

SafeLine  N2-W4-cc6

# Tube formed Median Barrier

## Installation manual



05.03.19



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## 1. Important

Proper installation and repair are essential to ensure the systems maximum performance.

## 2. Description

The SafeLine-M is a steel road restraint system that is designed to enhance safety on the roads.

The system has successfully been tested according to class N2, described in EN 1317-2.

The system is based on C-formed steel posts with post distance of 6 meters and a longitudinal C-formed elliptic steel tubes/profiles, placed on top of the posts.

In a collision, the system is designed to lead the vehicle back on the road.

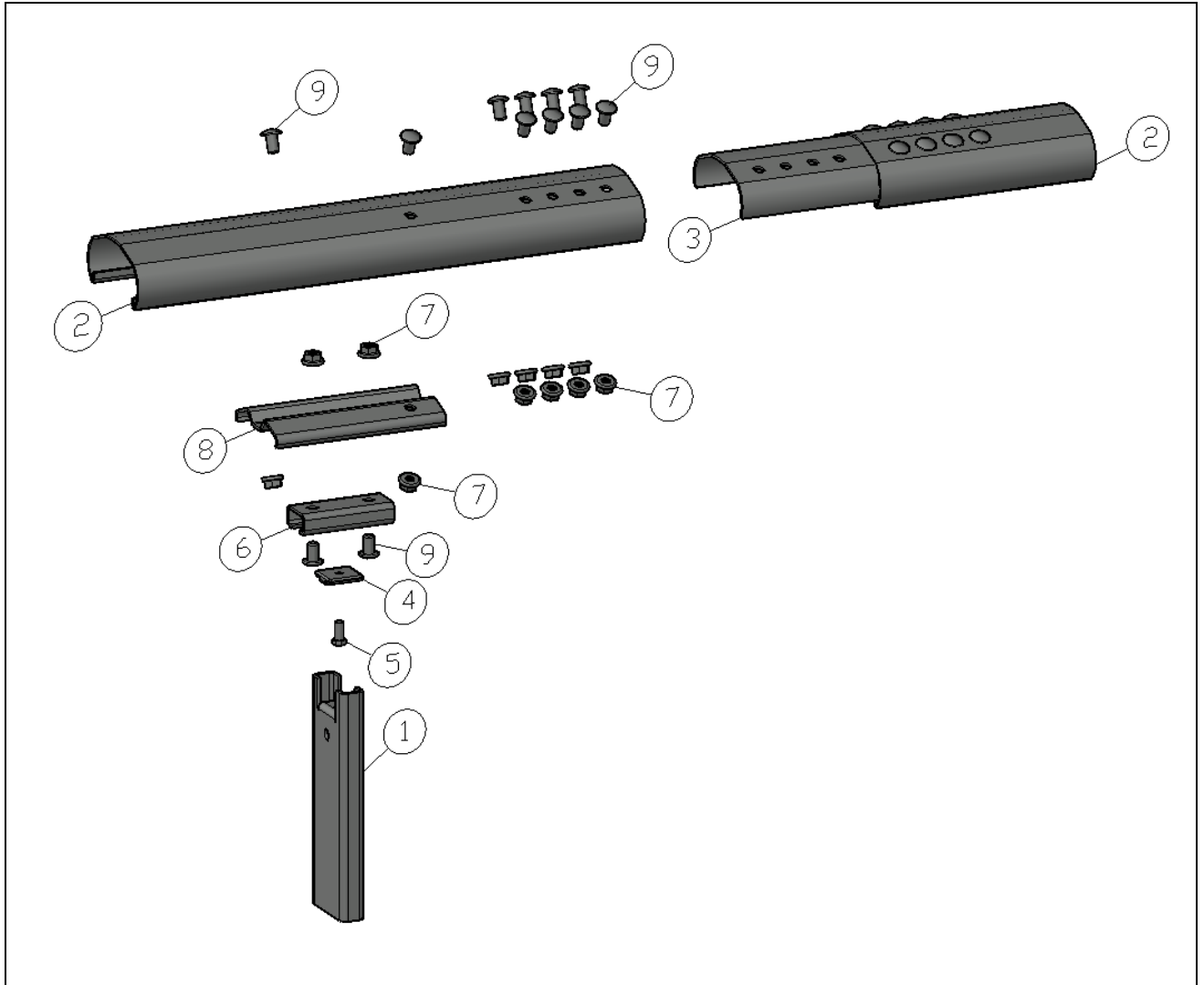
The bolts are an important part of the system function and this manual should be read carefully before installation is started.

## 3. Level of performance

According to EN-1317

Post distance	Containment level	Working width	Dynamic deflection	Impact severity level	System height [mm]
6 m	N2	W4 (1,3m)	0,8m	A	600

4. Installing



Pos. no.	Description/Item	Quality	Drawing
1	Post C-120 (120x40x25x5), length 1300 mm	S355	CT-010
2	Oval open top profile, length 6000 mm	S420	CT-025
3	Joint plate	S420	CT-014
4	Connector plate, T-washer	S355	CT-013
5	Bolt M12x25 VZN	4.6	
6	Mini C 65	S355	CT-011
7	Flange nut M16	8	
8	Top plate	S355	CT-012
9	Bolt M16x30 with rounded head	8.8	

#### 4.1 Soil and placement

The soil where the barrier is placed should be of sufficient quality to ensure the guardrails function.

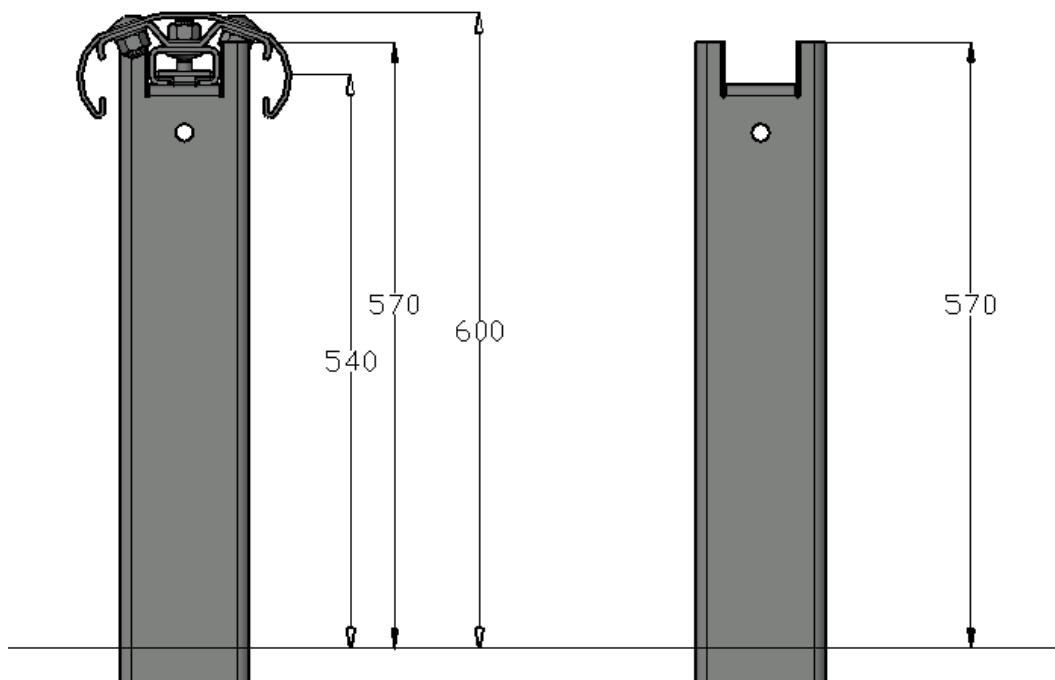
The posts should bend and not break up true the soil or be pulled up when the barrier is hit.

