# **TENDER SPECIFICATION**

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

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# 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 Dübel + Montagetechnik GmbH P.O. Box 10 01 17 70745 Leinfelden-Echterdingen Germany Telephone:+49 (0)711/90 313-0 Fax: +49 (0)711/90 313-20 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)

Main dimensions of building : W x H Building ground plan (see attachment)

\_\_\_\_ m x \_\_\_\_\_m

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/m <sup>2</sup> acting on% of total surface area	
Wind suction in area A	_ kN/m <sup>2</sup> acting on% of total surface area	
Wind suction in area B	_ kN/m <sup>2</sup> acting on% of total surface area	
Wind suction in area C	_ kN/m <sup>2</sup> acting on% of total surface area	
On the side of the building	_At a height of	
Wind pressure	_ kN/m <sup>2</sup> acting on% of total surface area	
Wind suction in area A	_ kN/m <sup>2</sup> acting on% of total surface area	
Wind suction in area B	_ kN/m <sup>2</sup> acting on% of total surface area	
Wind suction in area C	_ kN/m <sup>2</sup> 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

Sub-Structure system:	ATK 100 "Minor"
Uses:	<ul> <li>Vertical sub-structure for visible or bonded fixing of large-format facade panels</li> <li>As a base sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>

#### 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

	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.
	<ul> <li>The joints of the supporting sections must correspond with the horizontal joints of the facade panels.</li> <li>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.</li> </ul>
	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 m <sup>2</sup>
TS item:	As above, but the vertical supporting sections are black anodized
	Approx m <sup>2</sup>

Sub-Structu	re svstem:	ATK 100 "Minor"
Uses:		<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a base sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>
TS item:	Areas with increased wind load	<u>S</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa L-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approxm	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con- expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-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.

Sub-Structure system:	ATK 100 ZeLa
Uses:	<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a base sub-structure for Horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>

# TS item: \_\_\_\_\_ Adjustable aluminium sub-structure System 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 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structu	re system:	ATK 100 ZeLa
Uses:		- 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 load	· · · · · · · · · · · · · · · · · · ·
	For the reinforcement of the sub	structure necessary due to increased wind
	suction loads on buildings accord	
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa ZeLa facade brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-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.

Sub-Structure system:	ATK 100 Thermokonsole
Uses:	<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>

#### TS item: \_\_\_\_\_ Adjustable aluminium sub-structure System 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 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structu	re system:	ATK 100 Thermokonsole
Uses:		<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>
TS item:	Areas with increased wind load	<u>s</u>
	For the reinforcement of the sub- suction loads on buildings accord	-structure necessary due to increased wind ding to DIN
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for t	forming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for the sub-st	forming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for t with a width of cm	forming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent bui	Iding-specific static calculation
	Lump Sum	
	Other items for the sub-structure features of the building and its si	may be necessary depending on the actual tuation.

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

#### TS item: \_\_\_\_\_ Adjustable aluminium sub-structure System ATK 100 KL and KL-L 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.

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structu	re system:	ATK 100 KL and KL-L
Uses:	•	<ul> <li>Vertical sub-structure for ceramic and fine stoneware panels with clamp fixings and 8mm joint</li> </ul>
TS item:	Areas with increased wind loads	
		-structure necessary due to increased wind
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa L-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for forming external corners	
	Approx m	
TS item:	Addition to the sub-structure for forming internal corners Approx m	
TS item:	Embrasures and reveals	
10 keini	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 con expansion joints	struction for forming in the area of building
	Approx m	
TS item:	_ Submission of a competent bui	Iding-specific static calculation
	Lump Sum	
	Other items for the sub-structure features of the building and its si	may be necessary depending on the actual tuation.

Sub-Structure system:	ATK 101
Uses:	<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>

# TS item: \_\_\_\_\_ Adjustable aluminium sub-structure System 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 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structur	e system:	ATK 101
Uses:	•	<ul> <li>Vertical sub-structure for visibly ('face') fixed or bonded large- format facade panels</li> <li>As a sub-structure for horizontal support systems (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>
TS item:	Areas with increased wind load	<u>s</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the U-Brackets referred to	
	Approx m <sup>2</sup>	
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 f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con- expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-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.

