

|                       |          |   |   |                    |         |
|-----------------------|----------|---|---|--------------------|---------|
| TD-106-1<br>Rev No. 5 | Form No. |  | <b>PRODUCT STANDARD</b><br><b>PULVERISERS</b><br><b>HYDERABAD</b> | Product<br>STD NO. | BA89069 |
|                       |          |   |   | Rev No. 01         |         |
|                       |          |   |   | Page 1 of 2        |         |

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|--|---|

|                               |                           |                            |
|-------------------------------|---------------------------|----------------------------|
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# PRODUCT STANDARD

## PULVERISERS

### HYDERABAD

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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 15 TPH wet ball milling system

| S No | Description              | Value                  |
|------|--------------------------|------------------------|
| 1    | Mass flow rate           | 96.4 TPH               |
| 2    | Flow rate                | 54 m <sup>3</sup> /hr  |
| 3    | Specific density         | 1.785 T/m <sup>3</sup> |
| 4    | % of solids by mass      | 70%                    |
| 5    | Mass flow rate of solids | 67.5 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

Approved by

KHRK

TD-106-1  
Rev No. 5

Form No.



# PRODUCT STANDARD PULVERISERS HYDERABAD

Product  
STD NO.

BA 11077

Rev No 00

Annexure - I of BA89069

## PARTICLE SIZE DISTRIBUTION OF WET BALL MILL DISCHARGE SLURRY

| Top size<br>(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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|------------|------|------------------|---------|----------|
|            |      |                  |         |          |
|            |      |                  |         |          |

Revisions:

Prepared:  
K PAVANApproved:  
AMANDate:  
21.08.2021

Refer to record of revisions:



**PRODUCT  
STANDARD  
PULVERISERS**

**Product  
STD NO. BA89069**

Rev No. 01

Annexure - II of BA89069

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**Sizing and selection of limestone classifying cyclone (BHEL-NTPL TUTTICORIN):**

**Classifying Cyclone**

**BHEL-NTPL TUTTICORIN**

Cyclone: 4 way cluster fitted with 4 of 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) | FEED SIZE | SIEVE SIZE | OVER CUM % | UNDER CUM % | FEED CUM % | RECOVERY TO U/F | Max Temp |      | Viscosity | Liners |
|------|--------|-----------|------------|------------|-------------|------------|-----------------|----------|------|-----------|--------|
|      |        |           |            |            |             |            |                 | 35C      | 1.00 |           |        |
| 0.39 | 53     |           |            |            |             |            |                 |          |      |           |        |
|      |        | TOP       | BOT        | IND. %     | micron      | PASS       |                 |          |      |           |        |
| 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/0!         |          |      |           |        |
| 0    | 0      | 0.00      | 0          | 0.0        | 0.0         | 0.0        | #DIV/0!         |          |      |           |        |

