

TENDER SPECIFICATION

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Sub-Structure for Ventilated Rainscreen Facades**

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**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

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**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

A) General Preliminary Remarks

The invitation to tender relates to the work for the supply and installation of a ventilated rainscreen facade.

The building has _____ full storeys and a total height of _____ m.

The BWM sub-structure system is to be installed on walls made of e.g. concrete, brickwork etc.

Exact description of the anchoring substrate (if relevant, with an indication of any intermediate layers such as plaster, split tiles etc.)

Manufacturer of the sub-structures:

BWM

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Germany

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Internet: www.bwm.de

The following building data are to be taken into account in order to determine the wind loads according to DIN EN 1991-1-4 and DIN EN 1991-1-4/NA

Wind zone:

1 / 2 / 3 or 4

Category of the terrain:

I , II, III or IV or mixed combination of coastal and inland terrain

Height above sea level:

(only necessary if > 800 m above sea level) _____ m

Main dimensions of building : W x H

Building ground plan (see attachment) _____ m x _____ m

Building height above surface of ground

_____ m

Exposed position according to the standard?

Yes / No. If Yes, exact description

Is building susceptible to vibration according to the Standard?

Yes / No. If Yes, exact description

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

On the basis of the above data, the wind loads are as follows:

On the side of the building _____ At a height of _____

Wind pressure _____ kN/m² acting on% of total surface area

Wind suction in area A _____ kN/m² acting on% of total surface area

Wind suction in area B _____ kN/m² acting on% of total surface area

Wind suction in area C _____ kN/m² acting on% of total surface area

On the side of the building _____ At a height of _____

Wind pressure _____ kN/m² acting on% of total surface area

Wind suction in area A _____ kN/m² acting on% of total surface area

Wind suction in area B _____ kN/m² acting on% of total surface area

Wind suction in area C _____ kN/m² acting on% of total surface area

All facades and surfaces of outer walls must be fitted with a _____ mm layer of thermal insulation as well as ventilated rainscreen facade cladding consisting of _____ installed on an aluminium sub-structure.

Special care is to be taken with all the joints, panel connecting points and edges as well as the corners of the building.

The prices in the tender must include complete mounting and installation, including the necessary materials such as cladding panels, aluminium sections, anchoring/connecting/fixing components, sealing strips, accessory sections and other small parts, as well as wastage of off-cuts.

The sequence in which surfaces are to be covered as well as the sequence of mounting procedure is to be agreed with the construction supervisor.

The bidder undertakes to plan the dates and details with the construction supervisor in advance.

B) Standards and Guidelines to be observed

- 1) DIN 18516 – External Wall Cladding, Ventilated, Part 1: Requirements, Test Principles
- 2) VOB C ATV DIN 18299: General Regulations for Construction Works of All Types
- 3) VOB C ATV DIN 18351: Suspended Ventilated Facades

C) Quality Assurance during Construction

Surcharge for quality assurance and control (BQA) during construction work in accordance with FVFH/ GTÜ industry standards and in accordance with the currently applicable table of fees.

Lump Sum

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 "Minor"
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visible or bonded fixing of large-format facade panels - As a base sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 100 "Minor" made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of L-Brackets and supporting sections (material EN-AW 6063 T 66). The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 "Minor"
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a base sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 ZeLa
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a base sub-structure for Horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 100 ZeLa made by**

BWM

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of ZeLa facade brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T66).

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Standard distances between wall and front surface of the sub-structure = 102 – 292 mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one ZeLa fixed-point bracket (max. distance from the fixed point to the furthest sliding point = 2,50 m) per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by ZeLa sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The ZeLa facade brackets are fitted with BWM stainless-steel retaining springs to facilitate mounting.

The supporting sections are connected to the ZeLa facade brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the ZeLa consoles and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 ZeLa
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 Thermokonsole
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 100 Thermokonsole made by**

BWM

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of the wall brackets Thermokonsole (material Ultramid A3WG10) and aluminium supporting sections (material EN-AW 6063 T66).

The sub-structure is to be aligned in such a way that is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one Thermokonsole fixed-point bracket for each profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by Thermokonsole sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The Thermokonsole facade brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the Thermokonsole facade brackets by means of BWM-Special rivets SNA 5x12K14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The requirements of the "General Technical Approval" or if the case arises of any determinations issued for individual case approval relating to the applications of the BWM Thermokonsole must be observed in particular with regard to any fire protection requirements (permissible types of insulation, fire barriers, etc.).

