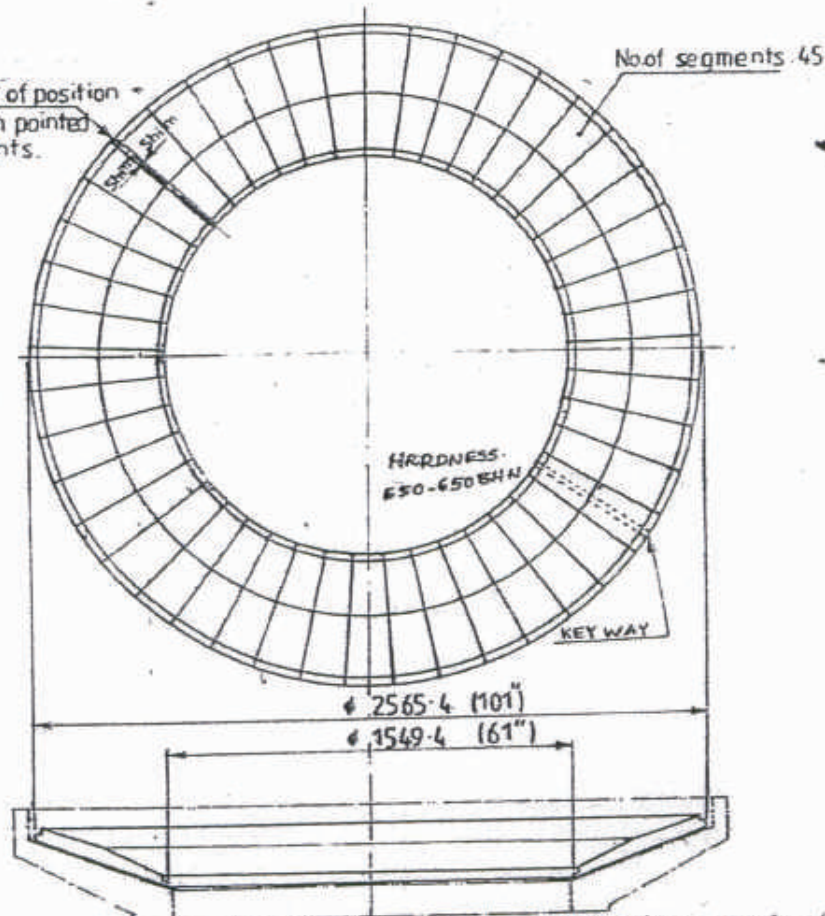


Type, indication of position and size of shim pointed on both segments.



NOTE : For details of bull ring segments ref. drg.no's SPD/BMD/A3/647 & 649

PART No.	DESCRIPTION	QTY.	MATERIAL	UNIT WT. IN K.G.	REMARKS
PARTS LIST					

This drawing is only tender purpose.

