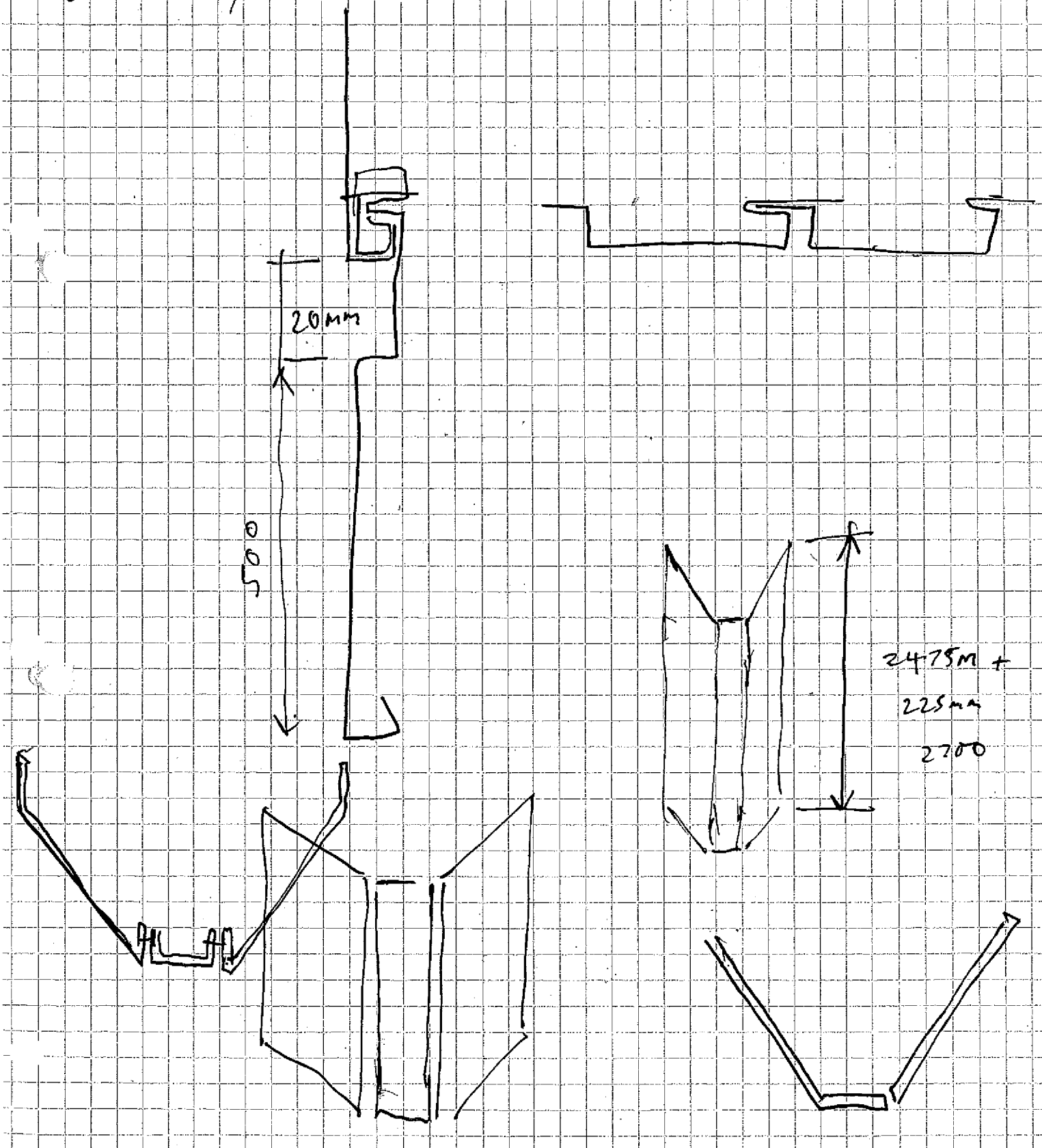
RHEINZINK®

Studio E.

Existing Structure. 250mm Cavity

24 Storeys Cladding (Curtain + windows)

0.15 kN/m² o/c



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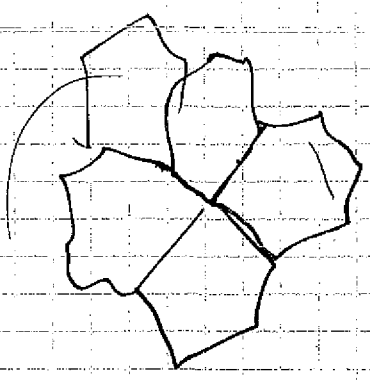
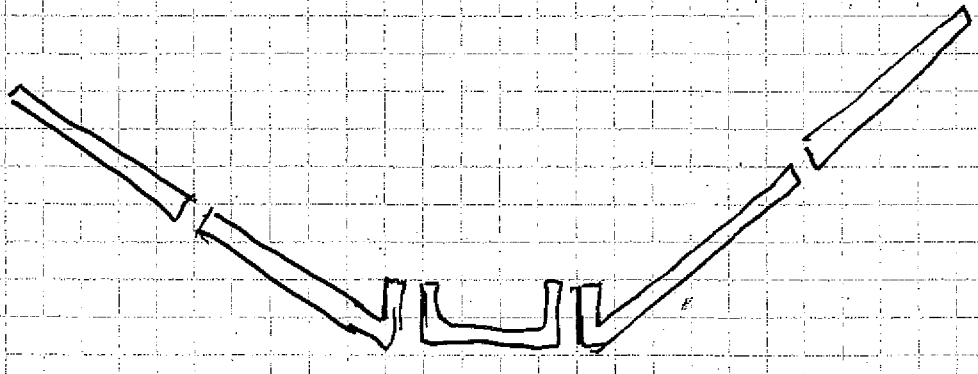
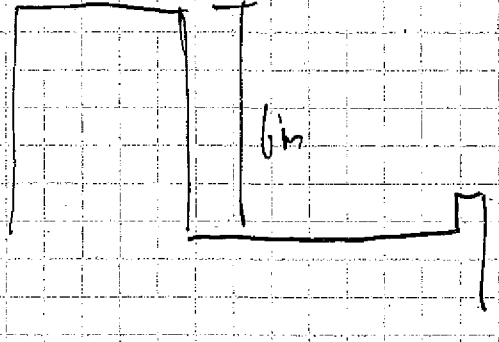
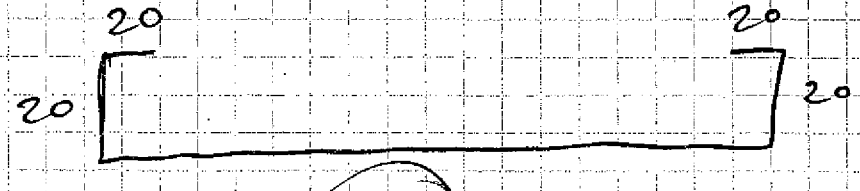




(250mm Centre)





920

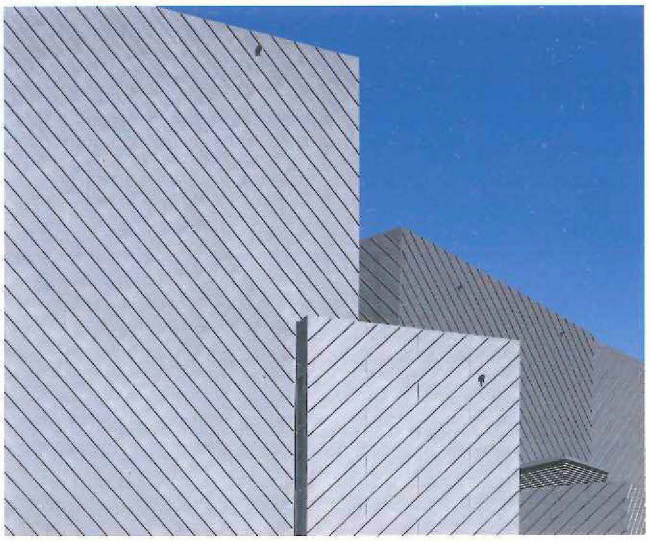
870 max?

Speak to KME Ref. Grenfell Road

RHEINZINK-bright rolled

RHEINZINK-bright rolled weathers to our classic blue-grey surface by formation of a natural patina.

RHEINZINK-
"preweathered pro blue-grey"



RHEINZINK-
„preweathered pro graphite-grey"

RHEINZINK-preweathered finishes provide the ultimate covering giving a natural weathered blue-grey and graphite-grey apearance which is produced in the factory, yet has all the original characteristics offered by a natural surface.

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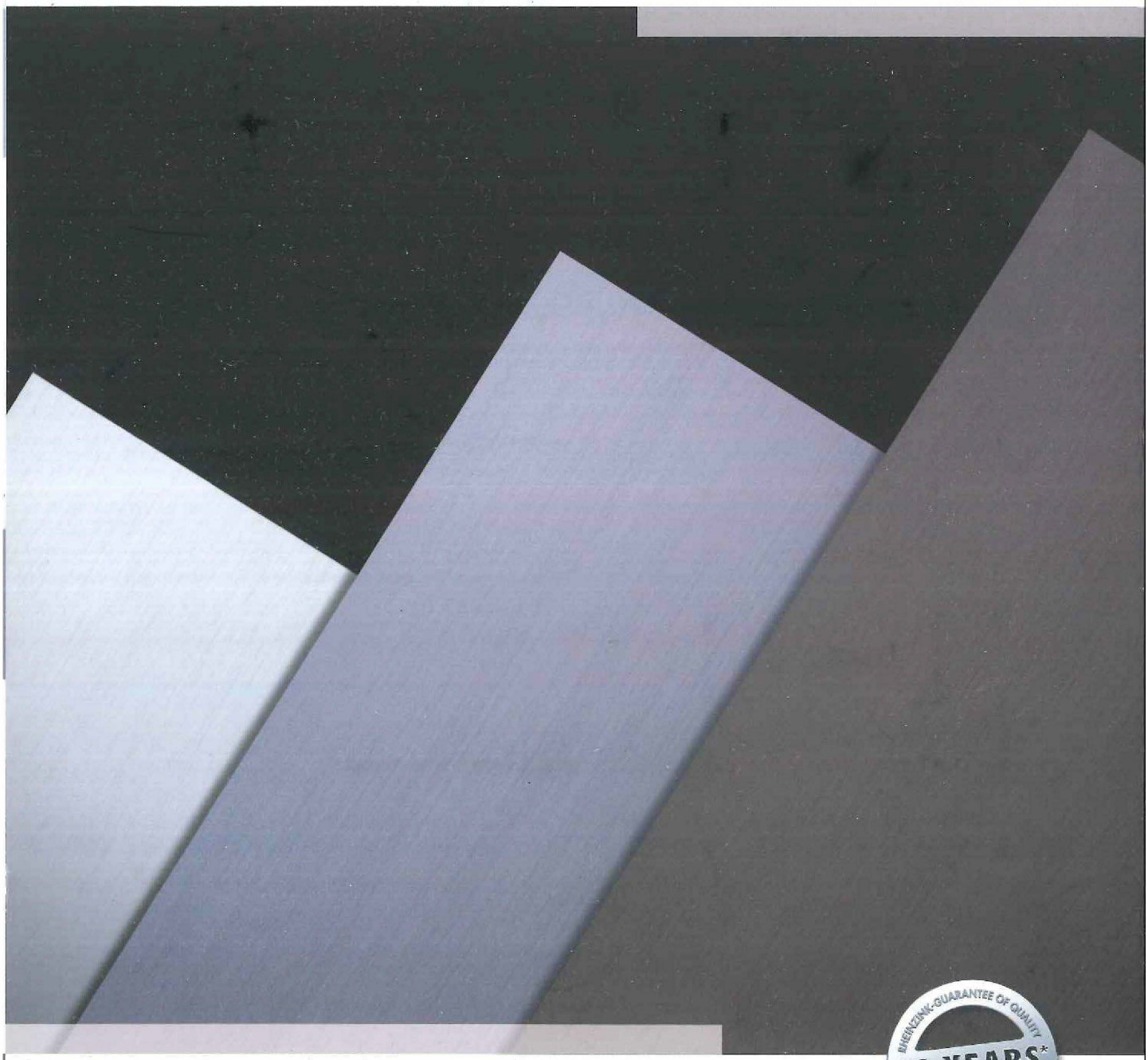
RHEINZINK®



RHEINZINK-GUARANTEE OF QUALITY
30 YEARS*
TITANIUM ZINC MADE IN GERMANY

THREE NATURAL SURFACES

The material with a future

TITANIUM ZINC MADE IN GERMANY

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RHEINZINK®

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* Terms and conditions of guarantee on request

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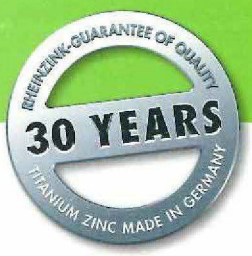
RHEINZINK®



SUSTAINABLE BUILDING WITH RHEINZINK®

Aspects for an intelligent material selection.

RHEINZINK

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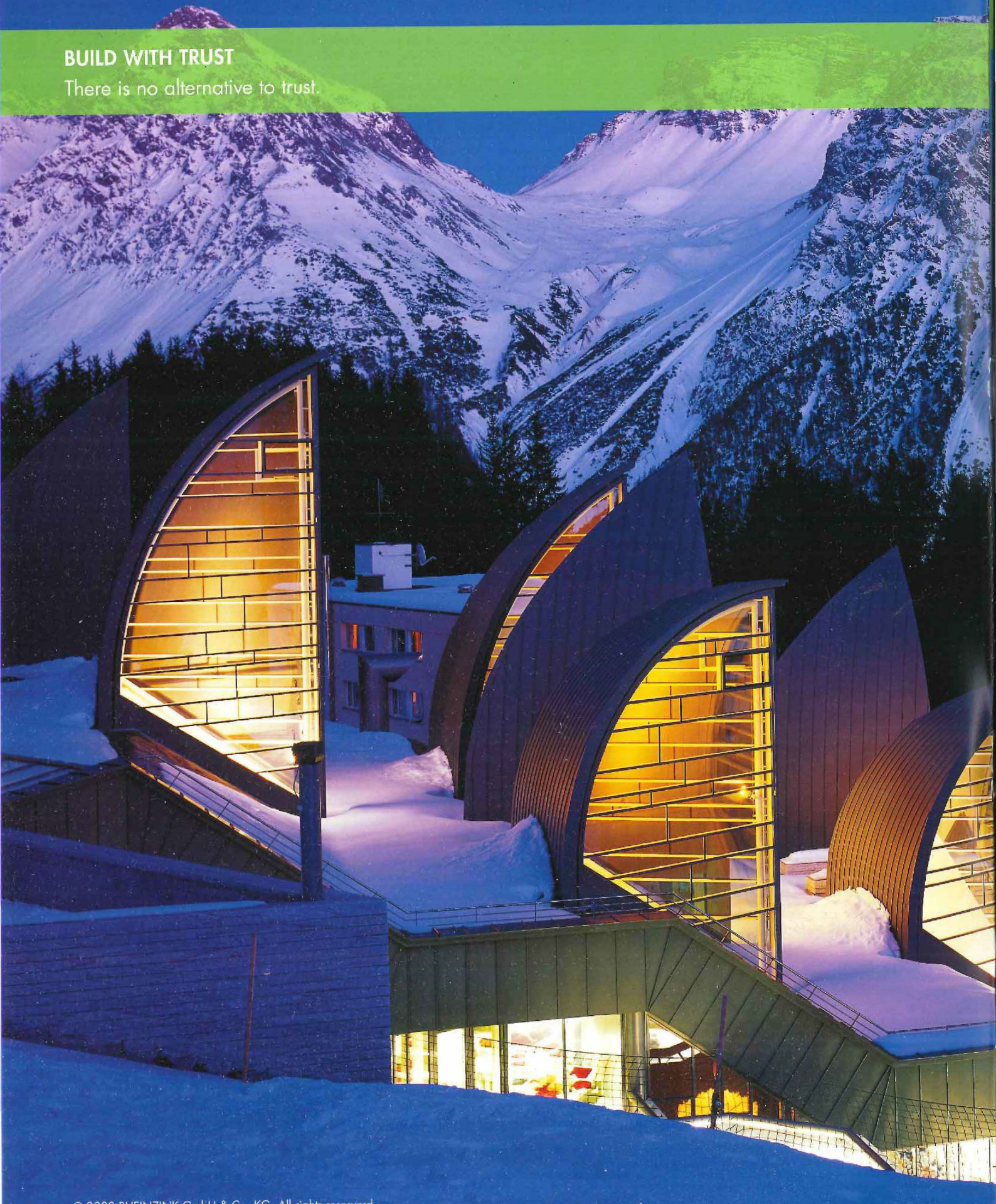
BUILD WITH TRUST

There is no alternative to trust.



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Sustainability – the word has spread. It describes the ability of using a natural system to the fullest. This can refer to dealing with the environment and natural resources in a responsible manner. It can also describe a company's reliability that sets it apart from others.

Definitely after the latest climate report, people all over the world focus strongly on climate protection and sustainability. In the near future, also in Germany, laws will be coming into effect to regulate the contact between human beings and nature in the right manner.

Especially in the field of sustainable construction there is a set of new challenges which will affect architects, planners, and constructors. Soon, when planning a building, the basics of sustainable construction will have to be respected: For example, there will be an energy certificate for the building that will make it possible to calculate and analyze a building's energy consumption. A „sustainability certificate" will document the quality of a building and categorize it according to sustainability criteria such as ecological and economic aspects, socio-cultural and functional as well as technical aspects, and it will determine the influence the building and its materials have on the environment.

Terms like ecological construction, low energy buildings, CO_2 discussions, renovation of old buildings and energy efficiency are becoming more important for constructors and planners. This has the effect that the use of sustainable materials will inevitably become more important. Ecological home construction will advance to becoming the standard in years to come.

With RHEINZINK® the coming standards will be easily met. The natural material for roof, façade, and roof drainage systems has been uniting the sum of all positive ecological aspects for over 40 years. The outstanding ecological balance is fully documented in the AUB* product declaration according to DIN ISO 14025, type III.

RHEINZINK®-products have a realistic durability of more than 75 years** and do not need any maintenance or care during that time. The aesthetic blue-grey patina created by natural weathering protects the material for generations and with time, scratches simply disappear.

Especially the comparatively low CO_2 emission during manufacturing and thus a low amount of energy needed in production, makes RHEINZINK® the lightweight option among metals for roofing and claddings. RHEINZINK® is 100% recyclable and compared to coated or other compound materials, it is, immediately and without needing further preparation whatsoever, recyclable again right away. This only requires about 5 % of the primary energy demand.

