

**CLASSIFICATION OF FIRE RESISTANCE PERFORMANCE**  
**IN ACCORDANCE WITH EN 13501-2:2016**

<b>Sponsor</b>	: DALSAN ALÇI SAN. VE TİC. A.Ş. Kızılcaşar Mahallesi, 1184. Cadde, No:22/1 İncek, Gölbaşı, Ankara / TURKEY
<b>Prepared by</b>	: EFFECTIS ERA AVRASYA Test ve Belgelendirme A.Ş. DİLOVASI OSB. 5. Kısım Fırat Cad. 1. No:18 41455 Dilovası, Kocaeli / TURKEY
<b>Product name</b>	: <i>Suspended Ceiling System Consisting of Double Layers of "A1 COREX 15 mm" Plasterboards</i>
<b>Classification report No.</b>	: EEA - 22 - 035
<b>Issue number</b>	: 1/2
<b>Date of issue</b>	: 14.06.2022

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## 1. INTRODUCTION

This classification report defines the classification in accordance with the procedures given in EN 13501-2:2016, assigned to 'Suspended Ceiling System Consisting of Double Layers of **"A1 COREX 15 mm"** Plasterboards'

## 2. DETAILS OF CLASSIFIED PRODUCT

### 2.1. General:

The element, 'Suspended Ceiling System Consisting of Double Layers of **"A1 COREX 15 mm"** Plasterboards', is defined as a type of product.

### 2.2. Description:

'Suspended Ceiling System Consisting of Double Layers of **"A1 COREX 15 mm"** Plasterboards', is fully described below.

#### 2.2.1. General

Product identification : Suspended Ceiling System Consisting of Double Layers of **"A1 COREX 15 mm"** Plasterboards

Direction of fire : Below the Suspended Ceiling System

Manufacturer : DALSAN ALÇI SAN. VE TİC. A.Ş.  
Gebze Güzeller OSB İnönü Mah. Ziya Gökalp Cad. No: 4, 41400 Gebze,  
Kocaeli / TURKEY

Sponsor of test : DALSAN ALÇI SAN. VE TİC. A.Ş.  
Kızılcaşar Mahallesi, 1184. Cadde, No:22/1 İncek, Gölbaşı, Ankara / TURKEY

#### 2.2.2. Construction

*Suspended Ceiling System Consisting of Double Layers of **"A1 COREX 15 mm"** Plasterboards were placed on bottom face of the framework.*

*Steel hangers were fixed to cement based concrete beams with a density of ca. 2000 kg/m<sup>3</sup>*

#### 2.2.3. Components

##### 2.2.3.1. Suspended Ceiling System

##### 2.2.3.1.1. Hangers:

*The framework was suspended by 14 pcs. of C type quick hanger. Hanger bars were fixed to concrete beams with steel dowels and L steel bars. Hanger bars were hanged on L steel bars and C-type quick hangers were placed to hanger bars which connected to TC galvanised steel profiles.*

- Hanger: Galvanised Quick Hanger (C type) and hanger bar – DALSAN
  - Dimensions of quick hanger : See figure 8
  - Dimensions of hanger bar : 3,8 x 400 mm (Ø x L)
  - Fixing : Steel dowel with L steel bar and a nut – CD6-45 - DALSAN
    - Dimensions : M6 x 45 mm (Ø x L)
    - Location : See figure 1, 2 and 3.

**2.2.3.1.2. Framework**

All edges of the supporting construction were circled by the U shaped galvanised steel profiles. Resilient tape was used between supporting construction and U shaped profiles. C shaped galvanised steel profiles were located in the U shaped galvanised steel profile crosswise.

- U shaped galvanised steel profile – Ceiling U-track (TU) - DALSAN  
Ceiling U-tracks were fixed to the supporting construction (side wall) by steel dowels.
  - Dimensions : 3100/4100 x 28 x 27/27 x 0,5 mm (l x w x d x t)
  - Fixing : M6 x 45 mm (Ø x l) - CD6-45 – Steel dowel - DALSAN
  - Location of fixing : 50 mm distance from edge of the supporting construction and 600 mm c.t.c distance between steel dowels.
- C shaped galvanized steel profile – Ceiling C-stud (TC) – DALSAN  
C shaped galvanised steel profiles were located in (without screws) the U shaped galvanised steel profiles.
  - Dimensions : 3080 x 60 x 27/27 x 0,6 mm (l x w x h x t)
  - Location : The distance between each Ceiling C-stud is 600 mm. The studs had 10 mm gap between Ceiling U-track (TU) and Ceiling C-stud (TC)
- Resilient tape:
  - Type : Sound resilient polyethylene foam tape – DALSAN
  - Dimensions : 25 x 3 mm (w x t)
  - Nominal density : 30 kg/m<sup>3</sup>
  - Location : Between supporting construction and U shaped profiles.

