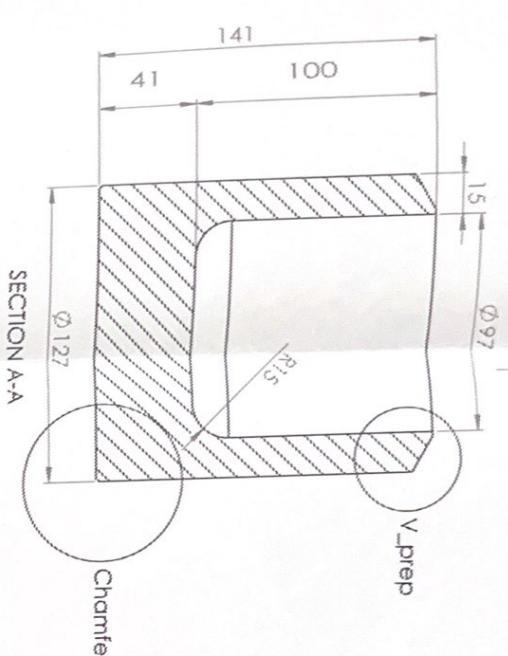
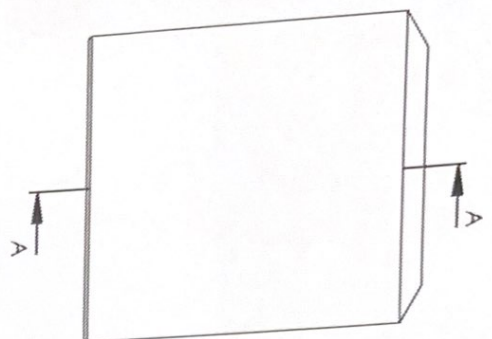
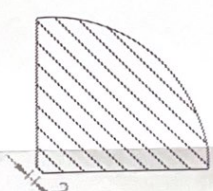


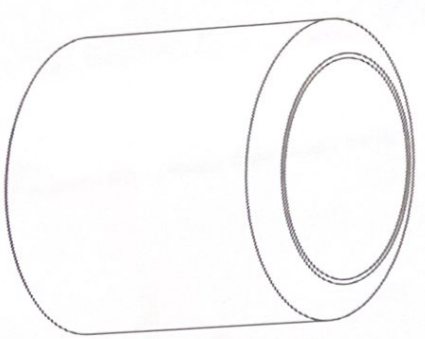


DETAIL
V_prep
SCALE 1:1



DETAIL Chamfer
SCALE 1:1

- NOTES:
- Material 10273 16Mo3
 - Material Certificate EN 10204 3.1 (minimum)
 - 3rd party inspection by AIA
 - Marking: Material nr and AIA stamp for traceability
 - SANS 347 Fluid Group 2
 - SANS 347 Hazard CAT II
 - 100% NDT
 - Design Data
 - Design P: 19,6 MPa
 - Design T 320 °C
 - Design code 12952-3 (2011)



Checked by
S. M. M. M. M. (P. Eng)
05/10/2022

Zangula Welding and Quality
Consultancy (Pty) Ltd
Professional Engineering Technicians
Registration No. 123456789
Status: A/E, B/E, C/E, I/E, O/E
SANS 10001:2013 ISO 9001:2015
SANS 10002:2013 ISO 14001:2015
SANS 10003:2013 ISO 45001:2018
SANS 10004:2013 ISO 26262:2018

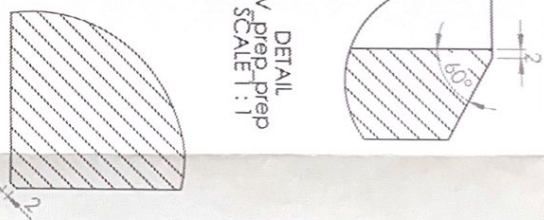
UNLESS OTHERWISE SPECIFIED:			
DIMENSIONS IN MILLIMETERS			
TOLERANCES:			
FRACTIONS			
DECIMALS			
ANGLES			
SURFACE FINISH			
AMOUNT 100%			
SYMBOL	NAME	DESCRIPTION	DATE
CHD	WAVE		
APP'D			
ING			
QA			
MATERIAL			
16Mo3			
METHOD			
2			

THE Arnot Unit 4 Economizer
Outlet Header
Endcap

DWG NO.
DRW-ARN-20220921-CALC02

SCALE: 1:1

A3



DETAIL
V_{prep}-prep
SCALE 1:1

- Material: 10273 13CrMo4-5
- Design life: 100 000 hrs
- Material Certificate: EN 10204 3.1 (minimum)
- 3rd party inspection by AIA
- Marking: Material nr. and AIA stamp for traceability
- SANS 347 Fluid Group 2
- SANS 347 Hazard CAT II
- 100% NDT

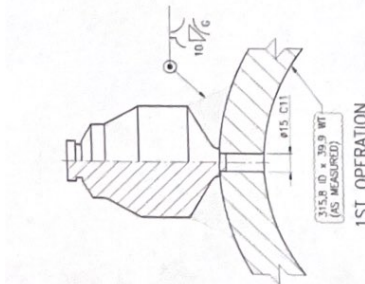
Design Data

- Design P: 19.2 MPa
- Design T: 441 °C

Design code: 12952-3 (2011)

[illegible]

Arnot Unit 4 S1TR2
Outlet Header
Endcap

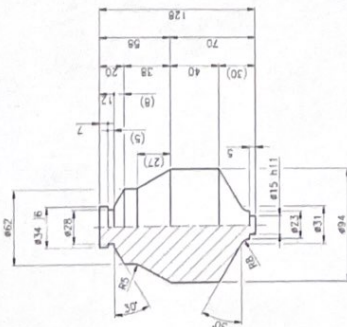


5TH OPERATION

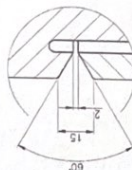
4TH OPERATION
AFTER DRILLING DIAMETER .38,1 HOLE

3RD OPERATION
DRILL DIAMETER 40 HOLE

2ND OPERATION



ITEM 1: PIPE STUB



DETAIL 1
SCALE 1:1

ITEM 2: MIDDLE TRANSITION PIECE

3.2/ ALL OVER

DESIGN CONDITIONS:
PRESSURE PART DESIGN TO EN 13480-3 2017
DESIGN PRESSURE: 18MPa
DESIGN TEMPERATURE: 504.4°C
DESIGN CALCULATIONS: ARNPS-T-CLC-SMA-000014

GENERAL NOTES:

1. MATERIAL TO BE AS SPECIFIED
 2. HARD STAMP MATERIAL, GRADE AND DRAWING NUMBER
 3. THIRD PARTY INSPECTION BY APPOINTED IIA
 4. MATERIAL CERTIFICATE TO EN 10204 3.1
 5. ALL SHARP EDGES TO BE BROKEN
- 3.2/
6. MACHINING TO BE ∇ ALL ROUND
 7. CORROSION ALLOWANCE = 1mm
 8. BUTT WELD: NO REQUIREMENT; 100% VT, 100% AN
 9. SAMS 347 (2019) FLOW GROUP- GROUP 2
 10. SAMS 347 (2019) FLUID HAZARD CATEGORY
 11. STEEL TO VERIFY WALL THICKNESS OF PIPE PRIOR TO ST
 12. MINIMUM DISTANCE BETWEEN STIFFES 350mm

[illegible]

W. Moll

Zangula welding and
Quality Consultants (Pty) Ltd
222
Status: ☒ A ☐ B ☐ C ☐ I
CAPS NO. ☐ TRADING ALLOWANCE ☒ RACE NO. ☐
REG. NO. ☐ R-REG. NO. ☐ TRANSFER NO. ☐ AND REGISTRATION
C-STATUS NO. ☐ C-STATUS NO. ☐ AND REGISTRATION
Agreement to the following terms for the supply of goods and services
I, the undersigned, hereby agree to accept the supplier's price in this
agreement as stated under the conditions of sale. The supplier's
representative is present and has authorized me to sign this

**Zangula Welding and Quality
Consultancy (Pty) Ltd**
A. Chanzu
Multinational Engineering Technologist
Registration No 201670105

