

PRODUCT SPECIFICATION

H1BL-01



MARGARITELLI
ROAD SAFETY

GENERALITY

Road side safety barrier made of laminated wood and steel, CE CERTIFIED in H1 containment class according to the harmonized standard EN 1317-5.

Certificate of Constancy of Performance CE n° **0497/CPR/3152** issued by CSI SpA – Bollate.



Figure 1 Transparent surface treatment, natural color – with single rear post cover



Figure 2 Deep brown color surface treatment – with single rear post cover



Figure 3 Transparent surface treatment, natural color – with no rear post cover



Figure 4 Deep brown color surface treatment – with no rear post cover

SUSTAINABILITY

At Margaritelli Road Safety, our commitment to sustainability is evident across all aspects of environmental management. This includes strict adherence to environmental legislation, the efficient use of energy and natural resources, the promotion of a circular economy through waste recovery, and active efforts to combat climate change by minimizing greenhouse gas emissions generated during the production of safety devices.

For the H1BL-01 barrier, an EPD (Environmental Product Declaration) has been registered and published on www.environdec.com. This declaration, prepared in accordance with the voluntary certification scheme outlined by the **ISO 14025** and **EN 15804** standards, pertains to the environmental performance of the product. The EPD serves as an objective assessment tool for evaluating the environmental performance of a product. It is based on the application of LCA (Life Cycle Assessment) methodologies, which assess the environmental footprint throughout the entire life cycle, from the extraction of raw materials to the product's end-of-life ("Cradle to grave") or to the factory gate ("Cradle to gate").

In the "Cradle to gate" analysis for the H1BL-01 barrier, the total global warming potential (GWP) indicator due to greenhouse gases is expressed in kilograms of CO₂ equivalent emitted per meter of product.

This value is:

Total GWP = 12,25 kg CO₂ eq

In order to manage the environmental aspects characterizing Margaritelli Ferroviaria's activities more effectively and sustainably, the Perugia and Bettona offices operate with an Environmental Management System certified in accordance with the **ISO 14001** standard.

PEFC CHAIN OF CUSTODY

The implementation and maintenance of a PEFC Chain of Custody is the tool through which Margaritelli Road Safety demonstrates its commitment to halting deforestation, conserving biodiversity, and acting responsibly on a social level, through the adoption of a legal and sustainable raw material supply system: the wood used in the Bettona facility for the production of the device comes exclusively from sustainably managed forests.

MAIN DIMENSIONAL CHARACTERISTICS.

Height from the road surface	830	mm
Maximum lateral clearance	327 - 363	mm
Post embedment	1000	mm
Posts spacing	3000	mm
Minimum length (tested barrier section)	81	m

