SHIV KIRPA SAFETY SOLUTION

Metal Beam Crash Barrier

SSS

ENSURANCE

SAFETY

Stay Safe with Shiv Kirpa

What is Metal Beam Crash Barrier ?

- A Metal Beam Crash Barrier is a particularly effective road safety system serving to protect vehicles and its occupants in the case of mishap and also serve as a good visual guide for drivers especially in night

Guidelines Followed

The metal beam crash barriers are manufactured in India as per the guidelines issued by MORTH, AASHTO-M-180, IRC-SP-119, MASH TL3 & MASH TL4.

All sections are cold rolled formed. Raw material grade Fe 360/ Fe 410/ Fe 510, IS 10748 Grade II or eqvt. conforming to ST42/IS5986 Raw material conforming to IS 5986 Grade: and hot dipped galvanized (550GSM minimum). The post spacing is 1.5 to 2m center to center. The international guidelines/manuals on W-beam which would conform to EN 1317 Part-1&2 can be adopted.

Types of Crash Barrier

Crash Barriers are divided into three groups, based on the amount they deflect when struck by a vehicle and the mechanism the barrier uses to resist the impact forces. I

There are three types of crash barriers viz:

a) Flexible Crash Barrier (like wire rope fencing)
b) Rigid Crash Barrier (like concrete crash barriers)
c) Semi-rigid Crash Barrier
    1. W-Beam type Metal Crash Barrier
    2. Thrie-Beam type Metal Crash barrier

Guideline for crash barrier selection (100km/h)

Min. distance (m) (from face of barrier system to hazard)	Suitable Crash Barrier System
1.5 or more	Flexible Semi-Rigid Rigid
0.5 to 1.0	Semi-Rigid Rigid
0 to 0.5	Rigid

At SSS we manufacture Semi-rigid Crash Barrier

Semi-rigid Crash Barrier is also known as **Metal Beam Crash Barrier (MBCB)**.

Metal Beam Crash Barriers are basically Road safety systems which prevent vehicles from colliding with obstacles such as boulders, walls, buildings and also prevents vehicles entering into large storm drains, steep slopes or deep water.

Deflection Characteristics for MBCB

In the case of Semi Rigid Barrier it is important to ensure sufficient distance is available between the barrier and the hazard to accommodate the lateral deflection. Typical deflection characteristics for semi-rigid longitudinal barrier types is as under:-

Type	Maximum Deflection (m) (recorded from full scale crash tests)
W-Beam type Metal Crash Barrier	0.6 to 0.9
Thrie-Beam Type Metal Crash Barrier	0.5 to 1
Thrie-Beam Type Modified Metal Crash Barrier	0.9

Why Semi-rigid Crash Barrier?

- Installation **cost** of Semi-rigid Crash Barrier is **less.**
- During collision the W Beam/Thrie Beam absorbs maximum energy by flattening out and laterally restrains the vehicle from veering over.
- Lesser damage to the vehicle.
- Controlled deflection when struck by a typical passenger car or light truck.
- Crash Barriers ensure minimum damage to the vehicle and its occupants.
- Prevents the vehicle from skidding back onto the carriageway by controlled exit angles by gradual deceleration and effective redirection of the vehicle back onto the road.
- Provides a good visual guide to the drivers especially in the night.
- Enables quick repairs in case of accidents.
- All components are hot dip galvanized for longer life.

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Components of MBCB

- **W Beams**
- Cold roll formed in thickness of 3.00 mm/2.67 mm
- Raw material conforming to IS 5986 Grade: Fe 360/Fe 410/ Fe 510, IS 10748 Grade II or eqvt.
- Hot dip galvanized to 550 gms/sq.m
- **Posts & Spacer**
- Cold roll formed in thickness of 5.00 mm/4.2 mm
- Raw material conforming to IS 5986 Grade: Fe 360/Fe 410, IS 10748 Grade II or eqvt.
- Hot dip galvanized to 550 gms/sq.m.

