



BUILD WHAT IS DESIGNED

NATURAL STONE FACADE

Designing a High Performance Stone Façade Should Not Be Left to Chance



Problem: Too many trades with questionable ownership. One to put up structure and one to hang stone.

Problem: Vendors offer components not systems. Component suppliers do not know how to engage early, nor conduct value engineering at the beginning.

Problem: Vendors do not take ownership: offer support systems, AND pre-construction services AND post award services.

Problem: Many stone support systems use HSS, which are often not adjustable, thermally inefficient, and difficult to install.

Risk and \$\$\$

AGENDA

01 STONE AS BUILDING MATERIAL

02 CHALLENGES/DESIGN ASSIST

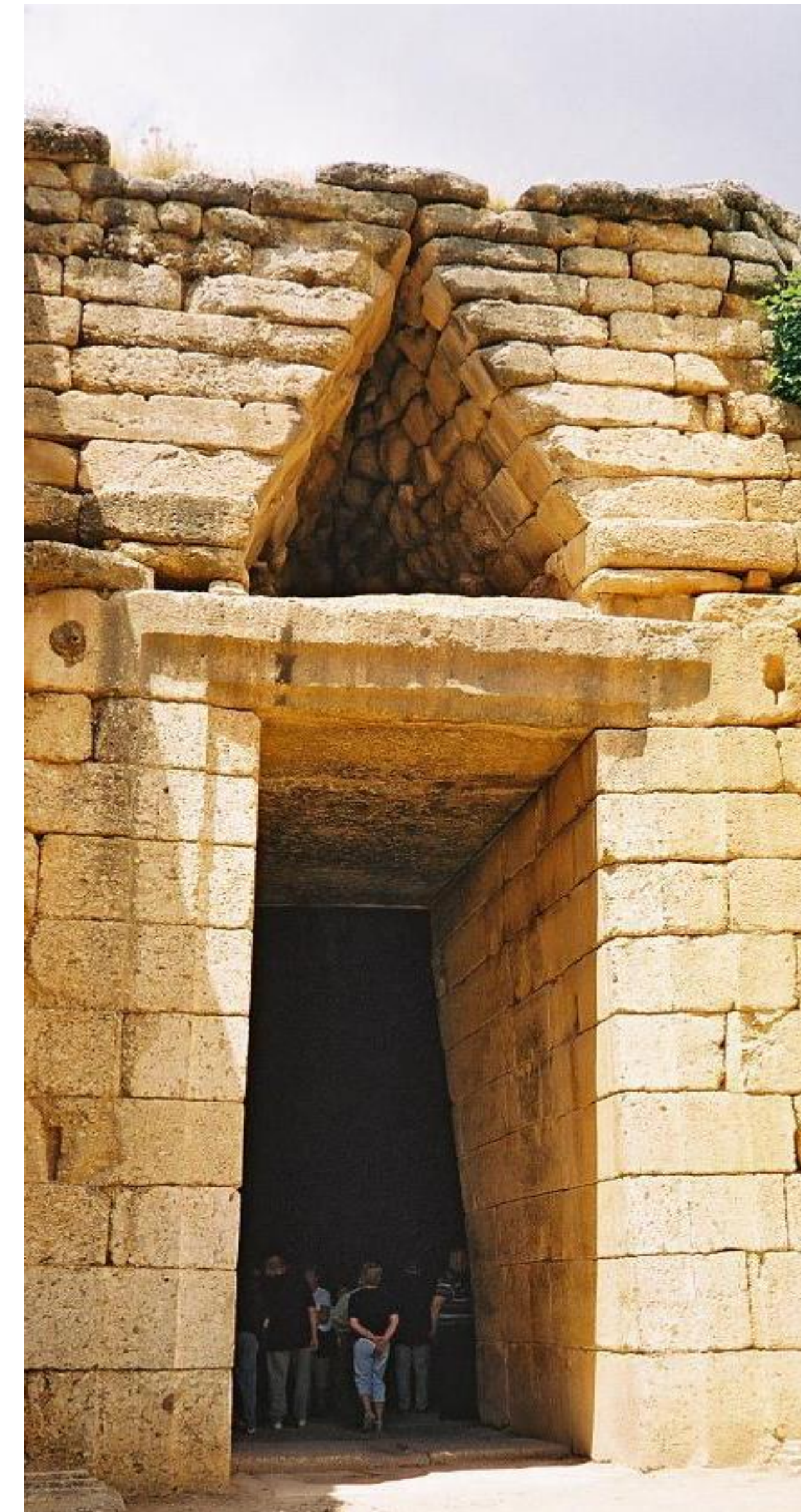
03 ABOUT U-KON SYSTEMS

04 AVAILABLE ASSEMBLIES

05 CASE STUDIES

STONE IS THE OLDEST BUILDING MATERIAL

Stone is the oldest building material. Stone proved own efficiency over the years. We still have buildings 200 years old and more where still living people. Most of the time the stone was used as main structural materials as well as exterior and interior decoration.



STONE AS FACADE

Now days we developed a lot of different composite materials that can be used as a structural component and stone became more decorative materials that with his unique, individual textures and colours can make our building unique and at the same time durable, efficient and beautiful.



TYPE OF THE STONE ASSEMBLIES

1. Dimensional stone



2. Random Ashlar

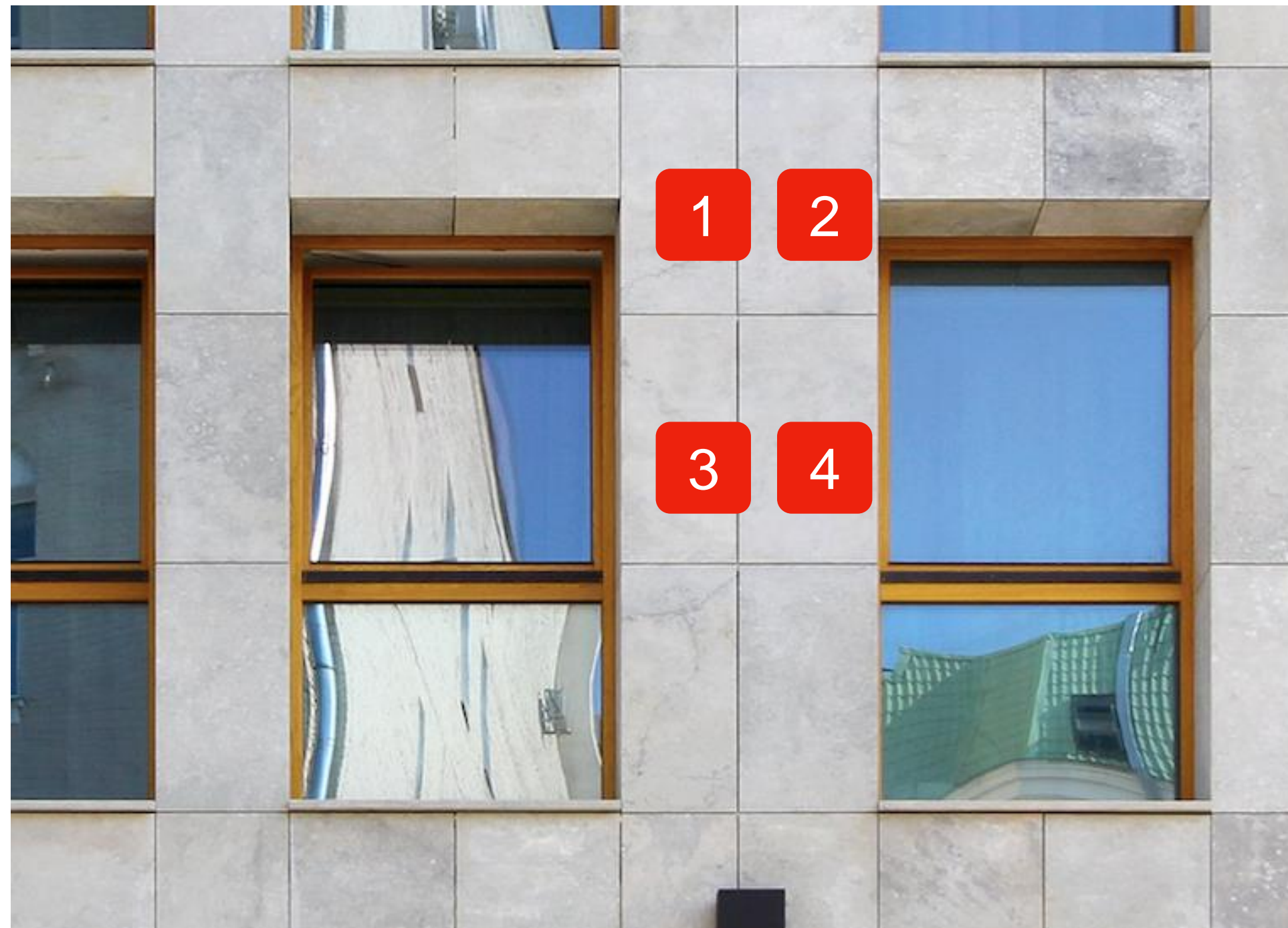
Masonry of ashlar not laid in continuous regular courses, but formed of dressed stones of different heights and widths fitted closely together, otherwise called broken ashlar, random bond, or random range ashlar.



TYPE OF THE STONE ASSEMBLIES

1. Dimensional stone

Custom size cut stone panels. That shaped individually for specific project with additional cuts or predrill holes to attach with different type of the mechanical anchors. Dimensional stone always require shop drawings, cut tickets, structural calculation etc.



Design Considerations

It's Not Easy to design and build a high performance stone facade



SIZE OF THE STONE PANEL

Quarry can not produce a specified size
High waste factor
Difference in color

MECHANICAL PROPERTIES

Specified stone not strong enough to withstand different loads.
It needs to increase a thickness or make a panel smaller

ANCHORING METHODS

The specified anchoring method won't work or
Fabricator/Quarry can not produce a specified stone
panels. The anchors are not available or has wrong
size.

INSTALLATION CHALLENGES

Complexity of installation. Wrong or not strong enough
backup wall for anchoring.

BUILD WHAT IS DESIGNED

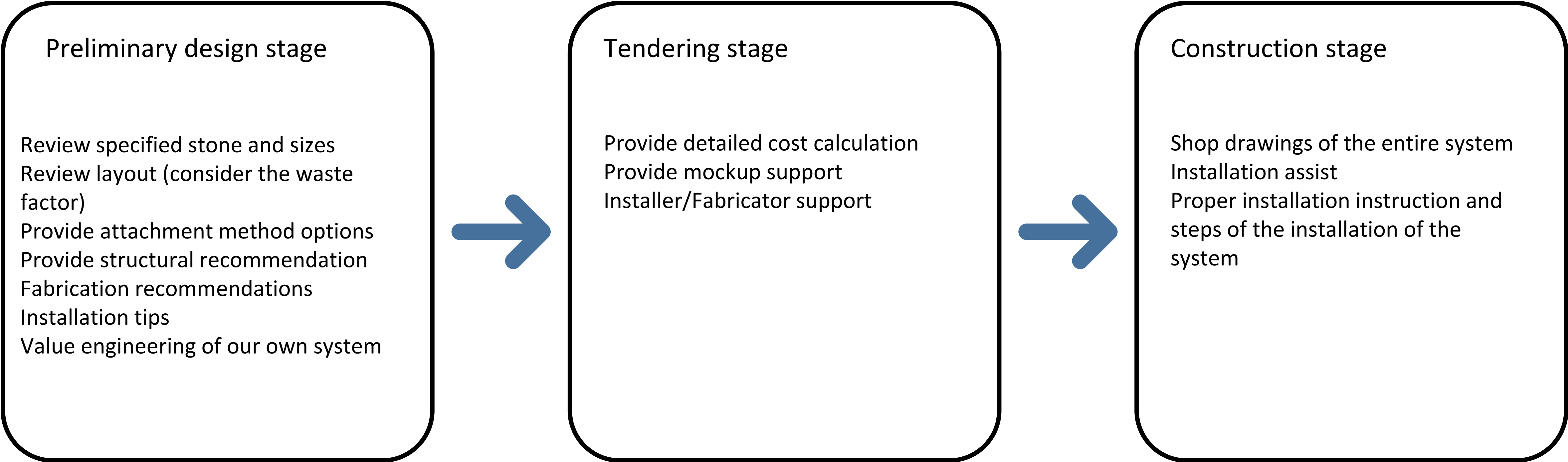
U-kon Systems provide a completely new approach in supply chain of facade materials.

We offering to all our customers a design assist service on all stages especially on a very early stage of the project.

With this approach we can eliminate most of the future problems and make installation more predictable in terms of cost, schedule and appearance.

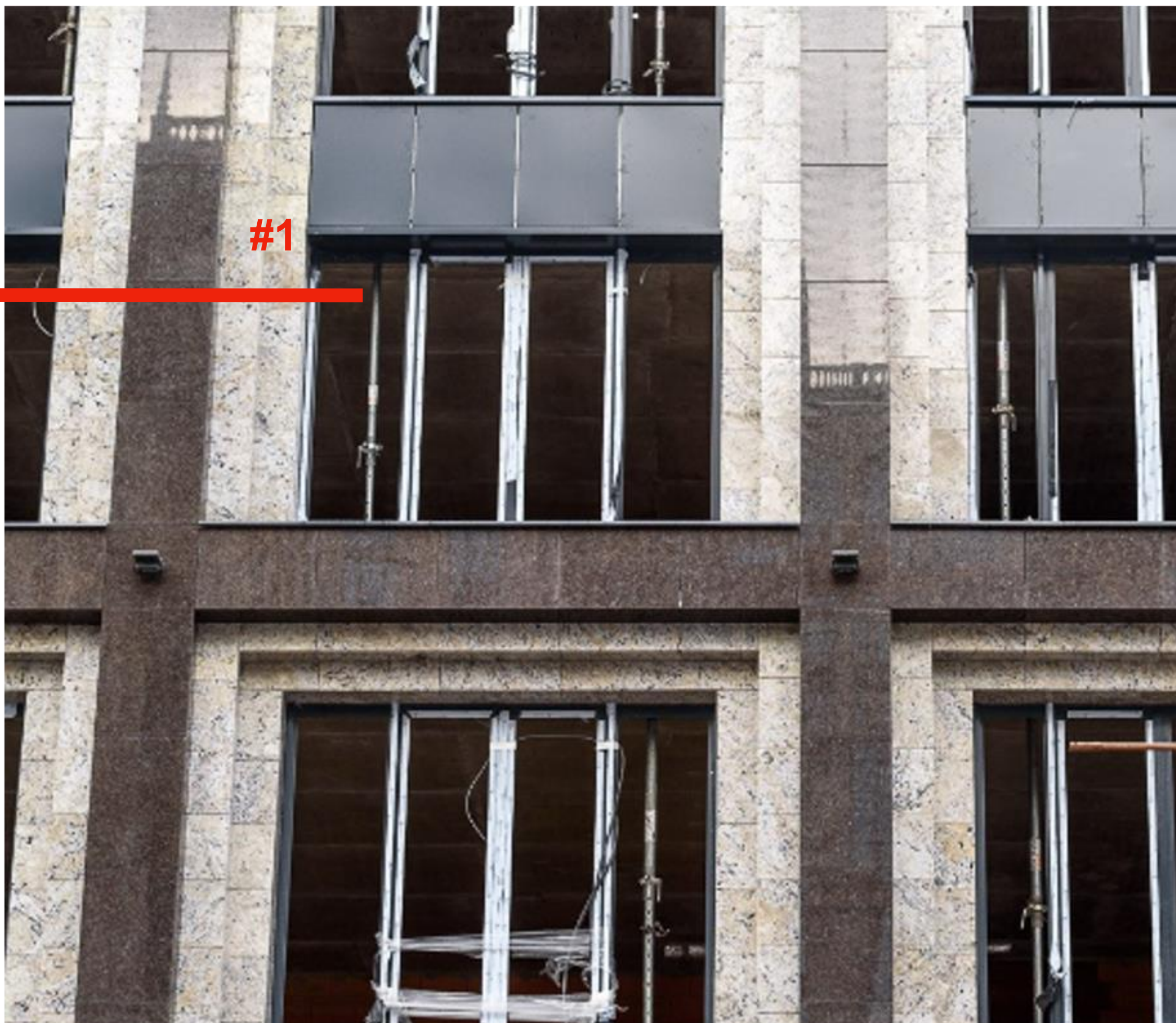
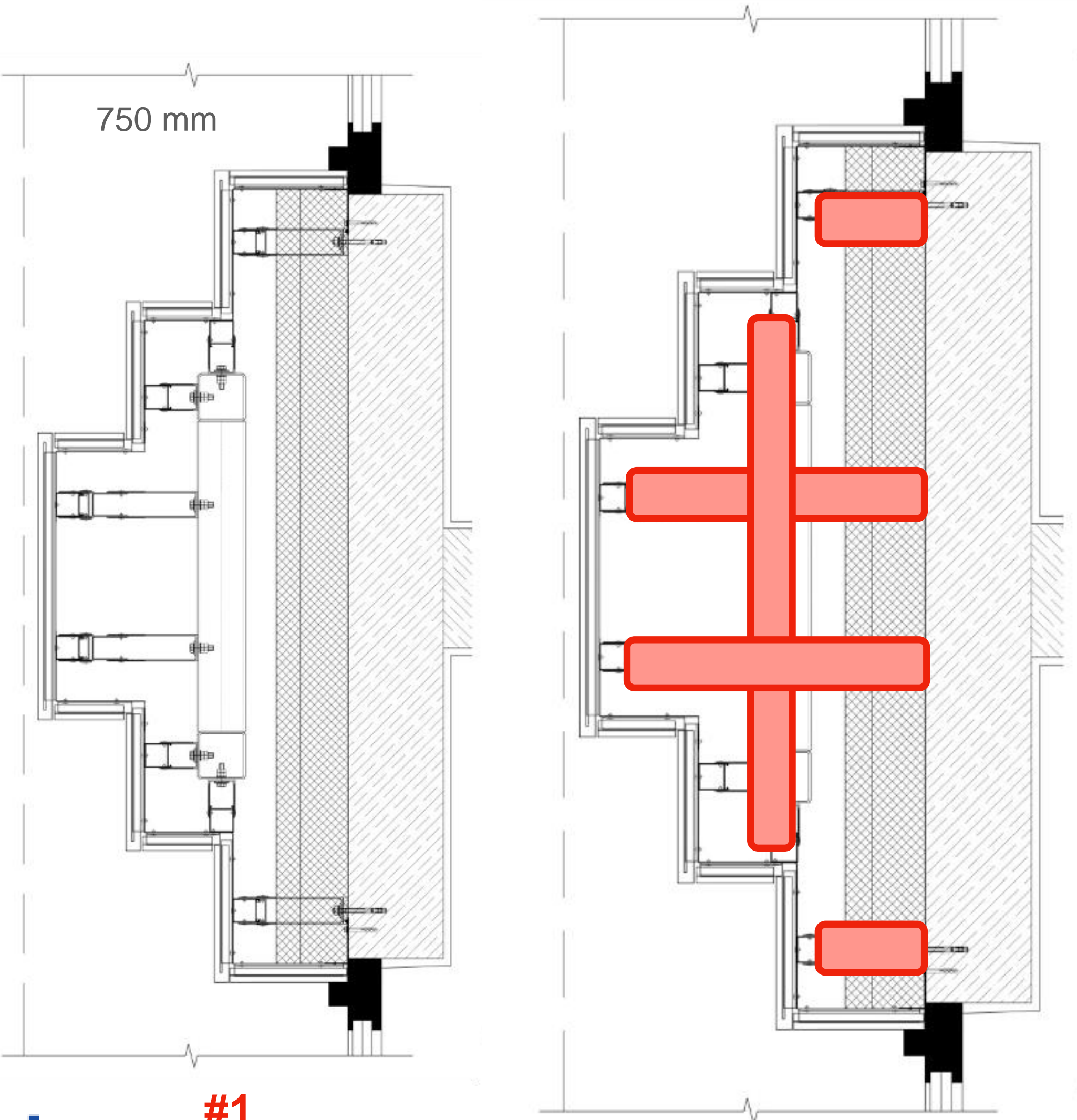


BUILD WHAT IS DESIGNED



GLOBAL TRACK RECORD + COMPLETE PORTFOLIO OF SYSTEMS

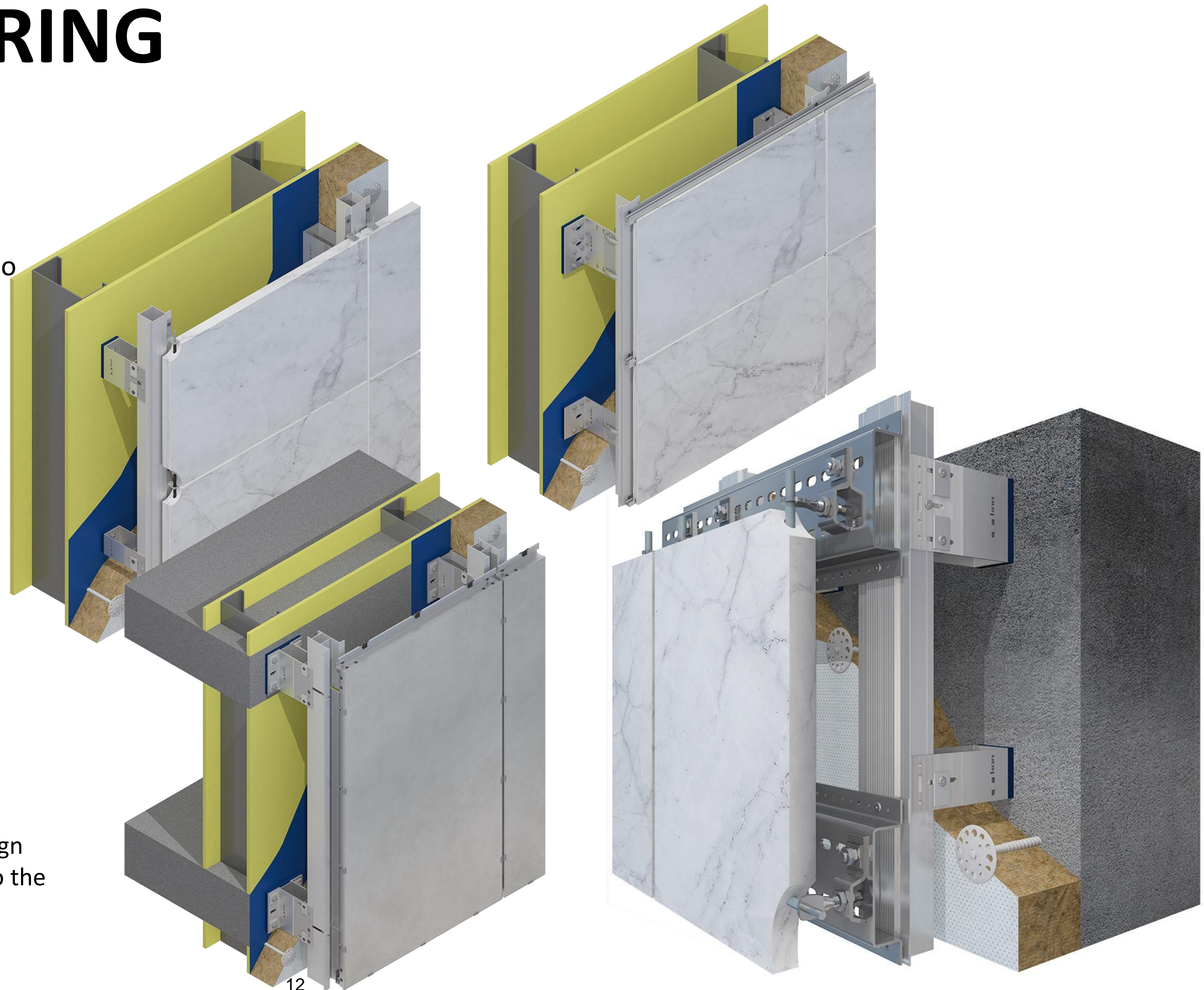
VALUE ENGINEERING HSS



STONE ANCHORING SOLUTIONS

Our company developed several options to attach stone panels mechanically:

- Kerf
- Pin
- Undercut anchors
- Modular /prefab



I'd like to introduce our company, our main design principles and components before we proceed to the stone anchoring systems

ABOUT

For over 26 years U-kon Engineering has stood for innovative sub-structure systems for ventilated facades.

