



Building Research Institution

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Series: TECHNICAL APPROVAL

## **TECHNICAL APPROVAL ITB AT-15-8394/2011**

On the basis of the Minister of Infrastructure dated November 8, 2004 on the technical approvals and agencies authorized to issue them (Official Journal of Polish Republic No. 249/2004 r., pos. 2497) following the approval procedure carried out in the Institute of Building Technology in Warsaw, at the request of companies:

**FRAMECAD SOLUTIONS LTD  
P.O, Box 1292, Auckland 1140  
NEW ZEALAND**

and

**“Czternasta – Czerwona Torebka” spółka akcyjna S.K.A.  
Ul. Śremska 75D, 62-050 Mosina**

states suitability for use in construction products under the name:

### **Cold-rolled sections of FRAMECAD system made of zinc-coated steel sheet**

in the field and on the terms set out in the attachment, which forms an integral part of this TECHNICAL APPROVAL ITB.

Validity term:

28<sup>th</sup> September 2016 r.



DIRECTOR  
Building Research Institution

Marek Kaproń

Attachement:

General and technical resolutions

Warsaw, 28<sup>th</sup> September 2011

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## 1. OBJECT OF THE APPROVAL

The object of the present ITB Technical Approval is cold-rolled sections of FRAMECAD system made of zinc-coated steel sheets of the G500 grade, with a zinc coat of total weight (for both sides) equal to 275 g/m<sup>2</sup> according to the PN-EN 10346:2009 standard, made by FRAMECAD SOLUTIONS LTD and „Czternasta – Czerwona Torebka spółka akcyjna” S.K.A. Representative of the producer group is FRAMECAD SOLUTIONS LTD P.O. Box 1292, Auckland 1140, NEW ZEALAND.

The assortments of the shapes is given in Table 1.

The required technical characteristics and the requirements concerning the shapes covered by the Approval are defined in item 3.

**Table 1**

No.	Trade symbol	Cross-section shape and dimensions	Thickness, mm	Weight, kg/m	Length, m
1	2	3	4	5	6
1.	63S41-055	Diagram on page 11 and tables 3-5	0.55	0.74	Agreed between the manufacturer and the customer
2.	63S41-075		0.75	0.98	
3.	63S41-095		0.95	1.23	
4.	65S41-055		0.55	0.75	
5.	65S41-075		0.75	1.00	
6.	65S41-095		0.95	1.24	
7.	75S41-055		0.55	0.79	
8.	75S41-075		0.75	1.06	
9.	75S41-095		0.95	1.32	
10.	89S41-055		0.55	0.86	
11.	89S41-075		0.75	1.14	
12.	89S41-095		0.95	1.43	
13.	89S41-115		1.15	1.71	
14.	89S41-155		1.55	2.26	
15.	100S50-055		0.55	0.99	
16.	100S50-075		0.75	1.32	
17.	100S50-095		0.95	1.65	
18.	100S50-115		1.15	1.98	
19.	100S50-155		1.55	2.63	
20.	140S41-095		0.95	1.82	
21.	140S41-115		1.15	2.19	
22.	140S41-155		1.55	2.90	
23.	140S41-195		1.95	3.60	
24.	140S50-095		0.95	1.96	
25.	140S50-115		1.15	2.35	
26.	140S50-155		1.55	3.12	
27.	140S50-195		1.95	3.89	
28.	150S41-095		0.95	1.90	
29.	150S41-115		1.15	2.28	
30.	150S41-155		1.55	3.03	
31.	150S41-195		1.95	3.76	
32.	150S50-095		0.95	2.04	

33.	150S50-115	1.15	2.45
34.	150S50-155	1.55	3.25
35.	150S50-195	1.95	4.04
36.	250S50-115	1.15	3.47
37.	250S50-155	1.55	4.62
38.	250S50-195	1.95	5.76
39.	254S50-115	1.15	3.51
40.	254S50-155	1.55	4.67
41.	254S50-195	1.95	5.82
42.	250S65-115	1.15	3.75
43.	250S65-155	1.55	5.00
44.	250S65-195	1.95	6.23
45.	254S65-115	1.15	3.79
46.	254S65-155	1.55	5.05
47.	254S65-195	1.95	6.29

The geometric characteristics of the sections should be assumed according to Table 6.

## 2. PURPOSE, SCOPE, AND CONDITIONS OF USE

The sections covered by the Approval are intended for building the frames of structural walls, partition walls, ceilings, elements of roof truss systems (purlins and tile battens), as well as other structural elements according to the selection made in technical designs of buildings or building elements.

