



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI 110002
Phone: + 91 11 23230131, 23233375, 23239402 Extn 8406, 23608406; Website: www.bis.gov.in

व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 7/टी-13

31 मार्च 2023

तकनीकी समिति : संरचनात्मक इंजीनियरिंग और संरचनात्मक अनुभाग विषय समिति सीईडी 7,

प्राप्तकर्ता:

- क) सिविल इंजीनियरी विभाग परिषद, सीईडीसी के सभी सदस्य
- ख) सीईडी एवं 7इसके उपसमितियों के सभी सदस्य
- ग) रुचि रखने वाले अन्य निकाय।

महोदय/महोदया,

निम्नलिखित मसौदा संलग्न है:

प्रलेख संख्या	शीर्षक
सीईडी 7 (22216)WC	इस्पात के तप्त बेलित और स्लिट टी सरिए - आयाम और गुण का भारतीय मानक मसौदा [IS 1173 का तीसरा पुनरीक्षण] ICS 77.140.70

कृपया इस मसौदे का अवलोकन करें और अपनी सम्मतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इन पर अमल करने में आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयाँ आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 15 05 2023

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई-मेल द्वारा abhishek.pal@bis.gov.in / ced7@bis.gov.in पर या उपरलिखित पते पर, संलग्न फॉर्मेट में भेजे। टिप्पणियाँ बीआईएस ई-गवर्नेंस पोर्टल, www.manakonline.in के माध्यम से ऑनलाइन भी भेजी जा सकती हैं।

यदि कोई सम्मति प्राप्त नहीं होती है अथवा सम्मति में केवल भाषा संबंधी त्रुटि हुई तो उपरोक्त प्रलेख को यथावत अंतिम रूप दे दिया जाएगा। यदि सम्मति तकनीकी प्रकृति की हुई तो विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रलेख को अंतिम रूप दे दिया जाएगा।

यह प्रलेख भारतीय मानक ब्यूरो की वेबसाइट www.bis.gov.in पर भी उपलब्ध है।

धन्यवाद।

भवदीय

ह-/

(अरुण कुमार एस.)

प्रमुख (सिविल इंजीनियरिंग)

संलग्न: उपरलिखित



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DRAFT IN WIDE CIRCULATION

Our Ref: CED 7/T-13

31 March 2023

TECHNICAL COMMITTEE: Structural Engineering and Structural Sections Sectional Committee, CED 7

ADDRESSED TO:

- All Members of Civil Engineering Division Council, CEDC
- All Members of CED 7 and its Sub Committees
- All other interests

Dear Sir/Madam,

Please find enclosed the following draft:

Doc. No.	Title
CED 7 (22216) WC	Draft Indian Standard Hot Rolled and Slit Steel Tee Bars – Dimensions and Properties (Third Revision of IS 1173) ICS 77.140.70

Kindly examine the attached draft and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for Comments: 15 May 2023

Comments if any, may please be made in the enclosed format and emailed at abhishek.pal@bis.gov.in or sent at the above address. Additionally, comments may be sent online through the BIS e-governance portal, www.manakonline.in.

In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case comments, technical in nature are received, then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Yours faithfully,

Sd/-
(Arun Kumar S.)
Head (Civil Engineering)

Encl: As above

FORMAT FOR SENDING COMMENTS ON BIS DOCUMENTS

(Please use A-4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/table/fig etc. be started on a fresh box. Information in column 3 should include reasons for the comments and suggestions for modified working of the clauses when the existing text is found not acceptable. Adherence to this format facilitates Secretariat's work) {Please e-mail your comments to abhishek.pal@bis.gov.in

DOC. NO. & TITLE: CED 7 (22216) WC

Draft Indian Standard Hot Rolled and Slit Steel Tee Bars – Dimensions and Properties

(Third Revision of IS 1173)

ICS 77.140.70

LAST DATE OF COMMENT : 15/05/2023

NAME OF THE COMMENTATOR/ORGANIZATION: _____

Sl. No.	Clause/Para/Table/ Figure No. Commented	Comments/Modified Wordings	Justification of the Proposed Change

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

Draft Indian Standard

Draft Indian Standard Hot Rolled and Slit Steel Tee Bars – Dimensions and Properties

(Third Revision of IS 1173)

ICS 77.140.70

Structural Engineering and Structural
Sections Sectional Committee, CED 7

Last date for Comment:
15/05/2023

FOREWORD

(Formal clauses to be added later)

This standard was first published in 1957 covering a wide range of hot rolled and slit tee bars and was subsequently revised in 1967 and 1978, which covered slit tee bars to be produced by slitting some of the Indian Standard light weight, medium weight and H-beam sections.

