

steel 201
07



Concor Construction Pty Ltd

Kusile West Chimney Temporary Stacks

THE PROJECT BRIEF

CLIENT: Eskom

MAIN CONTRACTOR: Concor Construction Pty Ltd

03

WHAT WE HAVE ACCOMPLISHED

Stack Program Milestones

➤ 3 March 2023

- Eskom approval to order steel plate for three (3) Stacks
- Eskom approval to fabricate one (1) Stack

➤ 6 March 2023

- Submit detailed Stack drawings for Eskom Environmental submission
- Submit detailed Stack drawings for Eskom Environmental submission
- Place purchase order for supply of all steel plate and fabrication of one (1) Stack
- Fabrication commenced

➤ 14 March 2023

- Stack drawings issued for construction

➤ 16 March 2023

- Eskom attend Quality Control inspection at fabricator

➤ 23 March 2023

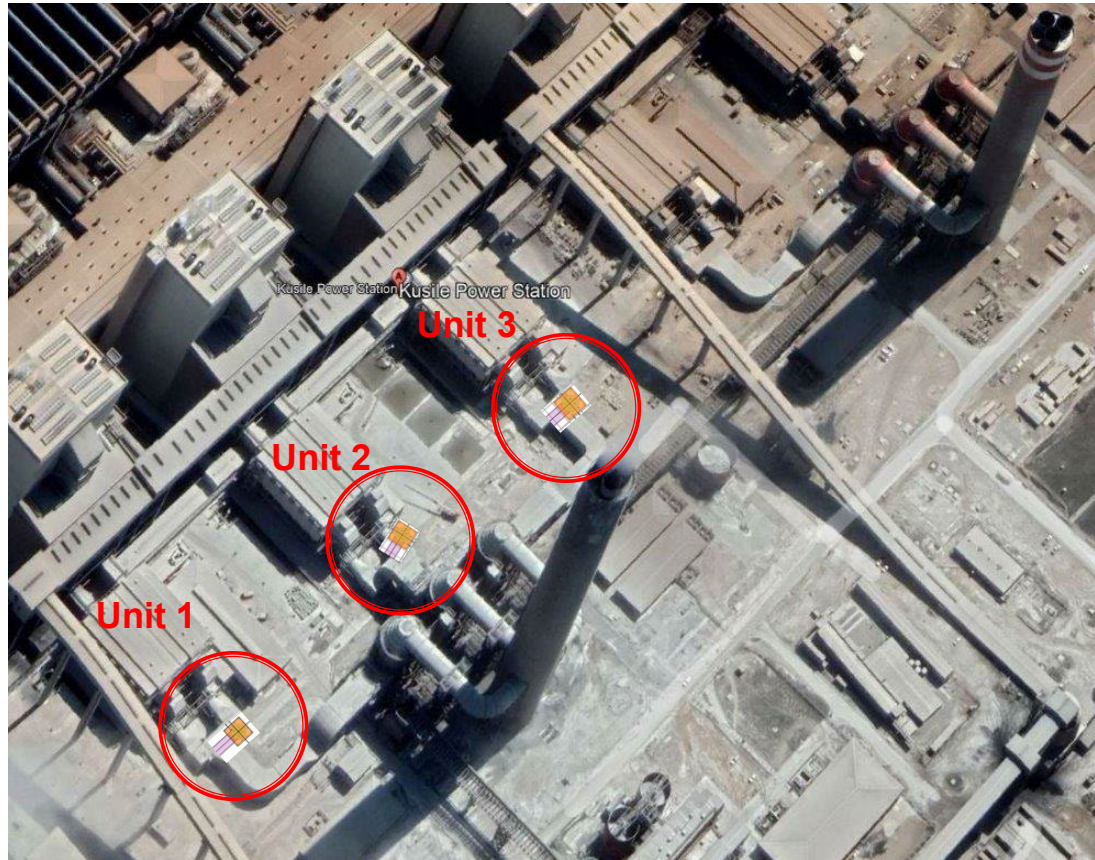
- Eskom Approval to fabricate three (3) Stacks