The sections covered by the present Approval should be used in accordance with technical designs prepared taking into account the applicable standards and building technology regulations, the provisions of the present Approval, and installation instructions of the manufacturer.

Due to the corrosion-protection requirements, zinc-coated steel shapes with coat weight equal to 275 g/m<sup>2</sup> may be used in environments of the atmosphere corrosiveness categories C1, C2, and C3 according to the PN-EN ISO 12944-2:2001 standard, taking into account the service life periods according to the PN-EN ISO 14713-1:2010 standard.

The required technical characteristics of the sections are defined in item 3.

## 3. TECHNICAL CHARACTERISTICS REQUIREMENTS

The required technical characteristics of the sections covered by the Approval are defined in Table 2.

**Table 2**

Item	Characteristics	Requirements	Test methods
1	2	3	4
1	Materials: – type of sheet metal	G500+Z	Manufacturers' certificates
	– thickness, mm	According to Tables 1 and 3-5	PN-EN 10143:2008
	– thickness tolerances	PN-EN 10143:2008	
2	Zinc coat: – weight, g/m <sup>2</sup> – appearance of the coat – adhesion of the coat	275 small flowery spangle pattern; type C, no scaling	PN-EN 10346:2009 PN-EN ISO 7438:2006
	3	Condition of shape surface	PN-EN 10162:2005
4	Nominal dimensions: – dimensions of cross-section – internal bending radiuses	according to Tables 3 - 5 according to PN-EN 10162:2005	item 5.6.1 PN-EN 10162:2005
5	Tolerances of cross-section dimensions	according to PN-EN 10162:2005	PN-EN 10162:2005
6	Tolerances of internal bending radiuses	according to PN-EN 10162:2005	PN-EN 10162:2005
8	Tolerances of length, in mm, of the shapes in the following length ranges: < 2,000 > 2,000 < 6,000 > 6,000 < 10,000	± 1	PN-EN 10162:2005
		± 2	
9	Allowed tolerance of straightness	± 3	
10	Torsion, °/m	≤ 0.002 x l (length)	PN-EN 10162:2005
11	Concavity, convexity of flat sides	≤ 0.8 % h (h'); but not less than 0,5 mm	PN-EN 10162:2005
12	Weight of 1 running metre, kg	according to Table 1 ± 5%	

#### 4. PACKAGING, STORAGE, AND TRANSPORT

The sections should be packaged into separate packages according to their type and dimensions. The conditions of the packaging may be agreed between the supplier and the customer.

To each packaging a label should be attached containing the following information, as a minimum:

- the name and address of the manufacturer;
- identification of the product: the trade name and symbol of the section;
- the type of sheet metal (the symbol of the steel grade and the symbol of the zinc coat, together with the coat weight identified) and the thickness of sheet metal (with the zinc coat);
- the length of the sections;
- the weight of the packaging;
- the number of items in a transport unit;
- the number of the ITB Technical Approval;
- the name of the certifying body that took part in the evaluation of conformance;
- the number and the date of issue of the national declaration of conformance;
- the construction product mark.

The method of marking of products with the construction product mark should comply with the regulation of the Minister of Infrastructure of 11 August 2004 on the methods of declaration of conformity of construction products and the method of marking them with construction product marks (Journal of Laws no. 198/2004, item 2041).

The storage and transport condition should be defined in the manufacturer's instruction.

The instruction must include information on the conditions of protection from damage to the coating surfaces during transport and storage, the microclimate and environment conditions in places of storage, and other significant technical conditions. The instruction should be provided to all buyers of the sections.

## 5. EVALUATION OF CONFORMITY

### 5.1. General principles

According to art. 4, art. 5 (1)(3), and art. 8 (1) of the Act of 16 April 2004 on construction products (Journal of Laws no. 92/2004, item 881), the sections covered by the present Technical Approval may be sold and used in the performance of construction work in the scope that corresponds to their performance characteristics and purpose, if their manufacturer has performed an evaluation of conformity, issued a national declaration of conformity in accordance to the ITB Technical Approval no. AT-15-8394/2010, and marked the products with a construction product mark in accordance with applicable regulations.

According to the Regulation of the Minister of Infrastructure of 11 August 2004 on the methods of declaration of conformity of construction products and the method of marking them with construction product marks (Journal of Laws no. 198/2004, item 2041), evaluation of conformity of sections to the ITB Technical Approval no. AT-15-8394/2010 must be performed by the manufacturer using the 2+ system.