RHEINZINK® – a sustainable material:

- Sustainability documented according to DIN ISO 14025, Type III
- 100% recyclable
- Recycling quota of pure zinc of 98%
- Low primary energy demand
- Low secondary energy demand (recycling)
- Comparatively low CO_2 emission among construction metals
- Lowest global warming potential
- High scrap metal value
- Over 40 years of experience
- Natural surface with self-healing effect (patina)
- Longevity and maintenance-free
- Rainwater drainage possible
- Zinc is an indispensable trace element
- Social responsibility „MADE IN GERMANY"
- Applicable in the multiplicity of architecture

* AUB, soon to be DIBU, German Institute for Construction and Environment

** Study TNO, Breda, Netherlands

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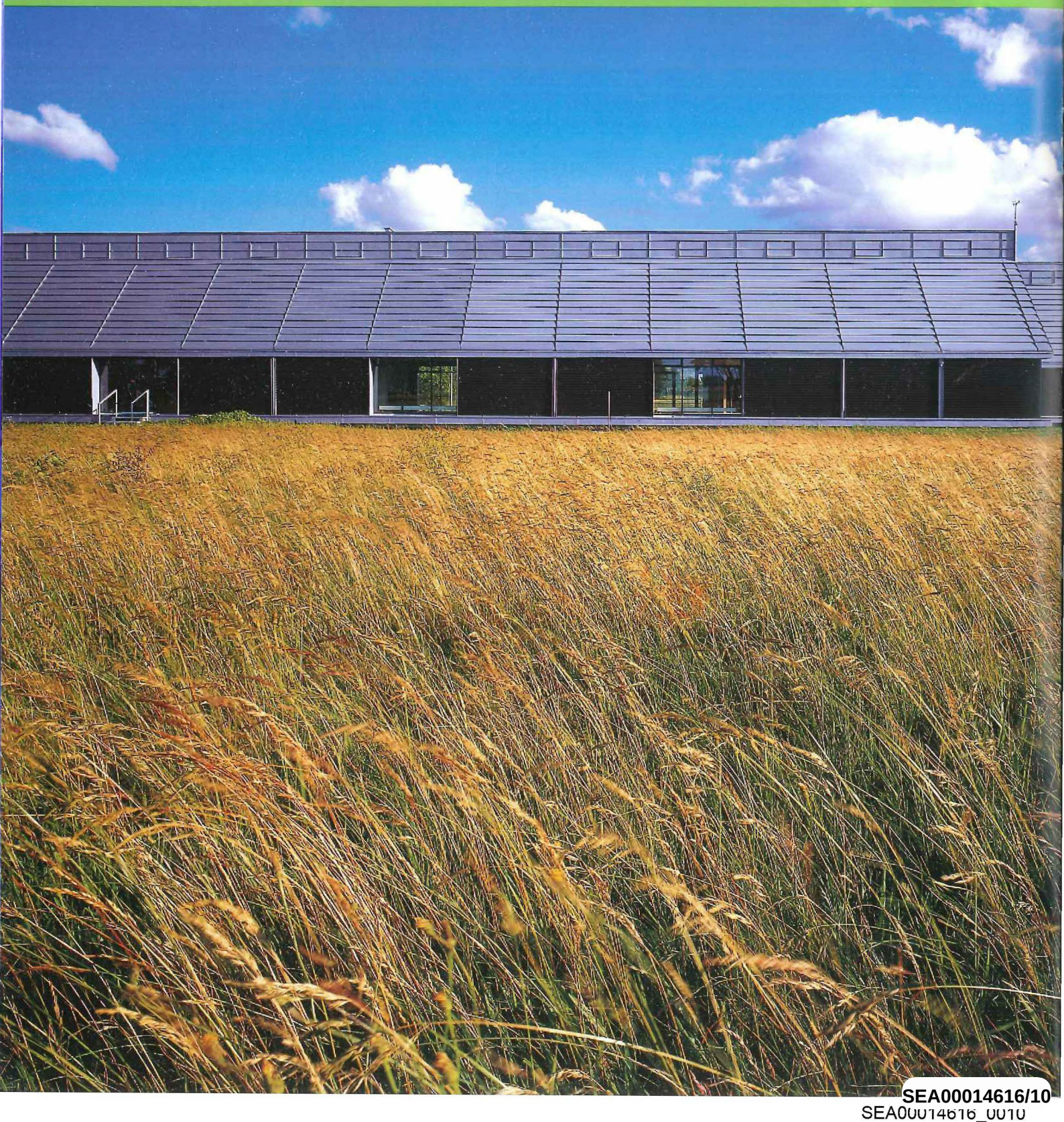
ZINC IS ONE OF LIFE'S COMPONENTS

And so is RHEINZINK®!



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The discussion on climate change shows that, also in Germany, the topic „sustainable construction" will have to gain importance. After all, we are responsible for about 20 % of the CO_2 emissions in the field of construction and living. It is therefore worthwhile to take a closer look and to preserve our resources, save energy, and avoid emissions.

In this context, the use of the ecological material zinc also becomes more important. It is gained from zinc ore through the use of energy in an electrolysis technique. The resources known to us today of 3,400 million tons provide a zinc stock for a time period of roughly 700 years without taking the recycling material into account. Refined zinc is also the source material for the high-quality RHEINZINK® alloy. In melting, casting or rolling RHEINZINK®, comparably little energy is needed due to zinc's low melting point. The result: The name RHEINZINK® stands for the most economical primary energy concentration in the field of construction metals.

And also here RHEINZINK® is scoring in the field of climate protection. Based on a square meter of RHEINZINK®-standing seam the primary energy concentration for RHEINZINK® compared to other roofing and cladding materials is three to eight times less. This is another aspect that – even when using a completely independent design – turns this natural material into a real alternative for sustainable construction.

The economical RHEINZINK®-energy balance is maintained within the material cycle also after usage. In order to convert zinc scrap back into refined zinc, only 5 % of the energy needed to manufacture refined zinc will be needed.

RHEINZINK® – naturally ecological.
The ecological performance capacity of a material is evaluated in a so-called eco-balance. Here, stock and energy flows as well as potential effects on the environment in the course of the entire life cycle are evaluated. The result for RHEINZINK® is clear: The natural material's contribution to the so-called impact categories (global warming potential, ozone depletion potential, acidification potential, overfertilization potential and summer smog potential) is also the lowest among all metals used for construction. A result that is reported in detail in the „Documentation of the Environment Profiles of Metal Sheets" (PE International GmbH, Leinfelden-Echterdingen) and that is also documented by the German Federal Environment Agency.

The RHEINZINK® energy data sheet:

- Primary energy concentration 187.5 MJ/m² (standing seam cover, metal thickness 0.70 mm)
- CO_2 concentration: 3478 g/m² (standing seam cover, metal thickness 0.70 mm)
- Recycling energy demand: 5 % of the demand for zinc manufacturing from ore
- Resources for over 700 years
- Climate-protecting metal
- Climate protection in action for over 40 years

When referring to primary energy, we are talking about energy that is naturally available in its existing energy forms or from energy sources in Germany. Primary energy sources are for example fossil combustibles (carbon, natural gas, crude oil), nuclear energy, but also renewable energies like the sun, wind, and hydraulic power. When estimating the primary energy concentration of a product, not only the manufacturing process of the material is being classified, but also the energy expenses that arise from transportation as well as how many additives and lubricants are needed during the production process.

* Source: PE International GmbH, Leinfelden-Echterdingen, Germany and the German Federal Environment Agency (UBA)

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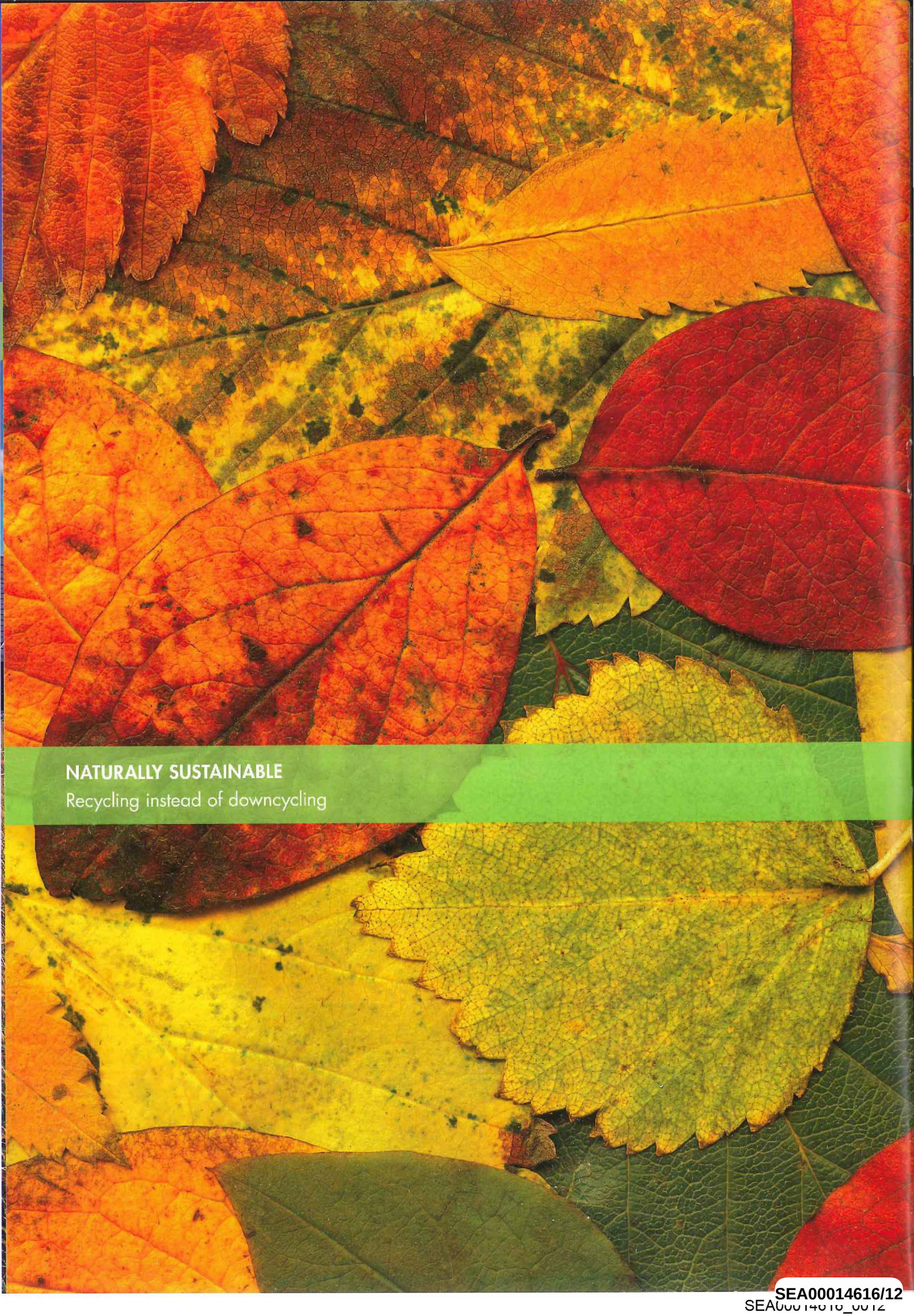

NATURALLY SUSTAINABLE

Recycling instead of downcycling

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In a time where handling resources in a responsible manner becomes ever more important, deciding on the adequate material in the field of future oriented and sustainable construction is not an easy task. New regulations worldwide have called the attention to material recycling after usage.

Until today, materials are used for roof and façade covers and roof drainage which consume a high amount of energy during production and which can only be re-used for secondary means (downcycling), or which cause a lot of expenses during disposal. Due to the described current conditions, a general trend towards natural materials is already foreseeable.

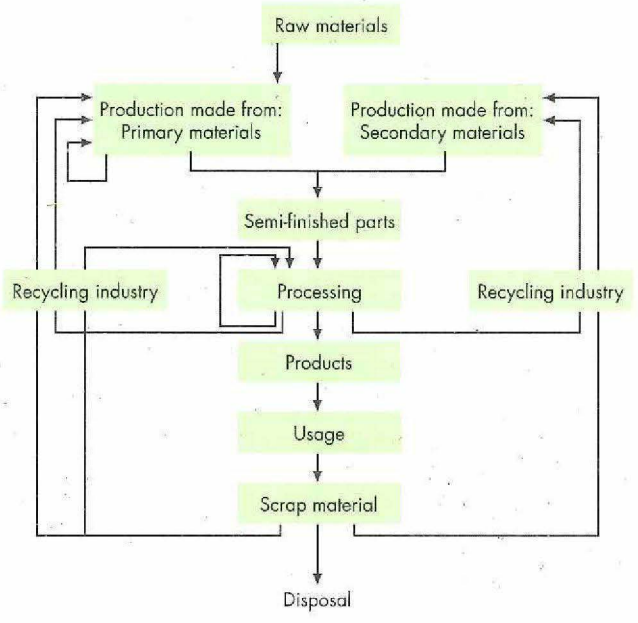
The material RHEINZINK® has been able to claim the title „sustainable" from production all the way to its permanent application for over 40 years. RHEINZINK combines economic and ecological preservation of resources par excellence because here, real recycling has been practiced since the very beginning: Zinc scrap material can be made available again after its usage thanks to a closed-loop material cycle, and it can be processed again and again.

(See chart below) Zinc is 100% recyclable. Today, for construction zinc, a real recycling quota of 98 % is achieved. In practice this means that each RHEINZINK®-product today already consists to 30 % of secondary material. An entire meter of a three meter long RHEINZINK®-roof gutter has theoretically been in use already. An impressive result that is hard to be outdone because of the extremely long life cycle of RHEINZINK®-products. RHEINZINK®-products live up to 75 years or even longer maintenance-free.

The RHEINZINK® energy data sheet:

- 100% recyclable without further production steps such as decoating or separating from compound materials
- 98% real recycling quota with zinc
- A RHEINZINK® roof gutter consists of at least 30% recyclable material
- Real recycling instead of downcycling

Manufacturing and recycling of zinc



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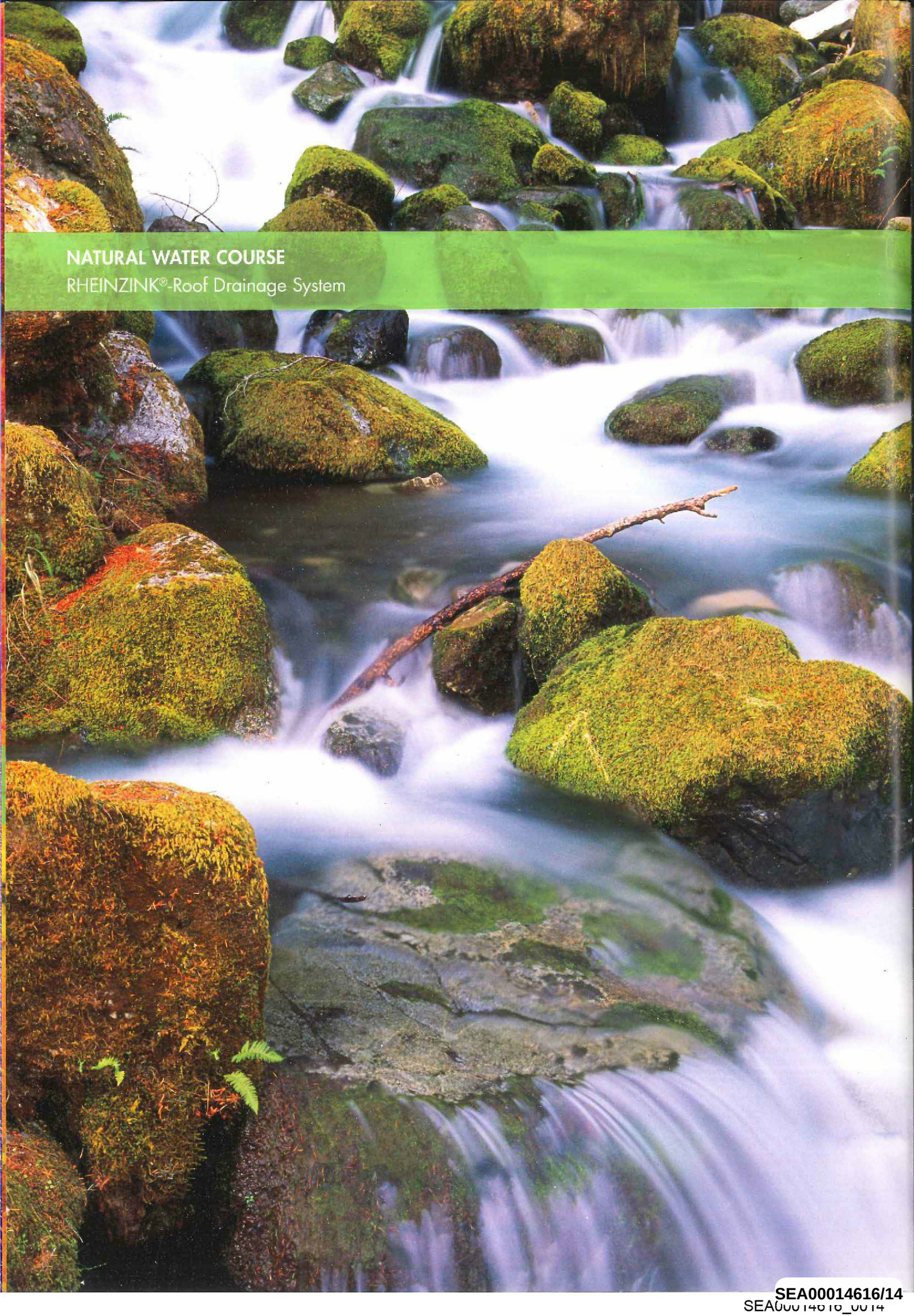

NATURAL WATER COURSE

RHEINZINK®-Roof Drainage System

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According to the German water management authorities, rainwater that needs to be drained from hard-surfaced and thus sealed plot areas should be allowed to seep into the ground of another area of the plot to join the groundwater. The aim of this requirement is to ensure the drinking water supply and reduce flooding. From a quality management point of view, it requires special attention.

Over the past years, various German federal states have dealt in detail with the topic of rainwater seepage – and with good cause: Before joining the groundwater through the earth by means of troughs, infiltration ditches or soakaway pits, the rainwater may come into contact with roofs, roof drainage systems, and the materials used for sealing the surface. As a result, roofs and roof drainage systems that may potentially harm the quality of ground water became subjects to special approval procedures. In this context, zinc, a natural material, was wrongly included in this measure by the German water management authorities.

Over the past ten years, various independent institutes have conducted countless international research projects to investigate the potential effects of zinc in rainwater. The unanimous result: Zinc in rainwater is not toxic. As long as the relevant technical rules and specifications are met, the seepage of rainwater by means of soakaway pits and drainage troughs is completely harmless. For example, according to recent publications of the German Federal Environment Agency (UBA), only 2% of all zinc that is added to the environment originate in zinc-coated building surfaces. Of this, less than 0.5% end up in the ground – a portion so small that it is completely harmless. The precautionary principle that various German states have been practicing is therefore no longer maintainable with regard to zinc.

As a result, the German water management authorities are updating their regulations. Baden-Württemberg has already acted – here, rainwater drainage by means of troughs no longer requires approval. Bavaria has announced an updated version of its rainwater exemption regulation for early this year. More federal states will soon follow these examples.

Zinc is one of life's components.
A natural component of our environment, zinc is the second most important trace element after iron. Since our bodies are not able to produce micronutrients, we have to ingest them with our daily food. Up until now, the allowed portion of zinc in drinking water was up to 5 mg per liter. However, due to its harmlessness, the new regulations will no longer impose such limits.

And so is RHEINZINK®.
For more than 150 years, zinc has traditionally been used to cover roofs and façades and to drain roofs. For decades, it has been playing an important role in international architecture in the form of the natural material RHEINZINK®. RHEINZINK® is of stable value, maintenance-free, and has been certified as an environmentally friendly building product. Due to atmospheric influences, a protective zinc patina (zinc carbonate) forms on the surface of the material. It is UV resistant and guarantees longevity and a timeless beauty. Over time, the atmospheric influences wash away metal ions. However, at a corrosion rate of only 0.3 to 0.4 µm per year, the concentration of zinc in the water running off the roof is similar to that in drinking water.