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 Thermokonsole
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a sub-structure for horizontal support systems <p>(ATK 103 / ATK 104 / ATK 110 / ATK 111)</p>

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 KL and KL-L
Uses:	- Vertical sub-structure for ceramic and fine stoneware panels with clamp fixings and 8mm joint

**TS item: _____ Adjustable aluminium sub-structure
System ATK 100 KL and KL-L made by**

BWM

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of L-Brackets and supporting sections (material EN-AW 6063 T 66). The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the width of the joints is 8 mm. The unit prices must include stainless steel (A4) clamps, fasteners as well as techniques to avoid clattering and migration of the facade panels.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 100 KL and KL-L
Uses:	- Vertical sub-structure for ceramic and fine stoneware panels with clamp fixings and 8mm joint

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 101
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 101 made by**

BWM

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of U-Brackets and supporting sections (material EN-AW 6063 T66). The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the joint has an 8mm width. Stainless steel clasps (A4) must be used.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 101
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visibly ('face') fixed or bonded large-format facade panels - As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 102 "Minor"
Uses:	- Vertical sub-structure for variable clamp fixing of facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 102 "Minor" made by**

BWM

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P.O. Box 100 117
70745 Leinfelden-Echterdingen
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Telephone: +49(0)711 – 90 313-0
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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of L-Brackets and supporting sections (material EN-AW 6063 T 66). The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the width of the joints is variable. Stainless steel clamps (A4) and spacers (A4) in addition to fixing elements and EPDM profiles are to be included in the unit price.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ **As above, but the vertical supporting sections are black anodized**

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 102 "Minor"
Uses:	- Vertical sub-structure for variable clamp fixing of facade panels

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 102
Uses:	- Vertical sub-structure for variable clamp fixing of facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 102 made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of U-Brackets and supporting sections (material EN-AW 6063 T66).

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the width of the joints is variable. Stainless steel clamps (A4) and spacers (A4) in addition to fixing elements and EPDM profiles are to be included in the unit price.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 102
Uses:	- Vertical sub-structure for variable clamp fixing of facade panels

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 102-GH
Uses:	- Vertical sub-structure for variable clamp fixing of toughened safety glass and photovoltaic glass elements

**TS item: _____ Adjustable aluminium sub-structure
System ATK 102-GH made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of U-Brackets and supporting sections (material EN-AW 6063 T66). The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open.

Aluminium glass holder, clamps, glass-bearing brackets (EN-AW 6063 T66) in addition to fixing elements and EPDM profiles are to be included in the unit price.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 102-GH
Uses:	- Vertical sub-structure for variable clamp fixing of toughened safety glass and photovoltaic glass elements

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 106 SZ 20
Uses:	- Aluminium coffers with concealed fixings ('secret fix')

TS item: _____ **Adjustable aluminium sub-structure
System ATK 106 SZ 20 made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 106 SZ 20 made of aluminium U-Brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T66)
or
vertical base support structure ATK 100 "Minor" made of aluminium L-Brackets and supporting sections (material EN-AW 6063 T66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The BWM supporting sections ATK 106 SZ 20 or ATK 100 "Minor" are to be installed vertically with one fixed-point wall bracket per profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 106 SZ 20
Uses:	- Aluminium coffers with concealed fixings ('secret fix')

B) Horizontal support structure ATK 106 SZ 20 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The facade panels are installed by means of the supporting sections fixed to the reverse of the aluminium coffers and are mechanically secured against lateral movement using SZ20 plastic clips in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the wall bracket referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 106 SZ 20
Uses:	- Aluminium coffers with concealed fixings ('secret fix')

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 107 B
Uses:	- Vertical sub-structure for metal coffers with joints of width approx. ≤ 30 mm (inset bolt fixing)

**TS item: _____ Adjustable aluminium sub-structure
System ATK 107 B made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of supporting sections and bolt sections (material EN-AW 6063 T66) as well as U-Brackets type N-LW70 (material EN-AW 5754 H24/H34) and stainless-steel bolts (A4).