PRELIMINARY

[illegible]

1

2

DO NOT SCALE

3

4

A

A

B

B

C

C

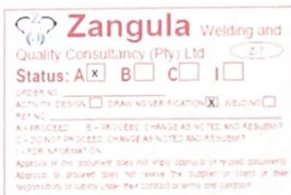
D

D

DESIGN DATA:

DESIGN PRESSURE: 18 MPa
 DESIGN TEMPERATURE: 504,4 °C
 DESIGN CODE: EN 13480-3:2017
 DESIGN CALCULATION: ARNPS-T-CLC-SMA-000016
 MATERIAL: EN 10273 13CrMo4-5

Zangula Welding and Quality
 Consultancy (Pty) Ltd
 A. Chandra
 Professional Engineering Technologist
 Registration No. 291070105



3.2

ALL OVER

GENERAL NOTES:

- HARD STAMP DRAWING No: ARNPS-T-DRAW-SMA-000041
- THIRD PARTY INSPECTION BY APPOINTED AIA
- MATERIAL CERTIFICATION TO EN 10204 3.1
- ALL SHARP EDGES TO BE BROKEN
- SANS 347 (2019) FLUID GROUP: 2
SANS 347 (2019) HAZARD CATEGORY: III
- BUTT WELD:
JOINT EFFICIENCY (z)=1
- NDE REQUIREMENTS:
100% MPI
100% VI
100% RT/UT
- CORROSION ALLOWANCE (C₀) = 1mm
- MANUFACTURING ALLOWANCE (C₂) = 1mm

PRELIMINARY

POWER
SYSTEMSBILFINGER POWER AFRICA
STEINMÜLLER AFRICA

40 De La Hay Road RICHMOND 2191, P.O. BOX 1037 RICHMOND 2191
 TEL: 011 800 3000 FAX: 011 800 813 1886
 E-MAIL: info@bilfinger.com

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SCALE: 1:1



CLIENT: ESKOM
 PROJECT No: SO.050011
 CONTRACT No:
 DRAWING No:

DRAWN	NAME	DATE
D.L.	22-03-03	
CHECKED	22-03-03	
DRAWING OFFICE	22-03-04	
RES. ENG.	22-03-04	
APPROVED	2022-03-04	
DEPT HEAD		

ARNOT POWER STATION
 UNIT 3
 DESUPERHEATER PIPEWORK THERMOCOUPLE
 END CAP DETAIL - GO 2022

REF DRGS																	
		DRG No.								DESCRIPTION							

DRAWING NUMBER
 ARNPS-T-DRAW-SMA-000041

REV
 OA
 SIZE
 A4

1

2

3

4

F

F



DESIGN AND CONSTRUCTION CODE: EN 13480-2017 ✓
DESIGN TEMPERATURE: 255°C ✓
DESIGN PRESSURE: 22 MPa ✓
SANS 347 (2019) FLUID GROUP: 2 ✓
SANS 347 (2019) HAZARD CATEGORY: 1 ✓
CALCULATION NUMBER: 2.2.3 ✓
MATERIAL: ARNPS-T-CLC-SMA-000009
EN 10273 16Mo

GENERAL NOTES:

1. ALL SHARP EDGES TO BE BROKEN
2. MATERIAL CERTIFICATE: EN 10204 3.1 AS A MINIMUM
3. HARD STAMP MATERIAL AND DRAWING NUMBER
4. BUTT WELD NOT REQUIREMENTS: 100% RT/UT 100% VT
5. CORROSION ALLOWANCE = 0.5mm
6. THIRD PARTY INSPECTION BY APPOINTED AIA
7. ALL MACHINING TO BE DONE $\bigtriangleup$ ALL OVER
8. MATERIAL GROUP ACCORDING TO EN 13480-2: GROUP 1.2
9. THE ORIGINAL DESIGN PRESSURE IS 20.7 MPa HOWEVER A DESIGN PRESSURE OF 22 MPa WAS USED PER THE CLIENTS REQUEST



W. MOLL



**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

45 De La Rue Street, Birmingham, 21000, P.O. Box 19532 Birmingham, 21138

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POWER
SYSTEMS

PRELIMINARY

SCALE: 1:1		NAME	DATE
DRAWN	CHECKED	P.B.	22-02-03
DRAWING OFFICE			22-02-09
RES. ENG.			22-02-09
DEPT. HEAD			2022-02-09

DRAWING NUMBER
ARNPS-T-DRAW

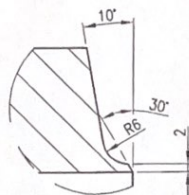
 FIRST ANGLE PROJECTION UOS	CLIENT: ESKOM PROJECT No: SO.050011 CONTRACT No: DRAWING No:
	RN0T POWER STATION

MAIN SUPERHEATER PILOT SPRAY
VALVE REDUCER DETAILS - GO 2022

ARNPS-T-DRW-SMA-000010

SIZE	A3
------	----

10



DESIGN DATA:

NOTES:

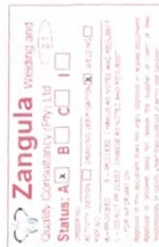
1. MATERIAL: EN 10222-2 13CrMo4-5
2. MATERIAL CERTIFICATE: EN 10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED AIA

- 3.2 / OVERALL
4. MACHINING TO BE
 5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
 6. ALL SHARP EDGES TO BE BROKEN
 7. SANS 347 (2019) FLUID GROUP: 2
 8. SANS 347 (2019) FLUID HAZARD CATEGORY: III
 9. BUTT WELD:
 10. JOINT EFFICIENCY (η) = 1
 11. NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
 12. CORROSION ALLOWANCE (s_0) = 1mm
 13. MATERIAL GROUP TO EN 13480-2 : 5.1

DESIGN DATA:

1. DESIGN PRESSURE: 18 MPa
2. DESIGN TEMPERATURE: 504 °C
3. DESIGN CODE: EN13480-3 : 2017
4. CALCULATION NUMBER: ARNPS-T-01

4. CALCULATION NUMBER: ARNPS-T-CLC-SMA-000001




A. Chandrasekhar
Zangula Welding and Quality
Consultancy (Pty) Ltd
Professional Engineering Technologist
Registration No. 2010/201005