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

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.

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. \_\_\_\_\_ m<sup>2</sup>

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

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- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
Placing additional thermal separators of the type L-Brackets referred to		tors of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming 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 for with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure conservation joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structure system:		ATK 102
Uses:		<ul> <li>Vertical sub-structure for variable clamp fixing of facade panels</li> </ul>
TS item:	Areas with increased wind loads	
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa U-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming 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 f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure conservation joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	
	Other items for the sub structure	may be necessary depending on the actual

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

#### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structu	re system:	ATK 102-GH
Uses:		<ul> <li>Vertical sub-structure for variable clamp fixing of toughened safety glass and photovoltaic glass elements</li> </ul>
TS item:	Areas with increased wind loads	<u>3</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa U-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for for with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure consequence expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	
	Other items for the sub-structure features of the building and its sit	may be necessary depending on the actual uation.

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. \_\_\_\_\_ m<sup>2</sup>

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

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)

	<ul> <li>The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation.</li> <li>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.</li> <li>The joints of the supporting sections must correspond with the vertical joints of the facade panels.</li> <li>The average distance between the wall and the front surface of the sub-structure is</li> </ul>
	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 m <sup>2</sup>
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 m <sup>2</sup>
TS item:	Thermostop
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the wall bracket referred to
	Approx m <sup>2</sup>
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

ATK 106 SZ 20
<ul> <li>Aluminium coffers with concealed fixings ('secret fix')</li> </ul>

### 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

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

#### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-Structure system:		ATK 107 B
Uses:		<ul> <li>Vertical sub-structure for metal coffers with jointsof width approx. ≤ 30 mm (inset bolt fixing)</li> </ul>
TS item:	Areas with increased wind loads	<u>5</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa U-Brackets referred to	itors of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for for with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure consequence expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	
	Other items for the sub-structure features of the building and its sit	may be necessary depending on the actual uation.

Sub-Structure system:		ATK 601 G
Uses:		<ul> <li>Vertical sub-structure for visible fixing of large-format facade panels</li> <li>As base support structure for horizontal support structures (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>
TS item:	_ Adjustable aluminium sub-struc System ATK 601 G made by	ture
	<b>BWM</b> Dübel + Montagetechnik GmbH P.O. Box 100 117 70745 Leinfelden-Echterdingen Germany Telephone: +49(0)711 – 90 313- Fax: +49(0)711 – 90 313-20	0
	consisting of supporting sections consisting of M8 threaded bars, e made of stainless steel (A4). The sub-structure is to be aligned vertical.	with DIN 18516, using the original parts indicated, and (material EN-AW 6063 T66) and fixing sets eye bolts, threaded sleeves, nuts and washers d in such a way that it is in true alignment and ne wall and the front surface of the sub-structure is s of
	Please give an exact description	
	The BWM supporting sections a profile section to support the inh These are installed with threade calculation. Wind pressure and suction force sets must be connected with the According to the structural requi threaded bars and eye bolts. The joints of the supporting sect the facade panels. Types of supporting section and points and sliding points, as well in accordance with a static calcu The sub-structure is to be design	re to be installed vertically with one fixed-point per erent weight of the facade. d bars and eye bolts according to the static es are absorbed by threaded bars, and the fixing supporting sections in a stand-off installation. rements additional bracings are mounted using ions must correspond with the horizontal joints of distances between them, dimensions of fixed as all means of connecting and anchoring must be
	Approx m <sup>2</sup>	
TS item:	_ As above, but the vertical support	ng sections are black anodized
	Approx m <sup>2</sup>	

Sub-Structu	re system:	ATK 601 G
Uses:		<ul> <li>Vertical sub-structure for visible fixing of large-format facade panels</li> <li>As base support structure for horizontal support structures (ATK 103 / ATK 104 / ATK 110 / ATK 111)</li> </ul>
TS item:	Areas with increased wind load	2
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming 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 f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure conservation joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	
	Other items for the sub-structure features of the building and its sit	may be necessary depending on the actual uation.