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The supporting sections are mounted in the U-Brackets type N-LW70.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The bolts are installed in the required position using bolt sections, which are riveted to the supporting sections.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 107 B
Uses:	- Vertical sub-structure for metal coffers with joints of width approx. ≤ 30 mm (inset bolt fixing)

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 601 G
Uses:	<ul style="list-style-type: none"> - Vertical sub-structure for visible fixing of large-format facade panels - As base support structure for horizontal support structures (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 601 G made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of supporting sections and (material EN-AW 6063 T66) and fixing sets consisting of M8 threaded bars, eye bolts, threaded sleeves, nuts and washers made of stainless steel (A4).

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____mm.

The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically with one fixed-point per profile section to support the inherent weight of the facade.

These are installed with threaded bars and eye bolts according to the static calculation.

Wind pressure and suction forces are absorbed by threaded bars, and the fixing sets must be connected with the supporting sections in a stand-off installation. According to the structural requirements additional bracings are mounted using threaded bars and eye bolts.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 601 G
Uses:	<ul style="list-style-type: none">- Vertical sub-structure for visible fixing of large-format facade panels- As base support structure for horizontal support structures (ATK 103 / ATK 104 / ATK 110 / ATK 111)

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	Wood holder type H1
Uses:	- Vertical wood sub-structures

TS item: _____ **Vertical adjustable aluminium / wood sub-structure**
System type H1 made by

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of U-Brackets (material EN-AW 5754 H24/H34) type H1.

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The wooden laths _____ x _____ mm in the joint area and _____ x _____ mm in surface area of the cladding panels are mounted vertically using stainless steel screws, e.g. (A4) - 5 x 40 according to DIN 571, in the pre-punched U-Brackets type H1 (4 per bracket).

Only approved anchoring elements are to be used for anchoring (one per bracket). The distance between the wooden laths, U-Bracket spacings, dimensions of U-Brackets, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the following facade panels described below and the wind loads must be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	Wood holder type H1
Uses:	- Vertical wood sub-structures

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction stress on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	Wood holders type T1,T2
Uses:	- Vertical wood sub-structures

TS item: _____ **Vertical adjustable aluminium / wood sub-structure**
System type T1,T2 made by

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting L-Brackets (material EN-AW 6063 T66) or ZeLa facade brackets (material EN-AW 5754) and T-shaped profiles (material EN-AW 6063 T66)
The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The wooden laths _____ x _____ mm in the joint area and _____ x _____ mm in surface area of the cladding panels are mounted vertically using stainless steel screws, e.g. JT4-FR-2-4,9x35, in the pre-punched T-sections type T1, T2 (4 per bracket).

Only approved anchoring elements are to be used for anchoring.

The distance between the wooden laths, wall bracket spacings, dimensions of the L-Brackets or ZeLa facade brackets, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the following facade panels described below and the wind loads must be measured according to DIN.

The contact surface between the L-Brackets or ZeLa-panels and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	Wooden holders type T1,T2
Uses:	- Vertical wood sub-structures

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets or ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 "Minor"
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

**TS item: _____ Adjustable aluminium sub-structure
System ATK 103 + ATK 100 Minor made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

A) Vertical base support structure ATK 100 Minor made of aluminium L-Brackets and supporting sections (material EN-AW 6063 T 66)

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 "Minor"
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The facade panels are installed by means of the clasps fixed to the reverse surface of the panels, adjusted by means of the set-screw contained in the clasp and mechanically secured against lateral movement in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)

Approx. _____ m²

TS item: _____ **Areas with increased wind loads**

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ **Thermostop**

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ **External corners**

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ **Internal corners**

Addition to the sub-structure for forming internal corners

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 "Minor"
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 103 + ATK 100 ZeLa made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 ZeLa made of aluminium ZeLa facade brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Standard distances between wall and front surface of the sub-structure = 102 – 292 mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one ZeLa fixed-point bracket (max. distance from the fixed point to the furthest sliding point = 2,50 m) per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by ZeLa sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The ZeLa facade brackets are fitted with BWM stainless-steel retaining springs to facilitate mounting.

The supporting sections are connected to the ZeLa facade brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the ZeLa consoles and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The facade panels are installed by means of the clasps fixed to the reverse surface of the panels, adjusted by means of the set-screw contained in the clasp and mechanically secured against lateral movement in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)

Approx. _____ m²

TS item: _____ **Areas with increased wind loads**

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ **Thermostop**

Placing additional thermal separators of the type **BWM Thermostop** for the ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ **External corners**

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ **Internal corners**

Addition to the sub-structure for forming internal corners

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 103 + ATK 100 Thermokonsole made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 Thermokonsole
(material Ultramid A3WG10)
and aluminium supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one Thermokonsole fixed-point bracket for each profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by Thermokonsole sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The Thermokonsole facade brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the Thermokonsole facade brackets by means of BWM-Special rivets SNA 5x12K14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The requirements of the "General Technical Approval" or if the case arises of any determinations issued for individual case approval relating to the applications of the BWM Thermokonsole must be observed in particular with regard to any fire protection requirements (permissible types of insulation, fire barriers, etc.).

