PASS+CO®
PASSCO.DE GMBH

INSTALLATION OF ROAD RESTRAINT SYSTEMS FOR BRIDGE

passco L2 H2-A-W4 (BW-ES 2.00) 3n (single sided)

1. GENERAL

The safety barrier system is a passive safety barrier equipment, that serves to the protection of the traffic.
The purpose of the process is to meet the requirements of the European standard EN 1317 for installation of vehicle restraint systems.
This technological instruction should apply for road restraint systems for vehicles that are CE-marked.
In order to reach the performance of the safety barrier according to test reports, following requirements are to be fulfilled exactly during the set-up and installation. In case of acting different of the requirements indicated in the instruction manual without having consulted the manufacturer during the construction, the responsibility of the defects for the construction material will go over from the manufacturer to the installation company.

2. COMPETENCE

2.1 The technological instructions are valid and mandatory for all the people, who are performing the installation of Road Restraint Systems, produced by "PASS CO" Ltd Bulgaria in the production plant of "Jupiter 05" Ltd.
2.2 The supervisors of the departments must guarantee that the collaborators are aware of the technological requirements and implement them.
If during the installation a deviation from the requirements occurs, the responsibility for defects of the production will go over from the manufacturer to the installer.

3. STORAGE AND TRANSPORTATION SPECIFICATIONS OF THE MATERIAL

3.1 All parts of the systems have to be packed and stored professionally.
3.2 All parts have to be stored and transported in such way to protect them from getting dirty, corrosion, acid and of any other influences, that could harm them..
3.3 Construction parts, that have been laid for installation have to be build in very shortly.
3.4 During transportation, the load has to be assured against sliding and falling from the vehicle.
3.5 During transportation, traffic rules and national regulations have to be obeyed.

4. TECHNICAL DATA

4.1 Description of the system

Length of the system 60 м
Beginning elements 8 м
Ending elements 8 м
Height of construction 900 мм ± 30 мм deviation
Posts spacing 2000 мм
Material Steel S235JR and S355JR
Covering Hot dip galvanizing according EN ISO 1461

4.2 General drawing of the system

Application 1

5. INSTALLATION INSTRUCTIONS

5.1 Preparatory stage
5.1.1 Precautions

Workers have to be provided with and to use protective warning clothes as well as foot, head, ear and hand protection. Further to be provided and use also reflective safety vests.

5.1.2 Necessary tools for Installation

- Drill
- Wrench
- Air compressor (for pneumatic machines)
- Torque wrench
- Roulette
- Others

5.1.3 Preparation of the installation site

Before starting the works, the contractor has to get information regarding the location and the positioning of cables, pipes, lines, natural gas lines, sewerage system, telephone-Internet lines and all lines under ground. Ramming in the field of underground lines is not allowed without taking necessary measures and permissions in advance.
In order to start the installation, first of all normal traffic safety measures have to be taken on construction sites in line with the current national regulations. Before starting the assembly a signal according Ordinance №3/16.08.2010г. for temporary organization of the traffic safety during carrying out works on roads and streets has to be put.
The installation equipment has to be placed on appropriate points. System components have to be transported to the installation site by truck. The material have to be packed out, controlled and laid down along the construction line according to the installation instructions.

5.2 Essential stage

5.2.1 Alignment of the beam on the installation site of the restraint system
5.2.2 Positioning of the post of the system at distance 2000 mm from each other, using string and roulette for measuring the distance from the top edge of the asphalt to the front side of the beam
5.2.3 The exact place for drilling a hole in the reinforced concrete construction is marked through the elliptical openings of the plate of the post by using a spray or other substitute for marking.
5.2.4 Displacement of the posts from their installation location for drilling the holes in the reinforced concrete construction
5.2.5 The treatment of the holes takes place in the following order:

5.2.5.1 Creating a drilling hole by using a drill – gadder
5.2.5.2 Blowing the holes with compressor
5.2.5.3 Cleaning the hole from dust particulates with brush – 4 times
5.2.5.4 Blowing with compressor once more
5.2.5.5 Injecting the composite – chemical anchor by using gun for resin
5.2.5.6 Positioning of the anchor by using a wrench in the hole of the construction in depth of 131 mm
5.2.6 Installation of washer Φ 40x18 and nut M16
5.2.7 Final installation of the posts over the elements from position 5.2.6
5.2.8 Installation of washer and nut immediately after placing the post but the elements are not tightened until the beam is installed
5.2.9 Installation of the beam by using bolt M 10x45, type 6.8
5.2.10 Connection beam to beam by using bolts M 16x35, type 8.8

