

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0005 Rev. No. 1.0 Page 1 of 7

TITLE: TECHNICAL DATA SHEET

Description: Non-ASME Code Material Specification – Thabana Pipestore Extension Date: See Signature Block

## Technical Data Sheet for the Supply of: ISO Fasteners

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	27/12/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2024/01/05
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2024/01/05
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2024/01/08

### REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

## 1. SCOPE

1.1. For the supply of ISO Fasteners, which shall conform to all the applicable requirements of:

- 1.1.1. ISO 4014, Standard for Hexagon Head Bolts – Product Grades A and B, ref. [1];
- 1.1.2. ISO 4017, Standard for Fasteners – Hexagon Head Screws – Product Grades A and B, ref. [2]; ;
- 1.1.3. ISO 4032, Standard for Hexagon Regular Nuts (Style 1) – Product Grades A and B, ref. [3];
- 1.1.4. ISO 7089, Standard for Plain Washers – Normal Series – Product Grade A, ref. [4];
- 1.1.5. DIN 580, German Standard for Lifting Eye Bolts, ref. [5];

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0005 | Rev. No. 1.0 | Page 2 of 7

TITLE: **TECHNICAL DATA SHEET**

- 1.1.6. DIN 582, German Standard for Lifting Eye Nuts, ref. [6];
- 1.1.7. ISO 898-1, Standard for Mechanical Properties of Fasteners Made of Carbon and Alloy Steel; Part 1: Bolts, Screws and Studs with Specified Property Classes – Coarse Thread and Fine Pitch Thread, ref. [7];
- 1.1.8. ISO 898-2, Standard for Mechanical Properties of Fasteners Made of Carbon and Alloy Steel; Part 2: Nuts with Specified Property Classes – Coarse Thread and Fine Pitch Thread, ref. [8];
- 1.1.9. ISO 3506-1, Standard for Fasteners - Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners - Part 1: Bolts, Screws and Studs with Specified Grades and Property Classes, ref. [9];
- 1.1.10. ISO 3506-2, Standard for Fasteners - Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners - Part 2: Nuts with Specified Grades and Property Classes, ref. [10];
- 1.1.11. And this TDS.

## 2. APPLICABLE DOCUMENTS

- [1] ISO 4014, 2022 Edition;
- [2] ISO 4017, 2022 Edition;
- [3] ISO 4032, 2023 Edition;
- [4] ISO 7089, 2000 Edition;
- [5] DIN, 580, 2018 Edition;
- [6] DIN, 582, 2018 Edition;
- [7] ISO 898-1, 2013 Edition;
- [8] ISO 898-2, 2022 Edition;
- [9] ISO 3506-1, 2020 Edition;
- [10] ISO 3506-2, 2020 Edition;
- [11] ISO 16228, 2017 Edition
- [12] Advanced Manufacturing, SHEQ Manual, Document Number AM-IMS-MAN-0001, Revision 2.0.

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0005 Rev. No. 1.0 Page 3 of 7

TITLE: TECHNICAL DATA SHEET

### 3. BASIC REQUIREMENTS

#### 3.1. Ordering Information:

- 3.1.1. Fastener Material: As per Table 1;
- 3.1.2. Type and Grade: As per Table 1;
- 3.1.3. Coating: None required
- 3.1.4. Size: Specified in the Purchase Order;
- 3.1.5. Quantity: Specified in the Purchase Order;
- 3.1.6. Additional Requirements: None in this TDS.
- 3.1.7. Marking Requirements: As per Section 11 of this TDS.
- 3.1.8. Delivery Requirements: As per Section 12 of this TDS.

**Table 1: List of Fastener Types**

Faster Type	Product Specification	Product Grade	Material Specification	Material Grade	Property Class
Hexagon Head Bolts	ISO 4014, ref. [1]	A and B	Stainless-Steel, ISO 3506-1, ref. [9]	A2	70
Hexagon Head Screws	ISO 4017, ref. [2]	A and B	Stainless-Steel, ISO 3506-1, ref. [9]	A2	70
Hexagon Head Screws	ISO 4017, ref. [2]	A and B	Carbon Steel, ISO 898-1, ref. [7]	N/A	8.8
Hexagon Regular Nuts (Style 1)	ISO 4032, ref. [3]	A and B	Carbon Steel, ISO 898-2, ref. [8]	N/A	8

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0005 Rev. No. 1.0 Page 4 of 7

TITLE: TECHNICAL DATA SHEET

Hexagon Regular Nuts (Style 1)	ISO 4032, ref. [3]	A and B	Stainless-Steel, ISO 3506-2, ref. [10]	A2	70
Plain Washer – Normal Series	ISO 7089, ref. [4]	A	Carbon Steel, Hardness Class 200 HV	N/A	N/A
Plain Washer – Normal Series	ISO 7089, ref. [4]	A	Stainless-Steel, ISO 3506-1, ref. [9], Hardness Class 200 HV	A2	70
Lifting Eye Bolts	DIN 580, ref. [5]	N/A	Carbon Steel	C15 or C15E	N/A
Lifting Eye Nuts	DIN 582, ref. [6]	N/A	Carbon Steel	C15 or C15E	N/A

## 4. GENERAL REQUIREMENTS

- 4.1. SI units of measurement shall be used.
- 4.2. All documents shall be provided in the English language.
- 4.3. Notification and Hold Points, if any, shall be as stated on the Purchase Order.

## 5. CHEMICAL COMPOSITION REQUIREMENTS

- 5.1. For Carbon Steel Fasteners, listed in Table 1 above, the chemical composition shall comply with the requirements contained in ISO 898-1, ref. [7], and ISO 898 - 2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 5.2. For Stainless-Steel Fasteners, listed in Table 1 above, the chemical composition shall comply with the requirements contained in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0005 Rev. No. 1.0 Page 5 of 7

TITLE: TECHNICAL DATA SHEET

## 6. MECHANICAL AND PHYSICAL PROPERTIES

- 6.1. For Carbon Steel Fasteners, listed in Table 1 above, the mechanical and physical properties shall comply with the requirements contained in ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 6.2. For Stainless-Steel Fasteners, listed in Table 1 above, the mechanical and physical properties shall comply with the requirements contained in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

## 7. WORKMANSHIP, FINISH AND APPEARANCE

- 7.1. The fasteners, listed in Table 1 above, shall be clean, commercially sound and without any surface discontinuities.

## 8. REPAIRS

- 8.1. Repair by welding of surface and any other defects are **not permitted**.

## 9. EXAMINATION AND TESTING REQUIREMENTS

- 9.1. Carbon Steel Fasteners, listed in Table 1 above, shall comply with the inspections and test as stipulated in ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 9.2. Stainless-Steel Fasteners, listed in Table 1 above, shall comply with the inspections and test as stipulated in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

## 10. NON-CONFORMANCES

- 10.1. The Purchaser shall be notified by non-conformance reports of any condition that does not comply with specified requirements of this TDS, the Purchase Order, or during the delivery process and following the detection of any Counterfeit, Fraudulent or Suspect Items.
- 10.2. Disposition of the notified non-conformances require approval from the Purchaser of the listed fasteners.

# ADVANCED MANUFACTURING



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DOC No:	AM-18033-TDS-0005	Rev. No. 1.0	Page	6	of	7
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TITLE: **TECHNICAL DATA SHEET**

## 11. IDENTIFICATION AND MARKING OF MATERIAL

- 11.1. Marking of Carbon Steel Fasteners shall be done according to the requirements of ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 11.2. Marking of Stainless-Steel Fasteners shall be done according to the requirements of ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

## 12. PACKAGING AND DELIVERY

- 12.1. All packages for all types of fasteners and of all sizes shall be marked through labelling.
- 12.2. Carbon Steel Fasteners shall be marked and packaged according to the requirements of ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 12.3. Stainless-Steel Fasteners shall be marked and packaged according to the requirements of ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].
- 12.4. All fastener packages shall be marked as per Purchase Order item reference numbers and quantities clearly indicated.
- 12.5. All fasteners shall be free of dirt, surface contamination, indentations, discontinuities and scratch marks before being packaged and also after delivery.
- 12.6. All materials and chemicals in contact with the fasteners shall not be detrimental to the integrity or chemical composition of the fasteners.
- 12.7. The Supplier shall not dispatch any fasteners from its premises until it has received the Purchaser's written acceptance of the required material certificates, test reports, inspection and release documentation.
- 12.8. It is important that the full complement of fasteners in the Purchase Order is to be delivered in accordance with the requirements of the Purchase Order.

## 13. RIGHT OF ACCESS

- 13.1. Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

# ADVANCED MANUFACTURING



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DOC No:	AM-18033-TDS-0005	Rev. No. 1.0	Page	7	of	7
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TITLE:	<b>TECHNICAL DATA SHEET</b>
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## 14. DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

- 14.1. Test reports are required for the various fasteners in accordance with ISO 16228, ref. [11], of Type F3.1. A consolidated report covering all the fasteners, listed in Table 1 above, is also acceptable.
- 14.2. All material certificates and / or test reports shall be traceable to the Purchase Order and materials specified therein.
- 14.3. The following information shall be included, as a minimum, in the documentation to be supplied:
  - 14.3.1. Description of the fastener materials;
  - 14.3.2. Identification marking of the fasteners;
  - 14.3.3. Clear reference to the producing mill or factory;
  - 14.3.4. Heat/Cast/Lot numbers;
  - 14.3.5. Method of manufacturing;
  - 14.3.6. Heat treatment if applicable;
  - 14.3.7. Grade and property class of the fastener materials.
- 14.4. Legible copies of the original fastener material certificates from the Mill are required, if available.
- 14.5. All material certificates and test reports shall be traceable to the respective fastener materials.