**2.2.3.1.3. Panels**

The suspended ceiling system have two layers of plasterboards. Plasterboards fixing to framework with self tapping screws screw. Joint tape and jointing compound were used at the joints of plasterboards. See figure 1, 5 and 6 for the layout of the panels.

- Plasterboards – EN 15283-1, Type GM FH1R Plasterboard - A1 COREX 15 mm – DALSAN
  - Nominal Dimensions : 1200 x 2000 x 15 mm (w x l x t) – 2 layers.
  - Nominal Density : 900 ± 135 kg/m<sup>3</sup>
  - Measured density : 896 kg/m<sup>3</sup>
  - Coating : Both faces of the plasterboards were covered with fiberglass mattress; unit area weight of fiberglass mattress on one face of the plasterboard 205 g/m<sup>2</sup>.
  - Location : Plasterboards layers were staggered at bottom of the suspended ceiling system
  - Dimensions:
    - First layer (inner layer):
      - Dimensions : 250 x (1700+1400) mm (w x l), 1200 x (1400+1700) mm (w x l), 1200 x (1700+1400) mm (w x l), 1200 x (1400+1700) mm (w x l), 250 x (1700+1400) mm (w x l)

- Second layer (outer layer):
  - Dimensions : 850 x (1100+2000) mm (w x l), 1200 x (2000+1100) mm (w x l), 1200 x (1100+2000) mm (w x l), 850 x (2000+1100) mm (w x l)
- Fixing – Plasterboards fixing to framework with self tapping steel screws - DALSAN
  - Dimensions: : 3,5 x 38 mm (Ø x l) – COREX BV 38 - First layer  
: 3,5 x 45 mm (Ø x l) – COREX BV 45 - Second layer
  - Location : At first layer the distance between screws is 300 mm and at second layer the distance between screws is 150 mm
  - Joints:
    - Type : Joint compound – DERZTEK – DALSAN
    - Wet density : 750 kg/m<sup>3</sup>
    - Location : Used at the joints of plasterboards at second layer.
      - Reinforcement: Joint tape – DALSAN
      - Joint tape : Used at the joints of plasterboards at second layer. The joint tape was applied on the joints of the board before the joint compound.
        - Type : Self-adhesive fibre-glass tape.
        - Nominal thickness: 0,13 mm
        - Mass per unit area: 60 g/m<sup>2</sup>

For detailed information see figures 1-8.

### 3. REPORTS AND RESULTS IN SUPPORT OF CLASSIFICATION

#### 3.1. Reports

Name of laboratory	Name of sponsor	Test report ref. no.	Test method
EFFECTİS ERA AVRASYA TEST VE BELGELENDİRME A.Ş.	DALSAN ALÇI SAN. VE TİC. A.Ş.	RFTR22056	EN 1364-2:2018

#### 3.2. Results

Test method	Parameter	Results
EN 1364-2:2018	Integrity, (E) – Cotton pad – Gap gauges Ø 6 mm Ø 25 mm – Flames longer than 10 sec.	no failure no failure (not applied) no failure (not applied) not observed
	Insulation:, [I] – average temperature – maximum temperature	no failure no failure
The heating was terminated at 66 <sup>th</sup> minute after consulted with sponsor.		

#### 4. CLASSIFICATION AND FIELD OF APPLICATION

##### 4.1. Reference of classification

This classification has been carried out in accordance with clause 7.5.4 of EN 13501-2:2016.

##### 4.2. Classification

'Suspended Ceiling System Consisting of Double Layers of "A1 COREX 15 mm" Plasterboards' is classified according to the following combinations of performance parameters and classes:

R	E	I	W		t	t	-	M	S	C	IncSlow	sn	ef	r
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<p style="text-align: center;"><b>FIRE RESISTANCE CLASSIFICATION</b></p> <p style="text-align: center;"><b>EI60 (a←b)</b></p>														
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\* a: above, b: below

##### 4.3. Field of application

###### 4.3.1 General

This report details the method of construction, the test conditions and the results obtained when the specific elements of construction described herein was tested following the procedure outlined in EN 1363-1:2020, and when appropriate EN 1363-2:1999. Any significant deviation with respect to size, constructional details, load stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

###### 4.3.2 Construction

The test results are directly applicable to an untested similar suspended ceiling construction provided the following is true:

###### 4.3.2.1 With respect to size

Test results obtained on a test specimen of 4 m x 3 m or greater, may be applied to ceilings of any dimension, provided that the distribution per unit area of the hangers is not reduced and the distance between hangers is not increased. The distance between grid members and the load on the hanger, shall not be increased. Provisions for expansion in the ceiling system shall be increased pro rata with the extensions in sizes, while the gap at the perimeter shall be the same as tested.