- **End specials**
- 3 mm/2.67 mm thick turned down end terminals.
- 3/2.67 mm thick press formed end terminals (Fish tail)
- 3/2.67 mm U shaped terminals as median end terminals

- **Fasteners**
- M20 and M16 fasteners as per IS 1367 Grade 4.6/8.8
- Hot dip galvanized

Components of 1 set of MBCB

Items -: W Beam, Post, Spacer, Button Headed Nut Bolt and Hex Headed Nut Bolt Length of W beam

- One Set of 3Mtr where Centre to Centre is 1.5mtr then length of one beam is 3318mm
- One Set of 4Mtr where Centre to Centre is 2mtr then length of one beam is 4318mm

One set of Crash Barrier includes of -:

- W Beam 1 pcs, Post 2 pcs, Spacer 2 Pcs, Button 10 pcs & Hex 4 pcsAs per IS specification thickness of Beam is 3mm and Post& Spacer is 5mm

Thickness before Galvanising W Beam - 2.8mm, Post & Spacer 4.8mm

W Beam (4000mm+318mm)

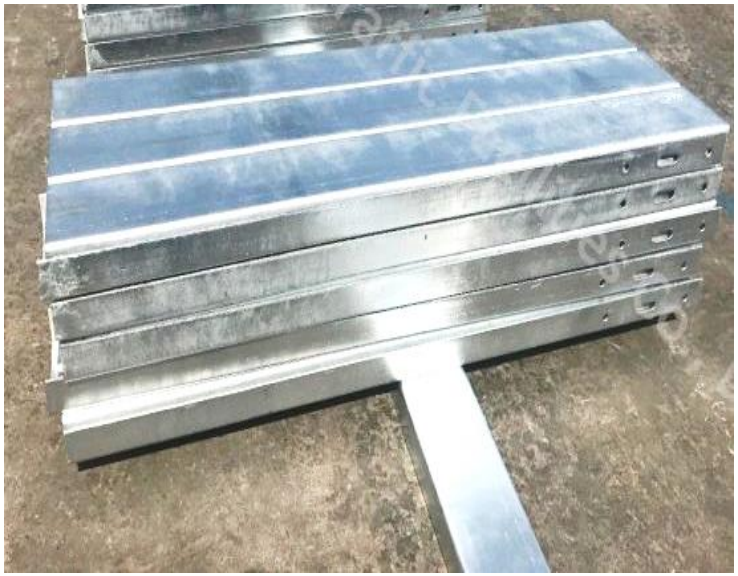
Weight of 4Mtr Beam – 44.3228 KG

Length	Width	Thickness	Iron Density
4318 MM or 4.318 Mtr	467 MM or .467 Mtr	2.8 MM or 0.0028 Mtr	7850

Post (1800mm height)

Weight of one post – 18.9907 KG

Length	Width	Thickness	Iron Density
1800MM Or 1.8 Meter	280 MM or .28 Meter	4.8 MM or 0.0048 Meter	7850



Spacer (330mm height)

Weight of one Spacer – 3.48163 KG

Length	Width	Thickness	Iron Density
330MM or .33 Meter	280 MM Or .28 Meter	4.8 MM or 0.0048 Meter	7850

Set Weight Of 4Mtr

ITEM	WEIGHT (in Kgs)	QUANTITY	TOTAL WT.
Beam	44.3228	1	44.3228
Post	18.9907	2	37.9814
Spacer	3.48163	2	6.96326
Nut bolts	0.14	14	1.96

Total weight of 1 set of 4 Mtr. - **91.22746** Kgs
Section Weight of 1 Mtr. – **22.806Kgs**
Section Weight after Zinc coating @2% - **23.2621** Kgs

