glasmarte®

GM RAILING®
PRODUCT REPORT

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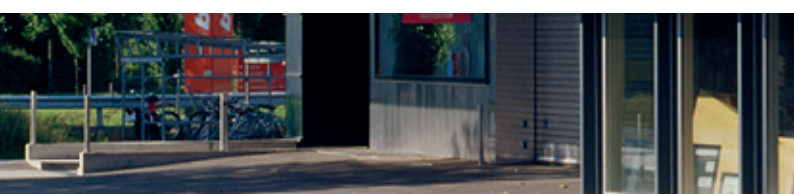

KEY

A	falling down side
ad	adaptor
af	adjustment fitting
aj	adjustment
bb	balance base
br	bearing rail
bt	bearing track
ca	covering angle
cop	connection profile
cp	curved profile
cpc	covering profile clips
ct	C-track 18 × 28 mm
dbs	drainage building site
gb	full glass balustrade
hb	height balustrade
hr	handrail
ld	direction of load
p	GM point
rg	rubber gasket
scbs	steel construction building site
sp	shuttering profile
sr	support rail
uc	substructure profile
ucb	substructure bracket
v	walking side
ws	window sill
d^1	profile depth
dte	distance of edge
ffl	finished floor level
h^{tot}	total height
h-of	horizontal offset
h^1	height of glass surplus
h^2	profile height
h^3	height of railing surplus
v-of	vertical offset

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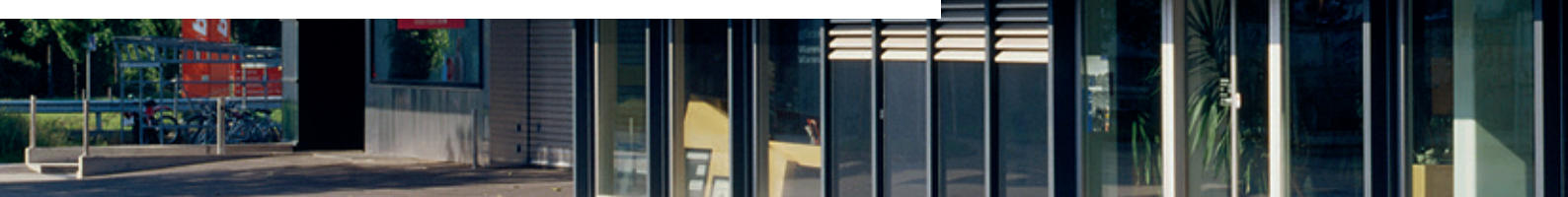


GLAS MARTE
COMPANY PROFILE

Innovative, patented developments, competent advice, detailed planning and accomplished execution – you will find all this at Glas Marte combined in a single company.

Founded in 1930, the company has gradually expanded its knowledge about the versatile building material that is glass, and now offers a wide product range, starting with flat and insulating glass, a variety of surfaces, multi-award-winning sliding and holding systems as well as delicate glass partition wall systems, through to DIBt-tested glass railings. Whether for indoors or outdoors, in private or public buildings – the more complex the requirements, the more innovative and creative the idea, the better you will be taken care of by Glas Marte.

GM RAILING®
THE PERFECT MODULAR SOLUTIONS

Advantages of GM RAILING®:

» MODULAR CONCEPT: LESS EFFORT FOR DESIGN AND PLANNING

» OPTIMAL CAVITY-FREE GLASS SUPPORT

» UNIFORM BEDDING WITHOUT STRESS PEAKS

» INFINITE ADJUSTABILITY

» TEST CERTIFICATES AVAILABLE

» COMPLIANT WITH DIN 18008-4

Glass has long had a fixed place as a building material and means of design in architecture. However, glass railings are still a challenge for any planner, architect or structural engineer – not to mention design and assembly. GM RAILING® has developed a technically perfect modular solution for these special challenges.

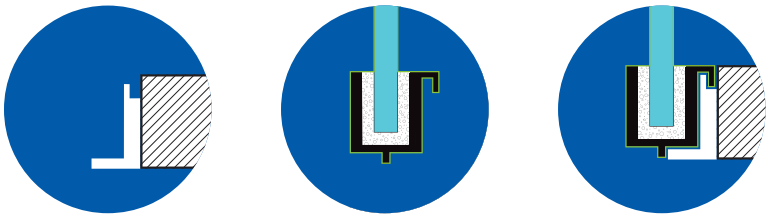
Flexible and compatible

GM RAILING® impresses with its wide range of possible applications. Based on six basic systems – UNI, DOUBLE, PLAN, FRONT, BENT and LEVEL U – virtually any requirement can be met with numerous variants. More and more substructures can be used across series, allowing the greatest possible flexibility.

The modular concept

GM RAILING® glass railings consist of a prefabricated glass module (glass and profile are firmly connected to each other and optimally mounted in the factory) and a substructure that is perfectly matched to the structure.

Through the delivery of the glass module, the installation can be optimally included in a construction process concept. The glass installation itself usually takes place only in the course of the completion work. The glass and all the surfaces that are visible in the final construction are thus optimally protected against building contamination and construction damage.

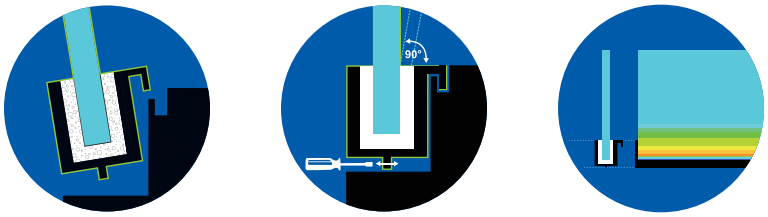


Substructure + **prefabricated glass module** = **GM RAILING® Glass railings**

TWO-STEP ASSEMBLY
EASY AND FAST

The GM RAILING® glass railing systems enable linear mounting without uprights due to prefabricated glass modules in combination with a substructure profile and a continuous handrail.

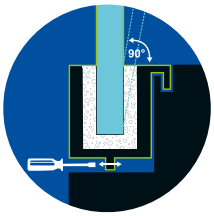
The prefabricated glass modules are hooked into the substructure profiles to be installed on the construction site and screwed together with special adjusting pieces. This screwing allows a tolerance compensation of the vertical position at rail height. Due to clamping in the support rail, no glass holes are necessary. This reduces planning and installation work as well as costs. The systematisation generates benefits in all areas.



Simple hooking in + **Infinite adjustability** = **Uniform glass support**

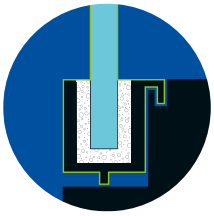
EXECUTION COMPLIANT WITH STANDARDS* OF GLASS RAILINGS

DOS



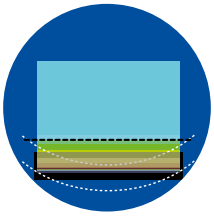
STRESS-FREE INSTALLATION

Low-stress mounting
DIN 18008-1 – 10.1.3 | ÖN B 3716-1 – 6.2 | SIGAB 002 – 5.3 | SIGAB 12/2007 – 5.0 | SIA 2057 08/2021 – 5.5.1.3, 5.5.1.4 and 5.5.5.2



UNCHANGEABLE POSITION STABILITY

Position stability despite destabilising effects | DIN 1055-100 – 9.2 | SIA 2057 08/2021 – 2.7.1



OPTIMAL GLASS SUPPORT

Avoidance of effects from the substructure on the glass railing, e.g. deformations | DIN 18008-1 – 3.1.1 and 7.1.5 I ÖN B 3716-1 – 1 | SIA 2057 08/2021 – 4.2.1.4

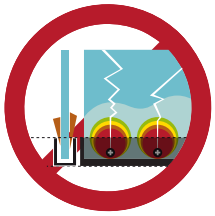
DON'TS

FORCED STRESS

Forced stress due to installation | Wedges must not be used (local stresses).

CHANGE DUE TO USE

Permanently limited usability due to the ingress of dirt | Indirect effects due to ice, snow and wetness influence the mounting conditions. | Environmental influences effecting the durability of the support structure



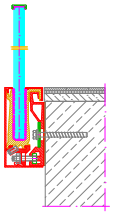
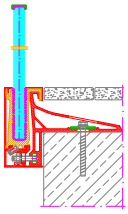
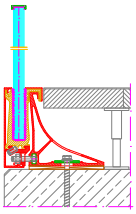
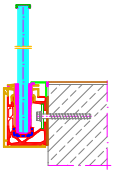
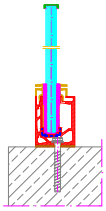
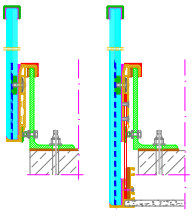
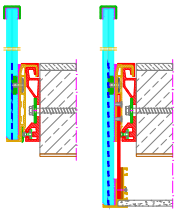
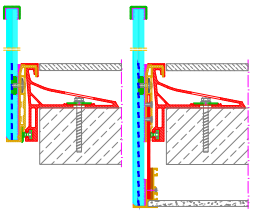
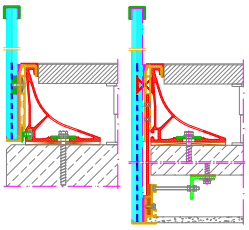
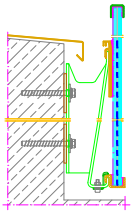
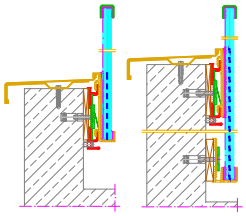
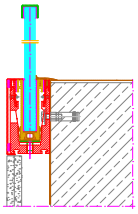
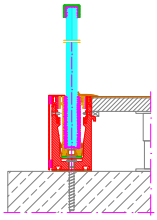
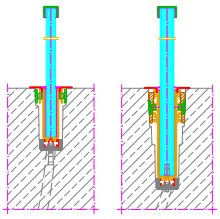
UNPLANNED STRESSES

Local pressure points directly on the glass cause stress peaks and lead to glass breakage.

*Our interpretation of standards and technical guidelines; no claim to being complete.

PRODUCT OVERVIEW
GM RAILING®

universal	**GM RAILING® UNI** Due to its consistent modular structure, the GM RAILING® system is easy to integrate into a wide variety of constructions and allows the planners a unique design freedom. It is universally usable for all load areas.
compact	**GM RAILING® DOUBLE** In the GM RAILING® DOUBLE glass railing system, the glass module is inserted and adjusted from above. The compact U-channel (80 x 100 mm) can be fastened to a supporting structure both from the top and from the side.
flush-mounted	**GM RAILING® PLAN** GM RAILING® PLAN is a glass railing that conveys a clear and unambiguous architectural language. It impresses with surface flushness in the facing and is refined in detail. You see uncompromisingly only glass.
Parapet	**GM RAILING® FRONT** GM RAILING® FRONT is designed for lateral fastening on the side facing the person to a parapet or a balustrade.
curved	**GM RAILING® BENT** The biggest advantage of the GM RAILING® BENT system is the standardisation of the fastening and mounting. The glass bedding, which is consistent across all radii and bending shapes and produced in the highest quality, has been verified in generally valid system statics.
in the floor	**GM RAILING® LEVEL U** The GM RAILING® LEVEL U system is conceived for applications in which the fastening unit for the glass railing is recessed in the concrete floor surface. Only the respective floor and the protruding glass itself can be seen.

	Connection				
	steel construction building site SOLO	at side SIDE	component edge PART	top TOP	embedded LEVEL
					
					
					
					
					
					

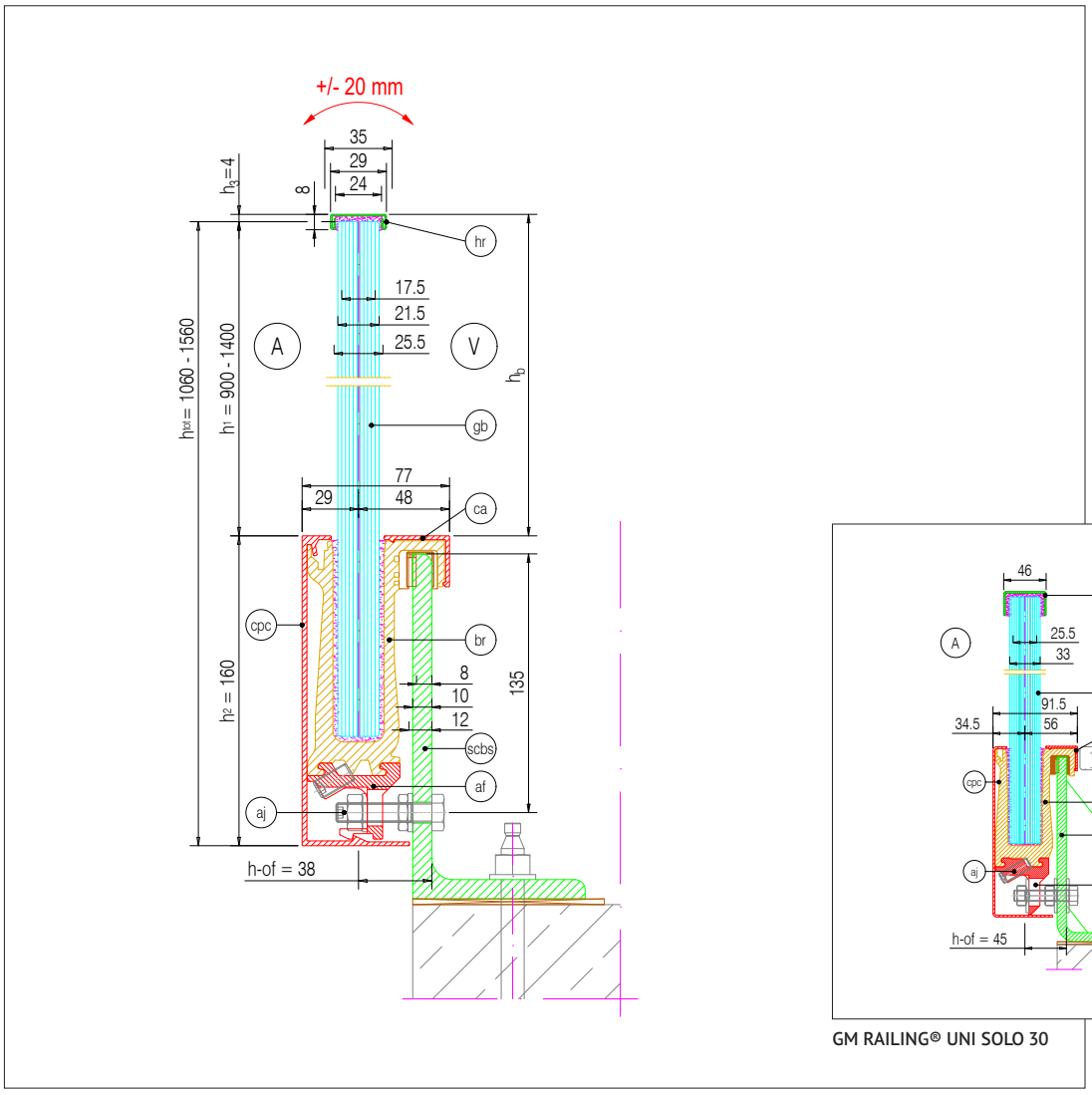
GM RAILING® UNI SOLO
FOR STEEL SUBSTRUCTURES

Advantages of GM RAILING® UNI SOLO.

