

Energy Absorbing Terminal "TAE H-110M"

INSTALLATION MANUAL

April 2023



Paseo de Belén, 11 - Edificio UVainnova - Campus Miguel Delibes
47011 - Valladolid, ESPAÑA (SPAIN) Tel: +(34) 983 990468
e-mail: info@roadsteel.com - <http://www.roadsteel.com>

ENERGY ABSORBING TERMINAL "TAE H-110M": INSTALLATION MANUAL

The energy absorbing terminal "TAE H-110M" is a longitudinal Road Restrain System made entirely of galvanized steel and specifically designed to be installed both in lateral shoulders and central reservation of any type of road.

The energy absorbing Terminal "TAE H-110M" is composed by continuous horizontal W-Beams exposed to traffic. Continuity of the horizontal rails (W-beam) is obtained through partial overlapping of consecutive elements through threaded joints with bolts, nuts and washers. W-Beams have special slotted holes distributed in their length. They are regularly supported by U-shaped and C-shaped vertical posts. Between W-Beams and posts are placed the W-Beam guiding pieces. In certain positions, some pieces for bracing are also placed between facing W-beams.

The set is finished with a terminal front panel, which includes two reinforcing tubular pieces, and which is joined to the W-Beams by means of two internal nose pieces.

The energy absorption during a frontal impact is achieved by the displacement and progressive deformation of the before mentioned W-Beams.

All the components are assembled one to each other by threaded joints by means of "bolt - washer - nut" assemblies.



TAE H-110M

Installation Works.

1.- Post Insertion.

Posts of the energy absorbing terminal "TAE H-110M" are to be embedded in soil. Posts shall be driven in soil using a hydraulic or pneumatic hammering machine or any other system equivalent to mechanical post driving that ensures an equivalent performance and compaction of the soil around the post after installation. Posts shall be driven with 2.0 meters spacing and at the proper depth to meet the system height.

Once inserted the four U-shaped posts, the C-shaped posts 785mm length shall be assembled into them and shall be driven in soil.

If necessary, due to the installation method, the U-shaped posts and the C-shaped posts can be connected before the installation by means of a mandrel or cylindrical bar. Once the posts are installed this mandrel or cylindrical bar must be removed.

2.- Assembly.

The "in-site" assembly of all the system components, once the posts are driven in soil, shall be made only by tightening bolts (screw, nuts and washers) meeting both the configuration, dimensions and tolerances defined in attached drawings.

Once inserted the posts, the W-Beam guiding pieces and the internal nose pieces are assembled to the posts, by means of bolt, nut and squared washer 35x35 (a squared washer 35x35 is located just under the nut, inside the post). At the four C-shaped posts assembled into the U-shaped posts, Round Head bolts TBC M16x40 shall be used. In the three C-shaped posts 1700mm length Round Head bolts CRF-10.5 M16x40 shall be used. In the first one of these posts, the one that also support the previous barrier, at the internal side a Round Head bolt TBC M16x40 shall be used.

Then the W-Beams are fixed to the guiding pieces, installing the bracing pieces too. The splice between the consecutive W-beams is carried out and tightened by means of bolts M16x50 DIN603, rectangular washer plates 76x66mm, circular washers and nuts (the rectangular washer plate is located just under the bolt head, over the W-Beam, and the circular washer is located just under the nut).

At the splice between the W-Beam of the previous barrier and the first W-Beam of the terminal, bolts M16x50 DIN603, rectangular washers 75x40x3mm, circular

washers and nuts shall be used (the rectangular washer is located just under the bolt head, over the W-Beam and the circular washer is located just under the nut).

The vertical alignment of the beams is then properly adjusted in order, finally, to proceed to the definitive tightening of the bolts attaching guiding pieces to posts.

Finally, the frontal panel, the reinforcement tubes and the plastic sheet are assembled.

3.- Tightening of bolts.

Bolts CRF-10.5 M16x40 fastening W-Beam guiding pieces to posts, shall be tightened with a torque of 40 ± 10 N.m.

Bolts TBC M16x40 fastening W-beams guiding pieces and internal nose pieces to posts, shall be tightened with a torque of 70 ± 10 N.m.

Bolts M16x50 DIN603 fastening consecutive W-beams, shall be tightened with a torque of 60 ± 10 N.m., except in the section of post "0" where the torque shall be 100 ± 10 N.m. and in the section of post "6" where the torque shall be 40 ± 10 N.m. (see the installation drawing in page 7 of this manual)

Bolts M16x80 DIN933 fastening the reinforcement tubular pieces to the frontal panel shall be tightened with a torque of 90 ± 10 N.m.

Bolts M5x30 DIN933 fastening the plastic sheet to the frontal panel shall be tightened with a torque of 40 ± 10 N.m.

Attached to this specification, the ANNEX1 includes all Installation drawings (general drawings and installation drawings of the terminal):

- A. Posts Insertion**
- B. W-Beam guiding pieces and internal nose pieces assembling**
- C. W-Beams assembly to the guiding pieces**
- D. Bracing pieces assembling**
- E. Vertical alignment and definitive tightening of W-Beams**
- F. Frontal panel, reinforcement tubes and plastic sheet assembling**

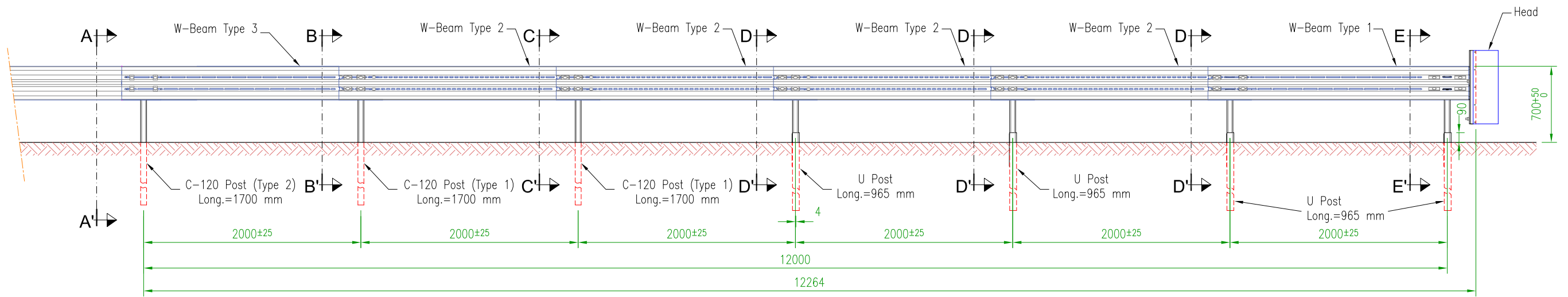
Energy Absorbing Terminal "TAE H-110M"

