent person.

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- Laboratory load test results and certificate indicating the rubber bearings test specimen results and a quality assurance certificate, for the supplied tie bars, signed off by a certified competent person.
- As part of the submission, the Service Provider shall submit an installation methodology.
- The Service Provider shall submit a manufacturer's warranty- a formal warranty certificate covering workmanship, material defects, and corrosion resistance for 12 months.
- TNPA shall witness the testing process. The Service Provider shall notify TNPA of the testing at least a week prior to the testing.

8. HANDLING AND STORAGE

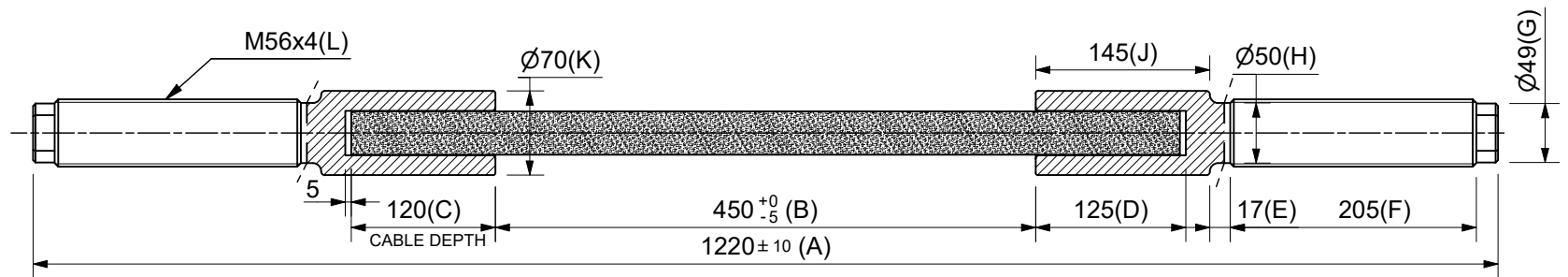
- The material shall be handled and stored in accordance with the manufacturer's instructions.

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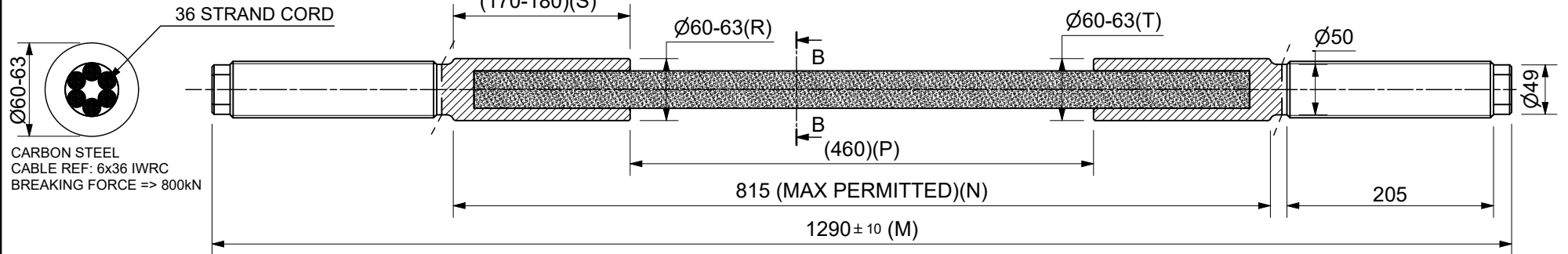
SITE PICTURES

