

TD-106-1 Rev No. 5 Form No.		<b>PRODUCT STANDARD</b> <b>PULVERISERS</b> <b>HYDERABAD</b>	Product STD NO.	BA89121
			Rev No. 01	
			Page 1 of 2	

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**TROMMEL SCREEN ASSEMBLY FOR WET BALL MILLING SYSTEM**

**PROJECT: TSGENCO KOTHAGUDEM 17.15 TPH WET BALL MILL**

**Application:**

Trommel screen is fitted to mill outlet trunion for Wet Ball Mill. It screens the particles from mill outlet and discharges to slurry tank. It prevents the balls inside the mill from coming out. Mill speed is 19 rpm

Particle size distribution of slurry at mill outlet is as per Annexure I (BA11077)

Particle size distribution of slurry at slurry tank / inlet to hydrocyclone is as per Annexure II

Mating flange of trommel screen with mill outlet is given in Annexure III (0-62-245-00021)

Lime stone and water properties are as per Annexure IV.

**Scope:**

- a. Complete Trommel screen assembly including forward helix, flanges, mesh etc
- b. Trommel screen assembly should have life > 8000 hours. Liners (if any) should be replaceable.
- c. All fasteners (anchor bolts, nuts washers etc) will be in vendor scope. Mounting details shall be shared along with offer.
- d. Supply shall include all Start-up and commissioning spares along with Mains.
- e. GA drawings along with offer
- f. Supervision for commissioning, shall be of 7 mandays / SET. This amount will be paid on receipt of site certification for completion of activity.

<b>Prepared by</b>	<b>Checked by</b>	<b>Approved by</b>
Manivas	Aman	KHRK





# PRODUCT STANDARD

## PULVERISERS

### HYDERABAD

Product  
STD NO.

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**Inputs:**

Trommel screen should handle wet limestone slurry with density upto 1.83 T/m<sup>3</sup>.

Recirculation ratio of wet ball milling circuit is 353%.

Below are the trommel screen input (feed) parameters for 17.15 TPH wet ball milling system

S No	Description	Value
1	Mass flow rate	110.97 TPH
2	Flow rate	62 m <sup>3</sup> /hr
3	Specific density	1.788 T/m <sup>3</sup>
4	% of solids by mass	70%
5	Mass flow rate of solids	77.67 TPH

**Inspection and Testing requirements:**

Inspection and quality shall be done as per BHEL / customer approved quality plan.

**Packing:**

- a. The trommel shall be packed in closed wooden cases to prevent damages during transit and storage.
- b. The flange openings shall be protected properly to prevent entry of foreign matter.
- c. Rain water should not enter into the materials during storage in the outer yard of the installation site.

**Painting:**

Painting shall be done as per BHEL / customer approved painting schedule.

**RECORD OF REVISIONS**

REV. NO	DATE	REVISION DETAILS	REVISED	APPROVED
01	30.08.2022	Annexure - V removed. Mill speed	added	

Prepared by

Manivas

Checked by

Aman

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KHRK

TD-106-1  
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Form No.



**PRODUCT STANDARD  
PULVERISERS  
HYDERABAD**

**Product  
STD NO.**

**BA 11077**

Rev No 00

Annexure -I of BA89121

**PARTICLE SIZE DISTRIBUTION OF WET BALL MILL DISCHARGE SLURRY**

Top size (microns)	% Passing
3000	D 100
2000	D 99.5
1000	D 99
500	D 97
300	D 89
200	D 79
128	D 71
96	D 61
74	D 52
64	D 44.5
44	D 38
32	D 30
16	D 23
8	D 15
3	D 11
1	D 5

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**RECORD OF REVISIONS**

REV. NO	DATE	REVISION DETAILS	REVISED	APPROVED

**Revisions:**

**Prepared:**  
K PAVAN

**Approved:**  
AMAN

**Date:**  
21.08.2021

**Refer to record of revisions:**

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Sizing and selection of limestone classifying cyclone :