Natural rainwater seepage with RHEINZINK®:

- No toxic substances
- No pathogenic substances
- Proven harmlessness
- The essential trace element zinc is bound in the ground
- Research has invalidated the authorities' precautionary principle
- Supporting the natural water balance through rainwater seepage improves the microclimate and protects the environment

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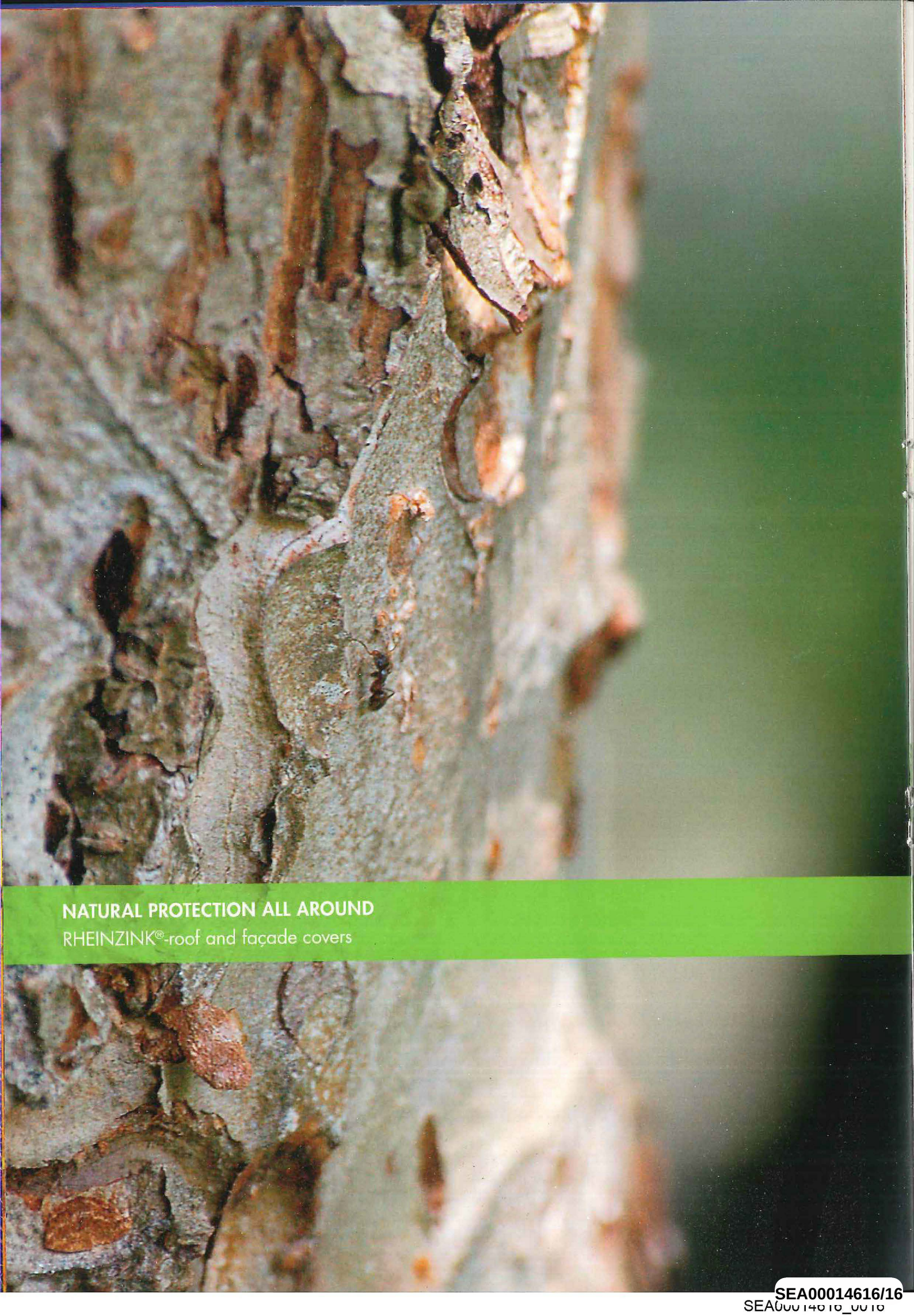

NATURAL PROTECTION ALL AROUND

RHEINZINK®-roof and façade covers

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Roofs, façade covers, and roof drainage systems – for more than 40 years, RHEINZINK® has been known as the material of choice for safe and ecological building protection and as Europe's best-selling roof drainage system. Thanks to its diverse product portfolio, RHEINZINK® can be used in almost any area and architectural style. In addition to its traditional technical material characteristics (malleability, enduring stability, ability to be worked on with tools on the building site, solderability), the material has a number of protective properties:

RHEINZINK® is non-combustible.
RHEINZINK®-Roof Coverings avert the spreading of fire and sparks, also in combination with various types of separating layers.

RHEINZINK® averts lightning strokes.
According to DIN EN 62305-3 RHEINZINK® on a roof and façade is an integral part of the external lightning protection. The natural, uncoated metal surface intercepts the lightning, diverting it across surface areas and locking joints together with the grounding line. Lightning protection in form of ungainly antennas and fanned-out, disfiguring deflectors is no longer needed.

RHEINZINK® averts electric smog.
The effect that electromagnetic radiation has on human beings is a highly-discussed and oftentimes controversial topic. In this light, the International Gesellschaft für Elektrosmogforschung (International Society for Electric Smog Research) has extensively tested the shielding characteristics of the RHEINZINK® material. The biological measurements taken on human beings confirm the technical measurements. They show that RHEINZINK®-covered surfaces, especially when grounded, have a harmonizing effect on heart, circulation, and nervous system, and increase relaxation of the human organism. 99.93% of electromagnetic radiation are deflected.

Technical properties of the RHEINZINK® material:

- Superior material quality
- Quality tested by TÜV (German Association for Technical Inspection)
- Protection of valuable buildings
- Integrated lightning protection
- Health-promoting
- Maintenance-free

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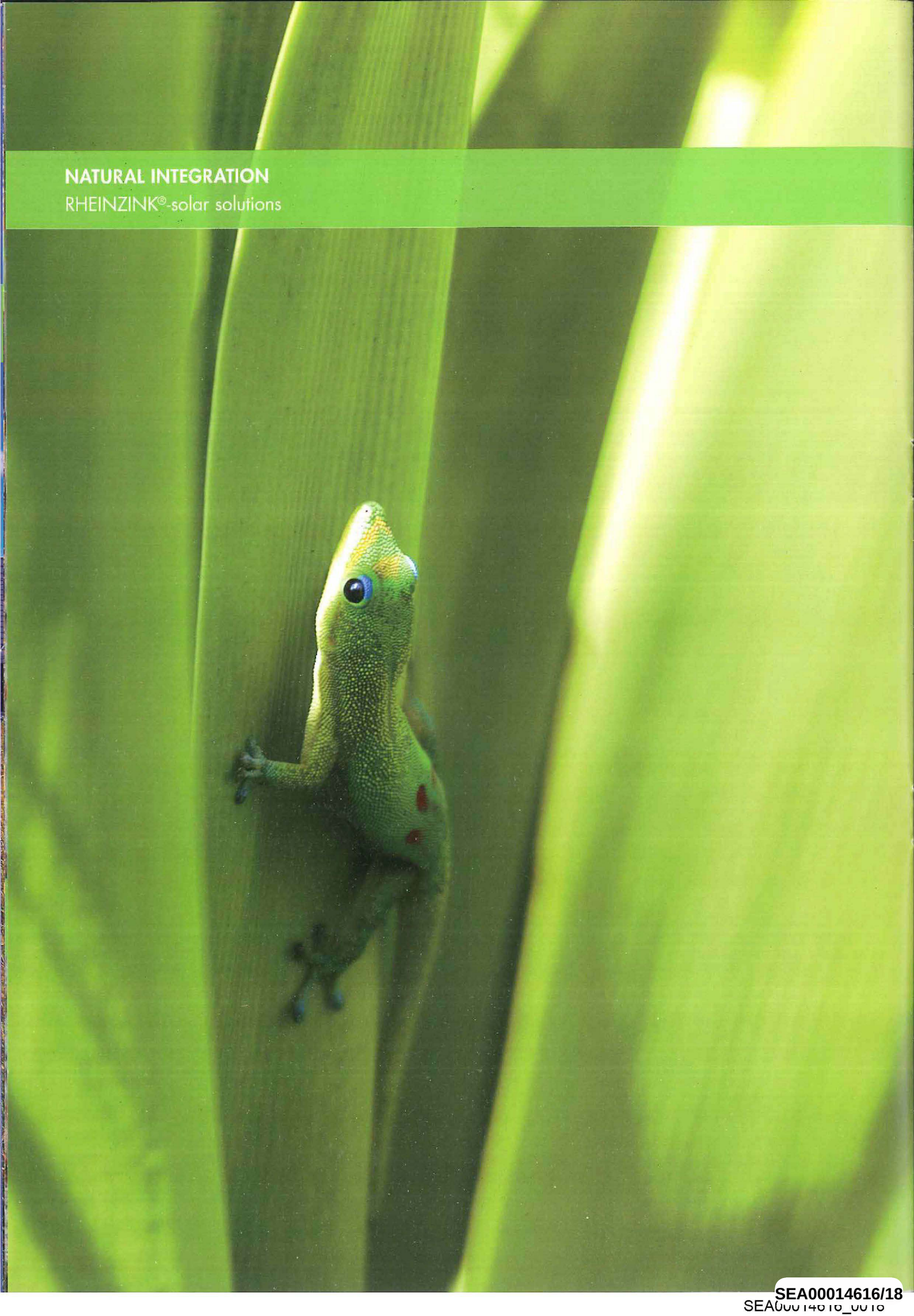

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The sun's energy output which reaches us in only 40 minutes is sufficient to cover the energy needs of all of mankind for one year. With the RHEINZINK®-solar solutions, we have succeeded in making the most of Nature's gift in a highly aesthetic way.

The integrated, sophisticated, and award-winning solar solutions RHEINZINK®-Solar PV and RHEINZINK®-SolarThermie enable a multifunctional use of roofs and façades. A one-step mounting technology that has proven itself for decades is all it takes to obtain an aesthetic building protection that uses the sun's free energy from day one.

RHEINZINK®-Solar PV – Strikingly unobtrusive.
The abbreviation PV stands for photovoltaic, the direct transformation of rays of light into electric energy. As the sun does not shine everywhere with the same intensity, the roof- or façade-integrated RHEINZINK®-PV cells can be used as needed: on the entire roof or only on parts. RHEINZINK®-Solar PV does not need to penetrate the roof, nor does it need additional mounting elements. The PV elements are delivered fixed to the RHEINZINK®-carrier elements. The highly effective Triple Junction Technology enables usage even in dim light or with little direct sun. In addition, the system is extremely light-weight – it is the perfect solution for practically any roof.

RHEINZINK®-SolarThermie – Strikingly invisible.
SolarThermie, or solar thermal, stands for the transformation of solar energy into directly usable heat. This technology seems made for RHEINZINK®, given the excellent thermal conduction properties of this natural material: In contrast with glazed collectors that collect the direct sunlight and convert it into energy, unglazed collectors also use an environmental absorber. This means that they also take in heat that does not result from direct solar radiation. The unglazed zinc collectors – together with a heat pump – are perfectly suited for use in geothermal energy facilities. This combination increases the facility's output considerably. Furthermore, the zinc collector can be used to preheat industrial water by up to 30% or, for example, to heat the water of a swimming pool.

By employing a RHEINZINK®-solar solution, you benefit the environment in two ways: You have opted for a natural material with an exemplary ecological balance and you make the most of the sun's free energy.

What are you waiting for? Check if your country authorities support future-oriented energy solutions today. With the help of a compensation guaranty by law for solar power, and in view of the roof's longevity, the investment in a solar roof will repay itself in no time.

The advantages of the roof-integrated RHEINZINK® solar solutions:

- Multifunctional surface area usage – weather protection and energy supply
- A single mounting step leads to an aesthetic, integrated solar solution
- Climate protection through innovative solar technology using sustainable material
- Architecturally valuable and CO_2 efficient in two ways

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NATURALLY RHEINZINK

We conserve value

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„Sustainable development means satisfying the needs of the present generation without compromising the ability of future generations to satisfy theirs." This phrase, coined in 1987 by Norwegian politician Gro Harlem Brundtland during her tenure as chairwoman of the World Commission on Environment and Development of the United Nations, stimulated an increasing international preoccupation with sustainability. From the beginning, this legendary sentence was not only relevant from an ecological point of view. It stood and continues to stand for the responsible use of resources. No company today can afford to ignore theses challenges of the future.

RHEINZINK conserves value.
For more than 40 years, we have been living up to this responsibility and see ourselves as conscientious advocates of sustainability. The careful use of natural, material, financial, and human resources is and will remain an integral part of our corporate philosophy. Our loyalty to Germany as a business location guarantees much more than just the valuable label "MADE IN GERMANY". At RHEINZINK, customer interaction has always been our focus. Only in cooperating closely with our customers will we be able to persist, improve, and meet the considerable challenges of the future. In this regard, our employees are our crucial asset. Only when working in a secure and harmonious environment will they be able to fulfill their tasks to the highest standards of quality.

Loyal employees.
We remunerate our employees within the framework of the German tariff system and according to the agreements for the German metal and electrical industry. With the tariff system, each employee receives the pay he or she is entitled to. A comprehensive social environment takes each employee's personal situation into account as much as possible and offers numerous possibilities of finding the ideal arrangement between job requirements and family life. Our employees are happy with RHEINZINK – and this shows in their great personal commitment and minimal labor turnover.

Loyal company.
We value fair partnerships with our customers and suppliers and strive to develop lasting business relationships. We maintain a personal contact with trade, the crafts, architects, and planners. Our comprehensive service is one of the central reasons for the global success of RHEINZINK's roof, façade, roof drainage, and solar products. If you should ever have reason to complain, we will do our best to find a viable solution immediately – we are only human after all.

RHEINZINK® –
Quality made in Germany.
We see our loyalty to Germany as a business location as another contribution to sustainability. For more than 40 years, we have stood by our production site in Datteln/Westphalia on the edge of the Ruhr area. Our regional service is carried out close to our customers – at seven locations in Germany. Branches and subsidiaries in more than 30 countries ensure that our products are delivered according to country-specific regulations and technical standards as well with the characteristics and specifications customary to the region. We speak our customer's language, manufacture according to the customer's wishes and offer customized service.

The corporate culture of RHEINZINK:

- Social and fair environment for our employees
- Lasting relationships with customers and suppliers
- Social engagement and consideration of the local economic situation
- Loyalty to business locations
- We speak our customer's language

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Further reading:

www.designing-nature.de (available in German only)
www.rheinzink.com

Prof. Dr.-Ing. habil. Heinz Hullmann,
Prof. Dr.-Ing. habil. Wolfgang Willkomm:
"Recycling von Kupfer und Zink"
(Recycling Copper and Zinc, available in German only),
Offprint from "Metall" 10/2001

International Zinc Association, Europe
www.zincworld.org
"Zink ist überall" (Zinc is Everywhere,
available in German only)
"Die Zinkindustrie bekennt sich ..." (The Zinc Industry
Shows its Cards, available in German only)

DIBU, Deutsches Institut für Bauen und Umwelt
(German Institute for Building and Environment),
Königswinter, Germany
(formerly Arbeitsgemeinschaft Umweltverträgliche
Bauprodukte e.V. (Association for Environmentally
Proofed Building Products)
"AUB product declaration RHEINZINK®"
"AUB – ecological balance of RHEINZINK®"

Initiative Zink (Zinc Initiative) of the Wirtschafts-
Vereinigung Metalle e.V. (Economic Metal Association),
Berlin, Germany

Initiative ProMetalldach (Pro Metal Roof Initiative)
of the Wirtschafts-Vereinigung Metalle e.V. (Economic
Metal Association), Berlin, Germany

Deutsches Institut für Nachhaltiges Bauen e.V (German
Institute for Sustainable Building), Stuttgart, Germany

RHEINZINK® books and brochures

Would you like to find out more? We will be happy to send you detailed information on sustainable building with RHEINZINK®!

RHEINZINK

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Tel. [redacted] Fax: [redacted] E-Mail: info@rheinzink.co.uk, www.rheinzink.co.uk

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RHEINZINK®

ROOFING

System Solutions for Roofs

SYSTEM OVERVIEW

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Foreword

If the best material curtails creativity, what good is it? If the best idea cannot be realized, what good is it? Materials that foster creativity and lend form to ideas are required for individual solutions, as are consulting services that take technical perfection, structural physics and aesthetics into consideration.

RHEINZINK offers all of the above. Not only does the name stand for unique creative material to clad roofs and façades, but also for exemplary service to implement your ideas – regardless of the size of your project – big or small. We offer solutions that are as unique as your project. A comprehensive range of RHEINZINK roofing, façade, and solar system products, along with diverse installation techniques, make it easy to find a perfect solution for every design.

RHEINZINK is extremely malleable; it is compatible with every architectural environment and its visual appeal is timeless. Furthermore, requirements for sustainable building using natural material are met without difficulty. RHEINZINK is absolutely maintenance and service free. Its lifetime comprises several generations and that, in and of itself, sets standards; its ecological balance is exemplary.

The examples in this brochure illustrate the design potential of RHEINZINK, along with various options available to you by using this ecological material.

Datteln, March 2010

RHEINZINK®

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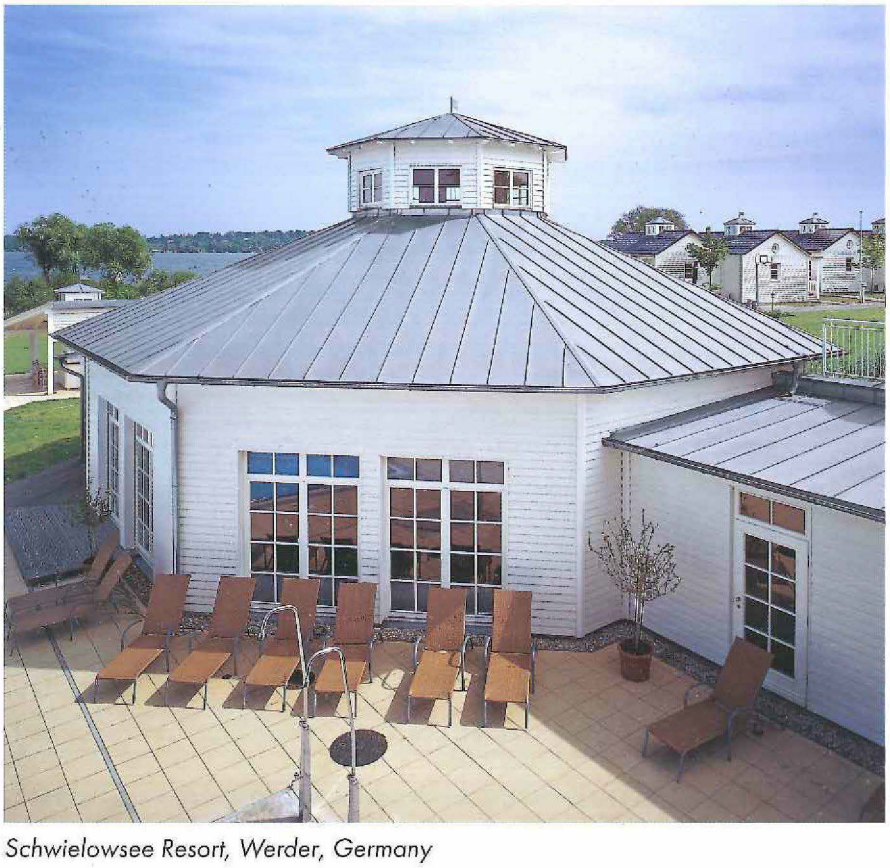
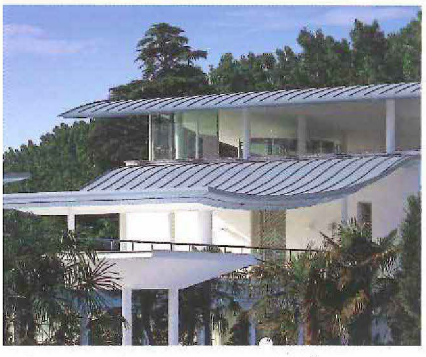


Schwielowsee Resort, Werder, Germany



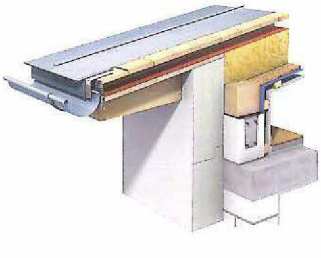
„Il sogno di Ivana", Turin, Italy

Česká pojišťovna Pankrác – Administrative Building, Prague, Czech Republic

RHEINZINK-Double Standing Seam

The double standing seam is a further development of the original hollow folded joint or single standing seam. This reliable system has been referenced in technical literature since 1899 and is the top choice for roof pitches from 3° to 25°. Here, the name "double standing seam" characterises one of the conventional types of longitudinal joints above the water level. A fine-lined seam height of 25 mm is rainproof without any additional measures. The double standing seam, manufactured with pre-profiled panels, has gained international recognition. Seams are folded and closed manually or with a seaming machine. Custom shapes such as convex and concave curves and conical panels are produced without difficulty. Thanks to a multitude of detail variations, the double standing seam emphasizes both traditional and modern architectural design.

