

EL  STRON

STEEL SERVICE CENTERS

COLD FORMED SECTIONS

SECTIONS TYPE EL Zplus

The cold form sections (EL Z, EL C, EL Σ , EL Zplus) are used as secondary steel frame structure of metal construction, decreasing its weight up to 50%, compared to the ordinary hot rolled steel sections (H-Beams, e.g. IPE, IPN etc).

The combination of the particular geometrical characteristics and the high resistance of the steel (S 320) that cold formed sections hold, has as a result increased resistance in relation to their weight.

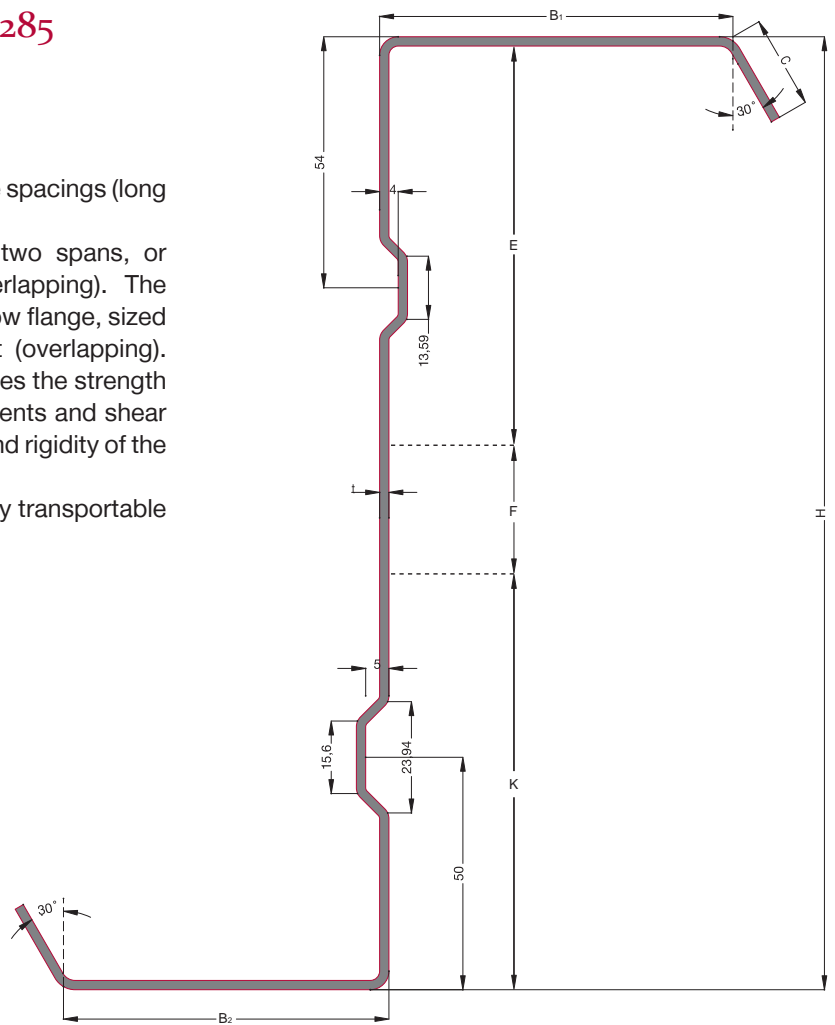
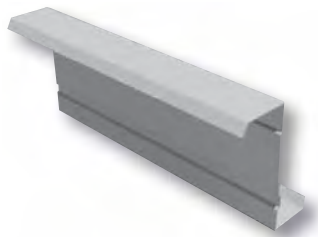
For each type of cold form section the topology of bolting holes can be provided so that it is delivered ready for erection, according to the designer's drawings. Having the advantage of customization, cold form sections can be manufactured according to customer's specifications (type, length, holes). Accessories are also available, necessary for the installation of the cold formed sections on the base metal frame (e.g. connection sleeves).

Advantages:

- High strength to weight ratio (load capacity).
- Decrease of the total weight of the metal base framing.
- Consistent quality. Production for hot-galvanized, high resistance steel.
- Close dimensional tolerances.
- Production according to the customers' requirements (forming progress, hole punching, final length).
- Marking based on constructional drawing for easier erection.

EL Zplus PROFILES 205, 225, 255, 285

- Appropriate either for side or roof purlins.
- Suitable for buildings with bigger portable frame spacings (long length cold form sections).
- Different types of configuration (one span, two spans, or multiple continuous spans connected by overlapping). The EL Zplus section feature one broad and one narrow flange, sized so that two sections of the same size fit tight (overlapping). Lapping (double thickness of the profiles) increases the strength on the join of two sections, where bending moments and shear are maximum, thus improving the load capacity and rigidity of the secondary steel frame system.
- EL Zplus profiles are available custom-cut in any transportable length and delivered in strapped bundles.



Cross section		EL Zplus205		EL Zplus225		EL Zplus255		EL Zplus285	
Dimensions (mm)	t	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5
	H	205		225		255		285	
	B ₁	76		76		76		76	
	B ₂	70		70		70		70	
	C	20		20		25		25	
	F	47		67		97		127	
	E	81		81		81		81	
	K	77		77		77		77	
Section properties	G (kg/m)	6.00	7.44	6.31	7.83	6.78	8.42	7.25	9.00
	A (cm ²)	7.54	9.43	7.93	9.92	8.72	10.90	9.31	11.64
	L _y (cm ⁴)	491.44	610.82	610.54	759.28	841.86	1047.87	1095.63	1364.50
	W _y (cm ³)	48.70	60.53	55.08	68.50	66.92	83.30	77.86	96.97
	L _z (cm ⁴)	92.28	113.81	92.29	113.82	105.62	130.37	105.63	130.38
	W _z (cm ³)	11.47	14.19	11.48	14.21	12.75	15.79	12.77	15.81

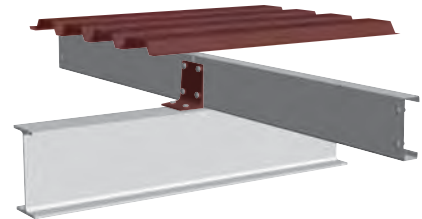
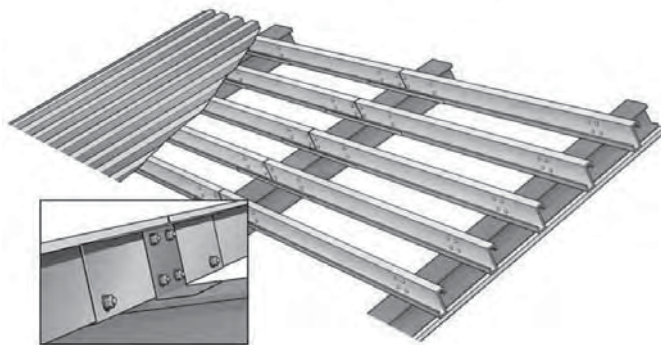
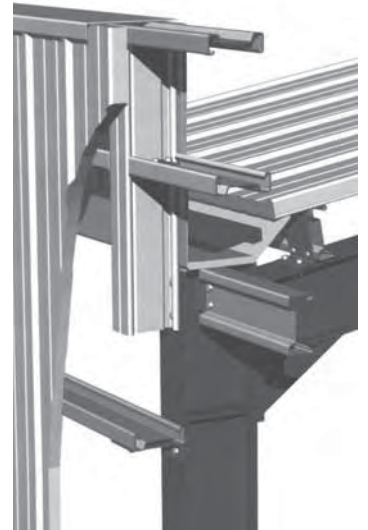
MARKING OF COLD FORM SECTIONS



- Cold form section product line is able to mark each profile, according to the designers' drawings (name of client, number of drawing, type of profile, length).
- The product line is easily programmed, by using NC files.