W/Moll

POWER
SYSTEMS

**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

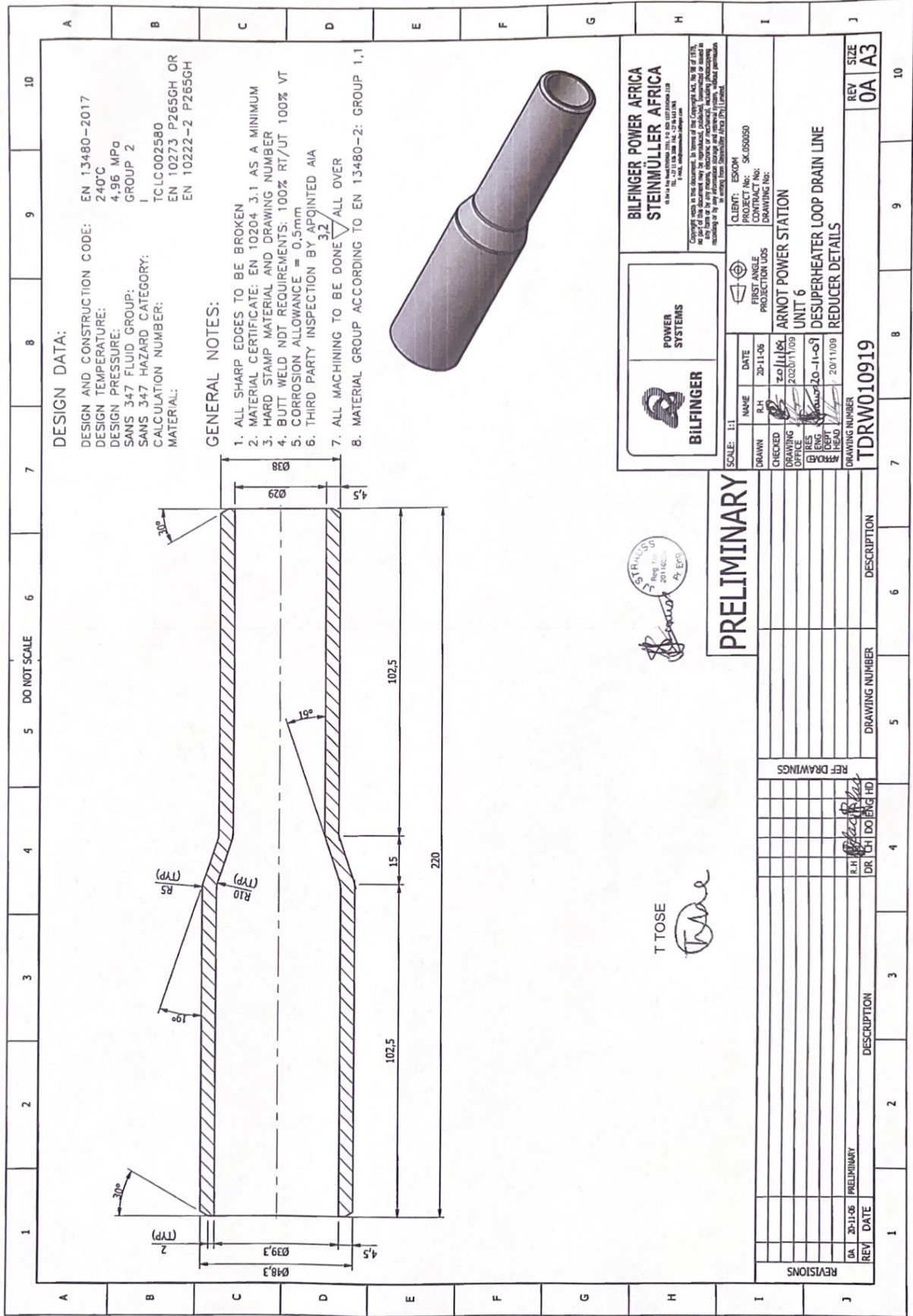
Journal of Interpersonal Violence 28(10) 1976-1990
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PRELIMINARY

PRELIMINARY		SCALE: 1:2, 1:1		 FIRST ANGLE PROJECTION U.S.		CLIENT: ESKOM PROJECT No.: SK 050054 CONTRACT No.: DRAWING No.:	
DRAWN R.H.		DATE 21-08-19		CHECKED 		ARNOT POWER STATION	
DRAWING OFFICE		2021-09-01		UNIT 2		MAIN STEAM ATTEMPORATOR	
RES. ENG. NAME		2021-09-01		NOZZLE END CAP DETAIL - GO 2021		REV. SIZE	
APPROVED 		2021-09-01		DRAWING NUMBER		ARNPS-T-DRW-SMA 000009	
REF. DRAWINGS		R.H. #/A		DESCRIPTION		00A 21-08-19	
DESCRIPTION		DR. CH. DO ENCHD		DATE		00A 1:3	

DRAWING NUMBER
ARNPS-T-DRW-SMA-000009



1	2 DO NOT SCALE 3	4
---	------------------	---

NOTES:

- MATERIAL: EN 10222-2 13CrMo4-5
- MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
- THIRD PARTY INSPECTION BY APPOINTED AIA
- MACHINING TO BE ∇ 3.2 OVERALL
- MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
- ALL SHARP EDGES TO BE BROKEN
- SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
- BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
- MATERIAL GROUP TO EN 13480-2 : 5.1

DESIGN DATA:

- DESIGN PRESSURE: 4,61 MPa
- DESIGN TEMPERATURE: 515 °C
- DESIGN CODE: EN 13480-3 : 2017
- CALCULATION NUMBER: TCLC002515

Amul
16/11/2020

Arjit Chandra
Pr. Tech Eng. (20110701009)
APPROVED "A"
2020-11-16
HI PROFILE INSPECTION AUTHORITY

LA Chapman
Pr. Tech Eng.
2011 70004

ISSUED FOR ACCEPTANCE

BILFINGER
POWER SYSTEMS

**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

40 De la Haye Road, BISHOPSTON P.O. BOX 10501 JOHANNESBURG
TEL: +27 11 858 3328 FAX: +27 11 858 3365
E-Mail: info@steinmuller-af.com

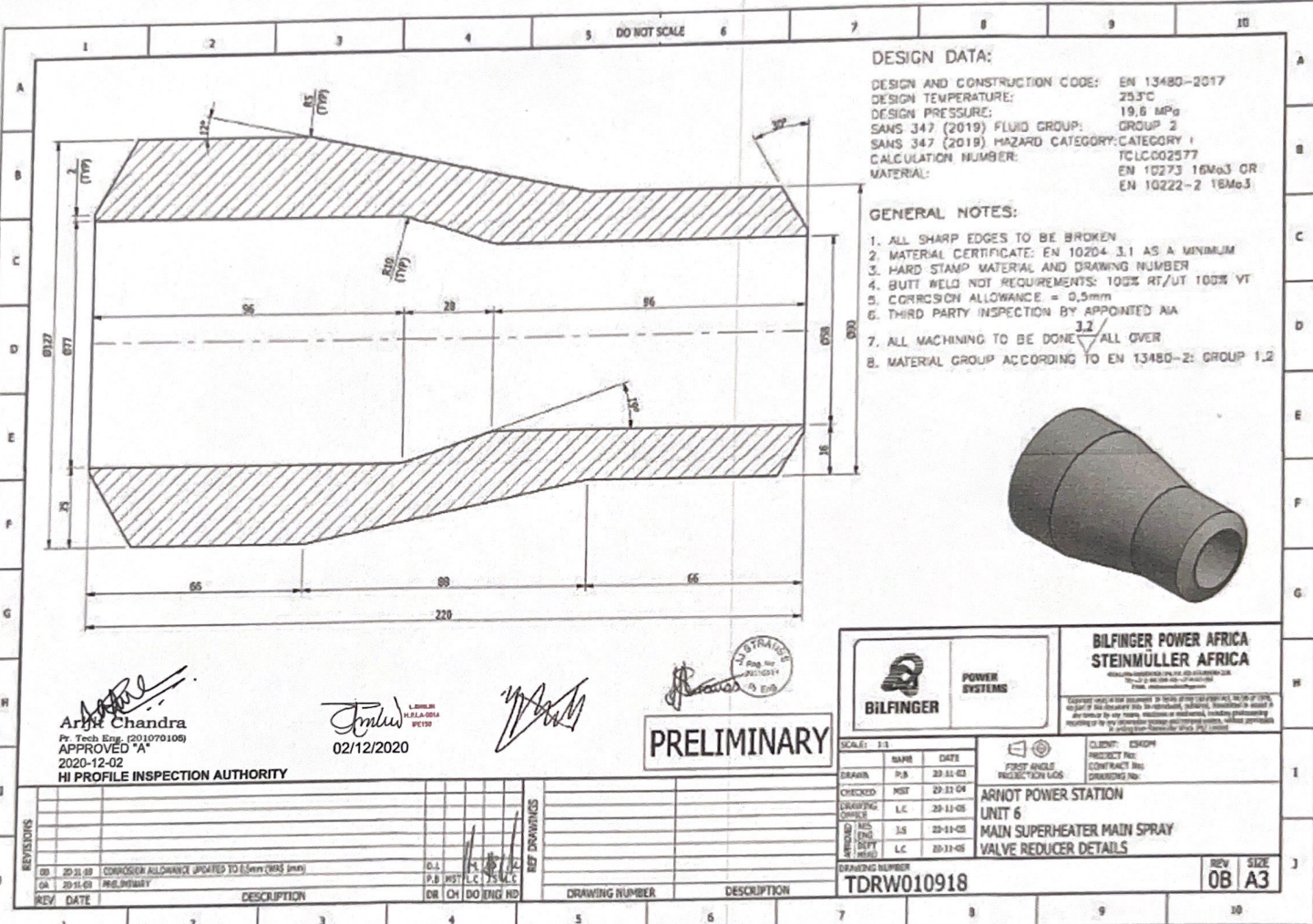
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SCALE: 1:1		CLIENT: ESKOM PROJECT No. SK 050050 CONTRACT No. DRAWING No.
DRAWN: K.M.	DATE: 20-09-23	ARNOT POWER STATION UNIT 6 HOT REHEAT PIPEWORK END CAP - LBB01 BR002
CHECKED: R.H.	DATE: 20-09-25	
DRAWING OFFICE: J.S.	DATE: 20-09-25	
DESIGN: H.M.	DATE: 20-09-25	
DEPT HEAD: J.S.	DATE: 20-09-25	

REV	DATE	DESCRIPTION	BY	CHKD	ENG'D	DATE
01	20-10-08	0. AND 00 UPDATED, ISSUED FOR ACCEPTANCE	D.L.	J.S.		
02	20-09-23	PRELIMINARY	K.M.	R.H.	J.S.	N.M.