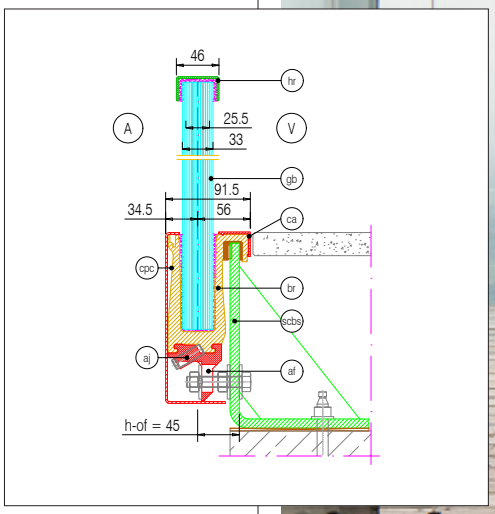
- » ECONOMICAL ALL-ROUNDER FOR ALL LOAD RANGES
- » INSTALLATION ON ON-SITE STEEL STRUCTURE
- » MAXIMUM FREEDOM IN THE CHOICE OF THE COVER PROFILES
- » ABP P-2024-3011/P-2018-3012

GM RAILING® UNI SOLO can be used in a wide range of applications in combination with an on-site steel substructure. In addition to the greatest possible flexibility of the connection, all load ranges can be realised.

Various native cover profiles are available for visual design. Facade profiles and your own cover plates can also be hung in the specially designed groove.



GM RAILING® UNI SOLO 20



GM RAILING® UNI SOLO 30

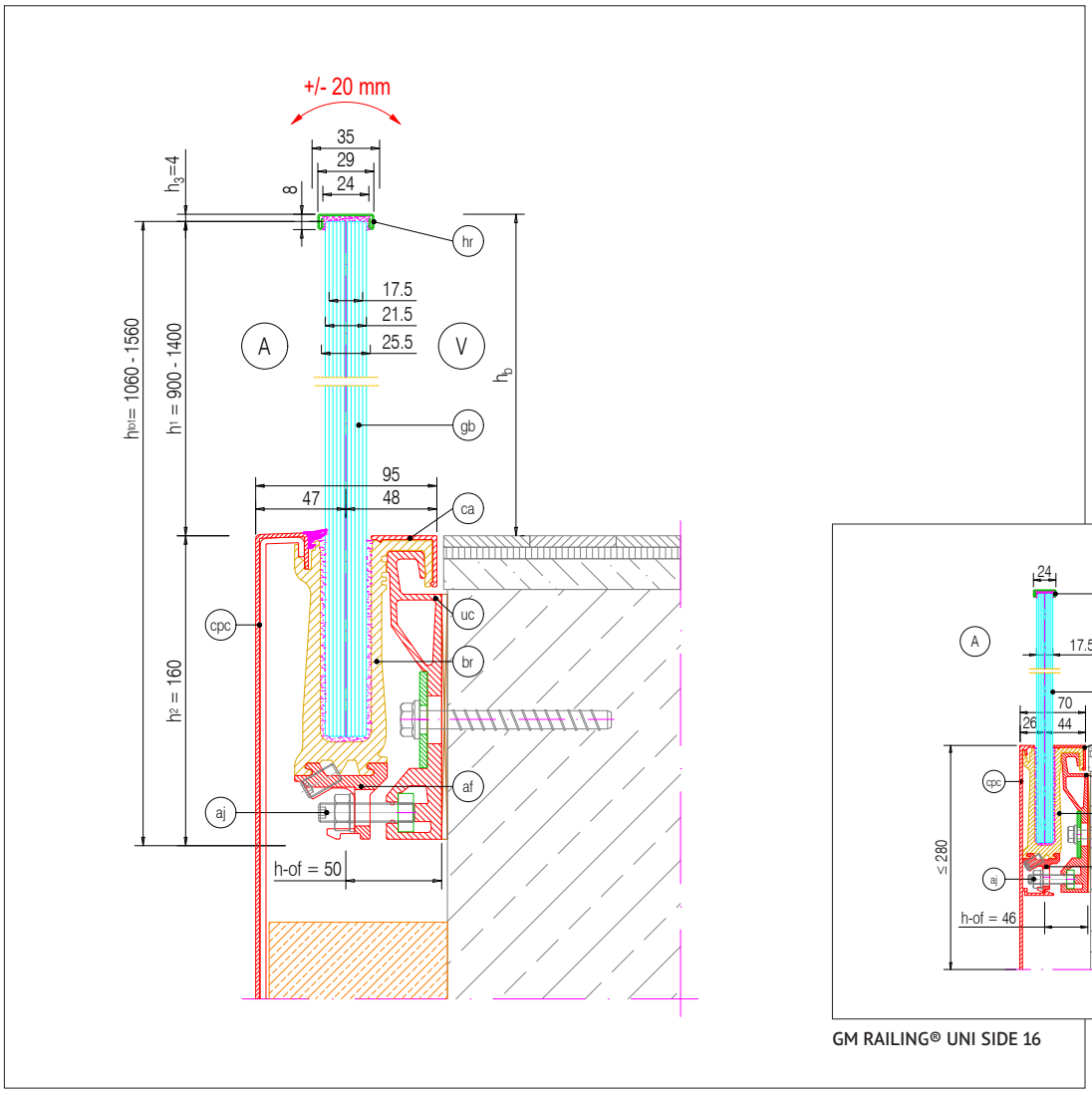
GM RAILING® UNI SIDE
FOR FASTENING FROM THE SIDE

Advantages of GM RAILING® UNI SIDE:

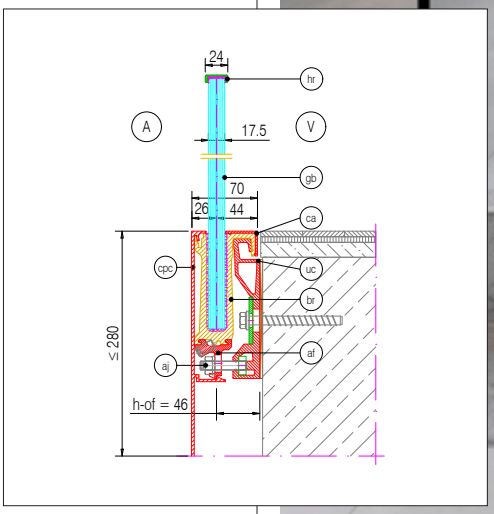
- » UNIVERSAL RAILING SYSTEM FOR VIRTUALLY ALL APPLICATIONS
- » LOW INSTALLATION DEPTH
- » PARTICULARLY EFFICIENT IN THE STAIR AND RAMP AREA TOO
- » ABP P-2024-3011

The substructure of GM RAILING® UNI SIDE is designed for fastening to the building from the side. Especially for implementations on stairs or ramps, the low installation depth enables optimised detailed planning, which takes into account the often limited space available in the staircase area.

Like the native cover profiles, facade profiles and your own cover profiles can also be hung in the specially designed groove.



GM RAILING® UNI SIDE 20



GM RAILING® UNI SIDE 16

GM RAILING® UNI PART
FOR SEALING SYSTEMS

Advantages of GM RAILING® UNI PART:

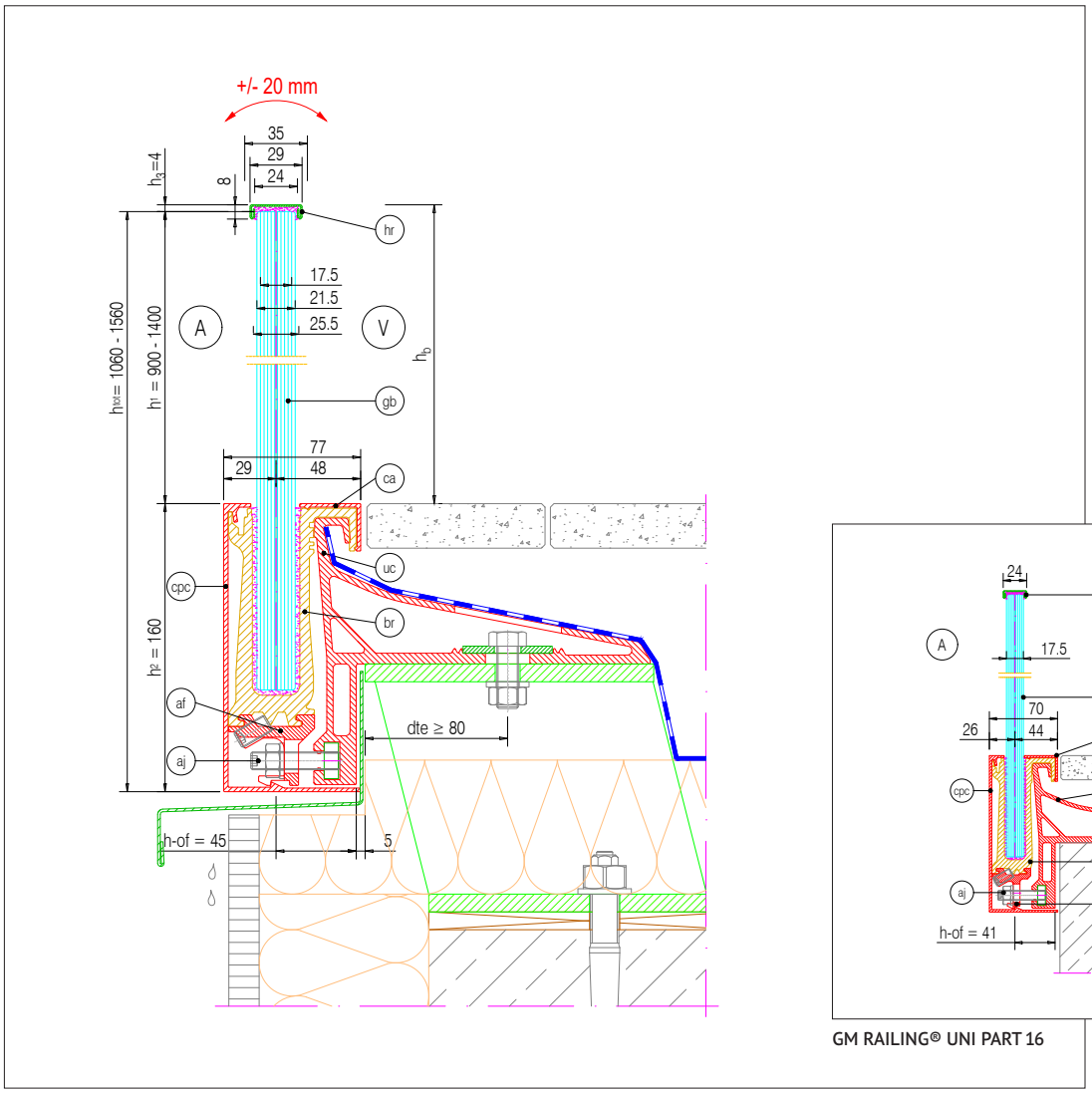
» UNIVERSAL RAILING SYSTEM WITH LOW INSTALLATION HEIGHT

» INSTALLATION ON THE COMPONENT EDGE

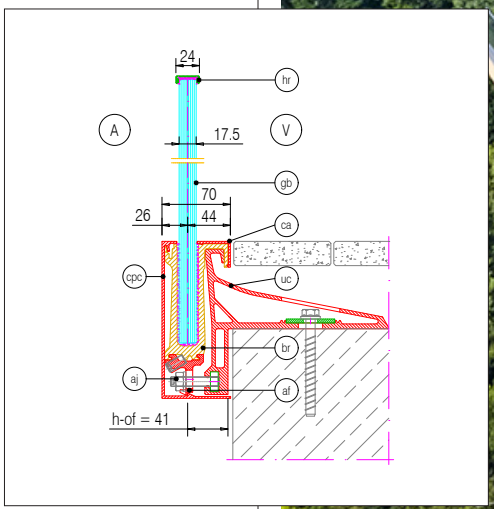
» OPTIMISED FOR ROOF SEALING AND THERMALLY INSULATED FACADES

» ABP P-2024-3011

With its particularly low installation height, GM RAILING® UNI PART is intended for mounting on the component edge. The glass railing can therefore also be connected to thick thermal insulation without applying too much force. The inside of the substructure is optimised for the connection of sealing membranes. The series is therefore an outstanding solution for highly insulated, energy-efficient areas of the building envelope, such as roof terraces or balconies above living rooms.