➤ 28 September 2023

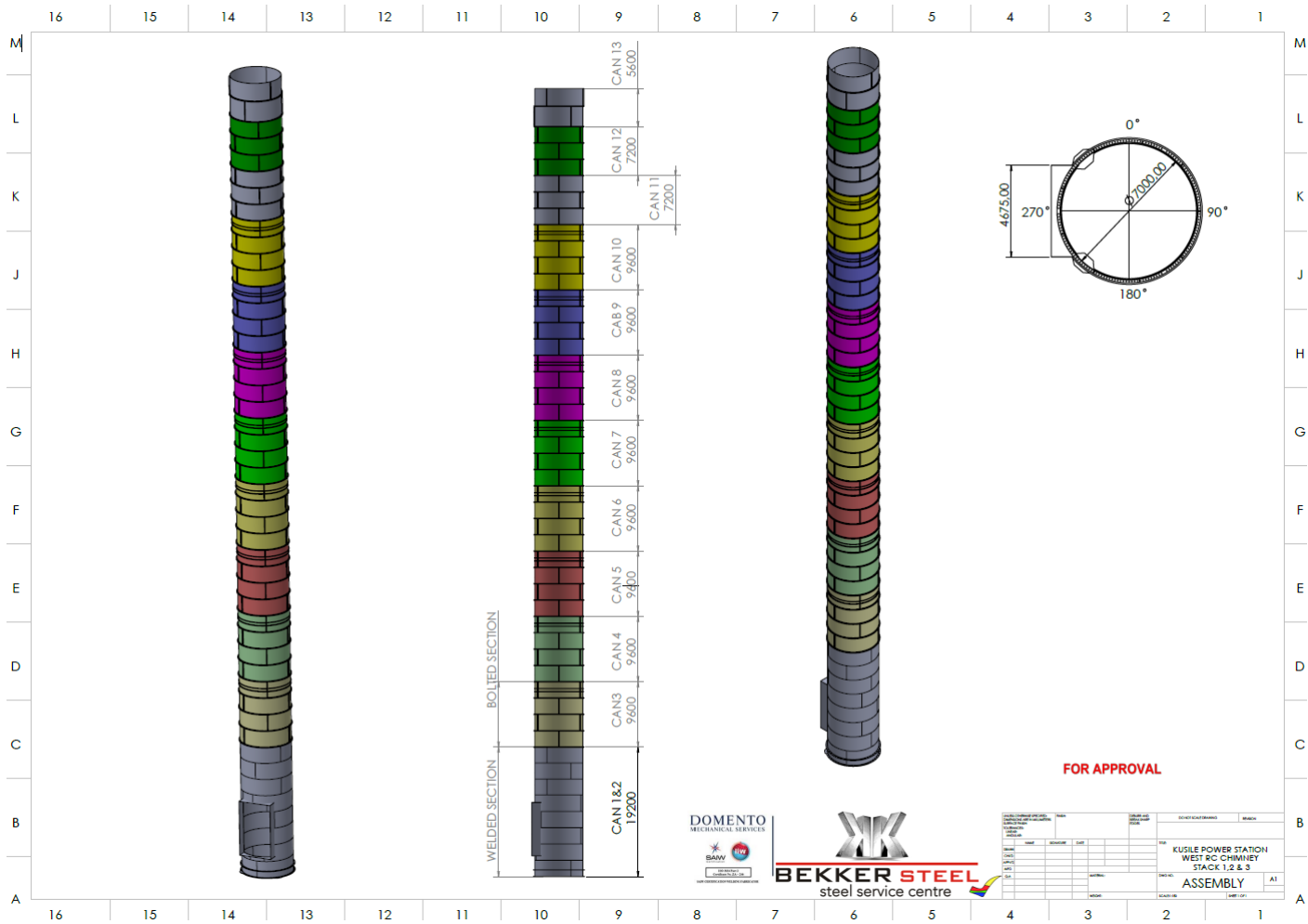
- Eskom Takeover of all three (3) Stack and Duct Systems

WHAT WE HAVE ACCOMPLISHED

Aerial View of the Power Station and Stack Positions



THE PROJECT OVERVIEW



FOR APPROVAL



NO.	REVISION	DATE	BY	CHECKED BY	APPROVED BY

PROJECT NO.	
CLIENT	
DESCRIPTION	
DATE	
SCALE	
DESIGNER	
CHECKER	
APPROVER	
DATE	

SHEET NO. 1
 TOTAL SHEETS 1
 PROJECT NO.
 CLIENT
 DESCRIPTION
 DATE
 SCALE
 DESIGNER
 CHECKER
 APPROVER
 DATE
 KUSLE POWER STATION
 WEST RC CHIMNEY
 STACK 1, 2 & 3
 ASSEMBLY
 A1

