भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI 110002
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व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 7/टी-14 **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) रूचि रखने वाले अन्य निकाय।

महोदय/महोदया,

निम्नलिखित मसौदा संलग्न है:

प्रलेख संख्या	शीर्षक
सीईडी 7 (22217)WC	**तप्त बेलित इस्पात के बल्ब कोण - आयाम और गुण का भारतीय मानक मसौदा** [IS 1252 का *दूसरा 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 कठिनाइयॉ आ सकती हैं।

सम्मतियॉ 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 फोर्मेट में भेजें। टिप्पणियां 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 वैबसाइट **www.bis.gov.in** पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय

ह-/
(अरुण कुमार एस.)
प्रमुख (सिविल इंजीनियरिंग)

संलग्न: उपरिलिखित

भारतीय मानक ब्यूरो
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DRAFT IN WIDE CIRCULATION

Our Ref: CED 7/T-14 **31 March 2023**

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

ADDRESSED TO:

a) All Members of Civil Engineering Division Council, CEDC
b) All Members of CED 7 and its Sub Committees
c) All other interests

Dear Sir/Madam,

Please find enclosed the following draft:

Doc. No.	Title
CED 7 (22217) WC	**Draft Indian Standard Hot Rolled Steel Bulb Angles – Dimensions and Properties** (*Second Revision* of IS 1252) 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/ced7@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 (22217) WC**

Draft Indian Standard Hot Rolled Steel Bulb Angles – Dimensions and Properties
(*Second Revision* of IS 1252)
ICS 77.140.70

LAST DATE OF COMMENTS : **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

Draft Indian Standard

Hot Rolled Steel Bulb Angles – Dimensions and Properties

(*Second Revision* of IS 1252)
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*)

Bulb angles are generally used in ship building industries. In the preparation of this standard the Sectional Committee specially kept in view the requirements of these industries.

This standard was first published in 1958 and subsequently revised in 1991. In this revision, the following modifications have been effected:

a) References clause has been updated.
b) Provision relating to customization of sizes through optimum width, depth and thickness has been added.

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 results 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 as that of the specified value in this standard.

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

Draft Indian Standard

Hot Rolled Steel Bulb Angles – Dimensions and Properties

[*Second Revision* of IS 1252]

ICS 77.140.70

Structural Engineering and Structural Sections Sectional Committee, CED 7	Last date for Comment: **15/05/2023**

1 SCOPE

1.1 This standard lays down the nominal dimensions, mass and sectional properties of hot rolled steel bulb angles.

2 REFERENCE

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:

IS No	*Title*
IS 808 : 2021	Hot rolled steel beam, column, channel and angle sections – Dimensions and Properties
IS 1852 : 1985	Rolling and cutting tolerances for hot-rolled steel products – Specification (*fourth revision*)
IS 2062 : 2011	Hot rolled medium and high tensile structural steel - Specification (*Seventh Revision*)

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 sections and parallel to the axis of the web.

3.2 Z-Z Axis – A line passing through the centre of gravity of the profile along the length of the of the sections.

3.3 U-U and V-V Axis – Lines passing through the centre of gravity of the profile of the section, representing the principal axes of the section.

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

4 SYMBOLS

4.1 Letter symbols used in this standard have been indicated in the Figure in Table 1. More explicit definitions for certain symbols used in the table and figure are given below:

a = Sectional area in mm^2
m = Nominal mass in kg per m = 0.785 a
D = Projection of the bulb from the inside face of the web
C_{zz} = Distance of centre of gravity of the section from the back line of the flange
C_{yy} = Distance of centre of gravity of the section from the back line of the flange
I_{zz} = Moment of inertia ab out the *Z-Z* axis
I_{yy} = Moment of inertia about the *Y-Y* axis
I_{uu} = Moment of inertia (*Max*) about the *U-U* axis
I_{vv} = Moment of inertia (*Max*) about the *V-V* axis
e_{zz} = Distance of extreme fibre from the *Z-Z* axis
e_{yy} = Distance of extreme fibre from the *Y-Y* axis
$Z_{zz} = \frac{I_{zz}}{C_{zz}}$ =Modulus of section about *Z-Z* axis
$Z_{yy} = \frac{I_{yy}}{C_{yy}}$ =Modulus of section about *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
$r_{uu} = \sqrt{\frac{I_{uu}}{a}}$ = Radius of gyration about the *U-U* axis
$r_{vv} = \sqrt{\frac{I_{vv}}{a}}$ = Radius of gyration about the *V-V* axis
α = Angle between the *U-U* axis and *Z-Z* axis