In the preparation of this standard, the Sectional Committee has kept in view the manufacturing and trade practices followed in the country in this field.

In this revision, the following modifications have been effected:

- a) New clause for customization of sizes through optimum flange width, beam depth, thicknesses of flange and web has been added.
- b) References clause has been updated.

This standard also aims at satisfying some Sustainable Development Goals by United Nations, especially Goal 9 'Industry, innovation and infrastructure', particularly its target **9.1**.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same that of the specified value in this standard.

BUREAU OF INDIAN STANDARDS
DRAFT FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

Draft Indian Standard

Draft Indian Standard Hot Rolled and Slit Steel Tee Bars – Dimensions and Properties

[*Third Revision* of IS 1173]
ICS 77.140.70

Structural Engineering and Structural
Sections Sectional Committee, CED 7

Last date for Comment:
30/04/2023

1 SCOPE

1.1 This standard lays down the nominal dimensions, weight and basic sectional properties of hot rolled and slit steel tee bars.

2 REFERENCES

The standards listed below contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
IS 808 : 2021	Hot Rolled Steel Beam, Column, Channel and Angle Sections — Dimensions and Properties (<i>fourth revision</i>).
IS 1852 : 1985	Specification for rolling and cutting tolerances for hot - Rolled steel products (<i>fourth revision</i>)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel - Specification (<i>Seventh Revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2062 and the following shall apply.

3.1 Y-Y Axis – A line passing through the centre of gravity of the profile of the section, parallel to the axis of the web of the section.

3.2 Z-Z Axis – A line passing through the centre of gravity of the profile of the section and at right angles to the Y-Y axis.

4 SYMBOLS

4.1 Letter symbols used in this standard have been indicated in fig.1, fig.2 and Table 1. Other letter symbols used in the standard have the meaning indicated against each as given below:

a = Sectional area in sq cm

w = Calculated weight in kg/m = $(0.75 a)$

C_{zz} = Distance of centre of gravity from top of flange

I_{zz} = Moment of inertia about the Z-Z axis

I_{yy} = Moment of inertia about the Y-Y axis

e_{zz} = Distance of extreme fibre from the Z-Z axis

e_{yy} = Distance of extreme fibre from Y-Y axis

$Z_{zz} = \frac{I_{zz}}{e_{zz}}$ = Modulus of section about the Z-Z axis

$Z_{yy} = \frac{I_{yy}}{e_{yy}}$ = Modulus section about the Y-Y axis

$r_{zz} = \sqrt{\frac{I_{zz}}{a}}$ = Radius of gyration about the Z-Z axis

$r_{yy} = \sqrt{\frac{I_{yy}}{a}}$ = Radius of gyration about the Y-Y axis

D = The angle between the web and flange of the section, in degrees.

5 CLASSIFICATION

5.1 Indian standard hot-rolled steel tee bars may be classified as follows:

- a) Indian standard rolled normal tee bars (ISNT).
- b) Indian standard rolled deep legged tee bars (ISDT),
- c) Indian standard slit light weight tee bars (ISLT),
- d) Indian standard slit medium weight tee bars (ISMT), and
- e) Indian standard slit tee bars from h-sections (ISHT).