###### 4.3.2.2 With respect to fittings

Fittings which devices penetrating the ceilings that may be installed are those which have been included in the test specimen (example, lighting or ventilation etc.). The distance between the fittings cannot be smaller than tested.

###### 4.3.2.3 With respect to cavity

The test results are valid for cavities of any height.

###### 4.3.2.4 With respect to length of supporting hangers

The test results are applicable to ceilings suspended by hangers of any length.

###### 4.3.2.5 With respect to cable, pipes, etc. above the ceiling

The test results are only applicable to the inclusion of cables, pipes, etc. above the ceiling provided they are installed in such a manner that they give no additional mechanical load to ceiling during the fire.

## 5. LIMITATIONS

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This classification report does not represent any type approval or certification of the product. This report is initially valid until **14<sup>th</sup> June 2023** providing that no significant modifications are made in technical specification of the specimen and related test and classification standards

**Signed:**



e-signed

Osman AYYILDIZ

Person in the charge of tests



**Approved:**



e-signed

Ali BAYRAKTAR

Laboratory Manager

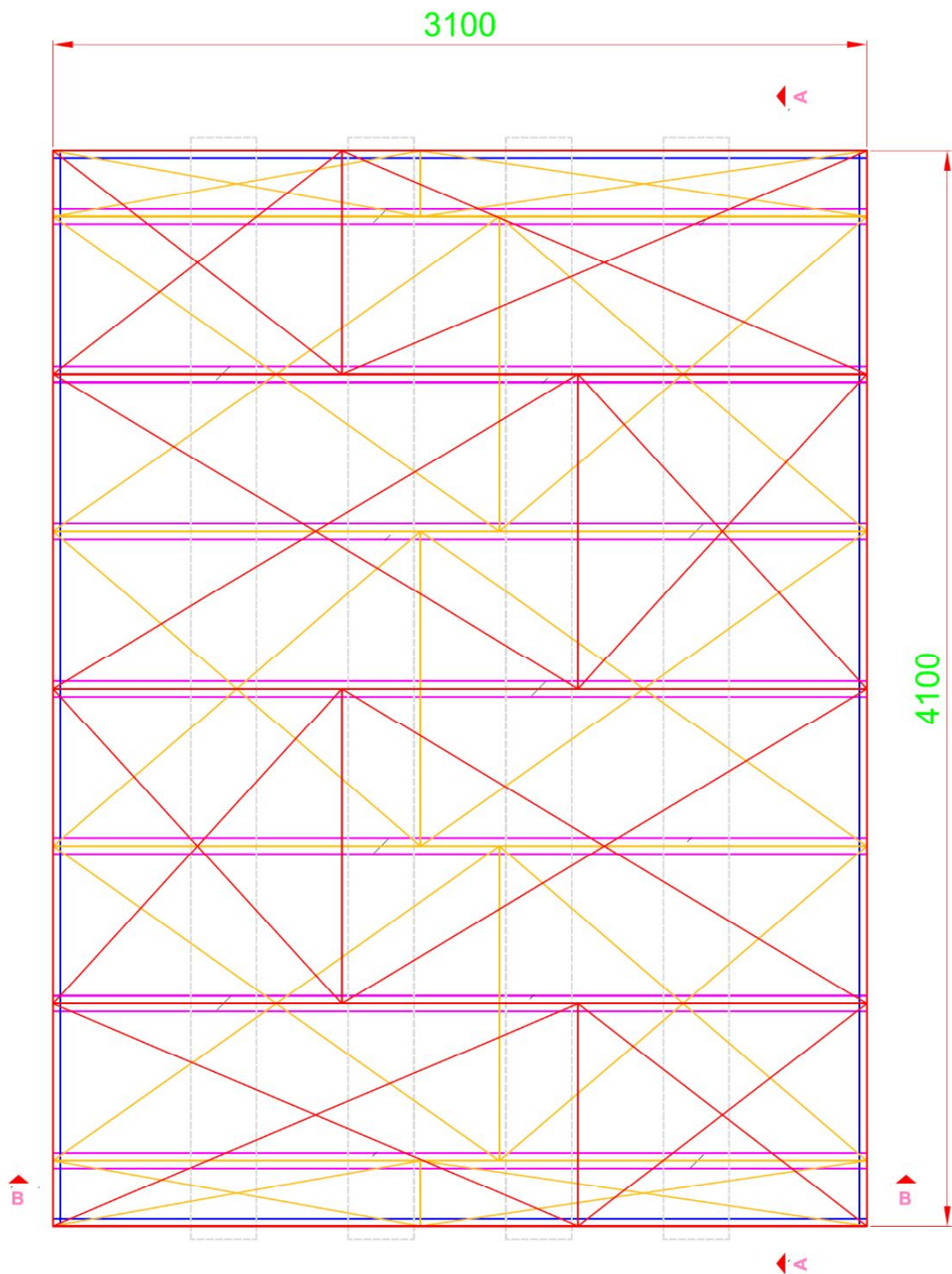
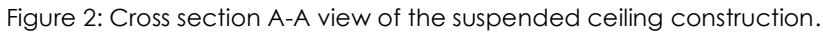
**6. DRAWINGS:**

