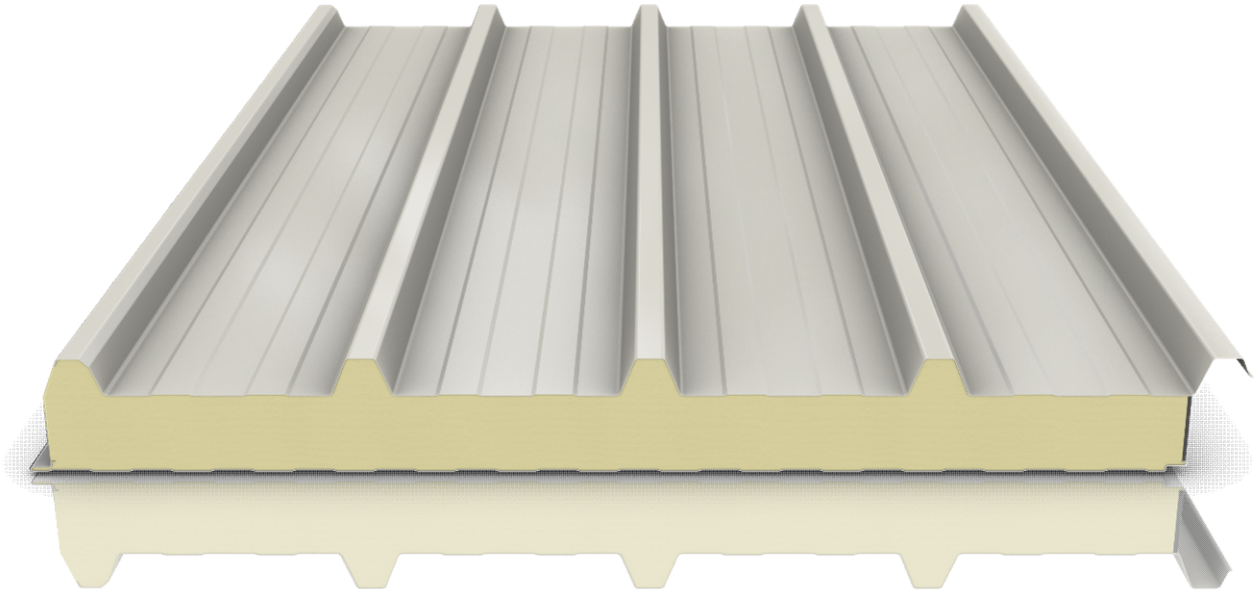
Technical Data Sheet

TTOP 5 PIR



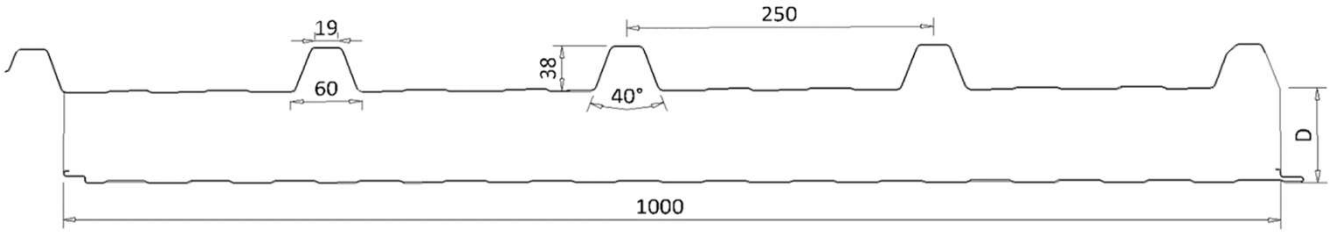
Description:

Roof sandwich panel with 5 ribs, insulation core of polyisocyanurate rigid foam and finishing outer and inner sheet of galvanized sheet. Suitable for roofs with a minimum slope of 7%.
Manufactured according to BDS EN 14509:2013

density of the instalation core: 40 kg/m3 *others on request

	external sheet	internal sheet
material	galvanized steel sheet, INOX, Aluminum	galvanized steel sheet, INOX, Aluminum
coating	PES, PVDF, Plastisol, Other special coating	
thickness	0.5 mm standard, other thickness on request	0.4 mm standard, other thickness on request

