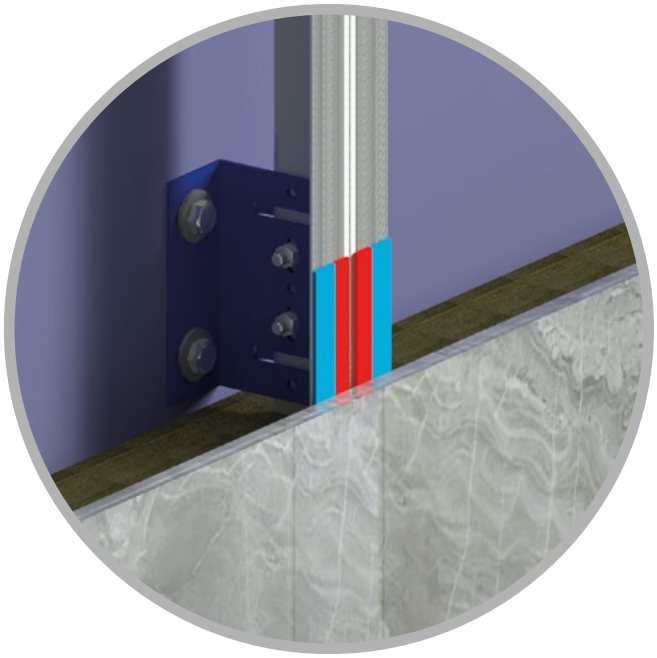
SILKARSTONE

INNOLITE Facade System

WHEN WEIGHT MATTERS

Content

Atatürk Cultural Center, İstanbul



INNOLITE & SILKARSTONE

INNOLITE; an innovative product developed for natural stone cladding on facades.

It is a laminated natural stone system developed by **SILKARSTONE** as a result of R&D and engineering studies.

It can be used with standard adhesive-type mechanical systems without the need for processes such as pins, holes, or notching.

Thanks to its total thickness of approximately 12 mm, it both imposes less load on facades and offers stylish solutions with more affordable costs.

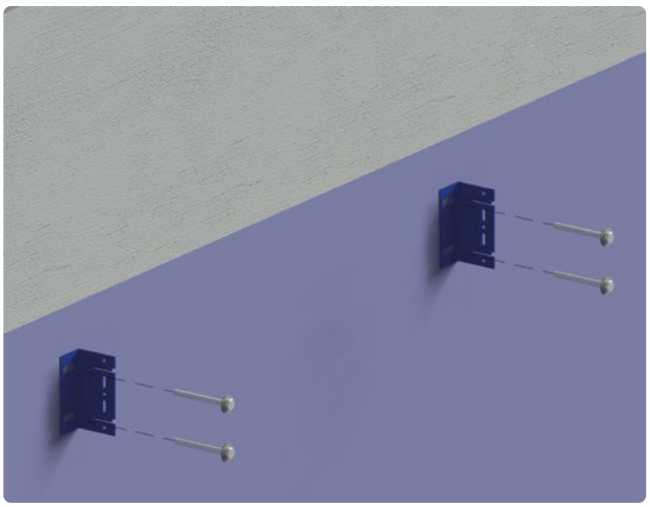
With **INNOLITE**, ventilated facade cladding applications can be made, achieving the desired high level of thermal insulation. For insulation purposes, membranes and the desired thickness of thermal insulation blankets can be used in the cavity behind the natural stone cladding as required by the details.

After mounting the carrier system elements, which are brackets and profiles, onto the surface to be clad, the necessary insulation elements and finally the **INNOLITE** products can be mounted with special adhesive chemicals.

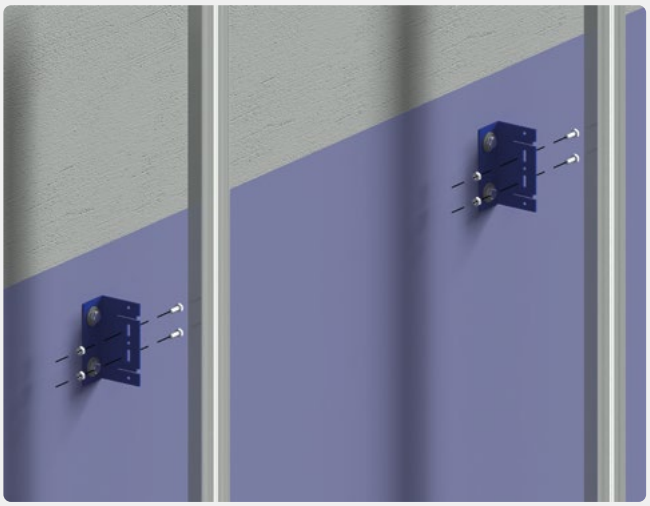
You will find these methods in detail on the following pages of this catalog. Additionally, you can find the necessary tables for system and stone type selections based on values such as the wind load of the buildings to be used and the self-weight of the products.

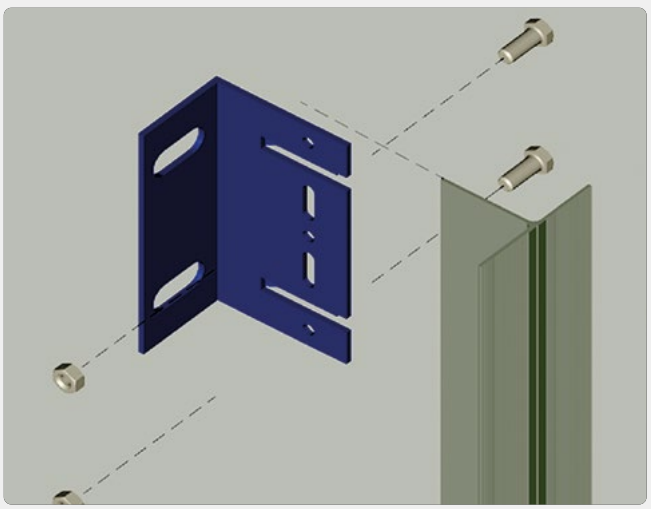
INNOLITE System Installation

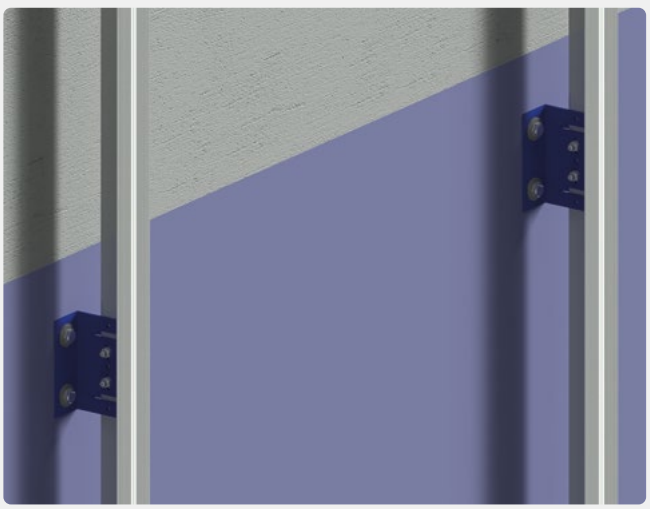
1 According to its detail, after the vapor barrier membrane is applied, the brackets are attached to the surface to be clad at appropriate intervals according to static requirements, using steel dowels.



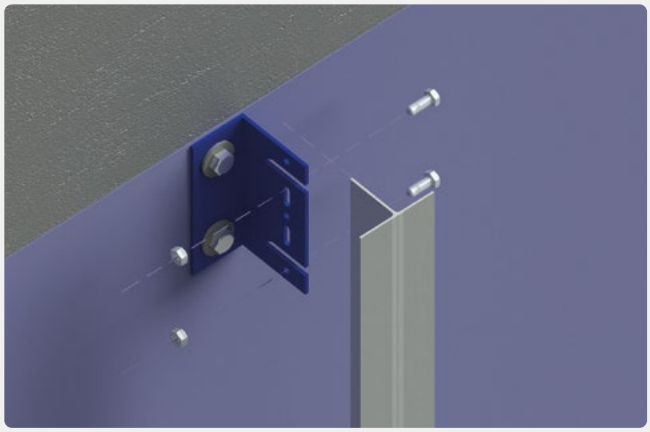
2 According to static requirements, the most suitable aluminum T-profile for the system is selected. The chosen aluminum T-profiles are then attached to the brackets with stainless steel bolts, fixed at the top and with a sliding mechanism at the middle and bottom points, thus completing the substructure installation.

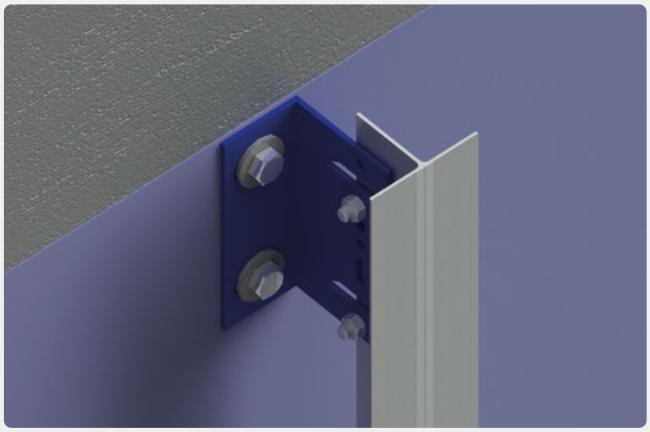




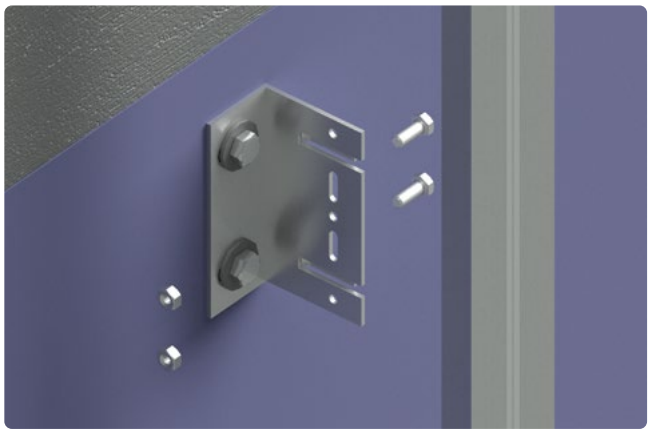


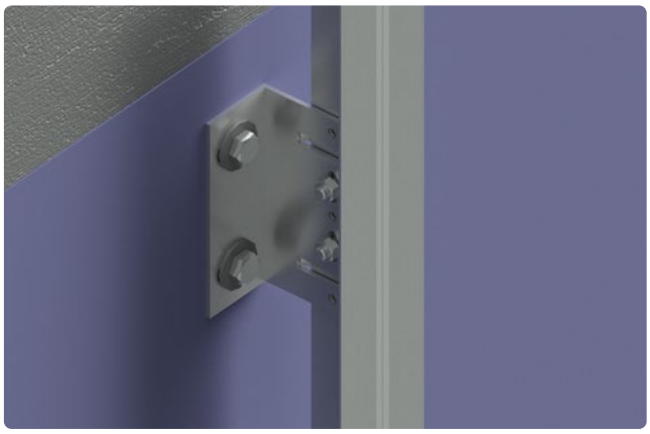
3 Since the aluminum T-profiles will be hung from the top, they must be fixed to the top brackets and no movement allowance should be left. Expansion movement will be accommodated by the middle and bottom brackets.



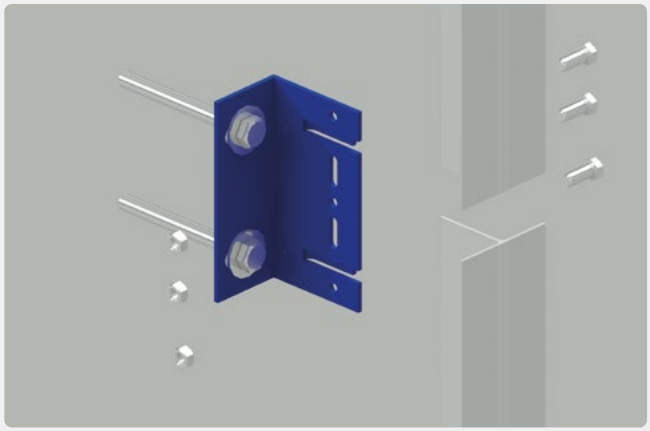


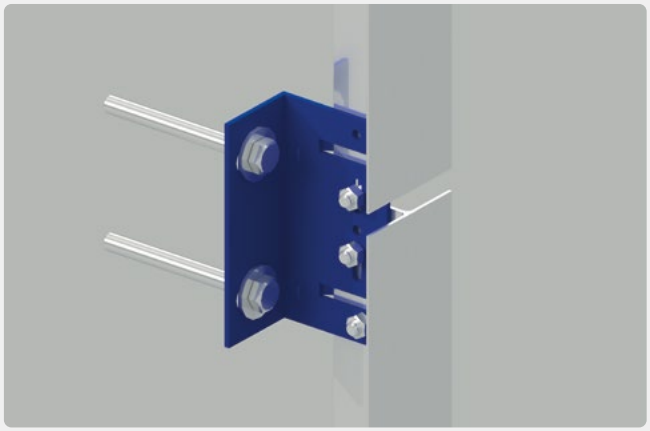
4 For aluminum T-profiles to be able to move during thermal expansion, the bolts connecting the supporting profiles should be installed centered in the slot holes of the middle brackets. (When using steel brackets, a separating tape must be placed between the vertical supporting profile and the bracket.)



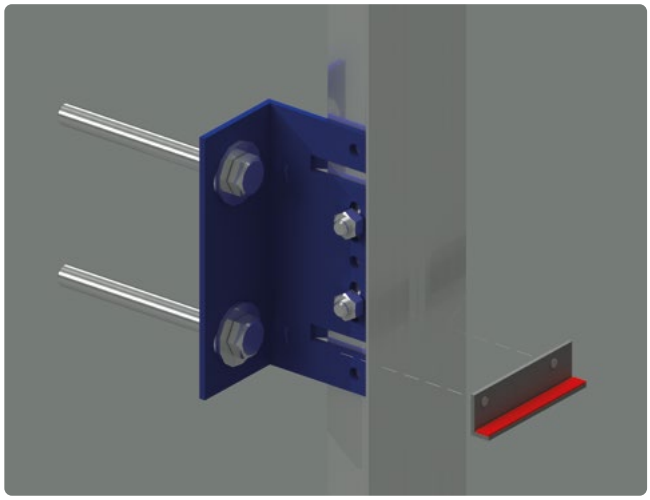


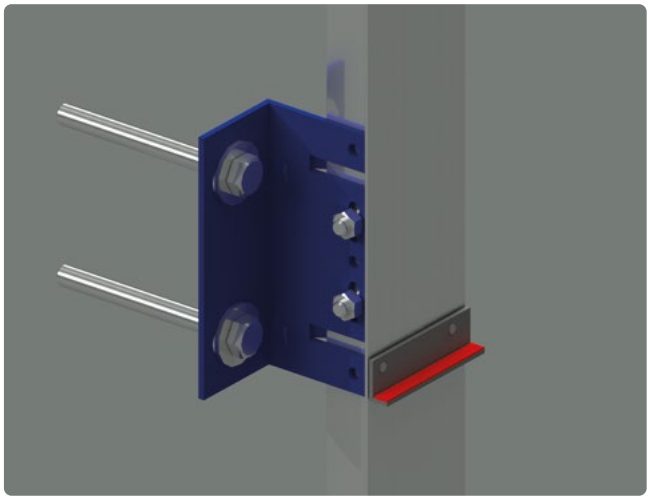
5 When joining aluminum carrier T-profiles, as shown in the following pictures, the top aluminum T-profile should be inserted into the slots, and the bottom profile should be fixed. This allows the aluminum T-profiles to move during thermal expansion.



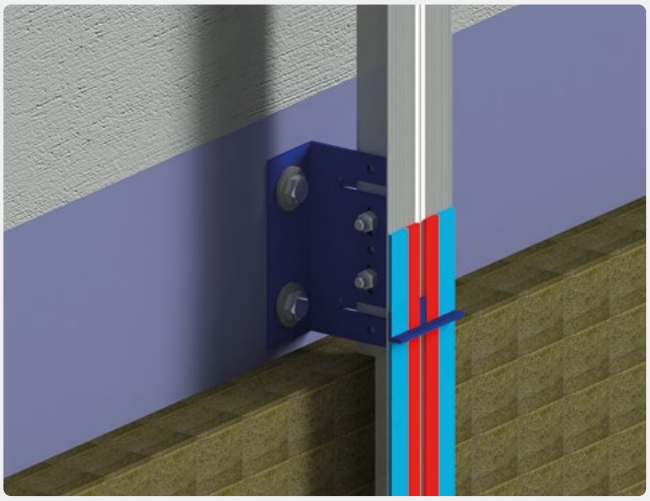


6 The dead load carrier clip is attached to the vertical load-bearing anodized aluminum T-profile with the help of a rivet. To prevent damage to **INNOLITE**, a 0.5 mm plastic-based tape is adhered to the top of the dead load carrier clip.
NOTE: In the following pictures, the tape is shown in red.