#### 4.2 Installing the posts

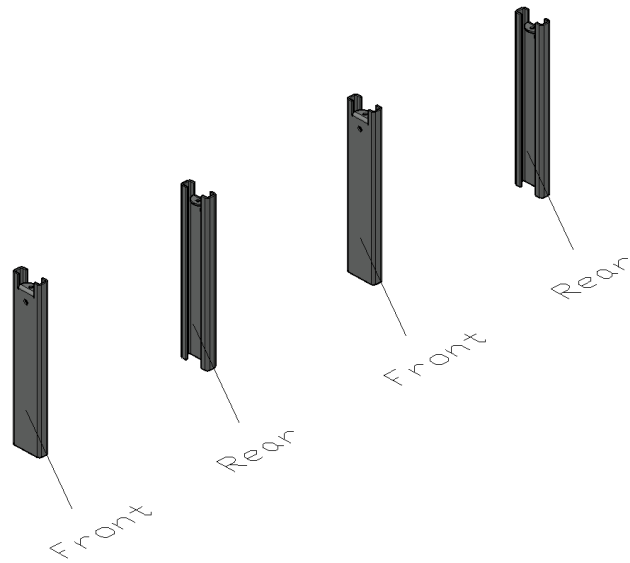
The posts should be installed with a distance of 6 meters. Every second with front / rear, as shown in the figure below.

The holes for the posts should normally be pre-drilled or pre-rammed before installing the post. They should be drilled to the correct level or deeper, to ensure that there is no need to ram the posts after they are placed.

After alignment and height adjustment, parts of the hole around the post should be filled with gravel to lock the post in the correct position.



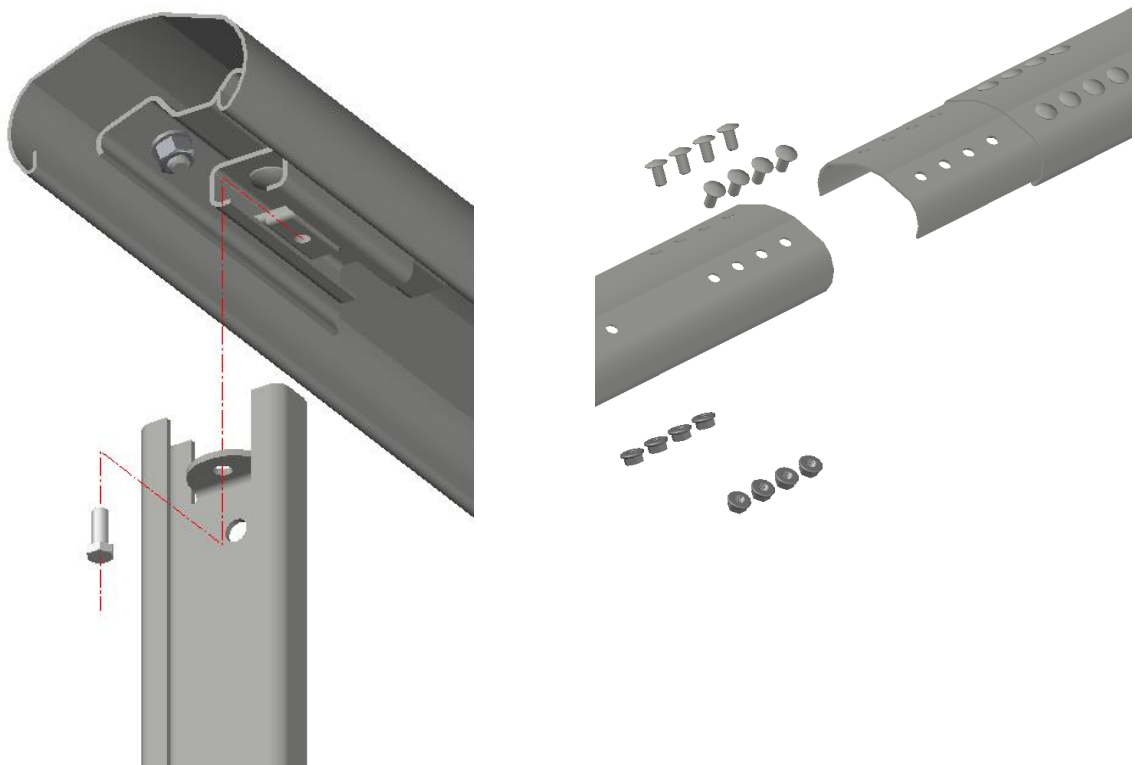
*Hight of the post.*



*Direction for the posts.*

#### **4.3 Installing the profiles/tubes/ longitudinal elements**

For details regarding connection between post to profile and profile to profile, and joining of longitudinal profile, see chapter 8. Drawings.



#### 4.4 After installation

When the guardrail is installed and adjusted, the holes around the post should be fully refilled.

### 5. Maintenance

There are no general inspections intervals for this guardrail itself. Inspections intervals have to be determined based on local factors such as volume of traffic, risk of damage, climate etc.

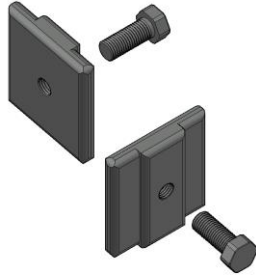

The guard rail should be inspected regularly and if displaced or damaged, it should be adjusted and repaired.

All damaged profiles should be replaced with new when repaired.

#### 5.1 Cleaning

Cleaning can be done with water and any type of Ph neutral detergent.