Geometry:

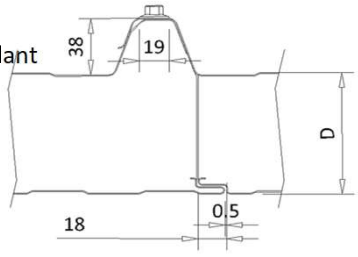


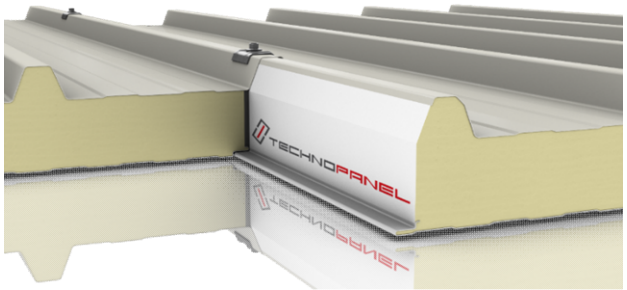
thicknesses	50, 60, 80, 100, 120, 150, 160 mm
lenghts	from 3000 to 16000 mm
covering width	1000 mm
overlap slice	from 70 to 250мм **with a minimum panel length of 3000mm*

Assembly:

The joint .between the TTOP roof panels is achieved through lapping of on additional profile with the neighbouring panel.

The joint shall be sealed with silocone sealant and butyl tape.





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Weight and standard packing:

D, mm	50	60	80	100	120	150	160
weight *with sheet metal 0.5/0.4, kg/m^2	10,29	10,7	11,52	12,34	13,16	14,39	14,8
standard packing, pcs/package	16	14	10	8	8	6	6

Thermotechnical characteristics:

D, mm	50	60	80	100	120	150	160
thermal conductivity coefficient, W/mK	λ = 0,022 W/mK						
thermal transmitance coef. U, W/m^{2}K	0,42	0,35	0,27	0,22	0,18	0,15	0,14
thermal transmitance coef. $U_{d,S}$, W/m2K	0,44	0,36	0,27	0,22	0,18	0,15	0,14

**U, W/m2K - coefficient of thermal transmitance regardless of joint types*

**Ud,S, W/m2K - coefficient of thermal transmittance with consideration of the types of joints according to p.A.10.4 of BDS EN 14509:2013*

Fire resistance and reaction to fire:

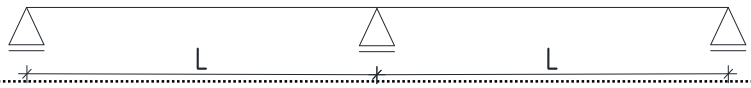
D, mm	50	60	80	100	120	150	160
class of reaction to fire	B-s2, d0						
fire resistance, min	-	-	REI30	REI30	REI30	REI30	REI30

Size of self - tapping screw with washer V 16/2.0

D, mm	50	60	80	100	120	150	160
min recommended lenght, mm	125	135	155	175	195	225	235

Allowable Loads kN/m²:

Дебелина на панела: / Panel thickness:	L = 1,0m	L = 1,5m	L = 2,0m	L = 2,5m	L = 3,0m	L = 3,5m	L = 4,0m
	Статическа схема / Static scheme:						
TTOP 5 PIR 50 0,5/0,4	10,37	7,50	5,63	4,54	4,18	3,80	2,55
TTOP 5 PIR 60 0,5/0,4	14,90	9,93	7,45	5,96	4,96	4,18	2,80
TTOP 5 PIR 80 0,5/0,4	22,52	14,77	11,08	8,79	6,52	4,93	3,30
TTOP 5 PIR 100 0,5/0,4	29,44	19,62	14,72	11,63	8,08	5,68	3,80
TTOP 5 PIR 120 0,5/0,4	31,00	20,66	15,50	12,31	9,29	6,66	4,46
TTOP 5 PIR 150 0,5/0,4	33,36	22,24	16,68	13,34	11,12	8,15	5,46
TTOP 5 PIR 160 0,5/0,4	34,14	22,76	17,07	13,68	11,72	8,64	5,79