In the case of the 2+ system of evaluation of conformity, the Manufacturer may issue a national declaration of conformity in accordance with the ITB Technical Approval no. AT-15-8394/2010 based on:

a) tasks of the manufacturer:

- initial type test;
- factory production control;
- inspection of finished products (samples) taken in the manufacturing facility, performed by the manufacturer, in accordance with a defined inspection plan covering inspections according to item 5.4.3;

b) tasks of the accredited body:

- certification of the factory production control on the basis of a preliminary inspection of the manufacturing facility and the factory production control and continuous supervision, evaluation, and acceptance of factory production control.

## 5.2. Initial type test

The initial type test is a test that confirms the presence of the required technical and performance characteristics, performed before a product is brought into the market. Initial type tests cover:

- tolerances of dimensions;
- resistance to corrosion.

The tests, which in the approval procedure, were the basis for defining the technical and performance characteristics of the product, constitute the initial type test in the evaluation of conformity.

## 5.3. Factory production control

Factory production control covers:

- 1) specification of materials and checking the certification documents that confirm their technical parameters:
  - steel grade (the type of sheet metal);
  - sheet metal thickness;
  - weights of zinc coats;
  - adhesion of zinc coats;
- 2) control and inspections of the production process and inspections of finished products (item 5.4.2) performed by the Manufacturer in accordance with a defined inspection plan and in accordance with the principles and procedures defined in the documentation of the factory production control, adapted to the production technology and intended to achieve products having the required characteristics. Production control must ensure conformity of the product to the ITB Technical Approval no. ITB AT-15-8394/2010. The results of production control must be systematically recorded. The recordings made should confirm that the products meet the criteria of the evaluation of conformity. Each product batch must be uniquely identified in the inspection record and in the commercial documents.

## 5.4. Inspections of finished products

**5.4.1. Inspection program** The inspection program covers:

- a) ongoing inspections;
- b) periodic inspections.

**5.4.2. Ongoing inspections.** Ongoing inspections involve checking:

- a) the shape and the dimensions, and the dimension tolerances;
- b) the weight of 1 running metre of the product.

**5.4.3. Periodic inspections.** Periodic inspections involve checking the corrosion resistance of the sections.

## 5.5. Frequency of inspections

Ongoing inspections should be performed in accordance with a defined inspection plan, but not less than on each product batch. The size of the product batch should be defined in the documentation of the factory production control.

Periodic inspections should be performed not less than every three years.

## 5.6. Inspection methods

The technical characteristics defined in Table 2 must be checked in accordance with the standards referred to in the table and with the description given below.

**5.6.1. Checking the dimensions of the cross-section.** The dimensions of the cross section of the section are checked using measurement instruments of appropriate accuracy, at the distance of at least 250 mm from the end of the shape and at its centre, in three locations and on at least three samples for each type of the section.

## 5.7. Sampling

Samples for the inspections must be taken in accordance to the PN-83/N-03010 standard.

## 5.8. Evaluation of inspection results

A finished product can be considered as conforming to the provisions of the ITM Technical Approval when all the results of the inspections are positive.

# 6. FORMAL AND LEGAL PROVISIONS

**6.1.** The ITB Technical Approval no. AT-15-8394/2011 is a document that certifies the suitability of the FRAMECAD system shapes for use in the construction industry in the scope implied from the Approval's provisions.

According to art. 4, art. 5 (1)(3), and art. 8 (1) of the Act of 16 April 2004 on construction products (Journal of Laws no. 92/2004, item 881), the product covered by the present Technical Approval may be sold and used in the performance of construction work in the scope that corresponds to their performance characteristics and purpose, if their manufacturer has performed an evaluation of conformity, issued a national declaration of conformity in accordance to the ITB Technical Approval no. AT-15-8394/2010, and marked the products with a construction product mark in accordance with applicable regulations.

**6.2.** The ITB Technical Approval does not violate the rights resulting from regulations on protection of industrial property, in particular the announcement of the Chairman of the Court of the Republic of Poland of 13 June 2003 concerning the promulgation of the consolidated text of the Act of 30 June 2000 - Industrial Property Law (Journal of Laws no. 119/2003, item 1117). The protection of these rights is a duty of the entities using the present ITB Technical Approval.



**6.3.** In issuing the present Technical Approval, the ITB does not accept responsibility for possible violation of exclusive and acquired rights.

**6.4.** The ITB Technical Approval does not absolve the Manufacturer from the responsibility for the proper quality of the materials used as components of the products and of the finished products and does not absolve the entities and persons performing construction works from responsibility for proper use of these products.