### 6. Bolts and fasteners

Art. no.	Description	Amount	Illustration
	<b>Fastening bolt M12x25 mm 4.6 (hot dip galvanized)</b>		
	xxxxx Bolt M12x25, DIN933	1	
	xxxxx Washer M12, 60x55x12mm	1	
	Tightening torque: Tighten down firmly 4.6: max. 35 Nm 8.8: max. 85 Nm		
xxxxx	<b>Connecting bolt M16x30 mm 8.8 (hot dip galvanized)</b>		
	xxxxx Bolt M16x30	1	
	692316000 Flange nut M 16	1	
	Tightening torque: Tighten down firmly max. 215 Nm		

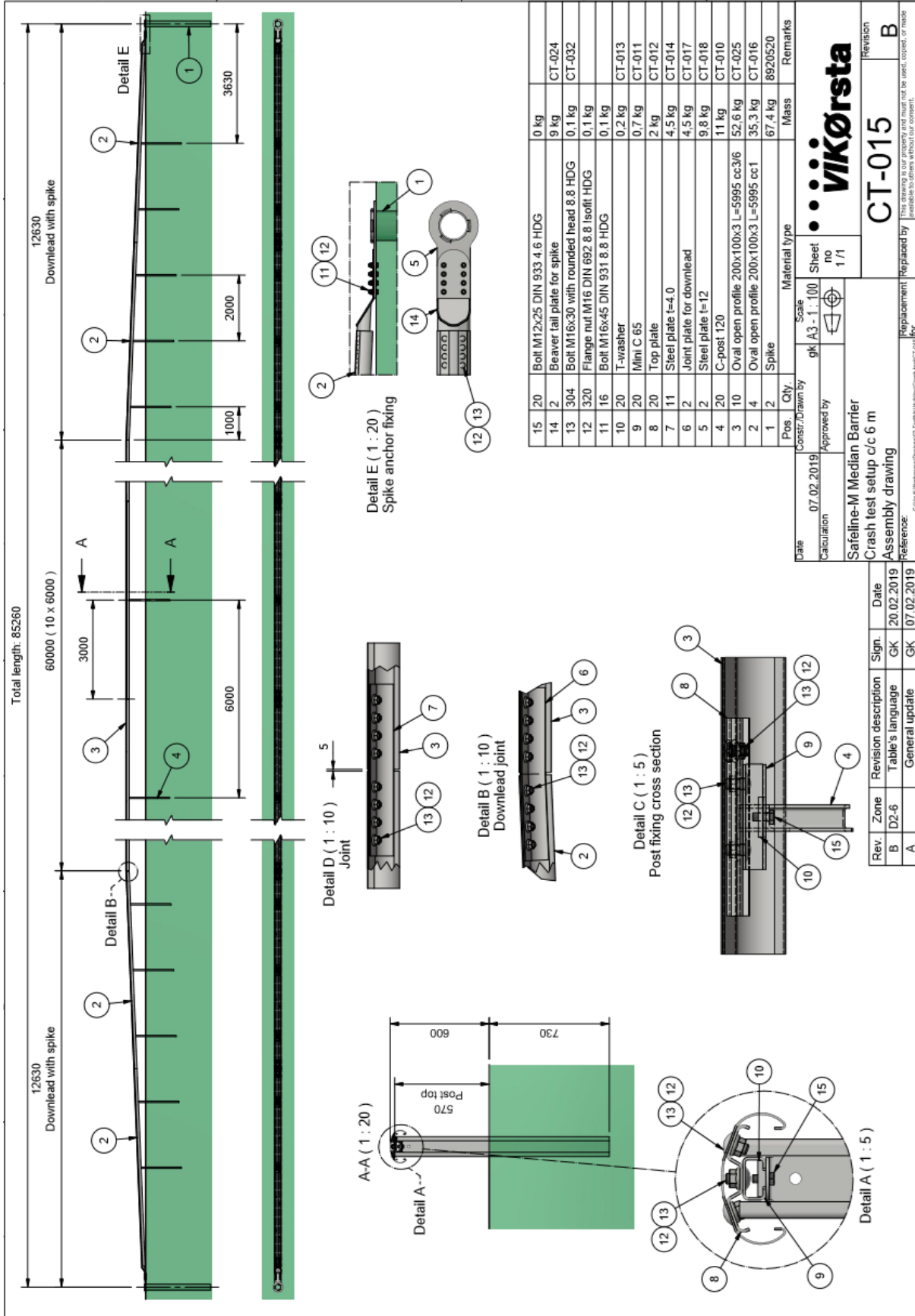
**Note:** Please check that all bolts/fasteners are placed correct and all bolts-washer-nuts-connections are normally/proper fastened/tighten.

### 7. Marking







If everything is done and installed according to this installation manual, the guardrail can be marked with the CE-mark. This mark shall be placed at the end (the starting end) of the installed guardrail.

8. Drawings

8.1 SafeLine-M N2-W4-cc6m

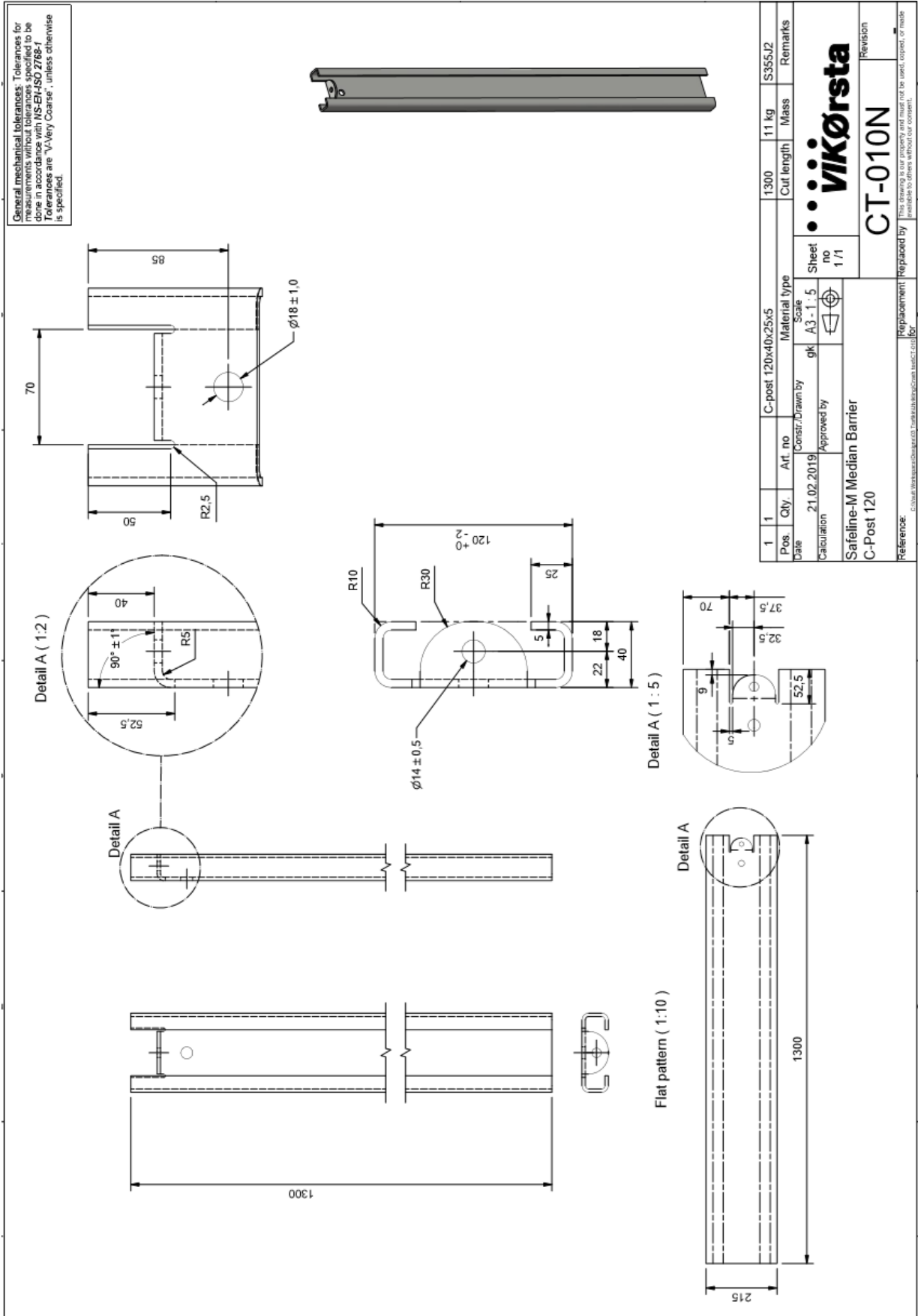


Rev.	Zone	Revision description	Sign.	Date
B	D2-6	Table's language	GK	20.02.2019
A		General update	GK	07.02.2019

