TONALITY
NATURAL FACADES

INDUSTRIE ARC

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Facade Planner

Facade tiles

Contents

There is a copy of the latest version of the national technical approval at any time on our website at www.tonality-facades.de.

Photo: Vesalius residential complex, Leuven, Belgium · Architects: Jasper-Eyers Architects, Brussels, Belgium · Installer: ZND NEDICOM, Asten, Netherlands · Photo: Houben NV, Hasselt, Belgium

Product overview

Facade tiles

High quality, frost resistance and durability have been inherent characteristics of TONALITY facade tiles for decades. These high quality facade tiles distinguish themselves through their outstandingly high quality raw materials combined with their unique colours, range of surface finishes, highly attractive joint designs and practical installation-friendly technology. Ventilated rainscreen facade projects, whether new builds or refurbishments, when constructed from TONALITY facade tiles have proven themselves both to be highly reliable and to possess outstanding physical characteristics.

TONALITY facade tiles are certified by the German Institute Construction and Environment e.V. (IBU - Institut Bauen und Umwelt e.V.) with an environmental product declaration (EPD) in accordance with ISO 14025 and EN 15804.

TONALITY offers unique design opportunities for individual facades with standard formats from 150 x 300 mm up to 400 x 1,600 mm and a wide choice of finishes. TONALITY already offers a very wide spectrum of standard colours with the BRICK RED, NATUR, NUANCE, NOBLESSE COLOR and SIENA product series, as shown on pages 58/59.

Additional colours and surfaces are available on request.

Standard finishes

smooth | grooved | single pilaster strip

Standard formats

Grid heigh (mm)	Min. grid width (mm)	Max. grid width (mm)
150	300	900
175	300	900
200	300	1,600
225	350	1,600
250	375	1,600
300	450	1,600
400	600	1,600

Privacy and sun protection

The Lamella, Baguette and Square Brise Soleil complement the TONALITY facade tile product range in the best way possible.
The precast Brise Soleil elements are available in numerous standard dimensions and all the colours from the NATUR, BRICK RED, NUANCE and NOBLESSE COLOR series as shown on pages 58/59.

Additional formats, colours and shapes are available on request.

KERALIS® Quality

KERALIS sinter-firing process

KERALIS Quality
- Innovative production process
- Meticulously prepared Westerwald clays
- Sinter firing at 1,200°C – high temperature firing
- Cutting-edge plant technology

Your benefits
- Long lifespan under heavy loads
- Completely frost-resistant
- Low water absorption
- Low contamination
- Easy to clean

High firing factor

Protection from environmental influences

Graffiti protection

High strength

Easy installation

Innovative system technology

Low dead weight

Large range of colours

Rear-ventilated ceramic rainscreen facades

Principle of the rear-ventilated rainscreen facade

The rear-ventilated rainscreen facade design is a highly effective system due to the physical separation of insulation and weather protection functions. Due to the space between the facade cladding and the insulation, air can circulate behind the facade cladding and remove any moisture. In terms of cost effectiveness, ecology and durability, the rear-ventilated rainscreen facade is growing in importance and is considered to be the leading system for new build constructions and building renovations.

This system can be used for all building types and heights and helps to reduce energy costs and fully complies with the requirements for energy-saving facades. Through the use of adequate insulation of thicknesses, the rear-ventilated facade can achieve the low-energy and passive house standards.

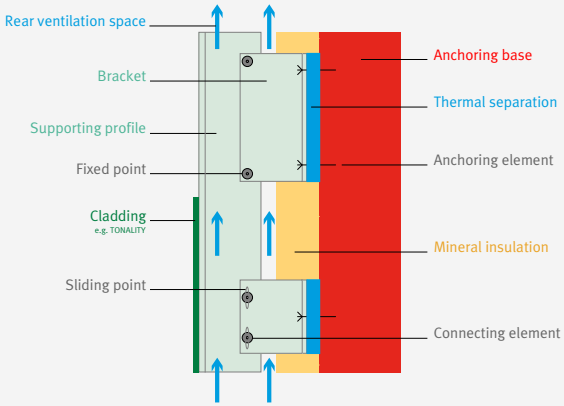


Image: FVHF

Rear-ventilated rainscreen facade: By structurally separating the thermal insulation and weather protection materials, rear-ventilated facade systems assure technical and economic certainty together with a high degree of creative freedom.

We are a member of

Fachverband Baustoffe und Bauteile für vorgehängte hinterlüftete Fassaden e.V. (FVHF)
www.fvhf.de

TONALITY facade system

The TONALITY facade system consists of facade tiles that are profiled on the reverse and which interlock there with vertical aluminium hanger profiles. The vertical joints between the tiles are backed by aluminium joint profiles. TONALITY facade tiles can be used in indoor and outdoor areas with every building type and height. TONALITY facade tiles are also suitable for overhead (ceiling cladding) installation.

