JINDAL STEEL & POWER

JINDAL STEEL & POWER LIMITED

CORPORATE OFFICE: Jindal Centre, 12, Bhikhaji Cama Place, New Delhi - 110066, INDIA Tel: +91 11 26188340-50, 4146000, Fax : +91 11 26161271
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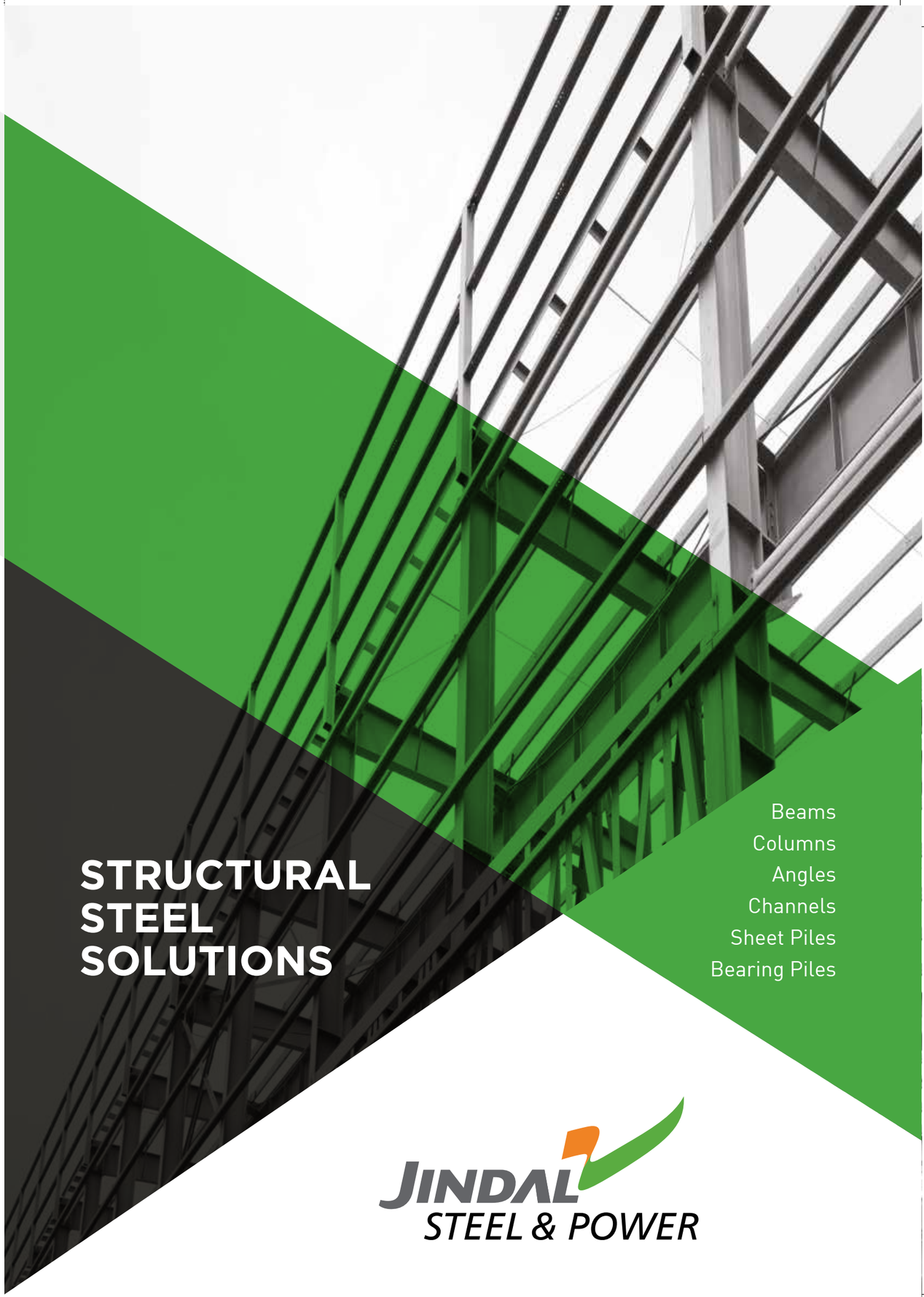


STRUCTURAL STEEL SOLUTIONS

Beams
Columns
Angles
Channels
Sheet Piles
Bearing Piles

JINDAL STEEL & POWER

ABOUT JINDAL STEEL & POWER LIMITED

JSPL is a leading Indian Infrastructure conglomerate with a Prescence in the Steel, Power and Mining sectors. With an investment of approximately 12 billion USD across the globe, the company is continuously scaling its capacity utilization and efficiencies to contribute towards building a self-reliant India. Led by Mr Naveen Jindal, the youngest son of the legendary Shri O.P. Jindal, the company produces economical and efficient steel and power through backward and forward integration.

JSPL's business operations span across the states of Chhattisgarh, Odisha and Jharkhand in India, where it operates some of India's most advanced steel manufacturing and power generation capacities of global scale. JSPL has created cutting-edge capacities to produce 10.0 MTPA steelmaking capacities through a judicious mix of Direct Reduced Iron (DRI), Blast Furnace across two locations in India. JSPL has captive iron ore mines at Tensa, Kasia and Odisha The company has a well-spread out installed finished steel capacity of 9.6 MTPA prudently spread over Bar Mills, Plate and coil Mills, Rail Mill (RM), Beam and Structural Mill (BSM), Plate Mill and Wire Rod Mill.

Alongside contributing to India's growth story the company is driving an ambitious global expansion plan with its sights set on emerging as a leading transnational business group. The company continues to capitalize on opportunities in high growth markets, expanding its core areas and diversifying into new businesses. JSPL's global operations include a 2.4 MTPA integrated steel complex at Sohar, Oman and 6.6 MTPA coal-mining operations spread across South Africa, Mozambique and Australia.

From the widest flat products to a whole range of long products, JSPL has a unique product portfolio that caters to markets across the steel value chain. JSPL has pioneered production of Hot Rolled Parallel Flange Beams and Columns in the country. The company also introduced 121-metre long rails in the country and is the first to manufacture Head Hardened Rails for high-speed trains and metros in India. The company's plate mill at Angul is capable of producing 5-meter-wide plates – the widest in the world. JSPL manufactures high strength Jindal Panther® TMT Rebars equipped to withstand shock loading and cyclic loading condition making them an ideal choice for buildings in high seismic zones. In addition, JSPL also manufactures customized steel products like Weld Mesh and Cut & Bend Rebars aimed to speed up the construction process.

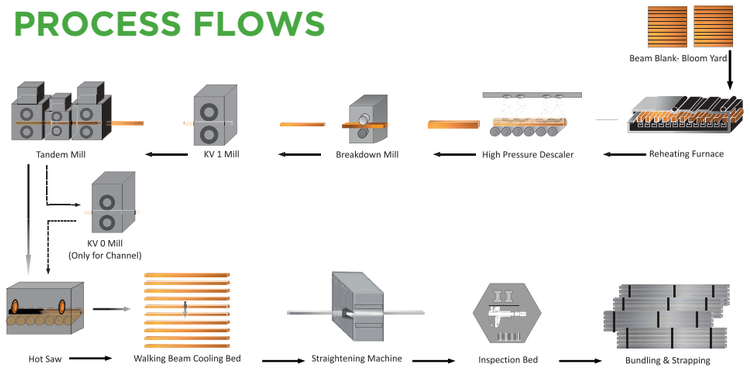
The company endeavours to strengthen India's industrial base by aiding infrastructural development, through sustainable development approaches and inclusive growth. It deploys its resources to improve infrastructure, education, health, water, sanitation, environment and so on in the areas it operates in.

RAIL MILL (RM) - STRUCTURALS

JSPL pioneered the production of Parallel Flange Sections and long Rails in India through Universal Rolling Technology from its 1.2 MTPA capacity Rail Mill (RM) in 2003. Leveraging on the unstinted support of its valued customers, consultants, and structural designers through all these years who realized the inherent advantages and saving potential of the Parallel Flange Beams & Columns over the conventional tapered flange beams, JSPL has today carved a name for Parallel Flange Sections in every corner of the country and has also established a name for its sections in the global structural sections market. The Mill is equipped with a walking beam type reheating furnace, high efficiency water descaling system, Breakdown Mill, a modern Universal Tandem Mill incorporating a 'Universal Rougher', Universal Edger and Universal Finishing one of the longest 123 meter long cooling bed, high capacity 9 roll vertical and 9 roll horizontal straightening machine, cutting, stacking, bundling, and marking machines. These enable production of structural steel sections with a very high degree of dimensional compliance to the specifications in desired lengths with adequate packaging and marking.