Annex 1: Installation Drawings

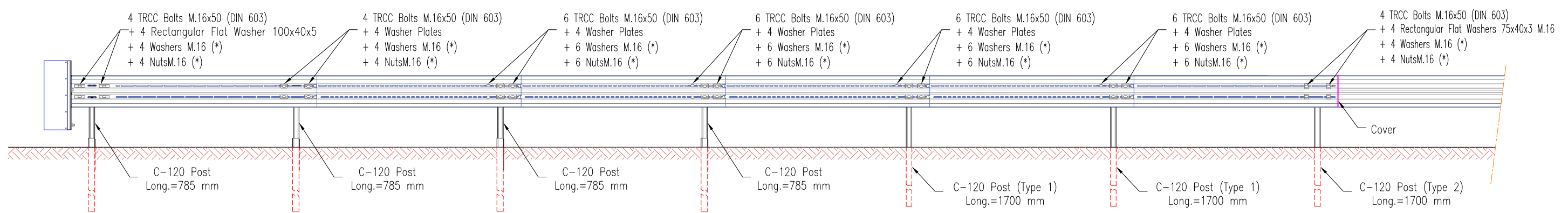
April 2023



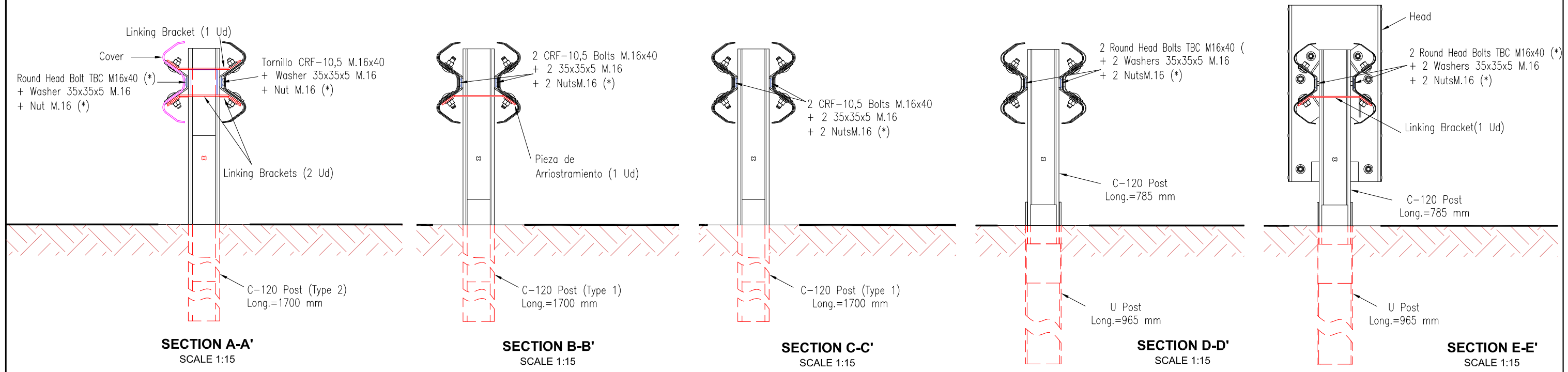
Paseo de Belén, 11 - Edificio UVainnova - Campus Miguel Delibes
47011 - Valladolid, ESPAÑA (SPAIN) Tel: +(34) 983 990468
e-mail: info@roadsteel.com - <http://www.roadsteel.com>



-ELEVATION FRONT-
SCALE 1:40



-ELEVATION REAR -
SCALE 1:40



SECTION A-A'
SCALE 1:15

SECTION B-B'
SCALE 1:15

SECTION C-C'
SCALE 1:15


SECTION D-D'
SCALE 1:15

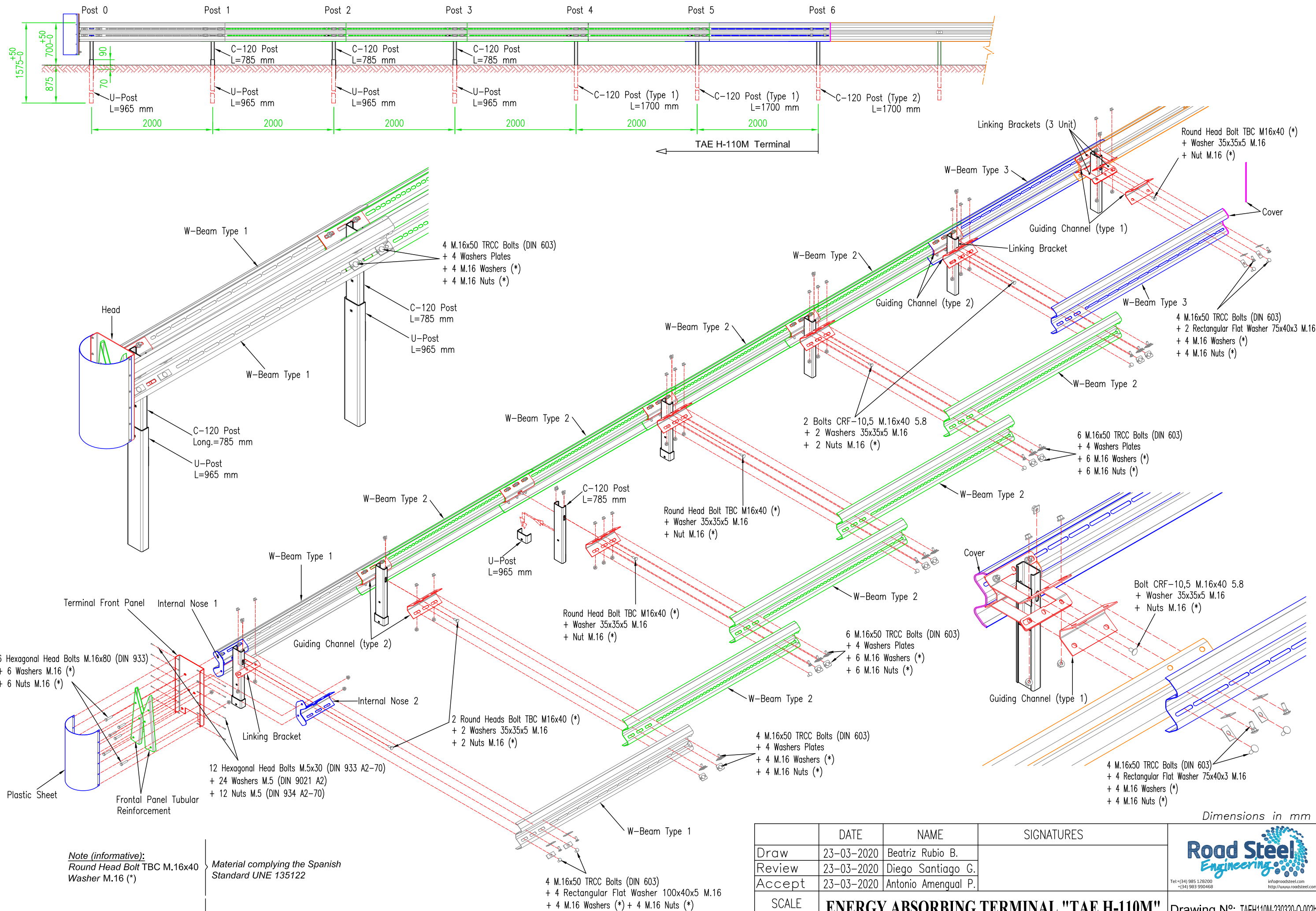
SECTION E-E'
SCALE 1:15

Dimensions in mm

Note (informative):
Round Head Bolt TBC M.16x40
Washer M.16 (*)
Material complying the Spanish
Standard UNE 135122

Note (informative):
Nut M.16 (*)
Material complying the Spanish Standard UNE 135122 (UNE-EN ISO 4034)

	DATE	NAME	SIGNATURES	 Tel: +34 985 128200 +34 983 998468 info@roadsteel.com http://www.roadsteel.com
Draw	23-03-2020	Beatriz Rubio B.		
Review	23-03-2020	Diego Santiago G.		
Accept	23-03-2020	Antonio Amengual P.		Drawing N°:TAEH110M-230320-0-001a
SCALE	ENERGY ABSORBING TERMINAL "TAE H-110M"			Replace to:TAEH110M-230320-0-001
1:15	GENERAL DRAWING			Replaced for:
1:40				



Dimensions in mm

Note (informative):
Round Head Bolt TBC M.16x40
Washer M.16 (*)

Material complying the Spanish
Standard UNE 135122

Note (informative):
Nut M.16 (*)

Material complying the Spanish Standard UNE 135122 (UNE-EN ISO 4034)

	DATE	NAME	SIGNATURES
Draw	23-03-2020	Beatriz Rubio B.	
Review	23-03-2020	Diego Santiago G.	
Accept	23-03-2020	Antonio Amengual P.	

