NEX PFS available with SAIL

Narrow Flange Parallel Beams
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- NBP 400 X 180 X 37.38
- NBP 400 X 180 X 46.3
- NBP 400 X 180 X 75.66
- PFP 420R (400X180 X 84.00)
- NFP 450 X 190 X 37.15
- NFP 450 X 190 X 73.57
- NFP 450 X 190 X 92.26
- TPE 458 (450 X 190 X 95.20)
- TPE 458 (450 X 190 X 104.00)
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As per IS 2062:2011 grades readily available -
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Contact Details for Commercial Enquiry

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Southern Region 044-28285003/9443160018 rbnsr@sailsteel.com
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Our latest product is NEX Parallel Flange Sections

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Parallel Flange Sections meet international standards of quality and stringent requirements of the infrastructure and construction industries
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**Higher product flexibility** - Wide range of width, flange thickness and web thickness combinations for any nominal depth

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- $B$: Width
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- $t_w$: Web thickness
- $r$: Root radius
- $x$: X axis
- $y$: Y axis

**Mechanically more efficient** - Higher bending strength for beams and higher axial load carrying capacity for columns

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**Lighter structures** - Higher strength-to-weight ratio leads to lighter structures and foundations

Application of NEX

- Flyovers
- Stadiums
- Metro Rails/Indian Railways
- Foot Over Bridges
- Multi-level Car Parks
- Industrial Buildings
- Raw Material Handling Plants
- Residential Complexes
- Commercial Complexes
- Power Plants
- Ports/Offshore Structures
- Oil Refineries/Petrochemical Plants
- Electric Poles (Masts)
- Trailer and Truck Bed Frames
# NEX AS ELECTRIC POLE (WPB160)

## Dimensions (mm)

<table>
<thead>
<tr>
<th>Sections</th>
<th>Mass (Kg/m)</th>
<th>Sectional Area (cm²)</th>
<th>D (Depth)</th>
<th>B (Width)</th>
<th>t (Wall)</th>
<th>T (Range Small)</th>
<th>s (Range Large)</th>
<th>Rx (Root Radius)</th>
<th>Rx (Radius)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPB160</td>
<td>30.44</td>
<td>38.78</td>
<td>152</td>
<td>160</td>
<td>6</td>
<td>9</td>
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<td>-</td>
</tr>
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<td>23.84</td>
<td>30.37</td>
<td>148</td>
<td>160</td>
<td>4.5</td>
<td>7</td>
<td>15</td>
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<td>-</td>
</tr>
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</table>

## Sectional Properties

<table>
<thead>
<tr>
<th>Sections</th>
<th>Moment of Inertia Iₓ (cm⁴)</th>
<th>Second Moment of Area Iᵧ (cm⁴)</th>
<th>Radius of Gyration Rx (mm)</th>
<th>Section Modulus Zₓ (mm)</th>
<th>Plastic Section Modulus Zᵧ (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPB160x30.44</td>
<td>10.46</td>
<td>613.57</td>
<td>6.57</td>
<td>3.98</td>
<td>220.33</td>
</tr>
<tr>
<td>WPB160x23.84</td>
<td>8.84</td>
<td>478.73</td>
<td>6.50</td>
<td>3.97</td>
<td>173.45</td>
</tr>
</tbody>
</table>

### Advantages of using NEX (WPB 160) as electric pole
1. Comparatively lighter steel member with higher section modulus
2. Saving in cost due to lower weight of steel member
3. Easier connection due to parallel flanges
4. Lower transportation, handling and erection cost owing to lighter members
5. Superior finish from state-of-the-art milking
6. Supply in specific lengths as per requirement
7. Alternative of existing sections viz., IS 125% 6.4 kg/m, SC150% 1 kg/m, J1 H15% 3 kg/m etc with cost saving

Steel conforming to IS: 2062:2011, Hot Rolled Section as per 12778:2004 & tolerances as per IS12779:1995

WPB 160 is available in 4 sections of 23.84 kg/m, 30.44 kg/m, 42.59 kg/m and 76.19 kg/m in Grades E250BR and above. WPB 160 is 23.84 kg/m & 30.44 kg/m have been adopted as Electric Poles by some of the State Government discoms for implementation of their DDUQIT, SAUHAGSTA & IPDS schemes.