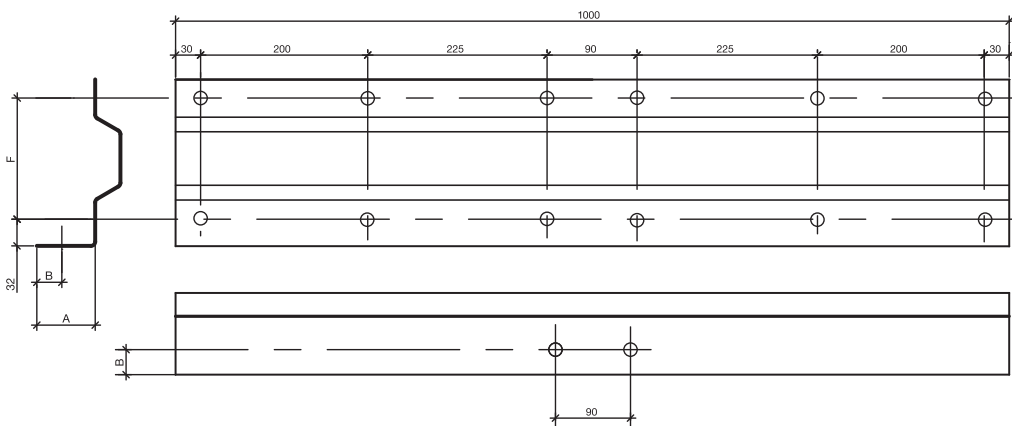
The tolerance of the strip is ± 2 mm.

ELASTRON cold form sections are included in libraries of specialized software of metal construction design

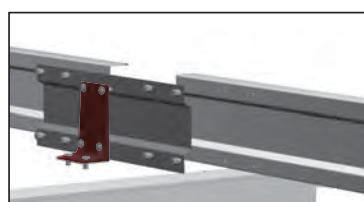


Visit our website, www.elastron.gr, where you can find the designing software - ELASTRON CFS

SLEEVE SIGMA TYPE COMPONENT



Cross section	Á	Â	F	Øthickness
175	60	30	121	3.0
205	60	30	151	3.0
225	70	40	171	3.5
255	70	40	201	3.5



COLD FORM SECTIONS FOR PHOTOVOLTAIC INSTALLATIONS

ELASTRON S.A. STEEL SERVICE CENTERS is activated in the section of processing of Cold Form Sections (EL SIGMA, EL C, EL Z, EL Zplus) for building constructions since 2001. Cold Form Sections produced by pre-galvanized high strength steel, are used for Photovoltaic Steel Understructures.

Solar Steel Structures from Cold Form Sections:

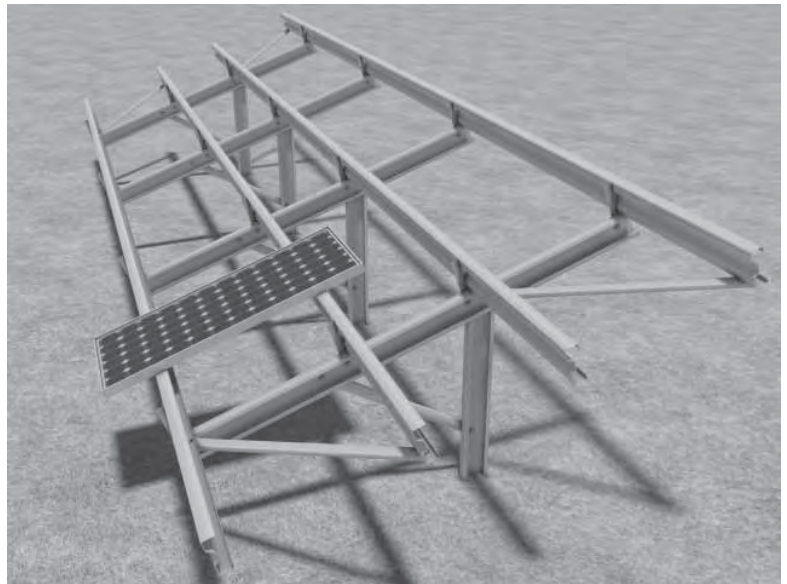
- By using the high strength capability are used for bigger span structures.
- Are certified.
- Provide corrosion resistance.
- Are produced according to the designer's drawings (holes, dimension, length, etc).

Advantages

- Cost and time saving
- Easy to assemble
- Less foundations
- Durability and low maintenance cost

General Characteristics

- Pre-galvanized steel S320GD or higher
- Galvanized coating Z275 till Z600
- Tailor Made
- Marking – packing per solar station



DESIGN LOAD TABLES FOR COLD FORM SECTIONS

The design tables of ELASTRON's Cold Form Sections (maximum variable load kg/m^2), are based on the following parameters:

Structural System:

1, 2, 4 span in length of 4m till 6m, step every 1m. The working loads for 3 span structural systems are equal with 2 span systems, as the lack of overlapping either in purlins or rails.

Distance between purlins (mm):

1000, 1200, 1500, 1800, 2000, 2400

Tie Brachet:

0, 1, 2 per span

Steel Quality:

S320GD

Sleeves or overlapping:

The special need of sleeves or overlapping depends on the length of purlins - rail, which is 12m. For example, if we have 4 span structural systems in a length of 5m per span, we assume an overlapping of 10m.

Methodology of maximum working load:

We choose the weight of cladding system as the load for design in combination with the dead weight, as follows $1.0 \times \text{Dead Weight} + 1.0 \times \text{Weight of Cladding System}$. The results of this calculation define the maximum ultimate load of the specific profile in the specific structural system. Starting the calculation with a maximum load of 1000 tons/ m^2 , we are searching for the maximum load that its design ratio does not exceed the value 1.0. The value of this load is the maximum load that the selected section can withstand in the selected structural system.

Example for using Design Tables:

Consider that there is a user who wants to choose the appropriate section from the Design Tables and deals with the following situation:

User in Greece wants to choose the appropriate purlin section taking into account the following design load scenarios:

Scenario 1:

Purlin self weight: 5 kg/m^2

Cladding: 10 kg/m^2

Snow: 100 kg/m^2

Wind: $+100 \text{ kg/m}^2$ (pressure)

Scenario 2:

Purlin self weight: 5 kg/m^2

Cladding: 10 kg/m^2

Snow: 100 kg/m^2

Wind: -250 kg/m^2 (suction)

Due to the fact that the user wants to dimension a purlin in Greece should calculate the sum of the actions using Eurocode 1. Let us consider that the user decides to take into account the following combinations:

$$S_d = \psi_0(\bar{a}_g \times G_k) + \bar{a}_{Q,1} \times Q_{k,1} + \psi_i \times 2 (\psi_{0,i} \times \bar{a}_{Q,1} \times Q_{k,i}) \quad (1)$$

$$S_d = \psi_0(\bar{a}_g \times G_k) + \bar{a}_{Q,1} \times Q_{k,1} \quad (2)$$

According to equation (1) we have the following:

Scenario 1 – main action snow

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 + 0.6 \times 1.5 \times 100 = 6.75 + 13.5 + 150 + 90 = 260.25 \text{ kg/m}^2$$

Scenario 1 – main action wind

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 + 0.7 \times 1.5 \times 100 = 6.75 + 13.5 + 150 + 105 = 275.25 \text{ kg/m}^2$$

Scenario 2 – main action snow

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 + 0.6 \times 1.5 \times (-250) = 6.75 + 13.5 + 150 - 225 = 54.75 \text{ kg/m}^2$$

Scenario 2 – main action wind

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times (-250) + 0.7 \times 1.5 \times 100 = 6.75 + 13.5 - 375 + 105 = -249.75 \text{ kg/m}^2$$

According to equation (2) we have the following:

Scenario 1 – main action snow

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 = 6.75 + 13.5 + 150 = 170.25 \text{ kg/m}^2$$

Scenario 1 – main action wind

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 = 6.75 + 13.5 + 150 = 170.25 \text{ kg/m}^2$$

Scenario 2 – main action snow

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times 100 = 6.75 + 13.5 + 150 = 170.25 \text{ kg/m}^2$$

Scenario 2 – main action wind

$$S_d = \Sigma[1.35 \times 5 + 1.35 \times 10] + 1.5 \times (-250) = 6.75 + 13.5 - 375 = -354.75 \text{ kg/m}^2$$

From all the above scenarios it is concluded that the worst load is derived from:

Scenario 1 – main action wind = -354.75 kg/m²

For this load (354.75 kg/m²) the user should choose the appropriate purlin section from the Design Tables.