Date: 07.02.2019  
 Calculation: gk A3-1-100  
 Constructed/Drawn by:   
 Approved by:   
 Sheet no: 1/1  
 Material type:   
 Scale: 1:100  
**vikørsta**  
**CT-015**  
 Safeline-M Median Barrier  
 Crash test setup c/c 6 m  
 Assembly drawing  
 Reference:   
 Replaced by:   
 Replaced by:   
 Revision: B

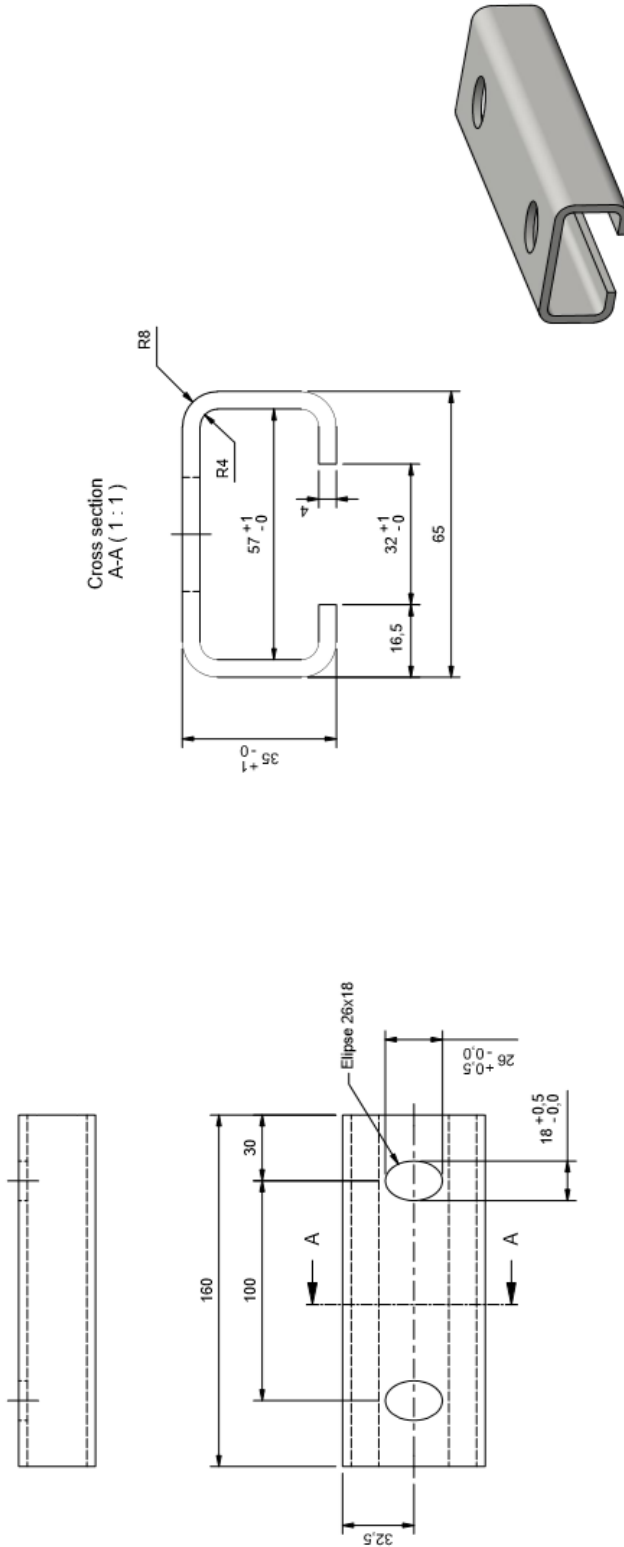


8.3 post



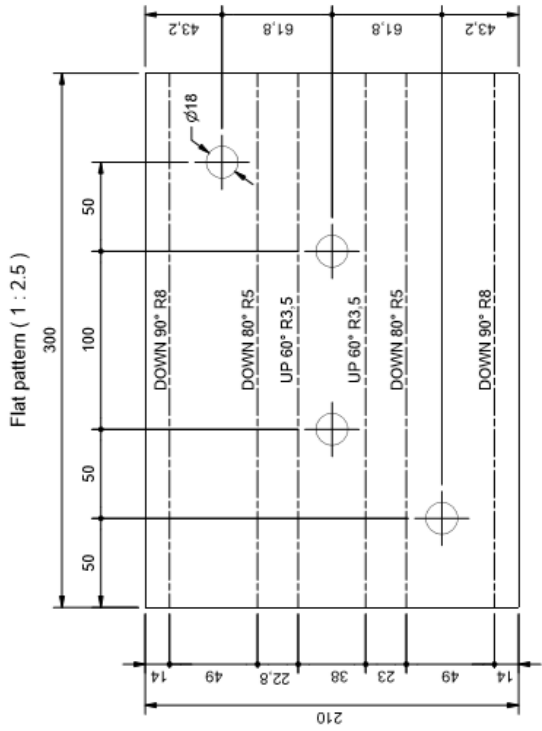
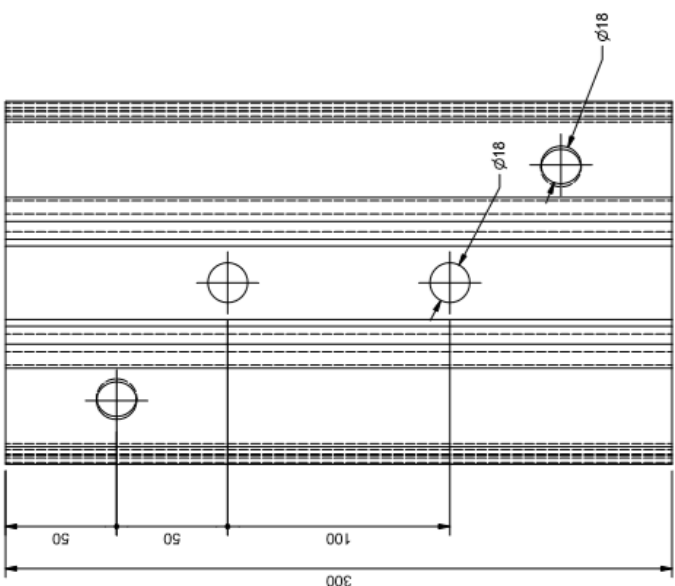
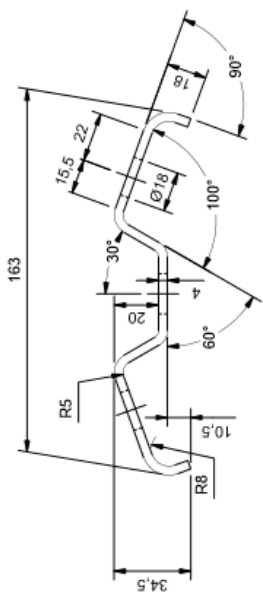
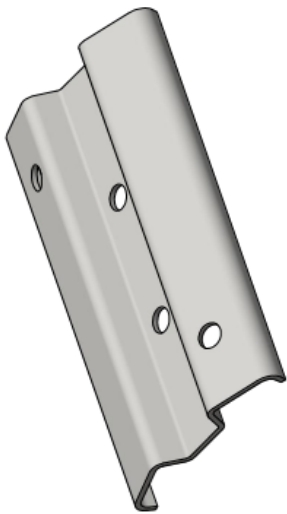
8.4 Fixing elements

