Concrete - Piles

Pre-tensioned High Strength Spun Concrete Piles
HBL Power Systems Limited is a pioneer in manufacturing of High Strength Pre-stressed Spun Concrete Products in India.

HIGH PERFORMANCE Pre-tensioned precast Spun High Strength Concrete Piles offer an economical deep foundation system with consistent and superior quality compared to the cast in-situ & other concrete piles. We have vast experience in the manufacturing of Spun Pre-tensioned Precast Spun concrete products. We are utilizing the latest concrete technology. HBL will be the market leader in concrete piles.

HBL Spun Piles are Circular in cross-section and are manufactured in sizes ranging from 350mm to 600mm diameter with standard lengths varying from 6m to 12m in single pieces.

HBL piles can be easily joined to any combination of length as per design requirements and manufactured with steel end plates for splicing.

These Piles can be widely used as a foundation pile for Power Projects, Steel Plants, High-rise buildings, Civil engineering works, Bridges, Marine structures, Harbors and Government Projects, etc.

We can Design, Manufacture, Supply Pre cast Spun concrete Piles; Also we undertake Piling works such as driving & installation etc., on turnkey basis.

**Standards**
HBL Spun Piles comply with CNS 2602 Classified No. A 2037

**Materials**

**Aggregates**
Coarse aggregates shall be 20mm & 10 mm granite. Fine aggregates shall be clean river sand or washed mining sand as per IS-383

**Cement**
Ordinary Portland cement 53 grade to IS-12269-1987

**Pre-stressing Steel**
Stressed Relived Normal P.C wires to IS 1785:1983

**Spiral Wire**
Hard Drawn wire to IS-432, 1566 & 2090

**Concrete Strength**
Minimum concrete cube strength; ≥ 80 N/mm²

**Joint**
The joint Shall consists of steel Plates meeting the requirement of IS 2062

**Lifting Points**
Two lifting points will be marked on all piles exceeding 9 m. Lifting is by wrapping wire ropes round the piles at specified points.

**Pile Shoes**
All Piles will be supplied either open ended, with flat steel end plate or with a steel pointed shoe.

**Curing**
After casting, the piles are steam cured. When the concrete reaches the specified transfer strength, the piles are demoulded and water cured for specified period. After marking & checked for quality the piles can normally be transported and driven when the cube strength reaches 80N/mm².

**Technical Data**
Technical data of piles are given in the table on the next page. They refer to our standard products. Please note that the axial loads represent the structural capacities of the piles. Whether the driven piles can safely carry these loads depend on the soil conditions and pile slenderness ratio.
### Structural Properties (Grade 80)

<table>
<thead>
<tr>
<th>Description</th>
<th>OD (mm)</th>
<th>Wall thickness (mm)</th>
<th>Steel Bars PC wire (Ømm/Nos)</th>
<th>Area of concrete (cm²)</th>
<th>Effective Pre-stress of concrete (N/mm²)</th>
<th>Nominal Weight (kg/m)</th>
<th>Crack Bending Moment (kNm)</th>
<th>Ultimate Bending Moment (kNm)</th>
<th>Design Value of single pile Strength Vertical Load Bearing (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class A (Effective Prestress = 4.0 N/mm²)</strong></td>
<td></td>
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</tr>
<tr>
<td>Precast Prestressed Spun Concrete Pile</td>
<td>Ø 350</td>
<td>60</td>
<td>7.0 / 7</td>
<td>547</td>
<td>4.00</td>
<td>142.00</td>
<td>28.00</td>
<td>40.00</td>
<td>104.00</td>
</tr>
<tr>
<td></td>
<td>Ø 400</td>
<td>65</td>
<td>7.0 / 9</td>
<td>684</td>
<td>4.00</td>
<td>178.00</td>
<td>41.50</td>
<td>61.00</td>
<td>130.00</td>
</tr>
<tr>
<td></td>
<td>Ø 600</td>
<td>90</td>
<td>7.0 / 12</td>
<td>1442</td>
<td>4.90</td>
<td>375.00</td>
<td>148.00</td>
<td>222.00</td>
<td>270.00</td>
</tr>
</tbody>
</table>

| **Class B (Effective Prestress = 5.0N/mm²)** |         |                     |                             |                        |                                          |                       |                             |                               |                                   |
| Precast Prestressed Spun Concrete Pile     | Ø 350   | 75                  | 7.0 / 10                    | 616                    | 5.80                                     | 160.00                | 39.00                       | 85.00                         | 114.00                           |
|                                           | Ø 400   | 80                  | 7.0 / 14 / 9.0 / 9          | 804                    | 6.26                                     | 209.00                | 60.50                       | 125.00                        | 148.00                           |
|                                           | Ø 600   | 100                 | 7.0 / 26 / 9.0 / 14         | 1571                   | 5.95                                     | 408.00                | 182.90                      | 391.00                        | 291.00                           |

| **Class C (Effective Prestress = 7.0 N/mm²)** |         |                     |                             |                        |                                          |                       |                             |                               |                                   |
| Precast Prestressed Spun Concrete Pile     | Ø 400   | 80                  | 9.0 / 12                    | 804                    | 7.50                                     | 209.00                | 67.00                       | 148.00                        | 144.00                           |
|                                           | Ø 600   | 100                 | 9.0 / 20                    | 1571                   | 7.00                                     | 408.00                | 195.00                      | 365.00                        | 286.00                           |

Note: The loads represents the structural capacities of the piles without considering the soil conditions and slenderness ratio.

Abbreviations - IS : Indian Standard

### Areas of Application:
- Power Projects
- Oil Companies
- Bridges
- Building Foundations
- Piled Embankments
- Civil Engineering Works

### Special Features of HBL Piles

**Product Attributes:**
- Spinning Process results in more durable concrete with high resistance to corrosion.
- Grade 80 Concrete enables the piles to be driven through hard strata.
- Can be manufactured to the lengths & dia as required customer’s requirement.
- Environmentally friendly installation by hydraulic Vibro Hammers which are free from noise, air pollution & vibration.
- Precast Spun Pile Deep Foundation is faster, easier & highly cost effective and require much less time.
Structural Design

END PLATE

WELDED JOINT DETAIL

STEEL SPIRAL

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

Steel Band

Pile Shoe

Pre-stressing Steel Bar

PC-BAR [RPC WIRE]

WALL THICKNESS (T)

PRESTRESSING STEEL BAR

Steel Band

Butt weld

Detail 'Y'

100 mm to 150 mm

150 mm

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

Steel Band

End Plate

Pre-stressing Steel Bar

Steel Spiral

Butt weld

See Detail 'Y'

Detail of joint at 'X'

STEEL SPIRAL AT PITCH OF 50 mm

STEEL SPIRAL AT PITCH OF 100 mm

Steel Band

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