TENDER DOCUMENT

NIT No.: BHI/PI(S)/665/1056

FOR

Tender for Detail Engineering, Manufacturing, Testing and Supply of ‘DRIVE PULLEY & DEFLECTOR PULLEY PACKAGE AND ASSOCIATED WORKS’ for the project of “Augmentation of Raw Material Handling Receipt and Handling facilities with new OHP Part- B (Package- 061) of Bhilai Steel Plant, (SAIL)”.

VOLUME - 2

TECHNICAL SPECIFICATION & DRAWINGS
TECHNICAL SPECIFICATION & DRAWINGS

GENERAL

The following Technical Specification shall be read in conjunction with General Technical Specification (GTS) of Bhilai Steel Plant, SAIL. If there are any provisions in this Technical Specification, which are at variance with the provisions of General Technical Specification (GTS) of Bhilai Steel Plant, SAIL and General Specification, the provisions in this Technical Specification shall take precedence.

SCOPE OF SUPPLY

The scope of the supply includes Detail Engineering, manufacture, shop fabrication, assembly, testing and inspection at manufacturer’s works, packing, dispatch, transportation, delivery to site of PULLEY PACKAGE and ASSOCIATED WORKS as per specifications and scope defined in tender documents complete with all accessories.

CONVEYOR PULLEY

Pulley diameter shall be selected as per the Indian standard and IPSS where applicable. All pulleys shall be of welded steel construction. All welds shall be properly stress relieved and Pulleys are to be statically balanced. All pulley shafts shall be key fitted.

Pulley face width – As per IS: 8531 – 1986 (Re-affirmed 1998).

Pulley grooving width & depth shall be 6 mm at 30 mm interval.

Deflection of drive pulley shaft at bearing shall not exceed 1/2000.

All Pulley shaft – up to 100 mm dia. Class-IV, IS: 1875-1992, more than 100 mm dia shall be heat treated (class-4 normalised) Forged steel, 45C8, IS: 2004-1992.

Bearing: Self-aligning double row spherical roller bearing with adapter sleeve. Life – 40,000 hrs.

P. Block – Material of P.Block shall be of cast Iron (IS:210), cast steel IS: 030, Grade-280-520W (min).

Material characteristics: Material used shall be suitable for efficient operation and reliable service in steel plant condition.

All conveyors with magnetic separator at head end shall have non-magnetic SS pulleys shafts & discharge.

All pulleys shall be of welded steel construction, stress relieved before boring and machining and statically balanced. Solid end discs shall be designed and provided to give maximum strength. Pulleys shall be designed as per relevant Indian Standard and IPSS where applicable. Pulleys shall be connected to the shaft preferably through
keyless friction grip connections for HT motors and key connection for LT motors unless otherwise agreed.

Shell thickness of the pulley shall be suitable for taking bending loads on the pulley. This shall not be less than 16mm for drive pulley and 12 mm for tail and other pulleys.

Drive pulleys shall be covered with minimum 12mm thick diamond rubber lagging. Tail, bend and take-up pulleys shall be covered with minimum 10 mm thick diamond rubber lagging. The depth and width of the grooves in the lagging shall be 6 mm spaced at 30mm interval. The eccentricity of pulley shell shall not be more then + 0.5% of the diameter prior to lagging. Drive pulleys shall be machined at steel faces prior to lagging. Shore hardness of rubber for drive pulleys shall be not less than 55 deg A and for other pulleys shall be not less than 45 deg A. All pulleys shall be statically balanced to minimize the vibration during running.

Rolled steel may be used for pulley shafts of diameter up to 140 mm. Forged steel shall be used for shafts above 140 mm diameter. The deflection slope of pulley shaft at bearings shall be restricted to 1/2000 under rated load condition. Combined stress value shall be restricted to 500kg/sq.cm. Shaft diameter shall be selected based on the maximum value. The shaft diameter shall be as per IPSS.

Pulley shafts shall be supported on self-aligning double row spherical roller bearings with adequate sealing and external lubrication arrangement in plummer blocks. One bearing for each shaft shall be fixed to prevent any movement of the shaft assembly and the other bearing shall be floating to have free axial movement. All lubricating nipples shall be readily accessible without removing the guards. All plummer blocks shall also have four mounting bolts.

Welding on the pulley shell shall be tested radio graphically or by ultrasonic method. Pulley shafts shall be ultrasonically tested. Checking of out of roundness and static balancing tests shall be carried out before dispatch of the pulleys.

Bought out items shall be as per approved makes of Mecon / BSP for package 061.

**DRAWING**

1. BSP-EPI-01-061-01-018-55-DE-00477 : For Deflector Pulley
2. BSP-EPI-01-061-01-018-55-DE-00471 : For Drive Pulley (HT)
### Pulley Schedule

| SL No. | CONDOR NO. | DIA. ROLL NO. | DIA. | DIA. ROLL NO. | DIA. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. | DIA. ROLL NO. |
|--------|-------------|---------------|------|---------------|------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 1      | BC-4        | 4              | 2    | 2              | 4    | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              |
| 2      | BC-1        | 1              | 2    | 2              | 4    | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              |
| 3      | BC-2        | 2              | 2    | 2              | 4    | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              | 4              |

### Detail of Diamond Groove Lagging

- Ceramic Tiles

### Typical Sketch of Cephal Lagging

- Plan
- Elevation

### Table 1 - Pulley Block Details

| PULLEY NO. | TYPE OF P.B. | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE | BORE |
|------------|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1          | 2            | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |

### Locking Assembly Details

- Type of Ring
- Type of Key
- Total No. of Ring
- Total No. of Key

### Typical Arrangement of Drive Pulley

- With Friction Clutch

### Notes

- This drawing is confidential and shall not be divulged to any other person without written consent of the original owner. Technicians, contractors, and maintenance of the system for which the drawing is made.