JSP today rolls more than 49 different sizes/series and over 160 different variants (unit-weights) of Parallel Flange Beams & Columns (NPB/IPE, WPB/HE, UB & UC, W Sections) in nominal depths ranging from 200mm to 900mm and with unit weights ranging from 39 kg/meter to 333kg/meter conforming to Indian specification (IS-12778) as well as European specifications for Standard Beams and Wide Flange Beams. Besides beams & columns, this mill also rolls Indian (ISMC) channel in size, 400mm & angle of 250mm.

PROCESS FLOWS

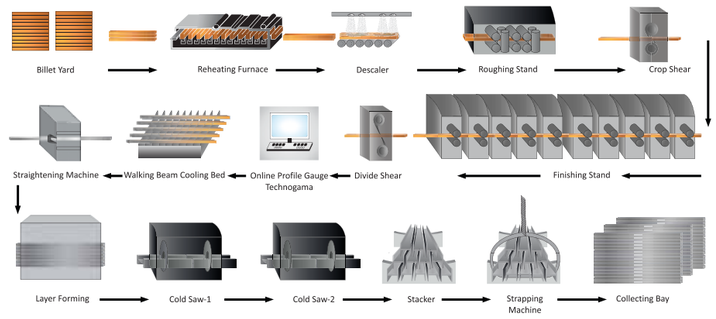


BEAMS AND STRUCTURALS MILL (BSM)

Aiming to provide product basket and an enhanced structural section size range to its customers, JSPL has commissioned the state-of-the-art 0.6 MTPA capacity Beams and Structural Mill (BSM) at Raigarh. With a wide range of light & medium beam & column sections, channels, angles, the mill along-with the existing sections from Rail Mill, has enabled JSPL to offer the widest range of light, medium, heavy and jumbo structural steel sections from an integrated steel manufacturer in India. A first of its kind in India, BSM is a 15 stand continuous mill equipped with advanced rolling mill technology and equipment from Danieli, Italy. BSM is equipped with a walking beam type reheating furnace, besides a high efficiency water descaling system, modern universal cartridge type rolling stands, on-line profile check machine, 90 meter long cooling bed, high capacity straightening machine, on-line shearing, sawing, stacking, bundling and marking machine. These enable production of light & medium beams, angles and channels with a very high degree of dimensional compliance to the specifications in customers desired lengths and sizes and high quality packaging and marking.

The mill is capable producing Ultra Light, Light and Medium Parallel Flange Beams & Columns in depths ranging from 150mm to 300mm, Channels in depths 100mm to 300mm, and Angles in size 75mm to 200mm, in unit weight ranging from 7kg/mtr to 86kg/mtr.

BEAM & STRUCTURALS MILL PROCESS FLOWS



PARALLEL FLANGE BEAMS & COLUMNS

Beams and Columns are characterized by their profile, their length, and their quality. JSPL manufactures Parallel Flange Beams and columns in various configurations.

- Narrow Parallel Flange Beams
- Wide Parallel Flange Beams
- Universal Beams
- Universal Columns

CHARACTERISTICS

To cater to the broader market segment and comply to the different needs of various industries, JSPL offers structural sections with various characteristics in this segment.

- Wide dimensional range
- Superior Weldability
- Cost effective
- Multiple sectional weights
- High strength to weight ratio
- Atmospheric corrosion resistance
- Various Grades

DIMENSIONAL RANGE

These are widely used in the construction industry to provide support for buildings and load-bearing walls. They are available in a variety of standard sizes and selected based on the applied load for the required application.
NPB - Narrow Parallel Flange Beams as per IS 808:2021 (Equivalent to IPE Series-European Standard Narrow Flange Beams)- NPB 180x90 to NPB 600x220 (IPE 180 —IPE600)
WPB — Wide Parallel Flange Beams as per IS 808:2021 (Equivalent to HE Series -European Wide Flange Beams) - WPB 160x160 to WPB 900x300 (HE 320-HE900)

UB- Universal Beam as per BS-4 Part 1:1993 UB 152x89 to UB 838x292*
UB- Universal Beam as per ASNZS 3679.1 UB 150x75 to UB 610x229
UC- Universal Columns per BS-4 Part 1:1993 UC 152x152 to UC 356x406
UC- Universal Columns per ASNZS 3679.1 UC 150x152 to UC 310x311

*Under development. To be available from Feb 2022.

APPLICATIONS

Beams generally carry vertical gravitational forces but can also be used to carry horizontal loads (i.e., loads due to an earthquake or wind). The loads carried by a beam are transferred to columns, walls, or girders, which then transfer the force to adjacent structural compression members. Corrosion resistant grades finding application in places exposed to outside atmosphere which are prone to corrosion. Various places where beams and columns find application can be listed as follows:

- Construction support beams for Commercial and residential construction
- Industrial Building Refineries, Steel & Power Plants,
- Warehouses
- Trailer and truck bed framing
- Support beams and columns in bridges
- Support frames and columns for trolley ways, lifts and hoists Machine bases
- Mezzanines and platforms Freight cars
- Freight cars
- Scaffoldings

CHANNELS

One of the hot rolled structural shapes which JSPL offers is the tapered flange channel which is available in a wide range of sizes and thicknesses. The shape provides superior structural support, making it an ideal product for frames and braces used for machinery, enclosure, vehicle, building and structural support applications.

CHARACTERISTICS

JSPL channel offers various characteristics which make it suitable for use in various industrial segments and as a support structure

- Mild to High tensile strength
- Superior weldability
- Atmospheric corrosion resistance
- Wide dimensional range

DIMENSIONAL RANGE

In order to meet the requirements of different segments, the tapered flange channels from JSPL are available as per Indian (IS 808) and various international standards.

- ISMC 100X50 to 400x100mm

APPLICATIONS

Tapered flange channel sections from JSPL find application in a wide range of segments. The various applications of Channel sections include the following

- Truck and trailer frame supports
- Equipment and machinery frames and supports
- Building frames and other support components.
- Bridges
- Freight cars
- Poles
- Steel plants
- Refineries
- Airports
- Industrial Sheds
- Railway Mast
- Scaffolding

ANGLES

JSPL is the manufacturer of hot rolled equal leg angles which are available in a variety of grades and sizes, making it ideal for structural applications, general fabrication, machining and repairs.

CHARACTERISTICS

Angles are one of the most widely used products in the construction industry.
It offers various characteristic features as a low-cost material.

- Wide dimensional range
- Superior Weldability
- Excellent surface finish
- Close dimensional tolerances
- Formable, and machinable

DIMENSIONAL RANGE

JSPL produces equal leg angles with a wide dimensional range.

- ISA 75X75 to ISA 250x250mm

APPLICATIONS

Angles are used in a range of industrial applications, including:

- Transmission towers & lines
- Buildings, bridges, and other structures for support
- General structural use in construction
- Transportation frames and corners
- Support frames that require welding, riveting or bolting on bridges and buildings
- Machinery and equipment frames, braces and corners
- Precipitators
- Scaffolding

ADVANTAGES OF JSPL PARALLEL FLANGE BEAMS & COLUMNS ROLLED WITH UNIVERSAL ROLLING TECHNOLOGY

- Wide Range: Widest product range available in the country lending more flexibility to designers and a more cost- effective option to project owners
- Exceptional Sectional Properties: Better sectional properties as compared to conventional tapered flange beams leading to efficient design and lower steel usage. Availability of hi-tensile steel grades enables designers/ users to further cut on steel tonnage
- Steel Saving: Steel savings with parallel flange sections under bending load as well as under axial compression are appreciable when compared with tapered flange sections enabling usage of lower beam sizes
- Higher Load carrying capacity: Exhibits higher load-carrying capacity with Parallel Flange Beams • sections under direct compression (when used as columns) owing to their higher radius of gyrationvalues about 'y-y' axis and reduced slenderness ratio of beams, thus increasing stress-bearing limits
- Faster Construction: Simpler direct bolting of connections to flanges possible, as taper washers are not required. Flange-to-Flange welding possible as flanges are parallel
- Ease in design: Enables complex design and fabrication in high volumes because of the inherent functional advantages of Parallel Flange Beams

QUALITY CONTROL FACILITIES AT JSPL

- Prestigious NABL accredited lab
- Fully equipped mechanical testing laboratory
- Universal Testing Machines [Load capacity: up to 1000KN]
- Impact Testing Machine [to carry out both Charpy as well as IZOD tests
- Bend Testing Machine
- Brinell cum Rockwell Hardness Tester
- CNC Wirecut Machine - To cut complex notches for tests like fracture toughness etc. • Strain Indicator
  - Used for measuring the residual stresses in rails
- MTS 810 machine - The state-of-the-art testing facility for conducting fracture toughness and fatigue testing for rails.
- Profile check
- Laser straightness checking
- Eddy current testing
- Ultrasonic testing

PACKING & DELIVERY

Packing: All the sections are supplied bare and either loose and/or in mill standard packing of maximum 5MT weight, each.