## 15. QUALITY ASSURANCE REQUIREMENTS

- 15.1. All general and specific Quality Assurance requirements stated in ref. [12] and this TDS shall be met.

# ADVANCED MANUFACTURING

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TITLE

**BOM RFQ (Annexure A)**

Page 1 of 1

Necsa RFQ No.: <b>AM-18033-RFQ-0001</b>	THABANA PIPE STORE part 1
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**QAR's required (for ASME III materials):** N/A

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
13	APO-017-0207-101-011218	1	ISO 4032 STEEL 8	AM-18033-TDS-0005	HEXAGON NUT: M10	100		
14	APO-017-0207-101-011218	1	ISO 7089 M10 STEEL	AM-18033-TDS-0005	FLAT WASHER: M10	100		
16	APO-017-0207-101-011218	1	DIN 580 STEEL C15	AM-18033-TDS-0005	LIFTING EYE BOLT: M12	50		
17	APO-017-0207-101-011218	1	ISO 4014 STAINLESS STEEL A2	AM-18033-TDS-0005	HEX CAP SCREW (PARTIALLY THREADED): M24 x 100	580		
18	APO-017-0207-101-011218	1	ISO 7089 STAINLESS STEEL A3	AM-18033-TDS-0005	FLAT WASHER: M24	580		
19	APO-017-0207-101-011218	1	ISO 4032 STAINLESS STEEL A4	AM-18033-TDS-0005	HEX NUT: M24	580		
	STORAGE VESSEL							
21	APO-017-0207-103-011219	2	ASME B36.19 ASTM A312 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 5 SCH 40S x 6000mm	97		
22	APO-017-0207-103-011219	2	ASME B36.19 ASTM A312 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 5 SCH 40S x 6000mm	48		
23	APO-017-0207-103-011219	2	ASTM 403M 304L	AM-18033-TDS-0001	END CAP: NPS 5 SCH 40S	49		
24	APO-017-0207-103-011219	2	ASTM-A240 304L	AM-18033-TDS-0003	PLATE:2500 x 1250 x 16 THK	2		
25	APO-017-0207-103-011219	2	ASME B36.19 ASTM A312 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000 LG	4		
26	APO-017-0207-103-011219	2	ANSI B16.5 ASTM A182 F304	AM-18033-TDS-0002	SLIP-ON-RAISED-FACE FLANGE: NPS 10 SCH 40S CLASS 150	48		
	SHUTTERING							
27	APO-017-0207-103-011220	1	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 6 THK	6		
28	APO-017-0207-103-011220	1	SA-106 GR B	APO-017-0207-103-011220	PIPE: NPS 12 SCH 10 x 6000 LG	5		
29	APO-017-0207-103-011220	1	EN 10025 S355JR	APO-017-0207-103-011220	PLATE 3000 x 1500 x 3 THK	16		
30	APO-017-0207-103-011220	1	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 3 THK	8		
31	APO-017-0207-103-011220	1	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 6 THK	16		



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BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
32	APO-017-0207-103-011220	1	EN 10025 S355JR	APO-017-0207-103-011220	SQUARE BAR: 10 x 10 x 6000 LG	25		
	PEDESTAL							
33	APO-017-0207-103-011221	2	ASTM-A240 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	2		
34	APO-017-0207-103-011221	2	ASTM-A240 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 10 THK	2		
	BORE HOLE CASING							
35	APO-017-0207-103-011222	1	ASTM A106 GR.B	APO-017-0207-103-011222	PIPE: Dia 250 NOM SCHED 20 x 6000	192		
36	APO-017-0207-103-011222	1	EN 10025 S355JR	APO-017-0207-103-011222	PLATE: 3000 x 1500 x 6 THK	1		
	FIBRE CEMENT ASSY							
37	APO-017-0207-103-011223	1	EN 10025 S355JR	APO-017-0207-103-011223	PLATE: 3000 x 1500 x 1.6 THK	3		
38	APO-017-0207-103-011223	1	EN 10025 S355JR	APO-017-0207-103-011223	PLATE: 3000 x 1500 x 16 THK	1		
39	APO-017-0207-103-011223	1	DIN 582 STEEL C15	AM-18033-TDS-0005	LIFTING EYE NUT: M8	48		
40	APO-017-0207-103-011223	1	ISO 4017 STEEL 8.8	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M8 x 25	48		
	ANTI-TAMPER COVER							
41	APO-017-0207-103-011225	2	ASTM-A240 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	16		
	FLANGE							
42	APO-017-0207-102-011226	1	ASTM SA-182-F304 ANSI B16.5	AM-18033-TDS-0002	BLIND FLANGE: OD 250 NOM CLASS 150	48		
	COVER							
44	APO-017-0207-102-011228	2	MILD STEEL CHEQUER PLATE	APO-017-0207-102-011228	PLATE: 3000 x 1500 x 6 THK (Hot dip Galvanise to spec SANS 121)	16		
	SPRING							
45	APO-017-0207-102-011229	1	AISI 316	APO-017-0207-102-011229	Round bar (9/16) 14,3mm x 6000mm	8		
	SEAL SCREW							
46	APO-017-0207-101-011230	1	ISO 4017 STAINLESS STEEL A2	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M10 x 35	100		
	PLUG							
47	APO-017-0207-103-011224	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	1		
48	APO-017-0207-103-011224	2	ASTM A479 304L	APO-017-0207-103-011224	ROUND BAR OD 50 x 6000 L	1		

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BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
49	APO-017-0207-103-011224	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 3 THK	3		
50	APO-017-0207-103-011224	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 3 THK	1		
52	APO-017-0207-103-011224	2	ASTM A276 304L	APO-017-0207-103-011224	TUBE OD 15.9 x 1.5 WT x 6 meter	8		
53	APO-017-0207-103-011224	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: PLATE 1250 x 2400 x 3 THK	1		
	CONE							
54	APO-017-0207-101-011231	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 2 THK	6		
	VALVE and FITTING ASSY							
55	74M724-01-00	1	SWAGELOK PART No SS-810-3-8TTM	74M724-01-00	1/2" x 1/2" UNION TEE	48		
56	74M724-01-00	1	SA-213 TP304 SEAMLESS TUBE	74M724-01-00	TUBE: 1/2" OD x 0.049" WT	48		
57	74M724-01-00	1	SA-213 TP304 SEAMLESS TUBE	74M724-01-00	TUBE: 1/2" OD x 0.028" WT	48		
58	74M724-01-00	1	SWAGELOK PART No SS-810-R-4	74M724-01-00	1/2" x 1/4" REDUCER	96		
59	74M724-01-00	1	SWAGELOK PART No SS-400-9	74M724-01-00	1/4" UNION ELBOW	48		
60	74M724-01-00	1	SWAGELOK PART No SS-4BG	74M724-01-00	1/4" NUPRO VALVE (4B SERIES)	48		
61	74M724-01-00	1	SWAGELOK PART No PGI-63B-TC150-LAQX	74M724-01-00	PRESURE GAUGE	48		
62	74M724-01-00	1	74M724-01-01	74M724-01-00	VACUUM FLANGE	48		

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**TITLE** **BOM RFQ (Annexure A)** Page 1 of 1

**Necsa RFQ No.:** **NM-18033-RFQ-0001** **THABANA PIPE STORE part 2**

**QAR's required (for ASME III materials):** N/A

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
65	APO-017-0206-101-011165	2	ISO 7089 M10 STEEL A2 Class 70	AM-18033-TDS-0005	FLAT WASHER: M10	80		
66	APO-017-0206-101-011165	2	ISO 4032 STEEL A2 Class 70	AM-18033-TDS-0005	HEXAGON NUT: M10	80		
67	APO-017-0206-101-011165	2	ISO 4014 STAINLESS STEEL A2	AM-18033-TDS-0005	HEX CAP SCREW (PARTIALLY THREADED): M24 x 100	580		
68	APO-017-0206-101-011165	2	ISO 7089 M10 STAINLESS STEEL A2	AM-18033-TDS-0005	FLAT WASHER: M24	580		
69	APO-017-0206-101-011165	2	ISO 4032 STAINLESS STEEL A2	AM-18033-TDS-0005	HEX NUT: M24	580		
70	APO-017-0206-101-011165	2	DIN 580 STEEL C15	AM-18033-TDS-0005	LIFTING EYE BOLT: M12	72		
71	APO-017-0206-101-011165	2	CHEMSET M8	APO-017-0206-101-011165	MASONARY ANCHOR: M8	120		
	STORAGE VESSEL		APO-017-0206-103-011166					
76	APO-017-0206-103-011166	3	ASME B36.19M ASTM A312 TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000mm	72		
77	APO-017-0206-103-011166	3	ASME B36.19M ASTM A312 TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 16 SCH 40S x 6000mm	4		
78	APO-017-0206-103-011166	3	ANSI B16.5 ASTM A182 F304L	AM-18033-TDS-0002	SLIP-ON-RAISED-FACE FLANGE: NPS 16 SCH 40 ANSI B16.5 CLASS 150	36		
79	APO-017-0206-103-011166	3	ASME B36.19M ASTM A312 TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000mm	36		
80	APO-017-0206-103-011166	3	ASTM WPS 304L, ANSI B16.9 304L	AM-18033-TDS-0001	END CAP: NPS 10 SCH 40	36		
81	APO-017-0206-103-011166	3	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 2500 x 1250 x 20 THK	2		
	SHUTTERING		APO-017-0206-103-011167					
83	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	SUPPORT: SQUARE BAR 12 x 12 x 6000 LG	36		
84	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	PLATE: 3000 x 1500 x 6 THK	12		
85	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	BODY: PLATE 12000 x 3000 x 6 THK	2		
86	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	PLATE: 3000 x 1500 x 6 THK	12		