In collaboration with leading manufacturers of facade cladding materials, we develop and produce high-quality solutions with a focus on an optimum price and performance ratio.

Our state of the art production facility that TUV ISO 9001 certified can produce materials in short notice.

Production capacity - 240,000 m² per month
Industrial and warehouse complex - 7000 m²
Implemented facades - 21,000,000 m²
Over 40 system modifications

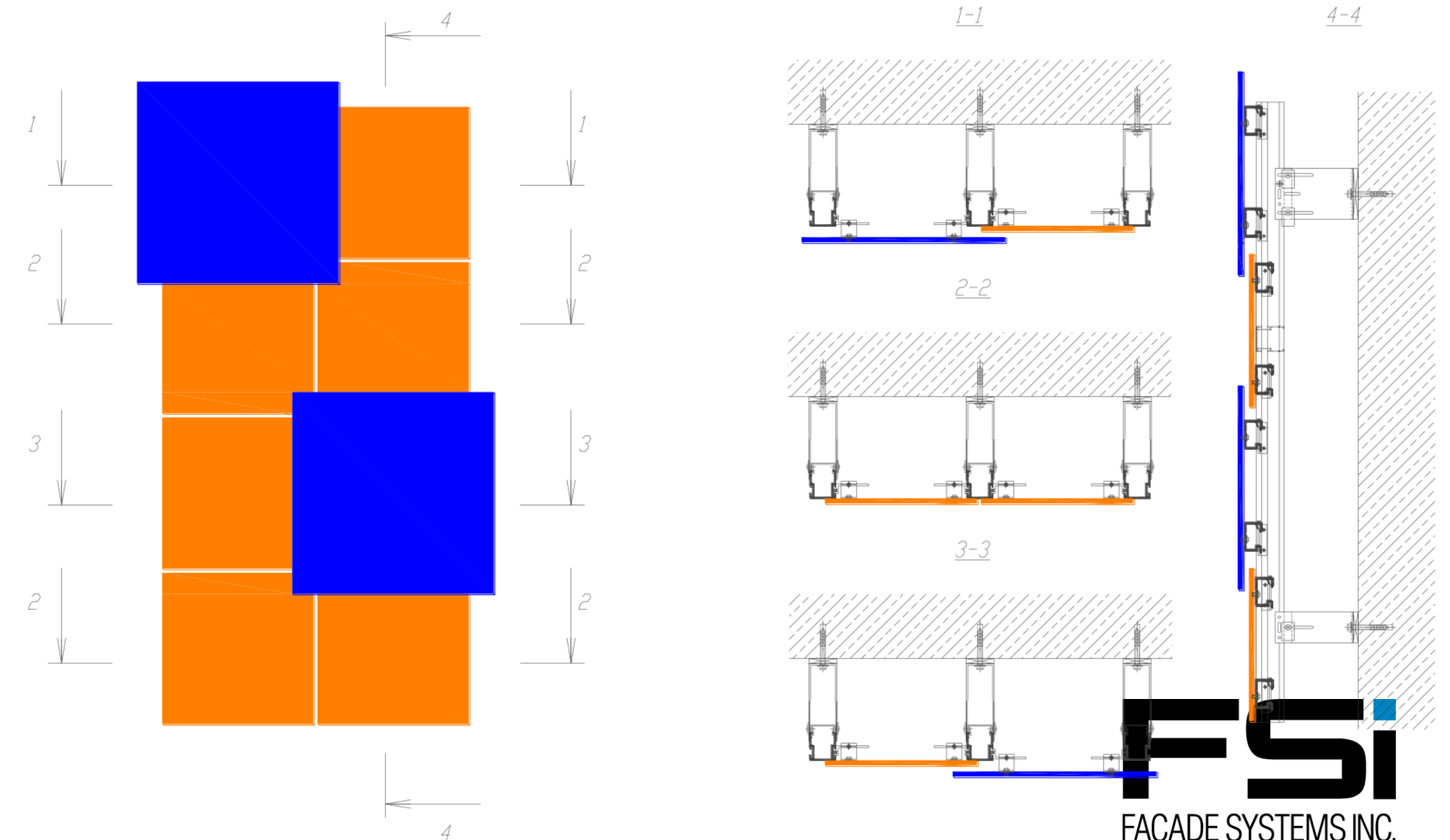


R&D

Our R&D and Engineering team are constantly in search of architectural and technical excellence of facade systems. We share our entire knowledge with our customers and provide custom solutions to reduce the increasing complexity of facade design and installation.

As part of our work, we would like to highlight the technical support provided for each project from start to end of the construction.

All our experience in design and realization make it possible for us to achieve almost any facade design.

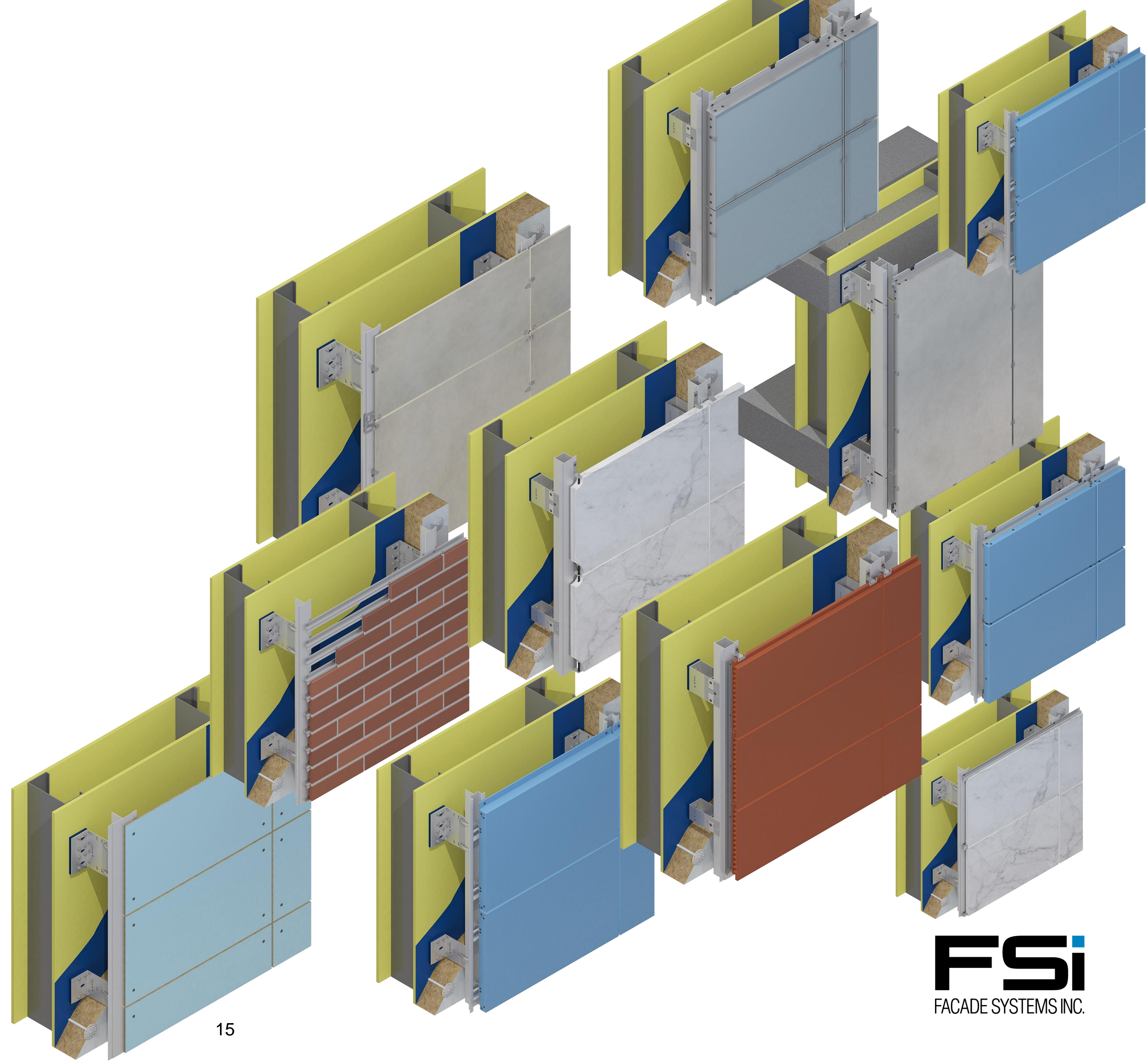


SYSTEMS

Our substructure systems are able to adapt to the specific needs of each project.

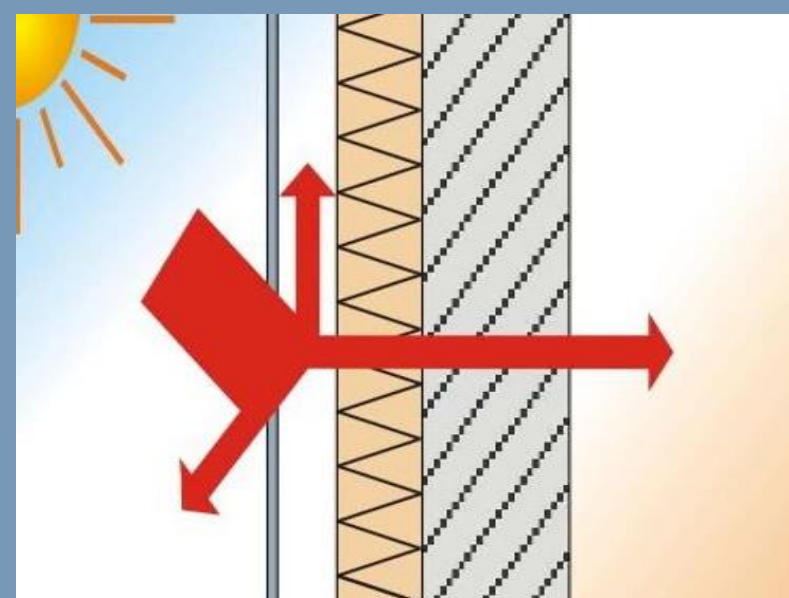
We can provide customized systems for specific projects and provide full support at every stage of the project starting from the early design stage.

U-kon Systems has always been considered a high-quality rear ventilated facade manufacturer in terms of technology, quality and safety. All these qualities helped us to win large-scale projects such as universities, hospitals, airports stadiums etc.

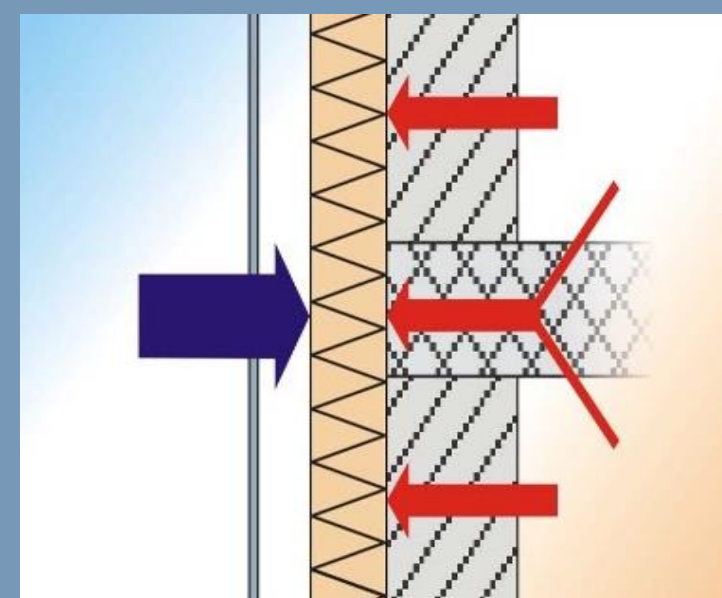


REAR VENTILATED SYSTEM

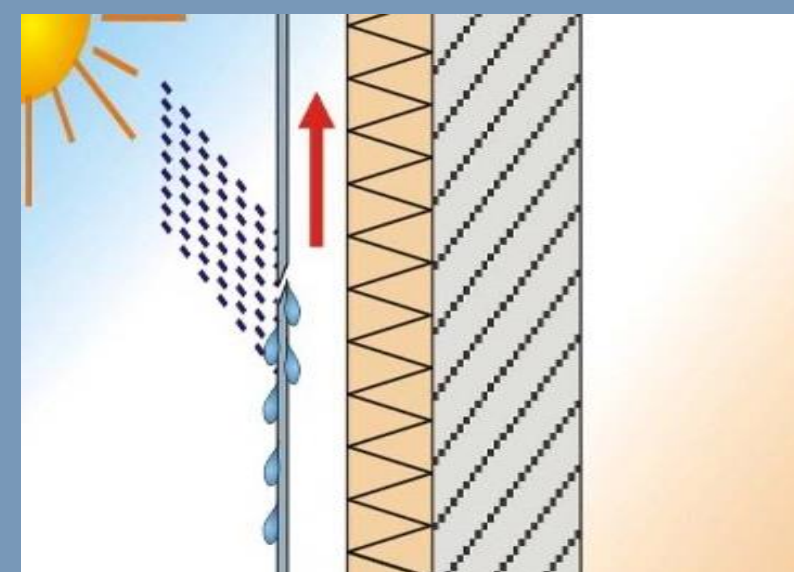
Rainscreen System provides a shield against rain, snow, and ice, preventing penetration water, mold through exterior walls and providing an excellent thermal and sound performance of the building.



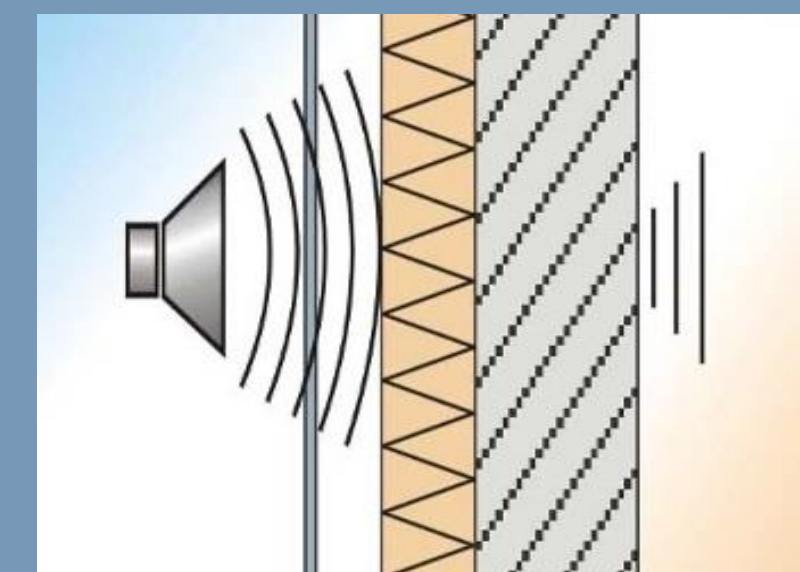
The cladding protects enclosure walls against the direct sun. The air cavity between insulation and cladding created a “chimney effect” which cools the building and helps to save energy in the summertime.



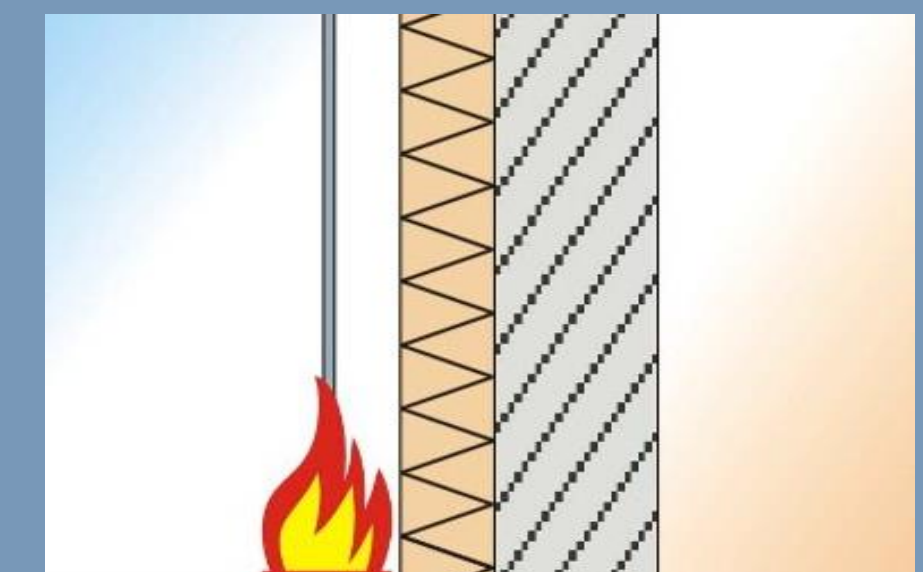
In wintertime exterior insulation layer preventing the escape of heat from the inside of the building.



The rear ventilated facade allows water to penetrate through open joints but not more than 5%. Effective ventilation behind the cladding effectively removing any water inside of facade system.



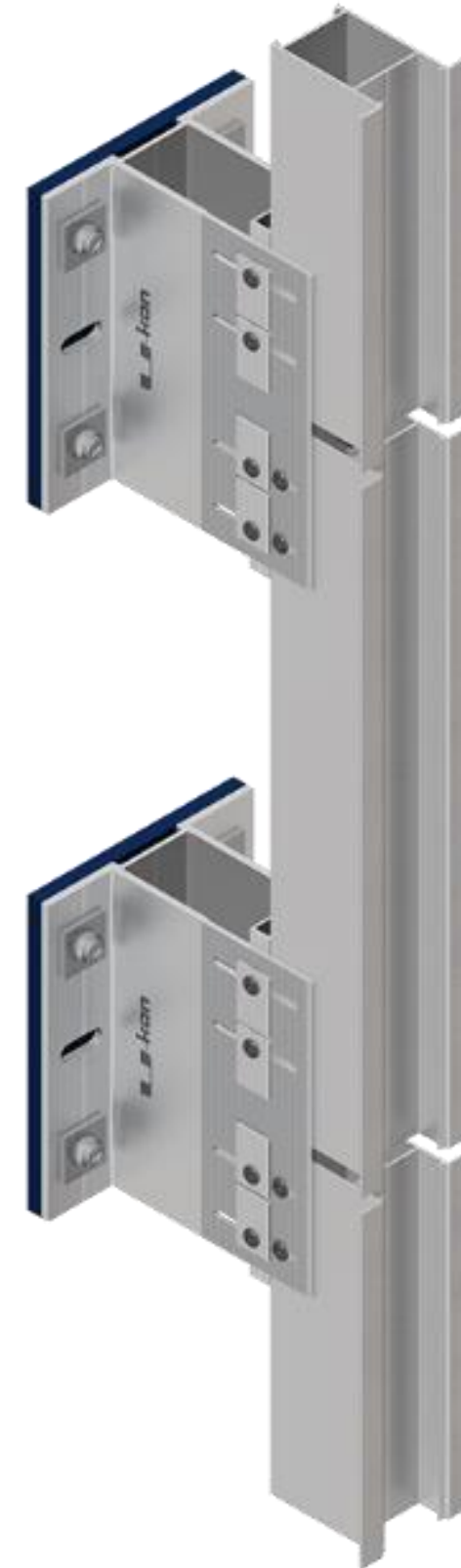
The rear ventilated facade consists of several layers including fibre insulation which helps to reduce a sound level up to 15 dB.



Proper design rear ventilated facade is a fire safe.

LEADING PORTFOLIO OF SYSTEM

U-kon Systems offering several options to attach wall brackets to the wall depends on facade design, structural or thermal requirements.



Assembly block "ATS HIGH"
 Allowing us to install wall brackets directly to the floor slabs avoiding the installation of wall brackets to the wall. This solution has a lot of advantages:

- Best thermal performance by reducing the number of connections (wall brackets) to the wall
- Fast installation
- Suitable for all U-kon Systems
- Best solution for complex facade design



Assembly block "ATS"
 ATS assembly provides an effective installation substructure system Ukon to the concrete, CMU and brick backup walls. The ATS assembly can be used for heavy cladding panels 250 kg/m² (51 psf). Suitable for all U-kon Systems

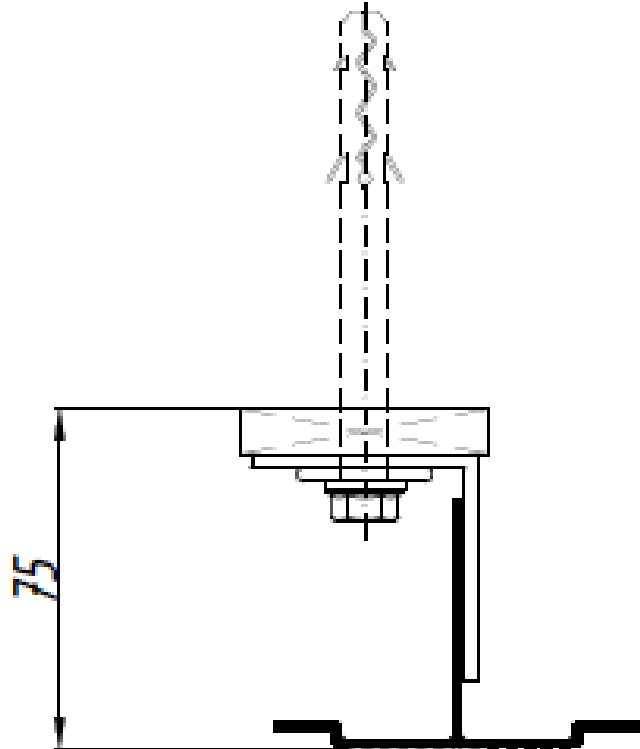
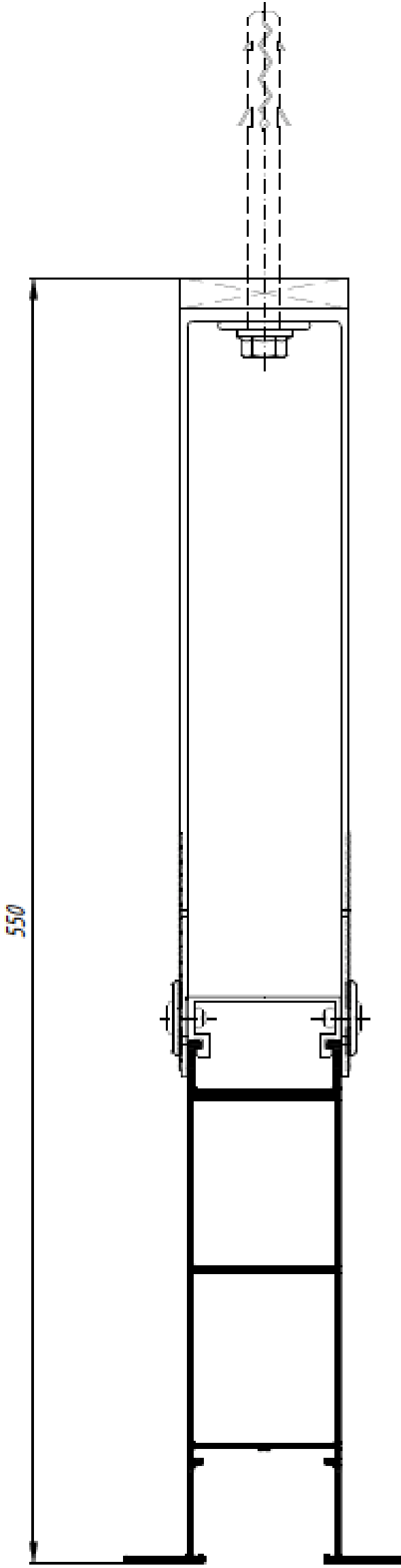


Assembly block "LT"
 The most common system to attach wall brackets directly to steel or wood studs wall. Suitable for all U-kon Systems

WALL BRACKET ADJUSTABILITY

The U-kon Systems has a wide variety of wall brackets that can accommodate any thickness of exterior insulation.

