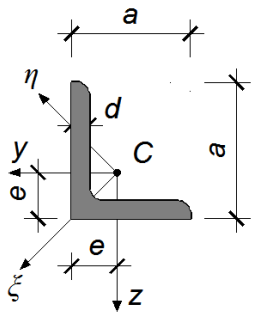
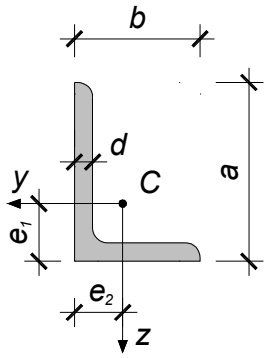
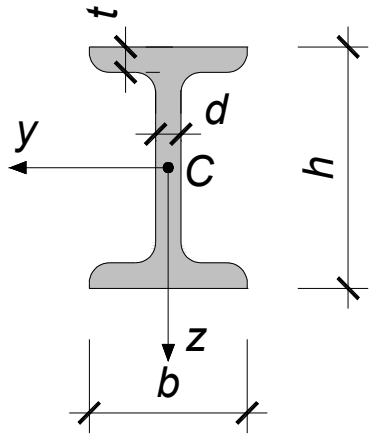
Appendix:



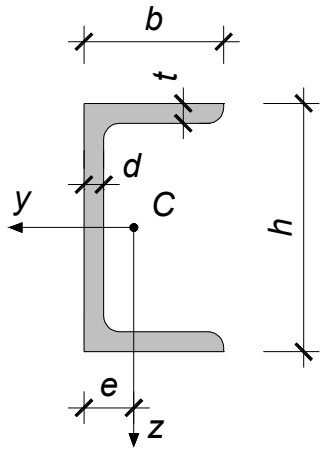
a.a.d	A	e	I_y	I_{yz}	I_η	I_ξ
[mm]	[cm^2]	[cm]	[cm^4]	[cm^4]	[cm^4]	[cm^4]
70.70.6	8,15	1,94	37,6	-22,1	15,5	59,7
70.70.8	10,70	2,02	48,2	-28,2	20	76,4
80.80.8	12,30	2,27	73,4	-43,1	30,3	116,5
90.90.8	13,90	2,51	106,0	-62,2	43,8	168,2
90.90.10	17,20	2,62	129,0	-75,6	53,4	204,6
100.100.8	15,60	2,75	147,0	-86,0	61	233
100.100.10	19,20	2,83	179,0	-105,0	74	284
100.100.12	22,80	2,91	209,0	-122,1	86,9	331,1
100.100.14	26,30	2,99	237,2	-137,8	99,3	375
100.100.16	29,70	3,06	264,0	-152,0	112	416
120.120.10	23,30	3,33	316,5	-186,5	130	503
120.120.12	27,60	3,41	371,5	-218,5	153	590
120.120.15	33,90	3,51	446,0	-259,5	186,5	705,6
125.125.10	24,30	3,45	360,0	-221,0	149	571
125.125.12	28,90	3,53	422,0	-248,0	174	670
125.125.14	33,40	3,61	482,0	-282,0	200	764
140.140.10	27,30	3,82	512,0	-302,0	210	814
140.140.12	32,50	3,90	602,0	-355,0	247	957
140.140.14	37,40	3,98	690,0	-410,0	280	1100
150.150.12	34,90	4,15	747,0	-439,0	308	1186
150.150.15	45,00	4,25	899,0	-530,0	369	1429
150.150.18	51,10	4,38	1059,6	-619,5	440	1679
160.160.10	31,40	4,30	774,0	-455,0	319	1229
160.160.12	37,40	4,39	913,0	-537,0	376	1450
160.160.14	43,30	4,47	1046,0	-616,0	430	1662
160.160.16	49,10	4,55	1176,0	-690,0	485	1865
160.160.18	54,80	4,63	1299,0	-762,0	537	2061
200.200.14	54,60	5,46	2097,0	-1236,0	861	3333
200.200.16	62,00	5,54	2363,0	-1393,0	970	3755
200.200.20	76,50	5,70	2871,0	-1689,0	1182	4560
200.200.30	111,50	6,07	4020,0	-2331,0	1699	6351
220.220.14	60,40	5,93	2814,0	-1656.0	1159	4470
220.220.16	68,60	6,02	3175,0	-1879.0	1306	5054