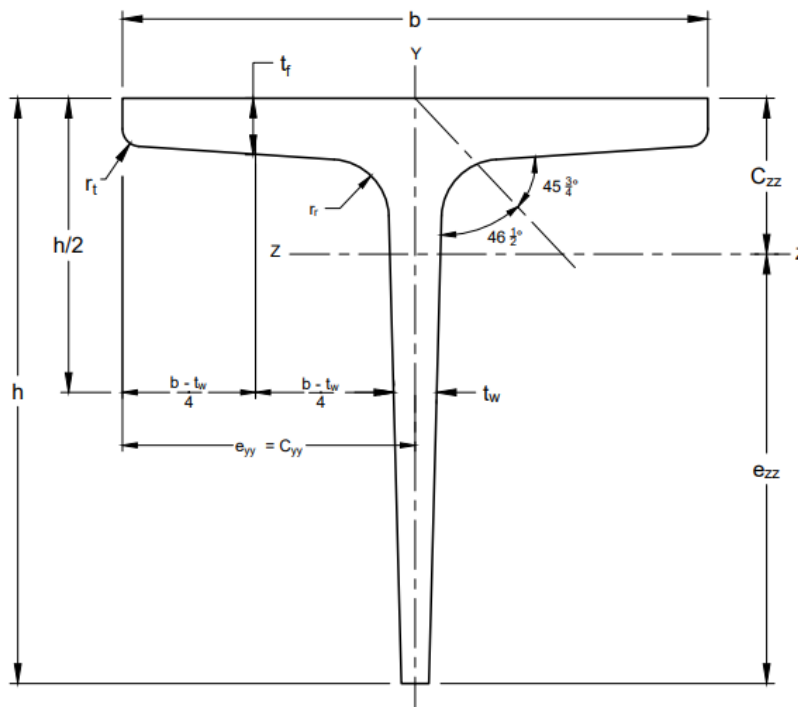


FIG. 1 ROLLED NORMAL TEE BAR (ISNT)

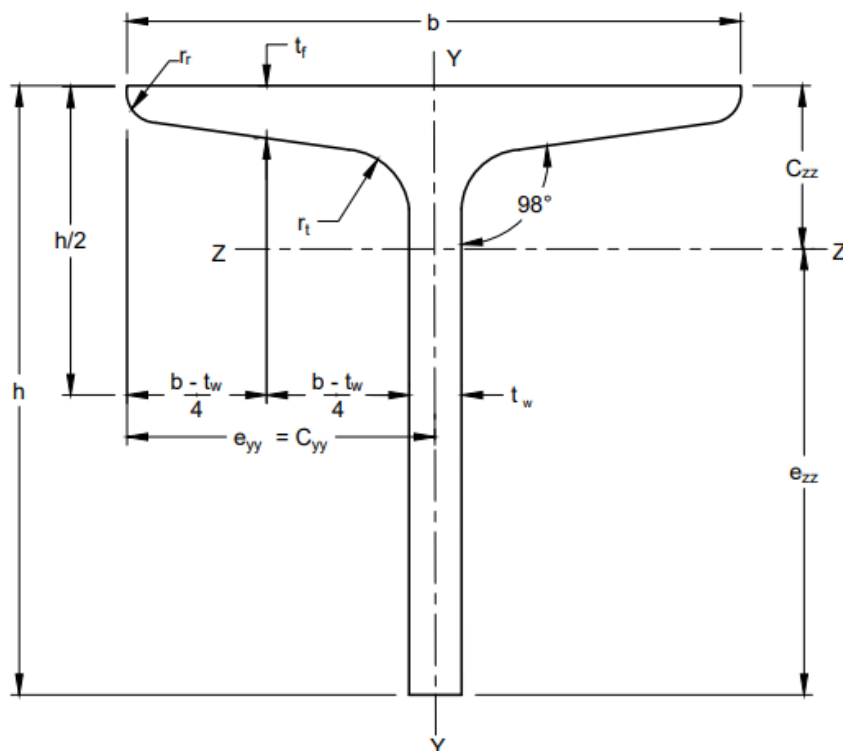


FIG. 2 SLIT TEE BAR AND DEEP LEGGED TEE BAR

5.2 For shop marking and drawing office purposes, the following abbreviated reference symbols may also be permitted provided specific understanding exists between the fabricator, the producer and the drawing office that members designated by these symbols refer only to Indian Standard Sections:

<i>Classification</i>	<i>Abbreviated Reference Symbols</i>
ISNT	NT
ISNT	DT
ISNT	LT
ISNT	MT
ISNT	HT

6 DIMENSIONS AND PROPERTIES

6.1 Nominal dimensions and weight of Indian standard tee bars shall be as given in Table 1.

6.2 The tolerances on the dimensions shall be specified in IS 1852.

6.3 The customization of sizes through optimum flange width, beam depth, thicknesses of flange and web will enable cost savings on the overall steel take off in addition to the reliability of connections achieved. A new range of sections suiting to the need of the design requirements can be produced based on the formulae to calculate the geometrical sectional properties as per Annex A and Annex B of IS 808 that fulfils the design criteria.