GM RAILING® UNI PART 20



GM RAILING® UNI PART 16

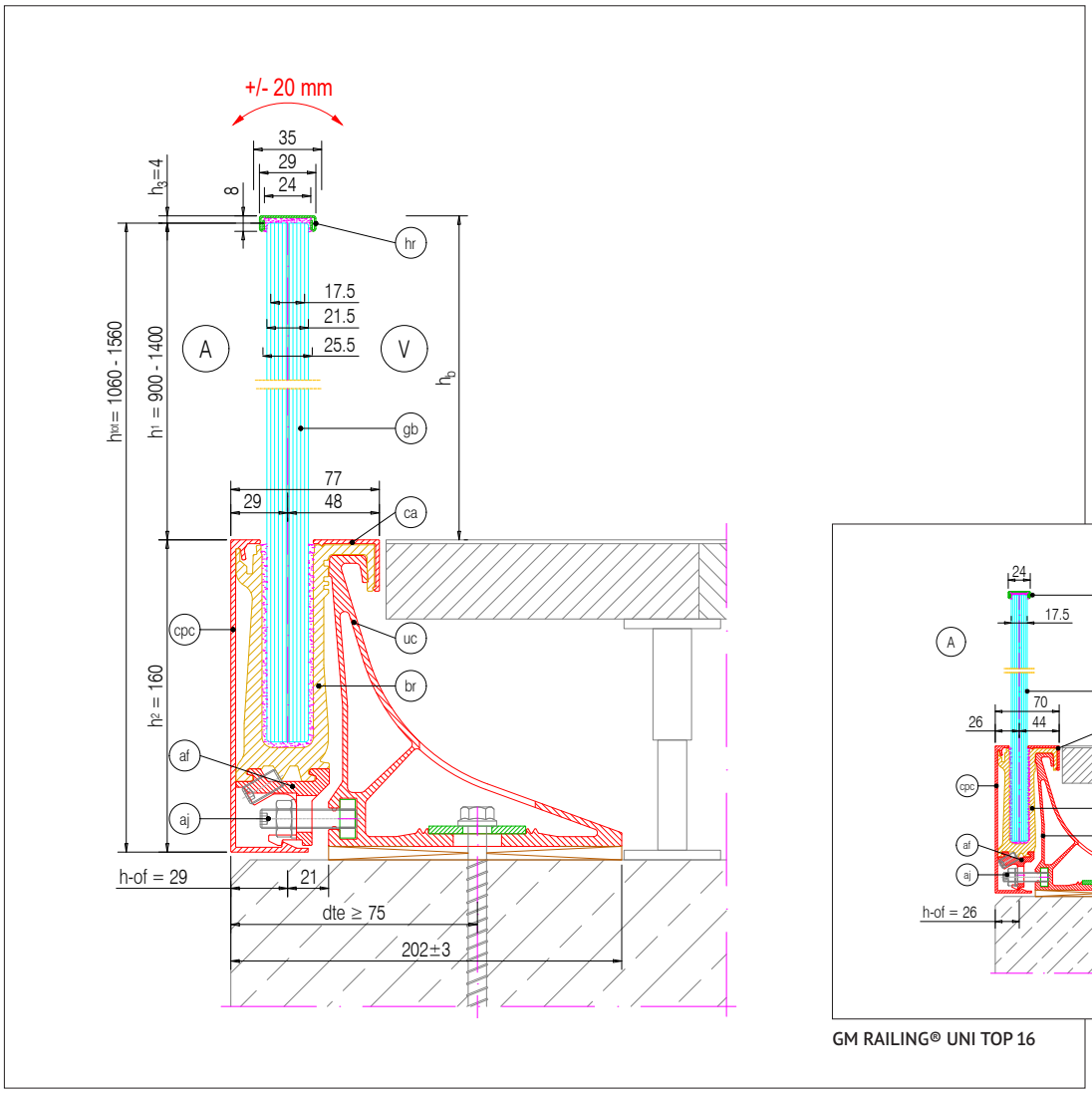
GM RAILING® UNI TOP
FOR CEILINGS WITH FLOOR STRUCTURE

Advantages of GM RAILING® UNI TOP:

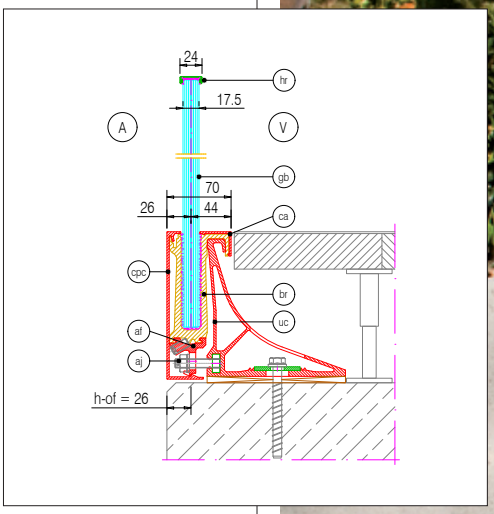
- » INSTALLATION ON THE BUILDING STRUCTURE
- » SUBSTRUCTURE PROFILE AS FINISH FOR FLOOR STRUCTURE
- » PENETRATION-RESISTANT ROOF SEALING WITH TOP THERMAL INSULATION
- » ABP P-2024-3011

With an installation height of 160 mm, the GM RAILING® UNI TOP substructure is suitable for elevated floors as well as balconies and terraces that drain inwards.

Like the native cover profiles, facade profiles and your own cover profiles can also be hung in the specially designed groove.



GM RAILING® UNI TOP 20



GM RAILING® UNI TOP 16

GM RAILING® DOUBLE SIDE
LATERALLY FASTENED U-CHANNEL

Advantages of GM RAILING® DOUBLE SIDE:

» ECONOMICAL GLASS RAILING

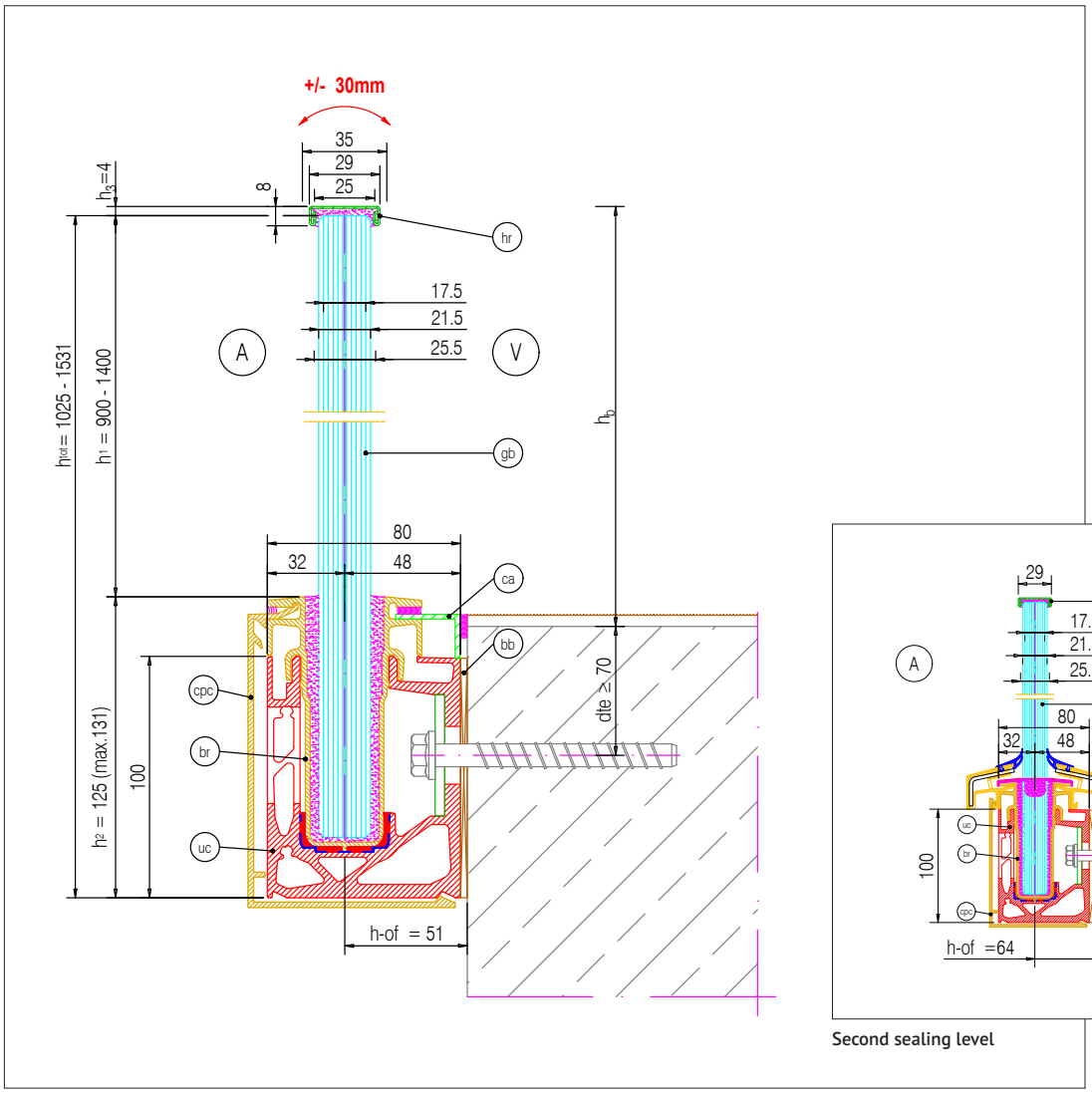
» VERY SIMPLE TO INTEGRATE IN THE FACADE PLANNING

» TWO-EDGE STABILITY

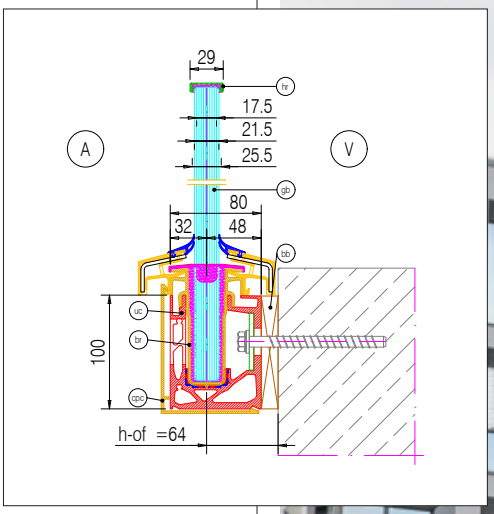
» OPTIONAL SECOND SEALING LEVEL

» ABP P-2021-3012

GM RAILING® DOUBLE is a very compact glass railing system with optimal, uniform glass support. The bonding and the two-sided suspension in the substructure stabilise the system enormously. Thanks to the bonding of the glass modules, the installation is very fast and is non-destructively reversible at any time. Cover panels and a second sealing level are optionally available. The connection of individual panels and cover plates is possible at any time.



GM RAILING® DOUBLE SIDE



Second sealing level

GM RAILING® DOUBLE TOP
U-CHANNEL FASTENED FROM ABOVE

Advantages of GM RAILING® DOUBLE TOP:

» ECONOMICAL GLASS RAILING

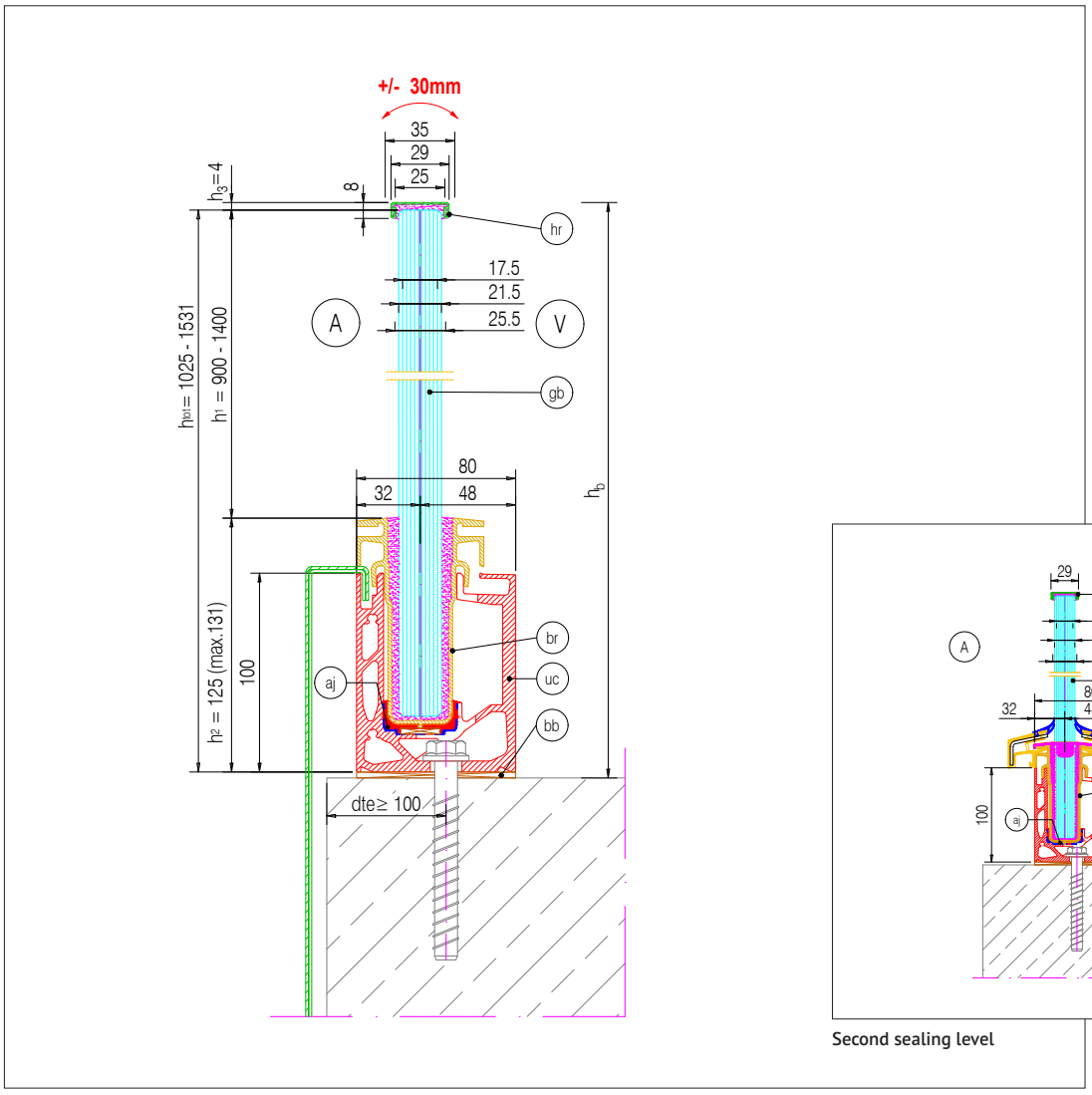
» TWO-EDGE STABILITY

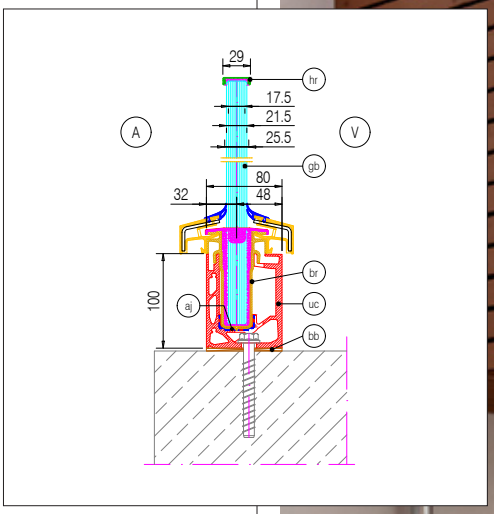
» OPTIONAL SECOND SEALING LEVEL

» WITH OR WITHOUT COVER PROFILE

» ABP P-2021-3012

GM RAILING® DOUBLE TOP was designed for fastening to the building structure from above. Facade claddings can easily be connected. Despite its low profile height of just 100 mm, the glass railing system is characterised by high stability. Thanks to the double-sided suspension, loads are discharged into the substructure by pressure and tension. In addition, GM RAILING® DOUBLE TOP is perfectly protected against moisture with the optional second sealing level.