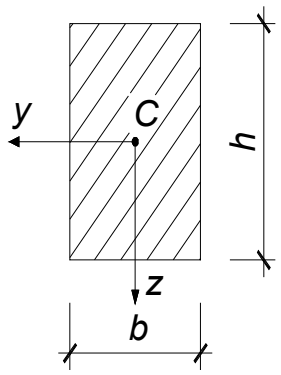
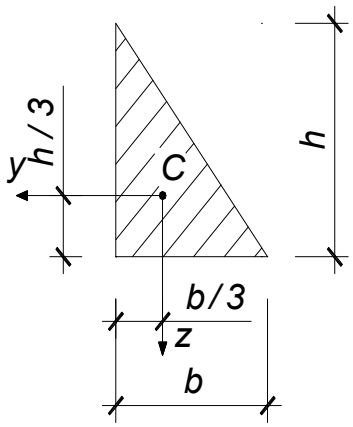
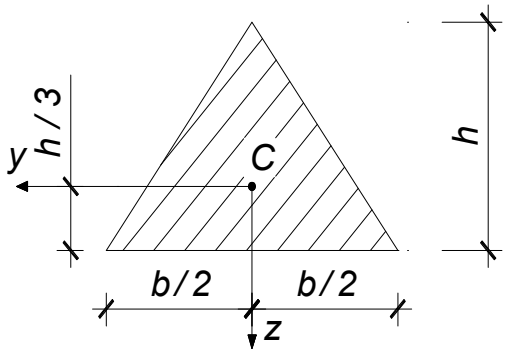
a.b.d	A	e_1	e_2	I_y	I_z	I_{yz}
[mm]	[cm^2]	[cm]	[cm]	[cm^4]	[cm^4]	[cm^4]
75.50.5	6,11	2,39	1,17	34,8	12,5	-12,02
75.50.6	7,25	2,44	1,21	40,9	14,6	-14.10
75.50.8	9,47	2,52	1,29	52,4	18,5	-17,85
80.50.5	6,36	2,60	1,13	41,6	12,7	-13,17
80.50.6	7,55	2,65	1,17	49,0	14,8	-15,49
90.56.6	8,54	2,95	1,28	70,6	21,2	-22,23
90.56.8	11,18	3,04	1,36	90,9	27,1	-28,35
100.63.6	9,59	3,23	1,42	98,3	30,6	-31,48
100.63.8	12,60	3,32	1,50	127,0	39,2	-40,51
100.63.10	15,50	3,40	1,58	154,0	47,1	-48,65
110.70.6,5	11,40	3,55	1,58	142,0	45,6	-46,27
110.70.8	13,90	3,61	1,64	172,0	54,6	-55,88
125.80.8	16,00	4,05	1,84	256,0	83,0	-84,12
125.80.10	19,70	4,14	1,92	312,0	100,0	-102,10
125.80.12	23,40	4,22	2,00	365,0	117,0	-118,20
140.90.8	18,00	4,49	2,03	364,0	120,0	-120,70
140.90.10	22,20	4,58	2,12	444,0	146,0	-146,60
160.100.9	22,90	5,19	2,23	606,0	186,0	-194,00
160.100.10	25,30	5,23	2,28	667,0	204,0	-213,00
160.100.12	30,00	5,32	2,36	784,0	239,0	-249,00
160.100.14	34,70	5,40	2,43	897,0	272,0	-283,00
180.110.10	28,30	5,88	2,44	952,0	276,0	-295,00
180.110.12	33,70	5,97	2,52	1123,0	324,0	-347,00
200.125.11	34,90	6,50	2,79	1449,0	446,0	-465,00
200.125.12	37,90	6,54	2,83	1568,0	482,0	-503,00
200.125.14	43,90	6,62	2,91	1801,0	551,0	-575,00
200.125.16	49,80	6,71	2,99	2026,0	617,0	-643,00
250.160.12	48,30	7,97	3,53	3147,0	1032,0	-1043,00
250.160.16	63,60	8,14	3,69	4091,0	1333,0	-1350,00
250.160.18	71,10	8,23	3,77	4545,0	1475,0	-1497,00
250.160.20	78,50	8,31	3,85	4987,0	1613,0	-1635,00