DRAWING NUMBER
TDRW010811

REV: **OB** SIZE: **A4**

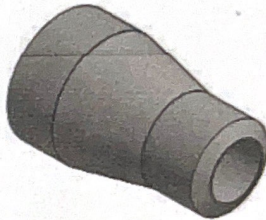


DESIGN DATA:

DESIGN AND CONSTRUCTION CODE: EN 13480-2017
DESIGN TEMPERATURE: 25.3°C
DESIGN PRESSURE: 19.6 MPa
SANS 347 (2019) FLUID GROUP: GROUP 2
SANS 347 (2019) HAZARD CATEGORY: CATEGORY 1
CALCULATION NUMBER: TCLC002577
MATERIAL: EN 10273 16Mo3 OR EN 10222-2 16Mo3

GENERAL NOTES:

1. ALL SHARP EDGES TO BE BROKEN
2. MATERIAL CERTIFICATE: EN 10204 3.1 AS A MINIMUM
3. HARD STAMP MATERIAL AND DRAWING NUMBER
4. BUTT WELD NOT REQUIREMENTS: 100% RT/UT 100% VT
5. CORROSION ALLOWANCE = 0.5mm
6. THIRD PARTY INSPECTION BY APPOINTED IIA
7. ALL MACHINING TO BE DONE ^{1.2} ALL OVER
8. MATERIAL GROUP ACCORDING TO EN 13480-2: GROUP 1.2



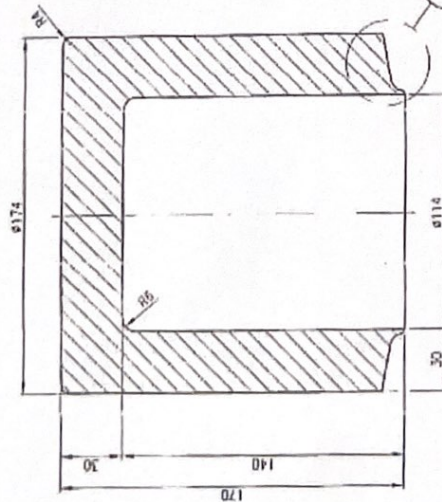
Arjun Chandra
Pr. Tech. Eng. (201070108)
APPROVED 'A'
2020-12-02
HI PROFILE INSPECTION AUTHORITY

02/12/2020

PRELIMINARY

		BILFINGER POWER AFRICA STEINMÜLLER AFRICA	
POWER SYSTEMS		STEINMÜLLER AFRICA (Pty) Ltd 100% of the share capital is owned by Bilfinger AG, Germany	
SCALE: 1:1		CLIENT: ESKOM	
DRAWN: P.B. 20-11-02		PROJECT NO:	
CHECKED: MHT 20-11-04		CONTRACT NO:	
DRAWING CODE: L.C. 20-11-05		DRAWING NO:	
REV: 1.0 20-11-05		ARNOT POWER STATION UNIT 6 MAIN SUPERHEATER MAIN SPRAY VALVE REDUCER DETAILS	
DRAWING NUMBER: TDRW010918		REV: 08 SIZE: A3	

DO NOT SCALE



DETAIL 1
SCALE 1:1

NOTES:

1. MATERIAL: EN 10222-2, 1.5046-5
2. MATERIAL CERTIFICATE: EN 10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED IIA
4. MACHINING TO BE OVERBALL
5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
6. ALL SHARP EDGES TO BE BROKEN
7. SANS 347 FLUID GROUP (2019): GROUP II
8. SANS 347 FLUID HAZARD CATEGORY (2019): CATEGORY III
9. BUTT WELD
10. JOINT EFFICIENCY (η) = 1
11. NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
12. CORROSION ALLOWANCE (c_a) = 1mm
13. MATERIAL GROUP TO EN 13480-2 - 5.1

DESIGN DATA:

1. DESIGN PRESSURE: 18 MPa
2. DESIGN TEMPERATURE: 304 °C
3. DESIGN CODE: DN13480-3, 2017
4. CALCULATION NUMBER: TCC002522

W. M. M.



ISSUED FOR ACCEPTANCE

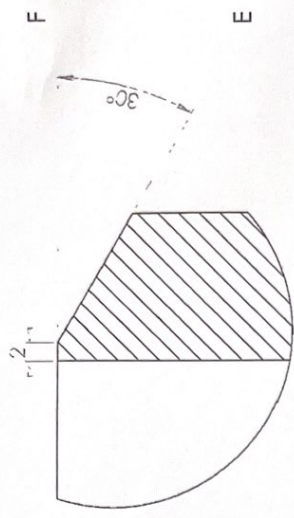
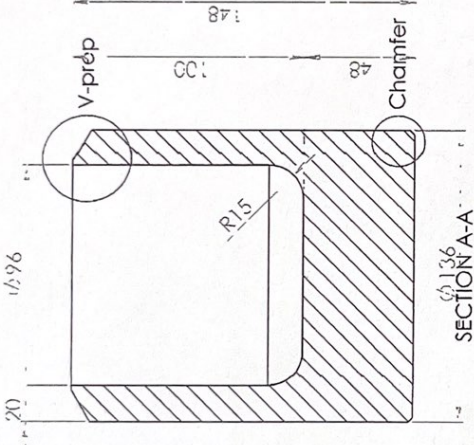
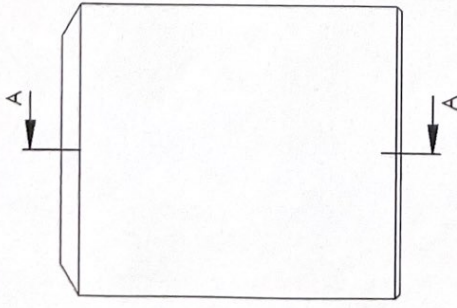
Like For Like Replacement

09.11.2020

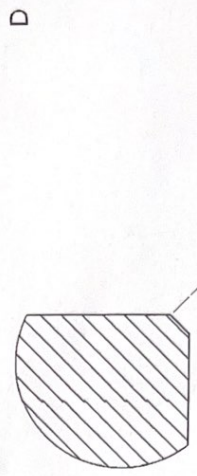
BILFINGER		POWER SYSTEMS		BILFINGER POWER AFRICA STEINMÜLLER AFRICA	
SCALE: 1:2, 1:1	NAME: D.L.	DATE: 20-10-06	CHECKED: P.B.	DATE: 20-10-07	PROJECT NO.: 54130049
PROJECT NO.: 54130049	FIRST ANGLE PROJECTION: YES		DRAWING NO.: 54130049		CLIENT: ESO-OM
DRAWING: LAC			ARNOT POWER STATION		
UNIT: 6			MAIN STEAM ATTENUATOR		
NOZZLE END CAP DETAIL			NOZZLE END CAP DETAIL		
DRAWING NUMBER: TDRW010870			REV: 08/13		

REV	DATE	DESCRIPTION	CRAWING NUMBER	DESCRIPTION
08	10-10-13	END CAP LENGTH UPDATED		
09	10-10-13	ISSUED FOR ACCEPTANCE		

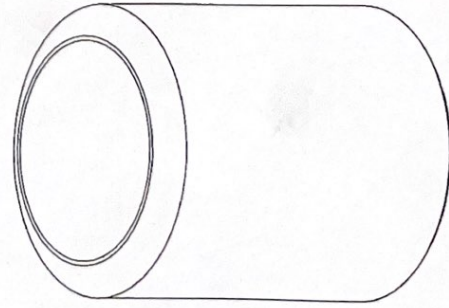
8 7 6 5 4 3 2 1



DETAIL V-prep
SCALE 2:1



DETAIL Chamfer
SCALE 2:1



NOTES:

- Calc. CALC-ARN-202010BLR04
- Material 10273 13 CrMo4-5
- Material Certificate EN 10204 3.1 (minimum)
- 3rd party inspection by AIA
- Marking: Material nr and AIA stamp for traceability
- SANS 347 Fluid Group 2
- SANS 347 Hazard CAT IV
- 100% NDT
- Design Data
- Design P: 19.2 MPa
- Design T 441 °C
- Design code 12952-3 (2011)

SG Mkhuthulu
Boiler Eng
W. 0011
BEng 0062
201204-67

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ARE:
ANGULAR ± 1 deg

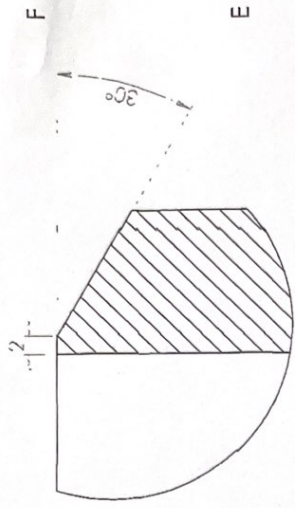
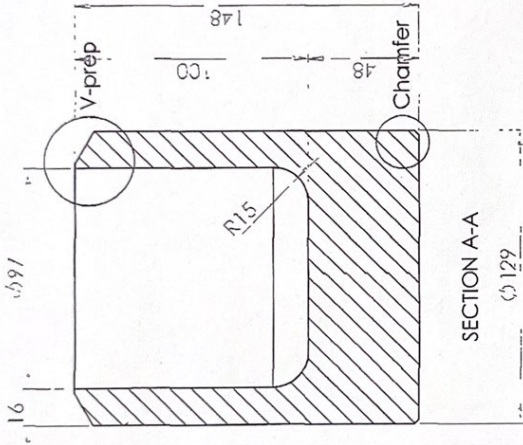
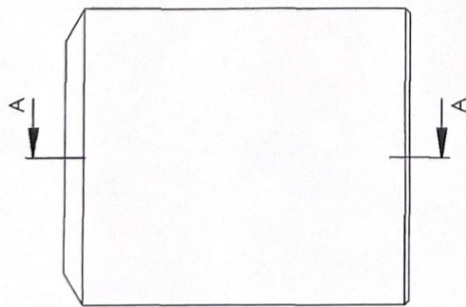
Arjun Chandra
Pr. Tech. Eng. (201070106)
APPROVED 'A'
2020-10-21
HI-PROFILE INSPECTION SERVICES

21/10/2020

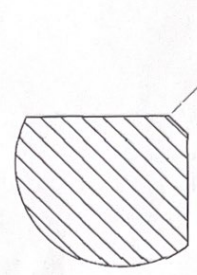
TITLE
STHR2 Header End Caps
DWG NO
DRW-ARN-202010-BLR04
A3
SCALE 1:2
SHEET 1 OF 1

8 7 6 5 4 3 2 1

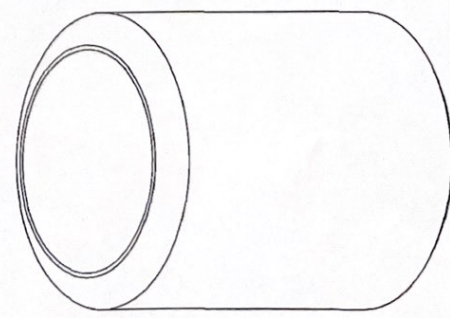
8 7 6 5 4 3 2 1



DETAIL V-prep
SCALE 2:1



DETAIL Chamfer
SCALE 2:1



NOTES:

- Calc. CALC-ARN-202010BLR01
- Material 10273 16 Mo3
- Material Certificate EN 10204 3.1 (minimum)
- 3rd party inspection by AIA
- Marking: Material nr and AIA stamp for traceability
- SANS 347 Fluid Group 2
- SANS 347 Hazard CAT III
- 100% NDT
- Design Data
- Design P: 19.6 MPa
- Design T 360 °C
- Design code 12952-3 (2011)

(Signature) (Pr Eng 20120467)
S. Mthembu

Botswana Engineering
W. Mthembu
12/09/2020

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
TOLERANCES ARE AS FOLLOWS
FRACTIONS DECIMALS
ANGLES 1 DEG

FINISH: DRAWN: CHECKED: APP'D: Q.A.
NAME: WMOLL
SIGNATURE: DATE:

(Signature)
Arjun Chandra
Pr. Tech Eng (201070108)
APPROVED "A"
2020-10-21
HI-PROFILE INSPECTION SERVICES

**LHS Side Wall Header
End Cap**

TITLE: LHS Side Wall Header End Cap
DWG NO: DRW-ARN-202010-BLR01
MATERIAL: 16Mo3
WEIGHT: 3
SCALE 1:2
SHEET 1 OF 1

1

2

3

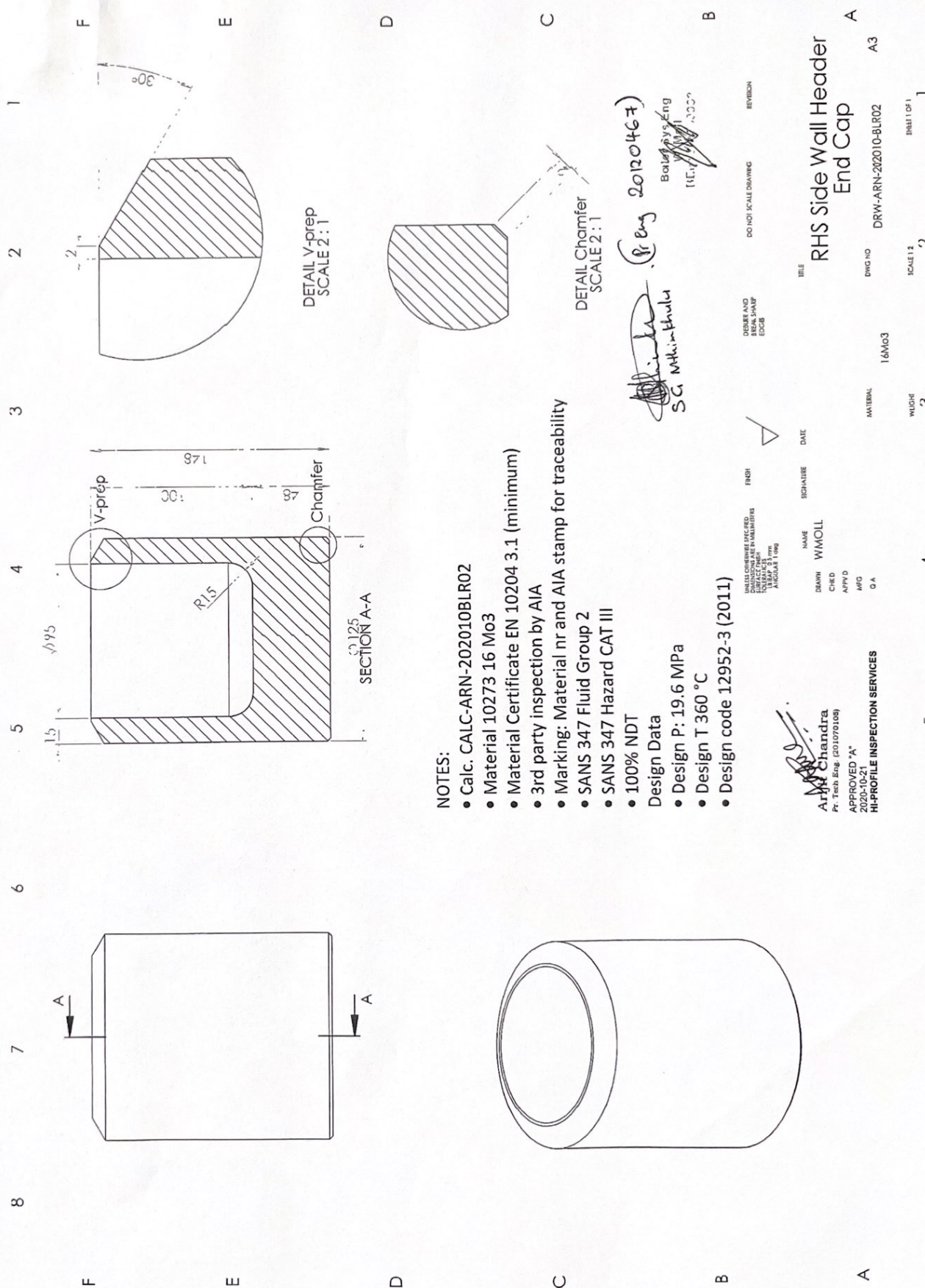
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NOTES:

- Calc. CALC-ARN-202010BLR02
- Material 10273 16 Mo3
- Material Certificate EN 10204 3.1 (minimum)
- 3rd party inspection by AIA
- Marking: Material nr and AIA stamp for traceability
- SANS 347 Fluid Group 2
- SANS 347 Hazard CAT III
- 100% NDT
- Design Data
- Design P: 19.6 MPa
- Design T 360 °C
- Design code 12952-3 (2011)

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
TOLERANCES UNLESS OTHERWISE SPECIFIED
FRACTIONS 1/16, 1/8, 1/4, 1/2, 3/4, 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600, 625, 650, 675, 700, 725, 750, 775, 800, 825, 850, 875, 900, 925, 950, 975, 1000

FINISH

DESIGN AND
DETAIL CHAMFER
CROSS

DO NOT SCALE DRAWING

BETWEEN

APPROVED "A"
2020-10-21
HI-PROFILE INSPECTION SERVICES

NAME
WMOLL

SIGNATURE

DATE

TITLE

RHS Side Wall Header
End Cap

DRW-ARN-202010-BLR02

16Mo3

SCALE 1:2

SCALE 1:2

SHEET 1 OF 1

8

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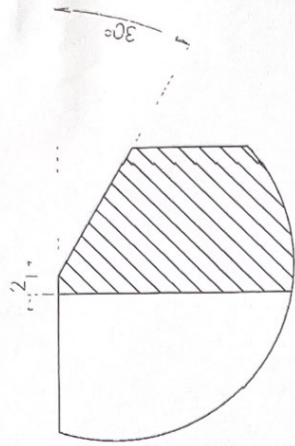
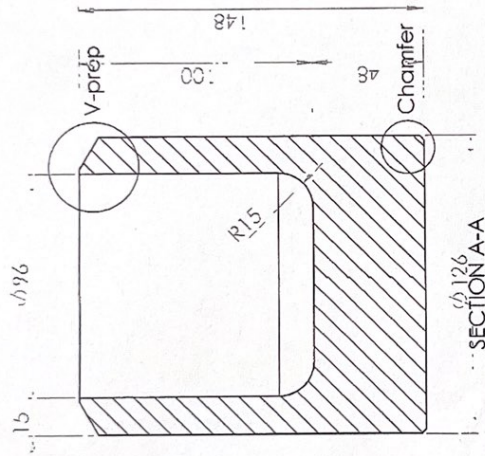
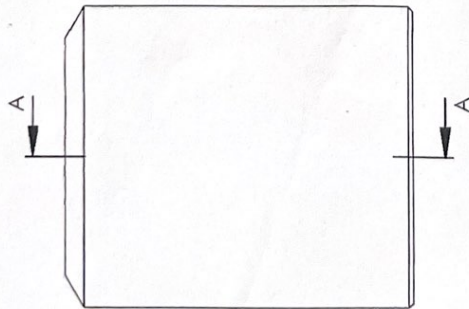
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DETAIL V-prep
SCALE 2:1

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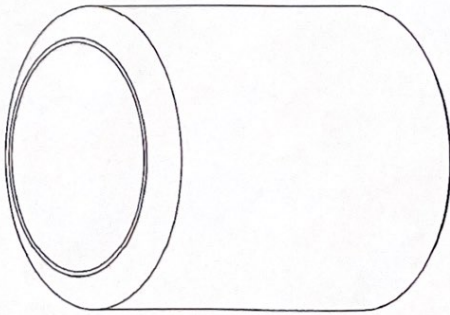
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NOTES:

- Calc. CALC-ARN-202010BLR03
- Material 10273 16 Mo3
- Material Certificate EN 10204 3.1 (minimum)
- 3rd party inspection by AIA
- Marking: Material nr and AIA stamp for traceability
- SANS 347 Fluid Group 2
- SANS 347 Hazard CAT III
- 100% NDT
- Design Data
- Design P: 19.6 MPa
- Design T 360 °C
- Design code 12952-3 (2011)



DETAIL Chamfer
SCALE 2:1

SG Mankhulu
(P Eng 20120467)
Boilermakers Eng
WMO
BEN/20100052

DO NOT SCALE DRAWING
REVISION

DRW-ARN-202010-BLR03
A3
16Mo3
MATERIAL
DWG NO
TITLE
Downcomer
Collection Header

Art Chandra
Pr. Tech Eng (201070109)
APPROVED "A"
2020-10-21
HI-PROFILE INSPECTION SERVICES

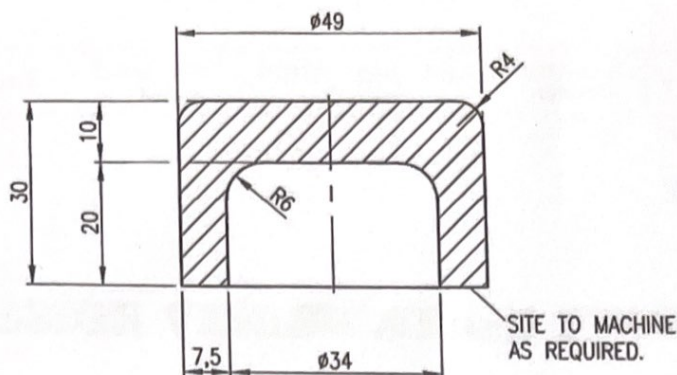
1

2 DO NOT SCALE 3

4

A

A



NOTES:

1. MATERIAL: EN 10222-2 13CrMo4-5
2. MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED AIA

06/10/2020

APPROVED "A"
2020-10-05

HI-PROFILE INSPECTION AUTHORITY

4. MACHINING TO BE $\sqrt{3,2}$ OVERALL
5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
6. ALL SHARP EDGES TO BE BROKEN
7. SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
8. BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
9. MATERIAL GROUP TO EN 13480-2 : 5.1

Boiler Sys Eng

BEng 20170062

DESIGN DATA:

1. DESIGN PRESSURE: 4,61 MPa
2. DESIGN TEMPERATURE: 515 °C
3. DESIGN CODE: EN 13480-3 : 2017
4. CALCULATION NUMBER: TCLC002515

POWER
SYSTEMSPRELIMINARY
BILFINGER POWER AFRICA
STEINMÜLLER AFRICA40 De La Rey Road, ROSSERIA 2017, P.O. BOX 1000 JOHANNESBURG
TEL: +27 11 808 3300 FAX: +27 11 813 1000
E-MAIL: info@bilfinger.com

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SCALE: 1:1

NAME	DATE
DRAWN K.M	20-09-23

FIRST ANGLE
PROJECTION UOS

 CLIENT: ESKOM
 PROJECT No: SK.050050
 CONTRACT No:
 DRAWING No:

DRG No.	DESCRIPTION

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
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REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
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REV	DATE	DESCRIPTION	K.M	DR	CH	END
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REV	DATE	DESCRIPTION	K.M	DR	CH	END
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REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

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REV	DATE	DESCRIPTION	K.M	DR	CH	END
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01	20-09-23	PRELIMINARY				

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REV	DATE	DESCRIPTION	K.M	DR	CH	END
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REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
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01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23	PRELIMINARY				