**6.5.** The contents of any prospects and announcements as any other documents connected with marketing and use in the construction industry of the FRAMECAD system sections must contain information on the ITB Technical Approval no. ITB AT-15-8394/2011 issued for those products.

## **7. TERM OF VALIDITY**

The present ITB Technical Approval no. AT-15-8394/2011 shall be valid until 28 September 2016.

The validity of the present ITB Technical Approval may be prolonged for successive periods if the Applicant or its formal successor files with the Building Research Institute (ITB) an appropriate application not later than 3 months prior to the expiry of the present document.

**THE END**

## ADDITIONAL INFORMATION

### Related standards and recommendations

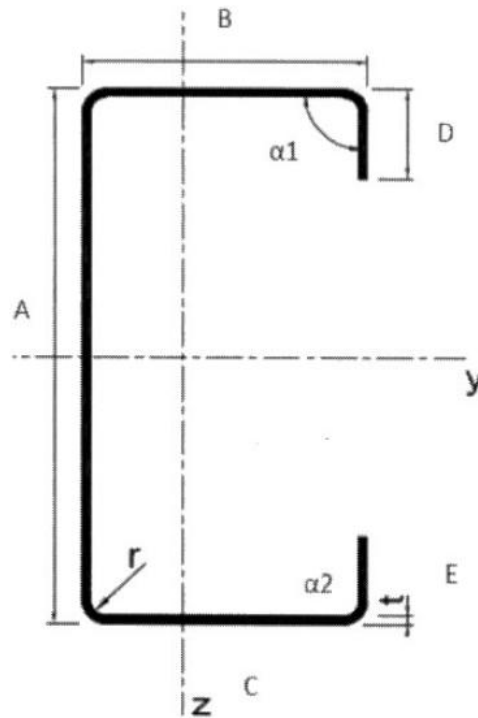
PN-EN 10143:2008	<i>Continuously hot-dip metal coated steel sheet and strip. Tolerances on dimensions and shape.</i>
PN-EN 10346:2009	<i>Continuously hot-dip coated steel flat products. Technical delivery conditions.</i>
PN-EN 10162:2005	<i>Cold rolled steel sections. Technical delivery conditions. Dimensional and cross-sectional tolerances.</i>
PN-EN ISO 12944-2:2001	<i>Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Part 2: Classification of environments.</i>
PN-EN ISO 14713-1:2010	<i>Zinc coatings. Guidelines and recommendations for the protection against corrosion of iron and steel in structures. Part 1: General principles of design and corrosion resistance.</i>
PN-EN ISO 7438:2006	<i>Metallic materials. Bend tests.</i>

### Tests and evaluations

1. LK-00830/10 – Research work concerning cold-bent FRAMECAD profiles, Department of Building Structures and Elements of the Building Research Institute, Warsaw 2010.
2. The technical opinion concerning corrosion-protection of steel profiles of the FRAMECAD type for the purpose of Technical Approval, Department of Construction Materials of the Building Research Institute, Warsaw 2010.

## FIGURES AND TABLES

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**Pic. 1. Scheme of FRAMECAD system sections**

**Table 3. Sections dimension type S41**

Symbol	Nominal dimension
A, mm	63,00; 75,00; 89,00; 140,00; 150,00
B, mm	41,00
C, mm	39,00
D, mm	11,00
E, mm	11,00
t, mm	0,55; 075,00; 0,95; 1,15; 1,55; 1,95
$\alpha 1, ^\circ$	90
$\alpha 2, ^\circ$	90

**Table 4. Sections dimension type S50**

<b>Symbol</b>	<b>Nominal dimension</b>
A, mm	100,00; 140,00; 150,00 250,00; 254,00
B, mm	50,00
C, mm	48,00; 50,00 in case A=250,00 and A=254,00
D, mm	11,00
E, mm	11,00; 15,00 in case A=250,00 and A=254,00
t, mm	0,55; 075,00; 0,95; 1,15; 1,55; 1,95
$\alpha_1$ , °	90
$\alpha_2$ , °	90

**Table 5. Sections dimension type S65**

<b>Symbol</b>	<b>Nominal dimension</b>
A, mm	250,00; 254,00
B, mm	50,00
C, mm	50,00
D, mm	15,00
E, mm	15,00
t, mm	1,15; 1,55; 1,95
$\alpha_1$ , °	90
$\alpha_2$ , °	90