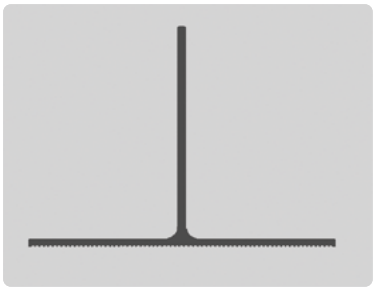


7 Depending on the details, the membrane and insulation mat are installed.

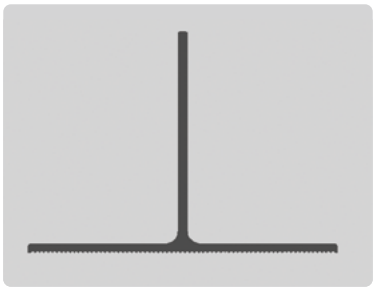


8 **INNOLITE** is attached to vertical carrier aluminum T-profiles using a bonding chemical and the system installation is completed. The chemical adhesive manufacturer's instructions must be followed for curing.

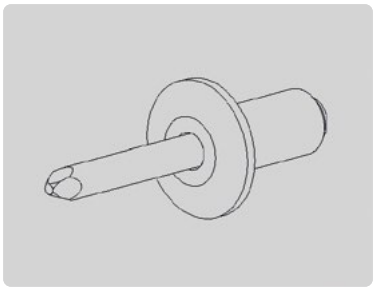
Load-Bearing System Material List



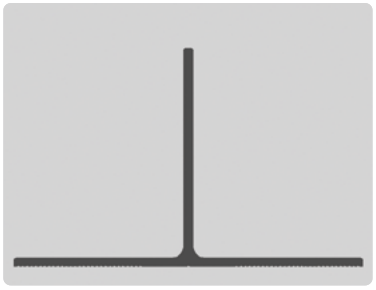
TM-01



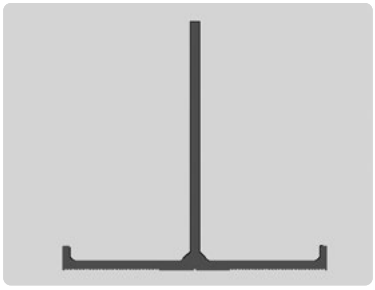
TM-02



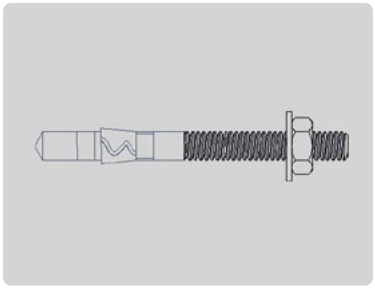
Rivet



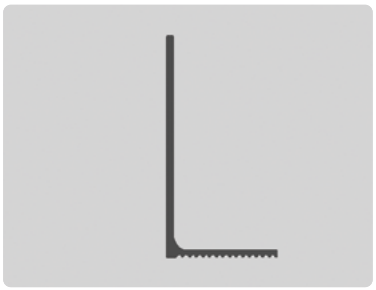
TM-03



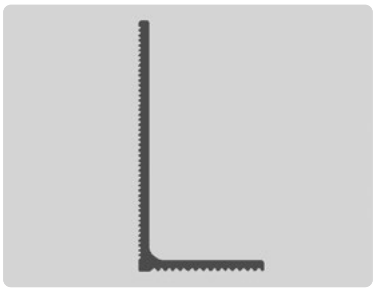
TM-04



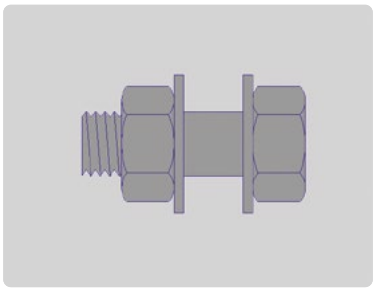
Dowel



LM-01



LM-02

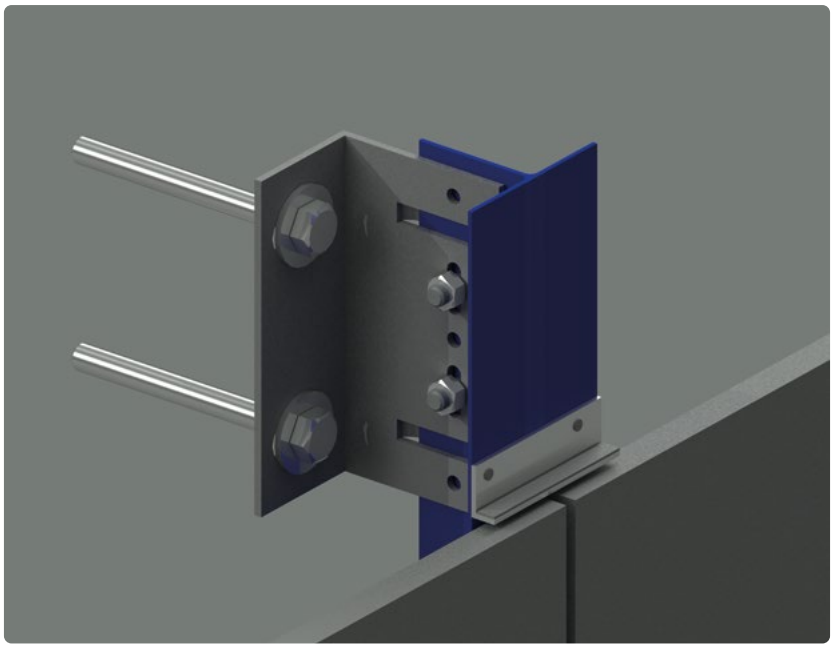


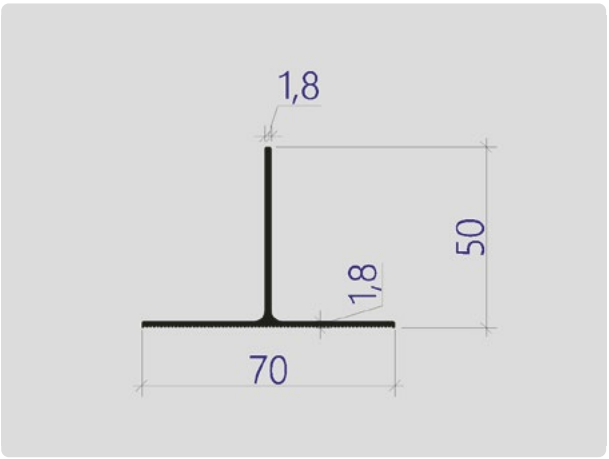
Bolt

LM-03 Dead Load Carrier Clip

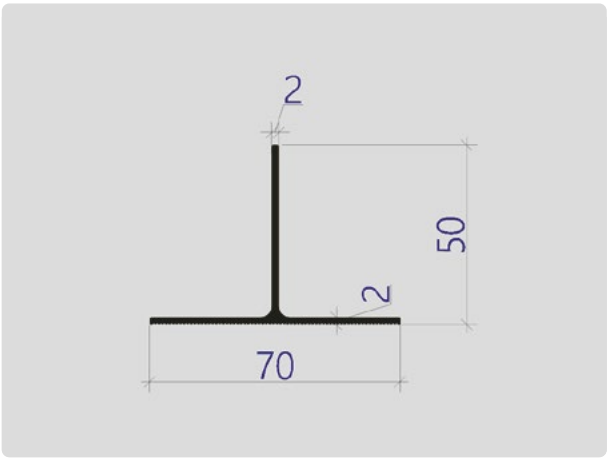
Bracket

Vertical Structural T-Profiles

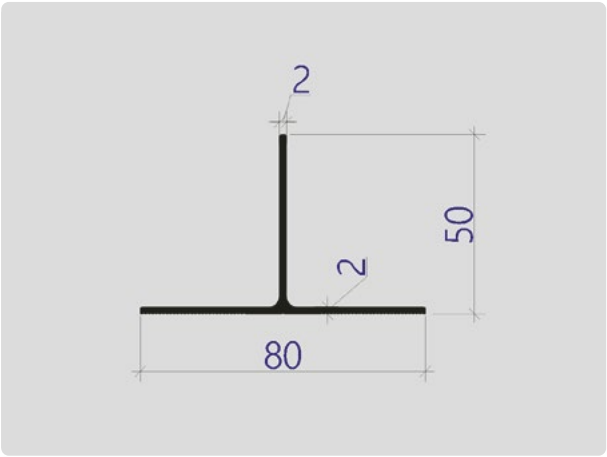




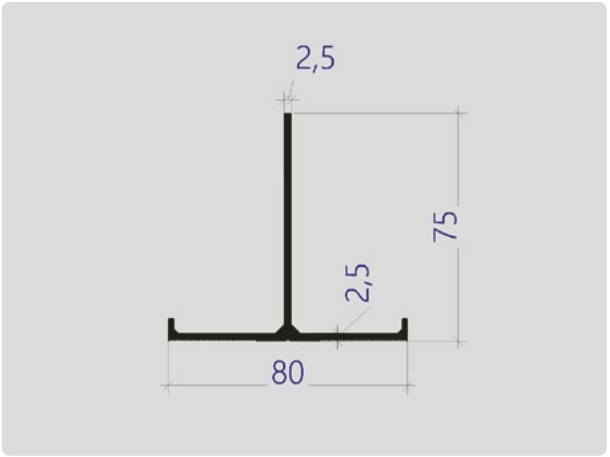
TM-01 = 0,529 Kg/m



TM-02 = 0,601 Kg/m

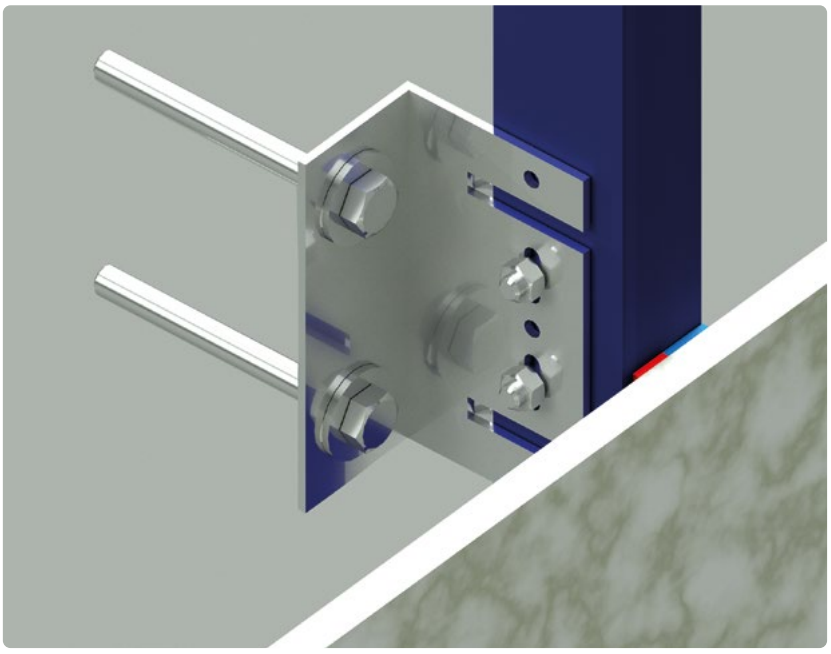


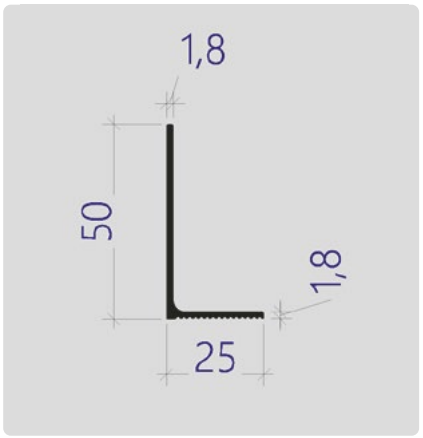
TM-03 = 0,625 Kg/m



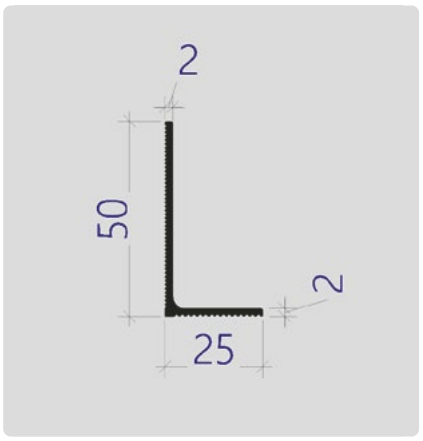
TM-04 = 1,090 Kg/m

Middle Vertical Load-Bearing L-Profiles



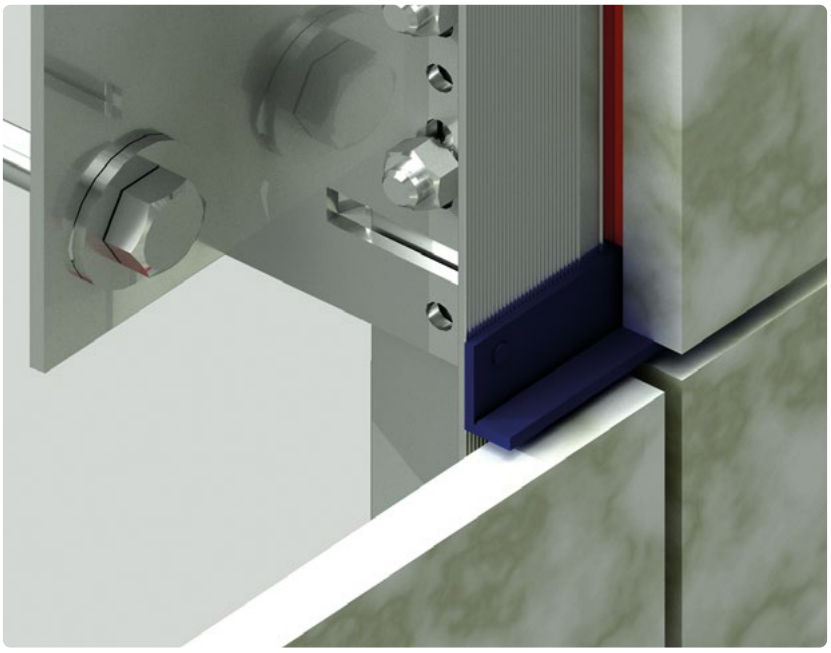


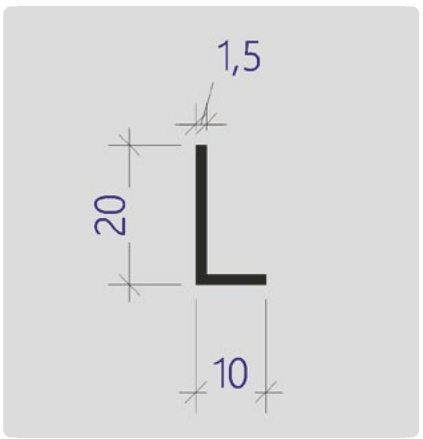
LM-01 = 0,349 Kg/m



LM-02 = 0,362 Kg/m

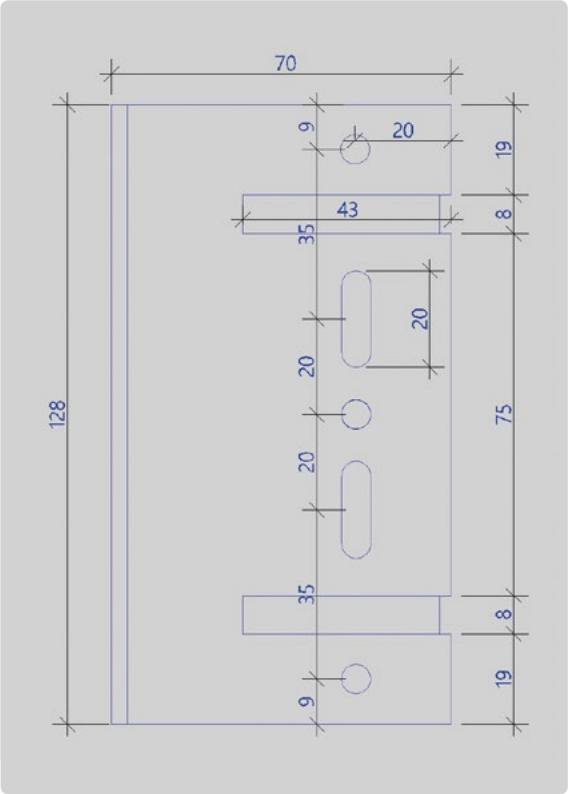
Dead Load Bearing Support



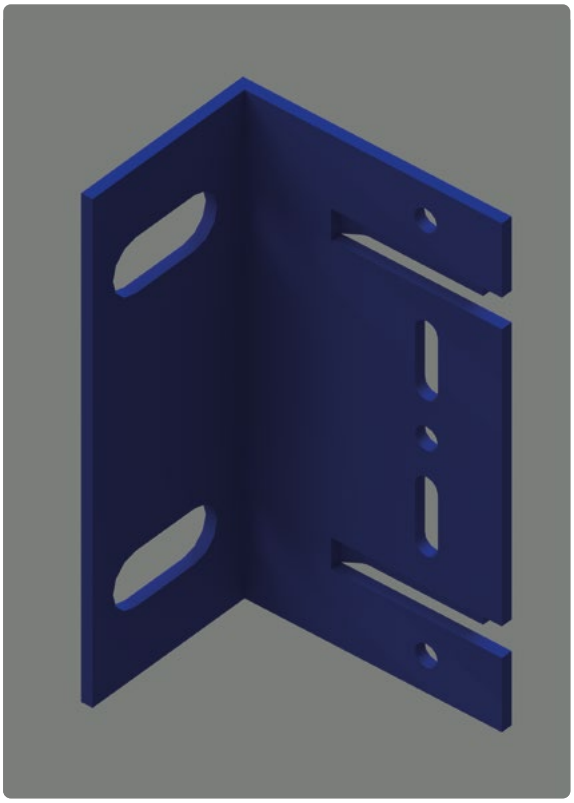


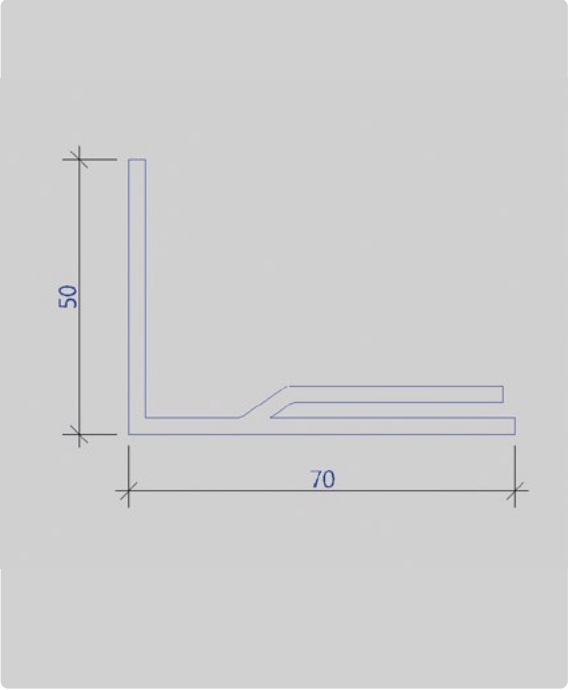
LM-03 = 0,12 Kg/m

Bracket

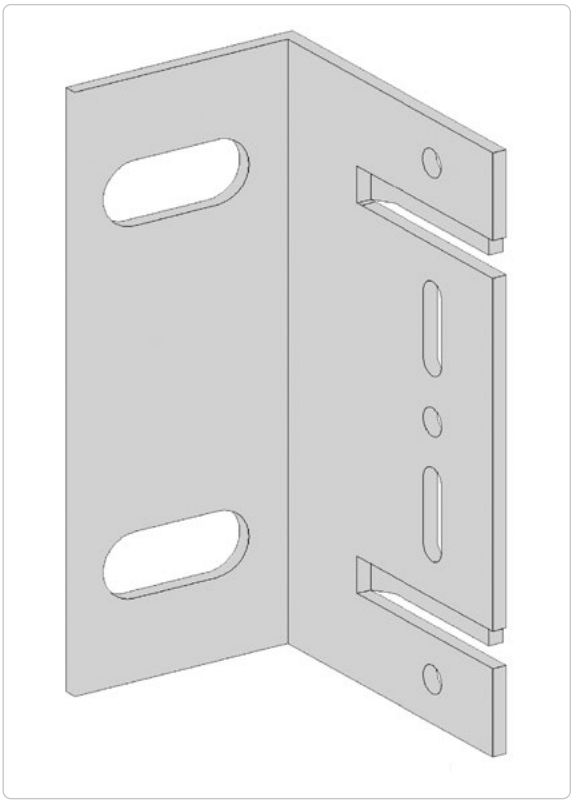


Cross Section





Plan

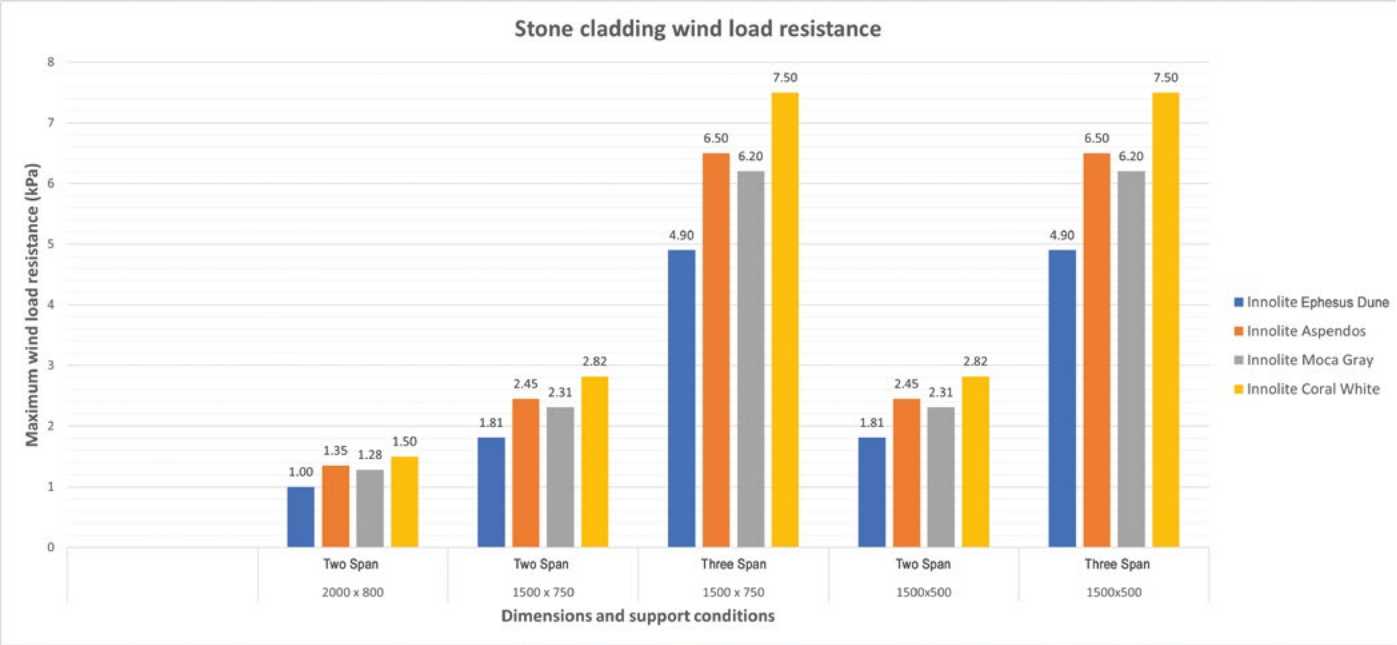


Perspective

BR-01

*Please refer to the tables below for **bracket** and thickness information.*

Stone Cladding Size and Model Selection Chart



After the back structure installation element is selected according to the tables above, the resistance and selection of the stone size and model based on the determined wind loads will be done using this table. The Wind Loads are indicated again on the left above, and the explanation of the notes indicated in the bottom row is as follows:

Two spans 2000x800:
In this method, Vertical Carrier T-profiles (in the horizontal direction) with a center-to-center spacing of 1000 mm are used, and the selected stone size is width: 200 cm, height: 80 cm. The graph shows up to which wind load each stone type can be used.

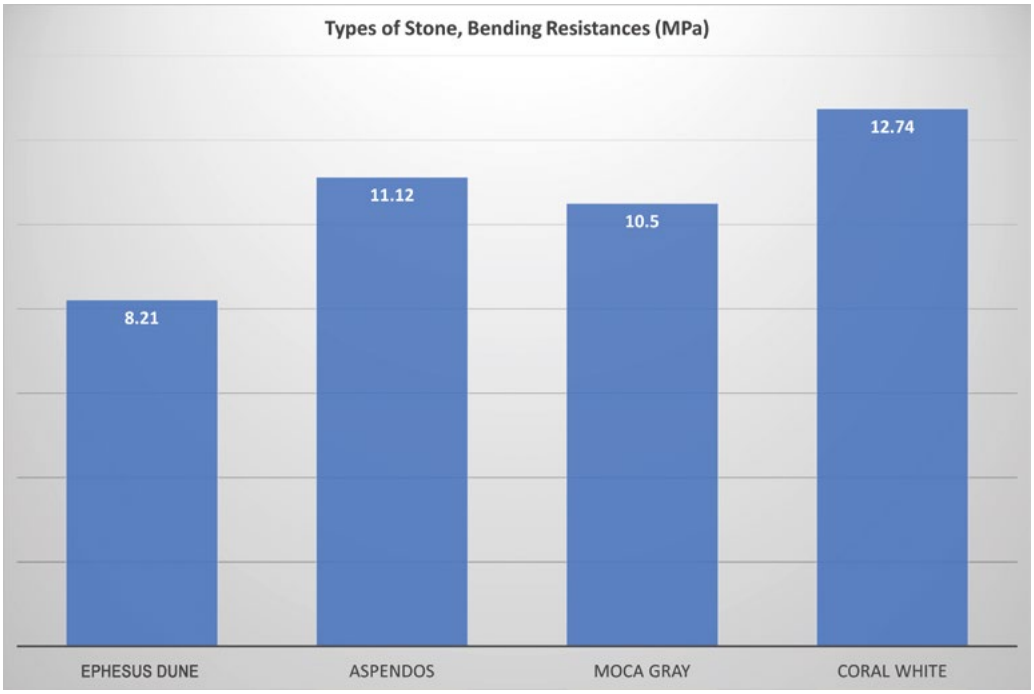
Two spans 1500x750:
In this method, Vertical Carrier T-profiles (in the horizontal direction) with a center-to-center spacing of 750 mm are used, and the selected stone size is width: 150 cm, height: 75 cm. The graph shows up to which wind load each stone type can be used.

Three spans 1500x750:
In this method, Vertical Carrier T-profiles (in the horizontal direction) with a center-to-center spacing of 500 mm are used, and the selected stone size is width: 150 cm, height: 75 cm. The graph shows up to which wind load each stone type can be used.

Two spans 1500x500:
In this method, Vertical Carrier T-profiles (in the horizontal direction) with a center-to-center spacing of 750 mm are used, and the selected stone size is width: 150 cm, height: 50 cm. The graph shows up to which wind load each stone type can be used.

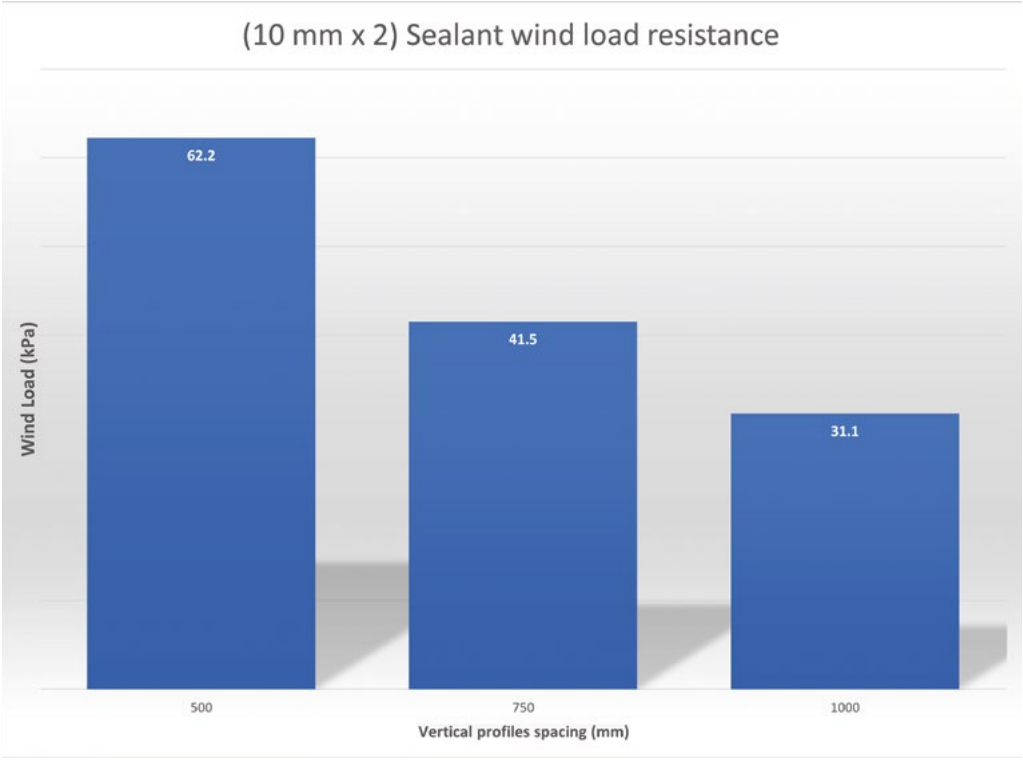
Three spans 1500x500:
In this method, Vertical Carrier T-profiles (in the horizontal direction) with a center-to-center spacing of 500 mm are used, and the selected stone size is width: 150 cm, height: 50 cm. The graph shows up to which wind load each stone type can be used.

Stone Cladding Size and Model Selection Chart



Above, the bending values of 4 types of stone models are given. If a different **INNOLITE** is designed, its bending value will be tested, and selection and evaluation will be made by comparing it with these values. If the resulting value is below which of the above and closest to it, the same results can be considered acceptable.

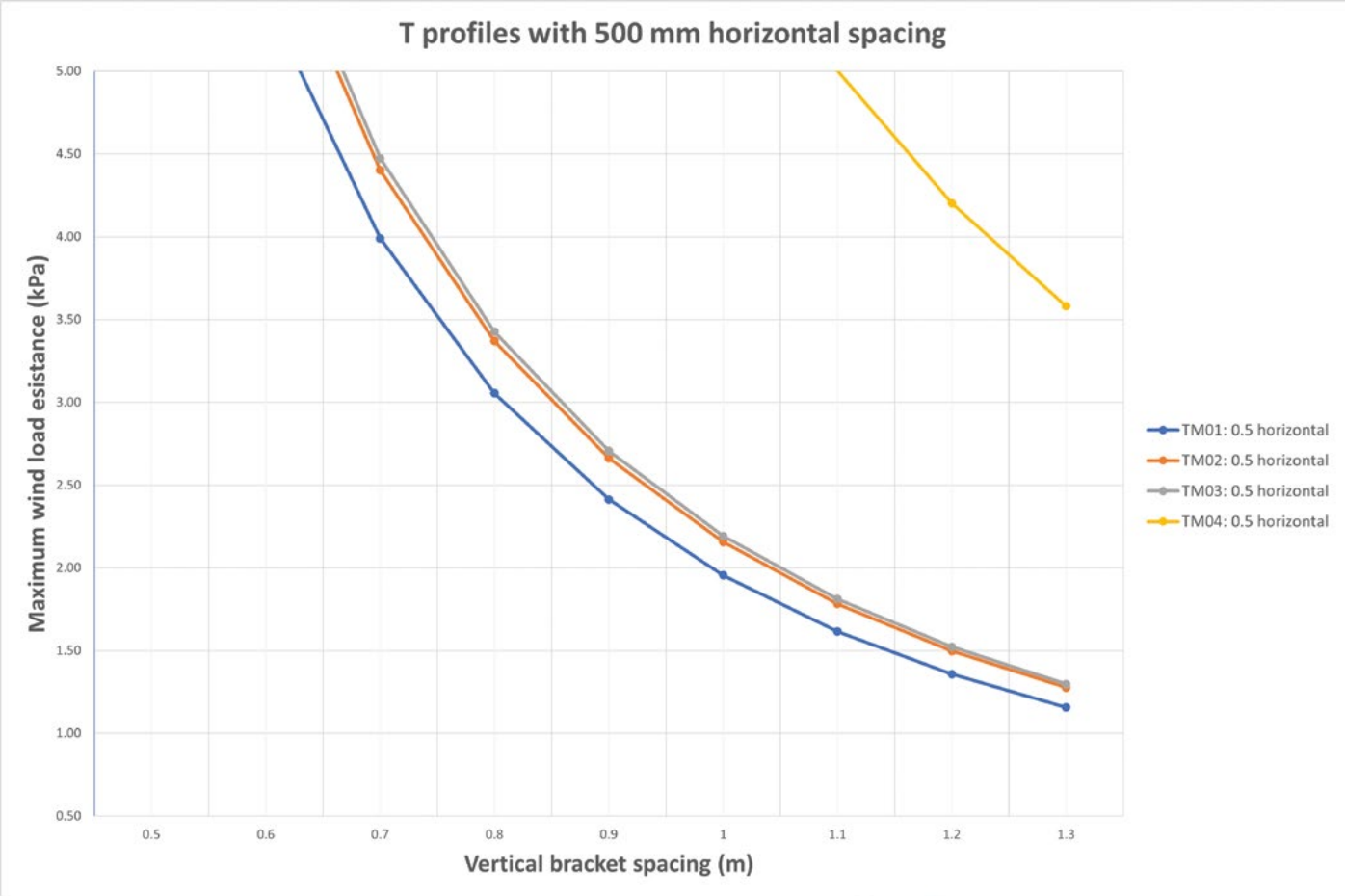
Adhesive (Bonding) Chemical Qualification Chart



The table above shows the calculated results for the application of SikaTack Panel-50 brand silicone adhesive with a 10 mm width to the parts seen in the detail on T-profiles at 3 different horizantal spacing. Accordingly, it is resistant to even unrealistic wind loads of 31 kPa even at the widest span.