**Classifying Cyclone**

Cyclone : 4 way cluster fitted with 4 off 150CVX06(3 op +1 standby)  
 Fittings: 41 mm FCL,50 mm VF, 30 mm Spigot  
 Feed Pressure: 120 kPa /17 psi  
 Item: Classifying cyclone

Rf	d50(c)		Max_Temp[	Viscosi	Liners			
0.39	53		35C	1.00	Rubber			
TOP	BOT	FEED	SIEVE	OVER	UNDER	FEED	RECOVERY	
micron	micron	SIZE	SIZE	CUM %	CUM %	CUM %	EFFICIENCY	
		IND. %	micron	PASS	PASS	PASS	TO U/F	
1096	180	18.40	1096	100.0	100.0	100.0	100.00	
180	127	12.00	180	100.0	75.5	81.6	100.00	
127	90	14.56	127	100.0	59.5	69.6	99.77	
90	64	10.60	90	99.9	40.1	55.0	94.81	
64	44	6.20	64	97.7	26.7	44.4	69.51	
44	32	5.80	44	90.1	20.9	38.2	48.89	
32	23	4.50	32	78.3	17.1	32.4	42.50	
23	16	2.64	23	67.9	14.6	27.9	40.35	
16	11	0.10	16	61.6	13.2	25.3	39.53	
11	8	12.60	11	61.4	13.1	25.2	39.21	
8	0	12.60	8	30.8	6.5	12.6	38.80	
0	0	0.00	0	0.0	0.0	0.0	#DIV/O!	
0	0	0.00	0	0.0	0.0	0.0	#DIV/O!	

% of            % of  
FEED            FEED  
25.0            75.0

**MASS BALANCE**

	Feed	Over	Under	S.G.
Solids - t.p.h.	68.000	17.021	50.98	2.70
Water - t.p.h.	55.64	34.05	21.59	1.0000
% solids - Cw	55.00	33.329	70.25	