General mechanical tolerances: Tolerances for measurements without tolerances specified to be done in accordance with EN ISO 2768-1 (tolerances are "Very Coarse", unless otherwise is specified).



1	1				C-profile 65x35x4	Material type	0,7 kg	S355J2	Remarks
Pos.	Qty.	Art. no.	Constr. Drawn by	Scale	Sheet no.	Revision			
Date	21.02.2019	gk	A3-1-2	1/1					
Calculation	Approved by								
Safeline-M Median Barrier									
Mini C for oval profile 200									
Reference:	Replacement: Repaired by								
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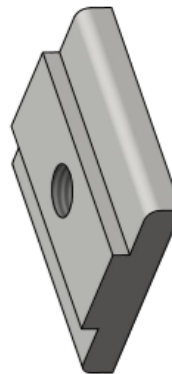
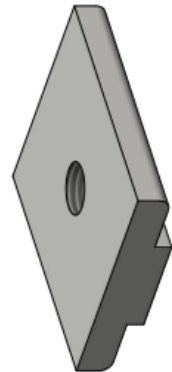
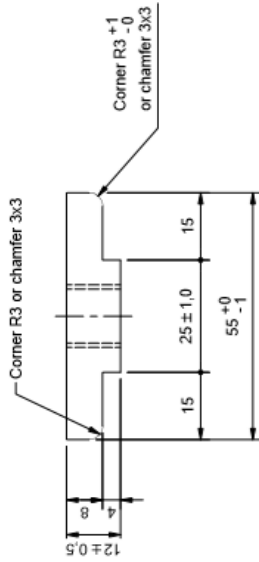
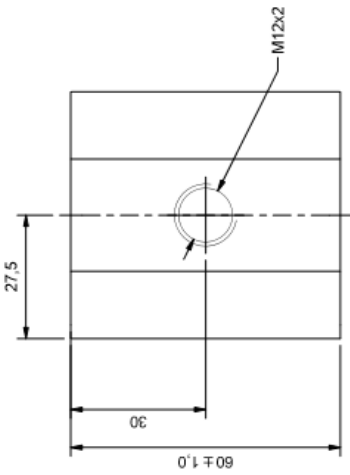
General mechanical tolerances: Tolerances for measurements without tolerances specified to be done in accordance with EN ISO 2768-1  
Tolerances are "Very Coarse", unless otherwise is specified.



Pos.	1	Qty.	1	Art. no.	Steel plate t=4 mm	Material type	S355 J2	Mass	2 kg	Remarks
Date	21.02.2019	Calculation	Approved by	gk	A3 - 1:2	Scale	Sheet no	1/1		
Safeline-M Median Barrier										
Top plate										
Reference: <a href="http://www.vikorsta.com">www.vikorsta.com</a>										
Replacement by										
CT-012N										
Revision										



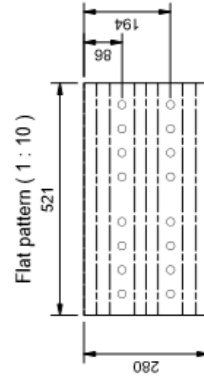
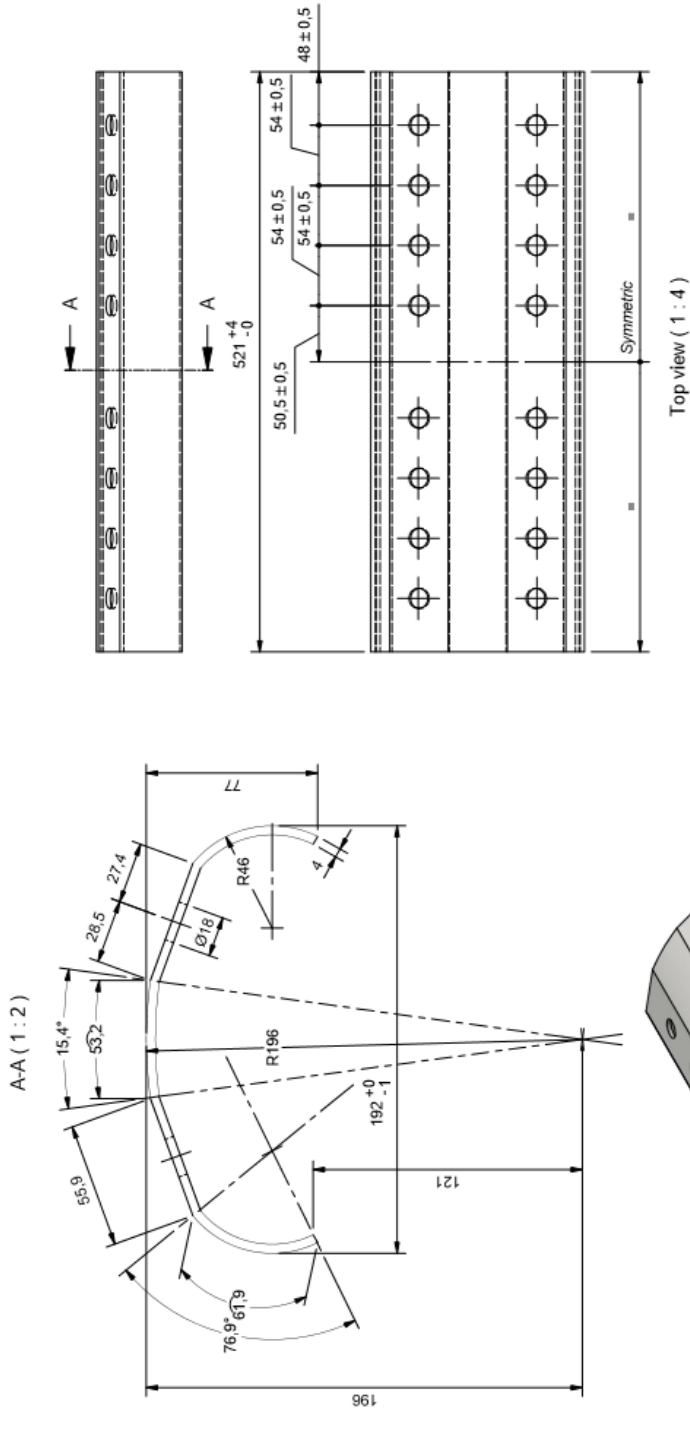
General mechanical tolerances: Tolerances for measurements without tolerances specified to be observed according to EN ISO 2768. Tolerances are 'Very Coarse', unless otherwise specified.