Marking: All of above sections are supplied with details of size/ length/ steel grade/ heat number marked with indelible white paint on pieces and on the bundles, with bundle number additionally appearing on the bundle. Embossing on the sections are also done as per customer requirement.

ADVANTAGES OF STRUCTURAL SECTION FROM JSPL

- Economy – Steel savings with parallel flange sections under bending as well as axial load conditions are appreciable when compared with tapered flange sections
- Excellent Durability - Due to clean steel quality, it is free from any harmful impurities and inclusions on account of in-house virgin raw material and state-of-art steel refining facilities
- Superior Weldability – Due to its chemical composition of pure steel and lower carbon equivalent.
- Product Range – Widest range available lending more flexibility to designers and more cost-effective options to project owners.
- Customised Length – Can be supplied in customised length which has helps in considerable amount of steel wastage reduction at consumer's end.
- Multiple Grades – Wide range of high value grades available providing good opportunity for consumers to opt for rolled sections and avoid built up sections.

MARQUEE PROJECTS CONSTRUCTED WITH JSPL STRUCTURAL STEEL ADVANTAGES OF HIGH STRENGTH STEEL (HSS):

- Statue of Unity (HSS E350 Grade), Sardar Sarovar Dam, Gujarat
- Central Vista, New Delhi
- Bogibeel Road cum Rail Bridge (HSS E410CU Copper Grade)
- Dwarka International Convention Center, New Delhi (HSS E350 Grade)
- KIA Motors Plant (HSS E350 Grade), Anantpur, A.P.
- MRF Rubber Factory, Chennai (HSS E350 Grade)
- Vijayvada Airport
- Hybrid Wind Towers from Suzlon (HSS E350 Grade), Tuticorin & Kudankulam
- Worli Sea Link, Mumbai
- Dhirubhai Ambani Convention Center, BMC, Mumbai (HSS E450 & E350 Grade)
- Refineries (All HSS E350 Grade)
- High Rise Buildings:
  - Mist Avenue Noida
  - Aplathum – Greater Noida

ADVANTAGES OF HIGH STRENGTH STEEL (HSS):

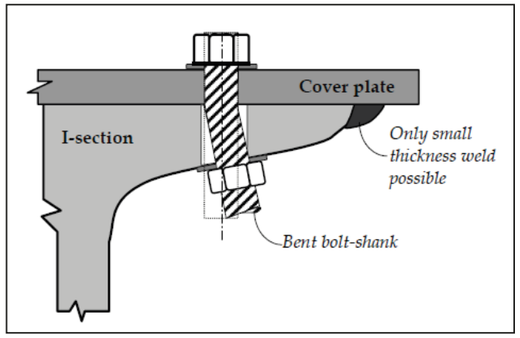
As a thumb rule, every 1% increase in YS saves 0.5% of steel as enumerated below:

	HSS GRADE	Inc in YS	Potential savings in usage	Savings in steel cost considering additional prices for high strength steel
Conventional Use is YS 250 MPa	YS 350 MPa	40% over 250 MPa	20%	15%
	YS 410 MPa	64% over 250 MPa	30%	25%
	YS 450 MPa	80% over 250 MPa	40%	30%

JSPL can supply all steel in High Strength Steel and is customized length. We can also collaborate to develop YS 550 MPa.

ADVANTAGES OF JSPL BEAMS VS TAPERED FLANGE BEAM

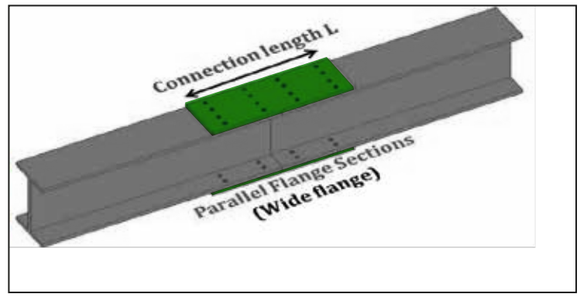
Connections

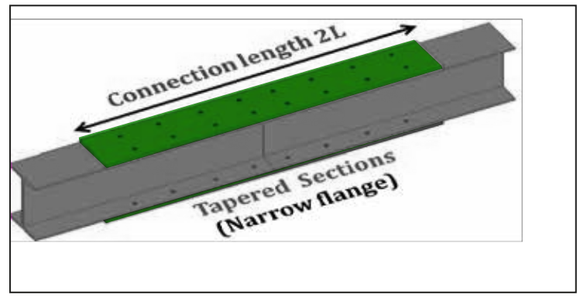


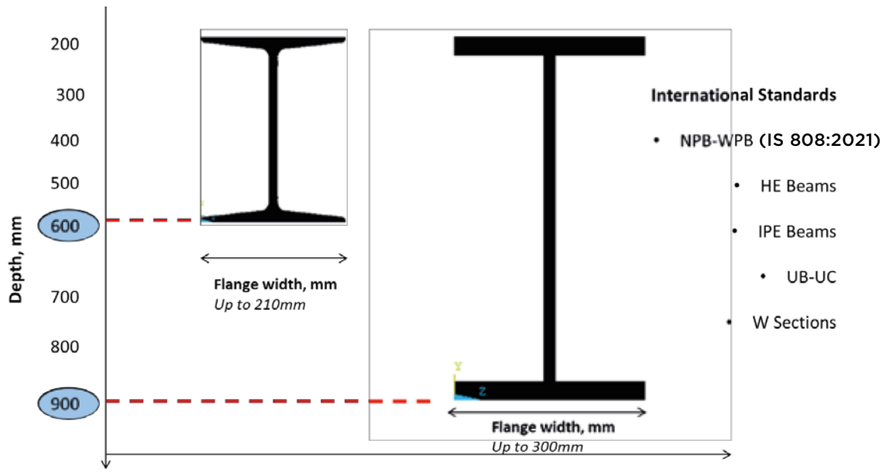
Effects of tapered flange:

- Bolted connection: Bolt shank gets bent on tightening from the origina straight alignment and
- Welded connection: Only obtuse angled small thickness weld possible at the tapered tip

- Tapered and narrow flange Indian sections result in two times more splice connection length compared to Parallel flange sections .

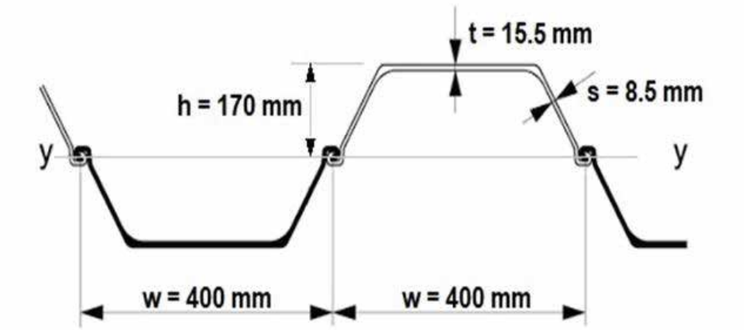






SHEET PILE

Sheet piles are thin interlocking steel sheets used to construct a continuous barrier in the ground to retain earth/water. Interlock is typically achieved by clutching the edge of one pile into the previous pile. Vibratory hammers are used to install sheet piles. Id the soil is too hard or dense, an impact hammer can be used to complete the installation. At certain sites where vibrations are a concern, sheets can be hydraulically pushed into the ground using silent pillar. Sheet piles are also a sustainable option since recycled steel is used in their construction and the piles can often be reused.