TABLE 1 NOMINAL DIMENSIONS, WEIGHT AND GEOMETICAL PROPERTIES OF INDIAN STANDARD TEE BARS
(Clauses 4.1 and 6.1)

DESIGNATION	WEIGHT (w)	SECTIONAL AREA (a)	SIZE (NOMINAL) (h × b)	THICKNESS OF WEB (t _w)	THICKNESS OF FLANGE (t _f)	RADIUS AT ROOT (r _r)	RADIUS AT TOE (r _t)	SLOPE OF FLANGE (D°)	CENTRE OF GRAVITY POSITION (C _{zz})	MOMENT OF INERTIA		RADII OF GYRATION		MOUCLI OF SECTION	
										I _{zz}	I _{yy}	r _{zz}	r _{yy}	Z _{zz}	Z _{yy}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	kg/m	mm ²	mm × mm	mm	mm	mm	mm		mm	10 ⁶ mm ⁴	10 ⁶ mm ⁴	mm	mm	10 ³ mm ³	10 ³ mm ³
Indian Standard Normal Tee Bars															
ISNT 20	1.1	145	20 × 20	4.0	4.0	4.0	3.0		6.0	0.005	0.002	5.8	4.1	0.3	0.2
ISNT 30	1.8	226	30 × 30	4.0	4.0	5.0	3.5		8.2	0.018	0.008	8.9	5.9	0.8	0.5
ISNT 40	3.5	445	40 × 40	6.0	6.0	5.5	4.0		11.4	0.061	0.029	11.8	8.1	2.1	1.5
ISNT 50	4.4	566	50 × 50	6.0	6.0	6.0	4.0		13.5	0.123	0.057	14.7	10.1	3.4	2.3
ISNT 60	5.4	685	60 × 60	6.0	6.0	6.5	4.5	(See Fig. 1)	15.6	0.214	0.097	17.7	11.9	4.8	3.2
ISNT 75	10.0	1270	75 × 75	9.0	9.0	8.0	5.5		20.4	0.620	0.292	22.1	15.2	11.4	7.8
ISNT 100	14.9	1900	100 × 100	10.0	10.0	9.0	6.0		26.2	1.64	0.768	29.4	20.1	22.2	15.4
ISNT 150	22.7	2890	150 × 150	10.0	10.0	10.0	7.0		36.1	5.41	2.50	43.3	29.4	47.5	33.4
Indian Standard Deep Legged Tee Bars															
ISDT 100	8.1	1040	100 × 150	5.8	10.0	8.0	4.0	98°	30.3	0.990	0.096	30.9	9.6	14.2	3.8
ISDT 150	15.7	2000	150 × 75	8.0	11.6	9.0	4.5	98°	47.5	4.50	0.370	47.5	13.6	43.9	9.9
Indian Standard Slit Light Weight Tee Bars*															
ISLT 200	28.4	3620	200 × 165	8.0	12.5	16.0	8.0	98°	47.8	12.7	3.58	59.2	31.5	83.3	43.4
ISLT 250	37.5	4780	250 × 180	9.2	14.1	17.0	8.5	98°	64.0	27.7	5.32	76.2	33.4	149.2	59.1
Indian Standard Slit Medium Weight Tee Bars†															
ISMT 50	5.8	735	50 × 70	4.5	7.5	9.0	4.5	98°	10.4	0.108	0.177	12.1	15.5	2.7	5.05
ISMT 62.5	6.7	850	62.5 × 70	5.0	8.0	9.0	4.5	98°	13.9	0.218	0.192	16.5	15.1	4.4	5.50
ISMT 75	7.5	955	75 × 75	5.0	8.0	9.0	4.5	98°	17.3	0.412	0.234	20.8	15.7	7.1	6.25
ISMT 87.5	9.8	1240	87.5 × 85	5.8	9.0	10.0	5.0	98°	20.6	0.756	0.384	24.7	17.6	11.3	9.00
ISMT 100	12.7	1620	100 × 100	5.7	10.8	11.0	5.5	98°	21.3	1.16	0.750	26.8	21.5	14.7	15.0
Indian Standard Slit Tee Bars from H-Section‡															
ISHT 75	15.3	1950	75 × 150	8.4	9.0	8.0	4.0	94°	16.2	0.962	2.30	22.2	34.4	16.4	30.1
ISHT 100	20.0	2550	100 × 200	7.8	9.0	9.0	4.5	94°	19.1	1.94	4.97	27.6	44.2	24.0	49.3
ISHT 125	27.4	3480	125 × 250	8.8	9.7	10.0	5.0	94°	23.7	4.15	10.0	34.5	53.7	41.0	79.9
ISHT 150	29.4	3740	150 × 250	7.6	10.6	11.0	5.5	94°	26.6	5.74	11.0	39.2	54.1	46.5	87.7

*Slit from ISLB 200 and ISLB 500.
†Slit from MB 100, 125, 150, 175 and 200.
‡Slit from ISHB 150, 200, 250 and 300.