However, it is necessary to use the dead load bearing brackets shown in the details.

Carrier System T-Profile Selection Charts



Using the table above, you can determine the selection of the carrier T-profile and the vertical distance between the brackets.

This catalog offers 4 different T-profile options with TM codes. You can identify one of these profiles according to the table above or determine the distance between the brackets based on your chosen T-profile. This table has been prepared based on the option of a 500 mm center-to-center spacing of the vertical T-profiles in the horizontal direction.

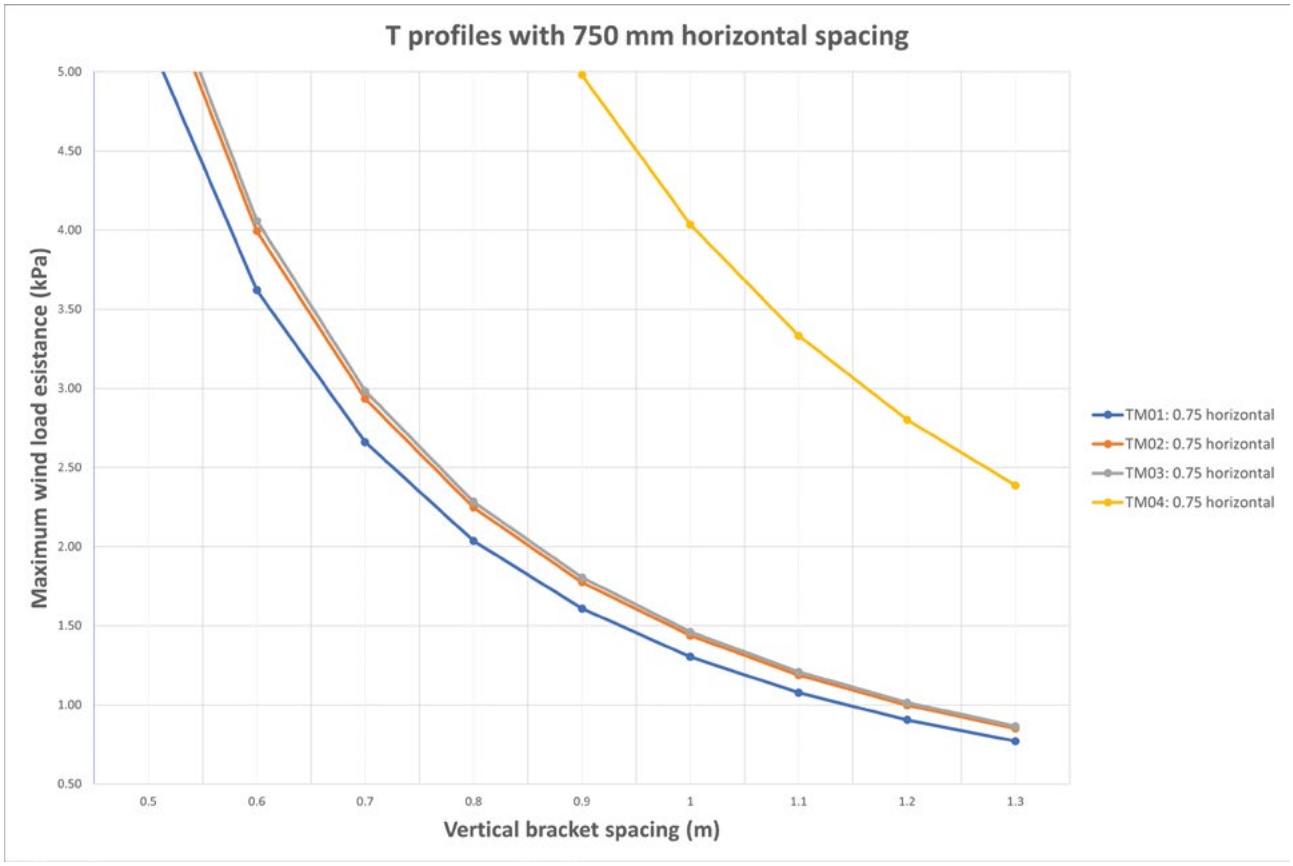
Before using the **INNOLITE** system on the exterior facade, the wind loads acting on the facades in kPa (kN/m^2) should be calculated in accordance with TS EN 1991-1.

The left side of the table shows the wind load, and the bottom shows the bracket spacing (vertical distance from each other). As an example, if the calculated wind load is 2.5 kPa and the bracket spacing height is 90 cm, the intersection point of these two values falls on the TM01 line, so the use of TM02 and TM03 profiles is suitable. Although the TM04 profile is also suitable, it provides much more than needed and may create unnecessary costs.

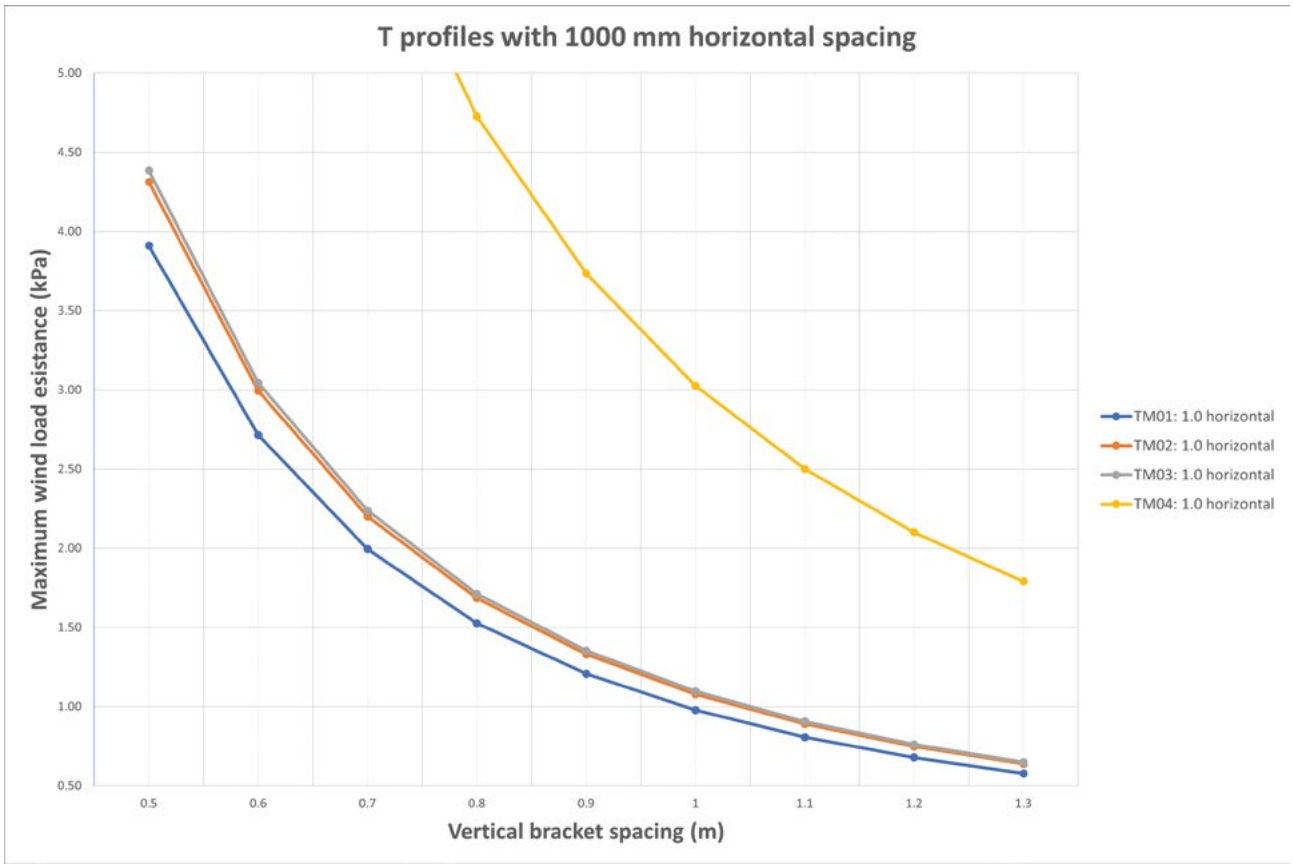
Alternatively, if you have an existing TM01 profile, you can safely apply it by selecting a bracket distance of 85 cm, which will intersect with the 2.5 kPa line but still remain below the blue curve.

(Vertical carrier T-profiles are based on EN AW 6063 Alloy and T6 heat treatment).

Carrier System T-Profile Selection Charts

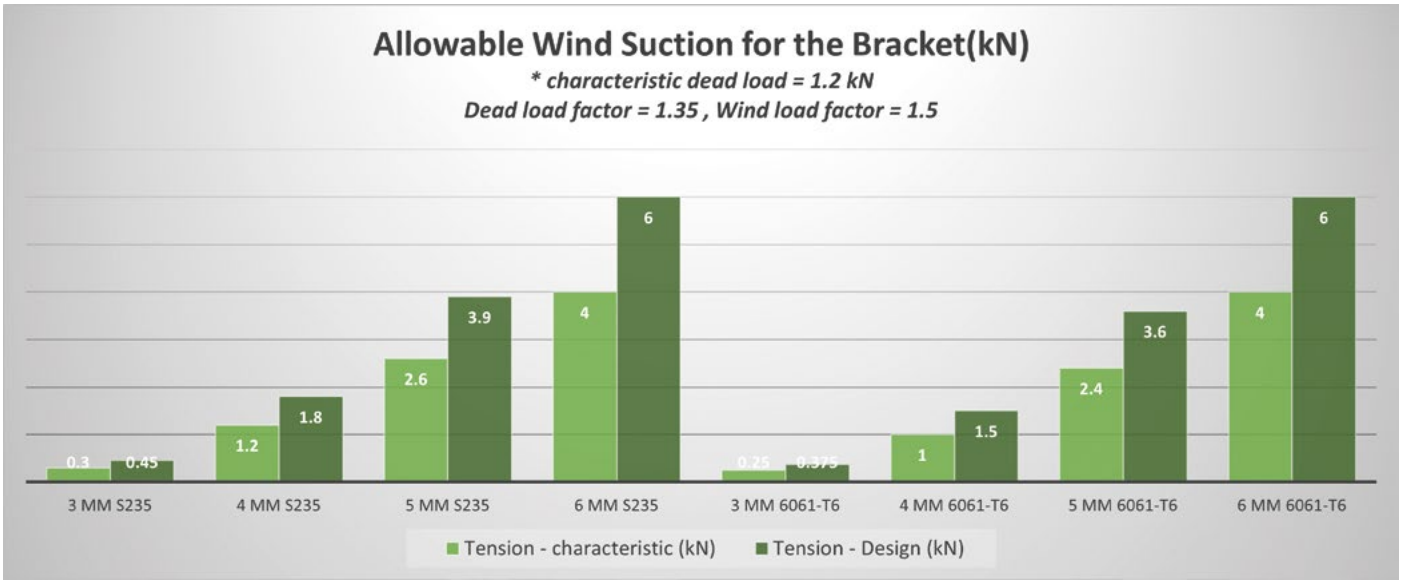


This table can also be used as above; the difference here is that the center-to-center spacing of the vertical profiles in the horizontal direction is 750 mm.



This table can also be used as above; the difference here is that the center-to-center spacing of the vertical profiles in the horizontal direction is 1000 mm.

Bracket Selection Chart



The bracket type shown in the drawing can be used in different thicknesses to select the required bracket wall thickness against wind loads.

The brackets indicated with S235 on the left are S235 grade steel brackets, while those indicated as 6061-T6 on the right are EN AW 6061 alloy T6 heat treatment type aluminum brackets.

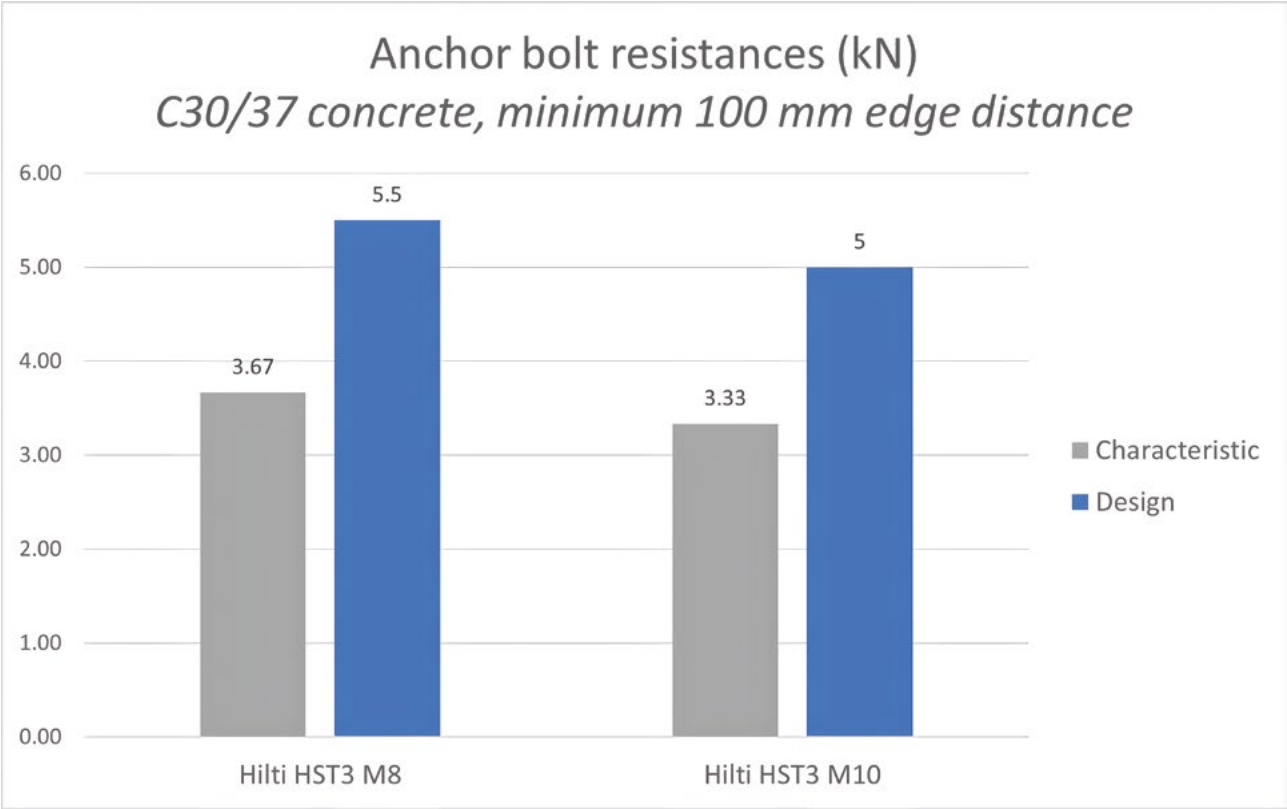
First, the "Characteristic Tensile" value mentioned above will be determined as follows:
Determined Wind Load (in kPa or kN/m2) x horizontal bracket spacing (in meters) x vertical bracket spacing (in meters)

Based on the result, the bracket type and thickness corresponding to the bars shown in light green on the graph (not exceeding the stated number) can be used.