WHAT WE HAVE ACCOMPLISHED

Rapid Piling and Pile Cap construction



PROJECT OVERVIEW

STRUCTURAL STEELWORK

Project Completed: 6th October 2023

Stack Steelwork Completed: 22nd August 2023

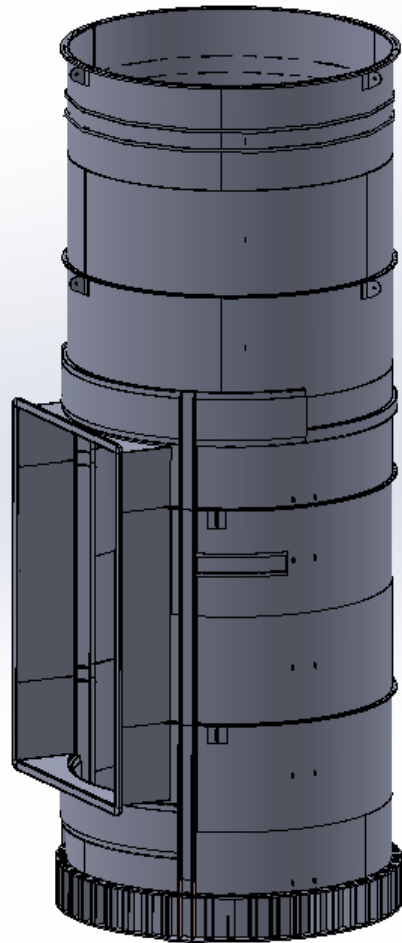
Stack Tonnage: 3 x 605T = 1815T

Profiles used: Plate 25mm thick to 8mm thick



WHAT WE HAVE ACCOMPLISHED

Stack Bottom Welded Portion

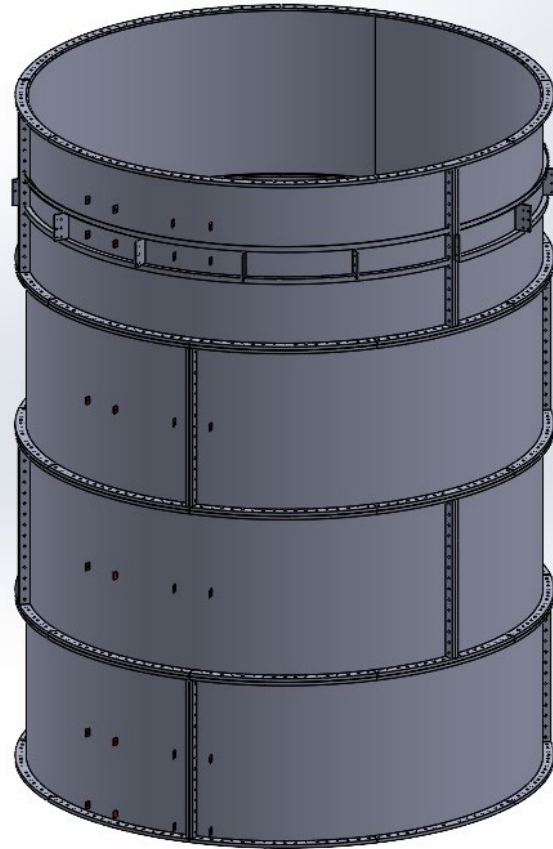


Breaching Opening



WHAT WE HAVE ACCOMPLISHED

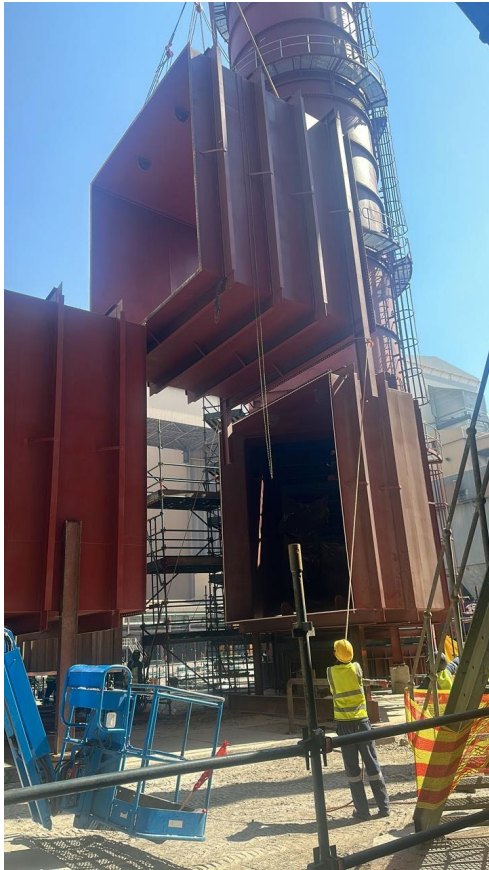
Stack Segmented Cans for Pre-Assembly and Future Removal