% of  
FEED  
25.0

% of  
FEED  
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

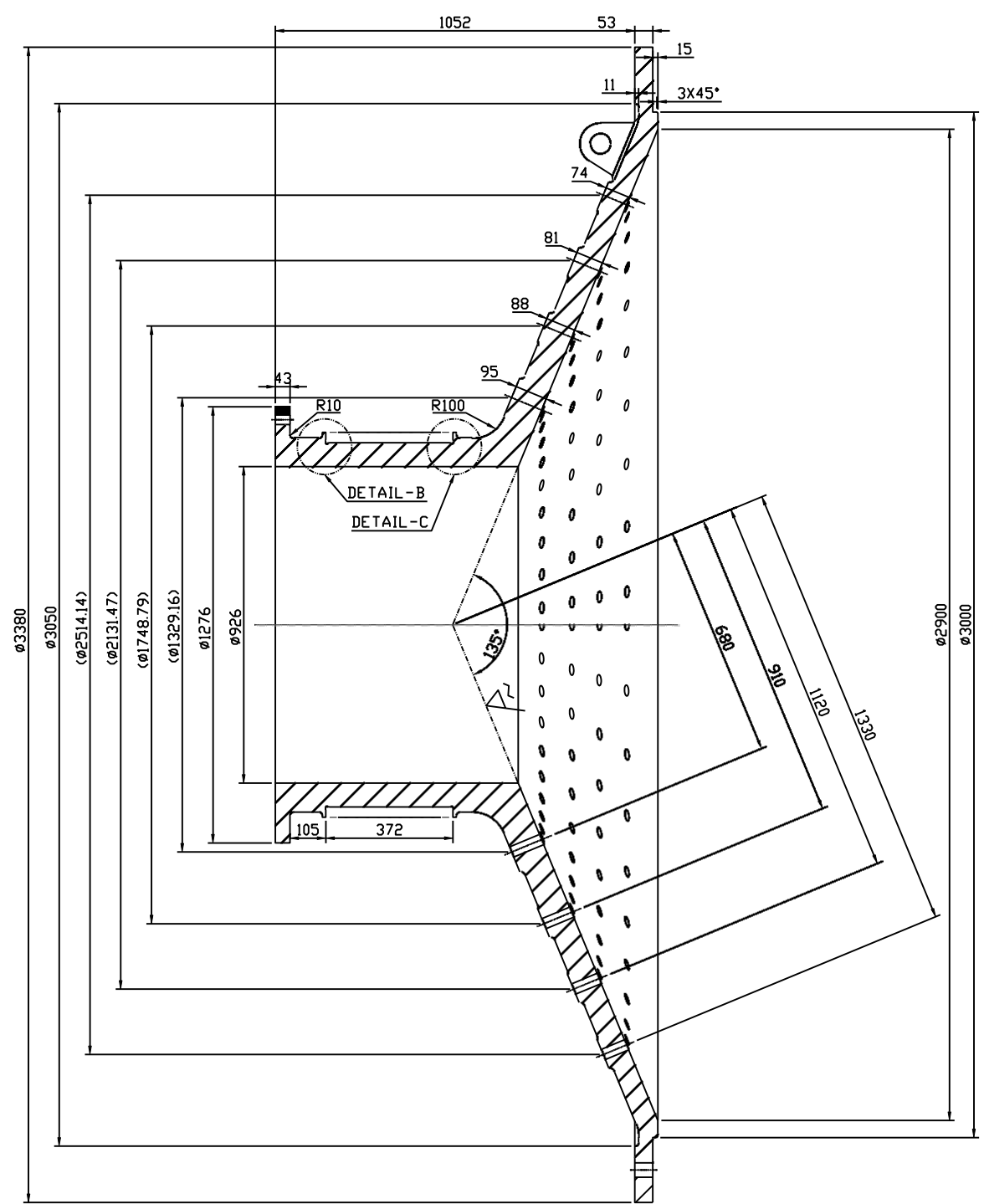
**SIEVE SIZE** in the previous column

|                               |                           |                            |
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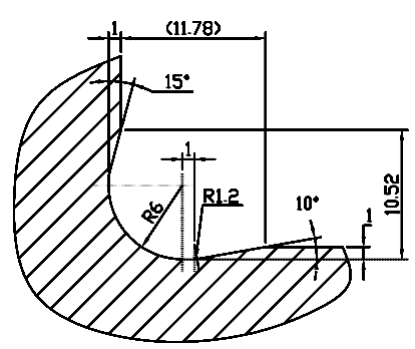
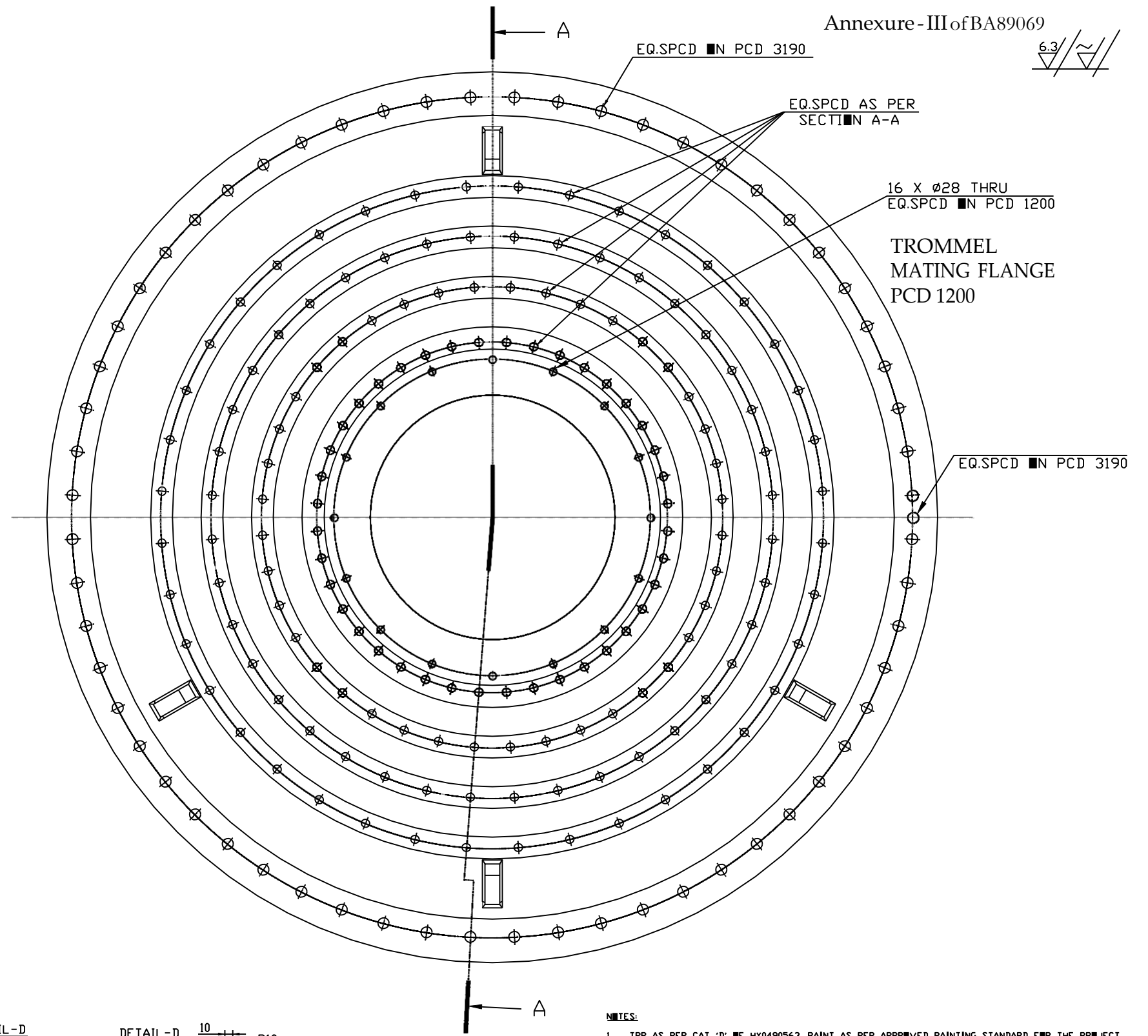
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Annexure-III of BA89069

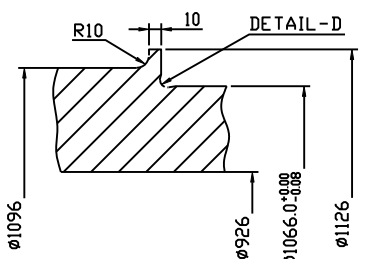
6.3



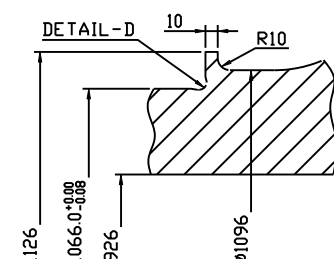
SECTION A-A



DETAIL-D  
2 PLACES (TYP)



DETAIL-B



DETAIL-C

NOTES:

- TRP AS PER CAT 'D' OF HY0490563. PAINT AS PER APPROVED PAINTING STANDARD FOR THE PROJECT.
- PAINT AS PER APPROVED PAINTING STANDARD FOR THE PROJECT.
- LIQUID PENETRANT EXAMINATION SHALL BE DONE AS PER A40850131 AFTER ROUGH MACHINING AT VENDORS WORKS. ACCEPTANCE NIRM LEVEL III OF STANDARD A40850132.
- MACHINING TOLERANCES SHOWN ARE BASED ON THE DIMENSIONS OF CASTING DRAWING AND ARE SHOWN ONLY AS AN ADDITIONAL INFORMATION FOR EASE OF OPERATION. THESE MAY VARY BASED ON CASTING ERRORS. FINAL DIMENSIONS TO BE MAINTAINED AS PER SECTION A-A, DETAILS B & C.