Types of Metal Beam Crash Barrier, we offer:-

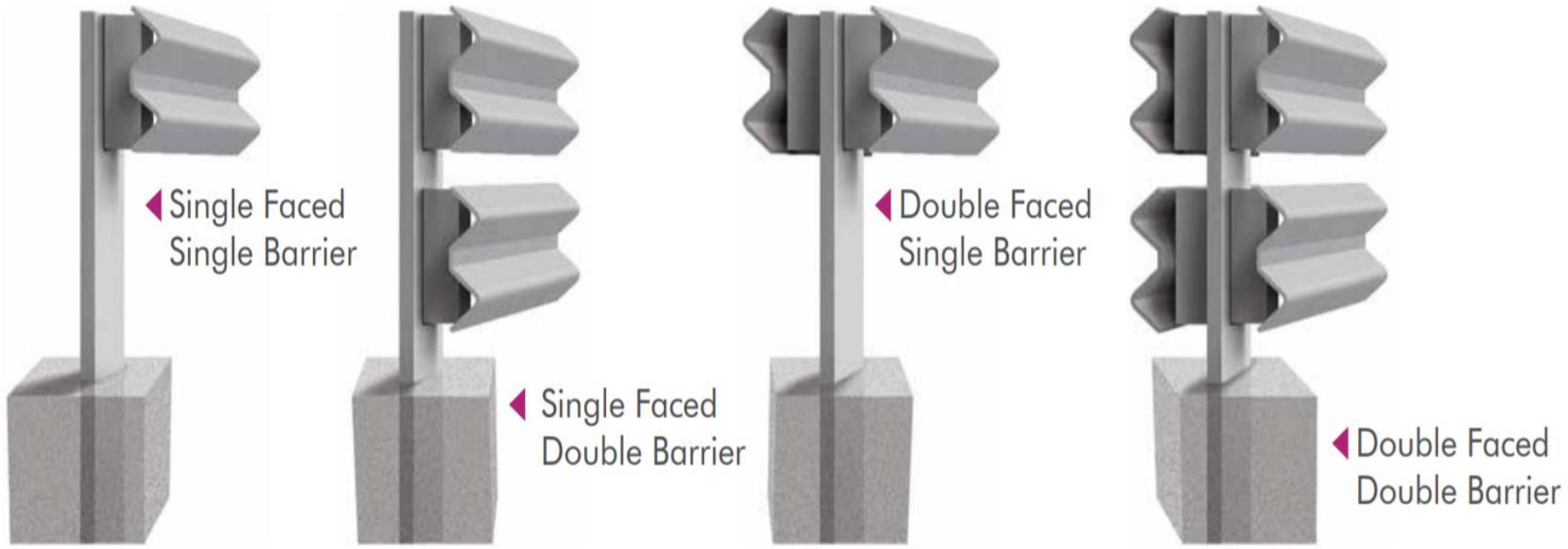
- **W-Metal Beam Crash Barrier**

SSSW	-Single Side Single W- Metal Beam Crash Barrier
SSSW(BP)	-Single Side Single W- Metal Beam Crash Barrier with base plate
BSSW	-Both Side Single W-Metal Beam Crash Barrier
BSSW(BP)	-Both Side Single W-Metal Beam Crash Barrier with base plate
SSDW	-Single Side Double W- Metal Beam Crash Barrier
SSDW(BP)	-Single Side Double W-Metal Beam Crash Barrier with base plate

- **Thrie-Metal Beam Crash Barrier**

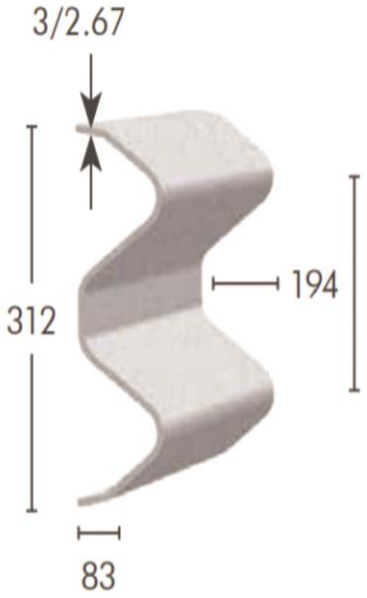
SSST	-Single Side Single Thrie- Metal Beam Crash Barrier
BSST	-Both Side Single Thrie- Metal Beam Crash Barrier
BSDT	-Both Side Double Thrie- Metal Beam Crash Barrier
SSST(Modified)	-Single Side Single Modified Thrie- Metal Beam Crash Barrier