Complete 9.6m Can



WHAT WE HAVE ACCOMPLISHED Horizontal Ducts – In Bolted Portions

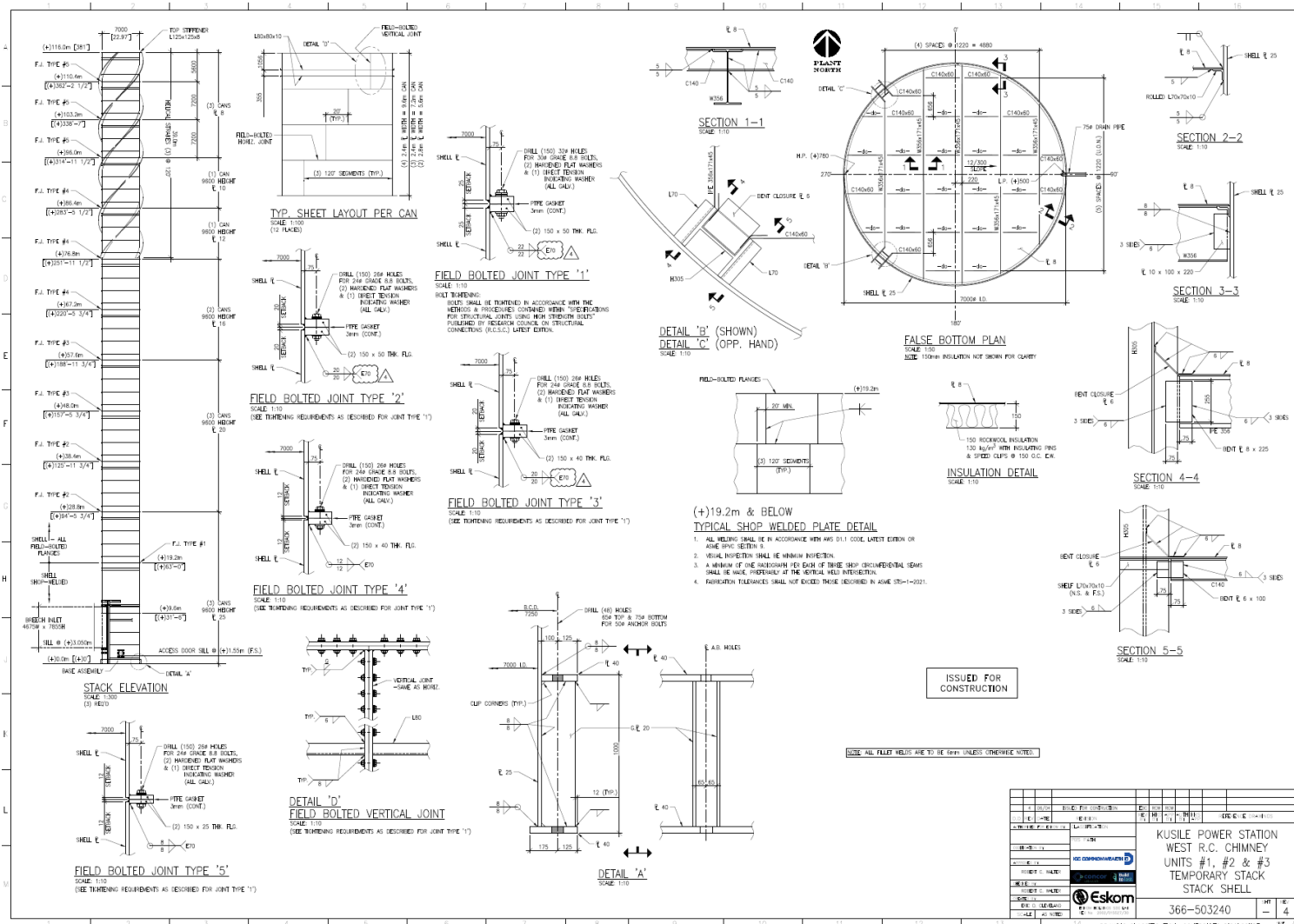


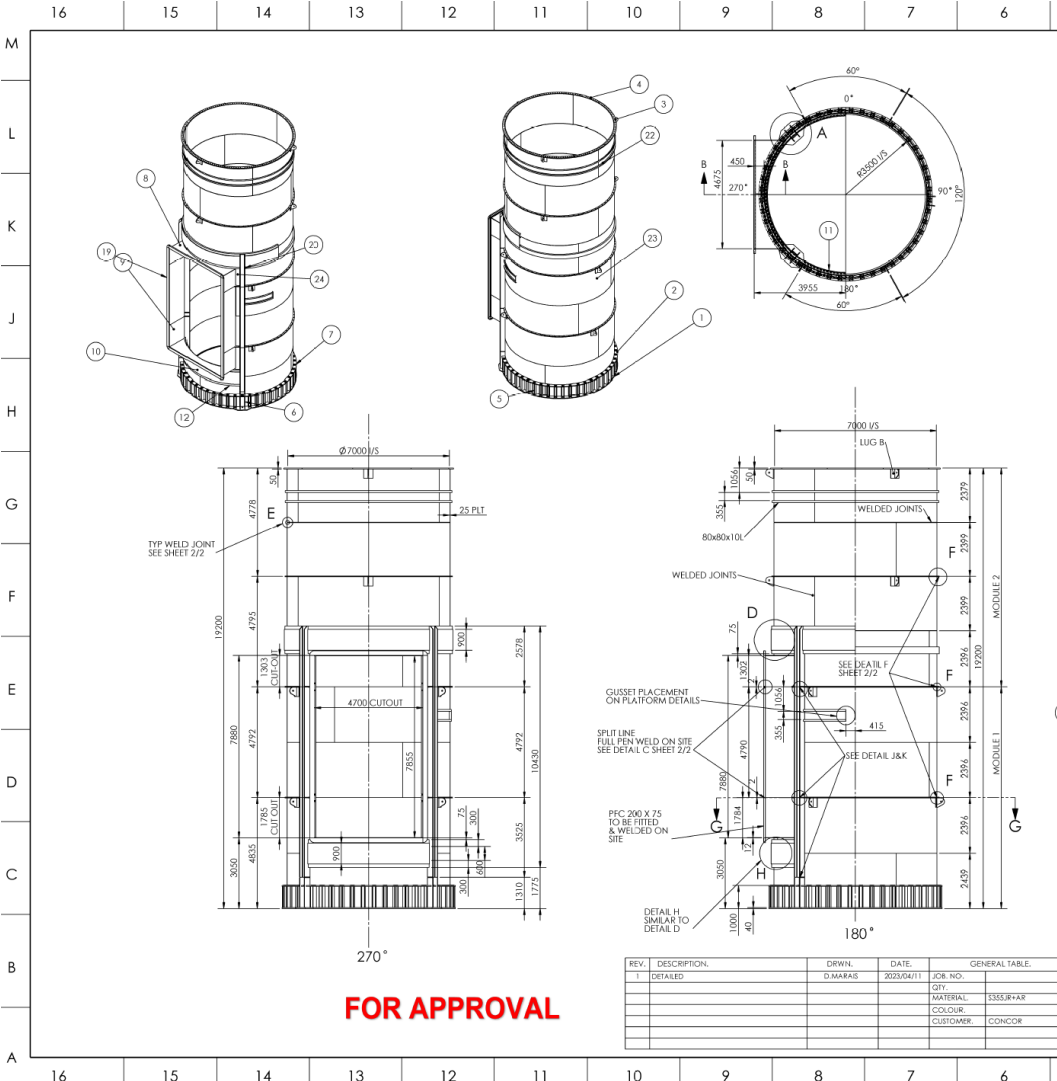
STRUCTURAL FRAMING

STRUCTURAL ENGINEER: Concor/ICC

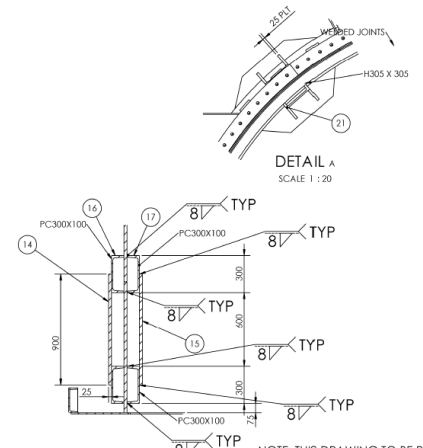
STEELWORK CONTRACTOR: Domento

STEEL DETAILER: Bekker Steel





ITEM NR	DESCRIPTION	DIMENSION	QTY	WEIGHT
1	BASE FLANGE	7500OX6900OX40		4492
1.1	BASE SHIMM PLATE	SEE DRAWING	ICC-2232-ST-02	584
2	CHAR RAL	3750X697X40	6	2218
3	SLF FLANGE A	2562X371X50	6	1244
4	SLF FLANGE B	2417X346X50	3	622
5	BASE STIFF T	919X213X20	96	3119
6	BASE STIFF 2	1310X311X25	4	338
7	SQ WASHER	150X150X20	48	180
8	INLET TOP&BOTTOM	4475X1384X12	2	1289
9	INLET SIDE	7855X1384X12	2	2166
10	BOT OUTSIDE CLOSURE PLATE	5862X900X25	1	1095
11	BOT INSIDE CLOSURE PLATE	5439X900X25	1	1015
12	BOT OUTSIDE CHANNEL	PC300 X 75	2	537
13	BOT INSIDE CHANNEL	PC300 X 75	2	502
14	TOP OUTSIDE CLOSURE PLATE	11428X900X25	1	2134
15	TOP INSIDE CLOSURE PLATE	10642X900X25	1	1987
16	TOP OUTSIDE CHANNEL	PC300 X 75	2	1048
17	TOP INSIDE CHANNEL	PC300 X 75	2	983
18	BACK CHANNEL	PC300 X 75	1	524
19	INLET FLANGE	PC200 X 75	1	669
20	OUTSIDE BEAM	H305 X 305	2	3430
21	INSIDE BEAM	H305 X 305	2	3844
22	SHELL	7357X2400X25	12	43233
23	SHELL	9980X2400X25	8	39097
24	SHELL	2199X2480X25	4	4131
25	GUSSET A	150X150X12	3	6
26	LIFTING LUG B	400 X 330 X 30	12	516
27	ADJUSTING FLANGE	7250 ODX7050 IDX20	6	12391
			TOTAL KG	133394