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.

## 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:	For the reinforcement of the sub- suction stress on buildings accor	structure necessary due to increased wind
TS item:	Approx m <sup>2</sup>	
	Placing additional thermal separa U-Brackets referred to Approx m <sup>2</sup>	ators of the type <b>BWM Thermostop</b> for the
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	ding-specific static calculation
	Lump Sum	

Sub-struc	ture system:	Wood holders type T1,T2
Uses:		- Vertical wood sub-structures
TS item:	Vertical adjustable aluminiu System type T1,T2 made by	
	<b>BWM</b> Dübel + Montagetechnik Gm P.O. Box 100 117 70745 Leinfelden-Echterding Germany Telephone: +49(0)711 – 90 3 Fax: +49(0)711 – 90 313-20	gen
	consisting L-Brackets (mater (material EN-AW 5754) and The sub-structure is to be ali vertical.	ance with DIN 18516, using the original parts indicated, rial EN-AW 6063 T66) or ZeLa facade brackets T-shaped profiles (material EN-AW 6063 T66) gned in such a way that it is in true alignment and en the wall and the front surface of the sub-structure is asists of
	Please	e give an exact description
	area of the cladding panels a JT4-FR-2-4,9x35, in the pre- (4 per bracket).	mm in the joint area and x mm in surface are mounted vertically using stainless steel screws, e.g. punched T-sections type T1, T2 ements are to be used for anchoring.
	The distance between the wo L-Brackets or ZeLa facade b anchoring must be in accord The sub-structure is to be de	ooden laths, wall bracket spacings, dimensions of the rackets, as well as all means of connecting and ance with a static calculation. esigned for the inherent weight loads of the following ow and the wind loads must be measured according to
	The contact surface betweer	n the L-Brackets or ZeLa-consoles and the anchoring f required in accordance with DIN EN 1991-1-1 and DIN

Approx. \_\_\_\_\_ m<sup>2</sup>

EN 1090-3.

#### 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 load	<u>s</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ding to DIN
	Approx m <sup>2</sup>	
TS item:	Thermostop	
	Placing additional thermal separa L-Brackets or ZeLa facade brack	ators of the type <b>BWM Thermostop</b> for the ets referred to
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con- expansion joints	struction for forming in the area of building
	Approx m	
TS item:	Submission of a competent buil	Iding-specific static calculation
	Lump Sum	

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:		ATK 103 + ATK 100 "Minor"
Uses:		<ul> <li>Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)</li> </ul>
<ul> <li>B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)</li> </ul>		
	structure at the required fixing int The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets ar gauge attachments.	s are installed on the vertical base support ervals according to the static calculation. s are fixed by using DIN approved BWM-Special ch horizontal section a fixed-point rivet is to be set e to be made in the oblong holes using rivet-setting
	facade panels. The average distance between th	ons must correspond with the vertical joints of the we wall and the front surface of the sub-structure is
	of the panels, adjusted by means mechanically secured against late manufacturer's recommendations When selecting the sub-structure	the manufacturer's recommendations of the not on the not on the not on the second second second second second s
	Approx m <sup>2</sup>	document.
TS item:	As above, but the horizontal support (painting or powder coating the ho	orting sections are black anodized rizontal supporting sections is not recommended)
	Approx m <sup>2</sup>	
TS item:	Areas with increased wind loads	<u>5</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ing to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa L-Brackets referred to	tors of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approxm	