The SP-IV cross-sectional performance values:

Dimensions			Per steel sheet pile			Per each meter of wall width			
Effective Width W {mm}	Effective Height H {mm}	Thickness t {mm}	Cross section	Geometrical moment of inertia	Section Modulus x	Unit Weight	Section Modulus	Geometrical Moment of inertia	Unit Weight
400	170	15.5	$x10^{-4}\{m^2\}$ 96.99	$x10^{-8}\{m^4\}$ 4670	$10^{-6}\{m^3\}$ 362	{kg/m} 76.1	$x10^{-6}$ $\{m^3/m\}$ 2270	$x10^{-8}\{m^4/m\}$ 38600	{kg/m} 190

- SP-IV U Type sheet pile 400 x 170 x 10 mm and 400 x 170 x 12 mm under development
- Wider sheet pile, PU 18-1: 600 x 215 x 10.2 mm and PU 18+1: 600 x 215 x 12.2 mm under development

APPLICATION OF SHEET PILE

ENVIRONMENTAL PROTECTIONS

Landfill, legacy pollution, encapsulation
Vertical diaphragm/slurry walls
Excavation for soil replacements
Tank farm bund walls
Waste tipping ramps

STRUCTURES FOR WATERWAYS AND WATERCOURSES

Lock Weirs, Bridge abutments
Culverts, Safety gates
Flood protection walls
Pier foundations
Intake & outfalls

CIVIL ENGINEERING

Foundations
Footings
Trench Shoring
Underground Car parks
Excavations

NOISE ABATEMENT

Noise Barriers

STRUCTURES FOR WATERWAYS AND WATERCOURSES

Lock Weirs, Bridge abutments
Culverts, Safety gates
Flood protection walls
Pier foundations
Intake & outfalls

PORTS

Quary walls, Dock structures
Dolphins, Ro-Ro facilities

STEEL BEARING PILES

Bearing piles are used mainly to support vertical loads. Steel sections can be used as bearing piles where soil and ground conditions preclude the use of shallow foundations and proves to be fast and cost-effective solution to the distribution of vertical loads.

THE MOST IMPORTANT ADVANTAGES ARE AS FOLLOW;

- Easy connection to the superstructures
- Easy installation at site
- Faster construction – immediate follow on work
- Flexibility with pile sizes as per the load capacity
- No limit to pile length

STEEL GRADES

- IS – E250, E275, E300, E350, E410, E450 as per IS 2062
- EN – S235, S275, S355, S420, S460 as per EN 10025:2019
- ASTM as per ASTM A36, ASTM A572, ASTM A992
- JIS – as per JIS G 3101, JIS A-3106
- DIN – as per DIN EN 10025
- Corrosion Resistant Steel as per IRSM 41-97
- FIRE RESISTANT STEEL AS PER IS 15103 / A1077M
- WEATHER RESISTANT STEEL AS PER IS 11587
- STRUCTURAL STEEL FOR BUILDINGS AND STRUCTURES WITH IMPROVED SEISMIC RESISTANCE as per IS 15962
- AS/NZS 3671.1 Grade 300/300L0/300L15/ 350/ 350 L0/ 350 L15

CERTIFICATION

- ISO 9001 & ISO 45001
- BIS CERTIFICATION
- CERTIFICATION FOR CE MARKING, MANDATORY FOR SUPPLY OF SECTIONS TO THE CONSTRUCTION INDUSTRY IN EUROPE AND OTHER EXPORT DESTINATIONS
- CERTIFICATION BY THE LLOYD'S REGITER UK
- JSPL SECTION ARE ALSO CERTIFIED BY ABS/LRS/IRS FOR SUPPLY TO SHIP BUILDING INDUSTRY
- AUSTRALIAN CERTIFICATION FOR HOT ROLLED STRUCTURAL STEELS, (ACRS CERTIFIED) AS PER AS/NZS 3679
- APPROVED FROM THE BUILDING AND CONSTRUCTION AUTHORITY_SINGAPORE BC-1 _2012

APPROVAL & CERTIFICATIONS

BIS LICENCE : INDIA

भारतीय मानक ब्यूरो

BUREAU OF INDIAN STANDARDS

Ministry of Consumer Affairs Food & Public Distribution
Government of India

Attachment to Licence No. CM/L- 8558192

CM/L No.	Name of the Licensee with the Factory Address	Name of the Product	Indian Standard No.
8558192	JINDAL STEEL AND POWER LTD POST BOX NO.: 16, KHARSIA RAOD, Dist.: RAIGARH, CHHATTISGARH - 496001	Hot Rolled Medium and High Tensile Structural Steel – Specification	IS 2062: 2011

Endorsement No. 58

Whereas, the licence was valid upto Thirty First August Two Thousand Twenty One.

Now, consequent upon renewal, the validity of the licence given in endorsement no.: 57 has been extended from **First September Two Thousand Twenty One to Thirty First August Two Thousand Twenty Two.**

Other conditions of the licence remain the same.

V GOPINATH

(V. GOPINATH)
SCIENTIST F & HEAD

ACRS PRODUCT CERTIFICATION : AUSTRALIA

2022
VALID TO 31 DEC

ACRS
PRODUCT CERTIFICATION
www.steelcertification.com

Australasian Certification Authority
for Reinforcing and Structural Steels Ltd

CERTIFICATE OF PRODUCT PERFORMANCE

Certificate Number: ***211204***

JINDAL STEEL & POWER

JINDAL STEEL AND POWER LIMITED
RAIGARH, CHHATTISGARH, INDIA

has satisfied the Authority that it complies with the rules of the ACRS Product Certification Scheme, and the relevant ACRS Quality and Operations Assessment Procedures. Where appropriate, and as listed below, it has further satisfied the Authority that it manufactures and/or supplies products that conform with the standards listed below, and is entitled to use the ACRS mark in relation to the products listed on this certificate.

Scope of Certification

Manufacture of hot-rolled sections to AS/NZS 3679.1:2016 and AS/NZS 5131:2016

Structural steelwork – Fabrication and erection, plus the requirements of the "Materials" and "Fabrication" sections of AS 4100:2020 Steel structures, or AS/NZS 5100.6:2017 Bridge design – Steel and Composite, or the Materials and Brittle Fracture section of NZS 3404:2009 Steel Structures Standard – Materials fabrication and construction.

Full details of the products for which certification has been achieved should be viewed at: *www.steelcertification.com*

By authority of ACRS Board: *Andrew Wheeler, Acting Executive Director*

Valid until: 31 December 2022

First certified: 17 December 2021

JAS-ANZ
www.jas-anz.org/register

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View original at www.steelcertification.com

1 of 2

FACTORY PRODUCTION CONTROL CERTIFICATE : : SINGAPORE

Factory Production Control Certificate
To BC 1:2012

In compliance with the Factory Production Control requirements of
The Building and Construction Authority, Singapore.

This is to Certify that the Factory Production Control System of

JINDAL STEEL & POWER LIMITED

In the Factory Located at

Kharsia Road, Raigarh, Chhatisgarh – 496 001

Raigarh Plant

Has been assessed under the Factory Production Control Requirements of BC 1:2012 and conforms to its requirements for the Production of

1. Material Type: Hot Rolled Sections & Sheet Piles
Material Standard: ASTM & EN Standards
(Refer Annexure – I)

Subject to control in accordance with the Jindal Steel & Power Limited Factory Production Control Procedure Manual Document JSPL-M, Edition-13, Rev 00 and material covered under BC-1: 2012, Appendix A - Certified steel materials

This Certificate is only valid when:

Certificate No: **ABS-BC1-IND-002 R1**

First issue date: 09th July 2021
Current issue date: 09th July 2021
Expiry date: 08th July 2024

This certificate is the property of ABSG Consulting Inc. and remains valid subject to satisfactory annual surveillance audits

ABS Consulting

ABSG Consulting Inc
438B Alexandra Road
#06-12, Alexandra Technopark
Singapore 119968

M.S. Rajendran
(Regional Manager)
On Behalf of ABSG Consulting Inc.

SIRIM QAS INTERNATIONAL PRODUCT CERTIFICATION LICENCE

SIRIM QAS INTERNATIONAL

No Lesen : **PC011587**
Licence No :

LESEN PENSIJILAN BARANGAN
Product Certification Licence

MS SIRIM

SIRIM QAS International Sdn. Bhd. dengan ini menganugerahkan kepada
SIRIM QAS International Sdn. Bhd. hereby grants to

JINDAL STEEL AND POWER LIMITED
JINDAL STEEL & POWER LIMITED
JINDAL CENTRE, 2ND FLOOR, TOWER B
PLOT 2, SECTOR 32
122001 GURGEON
HARYANA, INDIA

Lesen untuk menggunakan Tanda Pensijilan di atas barangan
a licence to use the Certification Mark on

HOT ROLLED PLATES AND STRIPS OF NON-ALLOY STRUCTURAL STEELS

Please refer to detail in the SCHEDULE

sebagai mematuhi keperluan
as complying with

MS EN 10025-2 : 2011

Nur Fadhilah binti Muhammad
Ketua Pegawai Eksekutif
Chief Executive Officer
SIRIM QAS International Sdn. Bhd.

SIRIM QAS International Sdn. Bhd.
(No. Syarikat 410334-X)
1, Persiaran Dato' Menteri
Seksyen 2, Peti Surat 7035
40700 Shah Alam
Selangor Darul Ehsan
MALAYSIA.