TONALITY facade tiles have been awarded technical approvals Z-33.1-567 for the 22 mm tile thickness and Z-10.3-798 for the 26 mm tile thickness.
The maximum spans for facade tiles in relation to the wind load can be obtained from the specific national technical approvals.
A distinction is made between the base clinch rail system (BAS) and the adaptive system (ADS), depending on the hanger profiles used.

The clay material

The remarkable properties of clay have been known since ancient times. The discovery of clay ceramics made using the special plasticity of clay material dates from 10,000 - 8,000 BC. Thus, clay is among the oldest natural materials used by mankind. Clay materials are products of weathering and erosion of the earth's crust. They occur in continental and maritime areas. Their diversity is dependent on the physical-chemical conditions during their formation, which accounts for a wide spectrum of properties and thus the diverse possibilities for using clays. The first-class clays used for TONALITY are excavated in the Westerwald. They are among the world's finest clays and are famous for their special purity.

Manufacturing process

TONALITY facade tiles are produced, dried and fired in cutting-edge production facilities using the vacuum extrusion process. In the innovative KERALIS process, the raw clay material is dried, ground into a fine clay powder and coloured throughout in finely graduated mix ratios. The products are then fired at over 1,200°C. Due to the high quality of raw materials and high firing temperature, a sintering process occurs during firing. This produces the density and smooth surface.

Properties

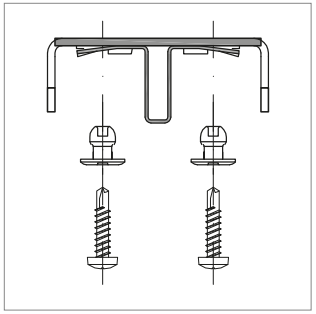
- non-combustible / building material class A1 (EN 13501-1)
- weather-resistant and frost-resistant
- impermeable to water
- decay-proof
- UV resistant
- shock-proof
- permanent graffiti protection in the TONALITY NATUR, NUANCE, NOBLESSE COLOR and SIENA series
- governed by a national technical approval
- low system weight
- exact fit between tile and system substructure
- installation not affected by weather

Areas of application

Rear-ventilated rainscreen facades. TONALITY facade tiles can be used in indoor and outdoor with every type and height of building. The TONALITY facade system has the national technical approval No. Z-10.3-798 in accordance with DIN 18516 from the Deutsches Institut für Bautechnik (DIBT). Privacy and sun protection is possible using TONALITY products.

Base clinch rail system (BAS)

BAS system



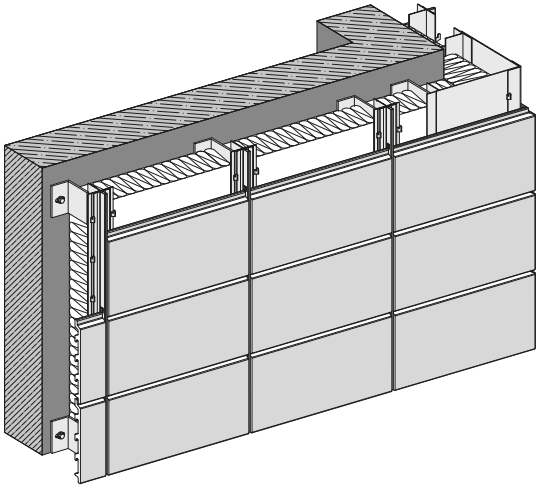
The base clinch rail system (BAS) can be attached to a conventional vertical primary substructure of wall brackets and T-profiles. Joint profiles and support profiles are already firmly connected to each other in the factory. The TONALITY 90° external corner profile is available for mitred corners and the TONALITY 30 x 30 mm external corner profile for open corners.

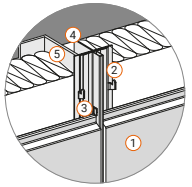
Reveal and lintel profiles are available for fixing in window and door areas. The system components are complemented by the universally applicable BAS-Flex holder.

Profile selection	Tile height (mm)	Profile length (mm)
Different system substructure profiles and profile lengths based upon the specific tile height resulting from the holder grid.	150	2,694
	175	2,794
	200	2,794
	225	2,694
	250	2,744
	300	2,694
	400	2,794

BAS system on vertical substructure

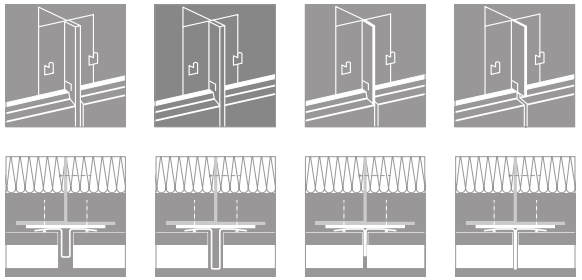
DWG No. BAS 200-01





Base clinch rail system (BAS)
1 TONALITY facade tile
2 Base clinch rail system
3 Integrated deconstruction protection
4 Primary substructure aluminium T-profile (by installer)
5 Primary substructure metal wall bracket (by installer)

TONALITY system assemblies offer varied facade design options with a selection of joint profiles. Whether it is a closed 8 mm wide joint, an almost invisible 2 mm wide fine joint, or an open joint, the system has a solution for every design requirement. Closed joints can be implemented in both recessed and flush versions.



