

SSAB safety barriers



Reliable safety barrier solutions

SSAB'S SAFETY BARRIERS



Applications

- Roads
- Bridges
- Parking areas and multi-level car parks
- Ports
- Industrial buildings and warehouses

Tested for safety and durability

The functioning of SSAB's safety barriers has been tested in crash tests complying with Standard EN1317, and the products have been found to be of high quality and safe.

The zinc layer of barriers, accessories and fasteners ensures a very long service life also in demanding conditions where roads are treated using de-icing salt.

Overall economy and easy to install

Special attention in the development of barrier systems has been paid not only to safety, but also to overall economy. Thanks to a straight forward structure and long rail sections, installation is quick and easy. Safety barriers are also used for benefit of modern high-strength steels with of improves safety and cost efficiency.

SSAB's safety barrier systems provide reliable, cost efficient solutions for improving traffic safety and for use in other safety barrier applications. The manufacture and development of barrier systems is based on SSAB's decades of experience as the supplier of barriers.



Quality and delivery conditions

Quality control of barrier systems is comprehensive and it extends from the barrier system production process and its raw material control to the quality control of the manufactured barrier products and its accessories. For our customers, this means quality on which can trust.

A delivery may consist of an installation-ready barrier system or a more limited set of components, where required. Complete barrier systems consist of rails, posts, terminals and end pieces, curved and corner sections and fastening accessories.

Experience gained in manufacturing and development of safety barriers during several decades, ensures reliable products and deliveries. Possible additional deliveries and spare parts deliveries to repair destination handled also quickly and flexibly.

Spare parts for the SSAB's barrier systems are also available.



The CE conformity marking has been awarded for SSAB's safety barriers.

MEDIAN BARRIER SSAB C210/130X4



A cost efficient median barrier system

SSAB's median barrier is an effective way of improving traffic safety. The safe, high-strength median barrier meets the requirements of impact containment levels H1 and N2 and has been CE-approved.

Every effort has been made to make installation as simple as possible. In addition to easy installation, the cost efficiency of the median barrier system has been improved by introducing high-strength steel grades and four-meter post spacing. SSAB's median barrier has excellent long-term durability.

End anchors can be installed without removing asphalt layers, which speeds up installation.

The outer surfaces of the rails are straight and free of screws, minimizing damage caused by snow-removal equipment. The barrier belongs to the highest snow removal class 4. The thickness of the safety barrier's zinc layer fulfills the requirements of Standard EN ISO 1461 and conforms to Finnish Transport Agency additional requirements for zinc layer thickness.

The barrier system includes opening sections, which can be used e.g. for temporary passageways for emergency vehicles.

The barrier system is based on open section and innovation that eliminates tight post assembly tolerances in rail's longitudinal direction.

The number of screws has been minimized into 16 pcs. /12 meters to speed up installation. Standard rail length is 12 meters.

Rail posts, placed at four-meter intervals, can be embedded directly in the ground or in pre-installed sockets. Socket installation is used for example with opening sections.

As the height of the barrier corresponds to the barrier height generally used in median barriers in Finland, SSAB median barrier is easy to combine it with existing barriers, crash cushions and end terminals.



Barrier	Impact containment class	Snow removal resistance	Risk level	Post spacing, m	Crash test vehicle			Working width W_w , m	Post type
					Mass, kg	Speed, km/h	Angle of impact		
SSAB C210/130x4	H1	4	A	4	900	100	20	1,0	Sigma120
					10000	70	15	1,9 (W6)	
	N2	4	A	4	900	100	20	1,0	
					1500	110	20	1,6 (W5)	

Table 1. Medium barrier properties.

SSAB SIDE BARRIERS

A safe, reliable W230 side barrier

The SSAB W230 side barrier is a new system based on high-strength steel and compatible with in Finland before usually used side barriers. The barrier type fulfills the requirements of impact containment level N2 and of the highest snow removal resistance class 4.

Because SSAB W230 side barrier is fully compatible with the W230/4 side barrier the optimal solution is achieved by utilizing the best features of the both barriers. For example, the sections where is demanded a smaller working width.

