



BEMO SPORTS FACILITIES & GYMNASIUMS



SPORT FACILITY
CONSTRUCTION FOR
MORE MOVEMENT

SPORTS FACILITIES AND GYMNASIUMS – DURABLE AND SUSTAINABLE COMPLETE SOLUTIONS



Sports facilities and gymnasiums are an important meeting point for people in many towns and communities. However, a lot of these facilities were built many years ago and urgently need a renovation or even complete rebuilding. Many of the roofs leak and show serious constructional defects. And it is often the same case with the façades, with defective cladding and insulation that is not working as it should.

BEMO offers complete solutions, such as highly insulated building shells for example, that have been specially developed for sports facilities and gymnasiums

and that are durable, sustainable and recyclable. The BEMO standing seam system provides a safe roof cladding with very long tracks, without gaps and therefore without leaks. Large-format façade panels ensure a cost-effective design and execution with a beautiful appearance. We provide plenty of freedom when it comes to designing your roof thanks to our flexible systems and forms. The rounded, flowing transitions from the roof to the façades fit the individual requirements of a sports venue perfectly.



WHY BEMO?

- TAILORED SYSTEM SOLUTIONS
- SUSTAINABLE, DURABLE AND RECYCLABLE SYSTEMS
- CALL FOR TENDERS, DETAILS AND A NETWORK OF INSTALLERS
- INDIVIDUAL SUPPORT FOR YOUR PROJECT AND PLANNING
- ECONOMIC FEASIBILITY AND COST-EFFICIENCY
- LONG PROFILE LENGTHS WITHOUT TRAVERSE JOINTS
- TRANSITION FROM THE ROOF TO THE FAÇADE POSSIBLE



PSV Sports Hall Salzburg // Austria

BEMO SPORTS FACILITIES – SOLUTIONS FOR SPORTING REQUIREMENTS



Photo: Clemens Ortmeyer



BŁONIE SPORTS CENTRE, POLAND

Product: BEMO-MONRO Aluminium standing seam façade
Special features: The BEMO-MONRO tracks are convex and concave. Flowing transitions of concave and convex forms for a unique façade design.



BAUSSNER WEG SPORTS HALL, BERLIN

Product: BEMO Aluminium standing seam N50-429
Special features: Small radii for a flowing and gap-free transition of the roof into the façade.

BEMO SPORTS FACILITIES – SOLUTIONS FOR SPORTING REQUIREMENTS



Photo: Andy Heinrich/vor-ort-foto.de

TRIESEN TENNIS COURT, LICHTENSTEIN

Product: BEMO Aluminium standing seam N65-400

Special features: Typical form of the tennis court made possible thanks to the rounded standing seam tracks without traverse joints.



NIEDERANVEN SWIMMING POOL, LUXEMBOURG

Product: BEMO Aluminium standing seam N65-400

Special features: Colour of the standing seam tracks has been adapted to the golden colour of the façade.

THE LONG-LASTING AND PENETRATION-FREE STANDING SEAM ROOF – FOR FLOWING TRANSITIONS FROM THE ROOF TO THE FAÇADE



No other roof system fulfils as many different requirements as a multilayer roof system with standing seam profiles. The roofs are self-supporting and can be installed without screws that penetrate the water-draining part of the structure.

The choice of surfaces, materials and colours allows for maximum flexibility when it comes to the design.

We can also create flowing building forms with the rounded standing seam tracks. After the initial production of the straight standing seam tracks, the tracks

are then rounded off in the second production step. In order to optimise transportation costs, this is usually done on-site with our mobile production plants.

The rounding can either be concave, convex or concave-convex and can be done on tracks with even the smallest radii.

One particular advantage of this is that it allows us to create flowing transitions from the roof to the façade without any problems.



 Künzelsau Tennis Court



FACT SHEET

- PENETRATION-FREE ROOF CLADDING
- WITH ROOF SLOPES FROM 1.5 DEGREES
- HIGH LOAD-BEARING CAPACITY AND LARGE SPANS OF UP TO 2.5 M
- LONG PROFILE LENGTHS WITHOUT TRAVERSE JOINTS
- HIGH PERCENTAGE OF RECYCLED ALUMINIUM
- LIFESPAN > 50 YEARS
- TRANSITION FROM THE ROOF TO THE FAÇADE POSSIBLE



 Villingen-Schwenningen Swimming Pool

BEMO ROOF SYSTEMS – OPTIMAL CONSTRUCTION



BEMO roof systems can be individually designed to meet the building requirements.

Depending on the type of insulation package, BEMO roof systems can achieve thermal transmission values of $< 0.15 \text{ W/m}^2\text{K}$.

In addition to the construction requirements, cost efficiency, sustainability and of course a simple, quick and safe installation all play an important role. For projects with high thermal insulation requirements, roof structures with as high a percentage of soft insulation as possible and non heat-conductive BEMO thermo halters are recommended.

The following roof structures are commonly used for sports facilities:

BEMO-SOFT: Layers of “soft” insulation with GFK halters directly on the load-bearing level. Very cost-efficient. Up to $< 0.131 \text{ W/m}^2\text{K}$.

BEMO-COMBI: Combination of “soft” and hard-wearing insulation for higher sound insulation requirements.

You can find suitable BIM data here:



You can find more examples of structures on our website:

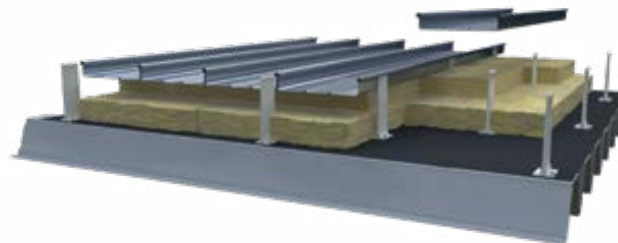


BEMO-SOFT

➤ **EXAMPLE OF A BEMO-SOFT ROOF STRUCTURE:**
BEMO Standing seam N65-400 / 1.0 mm aluminium
BEMO Thermo halter GFK245 (1.5 pcs/m²)
180 mm mineral wool 035, ~20 kg/m³
Cold self-adhesive vapour barrier (sd $>1500 \text{ m}$)
Steel support shell 0.75 mm (according to statics)

➤ **THERMAL INSULATION:**
U-value without consideration of heat bridges at selected points: $0.172 \text{ W/m}^2\text{K}$
U-value with consideration of heat bridges at selected points: $0.174 \text{ W/m}^2\text{K}$

➤ **SOUND INSULATION:**
Weight per m²: ~16 kg
Predicted sound reduction R: ~ 35 dB

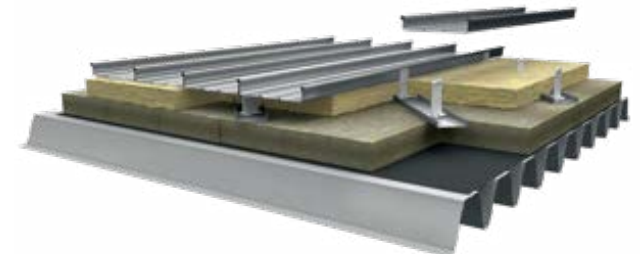


BEMO-COMBI

➤ **EXAMPLE OF A BEMO-COMBI ROOF STRUCTURE:**
BEMO Standing seam N65-400 / 1.0 mm aluminium
BEMO Thermo halter GFK245 (1.5 pcs/m²)
1st layer: 100 mm rock wool 037, ~100 kg/m³
2nd layer 180 mm mineral wool 035, ~20 kg/m³
Cold self-adhesive vapour barrier (sd $>1500 \text{ m}$)
Steel support shell 0.75 mm (according to statics)

➤ **THERMAL INSULATION:**
U-value without consideration of heat bridges at selected points: $0.129 \text{ W/m}^2\text{K}$
U-value with consideration of heat bridges at selected points: $0.133 \text{ W/m}^2\text{K}$

➤ **SOUND INSULATION:**
Weight per m²: ~25 kg
Predicted sound reduction R: ~ 40 dB



COMPOSITE FAÇADE PANELS – THE PERFECT CHOICE FOR MODERN SPORTS FACILITIES



BEMO-BOND / BEMO-BOND INVISIO
BEMO-BOND composite panels are also available in large formats. The fastening of the composite panels can be done so that the fastening is visible. Covered and invisible façade fastenings are available either as coffer systems or with the new, innovative BEMO-BOND INVISIO system.