Closed joint profile recessed joint 8 mm

Closed joint profile flush joint 8 mm

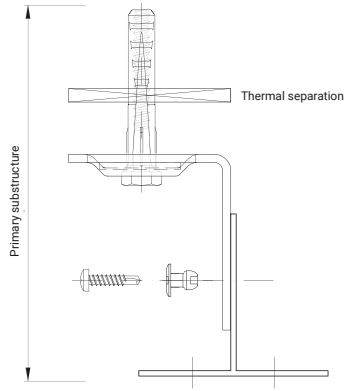
Fine joint closed recessed joint 2 mm

Fine joint closed flush joint 2 mm

Base clinch rail system (BAS)

BAS system design and installation example

DWG No. BAS 200-02



Primary substructure
Spacing, type of brackets, anchors, plugs or drill screws, in accordance with the specific structural calculations by the installer

Wall bracket and anchor by installer

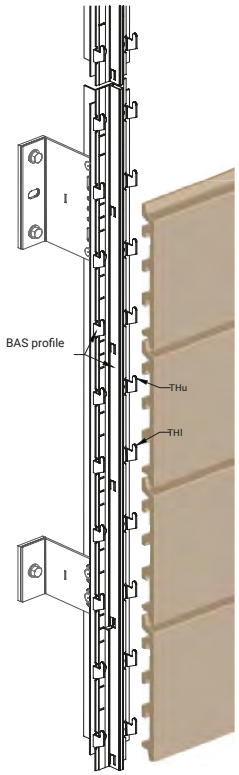
Aluminium T-profile by installer

System substructure BAS system

Rivet/drill screw by installer (in accordance with static engineering)

TONALITY Classic 26 Facade tiles

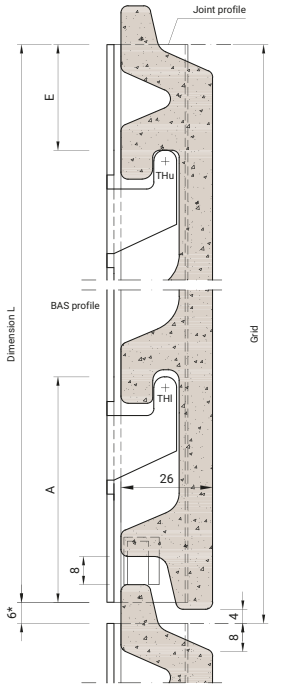
DWG No. BAS 200-04/1

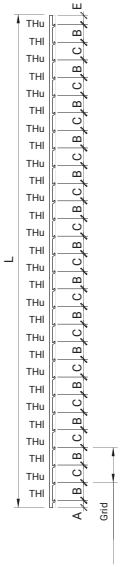


Installation examples

BAS installation lay-out

DWG No. BAS 200-05





Profile length= number of grid spaces minus 6 mm

THu: Upper tile hanger
THI: Lower tile hanger

* The minimum butt joint spacing of tiles and profiles is 6 mm due to thermal linear expansivity (see approval).

Grid (mm)	Number of grid spaces	Dimension L (mm)	Dimension A (mm)	Dimension B (mm)	Dimension C (mm)	Dimension E (mm)
150	18	2,694	55	75	75	14
175	16	2,794	55	100	75	14
200	14	2,794	64	100	100	30
225	12	2,694	55	150	75	14
250	11	2,744	64	150	100	30
300	9	2,694	114	150	150	30
400	7	2,794	114	200	200	80

Base clinch rail system (BAS)

BAS delivery programme

Image	Designation	Material/colour
DWG No. dwg 780	BAS profile 20 x 60 x 20 mm System depth 31 mm Closed joint 8 x 21 mm	aluminium bright; joint profile RAL 7021 black-grey
DWG No. dwg 781	BAS profile 20 x 60 x 20 mm System depth 31 mm Closed joint 8 x 29 mm	aluminium bright; joint profile RAL 7021 black-grey
DWG No. dwg 782	BAS profile 20 x 60 x 20 mm System depth 31 mm Closed joint 2 x 21 mm	aluminium bright; joint profile RAL 7021 black-grey
DWG No. dwg 783	BAS profile 20 x 60 x 20 mm System depth 31 mm Closed joint 2 x 29 mm	aluminium bright; joint profile RAL 7021 black-grey
DWG No. dwg 789	BAS end profile 20 x 40 x 23 mm	aluminium bright
DWG No. dwg 723	BAS reveal/lintel profile 20 x 100 x 20 mm	aluminium bright
DWG No. dwg 784/785	BAS closure profile 23 x 40 x 20 mm left or 20 x 40 x 23 mm for right	aluminium bright