Figure 1: Suspended ceiling construction general view.





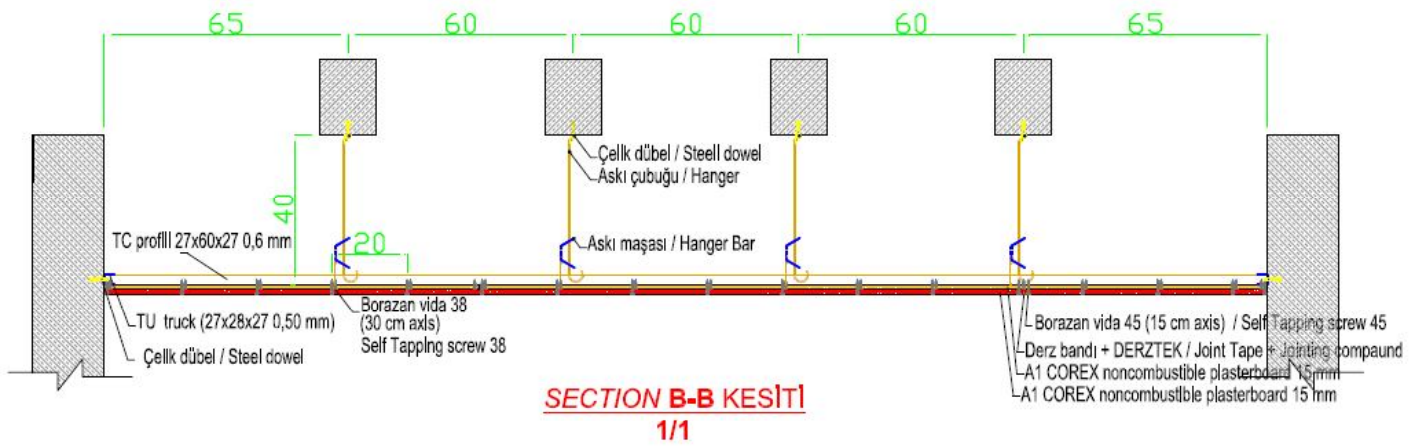


Figure 3: Cross section B-B view of the suspended ceiling construction.