ADVANTAGES OF BEMO-BOND

- SMOOTH SURFACE
- SEALED AND PROTECTED SURFACE THANKS TO THE BEMO-FLON COATING
- LARGE FORMAT
- EASY INSTALLATION THAT CAN BE DONE IN ALL WEATHER CONDITIONS
- CLOSED CUT EDGES
- JOINT BACKING POSSIBLE
- STABLE AND DURABLE CORNER AND JAM LIPPING
- A2 FIRE PROTECTION CLASSIFICATION
- LETTERS AND LOGOS CAN BE MILLED IN

BEMO-BOND composite façade panels

Registration number	Z-33.2-1559
Outer coating	BEMO-FLON
Cover plate	Two 0.5 mm aluminium cover plates, EN AW-3105 or 3005 alloy
Core	Polyethylene / inorganic filler
Format sizes	w: 800 – 2 000 mm, l: up to 7 200 mm
Hole patterns	Perforated sheets with max. 45% holes
Weight	Polyethylene: 7.6 kg/m ² / inorganic filler: 8.1 kg/m ²
Fire protection classification according to DIN EN 13501-1	B-s1, d0 / A2-s1, d0



Multi-purpose Hall, Bergheim // Germany



Closed edges



With perforations



Corner lipping



BEMO-BOND INVISIO



Rounded panels

FAÇADE PANELS – AVAILABLE AS STANDARD OR INDIVIDUALLY MANUFACTURED PANELS



FAÇADE PANELS

BEMO metal façade panels are particularly well-suited for an individual and free façade design. The façade fastenings can either be visible or hidden. A particular highlight of our façade designs is the individually designed panels with free profile geometries which can be tailor-made to fit your requirements.



SPECIAL PANELS

- CAN BE PRODUCED INDIVIDUALLY ACCORDING TO CUSTOMERS WISHES
- HIGHEST LEVEL OF STABILITY THANKS TO THE THICKER MATERIALS
- REPLACEABLE AND DURABLE
- WIDE VARIETY OF COLOURS AND FORMS
- HEAD EDGES ARE PREVENTED WITH OPEN CUT EDGES
- THE FASTENING CAN EITHER BE HIDDEN BY THE FAÇADE, VISIBLE OR SLIDE FREELY FOR HANGING
- AVAILABLE WITH A PERFORATED DESIGN



Box panel



Secret-fix panel



KP Multi Type Z



KP Multi Type A



KP Multi Type B



Pulse profile Type 2



Special panels

PRIMO CLIP-ON FAÇADES – COVERED FASTENINGS WITH A HIGH DEGREE OF DESIGN FREEDOM



PRIMO CLIP-ON FAÇADES

A PRIMO clip-on façade is the optimal façade solution for your sports facility. You can choose a grid dimension between 200 mm and 800 mm. The PRIMO sub-structure can be installed on any base or substructure. Thanks to a new type of fixed point assembly, panels can also be removed and replaced after they have been installed – an important plus point for buildings which can be easily damaged. The linear expansion is not subject to any constraints and is permanently and fully stress-free. This ensures the premium quality appearance of the façade.

PRIMO clip-on façades – Feasibility

Material	Steel			
Material thickness mm	1.5	1.25	1.0	0.88
Grid dimension mm	300 / 350 / 400 / 450 / 500 / 600 / 800	300 / 350 / 400 / 450 / 500 / 600	300 / 350 / 400	250 / 300
Coatings	PE / PVDF			
Lengths	500 – 6 000 mm			

PRIMO CLIP-ON FAÇADES

- YOU CAN CHOOSE A GRID DIMENSION BETWEEN 200 MM AND 800 MM
- CAN BE INSTALLED ON ANY BASE
- NEW TYPE OF FIXED POINT ASSEMBLY
- INDIVIDUAL PANELS CAN BE REPLACED LATER
- FREE LINEAR EXPANSION
- CORNER AND JAM LIPPING



SPECIAL REQUIREMENTS FOR SPORTS FACILITIES – FOCUS ON SAFE AND LOW MAINTENANCE SOLUTIONS



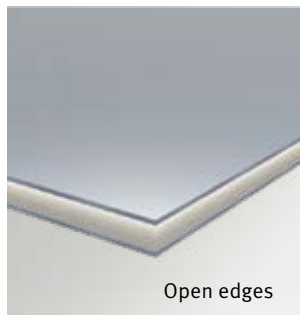
Sports facilities have special requirements that a building shell must meet:

Metal façades should not pose a risk of injury. BEMO-BOND composite panels are therefore available with closed, and therefore blunt, edges. Secret-fix and box panels can be manufactured with head edges and therefore without any open cut edges.

Façades are often vandalised with graffiti or paint but thanks to the BEMO-FLON coating, this can now be easily removed without any residues being left behind.

FACT SHEET

- CLOSED CUT EDGES REDUCE THE RISK OF INJURY
- EASY-TO-CLEAN THANKS TO THE BEMO-FLON COATING



Open edges



Closed edges

For safety reasons, and to avoid injuries, the edges of the BEMO-BOND composite façade panels can be closed. This means that there are no sharp edges.



Unwanted graffiti can now be easily removed with a special cleaner thanks to the BEMO-FLON coating.



Photo: Stefan Kirsch/vor-ort-foto.de

➤ Langenhagen Swimming Pool // Germany

SPECIAL REQUIREMENTS – INDIVIDUAL SOLUTIONS



PHOTOVOLTAIC PANEL OF STANDING SEAM ROOFS

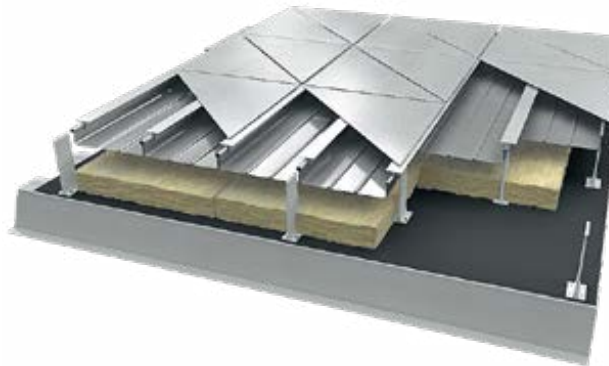
- PENETRATING AND ZERO-STRESS INSTALLATION WITH THE BEMO-AKKORD OR BEMO-TOP FOLDED IN RAIL SYSTEM.
- LINEAR APPLICATION OF FORCE
- DURABLE AND SAFE
- PV MODULES CAN BE CHANGED AT ANY TIME



PV modules can be mounted on BEMO standing seam roofs without any drilling through with the BEMO-AKKORD rails.