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
87	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	SMALL BODY: PLATE 2500 x 1250 x 6 THK	18		
88	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	BOTTOM PLATE: 2500 x 1250 x 10 THK	12		
90	APO-017-206-103-011168	3	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 10 THK	2		
91	APO-017-206-103-011168	3	ASME B36.19M ASTM A312 TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 18 SCH 40S x 6000mm	1		
	BORE HOLE CASING		APO-017-0206-103-011169					
93	APO-017-0206-103-011169	2	ASTM A106 GR.B	APO-017-0206-103-011169	PIPE: NPS 16 SCHED 20 x 6000	72		
94	APO-017-0206-103-011169	2	EN 10025 S355JR	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	2		
95	APO-017-0206-103-011169	2	ASTM A106 GR.B	APO-017-0206-103-011169	PIPE: NPS 16 SCHED 20 x 6000	36		
	FIBRE CEMENT ASSY		APO-017-206-103-011170					
97	APO-017-206-103-011170	2	EN 10025 S355JR	APO-017-206-103-011170	PLATE 2500 x 1200 x20 THK	2		
98	APO-017-206-103-011170	2	EN 10025 S355JR	APO-017-206-103-011170	PLATE 3000 x 1500 x 1.6 THK	3		
99	APO-017-206-103-011170	2	DIN 582 STEEL C15	APO-017-206-103-011170	LIFTING EYE NUT: M16	36		
100	APO-017-206-103-011170	2	ISO 4017 STEEL 8.8	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M16 x 35	40		
	PLUG		APO-017-206-103-11171					
102	APO-017-206-103-011171	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 6 THK	2		
103	APO-017-206-103-011171	2	ASTM A479 304L	APO-017-206-103-011171	ROUND BAR OD 50 x 3000 L	1		
104	APO-017-206-103-011171	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 3THK	6		
105	APO-017-206-103-011171	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 3THK	2		
107	APO-017-206-103-011171	2	ASTM A276 304L	APO-017-206-103-011171	TUBE OD 15.9 x 1.5 WT x 6000	9		
108	APO-017-206-103-011171	2	ASTM A240 304 L	AM-18033-TDS-0003	PLATE 1250 x 2400 x 3 THK	1		
	ANTI-TAMPER COVER		APO-017-206-102-011172					
110	APO-017-206-102-011172	3	ASTM A240 304 L	AM-18033-TDS-0003	PLATE: 2500 x 1200 x 6 THK	18		
	FLANGE		APO-017-206-102-011173					
112	APO-017-206-102-011173	1	ANSI B16.5 ASTM A182 F304L	AM-18033-TDS-0002	BLIND FLANGE: NPS 16 CLASS 150	36		
	COVER		APO-017-206-102-011175					

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BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
116	APO-017-206-102-011175	1	MILD STEEL CHEQUER PLATE	APO-017-206-102-011175	PLATE: 2500 x 1200 x 6mm (Hot dip Galvanise to spec SANS 121)	18		
	SPRING		APO-017-206-102-011176					
118	APO-017-206-102-011176	1	AISI 316	APO-017-206-102-011176	Round Bar Ø14mm x 6000mm	72		
	SEAL SCREW		APO-017-206-102-011177					
120	APO-017-206-102-011177	1	ISO 4017 STAINLESS STEEL A2	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M10 x 35	40		
	CONE		APO-017-206-102-011178					
122	APO-017-206-102-011178	1	ASTM A240 304 L	AM-18033-TDS-0003	PLATE 2500 x1200 x 2 THK	10		
	VALVE and FITTING ASSY							
124	74M724-01-00	1	SWAGELOK PART No SS-810-3-8TTM	74M724-01-00	1/2" x 1/2" UNION TEE	36		
125	74M724-01-00	1	SA-213 TP304 SEAMLESS TUBE	74M724-01-00	TUBE: 1/2" OD x 0.049" WT	36		
126	74M724-01-00	1	SA-213 TP304 SEAMLESS TUBE	74M724-01-00	TUBE: 1/2" OD x 0.028" WT	36		
127	74M724-01-00	1	SWAGELOK PART No SS-810-R-4	74M724-01-00	1/2" x 1/4" REDUCER	72		
128	74M724-01-00	1	SWAGELOK PART No SS-400-9	74M724-01-00	1/4" UNION ELBOW	36		
129	74M724-01-00	1	SWAGELOK PART No SS-4BG	74M724-01-00	1/4" NUPRO VALVE (4B SERIES)	36		
130	74M724-01-00	1	SWAGELOK PART No PGI-63B-TC150-LAQX	74M724-01-00	PRESURE GAUGE	36		
131	74M724-01-00	1	74M724-01-01	74M724-01-00	VACUUM FLANGE	36		
136								

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TITLE **BOM RFQ (Annexure A)** Page 1 of 1

Necsa RFQ No.: **AM-18033-RFQ-0001** THABANA PIPE STORE Part 1

QAR's required (for ASME III materials): **N/A**

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
13	APO-017-0207-101-011218	2	ISO 4032 Stainless Steel A2 Class 70	AM-18033-TDS-0005	HEXAGON NUT: M10	100		
14	APO-017-0207-101-011218	2	ISO 7089 Stainless Steel A2 Class 70	AM-18033-TDS-0005	FLAT WASHER: M10	100		
16	APO-017-0207-101-011218	2	DIN 580 STEEL C15	AM-18033-TDS-0005	LIFTING EYE BOLT: M12	50		
17	APO-017-0207-101-011218	2	ISO 4014 STAINLESS STEEL A2 Class 70	AM-18033-TDS-0005	HEX CAP SCREW (PARTIALLY THREADED): M24 x 100	580		
18	APO-017-0207-101-011218	2	ISO 7089 Stainless Steel A2 Class 70	AM-18033-TDS-0005	FLAT WASHER: M24	580		
19	APO-017-0207-101-011218	2	ISO 4032 Stainless Steel A2 Class 70	AM-18033-TDS-0005	HEX NUT: M24	580		
STORAGE VESSEL								
20	APO-017-0207-103-011219	4	APO-017-0207-102-011231					
21	APO-017-0207-103-011219	4	ASME B36.19M ASTM A312M TP304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 5 SCH 40S x 6000mm	97		
22	APO-017-0207-103-011219	4	ASME B36.19M ASTM A312M TP304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 5 SCH 40S x 6000mm	48		
23	APO-017-0207-103-011219	4	ASNE B16.9 ASME A403M WP304L Class S	AM-18033-TDS-0001	END CAP: NPS 5 SCH 40S	49		
24	APO-017-0207-103-011219	4	ASTM A240M 304L	AM-18033-TDS-0003	PLATE:2500 x 1250 x 16 THK	2		
25	APO-017-0207-103-011219	4	ASME B36.19M ASTM A312M TP304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000 mm	4		
26	APO-017-0207-103-011219	4	ASME B16.5 ASTM A182M F304L	AM-18033-TDS-0002	SLIP-ON-RAISED-FACE FLANGE: NPS 10 SCH 40S CLASS 150	48		
SHUTTERING								
27	APO-017-0207-103-011220	2	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 6 THK	6		
28	APO-017-0207-103-011220	2	ASME B36.10M ASTM A106M GR. B Seamless Pipe	APO-017-0207-103-011220	PIPE: NPS 12 SCH 10 x 6000 mm	5		
29	APO-017-0207-103-011220	2	EN 10025 S355JR	APO-017-0207-103-011220	PLATE 3000 x 1500 x 3 THK	16		
30	APO-017-0207-103-011220	2	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 3 THK	8		