REV	DATE	DESCRIPTION	K.M	DR	CH	END
01	20-09-23					

1	2 DO NOT SCALE 3	4
---	------------------	---

06/10/2020

APPROVED "A"
2020-10-05
HI-PROFILE INSPECTION AUTHORITY

NOTES:

- MATERIAL: EN 10222-2 13CrMo4-5
- MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
- THIRD PARTY INSPECTION BY APPOINTED AIA
- MACHINING TO BE ^{3,2} OVERALL
- MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
- ALL SHARP EDGES TO BE BROKEN
- SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
- BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
- MATERIAL GROUP TO EN 13480-2 : 5.1

DESIGN DATA:

- DESIGN PRESSURE: 4,61 MPa
- DESIGN TEMPERATURE: 515 °C
- DESIGN CODE: EN 13480-3 : 2017
- CALCULATION NUMBER: TCLC002515

BILFINGER

POWER SYSTEMS

SCALE: 2:1

DRAWN	NAME	DATE
K.M		20-09-23

CHECKED	NAME	DATE
Z.H		20-09-23

DRAWING OFFICE	NAME	DATE
		20-09-23

RES. (ENG.)	NAME	DATE
Z.H		20-09-23

DEPT HEAD	NAME	DATE
		20-09-23

PRELIMINARY

**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

40 De La Rey Street, STEINMÜLLER, P.O. BOX 1027, JOHANNESBURG
TEL: +27 11 688 3338 FAX: +27 11 688 1088
E-MAIL: info@steinmuller.co.za

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CLIENT: ESKOM
PROJECT No: SK.050050
CONTRACT No:
DRAWING No:

ARNOT POWER STATION
UNIT 6
HOT REHEAT PIPEWORK
END CAP - LBB01 BR004

DRAWING NUMBER: TDRW010797

REV	DATE	DESCRIPTION	DR	CH	DO	ENG	MD
0A	20-09-23	PRELIMINARY					

1	2 DO NOT SCALE 3	4
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A
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A
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C
D

NOTES:

- MATERIAL: EN 10222-2 13CrMo4-5
- MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
- THIRD PARTY INSPECTION BY APPOINTED AIA
- MACHINING TO BE $\sqrt{3,2}$ OVERALL
- MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
- ALL SHARP EDGES TO BE BROKEN
- SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
- BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
- MATERIAL GROUP TO EN 13480-2 : 5.1

06/10/2020

APPROVED "A"
2020-10-05
HI-PROFILE INSPECTION AUTHORITY

Boiler Sys Eng
BEng 201700052

PRELIMINARY

DESIGN DATA:

- DESIGN PRESSURE: 4,61 MPa
- DESIGN TEMPERATURE: 515 °C
- DESIGN CODE: EN 13480-3 : 2017
- CALCULATION NUMBER: TCLC002515

**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

40 De La Rey Road, ROSSDALE 2291, P.O. BOX 1037 JEREMBA 2108
TEL: 07 11 888 3033 FAX: 07 810 8108
EMAIL: info@bilfinger.com

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BILFINGER

POWER SYSTEMS

CLIENT: ESKOM
PROJECT No: SK.050050
CONTRACT No:
DRAWING No:

SCALE: 1:1

NAME	DATE
DRAWN K.M	20-09-23
CHECKED R.H	20-09-23
DRAWING OFFICE	20/9/25
RES. ENG.	20/9/25
DEPT HEAD	20/9/25

FIRST ANGLE
PROJECTION UOS

ARNOT POWER STATION
UNIT 6
HOT REHEAT PIPEWORK
END CAP - LBB02 BR001, BR002 & BR003

REVISIONS

REV	DATE	DESCRIPTION
0A	20-09-23	PRELIMINARY

DRAWING NUMBER
TDRW010798

DRG No.

REV SIZE
0A A4

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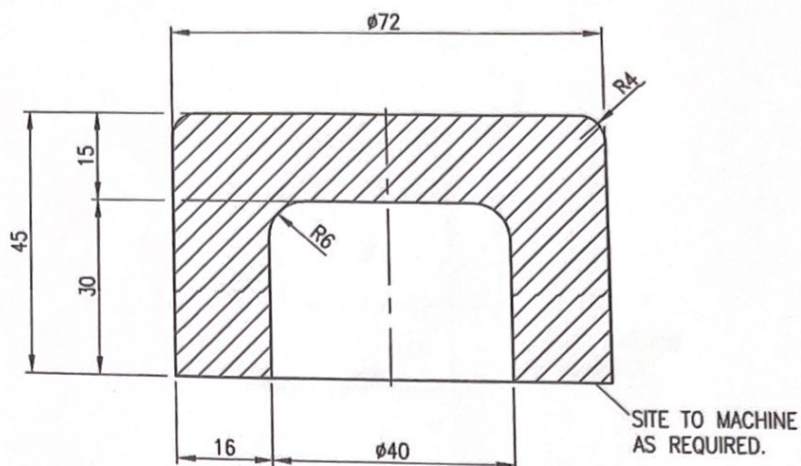
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DO NOT SCALE 3

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A

A



B

B

NOTES:

1. MATERIAL: EN 10222-2 13CrMo4-5
2. MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED AIA

06/10/2020

APPROVED "A"
2020-10-05

HI-PROFILE INSPECTION AUTHORITY

C

4. MACHINING TO BE $\sqrt{3,2}$ OVERALL
5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
6. ALL SHARP EDGES TO BE BROKEN
7. SANS 347 FLUID GROUP: GROUP 2
8. BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
9. MATERIAL GROUP TO EN 13480-2 : 5.1

Boiler Sys Eng

W. M. M. M.
BEng 2017/0052

C

DESIGN DATA:

1. DESIGN PRESSURE: 4,61 MPa
2. DESIGN TEMPERATURE: 515 °C
3. DESIGN CODE: EN 13480-3 : 2017
4. CALCULATION NUMBER: TCLC002515

D

D

REV	DATE	DESCRIPTION	DRG No.	DESCRIPTION
0A	20-09-23	PRELIMINARY		
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SCALE: 1:1