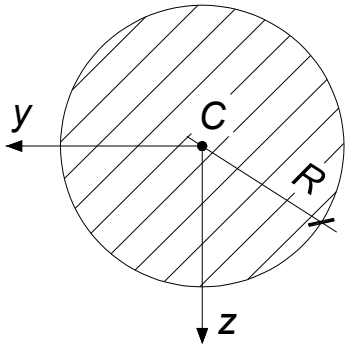
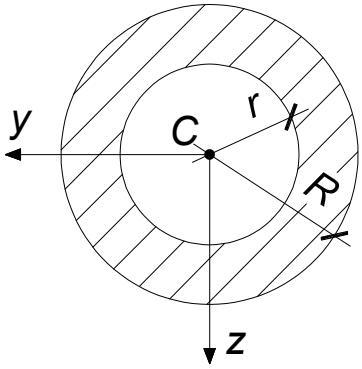
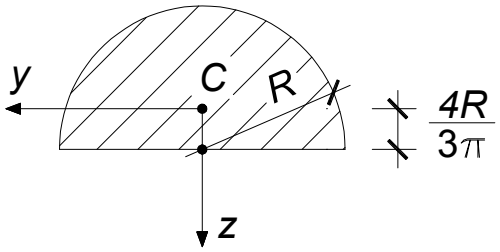
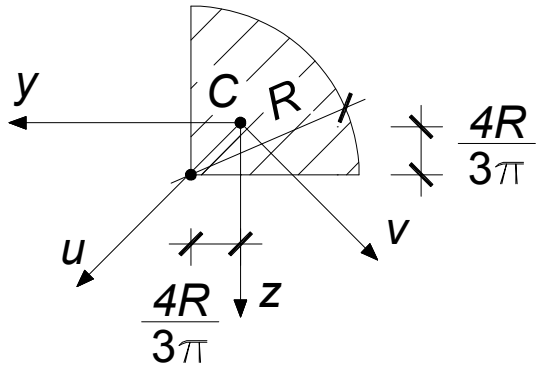


h	b	d	t	A	I_y	I_z	W_y	W_z	i_y	i_z	$S_y(0)$
[cm]	[cm]	[cm]	[cm]	[cm^2]	[cm^4]	[cm^4]	[cm^3]	[cm^3]	[cm]	[cm]	[cm^3]
12	6,4	0,48	0,73	14,7	350	27,9	58,4	8,72	4,88	1,38	33,7
14	7,3	0,49	0,75	17,4	572	41,9	81,7	11,5	5,73	1,55	46,8
16	8,1	0,50	0,78	20,2	873	58,6	109,0	14,5	6,57	1,70	62,3
18	9,0	0,51	0,81	23,4	1290	82,6	143,0	18,4	7,42	1,88	81,4
18 a	10,0	0,51	0,83	25,4	1430	114,0	159,0	22,8	7,51	2,12	89,8
20	10,0	0,52	0,84	26,8	1840	115,0	184,0	23,1	8,28	2,07	104,0
20 a	11,0	0,52	0,86	28,9	2030	155,0	203,0	28,2	8,37	2,32	114,0
22	11,0	0,54	0,87	30,6	2550	157,0	232,0	28,6	9,13	2,27	131,0
22 a	12,0	0,54	0,89	32,8	2790	206,0	254,0	34,3	9,22	2,50	143,0
24	11,5	0,56	0,95	34,8	3460	198,0	289,0	34,5	9,97	2,37	163,0
24 a	12,5	0,56	0,98	37,5	3800	260,0	317,0	41,6	10,10	2,63	178,0
27	12,5	0,60	0,98	40,2	5010	260,0	371,0	41,5	11,20	2,54	210,0
27 a	13,5	0,60	1,02	43,2	5500	337,0	408,0	50,0	11,30	2,80	229,0
30	13,5	0,65	1,02	46,5	7080	337,0	472,0	49,9	12,30	2,69	265,0
30 a	14,5	0,65	1,07	49,9	7780	436,0	518,0	60,1	12,50	2,95	292,0
33	14,0	0,70	1,12	53,8	9840	419,0	597,0	59,9	13,50	2,79	339,0
36	14,5	0,75	1,23	61,9	13380	516,0	743,0	71,1	14,70	2,89	423,0
40	15,5	0,83	1,30	72,6	19062	667,0	953,0	86,1	16,20	3,03	545,0
45	16,0	0,90	1,42	84,7	27696	808,0	1231,0	101,0	18,10	3,09	708,0
50	17,0	1,00	1,52	100,0	39727	1043,0	1589,0	123,0	19,90	3,23	919,0
55	18,0	1,10	1,65	118,0	55962	1356,0	2035,0	151,0	21,80	3,39	1181,0
60	19,0	1,20	1,78	138,0	76806	1725,0	2560,0	182,0	23,60	3,54	1491,0
65	20,0	1,20	1,92	153	101400	2170,0	3120,0	217,0	25,80	3,77	1800,0