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
31	APO-017-0207-103-011220	2	EN 10025 S355JR	APO-017-0207-103-011220	PLATE: 3000 x 1500 x 6 THK	16		
32	APO-017-0207-103-011220	2	EN 10025 S355JR	APO-017-0207-103-011220	SQUARE BAR: 10 x 10 x 6000 mm	25		
	PEDESTAL							
33	APO-017-0207-103-011221	3	ASTM-A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	2		
34	APO-017-0207-103-011221	3	ASTM-A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 10 THK	2		
	BORE HOLE CASING							
35	APO-017-0207-103-011222	2	ASME B36.10M ASTM A106M GR. B Seamless Pipe	APO-017-0207-103-011222	NPS 10 SCH 20 x 6000mm	192		
36	APO-017-0207-103-011222	2	EN 10025 S355JR	APO-017-0207-103-011222	PLATE: 3000 x 1500 x 6 THK	1		
	FIBRE CEMENT ASSY							
37	APO-017-0207-103-011223	2	EN 10025 S355JR	APO-017-0207-103-011223	PLATE: 3000 x 1500 x 1.6 THK	6		
38	APO-017-0207-103-011223	2	EN 10025 S355JR	APO-017-0207-103-011223	PLATE: 3000 x 1500 x 16 THK	1		
39	APO-017-0207-103-011223	2	DIN 582 STEEL C15	AM-18033-TDS-0005	LIFTING EYE NUT: M8	48		
40	APO-017-0207-103-011223	2	ISO 4017 STEEL 8.8	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M8 x 30	48		
	ANTI-TAMPER COVER							
41	APO-017-0207-103-011225	3	ASTM-A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	16		
	FLANGE							
42	APO-017-0207-102-011226	2	ASME B16.5 ASTM A182M F304L	AM-18033-TDS-0002	BLIND FLANGE: NPS 10 CLASS 150	48		
	COVER							
44	APO-017-0207-102-011228	3	MILD STEEL CHEQUER PLATE, VASTRAP COMMERCIAL QUALITY	APO-017-0207-102-011228	PLATE: 3000 x 1500 x 6 THK (Hot dip Galvanise to spec SANS 121)	16		
	SPRING							
45	APO-017-0207-102-011229	2	ASTM A313M Type 316	APO-017-0207-102-011229	Spring wire Ø15.9mm x 3850mm	48		
	SEAL SCREW							
46	APO-017-0207-101-011230	2	ISO 4017 STAINLESS STEEL A2 Class 70	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M10 x 35	100		
	PLUG							
47	APO-017-0207-103-011224	3	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 6 THK	1		

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BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
48	APO-017-0207-103-011224	3	ASTM A479M 304L	APO-017-0207-103-011224	ROUND BAR OD 50 x 1500mm	1		
49	APO-017-0207-103-011224	3	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 3 THK	3		
50	APO-017-0207-103-011224	3	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 3 THK	1		
52	APO-017-0207-103-011224	3	ASTM A213M TP304L	APO-017-0207-103-011224	TUBE OD 15.9 x 1.6 WT x 6000mm	8		
53	APO-017-0207-103-011224	3	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 1250 x 2400 x 3 THK	1		
	CONE							
54	APO-017-0207-101-011231	3	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 2 THK	6		
	VALVE and FITTING ASSY							
55	74M724-01-01	2	SWAGELOK PART No SS-810-3-8TTM	74M724-01-01	1/2" x 1/2" MALE BRANCH TEE	48		
56	74M724-01-01	2	ASTM A213M TP304L	74M724-01-01	TUBE: 1/2" OD x 0.049" WT (12,7 OD x 1,245 WT x 6000mm)	1		
57	74M724-01-01	2	ASTM A213M TP304L	74M724-01-01	TUBE: 1/4" OD x 0.035" WT (6,35 OD x 0,889 WT x 6000mm)	1		
58	74M724-01-01	2	SWAGELOK PART No SS-810-R-4	74M724-01-01	1/2" x 1/4" REDUCER	96		
59	74M724-01-01	2	SWAGELOK PART No SS-400-9	74M724-01-01	1/4" UNION ELBOW	48		
60	74M724-01-01	2	SWAGELOK PART No SS-4BG	74M724-01-01	1/4" NUPRO VALVE (4B SERIES)	48		
61	74M724-01-01	2	SWAGELOK PART No PGI-63B-TC150-LAQX	74M724-01-01	PRESURE GAUGE	48		
62	74M724-01-01	2	74M724-01-01	74M724-01-01	VACUUM FLANGE	48		
	Chemset Masonary Anchor							
65	APO-017-0207-101-011218	2	Chemset M8	APO-017-0207-101-011218	Masonry Anchor M8	150		



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**TITLE** **BOM RFQ (Annexure A)** Page 1 of 1

**Necsa RFQ No.:** **NM-18033-RFQ-0001** **THABANA PIPE STORE Part 2**

**QAR's required (for ASME III materials):** N/A

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
67	APO-017-0206-101-011165	3	ISO 7089 STAINLESS STEEL A2 Class 70	AM-18033-TDS-0005	FLAT WASHER: M10	80		
68	APO-017-0206-101-011165	3	ISO 4032 STAINLESS STEEL A2 Class 70	AM-18033-TDS-0005	HEXAGON NUT: M10	80		
69	APO-017-0206-101-011165	3	ISO 4014 STAINLESS STEEL A2 CLASS 70	AM-18033-TDS-0005	HEX CAP SCREW (PARTIALLY THREADED): M24 x 115	580		
70	APO-017-0206-101-011165	3	ISO 7089 STAINLESS STEEL A2 CLASS 70	AM-18033-TDS-0005	FLAT WASHER: M24	580		
71	APO-017-0206-101-011165	3	ISO 4032 STAINLESS STEEL A2 CLASS 70	AM-18033-TDS-0005	HEX NUT: M24	580		
72	APO-017-0206-101-011165	3	DIN 580 STEEL C15	AM-18033-TDS-0005	LIFTING EYE BOLT: M12	72		
73	APO-017-0206-101-011165	3	CHEMSET M8	APO-017-0206-101-011165	MASONARY ANCHOR: M8	120		
	STORAGE VESSEL		APO-017-0206-103-011166					
76	APO-017-0206-103-011166	4	APO-017-0206-102-011178		Item 58			
77	APO-017-0206-103-011166	4	ASME B36.19M ASTM A312M TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000mm	72		
78	APO-017-0206-103-011166	4	ASME B36.19M ASTM A312M TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 16 SCH 40S x 6000mm	4		
79	APO-017-0206-103-011166	4	ASME B16.5 ASTM A182M F304L	AM-18033-TDS-0002	SLIP-ON-RAISED-FACE FLANGE: NPS 16 SCH 40S ASME B16.5 CLASS 150	36		
80	APO-017-0206-103-011166	4	ASME B36.19M ASTM A312M TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 10 SCH 40S x 6000mm	36		
81	APO-017-0206-103-011166	4	ASME B16.9 ASTM A403M WP304L CLASS S	AM-18033-TDS-0001	END CAP: NPS 10 SCH 40S	36		
82	APO-017-0206-103-011166	4	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE: 2500 x 1250 x 20 THK	2		
	SHUTTERING		APO-017-0206-103-011167					
83	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	SUPPORT: SQUARE BAR 12 x 12 x 6000 mm	36		
84	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	PLATE: 3000 x 1500 x 6 THK	18		
85	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	BODY: PLATE 12000 x 3000 x 6 THK	2		

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
86	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	PLATE: 3000 x 1500 x 6 THK	18		
87	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	SMALL BODY: PLATE 2500 x 1250 x 6 THK	18		
88	APO-017-0206-103-011167	3	EN 10025 S355JR	APO-017-0206-103-011167	BOTTOM PLATE: 2500 x 1250 x 10 THK	12		
89	APO-017-0206-103-011168	4	ASTM A240M 304L	AM-18033-TDS-0003	PLATE: 3000 x 1500 x 10 THK	2		
90	APO-017-0206-103-011168	4	ASME B36.19M ASTM A312M TP 304L WELDED PIPE	AM-18033-TDS-0004	PIPE: NPS 18 SCH 40S x 6000mm	1		
	<b>BORE HOLE CASING</b>		<b>APO-017-0206-103-011169</b>					
91	APO-017-0206-103-011169	3	ASME B36.10M ASTM A106M GR. B SEAMLESS PIPE	APO-017-0206-103-011169	PIPE: NPS 16 SCHED 20 x 6000mm	72		
92	APO-017-0206-103-011169	3	EN 10025 S355JR	APO-017-0206-103-011169	PLATE: 3000 x 1500 x 6 THK	2		
93	APO-017-0206-103-011169	3	ASME B36.10M ASTM A106M GR. B SEAMLESS PIPE	APO-017-0206-103-011169	PIPE: NPS 16 SCHED 20 x 6000mm	36		
	<b>FIBRE CEMENT ASSY</b>		<b>APO-017-206-103-011170</b>					
94	APO-017-206-103-011170	3	EN 10025 S355JR	APO-017-206-103-011170	PLATE 2500 x 1200 x20 THK	2		
95	APO-017-206-103-011170	3	EN 10025 S355JR	APO-017-206-103-011170	PLATE 3000 x 1500 x 1.6 THK	10		
96	APO-017-206-103-011170	3	DIN 582 STEEL C15	APO-017-206-103-011170	LIFTING EYE NUT: M16	36		
97	APO-017-206-103-011170	3	ISO 4017 STEEL 8.8	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M16 x 35	40		
	<b>PLUG</b>		<b>APO-017-206-103-11171</b>					
98	APO-017-206-103-011171	3	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 6 THK	2		
99	APO-017-206-103-011171	3	ASTM A479M 304L	APO-017-206-103-011171	ROUND BAR OD 50 x 1500mm	1		
100	APO-017-206-103-011171	3	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 3THK	3		
101	APO-017-206-103-011171	3	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE 2500 x 1200 x 3THK	2		
103	APO-017-206-103-011171	3	ASTM A213M TP304L	APO-017-206-103-011171	TUBE OD 15.9 x 1.6 WT x 6000mm	8		
104	APO-017-206-103-011171	3	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE 1250 x 2400 x 3 THK	1		
	<b>ANTI-TAMPER COVER</b>		<b>APO-017-206-102-011172</b>					
105	APO-017-206-102-011172	4	ASTM A240M 304 L	AM-18033-TDS-0003	PLATE: 2500 x 1200 x 6 THK	18		
	<b>FLANGE</b>		<b>APO-017-206-102-011173</b>					