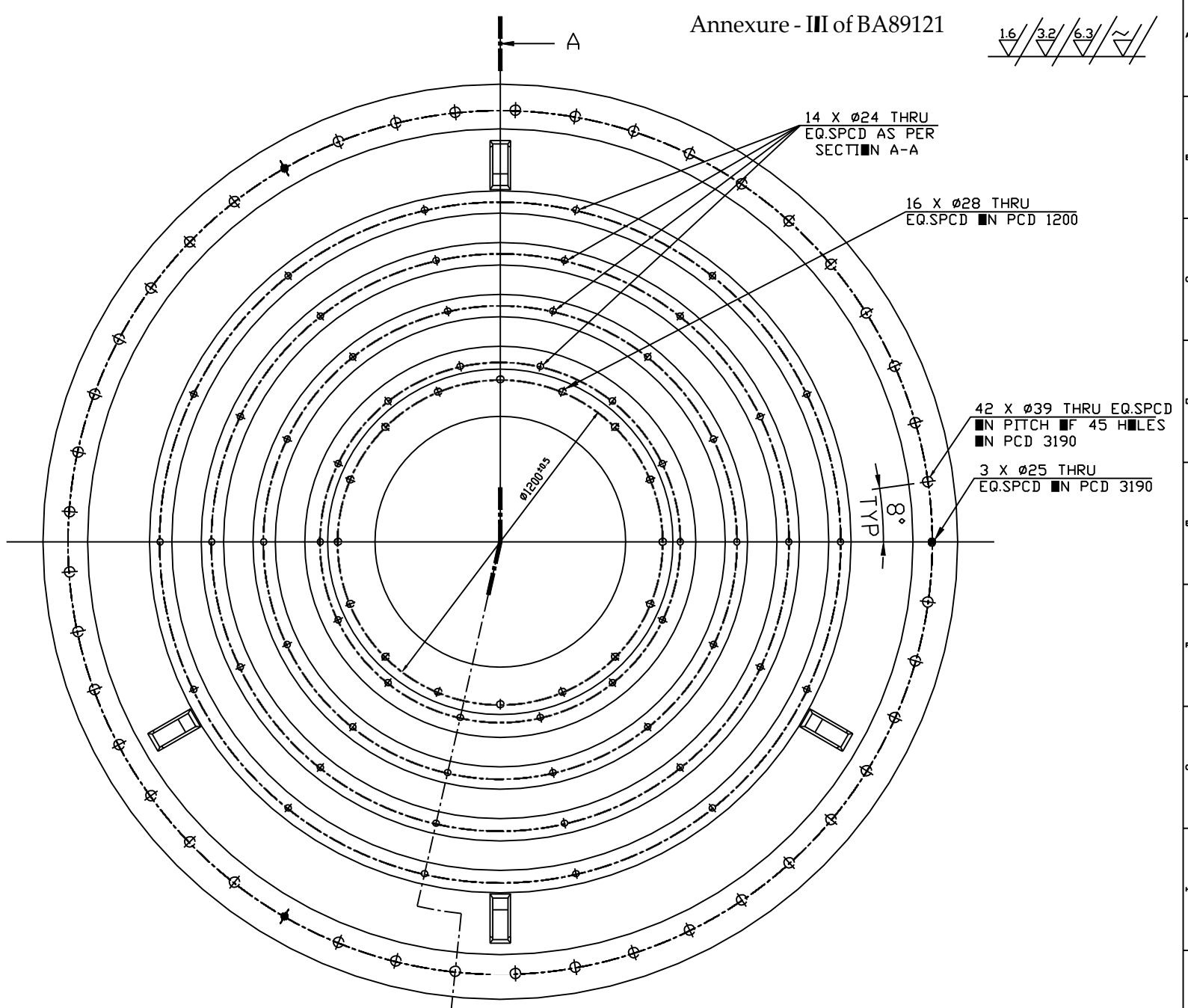
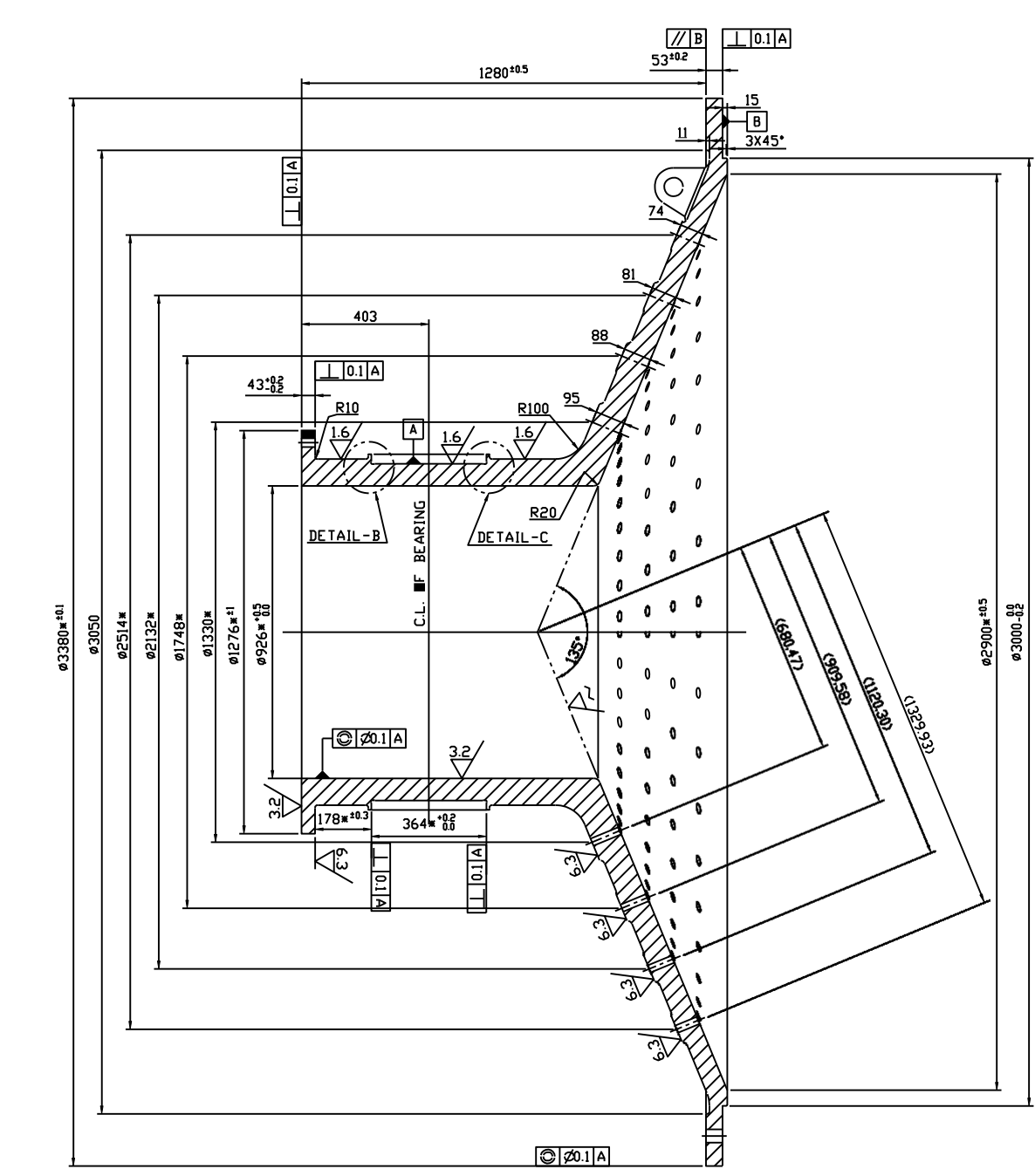
Notes: TOP & BOT: top & bottom size of feed solids fraction  
 IND %: Indicates % of that fraction in microns  
 OVER & UNDER CUM %: Cumulative % passing the  
 SIEVE SIZE in the previous column