The maximum standard extension is 550 mm (21.5")

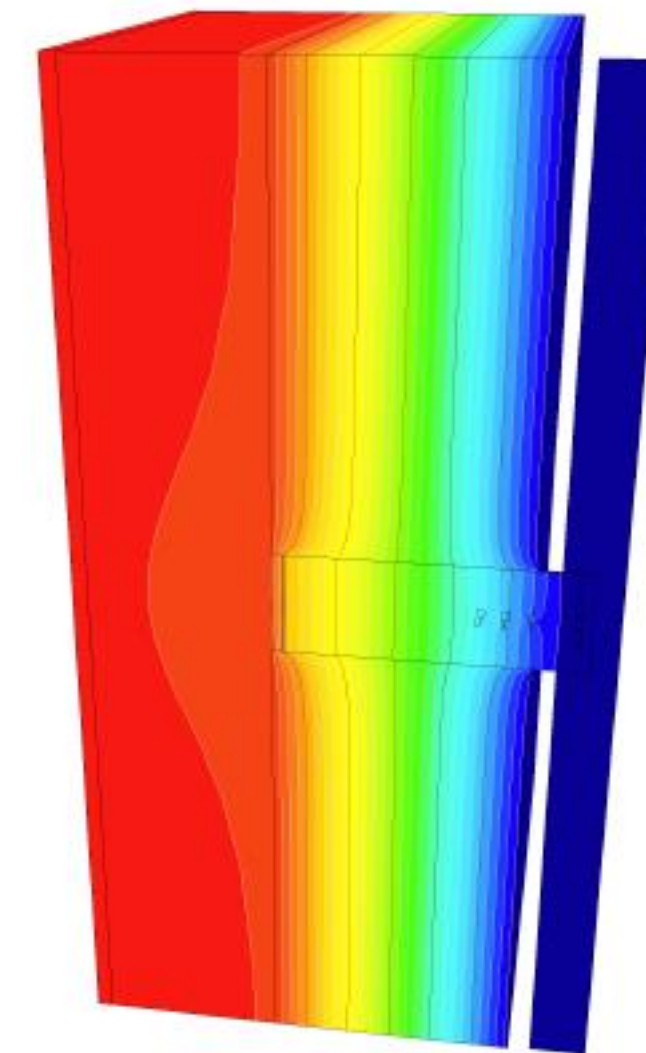
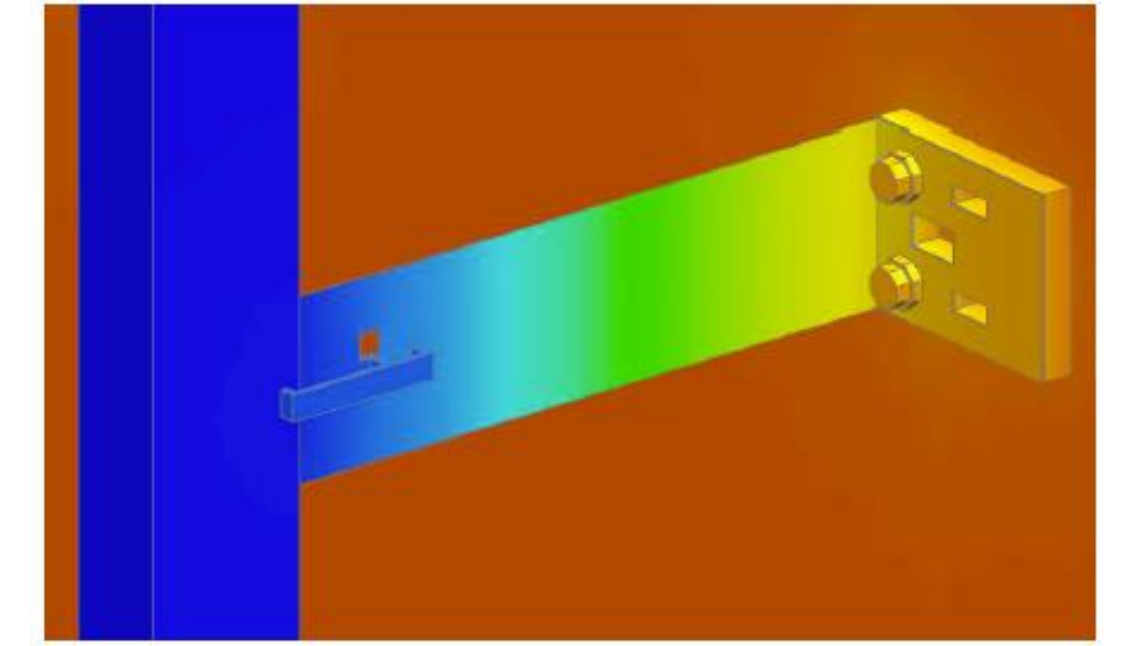
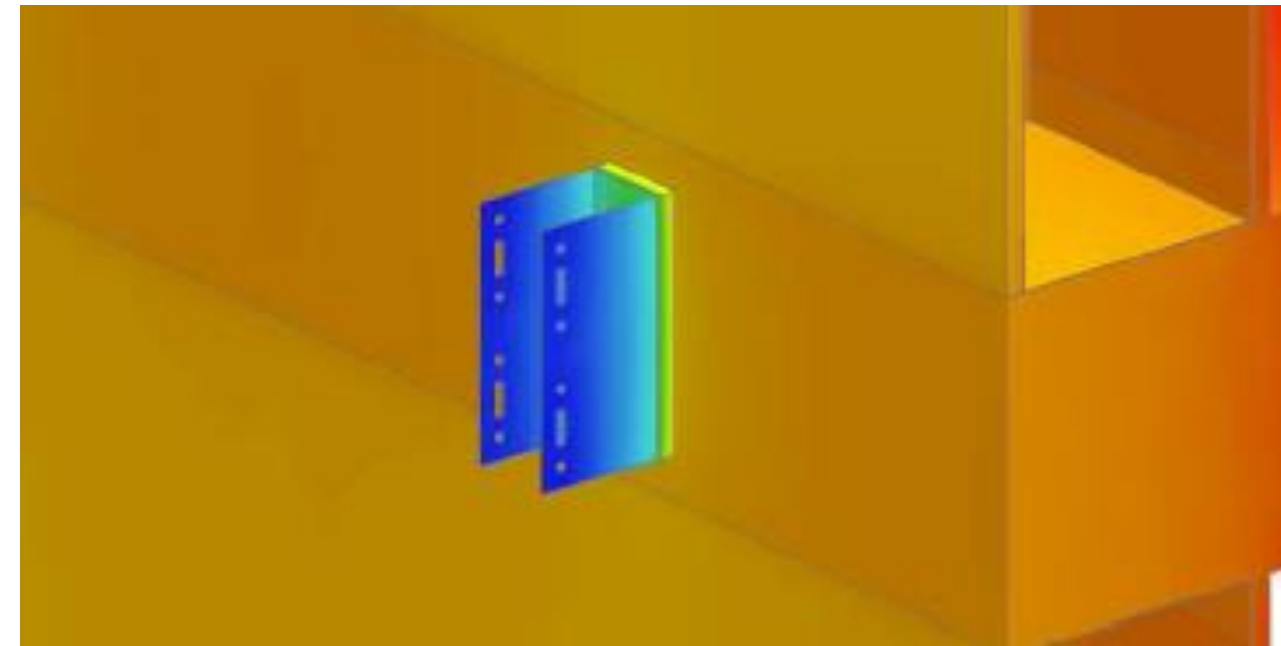


THERMAL PERFORMANCE

U-kon Systems can achieve the highest thermal performance requirements.

The U-kon System components
Passive House certified.

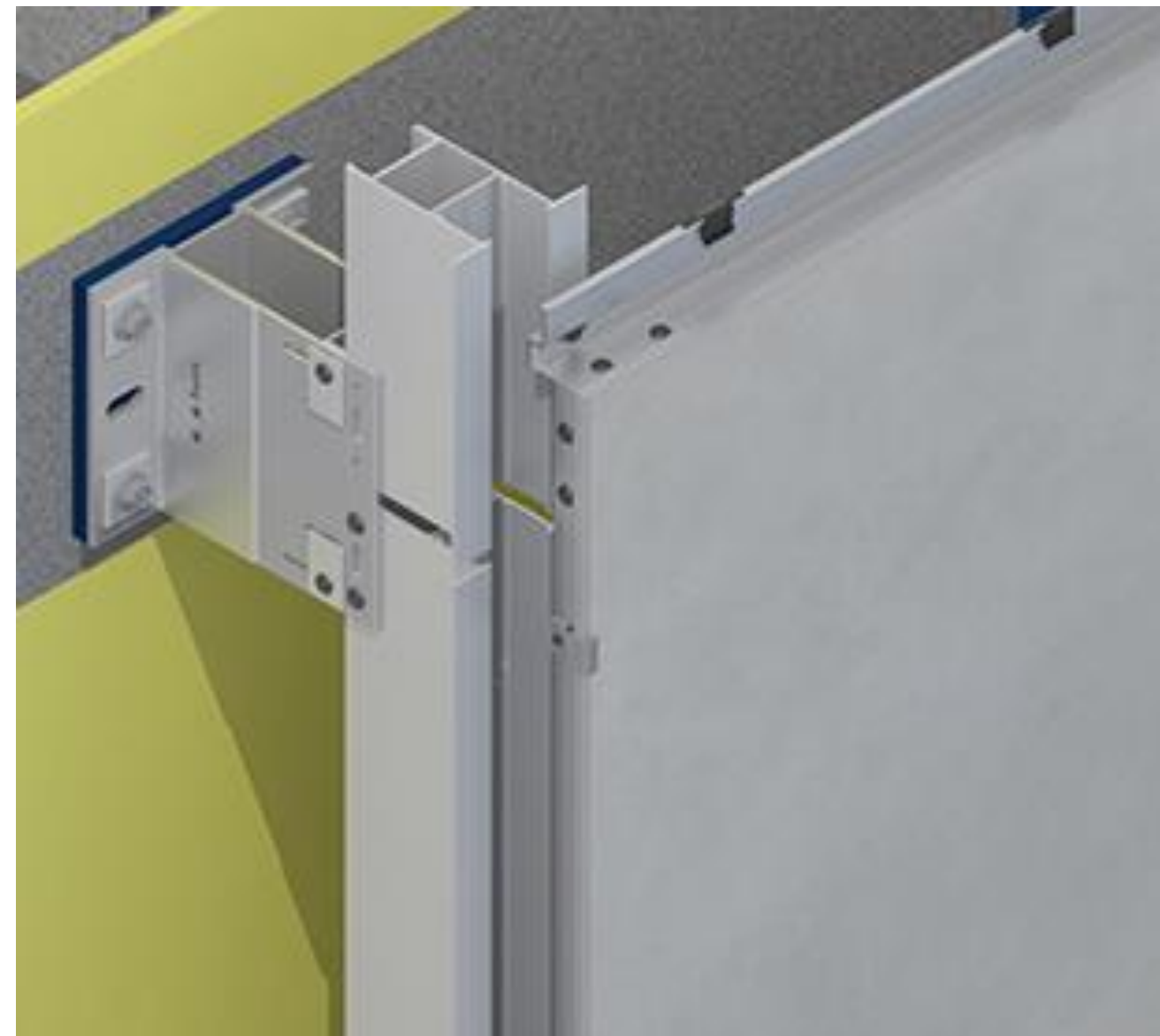
The U-kon System components conducted long term actual full scale thermal tests and 3D modelling



STONE SOLUTIONS



ATS/LT-316



ATS/LT-572

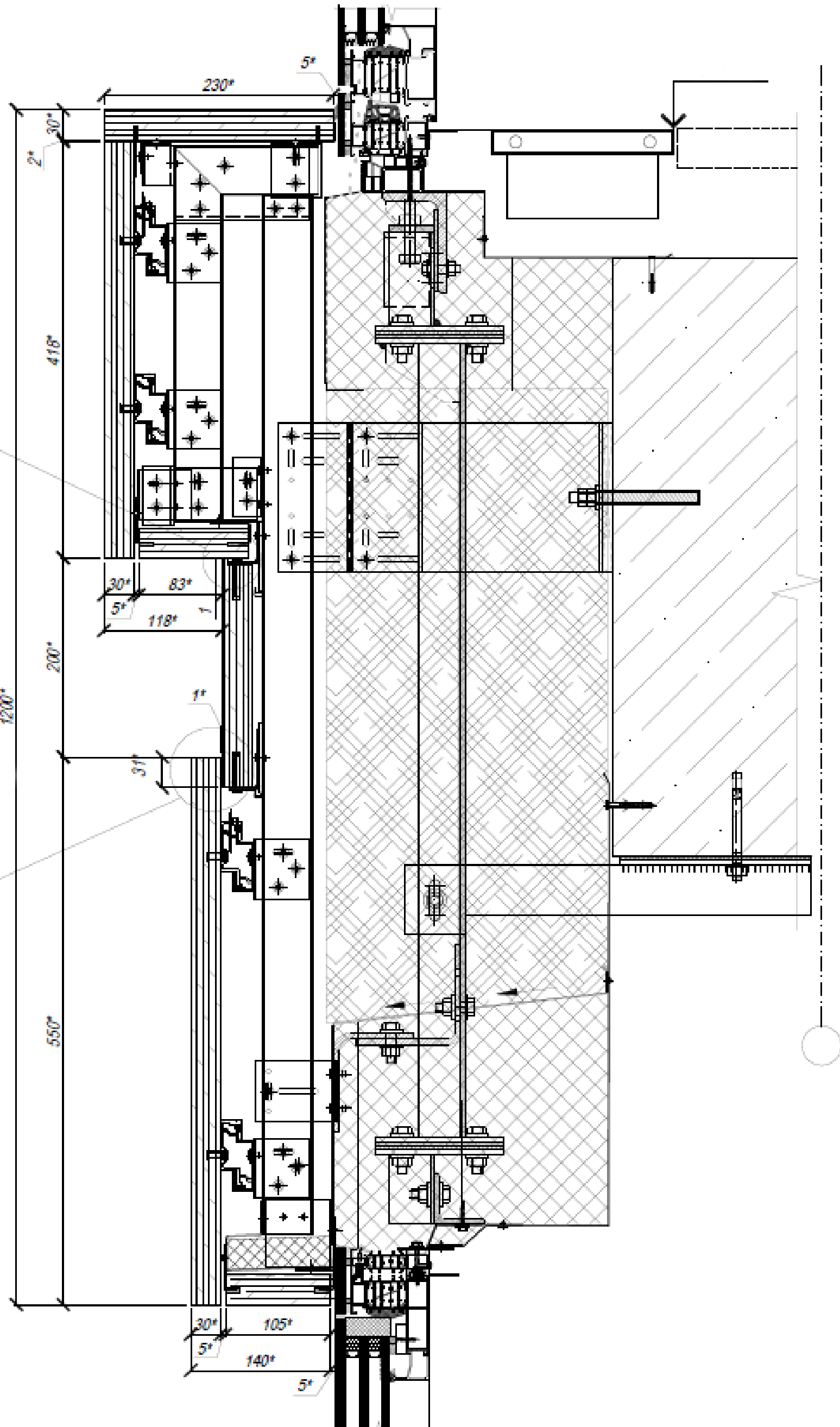
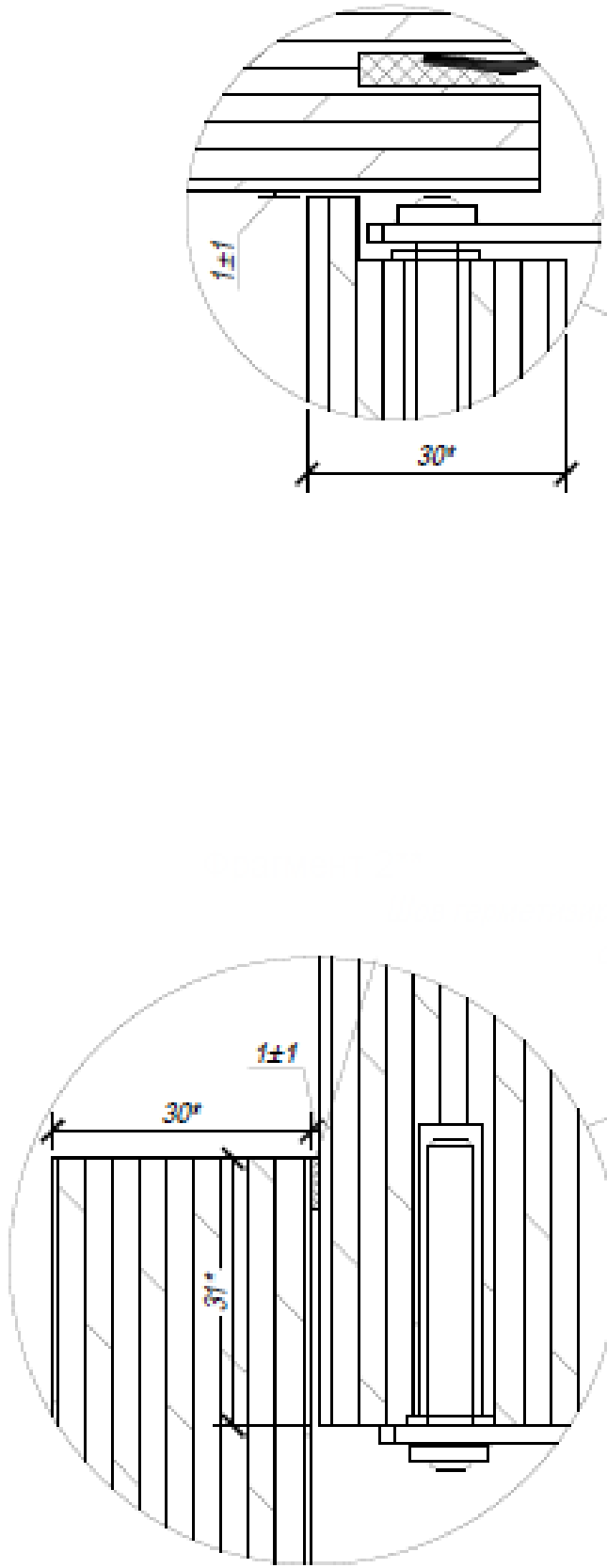
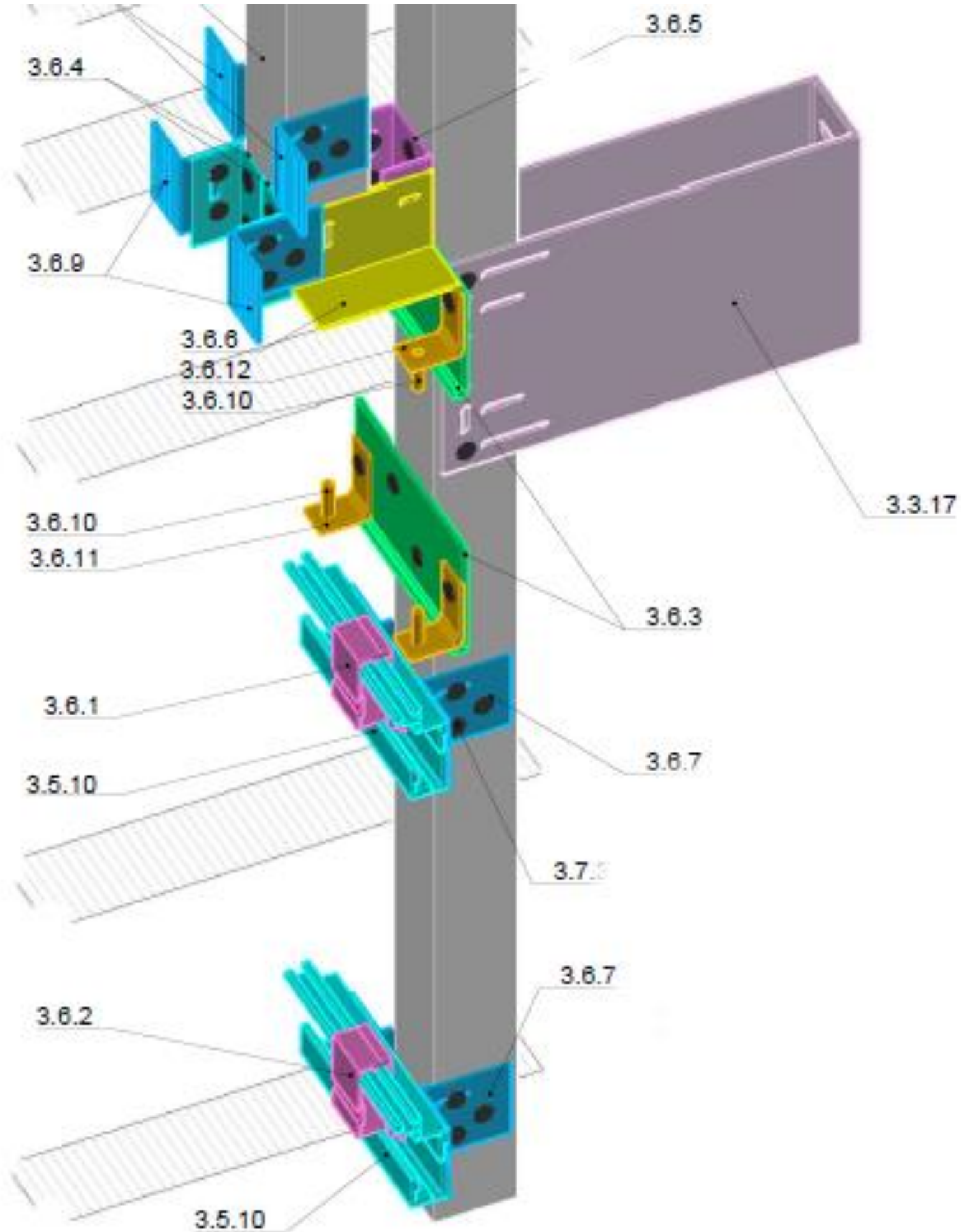


ATS/LT-325



ATS/LT-228

COMBINE SYSTEMS

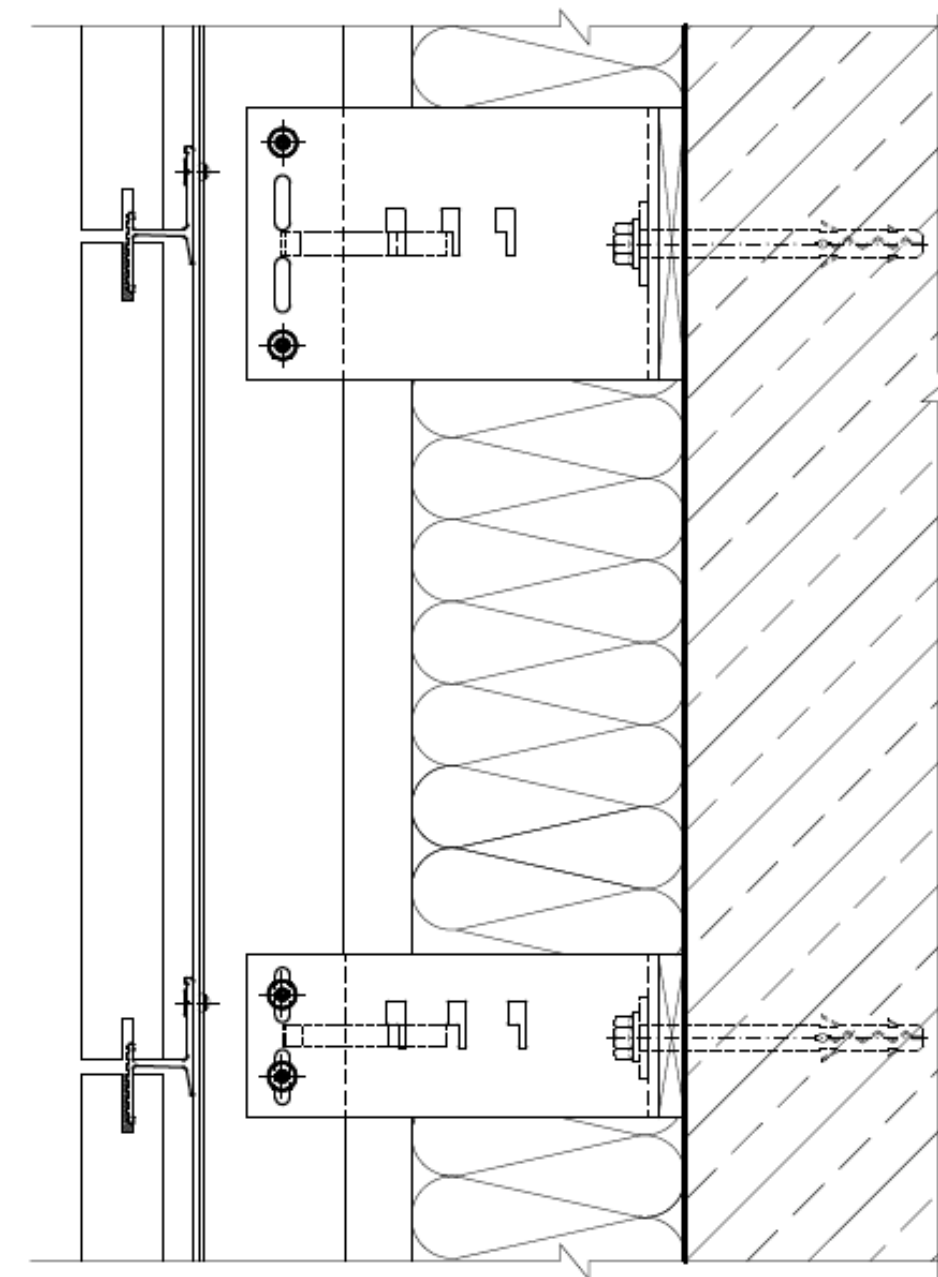


LT-316

Thermally broken rainscreen system to attach stone wall panels using continuous kerf