SMOOTH ROOF CLADDING WITH BEMO-SMOOTH

- SMOOTH ROOF CLADDING WITH A NON-PENETRATED WATER DRAINING LEVEL
- THE ALMOST MAINTENANCE-FREE STANDING SEAM ROOF IS VERY MECHANICALLY ROBUST AND IS SAFE TO WALK ON
- NO ADDITIONAL SEALING ON THE ROOF SYSTEM REQUIRED



The smooth roof cladding can be mounted on BEMO standing seam roofs without any drilling through with the BEMO-TOP rails.

ICE RINKS AND SWIMMING POOLS

- SPECIAL CONSTRUCTION REQUIREMENTS
- CAN BE MET WITH THE SPECIALLY TAILORED STRUCTURES



TECHNICAL SUPPORT – RIGHT FROM THE START



CALL FOR TENDERS SERVICE

We offer on-site, competent and project-related consulting. We then use this as the basis for a detailed bill of quantities.

EXECUTION PLANNING

We create installation and production plans and detailed solutions for the installation. We can do this either in 2D or 3D. The BEMO planning package also includes any necessary statistical calculations and verifications, as well as construction and acoustic verifications.



We support you right from the start and take on the call for tenders and execution planning.

THERMAL INSULATION CALCULATIONS

Thermal insulation calculations are also part of our standard planning services. We achieve optimal thermal protection with our heat bridge-free systems. To avoid having heat bridges at selected points in the façade, as they can have massively detrimental effects on the thermal insulation of a building, we use our new heat bridge-free TEKOFIX A++ console. This helps us to achieve savings of up to 75% in the insulation package – a major cost advantage. In addition, it offers outstanding fire protection as it has a fire protection classification of A.



High thermal insulation thanks to the heat bridge-free TEKOFIX A++ façade substructure.

EXAMPLES OF DETAILED SOLUTIONS

ROOF

Continued from page 14

- BEMO-SOFT ROOF STRUCTURE 1052
- BEMO-AKKORD ROOF STRUCTURE 1080
- BEMO-COMBI ROOF STRUCTURE 1005/1006
- EAVES WITH PARAPET 1501
- PITCH ROOF RIDGE 1202

EXAMPLES OF DETAILED SOLUTIONS

FAÇADE

Continued from page 20

- BEMO-BOND INVISIO
FAÇADE STRUCTURE F3100/F3101
- PRIMO FAÇADE STRUCTURE F1100/F1101

FIRE PROTECTION – FIRE CLASSIFICATION A PROVIDES SAFETY



Fire protection plays a very important role in public buildings. All our roof and façade structures have a fire protection classification of A.

BEMO standing seam roofs are non-flammable and heat bridge-free. Standing seam roofs are mostly made from aluminium or steel, which means that they are not flammable and therefore have a fire protection classification of A. A good thermal insulation and a good fire protection classification are usually mutually exclusive. This is why we rely on heat bridge-free GFK halters which have been fire tested (DIN 18234). This allows

us to build highly insulated roofs without heat bridges that are also non-flammable. Maximum safety for our athletes – whether they are amateurs or professionals.

When it comes to the façade, our new TEKOFIX A++ substructure combines a lack of heat bridges with the highest fire protection classification possible. With its unique selected point construction made from stainless steel, the console sets the highest standards when it comes to heat bridges and easily achieves a passive house level of thermal insulation.

Thanks to the non-flammable components like aluminium and stainless steel, TEKOFIX A++ has the highest level of fire resistance possible and as such can also be used in high-rise buildings.

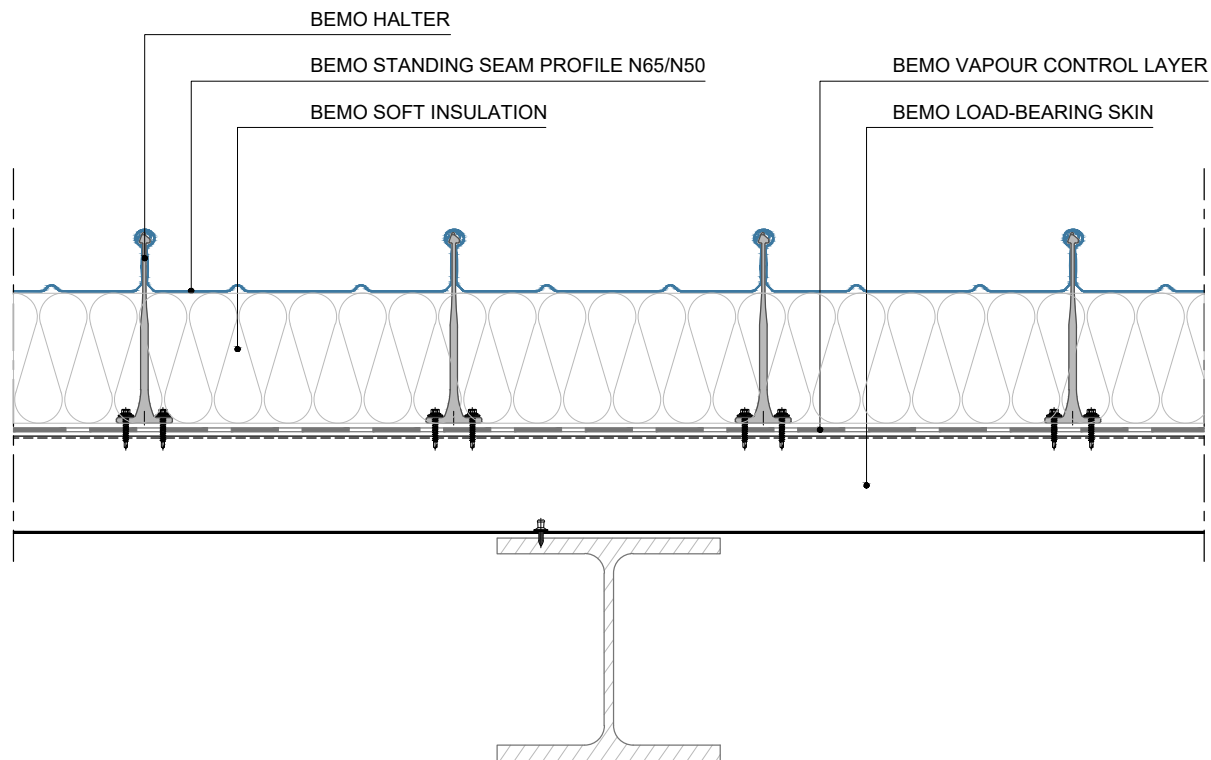
In terms of cladding materials, you can choose from aluminium, steel and a variety of other options – all of which are non-flammable. Even with the BEMO-BOND panels we are able to achieve a fire class protection rating of A (A2-S1, do). This means that we can create façade systems that insulate well and that are non-flammable.