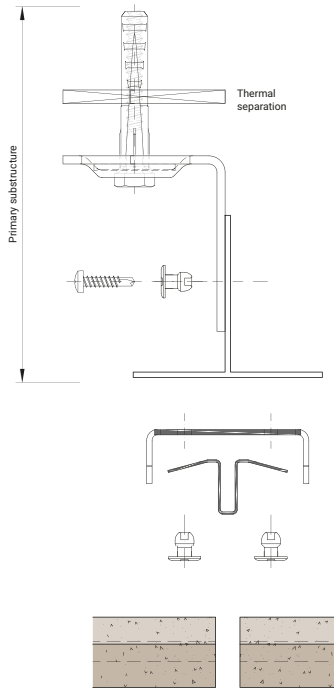
Image	Designation	Material/colour
DWG No. dwg 724	Reveal clip 90° external corner 20 x 66 x 66 x 20 mm	aluminium bright
DWG No. dwg 787	External corner profile 90° 20 x 40 x 40 x 20 mm System depth 31 mm	aluminium bright
DWG No. dwg all-16	Sealing carrier profile for external corner 27 x 64 mm (usable on both sides)	aluminium bright
DWG No. dwg 206	Joint profile for corner, closure joints and wind barrier	CR neoprene black
DWG No. dwg all-02	External corner profile visible 30 x 30 mm	aluminium bright
DWG No. dwg all-16	Spacer for horizontal joint with cut tile	aluminium bright

The substructure shown on this page is suitable for a tile thickness of 26 mm.
An analogous substructure is available for a tile thickness of 22 mm.
Note: Permitted spans and design calculation values (static engineering)
see pages 48/49.

BAS-Flex holder

BAS-Flex system design and installation example

DWG No. BAS 200-51



Primary substructure
Spacing, type of brackets, anchors and dowel plugs in accordance with the specific structural calculations for the building by the installer

Wall bracket and anchor by installer

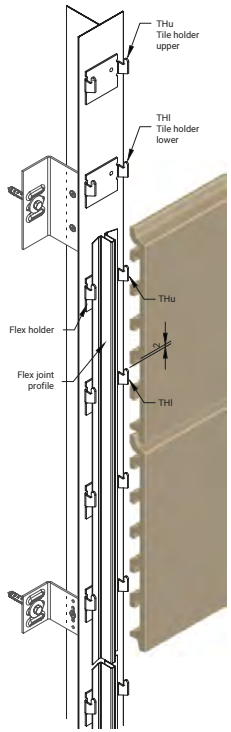
Aluminium T profile by installer

System substructure BAS-Flex holder with Flex joint profile

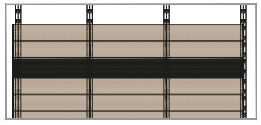
Blind rivet by installer (in accordance with structural calculations)

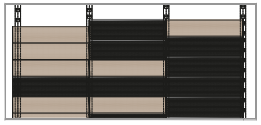
TONALITY Classic 26 Facade tile

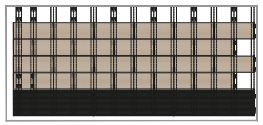
DWG No. BAS 200-50



Installation examples

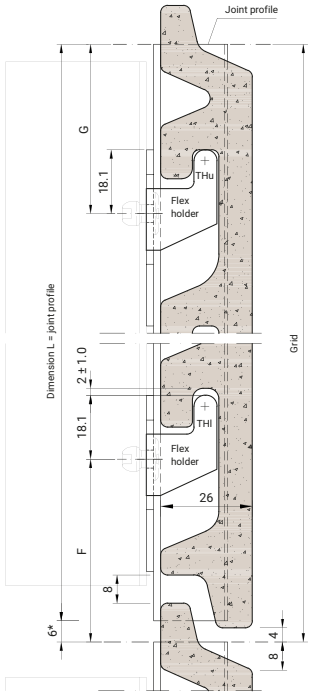




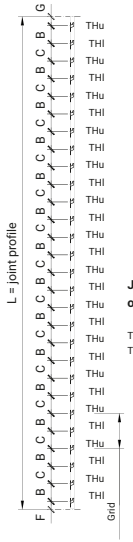


BAS-Flex holder

BAS-Flex installation lay-out



DWG No. BAS 200-52



Joint profile length = number of grid units minus 6 mm

THu: Upper tile holder
THI: Lower tile holder

* The minimum butt joint spacing of tiles and profiles is 6 mm due to linear thermal expansion (see approval).

Grid (mm)	Dimension L (mm)	Number of vertical grid spaces	Number of Flex holders	Dimension F (mm)	Dimension B (mm)	Dimension C (mm)	Dimension G (mm)
150	2,794	18.6	37	43	75	75	32
175	2,794	16	32	43	100	75	32
200	2,794	14	28	52	100	100	48
225	2,794	12.4	25	43	150	75	32
250	2,794	11.2	23	52	150	100	48
300	2,794	9.3	19	102	150	150	48
400	2,794	7.0	14	102	200	200	98

BAS-Flex delivery programme

The BAS-Flex holder serves as a supplement to the BAS system components. It facilitates easy implementation of mixed grids and height offsets, and can be used universally with all grids and tile heights.