EL Zplus - Number of spans: 1

Length: 4.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	340.58	496.58	544.43	283.94	413.82	453.61	227.17	331.06	363.04	189.21	275.88	302.49	170.29	248.29	272.22	141.97	206.91	226.81
EL Z*205-2.5	7.43	440.67	660.16	729.49	367.19	550.29	607.91	293.70	440.19	486.33	244.81	366.94	405.27	220.34	330.08	364.75	183.59	275.15	303.96
EL Z*225-2.0	6.28	376.71	550.78	604.00	313.72	459.23	503.42	250.98	367.19	402.59	209.23	306.15	335.45	188.36	275.39	302.00	156.86	229.61	251.71
EL Z*225-2.5	7.82	423.58	559.57	602.54	353.03	466.55	501.95	282.47	373.29	401.61	235.35	311.04	334.72	211.79	279.79	301.27	176.51	233.28	250.98
EL Z*255-2.0	6.89	471.31	656.25	711.91	392.82	546.88	593.26	314.21	437.50	474.61	261.72	364.50	395.51	235.66	328.13	355.96	196.41	273.44	296.63
EL Z*255-2.5	8.58	613.28	891.11	975.59	511.23	742.19	812.99	408.94	593.75	650.39	340.82	494.75	541.99	306.64	445.56	487.79	255.62	371.09	406.49
EL Z*285-2.0	7.35	531.25	741.70	804.69	442.87	617.68	670.41	354.25	494.39	536.13	295.17	411.87	447.02	265.63	370.85	402.34	221.44	308.84	335.21
EL Z*285-2.5	9.16	690.92	1007.81	1103.52	575.68	839.84	919.92	460.69	671.88	735.84	384.03	559.57	613.28	345.46	503.91	551.76	287.84	419.92	459.96

Length: 5.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	159.91	298.10	325.20	133.30	248.29	271.00	106.63	198.73	216.80	88.87	165.53	180.66	79.96	149.05	162.60	66.65	124.15	135.50
EL Z*205-2.5	7.43	206.54	394.53	433.59	172.12	328.61	361.33	137.70	262.94	289.06	114.81	219.12	240.78	103.27	197.27	216.80	86.06	164.31	180.66
EL Z*225-2.0	6.28	176.27	330.57	360.84	146.97	275.64	300.78	117.55	220.46	240.60	97.96	183.72	200.44	88.14	165.28	180.42	73.49	137.82	150.39
EL Z*225-2.5	7.82	209.96	340.09	364.01	174.93	283.20	303.47	139.89	226.69	242.80	116.64	188.84	202.27	104.98	170.04	182.01	87.46	141.60	151.73
EL Z*255-2.0	6.89	225.22	396.97	428.71	187.62	330.81	357.18	150.15	264.65	285.89	125.12	220.58	238.22	112.61	198.49	214.36	93.81	165.41	178.59
EL Z*255-2.5	8.58	289.31	535.65	583.98	241.15	446.53	486.69	192.99	357.18	389.40	160.77	297.61	324.46	144.65	267.82	291.99	120.58	223.27	243.35
EL Z*285-2.0	7.35	253.42	448.73	484.50	211.18	373.78	403.81	168.95	299.07	323.00	140.75	249.21	269.29	126.71	224.37	242.25	105.59	186.89	201.90
EL Z*285-2.5	9.16	324.95	605.96	660.65	270.75	504.88	550.29	216.55	403.81	440.43	180.42	336.67	366.94	162.48	302.98	330.32	135.38	252.44	275.15

Length: 6.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	81.36	189.21	217.41	67.81	157.59	181.15	54.23	126.10	144.90	45.20	105.10	120.76	40.68	94.60	108.70	33.91	78.80	90.58
EL Z*205-2.5	7.43	105.96	248.47	289.31	88.32	207.15	241.15	70.62	165.65	192.87	58.84	138.06	160.77	52.98	124.24	144.65	44.16	103.58	120.58
EL Z*225-2.0	6.28	89.48	209.84	241.33	74.52	174.93	201.05	59.63	139.89	160.89	49.68	116.58	134.03	44.74	104.92	120.67	37.26	87.46	100.53
EL Z*225-2.5	7.82	110.29	220.22	244.45	91.92	183.47	203.61	73.49	146.85	162.96	61.25	122.31	135.74	55.15	110.11	122.22	45.96	91.74	101.81
EL Z*255-2.0	6.89	115.23	255.13	287.84	96.07	212.65	239.87	76.84	170.04	191.90	64.03	141.72	159.91	57.62	127.56	143.92	48.04	106.32	119.93
EL Z*255-2.5	8.58	148.19	341.06	391.11	123.51	284.18	325.93	98.82	227.42	260.74	82.34	189.45	217.29	74.10	170.53	195.56	61.75	142.09	162.96
EL Z*285-2.0	7.35	129.52	288.33	325.44	107.91	240.23	271.00	86.30	192.26	216.92	71.96	160.16	180.79	64.76	144.17	162.72	53.96	120.12	135.50
EL Z*285-2.5	9.16	165.89	385.74	442.63	138.18	321.29	368.90	110.60	257.08	294.92	92.16	214.23	245.91	82.95	192.87	221.31	69.09	160.65	184.45

EL Zplus - Number of spans: 2

Length: 4.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	345.46	503.42	551.76	287.84	419.43	459.96	230.23	335.69	367.92	191.90	279.54	306.64	172.73	251.71	275.88	143.92	209.72	229.98
EL Z*205-2.5	7.43	454.59	681.15	752.44	378.66	567.38	626.95	302.98	454.10	501.47	252.44	378.42	417.97	227.30	340.58	376.22	189.33	283.69	313.48
EL Z*225-2.0	6.28	382.32	559.08	612.79	318.60	466.06	510.74	254.88	372.80	408.69	212.40	310.55	340.58	191.16	279.54	306.40	159.30	233.03	255.37
EL Z*225-2.5	7.82	429.93	567.87	611.33	358.40	473.51	509.28	286.62	378.66	407.47	238.95	315.67	339.60	214.97	283.94	305.66	179.20	236.76	254.64
EL Z*255-2.0	6.89	478.27	666.02	722.17	398.44	554.69	602.05	318.85	443.85	481.57	265.63	369.87	401.37	239.14	333.01	361.08	199.22	277.34	301.03
EL Z*255-2.5	8.58	631.35	916.99	1003.91	526.37	764.16	836.91	421.14	611.33	669.43	350.83	509.28	557.62	315.67	458.50	501.95	263.18	382.08	418.46
EL Z*285-2.0	7.35	540.04	753.91	817.87	450.20	628.42	681.64	360.11	502.44	545.41	300.05	418.95	454.35	270.02	376.95	408.94	225.10	314.21	340.82
EL Z*285-2.5	9.16	712.89	1039.06	1138.67	594.24	866.21	948.49	475.34	692.87	758.79	396.00	577.15	632.32	356.45	519.53	569.34	297.12	433.11	474.24