Дебелина на панела: / Panel thickness:	L = 1,0m	L = 1,5m	L = 2,0m	L = 2,5m	L = 3,0m	L = 3,5m	L = 4,0m
	Статическа схема / Static scheme: 						
TTOP 5 PIR 50 0,5/0,4	9,45	6,13	4,55	3,87	3,54	3,21	2,87
TTOP 5 PIR 60 0,5/0,4	12,44	8,11	6,03	4,80	4,00	3,42	2,95
TTOP 5 PIR 80 0,5/0,4	18,41	12,07	8,97	6,65	4,92	3,83	3,09
TTOP 5 PIR 100 0,5/0,4	24,38	16,03	11,92	8,51	5,84	4,25	3,24
TTOP 5 PIR 120 0,5/0,4	25,76	16,88	12,55	9,41	6,55	5,12	3,90
TTOP 5 PIR 150 0,5/0,4	27,85	18,17	13,51	10,76	8,82	6,43	4,90
TTOP 5 PIR 160 0,5/0,4	28,54	18,59	13,82	11,21	9,41	5,86	5,23

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Дебелина на панела: Panel thickness:	Статическа схема / Static scheme:						
	L = 1,0m	L = 1,5m	L = 2,0m	L = 2,5m	L = 3,0m	L = 3,5m	L = 4,0m
TTOP 5 PIR 50 0,5/0,4	9,53	6,29	4,71	3,76	3,38	3,12	2,77
TTOP 5 PIR 60 0,5/0,4	12,61	8,33	6,23	4,98	4,14	3,55	3,02
TTOP 5 PIR 80 0,5/0,4	18,76	12,40	9,27	7,40	5,65	4,40	3,51
TTOP 5 PIR 100 0,5/0,4	24,92	16,48	12,31	9,83	7,17	5,25	4,01
TTOP 5 PIR 120 0,5/0,4	26,25	17,35	13,01	10,35	8,05	6,32	4,83
TTOP 5 PIR 150 0,5/0,4	28,25	18,67	13,95	11,15	9,39	7,94	6,06
TTOP 5 PIR 160 0,5/0,4	28,91	19,10	14,31	11,41	9,83	8,47	6,47

Notes:

*The specified values are obtained on the basis of experimental tests from accredited laboratory and according the procedures described in standard EN14509

*Values in red color indicate loads for which the deflection limit fu=L/200 is reached.

*Values in blue color indicate loads obtained from shear work.

*The values of the allowable additional loads refer to panels installed under specified static systems and uniformly distributed load simulating respectively at roof panels - from snow, for facade panels - wind load.

*The values in the tables do not take into consideration the thermal effect. In cases where a detailed check is needed, as well as in cases different from those described in the load capacity tables, it is necessary to contact the Technopanel's Engineering Department.

*Construction calculations are the responsibility of the designer.

*The specified values in the tables are indicative, which need to be confirmed with calculations by the designer.

Main recommendations and details:

• Cutting tools must ensure a clear and easy cut, without damages to the panel surface. Fine-tooth jigsaws are considered most suitable for cutting purposes. Circular saws can only be used, if they can provide accurate and clear cut. Angle grinders equipped with cutting discs are not suitable due to the overheating and formation of surface rust.

• During installation, special attention shall be paid to the air tightness of joints. No air gap shall be left in the vertical joint between two adjacent panels.

• For the panels' installation, the use of self - tapping screws with a washer is recommended. The type of screws shall depend on the thickness of the panel and the supporting structure. The minimum recommended length of the screw is indicated in the table above "Size of self-tapping screw with washer V 16/2.0", and the length of the drill is determined according to the thickness of the structure - for installation in steel from 1.5 mm to 5 mm - drill 6 mm, for installation in steel from 4 mm to 12 mm - drill bit 12 mm. . In order to ensure adequate attachment of the panel to the structure, it is essential to keep the screws perpendicular to the panel surface while driving them into the panel.

• To prevent water retention during the construction of sandwich panel roofs, the following requirements about the roof slope shall be observed:

· min 7% (4°) - for roofs without transverse joints or skylights.

· min 10% (5.7°) - for roofs with transverse joints and/or skylights.