- **Individual shapes are possible**
- **High degree of design freedom**
- **Roof-integrated solar solutions**
- **Environmentally declared product**



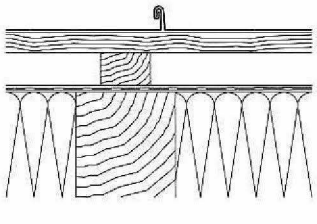


Fig. Cover page: Dorothy House Hospice, Bradford on Avon, United Kingdom
Fig. Left: Schwielowsee Resort, Werder, Germany

RHEINZINK

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Private Residence, Stavoren, Netherlands

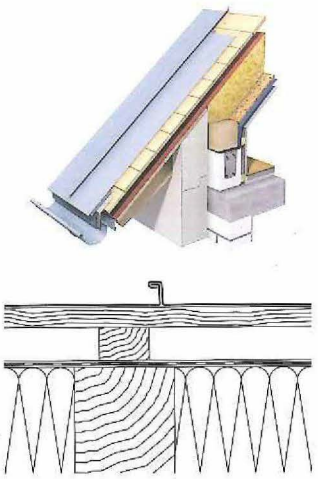
Private Residence Montaña del Socorro, Tafira Baja, Spain

Private Residence Möllmann, Bielefeld, Germany

RHEINZINK-Angled Standing Seam

Within conventional sheet metal techniques, the angled standing seam is a relatively new development; it has only been referenced in technical literature since the beginning of the 20th Century. Closing the seam of a pre-profiled panel is very easy compared with the double standing seam. The angled standing seam is completed simply by folding in one leg. It is particularly suitable for visible design areas on metal roofs where the pitch is greater than 25°, as well as for rounded parapets, attics or mansard roofs – in a conventional vertical, diagonal or horizontal application. As the angled standing seam looks wider than the double standing seam, it lends a vibrant, distinctive structure to large surface projects.

- **Design through distinct lines**
- **Roof-integrated solar solutions**
- **Cost-efficient for virtually every building style**
- **Little or no service or maintenance**



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Hôtel du Louvre, Paris, France

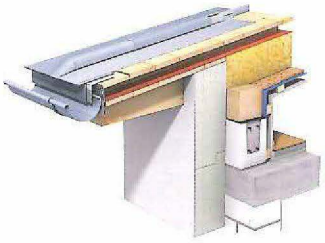
Hala Sazka, Prague, Czech Republic

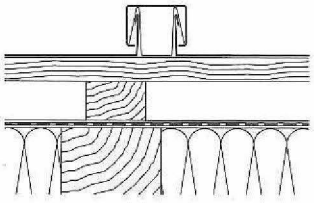
University of Fine Arts, Dresden, Germany

RHEINZINK-Click Roll Cap

The roll cap system with battens is one of the more traditional of today's prevailing sheet metal work techniques. The name "Click Roll Cap System" stands for a type of longitudinal joint, whereby the RHEINZINK-Click Roll Cap Fastener, made of galvanized steel, is used as a fastener between the panels, which are then weathered with a preformed capping. The efficiency of the system supports a design quality with a highly sophisticated look. The dominant longitudinal joints typical of the click roll cap system create a strong structural effect; the interplay of light and shadow is striking and charming. This lends itself to interesting design possibilities for both roofs and large curtain walls. An even greater wealth of variations exists when the roll cap system is combined with double standing seam techniques.

- **Simple planning and installation**
- **Few tools are required as a result of pre-fabrication**
- **Panel lengths of up to 20 m are possible**
- **Roof-integrated solar solutions**





RHEINZINK

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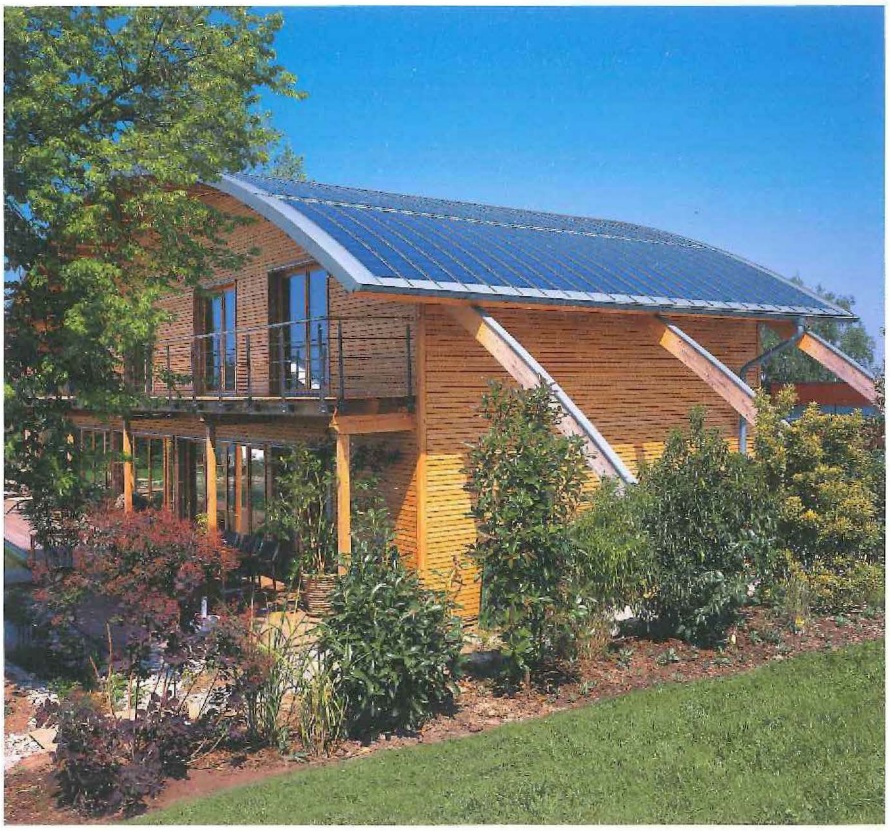
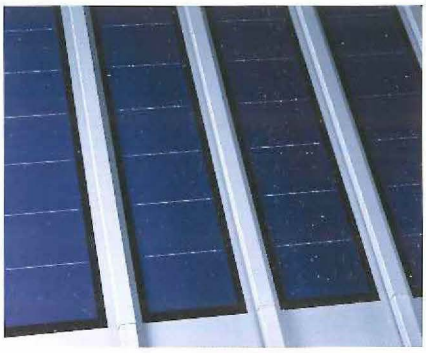


Private Residence, Heilbronn, Germany

Administrative Building, GEWOBAU, Essen, Germany

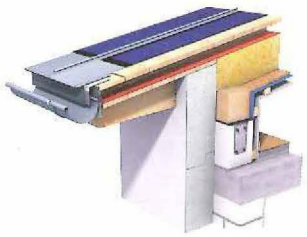


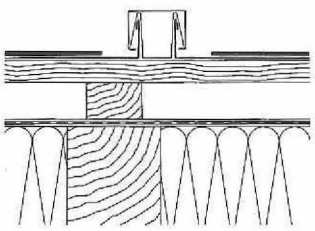
"Solar PV Click Roll Cap System" model

RHEINZINK - "Solar PV Standing Seam" and "Click Roll Cap System"

As a result of public solar incentive programs, roof-integrated photovoltaic technology provides an option to finance a permanent and maintenance-free RHEINZINK standing seam roof. This architecturally interesting solution of generating solar energy enables building owners to install a roofing and solar system in one step. The standing seam system constitutes a light-weight system for roofing renovations as well – not only with respect to the roof, but also because of the thin-film photovoltaic solution it utilizes. This thin-film technology has the additional benefit of producing very efficient solar energy when the sun is shining brightly or when the light is more diffused. This product is the culmination of decades of experience in manufacturing maintenance-free roofs, combined with the option of producing renewable energy.

- **Roof-integrated energy production**
- **Multi-functional roof**
- **Durable and maintenance-free**
- **Adapted for proven roofing technology**





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Private Residence, Bievres, France

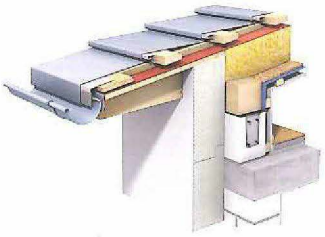
Private Residence, Wetzlar, Germany

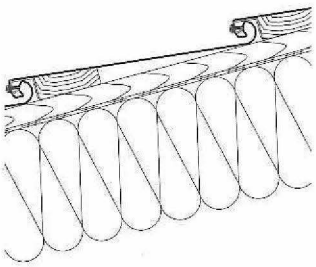
Mortuary, Stainz, Austria

QUICK STEP – The RHEINZINK-Stepped Roof

Architecture is always on the look-out for design variations. With this in mind, RHEINZINK offers a prefabricated installation system, which offers extensive design options that are easy to handle or manage: QUICK STEP – The RHEINZINK-Stepped Roof. A patented technology, this system is completely new and offers a multitude of cladding alternatives to conventional roofing. QUICK STEP is suitable for many roof shapes with inclines from 10° to 75°. Prefabricated plug-in components made of RHEINZINK- "preweathered pro", guarantee smooth and quick installation. The step-shaped structure of the system provides a striking, elegant format for the roof surface; it can be integrated harmoniously into every environment. From an architectural perspective, innovative accessories, such as surface-integrated photovoltaic technology or non-visible solar thermal solutions allow for multi-functional utilization of roof surfaces.

- **Simple installation using a modular principle**
- **Roof-integrated Solar PV- and SolarThermal Solutions**
- **Two naturally patinating surfaces**
- **Horizontal roofing segmentation**





RHEINZINK®

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Energieakademie, Samsø, Denmark

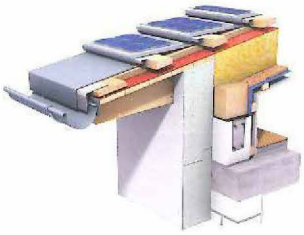
Private Residence – Passivhaus, Coschen, Germany

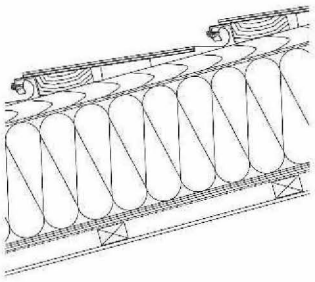
Private Residence – Passivhaus, Coschen, Germany

QUICK STEP - Solar PV

The modular technology and stepped structure of the QUICK STEP-roofing system opens up many design options. With the photovoltaic version of the lightweight and easy to install metal roofing system, solar energy is made useable, as the solar modules required to extract energy ecologically, are integrated into the QUICK STEP roofing panels. Simple installation is another benefit of the solar system. Roofs with pitches between 10° and 75° can be installed in one operation, without any additional fixing. QUICK STEP-Solar PV is a sustainable, roof-integrated photovoltaic solution – aesthetically pleasing roof architecture and ecological energy extraction in one.

- **System engineering for roofs and energy extraction**
- **Roof-integrated solar technology without penetrations**
- **Multi-functional roof utilization**
- **Simple installation using modular technology**





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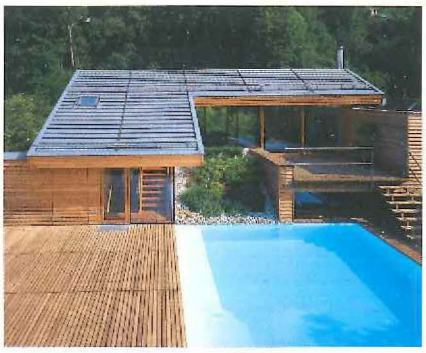
Energieakademie, Samsø, Denmark

Private Residence, Wetzlar, Germany

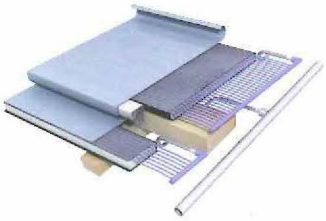


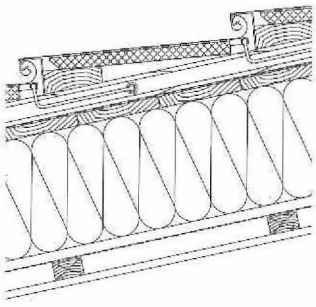
Private Residence, Wels, Austria

QUICK STEP - SolarThermie

With sustainability in mind, roofs today must provide so much more than strictly protection from the weather. RHEINZINK-Metal Roofing Systems offer the option of absorbing energy from the environment and sunlight and furthermore, to make these useable for heating systems. Using RHEINZINK-2Q, an intelligent control system, heat absorbed by the roof is conducted to its end-use via a roof-integrated piping system. The energy produced can be used to heat swimming pools or to pre-heat service water. Efficiency is increased when used in conjunction with geothermal systems. This combined, roof-integrated technology is the perfect system, architecturally speaking. It opens up many design possibilities and meets the requirements of sustainable building.

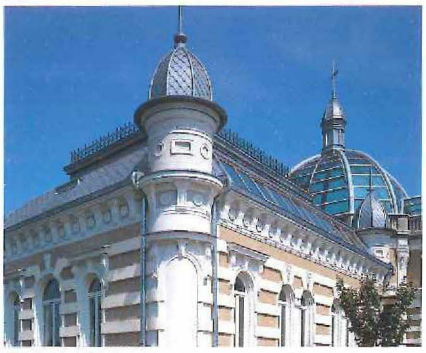
- **Multi-functional roof utilization**
- **Architecturally interesting solar technology**
- **Simple installation**
- **Optimum energy balance of a sustainable roof**





RHEINZINK

Hotel Kempinski, Hohe Tatra, Slovak Republic



Elisabeth Heilbad, Miskolc, Hungary

Kaplan Residence, Illinois, USA

RHEINZINK-Tiles

Tiles are becoming more and more popular for roofing as well. Small RHEINZINK-Tiles (square and diamond-shaped) provide secure and aesthetically pleasing solutions, even for geometrically complicated building designs. Dormer, chimney head and roof edge cladding counts as part of conventional tile utilization. RHEINZINK-Flat-Lock Tiles are most effective for large roof areas and curtain walls. These represent a further development of the diamond-shaped and square tiles; they are impressive, not only because of their aesthetic appeal, but because of the design benefits. Using different sizes of tiles opens up a multitude of façade design possibilities. The bright rolled version provides more design options, because the natural weathering of the shiny material will vary from tile to tile, which can be quite striking.

- **Custom made tiles**
- **High degree of design freedom**
- **Three natural, patinating surfaces**
- **Little or no maintenance or service**

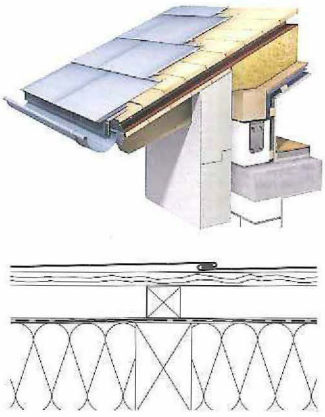


Fig. Right: Domkuppel San Pietro, Gattinara, Italy

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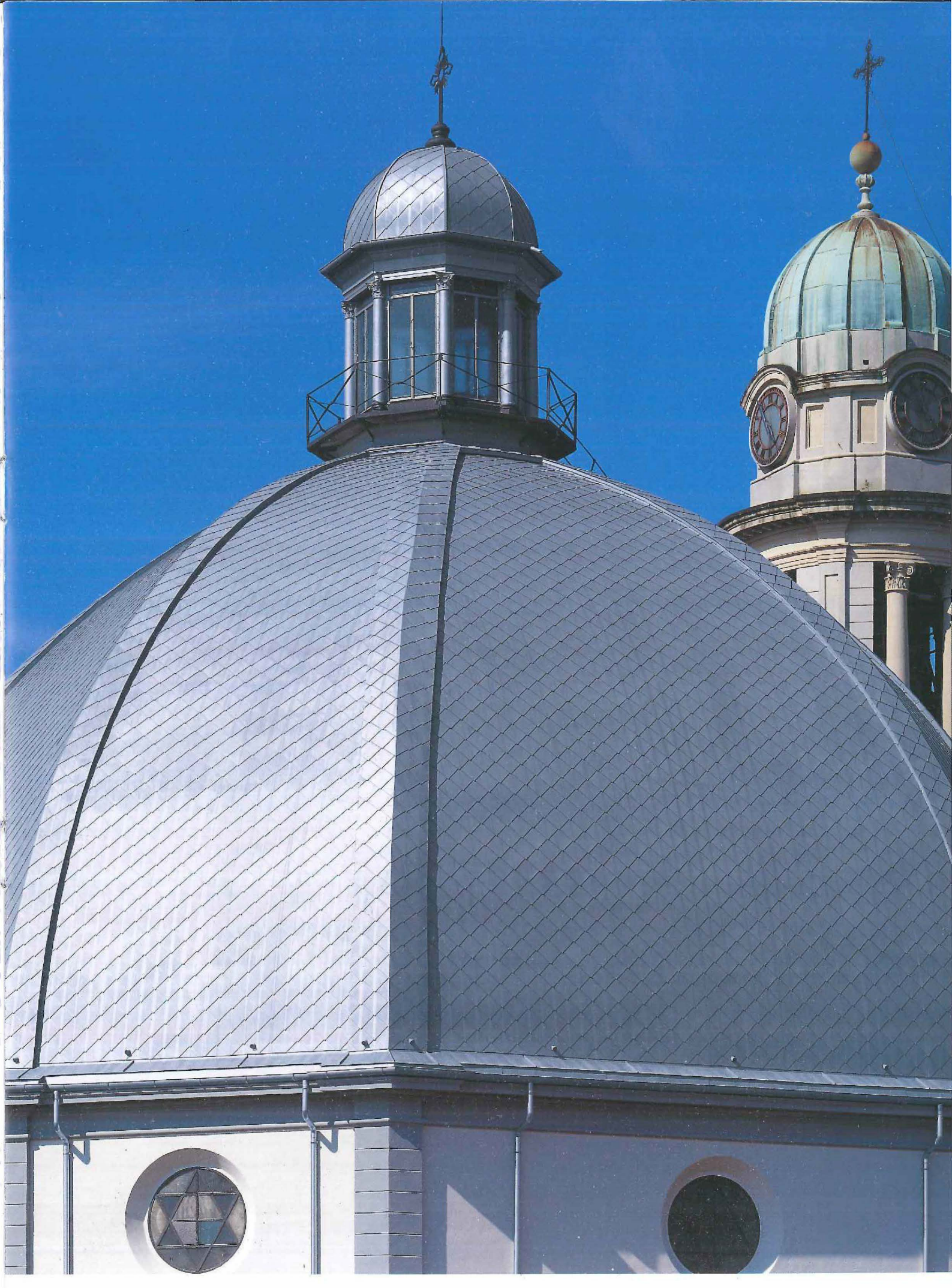

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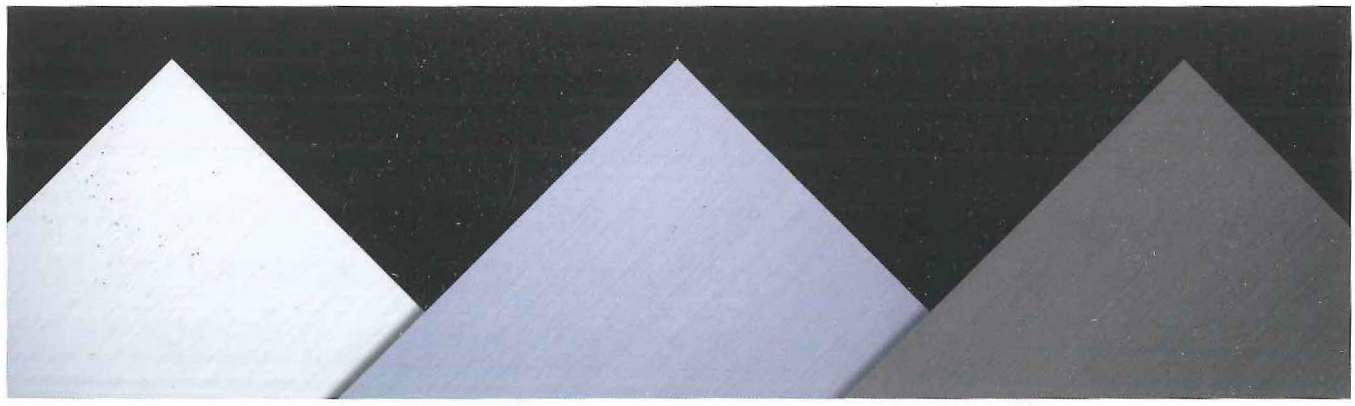

RHEINZINK-bright rolled *RHEINZINK-"preweathered pro blue-grey"* *RHEINZINK-"preweathered pro graphite-grey"*

Three natural surfaces

The ecological Material

Within the realm of sustainable building, the environmental compatibility of building products is becoming increasingly important. This, in turn, influences the decision-making of building owners and planners when selecting materials. Apart from durability, the focus is on the amount of energy used during production, the rate of recycling and the energy savings attained as a result of the high rate of recycling.