Length: 5.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	161.74	301.27	328.86	134.77	251.22	273.93	107.85	200.93	219.24	89.91	167.48	182.74	80.87	150.64	164.43	67.38	125.61	136.96
EL Z*205-2.5	7.43	212.77	406.01	446.29	177.25	338.38	371.83	141.85	270.51	297.36	118.16	225.59	247.93	106.38	203.00	223.15	88.62	169.19	185.91
EL Z*225-2.0	6.28	178.47	334.72	365.23	148.80	278.81	304.44	119.02	223.15	243.53	99.18	185.91	202.88	89.23	167.36	182.62	74.40	139.40	152.22
EL Z*225-2.5	7.82	212.52	344.24	368.65	177.12	286.87	307.13	141.60	229.49	245.73	118.04	191.16	204.71	106.26	172.12	184.33	88.56	143.43	153.56
EL Z*255-2.0	6.89	227.78	401.61	433.59	189.82	334.47	361.33	151.86	267.58	289.06	126.47	223.02	240.97	113.89	200.81	216.80	94.91	167.24	180.66
EL Z*255-2.5	8.58	297.12	549.81	599.12	247.56	458.01	499.15	198.00	366.46	399.41	165.04	305.42	332.76	148.56	274.90	299.56	123.78	229.00	249.57
EL Z*285-2.0	7.35	256.59	454.35	490.72	213.87	378.66	408.94	171.14	302.98	327.15	142.58	252.44	272.71	128.30	227.17	245.36	106.93	189.33	204.47
EL Z*285-2.5	9.16	333.98	622.56	678.71	278.32	519.04	565.92	222.66	415.04	452.64	185.55	345.95	377.20	166.99	311.28	339.36	139.16	259.52	282.96

Length: 6.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	82.21	191.04	219.61	68.48	159.18	182.98	54.81	127.32	146.36	45.69	106.14	121.95	41.11	95.52	109.80	34.24	79.59	91.49
EL Z*205-2.5	7.43	109.07	255.62	297.36	90.88	213.01	247.93	72.69	170.41	198.24	60.61	141.97	165.28	54.54	127.81	148.68	45.44	106.51	123.96
EL Z*225-2.0	6.28	90.45	212.16	243.90	75.38	176.76	203.25	60.29	141.36	162.60	50.26	117.86	135.50	45.23	106.08	121.95	37.69	88.38	101.62
EL Z*225-2.5	7.82	111.51	222.66	247.01	92.90	185.55	205.81	74.34	148.44	164.67	61.94	123.69	137.21	55.76	111.33	123.51	46.45	92.77	102.91
EL Z*255-2.0	6.89	116.33	257.57	290.53	96.99	214.72	242.07	77.58	171.75	193.73	64.64	143.07	161.38	58.17	128.78	145.26	48.49	107.36	121.03
EL Z*255-2.5	8.58	151.98	349.37	400.64	126.59	291.02	333.74	101.32	232.91	267.09	84.41	194.09	222.53	75.99	174.68	200.32	63.29	145.51	166.87
EL Z*285-2.0	7.35	130.98	291.50	328.86	109.13	242.98	274.17	87.28	194.34	219.24	72.75	161.99	182.74	65.49	145.75	164.43	54.57	121.49	137.09
EL Z*285-2.5	9.16	170.29	395.51	454.10	141.85	329.59	378.42	113.53	263.67	302.73	94.60	219.73	252.20	85.14	197.75	227.05	70.92	164.80	189.21

EL Zplus - Number of spans: 4

Length: 4.000 mm

SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	332.03	484.13	530.76	276.61	403.32	442.14	221.31	322.75	353.76	184.45	268.80	294.68	166.02	242.07	265.38	138.31	201.66	221.07
EL Z*205-2.5	7.43	438.23	656.74	725.59	364.99	547.36	604.49	291.99	437.74	483.77	243.35	364.75	403.08	219.12	328.37	362.79	182.50	273.68	302.25
EL Z*225-2.0	6.28	367.43	537.60	589.36	306.15	448.00	491.09	245.00	358.40	393.07	204.10	298.58	327.39	183.72	268.80	294.68	153.08	224.00	245.54
EL Z*225-2.5	7.82	414.31	547.36	589.36	345.22	456.30	491.09	276.12	364.99	392.82	230.23	304.20	327.39	207.15	273.68	294.68	172.61	228.15	245.54
EL Z*255-2.0	6.89	459.96	640.14	694.82	383.30	533.69	578.61	306.64	427.00	463.14	255.37	355.71	385.99	229.98	320.07	347.41	191.65	266.85	289.31
EL Z*255-2.5	8.58	608.40	883.79	967.53	506.84	736.33	806.15	405.76	588.87	645.02	338.14	490.72	537.60	304.20	441.90	483.77	253.42	368.16	403.08
EL Z*285-2.0	7.35	519.53	725.10	786.62	432.86	604.00	655.76	346.44	483.40	524.41	288.57	402.83	437.01	259.77	362.55	393.31	216.43	302.00	327.88
EL Z*285-2.5	9.16	687.01	1000.98	1096.68	572.27	834.47	914.06	458.01	667.48	731.45	381.59	556.15	609.38	343.51	500.49	548.34	286.13	417.24	457.03

Length: 5.000 mm

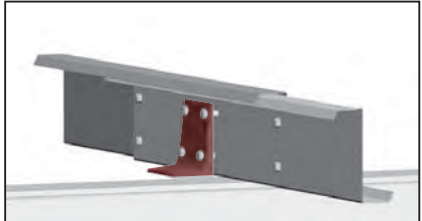
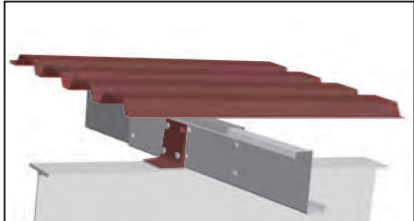
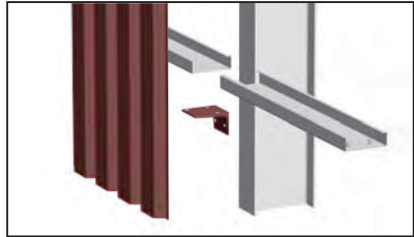
SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	194.82	362.06	394.78	162.35	301.51	329.10	129.88	241.33	263.18	108.28	201.05	219.36	97.41	181.03	197.39	81.18	150.76	164.55
EL Z*205-2.5	7.43	256.10	487.06	535.16	213.38	406.01	446.29	170.65	324.71	356.93	142.21	270.75	297.36	128.05	243.53	267.58	106.69	203.00	223.15
EL Z*225-2.0	6.28	214.97	401.86	438.48	179.08	334.96	365.48	143.31	267.82	292.24	119.39	223.27	243.53	107.48	200.93	219.24	89.54	167.48	182.74
EL Z*225-2.5	7.82	255.86	413.33	442.63	213.14	344.48	368.65	170.53	275.64	294.92	142.09	229.61	245.91	127.93	206.67	221.31	106.57	172.24	184.33
EL Z*255-2.0	6.89	273.93	481.93	520.02	228.27	401.61	433.59	182.62	321.29	346.92	152.22	267.58	289.06	136.96	240.97	260.01	114.14	200.81	216.80
EL Z*255-2.5	8.58	357.18	659.18	718.26	297.61	549.32	598.63	238.04	439.45	479.00	198.36	366.21	399.17	178.59	329.59	359.13	148.80	274.66	299.32
EL Z*285-2.0	7.35	308.59	544.92	588.38	257.08	454.35	490.36	205.69	363.53	392.33	171.39	302.73	326.90	154.30	272.46	294.19	128.54	227.17	245.18
EL Z*285-2.5	9.16	401.37	746.58	813.97	334.47	622.07	678.22	267.58	497.68	542.48	223.02	414.80	452.15	200.68	373.29	406.98	167.24	311.04	339.11

