

SAFEEND P4

WORKING DESCRIPTION INSTALLATION, REPAIRS AND MAINTENANCE



Working Description

Prepared by:	Doc. no.:
Fredrik Sangö	SafeEnd P4

Introduction/data:

SafeEnd P4 is a terminal tested according ENV 1317-4, performance class P4.

Performance class	P4
Permanent lateral displacement (approach side)	X1
Permanent lateral displacement (departure side)	Y1
Exit box	Z1
ASI value	1.1
Impact severity class	B

The installation work can be broken down into the following 10 steps, which will be processed individually in the work description in the order shown below.

- 1) Planning
- 2) Unloading of material
- 3) Proprietary inspection
- 4) Safety
- 5) Establishment
- 6) Installation
- 7) Repairs to zinc damage
- 8) Demobilisation
- 9) Repairs
- 10) Maintenance

Chap. 11 includes additional information (Drawings and Declaration of Conformity).

Rev. no.	Date	Signature	Reason for revision
A	2015-06-08	 Fredrik Sangö	Approved by SafeRoad Birsta

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1 PLANNING

It is at this point that the quality and flexibility of the project is determined. Well planned installation routines are a good basis when you are looking to achieve high quality, good logistics, work that is conducted safely and satisfied employees.

All the parties involved should have discussed the preconditions for the installation in good time and agreed on how it should be done.

It is important that both the client and the contractor are aware of the undertakings that each other have agreed to. These are best coordinated through good contacts.

Plan deliveries and installation in a timely manner. All the parties involved must keep each other notified as to any changed circumstances.

2 UNLOADING OF MATERIAL

The material is unloaded and suitably placed where the installation is to be carried out. This is to ensure that any unnecessary handling in the workplace can be avoided. Handle the material carefully, use wood pieces as support for material that is not placed on pallets.

When unloading, check that the unloaded goods match the delivery note. The goods must be checked to ensure that no damage is present. Non-conformance regarding package quantities or damages must be indicated on the delivery note and the sender must be contacted immediately.

3 PROPRIETARY INSPECTION

Assembly personnel are to perform and report, in the appropriate documents, proprietary inspections which must include the minimum of the following points:

Inspection points for installation in settings with traffic:

- The material is checked for damage and quantity following delivery to the worksite
- The height is checked
- All bolt joints are fitted and tightened
- Any minor damage to the galvanizing or painting is treated

4 SAFETY

As installation is often performed in a busy setting, the safety aspect is crucial. Temporary barriers (if needed) must be adapted to ensure that installation can be performed without them being removed.

5 ESTABLISHMENT

Assembly personnel must be notified or be privy to the conditions prevailing in the workplace by the time of establishment at the latest.

6 INSTALLATION

The installation description assumes that the company responsible for the installation has ensured that the assembly personnel have the necessary expertise with regard to the terminal components, terms and bolt dimensions, etc., see drawings in Chap . 11.1. This information is available in the drawings. These are attached at the end of this description. Each bolt must be tightened with a normal torque. Care should be taken to ensure that any over-tightening is avoided.

Setting out:

Before installation can commence, the location for the “nail” and post must be set out. This requires great accuracy. Setting out is done according to the drawing. NOTE: The dimension runs parallel with the roadway (inclined dimensions).

Installation of “nail”:

The “nail” is installed by ramming. The “nail” is hammer down until the top is 1dm above ground level.

Control point: Check so the twist is less than 10 degrees. If more adjusting by moving the bolts (see picture below)



The “nail” is “hammered” to ground level.

“Nail length” in asphalt 1500 mm, and 2000 mm in gravel.

Installation of posts: The posts can be installed with different methods (depending on the post type and ground condition):

- Ramming the post
- Pre-drilled or pre-punched holes. The post must be fitted immediately after hole drilling/punching. Special equipment is needed for pre-punching holes in order to minimize damage in the asphalt and to optimize stability of the post.

Note: If the ground where the pre-boring or pre-punched occurs is perceived as "loose", the site management must be notified.

Installation: Install the pre-mounted terminal to the "nail" and the post.

Install the transition to the connection safety barrier.

The terminal is correctly aligned and fully tightened followed by an inspection as specified in Chap 3.

- *Unless different tolerances are specified, ± 20 mm applies for installation.*

7 REPAIRS TO ZINC DAMAGE

Repairs to any zinc damage in the delivered materials are carried out according to SS/EN-1461 and "Industry Standard - finishing and repairs".

Zinc damage must be treated as follows:

- Scratches and elongated spots narrower than 2 mm and less than 10 cm². No action required.
- Damage wider than 2 mm and less than 3.16x3.16 cm (or less than 10 cm²) must be rectified by painting with zinc-rich paint. It is also possible to use a suitable zinc paste, zinc flakes or alloyed "sticks". Before any repairs are made, clean with a stainless steel brush.
- Damages larger than 10 cm² must be re-galvanized.