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____mm.

The facade panels are installed by means of the clasps fixed to the reverse surface of the panels, adjusted by means of the set-screw contained in the clasp and mechanically secured against lateral movement in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)

Approx. _____ m²

TS item: _____ **Areas with increased wind loads**

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ **External corners**

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ **Internal corners**

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ **Embrasures and reveals**

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 101
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 103 + ATK 101 made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 101 made of aluminium
U-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the joint has an 8mm width. Stainless steel clasps (A4) must be used.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS Item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 101
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The facade panels are installed by means of the clasps fixed to the reverse surface of the panels, adjusted by means of the set-screw contained in the clasp and mechanically secured against lateral movement in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)

Approx. _____ m²

TS item: _____ **Areas with increased wind loads**

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ **Thermostop**

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ **External corners**

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ **Internal corners**

Addition to the sub-structure for forming internal corners

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 101
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 601 G
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ **Adjustable aluminium sub-structure
System ATK 103 + ATK 601 G made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 601 G aluminium supporting sections (material EN-AW 6063 T 66) and fixing sets comprising M8 threaded bars, eye bolts, threaded sleeves, nuts and washers made of stainless-steel (A4)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically with one fixed-point per profile section to support the inherent weight of the facade.

These are installed with threaded bars and eye bolts according to the static calculation.

Wind pressure and suction forces are absorbed by threaded bars, and the fixing sets must be connected with the supporting sections in a stand-off installation.

According to the structural requirements additional bracings are mounted using threaded bars and eye bolts.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 601 G
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The joints of the supporting sections must correspond with the vertical joints of the facade panels.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The facade panels are installed by means of the clasps fixed to the reverse surface of the panels, adjusted by means of the set-screw contained in the clasp and mechanically secured against lateral movement in accordance with the manufacturer's recommendations.

When selecting the sub-structure the manufacturer's recommendations of the cladding panels are to be taken into consideration as well as the indications of any Certificate or other Approval document.

Approx. _____ m²

TS item: _____ As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)

Approx. _____ m²

TS item: _____ **Areas with increased wind loads**

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ **External corners**

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ **Internal corners**

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ **Embrasures and reveals**

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 103 + ATK 601 G
Uses:	- Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 104 + ATK 100 "Minor"
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 104 + ATK 100 "Minor" made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 100 Minor made of aluminium
L-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 "Minor"
Uses:	- Sub-structure for hook fixing of small-format facade panels

B) Horizontal support structure ATK 104 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The unit prices must include stainless steel (A4) hooks and the fasteners. The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 "Minor"
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Submission of a competent building-specific static calculation**

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-Structure system:	ATK 104 + ATK 100 ZeLa
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 104 + ATK 100 ZeLa made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 ZeLa made of aluminium ZeLa facade brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Standard distances between wall and front surface of the sub-structure = 102 – 292 mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one ZeLa fixed-point bracket (max. distance from the fixed point to the furthest sliding point = 2,50 m) per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by ZeLa sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The ZeLa facade brackets are fitted with BWM stainless-steel retaining springs to facilitate mounting.

The supporting sections are connected to the ZeLa facade brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the ZeLa consoles and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 ZeLa
Uses:	- Sub-structure for hook fixing of small-format facade panels

B) Horizontal support structure ATK 104 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The unit prices must include stainless steel (A4) hooks and the fasteners. The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 ZeLa
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Submission of a competent building-specific static calculation**

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 Thermokonsole
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Adjustable aluminium sub-structure system
ATK 104 + ATK 100 Thermokonsole made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 100 Thermokonsole
(material Ultramid A3WG10)
and aluminium supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one Thermokonsole fixed-point bracket for each profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by Thermokonsole sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The Thermokonsole facade brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the Thermokonsole facade brackets by means of BWM-Special rivets SNA 5x12K14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The requirements of the "General Technical Approval" or if the case arises of any determinations issued for individual case approval relating to the applications of the BWM Thermokonsole must be observed in particular with regard to any fire protection requirements (permissible types of insulation, fire barriers, etc.).