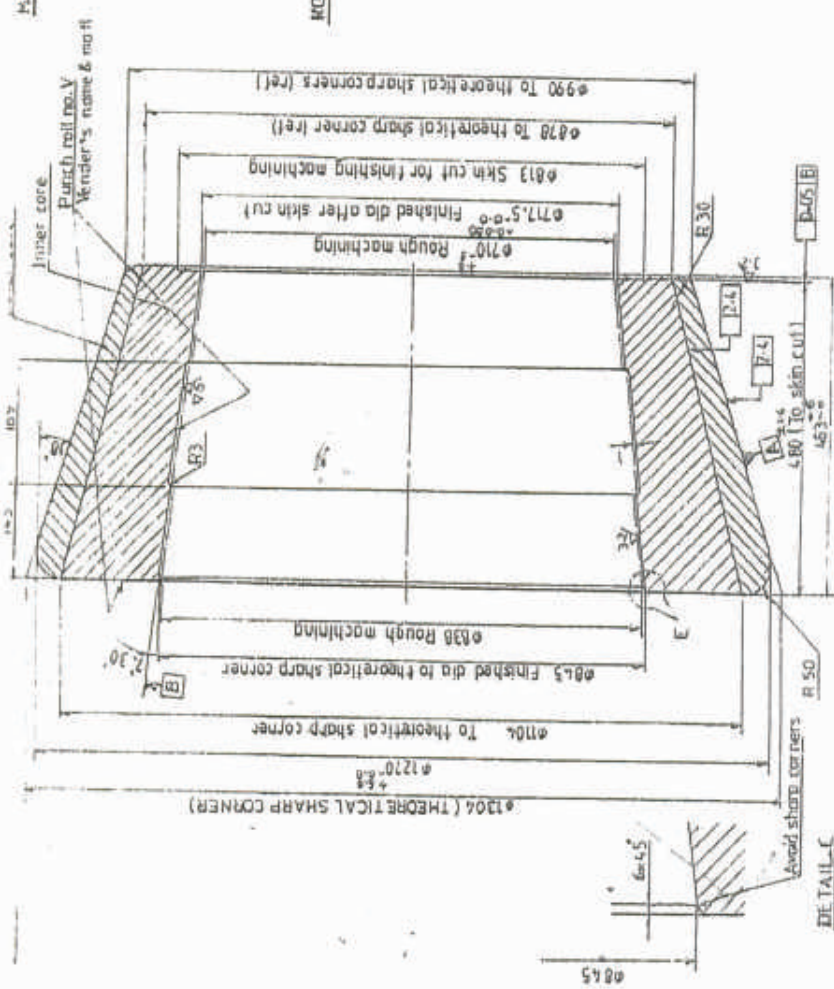
NTPC

RIHAND SUPER THERMAL POWER PROJECT

(A GOVERNMENT OF INDIA ENTERPRISE)

DESIGNED	PROJN.		TITLE :-
DRAWN	DATE		BULL RING SEGMENTS
CHECKED	SCALE		ARRANGEMENT FOR XRP-1003
APPROVED	DEPT.		BOWL MILL
GENERAL NOTES : 1. ALL DIMENSIONS ARE IN 'mm' UNLESS SPECIFIED. 2. DO NOT SCALE THE DRAWING, IF IN DOUBT ASK. 3. WELDING SYMBOLS AS PER IS.813 4. ALLOWABLE DEVIATIONS FOR DIMENS : WITHOUT SPECIFIED TOLERANCES FOLLOW IS.2102/1980.			DRAWING NO. S P D B M D A 4 2 6 4 6
			SIZE SHEET OF

MATERIAL



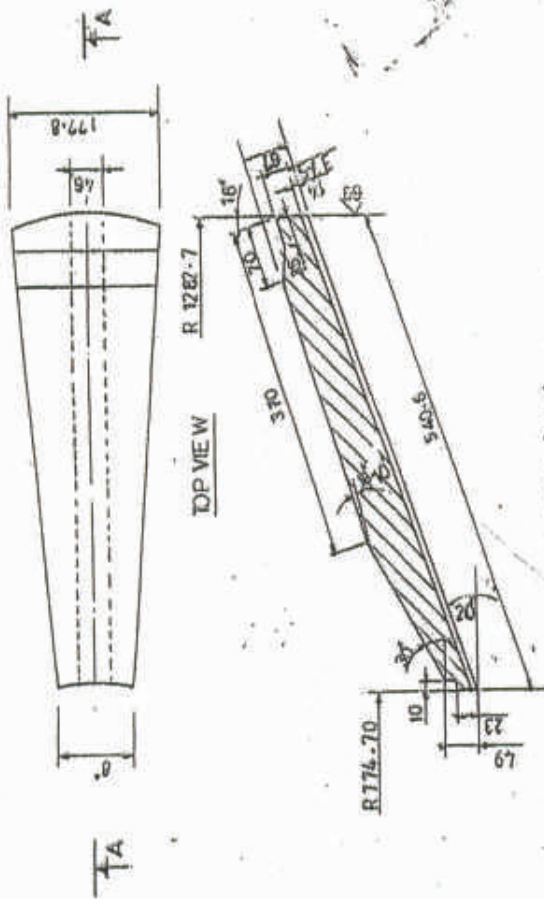
NOTE :- Taper must fit full contact plug gauge / plate of min. 90° minimum of 80% contact checked at 3 places 120°

This drawing is only Tender Purpose

RIHAND SUPER THERMAL POWER PROJECT (A GOVERNMENT OF INDIA ENTERPRISE)

DESIGNED	PROJIN	TITLE
SWARN	DATE	GRINDING ROLL
CHECKED	SCALE	FOR BOWL MILL
APPROVED	TEST	REV.
GENERAL NOTES		APPROVED NO
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		5
2. NO. NOT SCALE THE DIMENSIONS IN THE DRAWING		2
3. MATERIAL SYMBOLS ARE GIVEN IN 41		6
4. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		4
5. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		3
6. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		2
7. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		1
8. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED		0