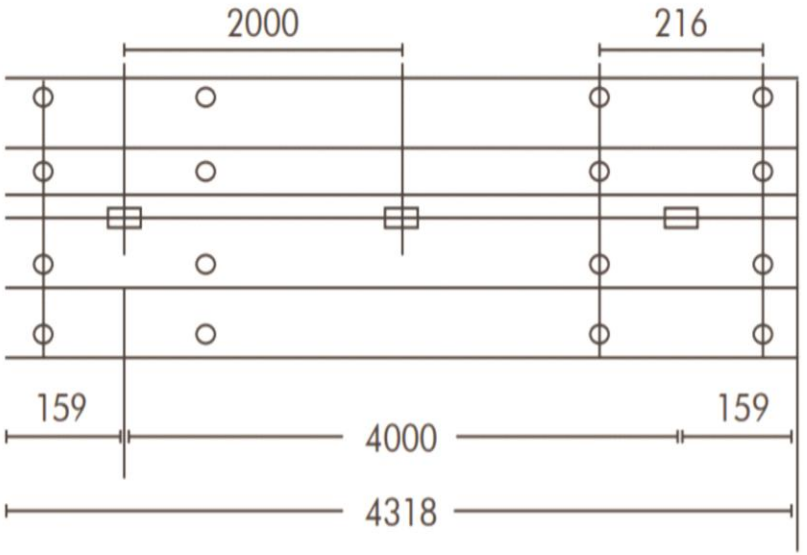
Types of W- Beam Crash Barrier



STANDARD SPECIFICATIONS

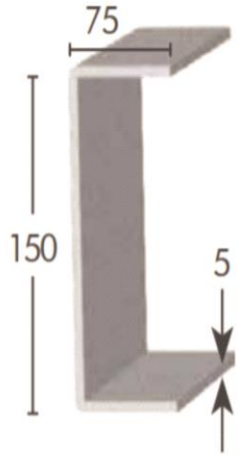
W Beam





TECHNICAL DATA				
	Ixx	= 1311.0 cm^4	Iyy	= 105.0 cm^4
	Zxx	= 86.0 cm^3	Zyy	= 25.0 cm
	Area	= 14.45 cm^2	W	= 11.35 kg/m

Post & Spacer

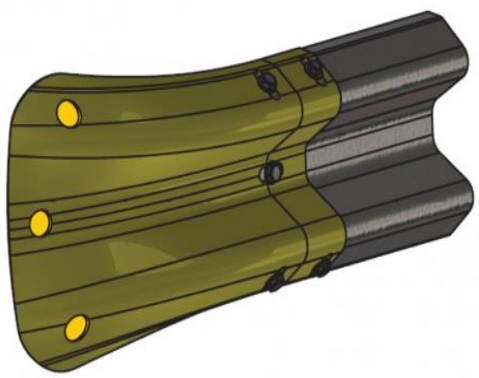


TECHNICAL DATA

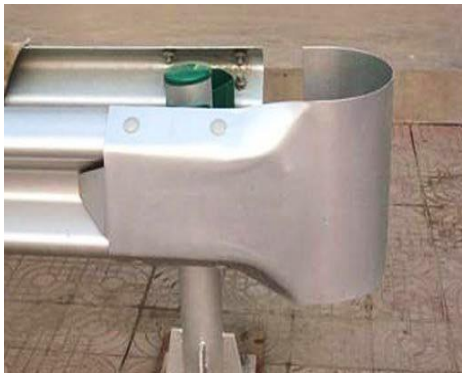
Ixx	= 479.27 cm^4	Iyy	= 77.51 cm^4
Zxx	= 63.9 cm^3	Zyy	= 14.45 cm
Area	= 13.96 cm^2	W	= 10.96 kg/m