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 100 Thermokonsole
Uses:	- Sub-structure for hook fixing of small-format facade panels

B) Horizontal support structure ATK 104 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The unit prices must include stainless steel (A4) hooks and the fasteners. The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 101
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 104 + ATK 101 made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 101 made of aluminium
U-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the joint has an 8mm width. Stainless steel clasps (A4) must be used.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 101
Uses:	- Sub-structure for hook fixing of small-format facade panels

B) Horizontal support structure ATK 104 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The unit prices must include stainless steel (A4) hooks and the fasteners. The average distance between the wall and the front surface of the sub-structure is _____mm.

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 101
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Submission of a competent building-specific static calculation**

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 601 G
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 104 + ATK 601 G made by**

BWM
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P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 601 G aluminium supporting sections (material EN-AW 6063 T 66) and fixing sets comprising M8 threaded bars, eye bolts, threaded sleeves, nuts and washers made of stainless-steel (A4)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically with one fixed-point per profile section to support the inherent weight of the facade.
These are installed with threaded bars and eye bolts according to the static calculation.
Wind pressure and suction forces are absorbed by threaded bars, and the fixing sets must be connected with the supporting sections in a stand-off installation.
According to the structural requirements additional bracings are mounted using threaded bars and eye bolts.
The joints of the supporting sections must correspond with the horizontal joints of the facade panels.
Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.
The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 601 G
Uses:	- Sub-structure for hook fixing of small-format facade panels

B) Horizontal support structure ATK 104 made of aluminium supporting sections (material EN-AW 6063 T66)

The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

The unit prices must include stainless steel (A4) hooks and the fasteners. The average distance between the wall and the front surface of the sub-structure is _____mm.

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 104 + ATK 601 G
Uses:	- Sub-structure for hook fixing of small-format facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 "Minor"
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

TS Item: _____ **Adjustable aluminium sub-structure
System ATK 110 + ATK 100 "Minor" made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
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Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 100 Minor made of aluminium
L-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 "Minor"
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals of _____mm.
 The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.
 The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 “Minor“
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 ZeLa
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

**TS item: _____ Adjustable aluminium sub-structure
System ATK 110 + ATK 100 ZeLa**

BWM

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 ZeLa made of aluminium ZeLa facade brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Standard distances between wall and front surface of the sub-structure = 102 – 292 mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one ZeLa fixed-point bracket (max. distance from the fixed point to the furthest sliding point = 2,50 m) per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by ZeLa sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The ZeLa facade brackets are fitted with BWM stainless-steel retaining springs to facilitate mounting.

The supporting sections are connected to the ZeLa facade brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the ZeLa consoles and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 ZeLa
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals of _____mm.
 The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.
 The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 ZeLa
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 Thermokonsole
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 110 + ATK 100 Thermokonsole made by**

BWM
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Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 Thermokonsole
(material Ultramid A3WG10)
and aluminium supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one Thermokonsole fixed-point bracket for each profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by Thermokonsole sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The Thermokonsole facade brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the Thermokonsole facade brackets by means of BWM-Special rivets SNA 5x12K14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The requirements of the "General Technical Approval" or if the case arises of any determinations issued for individual case approval relating to the applications of the BWM Thermokonsole must be observed in particular with regard to any fire protection requirements (permissible types of insulation, fire barriers, etc.).

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 100 Thermokonsole
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals of _____mm.
 The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.
 The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 101
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

**TS item: _____ Adjustable aluminium-sub-structure system
System ATK 110 + ATK 101 made by**

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Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 101 made of aluminium
U-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.
The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.
The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.
An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.
Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.
The vertical and horizontal joints remain open, the joint has an 8mm width. Stainless steel clasps (A4) must be used.
Only approved anchoring elements are to be used for anchoring.
The joints of the supporting sections must correspond with the horizontal joints of the facade panels.
Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.
The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 101
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals of _____mm.
 The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.
 The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 101
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 601 G
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

**TS Item: _____ Adjustable aluminium sub-structure
System ATK 110 + ATK 601 G made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 601 G aluminium supporting sections (material EN-AW 6063 T 66) and fixing sets comprising M8 threaded bars, eye bolts, threaded sleeves, nuts and washers made of stainless-steel (A4)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically with one fixed-point per profile section to support the inherent weight of the facade.