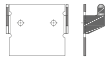
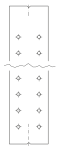
Image	Designation	Material/colour
DWG No. dwg 791 	BAS-Flex holder 20 x 60 x 50 mm System depth 31 mm	Finish bright
DWG No. dwg 792 	BAS-Flex joint profile closed (8 × 21 mm)	Finish coated RAL 7021 black-grey
DWG No. dwg 793 	BAS-Flex joint profile closed (8 × 29 mm) flush	Finish coated RAL 7021 black-grey
DWG No. dwg 795 	BAS-Flex fine joint profile (2 x 21 mm)	Finish coated RAL 7021 black-grey
DWG No. dwg 796 	BAS-Flex fine joint profile (2 x 29 mm) flush	Finish coated RAL 7021 black-grey
DWG No. dwg 794	BAS-Flex spring end strip (45 mm)	Finish bright

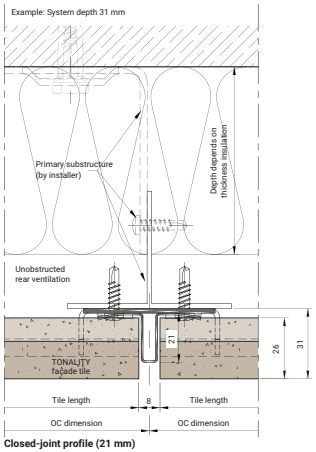
Image	Designation	Material/colour
DWG No. dwg all-06 	Sealing carrier profile for external corner 27 x 24 mm (usable on both sides)	aluminium bright
DWG No. dwg 206 	Joint profile for corner, closure joints and wind barrier	CR neoprene black
DWG No. dwg all-02 	External corner profile visible 30 x 30 mm	aluminium bright
DWG No. dwg all-16 	TONALITY spacer for horizontal joint at fitted tile	aluminium bright
DWG No. dwg 798 	BAS-Flex Drilling jig 60 x 1,385 mm	Finish bright

The substructure shown on this page is suitable for a tile thickness of 26 mm.
An analogous substructure is available for a tile thickness of 22 mm.
Note: Permitted spans and design calculation values (static engineering) see pages 48/49.

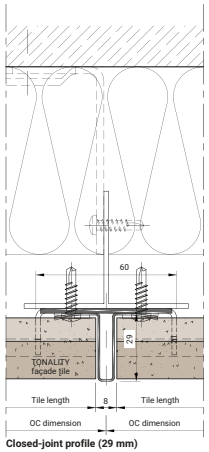
BAS standard details

Representation of joint profiles

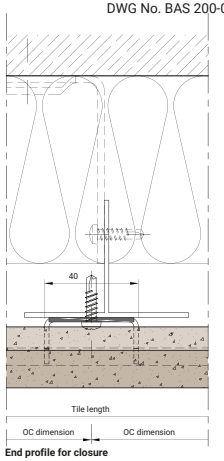
DWG No. BAS 200-07



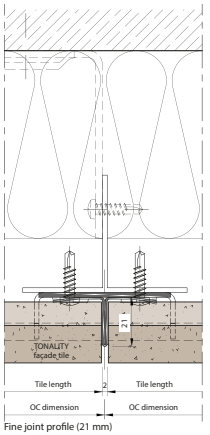
Closed-joint profile (21 mm)



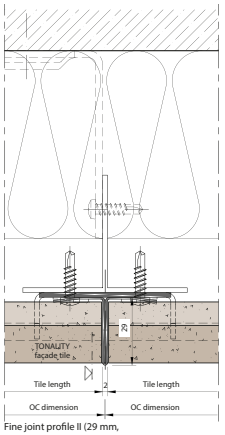
Closed-joint profile (29 mm)



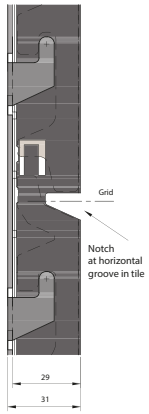
End profile for closure



Fine joint profile (21 mm)



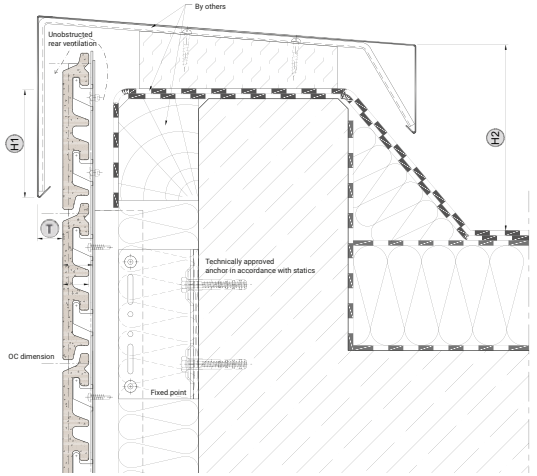
Fine joint profile II (29 mm, with notches in horizontal joint)



Detail of joint profile notch at horizontal groove

Vertical section of parapet

DWG No. BAS 100-20



Flat roof guideline requirements

H1 The outer, vertical leg of covers or copings must overlap the upper edge of render or cladding.