The side barrier W230 is delivered perforated, hot-dip galvanized and with accessories. Rail sections can also be delivered bent. Curved sections for the W230 are available with an angle of 45° or 90° as well as the 230/4 side barrier. The standard rail delivery length of the W230 barrier is 12 m and the standard post spacing is 4 meters.

W230/4 barrier systems complying with the type drawings of the Finnish Transport Agency

The most common barrier type in Finland is the W230/4 side barrier, which is defined in the type drawings (Ty3/51) of the Finnish Transport Agency. The barrier system is available CE-compliant with a standard splice or with a reinforced splice when better working width value is needed. The barrier is compliant with the containment level N2 requirements of the EN1317-2 standard as well as the highest snow removal resistance class 4. The barrier has been tested and approved with post spacings of 1, 2 and 4 meters.

All SSAB's side barrier systems have been crash-tested and CE marked.



Barrier	Impact containment class	Snow removal resistance	Risk level	Post spacing, m	Crash test vehicle			Working width W _n , m	Post type
					Mass, kg	Speed, km/h	Angle of impact		
SSAB W230	N2	4	A	4	900	100	20	1,4	Sigma100
					1500	110	20	1,8 (W6)	
W320/4 reinforced splice compliant with TY3/51:2010	N2	4	A	4	900	100	20	1,3	U100
					1500	110	20	2,1 (W6)	
	N2	4	A	2	900	100	20	0,8	
					1500	110	20	1,4 (W5)	
	N2	4	A	1	900	100	20	0,7	
					1500	110	20	1,0 (W3)	
W230/4, standard splice in accordance with TY3/51	N2	4	A	4	900	100	20	1,5	U100
					1500	110	20	2,1 (W6)	
	N2	4	A	2	900	100	20	1,2	
					1500	110	20	1,7 (W5)	

Table 2. Side barrier properties.



Curved sections of side barriers

W rails can also be delivered bent. The smallest possible bending radius of curved sections is 350 mm; the bending radius of longer barrier profiles are agreed when the order is placed.

Rail type W230 comes with optional 45° and 90° curved sections. A 90 degree curved section can be selected for rail W150/3. Additional information about the possibility of manufacturing sections with other bending radius is available from technical support and sales.