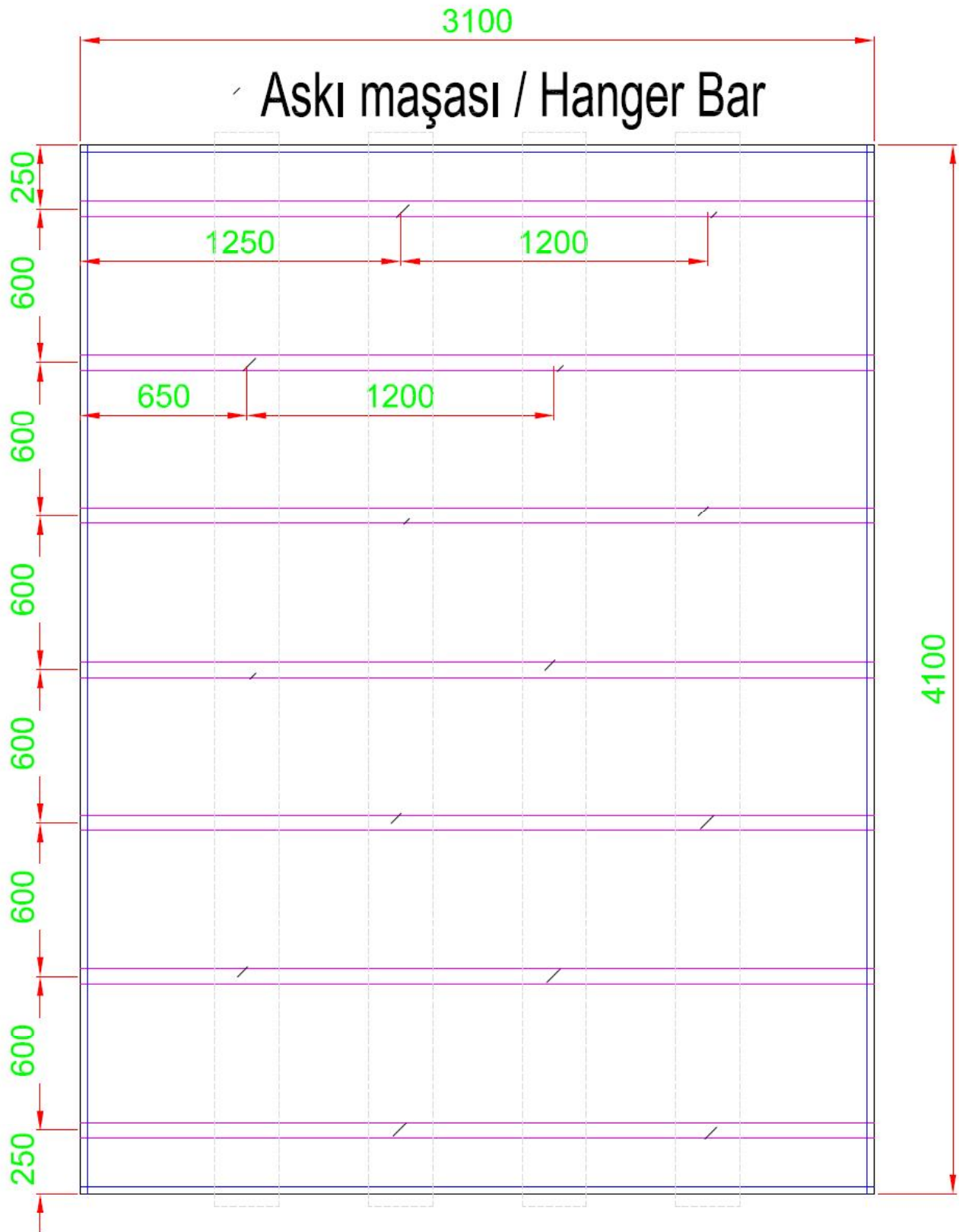


Figure 4: Location of hanger bars and TC profiles.