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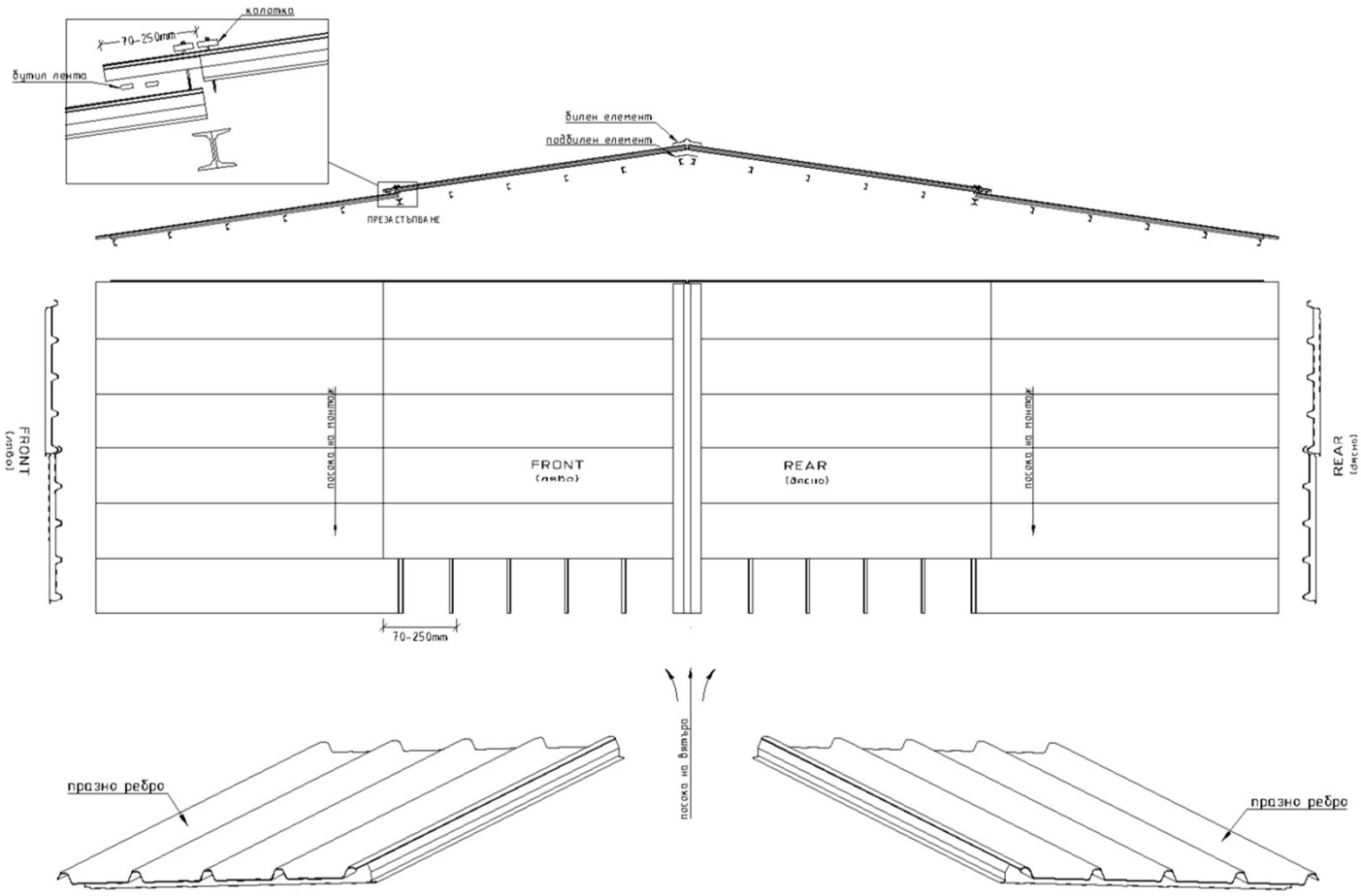
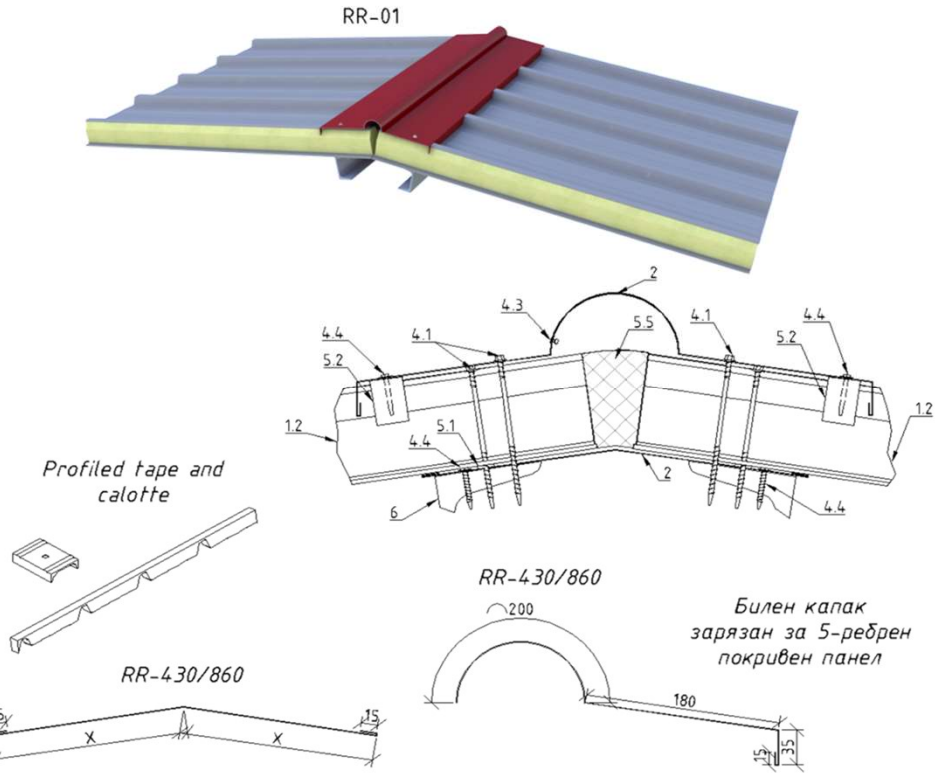
• In case of long slopes and the need to overlap the sandwich panels in length and/or for better water drainage at the roof, Technopanel offers making a factory cut from 70 to 250 mm.