These are installed with threaded bars and eye bolts according to the static calculation.

Wind pressure and suction forces are absorbed by threaded bars, and the fixing sets must be connected with the supporting sections in a stand-off installation.

According to the structural requirements additional bracings are mounted using threaded bars and eye bolts.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 110 + ATK 601 G
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels

B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals of _____mm.
 The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.
 The average distance between the wall and the front surface of the sub-structure is _____mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 "Minor"
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 111 + ATK 100 "Minor" made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 100 Minor made of aluminium
L-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.
The average distance between the wall and the front surface of the sub-structure is _____ mm.
The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The wall brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the wall brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the wall brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 “Minor“
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections are installed on the vertical base support structure at the required intervals according to a static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

A backing strip is glued onto the horizontal sections according to the facade panel manufacturer's recommendations.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the L-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 “Minor“
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 111 + ATK 100 ZeLa made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 ZeLa made of aluminium ZeLa facade brackets (material EN-AW 5754) and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Standard distances between wall and front surface of the sub-structure = 102 – 292 mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one ZeLa fixed-point bracket (max. distance from the fixed point to the furthest sliding point = 2,50 m) per profile section in order to support the inherent weight of the facade. Wind pressure and suction forces are absorbed by ZeLa sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The ZeLa facade brackets are fitted with BWM stainless-steel retaining springs to facilitate mounting.

The supporting sections are connected to the ZeLa facade brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N or self-drilling screws JT4-3H/5-5,5x19. An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet or screw fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN. The contact surface between the ZeLa consoles and the anchoring substrate is to be protected if required in accordance with DIN EN 1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections are installed on the vertical base support structure at the required intervals according to a static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

A backing strip is glued onto the horizontal sections according to the facade panel manufacturer's recommendations.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the ZeLa facade brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 ZeLa
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ **Adjustable aluminium sub-structure
System ATK 111 + ATK 100 Thermokonsole made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 100 Thermokonsole
(material Ultramid A3WG10)
and aluminium supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The BWM supporting sections are to be installed vertically usually with one Thermokonsole fixed-point bracket for each profile section to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by Thermokonsole sliding-point brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The Thermokonsole facade brackets are fitted with BWM stainless-steel retaining springs to facilitate installation.

The supporting sections are connected to the Thermokonsole facade brackets by means of BWM-Special rivets SNA 5x12K14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The requirements of the "General Technical Approval" or if the case arises of any determinations issued for individual case approval relating to the applications of the BWM Thermokonsole must be observed in particular with regard to any fire protection requirements (permissible types of insulation, fire barriers, etc.).

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections are installed on the vertical base support structure at the required intervals according to a static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

A backing strip is glued onto the horizontal sections according to the facade panel manufacturer's recommendations.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 101
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ **Adjustable aluminium sub structure
System ATK 111 + ATK 101 made by**

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

**A) Vertical base support structure ATK 101 made of aluminium
U-Brackets and supporting sections (material EN-AW 6063 T 66)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of:

Please give an exact description

The sub-structure sections are placed in the U-Brackets in a manner that they have horizontal movement.

The supporting sections are to be installed vertically usually with one fixed-point wall bracket per profile section in order to support the inherent weight of the facade.

Wind pressure and suction forces are absorbed by sliding-point wall brackets which enable an unforced change in length of the supporting sections due to temperature changes.

The supporting sections are connected to the U-Brackets by means of BWM-Special rivets SNA 5 x 12 K 14 A/N.

An approved "General Building Authority Test Certificate" according to DIN is to be submitted for this type of rivet fixing in accordance with the Building Regulation List A Part 2, Point 2.17.

Suitable rivet-setting gauge attachments are to be used when riveting the sliding points in accordance with the manufacturer's instructions.

The vertical and horizontal joints remain open, the joint has an 8mm width. Stainless steel clasps (A4) must be used.