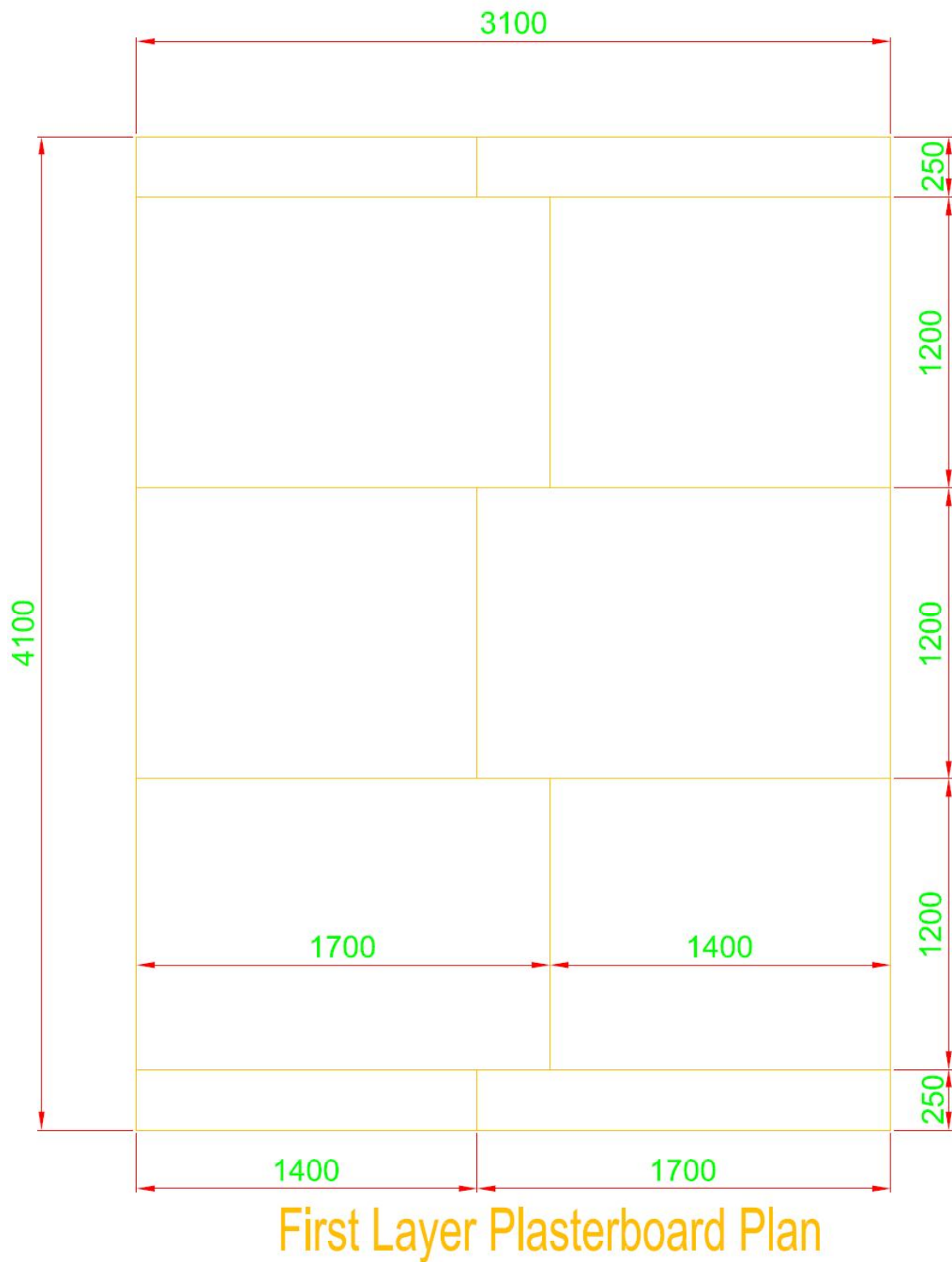