BOM Item No.	Drawing No. / Service	Rev	Specification	TDS No. & Rev.	Ordering of material Size	Qty	Unit Price	Price
106	APO-017-206-102-011173	3	ASME B16.5 ASTM A182M F304L	AM-18033-TDS-0002	BLIND FLANGE: NPS 16 CLASS 150	36		
	COVER		APO-017-206-102-011175					
108	APO-017-206-102-011175	2	MILD STEEL CHEQUER PLATE, VASTRAP COMMERCIAL QUALITY	APO-017-206-102-011175	PLATE: 2500 x 1200 x 6mm (Hot dip Galvanise to spec SANS 121)	18		
	SPRING		APO-017-206-102-011176					
109	APO-017-206-102-011176	2	ASTM A313M TYPE 316	APO-017-206-102-011176	SPRING WIRE Ø33,3mm x 4770mm	36		
	SEAL SCREW		APO-017-206-102-011177					
110	APO-017-206-102-011177	2	ISO 4017 STAINLESS STEEL A2 CLASS 70	AM-18033-TDS-0005	HEX CAP SCREW (FULLY THREADED): M10 x 35	80		
	CONE		APO-017-206-102-011178					
111	APO-017-206-102-011178	2	ASTM A240M 304L	AM-18033-TDS-0003	PLATE 2500 x1200 x 6 THK	3		
	VALVE and FITTING ASSY							
112	74M724-01-02	2	SWAGELOK PART No SS-810-3-8TTM	74M724-01-02	1/2" x 1/2" MALE BRANCH TEE	36		
113	74M724-01-02	2	ASTM A213M TP304L SEAMLESS TUBE	74M724-01-02	TUBE: 1/2" OD x 0.049" WT, (12,7 OD x 1,245 WT x 6000mm)	1		
114	74M724-01-02	2	ASTM A213M TP304L SEAMLESS TUBE	74M724-01-02	TUBE: 1/4" OD x 0.035" WT, (6,35 OD x 0,889 WT x 6000mm)	1		
115	74M724-01-02	2	SWAGELOK PART No SS-810-R-4	74M724-01-02	1/2" x 1/4" REDUCER	72		
116	74M724-01-02	2	SWAGELOK PART No SS-400-9	74M724-01-02	1/4" UNION ELBOW	36		
117	74M724-01-02	2	SWAGELOK PART No SS-4BG	74M724-01-02	1/4" NUPRO VALVE (4B SERIES)	36		
118	74M724-01-02	2	SWAGELOK PART No PGI-63B-TC150-LAQX	74M724-01-02	PRESURE GAUGE	36		
119	74M724-01-02	2	74M724-01-02	74M724-01-02	VACUUM FLANGE	36		

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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 1 of 7

TITLE: **TECHNICAL DATA SHEET**

**Description:** Material Purchase Specification – Thabana Pipestore Extension | **Date:** See Signature Block

**Technical Data Sheet for the supply of:** ASME SA-403M, Grade WP304L, Class S, Wrought Austenitic Stainless-Steel Piping Fittings – Ellipsoidal Caps

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	19/12/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2023/12/20
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2023/12/20
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2024/01/08

## REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

## 1 SCOPE

1.1. Supplying of SA-403M, Grade WP304L, Class S, Wrought Austenitic Stainless-Steel Piping Fittings that shall conform to all the applicable requirements of:

- 1.1.1. SA-403M, Specification for Wrought Austenitic Stainless-Steel Piping Fittings, ref. [1];
- 1.1.2. SA-960M, Specification for Common Requirements for Wrought Steel Piping Fittings, ref. [2];
- 1.1.3. ASME B16.9, Factory-Made Wrought Buttwelding Fittings, ref. [3];

1.2 The supplier shall supply the material in compliance with this TDS.

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 2 of 7

TITLE: TECHNICAL DATA SHEET

## 2 APPLICABLE DOCUMENTS

- [1] ASME BPVC Section II, Part A, SA-403M, 2019 Edition.
- [2] ASME BPVC Section II, Part A, SA-960M, 2019 Edition.
- [3] ASME B16.9, Factory-Made Wrought Butt welding Fittings, 2018 Edition.
- [4] Doc No: AM-IMS-MAN-0001, Rev. 2.0, SHEQ Manual.

## 3 BASIC REQUIREMENTS

### 3.1 Ordering Information:

- 3.1.1 Code of Manufacturing: ASME Section II, Part A, 2019 Edition, ref. [1];
- 3.1.2 Material Specification: SA-403M, ref. [1];
- 3.1.3 ASTM Designation: Acceptable ASTM Editions – 1986 through 2015 with exceptions as stated in Table II-200-1 of ASME Section II, Part A;
- 3.1.4 Name of Material: Austenitic Stainless-Steel;
- 3.1.5 UNS Designation: S30403;
- 3.1.6 Process: Class S (Seamless);
- 3.1.7 Grade: WP304L;
- 3.1.8 Pressure Class: Matching Pipe Schedule 40S;
- 3.1.9 Product Form: As per Purchase Order;
- 3.1.10 Size: As per Purchase Order;
- 3.1.11 Quantity: As per Purchase Order;
- 3.1.12 End Preparation: As per Section 8 of this TDS;
- 3.1.13 Test Report Required: Yes, as per Section 15 of this TDS;
- 3.1.14 Certification: Certification is required as per Section 15 of this TDS;
- 3.1.15 Optional Requirements: None;
- 3.1.16 Supplementary Requirements: None;

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 3 of 7

TITLE: **TECHNICAL DATA SHEET**

3.1.17 Special Requirements: As specified in this TDS.

- 3.2 SI units of measure shall be used.
- 3.3 All documents shall be provided in the English language.
- 3.4 No Code Cases are allowed.
- 3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

## 4 MATERIAL AND MANUFACTURING PROCESS

- 4.1 Material shall conform to par. 4 of SA-403M, ref. [1], and par. 5 of SA-960M, ref. [2].
- 4.2 Manufacturing shall conform to par. 5 of SA-403M, ref. [1], and par. 6 of SA-960M, ref. [2].

## 5 CHEMICAL COMPOSITION REQUIREMENTS

- 5.1 An analysis of each heat of steel shall be made in accordance with par. 8 of SA - 960M, ref. [2].
- 5.2 Chemical composition shall be as prescribed in par. 7 and Table 2 of SA-403M, ref. [1], for Grade WP304L.
- 5.3 Chemical analysis, samples and methods shall be in accordance with par. 8 of SA-960M, ref. [2].

## 6 HEAT TREATMENT

- 6.1 Shall be done as per par. 6 and Table 4 of SA-403M, ref. [1], and par. 7 of SA - 960M, ref. [2], for Grade WP304L.

## 7 MECHANICAL PROPERTIES

- 7.1 All material mechanical properties shall conform to par. 8 and Table 5 of SA - 403M, ref. [1], and par. 11 of SA-960M, ref. [2], for Grade WP304L.
- 7.2. All testing methods and requirements shall conform to par. 9 of SA-960M, ref. [2].

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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 4 of 7

TITLE: TECHNICAL DATA SHEET

## 8 WORKMANSHIP, FINISH AND APPEARANCE

- 8.1 The surface finish and appearance shall comply with par 10 of SA-403M, ref. [1], and par. 15 of SA-960M, ref. [2].
- 8.2 Tolerances, dimensions and end preparation shall comply with ASME B16.9, ref. [3].

## 9 FRACTURE TOUGHNESS REQUIREMENTS

- 9.1 Impact tests are not required, as exempted by the Mechanical Design Code for the Thabana Pipestore Extension Project.

## 10 REPAIRS

- 10.1 Repair by welding is **not permitted**.

## 11 NON-CONFORMANCES

- 11.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with the requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, also during the delivery process, or detection of any Counterfeit, Fraudulent or Suspect Items.
- 11.2 Disposition of the material with non-conformances require approval from the Purchaser.

## 12 IDENTIFICATION AND MARKING OF MATERIAL

- 12.1 Material shall be marked in accordance with:
  - 12.1.1 Par. 15 of SA-403M, ref. [1], par. 21 of SA-960M, ref. [2], and par. 4 of ASME B16.9, ref. [3];
  - 12.1.2 Requirements of this TDS.
- 12.2 At minimum the marking shall include:
  - 12.2.1 Material Specification Number (SA-403M);
  - 12.2.2 Grade (WP304L) and Class S;

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 5 of 7

TITLE: **TECHNICAL DATA SHEET**

- 12.2.3 Size (As per Purchase Order);
- 12.2.4 Matching Piping Schedule;
- 12.2.5 Heat number;
- 12.2.6 Heat treatment process (As per Section 6 of this TDS);
- 12.2.7 Manufacturer's name or identification mark.

12.3 Photos of the applied marking on the material shall be sent to the purchaser for acceptance prior to packaging and shipping.

12.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a waterproof marker and certification thereof shall be submitted to the Purchaser.

## **13 HANDLING, PACKAGING AND DELIVERY**

13.1 Handling, Packaging and Delivery shall conform to par. 21 of SA-960M, ref. [2].

13.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Test Report (MTR).