8 DEMOBILISATION

Inspection regarding heights and general visual impression.

A proprietary inspection in accordance with point 3 must be conducted and completed, and copies forwarded to the client (customer).

9 REPAIRS

All damaged material must be replaced immediately. Damage means that the steel is weakened such as deep scratches, rips, creases and suchlike. Damaged material must be replaced with genuine parts.

Replacing damaged components following a collision is no different from a normal installation besides the disassembly operation. Bear in mind that there may be a lot of tension in the safety barrier that has been hit.

10 MAINTENANCE

A minimum of maintenance includes rinsing with clean water where necessary followed by a visual inspection for damage.

11 OTHER INFORMATION

11.1 Drawings: Page 9 - 13.

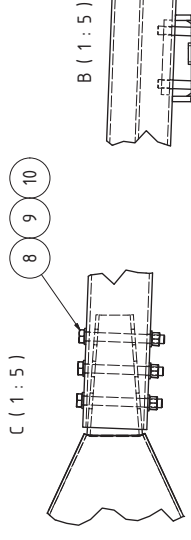
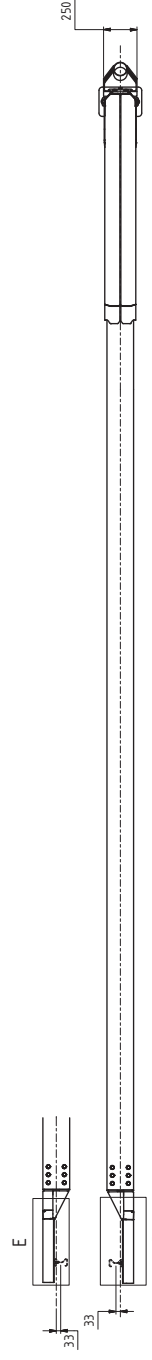
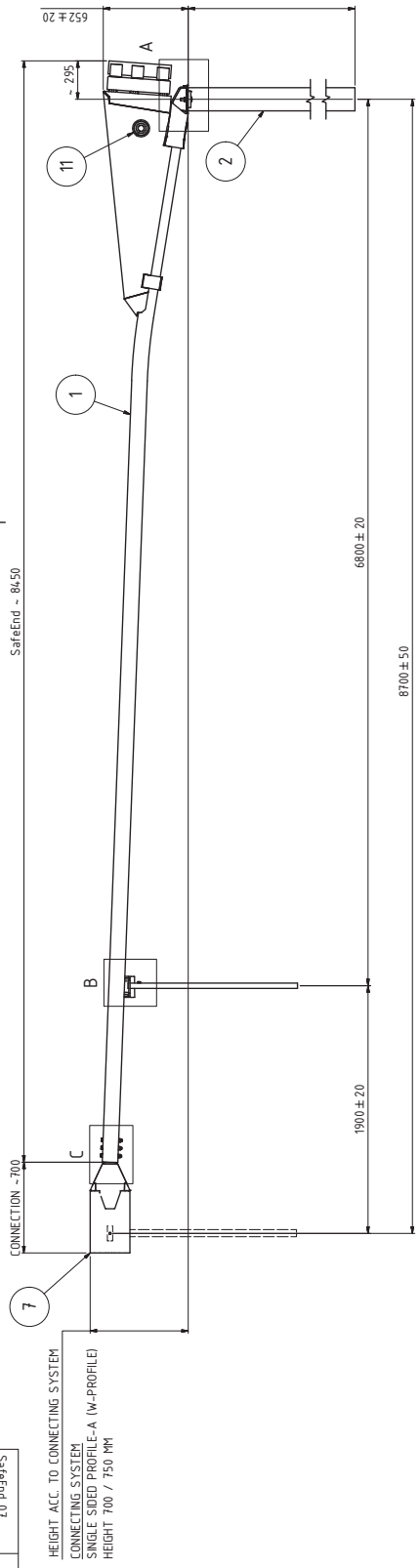
11.2 Declaration of Conformity: Page 14

ENV 1917-4
EN ISO 1461 (HOT DIP GALVANIZING)

P4
B
D11
Z1

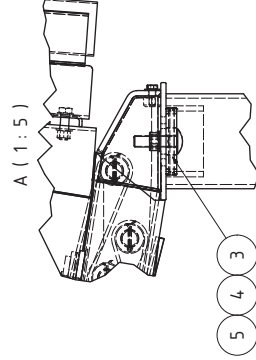
ADDITIONAL INFORMATION

PERFORMANCE LEVEL:
IMPACT SEVERITY LEVEL:
LATERAL DISPLACEMENT CLASS:
REDIRECTION ZONE:



D (1 : 5) LEFT MOUNTED

E (1 : 5) RIGHT MOUNTED



A (1 : 5)



OPTION: 892081
PLASTIC COVER MOUNTED ON SITE WITH 6x
MAURUTEX SCREW A2 M5.5x20.
CAN BE PROVIDED WITH VARIOUS TYPE OF
REFLEX, POINTING TO RIGHT, LEFT OR
MIDDLE EX.