Example:
Wind load: 3.5 kPa
Brackets spaced 90 cm vertically
Brackets spaced 75 cm horizontally
3.5 x 0.9 x 0.75 = 2.36 kN
According to this, 5 mm Aluminum 6061-T6 and 5 mm Steel S235 brackets will be sufficient.

Note: The "Design Loads" shown in dark green above have been created with coefficients determined according to the Eurocode – 1, EN 1991-1-1 and EN 1991-1-8 European Standards. If evaluation and limit values are to be determined according to different Standards and Norms, the characteristic values should be multiplied by the coefficients of the relevant standard.

Dowel Selection Chart

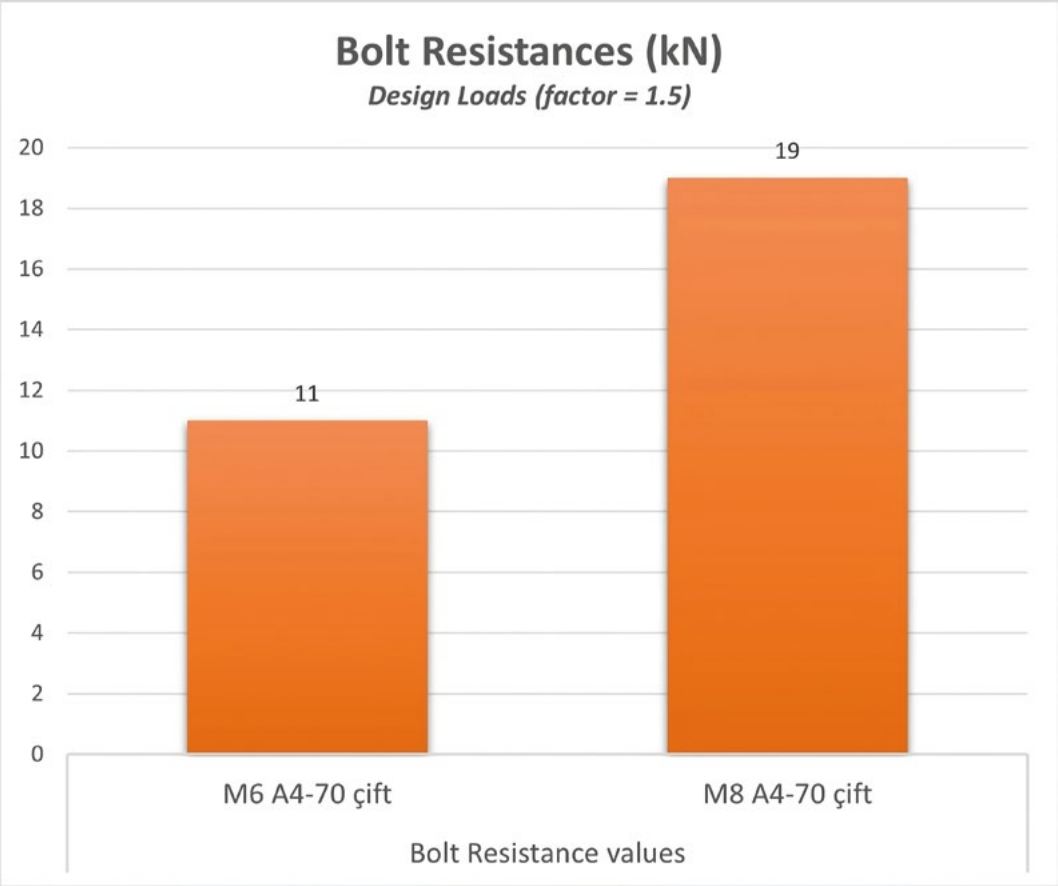


For the table above, the loads per bracket must be calculated by performing the calculation in the bracket selection table.

According to this table, where the calculated load is for a pair of anchors per bracket, one of the aforementioned 8 or 10 mm steel anchor types can be determined by referring to the characteristic load diagram that will not exceed the found load. According to the table above, no anchor should be used closer than 100 mm from a concrete edge. This table has been prepared according to C30/37 concrete quality; different calculations must be made for different types of concrete.

Note: The "Design Loads" shown in blue above have been created with coefficients determined according to the European Norms Eurocode – 1, EN 1991-1-1, and EN 1991-1-8. If evaluations are to be made and limit values are to be found according to different Standards and Norms, the characteristic values should be multiplied by the coefficients of the relevant standard.

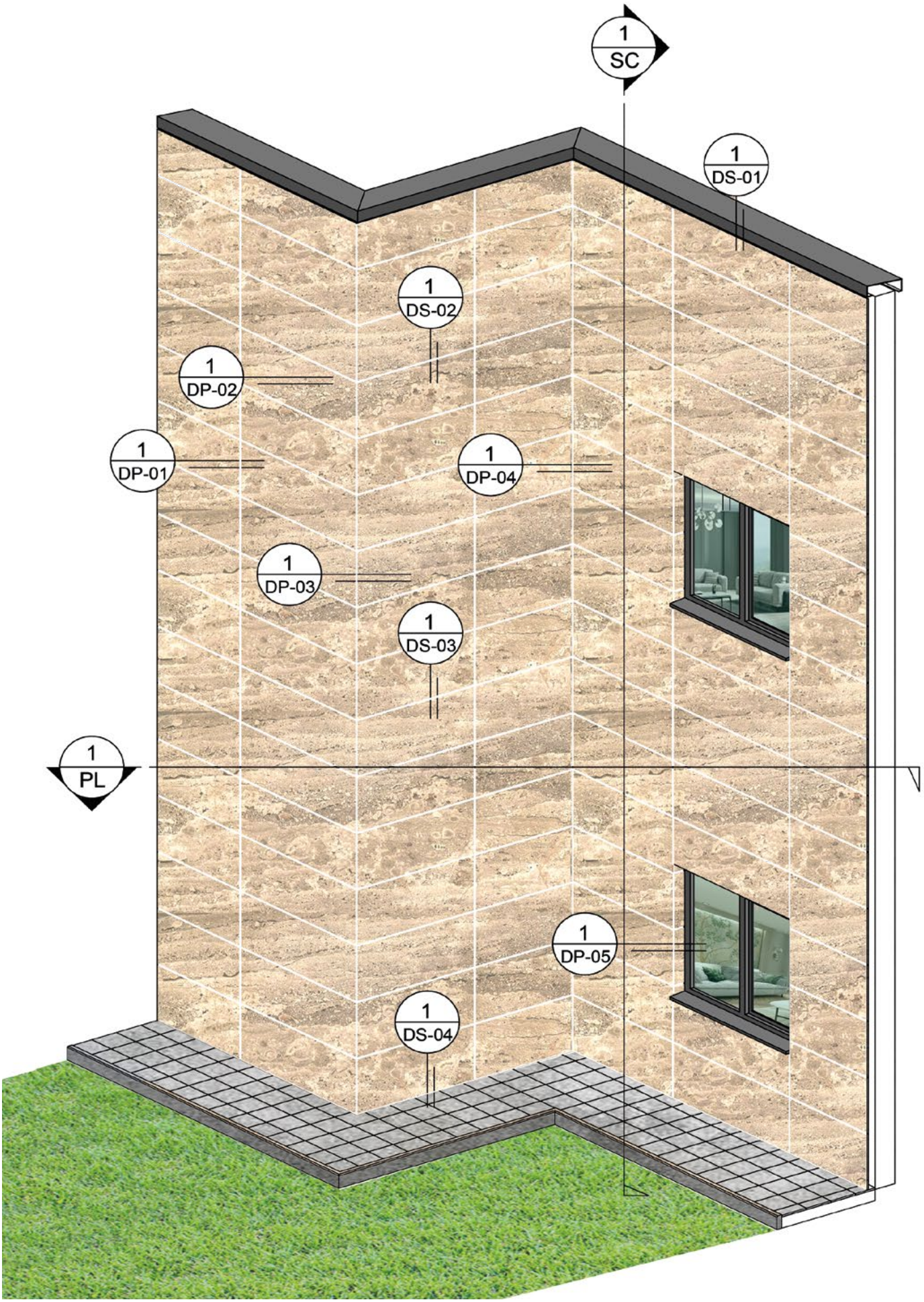
Bolt Selection Chart



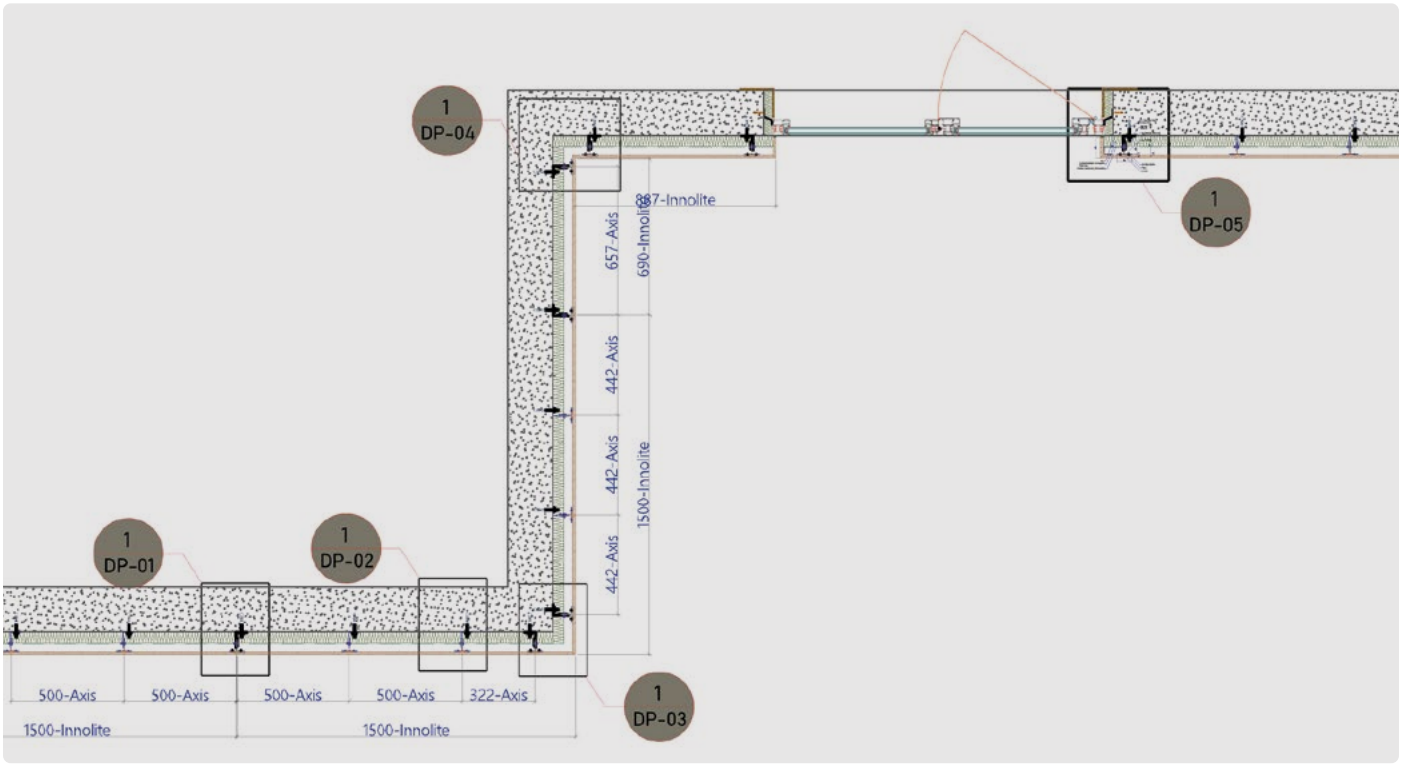
For the table above, the loads per bracket should be calculated by performing the calculations in the bracket selection table. The result should be multiplied by 1.5. According to this table, where the calculated load for a pair of bolts for each bracket is shown, one of the aforementioned 6 or 8 mm A4 stainless steel bolt types can be determined by referring to the load graph that will not exceed the found load.

Note: The table above has been created with coefficients determined according to Eurocode – 1, EN 1991-1-1, and EN 1991-1-8 European Standards. If an evaluation will be made and limit values will be found according to different Standards and Norms, the characteristic values should be calculated according to the relevant standard.