• Standard Detail Ridge



Legend:

1.2 - Roof Sandwich Panel
2 - Flashing
4.1 - Self tapping screw
4.3 - Rivet
4.4 - Screw
5.1 - Butyl tape
5.2 - Profiled tape
5.5 - Insulation
6 - Structure

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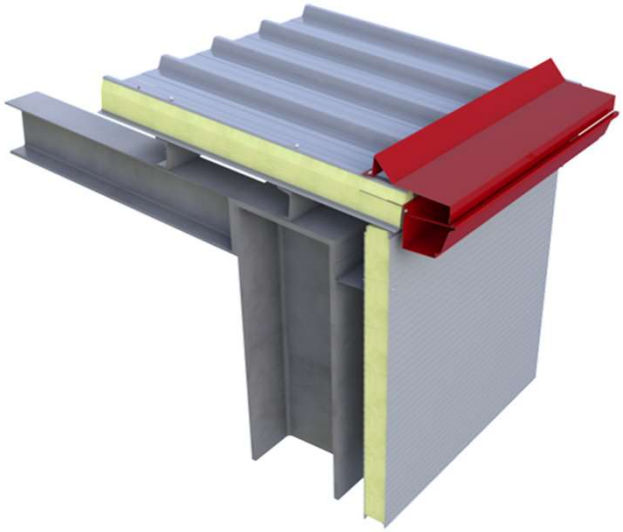
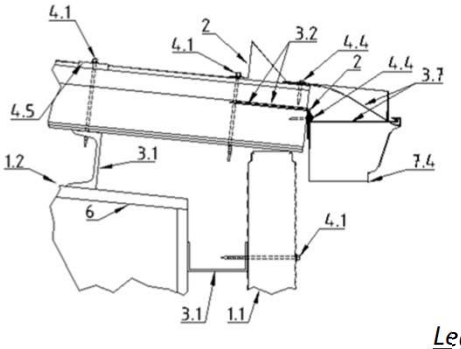
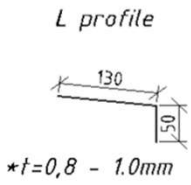
• Standard Detail External Gutter