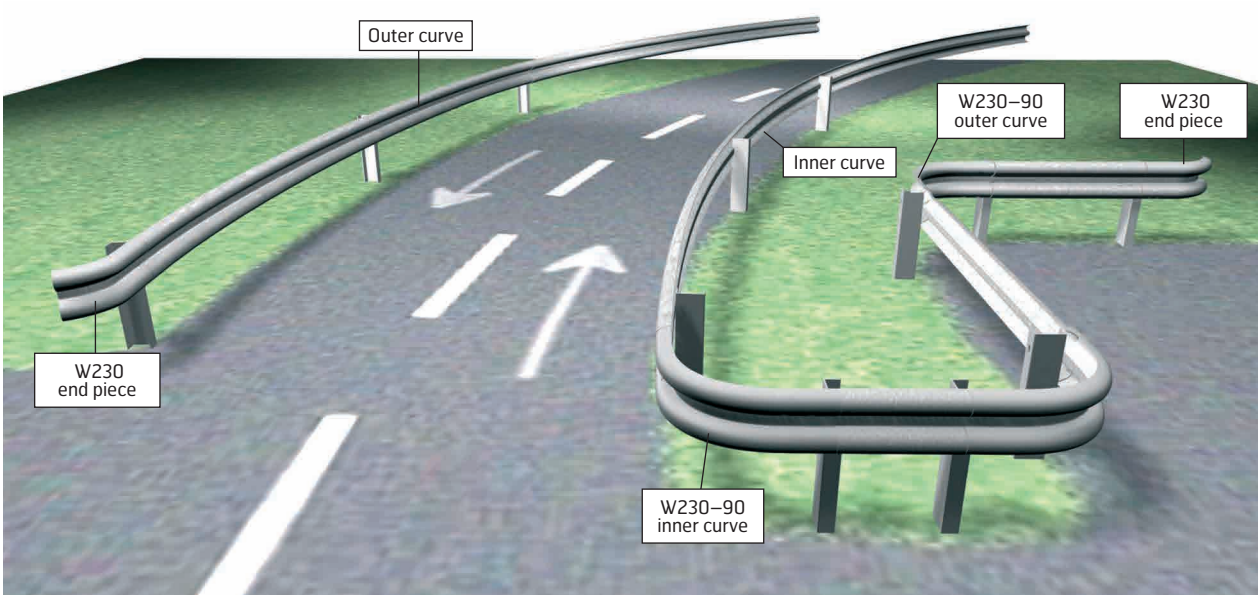


Figure 1. Inner and outer curves are defined on the basis of the direction of travel of vehicles as shown.

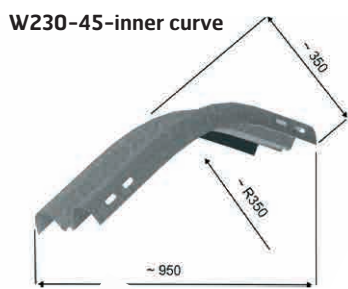


Figure 2. Stocked curved sections of road rail W230.

Crash safety

SSAB's barrier systems are CE-approved in compliance with Standard EN1317-5. Crash safety has been verified with crash tests complying with Standard EN1317-2.

Long-term durability

Safety barriers, accessories and fasteners are delivered hot dip galvanized. The thickness of SSAB safety barriers' zinc layer fulfills the requirements of Standard EN ISO 1461 and conforms to Finnish Transport Agency additional requirements for zinc layer thickness

The zinc additional requirement of the Finnish Transport Agency destinations:

-Safety barriers, excluding accessories and fasteners, zinc layer local thickness at least 75 µm.

Hot dip galvanized coating can be painted to provide the desired surface color and longer lifetime. Detailed instructions for painting of the hot dip galvanized pieces are given in Standard PSK 2702 and the Finnish Transport Agency SILKO 2.354.

SSAB's barrier systems meet the requirements of the most demanding snow-removal resistance Class 4.



RAILS AND ACCESSORIES

In addition to CE-approved safety barriers, SSAB delivers rails and components used in other safety barrier systems.

Rails used in bridge parapets

Rail W240/5, which is used in parapets of short bridges and similar applications in Finland, is also available perforated and hot dip galvanized. Rails cut to a specific length, as well as ungalvanized or unperforated rails and rails with specific hole spacing, are also available to order. The rails can also be delivered bent. The standard delivery length of the rail W240 is 12 meters, with a post spacing of 2 meters.

Rail W230/5 is used in repairs and rehabilitation involving bridges that still have the former standard bridge parapet of the Finnish Transport Agency and, occasionally, in secondary roads in new construction. The rails are delivered according to our customer's preferences.

The W150/3 rail is used in light-traffic bridge parapets. Its other applications are parking areas and multi-level car parks as well as other similar applications which the protection requirement is reduced.

Handrail U 55/114/55 x 6 is intended for use with the standard bridge parapet of the Finnish Transport Agency. C-profile C 14/50/50/50/14 x 3 is intended for use in light barrier highlight sections. Cold-rolled steel gives parapets a more finished, rounded appearance than sharp-angled hot-rolled steel. Additionally, if the parapet is to be painted, cold-rolled steel is more suitable thanks to its rounded shape and smoother surface. Handrails are delivered ungalvanized.

Median barrier "Box beam"

Barrier products without CE marking can only be used in repairs of existing non CE marked safety barriers. SSAB delivers rails and posts as well as other accessories for "Box beam" median barrier repairs.

Posts

SSAB offers a wide range of different post sections for common traffic barrier systems, such as those based on the standard drawings of the Finnish Transport Agency. Posts cut to a specific length as well as ungalvanized or unperforated posts and posts with specific hole spacing, are also available to order.