SCALE: **ENERGY ABSORBING TERMINAL "TAE H-110M"**

INSTALLATION

Tel: (+34) 985 126200
+34 983 99468

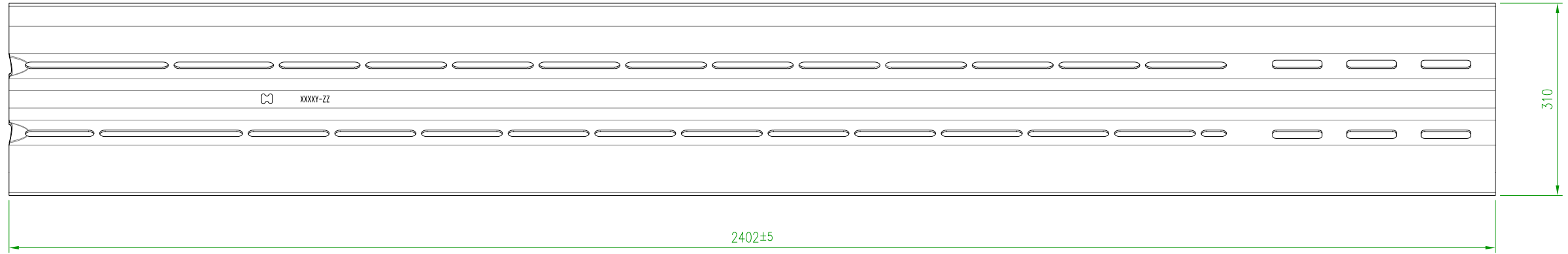
info@roadsteel.com
http://www.roadsteel.com

Drawing N°: TAEH110M-230320-Q-002b

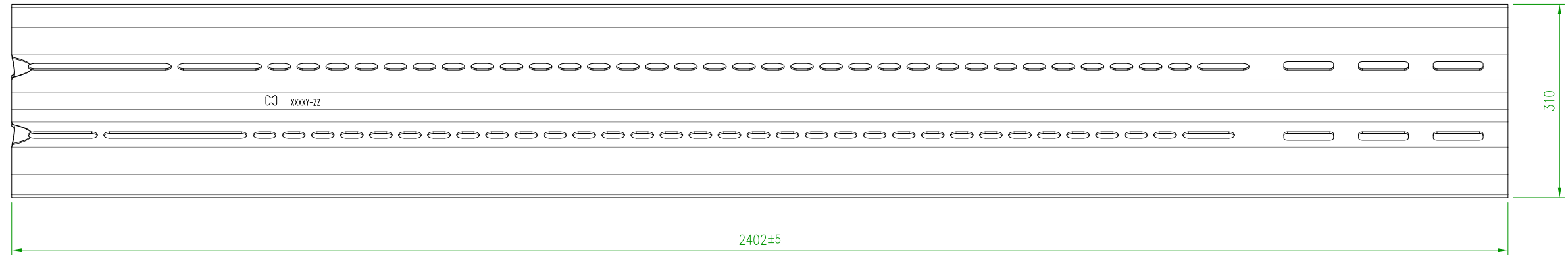
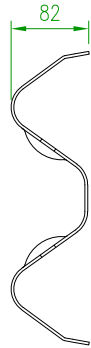
Replace to: TAEH110M-230320-0-002a

Replaced for:

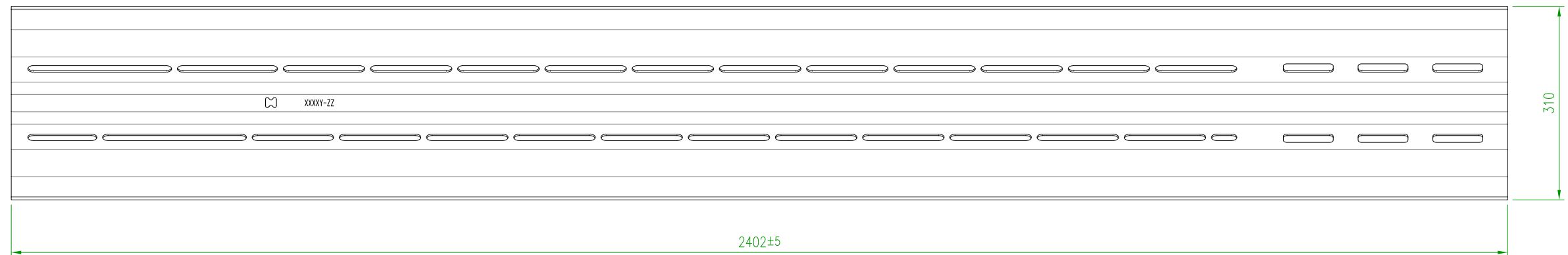
W-BEAM TYPE 1




W-BEAM TYPE 2



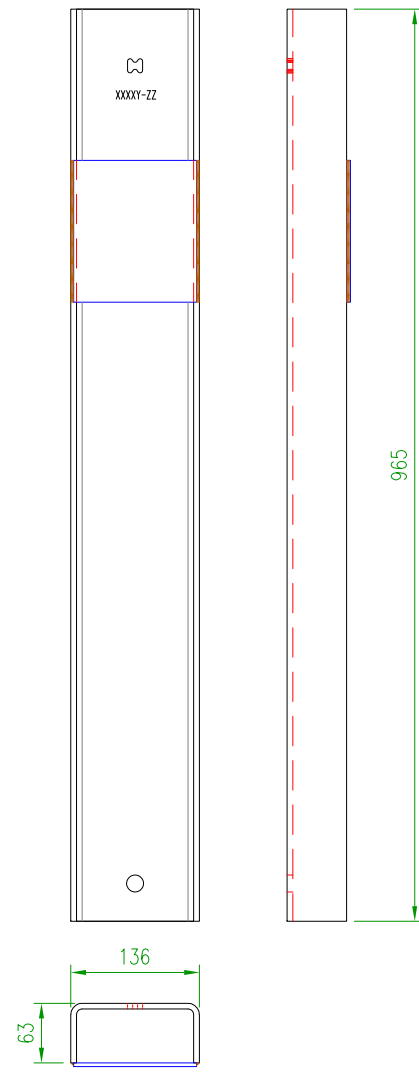
W-BEAM TYPE 3



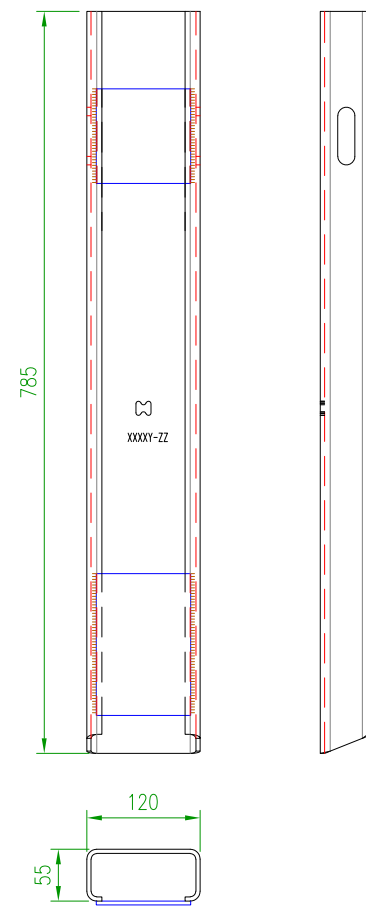
Dimensions in mm

	DATE	NAME	SIGNATURES	 Tel: +(34) 985 128200 +(34) 983 990468 info@roadsteel.com http://www.roadsteel.com
Draw	23-03-2020	Beatriz Rubio B.		
Review	23-03-2020	Diego Santiago G.		
Accept	23-03-2020	Antonio Amengual P.		
SCALE	ENERGY ABSORBING TERMINAL "TAE H-110M"			Drawing N°: TAEH110M-230320-0-003
-	COMPONENTS. W-BEAMS			Replace to:
				Replaced for:

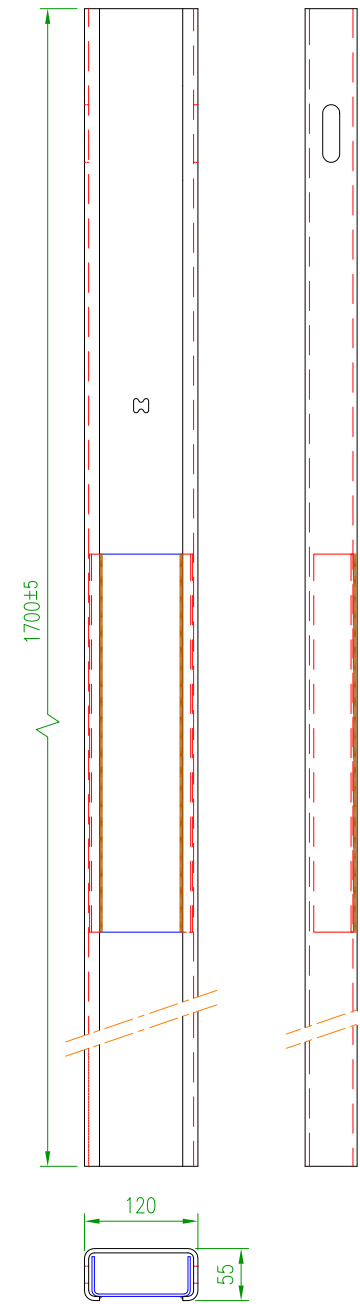
U POST
Long=965 mm



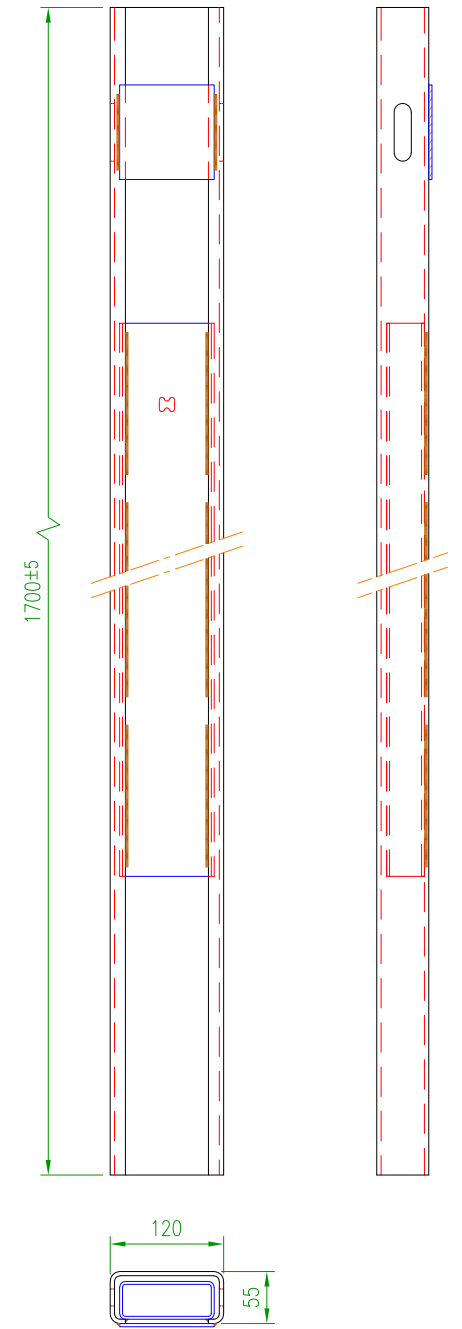
C-120 POST
Long=785 mm



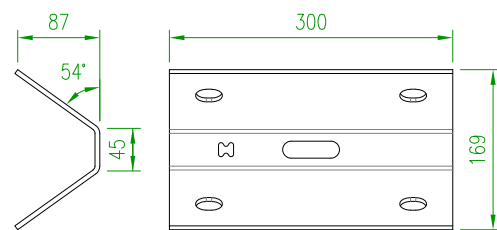
C-120 POST Type 1
Long=1700 mm



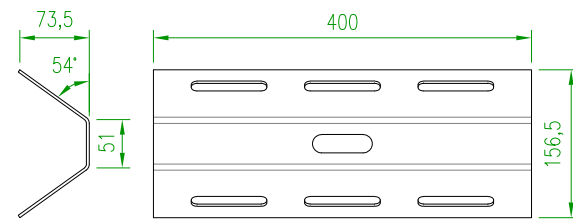
C-120 POST Type 2
Long=1700 mm



GUIDING CHANNEL TYPE 1



GUIDING CHANNEL TYPE 2




Note (informative):
Round Head Bolt TBC M.16x40
Washer M.16 (*)

Material complying the Spanish
Standard UNE 135122

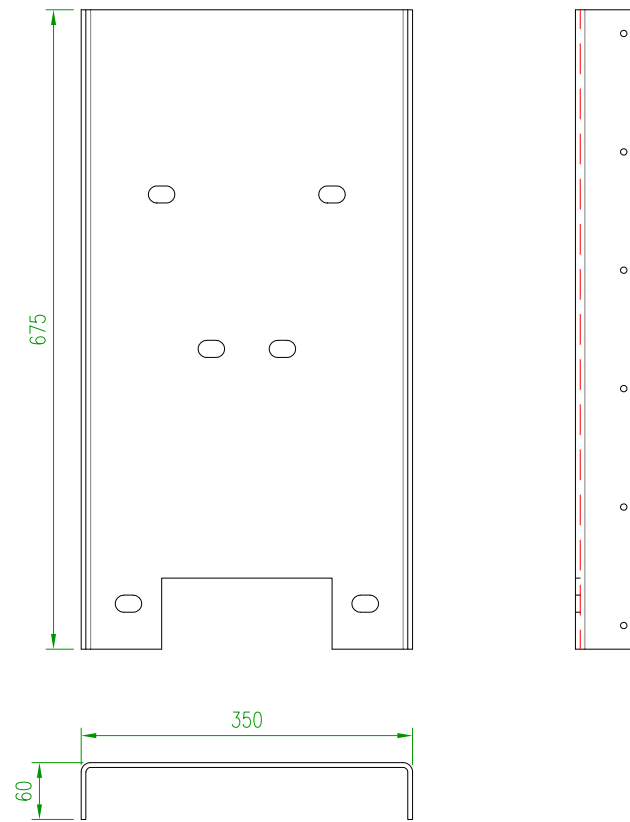
Note (informative):
Nut M.16 (*)

Material complying the Spanish Española UNE 135122 (UNE-EN ISO 4034)

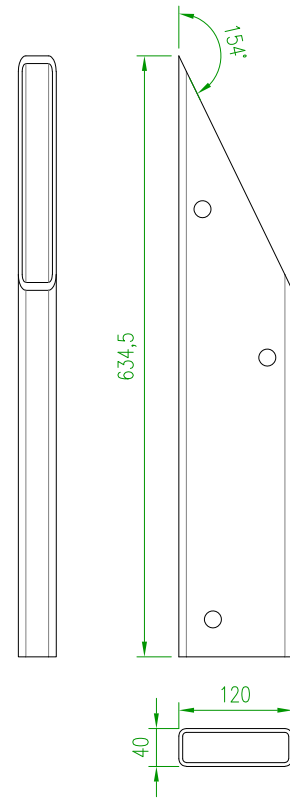
Dimensions in mm

	DATE	NAME	SIGNATURES	 Tel: +34 985 126200 +34 983 990468 info@roadsteel.com http://www.roadsteel.com
Draw	23-03-2020	Beatriz Rubio B.		
Review	23-03-2020	Diego Santiago G.		
Accept	23-03-2020	Antonio Amengual P.		Drawing N°: TAEH110M-230320-0-004
SCALE	ENERGY ABSORBING TERMINAL "TAE H-110M"			Replace to:
1:8	COMPONENTES, POSTES Y GUIAS VALLA			Replaced for:

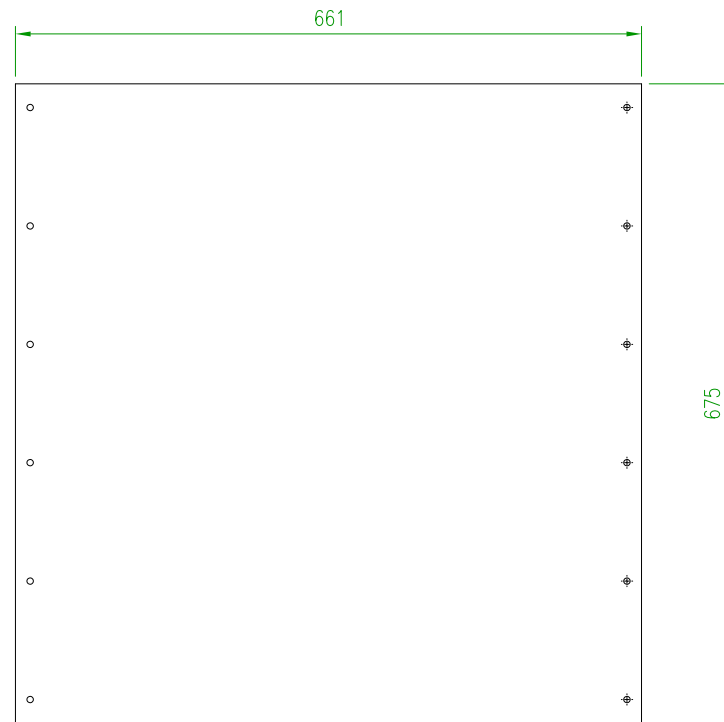
TERMINAL FRONT PANEL



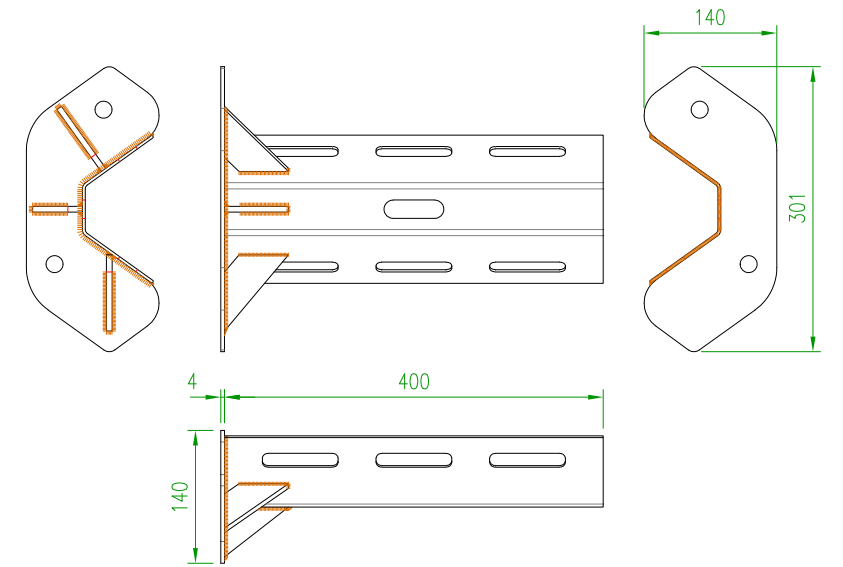
FRONTAL PANEL TUBULAR REINFORCEMENT



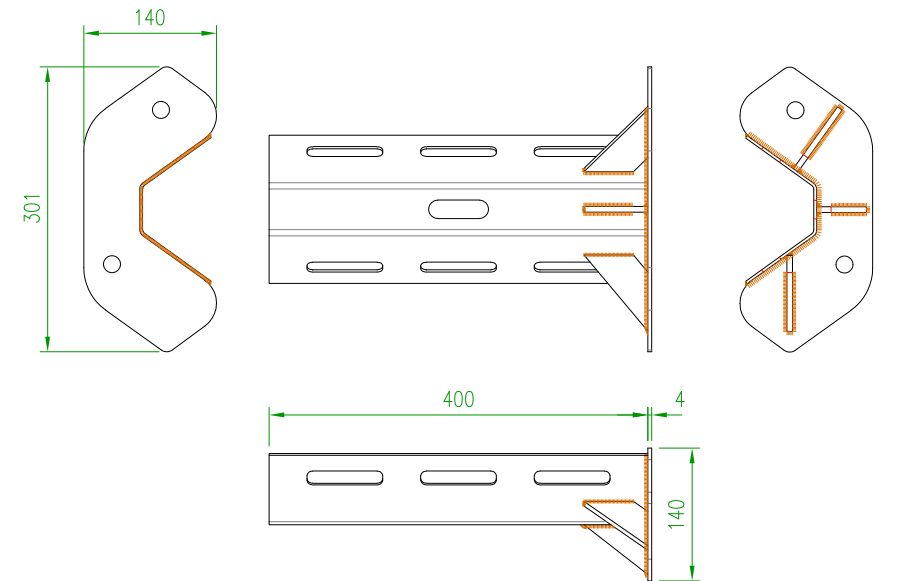
PLASTIC SHEET



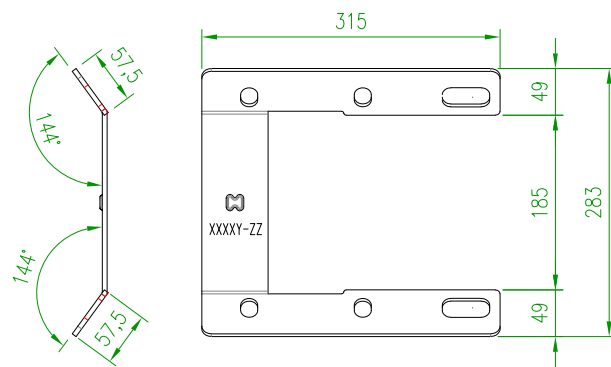
INTERNAL NOSE TYPE 1



INTERNAL NOSE TYPE 2



LINKING BRACKET




Note (informative):
Round Head Bolt TBC M.16x40
Washer M.16 (*)

Material complying the Spanish
Standard UNE 135122

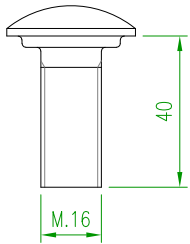
Note (informative):
Nut M.16 (*)

Material complying the Spanish Standard UNE 135122 (UNE-EN ISO 4034)

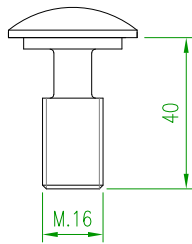
Dimensions in mm

	DATE	NAME	SIGNATURES	 Tel: +(34) 985 128200 +(34) 983 990468 info@roadsteel.com http://www.roadsteel.com
Draw	23-03-2020	Beatriz Rubio B.		
Review	23-03-2020	Diego Santiago G.		
Accept	23-03-2020	Antonio Amengual P.		
SCALE	ENERGY ABSORBING TERMINAL "TAE H-110M"			Draw N°: TAEH110M-230320-O-005
1:8	COMPONENTS. OTHERS			Replace to:
				Replaced for:

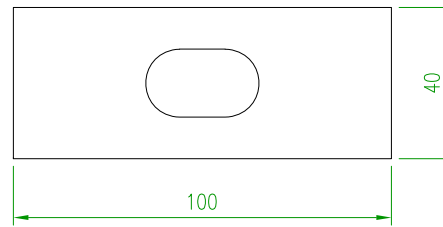
ROUND HEAD BOLT TBC M.16x40



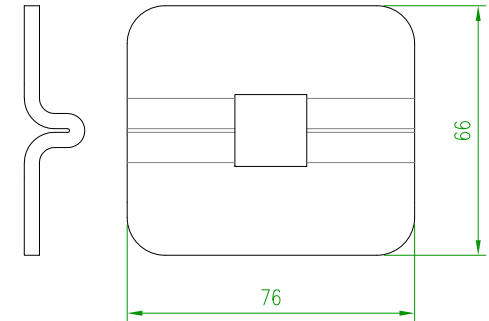
CRF-10,5 BOLT M.16x40



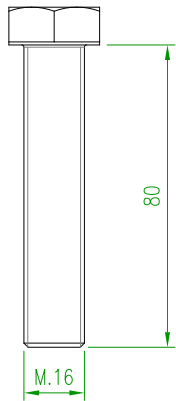
RECTANGULAR FLAT WASHER 100x40x5 M.16



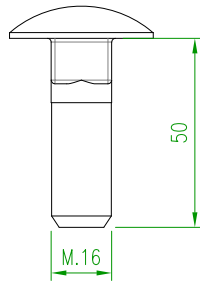
WASHER PLATE



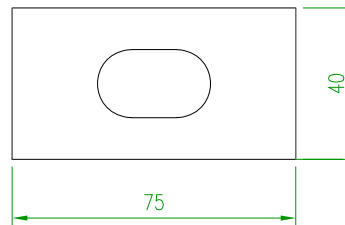
**HEXAGONAL HEAD BOLT
M.16x80 (DIN 933)**



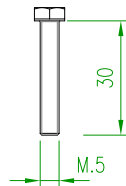
TRCC BOLT M.16x50



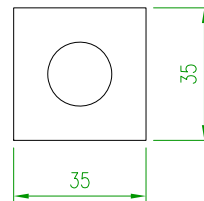
RECTANGULAR FLAT WASHER 75x40x3 M.16



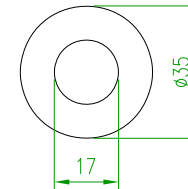
**HEXAGONAL HEAD BOLT
M.5x30 (DIN 933)**



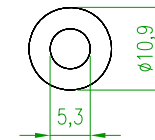
WASHER 35x35x5 M.16



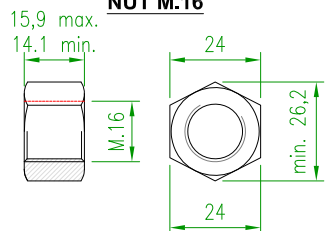
WASHER M.16



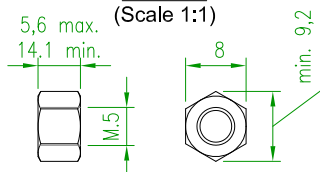
**WASHER M.5
(Scale 1:1)**




NUT M.16



**NUT M.5
(Scale 1:1)**



Dimensions in mm

	DATE	NAME	SIGNATURES	 <small>Tel: +34 985 128200 +34 983 990468</small> <small>info@roadsteel.com http://www.roadsteel.com</small>
Drawing	23-03-2020	Beatriz Rubio B.		
Review	23-03-2020	Diego Santiago G.		
Accept	23-03-2020	Antonio Amengual P.		
SCALE	ENERGY ABSORBING TERMINAL "TAE H-110M"			Drawing N°: TAEH110M-230320-0-006b
1:2	COMPONENTS. BOLTING			Replace to: TAEH110M-230320-0-006a
				Replaces for:

Energy Absorbing Terminal "TAE H-110M"

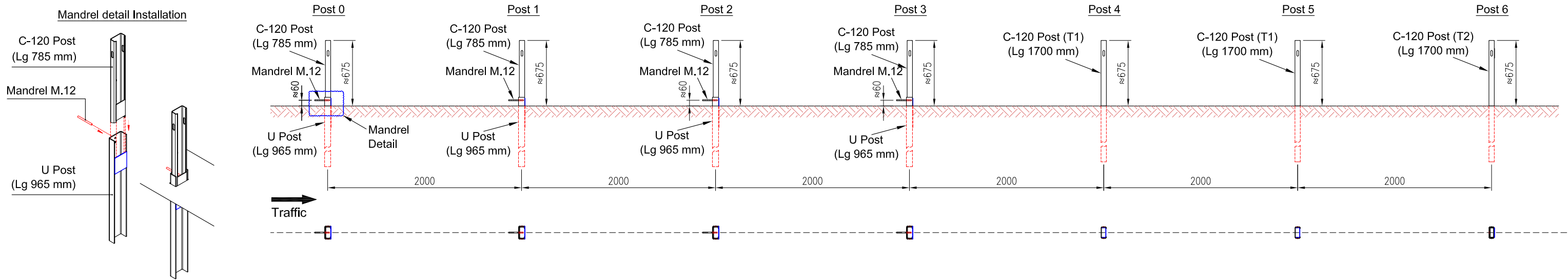
Annex 2: Installation Steps

April 2023

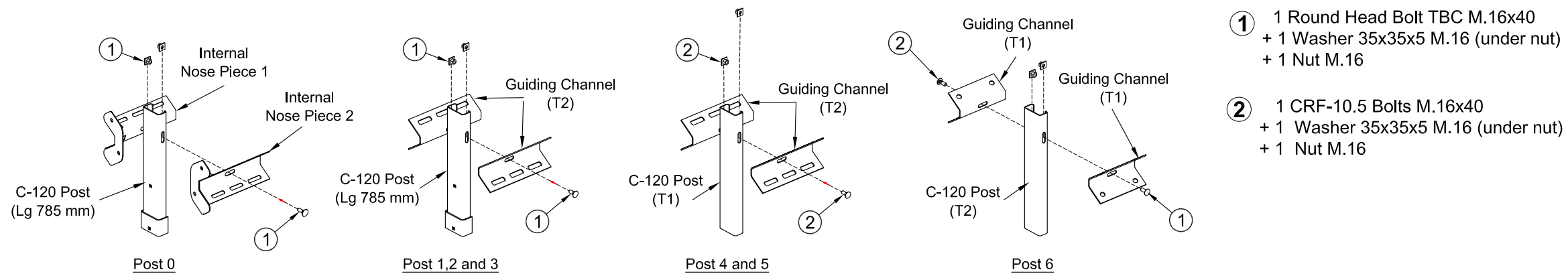


Paseo de Belén, 11 - Edificio UVainnova - Campus Miguel Delibes
47011 - Valladolid, ESPAÑA (SPAIN) Tel: +(34) 983 990468
e-mail: info@roadsteel.com - <http://www.roadsteel.com>