Second sealing level

GM RAILING® DOUBLE TOP

GM RAILING® PLAN SOLO
FOR STEEL SUBSTRUCTURES

Advantages of GM RAILING® PLAN SOLO:

» FLUSH-MOUNTED

» ALL-GLASS LOOK

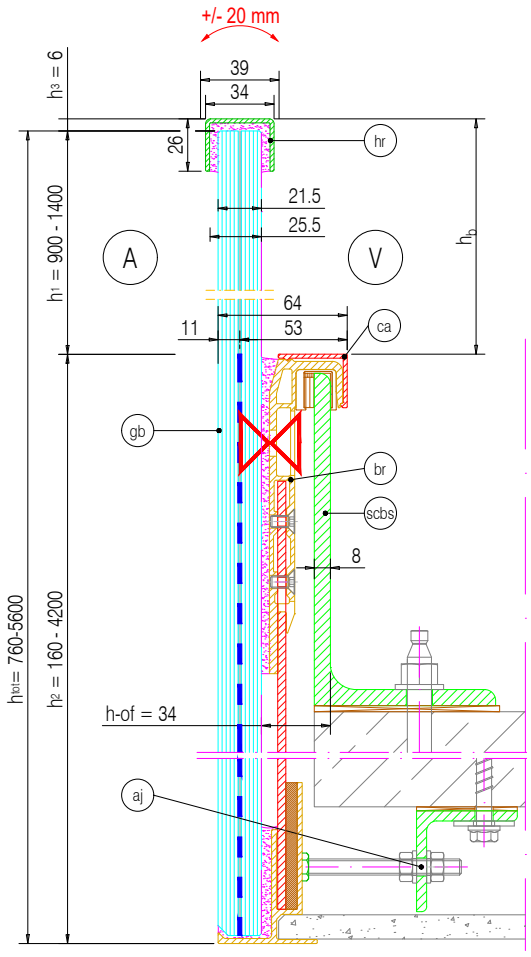
» LOW INSTALLATION DEPTH

» VARIABLE PROFILE HEIGHT

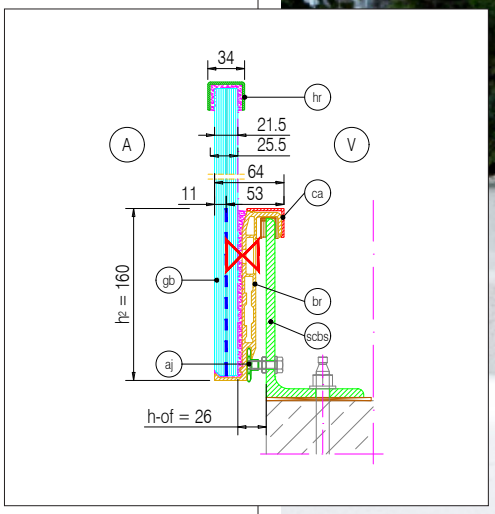
» ALSO POSSIBLE IN BENT VERSION

GM RAILING® PLAN meets the highest architectural standards: The external glass surface extends beyond the floor structure and the ceiling construction, finally ending flush with the ceiling underneath.

The GM RAILING® PLAN SOLO series is characterised by a very low installation depth. The glass railing is hung directly into on-site substructures and is infinitely adjustable. A bent version of the system is also possible.



GM RAILING® PLAN 2 SOLO



GM RAILING® PLAN 1 SOLO


THE
ICON
VIENNA

GM RAILING® PLAN SIDE
LATERAL FASTENING

Advantages of GM RAILING® PLAN SIDE:

» FLUSH-MOUNTED

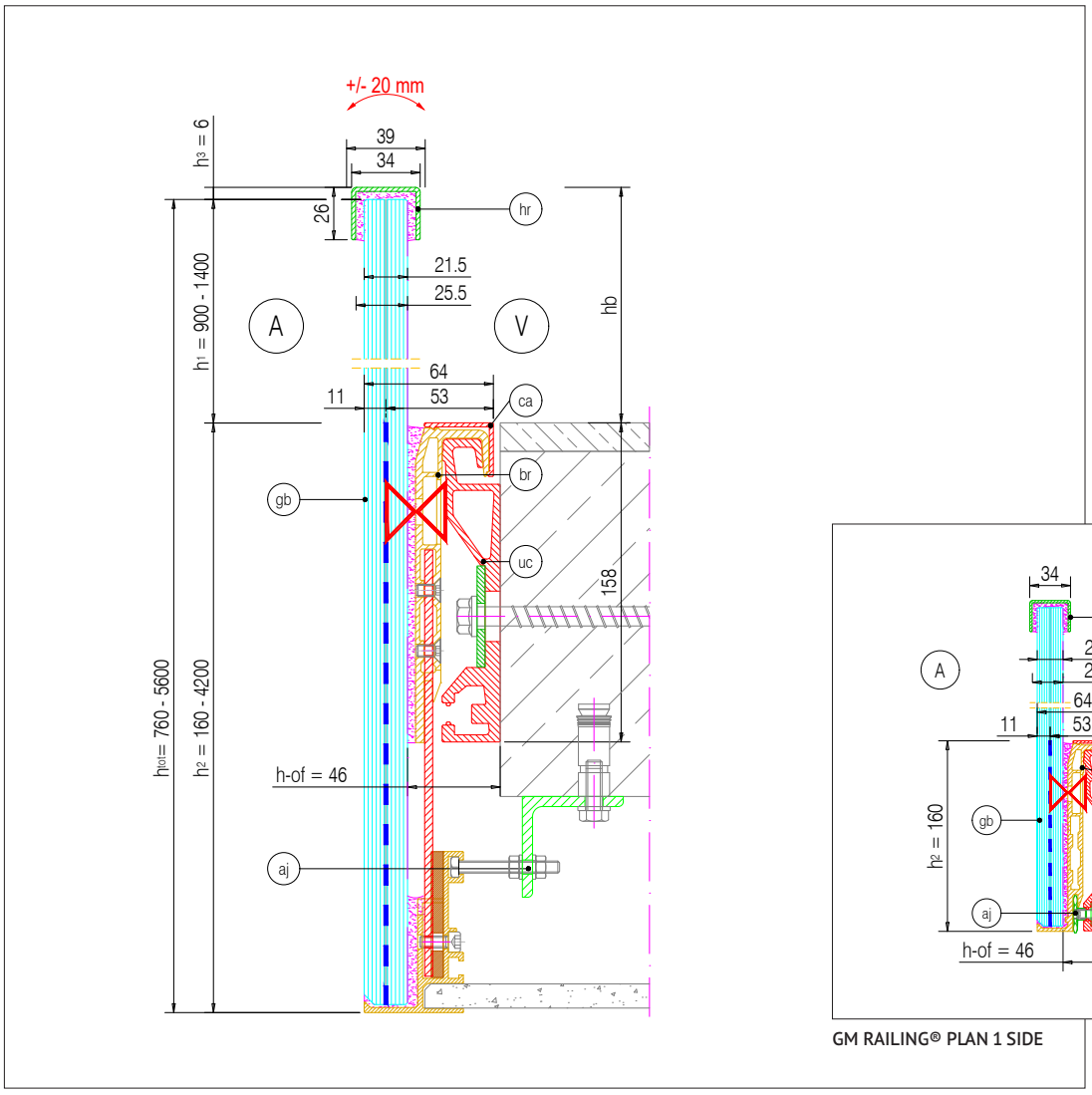
» ALL-GLASS LOOK

» VARIABLE PROFILE HEIGHT

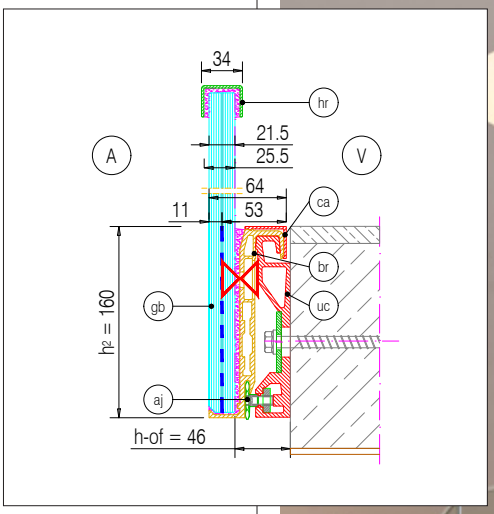
» INSTALLATION ON THE BUILDING STRUCTURE FROM THE SIDE

GM RAILING® PLAN was designed to meet the highest architectural standards: The view surface is made entirely of glass.

The GM RAILING® PLAN SIDE series was developed for fastening to the building structure from the side. The glass module is attached to the profile on the front side. With its low installation depth, the series is particularly suitable for installation in the stair area.



GM RAILING® PLAN 2 SIDE



GM RAILING® PLAN 1 SIDE

GM RAILING® PLAN PART
SEALING & INSULATION

Advantages of GM RAILING® PLAN PART:

» FLUSH-MOUNTED

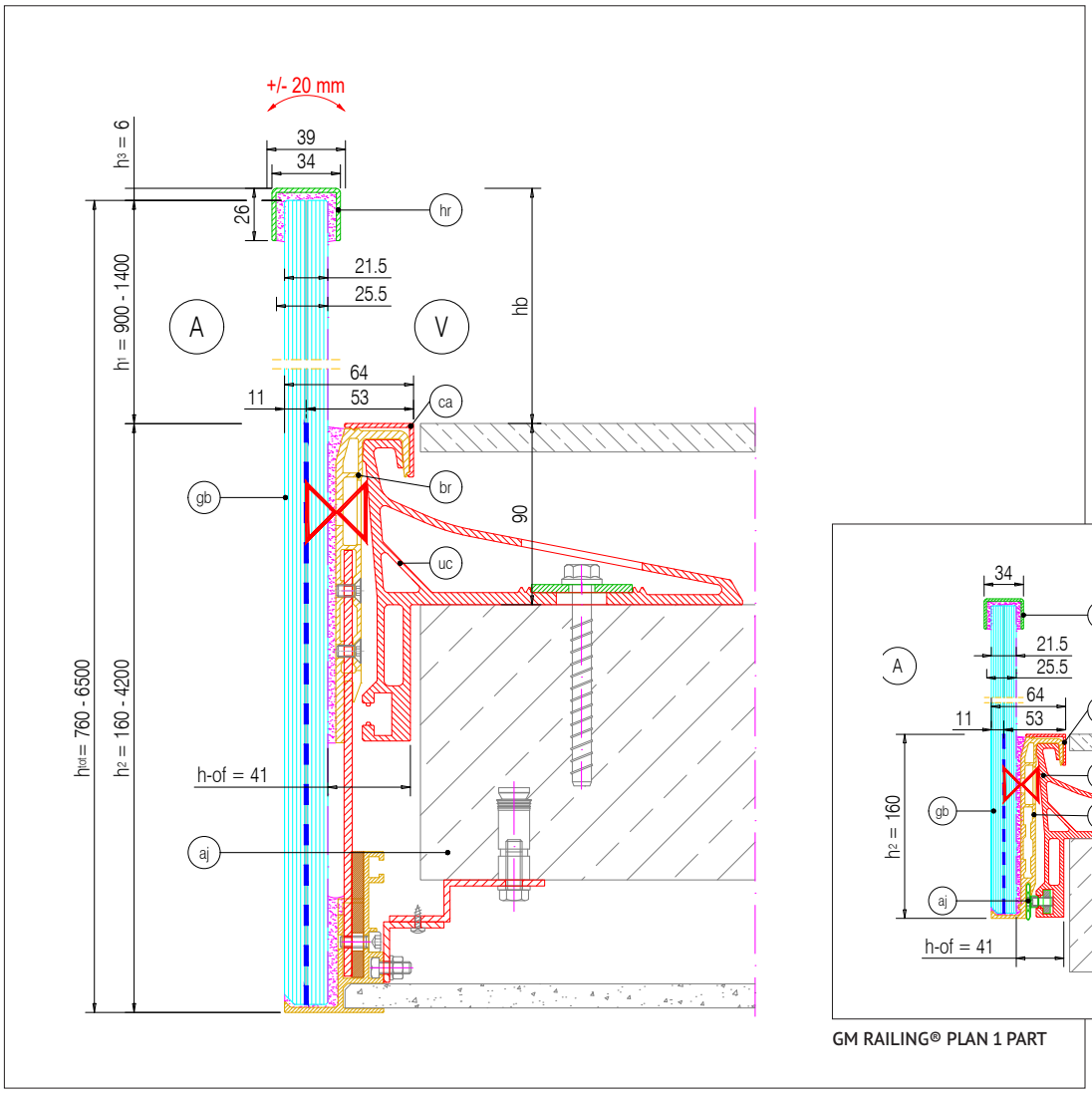
» PARTICULARLY LOW INSTALLATION HEIGHT

» VARIABLE PROFILE HEIGHT

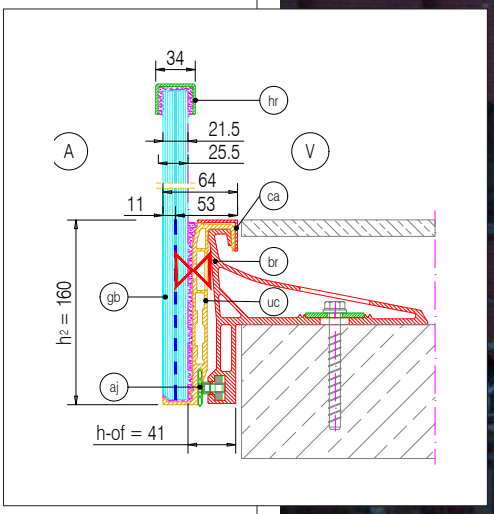
» INSTALLATION ON THE COMPONENT EDGE

The flush-mounted GM RAILING® PLAN speaks a clear and unambiguous architectural language.