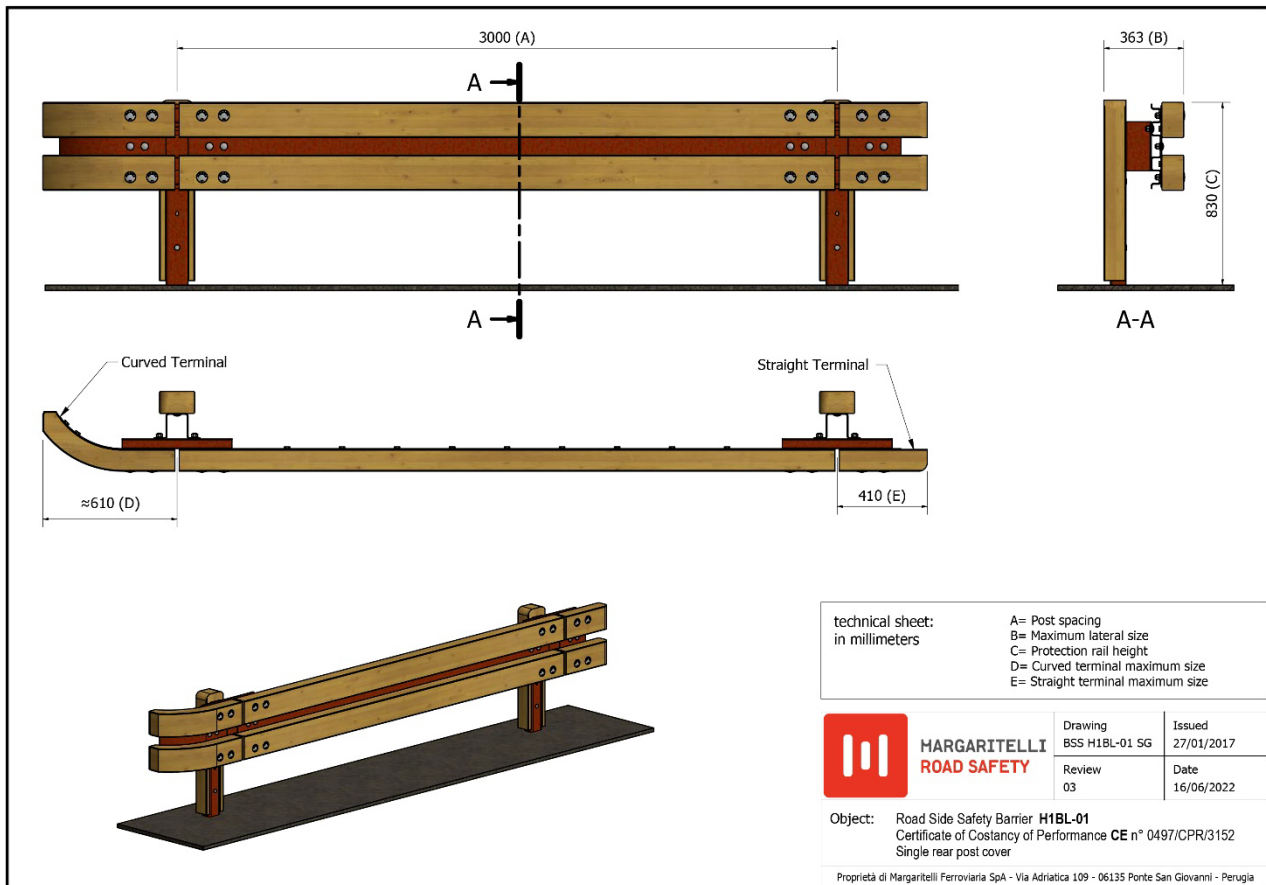


Figure 5 H1BL-01 the barrier in standard version

INTEGRATION WITH MOTORCYCLIST PROTECTION SYSTEMS - MPS.

The H1BL-01 barrier can be integrated with the RiderPro-MRS-03 safety device for motorcyclists, tested at the CSI SpA ISO 17025 certified test field, according to the CEN/TS 17342 standard.