End Terminal

Fish Tail



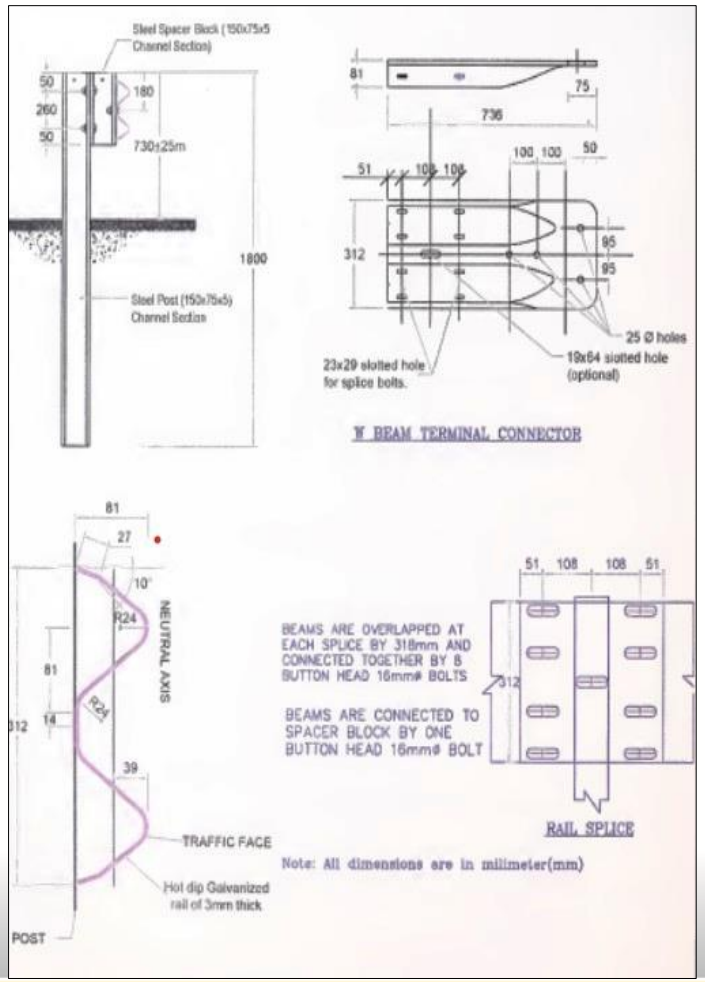
Buffer End

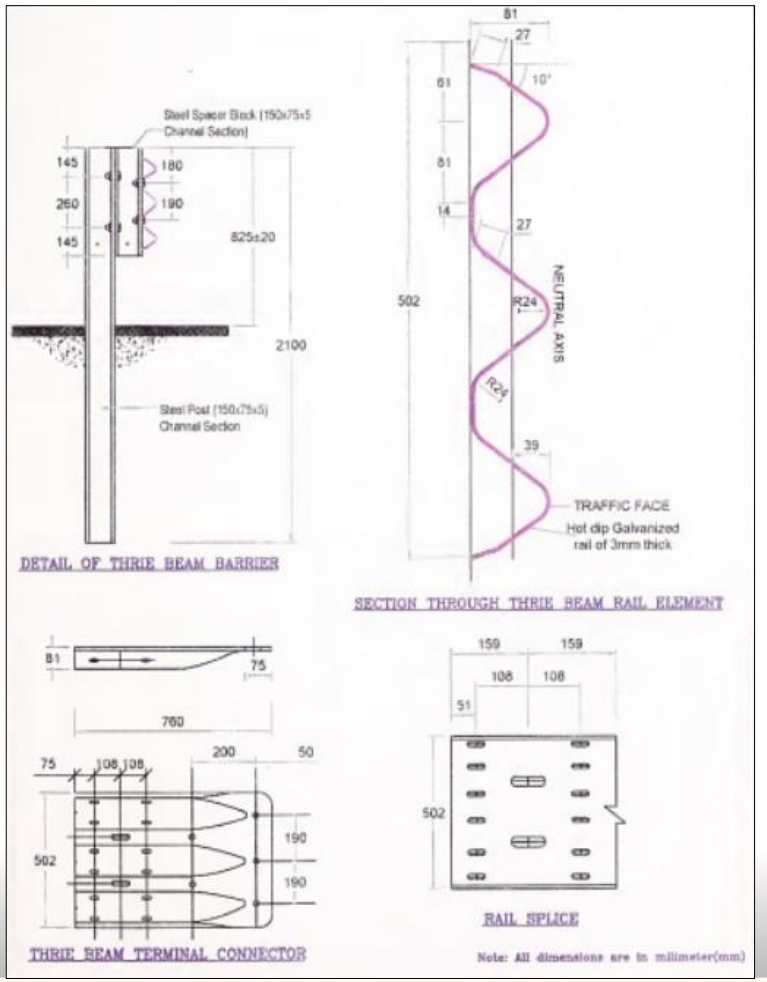


Bull Nose

W Beam-End

Typical Details of W-Beam & Thrie Beam Structural Elements:-





Weight Chart of W- Beam

W- Metal Beam Crash Barrier

Thickness	Combination	Weight (In Kgs)				Single W		Double W	
		Wbeam	Post	Space	Nut Bolts	Set Wt.	Wt. / RMT	Set Wt.	Wt./RMT
2.8/4.8 mm	1800 mm	45.209	19.371	3.551	1.960	93.013	23.253	147.284	36.821
	1710 mm		18.402			91.075	22.769	145.346	36.337
	1500 mm		16.142			86.555	21.639	140.826	35.207
	1200 mm		12.914			80.099	20.025	134.370	33.593
2.7/4.7 mm	1800 mm	43.595	18.967	3.477	1.960	90.443	22.611	142.952	35.738
	1710 mm		18.019			88.547	22.137	141.056	35.264
	1500 mm		15.806			84.121	21.030	136.630	34.158
	1200 mm		12.645			77.799	19.450	130.308	32.577
2.6/4.6 mm	1800 mm	41.980	18.563	3.403	1.960	87.872	21.968	138.618	34.655
	1710 mm		17.635			86.016	21.504	136.762	34.191
	1500 mm		15.470			81.686	20.422	132.432	33.108
	1200 mm		12.376			75.498	18.875	126.244	31.561
2.5/4.5 mm	1800 mm	40.365	18.160	3.329	1.960	85.303	21.326	134.286	33.572
	1710 mm		17.252			83.487	20.872	132.470	33.118
	1500 mm		15.133			79.249	19.812	128.232	32.058
	1200 mm		12.107			73.197	18.299	122.180	30.545
2.2/4.2 mm	1800 mm	35.522	16.949	3.107	1.960	77.594	19.399	121.290	30.323
	1710 mm		16.102			75.900	18.975	119.596	29.899
	1500 mm		14.124			71.944	17.986	115.640	28.910
	1200 mm		11.299			66.294	16.574	109.990	27.498