GENERAL TOLERANCES FOR UNLESS OTHERWISE SPECIFIED		SYMBOLS USED TO DENOTE SURFACE FINISHES		SURFACE FINISHES	
SIZE	TOLERANCE	SYMBOL	FINISH	FINISH	FINISH
0-10	±0.10	XXXX	ALL	XXXX	ALL
10-30	±0.15	XXXX	ALL	XXXX	ALL
30-50	±0.20	XXXX	ALL	XXXX	ALL
50-75	±0.25	XXXX	ALL	XXXX	ALL
75-100	±0.30	XXXX	ALL	XXXX	ALL
100-150	±0.35	XXXX	ALL	XXXX	ALL
150-200	±0.40	XXXX	ALL	XXXX	ALL
200-250	±0.45	XXXX	ALL	XXXX	ALL
250-300	±0.50	XXXX	ALL	XXXX	ALL
300-350	±0.55	XXXX	ALL	XXXX	ALL
350-400	±0.60	XXXX	ALL	XXXX	ALL
400-450	±0.65	XXXX	ALL	XXXX	ALL
450-500	±0.70	XXXX	ALL	XXXX	ALL
500-550	±0.75	XXXX	ALL	XXXX	ALL
550-600	±0.80	XXXX	ALL	XXXX	ALL
600-650	±0.85	XXXX	ALL	XXXX	ALL
650-700	±0.90	XXXX	ALL	XXXX	ALL
700-750	±0.95	XXXX	ALL	XXXX	ALL
750-800	±1.00	XXXX	ALL	XXXX	ALL
800-850	±1.05	XXXX	ALL	XXXX	ALL
850-900	±1.10	XXXX	ALL	XXXX	ALL
900-950	±1.15	XXXX	ALL	XXXX	ALL
950-1000	±1.20	XXXX	ALL	XXXX	ALL
1000-1050	±1.25	XXXX	ALL	XXXX	ALL
1050-1100	±1.30	XXXX	ALL	XXXX	ALL
1100-1150	±1.35	XXXX	ALL	XXXX	ALL
1150-1200	±1.40	XXXX	ALL	XXXX	ALL
1200-1250	±1.45	XXXX	ALL	XXXX	ALL
1250-1300	±1.50	XXXX	ALL	XXXX	ALL
1300-1350	±1.55	XXXX	ALL	XXXX	ALL
1350-1400	±1.60	XXXX	ALL	XXXX	ALL
1400-1450	±1.65	XXXX	ALL	XXXX	ALL
1450-1500	±1.70	XXXX	ALL	XXXX	ALL
1500-1550	±1.75	XXXX	ALL	XXXX	ALL
1550-1600	±1.80	XXXX	ALL	XXXX	ALL
1600-1650	±1.85	XXXX	ALL	XXXX	ALL
1650-1700	±1.90	XXXX	ALL	XXXX	ALL
1700-1750	±1.95	XXXX	ALL	XXXX	ALL
1750-1800	±2.00	XXXX	ALL	XXXX	ALL
1800-1850	±2.05	XXXX	ALL	XXXX	ALL
1850-1900	±2.10	XXXX	ALL	XXXX	ALL
1900-1950	±2.15	XXXX	ALL	XXXX	ALL
1950-2000	±2.20	XXXX	ALL	XXXX	ALL



Bottom and side faces to be suitably hand ground

PARTS LIST				
PART NO.	DESCRIPTION	QTY	MATERIAL	UNIT WT. IN KG.
1	Bull Ring Segment	1/100	35-0	

This drawing is only tender purpose.

RIHAND SUPER THERMAL POWER PROJECT (A GOVERNMENT OF INDIA ENTERPRISE)

DESIGNED	PROJN.	TITLE
DRAWN	DATE	BULL RING SEGMENT
CHECKED	SCALE	WITH KEY WAY
APPROVED	DEPT	DRAWING NO.
GENERAL NOTES		REV.
1. ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED		3
2. DO NOT SCALE THE DRAWING		P
3. ALLOWABLE DEVIATIONS FOR DIMS. WITH/OUT		D
4. ACCEPTED TOLERANCES FOLLOW IS: 10/10/1981		A
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PARTS LIST					
PART NO.	DESCRIPTION	QTY.	MATERIAL	UNIT WT. IN LBS.	REMARKS
01	Bull Ring Segment	44		35.0	

This drawing is only tender purpose.

[illegible]

NTPC Ltd.
Rihand Super Thermal Power Project
REFERENCE QUALITY PLAN FOR GRINDING ROLL (Annex-II)