Tel : 60-3-55446400
Faks : 60-3-55446466
http://www.sirim.my
http://www.mlpslsir=certified.my

Tarikh Mula Pensijilan : 05 April 2022
Certified Since
Sah Sehingga : 05 April 2023
Valid Until

Tarikh Dikeluarkan : 11 April 2022
Issue Date
No Siri : 073278
Serial No

Lesen ini dianugerahkan tertakluk kepada syarat-syarat Perjanjian Pensijilan Barangan SIRIM QAS International Sdn. Bhd.
This Licence is granted subject to the provisions of the Product Certification Agreement of SIRIM QAS International Sdn. Bhd.

Universal Beam (UB) Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
UB 152 x 89 x 16	16.0	152.4	88.7	4.5	7.7
UB 178 x 102 x 19	19.0	177.8	101.2	4.8	7.9
UB 203 x 102 x 23.1	23.1	203.2	101.9	5.4	9.3
UB 203 x 133 x 25	25.1	203.2	133.2	5.7	7.8
UB 203 x 133 x 30	30.0	206.8	133.9	6.4	9.6
UB 254 x 146 x 31	31.1	251.4	146.1	6.0	8.6
UB 254 x 146 x 37	37.0	256.0	146.4	6.3	10.9
UB 254 x 146 x 43	43.0	259.6	147.3	7.2	12.7
UB 305 x 165 x 40.3	40.3	303.4	165.0	6.0	10.2
UB 305 x 165 x 46.1	46.1	306.6	165.7	6.7	11.8
UB 305 x 165 x 54	53.8	310.4	165.9	7.9	13.7
UB 356 x 171 x 45	45	351.4	171.1	7	9.7
UB 356 x 171 x 51	51	355	171.5	7.4	11.5
UB 356 x 171 x 57	57	358	172.2	8.1	13
UB 356 x 171 x 67	67.1	363.4	173.2	9.1	15.7
UB 406 x 140 x 39	39	398	141.8	6.4	8.6
UB 406 x 140 x 46	46	403.2	142.2	6.8	11.2
UB 406 x 140 x 53	53.3	406.6	143.3	7.9	12.9
UB 406 x 178 x 54	54.1	402.6	177.7	7.7	10.9
UB 406 x 178 x 60	60.1	406.4	177.9	7.9	12.8
UB 406 x 178 x 67	67.1	409.4	178.8	8.8	14.3
UB 406 x 178 x 74	74.2	412.8	179.5	9.5	16
UB 457 x 152 x 52	52.3	449.8	152.4	7.6	10.9
UB 457 x 152 x 60	59.8	454.6	152.9	8.1	13.3
UB 457 x 152 x 67	67.2	458	153.8	9	15
UB 457 x 152 x 74	74.2	462	154.4	9.6	17
UB 457 x 152 x 82	82.1	465.8	155.3	10.5	18.9
UB 457 x 191 x 67	67.1	453.4	189.9	8.5	12.7
UB 457 x 191 x 74	74.3	457	190.4	9	14.5
UB 457 x 191 x 82	82	460	191.3	9.9	16
UB 457 x 191 x 89	89.3	463.4	191.9	10.5	17.7
UB 457 x 191 x 98	98.3	467.2	192.8	11.4	19.6
UB 457 x 191 x 106	105.8	469.2	194	12.6	20.6
UB 457 x 191 x 133	133.3	480.6	196.7	15.3	26.3
UB 457 x 191 x 161	161.4	492	199.4	18	32
UB 533 x 165 x 66	65.7	524.7	165.1	8.9	11.4
UB 533 x 165 x 74	74.7	529.1	165.9	9.7	13.6
UB 533 x 165 x 85	84.8	534.9	166.5	10.3	16.5
UB 533 x 210 x 82	82.2	528.3	208.8	9.6	13.2
UB 533 x 210 x 92	92.1	533.1	209.3	10.1	15.6
UB 533 x 210 x 101	101	536.7	210	10.8	17.4
UB 533 x 210 x 109	109	539.5	210.8	11.6	18.8
UB 533 x 210 x 122	122	544.5	211.9	12.7	21.3

Universal Beam (UB) Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
UB 610 x 229 x 101	101.2	602.6	227.6	10.5	14.8
UB 610 x 229 x 113	113	607.6	228.2	11.1	17.3
UB 610 x 229 x 125	125.1	612.2	229	11.9	19.6
UB 610 x 229 x 140	139.9	617.2	230.2	13.1	22.1
UB 610 x 305 x 149	149.2	612.4	304.8	11.8	19.7
UB 610 x 305 x 179	179	620.2	307.1	14.1	23.6
UB 610 x 305 x 238	238.1	635.8	311.4	18.4	31.4
UB 762 x 267 x 147	146.9	754.0	265.2	12.8	17.5
UB 762 x 267 x 173	173.0	762.2	266.7	14.3	21.6
UB 762 x 267 x 197	197.0	769.8	268.0	15.6	25.4
UB 762 x 267 x 220	220.0	779.0	266.0	16.5	30.0

Universal Column (UC) Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
UC 152 x 152 x 23	23.0	152.4	152	5.8	6.8
UC 152 x 152 x 30	30.0	157.6	153	6.5	9.4
UC 152 x 152 x 37	37.0	161.8	154	8.0	11.5
UC 152 x 152 x 51	51.0	170.2	157	11.0	15.7
UC 203 x 203 x 37	37.3	200	200	6.1	9
UC 203 x 203 x 46	46.1	203.2	203.6	7.2	11
UC 203 x 203 x 52	52	206.2	204.3	7.9	12.5
UC 203 x 203 x 60	60	209.6	205.8	9.4	14.2
UC 203 x 203 x 71	71	215.8	206.4	10	17.3
UC 203 x 203 x 86	86.1	222.2	209.1	12.7	20.5
UC 254 x 254 x 73	73.1	254.1	254.6	8.6	14.2
UC 254 x 254 x 89	88.9	260.3	256.3	10.3	17.3
UC 254 x 254 x 107	107.1	266.7	258.8	12.8	20.5
UC 254 x 254 x 132	132	276.3	261.3	15.3	25.3
UC 254 x 254 x 167	167.1	289.1	265.2	19.2	31.7
UC 305 x 305 x 97	96.9	307.9	305.3	9.9	15.4
UC 305 x 305 x 118	117.9	314.5	307.4	12	18.7
UC 305 x 305 x 137	136.9	320.5	309.2	13.8	21.7
UC 305 x 305 x 158	158.1	327.1	311.2	15.8	25
UC 305 x 305 x 163					
UC 305 x 305 x 198	198.1	339.9	314.5	19.1	31.4
UC 305 x 305 x 240	240	352.5	318.4	23	37.7
UC 305 x 305 x 283	282.9	365.3	322.2	26.8	44.1
UC 356 x 368 x 129	129	355.6	368.6	10.4	17.5
UC 356 x 368 x 153	152.9	362	370.5	12.3	20.7
UC 356 x 368 x 177	177	368.2	372.6	14.4	23.8
UC 356 x 368 x 202	201.9	374.6	374.7	16.5	27
UC 356 x 406 x 235	235.1	381	394.8	18.4	30.2
UC 356 x 406 x 287	287.1	393.6	399	22.6	36.5

IPE section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
IPE 160	12.7	157	82	4.0	5.9
IPE 160	15.8	160	82	5.0	7.4
IPE 180	18.8	180	91	5.3	8.0
IPE 200	22.4	200	100	5.6	8.5
IPE 360	57.1	360	170	8.0	12.7
IPE 400	66.3	400	180	8.6	13.5
IPE 450	77.6	450	190	9.4	14.6
IPE 500	90.7	500	200	10.2	16.0
IPE 600	122	600	220	12.0	19.0
IPE A 180	15	177	91	4.3	6.5
IPE A 200	18	197	100	4.5	7.0
IPE A 360	50.2	358	170	6.6	11.5
IPE A 400	57.4	397	180	7.0	12.0
IPE A 450	67.2	447	190	7.6	13.1
IPE A 500	79.4	497	200	8.4	14.5
IPE A 600	107.3	597	220	9.8	17.5
IPE O 180	21	182	92	6.0	9.0
IPE O 200	25	202	102	6.2	9.5
IPE O 360	66	364	172	9.2	14.7
IPE O 400	75.7	404	182	9.7	15.5
IPE O 450	92.4	456	192	11.0	17.6
IPE O 500	107	506	202	12.0	19.0
IPE O 600	154	610	224	15.0	24.0
IPE AA 200	18	196	100	4.5	6.7
IPE 750	147	750	265	13.2	17.0
IPE 750	173	750	267	14.4	21.6
IPE 750	196	750	268	15.6	25.4