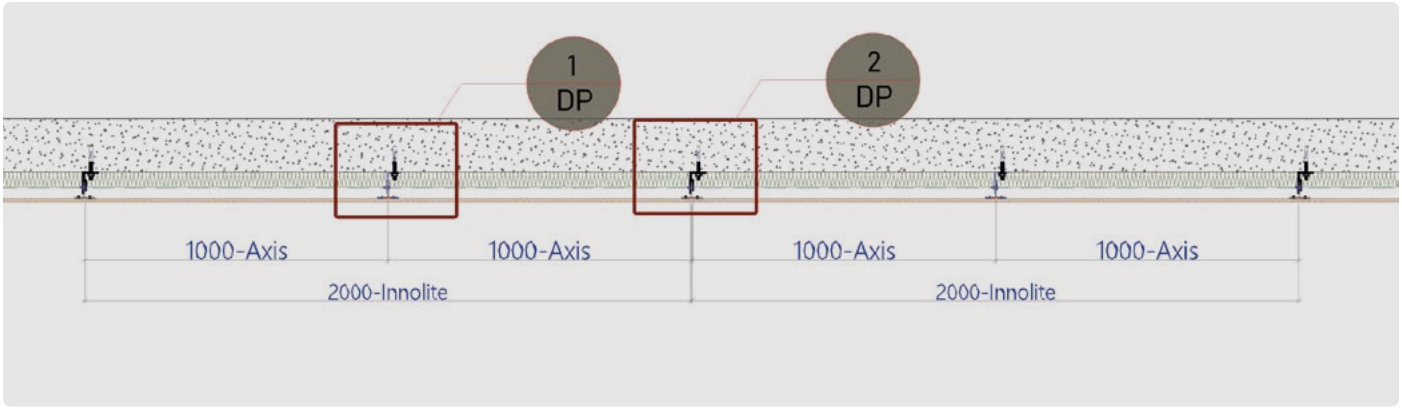
Example Installation Details



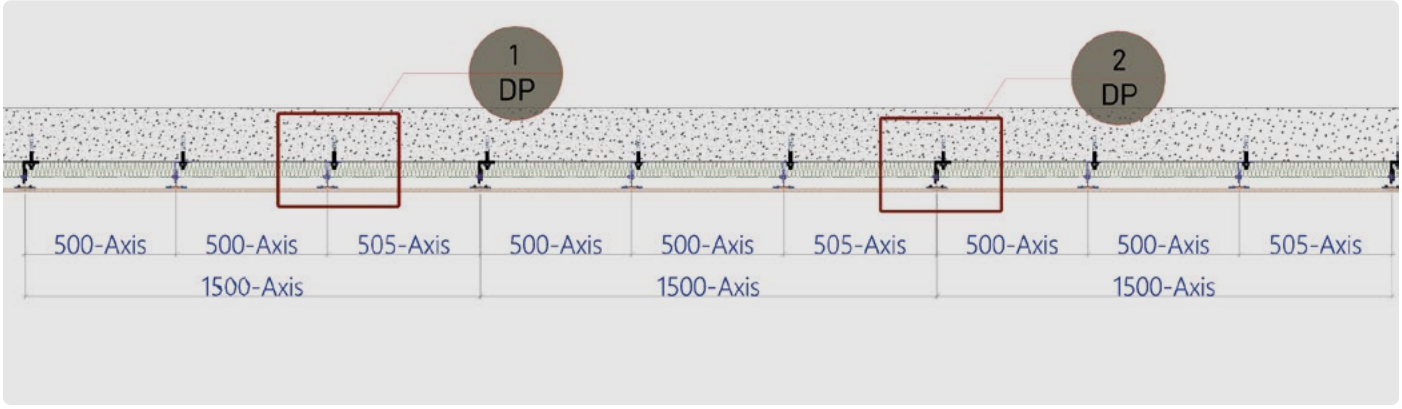
Example Installation Details



PL / 1 - Plan

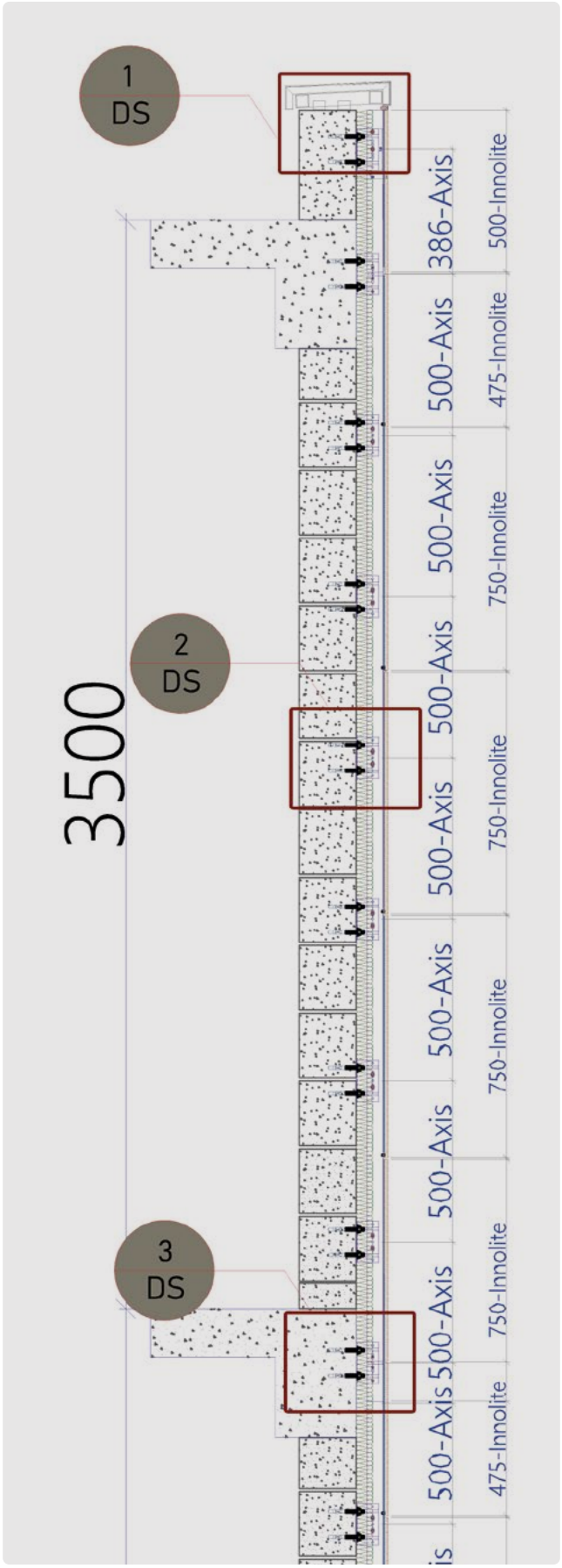


PL / 1 - Alternative Plan 1



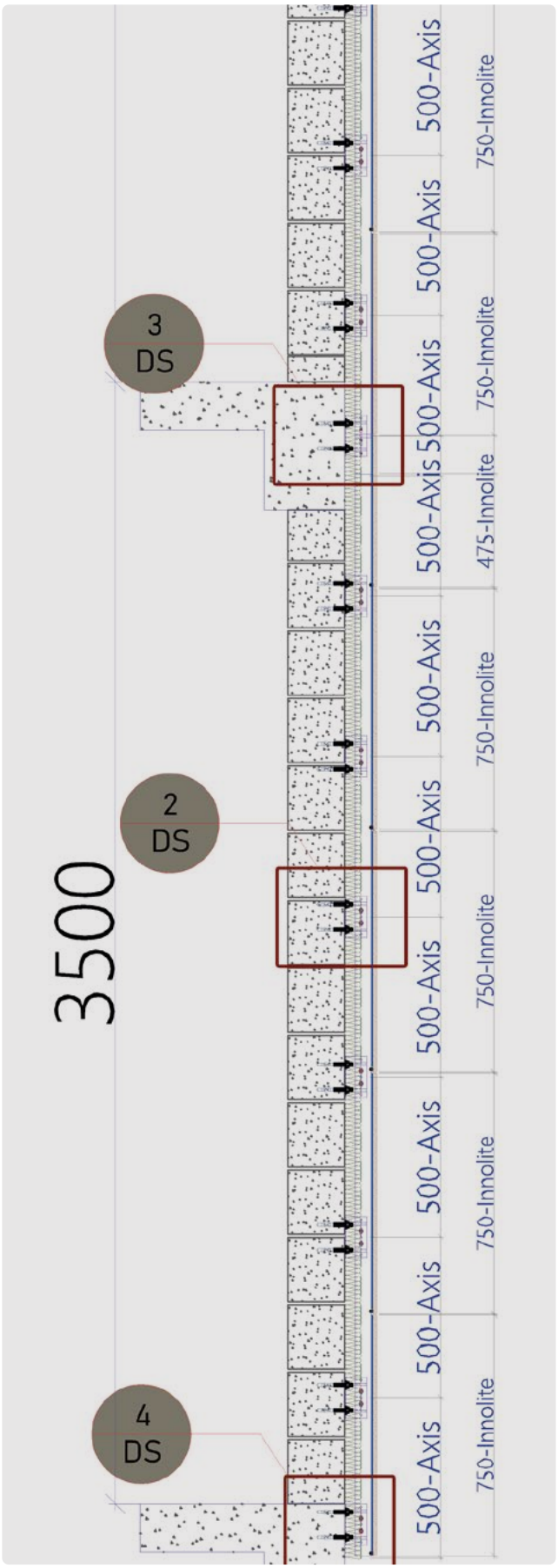
PL / 1 - Alternative Plan 2

Example Installation Details



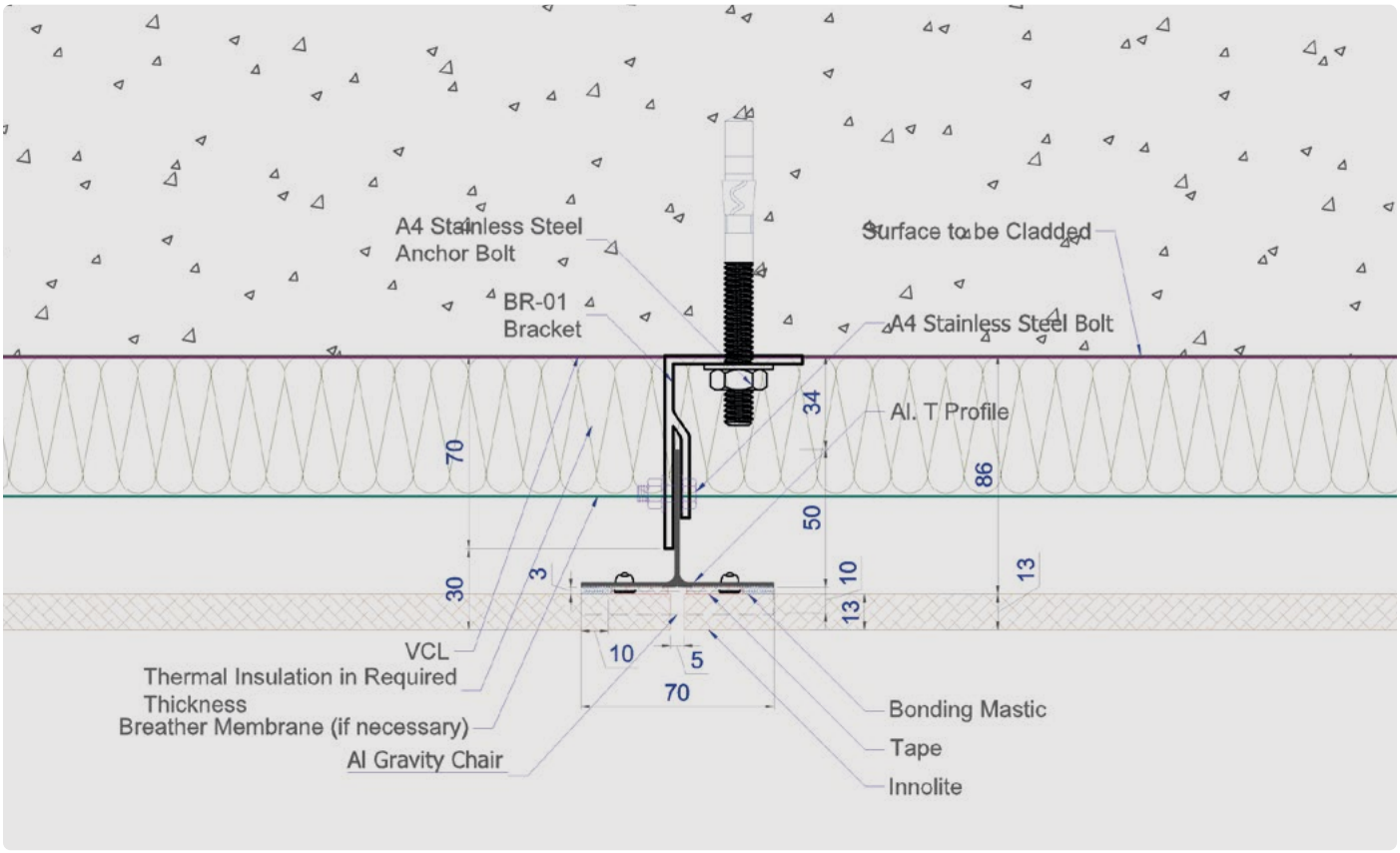
SC / 1

Example Installation Details

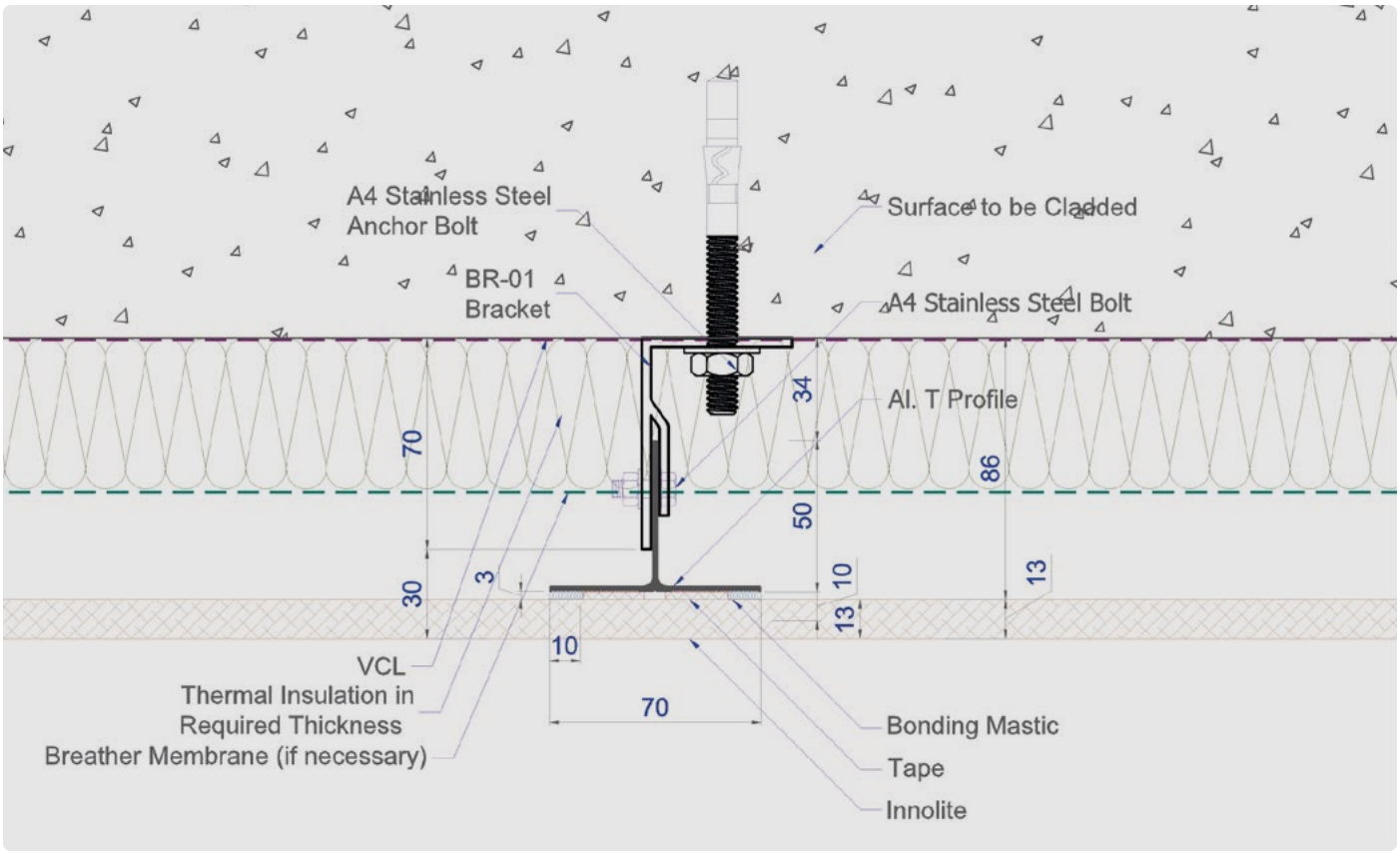


SC / 1

Example Installation Details

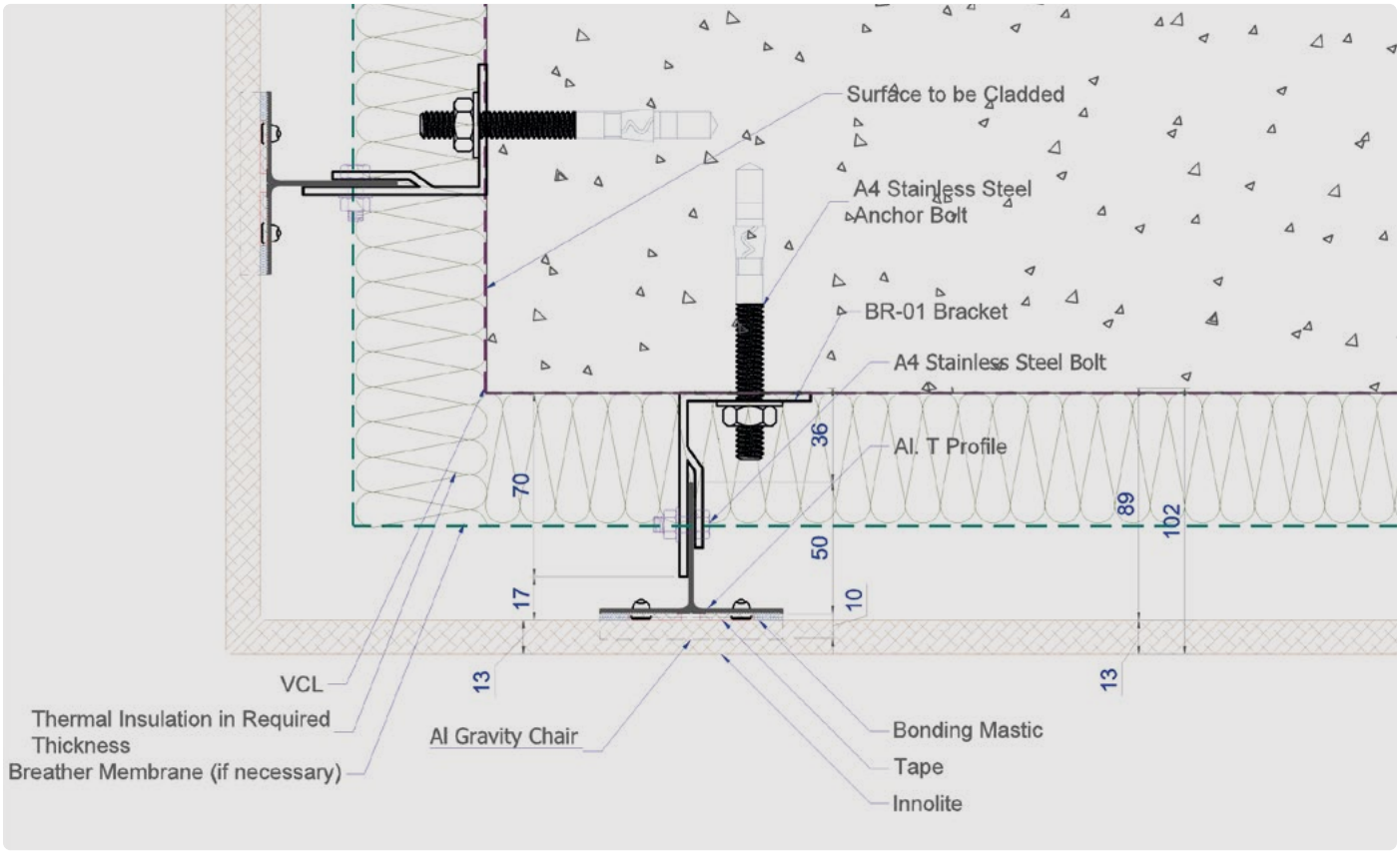


DP / 1

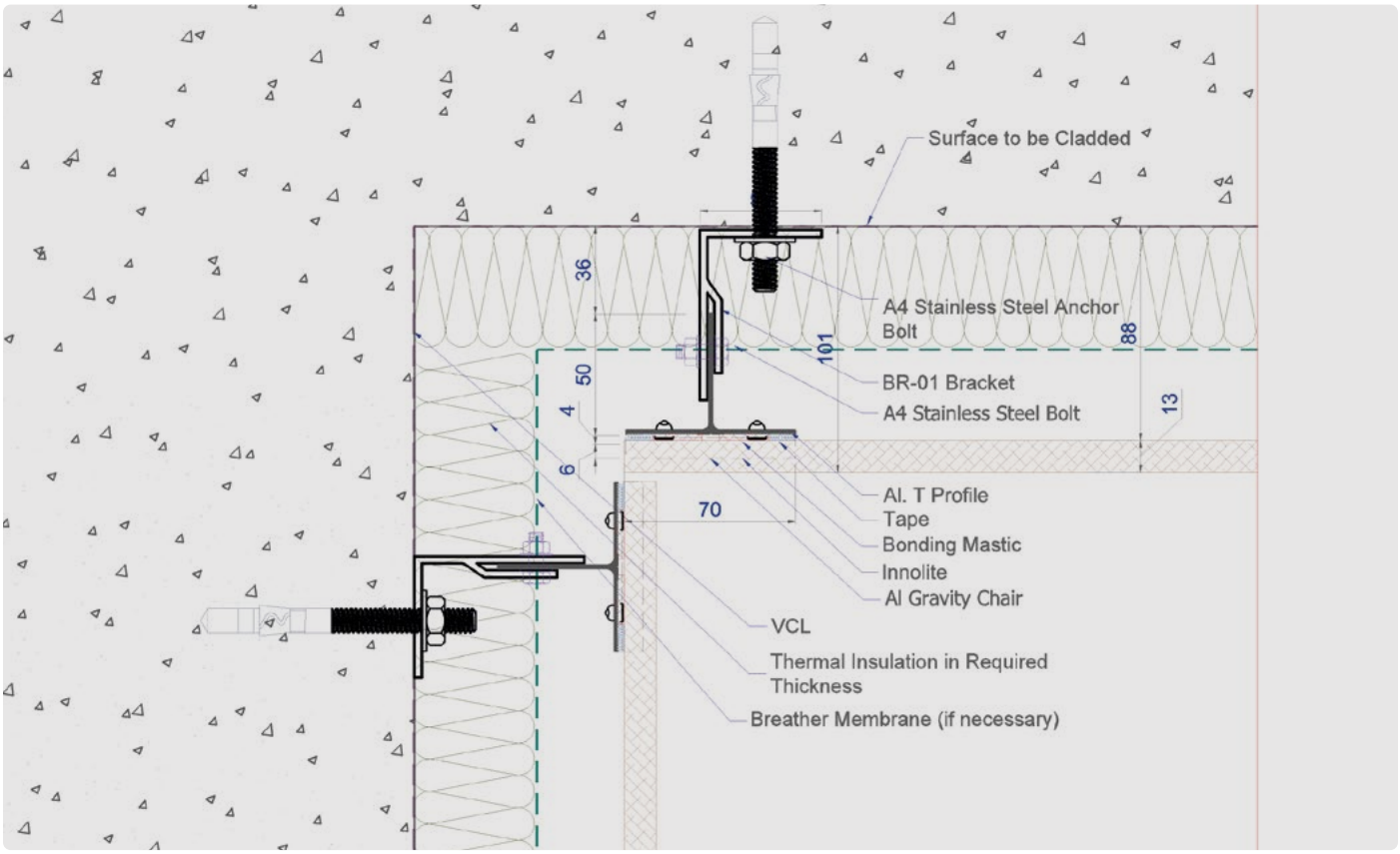


DP / 2

Example Installation Details

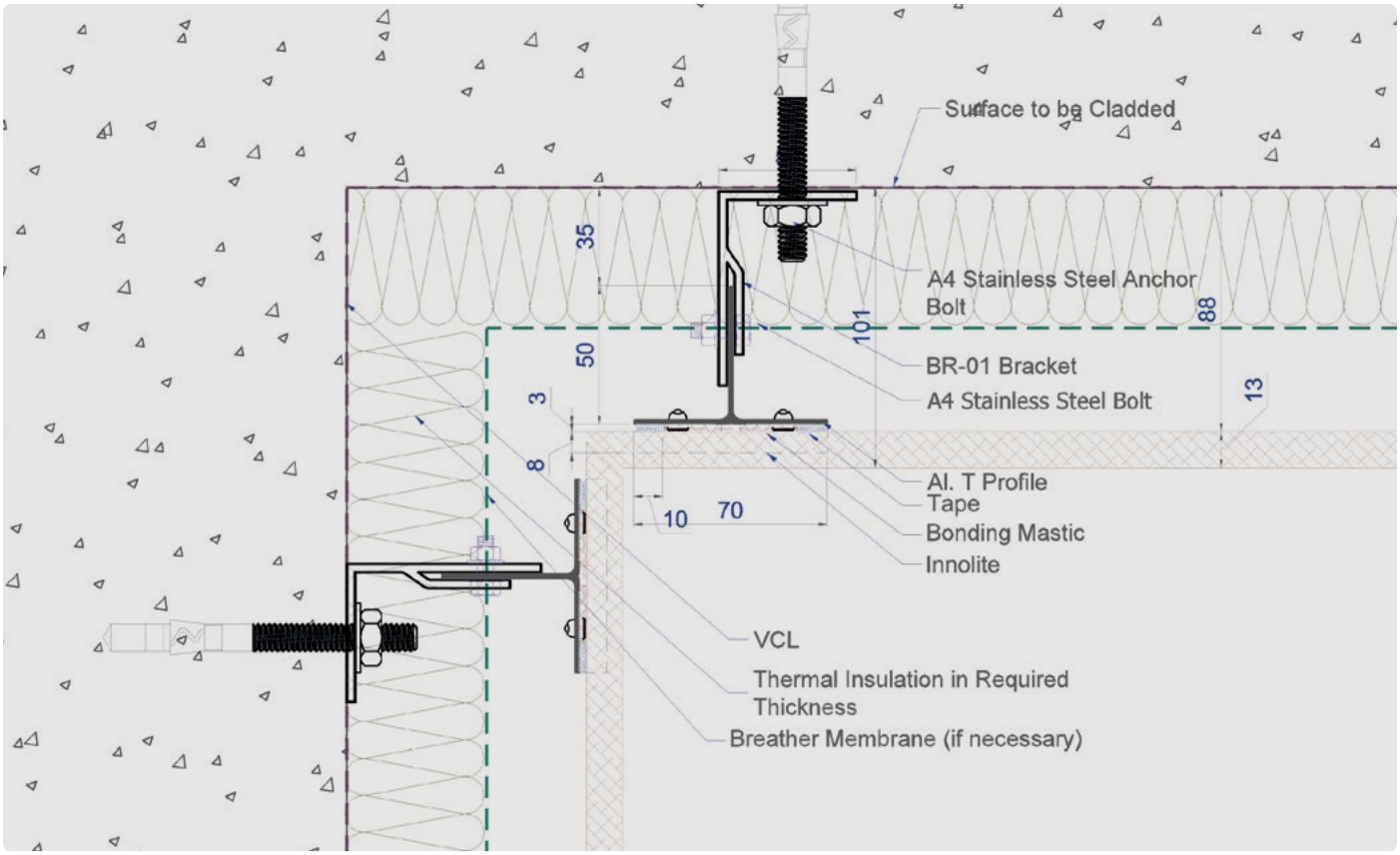


DP / 3

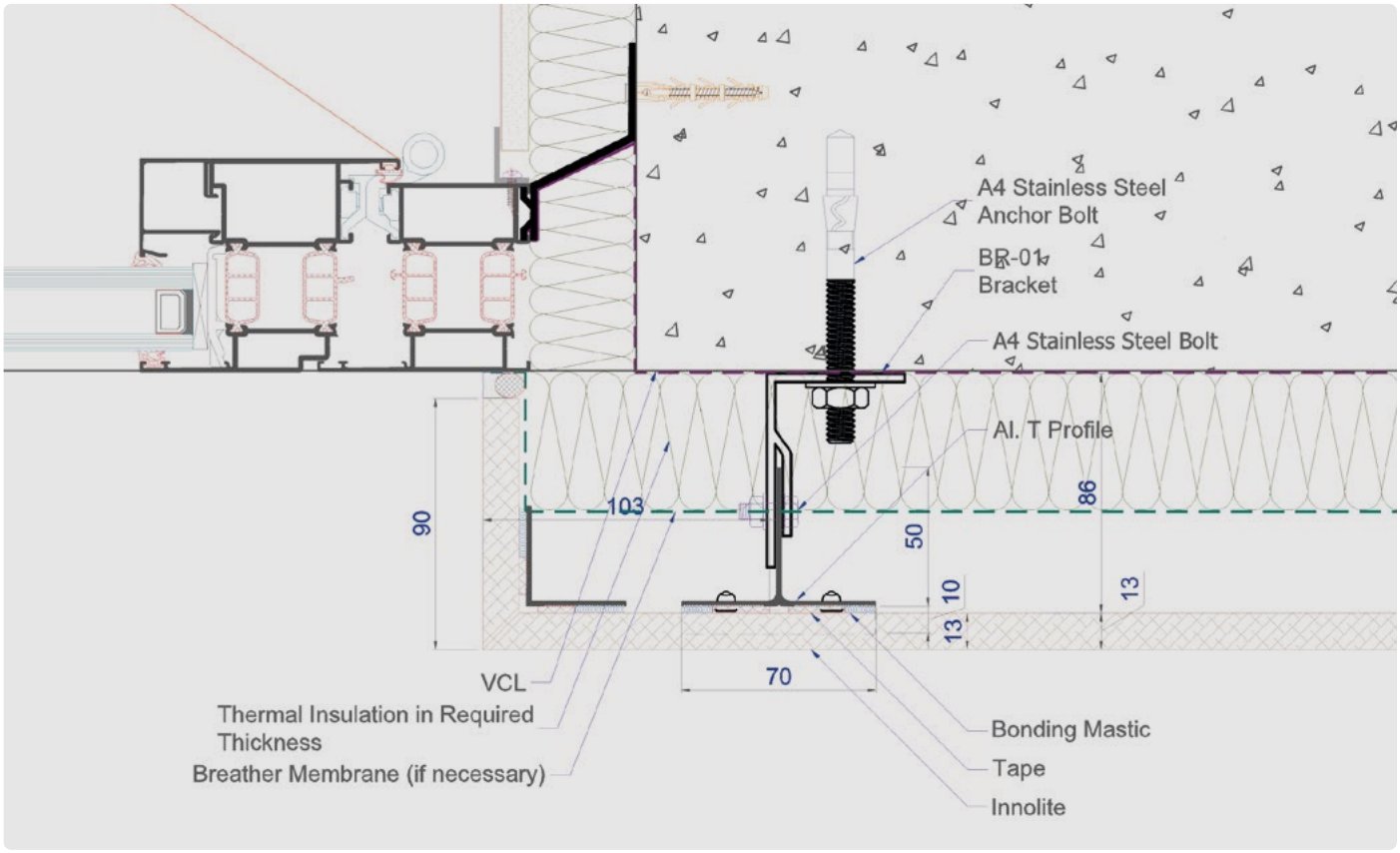


DP / 4

Example Installation Details

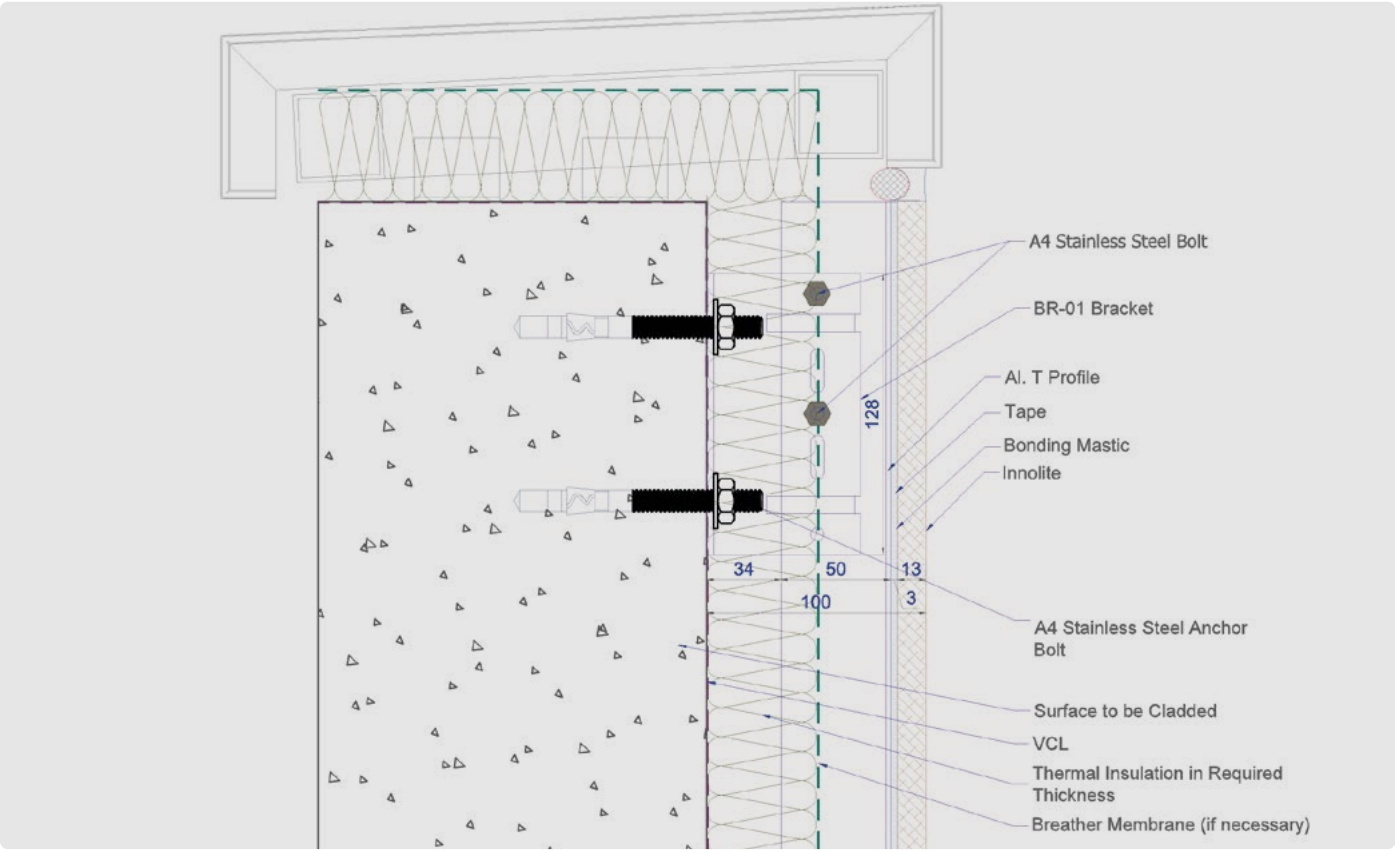


DP / 4 Alternative

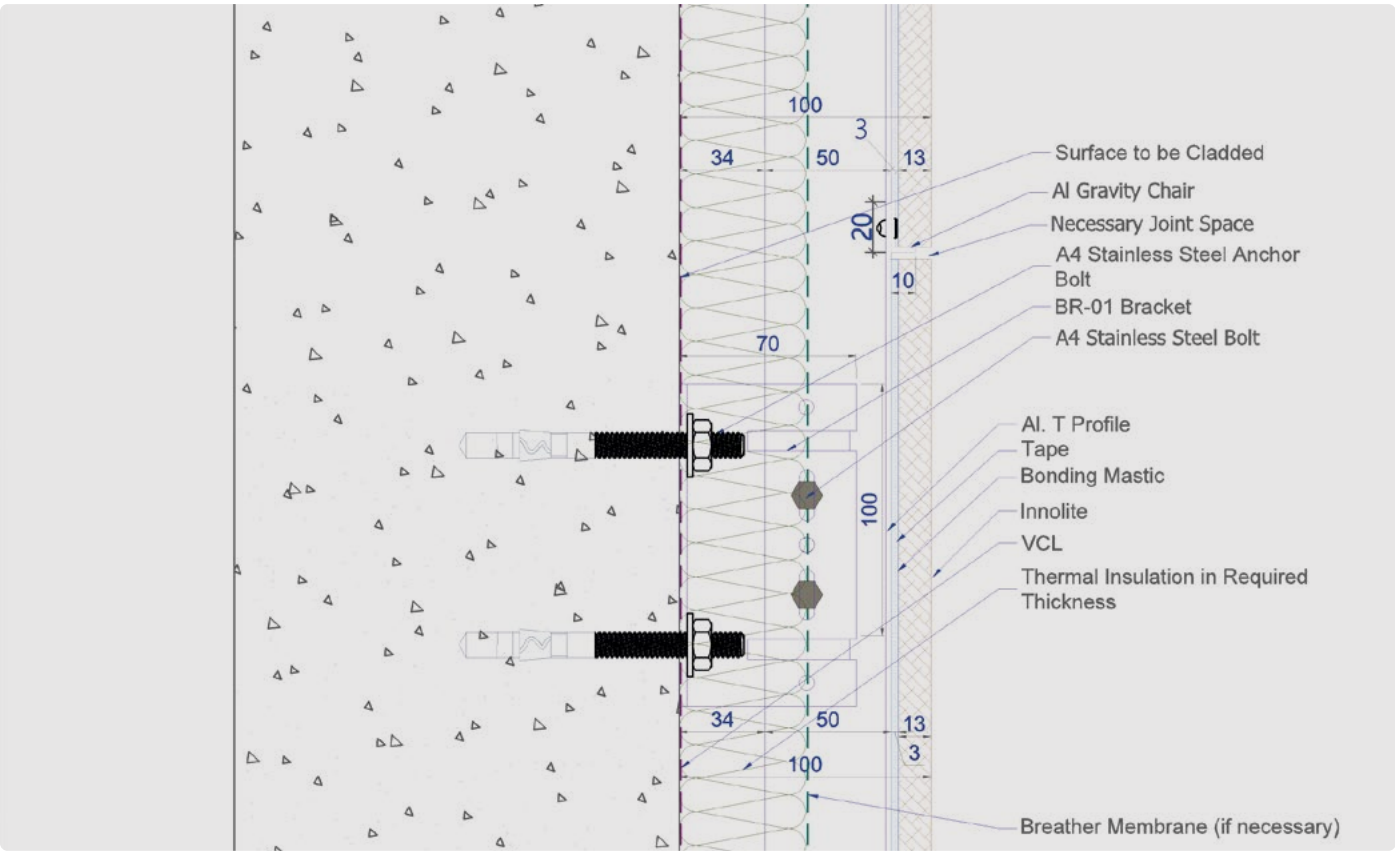


DP / 5

Example Installation Details

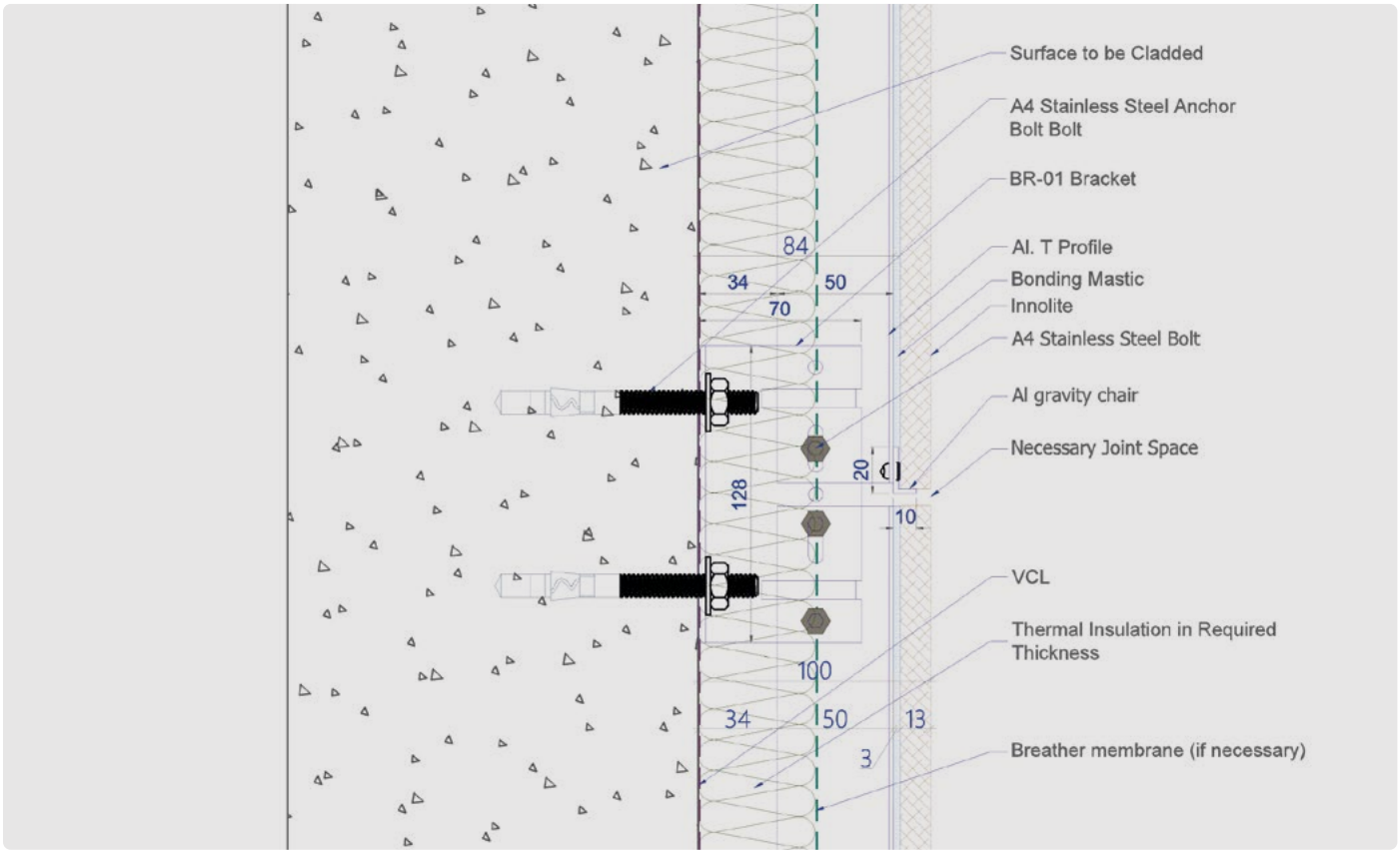


DS / 1

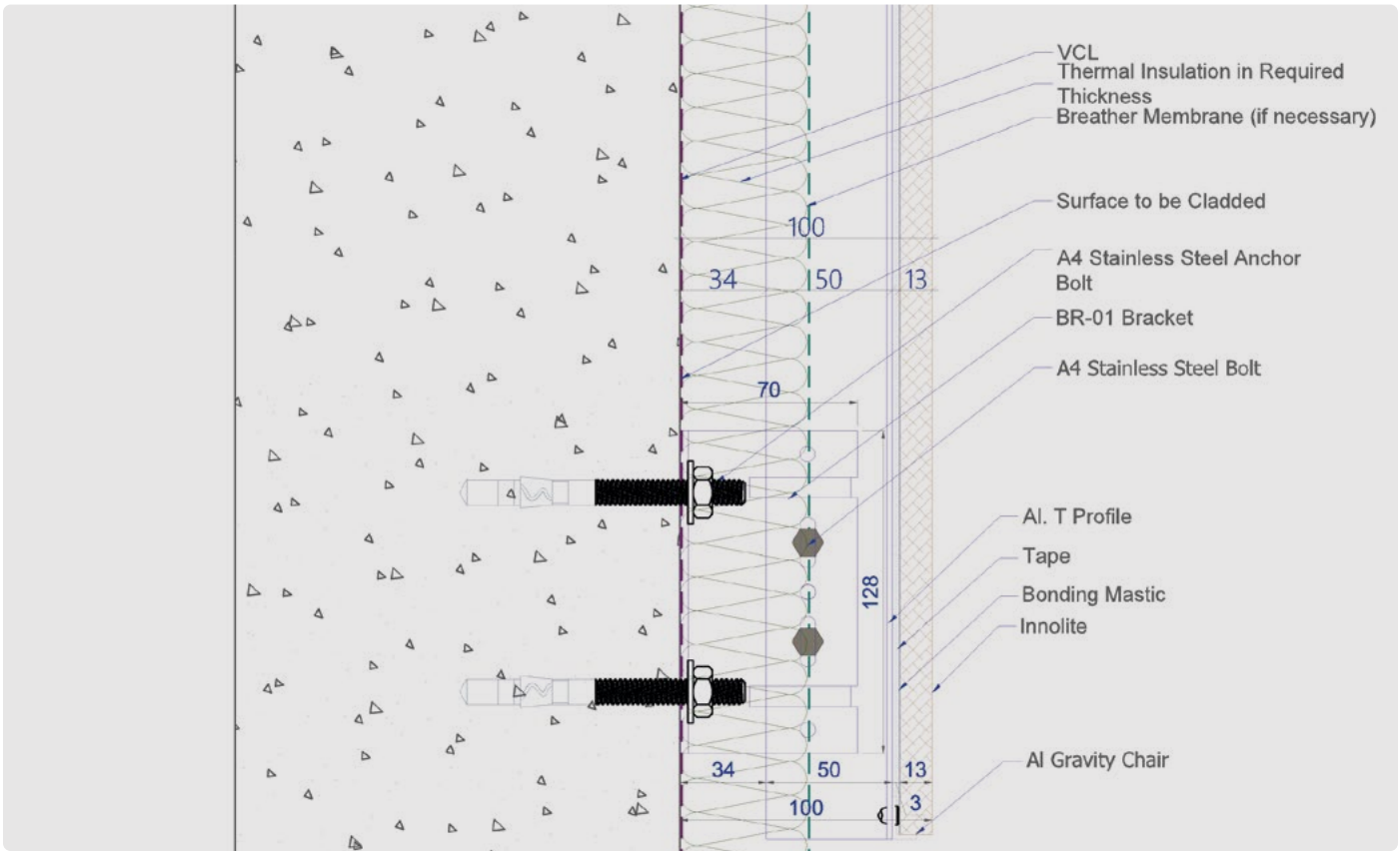


DS / 2

Example Installation Details



DS / 3



DS / 4

Available Colors

DEEP GREEN

CORAL WHITE / *Cross Cut*

ASPENDOS / *Vein Cut*

SILVER TRAVERTINE

MOCA GRAY

EPHESUS DUNE

Surfaces: Polished – Honed – Brushed – Sandblasted – Sandblasted+Brushed

INNOLITE Technical Information

	INNOLITE		Test Standards
Max Panel Dimension (mm)	1800 x 3000		-
Panel Thickness (mm)	12		-
Weight (kg/m^2)	32		-
Performance Properties	Not Flexible		-
Place of Use	Interiors - Bathroom floor & wall - Residential floor & wall - Commercial wall	Exteriors -Facade Applications	-
Finish	Polished / Honed / Brushed / Sandblasted / Sandblasted & Brushed		-
Installation System	Adhesion (Cement / Silicone / Epoxy)		-
Reaction to Fire	A2-s1 , d0		EN13501
Determination of Tensile Adhesion Strength for Adhesive (N/mm^2)	>2.5		EN 12004
Rupture Energy (Joule)	>53		EN 14158
Slip Resistance (Sandblasted)	R13		DIN 51130
Slip Resistance (Sandblasted)	C		DIN 51097
Modulus of Rupture (N/mm^2)	43.71		ISO 10545-4
Breaking Load (N)	4708.9		ISO 10545-4
Breaking Strength (N/mm^2)	4394.4		ISO 10545-4
Impact Resistance	Class 1 - No Damage		ISO 7892
Breaking Strength (N/mm^2)	4394.4		ISO 10545-4
Impact Resistance	Class 1 – No Damage		ISO 7892

TEBAR®
Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

-
T2400032