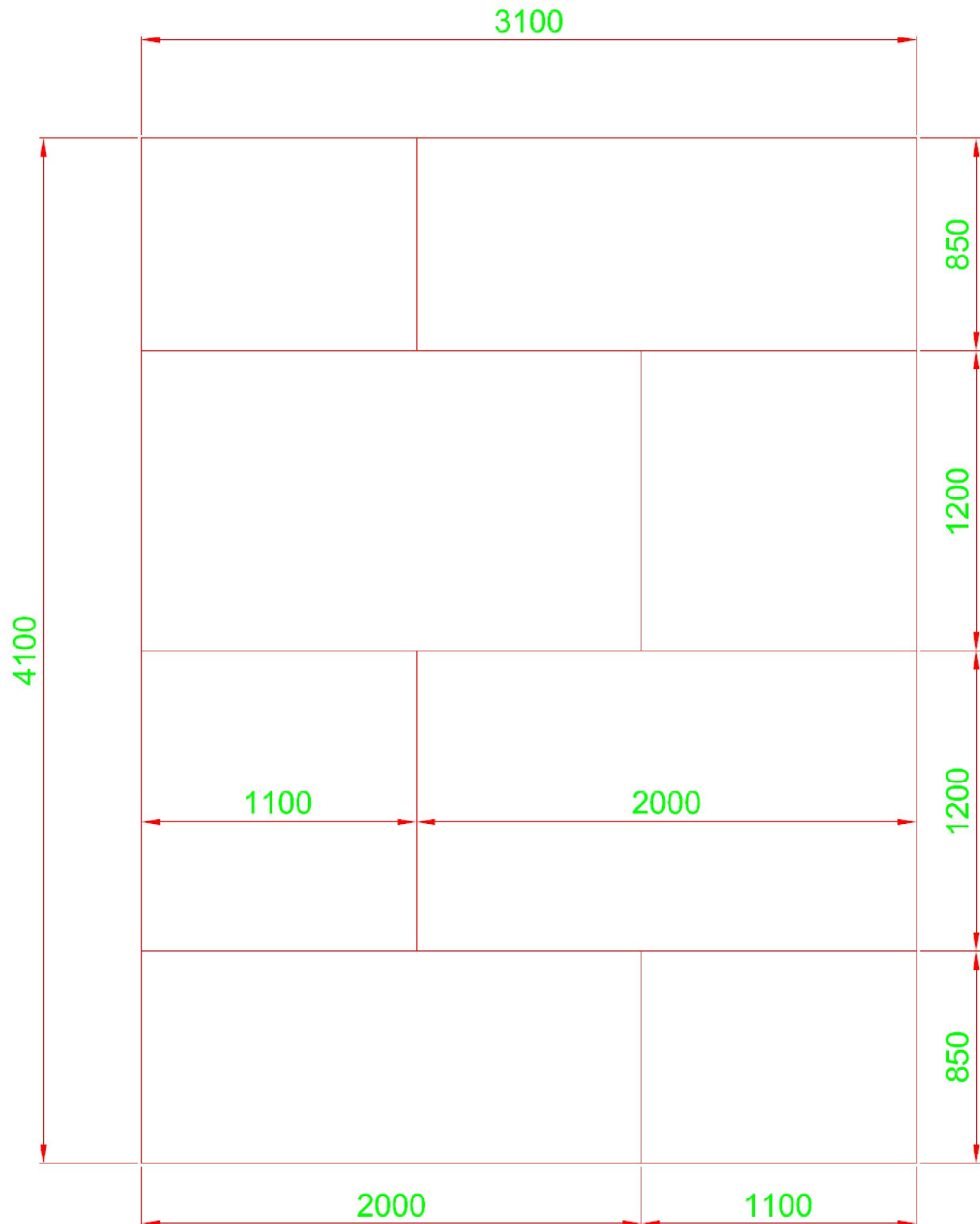