Figure 6 H1BL-01 barrier integrated with RiderPro-MRS-03

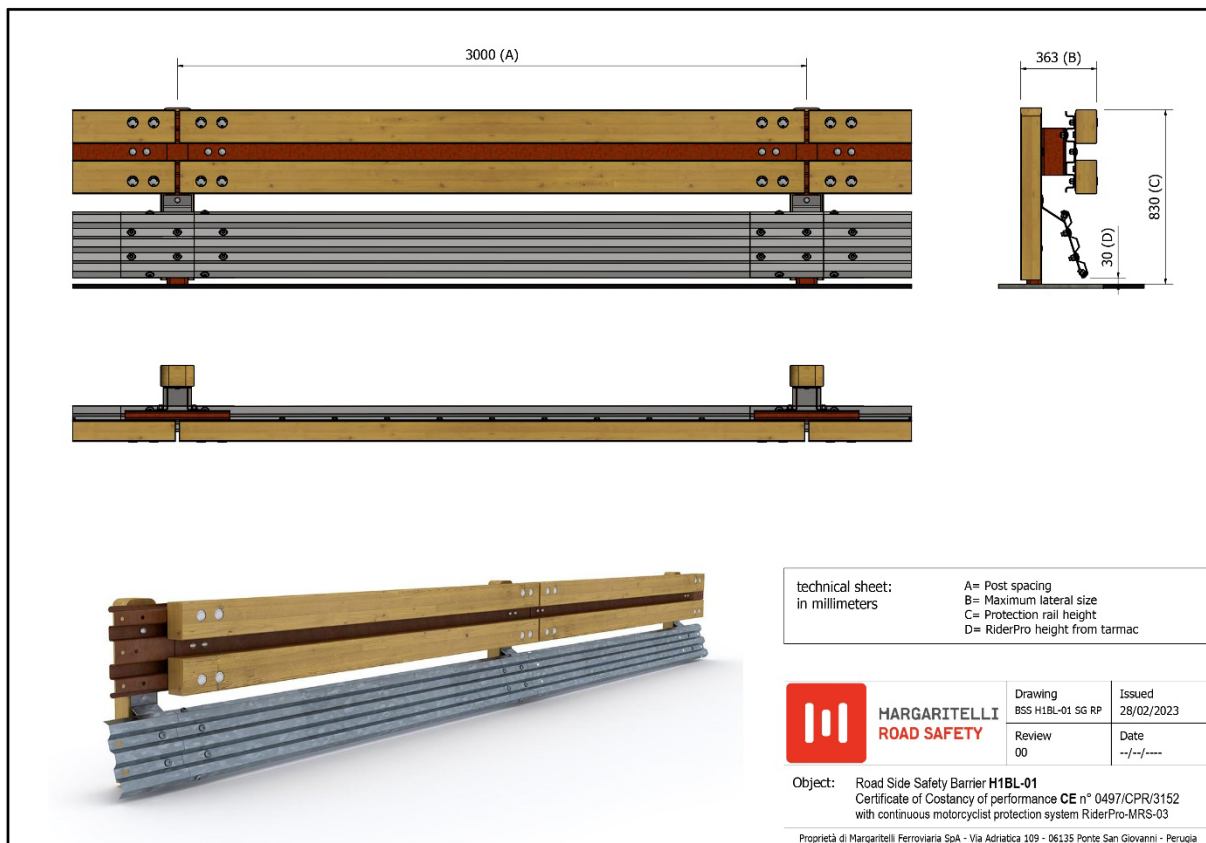


Figure 7 H1BL-01 barrier integrated with the RiderPro-MRS-03

PERFORMANCE CHARACTERISTICS.

Tests carried out.

LIER test number	Proof	Velocity	Angle	Mass	Vehicle Type
MAR/BAX-03/1151 of 02/04/08	TB 11	100 km/h	20°	900 Kg	Car
MAR/BAX-01/1149 of 01/04/08	TB 42	70 km/h	15°	10000 Kg	Truck

Dynamic performance.

PARAMETER	Detected value	Limit value	LIER test number
ASI index	0.7 – Grade A	≤ 1.0	MAR/BAX-03/1151
L _c containment level (kJ)	137	127	MAR/BAX-01/1149
Usable Width level (TB11)	W3 class (0.93 m)	≤ 1.0 m	MAR/BAX-03/1151
Usable width level (TB42)	W5 class (1.60 m)	≤ 1.7 m	MAR/BAX-01/1149
Vehicle Intrusion (TB42)	VI7 class	≤ 2.5 m	MAR/BAX-01/1149
Dynamic Deflection (TB42)	1.5 m		MAR/BAX-01/1149
THIV (km/h)	22,0	≤ 33.0	MAR/BAX-03/1151

Terminals.

To complete the barrier at the beginning and end of each section, untested terminal elements must be inserted, two for each distinct section, even of different types (straight or curved).

The placement of the non-certified terminals must be appropriately designed to avoid direct impacts. Otherwise, it is advisable to use certified energy-absorbing terminals.