CERTIFIED FIRE PROTECTION

- KARLSRUHE INSTITUTE FOR TECHNOLOGY: FIRE TEST AND USABILITY CHECK OF THE GFK THERMO HALTERS
- APPROVAL OF STANDING SEAM WITH THE NOTICE “HARD ROOF AND NON-FLAMMABLE”
- APPROVAL OF BEMO-BOND WITH A2 FIRE PROTECTION CLASSIFICATION
- STAINLESS STEEL TEKOFIX A++ FAÇADE SUBSTRUCTURE IS NOT FLAMMABLE





DRAWING TITLE:

**ROOF SYSTEM BEMO-SOFT
STRUCTURAL DECK (TRANSVERSE)**

TYPE:

CROSS SECTION

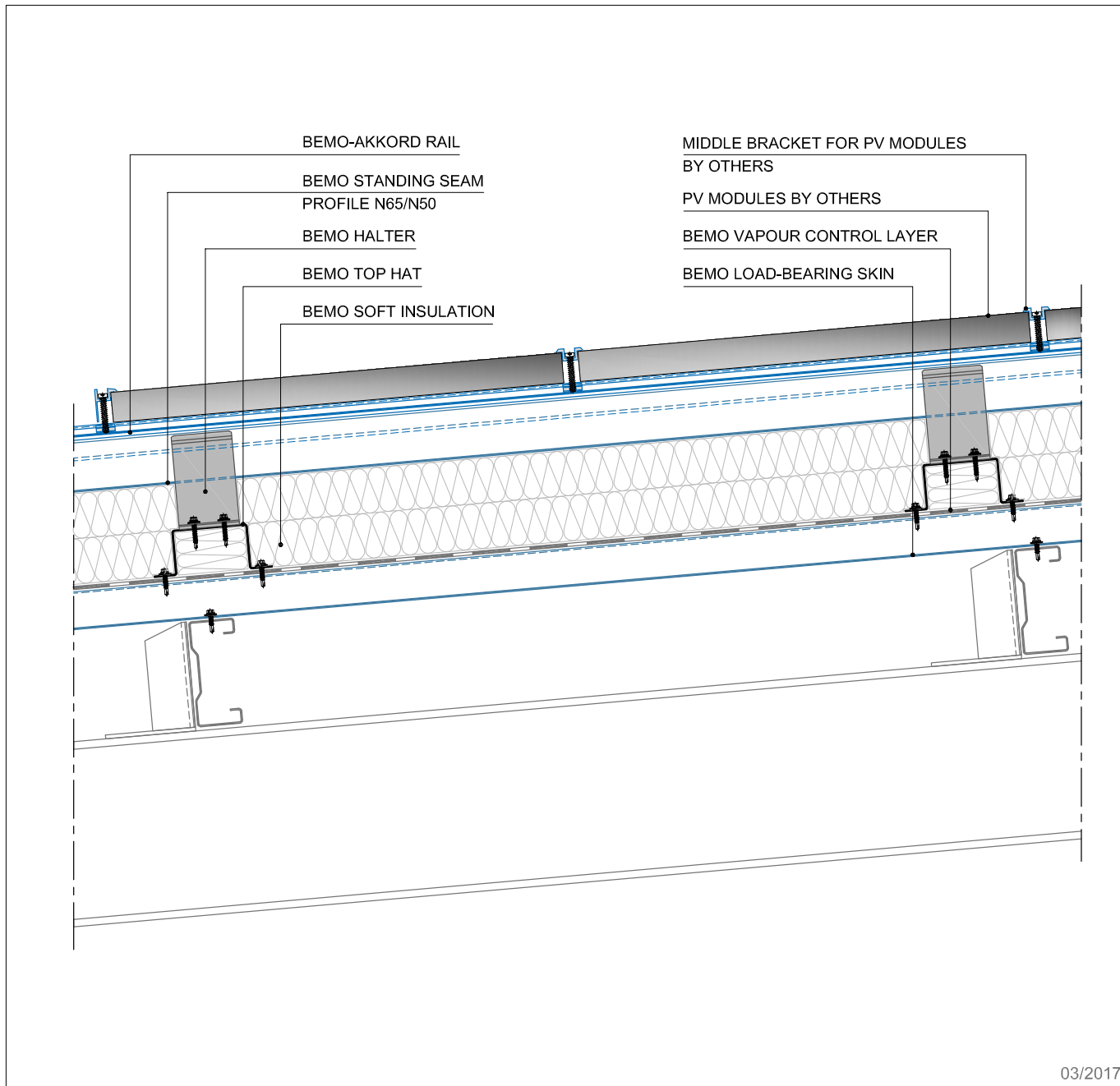
TYPICAL DETAIL

1052

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.



DRAWING TITLE:

ROOF SYSTEM BEMO-AKKORD OVER PURLIN SYSTEM

TYPE:

LONGITUDINAL SECTION

TYPICAL DETAIL

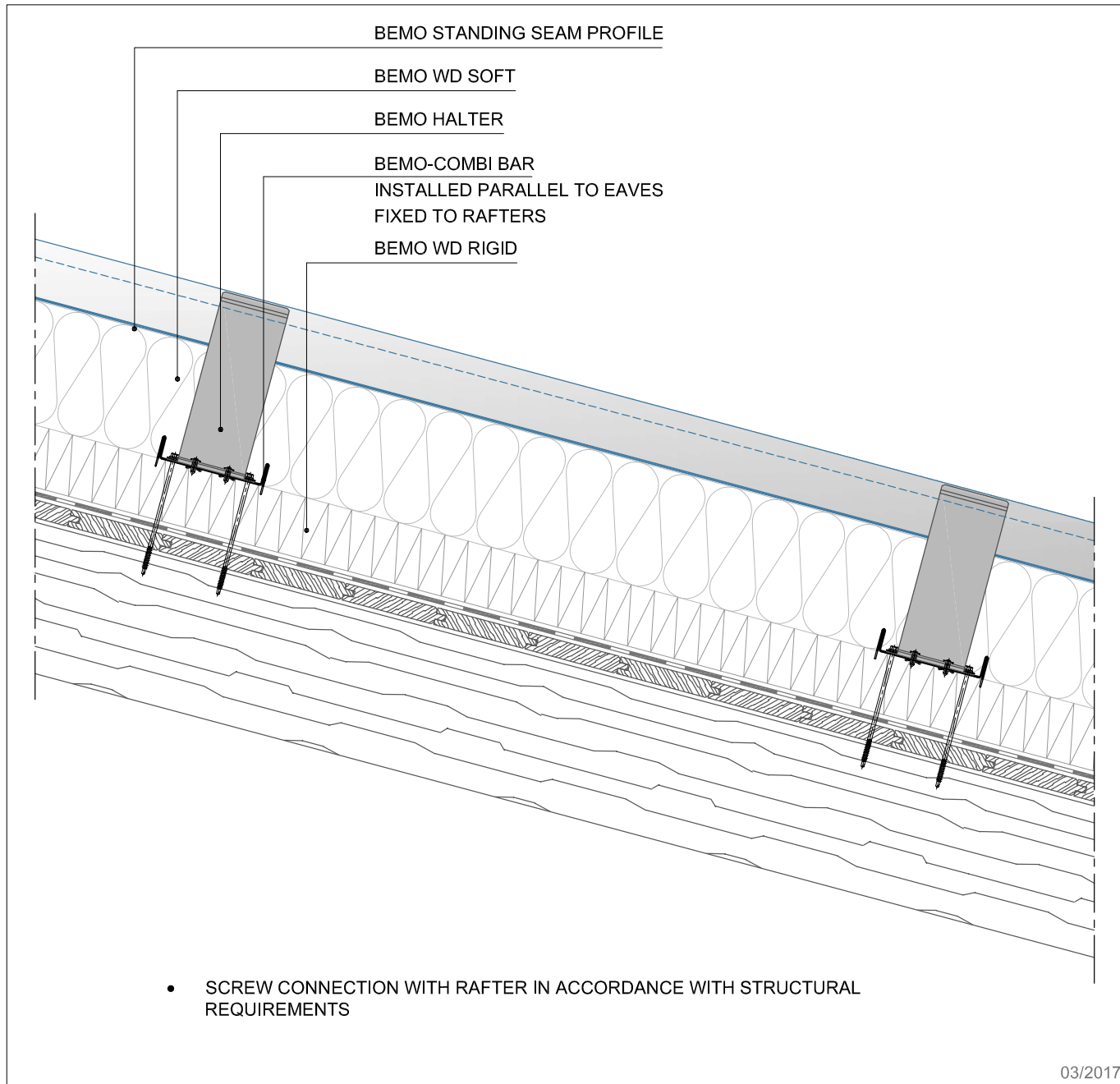
1080

BEMO Systems GmbH
 Max-Eyth-Straße 2
 D-74532 Ilshofen-Eckartshausen
 Germany

T: +49(0)7904 29899-60
 F: +49(0)7904 29899-61
 E: sales@bemo.com
 W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