<b>Prepared by</b> Manivas	<b>Checked by</b> Aman	<b>Approved by</b> KHRK
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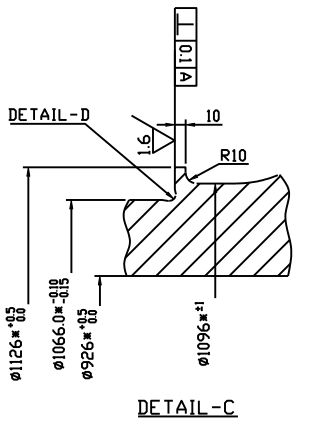
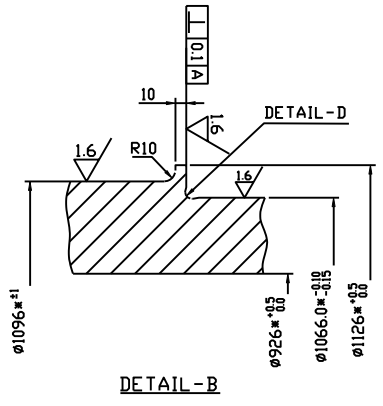
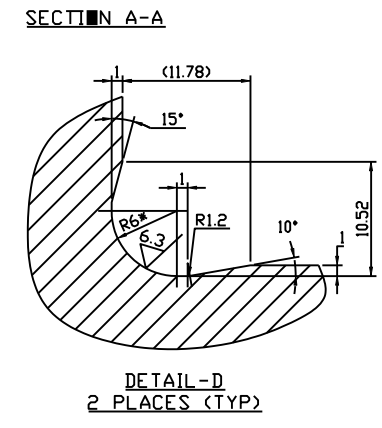
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12000-S12-29-0



Annexure - III of BA89121  
 1.6 / 3.2 / 6.3



Inner Diameter of trommel screen and Discharge Liner (Discharge diameter): 800mm.

- NOTES:
1. PAINT AS PER APPROVED PAINTING STANDARD FOR THE PROJECT.
  2. FINAL DIMENSIONS TO BE MAINTAINED AS PER SECTION A-A, DETAILS B & C.
  3. CRITICAL DIMENSIONS INDICATED WITH \*.