DRAWN: K.M. 20-09-23

CHECKED: P.H. 20-09-23

DRAWING OFFICE: P.H. 20/9/25

RES. ENG. P.H. 20/9/25

DEPT. HEAD: P.H. 20/9/25

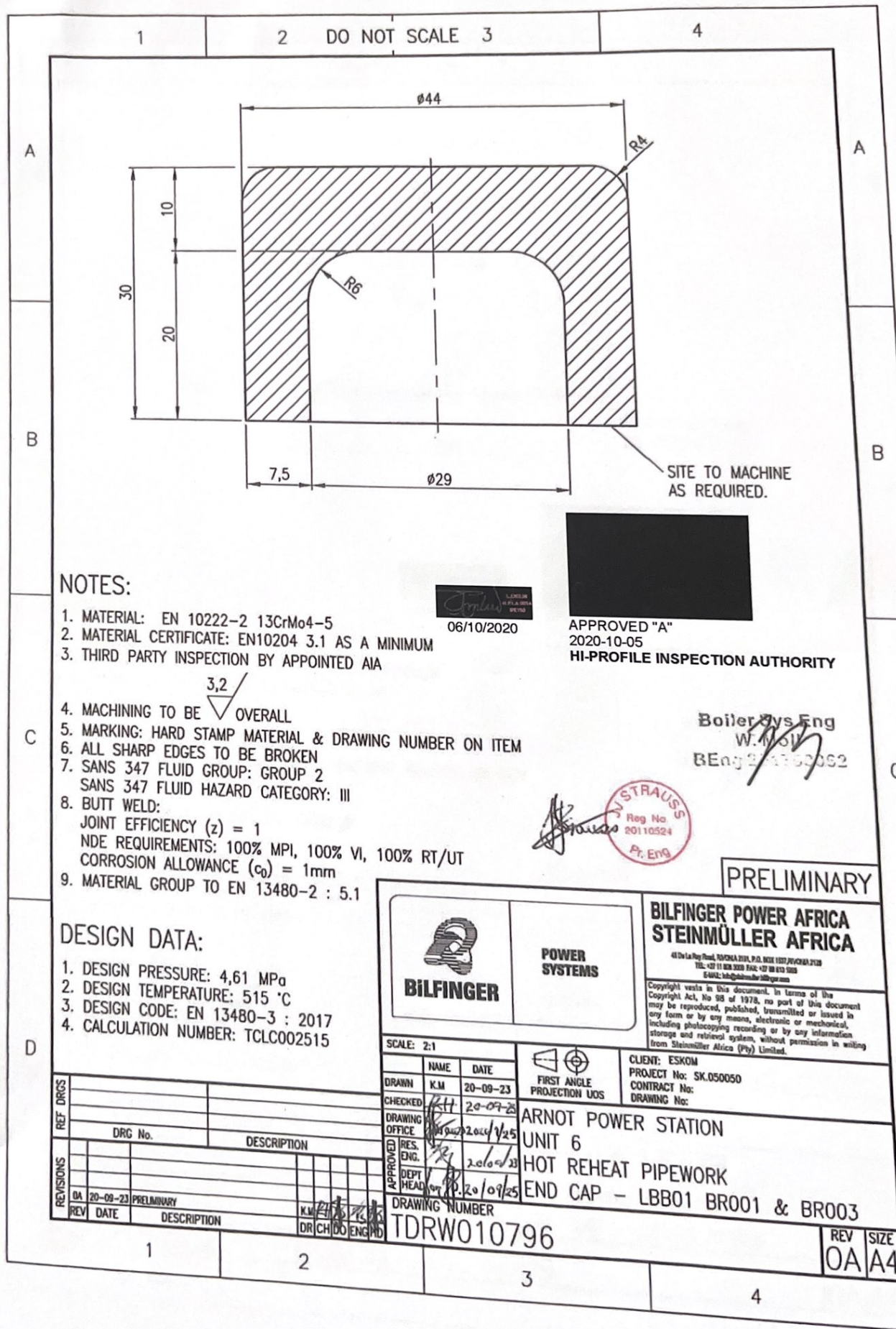
APPROVED: P.H. 20/9/25

DRAWING NUMBER: TDRW010799

FIRST ANGLE
PROJECTION UOSCLIENT: ESKOM
PROJECT No: SK.050050
CONTRACT No:
DRAWING No:ARNOT POWER STATION
UNIT 6
HOT REHEAT PIPEWORK
END CAP - LBB02 BR004BILFINGER POWER AFRICA
STEINMÜLLER AFRICA48 De La Rey Road, ROYAL HILL, P.O. BOX 1007, JOHANNESBURG 2010
TEL: +27 11 808 3000 FAX: +27 11 810 1000
EMAIL: info@bilfinger.com

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REV: 0A
SIZE: A4



1

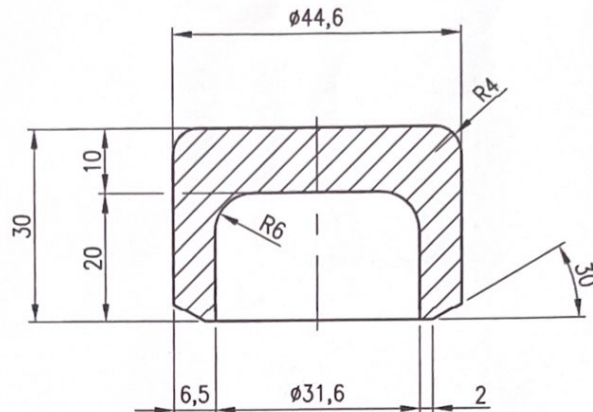
2

DO NOT SCALE 3

4

A

A



B

B

NOTES:

1. MATERIAL: EN 10222-2 11CrMo9-10
2. MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED AIA

3,2

4. MACHINING TO BE ∇ OVERALL
5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
6. ALL SHARP EDGES TO BE BROKEN
7. SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
8. BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
9. MATERIAL GROUP TO EN 13480-2 : 5.2

C

C

APPROVED "A"
2020-10-05
HI-PROFILE INSPECTION AUTHORITY

WMoII

PRELIMINARY

DESIGN DATA:

1. DESIGN PRESSURE: 18 MPa
2. DESIGN TEMPERATURE: 515 °C
3. DESIGN CODE: EN 13480-3 : 2017
4. CALCULATION NUMBER: TCLC002514

D

D

POWER
SYSTEMS

**BILFINGER POWER AFRICA
STEINMÜLLER AFRICA**

48 De La Rey Road, ROYKON 2001, P.O. BOX 1037 JOYINKA 2028
TEL: +27 11 888 3888 FAX: +27 11 888 3888
E-MAIL: info@steinmuller-afrika.com

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SCALE: 1:1



CLIENT: ESKOM
PROJECT No: SK.050050
CONTRACT No:
DRAWING No:

NAME	DATE
DRAWN K.M	20-09-15

CHECKED	20/09/20
DRAWING OFFICE	2020/9/22

RES. ENG.	20/09/22
DEPT HEAD	2020/9/22

APPROVED	2020/9/22
----------	-----------

DRAWING NUMBER	TDRW010795
----------------	------------

ARNOT POWER STATION
UNIT 6
MAIN STEAM PIPEWORK
END CAP - LBA02 BR002 & BR004

REV	DATE	DESCRIPTION	DR	CHKD	ENGRD
0A	20-09-15	PRELIMINARY	K.M		

REV	SIZE
0A	A4

1

2

3

4

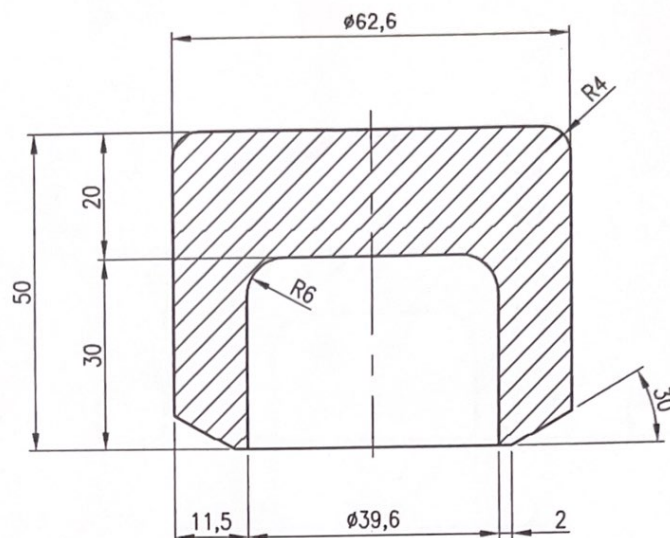
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2 DO NOT SCALE 3

4

A

A



NOTES:

1. MATERIAL: EN 10222-2 11CrMo9-10
2. MATERIAL CERTIFICATE: EN10204 3.1 AS A MINIMUM
3. THIRD PARTY INSPECTION BY APPOINTED AIA

APPROVED A
2020-10-05
HI-PROFILE INSPECTION AUTHORITY

4. MACHINING TO BE $\nabla_{3,2}$ OVERALL
5. MARKING: HARD STAMP MATERIAL & DRAWING NUMBER ON ITEM
6. ALL SHARP EDGES TO BE BROKEN
7. SANS 347 FLUID GROUP: GROUP 2
SANS 347 FLUID HAZARD CATEGORY: III
8. BUTT WELD:
JOINT EFFICIENCY (z) = 1
NDE REQUIREMENTS: 100% MPI, 100% VI, 100% RT/UT
CORROSION ALLOWANCE (c₀) = 1mm
9. MATERIAL GROUP TO EN 13480-2 : 5.2

WMoll



PRELIMINARY

DESIGN DATA:

1. DESIGN PRESSURE: 18 MPa
2. DESIGN TEMPERATURE: 515 °C
3. DESIGN CODE: EN 13480-3 : 2017
4. CALCULATION NUMBER: TCLC002514

		POWER SYSTEMS		BILFINGER POWER AFRICA STEINMÜLLER AFRICA 40 De La Rey Road, ROYALHILL, P.O. BOX 1552/ROYALHILL 2128 TEL: +27 11 800 3000 FAX: +27 80 813 1885 E-MAIL: info@steinmuller-africa.com	
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SCALE: 1:1				DRAWING NUMBER TDRW010794	
REVISIONS		REV		SIZE A4	

REF DRGS																					

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