Weight Chart of Thrie- Beam

Thrie Beam - Metal Crash Barrier

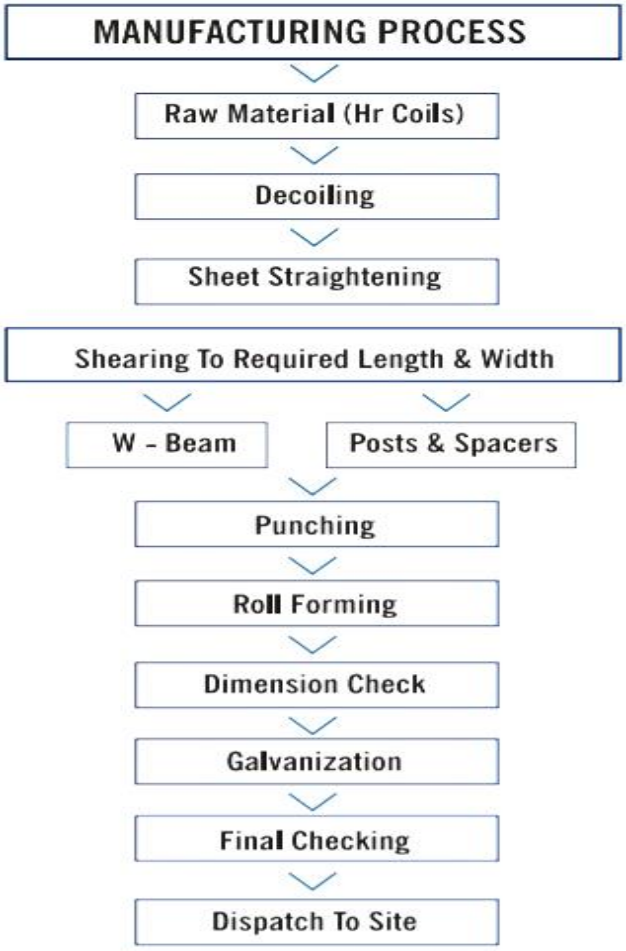
Thickness	Combination	Weight (In Kgs)				Single W		Double W	
		Wbeam	Post	Space	Nut Bolts	Set Wt.	Wt. / RMT	Set Wt.	Wt./RMT
2.8/4.8 mm	2100 mm	70.670	22.599	5.876	2.800	130.420	32.605	215.642	53.911
	2050 mm		22.061			129.344	32.336	214.566	53.642
	2000 mm		21.523			128.268	32.067	213.490	53.373
2.7/4.7 mm	2100 mm	70.670	22.128	5.753	2.800	126.708	31.677	209.160	52.290
	2050 mm		21.601			125.654	31.414	208.106	52.027
	2000 mm		21.074			124.600	31.150	207.052	51.763
2.6/4.6 mm	2100 mm	65.622	21.657	5.631	2.800	122.998	30.750	202.682	50.671
	2050 mm		21.142			121.968	30.492	201.652	50.413
	2000 mm		20.626			120.936	30.234	200.620	50.155
2.5/4.5 mm	2100 mm	63.098	21.187	5.508	2.800	119.288	29.822	196.202	49.051
	2050 mm		20.682			118.278	29.570	195.192	48.798
	2000 mm		20.178			117.270	29.318	194.184	48.546

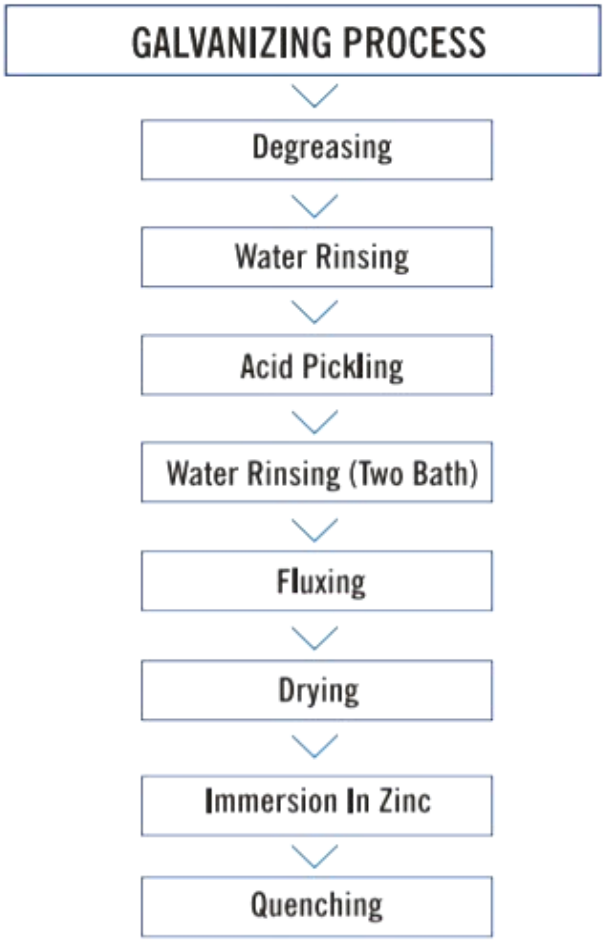
Major Raw Material used

- **Steel** : Procured from two major players of the Indian Industry – Steel Authority of India (SAIL) and TATA Steel.
- Grade of Hot Rolled Coil (HR Coil) used – **FE 410** ; **FE 510** ; **IS 10748**