REV.	DESCRIPTION	DRWNL	DATE	GENERAL TABLE
1	DETARED	D.MARAS	2023/04/11	JGR. NO. CITY MATERIAL: S355JR+AS COLOUR CUSTOMER: CONCOR

DOMENTO MECHANICAL SERVICES

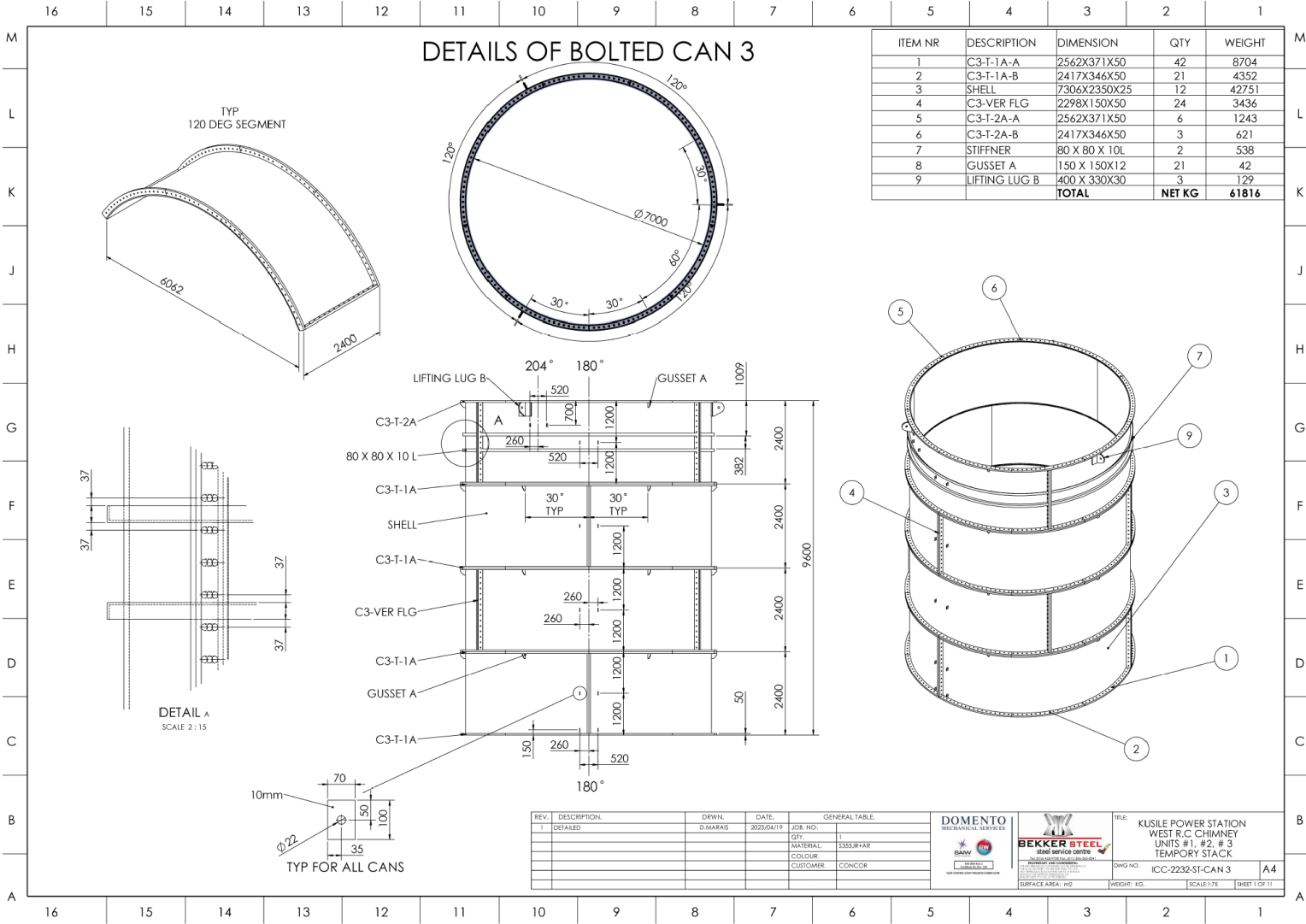
BEKKER STEEL steel service center

FILE: MODULE 1&2 KUSILE POWER STATION WEST C.C. CHIMNEY UNITS #1, #2 & #3 TEMPORARY STACK

DRWG. NO: ICC-2232-ST-01

WEIGHT: KG. SCALE: 1:100 SHEET 1 OF 3

FOR APPROVAL



DETAILS OF BOLTED CAN 3

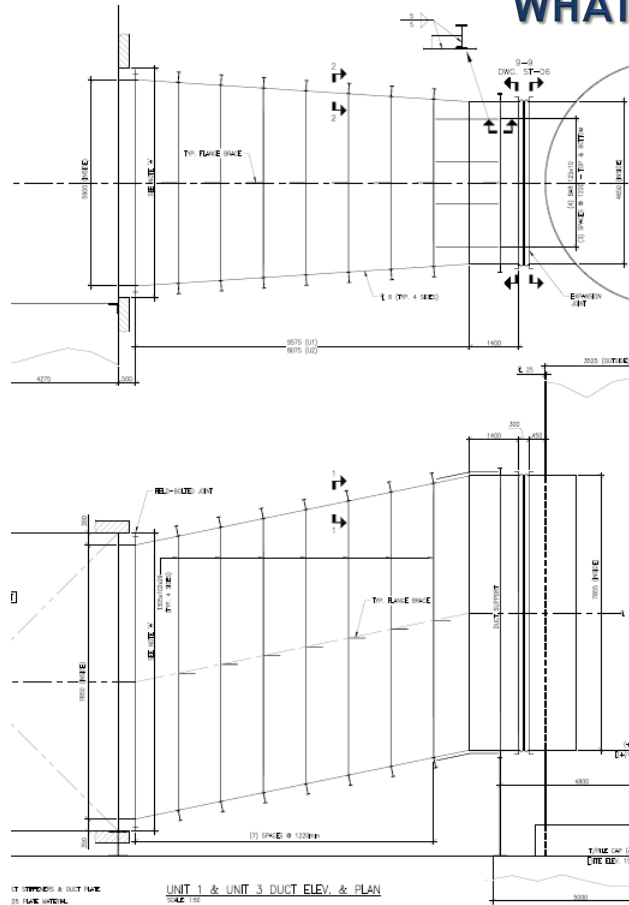
ITEM NR	DESCRIPTION	DIMENSION	QTY	WEIGHT
1	C3-T-1A-A	2562X371X50	42	8704
2	C3-T-1A-B	2417X346X50	21	4352
3	SHELL	7306X2350X25	12	42751
4	C3-VER FLG	2298X150X50	24	3436
5	C3-T-2A-A	2562X371X50	6	1243
6	C3-T-2A-B	2417X346X50	3	621
7	STIFFNER	80 X 80 X 10L	2	538
8	GUSSET A	150 X 150X12	21	42