h	b	d	t	e	A	I_y	W_y	i_y	I_z	W_z	i_z	S_y (0)
[cm]	[cm]	[cm]	[cm]	[cm]	[cm^2]	[cm^4]	[cm^3]	[cm]	[cm^4]	[cm^3]	[cm]	[cm^3]
10	4,6	0,45	0,76	1,44	10,9	174	34,8	3,99	20,4	6,46	1,37	20,4
12	5,2	0,48	0,78	1,54	13,3	304	50,6	4,78	31,2	8,52	1,53	29,6
14	5,8	0,49	0,81	1,67	15,6	491	70,2	5,60	45,4	11,00	1,70	40,8
14 a	6,2	0,49	0,87	1,87	17,0	545	77,8	5,66	57,5	13,30	1,84	45,1
16	6,4	0,50	0,84	1,80	18,1	747	93,4	6,42	63,3	13,80	1,87	54,1
16 a	6,8	0,50	0,90	2,00	19,5	823	103,0	6,49	78,8	16,40	2,01	59,4
18	7,0	0,51	0,87	1,94	20,7	1090	121,0	7,24	86,0	17,00	2,04	69,8
18 a	7,4	0,51	0,93	2,13	22,2	1190	132,0	7,32	105,0	20,00	2,18	76,1
20	7,6	0,52	0,90	2,07	23,4	1520	152,0	8,07	113,0	20,50	2,20	87,8
20 a	8,0	0,52	0,97	2,28	25,2	1670	167,0	8,15	139,0	24,20	2,35	95,9
22	8,2	0,54	0,95	2,21	26,7	2110	192,0	8,89	151,0	25,10	2,37	110,0
22 a	8,7	0,54	1,02	2,46	28,8	2330	212,0	8,99	187,0	30,00	2,55	121,0
24	9,0	0,56	1,00	2,42	30,6	2900	242,0	9,73	208,0	31,60	2,60	139,0
24 a	9,5	0,56	1,07	2,67	32,9	3180	265,0	9,84	254,0	37,20	2,78	151,0
27	9,5	0,60	1,05	2,47	35,2	4160	308,0	10,90	262,0	37,30	2,73	178,0
30	10,0	0,65	1,10	2,52	40,5	5810	387,0	12,00	327,0	43,60	2,84	224,0
33	10,5	0,70	1,17	2,59	46,5	7980	484,0	13,10	410,0	51,80	2,97	281,0
36	11,0	0,75	1,26	2,68	53,4	10820	601,0	14,20	513,0	61,70	3,10	350,0
40	11,5	0,80	1,35	2,75	61,5	15220	761,0	15,70	642,0	73,40	3,23	444,0
40 a	10,0	1,05	1,80	2,49	75,1	17578	879,0	15,30	592,0	78,60	2,81	517,0

	$I_y = \frac{bh^3}{12}; \quad I_z = \frac{hb^3}{12}$
	$I_y = \frac{bh^3}{36}; \quad I_z = \frac{hb^3}{36};$ $I_{yz} = -\frac{b^2h^2}{72}$
	$I_y = \frac{bh^3}{36}; \quad I_z = \frac{hb^3}{48}$