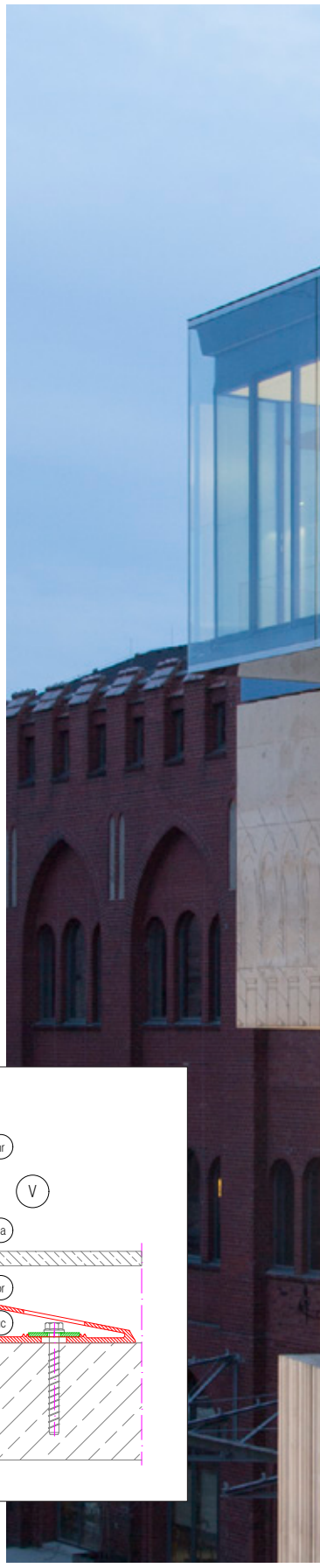
Thanks to the installation on the component edge, GM RAILING® PLAN PART is especially suitable for combination with thermally insulated facades. With its low installation height of just 90 mm, this series is also preferably used indoors with flat floor structures.



GM RAILING® PLAN 2 PART



GM RAILING® PLAN 1 PART



GM RAILING® PLAN TOP
FLUSH-MOUNTED VIEW

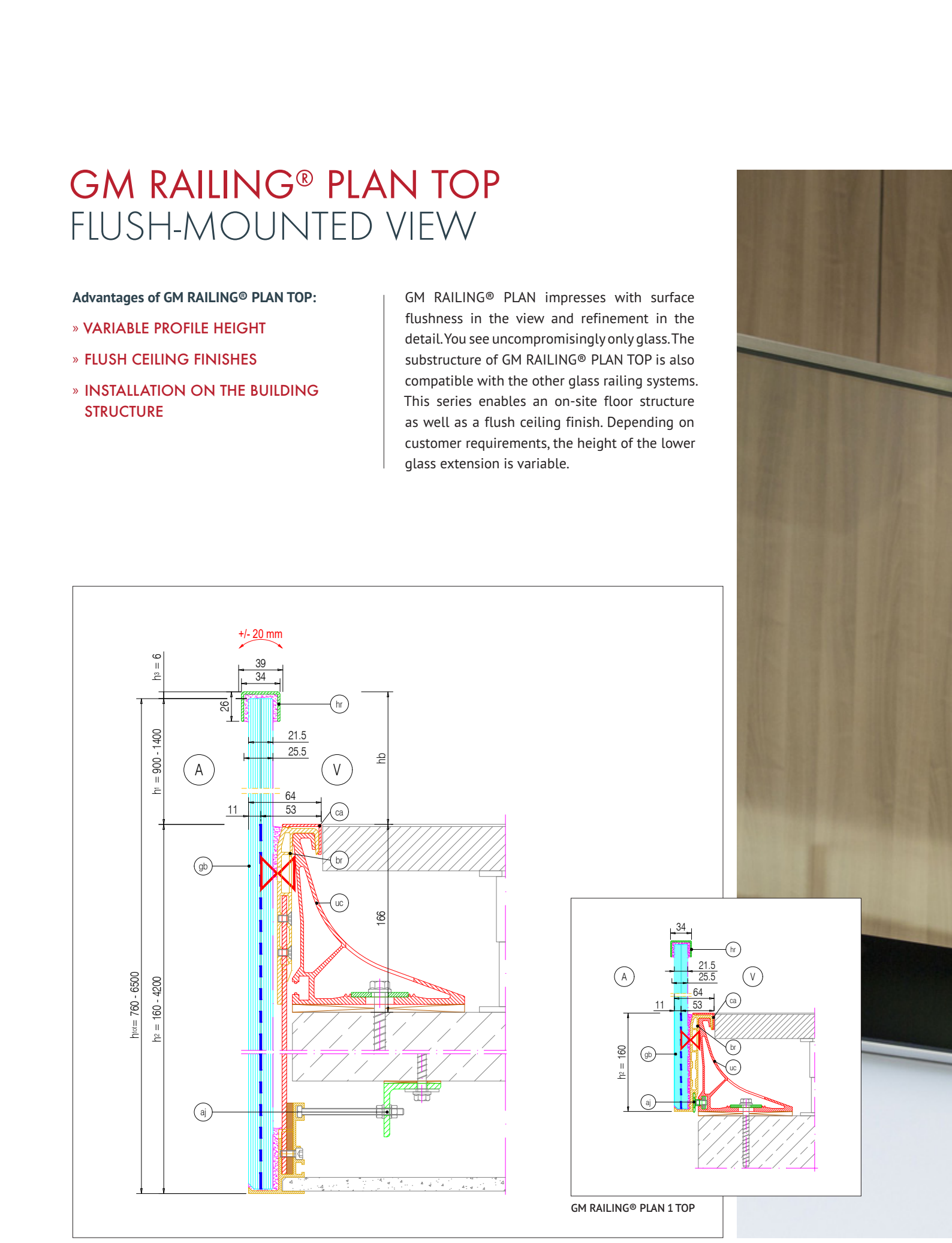
Advantages of GM RAILING® PLAN TOP:

» VARIABLE PROFILE HEIGHT

» FLUSH CEILING FINISHES

» INSTALLATION ON THE BUILDING STRUCTURE

GM RAILING® PLAN impresses with surface flushness in the view and refinement in the detail. You see uncompromisingly only glass. The substructure of GM RAILING® PLAN TOP is also compatible with the other glass railing systems. This series enables an on-site floor structure as well as a flush ceiling finish. Depending on customer requirements, the height of the lower glass extension is variable.



GM RAILING® PLAN 2 TOP

GM RAILING® PLAN 1 TOP

GM RAILING® FRONT AIT SOLO
ALL-GLASS PARAPET

Advantages of GM RAILING® FRONT AIT SOLO:

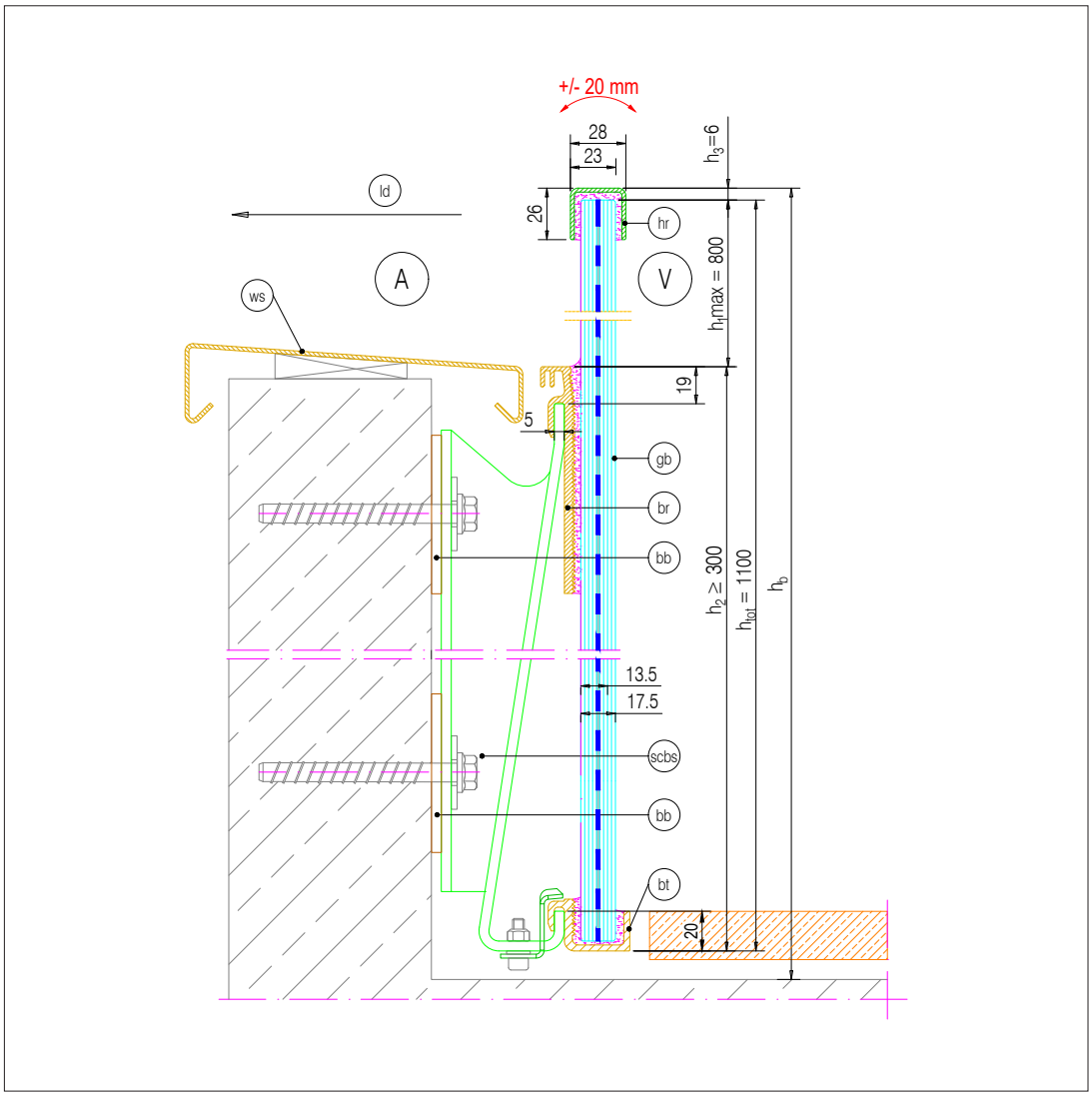
» ECONOMICAL PARAPET SOLUTION

» ALL-GLASS VIEW THANKS TO VARIABLE PROFILE HEIGHT

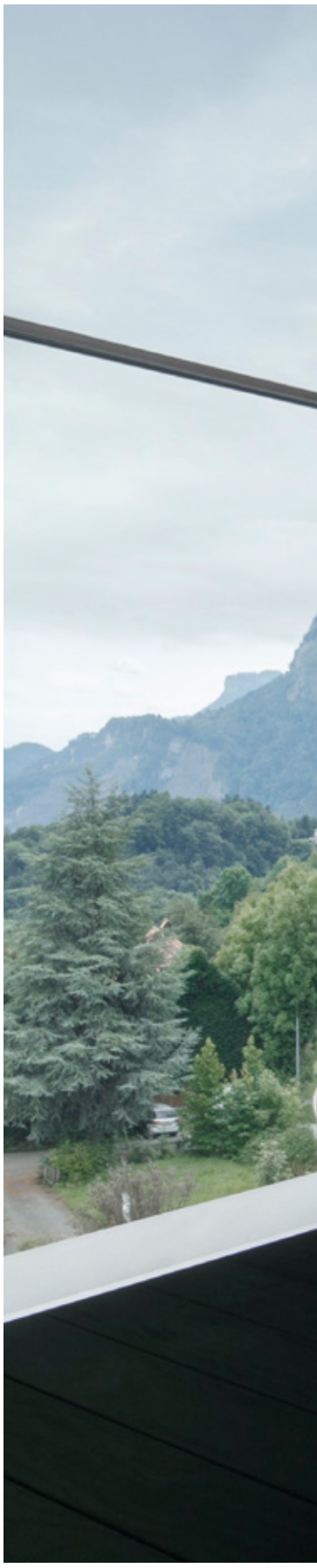
» INSTALLATION ON ON-SITE STEEL LUGS

» ABP A-13-017

GM RAILING® FRONT AIT SOLO is a glass railing system for parapets and balustrades. It is hooked into on-site steel lugs on the side facing the person. The lower profile height is variable; the glass railing covers the full parapet height. Glass thicknesses from LSG 12.2 can be realised.