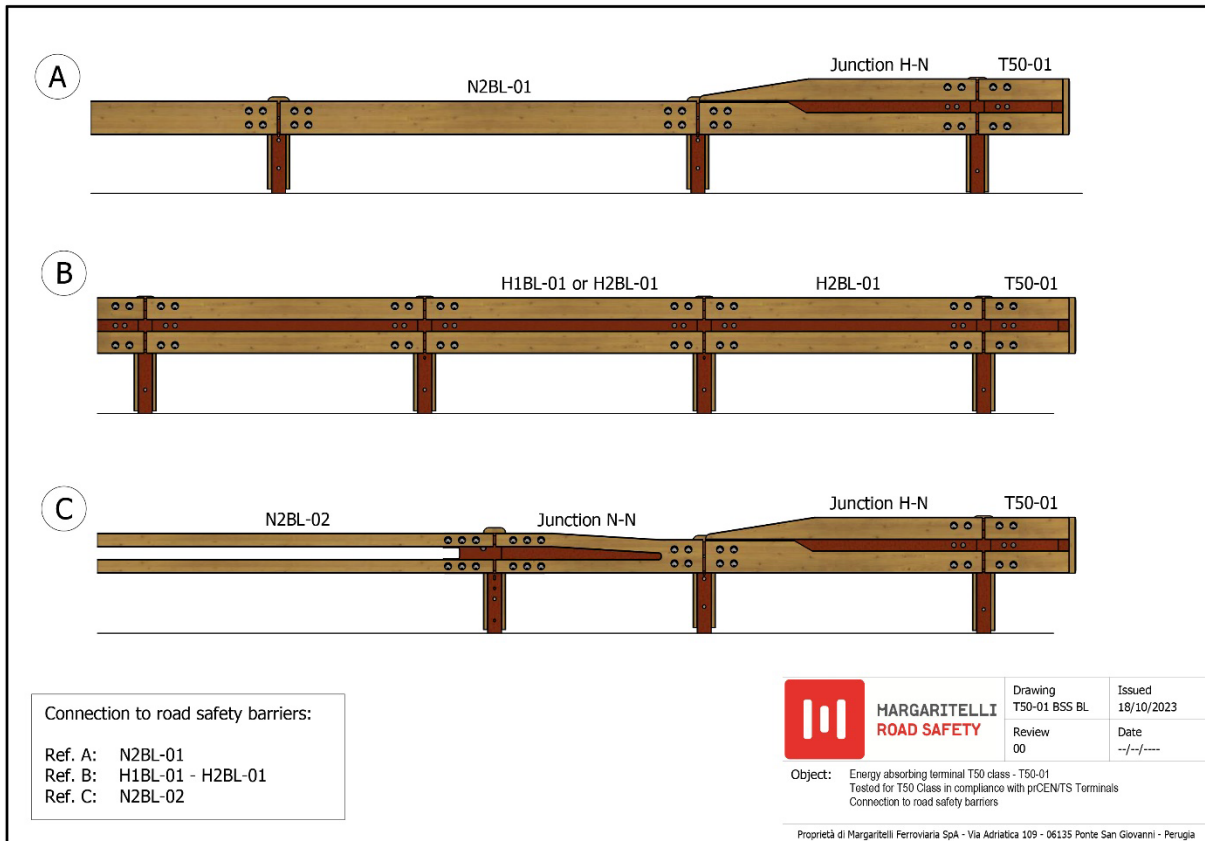


Figure 8 Connection with T50-01 terminal barrier

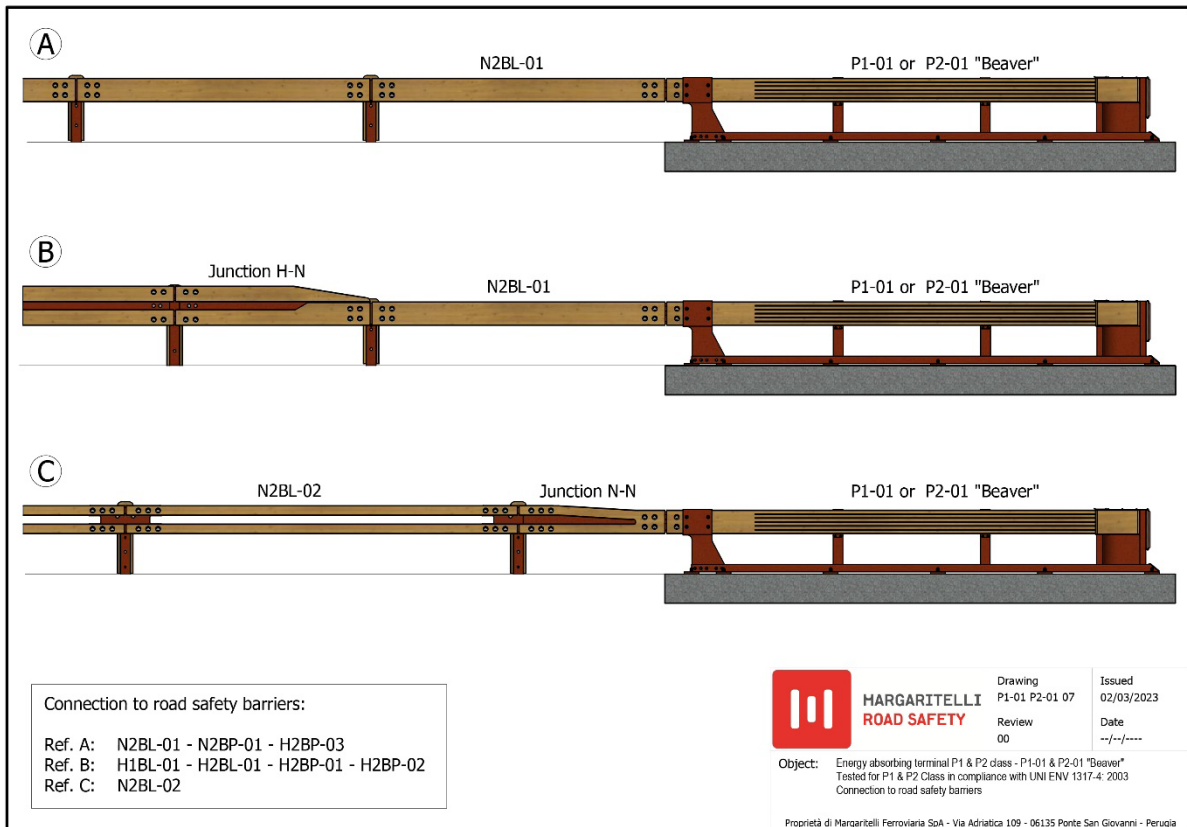


Figure 9 Connection with P1-01 and P2-01 Beaver terminals

MATERIALS.

Steel.

EN 10025-S355J0WP steel, CE-certified for structural applications, offers enhanced resistance to atmospheric corrosion (commonly referred to as Corten steel). This steel contains specific alloying elements that improve its resistance to weathering by forming a protective oxide layer on the base metal when exposed to atmospheric agents.

Laminated wood.

The laminated wood used is CE-certified for structural applications in accordance with the harmonized standard EN 14080.

The beams must be manufactured in compliance with the UNI EN 386 standard for Service Class 3, with minimum mechanical properties corresponding to Class GL24C, as specified in UNI EN 1194. This ensures uniformity in the mechanical characteristics of the finished product and compliance with the prototype subjected to crash test evaluations.

The adhesive used is Type I as defined by EN 301, making it suitable for climatic conditions involving relative air humidity equivalent to full exposure to weather.

Additionally, the bonding process is carried out to ensure resistance to autoclave impregnation treatments.

High-strength galvanized steel bolts.

Special bolts for road barriers in high-strength galvanized steel (class 8.8 for screws, class 8 for nuts).

Hexagonal head wood screws Ø 14 x 90 mm made of galvanised steel (class 4.6).

WOOD PRESERVATIVE TREATMENTS.

Autoclave pressure impregnation treatment.

The pressure impregnation treatment in an autoclave, using preservative substances, ensures that the wood is protected both on the surface and deep within against the degenerative effects of atmospheric agents and biological attacks to which the barrier is exposed in outdoor environments (refer to SPD 022).

Treatment: Pressure impregnation with salts using a vacuum/pressure/vacuum cycle in an autoclave.

Preservative substance: Eco-friendly, completely odorless preservative based on copper salts, boron, and organic compounds, free of chromium and arsenic. Absorption: Not less than the R3 value, as specified by CTBA certificate. Usage conditions: Suitable for Risk Class 3 according to EN 355-1, corresponding to the intended use conditions.

Surface treatment – optional pigmentation.

To protect the wood from the degenerative effects of sunlight and atmospheric agents, a hydrophobic surface treatment is applied. This treatment enhances the wood's natural appearance while significantly slowing the typical graying process that occurs with any wood exposed to outdoor environments.

The presence of resins in the surface impregnating agent also reduces moisture exchange with the environment, thereby decreasing the tendency to crack—a common issue for wood used outdoors.

Additionally, the surface treatment can be complemented with a dark walnut finish achieved through the use of specific pigments.