13.3 All material supplied shall have a good surface finish

13.4 All items shall be protected from damage and contamination (inside and outside) from chemicals, solids or soft metals that are detrimental to the integrity and corrosion resistance of stainless-steel.

13.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

- 13.5.1 Material Specification, Grade/Class of Material;
- 13.5.2 Overall weight of Package;
- 13.5.3 Material Organisation's name and Details.

13.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

13.7 It is important that the full complement of items listed in the Purchase Order is to be delivered as specified in the Purchase Order.



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DOC No: AM-18033-TDS-0001 | Rev. No. 1.0 | Page 6 of 7

TITLE: TECHNICAL DATA SHEET

## 14 RIGHT OF ACCESS

14.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

## 15 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

15.1 Copies of the material certificates for the material as required by par. 14 of SA - 403M, ref. [1], par. 20 of SA-960M, ref. [2], and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

15.2 The manufacturer shall provide the test report in accordance with the requirements of par. 14 of ref. [1].

15.3 The Material certificates shall include, but not limited to test results and information as applicable:

15.3.1 Description of material;

15.3.2 Heat treatment type;

15.3.3 Chemical Analyses results (heat and/or product);

15.3.4 Tensile test/property results;

15.3.5 Dimensions of the tensile test specimens;

15.3.6 Non-destructive electric test results, if available;

15.3.7 Results of all other tests required by ref. [1], ref. [2] and this TDS;

15.3.8 Visual acceptance of material surfaces, cleanliness and packaging;

15.3.9 Heat treatment report if available;

15.3.10 Clear reference to the producing mill or factory;

15.3.11 A statement that the wrought stainless-steel piping fittings were manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (SA-403M) and this TDS.

15.4 Legible copies of the original certificates from the Mill are required.

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DOC No:	AM-18033-TDS-0001	Rev. No. 1.0	Page	7	of	7
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TITLE:	<b>TECHNICAL DATA SHEET</b>
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15.5 All material certificates and test reports shall be traceable to the material identification marking.

## **16 QUALITY ASSURANCE REQUIREMENTS**

16.1 All general and specific Quality Assurance requirements stated in the Purchase Order and this TDS shall be met.

16.2 Comply with ref. [4].

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0002    Rev. No. 1.0    Page 1 of 7

TITLE: TECHNICAL DATA SHEET

**Description:** Material Purchase Specification – Thabana Pipestore Extension    **Date:** See Signature Block

**Technical Data Sheet for the supply of:** ASME SA-182M, Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	20/11/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2023/11/21
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2023/11/21
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2023/11/22

## REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

## 1 SCOPE

1.1. Supplying of Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, Valves and Parts for High-Temperature Service shall conform to all the applicable requirements of:

- 1.1.1. SA-182M, Specification for Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, Valves and Parts for High-Temperature Service, ref. [1];
- 1.1.2. SA-961M, Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves and Parts for Piping Applications, ref. [2];
- 1.1.3. ASME B16.5, Specification for Pipe Flanges and Flange Fittings, ref. [3];

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DOC No: AM-18033-TDS-0002 Rev. No. 1.0 Page 2 of 7

TITLE: TECHNICAL DATA SHEET

1.2 The supplier shall supply the material in compliance with this TDS.

## 2 APPLICABLE DOCUMENTS

- [1] ASME BPVC Section II, Part A, SA-182M, 2019 Edition.
- [2] ASME BPVC Section II, Part A, SA-961M, 2019 Edition.
- [3] ASME B16.5, Specification for Pipe Flanges and Flanged Fittings, 2017 Edition.
- [4] Doc No: AM-IMS-MAN-0001, Rev. 2.0, SHEQ Manual.

## 3 BASIC REQUIREMENTS

### 3.1 Ordering Information:

- 3.1.1 Code of Manufacturing: ASME Section II, Part A, 2019 Edition, ref. [1];
- 3.1.2 Material Specification: SA-182M, ref. [1];
- 3.1.3 ASTM Designation: Acceptable ASTM Editions – 1987a through 2018 with exceptions as stated in Table II-200-1 of ASME Section II, Part A;
- 3.1.4 Name of Material: Austenitic Stainless-Steel;
- 3.1.5 Process: Seamless;
- 3.1.6 Grade: F304L;
- 3.1.7 Pressure Class: As per ASME B16.5 or ASME B16.11;
- 3.1.8 Product Form: As per Purchase Order;
- 3.1.9 Size: As per Purchase Order;
- 3.1.10 Quantity: As per Purchase Order;
- 3.1.11 End Finish: As per Section 8 of this TDS;
- 3.1.12 Test Report Required: Yes, as per Section 15 of this TDS;
- 3.1.13 Certification: Certification is required as per Section 15 of this TDS;
- 3.1.14 Optional Requirements: None;
- 3.1.15 Supplementary Requirements: None;

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DOC No: AM-18033-TDS-0002 | Rev. No. 1.0 | Page 3 of 7

TITLE: TECHNICAL DATA SHEET

3.1.16 Special Requirements: As specified in this TDS.

- 3.2 SI units of measure shall be used.
- 3.3 All documents shall be provided in the English language.
- 3.4 No Code Cases are allowed.
- 3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

## 4 MANUFACTURING PROCESS

- 4.1 Shall conform to par. 6 of both SA-182M, ref. [1], and SA-961M, ref. [2].

## 5 CHEMICAL COMPOSITION REQUIREMENTS

- 5.1 An analysis of each heat of steel shall be made in accordance with par. 8 of SA - 961M, ref. [2].
- 5.2 Chemical composition shall be as prescribed in par. 8 and Table 2 of SA-182M, ref. [1], for Grade F304L.
- 5.3 Chemical analysis, samples and methods shall be in accordance with par. 8 of SA-961M, ref. [2].

## 6 HEAT TREATMENT

- 6.1 Shall be done as per par. 7 and Table 1 of SA-182M, ref. [1], for Grade F304L.

## 7 MECHANICAL PROPERTIES

- 7.1 All material mechanical properties shall conform to par. 9 and Table 3 of SA - 182M, ref. [1], for Grade F304L and all required tests are listed below:
  - 7.1.1 Tensile testing – Shall conform to par. 9.5 of SA-182M, ref. [1];
  - 7.1.2 Hardness testing – Shall conform to par. 9.6 of SA-182M, ref. [1];
  - 7.1.3 All testing methods and requirements shall conform to par. 9 of SA-961M, ref. [2].

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DOC No: AM-18033-TDS-0002 Rev. No. 1.0 Page 4 of 7

TITLE: TECHNICAL DATA SHEET

## 8 WORKMANSHIP, FINISH AND APPEARANCE

- 8.1 The surface finish and appearance shall comply with par 14 of SA-182M, ref. [1], and par. 15 of SA-961M, ref. [2].
- 8.2 Tolerances and dimensions shall comply with ASME B16.5, ref. [3].

## 9 FRACTURE TOUGHNESS REQUIREMENTS

- 9.1 Impact tests are not required, as exempted by the Mechanical Design Code for the Thabana Pipestore Extension Project.

## 10 REPAIRS

- 10.1 Repair by welding is **not permitted**.

## 11 NON-CONFORMANCES

- 11.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with the requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, also during the delivery process, or detection of any Counterfeit, Fraudulent or Suspect Items.
- 11.2 Disposition of the material with non-conformances require approval from the Purchaser.

## 12 IDENTIFICATION AND MARKING OF MATERIAL

- 12.1 Material shall be marked in accordance with:
  - 12.1.1 Par. 19 of SA-182, ref. [1], par. 20 of SA-961M, ref. [2], and par. 4 of ASME B16.5, ref. [3];
  - 12.1.2 Requirements of this TDS.
- 12.2 At minimum the marking shall include:
  - 12.2.1 Specification Number (SA-182M);
  - 12.2.2 Grade (F304L);

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0002 Rev. No. 1.0 Page 5 of 7

TITLE: TECHNICAL DATA SHEET

- 12.2.3 Size (As per Purchase Order);
- 12.2.4 Piping Schedule or Pressure Class;
- 12.2.5 Heat number;
- 12.2.6 Heat treatment process (As per Section 6 of this TDS);
- 12.2.7 Manufacturer's name or identification mark.

12.3 Photos of the applied marking on the material shall be sent to the purchaser for acceptance prior to packaging and shipping.

12.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a waterproof marker and certification thereof shall be submitted to the Purchaser.

## 13 HANDLING, PACKAGING AND DELIVERY

13.1 Handling, Packaging and Delivery shall conform to par. 21 of SA-961M, ref. [2].

13.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Test Report (MTR).

13.3 All material supplied shall have a good surface finish

13.4 All items shall be protected from damage and contamination (inside and outside) from chemicals or solids that are detrimental to the integrity and corrosion resistance of stainless-steel.

13.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

13.5.1 Material Specification, Class/Grade of Material;

13.5.2 Overall weight of Package;

13.5.3 Material Organisation's name and Details.

13.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

13.7 It is important that the full complement of items listed in the Purchase Order is to be delivered as specified in the Purchase Order.