Durable and sustainable

Traditionally, environmental compatibility has been extremely important to RHEINZINK. Ecological standards are set during raw material extraction and processing: energy consumption is extremely low. Modern production equipment reduces emissions to a minimum. RHEINZINK is 100% recycleable; a lifespan of several decades, also sets very high standards. Apart from exemplary ecological properties, the "self-healing" material surface is telling: the protective, aesthetic patina which develops through weathering, naturally evens out any scratches or other smaller damage, thereby guaranteeing maintenance-free lifespan lasting decades. This applies equally to the bright rolled and "preweathered pro" RHEINZINK surfaces. Once the roof, façade cladding or roof drainage system has run its course, RHEINZINK is still very valuable: as the energy expended for recyling is only about 5% of the primary energy content and, because the goal is to get up to 60% of the raw material price for high-purity zinc scrap metal, to decide for RHEINZINK is to decide in favour of future generations. Thanks to the high rate of recycling – over 95% – a further reduction of energy requirements for primarily material is achieved.

In the RHEINZINK manufacturing process, any production scrap is fed back into the smelting process without any additional pre-treatment.

Lasting Values

With a service life lasting several generations, RHEINZINK sets very high standards. The 30-year quality guarantee underscores the longevity of the 100% recycleable material. Now that adds to the security and dependability of the material.

QUALITY ZINC Certificate

TÜV Certificate DIN EN ISO 9001:2008 and ISO 14001:2004

IGEF Certificate

ECO Environmental Declaration

Please see www.rheinzink.com and www.follow-your-inspiration.com for many other exemplary solutions for working creatively with RHEINZINK. We would also be pleased to send you detailed information on the diverse RHEINZINK-Program!

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RHEINZINK®

REVEAL PANEL

System technology for façades

DESIGN AND APPLICATION

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Disclaimer

RHEINZINK GmbH & Co. KG always considers state-of-the art technology, along with current product development and research when issuing engineering opinions or comments. These type of statements or recommendations describe optional designs in standard cases based on a European climate, specifically Europe's interior climate. It is not possible to consider every scenario, in which more extensive or restrictive measures may be required. Thus, an opinion issued by RHEINZINK GmbH & Co. KG does not replace the planning advice of a responsible architect or planner for a specific building project or the advice given by the company carrying out the tasks, while considering practical local conditions. Using the documents provided by RHEINZINK GmbH & Co. KG is a service, which excludes liability for damages or claims of any kind. Contingent liability for malice or gross negligence, as well as liability in the event of injury to body, life or health of an individual is unaffected. Claims in accordance with the product liability law also remain unaffected.

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Foreword

This document is based on practical experience and is commensurate with the current status of knowledge from Research and Development. It also complies with recognized regulations and state-of-the-art technology. It describes the worldwide application of RHEINZINK-Façade Systems for universally designed façade cladding and is the basis for professional design and conventional solutions in application technology.

This handbook shall serve as a guideline for design and implementation, subject to current building techniques. We would like to point out, however, that situations may arise in the field, for which the type of cladding presented in this handbook may not be applicable, or, may only be applicable in a limited capacity. Consequently, the detail drawings depicted here describe the standard details of the systems only. The effects the system will have on the project, as well as the location, climatic conditions and the demands on the physical structure, must be taken into consideration by the planner.

Compliance with the application techniques and specifications contained in this handbook do not exclude responsibility on the part of the client.

We reserve the right to undertake changes based on new developments. Please contact our Department of Application Engineering should you have any questions with respect to the system. We are also grateful for any suggestions you may have pertaining to product or design.

Datteln, January 2010

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1. Material

1.1 Alloy and quality

RHEINZINK is titanium zinc, manufactured in accordance with DIN EN 988. RHEINZINK-alloy consists of electrolytic high-grade pure zinc with a purity of 99.995 % conforming to DIN EN 1179, alloyed with exact percentages of copper and titanium. RHEINZINK-products are certified according to DIN EN ISO 9001:2008 and are subject to voluntary testing by TÜV Rheinland Group (the relevant local inspection and monitoring body) according to the stringent requirements of the Quality Zinc Criteria Catalogue *(available upon request)*.

Ecological relevance

RHEINZINK is a natural material, which meets today's strict ecological requirements in many areas. Environmental protection is evident in the production, transportation and installation of this material. State-of-the-art facilities, well thought-out logistics and favourable processing properties attest to this.
Environmentally conscious handling is documented through the adoption of ISO 14001:2004, the Environmental Management System, tested and certified by the TÜV Rheinland Group.

Other significant aspects of the overall ecological assessment of zinc are:

- **Natural material**
- **Low energy requirement**
- **Durability**
- **An established cycle for valuable material resources**
- **High percentage of recycling**

Other significant properties of zinc are:

- **Vital trace element**
- **Extensive resources**

RHEINZINK has been declared as an environmentally sound building product according to ISO 14025 Type III by the German Institute Construction and Environment. The environmental product declaration includes the entire life cycle of RHEINZINK-products, from raw material extraction to production and use phase, right up to the end-of-life stage and recycling. An integral part of the environmental product declaration is a life cycle assessment (LCA) according to ISO 14040 *(declaration available upon request)*.

RHEINZINK provides protection against electromagnetic radiation

There is a great deal of controversy in the public domain surrounding electromagnetic radiation. Within this context, the International Society for Electro-Smog Research [GEF e.V.] has analyzed and determined the shielding properties of RHEINZINK.
The result: more than 99% of existing electro-magnetic radiation is shielded. Biological tests conducted on human beings confirm the technical values and indicate a harmonizing effect on the heart, circulation and nervous system – especially when grounded. Relaxation of the body increases.

Sustainable value

With a lifetime spanning several generations, RHEINZINK is a material that sets standards. The 30-year guarantee underscores the durability of this 100% recyclable material. This creates a sense of additional security.

1.2 Material properties

- Density (spec. weight) 7,2 g/cm³
- Melting point 418 °C
- Recrystallisation temperature > 300 °C
- Coefficient of thermal expansion:
  in length as rolled:
  2,2 mm/m x 100 K
  in transverse direction
  1,7 mm/m x 100 K
- Modulus of elasticity ≥ 80000 N/mm²
- Non-magnetic
- Non-combustible

Mechanical properties
(measured lengthwise)

RHEINZINK-bright rolled, "preweathered^{pro} blue-grey":

- 0,2 % (yield strength) (R_p 0,2) 110 - 160 N/mm²
- Tensile strength (R_m) 150 - 190 N/mm²
- Total elongation (A_{50}) ≥ 35 %
- Vickers hardness (HV 3) ≥ 40

RHEINZINK-"preweathered^{pro} graphite-grey":

- 0,2 % (yield strength) (R_p 0,2) ≥ 140 N/mm²
- Tensile strength (R_m)) ≥ 180 N/mm²
- Total elongation (A_{50}) ≥ 50 %
- Vickers hardness (HV 3) ≥ 40

Material thickness (mm)	Weight (kg/m²)
1,00	7,24
1,20	8,60
1,50	10,80

Table 1:
RHEINZINK-weight according to material thickness in kg/m² (numbers have been rounded)

TÜVRheinland® CERT ISO 9001 ISO 14001

ECO *

* *recognized environmental label for building products put out by the German Federal Environmental Agency*

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1.3 RHEINZINK-bright rolled, "preweathered^{pro} blue-grey" and "preweathered^{pro} graphite-grey"

Many years ago, RHEINZINK developed the "preweathered^{pro} blue-grey" finish and, as of 2003, the "preweathered^{pro} graphite-grey" finish, to be used specifically for façades, where a "finished look" of the RHEINZINK-surface is required when the product is delivered.
By using a process, which is unique worldwide, it is possible to change the surface so that it looks very much like a naturally weathered surface – both in colour and structure – without impairing process capability or the natural formation of the protective layer.
Insofar as possible, preweathering the material reduces the appearance of surface reflections, which are typical for thin sheet metal (the appearance of waves).
As a result of increased demand, a large-scale production facility was put into operation in 1988, in which coils of up to 1000 mm wide (blue-grey) or 700 mm (graphite-grey) are cleaned and scoured.
This process (etching) results in an even colour, which, however, cannot be compared to a RAL-colour.
By undergoing a new organic surface treatment, this material, which is 100% recyclable, is protected, for the most part, from processing traces such as fingerprints. It also provides better protection during storage and transportation.

Recommendation:
Oil-free cloth gloves should be used during processing and handling.

Generally speaking, in order to eliminate the possibility of visual disparities, material should be ordered from the same batch for a specific project.
Surface disparities are purely visual and, as a rule, disappear bit by bit as the patina forms.

In order to protect the surface during transportation, storage and installation and from negative influences during construction, the façade systems are provided with a thin strippable plastic film. **This is a one-sided protective adhesive film, which should be removed at the end of each working day, immediately following installation.**

1.4 Storage and transportation

Always store and transport RHEINZINK-products in a dry, well-ventilated area.

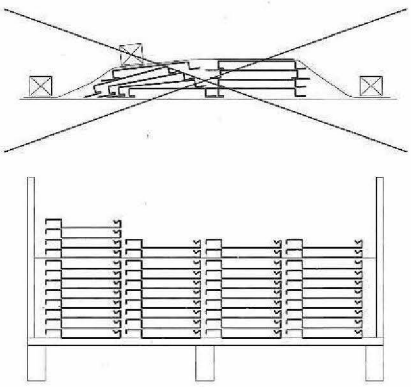

Fig. 1:
Storage and transportation of profiles and panels, (diagram)

Note:
For optimum storage on the construction site, please ask construction management for a dry, well-ventilated space or use containers.
Do not place cover sheets directly on the material.

1.5 Surfaces

RHEINZINK-"preweathered^{pro}" is used for RHEINZINK®-façade systems. This material has a permanent surface coating. When the building is finished, it will have the classical-modern blue-grey/graphite-grey look, typical of zinc. RHEINZINK-façades do not require cleaning or maintenance. As a result of natural weathering, the façade will get slightly darker with time..

1.6 Structural physics

- **Weather protection**
- **Moisture regulation**
- **Thermal economy**
- **Rear ventilation**
- **Sound proofing/fire protection**

The rear-ventilated façade is a multi-layered system, which, when designed properly, guarantees permanent functional capability. By functional capability, we mean that all requirements pertaining to structural physics are met. This is described in detail below.

By separating the rain screen façade from the thermal insulation and supporting structure, the building is protected from the weather.

The supporting outer walls and the insulation remain dry and thus fully functional. Even when driving rain penetrates open joints, it is quickly dried out as a result of the air circulation in the ventilation space. The bracket-mounted rear-ventilated façade protects the components from severe temperature influence. Heat loss in the winter and too much heat gain in the summer are prevented.

Thermal bridges can be reduced considerably.

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In the case of rounded parapets and dormer girders, the substructure and thermal insulation should be protected from penetrating moisture with a suitable layer.

1.7 Airtightness

This does not apply to the rear-ventilated façade, as this component itself cannot be airtight.

The building must be airtight before the rear-ventilated façade is installed. A solid brick or concrete wall will ensure that the building is airtight. Penetrations (e.g. windows, ventilation pipes, etc.) must be sealed from the building component to the supporting structure. In the case of a skeleton construction, the wall surface must also be sealed.

If the building envelope is improperly sealed (wind suction, wind pressure), there is a high degree of ventilation/energy loss, which, along with drafts, creates unpleasant room temperature. Dew or condensation can be expected on the leeward side of the building.

Air circulation in the room should be provided through air conditioning or by opening the windows.

1.8 Weather protection

Rear-ventilated façade cladding protects the supporting structure, the water-proofed thermal façade insulation, and the substructure, from the weather.
Bracket-mounted rear-ventilated façades provide a high degree of protection from driving rain.
Because of the physical structure, it is impossible for the rain or capillary water transfer to reach the insulating layers. Furthermore, moisture can always be drawn out through the ventilation space. This allows the insulating layers to dry out quickly, without impeding thermal insulation.

1.9 Moisture

Rear-ventilated façade cladding provides protection from driving rain and moisture. Moisture penetration as a result of diffusion does not occur in the rear-ventilated façade.
When the supporting structure is windproof, the diffusion current density is too small to cause the dew point temperature to drop.

1.10 Thermal economy

In order to understand the thermal economy of the rear-ventilated façade, we must first consider the various heat flow rates, as well as the air exchange between the rear-ventilation space and the outside air, separately, in terms of structural physics.

1.10.1 Thermal insulation

In the winter, heat flow from the inside to the outside is referred to as a heat transfer co-efficient (U-value).
The smaller the value, the smaller the quantity of heat escaping to the outside. The U-value is determined by the heat conductivity of the thermal insulation and insulation thickness.
The high-grade thermal insulation is a contribution to environmental protection and pays for itself in a relatively short period of time through low heating costs.

1.10.2 Summer thermal insulation

Summer thermal insulation should provide comfort: The amount of heat flowing from the outside to the inside sh ould remain as small as possible. Proper thermal insulation, as well as a certain mass in the construction itself, will help to achieve this objective.
The advantage of a bracket-mounted, rear-ventilated façade, is that a large portion of the heat which streams onto the cladding is diverted through convective air exchange.

1.10.3 Thermal bridges

Thermal bridges are elements of the building envelope, that have high thermal conductivity (have high U-values) and are continuous from the warm side to the cold side of the thermal insulation.
Apart from general design-dependent thermal bridges of a building, e.g. protruding balconies, the installation of the substructure must be taken into account in the case of a rear-ventilated façade.
Thermal bridges can be reduced significantly by installing an insulating strip between the supporting structure and the substructure (thermal break).
Proper installation of the insulation reduces the formation of thermal bridges.

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1.11 Fire protection

Metal façades with a metal substructure and appropriate fasteners meet the highest requirements for non-combustibility (Building Material Class A1, DIN 4102). In the case of bracket-mounted, rear-ventilated façades, it may be necessary to install firestops.

1.12 Rear-ventilation

The free ventilation cavity between the façade cladding and the layer behind it must be at least 20 mm. Tolerances and plumbness of the building must be taken into account. In some places, this rear-ventilation space may be reduced locally up to 5 mm – e.g. by means of the substructure or the unevenness of the walls.

1.12.1 Air intake and exhaust openings

The rear-ventilation space requires intake and exhaust vent openings. These openings must be designed so that their functionality is guaranteed for the lifetime of the building. It cannot be hindered through dirt or other external influences. The openings are located at the lowest and highest point of the façade cladding, as well as in windowsill and window lintel areas, and penetrations. In the case of higher, multi-storey buildings, additional intake and exhaust vent openings should be provided (e.g. at each floor).

1.13 Soundproofing

To prove that a façade design is soundproof, the entire wall structure, as well as each building component (windows, etc.) must be defined. The use of proper static fasteners will prevent any potential noise development as a result of the cladding.

1.14 Processing

Bending radii

Zinc and its alloys are anisotropic, which means they have different properties parallel and horizontally to the rolling direction.

The mechanical effects of this anisotropy is reduced to such a degree with RHEINZINK through the alloys and the rolling process, that RHEINZINK, independent of the direction of rolling, can be folded at 180° without cracking. When processing in order to manufacture a cold-rolled or pressed profile, compliance with the minimum radii is recommended (see Table 3).

1.15 Other applicable standards and guidelines

All trades must adhere to applicable DIN EN-/DIN-standards.
Guidelines for the design of metal roofs/façade cladding and sheet metal work. Government regulations, building codes.

Building height	Size of rear-ventilation	Free ventilation shaft
≤ 6 m	20 mm	200 cm²/m
> 6 m ≤ 22 m	30 mm	300 cm²/m
> 22 m	40 mm	400 cm²/m

Table 2: Specifications pertaining to rear-ventilation space Source: FVHF 20.09.94

Material thickness	Bending radius R_i Min.
1.00 mm	1.75 mm
1.20 mm	2.10 mm
1.50 mm	2.63 mm

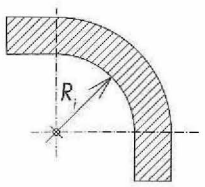

Table 3: Recommended bending radii (inner radius) for RHEINZINK

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2. RHEINZINK-Profile group Reveal Panel SF 25

The reveal panel opens up a wealth of design possibilities for the designer, because it can be installed vertically and diagonally. Variable spacing of the reveal joints (0-30 mm) underscores segmentation when the reveal panel is used. The reveal panel is available in widths of 200-333 mm.

Static load tables

Load tables are based on DIN 18807 for profile section properties.
Deflection:
1/180 for façade components
Safety factor:
g = 1.50
(this is taken into account in the tables)

Units for loads and forces

The load tables indicate permissible forces and loads in kN/m².
Deflection values in relation to span width are given for single span, double span or multi-span conditions.
The following indicators are used for display purposes:
Single span ■
Double span ■■
Multi-span ■■■

Span width in m		0,50	0,60	0,80	0,90	1,00	1,20	1,40	1,50	1,60	1,70
Permissible wind load in kN/m²	■			3,50	3,14	2,83	2,36	2,00	1,89	1,78	1,67
	■■	2,20	1,85	1,42	1,28	1,14	0,95	0,86	0,82	0,77	0,73
	■■■	2,50	2,14	1,56	1,41	1,30	1,09	0,95	0,91	0,87	0,83

SF 25-200, s = 1,00 mm

Span width in m		0,50	0,60	0,80	0,90	1,00	1,20	1,40	1,50	1,60	1,70
Permissible wind load in kN/m²	■			2,83	2,50	2,27	1,89	1,62	1,49	1,40	1,32
	■■	1,78	1,48	1,14	0,99	0,93	0,82	0,70	0,65	0,59	0,53
	■■■	2,04	1,70	1,30	1,16	1,03	0,91	0,81	0,76	0,71	0,66

SF 25-250, s = 1,00 mm

Span width in m		0,50	0,60	0,80	0,90	1,00	1,20	1,40	1,50	1,60	1,70
Permissible wind load in kN/m²	■	3,37	2,82	2,12	1,89	1,71	1,41	1,18	1,07	0,97	0,89
	■■	1,36	1,13	0,89	0,82	0,74	0,59				
	■■■	1,48	1,30	0,98	0,91	0,85	0,72	0,58	0,52		

SF 25-333, s = 1,00 mm

Table 4: Load table for reveal panel
Basis for design: uniformly distributed load, including the weight of the profile itself
Safety factor: 1.50
Tensile yield strength: 100 N/mm²
Width of support profile: ≥ 50 mm
DIN 18807/experimental testing at the University of Karlsruhe, Germany

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2.1 Profile geometry

Metal gauge
s = 1.00 mm/1.20 mm

Cover widths SF 25 s = 1.00 mm	Weight
200 mm	11.20 kg/m²
225 mm	10.70 kg/m²
250 mm	10.40 kg/m²
300 mm	9.84 kg/m²
333 mm	9.60 kg/m²

Cover widths of 200-333 mm
All sizes in between, in mm intervals, are possible. For widths of over 250 mm, we recommend using a material thickness of 1,20 mm.

Possible applications

- Façades
- Soffits
- Parapets

Fastening

Using rivets or screws, the panels are fastened directly onto the substructure, through the protruding leg of the groove (see detail above).
Linear expansion is restricted by limiting the length of the façade panel, and accommodated via the deflection of the substructure.