1	1	Steel plate t=12 mm	Material type	0.2 kg	S355	Remarks
Pos. no.	Art. no.	Constr./Drawn by	Scale	Cut length	Mass	
Date	21.02.2019	gk	A3 - 1 : 1			
Calculation	Approved by		Sheet no			
			1 / 1			
SafeLine-M Median Barrier Connector T-plate / T-washer			<b>VIKØRSTA</b>			
			CT-013N			
Reference: <a href="http://www.vikosta.no/produkter/produkter/ct013n">www.vikosta.no/produkter/produkter/ct013n</a>			Replacement: Replaced by			
			Revision			

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General mechanical tolerances: Tolerances for measurements without a tolerance are given according to EN/ISO 2768. Tolerances are 'Very Coarse', unless otherwise is specified.

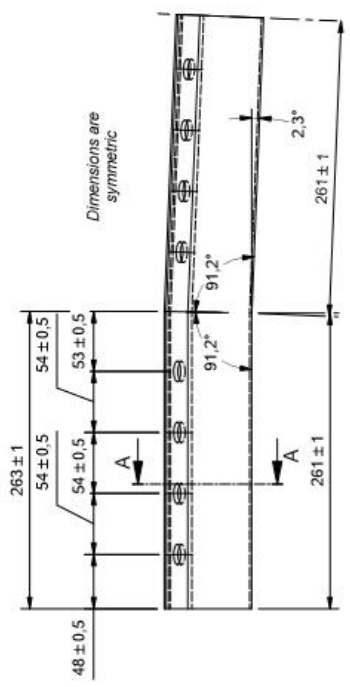


1	1	Qty	Art. no	Steel plate t=4,0	Material type	Cut length	Mass	4,5 kg	S420 acc. to EN10025	Remarks
Pos.	Date	Calculation	21.02.2019	Constr./Drawn by	gkl	Scale	A3 - 1 : 4	Sheet no	1/1	Revision
Safeline-M Median Barrier Joint plate										
Reference: <small>© 2019 Vikørsta AS. All rights reserved. This drawing is our property and must not be used, copied, or made available to others without our consent.</small>										

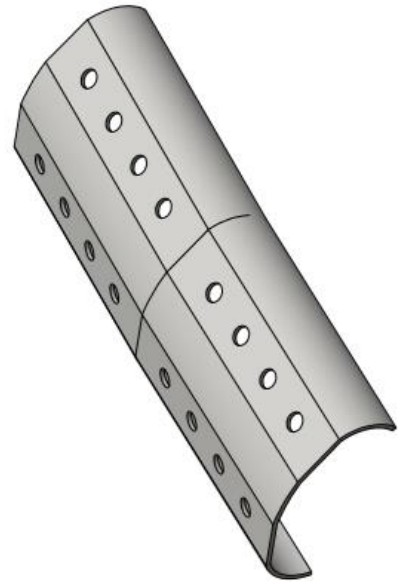
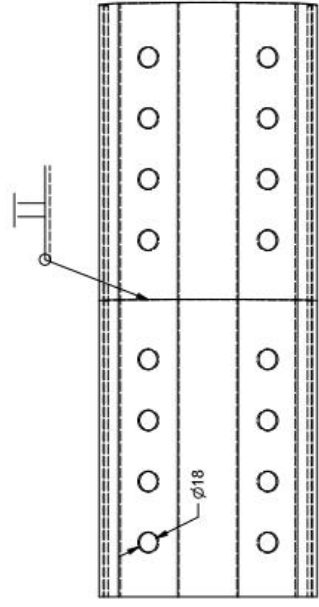
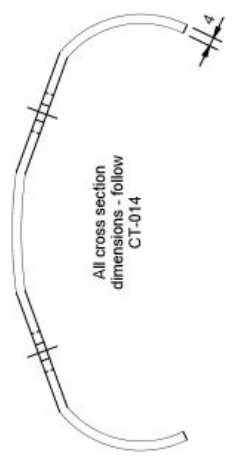


CT-014N

General mechanical tolerances: Tolerances for measurements without tolerances specified to be observed are in accordance with EN ISO 2768. Tolerances are "Average Case", unless otherwise is specified.



A-A (1 : 2)

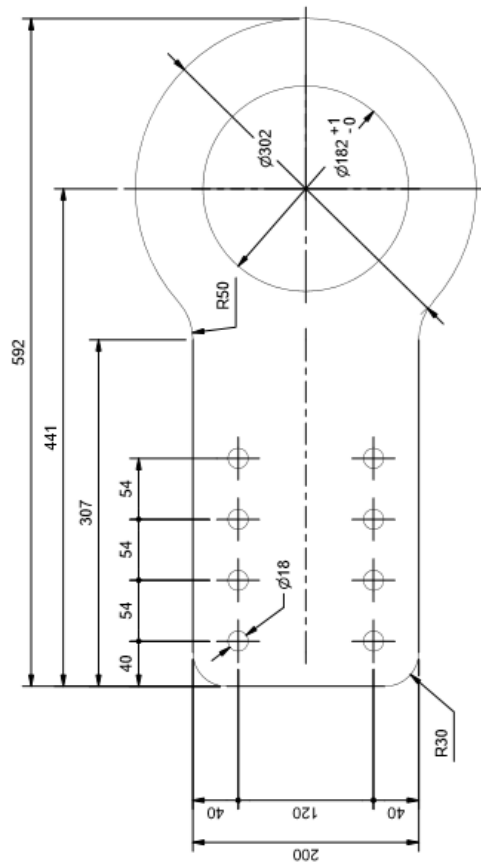


1	1	Steel plate t=4 mm	4,5 kg	S420 acc. to EN10025	
Pos.	Qty.	Art. no.	Cut length	Mass	Remarks
Date	21.02.2019	Constr. Drawn by	gk	A3 - 1 - 4	Scale
Calculation	Approved by				Sheet no 1/1
Safeline-M Median barrier Joint plate for 12 m download			<b>VIKØRSTA</b>		
Reference:			CT-017N		
Replacement:			Revised		
<small>C:\Vik\Worskst\Design\CT-014\SafeLineM\SafeLineM\CT-017N.dwg This drawing is our property and must not be used, copied, or made available to others without our consent.</small>					

General mechanical tolerances: Tolerances for dimensions not otherwise specified shall be done in accordance with EN/ISO 2768-1. Tolerances are 'Average Coarse', unless otherwise is specified.