HDG IN PART LIST STANDS FOR HOT DIP GALVANIZING
ACCORDING TO EN ISO 1461
BOLT, SCREWS & NUTS ACC. TO EN ISO 10648

Item	Qty	Part	Material	Unit	Scale	Notes
11	2	SafeEnd SIDE CAP	PE			892082 / RSK7510-SBL
10	6	HEX NUT M16	HDG			M6M M16 123160000
9	12	WASHER ROUND	HDG			17x34 120173400
8	6	BOLT M16	HDG			M16x50 120165000
7	1	CONNECTION REVERSIBLE	HDG			8920026
6.3	1	WASHER ROUND TBRUB	HDG			5x74x44 120132402
6.2	1	SCREW M12	HDG			M12x30 120102900
6.1	1	CONNECTOR PLATE	HDG			8920505
6	1	C-POST 140x40	HDG			8920300A (ASSEMBLED)
5	2	HEX NUT M20	HDG			M20 120200000
4	9	WASHER ROUND	HDG			17x36 120200800
3	2	CONNECTOR TUBE	HDG			2000 / 1500 8920537 / 8920530
2	1	Birsta SafeEnd	HDG			8920080
1	1	Birsta SafeEnd	HDG			8920080

ASSEMBLY DRAWING

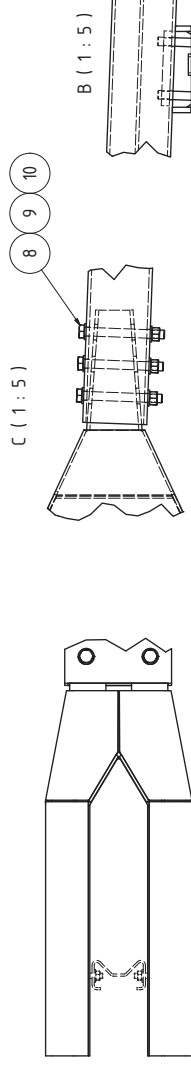
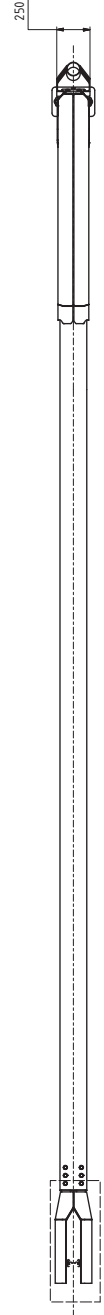
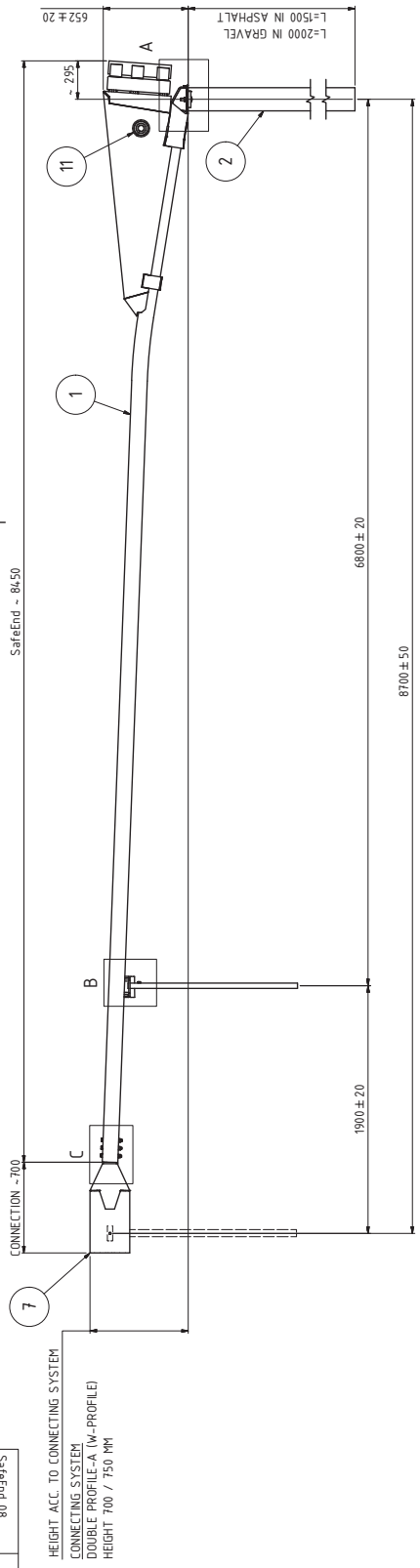
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Designed: GLN
Scale: 1:20
Revised by: GLN
Revised: 15.06.2015