Dimensions

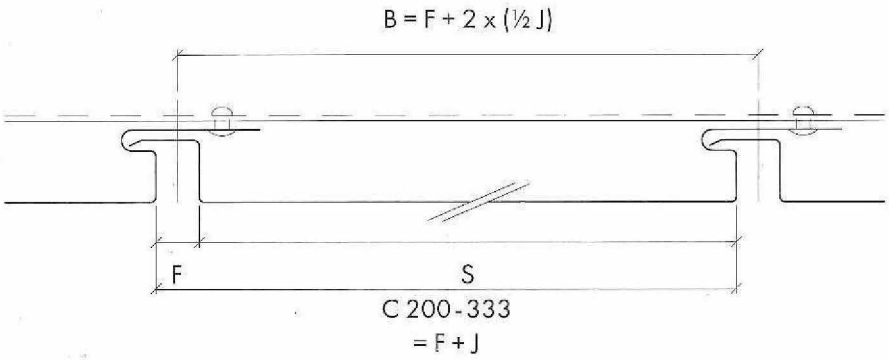
- Drawings: Dimensions in mm
- Panel designation: SF 25-287 (example)
- Standard length: ≤ 4000 mm
- B: bay width
- C: cover width
- J: joint width
- F: face width

Tolerances

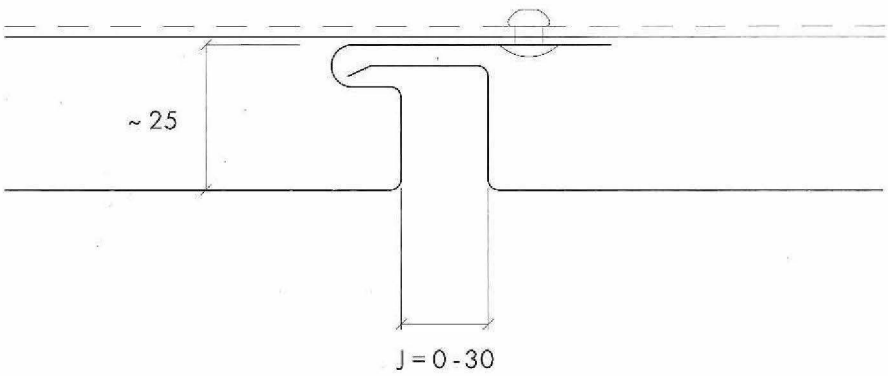
As per company standard WN 21

Note re installation:

- Reinforcing the panels at both ends with backfolds is recommended
- A 0-33 mm wide reveal joint (J) is possible
- The cover width (C) of the panel is manufactured with a minus tolerance of < 1 mm.



System section



Joint configuration

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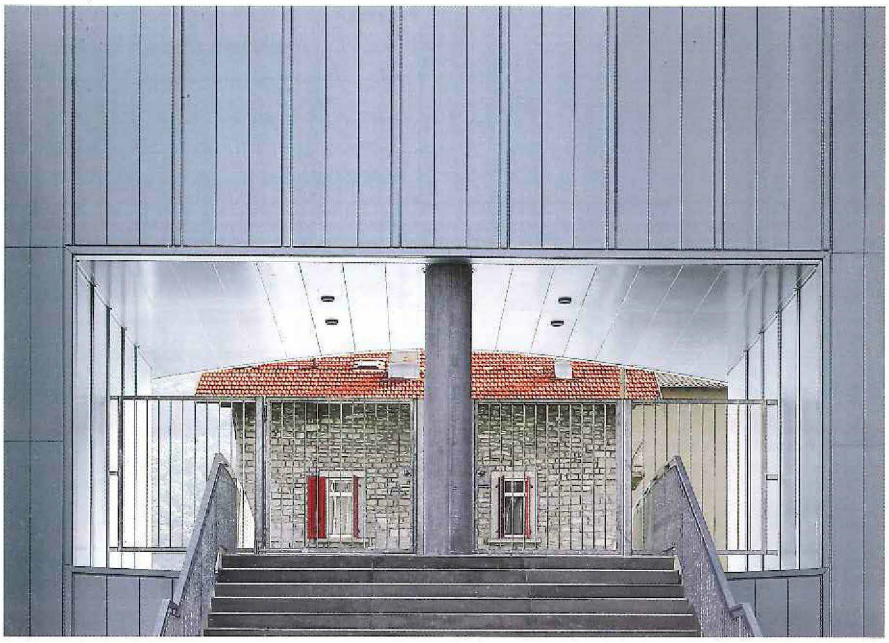
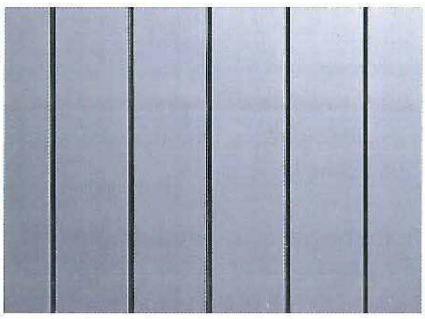
2.1.1 RHEINZINK-Reveal Panel, vertical installation

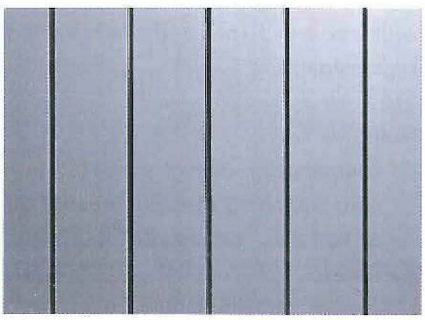


Telecom Giubiasco, Giubiasco, Switzerland



RHEINZINK-Panel, SF 25 with 20 mm reveal joint

Theater am Marientor (previously: Les Misérables), Duisburg, Germany



RHEINZINK-Panel, SF 25 with 15 mm reveal joint

2.2 Joint formation

2.2.1 Vertical panels

2.2.1.1 Horizontal joint

A: Slave profile

A virtually seamless transition from one panel to the other strongly accentuates the verticality of the façade. This type of joint formation does not affect the rear-ventilation space.

Fastening

Using rivets or adhesives, fastening is one-sided directly onto the substructure or onto the lower panel.

B: Flashing profile installed within horizontal joint

Panel with backfolds closes the vertical joint and frames the panel with a surrounding reveal joint.

C: Cornice profile

The horizontal joint can be accentuated by using profiles of varying widths. It is important not to interrupt or close off the rear-ventilation space.

2.2.1.2 Vertical joint

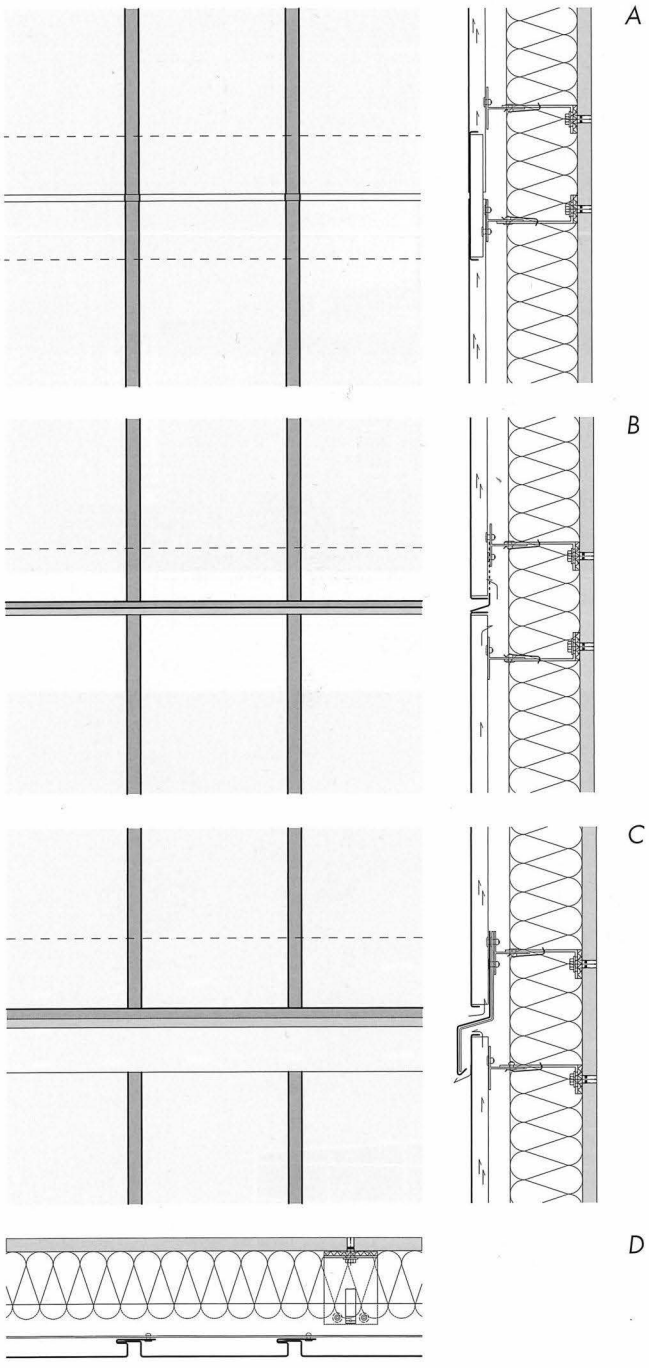
D: Butt joint

This joint is formed by using a certain type of panel. It can be developed in varying widths from 0-30 mm and affects vertical segmentation.

Note:

- Theoretically, all of the joint formations illustrated here can be used on all vertically installed RHEINZINK-Panels.
- Façade sections should be separated by means of expansion joints - a max. of 4000 mm (Example A, B, C).
- When determining panel lengths (Example C), air intake and exhaust openings must be taken into account.

View **Profile**



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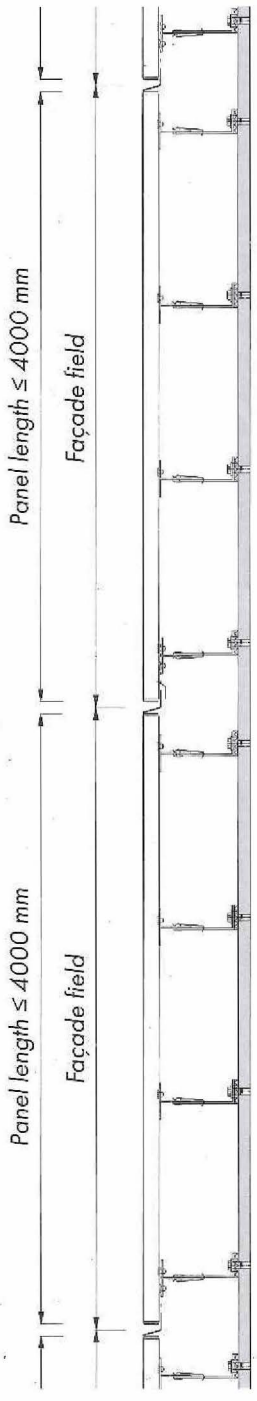
2.3 Accommodating thermal expansion of façade cladding

- Thermal expansion of façade profiles is accommodated by means of expansion joints.
- Statically connected fields cannot exceed 4000 mm in length. Exceptions must be discussed and approved by Application Engineering Department*.
- In the area of expansion joints the fixing to the substructure must be executed accordingly.
- The substructure must be designed to be independent for each façade field around the expansion joint.

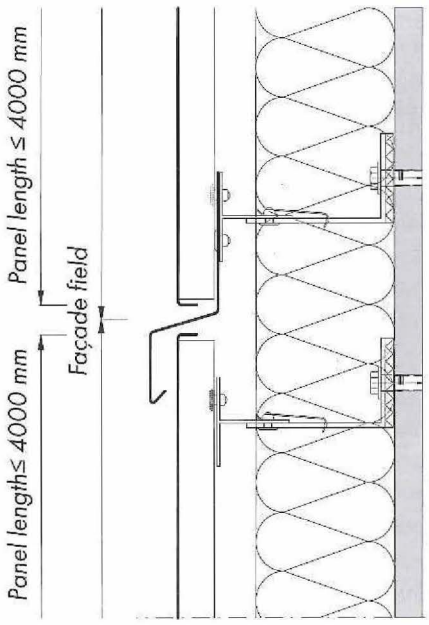
Two examples of façade implementation illustrate the connections schematically:

Example A
Large cladding components each form a field, which is fastened separately from the next field, by means of expansion joints.

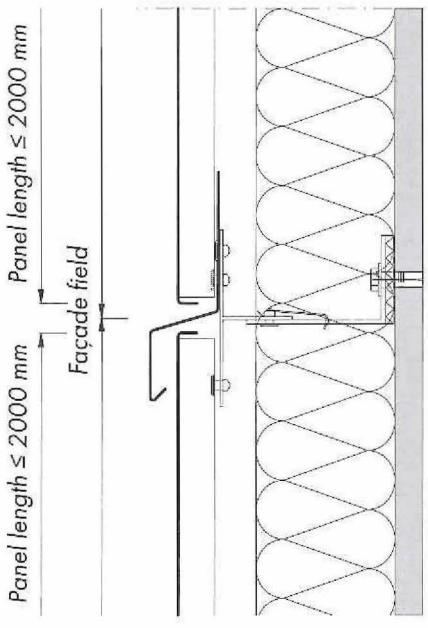
Example B
Small façade components are combined to create one façade field. Linear expansions can be accommodated after every third component, however, the total length of 4000 mm should not be exceeded.



Example A: Façade field joint (separation by means of expansion joints)



Fall A: technischer Fassadenfeldstoß (ausdehnungstechnische Trennung)



Example B: Facade joint serving as design feature only

* *see addresses and contacts on page 44*

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2.4 Substructure

RHEINZINK-Façade systems are normally installed on substructures consisting of single, double, or multiple non-ferrous metal systems. Apart from efficiency and the structural advantages provided by these systems, they also guarantee control and monitoring of fastening patterns and compliance with fire protection regulations. Moreover, the double and multiple systems enable building tolerances to be adjusted without difficulty.

The architectural appearance of the profiles determines the design of the substructure. Before the substructure is constructed, those concerned must determine the appropriate design, otherwise – inevitably – the design would determine the architecture.

Note:

Use of wood as a substructure for large façade surfaces in system technology is not recommended because of its behaviour when damp and difficulty in adjusting tolerances.

However, a dried wooden substructure is definitely suitable for small surface applications such as dormers, fascias and gable walls.

The location and orientation of the fixed and sliding points for metal substructures must be determined based on the type of cladding, the surface and length of the panels.

With single substructure systems, the disadvantages certainly outweigh the advantages, such as:

- inability to accommodate building tolerances
- large thermal bridges

All technical problems are solvable when double/multiple systems are used:

- local thermal bridges only
- rear-ventilation throughout is guaranteed

However, the expensive and elaborate design coupled with the fact that two or more installation procedures must be implemented must be taken into consideration.

Double or two-part systems constitute the "happy medium":

Advantages

- cost-effective
- easy accommodation of building tolerances
- local thermal bridges only

Disadvantages:

- two installation procedures
- depending on the detailing requirements additional costs can occur

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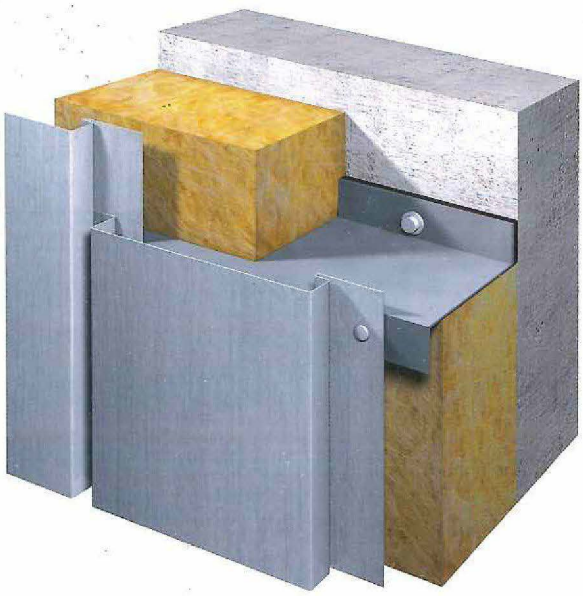
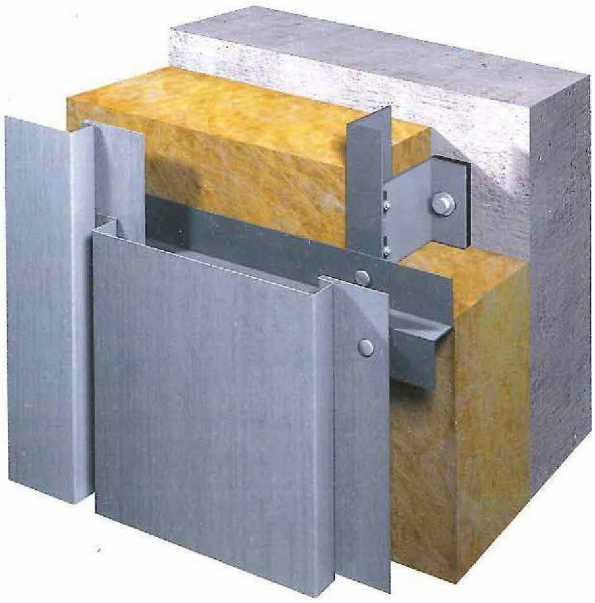


Single substructure

Double or two-part substructure



Multi-part substructure

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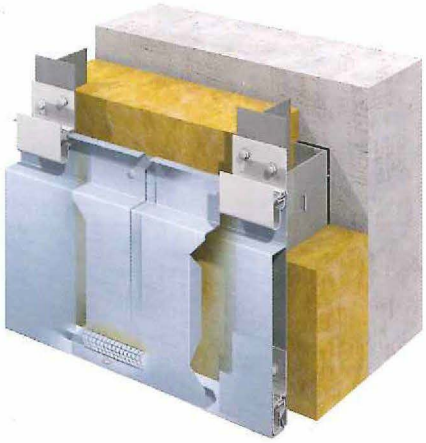
2.5 Fasteners

Fasteners are parts that connect the cladding to the substructure mechanically. The edge distance of connections and fasteners in the substructure must be at least 10 mm. Only corrosion-resistant fasteners, which guarantee long-term function capability, may be used.



2.5.1 EJOT® Drilling screws

Area of application

Drilling screws to join
- RHEINZINK-Panels

onto
- steel substructures
- 1,5 - 4,0 mm
- aluminum substructures
- 1,5 - 4,0 mm

JT 3 - FR - 6 - 5,5 x 25 - E11

Marking	Ø x mm	Length mm	Drill capacity $t_I + t_{II}$ mm	Clamping thickness mm
JT3 - FR - 6	5.5 x	25	min. 0,63 + 1,5 max. 2,0 + 4,0	7.0

Note

When using screws without sealing washers, clamping thickness increases by 3 mm.

2.5.2 EJOT®
Blind rivet with large collar

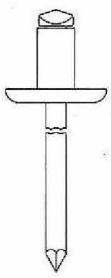
Aluminum (Al) rivet sleeve
Rivet mandrel made of high-grade steel
Secure connection

Area of application

Use blind rivets to fasten
- RHEINZINK-Panels
- steel or aluminum profile sheets

onto
- steel substructures
- aluminum substructures

Blind rivet K14 - Al/E - 5,0 x 8,0



Marking	Ø x mm	Length mm	Clamping thickn. mm	Drill hole Ø mm
Blind rivet K14 - Al/E -	5.0 x	8.0	2.5 - 4.5	5.1
	5.0 x	10.0	4.5 - 6.0	5.1
	5.0 x	12.0	6.0 - 8.0	5.1
	5.0 x	18.0	12.0 - 14.0	5.1

2.5.3 EJOT® Blind rivet

Aluminum (Al) rivet sleeve
Rivet mandrel made of high-grade steel
Secure connection

Area of application

Blind rivets are used to fasten secondary components, e.g. slave profiles.