9	LIFTING LUG B	400 X 330X30	3	129
TOTAL			NET KG	61816

REV.	DESCRIPTION	DRWN.	DATE	GENERAL TABLE
1	DETAILED	D-MARAS	2023/04/19	JOB NO: QTY: 1 MATERIAL: S355JR/HR COLOUR: CUSTOMER: CONCOR



FILE:	KUSILE POWER STATION WEST R.C. CHIMNEY UNITS #1, #2, #3 TEMPORARY STACK
DWG NO.:	ICC-2232-ST-CAN 3
SURFACE AREA: M2	WEIGH: KG
SCALE: 1/25	SHEET 1 OF 11

WHAT WE HAVE ACCOMPLISHED Duct General Details



Unit 1 & 3 Ducts

FABRICATION

STEELWORK CONTRACTOR: Domento

WHAT WE HAVE ACCOMPLISHED

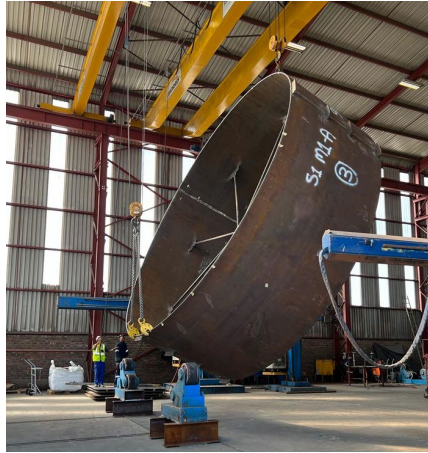
Welded Can Fabrication- Domento Workshop



17 May 2023 09:46:27
Stack M1B



17 May 2023 09:45:33
Stack 1 M1A



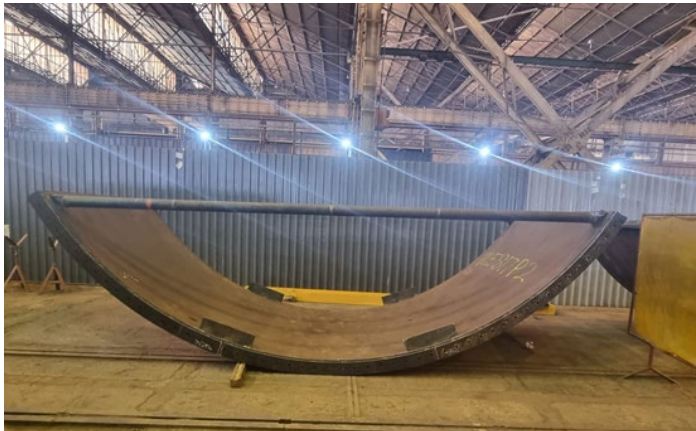
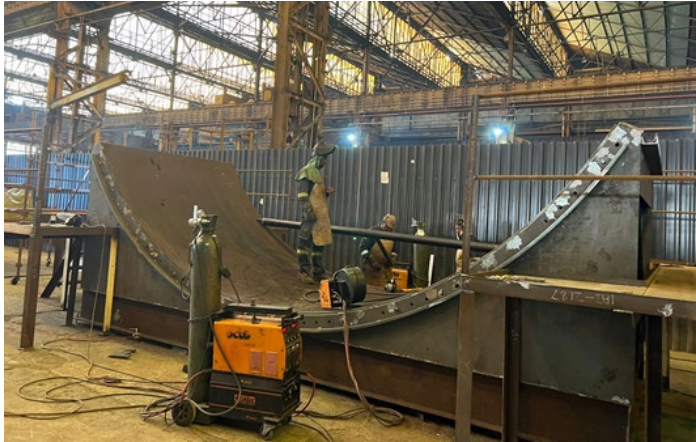
Fabrication of the Welded Can 19.6m Bottom Portion – Domento Workshop