HD section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
HD 260 x 142	141.5	278	265	15.5	26.5
HD 360 x 134	133.9	356	369	11.2	18
HD 360 x 162	161.9	364	371	13.3	21.8
HD 360 x 196	196.5	372	374	16.4	26.2
HD 400 x 187	186.5	368	391	15	24
HD 400 x 216	216.3	375	394	17.3	27.7
HD 400 x 237	236.2	380	395	18.9	30.2
HD 400 x 262	262.7	387	398	21.1	33.3
HD 400 x 287	287.5	393	399	22.6	36.6

HP Section (Bearing pile)					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
HP 305 x 149	149.1	318.5	316	20.6	20.7
HP 305 x 180	180	326.7	320	24.8	24.8
HP 305 x 223	222.9	337.9	326	30.3	30.4
HP 360 x 110	110.4	308.0	310	15.4	15.5
HP 360 x 133	133	352	374	15.6	15.7
HP 360 x 152	152	356.4	376	17.8	17.9
HP 360 x 174	173.9	361.4	379	20.3	20.4

HE Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
HE 160 A	30.4	152	160	6	9
HE 160 B	42.6	160	160	8	13
HE 160 C	59.2	170	163	11	18
HE 160 M	76.2	180	166	14	23
HE 320 A	97.6	310	300	9	15.5
HE 320 B	127	320	300	11.5	20.5
HE 320 C	186	340	305	16	30.5
HE 320 M	245	359	309	21	40
HE 600 AA	129	571	300	12	15.5
HE 600	153	583	300	12	20
HE 600 A	178	590	300	13	25
HE 600 B	212	600	300	15.5	30
HE 600 M	285	620	305	21	40
HE 700 AA	149.9	670	300	13	17
HE 700	173	680	305	12	21
HE 700 A	204	690	300	14.5	27
HE 700 B	241	700	300	17	32
HE 700 M	301	716	304	21	40
HE 800 AA	172	770	300	14	18
HE 800 A	224	790	300	15	28
HE 800 B	262	800	300	17.5	33
HE 800 M	317	814	303	21	40
HE 800	377	826	306	26	46
HE 900	224	880	307	15	25.5
HE 900 A	252	890	300	16	30
HE 900 B	291	900	300	18.5	35
HE 900 M	333	910	302	21	40

Ultra Light Beam					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
ULB 12 x 3 x 10.8	16.2	301.5	77.9	4.1	5.2
ULB 12 x 3 x 11.8	17.6	302.5	77.9	4.5	5.7

W section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
W 6 x 4 x 9	13.5	148	100	4.3	5.5
W 6 x 4 x 9	14	150	100	4.3	6
W 6 x 4 x 12	18	153	102	5.8	7.1
W 6 x 4 x 16	24	160	102	6.6	10.3
W 6 x 6 x 15	22.5	152	152	5.8	7
W 6 x 6 x 20	29.8	157	153	6.6	9
W 6 x 6 x 25	37.1	162	154	8.1	12
W 8 x 4 x 10	15	200	100	4.3	5
W 8 x 4 x 13	19.3	203	102	5.8	7
W 8 x 4 x 15	22.5	206	102	6.2	8
W 8 x 5.25 x 18	26.6	207	133	5.8	8
W 8 x 5.25 x 21	31.3	210	134	6.4	10
W 8 x 8 x 31	46	203	203	7.2	11
W 8 x 8 x 35	52	206	204	7.9	12.6
W 8 x 8 x 40	59	210	205	9.1	14.2
W 8 x 8 x 48	71	216	206	10.2	17.4
W 8 x 8 x 58	86	222	209	13	20.6
W 10 x 5.75 x 22	32.7	258	146	6.1	9.1
W 10 x 5.75 x 26	38.5	262	147	6.6	11.2
W 10 x 5.75 x 30	44.8	266	148	7.6	13.0
W 10 x 10 x 49	73	253	254	8.6	14.2
W 10 x 10 x 54	80	256	255	9.4	15.6
W 10 x 10 x 60	89	260	256	10.7	17.3
W 10 x 10 x 68	101	264	257	11.9	19.6
W 10 x 10 x 77	115	269	259	13.5	22.1
W 10 x 10 x 88	131	275	261	15.4	25.1
W 10 x 10 x 100	149	282	263	17.3	28.4
W 10 x 10 x 112	167	289	265	19.2	31.8
W 12 X 6.5 X 26	39	310	165	5.8	9.7
W 12 X 6.5 X 30	45	313	166	6.6	11.2
W 12 X 6.5 X 35	52	318	167	7.6	13.2
W 12 x 12 x 65	97	308	305	9.9	15.4
W 12 x 12 x 72	107	311	306	10.9	17
W 12 x 12 x 79	118	314	307	11.9	18.7
W 12 x 12 x 87	129	318	308	13.1	20.6
W 12 x 12 x 96	143	323	309	14	22.9
W 12 x 12 x 106	158	327	310	15.5	25.1
W 12 x 12 x 120	179	333	313	18	28.1
W 12 x 12 x 136	202	341	315	20.1	31.8
W 14 x 6.75 x 30	45	352	171	6.9	9.8
W 14 x 6.75 x 34	51	355	171	7.2	11.6
W 14 x 6.75 x 38	57	358	172	7.9	13.1

W section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
W 14 x 14.5 x 90	134	356	369	11.2	18
W 14 x 14.5 x 99	147	360	370	12.3	19.8
W 14 x 14.5 x 109	162	364	371	13.3	21.8
W 14 x 14.5 x 120	179	368	373	15	23.9
W 14 x 14.5 x 132	196	373	374	16.4	26.2
W 14 x 16 x 145	216	375	394	17.3	27.7
W 14 x 16 x 176	262	387	398	21.1	33.3
W 14 x 16 x 193	287	393	399	22.6	36.6
W 16 x 5.5 x 26	39	399	140	6.4	8.8
W 16 x 5.5 x 31	46	403	140	7	11.2
W 16 x 7 x 36	54	403	177	7.5	10.9
W 16 x 7 x 40	60	407	178	7.7	12.8
W 16 x 7 x 45	67	410	179	8.8	14.4
W 16 x 7 x 50	74	413	180	9.7	16
W 16 x 7 x 57	85	417	181	10.9	18.2
W 18 x 6 x 35	52	450	152	10.8	7.6
W 18 x 6 x 40	60	455	153	13.3	8
W 18 x 6 x 46	68	459	154	15.4	9.1
W 18 x 7.5 x 45	67	454	190	12.7	8.5
W 18 x 7.5 x 50	74	457	190	14.5	9
W 18 x 7.5 x 55	82	460	191	16	9.9
W 18 x 7.5 x 60	89	463	192	17.7	10.5
W 18 x 7.5 x 65	97	466	193	19	11.4
W 18 x 7.5 x 71	106	469	194	20.6	12.6
W 21 x 6.5 x 44	66	525	165	11.4	8.9
W 21 x 6.5 x 50	74	529	166	13.6	9.7
W 21 x 6.5 x 57	85	535	166	16.5	10.3
W 21 x 8.25 x 62	92	533	209	15.6	10.2
W 21 x 8.25 x 68	101	537	210	17.4	10.9
W 21 x 8.25 x 73	109	539	211	18.8	11.6
W 21 x 8.25 x 83	123	544	212	21.2	13.1
W 21 x 8.25 x 93	138	549	214	23.6	14.7
W 24 x 9 x 68	101	603	228	14.9	10.5
W 24 x 9 x 76	113	608	228	17.3	11.2
W 24 x 9 x 84	125	612	229	19.6	11.9
W 24 x 9 x 94	140	617	230	22.2	13.1
W 24 x 9 x 103	153	623	229	24.9	14
W 30 x 10.5 x 99	147	753	265	17.0	13.2
W 30 x 10.5 x 116	173	758	266	19.3	13.8
W 30 x 10.5 x 132	196	762	267	21.6	14.4
W 30 x 10.5 x 148	220	766	267	23.6	14.9