Length: 6.000 mm

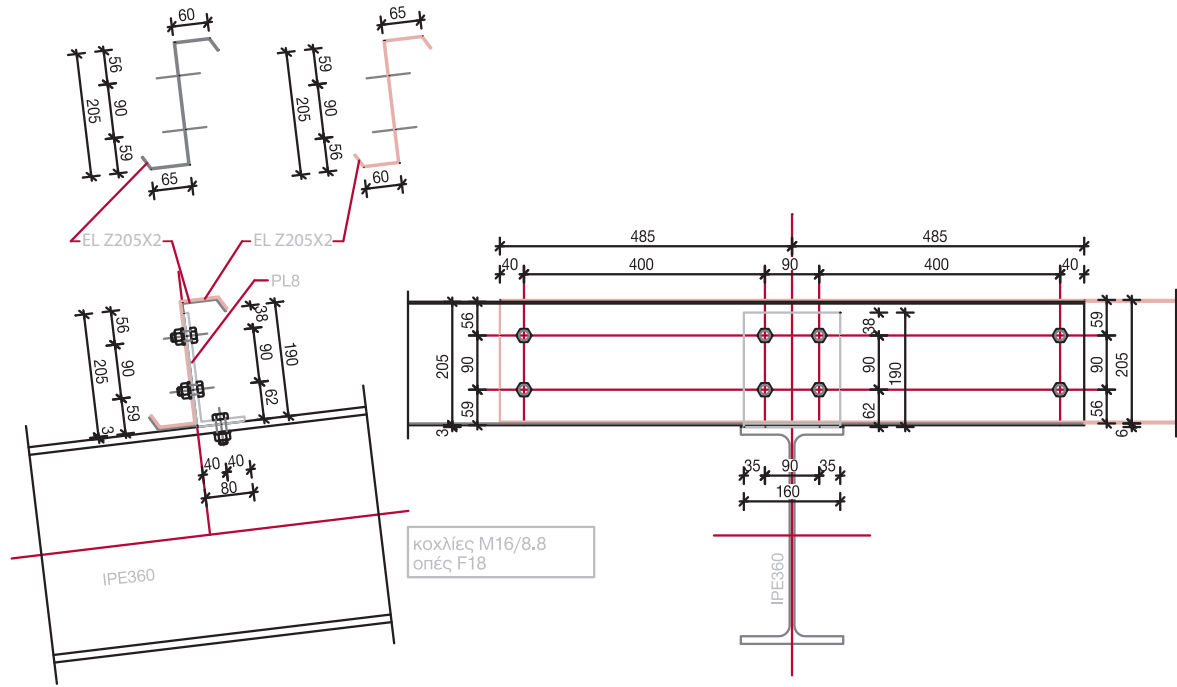
SECTIONS	Weight (kg/m)	Maximum load (kg/m ²)																	
	Distance Between Sections	1000			1200			1500			1800			2000			2400		
	Tie Brachet	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2	0	1	2
EL Z*205-2.0	5.97	99.49	229.74	263.67	82.95	191.41	219.85	66.35	153.20	175.78	55.30	127.56	146.48	49.74	114.87	131.84	41.47	95.70	109.92
EL Z*205-2.5	7.43	131.84	307.13	357.18	109.92	255.86	297.61	87.95	204.71	238.04	73.24	170.53	198.36	65.92	153.56	178.59	54.96	127.93	148.80
EL Z*225-2.0	6.28	109.44	254.88	292.97	91.19	212.52	244.08	72.94	169.92	195.31	60.79	141.60	162.72	54.72	127.44	146.48	45.59	106.26	122.04
EL Z*225-2.5	7.82	134.89	267.58	296.88	112.43	223.15	247.38	89.91	178.47	197.88	74.95	148.68	164.92	67.44	133.79	148.44	56.21	111.57	123.69
EL Z*255-2.0	6.89	140.63	309.33	348.88	117.19	257.81	290.53	93.75	206.30	232.54	78.13	171.88	193.73	70.31	154.66	174.44	58.59	128.91	145.26
EL Z*255-2.5	8.58	183.35	419.43	480.47	152.83	349.37	400.64	122.22	279.54	320.31	101.87	233.03	267.09	91.68	209.72	240.23	76.42	174.68	200.32
EL Z*285-2.0	7.35	158.08	350.10	394.78	131.71	291.75	328.86	105.35	233.40	263.18	87.77	194.46	219.36	79.04	175.05	197.39	65.86	145.87	164.43
EL Z*285-2.5	9.16	205.44	474.61	544.43	171.14	395.51	453.86	136.96	316.41	363.04	114.14	263.67	302.49	102.72	237.31	272.22	85.57	197.75	226.93

COMPONENTS AND ACCESSORIES

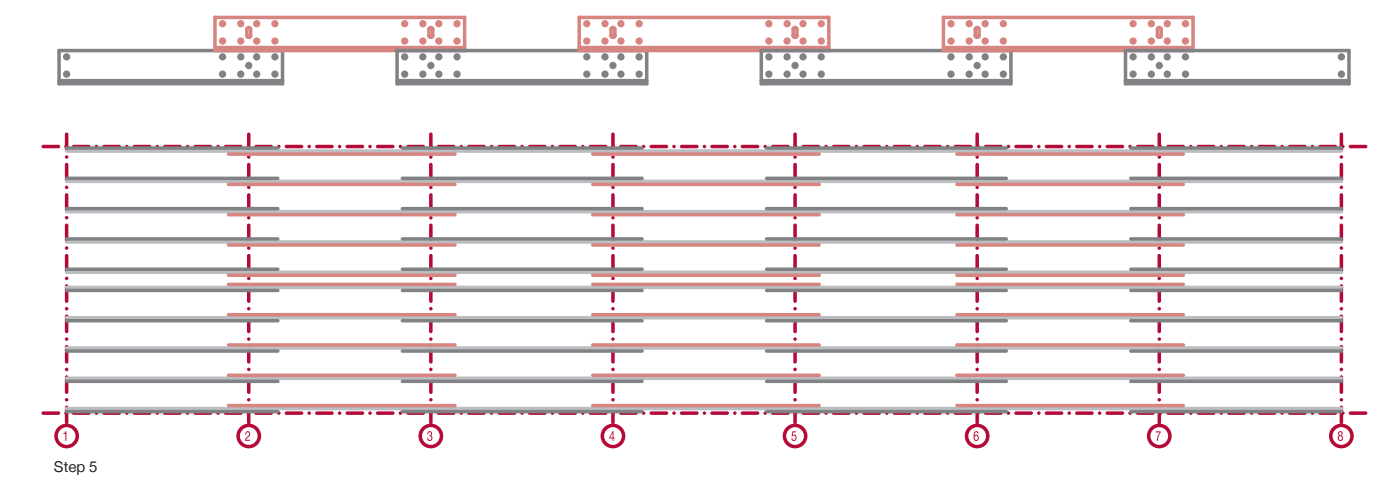
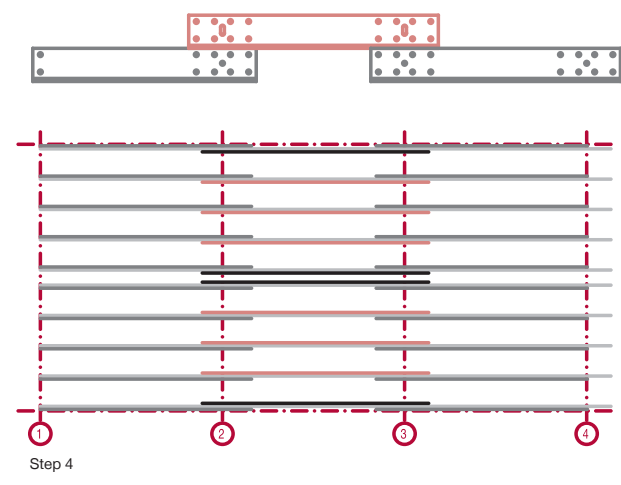
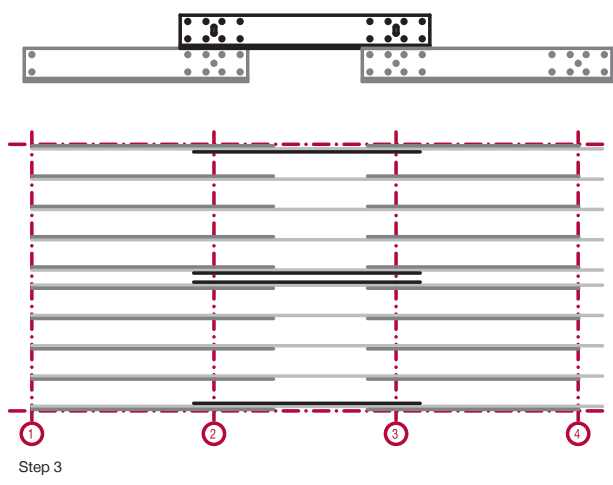
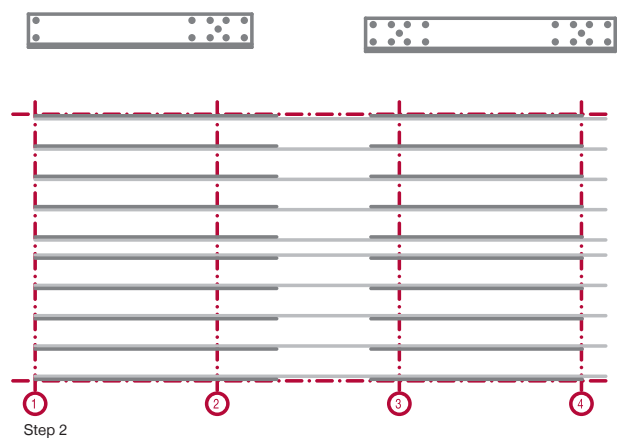
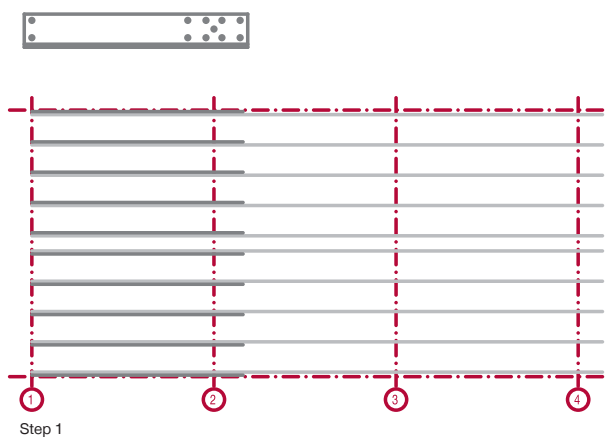
The dimensions and location of the holes of each component or accessory have the appropriate geometrical characteristics, in order to be connected with the cold form section (EL Z, EL C, EL SIGMA, EL Zplus).