Figure 3. Bridge parapet rail W240/5.



Figure 4. Box beam rail.

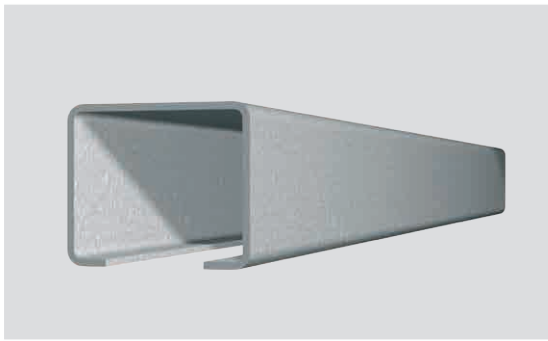


Figure 5. Examples of posts, Sigma and U-profile.

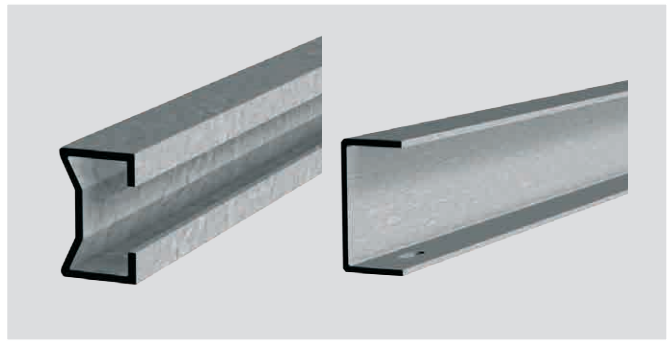


Table 3. Dimensions and cross-sectional properties of rails and posts delivered as components.

Product	Steel grade	h [mm]	b [mm]	t [mm]	M [kg/m]	A [mm ² x10 ²]	I _x [mm ⁴ x10 ⁴]	W _x [mm ³ x10 ³]	I _y [mm ⁴ x10 ⁴]	W _y [mm ³ x10 ³]
Parapet rails										
W150/3	S235J2	150	38	3	5.6	6.7	10.0	5.1	-	-
W230/3	S420MC	230	65	3	9,2	11,2	52,8	16	-	-
W230/4	S235J2	230	65	4	11.8	14.6	64.0	19.9	-	-
W230/5	S235J2	230	65	5	14.7	18.2	80.1	24.6	-	-
W240/5	S355MC	235	71	5	16.2	19.3	96.2	27.1	-	-
W306/3	S235J2	306	80	3	11.4	14.2	101.9	24.5	-	-
SSAB median barrier C210/130 x 4	S420MC	132	212	4	18,8	22,5	1607	151	621	94
Box beam 150/180 x 4	S235J2	150	180	4	16,6	20,7	1179	131	636	70
Handrail 55/114/55 x 6*	S355MC	114	55	6	9,5	12,3	231	40,5	34,9	9
Kaidepylväät										
U 50/100/50 x 4	S235J2	100	50	4	6.0	7.5	113	22.6	18.1	5.1
U 50/100/50 x 5	S235J2	100	50	5	7.3	9.1	132	26.5	21.6	6.2
SIGMA 55/100/55 x 4	S355MC	100	55	4	7.6	9.4	138	27.6	23.3	7.7
SIGMA 55/120/55 x 4	S420MC	120	55	4	8,4	10,2	213	35,5	23,7	7,8
*) Ungalvanized										

SSAB is a Nordic and US-based steel company. SSAB offers value added products and services developed in close cooperation with its customers to create a stronger, lighter and more sustainable world. SSAB has employees in over 50 countries. SSAB has production facilities in Sweden, Finland and the US. SSAB is listed on the NASDAQ OMX Nordic Exchange in Stockholm and has a secondary listing on the NASDAQ OMX in Helsinki. www.ssab.com

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The SSAB logo consists of the letters 'SSAB' in a bold, blue, sans-serif font. The 'S' and 'A' are connected, and the 'B' has a distinctive shape with a vertical bar on its right side.