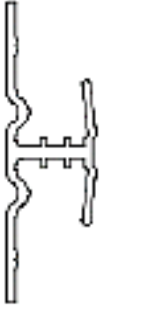

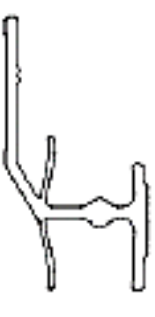
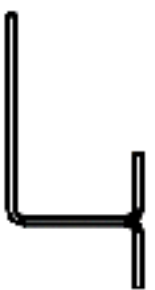
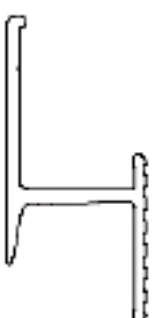
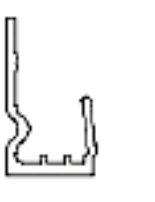

BENEFITS:

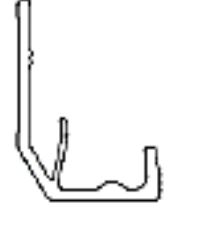
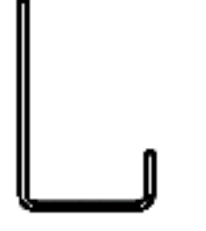
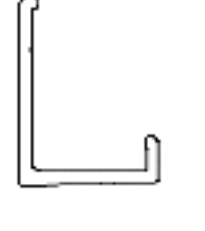
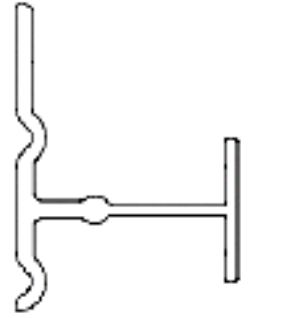
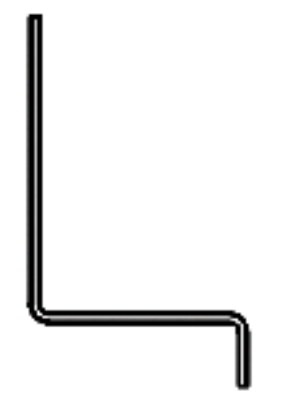
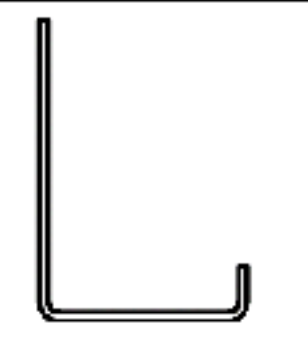
- Fast installation
- Stone thickness 20 mm - 60 mm
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application



LT-316

Thermally broken rainscreen system to attach stone wall panels using continuous kerf

Aluminum profile		Steel profile	
Legend	Profile section	Legend	Profile section
A-16		C-16	
A-16.2		C-16.2	
A-16.5			
A-17		C-17	

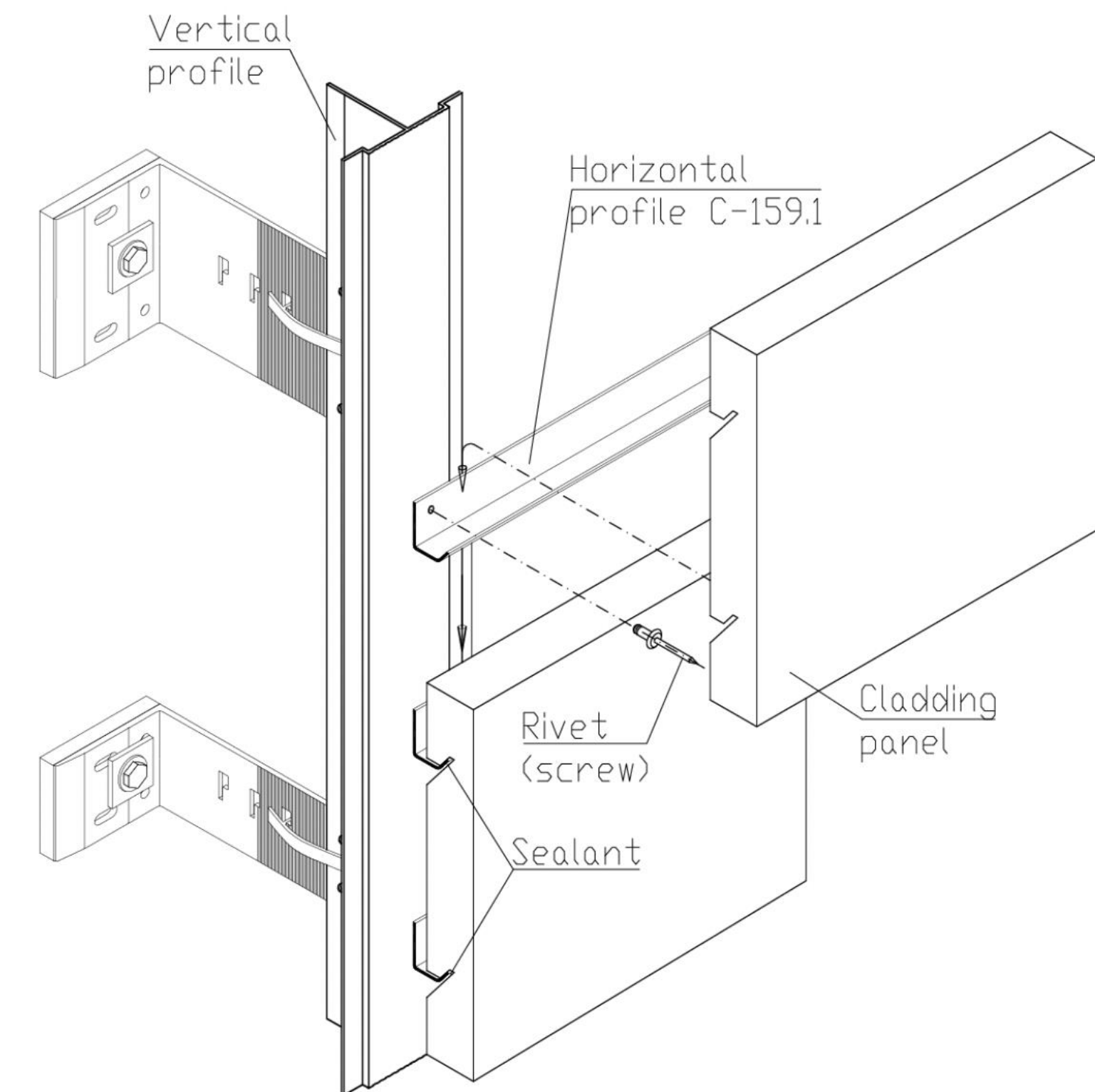
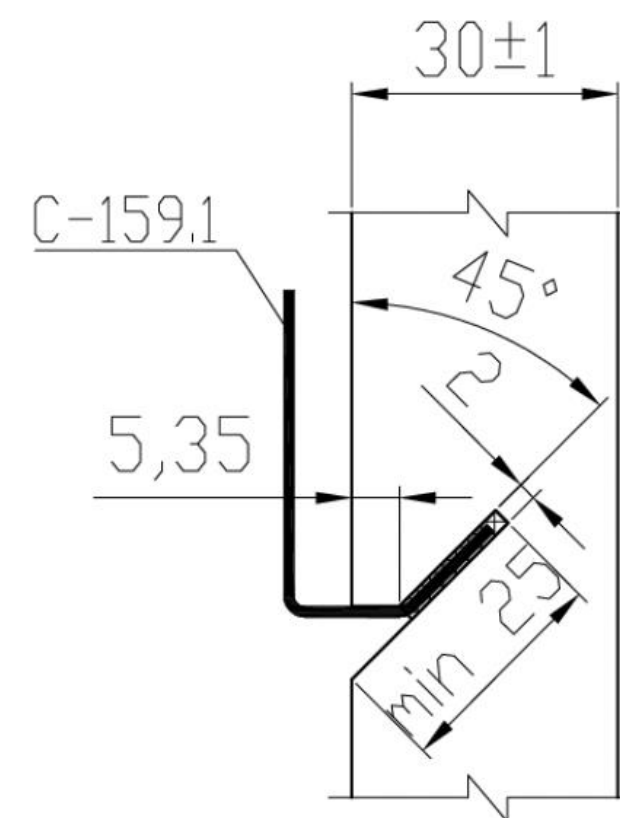
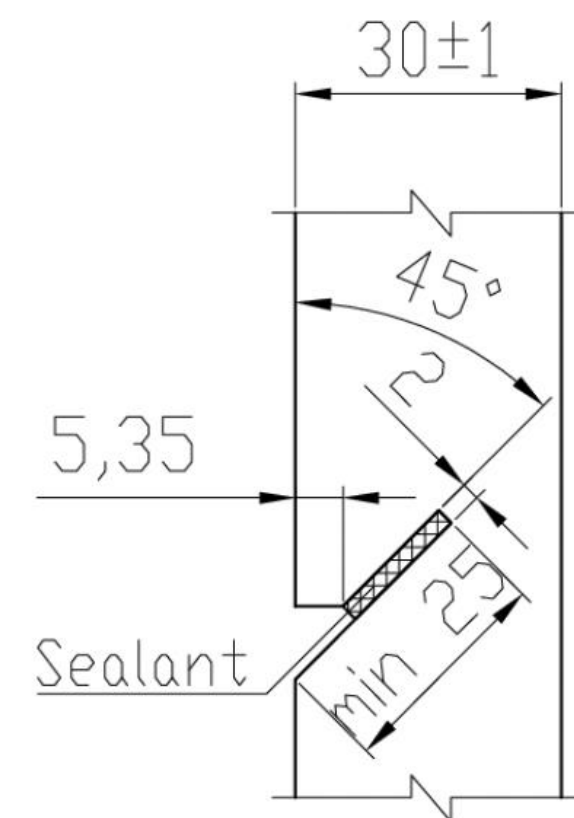
A-17.2		C-17.2	
A-17.5			
A-16.3		C-16.4B	
		C-17.4	

LT-316

Thermally broken rainscreen system to attach stone wall panels using continuous 45 degree kerf

BENEFITS:

- Stone thickness 30 mm - 50 mm
- Horizontal layout
- Various installation pattern available

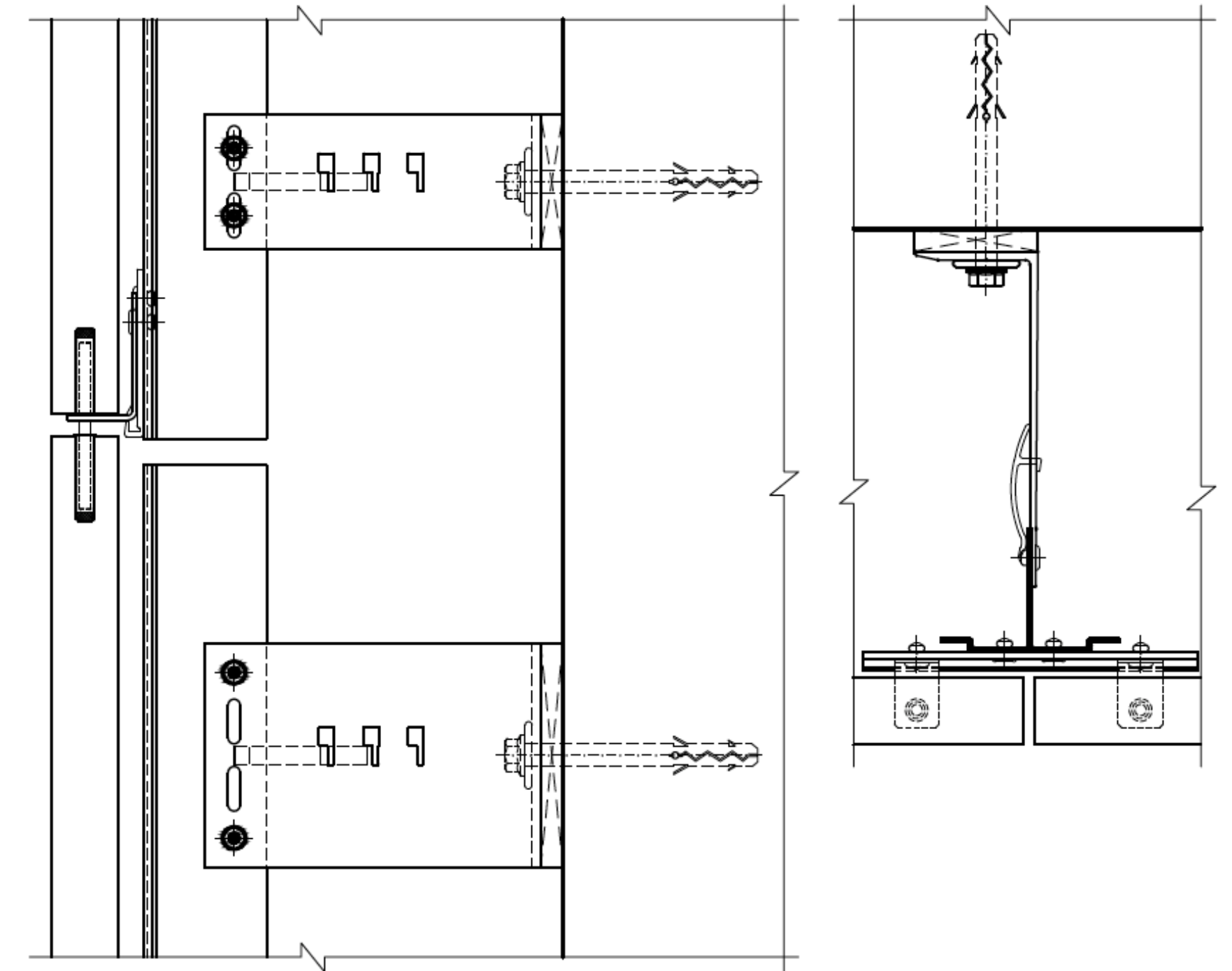


LT-325

Thermally broken rainscreen system to attach stone wall panels using pin

BENEFITS:

- Site fabrication
- Stone thickness 20 mm - 40 mm
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Possible to install curved panels

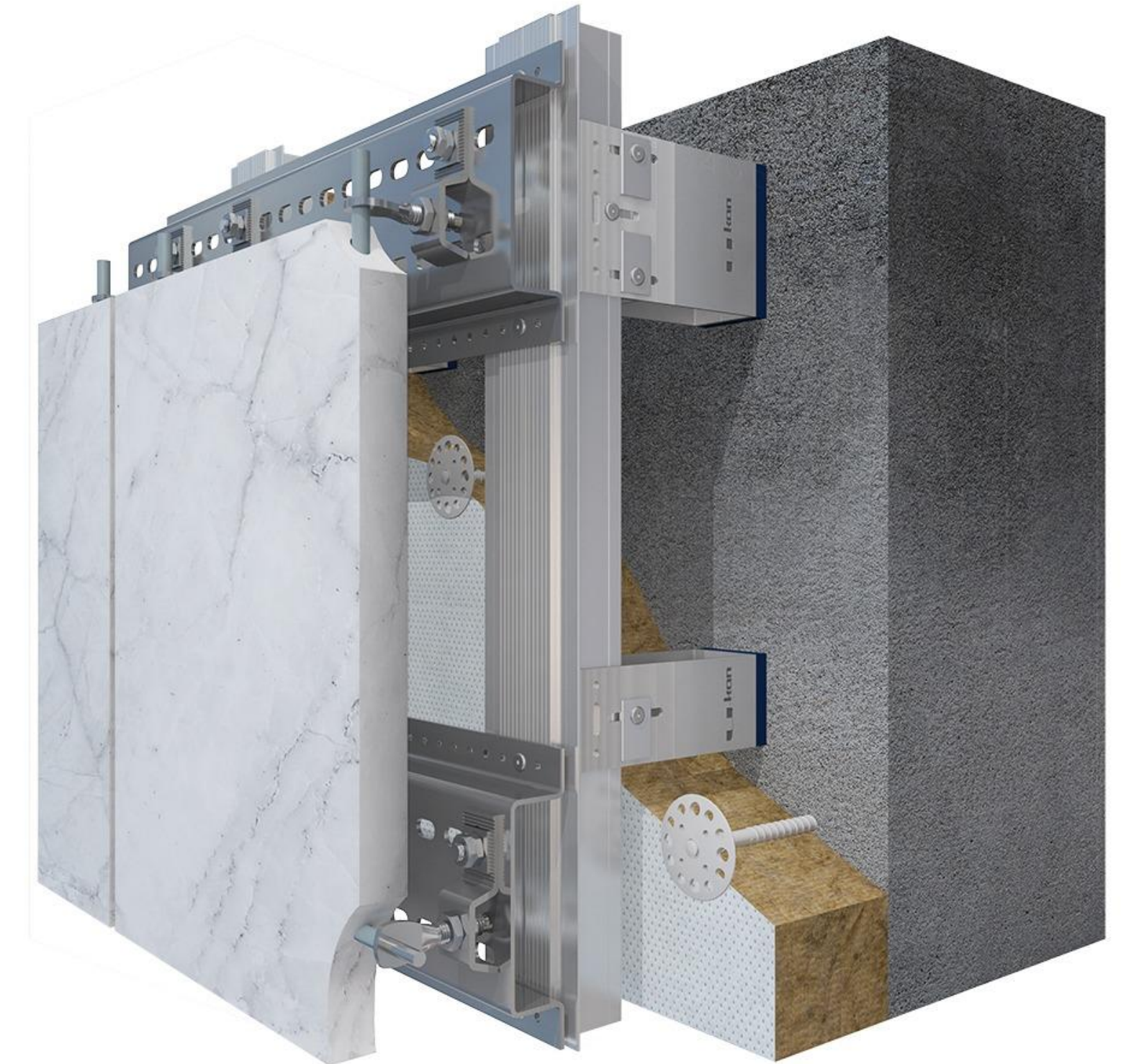
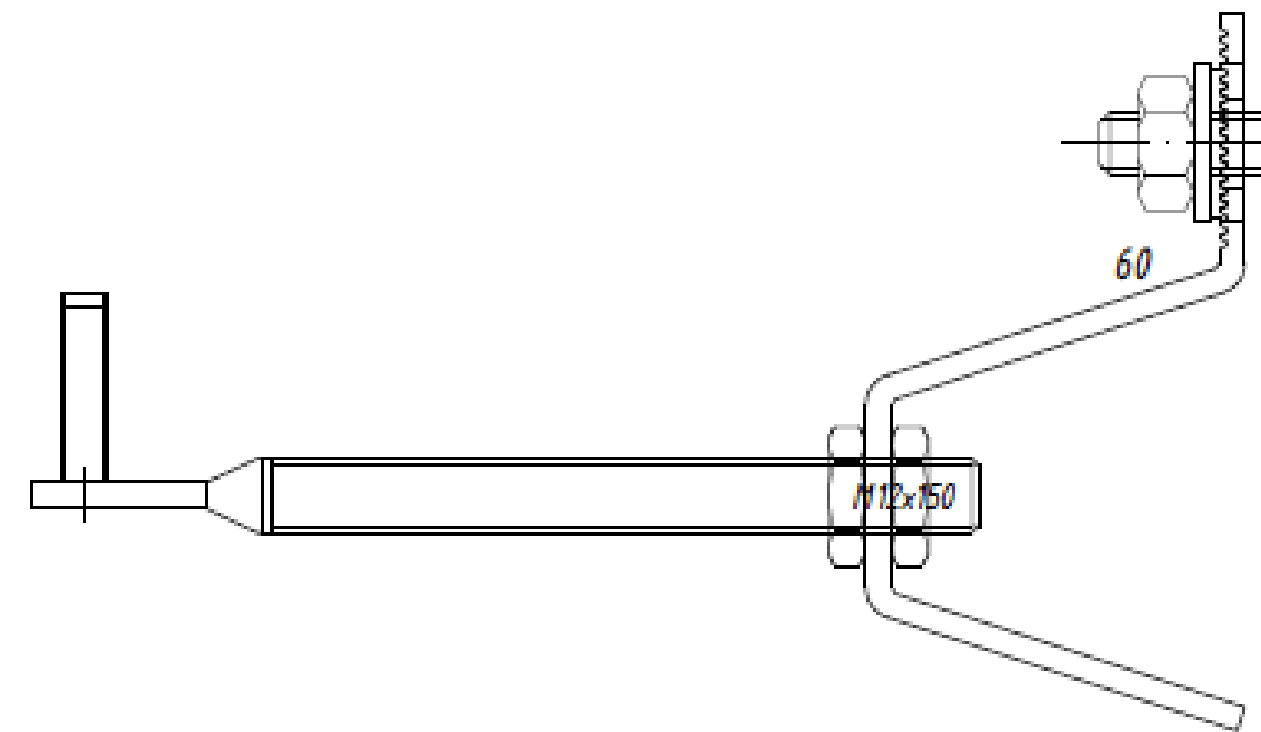
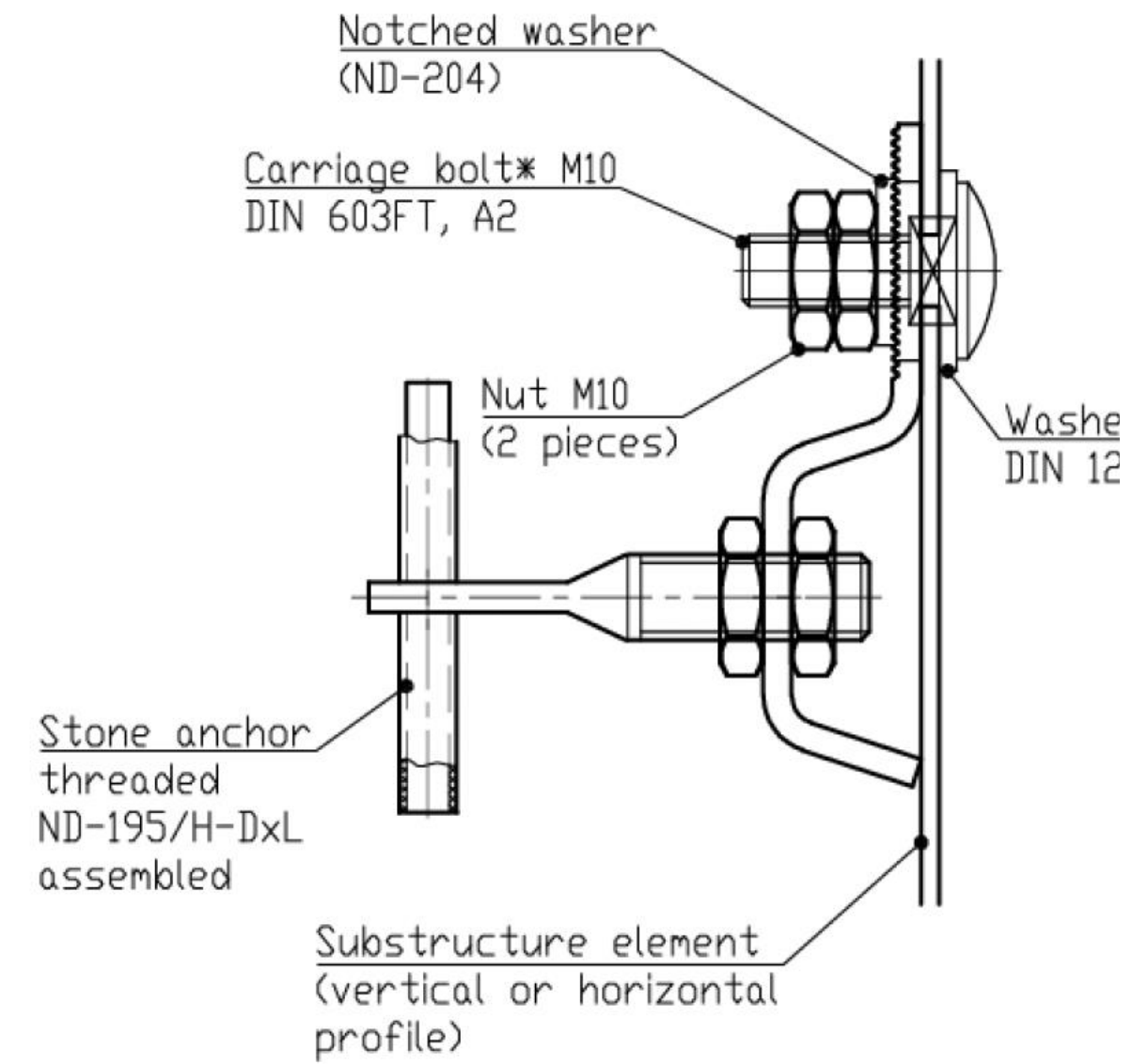