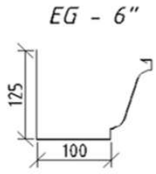


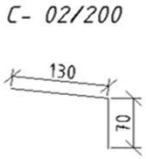


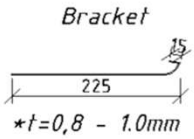
Legend:

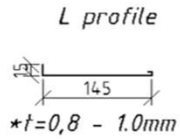
1.1 - Wall Sandwich Panel
1.2 - Roof Sandwich Panel
2 - Flashing
3.1 - U profile
3.2 - L profile
3.7 - Supporting profile
4.1 - Self tapping screw
4.4 - Screw
4.5 - Calotte
6 - Structure
7.4 - Gutter

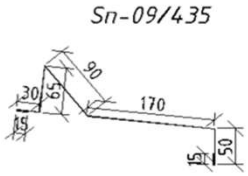












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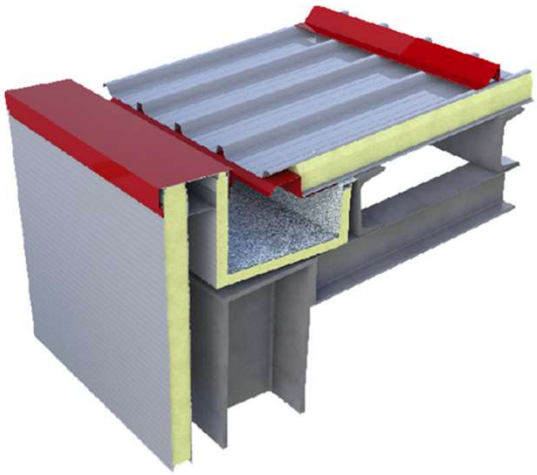

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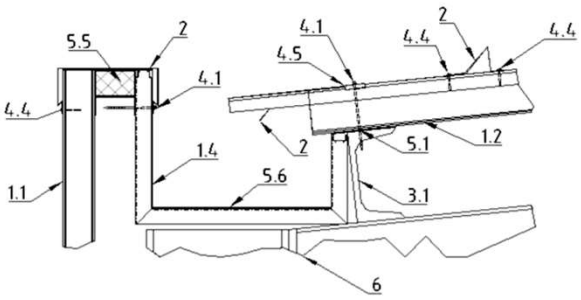

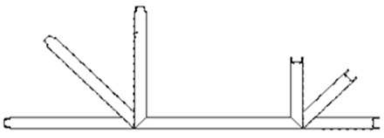

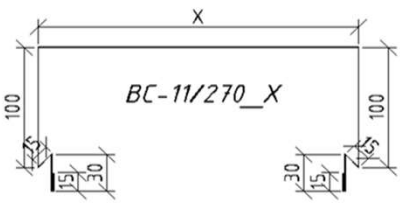

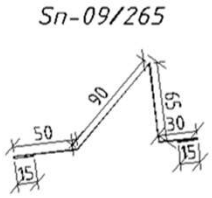

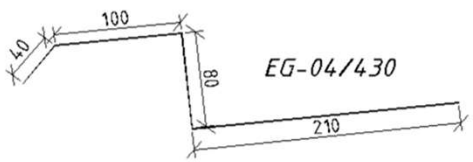

Legend:

1.1 - Wall Sandwich Panel
1.2 - Roof Sandwich Panel
2 - Flashing
3.1 - U profile
3.2 - L profile
4.1 - Self tapping screw
4.4 - Screw
4.5 - Calotte
5.1 - Butyl tape
5.5 - Insulation
5.6 - Waterproofing
6 - Structure