Sl No	Components & Operation	Characteristics	Class	Type Of Check	Quantum Of Check	Reference Documents	Acceptance Norms	Format of record	Agency			Remarks
1.0	Raw material								P	W	V	
1.1	Moulding sand	Physical	Minor	Size distribution	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
1.2	Ferrous alloys	Chemical	Major	Melting recovery	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
1.3	Scrap	Chemical	Minor	Melting recovery	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
2.0	IN PROCESS INSPECTION-INSERTS FOR SINTERCAST GRINDING ROLLS											
2.1	Melting	Temp.control	Critical	Measurement	Each melt	Vendor std.	Vendor std.	Log sheet	1	-	2	
		Chemical test	Critical	Chemical analysis	Each melt	Vendor std.	Vendor std.	Test report	1	-	2	
2.2	Insert casting	Pouring	Critical	Observation	Each melt	Vendor std.	Vendor std.	Log sheet	1	-	2	
		Visual	Critical	Observation	Each Insert	Vendor std.	Vendor std.	Test report	1	-	2	
3	IN PROCESS INSPECTION- SINTERCAST INSERTED ROLL CASTINGS											
3.1	Melting	Temp.control	Critical	Measurement	Each melt	Vendor std.	Vendor std.	Log sheet	1	-	2	
		Chemical test	Critical	Chemical analysis	Each melt	Vendor std.	Vendor std.	Test report	1	-	2	
3.2	Roll casting	Pouring	Critical	Observation	Each melt	Vendor std.	Vendor std.	Log sheet	1	-	2	
		Heat treatment	Critical	Measurement	Each batch	Vendor std.	Vendor std. (*)	H/T charts	1	-	2	
		Visual	Critical	Observation	Each roll	Vendor std.	Vendor std.	Test report	1	-	2	
		Microstructure	Critical	Microstructure	Vendor std.	Vendor std.	Vendor std.	Test report	1	-	2	
4.0		Hardness	Major	Hardness	Each H/T batch	Vendor std.	Vendor std.	Test report	1	-	2	
4.0	FINAL INSPECTION-FINISHED SINTERCAST INSERTED ROLL											
4.1	Finished rolls	Visual	Critical	Visual inspection	Each roll	Vendor std.	Vendor std.	Inspection report	1	2	2	
		Dimensions	Critical	Measurement	Each roll	As per Drg.	As per Drg.	Inspection report	1	2	2	10% random by 2
		Hardness test	Critical	Hardness	01 sample from 3 rolls in set	Vendor std.	Min.600 BHN	Inspection report	1	2	2	20% random by 2
		Bore surface contact	Critical	Blue match	Each roll	Vendor std.	Min.85% area	Inspection report	1	2	2	10% random by 2
		Identification & painting	Critical	Visual	Each roll	Vendor std.	Vendor std. (**)	Inspection report	1	2	2	

1- Agency

2- NTPC

P - Perform by

W - witness by

V - Verified by

* Heat treatment: Rolls are air quenched after holding 980 to 1060° C for 9 to 12 hours

** Roll serial number to be punched on non wearing surface on roll

Note: This is reference quality plan, vendor has to submit own manufacturing quality plan for NTPC approval before start of manufacture as vendor has to unequivocally guarantee of item as per NTPC specification

Vendor

Indentor

FQA

NTPC Ltd.
Rihand Super Thermal Power Project
REFERENCE QUALITY PLAN FOR BULL RING SEGMENTS (BRS) (Annex-II)

SI No	Components & Operation	Characteristics	Class	Type Of Check	Quantum Of Check	Reference Documents	Acceptance Norms	Format of record	Agency			Remarks
									P	W	V	
1.0	Raw material											
1.1	Moulding sand	Physical	Minor	Size distribution	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
1.2	Ferrous alloys	Chemical	Major	Melting recovery	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
1.3	Scrap	Chemical	Minor	Melting recovery	Each batch	Vendor std.	Vendor std.	Lab record	1	-	2	
2.0												
IN PROCESS INSPECTION												
2.1	Melting	Temp.control	Critical	Chart record	Each heat	Vendor std.	Vendor std.	Log sheet	1	-	2	
		Chemical test	Critical	Chemical analysis	Each melt	Vendor std.	Vendor std.	Test report	1	-	2	
		Pouring	Critical	Observation	Each heat	Vendor std.	Vendor std.	Log sheet	1	-	2	
2.2	BRS castings	Heat treatment	Critical	Observation	Each H/T batch	Vendor std.*	Vendor std	H/T charts	1	-	2	
		Microstructure	Critical	Microstructure	Vendor std.	Vendor std.	Vendor std.	H/T charts	1	-	2	
3.0												
FINAL INSPECTION AND TESTING												
3.1	BRS castings	Visual	Critical	Visual inspection	100%	Vendor std.	Vendor std.	Inspection report	1	2	2	
		Dimensional-trial basis	Critical	Assembly on test bowl	100%	As per drg.	As per drg.	Test certificate	1	2		20% random by 2
		Hardness test	Critical	Chart record	1BRS from each set	Vendor std.	Min.550 BHN	Test certificate	1	2	2	20% random by 2
		Identification	Critical	Verification	Each set	Vendor std.	Vendor std. (**)	Test certificate	1	2	2	

1 - Agency 2 - NTPC P - Perform by W - witness by V - Verified by

* Heat treatment: Heat between 980 to 1060° C,hold for 4 to 5 hours and air quenched

** Serial number and set number will be painted on working face of each casting of the set.

Note: This is reference quality plan, vendor has to submit own manufacturing quality plan for NTPC approval before start of manufacture as vendor has to unequivocally guarantee of item as per NTPC specification

Vendor

Indentor

FQA