12-24

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mahallesi Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEST REPORT

Customer Name/Adresse : SİLKAR MADENCİLİK SANAYİ ve TİCARET A.Ş.
2. Organize Sanayi Bölgesi / BİLECİK

Order No : İ2400139

Specimen No : N2400272, N2400273

Name and identity of test item : Reaction resin ceramic adhesive

The date of receipt of test item : 05.11.2024

The date of acceptance of test item : 05.11.2024

Remarks : Test sample sent by the client to the laboratory and determination of initial tensile adhesion strenght properties is tested according to EN 12004-2

Date of Test : 12.11-11-12.2024

Number of pages of the Report : 1/5

The test and/or measurement results,the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Seal	Date	Person in charge of test / Head of Testing Laboratory	Approval/ Technical Regulatory Officer
Test Belgelendirme Araştırma ve Geliştirme Tic. A.Ş. TEBAR	18.12.2024	KEMAL ÇATKIN — Dijital olarak imzalayan KEMAL ÇATKIN Tarih: 2024.12.18 15:03:31 +03'00'	TİMUR DİZ — Digitally signed by TİMUR DİZ Date: 2024.12.18 16:32:59 +03'00'

This report is signed with electronic signature under the electronic signature law numbered 5070. You can contact TEBAR to verify the report.

The result shown in this test report refer only to the sample(s) tested unless otherwise stated. The result shown in this report refers applied to the sample as were received. This test report does not involve evaluation of conformity on the tested product according to Construction Products Directive and should not be considered as initial type testing report or its parts. This report shall not be reproduced other than in full except with the permission of the laboratory. Testing reports without signature and seal are not valid.

FR.060/06/31.01.2024

TEBAR®
Test Belgelendirme Araştırma ve Geliştirme Ticaret A.Ş.

-
T2400032
12-24

TEBAR TEST BELGELENDİRME ARAŞTIRMA ve GELİŞTİRME TİC. A.Ş.
Adres: Şerifali Mahallesi Hendem Caddesi No:58 Y.Dudullu 34775 Ümraniye/İSTANBUL

TEST REPORT

f-) Test Results: The test results obtained for the product, whose information is given above, are given in the table below.

Test Sample	Initial		After Heat Ageing		After Freeze-thaw Cycle	