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

|         |                                  |            |         |   |               |                            |
|---------|----------------------------------|------------|---------|---|---------------|----------------------------|
| 01      | CHECK TRUNNION-Ø2.9M R/M CASTING |            |         | BAxxxxx   | 6118.87       |                            |
| ITEM NO | DESCRIPTION                      | DRAWING NO | VAR. NO | RAW MATERIAL SIZE OR CASTING DRG. NO. OR FABRIG DRG. NO | MATERIAL SPEC | NET WT. GROSS WT. QUANTITY |
|         |                                  |            |         |   |               |                            |

|                                     |     |                          |     |
|-------------------------------------|-----|--------------------------|-----|
| UNL-COPY PARTS                      |     | TYPE OF PRODUCT          |     |
| WET BALL MILLS                      |     | WET BALL MILLS           |     |
| NAME OF CUSTOMER/PROJECT            |     | NAME                     |     |
| HYDERABAD HEAVY ELECTRICALS LIMITED |     | SHARIFF                  |     |
| HYDERABAD                           |     | K.PAVAN                  |     |
| APPRO. AMAN                         |     | APPRO. AMAN              |     |
| SCALE                               | NTS | SCALE                    | NTS |
| 6118.87                             |     | 6118.87                  |     |
| TITLE                               |     | TITLE                    |     |
| CHECK TRUNNION DE- Ø2.9M            |     | CHECK TRUNNION DE- Ø2.9M |     |
| DRAWING NO                          |     | DRAWING NO               |     |
| 0-62-215-00021                      |     | 0-62-215-00021           |     |
| SHEET NO                            |     | SHEET NO                 |     |
| 16 OF SHEETS                        |     | 16 OF SHEETS             |     |

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|                       |          |   |   | Annexure-IV of BA89069 |         |

## 2.0 LIMESTONE ANALYSIS/CHARACTERISTICS

The following limestone property to be used designing Limestone grinding system



Tender Specification  
for  
FGD Package

NLC Tamil Nadu Power Ltd.  
2x500 MW Project  
Tutdoorin, Tamil Nadu

TABLE-VII

### PROPERTIES OF LIMESTONE

Limestone is proposed to be brought by Trucks to the plant. The limestone size is expected to be (-) 250 mm.

|     |                                |   |           |
|-----|--------------------------------|---|-----------|
| 1.  | CaO                            | % | 47.5-51.0 |
| 2.  | MgO                            | % | 0.9-2.0   |
| 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                            | % | 39.0-41.3 |

#### Physical Properties:

|    |              |       |        |
|----|--------------|-------|--------|
| 1. | Bond Index   | kWh/t | 13     |
| 2. | Granule size |       | Medium |



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Salient Design Data

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|                       |          |   |   | Annexure-IV of BA89069 |         |

### 3.0 WATER ANALYSIS

The following water to be used during the grinding process of limestone in Lime stone grinding system (LGS)



Tender Specification  
for  
FGD Package

NLC Tamil Nadu Power Ltd.  
2x500 MW Project  
Tutdoorin, Tamil Nadu

TABLE-II

#### TREATED WATER/ FGD PROCESS WATER QUALITY

| Sr. Number | Item   | Unit                    | Value   |
|------------|--|-------------------------|---------|
| 1.         | <u>TDS of permeate from Desalination RO System</u> | ppm                     | <500    |
| 2.         | Total Suspended solids                             | ppm                     | Nil     |
| 3.         | Iron as Fe   | ppm as Fe               | <0.1    |
| 4.         | Reactive Silica as SiO <sub>2</sub>                | ppm as SiO <sub>2</sub> | <1.0    |
| 5.         | Chloride as Cl                                     | ppm as Cl               | <200    |
| 6.         | Sodium   | ppm as Na               | <150    |
| 7.         | pH at 25 deg C                                     | —                       | 6.0-7.0 |

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