03/2017



DRAWING TITLE:

ROOF SYSTEM BEMO-COMBI RAFTER ROOF

TYPE:

LONGITUDINAL SECTION

TYPICAL DETAIL

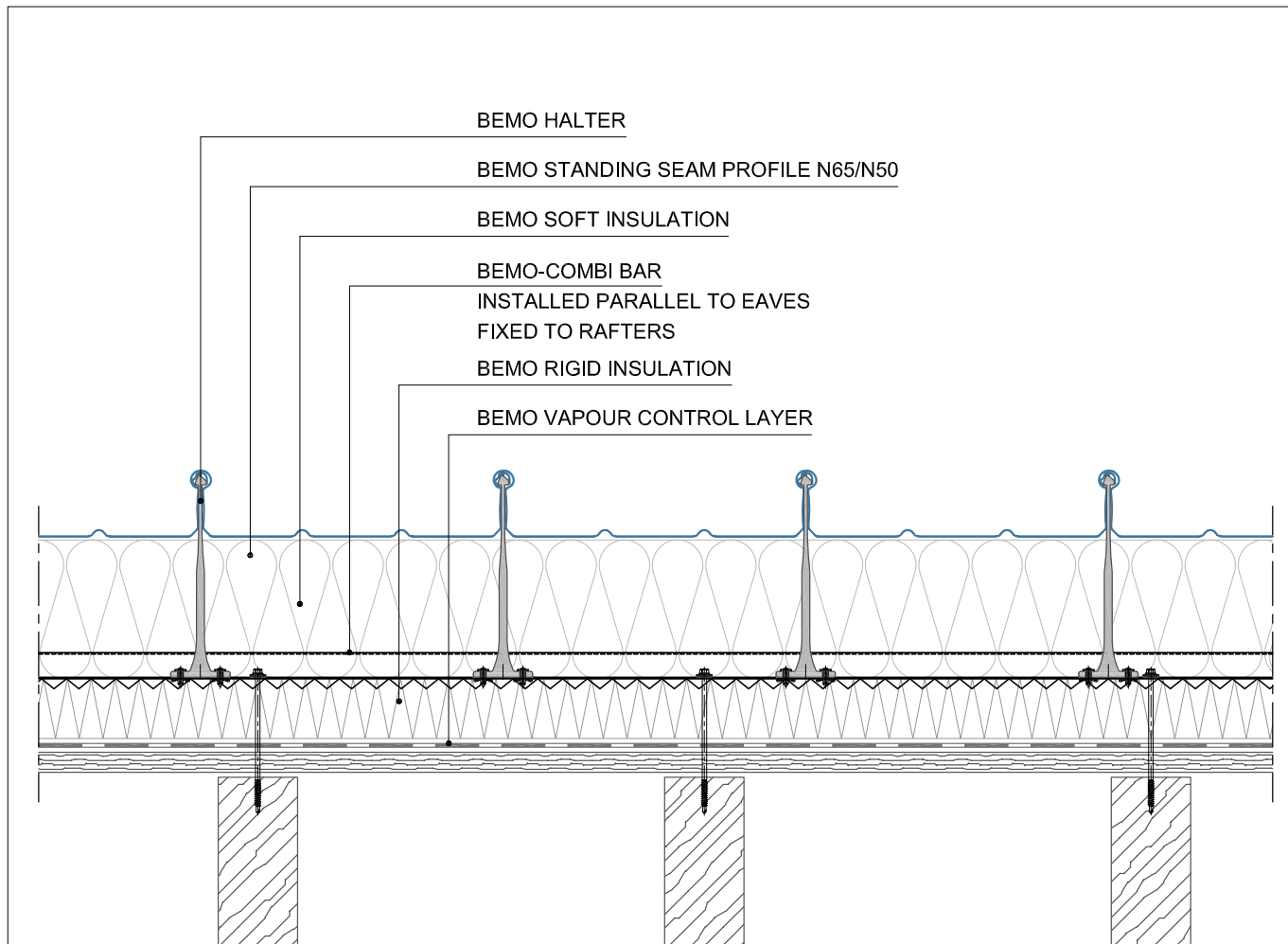
1005c

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

03/2017



- SCREW CONNECTION WITH RAFTER IN ACCORDANCE WITH STRUCTURAL REQUIREMENTS

DRAWING TITLE:

ROOF SYSTEM BEMO-COMBI RAFTER ROOF

TYPE:

CROSS SECTION

TYPICAL DETAIL

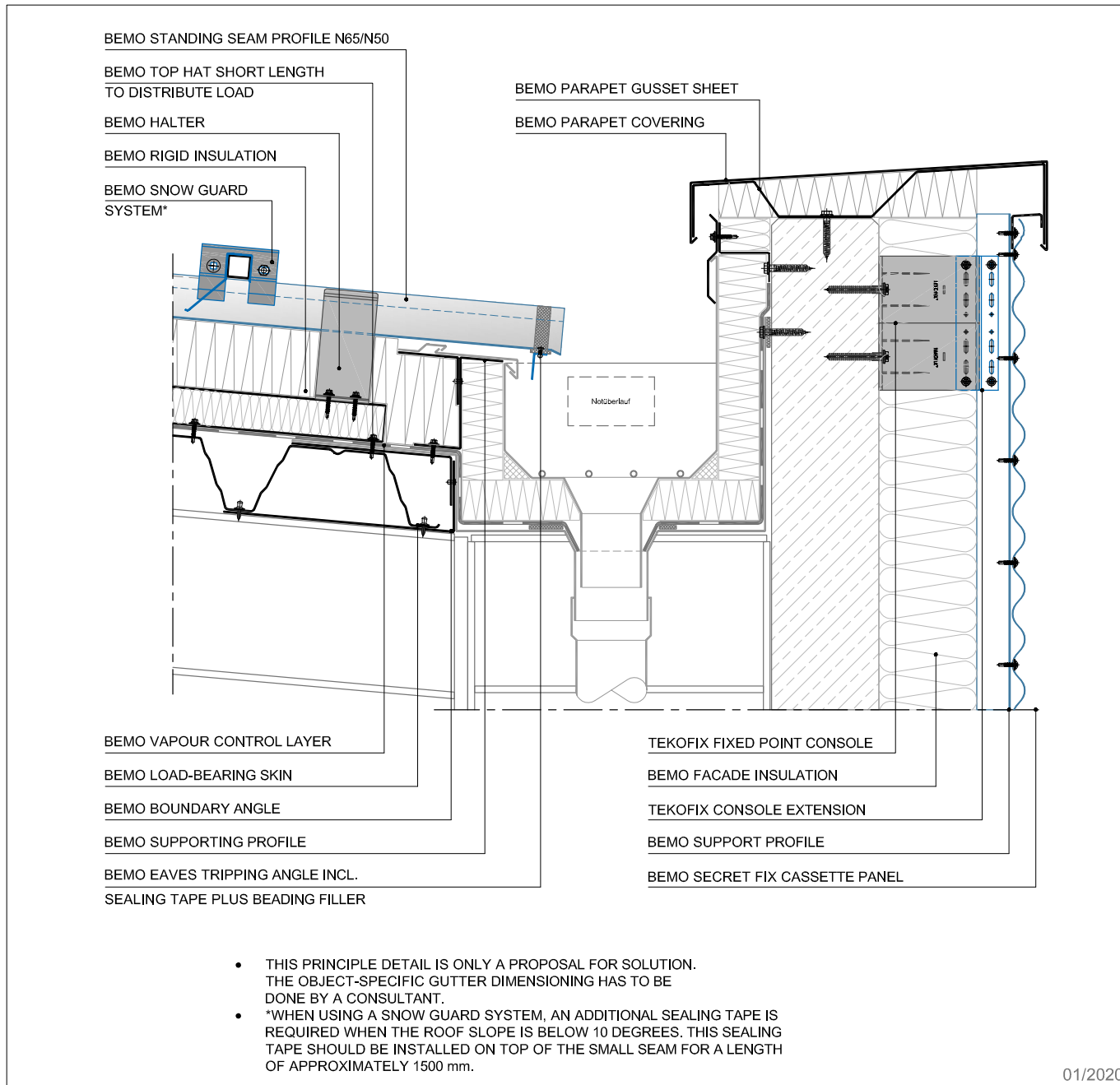
1006c

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

03/2017



DRAWING TITLE:

EAVES WITH PARAPET STRUCTURAL DECK (TRANSVERSE)

TYPE:

LONGITUDINAL SECTION

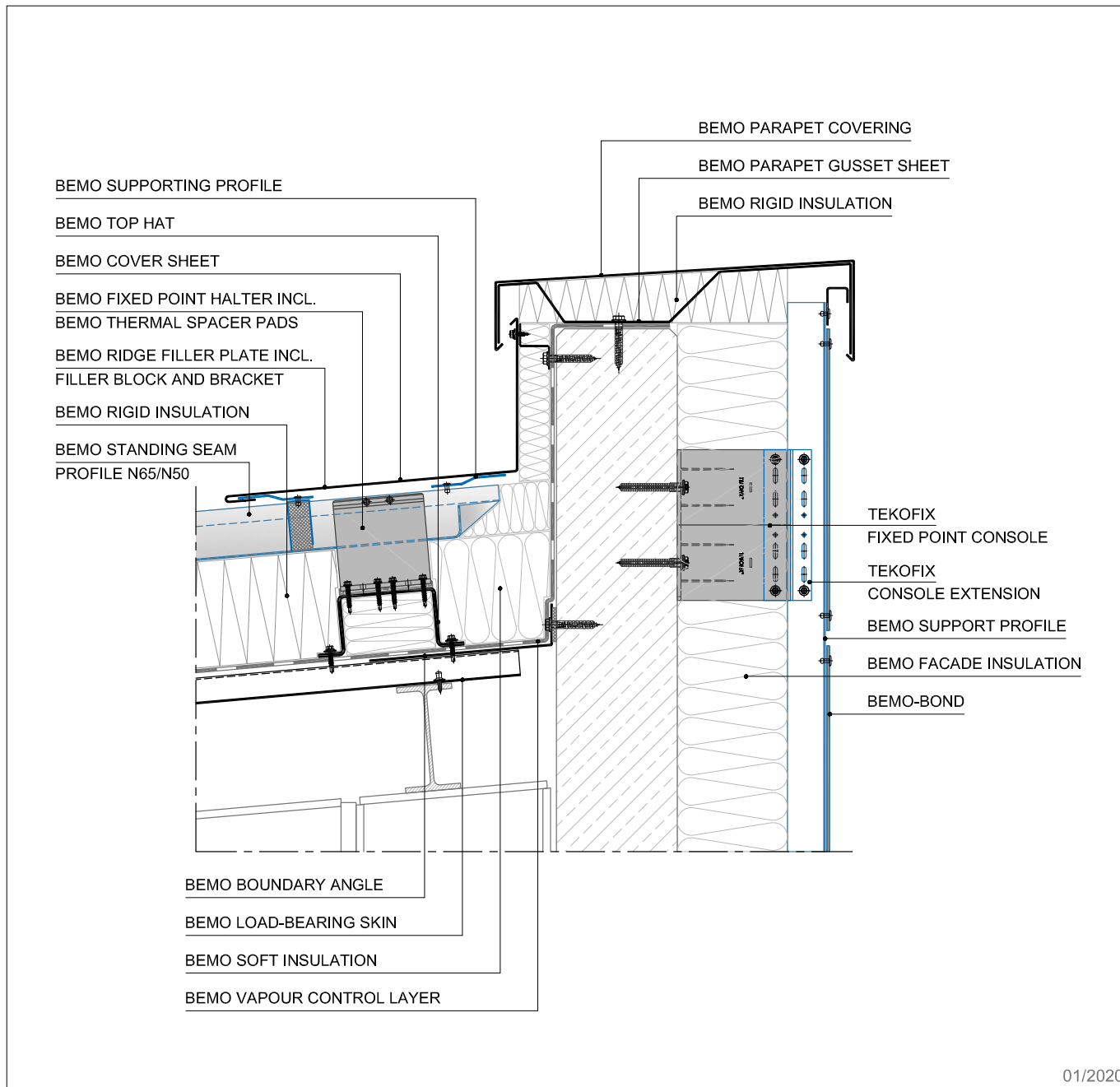
TYPICAL DETAIL

1501d

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.



DRAWING TITLE:

PITCH ROOF RIDGE AT PARAPET STRUCTURAL DECK (TRANSVERSE)

TYPE:

LONGITUDINAL SECTION

TYPICAL DETAIL

1202e

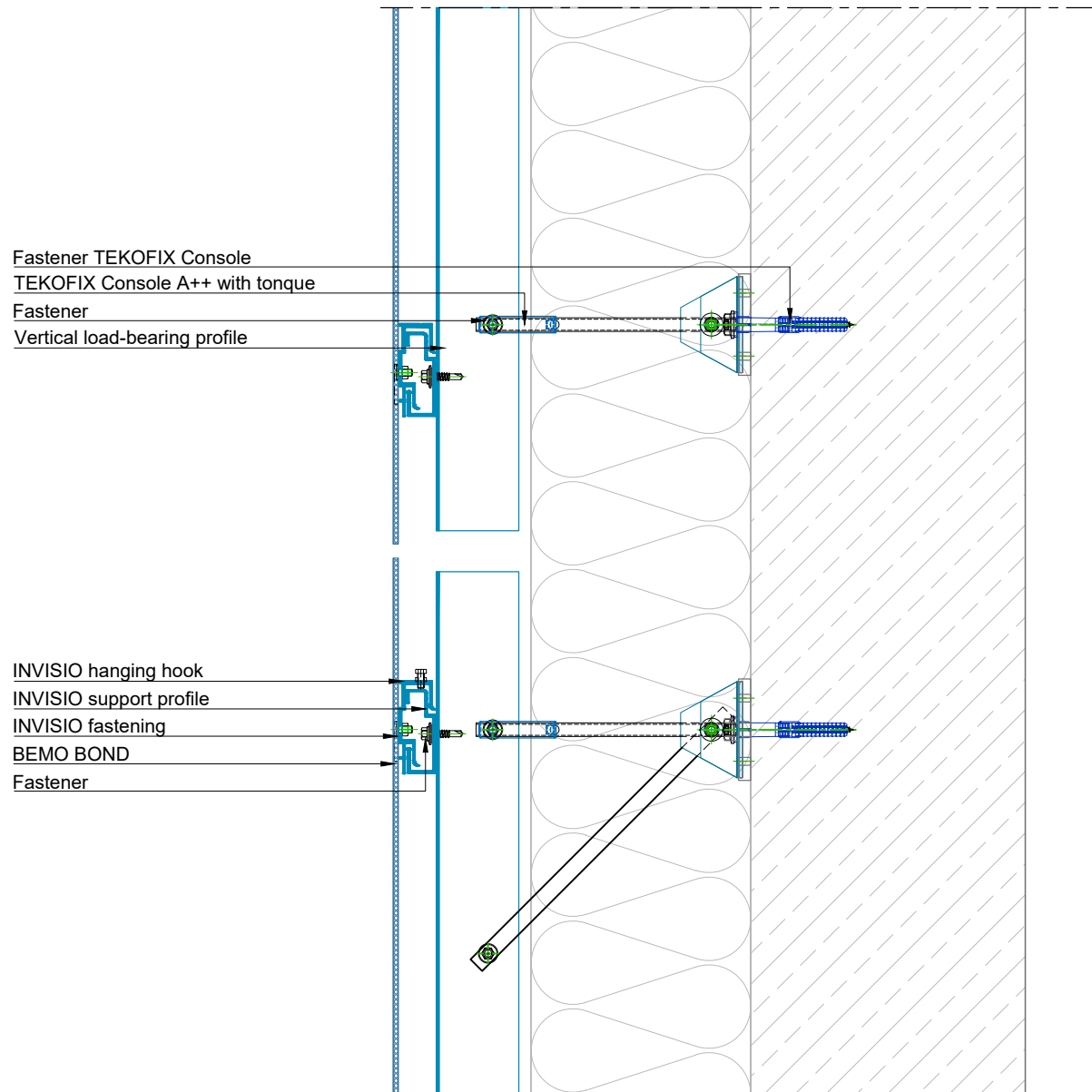
BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