***Refer to Technical Drawings below**



BEFORE CRIMPING

SECTION B-B



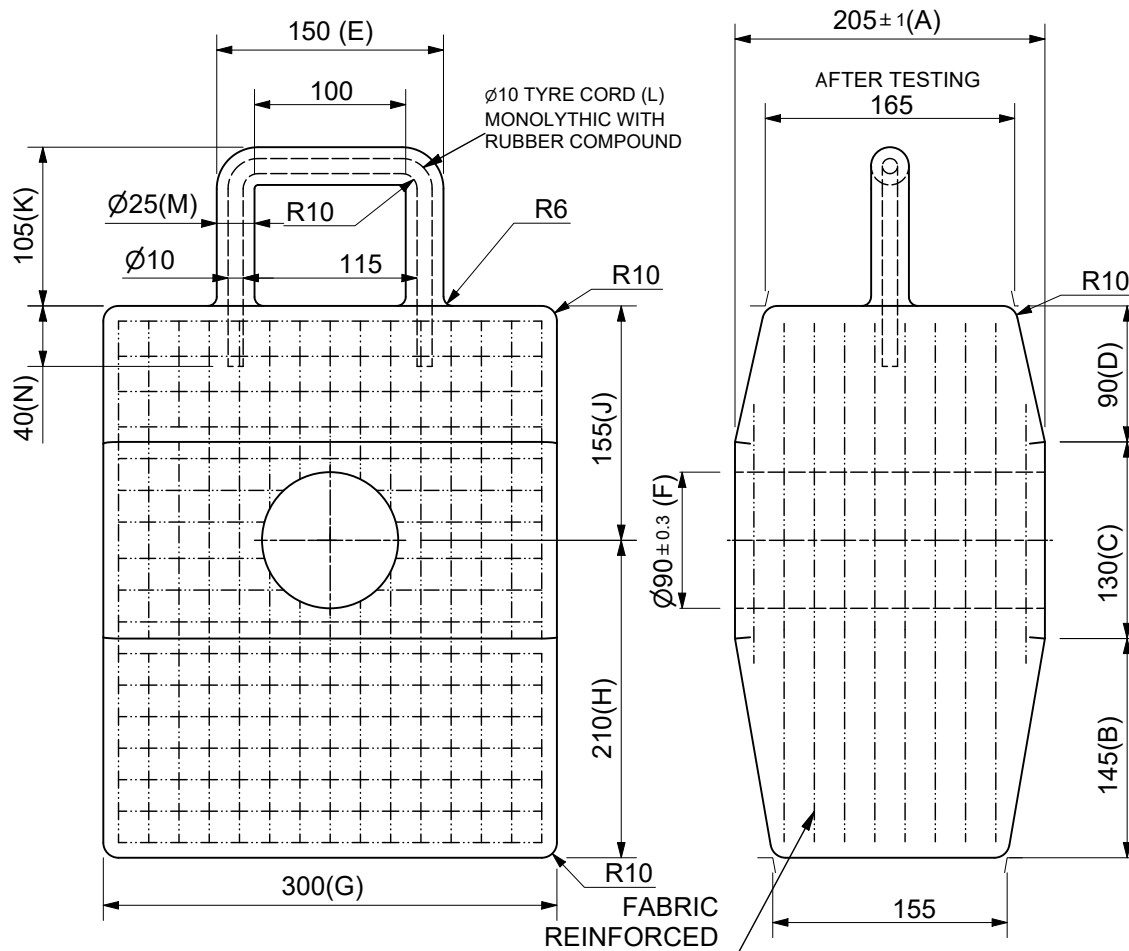
AFTER CRIMPING



AFTER VULCANISING

						MILSON ELASTOMERIC SOLUTIONS (PTY) LTD				TRANSNET GROUP CAPITAL				Transnet Group Capital												
						TITLE		NAME	SIGN	DATE	TITLE		NAME	SIGN	DATE	TRANSNET LTD (TRADING AS TRANSNET CAPITAL PROJECTS)										
						DRAWN		A.H.		08/07/2020	DRAWN					REG NO 1990/000900/30										
						CHECKED		G.M.		08/07/2020	CHECKED					237 MAHATMA GANDHI ROAD										
						APPROVED		G.M.		10/07/2020	DESIGNED					DURBAN										
										CHECKED				P.O. BOX 38163 DURBAN						TEL: 031 3611696		FAX: 0866 7708 15				
						OPERATING DIVISIONS								PORT OF RICHARDS BAY												
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(MASS 24Kg)

RUBBER SPECIFICATIONS (BEARING)

HARDNESS 68-75° SHORE A (DIN 53505) 3 SEC DELAY (P)
TENSILE => 20MPa
ELONG => 400%
COMPRESSION SET =< 15% (72 Hrs @ 23° C)
THE RUBBER IS UV RESISTANT & FABRIC REINFORCED TO ACHIEVE THE REQUIRED STIFFNESS.

BEARING COMPRESSIVE STIFFNESS = 15.5 kN/mm
(ie) @ 140 kN, DEFLECTION = 9mm ± 10%.

THE BEARING MUST ALSO BE TESTED FOR ROTATIONAL STIFFNESS WHICH @ 6.05° MUST NOT EXCEED 50kN.

BEARING "COMPRESSION SET" TEST

THE "COMPRESSION SET" TEST IS ONLY PERFORMED ON ONE BEARING IN ORDER TO ENSURE THAT THE POLYMER AND THE REINFORCING CONFIGURATION OF THE BEARINGS ARE SUITABLE FOR SERVICE.

- ONCE THE BEARING HAS PASSED THE SPRING RATE TEST (15.5 kN/mm), IT MUST BE ALLOWED TO RECOVER FOR A MINIMUM OF 2 HOURS BEFORE THE "COMPRESSION SET" TEST IS PERFORMED.
- MEASURE THE THICKNESS OF THE BEARING (RECORD THE SIZE), THEN PLACE IT HORIZONTALLY IN THE TEST PRESS AND SUBJECT IT TO A VERTICAL LOAD OF 140 kN FOR 12 HOURS.
- REMOVE FROM TEST PRESS AND ALLOW A 3-HOUR RECOVERY PERIOD, THEN REMEASURE THE THICKNESS.
- THE DIFFERENCE BETWEEN THE TWO SIZES MUST BE DIVIDED BY THE INITIAL THICKNESS TO OBTAIN THE "COMPRESSION SET" VALUE WHICH MUST NOT EXCEED 0.5%.

E.G. ORIGINAL THICKNESS = 206MM
RECOVERED THICKNESS = 205MM
206-205 = 1MM
 $\frac{1}{206} = 0.0048 = 0.48\%$
206

REFER BEARING INSPECTION REPORT FOR PRODUCT SIZES

TOLERANCE ± 2mm UNLESS OTHERWISE SHOWN

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PORT OF RICHARDS BAY

PONTON BEARING / CONNECTOR ASSEMBLY

RICHARDS BAY FLOATING BREAKWATER