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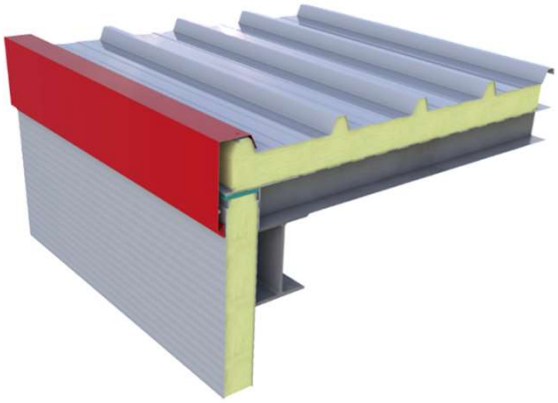
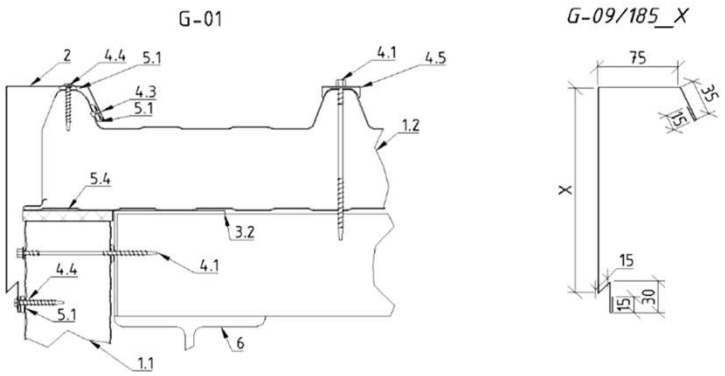
• Standard Detail Gable - variant 1

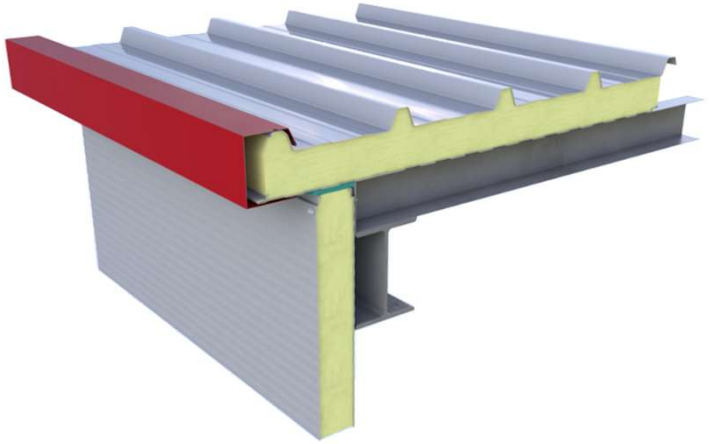


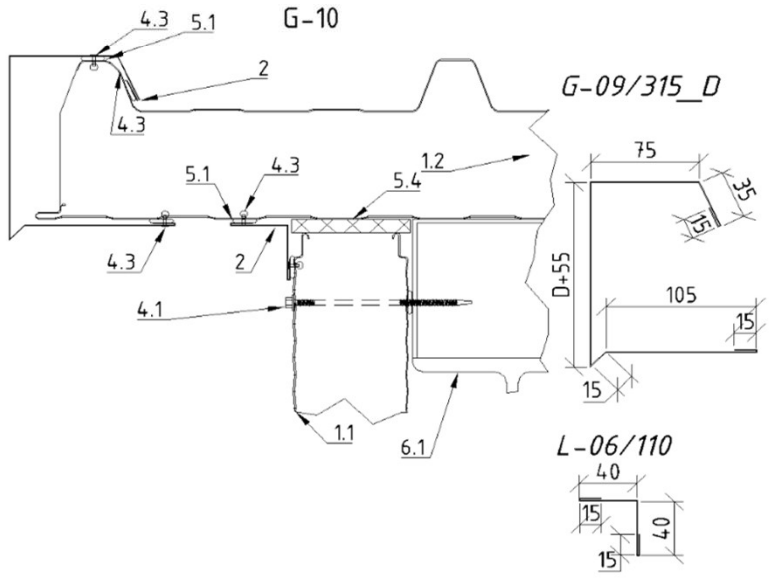


Legend:

1.1 - Wall Sandwich Panel
1.2 - Roof Sandwich Panel
2 - Flashing
3.2 - L profile
4.1 - Self tapping screw
4.3 - Rivet
4.4 - Screw
4.5 - Calotte
5.1 - Butyl tape
5.4 - Silicone gasket
6 - Structure