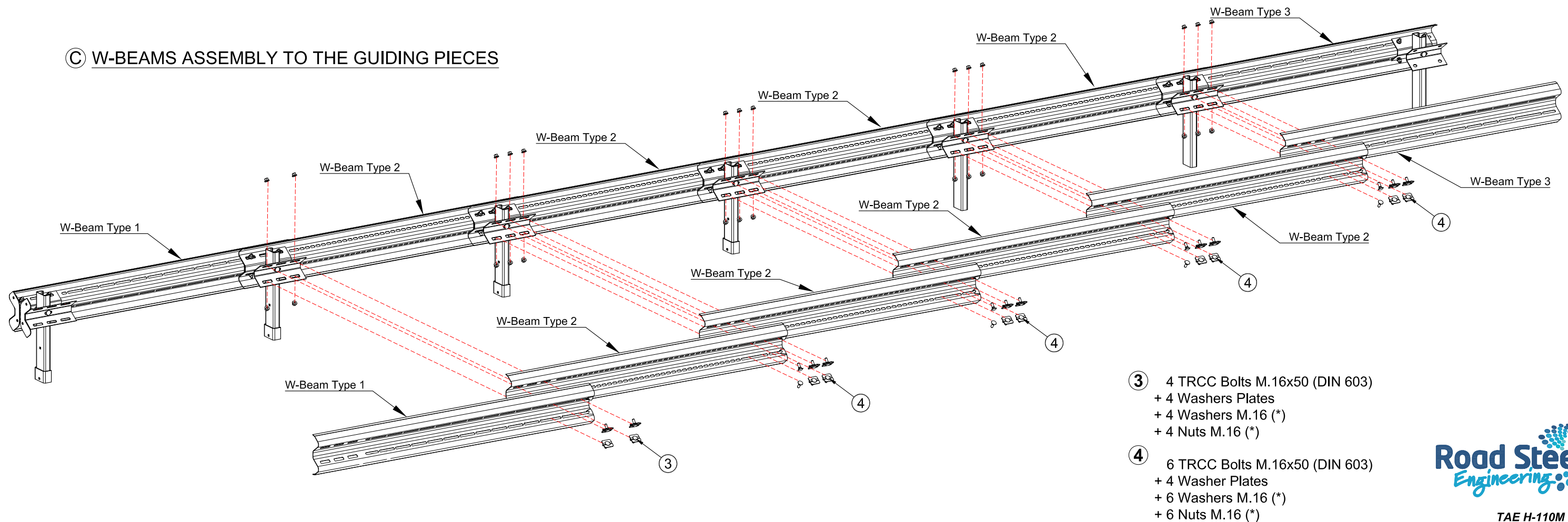
A POST INSERTION



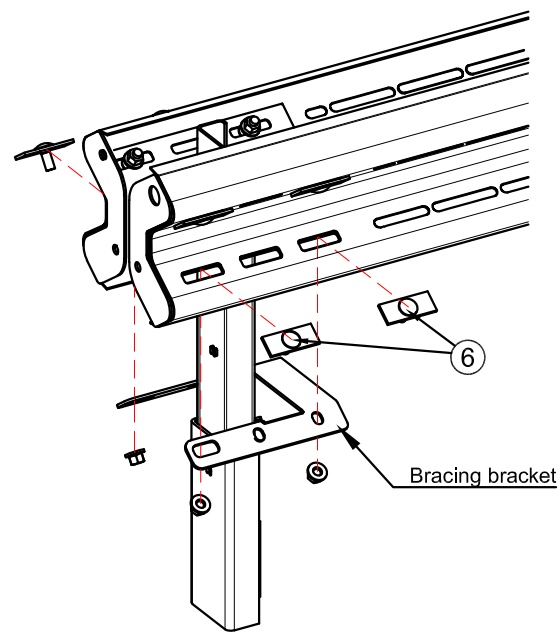
B W-BEAM GUIDING PIECES AND INTERNAL NOSE PIECES ASSEMBLING



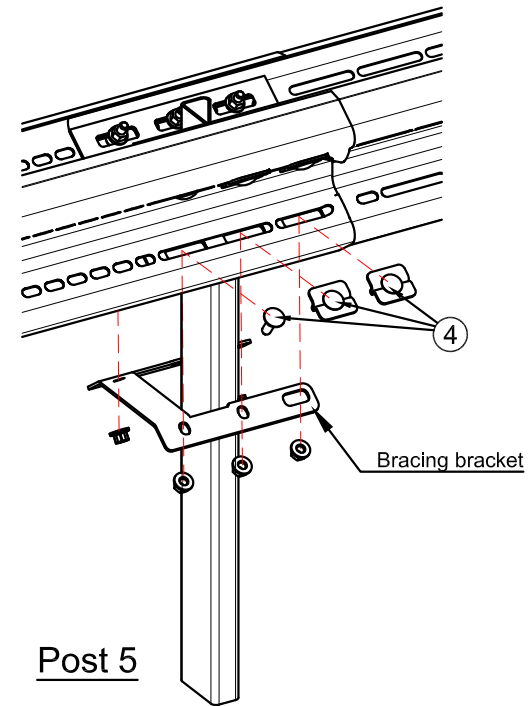
C W-BEAMS ASSEMBLY TO THE GUIDING PIECES