## Parallel Flange Sections have multiple advantages over conventional sections

**Easier fabrication** - Easier connection of joints by direct bolting on flanges without using tapered washers and easier butt welding of plate at edge of flange

Only small thickness weld possible Bent bolt-shank

### Economical - Substantial saving in material weight when used as compression member (columns) or flexural member (beams)

<table>
<thead>
<tr>
<th>Type</th>
<th>Size</th>
<th>Weight (Kg/m)</th>
<th>Area (Sq. cm)</th>
<th>Radius of Gyration (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMNB</td>
<td>600x210</td>
<td>123</td>
<td>156</td>
<td>4.12</td>
</tr>
<tr>
<td>NPB</td>
<td>600x210</td>
<td>122.45</td>
<td>156</td>
<td>4.66</td>
</tr>
<tr>
<td>WPB</td>
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<td>7.34</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Mass (Kg/m)</th>
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</thead>
<tbody>
<tr>
<td>MB 400</td>
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<tr>
<td>NPB 400x180x57.38</td>
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<td>1022.3</td>
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NEX Parallel Flange Sections are more efficient and provide more economic designs. e.g. UTILISATION RATIO of sections

TFS (IS 808)  NEX(PFS)(IS12778)

Max utilisation ratio of the
Conventional sections used:
Top Beams: MB250 – 0.328
Mid Beams: MB350 – 0.894
Lower Beams: MB450 – 0.892
Columns: MB600 – 0.916

Max utilisation ratio of the
Parallel Flange Sections used:
Top Beams: NPB250x20.11 – 0.371
Mid Beams: NPB300x49.32 – 0.821
Lower Beams: NP800x66.31 – 0.81
Columns: WPB240x83.2 – 0.874

The ratio of calculated design load on any structural member to its load-carrying capacity is known as UTILISATION RATIO which should normally be less than one.

Loading conditions
- Dead Load of 400 kg/m on floor beams & 100 kg/m on roof beams.
- Live Load of 1000 kg/m² on lower level floor beams & 600 kg/m² on mid level floor and 200 kg/m² on roof beams.
- Wind Load of 300 kg/m on each column in both X & Z direction.

Comparison of the weight of structure, for the above example, is given below:

<table>
<thead>
<tr>
<th>Conventional Section</th>
<th>Weight (Ton)</th>
<th>Parallel Flange Section</th>
<th>Weight (Ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB 600 x 123.0</td>
<td>5.79</td>
<td>WPF 240 x 83.20</td>
<td>3.955</td>
</tr>
<tr>
<td>MB 450 x 72.4</td>
<td>1.735</td>
<td>NP 300 x 49.32</td>
<td>1.181</td>
</tr>
<tr>
<td>MB 350 x 52.4</td>
<td>1.254</td>
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<td>1.181</td>
</tr>
<tr>
<td>MB 250 x 37.3</td>
<td>1.125</td>
<td>NP 250 x 30.11</td>
<td>0.906</td>
</tr>
<tr>
<td>Total</td>
<td>9.904</td>
<td>Total</td>
<td>7.661</td>
</tr>
</tbody>
</table>

23% saving in weight is realised by using NEX Parallel Flange Sections instead of conventional sections for the example shown.

Greater efficiency of the Parallel Flange Sections is primarily due to better distribution of material across the section. This leads to greater moment of inertia, section modulus and radius of gyration. Consequently PFS has more load carrying capacity.

ADVANTAGES OF USING HIGHTENSILE SECTIONS
- Lighter super structure
- Upfront savings in cost due to lesser weight of steel
- Reduced depth of beams
- Greater load carrying capacity for same depth of columns used in mild steel
- Lower transportation, handling and erection costs due to lower weight of structure
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<th>Sections</th>
<th>Mass (Kg/m)</th>
<th>Cross Section Area (cm²)</th>
<th>D (Depth)</th>
<th>B (Width)</th>
<th>‘t’ (Web)</th>
<th>T (Flange thick)</th>
<th>a (Angle)</th>
<th>Rb (Root Radius)</th>
<th>Rs (Top Radius)</th>
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<td>WPB160</td>
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Narrow Flange Parallel Beams
- NBP 600 x 220 x 122.45
- NBP 600 x 220 x 154.46
- IPE 600I (500 x 210 x 184.00)
- IPE 750 (750 x 270 x 202.48)
- IPE 750 (750 x 270 x 173.00)
- IPE 750 (750 x 270 x 185.00)
- IPE 750 (750 x 270 x 196.00)

Wide Flange Parallel Beams
- WBP 160 x 160 x 23.64
- WBP 160 x 210 x 30.44
- PBE 160 x 160 x 42.59
- PBE 160 x 160 x 76.19
- PBE 240 x 340 x 47.39
- PBE 240 x 240 x 60.22
- PBE 340 x 240 x 83.10
- WBP 240 x 240 x 154.87
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*As on January 2019*