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

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:	ATK 103 + ATK 100 ZeLa	
Uses:	Sub-structure for concealed fixing     of facade panels (,secret fix')     (Installation with clasps)	
<ul> <li>B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)</li> </ul>		
structure at the required fixin The horizontal supporting ser rivets SNA 5x12 K14 A/N. Fo	ctions are installed on the vertical base support g intervals according to the static calculation. ctions are fixed by using DIN approved BWM-Special or each horizontal section a fixed-point rivet is to be set ts are to be made in the oblong holes using rivet-setting	
The joints of the supporting s facade panels. The average distance betwee	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	
of the panels, adjusted by me mechanically secured agains manufacturer's recommenda		
	cture the manufacturer's recommendations of the en into consideration as well as the indications of oval document.	
Approx m <sup>2</sup>		
TS item: As above, but the horizontal s (painting or powder coating the	upporting sections are black anodized e horizontal supporting sections is not recommended)	
Approx m <sup>2</sup>		
TS item: Areas with increased wind le	oads	
For the reinforcement of the s suction loads on buildings ac	sub-structure necessary due to increased wind cording to DIN	
Approx m <sup>2</sup>		
TS item: Thermostop		
Placing additional thermal se ZeLa facade brackets referre	parators of the type <b>BWM Thermostop</b> for the d to	
Approx m <sup>2</sup>		
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		

Sub-structur	e system:	ATK 103 + ATK 100 ZeLa
Uses:		<ul> <li>Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)</li> </ul>
TS item:	Embrasures and reveals	
	Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals

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

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:		ATK 103 + ATK 100 Thermokonsole
Uses:		<ul> <li>Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)</li> </ul>
<ul> <li>B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)</li> </ul>		
	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 th	e 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 not consideration as well as the indications of
	Approx m <sup>2</sup>	
TS item:	<b>S item:</b> As above, but the horizontal supporting sections are black anodized (painting or powder coating the horizontal supporting sections is not recommended)	
	Approx m <sup>2</sup>	
TS item:	Areas with increased wind loads	<u>8</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for for with a width of cm	orming the window embrasures and door reveals
	Approx m	

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

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:		ATK 103 + ATK 101
Uses:		<ul> <li>Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)</li> </ul>
<ul> <li>B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)</li> </ul>		
	structure at the required fixing inter The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets are gauge attachments.	s are installed on the vertical base support ervals according to the static calculation. s are fixed by using DIN approved BWM-Special ch horizontal section a fixed-point rivet is to be set e to be made in the oblong holes using rivet-setting ons 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	
	of the panels, adjusted by means mechanically secured against late manufacturer's recommendations When selecting the sub-structure	the manufacturer's recommendations of the to consideration as well as the indications of
	Approx m <sup>2</sup>	
TS item:	As above, but the horizontal suppo	orting sections are black anodized rizontal supporting sections is not recommended)
	Approx m <sup>2</sup>	
TS item:	Areas with increased wind loads	<u>3</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ing to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa U-Brackets referred to	tors of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for fe	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for fe	orming internal corners
	Approx m	

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 reve	

### 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

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

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:		ATK 103 + ATK 601 G
Uses:		<ul> <li>Sub-structure for concealed fixing of facade panels (,secret fix') (Installation with clasps)</li> </ul>
<ul> <li>B) Horizontal support structure ATK 103 made of aluminium supporting sections and clasps (material EN-AW 6063 T66)</li> </ul>		
structure at The horizor rivets SNA in a round h gauge attac The joints c	the required fixing int tal supporting section 5x12 K14 A/N. For ea hole, all other rivets an chments. f the supporting section	as are installed on the vertical base support ervals according to the static calculation. Is are fixed by using DIN approved BWM-Special ch horizontal section a fixed-point rivet is to be set e to be made in the oblong holes using rivet-setting ons 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 of the pane mechanical manufactur When selec	panels are installed b ls, adjusted by means ly secured against late er's recommendations ting the sub-structure	by means of the clasps fixed to the reverse surface of the set-screw contained in the clasp and eral movement in accordance with the
	ate or other Approval	
Approx.	m <sup>2</sup>	
		orting sections are black anodized rizontal supporting sections is not recommended)
Approx.	m <sup>2</sup>	
TS item: Areas with i	ncreased wind loads	<u>8</u>
	forcement of the sub- ls on buildings accord	structure necessary due to increased wind ling to DIN
Approx.	m <sup>2</sup>	
TS item: External co	mers	
Addition to	the sub-structure for f	orming external corners
Approx.	m	
TS item: Internal cor	ners	
Addition to	the sub-structure for f	orming internal corners
Approx	m	
TS item: Embrasures	and reveals	
	the sub-structure for	orming the window embrasures and door reveals
Approx	m	