Building height:
up to 8 m: min. 50 mm
over 8 to 20 m: min. 80 mm
over 20 m: min. 100 mm

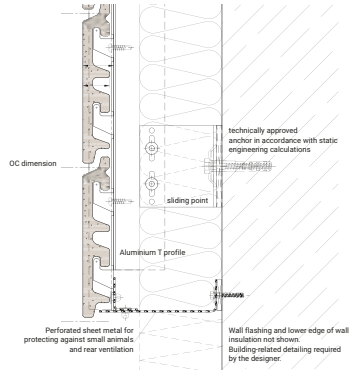
H2 The roof edge closure height must be as follows:
Roof pitches up to 5° approx. 100 mm
Roof pitches > 5° approx. 50 mm
above the covering surface or gravel layer.

Roof edge closures must slope toward the roof.

T The overhang of covers or copings must have a drip edge, at least 20 mm away from the protected building elements.

Vertical section of base

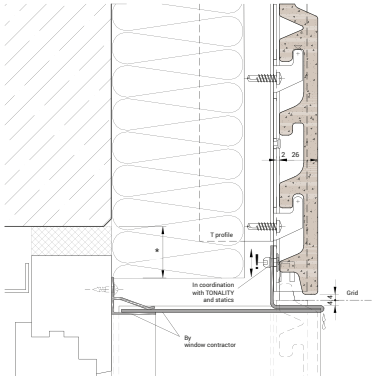
DWG No. BAS 100-21



BAS standard details

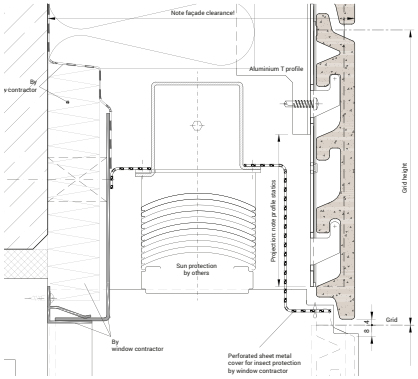
Vertical window sections

DWG No. BAS 200-15



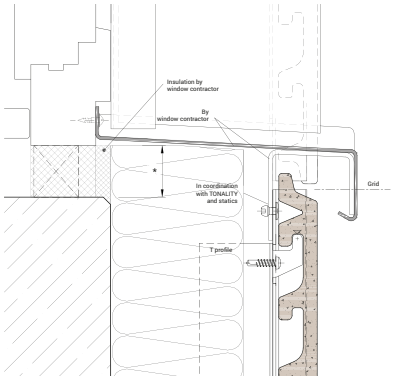
Window lintel with sheet metal cladding (without sun protection)

DWG No. BAS 200-17



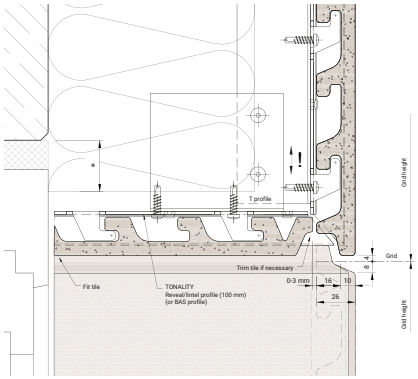
Window lintel with sun protection

DWG No. BAS 200-16



Parapet with window sill connection

DWG No. BAS 200-15.1

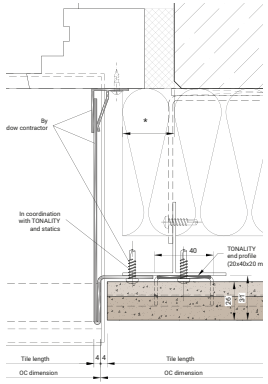


Window lintel with TONALITY cladding (without sun protection)

** Insulation must be implemented in accordance with the current Energy Saving Ordinance (EnEV).*

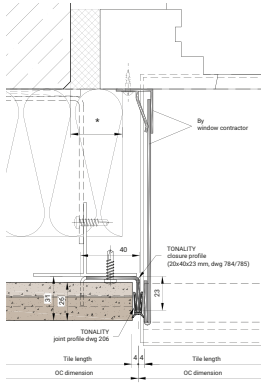
Horizontal window sections

DWG No. BAS 200-14



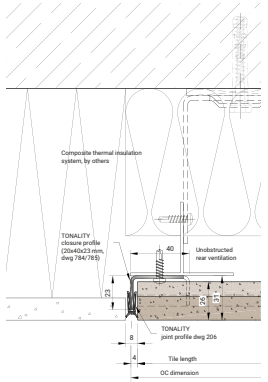
Window reveal with sheet metal cladding

DWG No. BAS 200-14.3



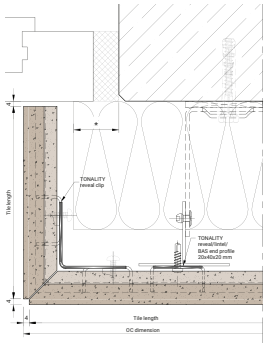
Window reveal with sheet metal cladding and neoprene joint seal