ATS-325

Thermally broken rainscreen system to attach stone wall panels using pin

BENEFITS:

- Site fabrication
- Stone thickness 50 mm - 120 mm
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Possible to install curved panels

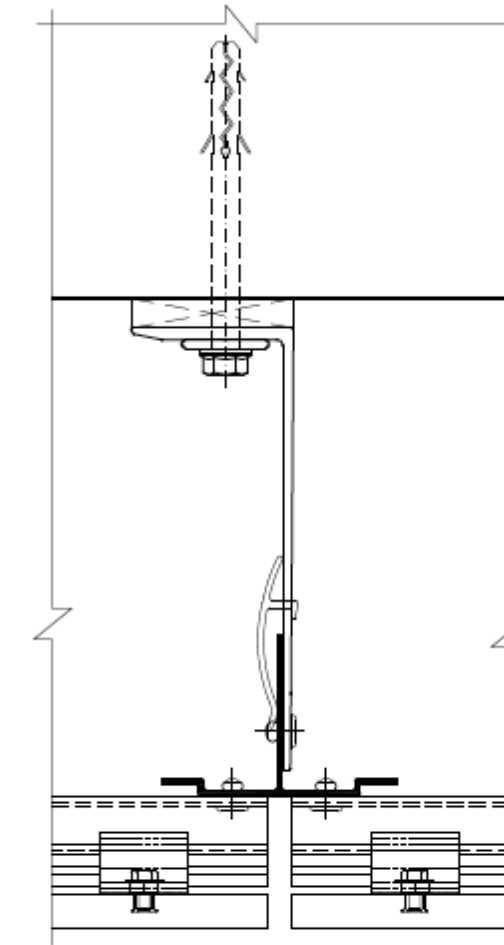
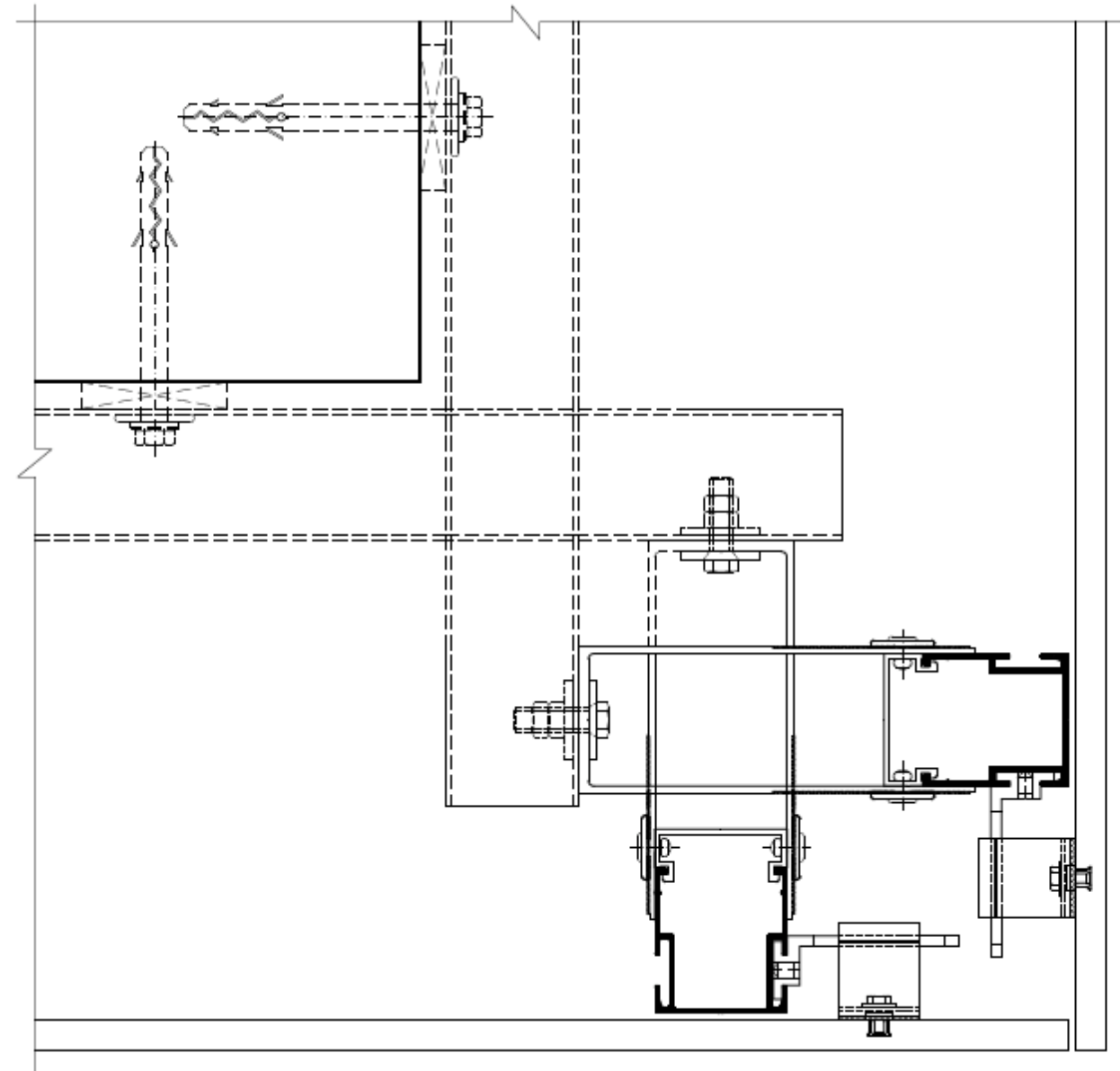


LT-228

Thermally broken rainscreen system to attach stone wall panels using undercut anchors

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application

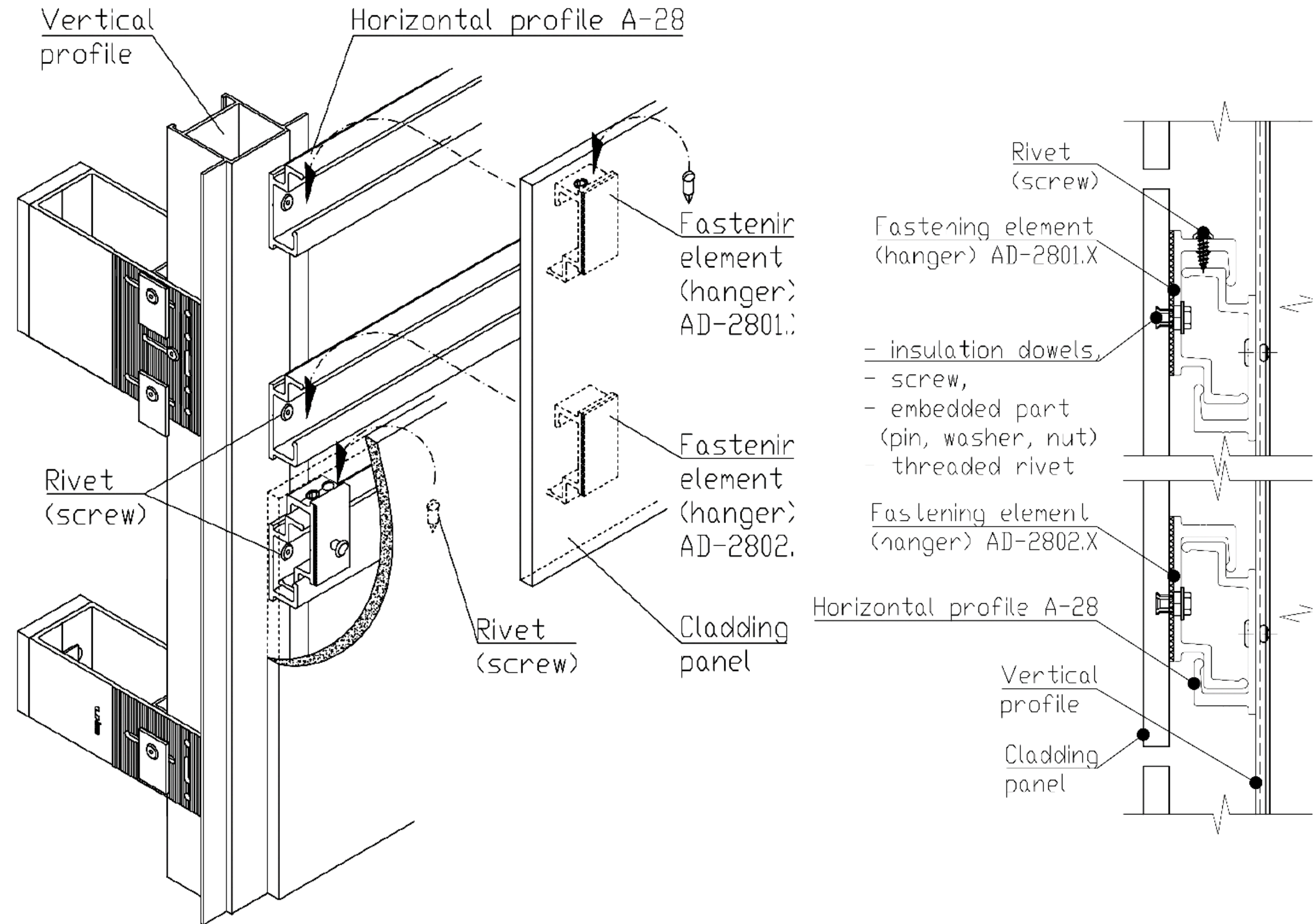


LT-228

Thermally broken rainscreen system to attach stone panels using undercut anchors

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application

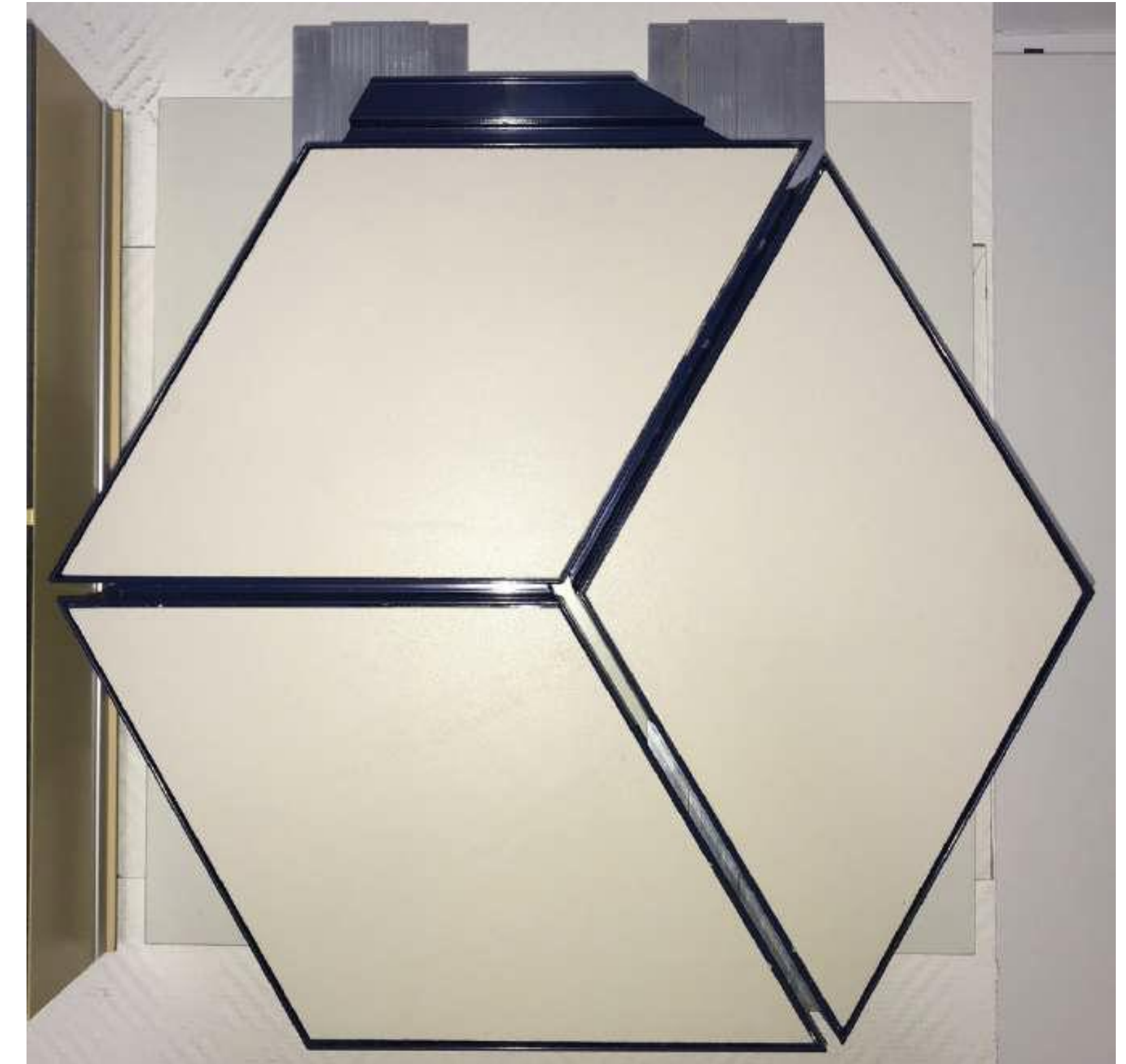
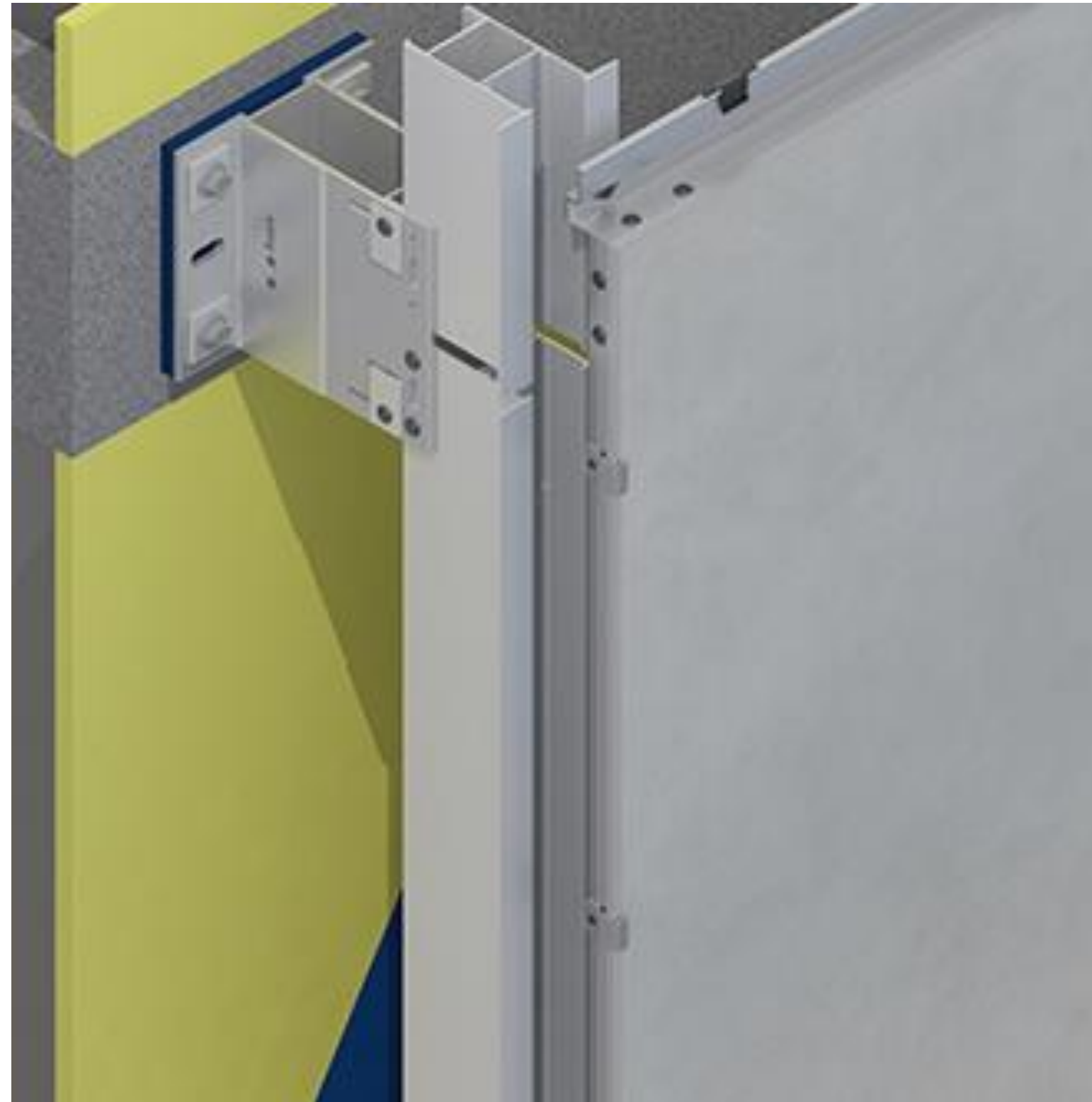


LT-572

Thermally broken rainscreen system to attach stone wall panels structural adhesive and mechanical stainless clip

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Prefabricate columns 2-3 sides

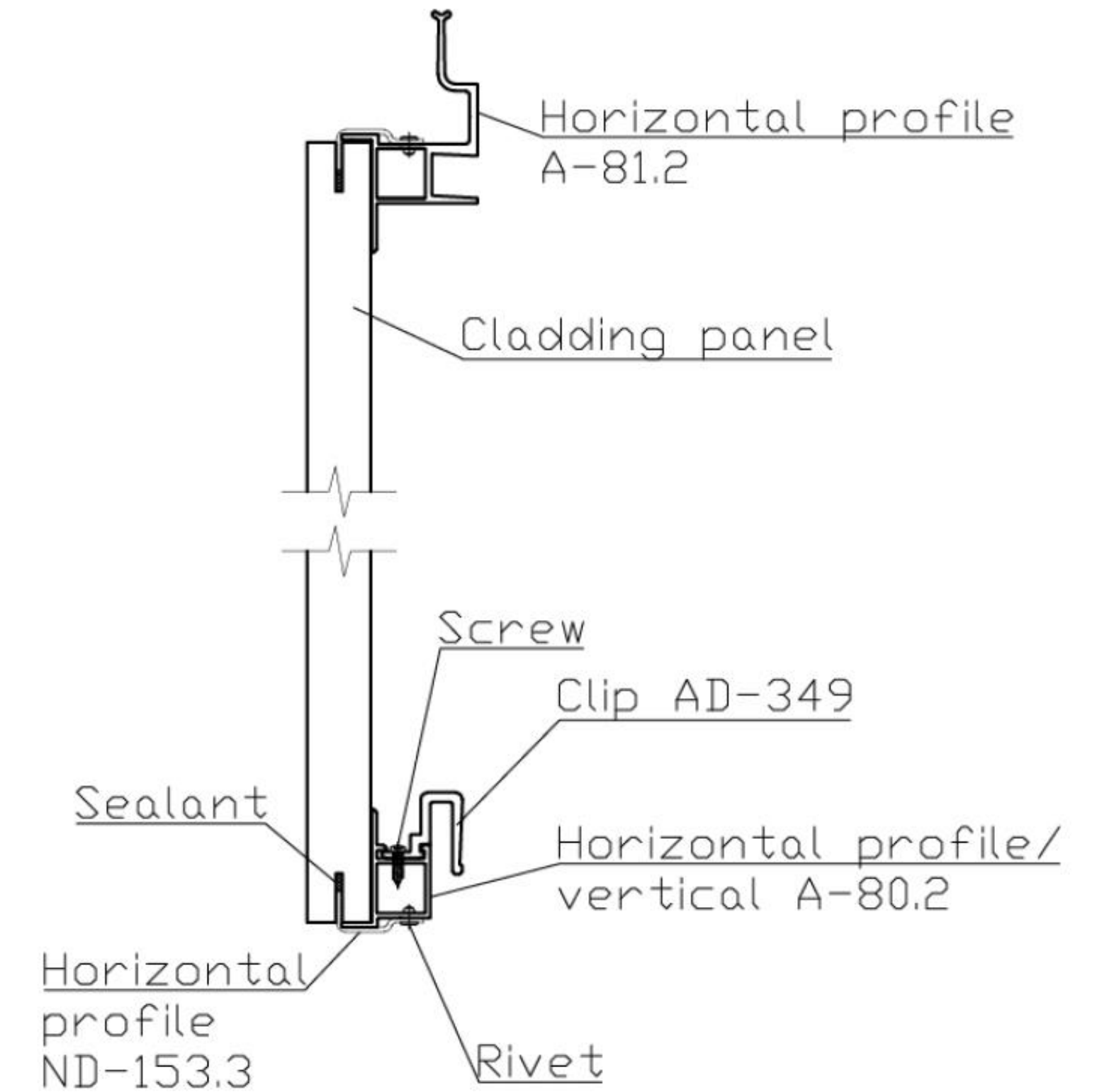
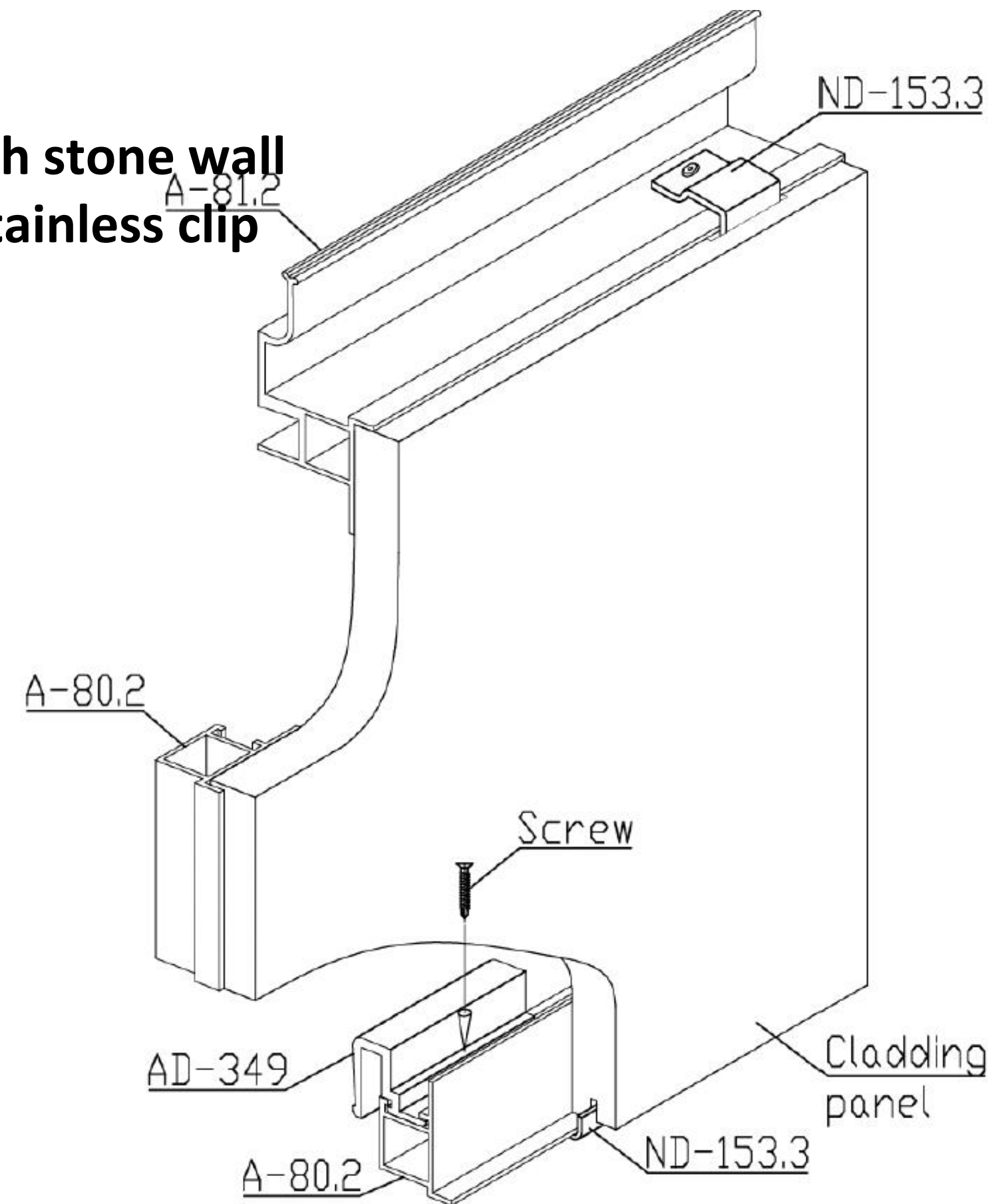