	$I_y = I_z = \frac{\pi R^4}{4}$
	$I_y = I_z = \frac{\pi\left(R^4 - r^4\right)}{4}$
	$I_y = 0{,}1098R^4; \quad I_z = 0{,}3927R^4$
	$I_y = I_z = 0{,}0549R^4$ $I_{yz} = -0{,}0165R^4$ $I_u = 0{,}0714R^4; \quad I_v = 0{,}0384R^4$

Values of the coefficient φ according to slenderness λ - St 3

λ	φ	λ	φ	λ	φ	λ	φ	λ	φ
0	1.000	21	0.958	41	0.917	61	0.855	81	0.744
1	0.999	22	0.956	42	0.914	62	0.850	82	0.738
2	0.998	23	0.954	43	0.911	63	0.845	83	0.732
3	0.997	24	0.952	44	0.908	64	0.840	84	0.726
4	0.996	25	0.950	45	0.905	65	0.835	85	0.720
5	0.995	26	0.948	46	0.902	66	0.830	86	0.714
6	0.994	27	0.946	47	0.899	67	0.825	87	0.708
7	0.993	28	0.944	48	0.896	68	0.820	88	0.702
8	0.992	29	0.942	49	0.893	69	0.815	89	0.696
9	0.991	30	0.940	50	0.890	70	0.810	90	0.690
10	0.990	31	0.938	51	0.887	71	0.804	91	0.681
11	0.987	32	0.936	52	0.884	72	0.798	92	0.672
12	0.984	33	0.934	53	0.881	73	0.792	93	0.663
13	0.981	34	0.932	54	0.878	74	0.786	94	0.654
14	0.978	35	0.930	55	0.875	75	0.780	95	0.645
15	0.975	36	0.928	56	0.872	76	0.774	96	0.636
16	0.972	37	0.926	57	0.869	77	0.768	97	0.627
17	0.969	38	0.924	58	0.866	78	0.762	98	0.618
18	0.966	39	0.922	59	0.863	79	0.756	99	0.609
19	0.963	40	0.920	60	0.860	80	0.750	100	0.600

λ	φ	λ	φ	λ	φ	λ	φ	λ	φ
101	0.592	121	0.445	141	0.356	161	0.287	181	0.228
102	0.585	122	0.440	142	0.352	162	0.284	182	0.226
103	0.578	123	0.435	143	0.348	163	0.281	183	0.224
104	0.572	124	0.430	144	0.344	164	0.278	184	0.222
105	0.567	125	0.425	145	0.340	165	0.275	185	0.220
106	0.563	126	0.420	146	0.336	166	0.272	186	0.218
107	0.558	127	0.415	147	0.332	167	0.269	187	0.216
108	0.554	128	0.410	148	0.328	168	0.266	188	0.214
109	0.551	129	0.405	149	0.324	169	0.263	189	0.212
110	0.520	130	0.400	150	0.320	170	0.260	190	0.210
111	0.513	131	0.396	151	0.317	171	0.257	191	0.208
112	0.506	132	0.392	152	0.314	172	0.254	192	0.206
113	0.499	133	0.388	153	0.311	173	0.251	193	0.204
114	0.492	134	0.384	154	0.308	174	0.248	194	0.202
115	0.485	135	0.380	155	0.305	175	0.245	195	0.200
116	0.478	136	0.376	156	0.302	176	0.242	196	0.198
117	0.471	137	0.372	157	0.299	177	0.239	197	0.196
118	0.464	138	0.368	158	0.296	178	0.236	198	0.194
119	0.457	139	0.364	159	0.293	179	0.233	199	0.192
120	0.450	140	0.360	160	0.290	180	0.230	200	0.190

Euler's formula and Tetmajer-Jasinski's formula
of the critical force

$$\lambda \geq 105 \qquad F_{cr} = \frac{\pi^2 E I_{\min}}{l_0^2}$$

$$40 < \lambda < 105 \qquad F_{cr} = A\sigma_{cr}; \qquad \sigma_{cr} = 30{,}4 - 0{,}112\lambda$$