01/2020

Maximum load-bearing profile length for this type of joint depending on the selected cladding profile, fixation scheme and the colour of the cladding.



DRAWING TITLE:

FACADE BUILD-UP
BEMO-BOND INVISIO

TYPE:

VERTICAL SECTION

TYPICAL DETAIL

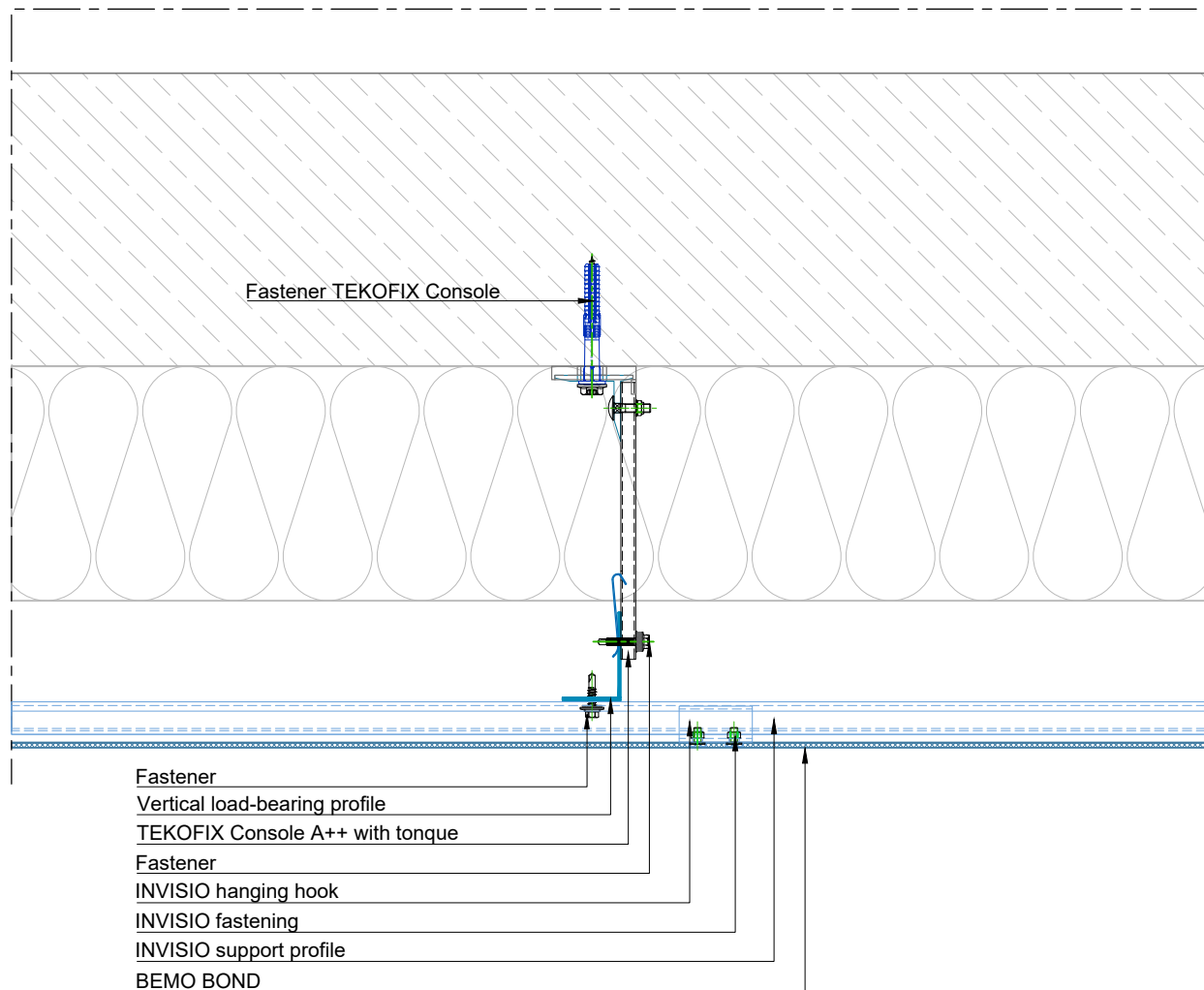
F3100a

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

07/2020



DRAWING TITLE:

FACADE BUILD-UP
BEMO-BOND INVISIO

TYPE:

HORIZONTAL SECTION

TYPICAL DETAIL

F3101a

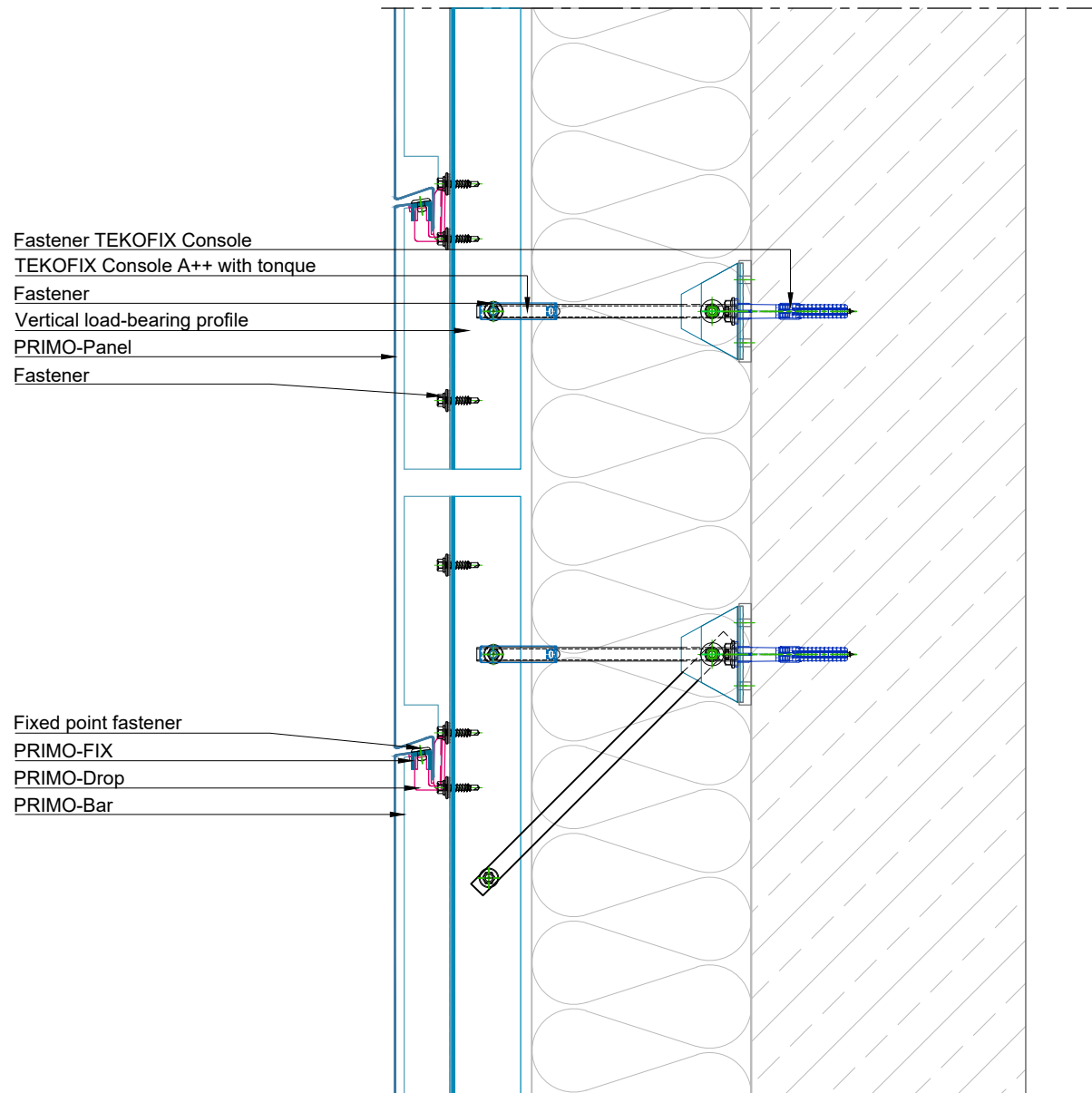
BEMO Systems GmbH
 Max-Eyth-Straße 2
 D-74532 Ilshofen-Eckartshausen
 Germany

T: +49(0)7904 29899-60
 F: +49(0)7904 29899-61
 E: sales@bemo.com
 W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

07/2020

Maximum load-bearing profile length for this type of joint depending on the selected cladding profile, fixation scheme and the colour of the cladding.



DRAWING TITLE:

**FACADE BUILD-UP
PRIMO**

TYPE:

VERTICAL SECTION

TYPICAL DETAIL

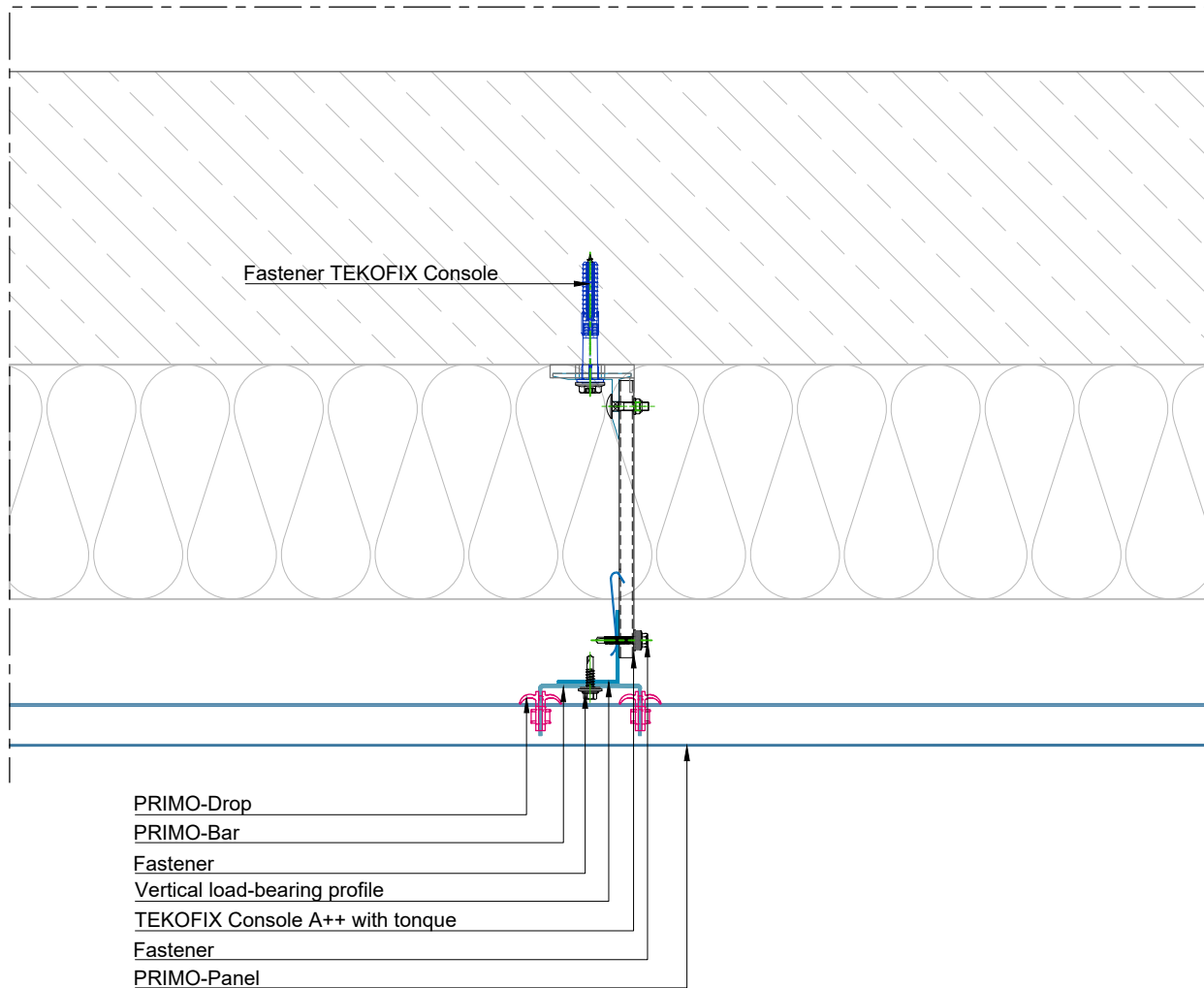
F1100a

BEMO Systems GmbH
Max-Eyth-Straße 2
D-74532 Ilshofen-Eckartshausen
Germany

T: +49(0)7904 29899-60
F: +49(0)7904 29899-61
E: sales@bemo.com
W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

07/2020



DRAWING TITLE:

**FACADE BUILD-UP
 PRIMO**

TYPE:

HORIZONTAL SECTION

TYPICAL DETAIL

F1101a

BEMO Systems GmbH
 Max-Eyth-Straße 2
 D-74532 Ilshofen-Eckartshausen
 Germany

T: +49(0)7904 29899-60
 F: +49(0)7904 29899-61
 E: sales@bemo.com
 W: www.bemo.com

This drawing is exclusively our property. It may not be copied or given to third parties without our prior consent. All rights, including rights created by patent grant or registration of a utility model or design, are reserved. The pictured construction details are non-binding proposals which have to be checked in detail for each project concerning applicability and correctness.

07/2020



BEMO SYSTEMS GmbH
Max-Eyth-Straße 2
74532 Ilshofen-Eckartshausen
Germany
T: +49 (0) 7904 29899-60
F: +49 (0) 7904 29899-61
E: sales@bemo.com
W: www.bemo.com