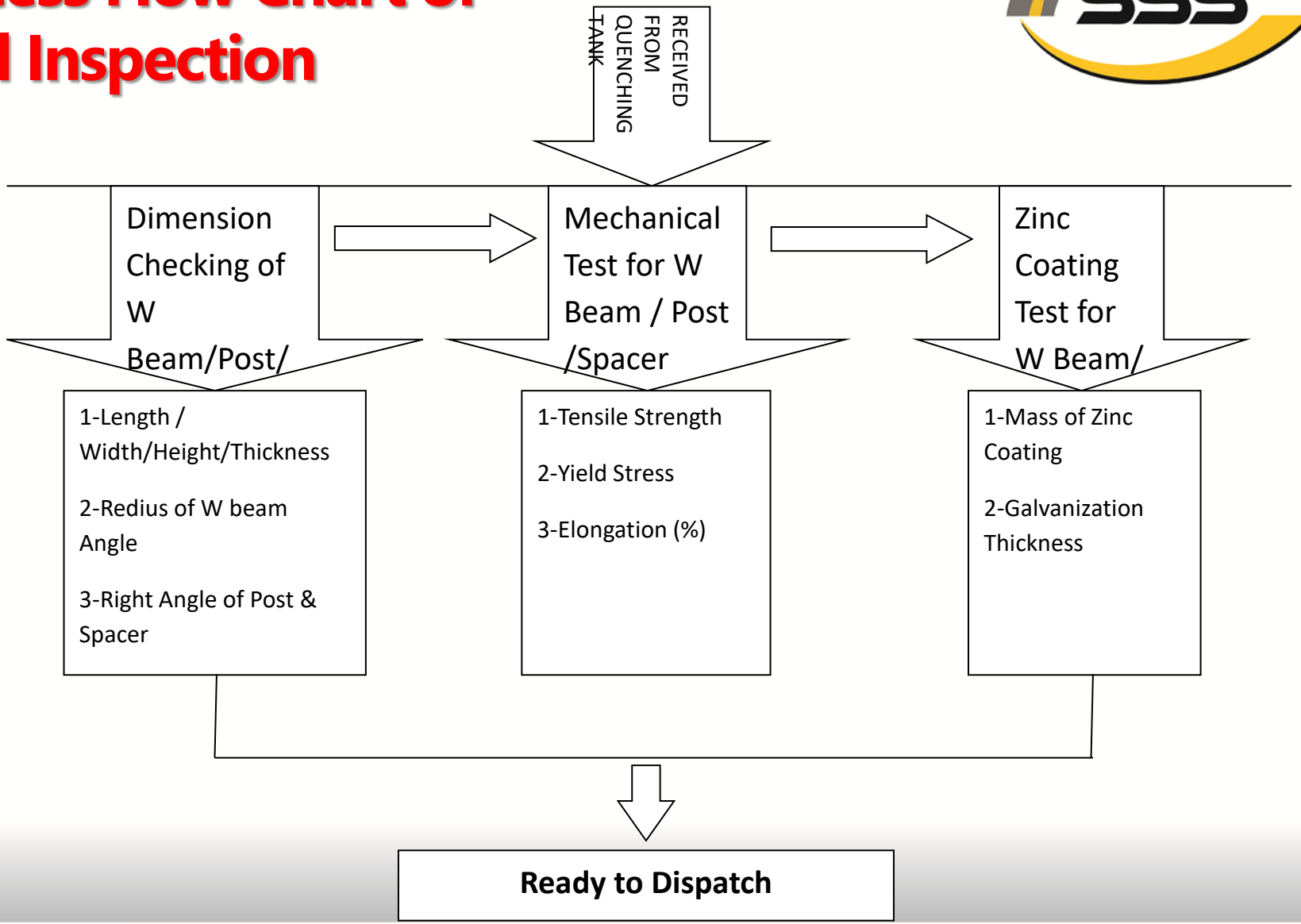
- **Zinc** : Procured from India's biggest supplier and sole manufacturer – Hindustan Zinc Limited (HZL)
- Grade used – Special High Grade (SHG) of maximum purity (99.995% pure)

Manufacturing Process





Process Flow Chart of Final Inspection



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Stay Safe with Shiv Kirpa

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