GM RAILING® FRONT AIT SOLO



GM RAILING® FRONT AIT
ALL-GLASS PARAPET

Advantages of GM RAILING® FRONT AIT:

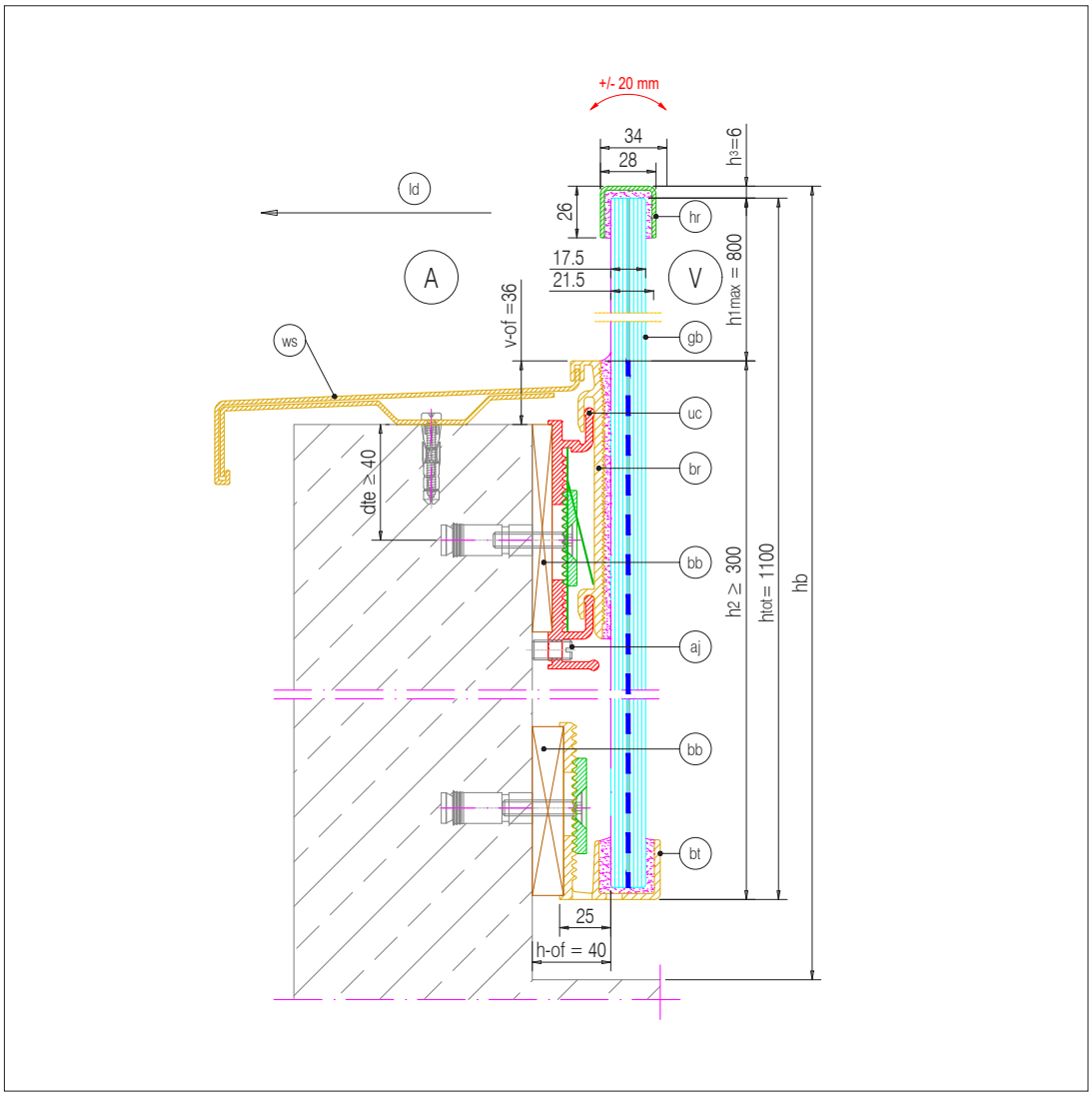
» FOR PARAPETS AND BALUSTRADES

» ALL-GLASS VIEW THANKS TO VARIABLE PROFILE HEIGHT

» INSTALLATION ON THE WALKING SIDE

» ABP A-13-017

In its function as an anti drop device, GM RAILING® FRONT AIT is an independent design element that gives every building an extravagant character. The glass railing system is mounted on the walking side. The height of the substructure profile is variable; the glass railing covers the full parapet height. No matter how high the parapet is, you get an elegant all-glass view. Glass thicknesses from LSG 12.2 can be realised.



GM RAILING® FRONT AIT

GM RAILING® FRONT AIO
PARAPET HEIGHT EXTENSION

Advantages of GM RAILING® FRONT AIO:

» GLASS EXTENSION FOR PARAPETS AND BALUSTRADES

» 140 MM PROFILE HEIGHT

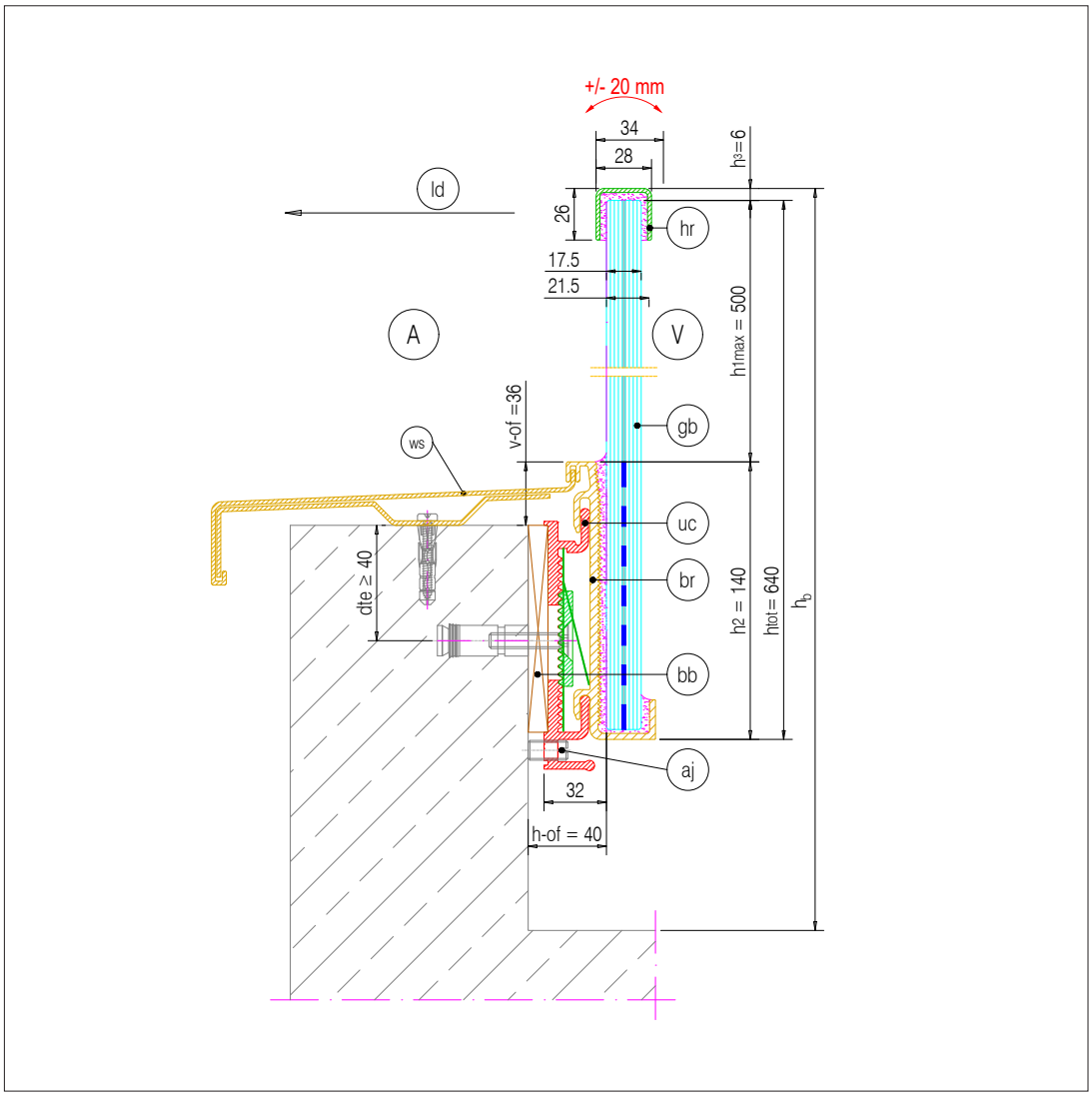
» CONTINUOUS ALL-GLASS VIEW

» INSTALLATION ON THE WALKING SIDE

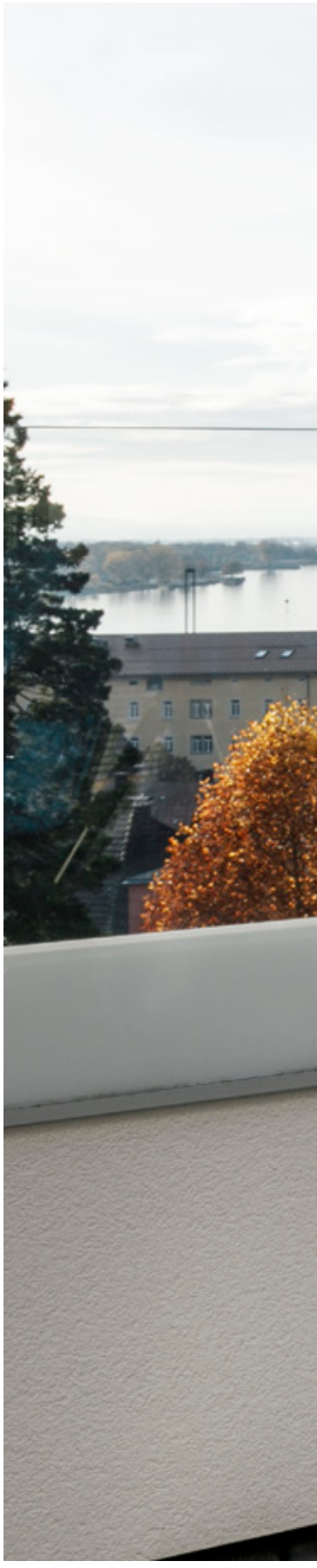
» ABP A-19-008

GM RAILING® FRONT AIO is a transparent, light looking extension for parapets and balustrades. The profile height is 140 mm.

In the area of the profile height, the lower glass surplus can be selected in a colour to match the building.



GM RAILING® FRONT AIO



GM RAILING® BENT
FOR CURVED GLASS RAILINGS

Advantages of GM RAILING® BENT:

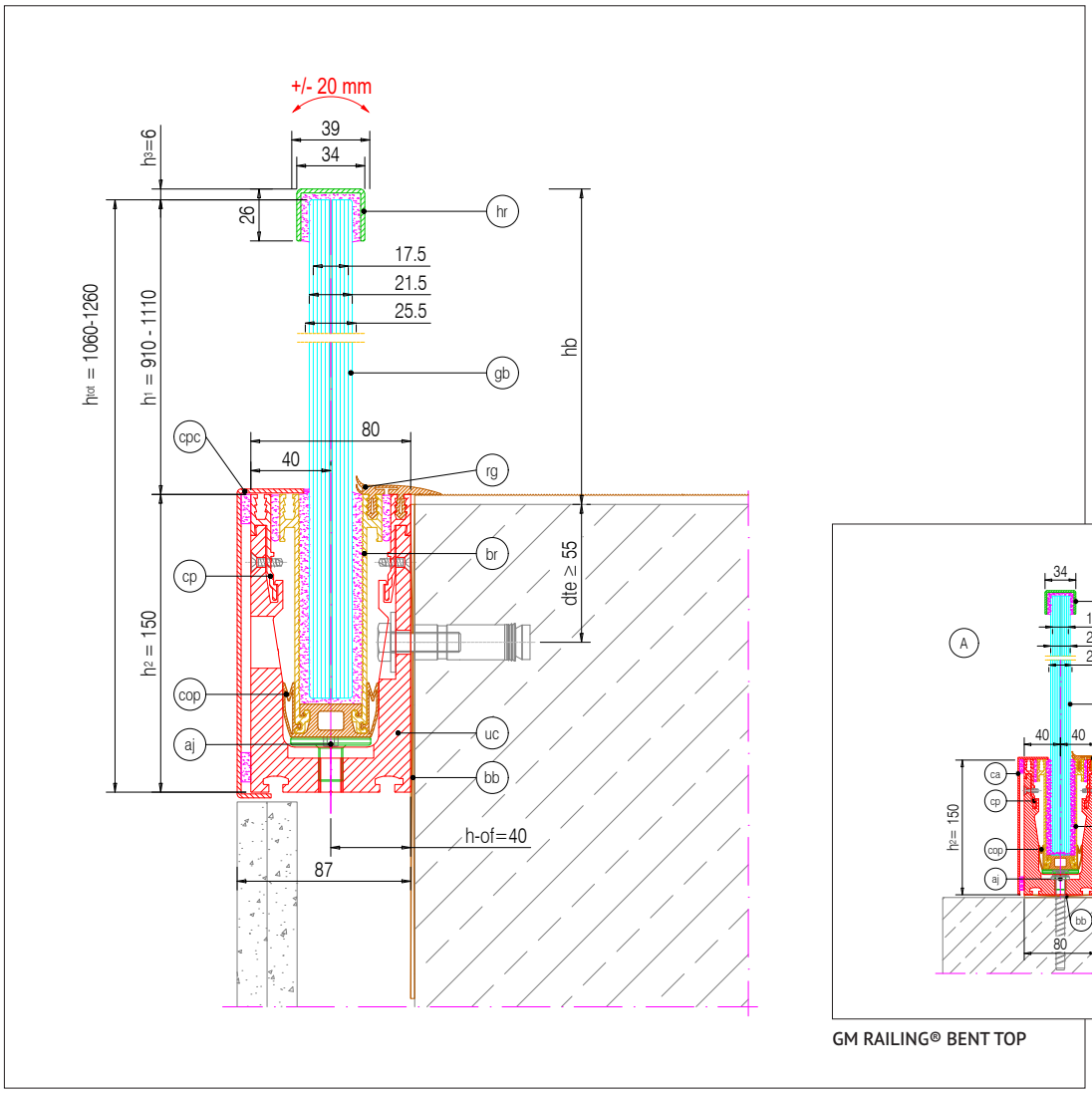
» SEGMENTED SUBSTRUCTURE

» FOR ALL RADII AND BENDING SHAPES

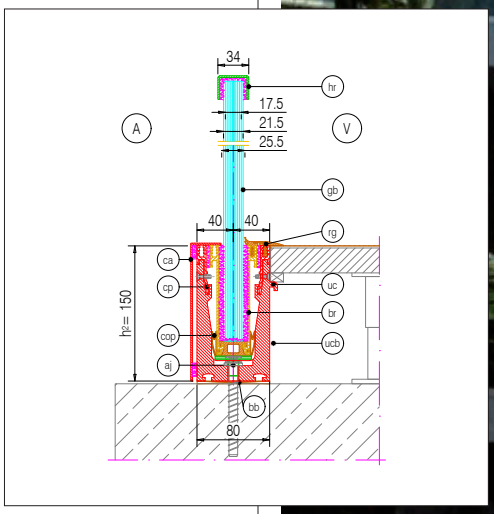
» ABP A-22-005/A-13-021

GM RAILING® BENT allows a consistently high-quality glass bedding across all radii and bending shapes. Due to the segmented construction, convex, concave, regular and free bending shapes can be realised.