**Table 6. Geometrical characteristics of FRAMECAD system sections**

Trade system	Steel sheet thickness mm	Area mm <sup>2</sup>	Moment of inertia mm <sup>4</sup>		Moment of fragmentary inertia mm <sup>6</sup>	Radius of gyration mm	
			I <sub>z</sub>	I <sub>y</sub>		R <sub>z</sub>	R <sub>y</sub>
1	2	3	4	5	6	7	8
63S41-055	0,55	87,65	20506	58866	1,868E+07	15,30	25,92
63S41-075	0,75	118,92	27513	79344	2,482E+07	15,21	25,83
63S41-095	0,95	149,87	34286	99335	3,062E+07	15,12	25,74
65S41-055	0,55	88,75	20744	63193	1,983E+07	15,29	26,68
65S41-075	0,75	120,42	27833	85195	2,636E+07	15,20	26,60
65S41-095	0,95	151,77	34686	106684	3,253E+07	15,12	26,51
75S41-055	0,55	94,25	21856	87532	2,629E+07	15,23	30,48
75S41-075	0,75	127,92	29328	118122	3,499E+07	15,14	30,39
75S41-095	0,95	161,27	36553	148060	4,324E+07	15,06	30,30
89S41-055	0,55	101,95	23221	129597	3,736E+07	15,09	35,65
89S41-075	0,75	138,42	31163	175064	4,980E+07	15,00	35,56
89S41-095	0,95	174,57	38844	219658	6,164E+07	14,92	35,47
89S41-115	1,15	210,40	46268	263386	7,291E+07	14,83	35,38
89S41-155	1,55	281,11	60362	348273	9,379E+07	14,65	35,20
100S50-055	0,55	117,90	39201	193840	7,715E+07	18,23	40,55
100S50-075	0,75	160,17	52741	262165	1,032E+08	18,15	40,46
100S50-095	0,95	202,12	65906	329348	1,281E+08	18,06	40,37
100S50-115	1,15	243,75	78703	395400	1,521E+08	17,97	40,28
100S50-155	1,55	326,06	103207	524138	1,970E+08	17,79	40,09
140S41-095	0,95	223,02	44978	635275	1,660E+08	14,20	53,37
140S41-115	1,15	269,05	53578	763420	1,970E+08	14,11	53,27
140S41-155	1,55	360,16	69907	1013952	2,549E+08	13,93	53,06
140S41-195	1,95	449,98	85104	1256881	3,079E+08	13,75	52,85
140S50-095	0,95	240,12	73609	717045	2,686E+08	17,51	54,65
140S50-115	1,15	289,75	87907	862115	3,195E+08	17,42	54,55
140S50-155	1,55	388,06	115294	1146197	4,156E+08	17,24	54,35
140S50-195	1,95	485,08	141103	1422277	5,045E+08	17,06	54,15
150S41-095	0,95	232,52	45893	748903	1,939E+08	14,05	56,75
150S41-115	1,15	280,55	54668	900224	2,301E+08	13,96	56,65
150S41-155	1,55	375,66	71327	1196341	2,981E+08	13,78	56,43
150S41-195	1,95	469,48	86830	1483832	3,602E+08	13,60	56,22
150S50-095	0,95	249,62	75182	842870	3,138E+08	17,35	58,11
150S50-115	1,15	301,25	89786	1013664	3,733E+08	17,26	58,01
150S50-155	1,55	403,56	117758	1348403	4,859E+08	17,08	57,80
150S50-195	1,95	504,58	144118	1674087	5,902E+08	16,90	57,60
250S50-115	1,15	427,75	122130	3605344	1,462E+09	16,90	91,81
250S50-155	1,55	574,06	160467	4813999	1,914E+09	16,72	91,57
250S50-195	1,95	719,08	196749	5999482	2,337E+09	16,54	91,34
254S50-115	1,15	432,35	122611	3747857	1,516E+09	16,84	93,10
254S50-155	1,55	580,26	161097	5004727	1,984E+09	16,66	92,87
254S50-195	1,95	726,88	197519	6237730	2,423E+09	16,48	92,64
250S65-115	1,15	462,25	231451	4135375	2,708E+09	22,38	94,58
250S65-155	1,55	620,56	305677	5526060	3,562E+09	22,19	94,37
250S65-195	1,95	777,58	376762	6892375	4,372E+09	22,01	94,15
254S65-115	1,15	466,85	232445	4295086	2,808E+09	22,31	95,92
254S65-155	1,55	626,76	306988	5739930	3,693E+09	22,13	95,70
254S65-195	1,95	785,38	378375	7159690	4,534E+09	21,95	95,48