Angle Section						
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	T (mm)	R1 (mm)	R2 (mm)
Angle 75 x 75 x 5	5.7	75	75	5	7	4.5
Angle 75 x 75 x 6	6.8	75	75	5	7	4.5
Angle 75 x 75 x 8	8.9	75	75	5	7	4.5
Angle 75 x 75 x 10	11.4	75	75	5	7	4.5
Angle 80 x 80 x 5	6.2	80	80	5	8	4.5
Angle 80 x 80 x 6	7.3	80	80	6	8	4.5
Angle 80 x 80 x 7	8.5	80	80	7	8	4.5
Angle 80 x 80 x 8	9.6	80	80	8	8	4.5
Angle 80 x 80 x 10	11.9	80	80	10	8	4.5
Angle 90 x 90 x 5	7.0	90	90	5	8.5	5.5
Angle 90 x 90 x 6	8.5	90	90	6	8.5	5.5
Angle 90 x 90 x 7	9.6	90	90	7	8.5	5.5
Angle 90 x 90 x 8	10.8	90	90	8	8.5	5.5
Angle 90 x 90 x 9	12.2	90	90	9	8.5	5.5
Angle 90 x 90 x 10	13.4	90	90	10	8.5	5.5
Angle 90 x 90 x 12	15.8	90	90	12	8.5	5.5
Angle 100 x 100 x 6	9.2	100	100	6	8.5	5.5
Angle 100 x 100 x 7	10.7	100	100	7	8.5	5.5
Angle 100 x 100 x 8	12.1	100	100	8	8.5	5.5
Angle 100 x 100 x 9	13.5	100	100	9	8.5	5.5
Angle 100 x 100 x 10	14.9	100	100	10	8.5	5.5
Angle 100 x 100 x 11	16.3	100	100	11	8.5	5.5
Angle 100 x 100 x 12	17.7	100	100	12	8.5	5.5
Angle 102 x 102 x 12.7	19.0	100	100	13	8.5	5.5
Angle 110 x 110 x 6	10.2	110	110	6	10.0	6
Angle 110 x 110 x 7	11.8	110	110	7	10.0	6
Angle 110 x 110 x 8	13.4	110	110	8	10.0	6
Angle 110 x 110 x 9	15.0	110	110	9	10.0	6
Angle 110 x 110 x 10	16.6	110	110	10	10.0	6
Angle 110 x 110 x 12	19.7	110	110	12	10.0	6
Angle 110 x 110 x 15	24.2	110	110	15	10.0	6
Angle 110 x 110 x 16	25.7	110	110	16	10.0	6
Angle 120 x 120 x 7	12.8	120	120	7	13.0	
Angle 120 x 120 x 8	14.7	120	120	8	13.0	4.8
Angle 120 x 120 x 9	16.5	120	120	9	13.0	
Angle 120 x 120 x 10	18.2	120	120	10	13.0	4.8
Angle 120 x 120 x 11	19.9	120	120	11	13.0	6.5
Angle 120 x 120 x 12	21.6	120	120	12	13.0	6.5
Angle 120 x 120 x 13	23.3	120	120	13	13.0	6.5
Angle 120 x 120 x 15	26.6	120	120	15	13.0	6.5
Angle 130 x 130 x 8	15.9	130	130	8	10.0	6.0
Angle 130 x 130 x 9	17.9	130	130	9	10.0	6.0
Angle 130 x 130 x 10	19.7	130	130	10	10.0	6.0
Angle 130 x 130 x 12	23.5	130	130	12	10.0	6.0
Angle 130 x 130 x 14	27.2	130	130	14	10.0	6.0
Angle 130 x 130 x 15	28.8	130	130	15	10.0	6.0
Angle 130 x 130 x 16	30.7	130	130	16	10.0	6.0

Angle Section						
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	T (mm)	R1 (mm)	R2 (mm)
Angle 150 x 150 x 10	22.9	150	150	10	12.0	8.0
Angle 150 x 150 x 11	24.9	150	150	11	12.0	8.0
Angle 150 x 150 x 12	27.3	150	150	12	12.0	8.0
Angle 150 x 150 x 13	29.5	150	150	13	12.0	8.0
Angle 150 x 150 x 14	31.8	150	150	14	12.0	8.0
Angle 150 x 150 x 15	33.8	150	150	15	12.0	8.0
Angle 150 x 150 x 16	35.8	150	150	16	12.0	8.0
Angle 150 x 150 x 17	37.7	150	150	17	12.0	8.0
Angle 150 x 150 x 18	40.1	150	150	18	12.0	8.0
Angle 150 x 150 x 19	42.1	150	150	19	12.0	8.0
Angle 150 x 150 x 20	44.1	150	150	20	12.0	8.0
Angle 180 x 180 x 14	38.3	180	180	14	18.0	9.0
Angle 180 x 180 x 15	40.9	180	180	15	18.0	9.0
Angle 180 x 180 x 16	43.5	180	180	16	18.0	9.0
Angle 180 x 180 x 18	48.6	180	180	18	18.0	9.0
Angle 180 x 180 x 20	53.7	180	180	20	18.0	9.0
Angle 200 x 200 x 12	36.9	200	200	12	15.0	9.0
Angle 200 x 200 x 14	42.7	200	200	14	15.0	9.0
Angle 200 x 200 x 15	45.6	200	200	15	15.0	9.0
Angle 200 x 200 x 16	48.5	200	200	16	15.0	9.0
Angle 200 x 200 x 18	54.3	200	200	18	15.0	9.0
Angle 200 x 200 x 20	60.0	200	200	20	15.0	9.0
Angle 200 x 200 x 21	62.8	200	200	21	15.0	9.0
Angle 200 x 200 x 22	65.6	200	200	22	15.0	9.0
Angle 200 x 200 x 24	71.7	200	200	24	15.0	9.0
Angle 200 x 200 x 25	73.9	200	200	25	15.0	9.0
Angle 200 x 200 x 26	76.6	200	200	26	15.0	9.0
Angle 200 x 200 x 28	82.2	200	200	28	15.0	9.0
Angle 250 x 250 x 22	82.5	250	250	22	18	9
Angle 250 x 250 x 23	86.1	250	250	23	18	9
Angle 250 x 250 x 24	89.7	250	250	24	18	9
Angle 250 x 250 x 25	93.2	250	250	25	18	9
Angle 250 x 250 x 28	104	250	250	28	18	9
Angle 250 x 250 x 29	107	250	250	29	18	9
Angle 250 x 250 x 30	111	250	250	30	18	9
Angle 250 x 250 x 32	118	250	250	32	18	9
Angle 250 x 250 x 35	128	250	250	35	18	9

NPB Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
NPB 160 x 80 x 12.7	12.7	157.0	82	4.0	5.9
NPB 160 x 80 x 15.8	15.8	160.0	82	5.0	7.4
NPB 180 x 90 x 15.4	15.4	177.0	91	4.3	6.5
NPB 180 x 90 x 18.80	18.8	180.0	91	5.3	8.0
NPB 180 x 90 x 21.27	21.3	182.0	92	6.0	9.0
NPB 200 x 100 x 17.95	18.0	196.4	100	4.5	6.7
NPB 200 x 100 x 18.4	18.4	197.0	100	4.5	7.0
NPB 200 x 100 x 22.4	22.4	200.0	100	5.6	8.5
NPB 200 x 100 x 25.1	25.1	202.0	102	6.2	9.5
NPB 350 x 170 x 50.2	50.2	357.6	170	6.6	11.5
NPB 350 x 170 x 57.1	57.1	360.0	170	8.0	12.7
NPB 350 x 170 x 66.0	66.0	364.0	172	9.2	14.7
NPB 400 x 180 x 57.4	57.4	397.0	180	7.0	12.0
NPB 400 x 180 x 66.3	66.3	400.0	180	8.6	13.5
NPB 400 x 180 x 75.7	75.7	404.0	182	9.7	15.5
NPB 450 x 190 x 67.2	67.2	447.0	190	7.6	13.1
NPB 450 x 190 x 77.6	77.6	450.0	190	9.4	14.6
NPB 450 x 190 x 92.4	92.4	456.0	192	11.0	17.6
NPB 500 x 200 x 79.4	79.4	497.0	200	8.4	14.5
NPB 500 x 200 x 90.7	90.7	500.0	200	10.2	16.0
NPB 500 x 200 x 107.3	107.3	506.0	202	12.0	19.0
NPB 600 x 220 x 108	107.6	597.0	220	9.8	17.5
NPB 600 x 220 x 122.4	122.5	600.0	220	12.0	19.0
NPB 600 x 220 x 154.5	154.5	610.0	224	15.0	24.0
NPB 750 x 270 x 147	147.0	750.0	265	13.2	17.0
NPB 750 x 270 x 173	173.0	750.0	267	14.4	21.6
NPB 750 x 270 x 196	196.0	750.0	268	15.6	25.4

WPB Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
WPB 150 x 150 x 34.6	34.6	150	150	9	11.8
WPB 160 x 160 x 23.8	23.8	148	160	4.5	7.0
WPB 160 x 160 x 30.4	30.4	152	160	6	9.0
WPB 160 x 160 x 42.6	42.6	160	160	8	13.0
WPB 200 x 200 x 37	37.3	200	200	6	9.0
WPB 320 x 300 x 97.6	97.6	310	300	9	15.5
WPB 320 x 300 x 126.7	126.7	320	300	12	20.5
WPB 320 x 300 x 186	186.0	340	305	16	30.5
WPB 320 x 300 x 245	245.0	359	309	21	40.0
WPB 600 x 300 x 128.8	128.8	571	300	12	15.5
WPB 600 x 300 x 153	153.0	583	300	12	20.0
WPB 600 x 300 x 177.8	177.8	590	300	13	25.0
WPB 600 x 300 x 211.9	211.9	600	300	16	30.0
WPB 600 x 300 x 285.5	285.5	620	305	21	40.0