Blindniet Al/E - 4,8 x 10

Marking	Ø x mm	Length mm	Clamping thickn. mm	Drill hole Ø mm
Blind rivet Al/E -	4.8 x	10.0	0.5 - 6.5	4.9
	4.8 x	15.0	4.5 - 11.0	4.9
	4.8 x	25.0	11.0 - 19.5	4.9

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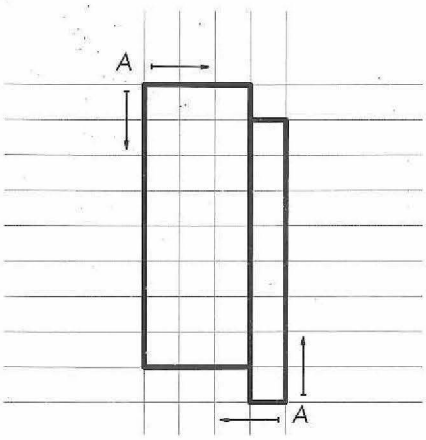
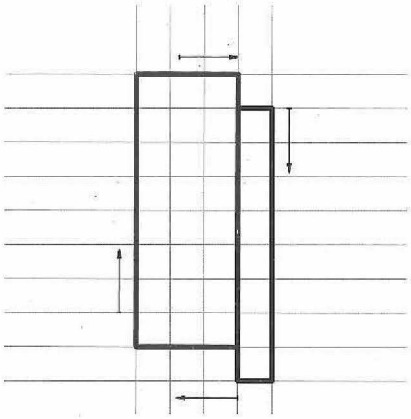
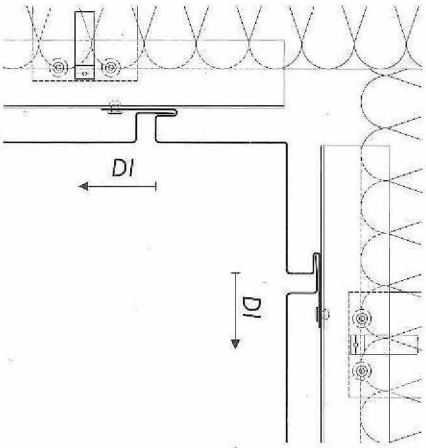


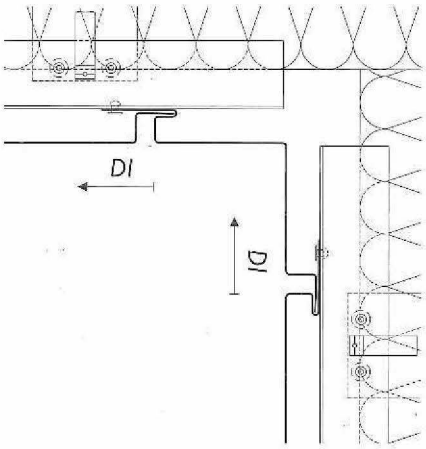
A: start of installation



Installation can begin anywhere



Example A:
The corner panel is installed first. Building tolerances are accommodated either by installing an adapter panel in the centre of the façade, or, next to the outside corner panel.



Example B:
The corner panel is part of the continuous installation sequence. Any tolerances that need to be adjusted at this point can be accommodated by the corner panel.

2.6 Installation and building tolerances

Adapter panels are required to accommodate building and installation tolerances.
The location of these panels in the façade is determined by the installation process and sequence.
Trim work, e.g. window and door frames, corner panels, joint profiles, etc., should be installed first. The panels are manufactured at the RHEINZINK-System Centre to precise dimensions.
Dimensional adjustments can be made on site by making minimum changes to the joint width. The performance of the system is not affected by this.
The panels are installed starting at Installation Point A. Adaptor panels are generally inserted before the next section.
Depending on the size of tolerance to be accommodated, one or two adaptor panels will be installed.

Note:
Tolerance adjustment using adaptor panels ≤ 15 mm difference is hardly noticeable.
DI: direction of installation

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2.7 Detail concept

Detail design creates the lasting impression of the façade. Plan details or sections are required for most of the corners, reveals, as well as connections and terminations. These must be coordinated during detail design development. Two significant design variations will illustrate this.

Visible width of the building profile or section
The spectrum ranges from sharp-edged profiles to profiles that are several centimeters wide. Precise planning allows for the widths of all termination and frame profiles to be the same, or, to vary these in desired proportions.

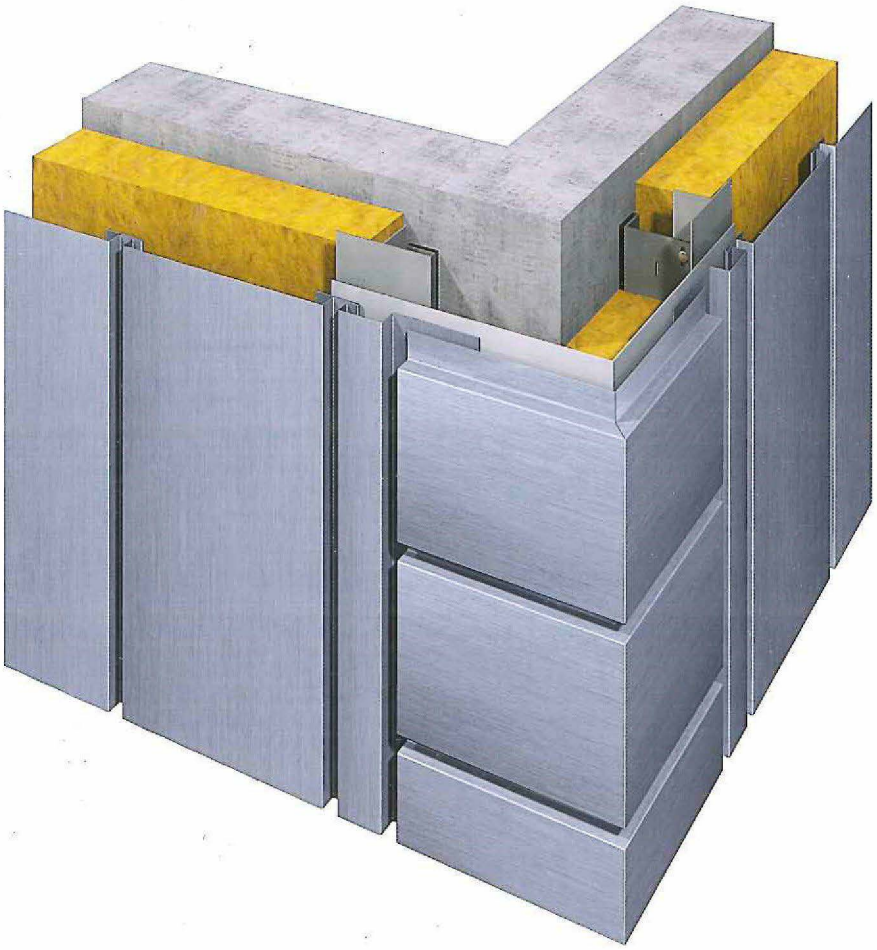
Projection of profiles
Depending on the detail design, the profiles either protrude from, or lie flush with the façade surface.

This overview illustrates three possible principles:

Profile group 1
A relatively wide joint profile (visible width ca. 60 mm) is selected as the building profile, which is terminated flush with the façade surface.
Various façade systems, such as cassettes or panels, can be used to form the corner of the building.

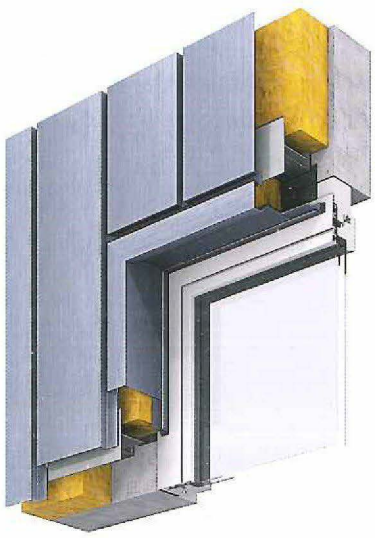
Profile group 2
A sharpe-edged profile will be installed flush with the curtain wall, so that the window frame design is not accentuated.

Profile group 3
The jamb profile selected for this window surround can replicate the joint profile (see profile group 1) and is used as a flashing in conjunction with the window sill and lintel.



Profile group 1

Profile group 2



Profile group 3

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2.8 Details

2.8.1 General instructions

Third Party Trades

Connections of façade claddings to third party trades are necessary and unavoidable in most cases to ensure impermeability. Because of the warranty obligations on the part of the craftsman, sub-contracting connections and fasteners to third party trades (e.g. windows), must always be approved by the project manager of the trade in question.
Please keep the location of the scaffold anchors in mind during planning/design.

Wall structure

The layered construction is equal to a rear-ventilated metal façade. A solid brick/concrete wall or stud wall with sheathing serves as the supporting structure. Other supporting structures are possible and can be discussed with Application Engineering Department*.

Substructure

See Chapter 2.4

Load effect

In the case of two-dimensional cladding profiles (all panel types) that are only fastened on one side, flanged backfolds are required to provide additional reinforcement for all profiles in exposed building locations.

Installation instructions

We will not go into installation details here, because, when it comes right down to it, these are strongly influenced by other trades when it comes to windows, structural steel construction, etc.
The installation processes must always be determined individually for each project, considering interfaces and the sequence of installation.
Notable deviations from the rule will be pointed out for various details.

Drip edges

Standards and regulations must be taken into consideration in the detail design, e.g. drip edges above rendered façades (dirt as a result of pollution).

Diagonal installation

RHEINZINK-Reveal panels can also be used for diagonal façade installation.
To a large extent, technical implementation of the design is commensurate with horizontal installation. Foldbacks must be fabricated on site.

2.8.2 Pictographs

Horizontal profiles
(see page 24)
H1: outside corner
H2: inside corner
H3: window jamb
H4: expansion joint

Vertical profiles
(see page 25)
V1: base
V2: windowsill
V3: window lintel
V4: roof edge

Variations

In some cases, variations for the same detail are depicted (e.g. window lintel with/without shade).
These are identified and include additional explanatory texts or drawings.

Applicability

The details and designs depicted here are suggestions, which have been implemented on various projects. Responsibility must be taken for decisions made on detail suggestions, taking into account applicable standards and regulations, as well as the stylistic intentions of the planner for the project.

Building Height	Overlap	Distance to drip edge
≤ 8 m	≥ 50 mm	≥ 20 mm
> 8 m ≤ 20 m	≥ 80 mm	≥ 20 mm
> 20 m	≥ 100 mm	≥ 20 mm

Table 6: Distance and overlap dimensions for flashings (e.g. windowsills, wall copings, verge profile, etc.)

Source: German Sheet Metal Standards 2005

* *see addresses and contacts on page 44*

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2.9 Planning grid

The grid principle in façade construction

A metal façade consists of components manufactured industrially with a high degree of precision. These components determine appearance through precise horizontal and vertical segmentation. Penetrations and terminations that are not matched/coordinated with the axis grid can have a disturbing effect.
The following instructions serve to assist proper planning of façade segmentation:

Principles

As a rule, a differentiation should be made between new construction and renovations when discussing grid problems. In the case of new construction, the façade grid can be coordinated or matched to the design; penetrations such as windows, ventilation piping, etc. are always secondary.
In the case of renovations, the penetrations (e.g. windows) cannot be displaced or removed, so the grid must be coordinated with the penetrations.
When deviating from the grid, the following principles apply:

- At terminations, one should begin or end with an entire module (X or Y)
- Dimensional differences of max. 10 mm (deviations from module X or Y, in the case of two-dimensional profiles), are not noticeable.
- Dimensional tolerances, which cannot be corrected (X or Y dimensional change) must be compensated either in the windowsill or roof edge area.
- Adjustments or displacements of height coordinates can only be implemented in the roof edge or base area.

The principles used to segment a façade are illustrated using the example of a vertical grid for horizontal cladding. This principle also applies to vertical façade cladding.

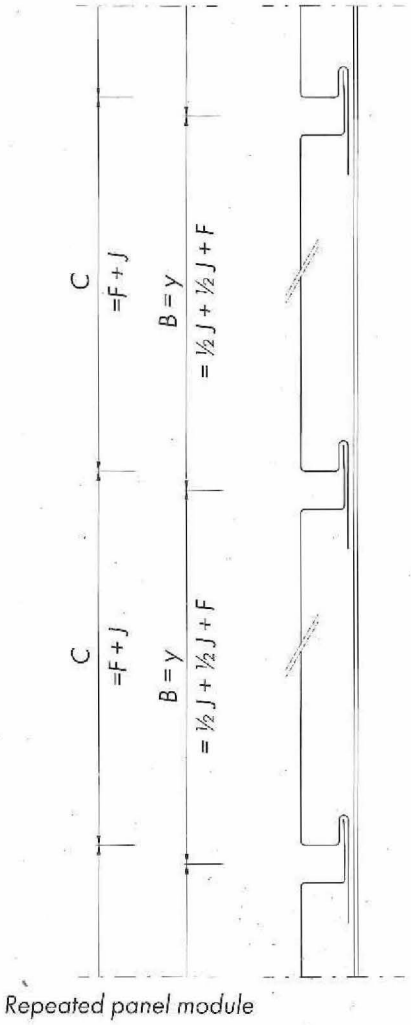
- B: bay width
- C: cover width
- J: joint width
- F: face width

Module Y

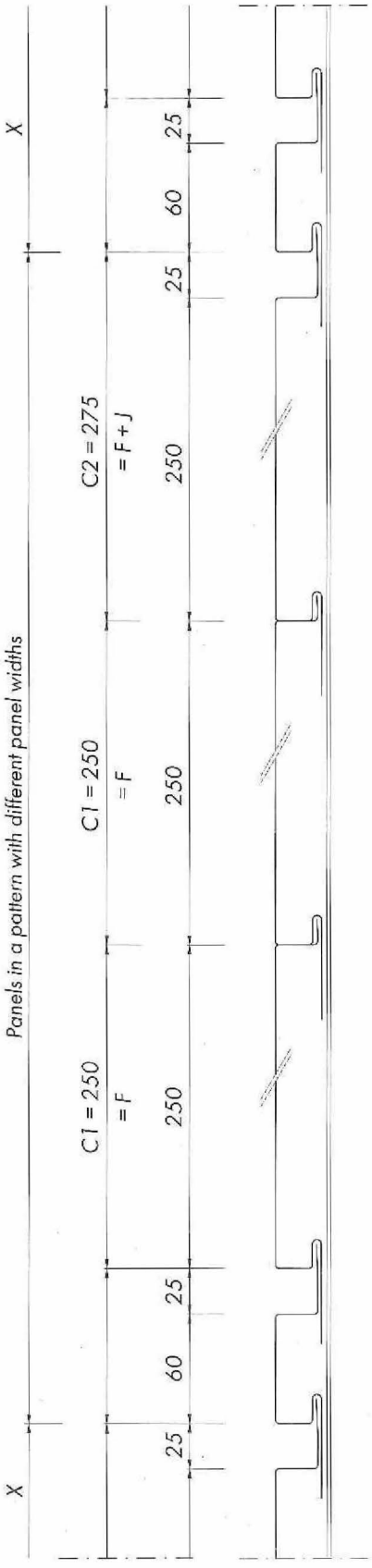
Y corresponds to the smallest segment of the façade, which is repeated again and again, e.g. panel width. The Y grid module determines the precise location of penetrations and terminations. In the case of reveal panels, the Y dimension is discretionary and is produced in cover widths of 200 mm to 333 mm, based on the project.
The bay width (Y) is formed using the visible surface of the panel and two half joints.
The cover width is established from the visible surface and the width of the joint. The width of the reveal can vary from 0 to 30 mm and is determined by appropriate length of the "tongue".

Dimension X

All of the sections marked with X are an integral multiple of selected module Y and, as a rule, correspond to the cover width of a profile.



Repeated panel module



Combination of panels creating a module

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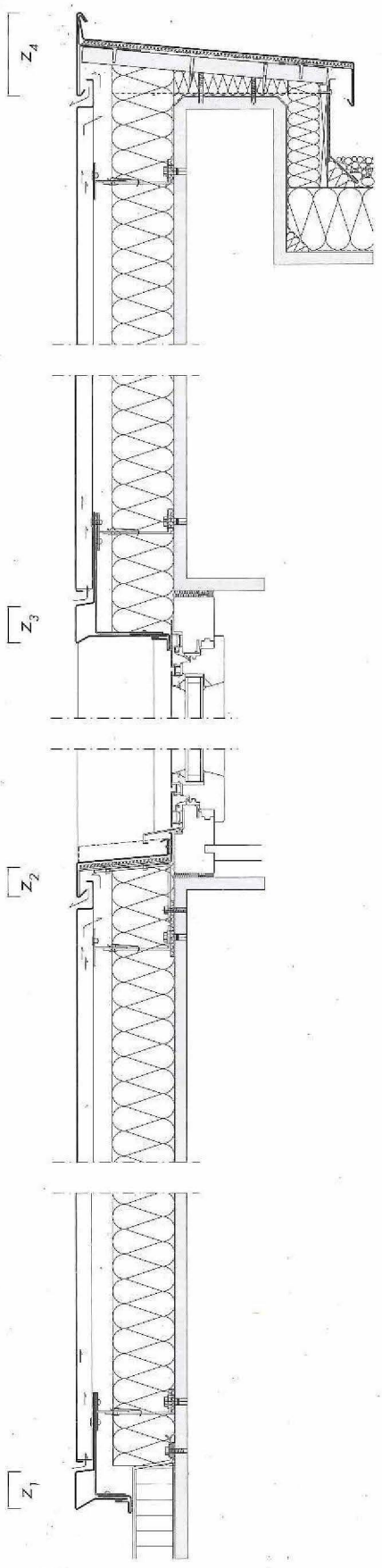

Position Z_4: roof edge

Grid for new construction, respectively, renovation

If the height coordinates of the roof edge do not fit into the prescribed grid selected, the following corrective options can be selected:

- change the roof edge profile/ incline
- raise or lower the parapet wall or the roof edge frame.
- Changing the X or Y module

As a rule, the first two options are only viable if the flat roof is being restored at the same time.