Birsta SafeEnd P4 501.9 kg 2015-02-23
Drawing No. 8920537 / 8920530
SafeEnd 07

ENV 1917-4
EN ISO 1461 (HOT DIP GALVANIZING)

ADDITIONAL INFORMATION

PERFORMANCE LEVEL: P4
IMPACT SEVERITY LEVEL: B
LATERAL DISPLACEMENT CLASS: D11
REDIRECTION ZONE: Z1



D (1 : 5)

B (1 : 5)

C (1 : 5)

A (1 : 5)



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PLASTIC COVER MOUNTED ON SITE WITH 6x
MAURUTEX SCREW A2 M5x20.
CAN BE PROVIDED WITH VARIOUS TYPE OF
REFLEX, POINTING TO RIGHT, LEFT OR
MIDDLE EX.

HDG IN PART LIST STANDS FOR HOT DIP GALVANIZING
ACCORDING TO EN ISO 1461
BOLT, SCREWS & NUTS ACC. TO EN ISO 10648

Item	Qty	Part No.	Part Name	Material	Unit	Notes
11	2	SafeEnd SIDE CAP	PE			8920082 / RSK7510-SBL
10	6	HEX NUT M16	HDG	M6M M16		123160000
9	12	WASHER ROUND	HDG	17x34		126173400
8	6	BOLT M16	HDG	M16x50		120165000
7	1	CONNECTION DOUBLE	HDG			8920029
6.3	1	WASHER ROUND TBRUB	HDG	53x44x4		126132402
6.2	1	SCREW M12	HDG	M12x30		120202900
6.1	1	CONNECTOR PLATE	HDG			8920505
6	1	C-POST 140x40	HDG			8920300A (ASSEMBLED)
5	2	HEX NUT M20	HDG	M6M M20		122202000
4	9	WASHER ROUND	HDG	24x36		126225800
3	2	ANCHOR BOLT M20	HDG			126225800
2	2	Birsta "SafeEnd" ANCHOR TUBE	HDG	2000 / 1500		8920537 / 8920530
1	1	Birsta SafeEnd	HDG			8920080

ASSEMBLY DRAWING

In Review

Scale: 1:20

Revised by: [Signature]

Revised on: 2015-02-25

Weight: 517,4 kg

SafeEnd 08

Birsta

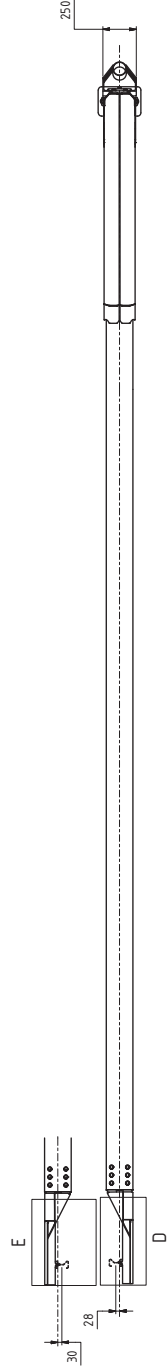
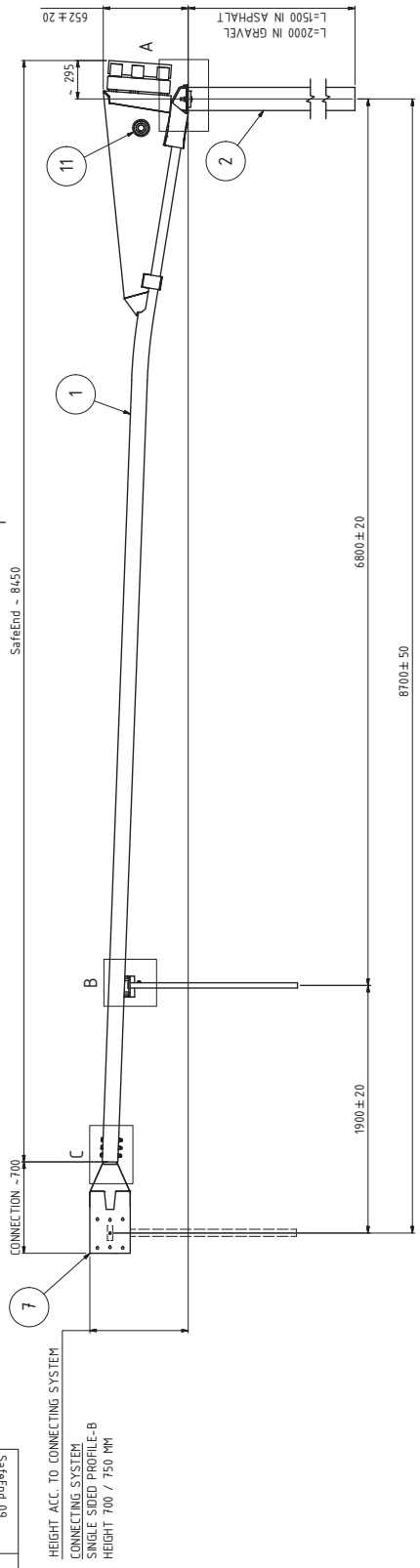
Birsta SafeEnd P4