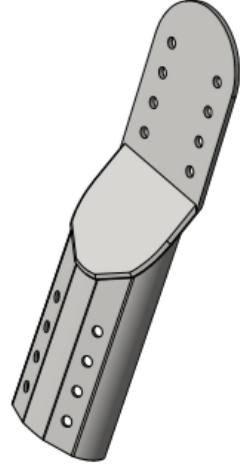
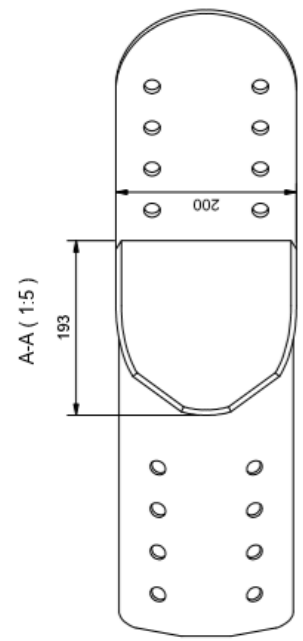
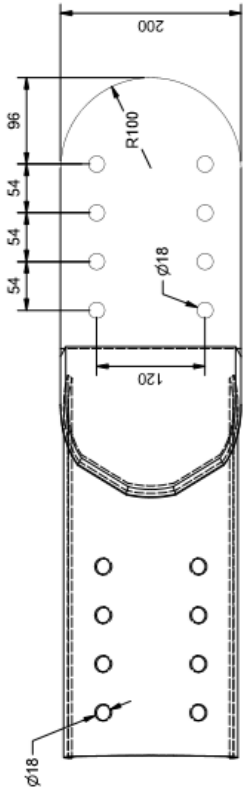
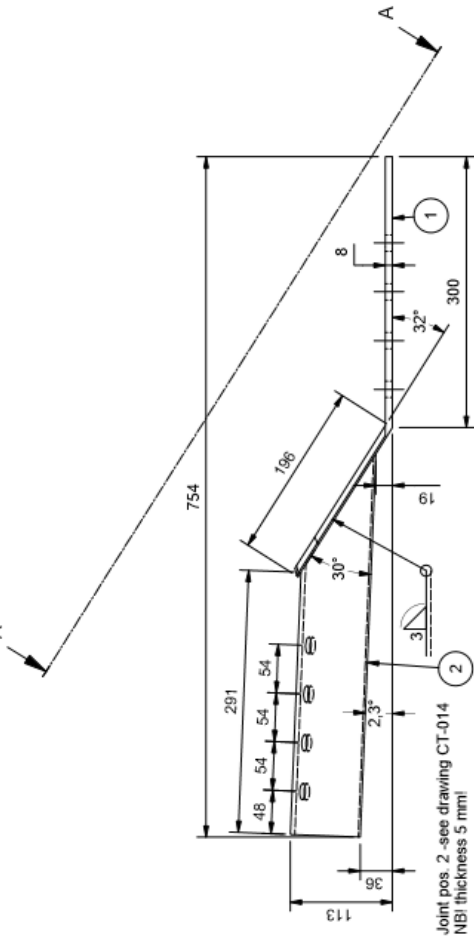


Top view ( 1 : 4 )



1	1	Steel plate t=12	Material type	S355 J2	9.8 kg	Mass	Remarks
Pos	Qty.	Art. no	Scale				
Date	21.02.2019	Constr./Drawn by	A3 - 1 : 4				
Calculation	Approved by	gk	Sheet no				
			1/1				
Safeline-M Median Barrier							
Anchor spike fixing plate							
Reference:			Replacement		Revision		
			CT-018N				
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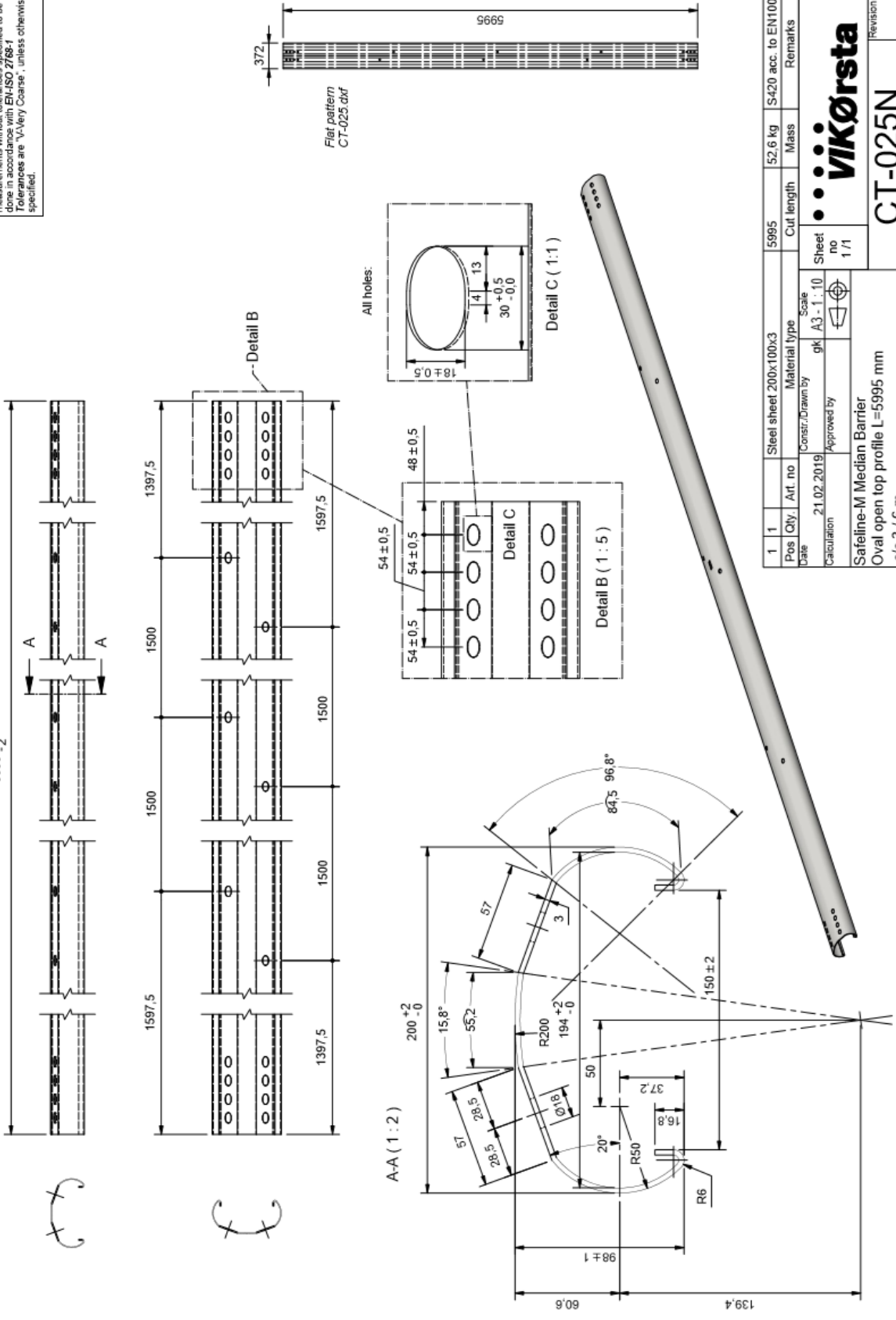
General mechanical tolerances: Tolerances for measurements without tolerances specified are in accordance with ISO 2768. Tolerances are "Average Coarse", unless otherwise is specified.