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

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. \_\_\_\_\_ m<sup>2</sup>

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

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 m <sup>2</sup>
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 m <sup>2</sup>
TS item:	Thermostop
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the L-Brackets referred to
	Approx m <sup>2</sup>
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
	Approxm
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

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

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. \_\_\_\_\_ m<sup>2</sup>

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

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)

	<ul> <li>The horizontal supporting sections are installed on the vertical base support structure at the required fixing intervals according to the static calculation.</li> <li>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.</li> <li>The unit prices must include stainless steel (A4) hooks and the fasteners.</li> <li>The average distance between the wall and the front surface of the sub-structure is</li> </ul>
	mm.
	Approx m <sup>2</sup>
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 m <sup>2</sup>
TS item:	Thermostop
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the ZeLa facade brackets referred to
	Approx m <sup>2</sup>
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

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

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. \_\_\_\_\_ m<sup>2</sup>

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

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 m <sup>2</sup>
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 m <sup>2</sup>
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

features of the building and its situation.

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:	ATK 104 + ATK 101
Uses:	<ul> <li>Sub-structure for hook fixing of small-format facade panels</li> </ul>

# 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 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

# TS item: \_\_\_\_\_ Thermostop

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

Approx. \_\_\_\_\_ m<sup>2</sup>

# 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

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

### TS item: <u>Submission of a competent building-specific static calculation</u>

Lump Sum

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

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. \_\_\_\_\_ m<sup>2</sup>

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

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: <u>Areas with increased wind loads</u>

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

Approx.	 $m^2$

# 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

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

### TS item: <u>Submission of a competent building-specific static calculation</u>

Lump Sum

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

### TS Item: \_\_\_\_\_ Adjustable aluminium sub-structure System ATK 110 + 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structu	re system:	ATK 110 + ATK 100 "Minor"
Uses:		<ul> <li>Sub-structure with weather boarding for visible fixing of 8mm facade panels</li> </ul>
		ucture ATK 110 made of aluminium naterial EN-AW 6063 T66)
	vertical base support structure at The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets at gauge attachments.	ng sections for 8 mm panels are installed on the intervals ofmm. Ins are fixed by using DIN approved BWM-Special ach horizontal section a fixed-point rivet is to be set the to be made in the oblong holes using rivet-setting the wall and the front surface of the sub-structure is
	Approx m <sup>2</sup>	
TS item:	_ Areas with increased wind load	<u>s</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separa L-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for	orming internal corners
	Approxm	
TS item:	_ Embrasures and reveals	
	Addition to the sub-structure for the with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure con expansion joints	struction for forming in the area of building
	Approx m	

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

# TS item: \_\_\_\_\_ Submission of a competent building-specific static calculation

Lump Sum

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

#### TS item: \_\_\_\_\_ Adjustable aluminium sub-structure System ATK 110 + ATK 100 ZeLa

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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structu	ıre system: A	TK 110 + ATK 100 ZeLa
Uses:	-	Sub-structure with weather boarding for visible fixing of 8mm facade panels
	<ul> <li>B) Horizontal support struct supporting sections (mat</li> </ul>	ure ATK 110 made of aluminium terial EN-AW 6063 T66)
	The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals ofmm. 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 m <sup>2</sup>	
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 m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the ZeLa facade brackets referred to	
	Approx m <sup>2</sup>	
TS item:	<u>External corners</u> Addition to the sub-structure for forming external corners Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for form	ning internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for form with a width of cm	ning the window embrasures and door reveals
	Approx m	
TS item:	_ Building expansion joints	
	Addition to the sub-structure construe expansion joints	uction for forming in the area of building
	Approx m	

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

# TS item: \_\_\_\_\_ Submission of a competent building-specific static calculation

Lump Sum

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

# TS item: \_\_\_\_\_ Adjustable aluminium sub-structure

System ATK 110 + 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-struct	ture system: ATK 110 + ATK 100 Thermokonsole		
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels		
	<ul> <li>B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)</li> </ul>		
	The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals ofmm. 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 ismm.		
	Approx m <sup>2</sup>		
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 m <sup>2</sup>		
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.		