6. Regulations

6.1 Mounting elements, produced by “PASS CO” Ltd Bulgaria in the production plant of “Jupiter 05” Ltd are interchangeable and compatible with the CE-marked vehicle restraint systems
6.2 The CE-marked vehicle restraint systems are installed according to the available test reports
6.3 The installation should be monitored and documented by a competent installer – specialist
6.4 Direct concreting of the posts of the vehicle restraint system is not allowed
6.5 The beams should be installed toward the traffic direction. The posts should be installed as shown in the scheme:

6.6 The installation height is 900 мм ± 30 мм measured from the top edge of the carriageway.

6.7 To be used only bolts that have proven quality according to the test. The bolts must be tightened in accordance with the technical requirements:

Bolt	Connection	Torque
M 10x45	post - beam	30 Nm
M 16x27	beam - beam	140 Nm
Pin M 16x195, type 8.8	post-concrete	100 Nm

The use of torque wrench is recommended.
You should not exceed or fall below strength class described in p. 6.7.
Bolts which are once used, should never be used again.

6.8 All elements are hot dip galvanized according to EN ISO 1461.
If anchors connecting through glueing are used, the installation instructions given by the anchor`s manufacturer should be followed successively.

- The type of anchors should meet type 8.8.
- The strength of the concrete should meet at least B35.
- Installation of anchors should be performed by trained personnel.
- Only components delivered by the manufacturer should be used, it is not allowed replacement of separate parts (e.g. resin)
- When anchoring you should follow the installation instructions given by the chemical anchors`s manufacturer. Only then the support can be fixed (torque moment = 100 Nm).

Only as exception, the installation of the connecting anchor is possible also at temperature from -10 ° C to -6°C with time-out of 24 hours.

6.9 If the mounting parts must be corrected by the manufacturer, the following should be taken in account:
- for cutting use a cutting tool, the cut edges must be cleaned of mustaches;
- drill the holes in accordance with the technical requierements;
- the cut edges must be protected from corrosion by coating with zinc powder (according to EN ISO 1461)
- thermal proceses such as welding or cutting are not allowed;

6.10 The beams must be mounted free from mechanical stress. Beams, flexed in advance, should be used in curves < 30m.

6.11 According to the Vehicle restraint systems only appropriate end terminals and transitional structures should be installed.
To connect other safety structures a written verification from the manufacturer is required.

6.12 In general all parts that show residual (plastic) deformation are interchangeable.

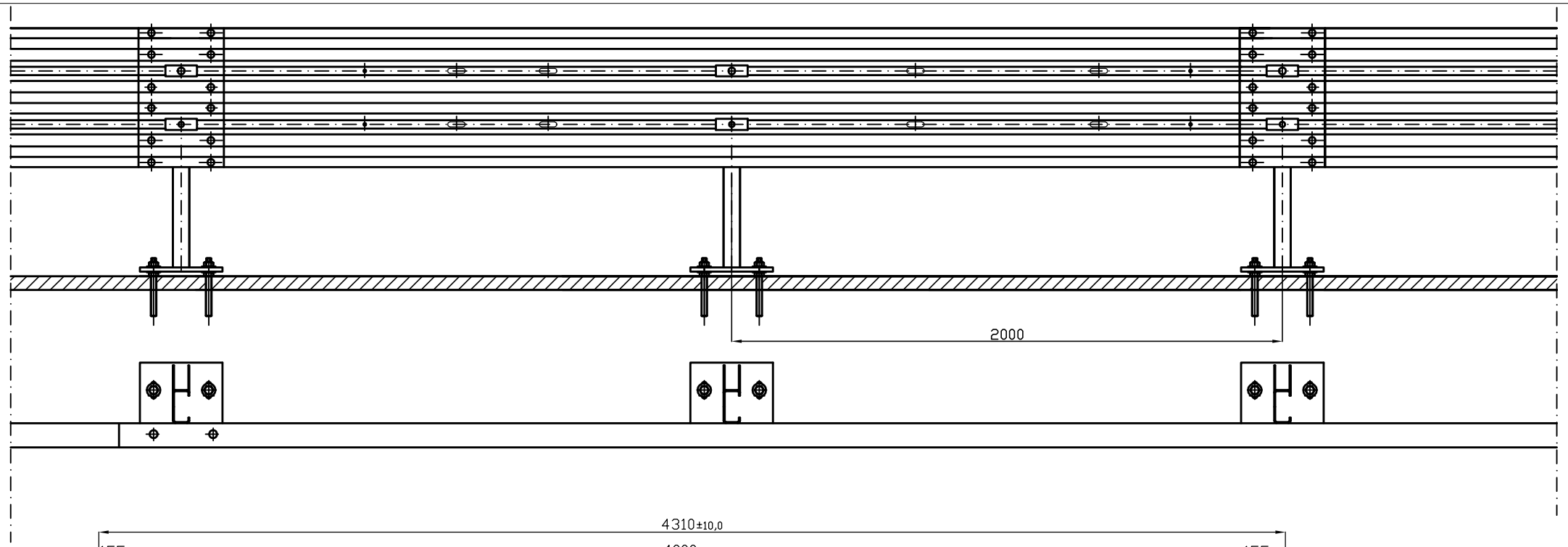
6.13 The parts of the restraint systems can be used again for repairs, when:

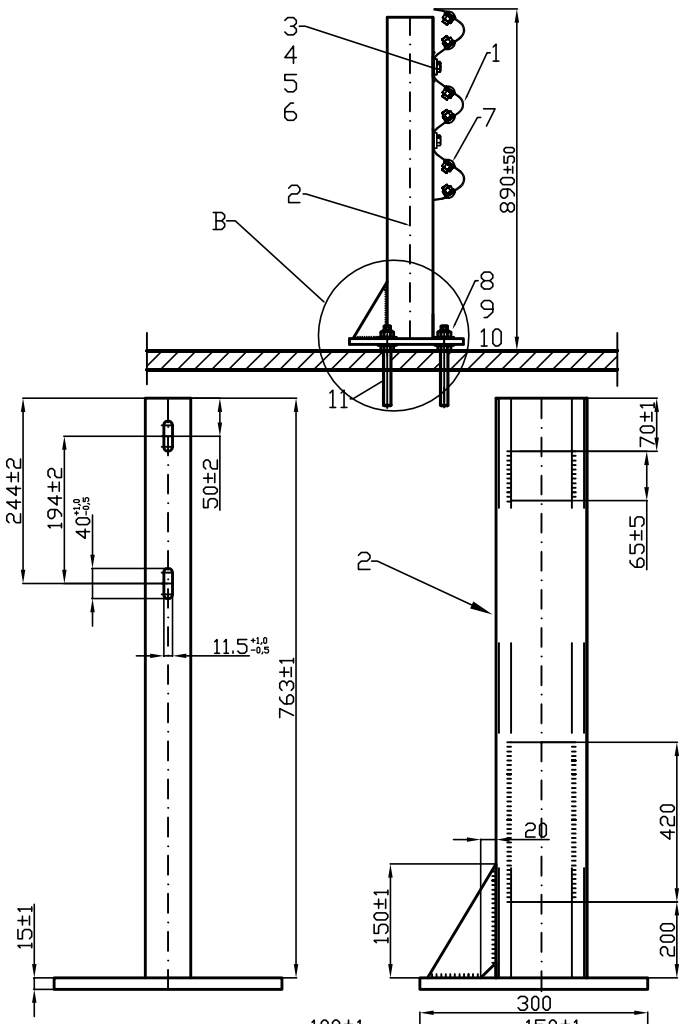
- the mounting elements don`t show visible deformations and/or damages (e.g. torn, expanded or burned openings);
- the construction components show thickness of min. 55 µm;
- the parts that are subject to mandatory to mandatory labeling, are with well recognizable identifying marks of the manufacturer and marks for the trial period.

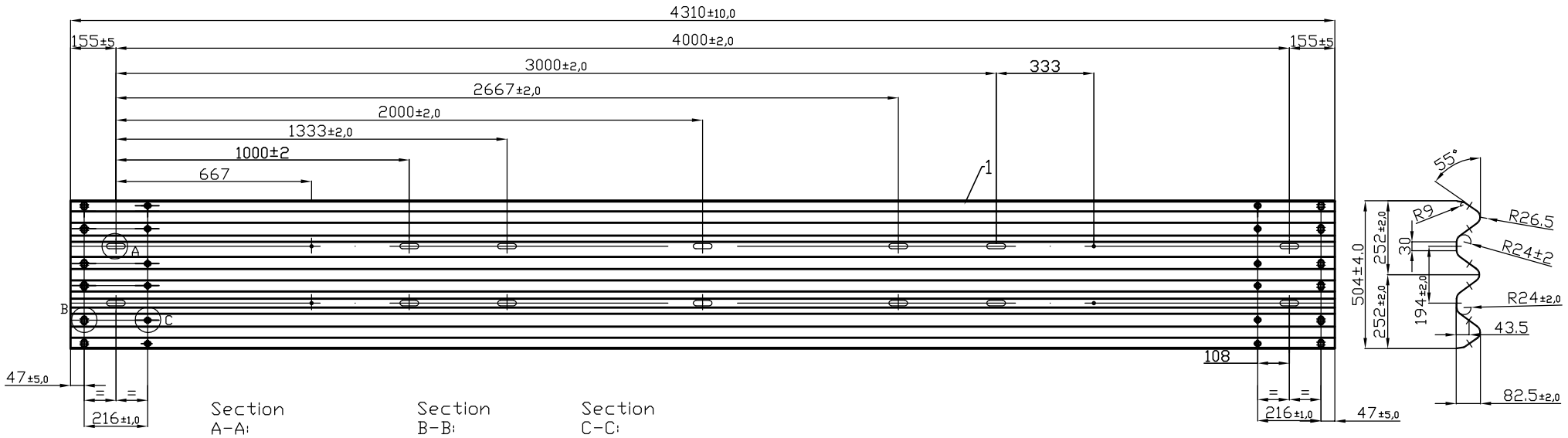
The fasteners (bolts, nuts, washers, connecting plates) that were already installed, must not be used again. You should always use new elements. When repairing after traffic incidents always use new fasteners.