Workshop Pre-Assembly to confirm fit



WHAT WE HAVE ACCOMPLISHED

Stack Segment Fabrication – 3 Production Lines - Rented Fabrication Workshop



WHAT WE HAVE ACCOMPLISHED

Horizontal Duct Fabrication while Stacks being installed – Domento Workshop



ERECTION / CONSTRUCTION / INSTALLATION

CONTRACTOR: Domento

Effective Segment Delivery - Multiple Concurrent Pre-Assembly of Cans at the Pre-Assembly Area on Site





**Installation of the Bottom,
Welded 19.6m high can –
Segments Bolted together
with Backing Flanges for
Site Welding**



Bolt Tensioning Temporary Stack Module 1 Unit 1,2 & 3



Pre-assembly of Multiple Stack Modules in the Pre-assembly Yard





**Installation of the
Pre-assembled cans
on the Stacks –
Dedicated Cranes
for Each Stack**

Installation of the Horizontal Duct Bolted Segments

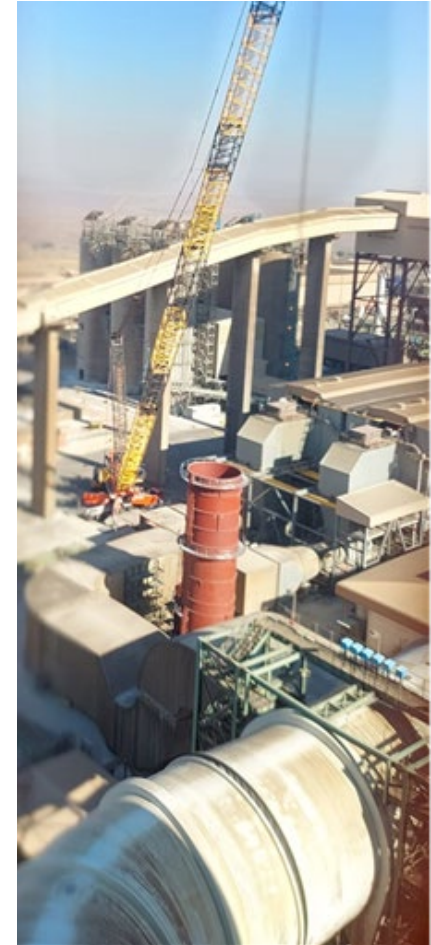
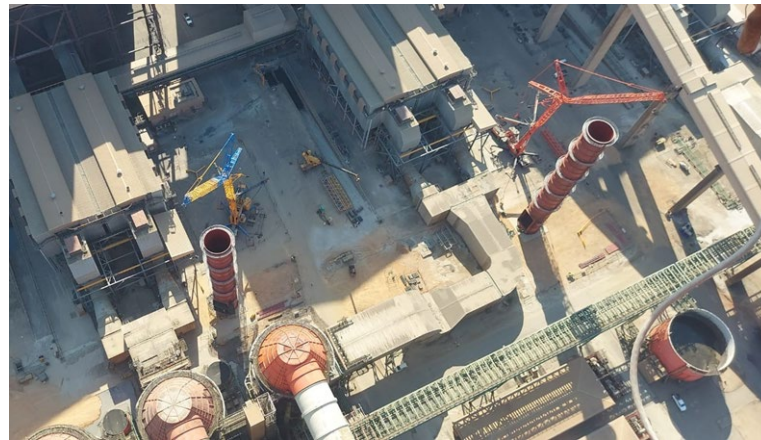
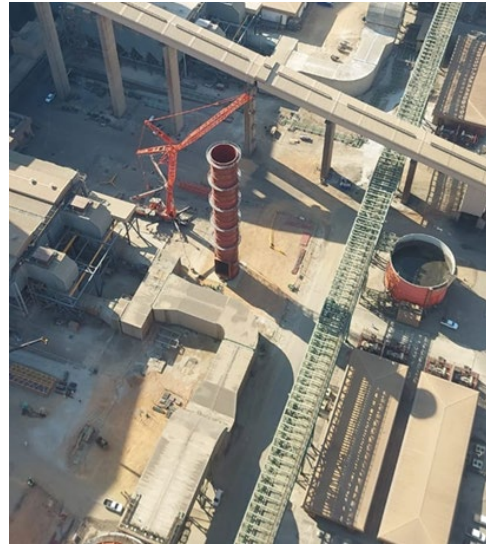


CHALLENGES AND SOLUTIONS

3 Workshop Fabrication to Achieve Program



Congested Brown Fields Location of the Temporary Stacks within the Power Station Operating Area



Sourcing of 3 Large Cranes to Install 3 Stacks Rapidly and Concurrently – Safe bolting Platforms – Wind Constraints at Heights



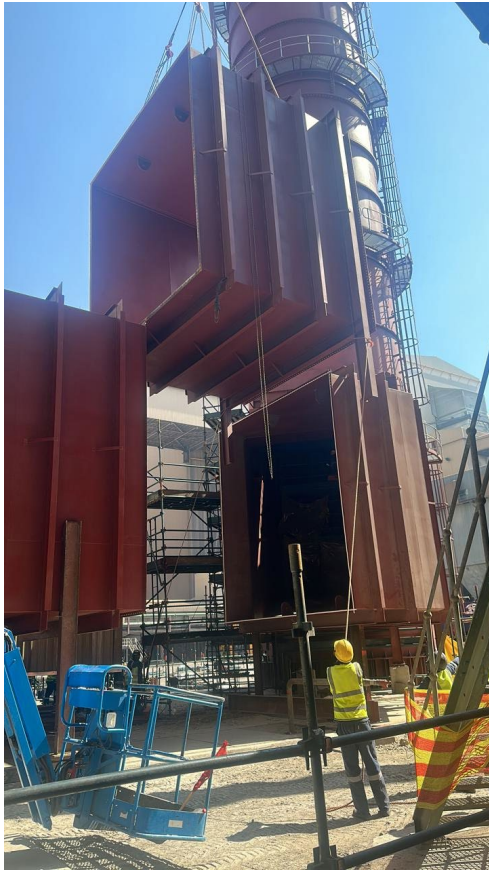
THE BENEFITS OF STEEL IN THIS APPLICATION

Multiple fabrication lines in workshops off site, effective transportation, preassembly of cans away from brown fields operating area of power station and ease of dismantling of bolted segments in the future.