Thanks to system statics and general building authority test certificate (AbP), no separate proof is required.



GM RAILING® BENT SIDE



GM RAILING® BENT TOP

GM RAILING® LEVEL U
FOR INSTALLATION IN FAIR-FACED CONCRETE

Advantages of GM RAILING® LEVEL U:

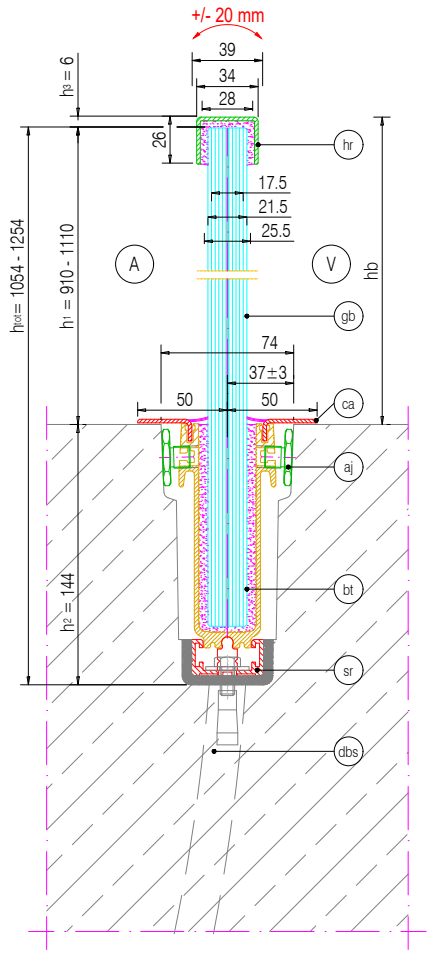
» LIGHTWEIGHT APPEARANCE

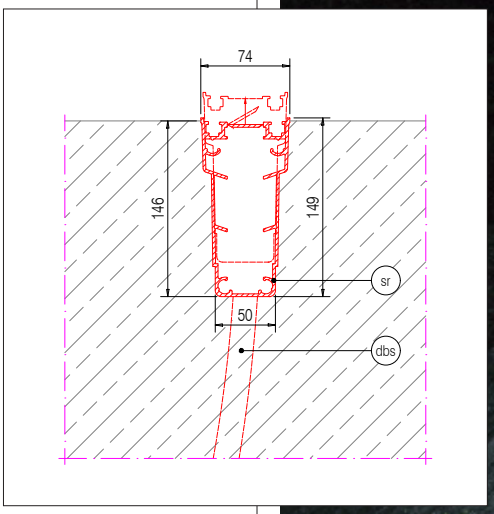
» ASSEMBLY IN THE BUILDING STRUCTURE

» EXACT PROCESSING THANKS TO SPECIAL SHUTTERING PROFILE

» ABP A-20-001

With GM RAILING® LEVEL U, the glass railing is fastened in the floor surface. Thus, only the respective floor and the glass itself – protruding from a slot in the floor – can be seen. This is achieved by a special shuttering profile, which must be mounted before concreting. The profile is removed from the concrete after the curing process. The glass modules are mounted after removing the shuttering profile.



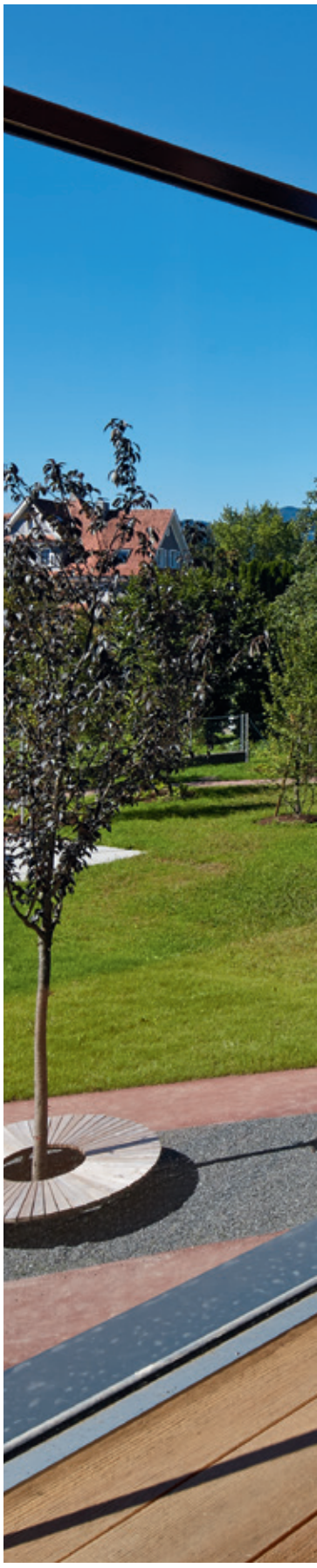


Shuttering profile

GM RAILING® LEVEL U

GM RAILING® ACCESSORIES FOR ALL SYSTEMS

Glas Marte also offers supplementary products such as handrails and cover profiles in many different versions and materials. Our development team will also be happy to design individual custom solutions.



HANDRAILS

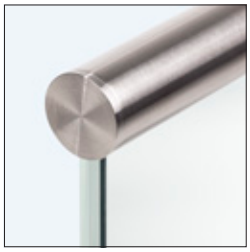
GM RAILING® has a wide range of handrails. Apart from ground or polished stainless steel profiles, we also produce wooden surrounds in various shapes and types of wood. Corner connections ensure exact matching.

As prescribed in DIN 18008-4, 6.1 – special proofs for glass parapets of category B – GM RAILING® handrails are able to transfer the rail loads to adjacent elements, end posts or building anchors in the event of complete failure of a parapet element.

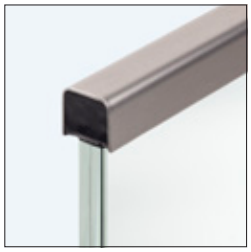
Product advantages:

» Proofs according to DIN 18008-4 are provided.

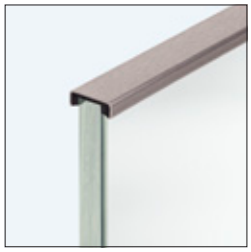
» Due to the optimum glass clamping in the lower area, the handrail is mounted on the upper edge of the glass without the latter having to be aligned.



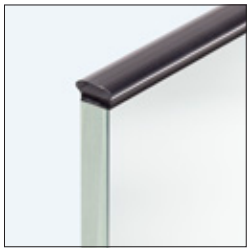
GM SOLID



GM LIGHT



GM EXTRALIGHT



GM GLASS STRIPE

COVER PROFILES

GM RAILING® cover profiles ensure a visually attractive appearance. There are no limits to the design. The covers are available as standard as an aluminium clip profile in a height of 160 to 280 mm or as an edge profile in stainless steel. In addition, custom solutions such as plasterboards or mirrors can be implemented on request.

Likewise, an inner metal edge has been structurally implemented at the transition to the floor covering to protect the floor from excessive moisture during wet cleaning.

Product advantages:

» simple installation and removal of the system element

» no visible screw fittings

» structural benefits even in case of service

GM RAILING® TEMPORARY RAILING FOR ALL SYSTEMS

Glass railing is inserted. Glas Marte has developed a special temporary railing for all GM RAILING® systems for the period between the installation of the substructure and that of the glass. Through the use of the temporary construction, all dangerous work in the drop area is significantly safer when installing anti-drop glazing.

The temporary railing is delivered to the building site in a bundle. In the course of the installation of the glass modules, the temporary railing is dismounted and recovered by Glas Marte.

Late glass module installation is the best protection against damage during the construction period. In addition, this avoids having to clean the glass railings again.

The procedure at a glance:

» Substructure is installed.

» Temporary railing is hooked in and fastened with screws.

» All other trades can continue their work in the meantime.

» Temporary railing is dismounted.

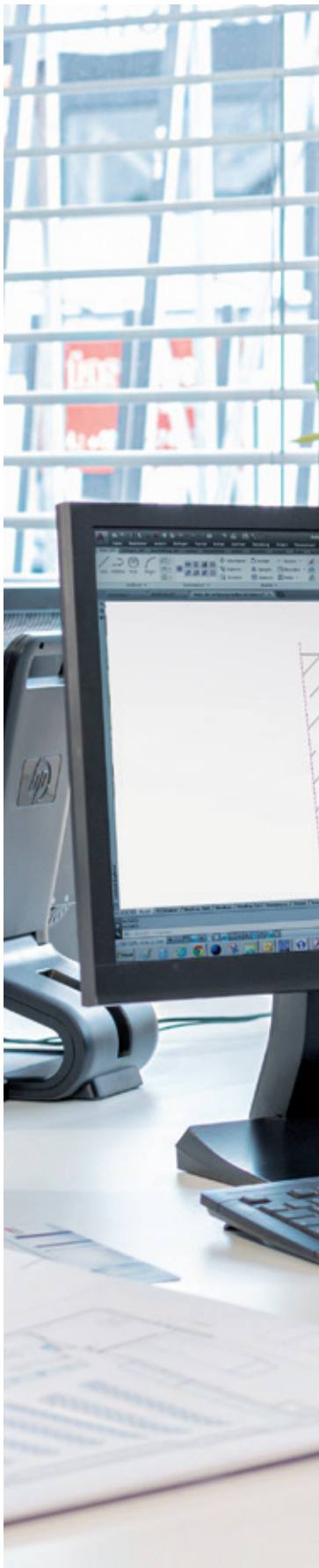

glasmarte

CONCENTRATED KNOW-HOW
DATABASE & SERVICE

The many years of experience of our well-versed glass construction technicians are the basis for building-related detail solutions, which have contributed significantly to the successful realisation of a wide variety of buildings, from detached houses to representative corporate headquarters. You, too, can benefit from this wealth of experience – inform yourself in our extensive GM RAILING® database about connection details and design variants of the GM RAILING® systems!

Do you need individual support for special design tasks? Our specialists will be happy to assist you with the creation of the necessary custom solutions.
In cooperation with our own development department, we pull out all the stops to solve your planning task to your satisfaction, taking into account technical and economic aspects.
Living up to our position as a technology and know-how leader is the passionate and committed goal of every task we are asked to do.

Details available as .dxf or .pdf file at: *glasmarte.at/downloads*



EVERYTHING FROM A SINGLE SOURCE

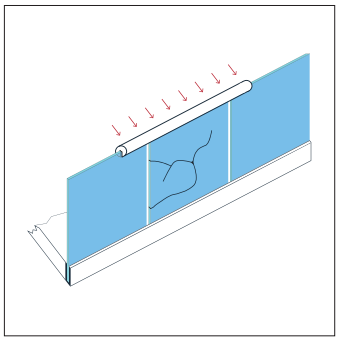
- » Personal consulting and ordering
- » Technical elaboration
- » Detailed planning by Glas Marte
- » Approval plan by customer
- » Production, delivery by Glas Marte
- » Assembly, material delivery, installation support


SAMSUNG

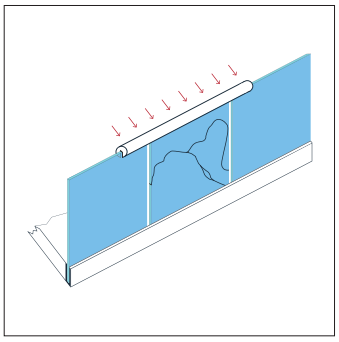
GM RAILING® TEST CERTIFICATES PATENTED AND TESTED COUNTLESS TIMES

According to DIN 18008-4, section 6.1, the effects of damage to any parapet element (including the failure of end panes) must be demonstrated. In the event of a parapet element failure, especially with the interaction of handrail and broken glass, this can best be verified by means of tests.

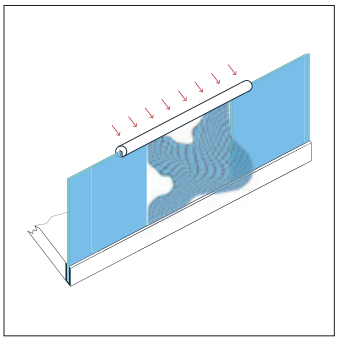
The results of breakage tests differ drastically from one another depending on the choice of glass (LSG made of 2 × TSG, LSG made of 2 × HSG or LSG made of 2 × float glass) and the foil thickness. The broken glass has in some cases a residual stability and a residual load-bearing behaviour. Depending on the type of glass, this can have a positive or negative effect on the overall system. To date, we are not aware of any method by which the residual stability of broken glass can be proven conclusively by means of calculation. For this reason, GM RAILING® has carried out thousands of glass breakage tests with original components up to a single length of 4 m.
In addition, we have static proofs for all series and a very large pool of authorisations for special situations or requirements. GM RAILING® is also able to take your individual requirements into account through a certified calculation program.