CONNECTION EL Z205/2 (OVERLAPPING) STEEL FRAME (IPE360)

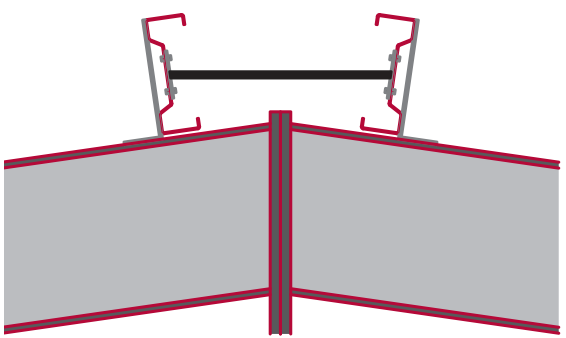


EL Z AND EL Zplus PROFILE QUICK ERECTION PROCEDURE

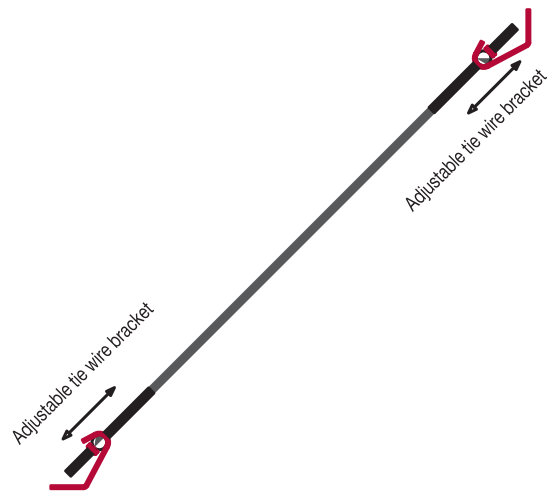


CONSTRUCTION DETAILS

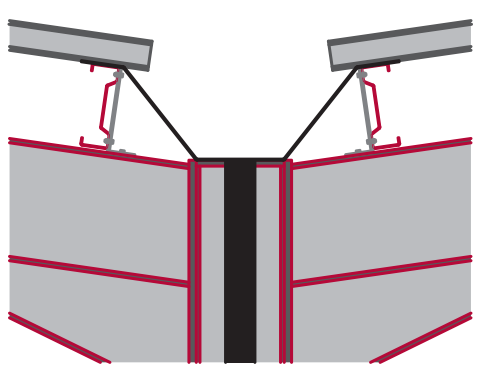
TIE ROD



ADJUSTABLE WING BRACING

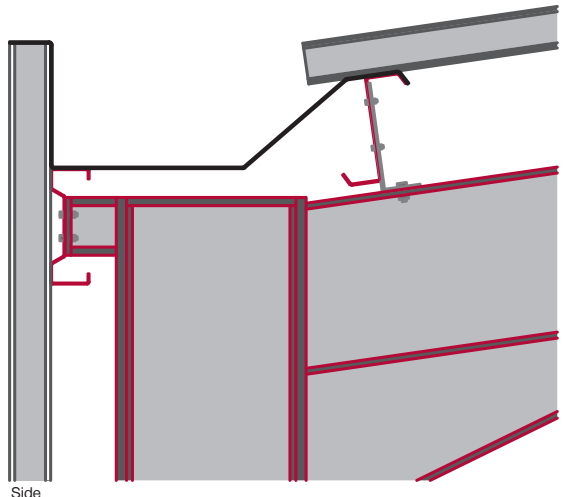


INTERNAL GATTER



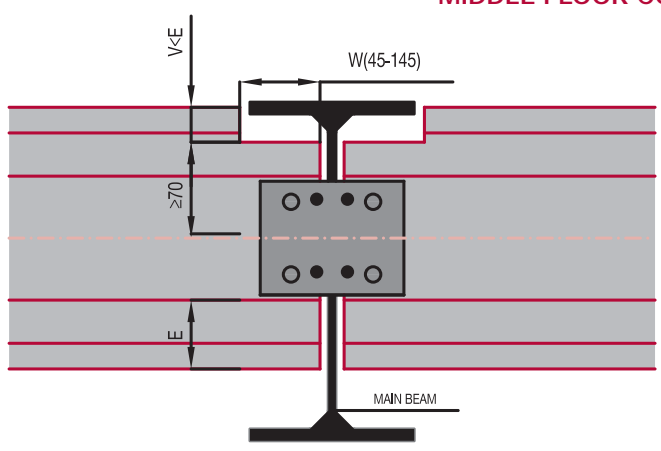
Middle

EXTERNAL GATTER

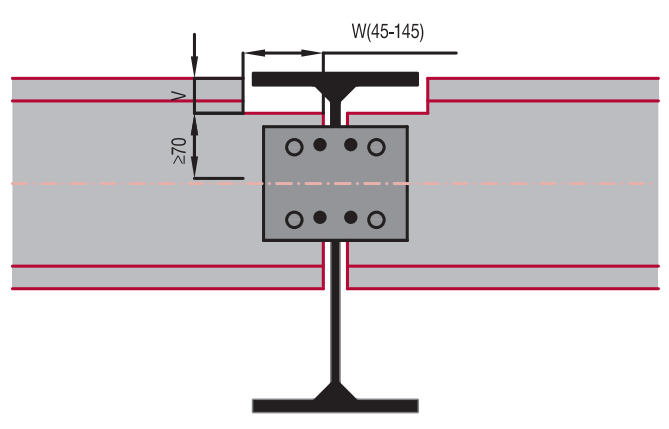


Side

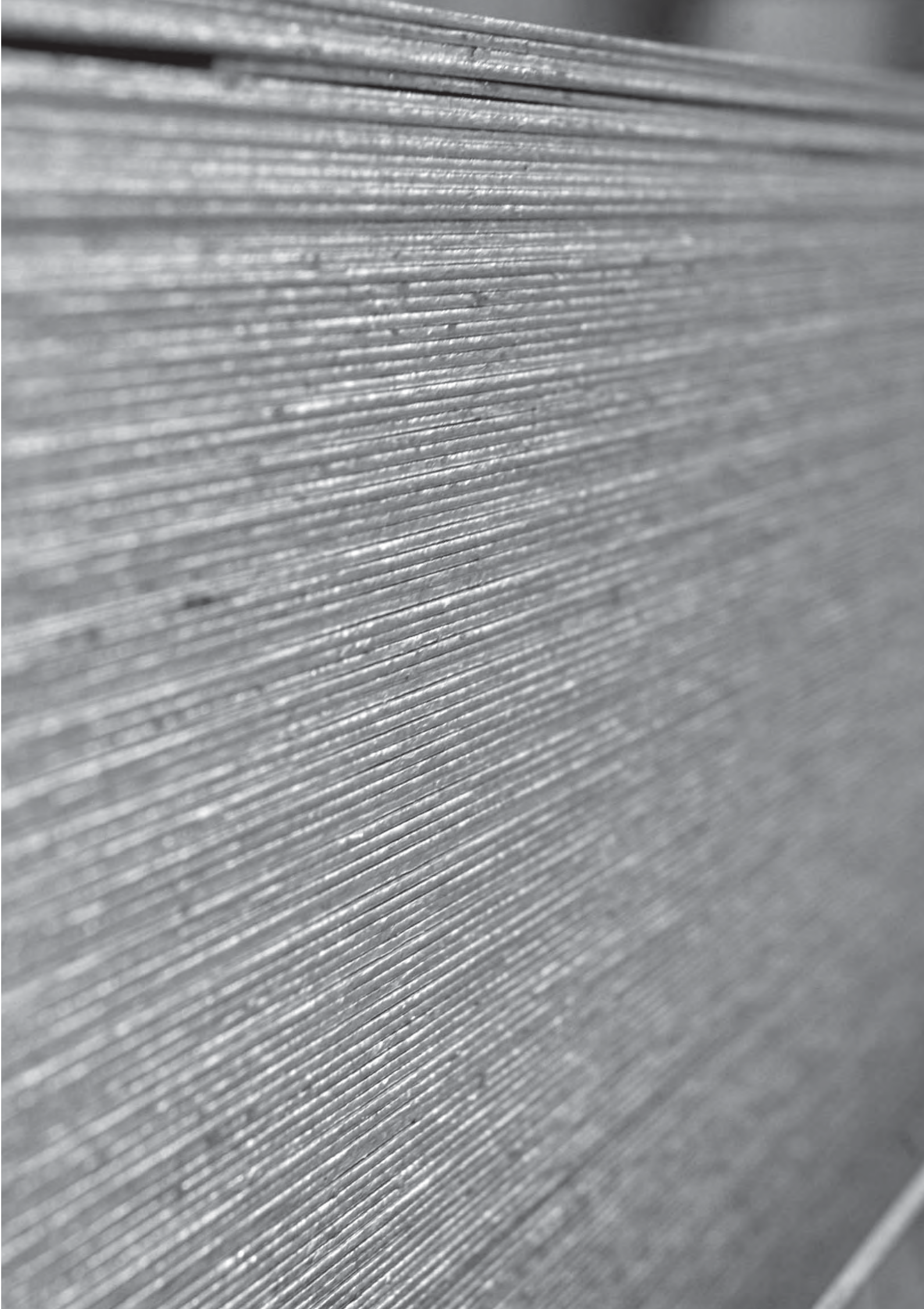
MIDDLE FLOOR CONSTRUCTION DETAIL



Connection between main frame-Sigma CFS



Connection between main frame-C CFS



TÜV HELLAS
Member of TÜV NORD Group

CERTIFICATE

**Management system as per
EN ISO 9001 : 2008
Quality Management Systems - Requirements**

In accordance with TÜV HELLAS (TÜV NORD) S.A procedures, it is hereby certified that

**ELASTRON S.A.
Head Offices and Aspropyrgos Manufacturing Plant:
Diylistirion Ave. Ag. Ioannis
19 300 Aspropyrgos**

**Skaramaga Manufacturing Plant:
1, Palaska Str.
124 62 Skaramagas
Greece**

applies a Management System in line with the above standard for the following scope

Trade and Processing of Steel Products

Certificate Registration No.041050100
Audit Report No. E-0405/2011

Initial certification 2005

TÜV HELLAS (TÜV NORD) S.A. Certification Body

Athens, 2011-06-05

This certification was conducted in accordance with the TÜV HELLAS S.A. auditing and certification procedures and is subject to regular surveillance audits.



INTERNATIONAL COMPARISON OF STANDARDS

EN		EN 10025:1990 +A1:1993	EN 10025:1990	GERMANY	FRANCE	U.K.	SPAIN	ITALY	BELGIUM	SWEDEN	PORTUGAL	AUSTRIA	NORWAY
EN 1005-2:2004	EN 10025:1990 +A1:1993												