LT-572

Thermally broken rainscreen system to attach stone wall panels structural adhesive and mechanical stainless clip

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Prefabricate columns 2-3 sides



LT-572

Thermally broken rainscreen system to attach stone wall panels structural adhesive and mechanical stainless clip

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Prefabricate columns 2-3 sides



LT-572

Thermally broken rainscreen system to attach stone wall panels structural adhesive and mechanical stainless clip

BENEFITS:

- Install large size of stone panels
- Vertical or horizontal layout
- Various installation pattern available
- Possible to use for soffits application
- Prefabricate columns 2-3 sides



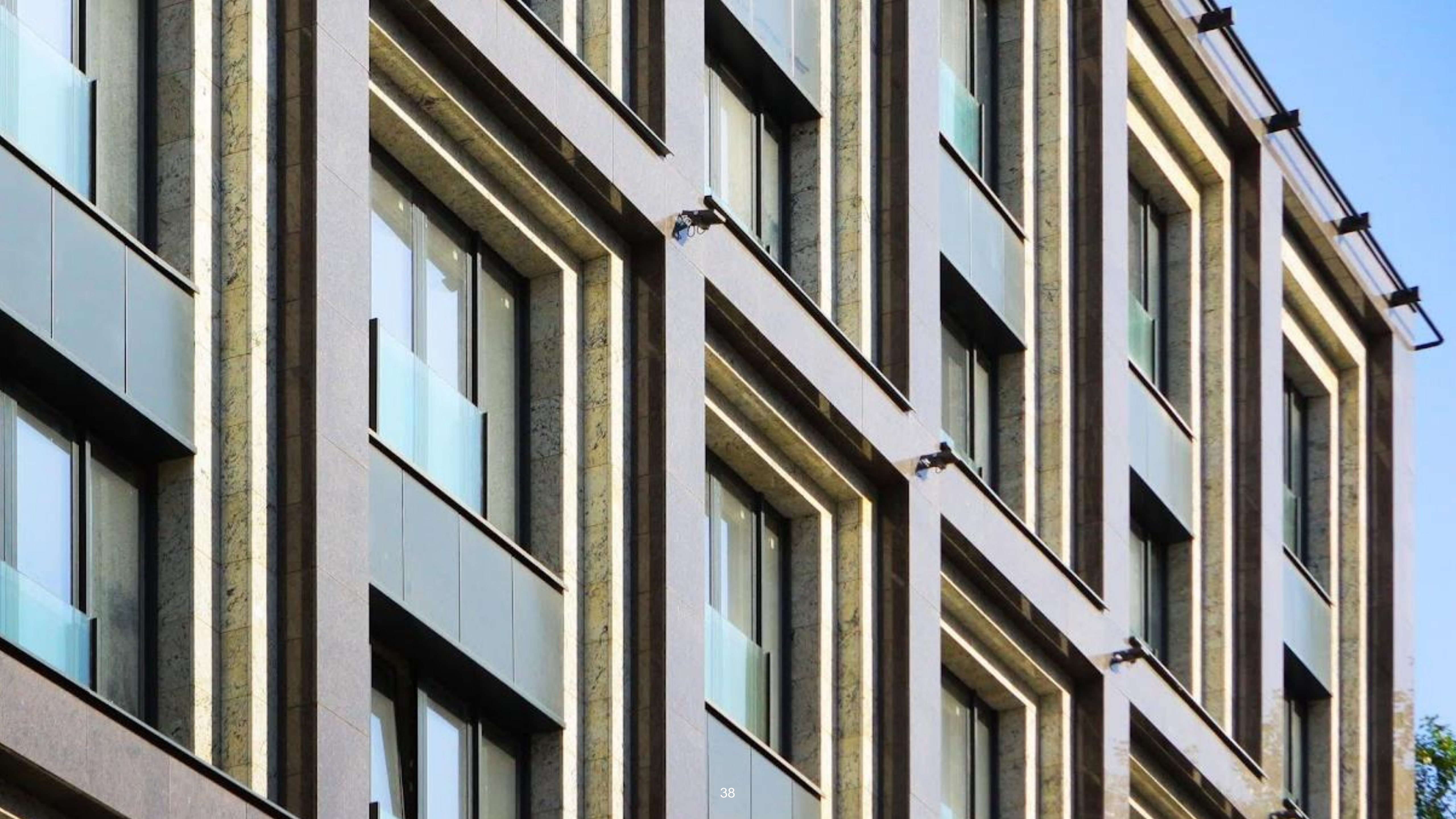


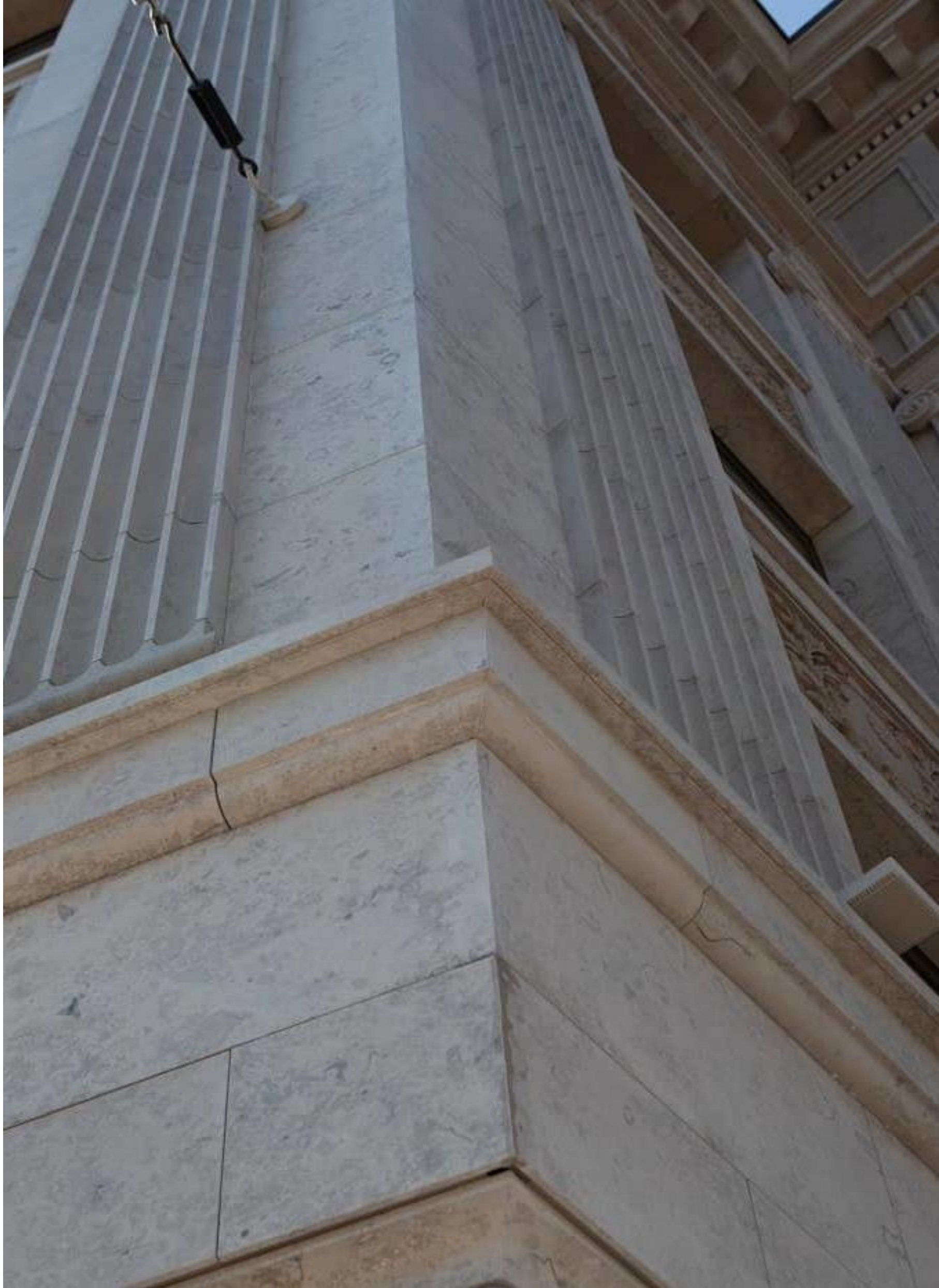




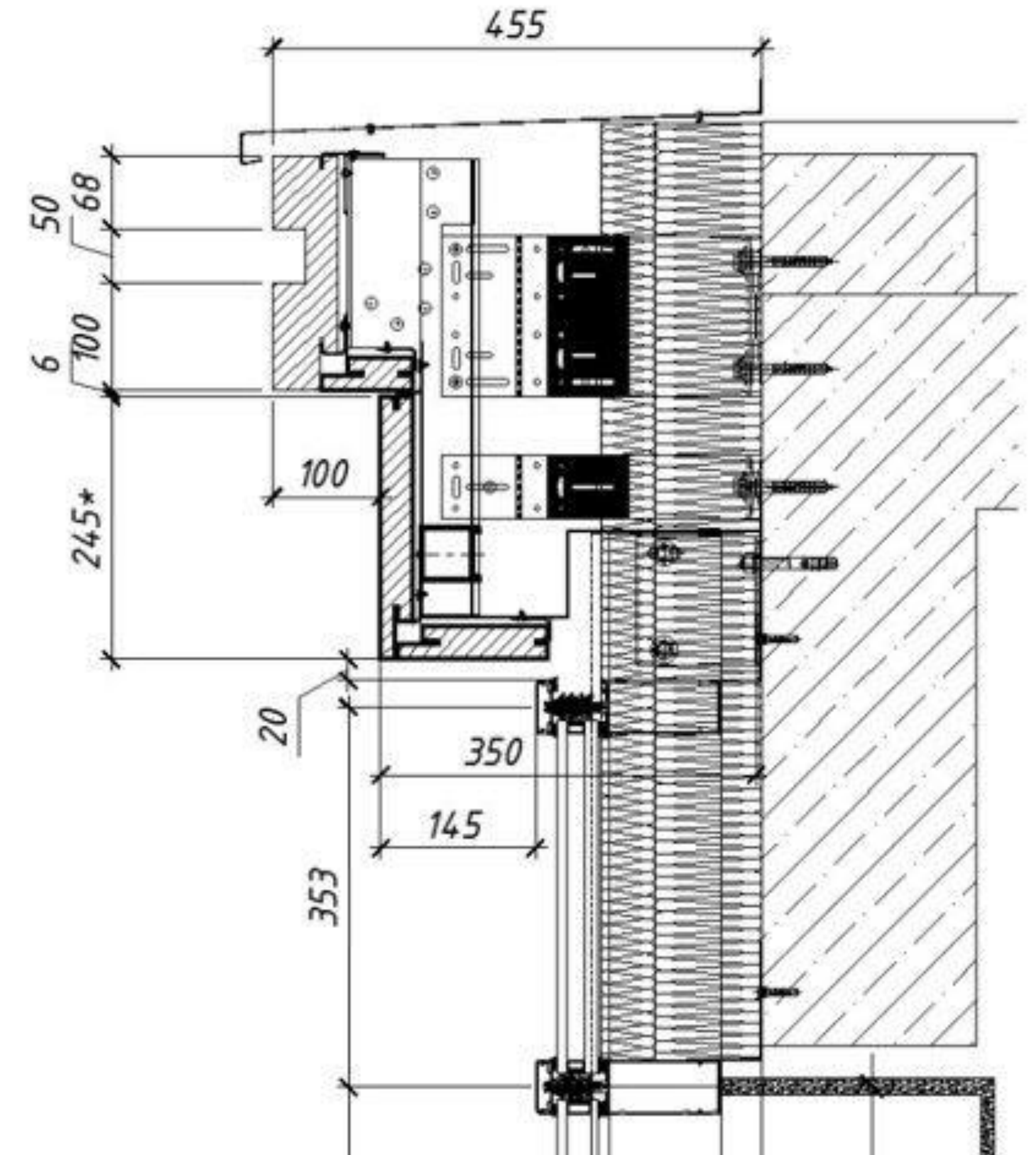












ATS type Wall brackets with additional extensions helped to achieve the necessary offset from the wall to create a cornice.
 Using 30 mm panels helped to reduce the weight of the cornice and cost of the materials



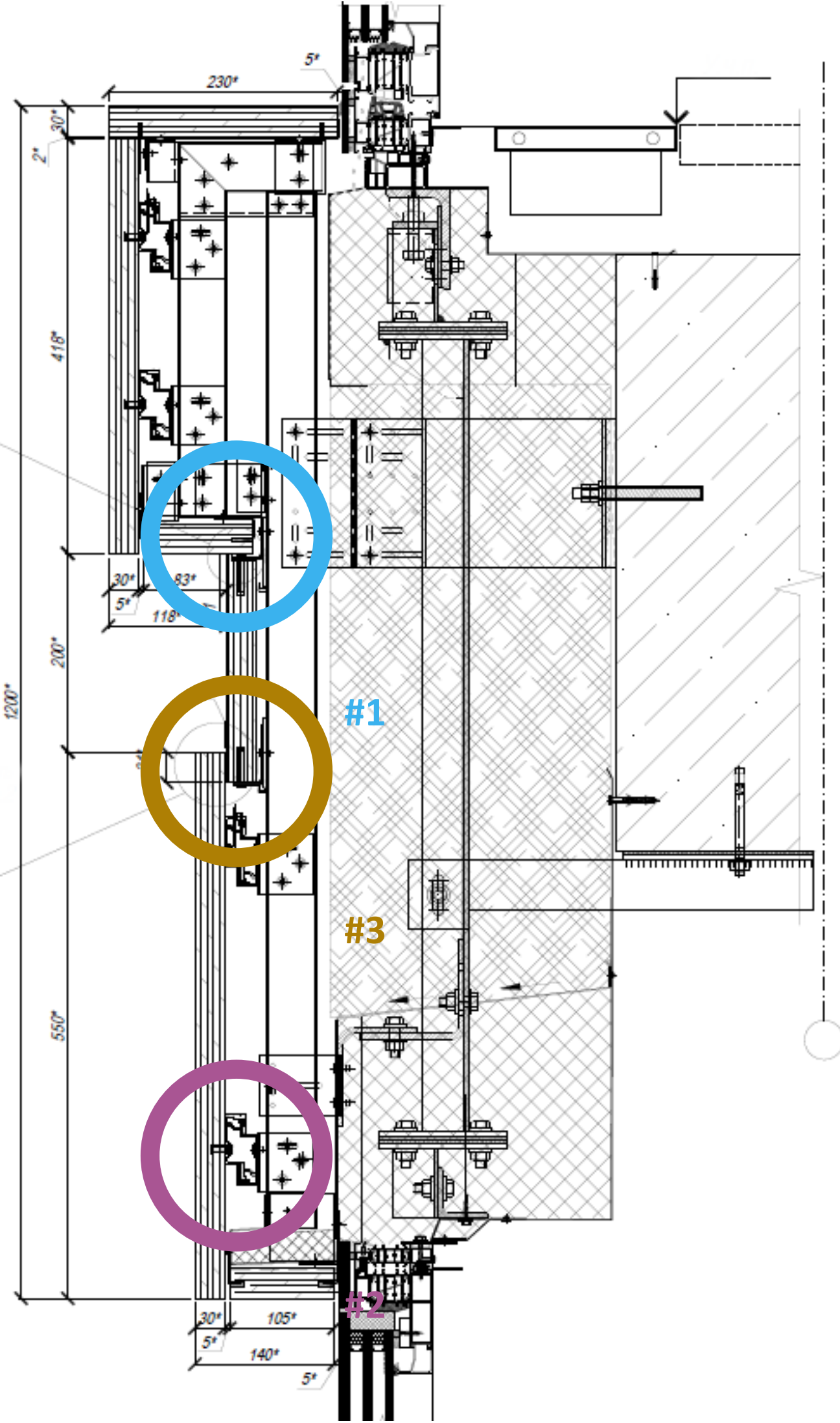
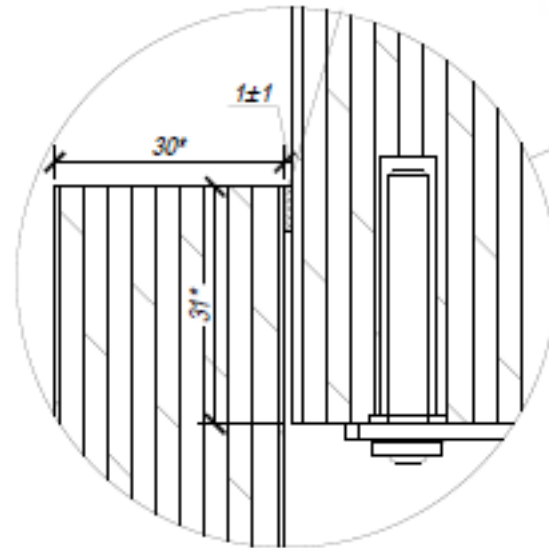
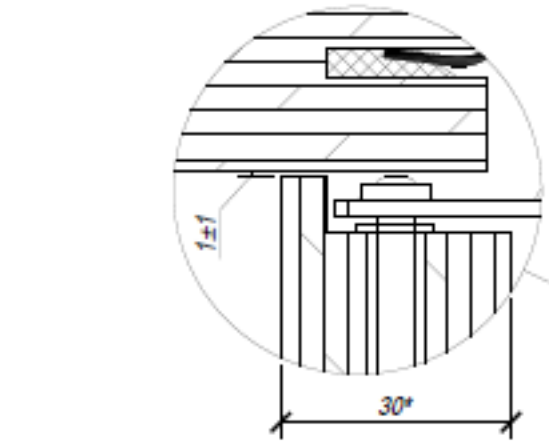
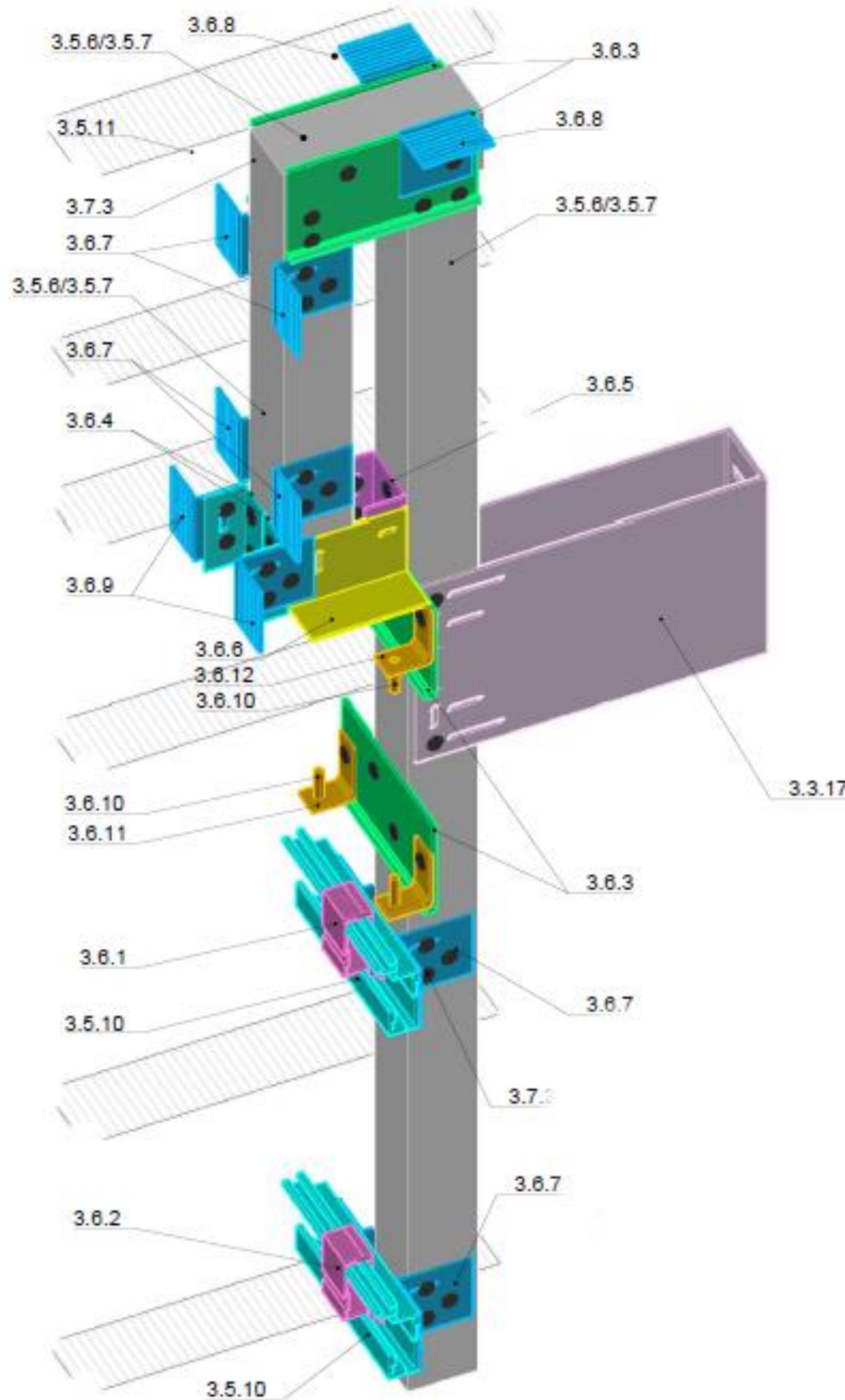
Many Systems; One Building



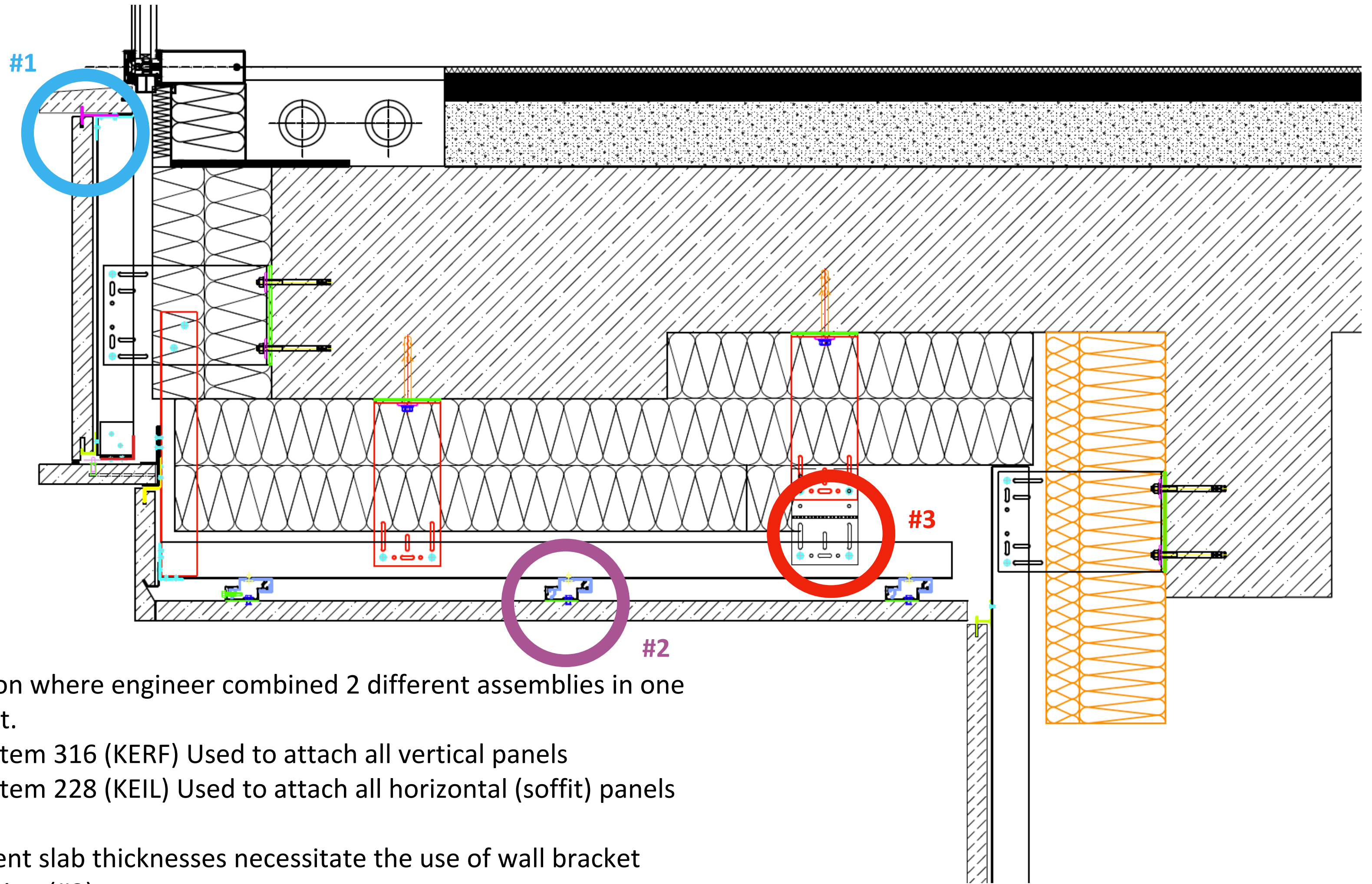
Great example showing how of combination of 3 different assemblies can help to achieve architectural idea.