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

### TS item: \_\_\_\_\_ Adjustable aluminium-sub-structure system System ATK 110 + 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:	ATK 110 + ATK 101	
Jses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels	
	ucture ATK 110 made of aluminium material EN-AW 6063 T66)	
vertical base support structure at The horizontal supporting sectior rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets ar gauge attachments.	The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals ofmm. 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 m <sup>2</sup>		
rS item: Areas with increased wind load	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 m <sup>2</sup>		
ΓS item: <u>Thermostop</u>		
Placing additional thermal separa U-Brackets referred to	ators of the type <b>BWM Thermostop</b> for the	
Approx m <sup>2</sup>		
IS item: External corners		
Addition to the sub-structure for f	Addition to the sub-structure for forming external corners	
Approx m		
ΓS item: Internal corners	Internal corners	
Addition to the sub-structure for f	forming internal corners	
Approx m		
IS item: Embrasures and reveals		
Addition to the sub-structure for f with a width of cm	forming the window embrasures and door reveals	
Approx m		
rs item: Building expansion joints		
Addition to the sub-structure con expansion joints	nstruction for forming in the area of building	

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

Lump Sum

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

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-struc	ture system: ATK 110 + ATK 601 G	
Uses:	- Sub-structure with weather boarding for visible fixing of 8mm facade panels	
	<ul> <li>B) Horizontal support structure ATK 110 made of aluminium supporting sections (material EN-AW 6063 T66)</li> </ul>	
	<ul> <li>The ATK 110 horizontal supporting sections for 8 mm panels are installed on the vertical base support structure at intervals ofmm.</li> <li>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.</li> <li>The average distance between the wall and the front surface of the sub-structure is mm.</li> </ul>	
	Approx m <sup>2</sup>	
TS itom	Areas with increased wind loads	
13 item		
	For the reinforcement of the sub-structure necessary due to increased wind suction loads on buildings according to DIN	
	Approx m <sup>2</sup>	
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.	

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

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structur	re system:	ATK 111 + ATK 100 "Minor"
Uses:		<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>
		icture ATK 111 made of aluminium naterial EN-AW 6063 T66)
	support structure at the required in The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets an gauge attachments. A backing strip is glued onto the h manufacturer's recommendations	ng sections are installed on the vertical base intervals according to a static calculation. Is are fixed by using DIN approved BWM-Special ch horizontal section a fixed-point rivet is to be set e to be made in the oblong holes using rivet-setting horizontal sections according to the facade panel s. he wall and the front surface of the sub-structure is
	Approx m <sup>2</sup>	
TS item:	Areas with increased wind loads	<u>5</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	Thermostop	
	Placing additional thermal separa L-Brackets referred to	tors of the type <b>BWM Thermostop</b> for the
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for f	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for f	orming internal corners
	Approxm	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for few with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure consexpansion joints	struction for forming in the area of building
	Approx m	

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

Lump Sum

Sub-structure system:	ATK 111 + ATK 100 ZeLa
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structu	re system:	ATK 111 + ATK 100 ZeLa
Uses:		<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>
	<ul> <li>B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)</li> </ul>	
	support structure at the required i The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets ar gauge attachments. A backing strip is glued onto the h manufacturer's recommendations	ng sections are installed on the vertical base intervals according to a static calculation. Is are fixed by using DIN approved BWM-Special ch horizontal section a fixed-point rivet is to be set e to be made in the oblong holes using rivet-setting horizontal sections according to the facade panel s. he wall and the front surface of the sub-structure is
	Approx m <sup>2</sup>	
TS item:	Areas with increased wind loads	<u>}</u>
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	<u>Thermostop</u>	
Placing additional thermal separators of the type <b>BWM Thermostop</b> for the ZeLa facade brackets referred to		
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for fe	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for for	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for for with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
		struction for forming in the area of building
	Approx m	