WHAT WE HAVE ACCOMPLISHED

Rapid installation of duct segments
and ease of removal in future.



WHAT WERE PROUD OF



WHAT WE HAVE ACCOMPLISHED

Stack completion 6 Weeks ahead of Program enabling Eskom to bring the 3 Units back into Service as soon as possible

INSTALLED					100.00%		INSTALLED					100.00%		INSTALLED					99.58%			
STACK 3							STACK 2							STACK 1								
Stack 3 Cans	Stack 3 STRAKE	QTY REQ.	QTY INSTALLED	PERCENTAGE INSTALLED	DOMENTO BASELINE COMPLETION DATE	Stack 2 Cans	Stack 2 STRAKE	QTY REQ.	QTY INSTALLED	PERCENTAGE INSTALLED	DOMENTO BASELINE COMPLETION DATE	Stack 1 Cans	Stack 1 STRAKE	QTY REQ.	QTY INSTALLED	PERCENTAGE INSTALLED	DOMENTO BASELINE COMPLETION DATE	Height in Meters	Height in Meters			
13	48 A B C	3	3	100%	2023/09/08	13	48 A B C	3	3	100%	2023/09/16	13	48 A B C	3	3	100%	2023/09/25	0.6	111.0			
100%	47 A B C	3	3	100%	2023/08/02	100%	47 A B C	3	3	100%	2023/08/05	100%	47 A B C	3	3	100%	2023/08/17					
12	46 A B C	3	3	100%	2023/09/02	12	46 A B C	3	3	100%	2023/09/11	12	46 A B C	3	3	100%	2023/09/16	7.2	110.4			
100%	45 A B C	3	3	100%	Completed	100%	45 A B C	3	3	100%	Completed	100%	45 A B C	3	3	100%	Completed					
	44 A B C	3	3	100%	2023/08/01	100%	44 A B C	3	3	100%	2023/08/04	100%	44 A B C	3	3	100%	2023/08/16					
11	43 A B C	3	3	100%	2023/08/28	11	43 A B C	3	3	100%	2023/09/04	11	43 A B C	3	3	100%	2023/09/11	7.2	103.2			
100%	42 A B C	3	3	100%	Completed	100%	42 A B C	3	3	100%	Completed	100%	42 A B C	3	3	100%	Completed					
	41 A B C	3	3	100%	2023/07/27	100%	41 A B C	3	3	100%	2023/08/03	100%	41 A B C	3	3	100%	2023/08/15					
10	40 A B C	3	3	100%	2023/08/19	10	40 A B C	3	3	100%	2023/08/29	10	40 A B C	3	3	100%	2023/09/04	9.6	96.0			
100%	39 A B C	3	3	100%	Completed	100%	39 A B C	3	3	100%	Completed	100%	39 A B C	3	3	100%	Completed					
	38 A B C	3	3	100%	2023/07/22	100%	38 A B C	3	3	100%	2023/07/28	100%	38 A B C	3	3	100%	2023/08/14					
9	36 A B C	3	3	100%	2023/08/15	9	36 A B C	3	3	100%	2023/08/22	9	36 A B C	3	3	100%	2023/08/30	9.6	86.4			
100%	35 A B C	3	3	100%	Completed	100%	35 A B C	3	3	100%	Completed	100%	35 A B C	3	3	100%	Completed					
	34 A B C	3	3	100%	2023/07/18	100%	34 A B C	3	3	100%	2023/07/12	100%	34 A B C	3	3	100%	2023/07/21					
8	32 A B C	3	3	100%	2023/08/08	8	32 A B C	3	3	100%	2023/08/16	8	32 A B C	3	3	100%	2023/08/22	9.6	76.8			
100%	31 A B C	3	3	100%	Completed	100%	31 A B C	3	3	100%	Completed	100%	31 A B C	3	3	100%	Completed					
	30 A B C	3	3	100%	2023/07/07	100%	30 A B C	3	3	100%	2023/07/26	100%	30 A B C	3	3	100%	2023/07/14					

WHAT WE HAVE ACCOMPLISHED

Stack completion 6 Weeks ahead of Program

Activity	Stack 3	Stack 3	Stack 2	Stack 2	Stack 1	Stack 1
	Planned	Actual	Planned	Actual	Planned	Actual
Procurement & Mobilisation	25 Mar'23	22 Mar'23	25 Mar'23	22 Mar'23	25 Mar'23	22 Mar'23
Excavation	27 Mar'23	24 Mar'23	01 Apr'23	30 Mar'23	07 Apr'23	27 Mar'23
Piling	05 Apr'23	01 Apr'23	12 Apr'23	06 Apr'23	20 Apr'23	01 Apr'23
Foundation	17 Apr'23	15 Apr'23	27 Apr'23	19 Apr'23	05 May'23	05 May'23
Backfilling	30 May'23	13 May'23	08 Jun'23	23 May'23	16 Jun'23	24 May'23
Hand Over	05 Jun'23	18 May'23	14 Jun'23	25 May'23	22 Jun'23	03 Jun'23
Stack Installation	06 Jun'23	19 May'23	15 Jun'23	03 Jun'23	23 Jun'23	10 Jun'23
Stack Completion	21 Sep'23	08 Aug'23	28 Sep'23	15 Aug'23	04 Oct'23	22 Aug'23