7. Others

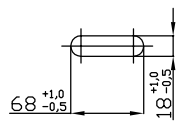
National and international contractual specifications, relevant test reports of the systems (ITT) in accordance with EN 1317, specific installation manuals and assembly tables are valid.







Section A-A:



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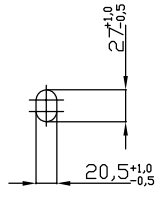

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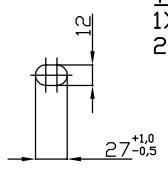
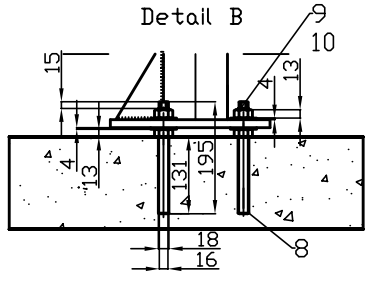


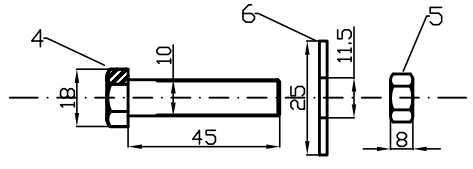
Technical requirements:

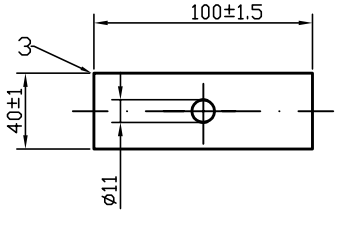
1) Nominal thickness of steel δ= 2.5 ± 0.17
2) Coating - hot dip zinc galvanizing, according to EN 1461:2009

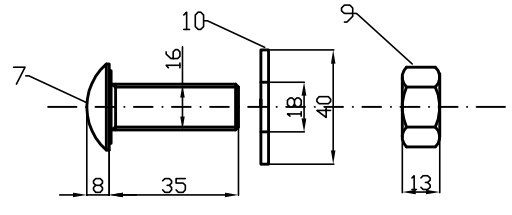
Detail B



Fish plate thickness 5mm ± 0.5mm







Part Nr.	Quantity	Description	Dimension	Single-weight	Overall weight	Material / Quality	Norm	Drawing
1	15	Beam type A with three beams	L=4310, δ=2.5	62.59	938.88	S355JR	EN 10025-2/EN 1461	2.1
2	30	Post, δ=2.5 with plate 300x300x15	C120x60x20x778	18.03	540.90	S355JR/S235JR	EN 10025-2/EN 1461	3.1
3	60	Fish plate with hole ø11	100x40x5	0.16	9.42	S235JR	EN 10025-2/EN 1461	5.1
4	60	Hexagon bolt M10x45,	M10x45	0.04	2.40	6.8	EN ISO 898-1	5.2
5	60	Nut M10	M10	0.01	0.60	SAE 1006 C	ISO 4032	5.2
6	60	Washer ø25	ø25x11.5x4	0.013	0.78	S235JR	ISO 7091	5.2
7	180	HRK bolt M16x35,	M16x35	0.07	12.60	-	ROUND HEAD OVAL, NECK BOLT	5.2
8	120	Bolt M16x195	M16x195	0.30	36.00	-	-	5.3
9	420	Nut M16	M16	0.03	12.60	SAE 1006 C	ISO 4032	5.3
10	420	Washer ø40	ø40x18x4	0.048	20.16	S235JR	ISO 7091	5.3
11	8	Chemical anchor	-	-	-	-	-	

Weight of the construction: 1573.34 kg

Weight/Running metter: 26.24 kg

Test length: 60 m

PASS+CO®

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Germany

Surface: galvanized	General tolerance	Material: S355JR;S235JR;4.6;8.8
Remarks	Created by: T. Baracz	Part number
	Title, Additional title: passco L2 H2-A-W4 (BW-ES 2.00) 3n	Document
	Scale: 1:20(1:10)(1:5)	She.: 00
	Date of issue: 01.05.2016	Form.: A3