PROFILE-A DOUBLE

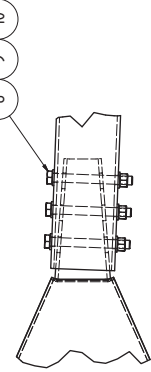
ENV 1917-4
EN ISO 1461 (HOT DIP GALVANIZING)

ADDITIONAL INFORMATION

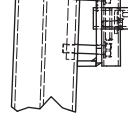
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IMPACT SEVERITY LEVEL: B
LATERAL DISPLACEMENT CLASS: D11
REDIRECTION ZONE: Z1



C (1 : 5)



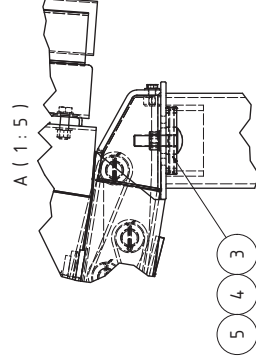
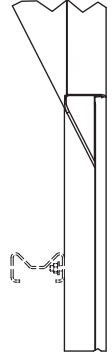
B (1 : 5)



E (1 : 5) RIGHT MOUNTED



D (1 : 5) LEFT MOUNTED



A (1 : 5)



OPTION: 8920081
PLASTIC COVER MOUNTED ON SITE WITH 6x MAURUTEX SCREW A2 M5.5x20.
CAN BE PROVIDED WITH VARIOUS TYPE OF REFLEX, POINTING TO RIGHT, LEFT OR MIDDLE EX.

HDG IN PART LIST STANDS FOR HOT DIP GALVANIZING
ACCORDING TO EN ISO 1461
BOLT, SCREWS & NUTS ACC. TO EN ISO 10648

Item	Qty	Part No.	Part Name	Material	Unit	Notes
11	2	SafeEnd SIDE CAP	PE			
10	6	HEX NUT M16	HDG	M6M M16	123160000	
9	12	WASHER ROUND	HDG	17x34	126173400	
8	6	BOLT M16	HDG	M16x50	120165000	
7	1	CONNECTION REVERSIBLE	HDG		8920031	
6.3	1	WASHER ROUND TBRUB	HDG	5x74x44	126132402	
6.2	1	SCREW M12	HDG	M12x30	120202900	
6.1	1	CONNECTOR PLATE	HDG		8920505	
5	1	C-POST 140x40	HDG		8920300A (ASSEMBLED)	
4	2	HEX NUT M20	HDG	M6M M20	122202000	
3	2	WASHER ROUND	HDG	17x36	126173600	
2	2	BRACKET ANCHOR TUBE	HDG		8920537	
1	1	SafeEnd	HDG	2002 / 1500	8920537 / 8920530	
1	1	SafeEnd	HDG		8920080	