DWG No. BAS 200-30



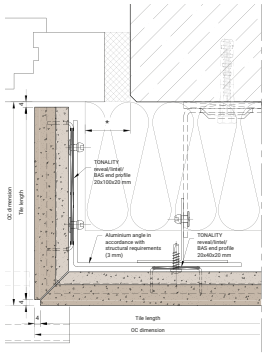
Transition from TONALITY facade (RVCF) to ETICS with neoprene joint seal

DWG No. BAS 200-14.2

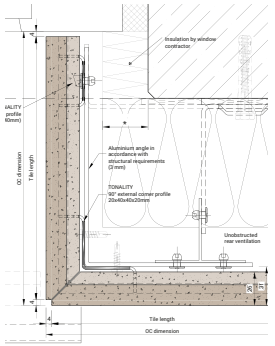


Window reveal with TONALITY (small)

DWG No. BAS 200-14.2



DWG No. BAS 200-14.1



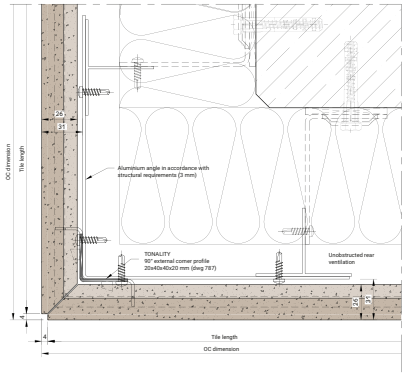
Window reveal with TONALITY (large)

** Insulation must be implemented in accordance with the current Energy Saving Ordinance (EnEV).*

BAS standard details

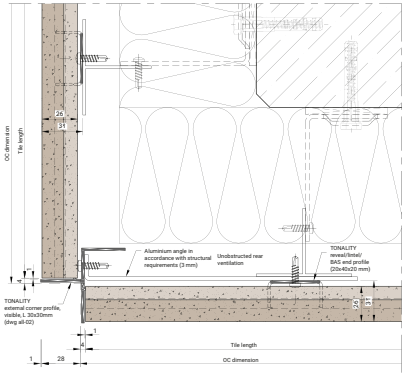
Horizontal sections of external corners

DWG No. BAS 200-09



External corner 90° – TONALITY on vertical primary substructure, mitred TONALITY – external corner profile 90° 20 x 40 x 40 x 20 mm. The edges of mitre cuts must always be provided with a 4 mm chamfer. For example, the external corner profile can be attached to an aluminium sheet.

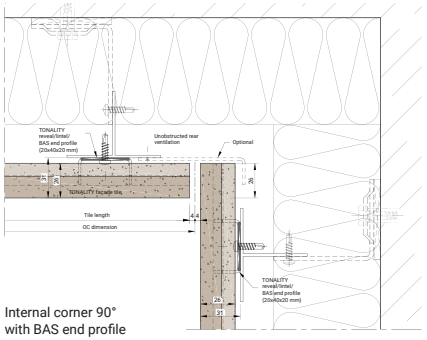
DWG No. BAS 200-10



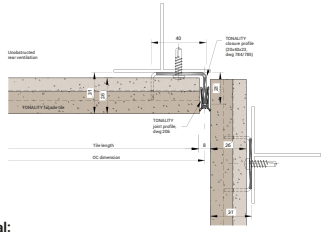
External corner 90° – TONALITY on vertical primary substructure, TONALITY with corner profile – visible external corner profile 30 x 30 mm.

Horizontal sections of internal corners

DWG No. BAS 200-11



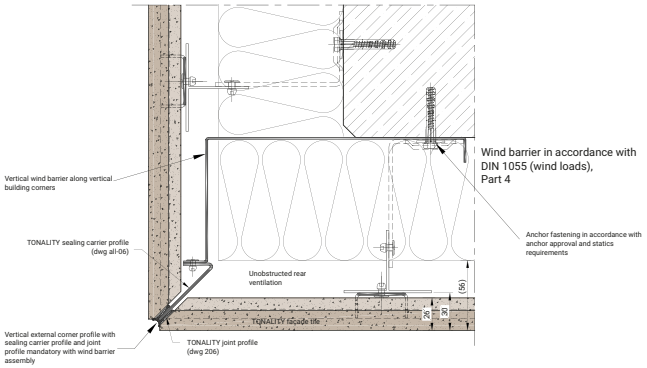
Internal corner 90°
with BAS end profile
All drawings show tiles with a thickness of 26 mm



Optional:
Internal corner 90° with BAS closure and joint profile (neoprene, black)