S185	1.0035	S185	Fe 310-0	St 33	NF A 35-501 A 33	BS 4360	UNE 36-080 A 310-0	UNI 7070 Fe 320	NBN A 21-101 A 320	SS 14 13 00-00	NP 1729 Fe 310-0	N 3116 St 320	
		S235JR	Fe 360 B	St 37 - 2	E24-2			Fe 360 B	AE 235-B	13 11-00	Fe 360-B		NS 12 120
		S235JRG1	Fe 360 BFN	Ust 37-2			AE 235 B-FU					Ust 360 B	NS 12 122
S235JR	1.0038	S235JRG2	Fe 360 BFN	RSt 37-2		40B	AE 235 B- FN			13 12-00		Rst 360 B	NS 12 123
S235JO	1.0114	S235JO	Fe 360 C	St 37-3 U	E24-3	40C	AE 235 C	Fe 360 C	AE 235-C		Fe 360-C	St 360 C	NS 12 124
											Fe 360-CE		
		S235J2G3	Fe 360 D1	St 37-3 N	E24-4	40D	AE 235 D	Fe 360 D	AE 235-D		Fe 360-D	St 360 D	NS 12 124
S235J2	1.0117	S235J2G4	Fe 360 D2										
S275JR	1.0044	S275JR	Fe 430 B	St 44-2	E 28-2	43B	AE 275 B	Fe 430 B	AE 255-B	14 12-00	Fe 430-B	St 430 B	NS 12 142
S275JO	1.0043	S275JO	Fe 430 C	St 44-3 U	E 28-3	43C	AE 275 C	Fe 430 C	AE 255-C		Fe 430-C	St 430 C	NS 12 143
												St 430 CE	
		S275JOG3	Fe 430 D1	St 44-3 N	E 28-4	43D	AE 275 D	Fe 430 D	AE 255-D	14 14-00	Fe 430-D	St 430 D	NS 12 143
S275J2	1.0145	S275JOG4	Fe 430 D2										
S355JR	1.0045	S355JR	Fe 510 B		E 36-2	50B	AE 355 B	Fe 510 B	AE 355-B		Fe 510-B		
S355JO	1.0553	S355JO	Fe 510 C	St 52-3 U	E 36-3	50C	AE 355 C	Fe 510 C	AE 355-C		Fe 510-C	St 51C	NS 12 153
		S355J2G3	Fe 510 D1	St 52-3N		50D	AE 355D	Fe 510 D	AE 355-D		Fe 510-D	St 51 D	NS 12 153
S355J2	1.0577	S355J2G4	Fe 510 D2										
		S355K2G3	Fe 510 DD1		E 36-4	50DD			AE 355-DD		Fe 510-DD		
S355K2	1.0596	S355K2G4	Fe 510 DD2										
S450JO	1.0590					55C							
E295	1.0050	E295	Fe 490 - 2	St 50-2	A 50-2		A 490	Fe 490	A 490-2	15 50-00	Fe 490-2	St 490	
										15 50-01			
E335	1.0060	E335	Fe 590 - 2	St 60-2	A 60-2		A 590	Fe 590	A 590-2	16 50 00	Fe 590-2	St 590	
										16 50 01			
E360	1.0070	E360	Fe 690 - 2	St 70-2	A 70-2		A 690	Fe 690	A 690-2	16 55 00	Fe 690-2	St 690	
										16 55 01			