- #1 System 316 (KERF)
- #2 System 228 (KEIL)
- #3 System 325 (PIN)

Using System #2 allow us to overlap the panel installed with System #3. Both system using the same vertical profile. This method can eliminate additional vertical profiles and wall brackets.





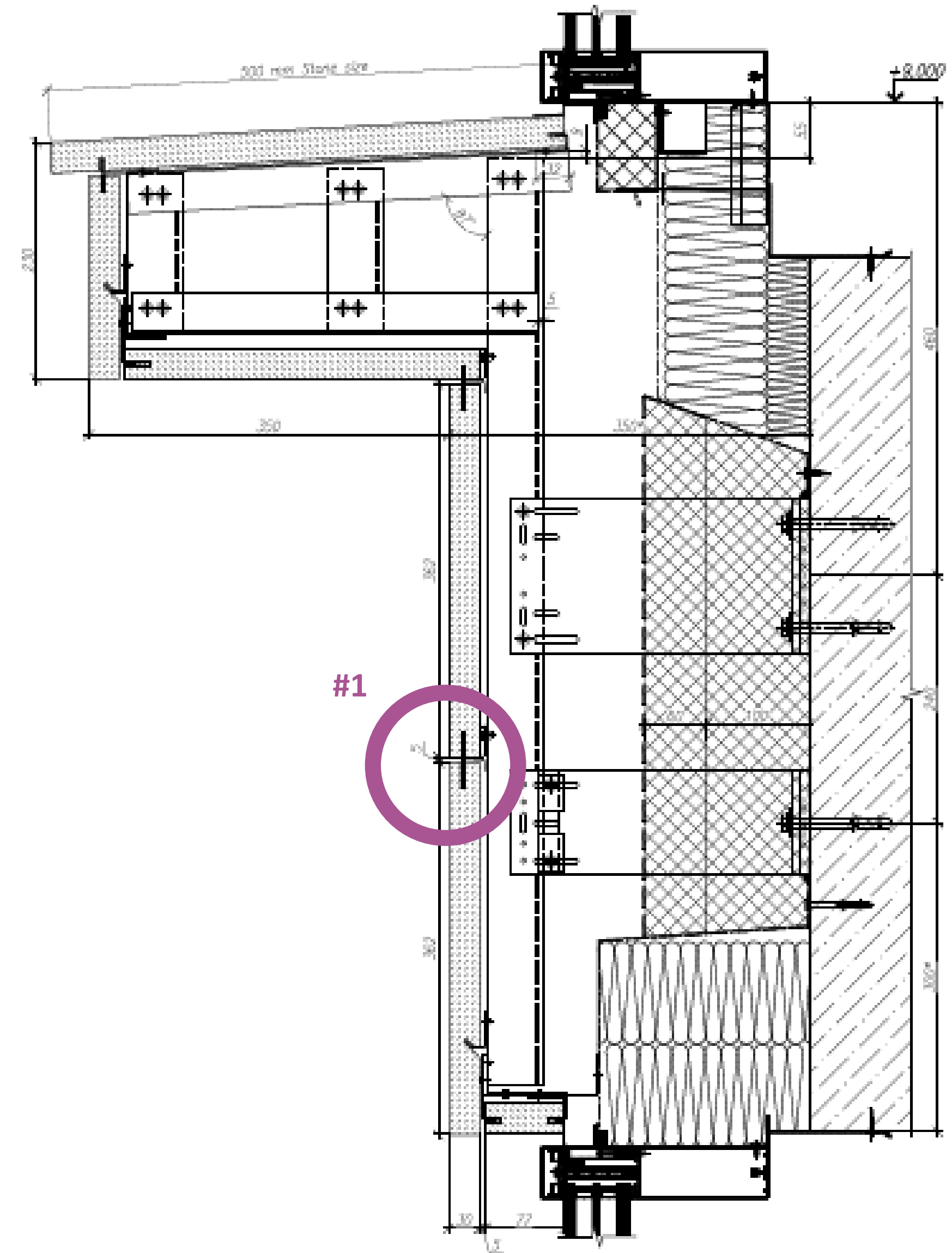
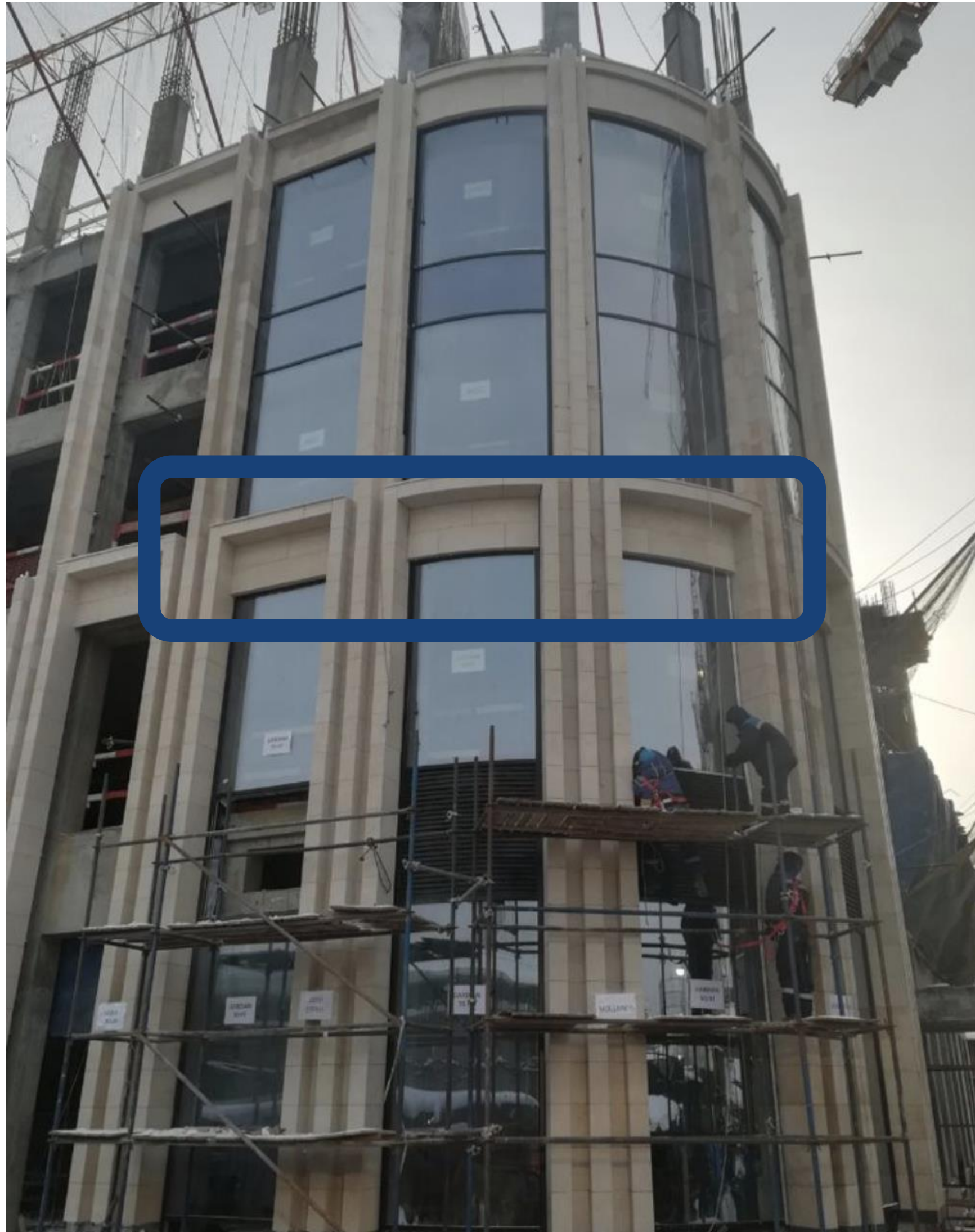


Solution where engineer combined 2 different assemblies in one project.

#1 System 316 (KERF) Used to attach all vertical panels

#2 System 228 (KEIL) Used to attach all horizontal (soffit) panels

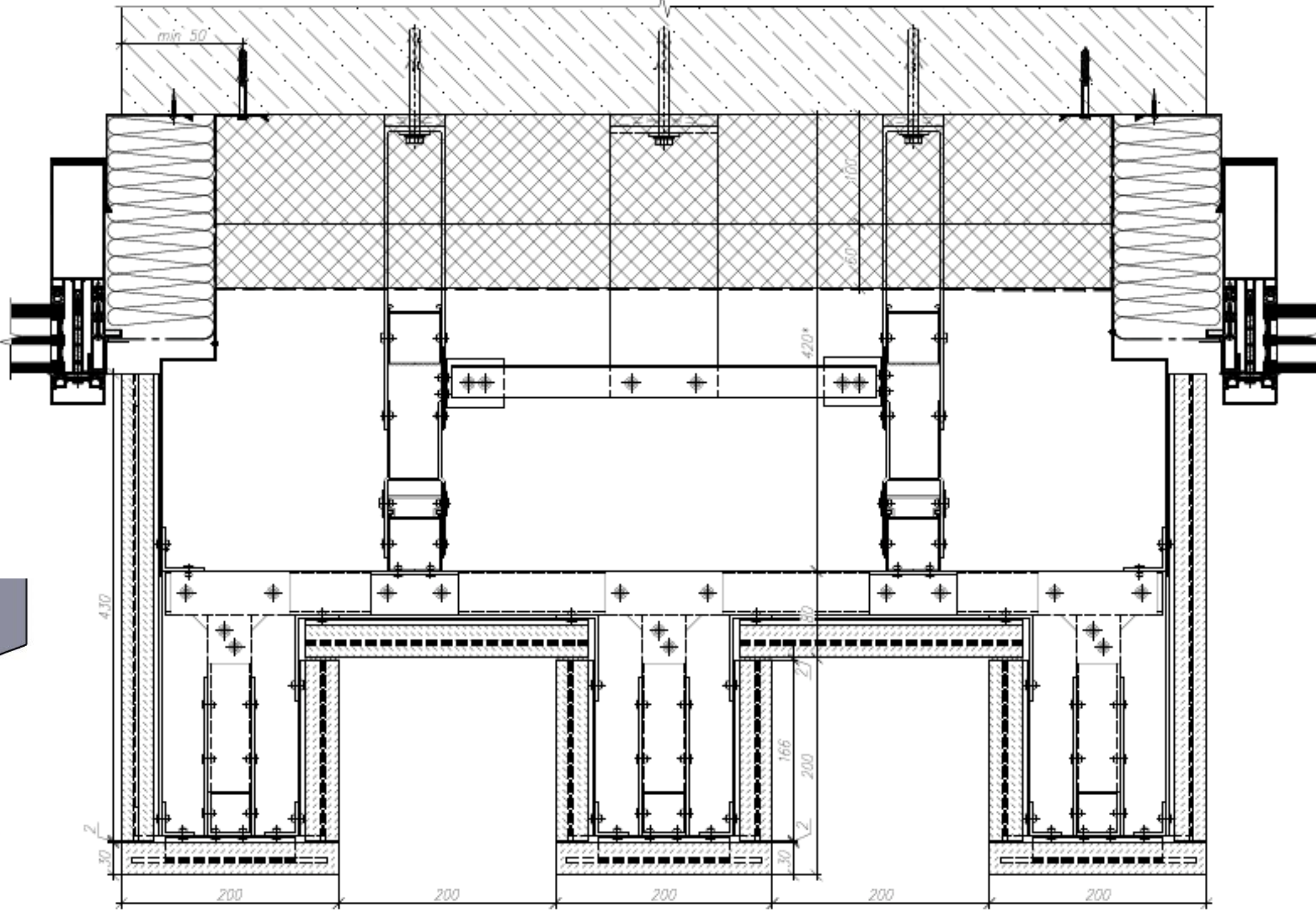
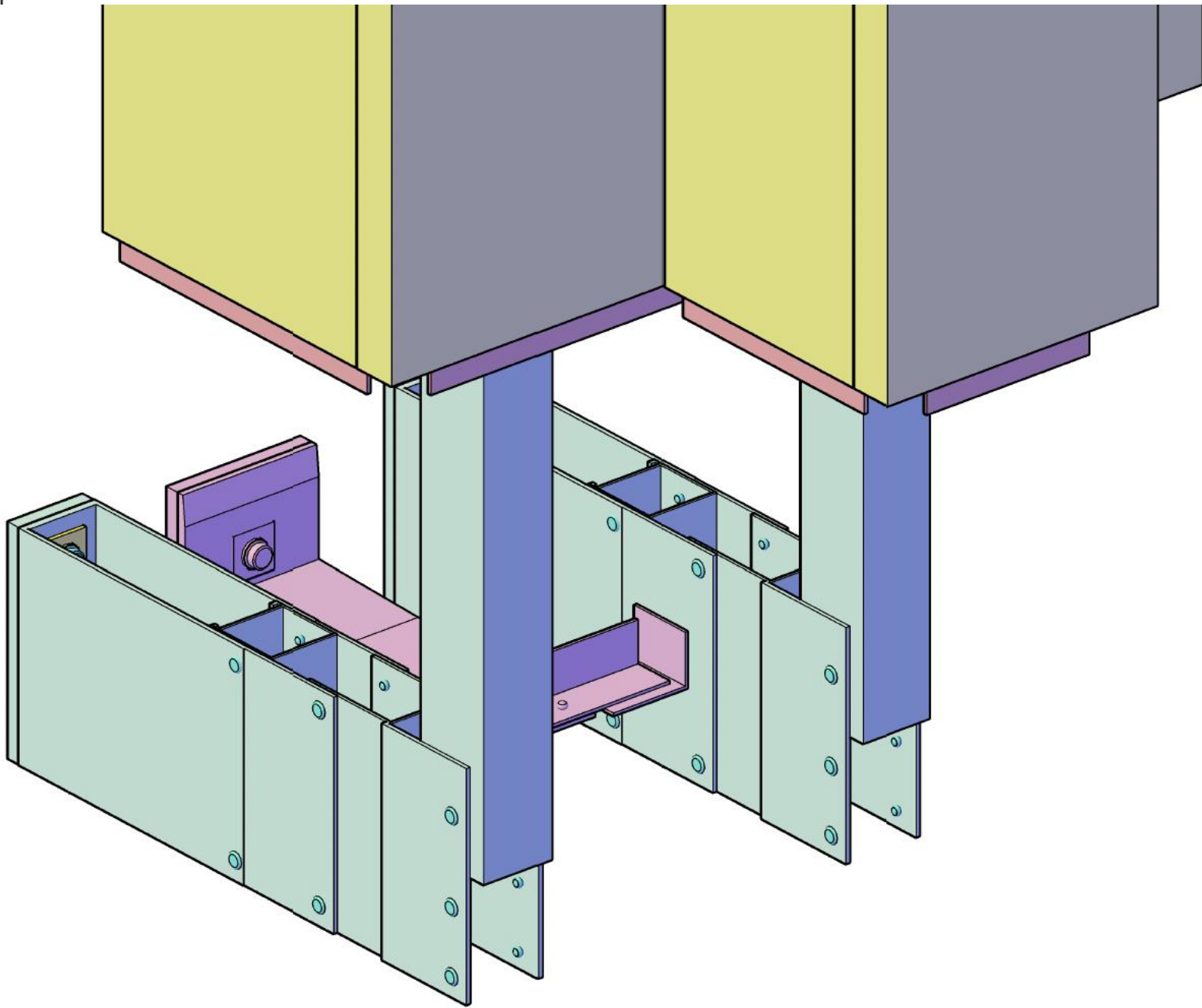
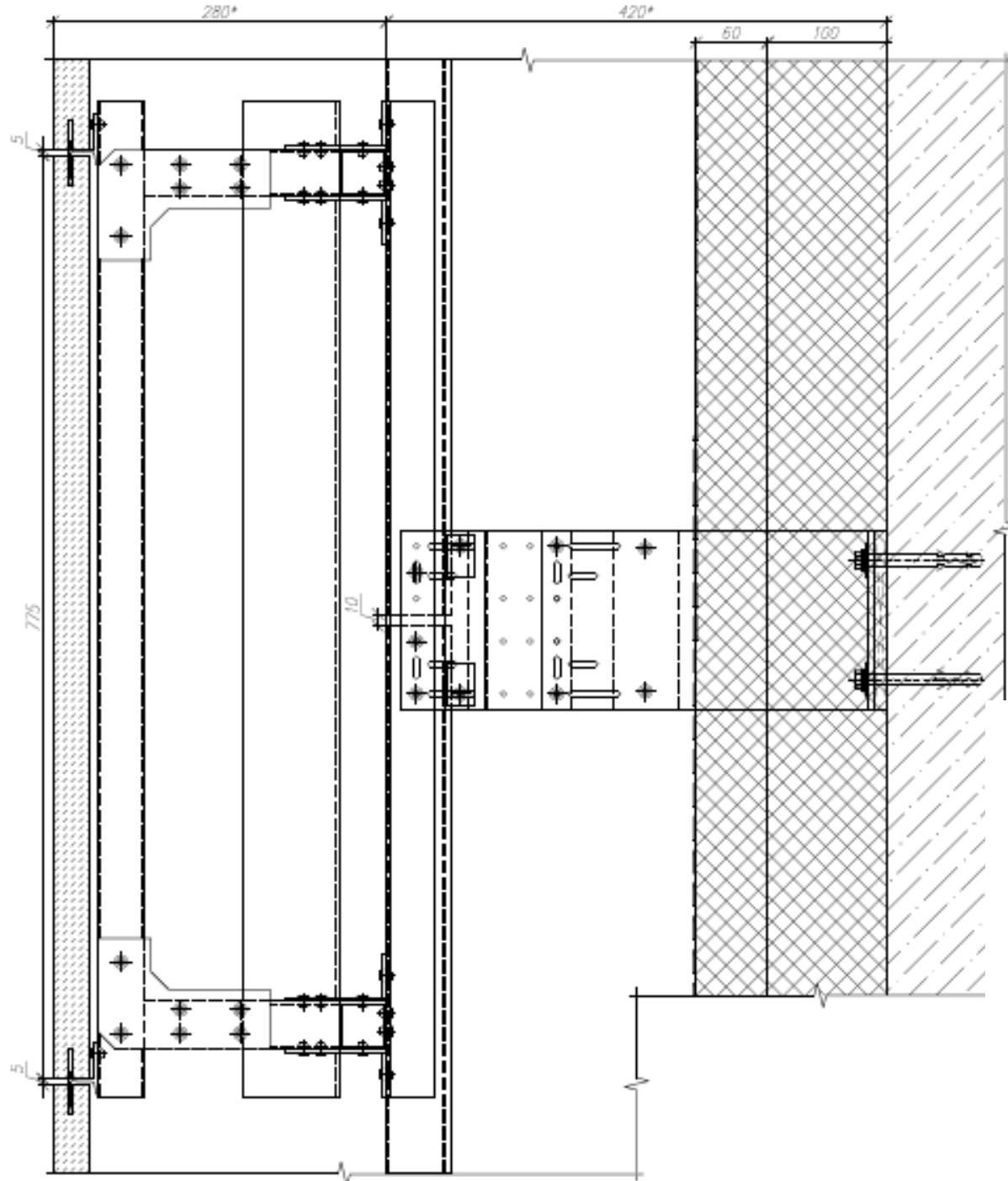
Different slab thicknesses necessitate the use of wall bracket extension (#3)



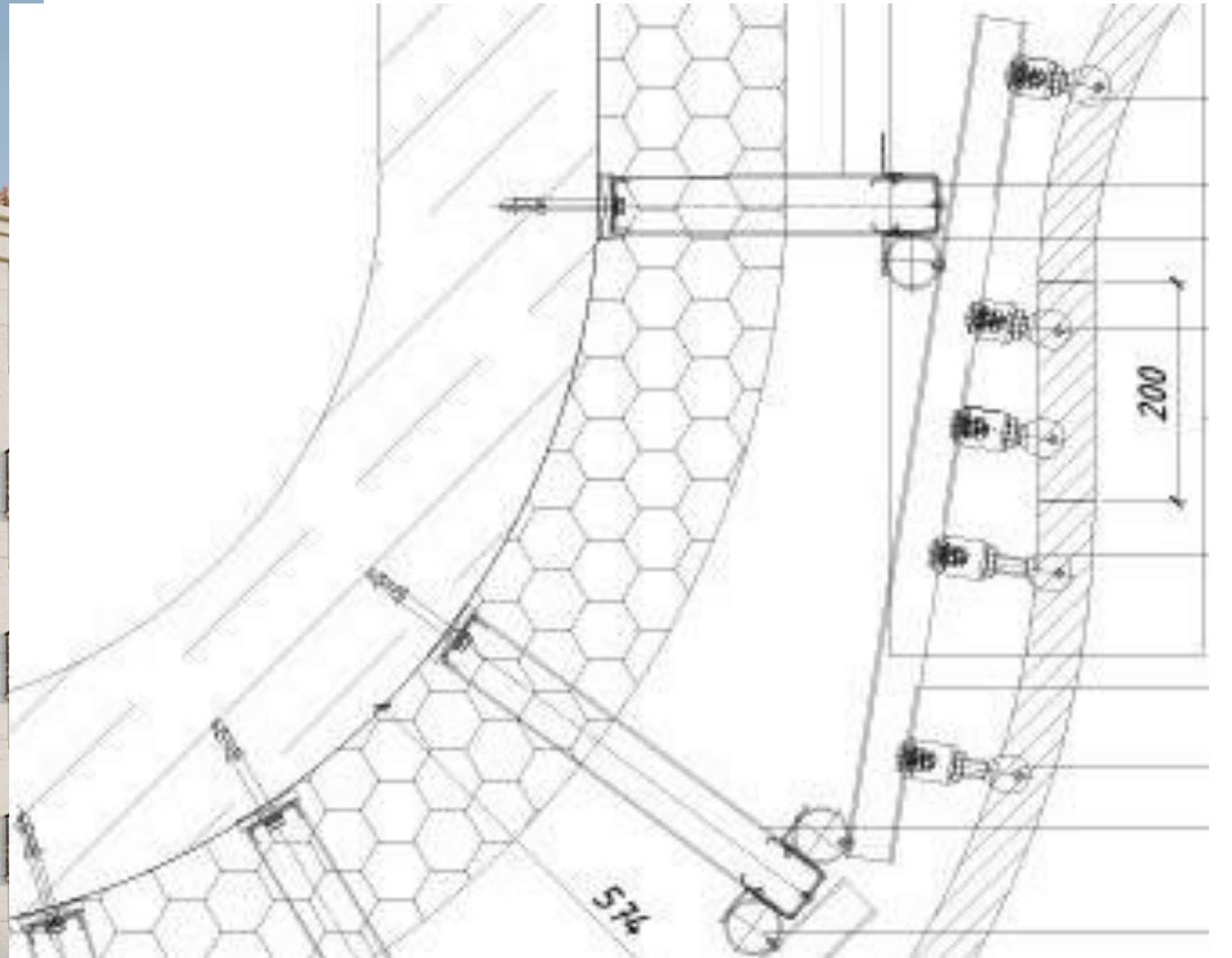
Solution where engineer combined 2 different assemblies in one project.