5 DESIGNATION

5.1 Hot rolled steel bulb angles conforming to this standard shall be designated by letters BA followed by a figure denoting the depth of longer side of the angle in mm. * and ** to denote heavier sections.

6 DIMENSIONS AND SECTIONAL PROPERTIES

6.1 The nominal dimension and mass of bulb angles sections shall be as given in fig. 1 and Table 1. Sectional properties of the bulb angles have been given in Table 1 for information.

NOTE – 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 or as agreed between purchaser and user.

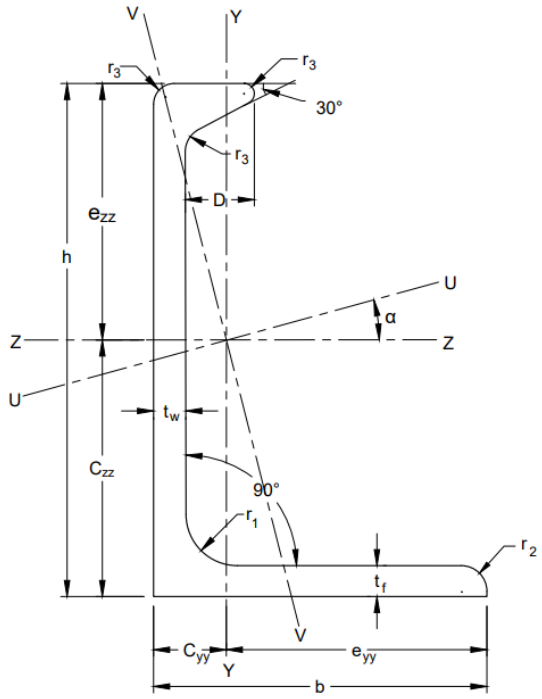

FIG. 1 HOT ROLLED STEEL BULB ANGLE

6.2 The rolling and cutting tolerances bulb angles shall be as stipulated in IS 1852.

Table 1 Nominal Dimensions, Mass and Sectional Properties of Bulb Angles

(*Clauses* 4.1 *and* 6.1)