• Standard Detail Gable - variant 2





Legend:

1.1 - Wall Sandwich Panel
1.2 - Roof Sandwich Panel
2 - Flashing
4.1 - Self tapping screw
4.3 - Rivet
5.1 - Butyl tape
5.4 - Silicone gasket
6.1 - Steel structure

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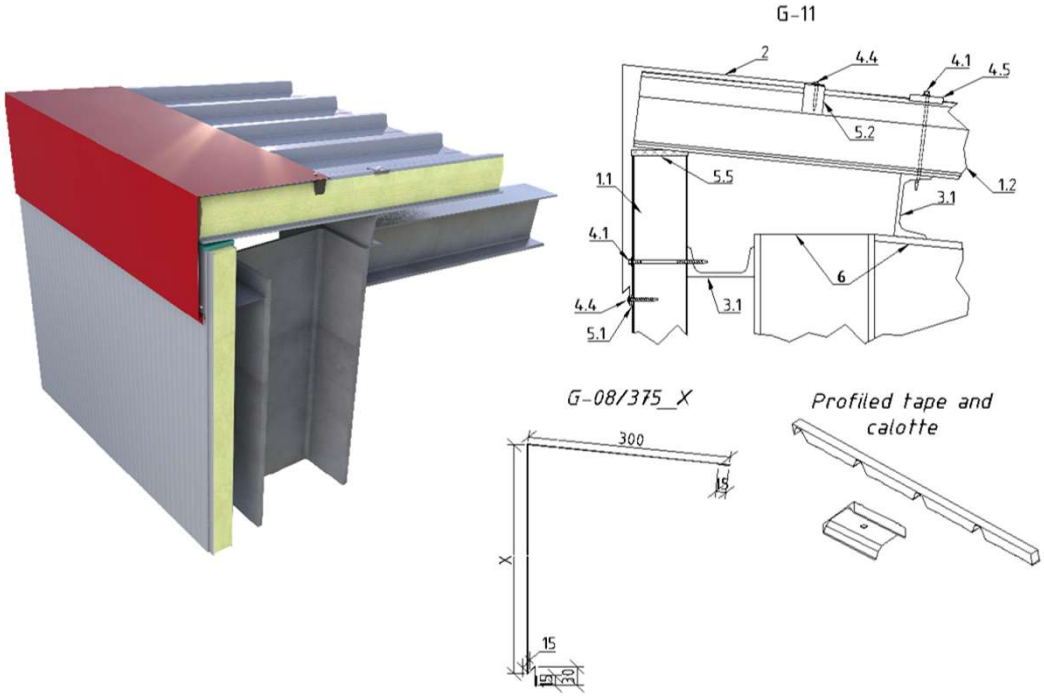
• Standard Detail Gable - variant 3



Legend:

1.1 - Wall Sandwich Panel
1.2 - Roof Sandwich Panel
2 - Flashing
4.1 - Self tapping screw
4.3 - Rivet
5.1 - Butyl tape
5.4 - Silicone gasket
6.1 - Steel structure

• Standard color range for TTOP 5 PIR

Grey White RAL 9002 group I *e: F, W, R* *i: F, W, R*	White Aluminium RAL 9006 group II e: F, W, R i: F, W, R	Light Ivory RAL 1015 group I e: F, R

Legend: e: outer metal sheet; i: inner metal sheet; F: TFACE S facade panels; W: TFACE T wall panels; R: TTOP roof panels

· The described colours should be interpreted as approximate.

· No guarantee for identic color shades on partial or additional deliveries due to the possibility of using different coils.

· In order to avoid nuance differences, complete information should be provided when ordering.

· Larger shade differences are possible with PVDF coatings.

· Additional panels in reserve should be calculated when ordering specific colours.

· Large temperature differences may occur between the internal and the sun exposed external sheet of the sandwich panels. As a result of the high coefficient of thermal expansion of the sheet, bending and tension stresses can be obtained in the cross-section of the panels. Special attention should be paid in this direction for colours of II and III colour group, and particularly for sandwich panels with PIR insulation core.

1805 Yana, 1 Zavodska Str., e-mail: office@technopanel.com