Figure 5: First (Inner) layer view of exposed side of the test specimen.



## Second Layer Plasterboard Plan

Figure 6: Second (Outer) layer view of exposed side of the test specimen.

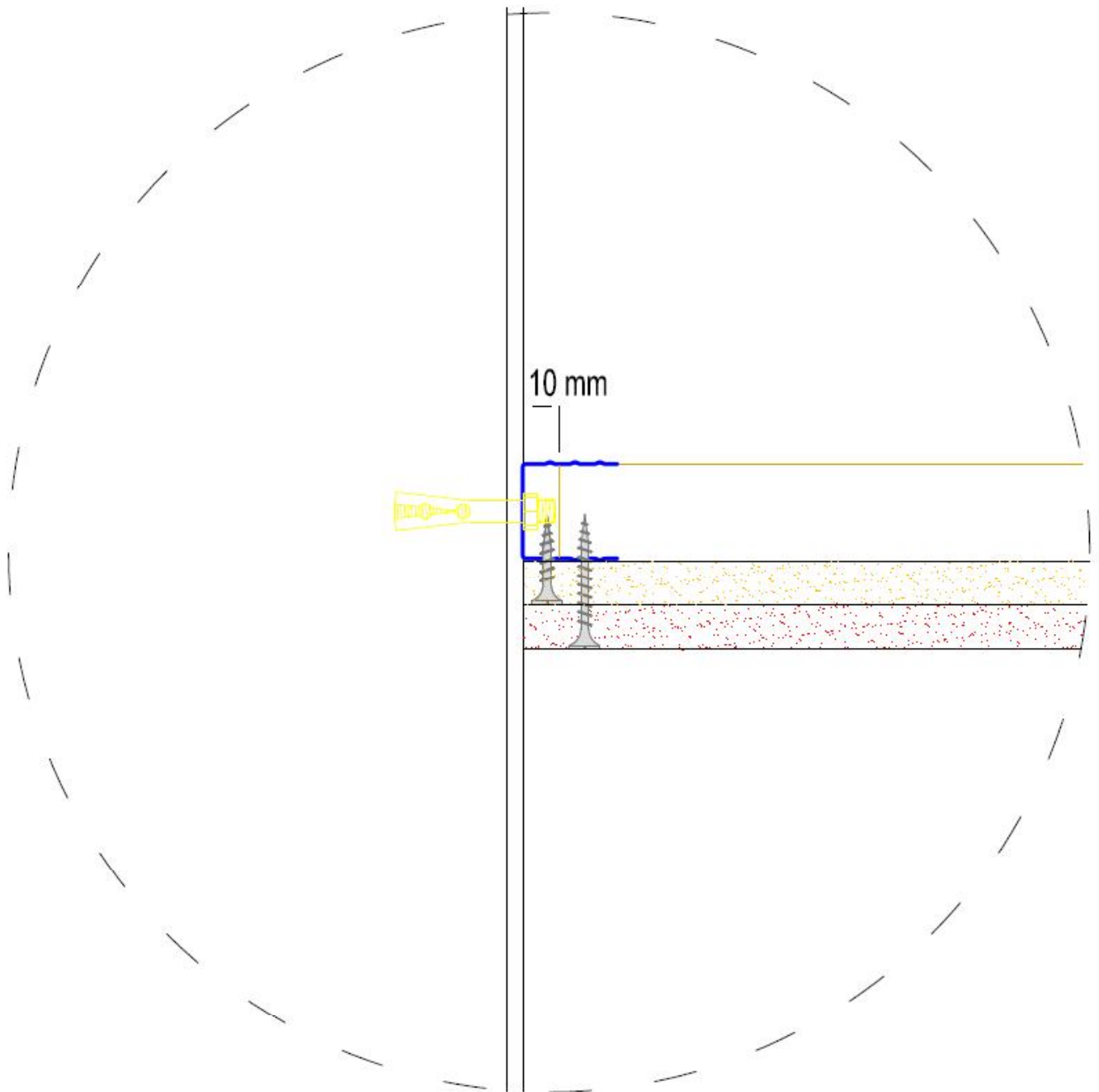


Figure 7: TC – TU steel profiles junction detail.

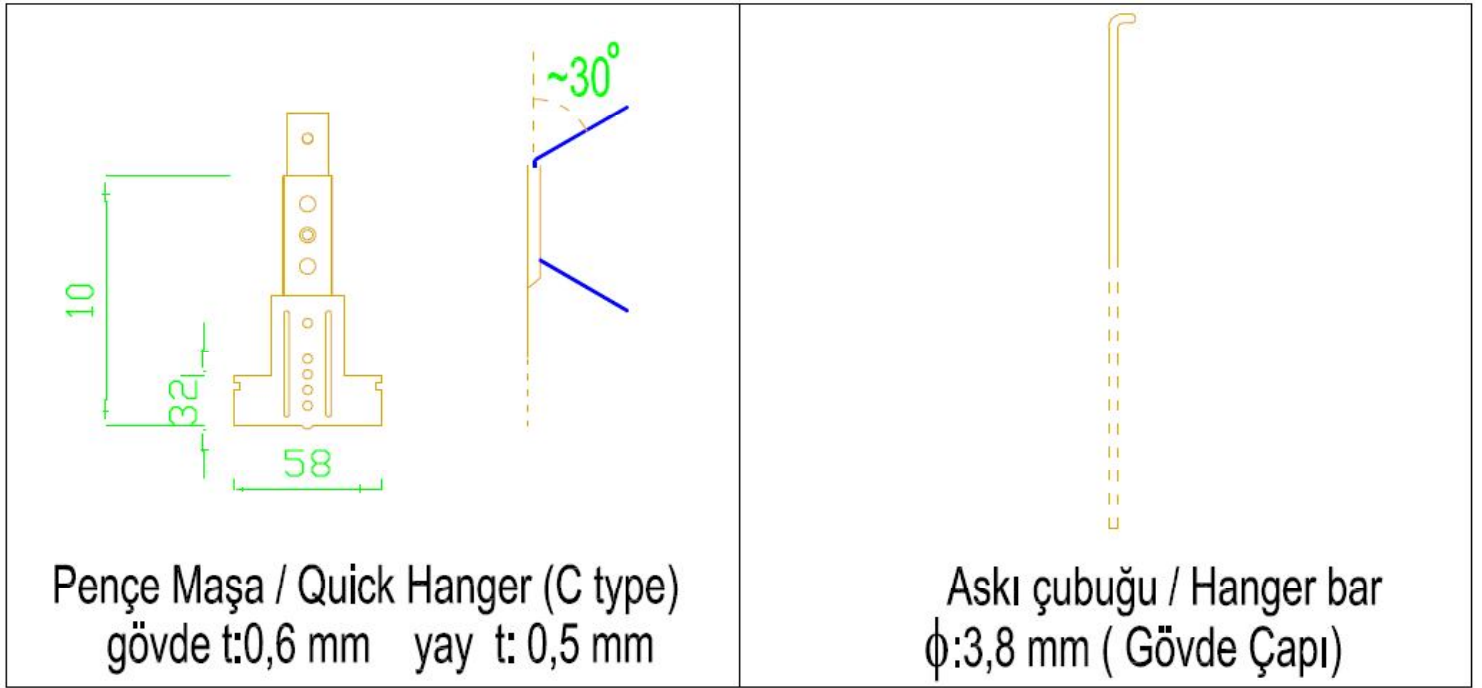


Figure 8: Quick hanger (C Type) details.