CHEMICAL COMPOSITION OF THE PRODUCT ANALYSIS

Designation		Method of deoxidation ^b	C in % max. for nominal product thickness in mm			Si % max.	Mn % max.	P % max. ^d	S % max. ^{d,e}	N % max. ^f	Cu % max. ^g	Other % max. ^h
According EN 10027-01 and CR 10260	According EN 10027-2		≤ 16	> 16 ≤ 40	> 40 ^c							
S235JR	1.0038	FN	0,19	0,19	0,23	-	1,50	0,045	0,045	0,014	0,60	-
S235J0	1.0114	FN	0,19	0,19	0,19	-	1,50	0,040	0,040	0,014	0,60	-
S235J2	1.0117	FF	0,19	0,19	0,19	-	1,50	0,035	0,035	-	0,60	-
S275JR	1.0044	FN	0,24	0,24	0,25	-	1,60	0,045	0,045	0,014	0,60	-
S275J0	1.0143	FN	0,21	0,21	0,23 ⁱ	-	1,60	0,040	0,040	0,014	0,60	-
S275J2	1.0145	FF	0,21	0,21	0,23 ⁱ	-	1,60	0,035	0,035	-	0,60	-
S355JR	1.0045	FN	0,27	0,27	0,27	0,60	1,70	0,045	0,045	0,014	0,60	-
S355J0	1.0553	FN	0,23 ^j	0,23 ^k	0,24	0,60	1,70	0,040	0,040	0,014	0,60	-
S355J2	1.0577	FF	0,23 ^j	0,23 ^k	0,24	0,60	1,70	0,035	0,035	-	0,60	-
S355K2	1.0596	FF	0,23 ^j	0,23 ^k	0,24	0,60	1,70	0,035	0,035	-	0,60	-
S450J0 ^l	1.0590	FF	0,23	0,23 ^k	0,24	0,60	1,80	0,040	0,040	0,027	0,60	^m

^b FN = rimming steels not permitted; FF = fully killed steel

^c For sections with nominal thickness > 100 mm the C content by agreement.

^d For long products the P and S content can be 0,005% higher.

^e For long products the max. S content can be increased for improved machinability by 0,015% by agreement if the steel is treated to modify the sulphide morphology and the chemical composition shows min. 0,0020% Ca.

^f The max. value for nitrogen does not apply if the chemical composition shows a minimum total Al content of 0,015% or alternatively min. 0,013% acid soluble Al or if sufficient other N binding elements are present. In this case the N binding elements shall be mentioned in the inspection document.

^g Cu content above 0,45% may cause hot shortness during hot forming.

^h If other elements are added, they shall be mentioned on the inspection document.

ⁱ For nominal thickness > 150 mm: C = 0,22% max.

^j For grades suitable for cold roll forming C = 0,24% max.

^k For nominal thickness > 30 mm: C = 0,24% max.

^l Applicable for long products only.

^m The steel may show a Nb content of max. 0,06%, a V content of max. 0,15% and a Ti content of max. 0,06%.

(according to EN10025)

MECHANICAL PROPERTIES AT AMBIENT TEMPERATURE FOR FLAT AND LONG PRODUCTS OF STEEL GRADES AND QUALITIES WITH VALUES FOR THE IMPACT STRENGTH

Designation		Minimum yield strength R _{eH} ^a MPa ^b Nominal thickness mm										Tensile strength R _m ^a MPa ^b Nominal thickness mm							
According EN 10027-1 and CR 10260	According EN 10027-2	≤ 16	> 16 ≤ 40	> 40 ≤ 63	> 63 ≤ 80	> 80 ≤ 100	> 100 ≤ 150	> 150 ≤ 200	> 200 ≤ 250	> 250 ≤ 400 ^c	> 3	≥ 3 ≤ 100	> 100 ≤ 150	> 150 ≤ 250	> 250 ≤ 400 ^c				
S235JR	1.0038	235	225	215	215	215	195	185	175	-	360 to 510	360 to 510	350 to 500	340 to 490	-				
S235J0	1.0114	235	225	215	215	215	195	185	175	-	360 to 510	360 to 510	350 to 500	340 to 490	-				
S235J2	1.0117	235	225	215	215	215	195	185	175	165	360 to 510	360 to 510	350 to 500	340 to 490	330 to 480				
S275JR	1.0044	275	265	255	245	235	225	215	205	-	430 to 580	410 to 560	400 to 540	380 to 540	-				
S275J0	1.0143	275	265	255	245	235	225	215	205	-	430 to 580	410 to 560	400 to 540	380 to 540	-				
S275J2	1.0145	275	265	255	245	235	225	215	205	195	430 to 580	410 to 560	400 to 540	380 to 540	380 to 540				
S355JR	1.0045	355	345	355	325	315	295	285	275	-	510 to 680	470 to 630	450 to 600	450 to 600	-				
S355J0	1.0553	355	345	355	325	315	295	285	275	-	510 to 680	470 to 630	450 to 600	450 to 600	-				
S355J2	1.0577	355	345	355	325	315	295	285	275	265	510 to 680	470 to 630	450 to 600	450 to 600	450 to 600				
S355K2	1.0596	355	345	355	325	315	295	285	275	265	510 to 680	470 to 630	450 to 600	450 to 600	450 to 600				
S450J0 ^d	1.0590	450	430	410	390	380	380	-	-	-	-	550 to 720	530 to 700	-	-				

^a For plate and wide flats with widths ≥ 600 mm the direction transverse (t) to the rolling applies. For all other products the values apply for the direction parallel (l) to the rolling direction.

^b 1 MPa = 1 N/mm².

^c The values apply to flat products.

^d Applicable for long products only.

(according to EN10025)

MECHANICAL PROPERTIES AT AMBIENT TEMPERATURE FOR FLAT AND LONG PRODUCT OF STEEL GRADES AND QUALITIES WITH VALUES FOR THE IMPACT STRENGTH (CONCLUDED)

Designation		Position of test pieces ^a	Minimum percentage elongation after fracture ^a %										
			L ₀ = 80 mm Nominal thickness mm					L ₀ = 5,65 √S ₀ Nominal thickness mm					
According EN 10027-1 and CR 10260	According EN 10027-2		≤ 1	> 1 ≤ 1,5	> 1,5 ≤ 2	> 2 ≤ 2,5	> 2,5 < 3	≥ 3 ≤ 40	> 40 ≤ 63	> 63 ≤ 100	> 100 ≤ 150	> 150 ≤ 250	> 250 ^c ≤ 400 only for J2 and K2
S235JR	1.0038	l	17	18	19	20	21	26	25	24	22	21	-
S235J0	1.0114												-
S235J2	1.0117	t	15	16	17	18	19	24	23	22	22	21	21 (l and t)
S275JR	1.0044	l	15	16	17	18	19	23	22	21	19	18	-
S275J0	1.0143												-
S275J2	1.0145	t	13	14	15	16	17	21	20	19	19	18	18 (l and t)
S355JR	1.0045	l	14	15	16	17	18	22	21	20	18	17	-
S355J0	1.0553												-
S355J2	1.0577												17 (l and t)
S355K2	1.0596	t	12	13	14	15	16	20	19	18	18	17	17 (l and t)
S450J0 ^d	1.0590	l	-	-	-	-	-	17	17	17	17	-	-

^a For plate, strip and wide flats with widths ≥ 600 mm the direction transverse (t) to the rolling direction applies. For all other products the values apply for the direction parallel (l) to the rolling direction.

^c The values apply to flat products.

^d Applicable for long product only.

(according to EN10025)