#1 System 316 (KERF) Used to attach all horizontal panels

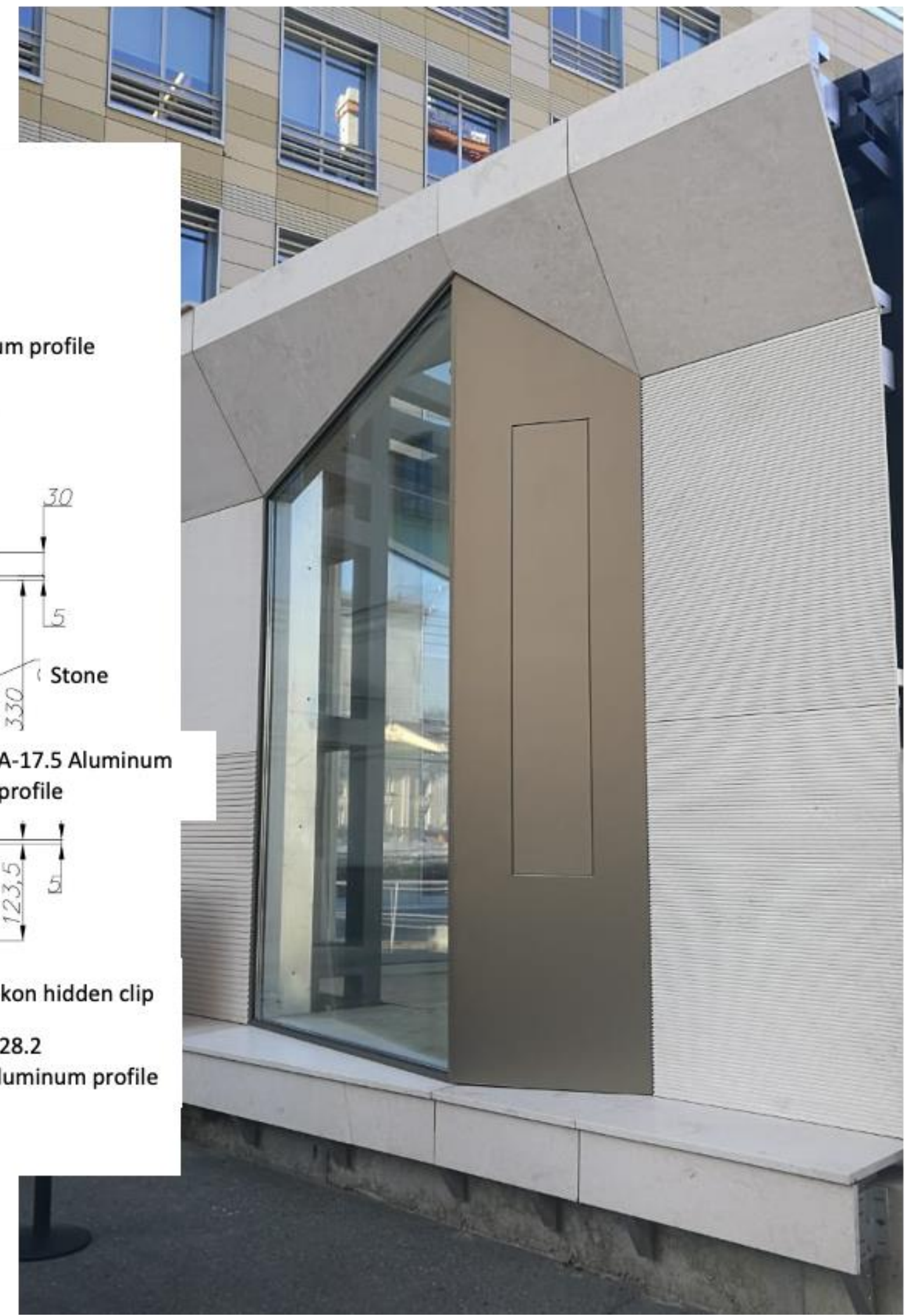
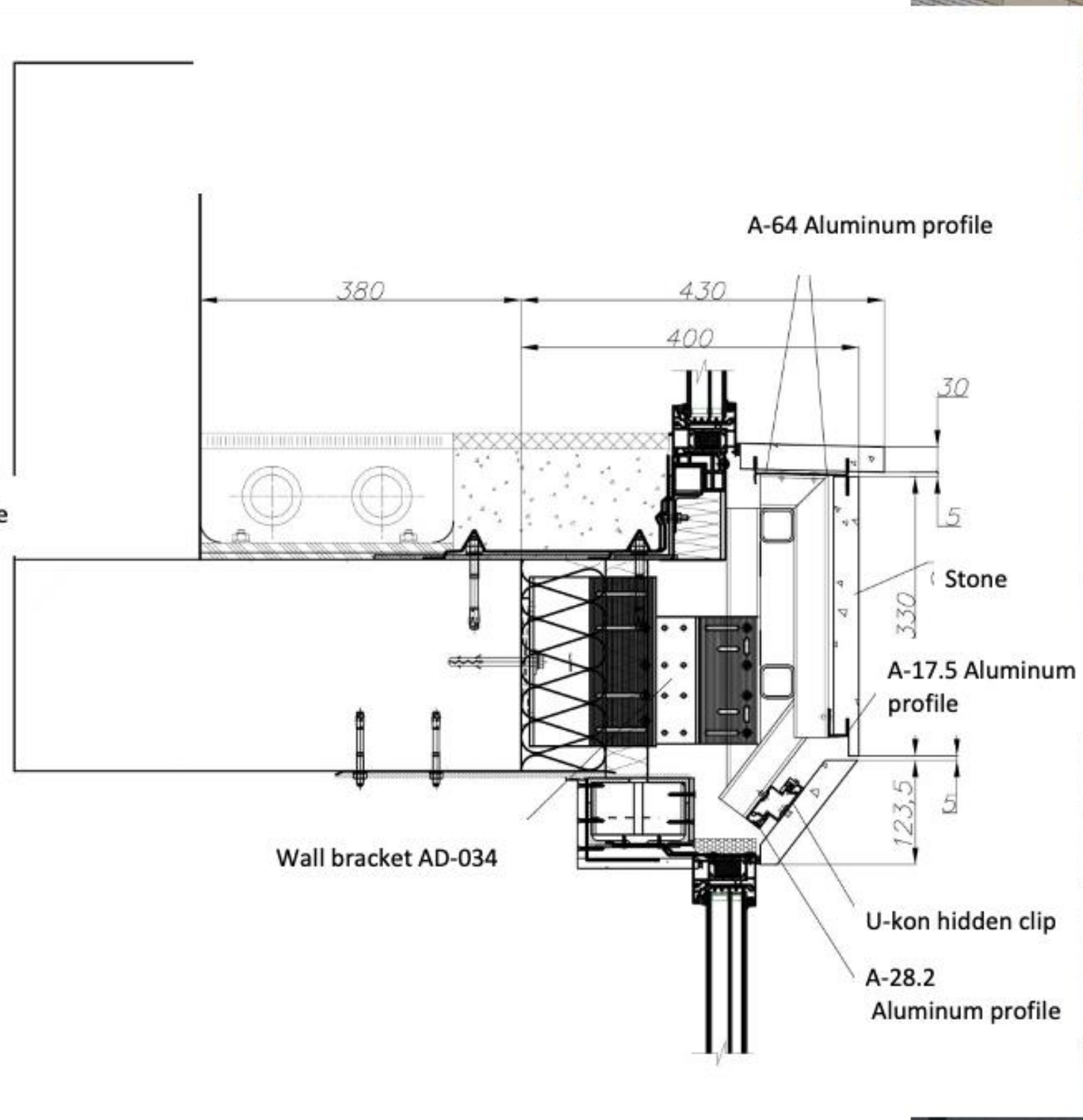
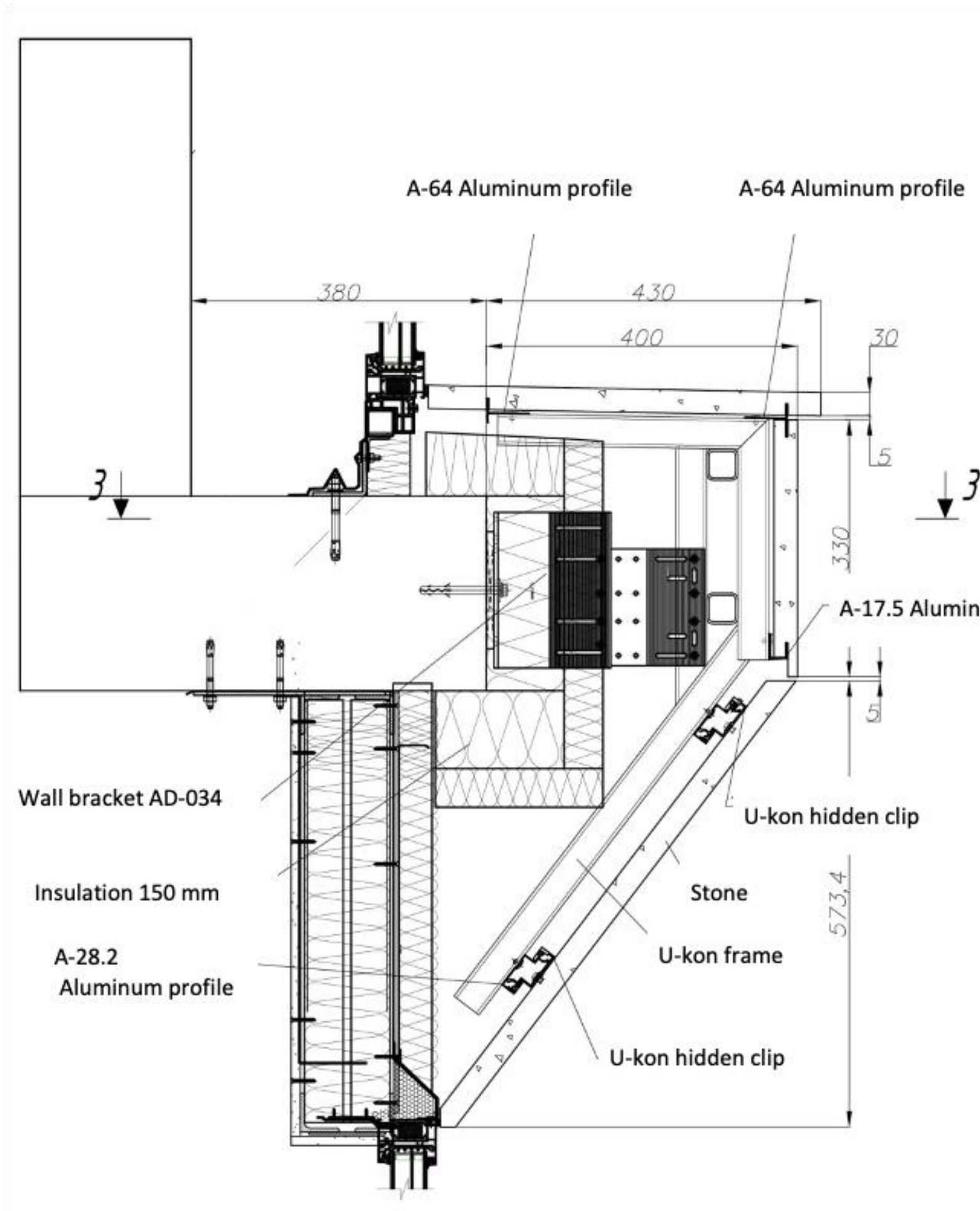
INSTALLATION EXAMPLES

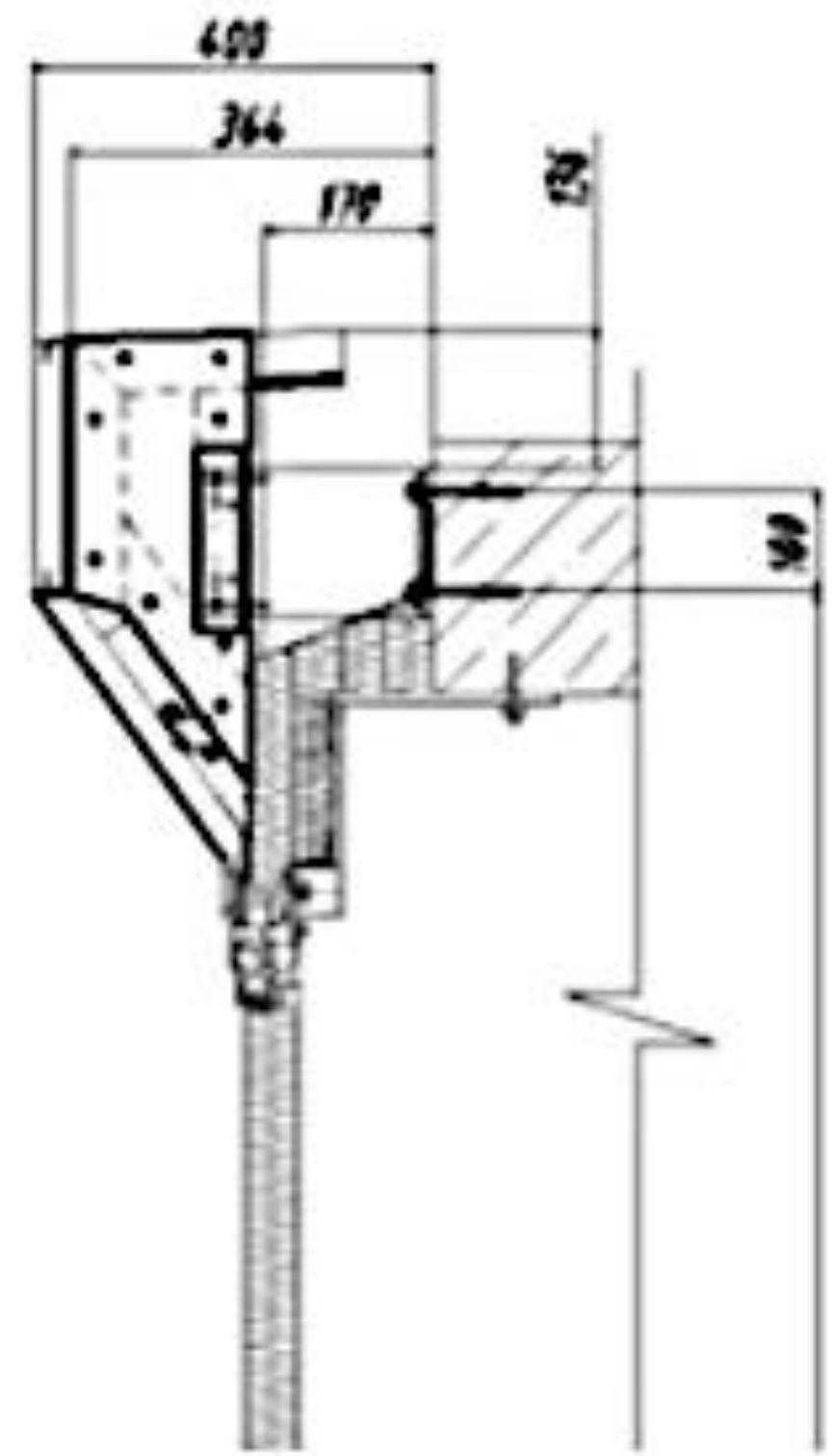
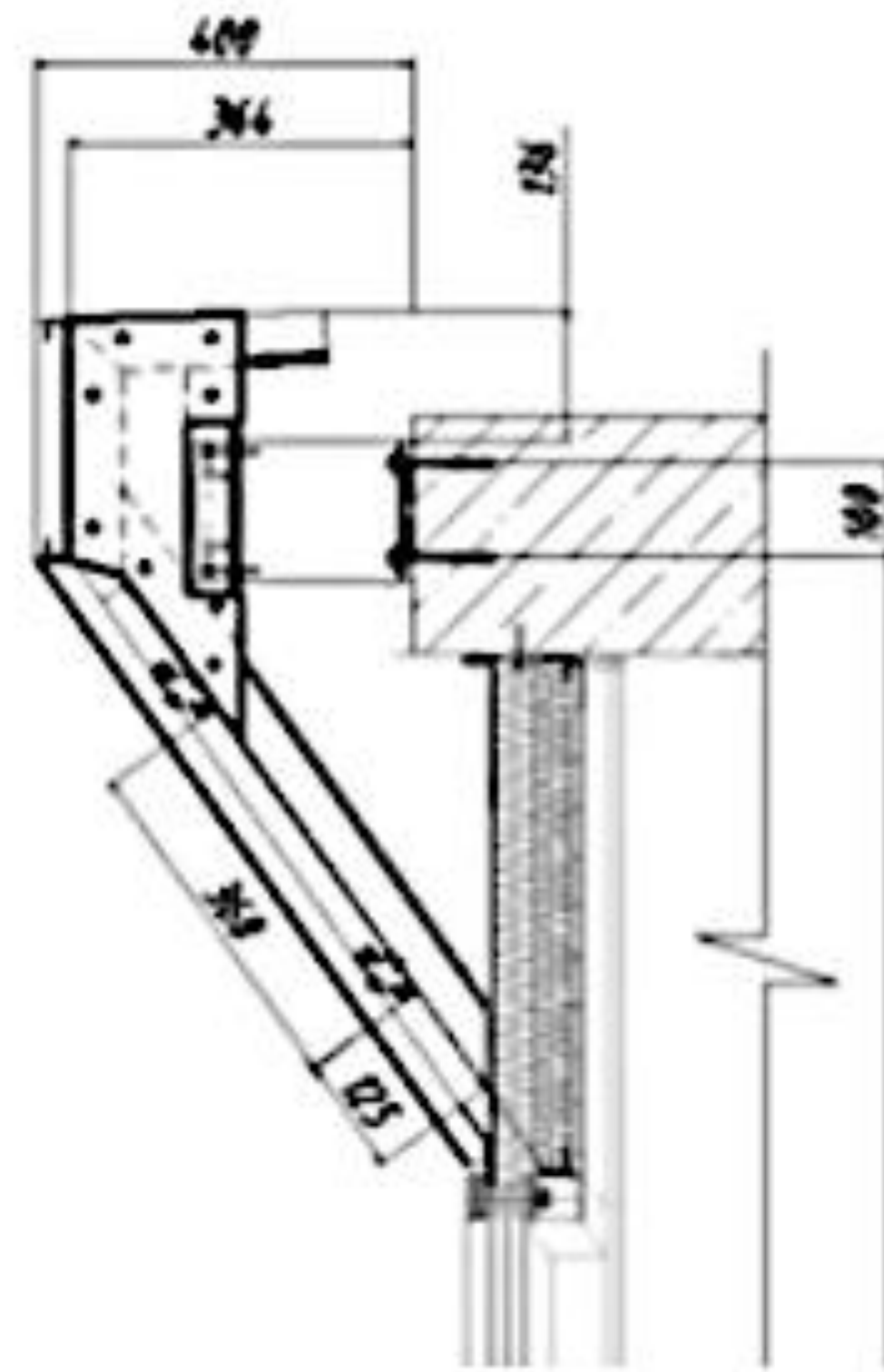
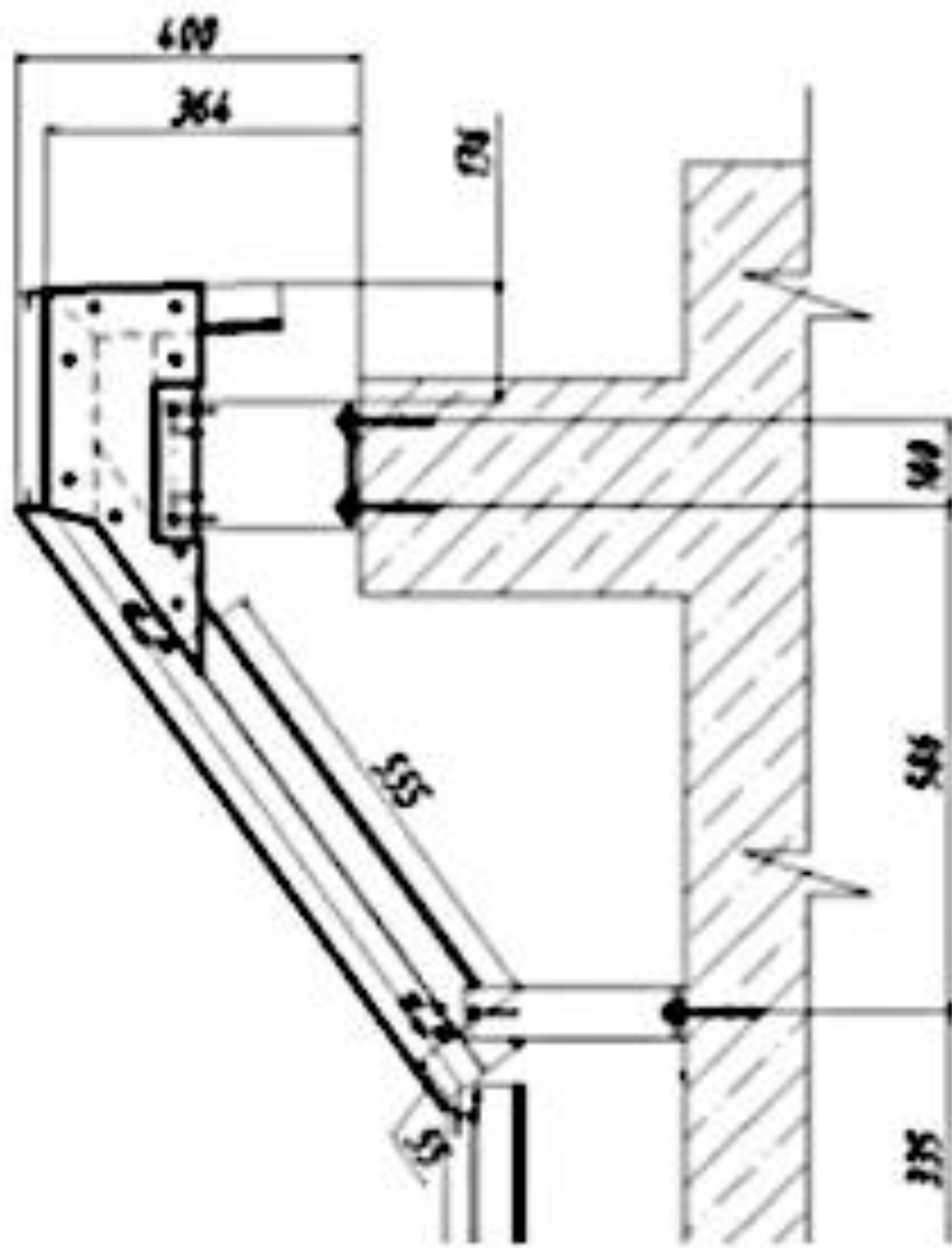












AGENDA

01 STONE AS BUILDING MATERIAL

02 CHALLENGES/DESIGN ASSIST

03 ABOUT U-KON SYSTEMS

04 AVAILABLE ASSEMBLIES

05 CASE STUDIES

Designing a High Performance Stone Façade Should Not Be Left to Chance



Problem: Too many trades with questionable ownership. One to put up structure and one to hang stone.

Problem: Vendors offer components not systems. Component suppliers do not know how to engage early, nor conduct value engineering at the beginning.

Problem: Vendors do not take ownership: offer support systems, AND pre-construction services AND post award services.

Problem: Many stone support systems use HSS, which are often not adjustable, thermally inefficient, and difficult to install.

Risk and \$\$\$

Designing a High Performance Stone Façade Should Not Be Left to Chance



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