Horizontal section of external corner with wind barrier

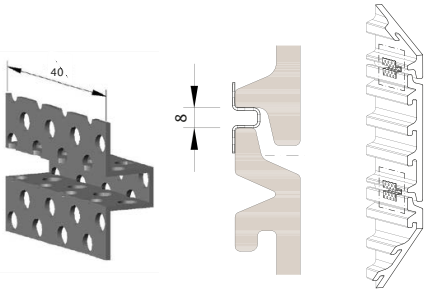
DWG No. BAS 200-08



BAS – installation of cut tiles

Cut tiles with spacer

DWG No. dwg all-16

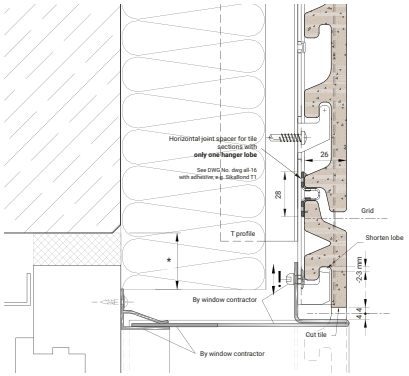


Installation instructions

1. Mark the cut tile.
2. Cut with wet saw and recommended cutting blade.
3. Place cut tile face down on a flat substrate.
4. Set up the required tile spacing using a system substructure profile with hangers spaced in accordance with grid.
5. Place the spacers in position (two pieces per cut tile).
6. Fill the resulting joint with spacer adhesive, spread smoothly and evenly and allow to set.
7. Hang the facade tile with scheduled cutting mark on the system substructure profile.

Installation with spacer – vertical section of window lintel

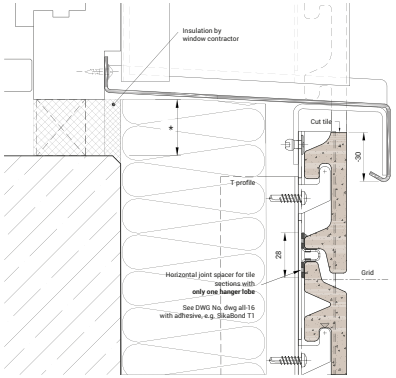
DWG No. BAS 200-15



Detail of cut tile fastening above the window

Installation with spacer – vertical section of window spandrel

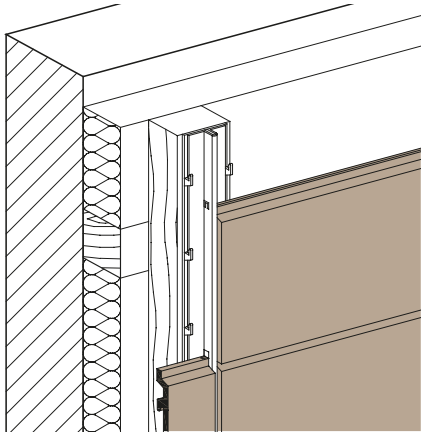
DWG No. BAS 200-16



Detail of cut tile fastening below the window

BAS on wooden primary substructure

BAS on wooden primary substructure



The details must be adapted to the material of the specific substructure selected.

BAS system design

1 Wood primary substructure

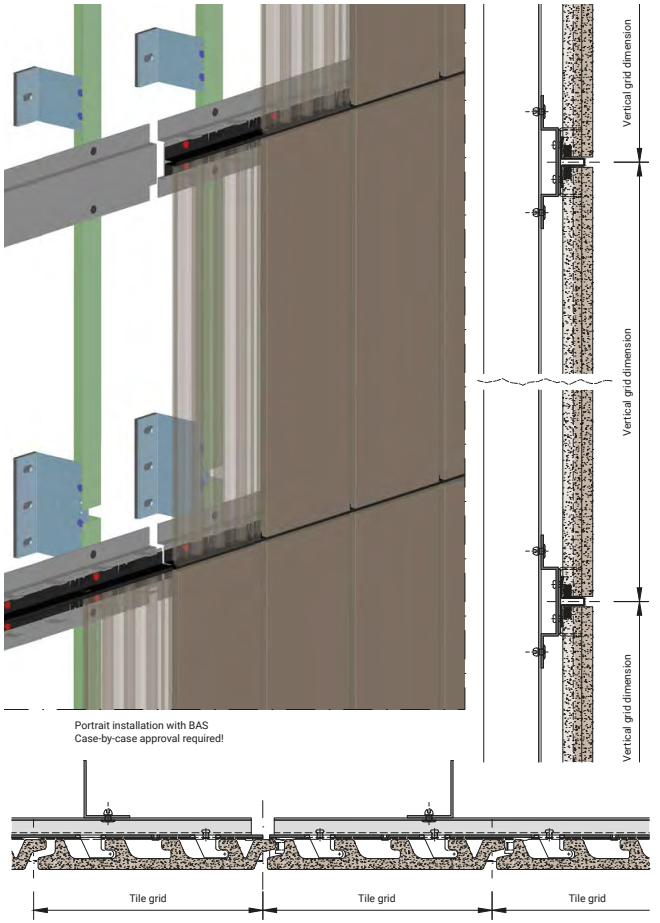
2 BAS profile

3 Wood screw

4 TONALITY facade tile

BAS portrait installation

Portrait installation



Portrait installation with BAS
Case-by-case approval required!