01	CHECK TRUNNION R/W CASTING WITH LIFTING LUGS	3-62-215-00025			8367	01
ITEM NO.	DESCRIPTION	DRAWING NO.	VAR. NO.	RAW MATERIAL SIZE OR CASTING DRG. NO. OR FABRICATING DRG. NO.	MATERIAL SPEC.	NET WT. GROSS WT. QUANTITY

PREPARED BY: CHECKED BY: APPROVED BY:		TYPE OF PRODUCT: <b>WET BALL MILLS</b>	
ALL DIMENSIONS ARE IN MILLIMETERS. UNLESS OTHERWISE SPECIFIED.		NAME OF CUSTOMER/PROJECT: <b>HYDERABAD</b>	
TITLE: <b>CHEEK TRUNNION DE - Ø29M</b>		NAME: <b>SHARIFF</b>	
DATE: <b>04.09.21</b>		SIGN:	
DRAWING NO: <b>0-62-215-00021</b>		DATE: <b>08.09.21</b>	
SCALE: <b>1:1</b>		NAME: <b>K.PAVAN</b>	
SHEET NO: <b>00</b>		DATE: <b>11.09.21</b>	
SHEET NO. OF SHEETS: <b>00</b>		NAME: <b>AMAN</b>	

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			Annexure - IV of BA89121	

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### 3.3. LIMESTONE CHARACTERISTICS CONSIDERED FOR FGD DESIGN:

CHEMICAL ANALYSIS ( % BY MASS)			
Sl. No	Description	unit	Values
1.	CaO	%	>= 51.0
2.	MgO	%	0.9 – 3.8
3.	Fe <sub>2</sub> O <sub>3</sub>	%	0.45 - 1.0
4.	Al <sub>2</sub> O <sub>3</sub>	%	1.19 – 2.1
5.	Si <sub>2</sub> O <sub>3</sub>	%	2.1 – 4.5
6.	Mn <sub>2</sub> O <sub>3</sub>	%	< 0.12
7.	P <sub>2</sub> O <sub>5</sub>	%	Traces
8.	Cl <sub>2</sub>	%	< 0.015
9.	Na <sub>2</sub> O	%	< 0.16
10.	K <sub>2</sub> O	%	< 0.01
11.	TiO <sub>2</sub>	%	< 0.02
12.	Total Sulphur	%	< 0.1
13.	LOI		38 – 41.3
PHYSICAL PROPERTIES			
14.	Bond Index	KWh/Metric ton	<b>14.33</b>
15.	Granule size		Medium ( 250 mm)
16.	Bulk density		
	a. Volume	Kg/m <sup>3</sup>	1400
	b. Torque and drive calculation	Kg/m <sup>3</sup>	1700
	c. Structural load calculation	Kg/m <sup>3</sup>	2200

Note: BHEL considered CaO % in limestone as 47.0 % for FGD design point and 50 % for FGD guarantee point ( CaCO<sub>3</sub> of 89 %), BHEL confirms that FGD systems for Kothagudem will work satisfactorily in terms of meeting outlet emission of SO<sub>2</sub> even if CaO % of Limestone as 45.9%.

<b>Prepared by</b>	<b>Checked by</b>	<b>Approved by</b>
Manivas	Aman	KHRK

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**3.4. WATER PROPERTIES CONSIDERED FOR FGD DESIGN:**

Sl. No	Constituents	as	mg per litre
1.	Calcium	CaCO <sub>3</sub>	141.5
2.	Magnesium	CaCO <sub>3</sub>	45.0
3.	Sodium & Potassium	CaCO <sub>3</sub>	25.0
4.	Bi-Carbonates	CaCO <sub>3</sub>	117.5
5.	Chloride	CaCO <sub>3</sub>	27
6.	Sulphate	CaCO <sub>3</sub>	67
7.	Carbonate	CaCO <sub>3</sub>	0
8.	Silica	SiO <sub>2</sub>	10
9.	Iron	Fe	0.5
10.	pH value	-	7.8
11.	Turbidity	NTU	<15
12.	TDS		<500

<b>Prepared by</b> Manivas	<b>Checked by</b> Aman	<b>Approved by</b> KHRK
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