	Tensile Adhesion Strenght N/mm²	Separation Type	Tensile Adhesion Strenght N/mm²	Separation Type	Tensile Adhesion Strenght N/mm²	Separation Type
1	0,9	CF-T	1,5	AF-T	1,1	AF-T
2	0,9	CF-T	1,4	AF-T	1,1	AF-T
3	1,0	CF-T	1,4	AF-T	1,0	AF-T
4	1,0	CF-T	1,4	AF-T	1,1	AF-T
5	1,0	CF-T	1,5	AF-T	1,2	AF-T
6	1,0	CF-T	1,5	AF-T	1,1	AF-T
7	•	CF-T	1,4	AF-T	1,0	AF-T
8	0,9	CF-T	1,3	AF-T	1,1	AF-T
9	0,9	CF-T	1,3	AF-T	0,9	AF-T
10	1,0	CF-T	1,4	AF-T	1,1	AF-T
Average	**1,0**	-	**1,4**	-	**1,1**	-
U	±0,05	-	±0,09	-	±0,06	-

•: This value is not included in the average because it falls outside ±20% of the average value.
U: Measurement uncertainty (approximately k=2 and 95% Confidence Interval)

Figure 1: Test Sample

TİMUR DİZ Digitally signed by TİMUR DİZ Date: 2024.12.18 16:33:31 +03'00'

INSPECTION REPORT

TR12323498

09.05.2025

EUROLAB LABORATUVAR A.Ş.

EUROLAB Inspection & Testing Laboratory

Report No/ Rapor No :	2025050924-R1
Applicant/Deney Sahibi :	**Silkar Madencilik Sanayi ve Ticaret AŞ**
Applicant Address / Adres :	Hürriyet 2.OSB Mahallesi 8. Cad. No:4/0 Merkez/Bilecik
Contact Person / Yetkili :	Ferdan Susaman
Contact Telephone / Telefon:	0 531 342 86 71
Sample Accepted on / Numune Tarihi :	21.04.2025
Report Date / Rapor Tarihi :	09.05.2025
Total number of pages/Rapor Sayfa :	9 page
Sample ID :	**Innolite Moca Gray (Bitmiş Ürün)** **File** **Doğal Taş (Moca Gray)** **Yapıştırıcı**

	TEST/ INSPECTION	DIRECTIVE	METHOD	RESULT
*	**Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests**	**The General Product Safety Directive (GPSD) (2001/95/EC)**	**EN 13501-1**	**A2-s1-d0**

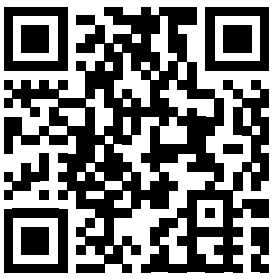
NOTE: This test result replaces the conformity assessment, can be presented to official institutions, and used in products and brochures.
Note: Test result tables have been detailed upon customer request. Report No. 2025050924 published on 09.05.2025 is invalid. Current report number is 2025050924-R1.

Seal

Customer Representative
Merve Nur KIRVELİ

Laboratory Manager
Merve ÖZLÜ

Adress:Mahmutbey Mah. Dilmenler Cad. No :2 Bağcılar İstanbul Türkiye
Contact: www.laboratuvar.com e-mail: info@laboratuvar.com



Silkar Madencilik San. ve Tic. A.S.

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info@silkarstone.com

China • Greece • Türkiye • USA

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