LSG/float



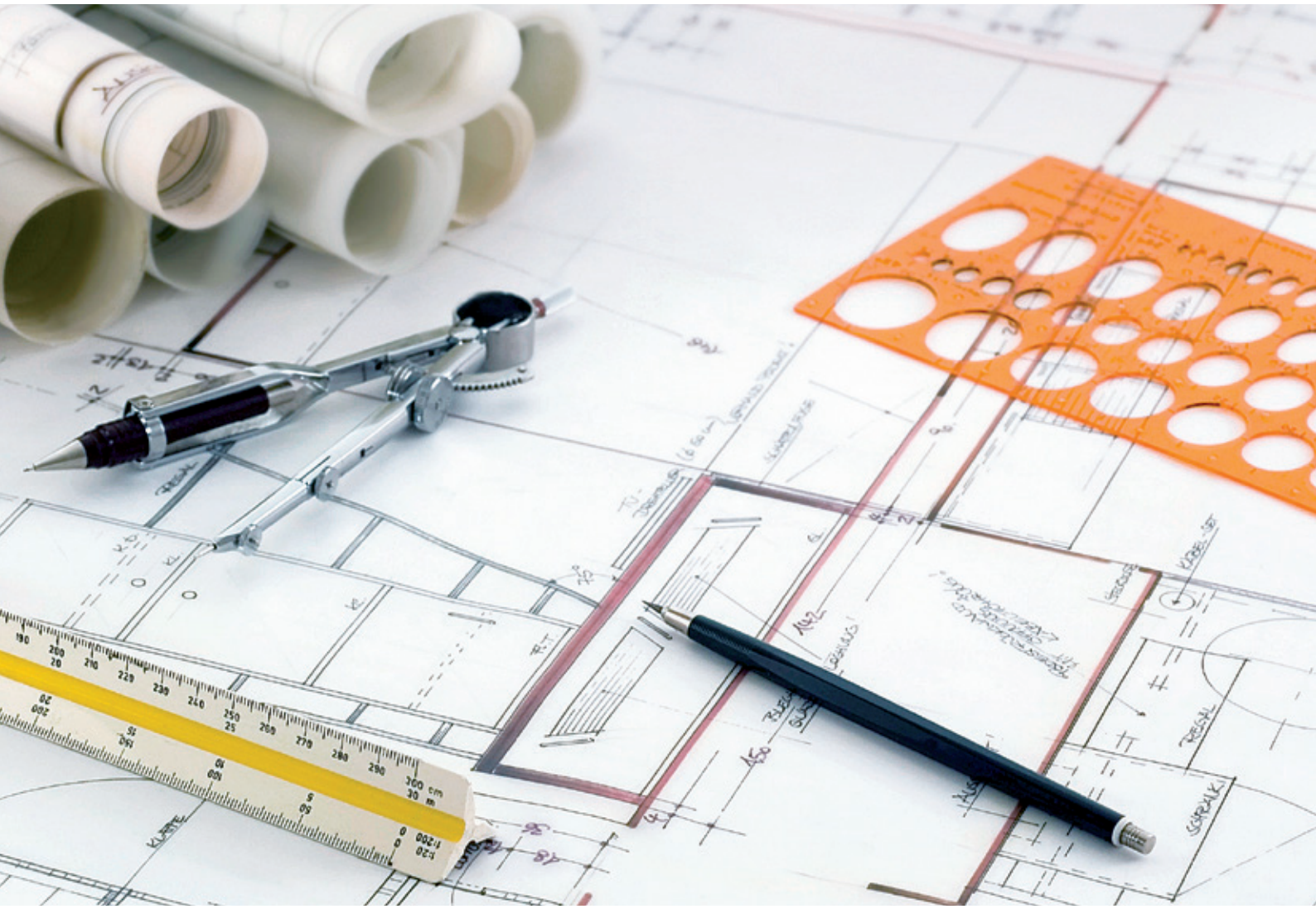
LSG/HSG

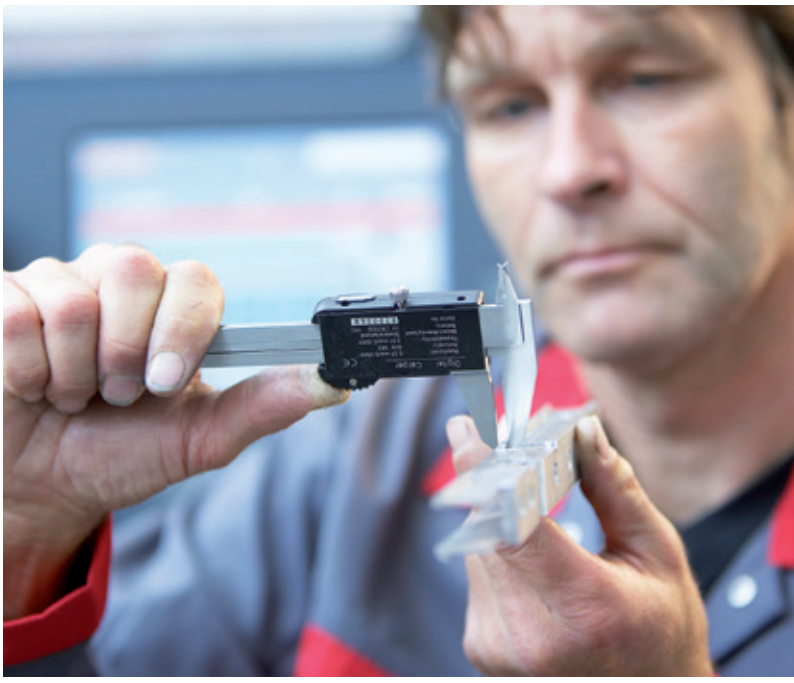


LSG/TSG

TEST LABORATORY

Breakage resistance, stability, load-bearing capacity and residual stability are just a few of the parameters that we constantly keep an eye on and test in our test laboratory. In addition to high qualifications, the basis for this is the appropriate equipment of different test benches. In addition to the classic impact test, residual stability, breakage resistance, reaction to tension and pressure as well as stability of holders and suspension profiles are tested, recorded and logged with DKD-calibrated test machines. GM RAILING® is subjected to regular material and component testing by internal and external testing bodies.





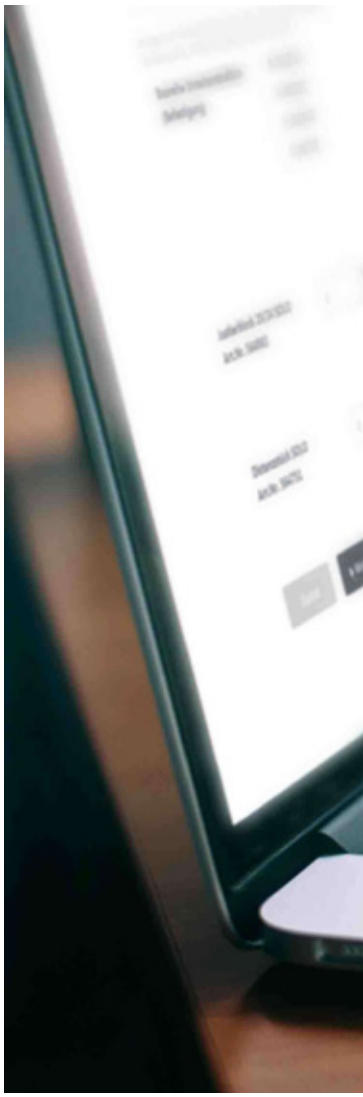
GM RAILING®
HELPFUL TOOLS

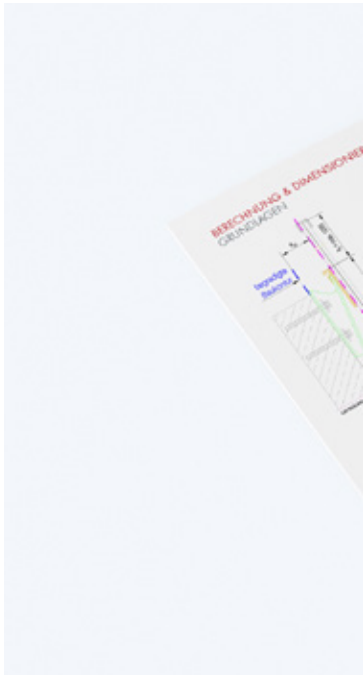
Online calculator:
Our online calculator for GM RAILING® UNI and DOUBLE enables you to quickly and conveniently obtain a quotation yourself at any time – independent of location and business hours.

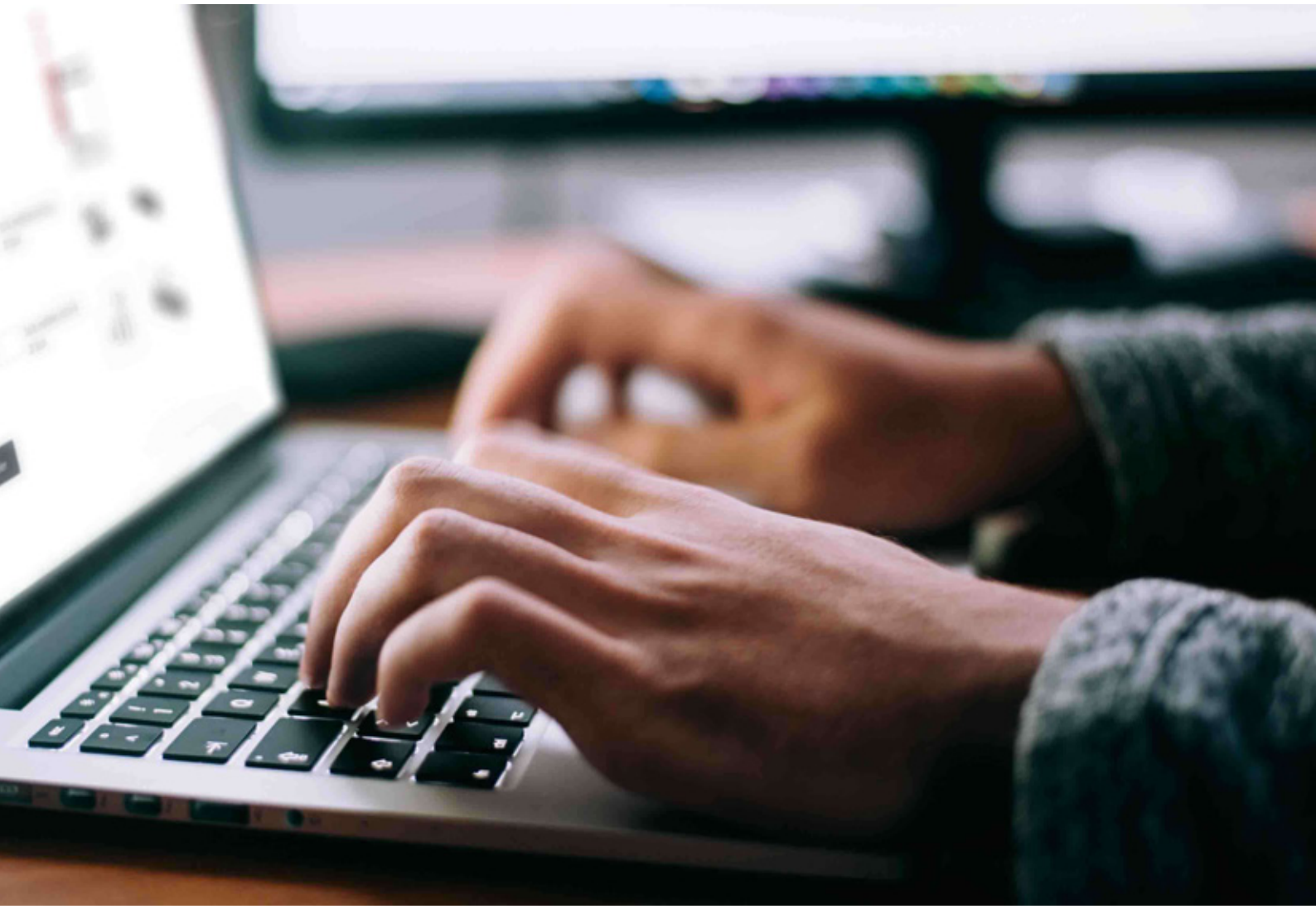
Planning manual:
The respective GM RAILING® UNI, DOUBLE and FRONT planning manual provides assistance with planning. So you get an absolutely realistic cost estimate at the end.

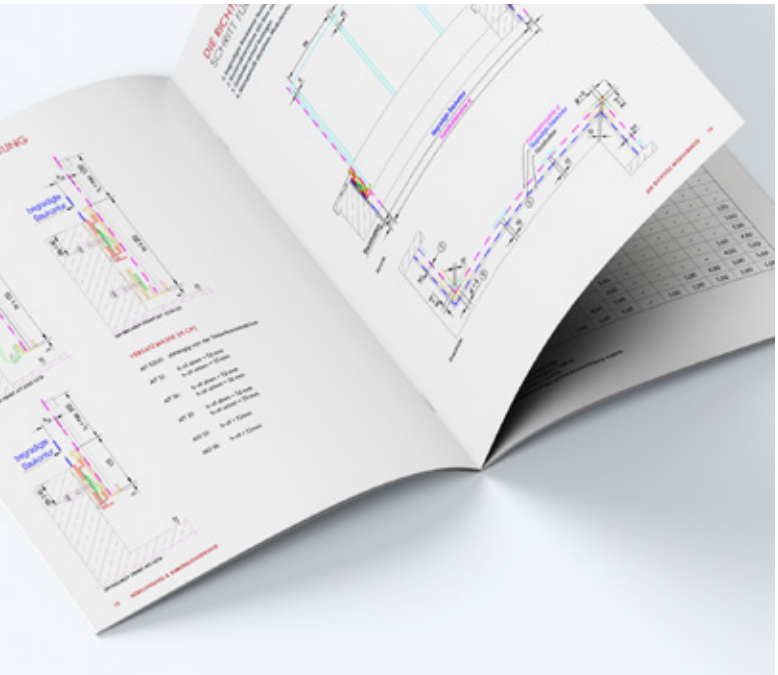
Videos:
tests, installation instructions, product advantages or instructions for the online calculator can be found on our YouTube channel: *youtube.com/glasmarte*

Downloads:
Comprehensive information about our glass railing systems, such as tendering texts, installation instructions and detailed drawings, is freely available on our website: *glasmarte.at/downloads*







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Glas Marte GmbH | Brachsenweg 39 | 6900 Bregenz
+43 5574 6722-0 | office@glasmarte.at | glasmarte.at