Only approved anchoring elements are to be used for anchoring.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

The contact surface between the U-Brackets and the anchoring substrate is to be protected if required according to DIN EN-1991-1-1 and DIN EN 1090-3.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 101
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections are installed on the vertical base support structure at the required intervals according to a static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

A backing strip is glued onto the horizontal sections according to the facade panel manufacturer's recommendations.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ Thermostop

Placing additional thermal separators of the type **BWM Thermostop** for the U-Brackets referred to

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 101
Uses:	- Sub-structure for concealed fixing of large format Trespa (TS300) facade panels

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 601 G
Uses:	- Sub-structure for the concealed fixing of large-format Trespa facade panels (TS300)

**TS item: _____ Adjustable aluminium sub-structure
System ATK 111 + ATK 601 G made by**

BWM
Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- A) Vertical base support structure ATK 601 G aluminium supporting sections (material EN-AW 6063 T 66) and fixing sets comprising M8 threaded bars, eye bolts, threaded sleeves, nuts and washers made of stainless-steel (A4)**

The sub-structure is to be aligned in such a way that it is in true alignment and vertical.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

The anchoring substrate consists of

Please give an exact description

The BWM supporting sections are to be installed vertically with one fixed-point per profile section to support the inherent weight of the facade.

These are installed with threaded bars and eye bolts according to the static calculation.

Wind pressure and suction forces are absorbed by threaded bars, and the fixing sets must be connected with the supporting sections in a stand-off installation.

According to the structural requirements additional bracings are mounted using threaded bars and eye bolts.

The joints of the supporting sections must correspond with the horizontal joints of the facade panels.

Types of supporting section and distances between them, dimensions of fixed points and sliding points, as well as all means of connecting and anchoring must be in accordance with a static calculation.

The sub-structure is to be designed for the inherent weight loads of the facade panels described below, and the wind loads are to be measured according to DIN.

Approx. _____ m²

TS item: _____ As above, but the vertical supporting sections are black anodized

Approx. _____ m²

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 601 G
Uses:	- Sub-structure for the concealed fixing of large-format Trespa façade panels (TS300)

B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)

The ATK 110 horizontal supporting sections are installed on the vertical base support structure at the required intervals according to a static calculation. The horizontal supporting sections are fixed by using DIN approved BWM-Special rivets SNA 5x12 K14 A/N. For each horizontal section a fixed-point rivet is to be set in a round hole, all other rivets are to be made in the oblong holes using rivet-setting gauge attachments.

A backing strip is glued onto the horizontal sections according to the facade panel manufacturer's recommendations.

The average distance between the wall and the front surface of the sub-structure is _____ mm.

Approx. _____ m²

TS item: _____ Areas with increased wind loads

For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN

Approx. _____ m²

TS item: _____ External corners

Addition to the sub-structure for forming external corners

Approx. _____ m

TS item: _____ Internal corners

Addition to the sub-structure for forming internal corners

Approx. _____ m

TS item: _____ Embrasures and reveals

Addition to the sub-structure for forming the window embrasures and door reveals with a width of _____ cm

Approx. _____ m

TS item: _____ Building expansion joints

Addition to the sub-structure construction for forming in the area of building expansion joints

Approx. _____ m

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	ATK 111 + ATK 601 G
Uses:	- Sub-structure for the concealed fixing of large-format Trespa facade panels (TS300)

TS item: _____ Submission of a competent building-specific static calculation

Lump Sum

Other items for the sub-structure may be necessary depending on the actual features of the building and its situation.

**Recommendation - Specification of Products and Services
Sub-Structure for Ventilated Rainscreen Facades**

Sub-structure system:	BWM Fire Barriers
Uses:	- For increased requirements for fire protection of ventilated rain screen facades

TS item: _____ Fire barriers made by

BWM

Dübel + Montagetechnik GmbH
P.O. Box 100 117
70745 Leinfelden-Echterdingen
Germany
Telephone: +49(0)711 – 90 313-0
Fax: +49(0)711 – 90 313-20

Supply and install in accordance with DIN 18516, using the original parts indicated, consisting of

- Wall section 30 mm x 40...370 mm made of 1,0 mm galvanized iron
- Ventilation section made of 1,0 mm galvanized iron
- Fasteners for ventilation section made of galvanized iron

The fire barriers are installed in accordance with the respective Building Control Authority / Regional Building Control.

The installation of the wall sections is undertaken using permissible approved anchoring elements in pre-punched oblong holes into the anchoring substrate made of _____.

The ventilation sections are fixed to the wall sections using rivets.

An additional fixing of the ventilation profiles is achieved through the use of fasteners, which are connected sideways on the sections present on the building using screws / rivets.

All fixing intervals and the installation lengths of the sections are according to The manufacturer's recommendations.

Approx. _____ m