Surface treatment
Transparent
Natural color
Standard production
Ready for shipping



Surface treatment
Pigmented
Deep brown color
On specific request
Delivery in 30 days



DURABILITY AND MAINTENANCE.

Due to the materials used, the construction techniques, and the treatments applied to the wooden components, the installed barrier does not require any maintenance and retains its performance characteristics over time.

However, wood, like any other material permanently exposed to the outdoor environment, tends to lose its original color, more or less quickly, over time due to the degenerative effects of UV rays. In the case of a walnut-colored finish, it may be necessary, after a few years (depending on the extent of exposure to sunlight), to restore the original aesthetic appearance of the barrier by repeating the surface treatment on-site using a manual application of staining impregnators.

APPLICATION OF THE ASDR-MRS SYSTEM.

The ASDR-MRS system is an auxiliary anchoring device for barrier posts in the ground, specifically designed, tested, and manufactured for barriers intended for roadside use.

Its application helps maintain the mechanical performance of a post, even when it is installed in "soft" soils, which have low consistency and are unable to properly support the post.

The ASDR-MRS system is installed on barriers without post cladding, without requiring any modifications to the post structure itself.

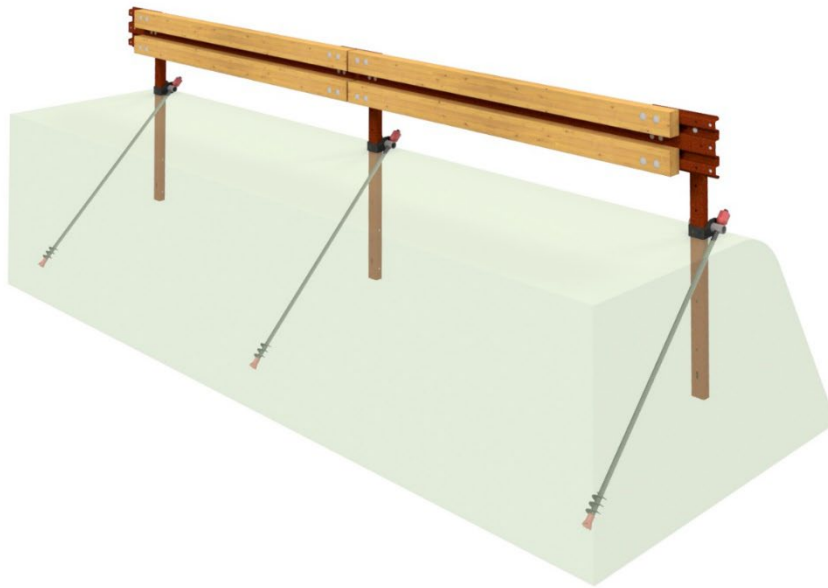


Figure 10 H1BL-01 barrier integrated with ASDR-MRS system

CLASSIFICATION OF TREATED TIMBER AS WASTE.

The laminated wood used, subjected to the double impregnation treatment, is assigned the EWC code 170201 (Wood). Therefore, it is classified as NON-HAZARDOUS WASTE, making it easily manageable in the event of replacement during maintenance after accidents.

DECLARATION OF NON-EMISSION OF HAZARDOUS SUBSTANCES.

The use of CE-certified laminated wood, in accordance with the harmonized standard EN 14080, guarantees the non-emission of harmful or dangerous substances listed in the European Community directive 76/769/EEC.

NON-CERTIFIED BARRIER WITH PEDESTRIAN HANDRAIL.

In the case of use in hazardous areas, where, in addition to vehicle containment, a safety device for pedestrians is also required, it is possible to equip the barrier with a handrail made of laminated wood, positioned at a height of over 1 meter.

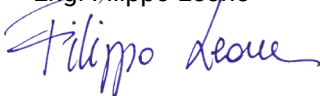
The application of the handrail does not modify the structure of the barrier, but only involves an extension of the wooden shells, which make up the covering of the posts in the certified version.

The application of the handrail is not covered by the CE performance consistency certificate and must be expressly authorized by the contracting authority.

issued by:

Technical Office

Eng. Filippo Leone



verified and approved by:

CEO

Dr. Stefano Lucarini