Sub-structure system:	ATK 111 + ATK 100 ZeLa
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

Lump Sum

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

# 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>
<ul> <li>B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)</li> </ul>	
support structure at the required The horizontal supporting section rivets SNA 5x12 K14 A/N. For ea in a round hole, all other rivets ar gauge attachments. A backing strip is glued onto the manufacturer's recommendations The average distance between th mm.	ng sections are installed on the vertical base intervals according to a static calculation. Its are fixed by using DIN approved BWM-Special the horizontal section a fixed-point rivet is to be set the to be made in the oblong holes using rivet-setting horizontal sections according to the facade panel s. The wall and the front surface of the sub-structure is
Approx m <sup>2</sup>	
TS item: <u>Areas with increased wind loads</u>	<u>s</u>
For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
Approx m <sup>2</sup>	
TS item: External corners	
Addition to the sub-structure for f	orming external corners
Approx m	
TS item: Internal corners	
Addition to the sub-structure for f	orming internal corners
Approx m	
TS item: Embrasures and reveals	
Addition to the sub-structure for f with a width of cm	orming the window embrasures and door reveals
Approx m	
TS item: Building expansion joints	
Addition to the sub-structure conservation joints	struction for forming in the area of building
Approx m	

Sub-structure system:	ATK 111 + ATK 100 Thermokonsole
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

Lump Sum

Sub-structure system:	ATK 111 + ATK 101
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:		ATK 111 + ATK 101
Uses:		<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>
		ucture ATK 111 made of aluminium naterial 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 se in a round hole, all other rivets are to be made in the oblong holes using rivet-settir 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 m <sup>2</sup>	
TS item:	Areas with increased wind loads	
	For the reinforcement of the sub- suction loads on buildings accord	structure necessary due to increased wind ling to DIN
	Approx m <sup>2</sup>	
TS item:	Thermostop	
	Placing additional thermal separators of the type <b>BWM Thermostop</b> for the U-Brackets referred to	
	Approx m <sup>2</sup>	
TS item:	External corners	
	Addition to the sub-structure for fe	orming external corners
	Approx m	
TS item:	Internal corners	
	Addition to the sub-structure for fe	orming internal corners
	Approx m	
TS item:	Embrasures and reveals	
	Addition to the sub-structure for for with a width of cm	orming the window embrasures and door reveals
	Approx m	
TS item:	Building expansion joints	
	Addition to the sub-structure consequence expansion joints	struction for forming in the area of building
	Approx m	

Sub-structure system:	ATK 111 + ATK 101
Uses:	<ul> <li>Sub-structure for concealed fixing of large format Trespa (TS300) facade panels</li> </ul>

Lump Sum

Sub-structure system:	ATK 111 + ATK 601 G
Uses:	<ul> <li>Sub-structure for the concealed fixing of large-format Trespa facade panels (TS300)</li> </ul>

### 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. \_\_\_\_\_ m<sup>2</sup>

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

Sub-structure system:	ATK 111 + ATK 601 G		
Uses:	<ul> <li>Sub-structure for the concealed fixing of large-format Trespa façade panels (TS300)</li> </ul>		
<ul> <li>B) Horizontal support structure ATK 111 made of aluminium supporting sections (material EN-AW 6063 T66)</li> </ul>			
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 m <sup>2</sup>			
TS item: Areas with increased wind load	<u>ds</u>		
For the reinforcement of the sub suction loads on buildings accor	o-structure necessary due to increased wind rding to DIN		
Approx m <sup>2</sup>			
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 with a width of cm	forming the window embrasures and door reveals		
Approx m			
TS item: Building expansion joints			
Addition to the sub-structure cor expansion joints	nstruction for forming in the area of building		
Approx m			

Sub-structure system:	ATK 111 + ATK 601 G
Uses:	<ul> <li>Sub-structure for the concealed fixing of large-format Trespa facade panels (TS300)</li> </ul>

Lump Sum

Sub-structure system:	BWM Fire Barriers
Uses:	<ul> <li>For increased requirements for fire protection of ventilated rain screen facades</li> </ul>

## 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