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DOC No: AM-18033-TDS-0002    Rev. No. 1.0    Page 6 of 7

TITLE: **TECHNICAL DATA SHEET**

## 14 RIGHT OF ACCESS

14.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

## 15 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

15.1 Copies of the material certificates for the material as required by par. 18 of SA - 182M, ref. [1], par. 19 of SA-961M, ref. [2], and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

15.2 The manufacturer shall provide the test report in accordance with the requirements of par. 18 of ref. [1].

15.3 The Material certificates shall include, but not limited to test results and information as applicable:

15.3.1 Description of material;

15.3.2 Heat treatment type;

15.3.3 Chemical Analyses results (heat and/or product);

15.3.4 Tensile test/property results;

15.3.5 Width in the gage length (if longitudinal strip tension tests were used);

15.3.6 Hardness test results;

15.3.7 Non-destructive electric test results, if available;

15.3.8 Results of all other tests required by ref. [1], ref. [2] and this TDS;

15.3.9 Visual acceptance of material surfaces, cleanliness and packaging;

15.3.10 Heat treatment report if available;

15.3.11 Clear reference to the producing mill or factory;

15.3.12 A statement that the forged stainless-steel piping fittings were manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (SA-182M) and this TDS.

15.4 Legible copies of the original certificates from the Mill are required.



# ADVANCED MANUFACTURING



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DOC No:	AM-18033-TDS-0002	Rev. No. 1.0	Page	7	of	7
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TITLE:	<b>TECHNICAL DATA SHEET</b>
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15.5 All material certificates and test reports shall be traceable to the material identification marking.

## **16 QUALITY ASSURANCE REQUIREMENTS**

16.1 All general and specific Quality Assurance requirements stated in the Purchase Order and this TDS shall be met.

16.2 Comply with ref. [4].

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DOC No: AM-18033-TDS-0003 Rev. No. 1.0 Page 1 of 7

TITLE: TECHNICAL DATA SHEET

Description: Material Purchase Specification – Thabana Pipestore Extension Date: See Signature Block

Technical Data Sheet for the supply of: ASME SA-240M, Cr and Cr-Ni Stainless-Steel Plate, Sheet and Strip for Pressure Vessels and General Applications

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	20/11/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2023/11/21
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2023/11/21
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2023/11/22

## REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

## 1 SCOPE

1.1. Supplying of Cr and Cr-Ni Stainless-Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications shall conform to all the applicable requirements of:

- 1.1.1. SA-240M, Specification for Cr and Cr-Ni Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications, ref. [1];
- 1.1.2. SA-480M, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip, ref. [2];

1.2 The supplier shall supply the material in compliance with this TDS.

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0003 Rev. No. 1.0 Page 2 of 7

TITLE: TECHNICAL DATA SHEET

## 2 APPLICABLE DOCUMENTS

- [1] ASME BPVC Section II, Part A, SA-240M, 2019 Edition.
- [2] ASME BPVC Section II, Part A, SA-480M, 2019 Edition.
- [3] Doc No: AM-IMS-MAN-0001, Rev. 2.0, SHEQ Manual.

## 3 BASIC REQUIREMENTS

### 3.1 Ordering Information:

- 3.1.1 Code of Manufacturing: ASME Section II, Part A, 2019 Edition, ref. [1];
- 3.1.2 Material Specification: SA-240M, ref. [1];
- 3.1.3 ASTM Designation: Acceptable ASTM Editions – 1988c through 2017 with exceptions as stated in Table II-200-1 of ASME Section II, Part A;
- 3.1.4 Name of Material: Austenitic Stainless Steel (UNS designation: S30403);
- 3.1.5 Process: As per Section 4 of this TDS;
- 3.1.6 Grade: 304L;
- 3.1.7 Product Form: Plate, Sheet or Strip;
- 3.1.8 Surface Finish: As per Section 8 of this TDS;
- 3.1.9 Size: As per Purchase Order;
- 3.1.10 Quantity: As per Purchase Order;
- 3.1.11 End Finish: As per Section 8 of this TDS;
- 3.1.12 Test Report Required: Yes, as per Section 15 of this TDS;
- 3.1.13 Certification: Certification is required as per Section 15 of this TDS;
- 3.1.14 Optional Requirements: As per Purchase Order;
- 3.1.15 Supplementary Requirements: None.

3.2 SI units of measure shall be used.

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0003 Rev. No. 1.0 Page 3 of 7

TITLE: TECHNICAL DATA SHEET

- 3.3 All documents shall be provided in the English language.
- 3.4 No Code Cases are allowed.
- 3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

## 4 MANUFACTURING PROCESS

- 4.1 Shall conform to par. 5 of SA-480M, ref. [2].

## 5 CHEMICAL COMPOSITION REQUIREMENTS

- 5.1 Shall comply with par. 4 and Table 1 of SA-240M, ref. [1], and par. 6 of SA-480M, ref. [2], for Grade 304L.

## 6 HEAT TREATMENT

- 6.1 Plate, Sheet or Strip shall be solution annealed at 1040°C minimum, and quenched, according to par. 15 and Table A1.2 of SA-480M, ref. [2].

## 7 MECHANICAL PROPERTIES

- 7.1 All material mechanical tests and property requirements shall comply with par. 5 and Table 2 of SA-240M, ref. [1], and par. 17 of SA-480M, ref. [2]. The required tests are listed below, and the number of tests as prescribed in par. 16 of SA - 480M, ref. [2]:

- 7.1.1 Tension test, par. 17.1 of ref. [2];
- 7.1.2 Hardness test, par. 17.2 of ref. [2].

## 8 WORKMANSHIP, FINISH AND APPEARANCE

- 8.1 Workmanship shall comply with par. 10 of SA-480M, ref. [2].
- 8.2 All product forms shall be pickled.
- 8.3 Surface finish, on both surfaces, for Sheet to a No. 2B Finish, and for Strip and Plate to the equivalent of a No. 2B Finish, as stipulated in pars. 11, 12 and 13 of SA-480M, ref. [2].

# ADVANCED MANUFACTURING



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DOC No: AM-18033-TDS-0003 Rev. No. 1.0 Page 4 of 7

TITLE: TECHNICAL DATA SHEET

8.4 Sheet, Strip and Plate shall be free of defects such as scale, cracks, porosity, sand inclusions or any imperfections that can hinder product quality.

8.5 The variations in dimensions and weight shall conform to par. 9 of SA-480M, ref. [2].

## 9 FRACTURE TOUGHNESS REQUIREMENTS

9.1 Impact tests are not required, as exempted by the Mechanical Design Code for the Thabana Pipestore Extension Project.

## 10 REPAIRS

10.1 Repair by welding is **not permitted**.

## 11 NON-CONFORMANCES

11.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with standard requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, also during the delivery process, or detection of any Counterfeit, Fraudulent or Suspect Items.

11.2 Disposition of the material with non-conformances require approval from the Purchaser.

## 12 IDENTIFICATION AND MARKING OF MATERIAL

12.1 Material shall be marked in accordance with:

12.1.1 Par. 25.1 of SA-480M, ref. [2];

12.1.2 Requirements of this TDS.

12.2 At minimum the marking shall include:

12.2.1 Specification Number (SA-240M);

12.2.2 Grade (304L);

12.2.3 Size (As per Purchase Order);

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DOC No: AM-18033-TDS-0003      Rev. No. 1.0      Page 5 of 7

TITLE: **TECHNICAL DATA SHEET**

- 12.2.4 Product Form;
- 12.2.5 Heat number;
- 12.2.6 Heat treatment process (As per Section 6 of this TDS);
- 12.2.7 Manufacturer's name or identification mark.

12.3 Photos of the applied marking on the material shall be sent to the purchaser for acceptance prior to packaging and shipping.

12.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a waterproof marker and certification thereof shall be submitted to the Purchaser.

## **13 HANDLING, PACKAGING AND DELIVERY**

13.1 Handling, Packaging and Delivery shall conform to par. 25.1 of SA-480M, ref. [2].

13.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Test Report (MTR).

13.3 All material supplied shall have a good surface finish

13.4 All items shall be protected from damage and contamination from chemicals or solids that are detrimental to the integrity and corrosion resistance of stainless-steel.

13.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

13.5.1 Material Specification, Class/Grade of Material;

13.5.2 Overall weight of Package;

13.5.3 Material Organisation's Name and Details.

13.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

13.7 It is important that the full complement of items listed in the Purchase Order is to be delivered as specified in the Purchase Order.

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DOC No: AM-18033-TDS-0003 Rev. No. 1.0 Page 6 of 7

TITLE: TECHNICAL DATA SHEET

## 14 RIGHT OF ACCESS

14.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

## 15 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

15.1 Copies of the material certificates for the material as required by, par. 8 of SA - 480M, ref. [2], and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

15.2 The manufacturer shall provide the test report in accordance with the requirements of par. 8 of ref. [2].

15.3 The Material certificates shall include, but not limited to test results and information as applicable:

15.3.1 Description of material;

15.3.2 Heat treatment type;

15.3.3 Chemical Analyses results (heat and/or product);

15.3.4 Tensile test/property results;

15.3.5 Width in the gage length (if longitudinal strip tension tests were used);

15.3.6 Hardness test results;

15.3.7 Visual acceptance of material surfaces, cleanliness and packaging.;

15.3.8 Heat treatment report (if available);

15.3.9 Clear reference to the producing mill or factory;

15.3.10 A statement that the stainless-steel sheet, strip or plate was manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (SA-240M) and this TDS.