ASSEMBLY DRAWING

Checked: GLN
Designed: GLN
Scale: 1:50
Revised by: GLN

Regions: 5081 kg
Weight: 2015-02-26
SafeEnd 09

Birsta SafeEnd P4
PROFILE-B LEFT/RIGHT

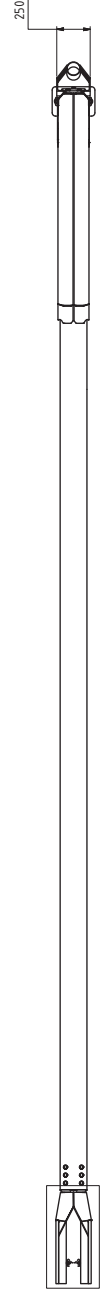
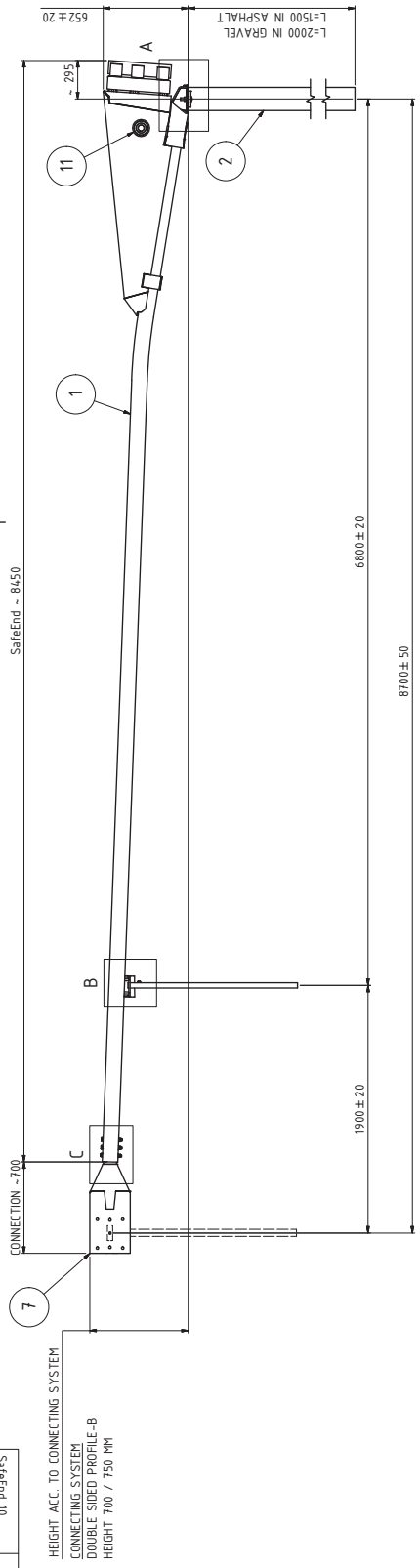
REGULATIONS

ENV 1917-4
EN ISO 1461 (HOT DIP GALVANIZING)

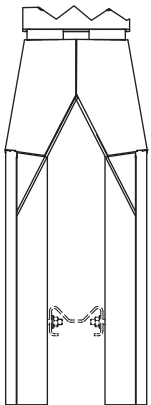
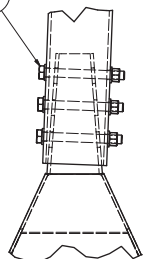
P4
B
D11
Z1

ADDITIONAL INFORMATION

PERFORMANCE LEVEL:
IMPACT SEVERITY LEVEL: B
LATERAL DISPLACEMENT CLASS: D11
REDIRECTION ZONE: Z1

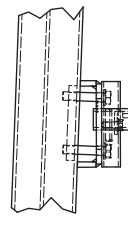


C (1 : 5)



D (1 : 5)

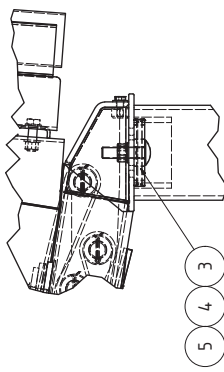
B (1 : 5)



6.3 6.2 6.1

6

A (1 : 5)



OPTION: 8920081
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MAURUTEX SCREW A2 M5.5x20.
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MIDDLE EX.

HDG IN PART LIST STANDS FOR HOT DIP GALVANIZING
ACCORDING TO EN ISO 1461
BOLT, SCREWS & NUTS ACC. TO EN ISO 10648

Part	Designation	Material	Quantity	Unit	Remarks
11	2	SafeEnd SIDE CAP	1	PE	8920082 / RSK7510-SBL
10	6	HEX NUT M16	1	HDG	M6x16 M16 123160000
9	12	WASHER ROUND	1	HDG	17x34 126173400
8	6	BOLT M16	1	HDG	M16x50 120165000
7	1	CONNECTION	1	HDG	8920032
6.3	1	WASHER ROUND TBRUB	1	HDG	53x44x4 126132402
6.2	1	SCREW M12	1	HDG	M12x30 120120900
6.1	1	CONNECTOR PLATE	1	HDG	8920505
6	1	C-POST 140x40	1	HDG	8920300A (ASSEMBLED)
5	2	HEX NUT M20	1	HDG	M20 122200000
4	9	WASHER ROUND	1	HDG	17x36 126173600
3	1	PLASTIC COVER	1	HDG	8920081
2	2	Birsta "SafeEnd" ANCHOR TUBE	1	HDG	2002 / 1500 8920537 / 8920530
1	1	Birsta SafeEnd	1	HDG	8920080