WPB Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
WPB 700 x 300 x 149.9	149.9	670	300	13	17.0
WPB 700 x 300 x 173	173.0	680	305	12	21.0
WPB 700 x 300 x 204.5	204.5	690	300	15	27.0
WPB 700 x 300 x 240.5	240.5	700	300	17	32.0
WPB 700 x 300 x 300.7	300.7	716	304	21	40.0
WPB 800 x 300 x 171.5	171.5	770	300	14	18.0
WPB 800 x 300 x 224.4	224.4	790	300	15	28.0
WPB 800 x 300 x 262.3	262.3	800	300	18	33.0
WPB 800 x 300 x 317.4	317.4	814	303	21	40.0
WPB 800 x 300 x 377	377.0	826	306	26	46.0
WPB 900 x 300x 224	224.0	880	307	15	25.5
WPB 900 x 300 x 251.6	251.6	890	300	16	30.0
WPB 900 x 300 x 291.5	291.5	900	300	19	35.0
WPB 900 x 300 x 333	333.0	910	302	27	40.0

JSPL section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
JNPB 450 x 160	51.89	450	160	7	11
JNPB 450 x 160	56.09	452	160	7.5	12
JNPB 450 x 160	63.01	456	162	8	14
JNPB 450 x 160	69.37	458	163	9	15
JNPB 500 x 180	69.29	494	180	8	13
JNPB 500 x 180	72.11	496	180	8	14
JNPB 500 x 180	78.87	498	181	9	15
JNPB 500 x 180	85.66	500	182	10	16
JNPB 500 x 180	89.61	500	183	11	16

Channel Section					
Section	Sectional Weight (kg/m)	H (mm)	W (mm)	Tw (mm)	Tf (mm)
ISMC 100 x 50	9.6	100	50	5.0	7.7
ISMC 100 x 50	10.6	100	50	6.0	8.5
ISMC 125 x 65	13.1	125	65	5.3	8.2
ISMC 125 x 65	13.7	125	66	6.0	8.1
ISMC 150 x 75	16.8	150	75	5.7	9.0
ISMC 150 x 75	17.7	150	76	6.5	9.0
ISMC 175 x 75	19.6	175	75	6.0	10.2
ISMC 200 x 75	22.3	200	75	6.2	11.4
ISMC 250 x 80	30.6	250	80	7.2	14.1
ISMC 250 x 82	34.2	250	82	9.0	14.1
ISMC 300 x 90	36.3	300	90	7.8	13.6
ISMC 300 x 90	41.3	300	92	10.0	13.6
ISMC 400 x 100	50.1	400	100	8.8	15.3

Australia New Zealand Standard Universal Beams						
AS NZS 3679.1 Section	Sectional Weight (kg/m)	H (mm)	W (mm)	T w (mm)	Tf (mm)	Root Radius ('r) mm
UB 150 x 75 x 18.0	18.0	155.0	75.0	6.0	9.5	8.0
UB x 180 x 90 x 16.1	16.1	173.0	90.0	4.5	7.0	8.9
UB x 180 x 90 x 18.1	18.1	175.0	90.0	5.0	8.0	0.9
UB x 180 x 90 x 22.2	22.2	178.8	90.0	6.0	10.0	8.9
UB 200 x 99 x 18.2	18.2	198.0	99.0	4.5	7.0	11.0
UB 200 x 133 x 22.3	22.3	201.6	133.0	5.0	7.0	8.9
UB 200 x 133 x 25.4	25.4	203.2	133.0	5.8	7.8	8.9
UB 200 x 134 x 29.8	29.8	207.0	134.0	6.3	9.6	8.9
UB 250 x 124 x 25.7	25.7	248.0	124.0	5.0	8.0	12.0
UB 250 x 146 x 31.4	31.4	251.6	146.0	6.1	8.6	8.9
UB 250 x 146 x 37.3	37.3	256.2	146.0	6.4	10.9	8.9
UB 310 x 149 x 32.0	32.0	298.0	149.0	5.5	8.0	11.4
UB 310 x 165 x 40.4	40.4	304.0	165.0	6.1	10.2	11.4
UB 310 x 166 x 46.2	46.2	307.2	166.0	6.7	11.8	11.4
UB 360 x 171 x 44.7	44.7	352.0	171.0	6.9	9.7	11.4
UB 360 x 171 x 50.7	50.7	355.6	171.0	7.3	11.5	11.4
UB 360 x 172 x 56.7	56.7	358.6	172.0	8.0	13.0	11.4
UB 410 x 178 x 53.7	53.7	402.6	178.0	7.6	10.9	11.4
UB 410 x 178 x 59.7	59.7	406.4	178.0	7.8	12.8	11.4
UB 460 x 190 x 67.1	67.1	453.8	190.0	8.5	12.7	11.4
UB 460 x 190x 74.6	74.6	457.4	190.0	9.1	14.5	11.4
UB 460 x 191 x 82.1	82.1	460.4	191.0	9.9	16.1	11.4
UB 530 x 209 x 82.0	82.0	528.2	209.0	9.6	13.2	14.0
UB 530 x 209x 92.4	92.4	533.0	209.0	10.2	15.6	14.0
UB 610 x 228 x 101	101	602.0	228.0	10.6	14.8	14.0
UB 610 x 228 x 113	113	607.0	228.0	11.2	17.3	14.0
UB 610 x 229 x 125	125	611.6	229.0	11.9	19.6	14.0

Australia New Zealand Standard Universal Columns						
AS NZS 3679.1 Section	Sectional Weight (kg/m)	H (mm)	W (mm)	T w (mm)	Tf (mm)	Root Radius ('r) mm
UC 150 x 152 x 23.4	23.4	152.4	152.0	6.1	6.8	8.9
UC 150 x 153 x 30.0	30.0	157.6	153.0	6.6	9.4	8.9
UC 150 x 154 x 37.2	37.2	161.8	154.0	8.1	11.5	8.9
UC 200 x 203 x 46.2	46.2	203.4	203.0	7.3	11.0	11.4
UC 200 x 204 x 52.2	52.2	206.4	204.0	8.0	12.5	11.4
UC 200 x 205 x 59.5	59.5	209.8	205.0	9.3	14.2	11.4
UC 250 x 254 x 72.9	72.9	253.8	254.0	8.6	14.2	14.0
UC 250 x 256 x 89.5	89.5	260.0	256.0	10.5	17.3	14.0
UC 310 x 305 x 96.8	96.8	308.0	305.0	9.9	15.4	16.5
UC 310 x 307 x 118	118.0	314.6	307.0	11.9	18.7	16.5
UC 310 x 309 x 137	137.0	320.6	309.0	13.8	21.7	16.5
UC 310 x 311 x 158	158.0	327.2	311.0	15.7	25.0	16.5

Australia New Zealand Standard Equal Angles					
AS NZS 3679.1 Nominal leg size (axb) mm xmm	Nominal thickness (mm)	Sectional Weight (kg/m)	Actual Thickness (t) mm	Radius	
				Root (r1) mm	Toe (r2) mm
75 x75	5	5.27	4.6	8.0	5.0
75 x75	6	6.81	6.0	8.0	5.0
75 x75	8	8.73	7.8	8.0	5.0
75 x75	10	10.5	9.5	8.0	5.0
90 x 90	6	8.22	6.0	8.0	5.0
90 x 90	8	10.6	7.8	8.0	5.0
90 x 90	10	12.7	9.5	8.0	5.0
100 x 100	6	9.16	6.0	8.0	5.0
100 x 100	8	11.8	7.8	8.0	5.0
100 x 100	10	14.2	9.5	8.0	5.0
100 x 100	12	17.7	12.0	8.0	5.0
125 x 125	8	14.9	7.8	10.0	5.0
125 x 125	10	18.0	9.5	10.0	5.0
125 x 125	12	22.5	12.0	10.0	5.0
125 x 125	16	29.1	15.8	10.0	5.0
150 x 150	10	21.9	9.5	13.0	5.0
150 x 150	12	27.3	12.0	13.0	5.0
150 x 150	16	35.4	15.8	13.0	5.0
150 x 150	19	42.1	19.0	13.0	5.0
200 x 200	13	40.0	13.0	18.0	5.0
200 x 200	16	48.7	16.0	18.0	5.0
200 x 200	18	54.4	18.0	18.0	5.0
200 x 200	20	60.1	20.0	18.0	5.0
200 x 200	26	76.8	26.0	18.0	5.0

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