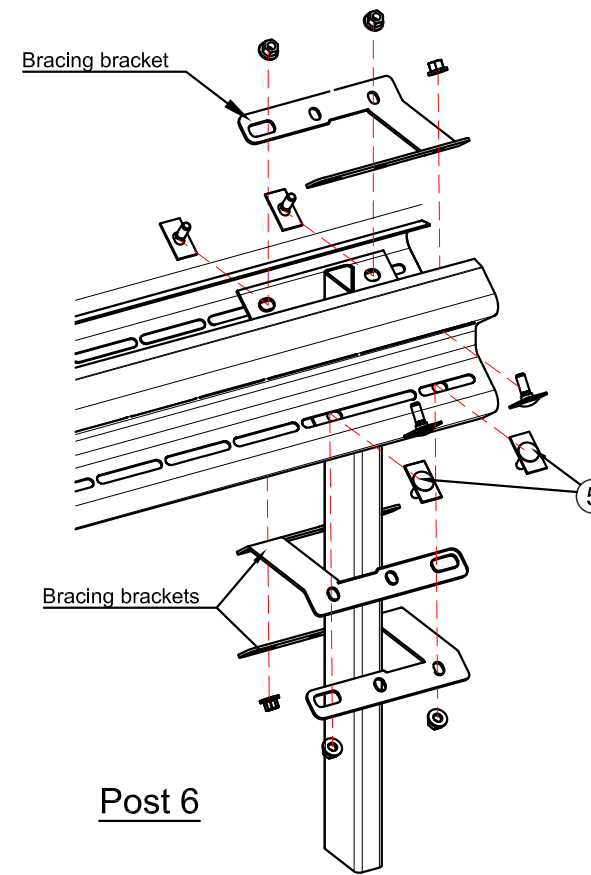
D BRACING PIECES ASSEMBLING



Post 0



Post 5



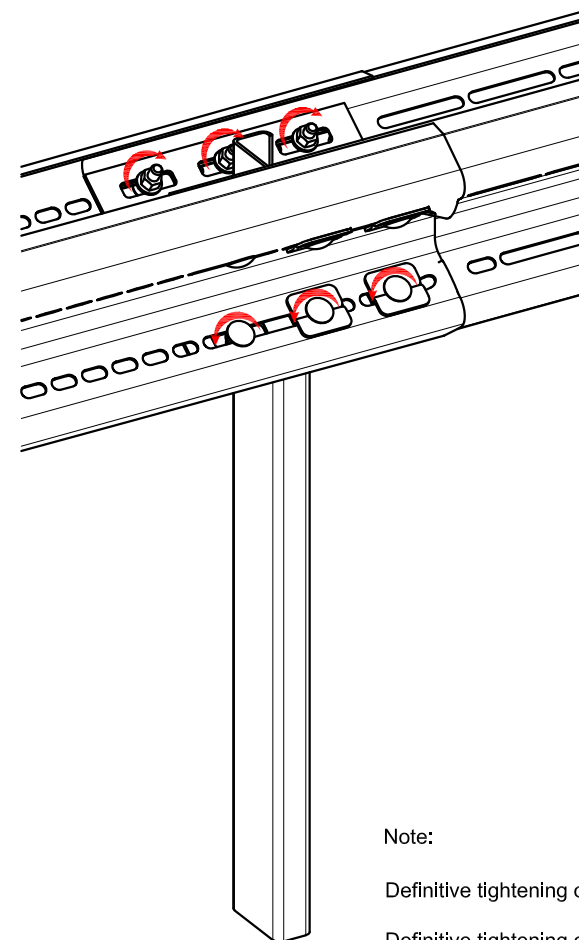
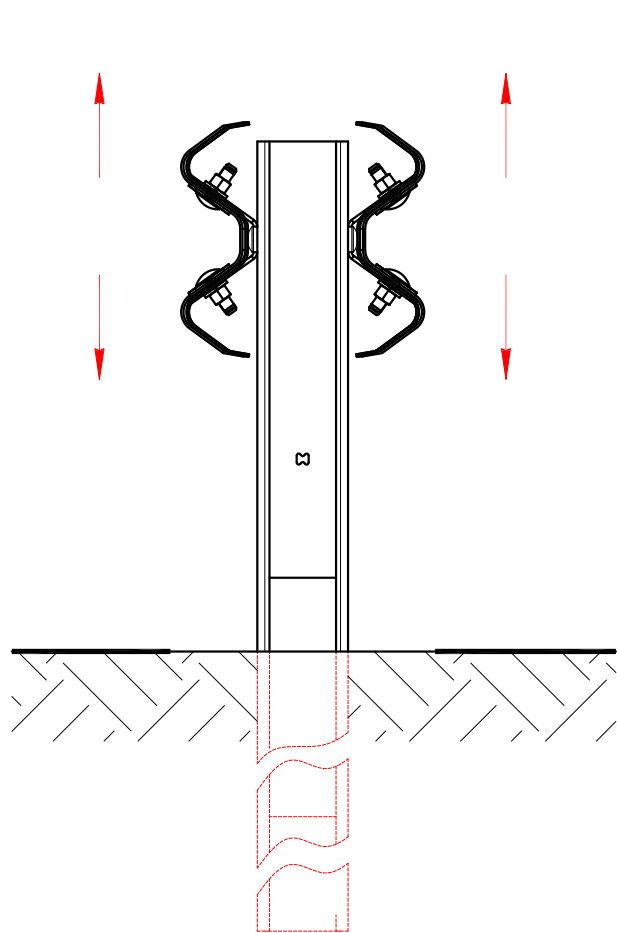
Post 6

- ④ 6 TRCC Bolts M.16x50 (DIN 603)
+ 4 Washer Plates
+ 6 Washers M.16 (*)
+ 6 Nuts M.16 (*)

- ⑤ 4 TRCC Bolts M.16x50 (DIN 603)
+ 4 Rectangular Flat Washers 75x40x3 M.16
(under head bolt)
+ 4 Washer M.16 (*)
+ 4 Nuts M.16 (*)

- ⑥ 4 TRCC Bolts M.16x50 (DIN 603)
+ 4 Rectangular Flat Washers 100x40x5 M.16
(under head bolt)
+ 4 Washers M.16 (*)
+ 4 Nuts M.16 (*)

E VERTICAL ALIGNMENT AND DEFINITIVE TIGHTENING OF W-BEAMS



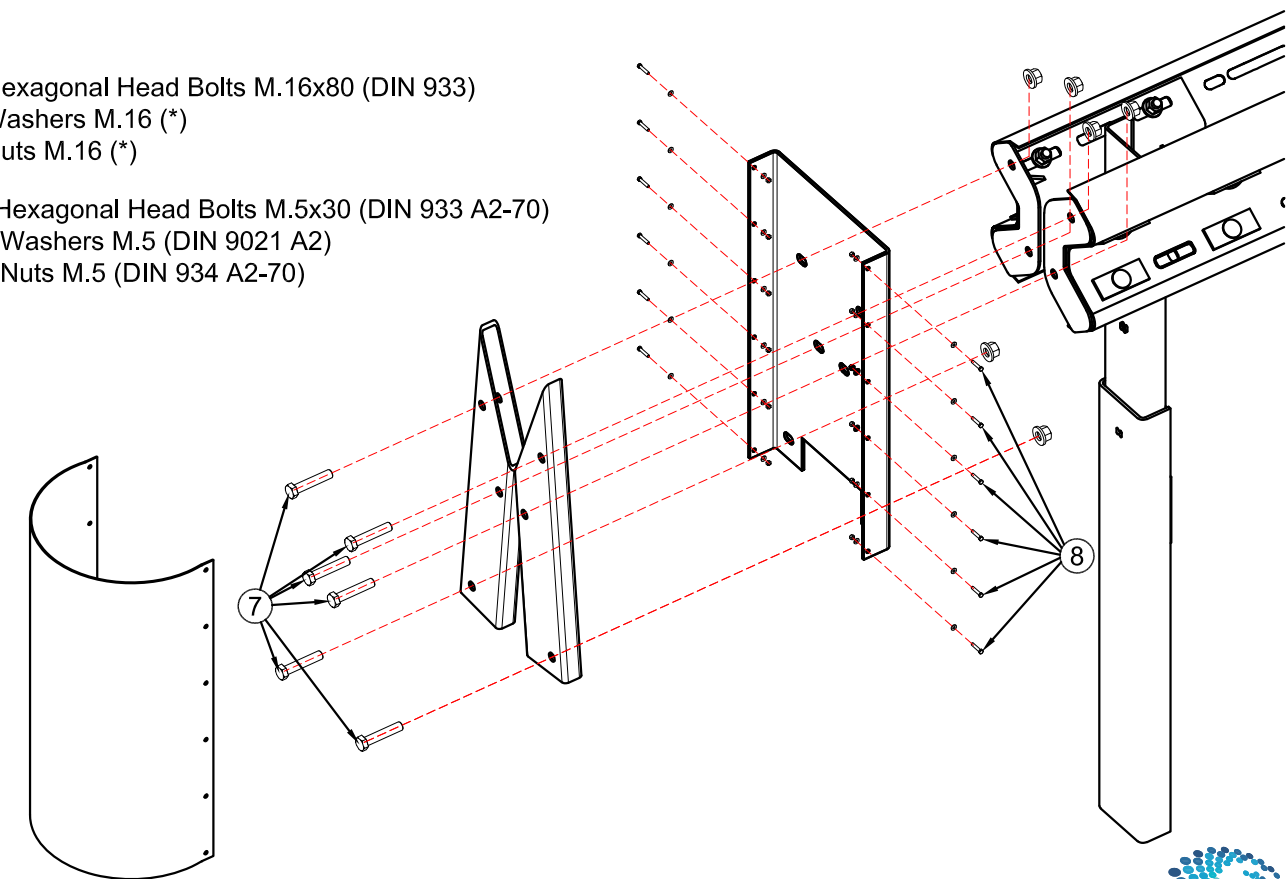
Note:

- Definitive tightening of bolts ① with a torque of 70 ± 10 N·m
Definitive tightening of bolts ② and ⑤ with a torque of 40 ± 10 N·m
Definitive tightening of bolts ③ and ④ with a torque of 60 ± 10 N·m
Definitive tightening of bolts ⑥ with a torque of 100 ± 10 N·m

F FRONTAL PANEL, REINFORCEMENT TUBES AND PLASTIC SHEET ASSEMBLING

- ⑦ 6 Hexagonal Head Bolts M.16x80 (DIN 933)
+ 6 Washers M.16 (*)
+ 6 Nuts M.16 (*)

- ⑧ 12 Hexagonal Head Bolts M.5x30 (DIN 933 A2-70)
+ 24 Washers M.5 (DIN 9021 A2)
+ 12 Nuts M.5 (DIN 934 A2-70)



Note:

- Definitive tightening of bolts ⑦ with a torque of 90 ± 10 N·m
Definitive tightening of bolts ⑧ with a torque of 40 ± 10 N·m