ASSEMBLY DRAWING

In Review

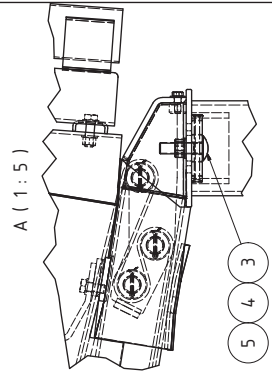
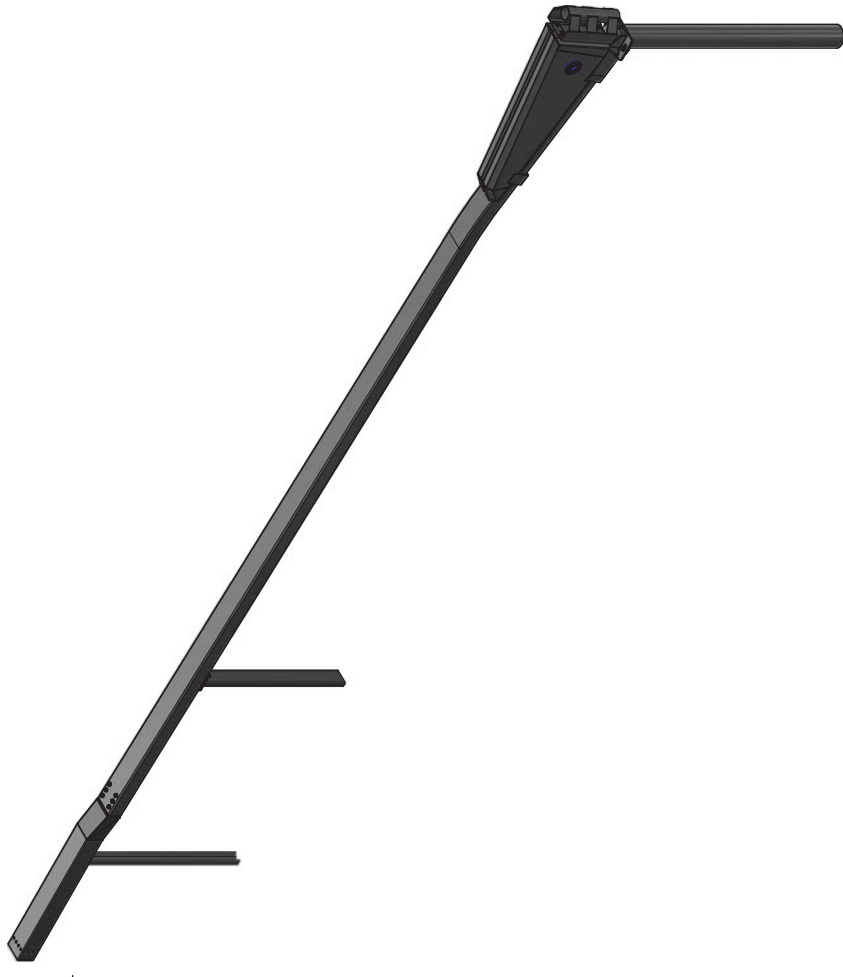
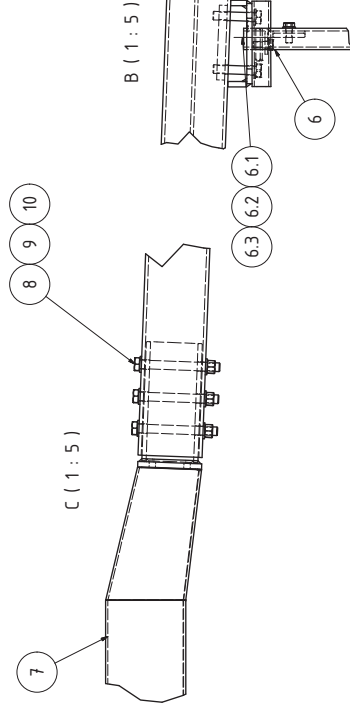
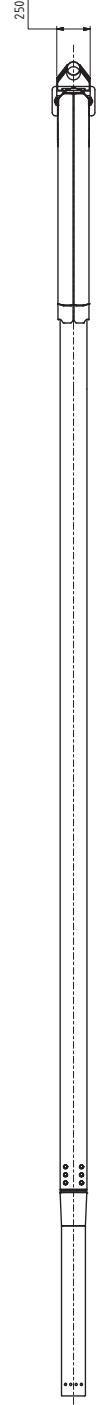
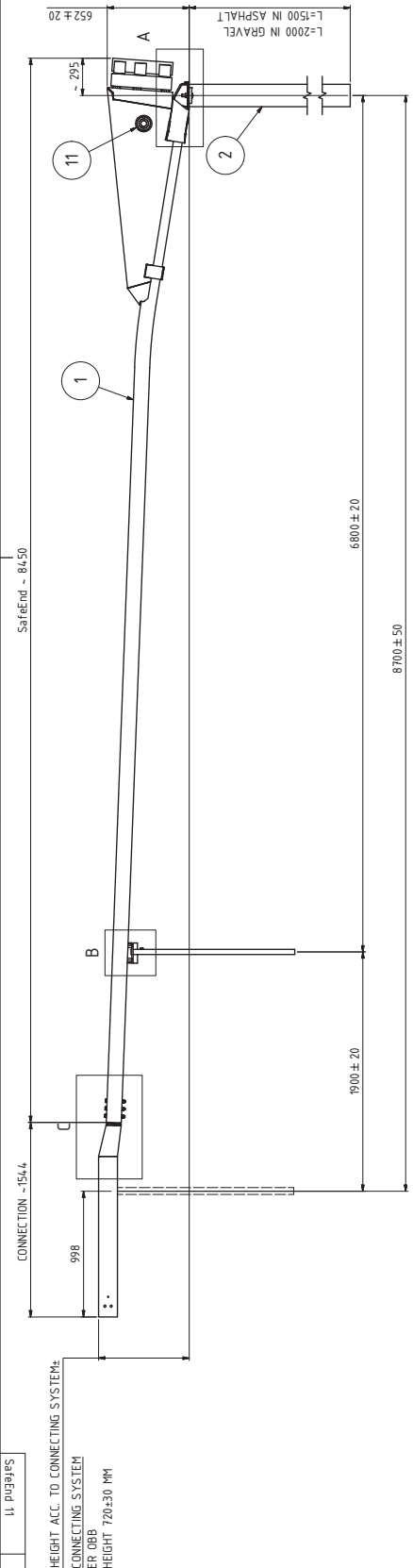
Checked by: FSJ
Designed by: GLN
Scale: 1:1
Revised by: GLN