2	1	Joint plate l=5mm		3,6 kg	S355 J2	
1	1	Steel plate l=8mm		5,4 kg	S355 J2	
Pos	Qty.	Art. no	Material type	Mass	Cut length	Remarks
Date	21.02.2019	Constr./Drawn by	Scale			
Calculation		Approved by	A3 - 1:5			
			gk			Sheet no 1/1
Safeline-M Median Barrier			Revision			
Beaver tail plate for anchor spike			CT-024N			
Reference: E:\naar\afspandebæret\CT-024N\afspandebæret.ctb			Replacement		Replaced by	

8.5 Longitudinal beams

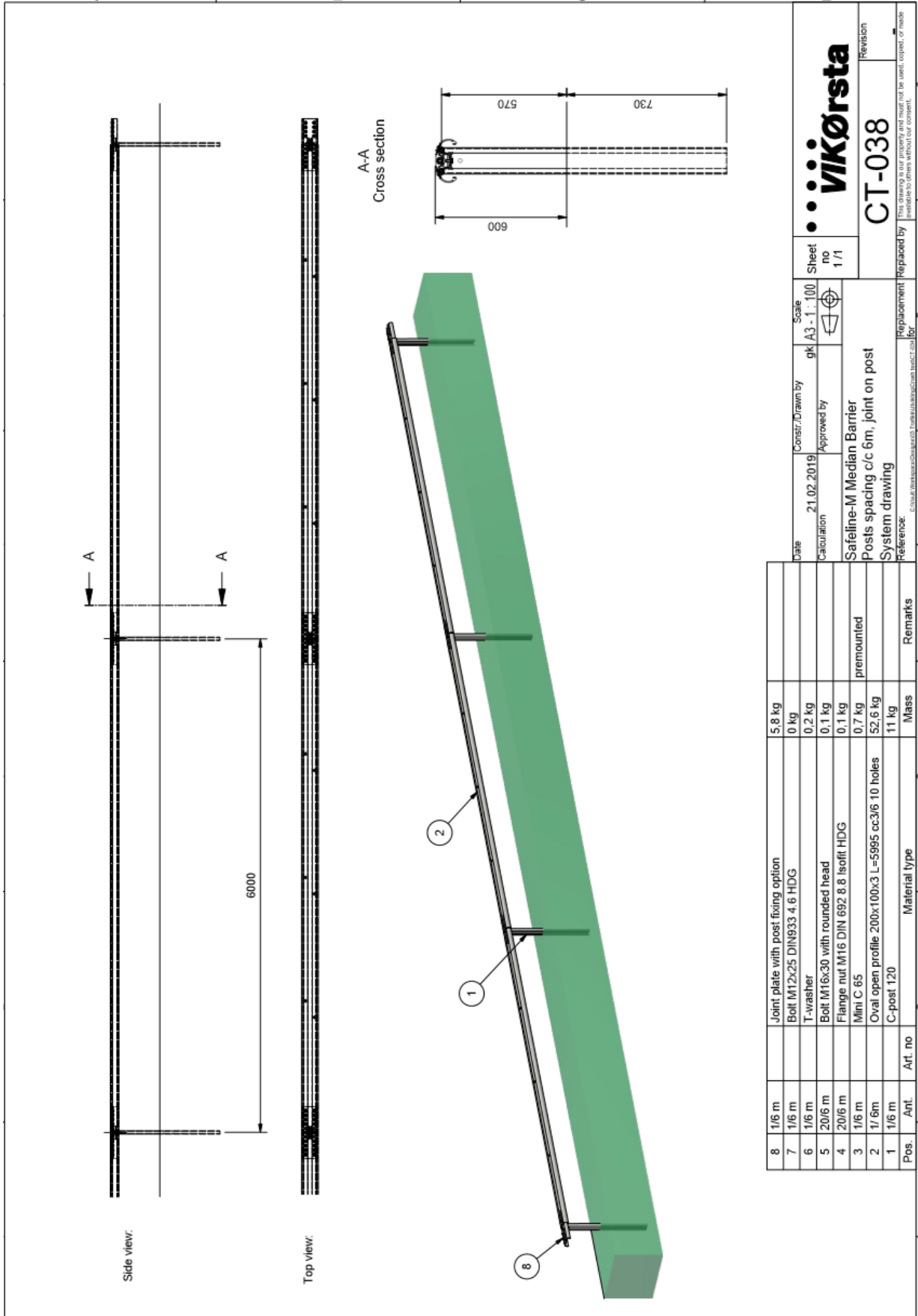
**General mechanical tolerances:** Tolerances for measurements without tolerances specified to be done in accordance with EN-ISO 2768-1. Tolerances are 'V-Very Coarse', unless otherwise is specified.



Pos	1	Art. no	Steel sheet 200x100x3	Material type	5995	Cut length	52.6 kg	Mass	S420 acc. to EN10025	Remarks
Date	21.02.2019	Constr. Drawn by	gk	Scale	A3 - 1:10	Sheet no	1/1	Sheet	no	Revision
Calculation		Approved by								
Safeline-M Median Barrier Oval open top profile L=5995 mm c/c 3 / 6 m										
Reference: C:\Users\mads\OneDrive\Documents\SafeLine\Safeline-M\CT-025N.ctb Replacement Prepared by: This drawing is our property and must not be used, copied, or made available to others without our consent.										



8.6 Alternative post placement /-fixing (c/c 6m)



**Detail A (1 : 5)**

**Detail B (1 : 5)**

**Cross section (1 : 15)**

**Post's direction is alternated:**

**Driving direction**

**12m c/c 6m repeating section**

**Detail A**  
**Detail B (from below)**

8	Joint plate with post fixing option	5,8 kg
7	Bolt M12x25 4.6 HDG	0 kg
6	T-washer	0,2 kg
5	Bolt M16x30 with rounded head	0,1 kg
4	Flange nut DIN 692 M16 8.8 Isoflr HDG	0,1 kg
3	Mini C 65	0,7 kg
2	Oval open profile 200x100x3 L=5995 cc3/6 with 10 holes	52,6 kg
1	C-post 120	11 kg
	Pos	Vekt

Date	21.02.2019	Constr./Drawn by	gk	Scale	A3 - 1 : 50	Sheet no	1 / 1
Calculation		Approved by					
<p><b>Safeline-M Median Barrier</b> <b>Assembly drawing</b> <b>Alternative post placement</b></p>							
Reference:				Replacement			
C:\na\Workshop\Compas\CT-039\SafeLine\SafeLine.ctb				Replaced by			
				Revision			

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**CT-039**

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