15.4 Legible copies of the original certificates from the Mill are required.

15.5 All material certificates and test reports shall be traceable to the material identification marking.

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DOC No:	AM-18033-TDS-0003	Rev. No. 1.0	Page	7	of	7
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TITLE:	<b>TECHNICAL DATA SHEET</b>
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## **16 QUALITY ASSURANCE REQUIREMENTS**

- 16.1 All general and specific Quality Assurance requirements stated in the Purchase Order and this TDS shall be met.
- 16.2 Comply with ref. [3].



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DOC No: AM-18033-TDS-0004 Rev. No. 1.0 Page 1 of 7

TITLE: TECHNICAL DATA SHEET

Description: Material Purchase Specification – Thabana Pipestore Extension Date: See Signature Block

Technical Data Sheet for the supply of: ASME SA-312M Seamless, Welded and Heavily Cold Worked Austenitic Stainless-Steel Pipes

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	20/11/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2023/11/21
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2023/11/21
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2023/11/22

## REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

## 1 SCOPE

1.1. Supplying of Seamless or Welded Austenitic Stainless-Steel Pipes, of Grade TP304L, shall conform to all the applicable requirements of:

1.1.1. SA-312M, Specification for Seamless, Welded and Heavily Cold Worked Austenitic Stainless-Steel Pipes, ref. [1];

1.1.2. SA-999M, Specification for General Requirements for Alloy and Stainless-Steel Pipe, ref. [2];

1.2 The supplier shall supply the material in compliance with this TDS.

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DOC No: AM-18033-TDS-0004 Rev. No. 1.0 Page 2 of 7

TITLE: TECHNICAL DATA SHEET

## 2 APPLICABLE DOCUMENTS

- [1] ASME BPVC Section II, Part A, SA-312M, 2019 Edition.
- [2] ASME BPVC Section II, Part A, SA-999M, 2019 Edition.
- [3] Doc No: AM-IMS-MAN-0001, Rev. 2.0, SHEQ Manual.

## 3 BASIC REQUIREMENTS

### 3.1 Ordering Information:

- 3.1.1 Code of Manufacturing: ASME Section II, Part A, 2019 Edition, ref. [1];
- 3.1.2 Material Specification: SA-312M, ref. [1];
- 3.1.3 ASTM Designation: Acceptable ASTM Editions – 1988a through 2015 with exceptions as stated in Table II-200-1 of ASME Section II, Part A;
- 3.1.4 Name of Material: Austenitic Stainless-Steel (UNS designation: S30403);
- 3.1.5 Process: Welded;
- 3.1.6 Grade: TP304L;
- 3.1.7 Pipe Schedule: As per Purchase Order;
- 3.1.8 Size: As per Purchase Order;
- 3.1.9 Length: As per Purchase Order;
- 3.1.10 Quantity: As per Purchase Order;
- 3.1.11 End Finish: Shall conform to par. 15 of SA-999M;
- 3.1.12 Test Report Required: Yes, as per Section 16 of this TDS;
- 3.1.13 Certification: Certification is required as per Section 16 of this TDS;
- 3.1.14 Optional Requirements: Hydrostatic or Non-destructive Electric Test Requirements as per par. 12 of SA - 312M, ref. [1];
- 3.1.15 Supplementary Requirements: None;

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DOC No: AM-18033-TDS-0004 Rev. No. 1.0 Page 3 of 7

TITLE: TECHNICAL DATA SHEET

3.1.16 Special Requirements: As specified in this TDS.

3.2 SI units of measure shall be used.

3.3 All documents shall be provided in the English language.

3.4 No Code Cases are allowed.

3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

## 4 MANUFACTURING PROCESS

4.1 Shall conform to par. 6 of SA-312M, ref. [1], and par. 3 of SA-999M, ref. [2].

## 5 CHEMICAL COMPOSITION REQUIREMENTS

5.1 Shall comply with the chemical composition prescribed in par. 7 and Table 1 of SA-312M, ref. [1], for Grade TP304L.

5.2 Analysis shall be conducted as per par. 6 of SA-999M, ref. [2].

## 6 HEAT TREATMENT

6.1 Shall conform to par. 6.2 and Table 2 of SA-312M, ref. [1].

## 7 MECHANICAL PROPERTIES

7.1 All material mechanical tests and property requirements, for Grade TP304L, shall comply with par. 11 of SA-312, ref. [1], and pars. 7, 8 and 20 of SA-999M, ref. [2].  
The required tests are listed below:

7.1.1 Tensile test – Shall conform to par. 10 and Table 4 of SA-312M, ref. [1];

7.1.2 Flattening test – Shall conform to par. 11.3 of SA-312M, ref. [1], and par. 21 of SA-999M, ref. [2].

## 8 WORKMANSHIP, FINISH AND APPEARANCE

8.1 Shall conform to par. 14 of SA-312M, ref. [1], and pars. 9, 10, 11, 12, 13, 14, 15 and 16 of SA-999M, ref. [2].

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DOC No:	AM-18033-TDS-0004	Rev. No. 1.0	Page	4	of	7
---------	-------------------	--------------	------	---	----	---

TITLE:	<b>TECHNICAL DATA SHEET</b>
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## 9 FRACTURE TOUGHNESS REQUIREMENTS

9.1 Impact tests are not required, as exempted by the Mechanical Design Code for the Thabana Pipestore Extension Project.

## 10 EXAMINATIONS AND REPAIRS

10.1 Hydrostatic or non-destructive electric tests shall be performed according to par. 12 of SA-312M, ref. [1], and par. 22 of SA-999M, ref. [2].

10.2 Repair by welding is **not permitted**.

## 11 SUPPLEMENTARY AND ADDITIONAL REQUIREMENTS

11.1 As specified on the Purchase Order.

## 12 NON-CONFORMANCES

12.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with the requirements of this TDS, the Purchase Order, Applicable Codes and Standards as listed in Section 2 of this document, also during the delivery process, or detection of any Counterfeit, Fraudulent or Suspect Items.

12.2 Disposition of the material with non-conformances require approval from the Purchaser.

## 13 IDENTIFICATION AND MARKING OF MATERIAL

13.1 Material shall be marked in accordance with:

13.1.1 Par. 17 of SA-312, ref. [1], and par. 26 of SA-999M, ref. [2];

13.1.2 Requirements of this TDS.

13.2 At minimum the marking shall include:

13.2.1 Specification Number (SA-312M);

13.2.2 Grade (TP304L);

13.2.3 Size (As per Purchase Order);

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DOC No:	AM-18033-TDS-0004	Rev. No. 1.0	Page	5	of	7
---------	-------------------	--------------	------	---	----	---

TITLE:	<b>TECHNICAL DATA SHEET</b>
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- 13.2.4 Piping Schedule;
- 13.2.5 Heat number;
- 13.2.6 Heat treatment process (As per Section 6 of this TDS);
- 13.2.7 Manufacturer's name or identification mark.

13.3 Photos of the applied marking on the material shall be sent to the purchaser for acceptance prior to packaging and shipping.

13.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a waterproof marker and certification thereof shall be submitted to the Purchaser.

## **14 HANDLING, PACKAGING AND DELIVERY**

14.1 Handling, Packaging and Delivery shall comply with par. 27 of SA-999M, ref. [2].

14.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Test Report (MTR).

14.3 All material supplied shall have a good surface finish

14.4 All items shall be protected from damage and contamination (inside and outside) from chemicals or solids that are detrimental to the integrity and corrosion resistance of stainless-steel.

14.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

14.5.1 Material Specification, Class/Grade of Material;

14.5.2 Overall weight of Package;

14.5.3 Material Organisation's Name and Details.

14.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

14.7 It is important that the full complement of items listed in the Purchase Order is to be delivered as specified in the Purchase Order.

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DOC No:	AM-18033-TDS-0004	Rev. No. 1.0	Page	6	of	7
---------	-------------------	--------------	------	---	----	---

TITLE:	<b>TECHNICAL DATA SHEET</b>
--------	-----------------------------

## **15 RIGHT OF ACCESS**

15.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

## **16 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER**

16.1 Copies of the material certificates for the material as required by par. 16 of SA - 312M, ref. [1], par. 25 of SA-999M, ref. [2], and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

16.2 The manufacturer shall provide the test report in accordance with the requirements of par. 25 of ref. [2].

16.3 The Material certificate shall include, but not limited to test results and information as applicable:

16.3.1 Description of material;

16.3.2 Heat treatment type;

16.3.3 Chemical Analyses results (heat and/or product);

16.3.4 Tensile test/property results;

16.3.5 Width in the gage length (if longitudinal strip tension tests were used);

16.3.6 Hydrostatic test pressure or Non-destructive electric test method;

16.3.7 Visual acceptance of material surfaces, cleanliness and packaging;

16.3.8 Heat treatment report (if available);

16.3.9 Clear reference to the producing mill or factory;

16.3.10 A statement that the welded stainless-steel pipe was manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (SA-312M) and this TDS.

16.4 Legible copies of the original certificates from the Mill are required.

16.5 All material certificates and test reports shall be traceable to the material identification marking.

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DOC No:	AM-18033-TDS-0004	Rev. No. 1.0	Page	7	of	7
---------	-------------------	--------------	------	---	----	---

TITLE:	<b>TECHNICAL DATA SHEET</b>
--------	-----------------------------

## **17 QUALITY ASSURANCE REQUIREMENTS**

- 17.1 All general and specific Quality Assurance requirements stated in the Purchase Order and this TDS shall be met.
- 17.2 Comply with ref. [3].