Birsta SafeEnd P4
N/A
2015-03-05
SafeEnd 10

ENV 1317-4
EN ISO 1461 (HOT DIP GALVANIZING)
P4
B
D11
Z1

ADDITIONAL INFORMATION

PERFORMANCE LEVEL:
IMPACT SEVERITY LEVEL: B
LATERAL DISPLACEMENT CLASS: D11
REDIRECTION ZONE: Z1



HDG IN PART LIST STANDS FOR HOT DIP GALVANIZING
ACCORDING TO EN ISO 1461
BOLT, SCREWS & NUTS ACC. TO EN ISO 10648

Item	Qty	Part	Material	Notes
11	2	SafeEnd SIDE CAP	PE	8920082 / RSK7510-SBL
10	6	HEX NUT M16	HDG	M6x16 M16 120160000
9	12	WASHER ROUND	HDG	17x34 120173400
8	6	BOLT M16	HDG	M16x50 120165000
7	1	CONNECTION	HDG	
6.3	1	WASHER ROUND TBRUB	HDG	5x74x44 120132402
6.2	1	SCREW M12	HDG	M12x30 120120900
6.1	1	CONNECTOR PLATE	HDG	
6	1	C-POST 140x440	HDG	8920505
5	2	HEX NUT M20	HDG	8920300A (ASSEMBLED)
4	9	WASHER ROUND	HDG	M20 120220000
3	2	CONNECTOR	HDG	120220800
2	2	BRACKET ANCHOR TUBE	HDG	2002 / 1500 8920537 / 8920530
1	1	Birsta SafeEnd	HDG	8920080

Assembly	Drawn	Checked	Scale	Page	Revised by
GLN	GLN	GLN	1:1	120	
Birsta SafeEnd P4					
ER 08B					
525.1 kg					
2015-02-26					
SafeEnd 11					

OPTION: 8920081
PLASTIC COVER MOUNTED ON SITE WITH 6x
MAURUTEX SCREW A2 M5.5x20.
CAN BE PROVIDED WITH VARIOUS TYPE OF
REFLEX, POINTING TO RIGHT, LEFT OR
MIDDLE EX.

Supplier's Declaration of Conformity

No: SafeEnd P4 terminal

Issuer's name: Birstaverken AB

Issuer's address: Box 30
SE 863 32 Sundsbruk
Sweden

Object of the declaration: SafeEnd P4 terminal

The object of the declaration described above is in conformity with the requirements of the following documents:

Document No.	Edition/Date of issue
ENV 1317-4	November 2001
EN ISO 1461	April 2009

Additional information:

Performance level:	P4
Impact severity level:	B
Lateral Displacement Class:	D1.1
Redirection zone:	Z1
Durability:	HDG according to EN ISO 1461

Signed for and on behalf of:

Birstaverken AB

Sundsvall, 2015-01-21

A handwritten signature in blue ink, reading 'Fredrik Sangö', written over a horizontal line.

Fredrik Sangö

Senior Technical Adviser

SAFEROAD®

Main Office

SafeRoad Birsta AB
Birstavägen 10
Box 30
863 22 Sundsbruk
Sweden
Tel: +46 60 52 72 00
Fax: +46 60 52 72 16
www.birsta.eu

Arboga Office

Kapellgatan 29
Box 216
732 24 Arboga
Sweden

Borås Office

Viaredsvägen 35
504 94 Borås
Sweden