Designation	Mass per Meter	Sectional Area	Size	Thickness of web	Thickness flange	(D)	Radius at Root	Radius at Toe	Radius at Bulb Corners	Centre of gravity		Distance of Extreme Fibres		Tan α	Moment of inertia				Radii of gyration				Moduli of Section	
		a		t_w	t_f		r_1	r_2	r_3	C_{zz}	C_{yy}	t_{zz}	t_{yy}		I_{zz}	I_{yy}	I_{zz} (*Max*)	I_{yy} (*Min*)	r_{zz}	r_{yy}	r_{uu} (*Max*)	r_{vv} (*Min*)	Z_{zz}	Z_{yy}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
	kg	100* mm^2	mm ×mm	mm	Mm	mm	mm	mm	mm	cm	cm	cm	cm		cm^4	cm^4	cm^4	cm^4	cm	cm	cm	cm	cm^3	cm^3
BA 100	8.6	10.94	100×65	6.0	6.0	13	10.0	5.0	4.0	3.92	1.43	6.08	5.07	0.291	143	33.0	153	22.8	3.61	1.74	3.74	1.44	23.5	6.5
BA 100*	9.6	12.17	100×65	7.0	6.5	13	10.0	5.0	4.0	3.95	1.43	6.05	5.07	0.288	155	35.7	165	24.9	3.56	1.71	3.69	1.43	25.6	7.0
BA 125	12.2	15.60	125×75	7.0	7.0	16	11.0	5.5	5.0	5.06	1.60	7.44	5.90	0.248	322	60.4	339	43.3	4.54	1.97	4.66	1.67	43.2	10.2
BA 125*	13.4	17.11	125×75	8.0	7.5	16	11.0	5.5	5.0	5.08	1.61	7.42	5.89	0.246	344	64.6	362	46.6	4.49	1.94	4.60	1.65	46.4	11.0
BA 150	16.1	20.45	150×75	8.0	8.0	20	11.0	5.5	6.0	6.52	1.55	8.48	5.95	0.167	613	71.4	628	55.9	5.47	1.87	5.54	1.65	72.2	12.0
BA 150*	18.8	23.94	150×75	10.0	9.0	20	11.0	5.5	6.0	6.53	1.57	8.47	5.93	0.162	686	79.8	703	63.4	5.36	1.83	5.42	1.63	81.1	13.5
BA 175	20.0	25.54	175×90	8.0	9.0	23	13.5	6.5	7.0	7.44	1.89	10.06	7.11	0.185	1 070	137	1 110	104	6.48	2.32	6.58	2.02	107	19.3
BA 175*	23.3	29.66	175×90	10.0	10.0	23	13.5	6.5	7.0	7.46	1.90	10.04	7.10	0.181	1 190	152	1 230	117	6.34	2.27	6.43	1.99	119	21.4
BA 175**	26.5	33.74	175×90	12.0	11.0	23	13.5	6.5	7.0	7.49	1.92	10.01	7.08	0.177	1 310	166	1 350	130	6.23	2.22	6.32	1.96	131	23.5
BA 200	28.2	35.95	200×90	11.0	11.0	26	13.5	6.5	8.0	8.87	1.86	11.13	7.14	0.136	1 880	172	1 910	140	7.23	2.19	7.29	1.97	169	24.1
BA 200*	33.6	42.76	200×90	14.0	12.5	26	13.5	6.5	8.0	8.89	1.91	11.11	7.09	0.131	2 130	194	2 160	160	7.06	2.13	7.12	1.93	192	27.3
BA 225	31.4	39.94	225×90	11.0	11.0	29	13.5	6.5	9.0	10.4	1.80	12.10	7.20	0.103	2 660	179	2 690	152	8.17	2.12	8.21	1.95	220	24.9
BA 225*	37.3	47.50	225×90	14.0	12.5	29	13.5	6.5	9.0	10.4	1.85	12.13	7.15	0.098	3 020	202	3 040	175	7.97	2.06	8.01	1.92	249	28.2
BA 250	34.9	44.41	250×90	11.0	11.0	33	13.5	6.5	10.0	12.1	1.78	12.93	7.22	0.075	3 680	188	3 700	168	9.11	2.06	9.13	1.95	285	26.0
BA 250*	39.2	49.96	250×90	13.0	12.0	33	13.5	6.5	10.0	12.0	1.81	13.01	7.19	0.072	4 010	205	4 030	185	8.96	2.02	8.98	1.92	308	28.5
BA 275	40.9	52.13	275×90	12.0	12.0	36	13.5	6.5	11.0	13.5	1.80	13.93	7.21	0.057	5 160	213	5 180	197	9.95	2.02	9.97	1.94	370	29.6
BA 275*	45.6	58.15	300×90	14.0	13.0	36	13.5	6.5	11.0	13.4	1.83	14.05	7.17	0.054	5 580	231	5 600	215	9.80	1.99	9.81	1.92	397	32.2
BA 300	47.5	60.47	275×90	13.0	13.0	39	13.5	6.5	12.0	15.0	1.82	15.02	7.18	0.042	7 030	241	7 050	229	10.8	2.00	10.8	1.95	468	33.6
BA 300*	52.6	66.96	300×90	15.0	14.0	39	13.5	6.5	12.0	14.9	1.86	15.08	7.14	0.040	7 570	260	7 580	248	10.6	1.97	10.6	1.92	502	36.4

NOTE – Sections carrying with * and ** in the designation are heavier sections in each size obtained from the same set of rolls as the lighter sections by spreading of the rolls. The width of flanges of these difference between of the webs. Therefore while ordering these heavier sections, mass should be mentioned.