Position Z_3: window lintel
Position Z_2: windowsill
Grid development for new construction

- Determine the relief/recess of the building envelope
- Determine the window frame profile
- Determine window location
- Determine profile geometry of window connections
- Develop design details within the grid

Grid development for renovations

- Determine window frame profile, for new/old window
- Determine window location, for new/old window
- Determine profile geometry of window connections
- Develop design details within the grid

If the location of the window or of the detail does not fit into the grid, the following corrective options can be selected:

- Change the profile geometry of the window lintel profile or the windowsill
- Adjust window height
- change the incline of the windowsill
- Change the X or Y module

Position Z_1: base

Grid development for new construction, respectively, renovation

- Define potential deviations toward the top or bottom
- Define profile geometry of base detail

If the location of the base does not fit into the grid, the following corrective options can be selected:

- Shift the façade connection towards the top or bottom
- Change the profile geometry of the base moulding
- Lower or raise the plinth wall, if it exists or has been designed

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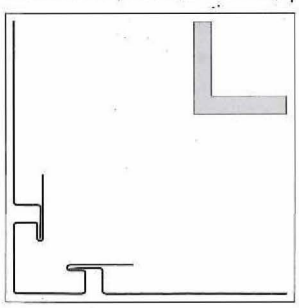
2.10 Reveal panel design, vertical application

Detail H1: Outside corner, page 26



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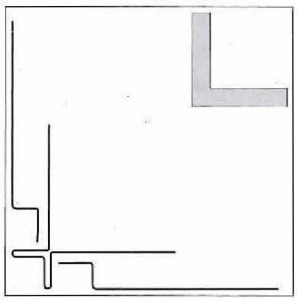
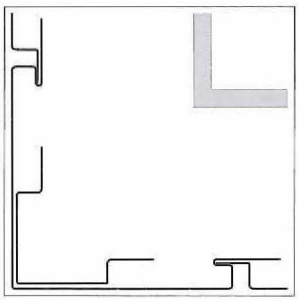
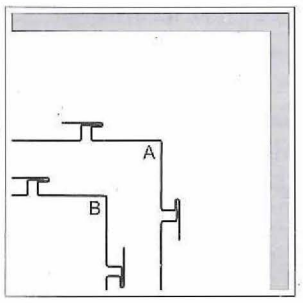


H1.2

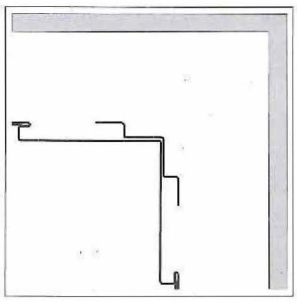


H1.3

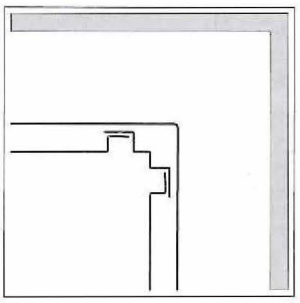
Detail H2: Inside corner, page 28



H2.1

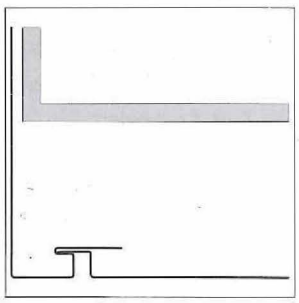


H2.2



H2.3

Detail H3: Window jamb, page 30



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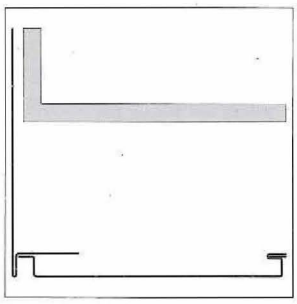

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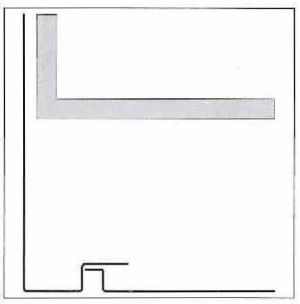
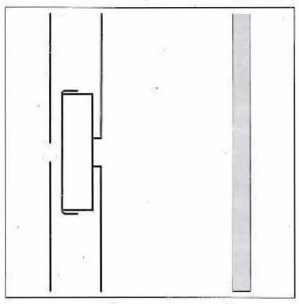


H3.3

Detail H4: Expansion joint, page 32



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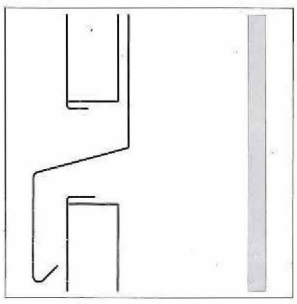
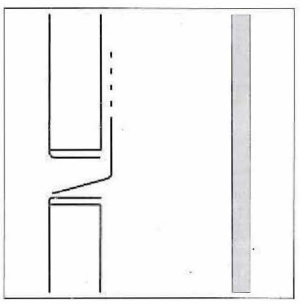


H4.2



H4.3

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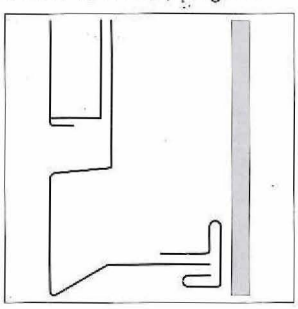
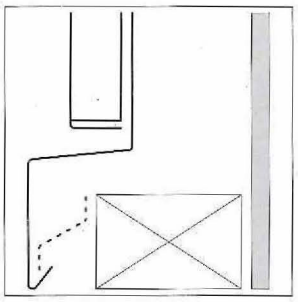
2.10 Reveal panel design, vertical application

Detail V1: Base, page 34



V1.1



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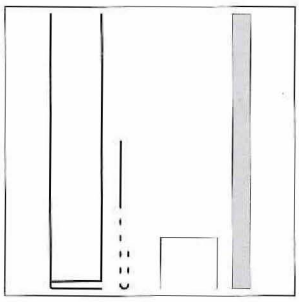
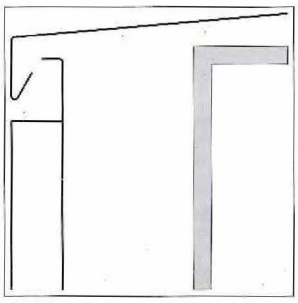
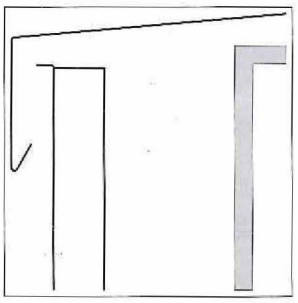


V1.3

Detail V2: Windowsill, page 36



V2.1



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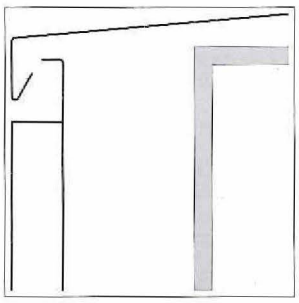
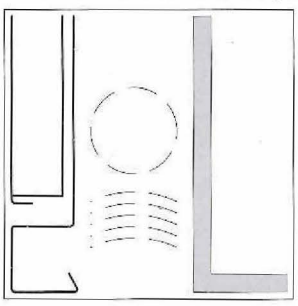
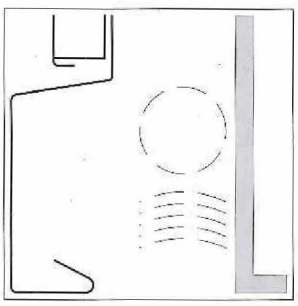


V2.3

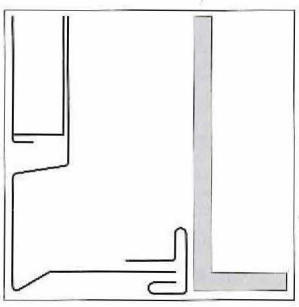
Detail V3: Window lintel, page 38



V3.1

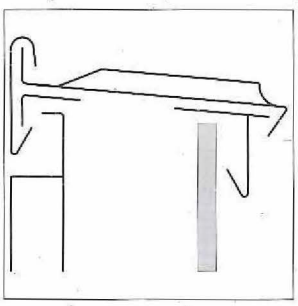


V3.2

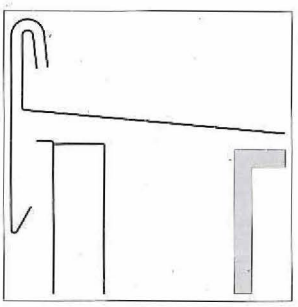


V3.3

Detail V4: Two-part roof edge, page 40



V4.1



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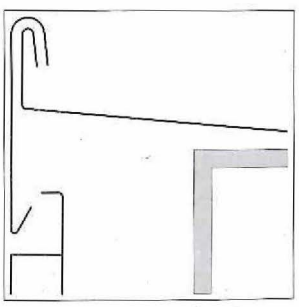

V4.3

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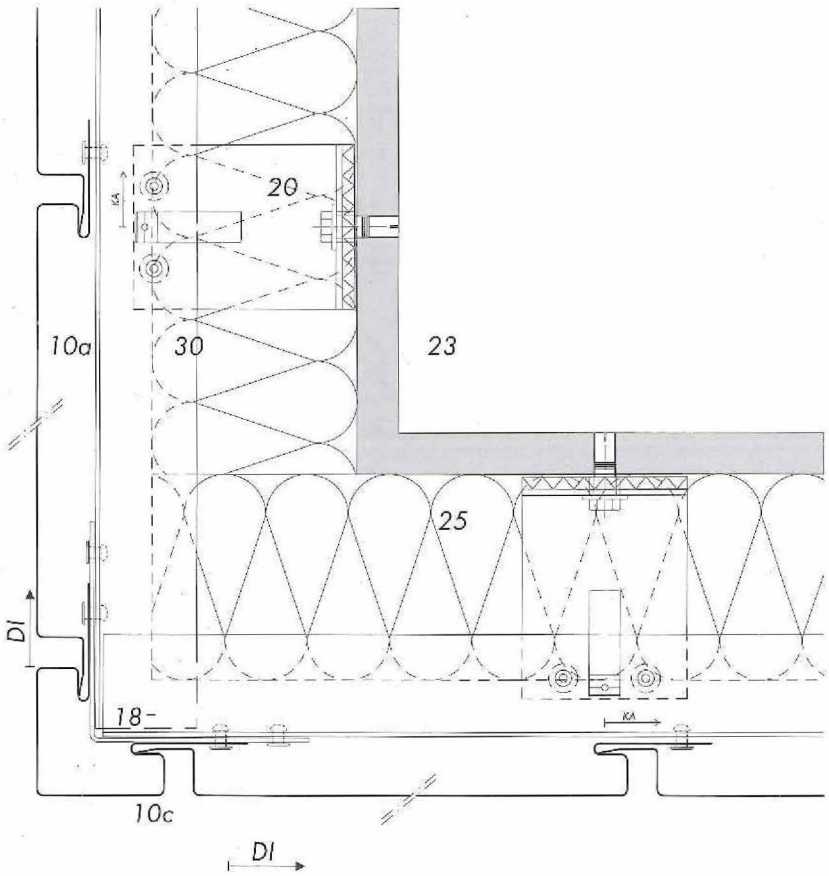
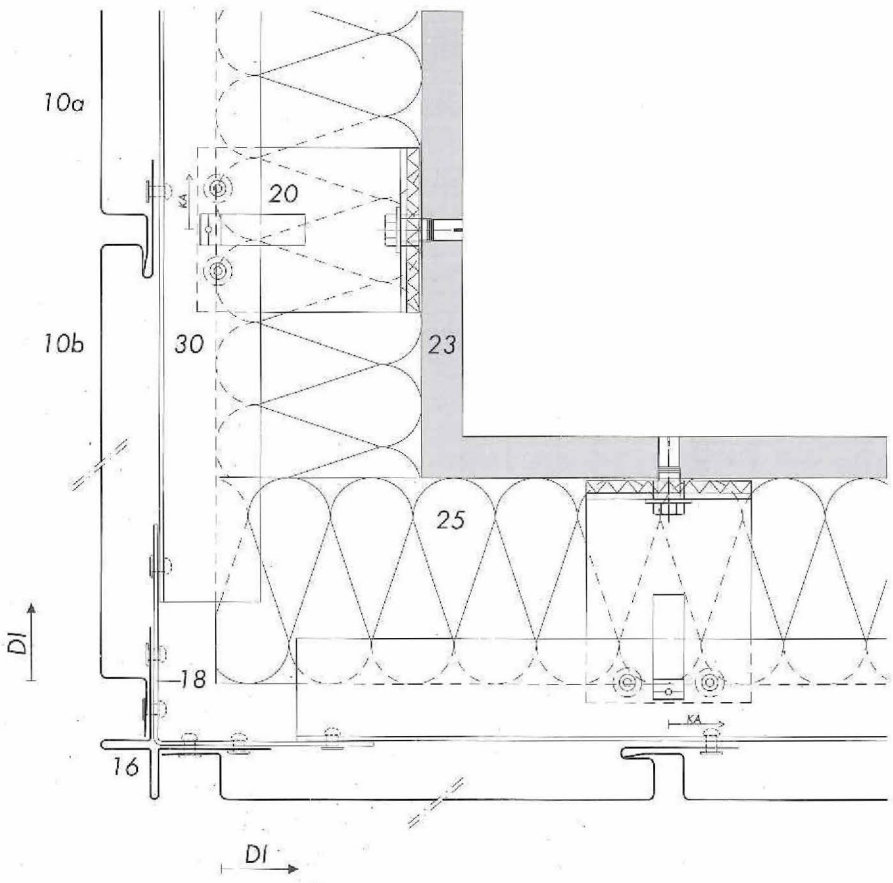
DESIGN – VERTICAL APPLICATION
DETAIL H1: OUTSIDE CORNER

H1.1



H1.2



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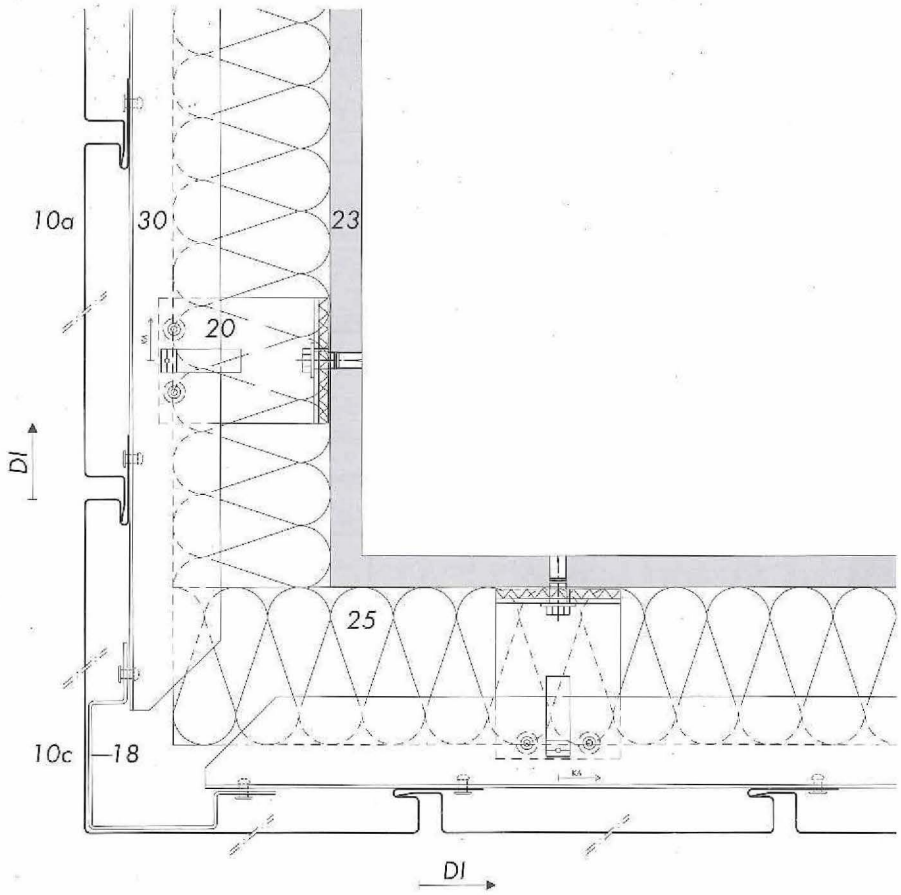
DESIGN – VERTICAL APPLICATION
DETAIL H1: OUTSIDE CORNER

H1.3



2.10.1 Detail H1: Outside Corner

10 RHEINZINK-Reveal Panel, SF 25
- a Standard panel
- b Adapter panel
- c Corner panel groove/groove

16 RHEINZINK-Building profile
- Outside corner profile

18 Support profile
- Made of aluminium

20 Substructure
- 2-part: wall bracket with thermal break and horizontal profile*

23 Supporting structure
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation
CE Controlled expansion of substructure

* Manufacturers' guidelines must be complied with

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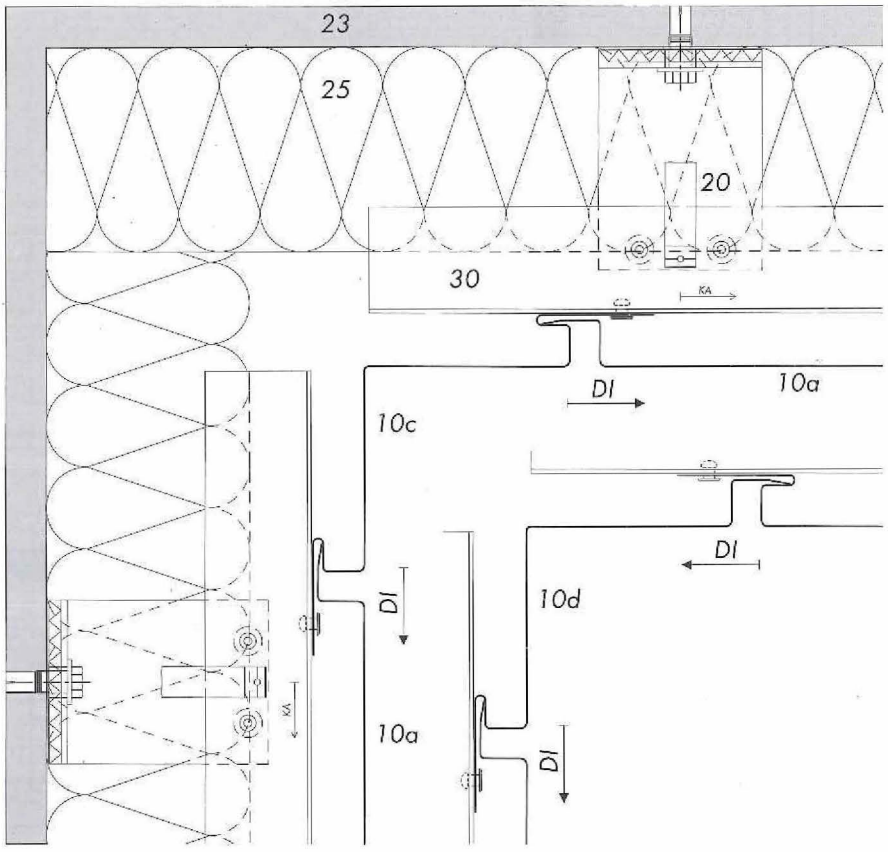
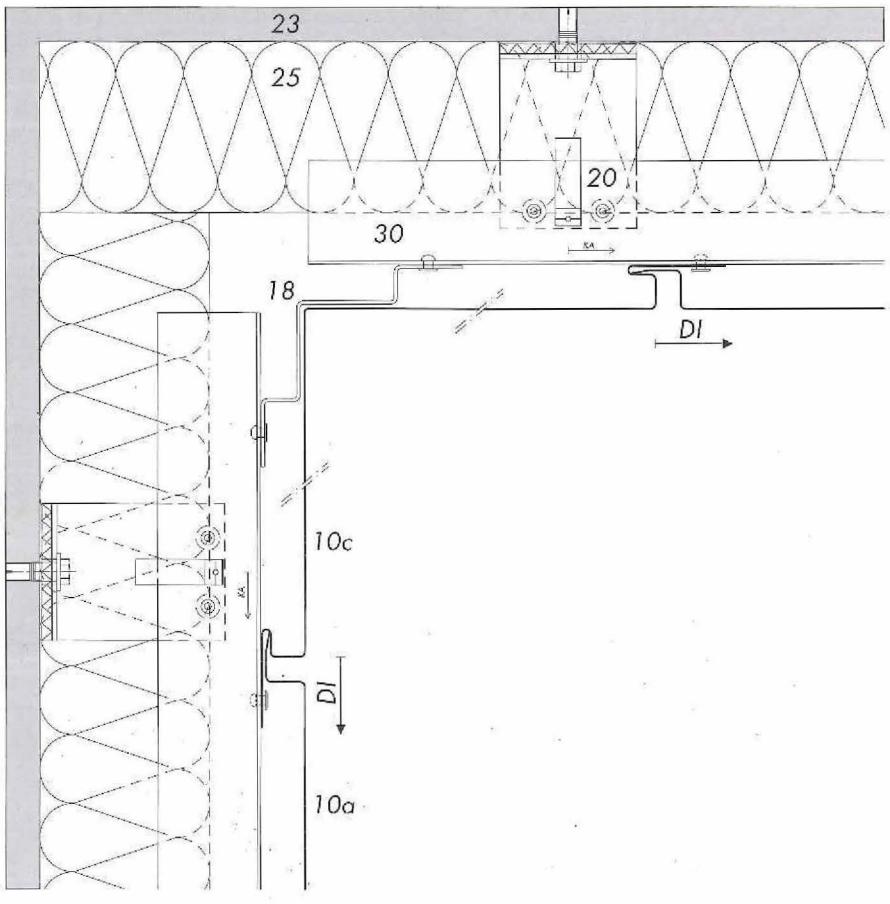
DESIGN – VERTICAL APPLICATION
DETAIL H2: INSIDE CORNER

H2.1



H2.2



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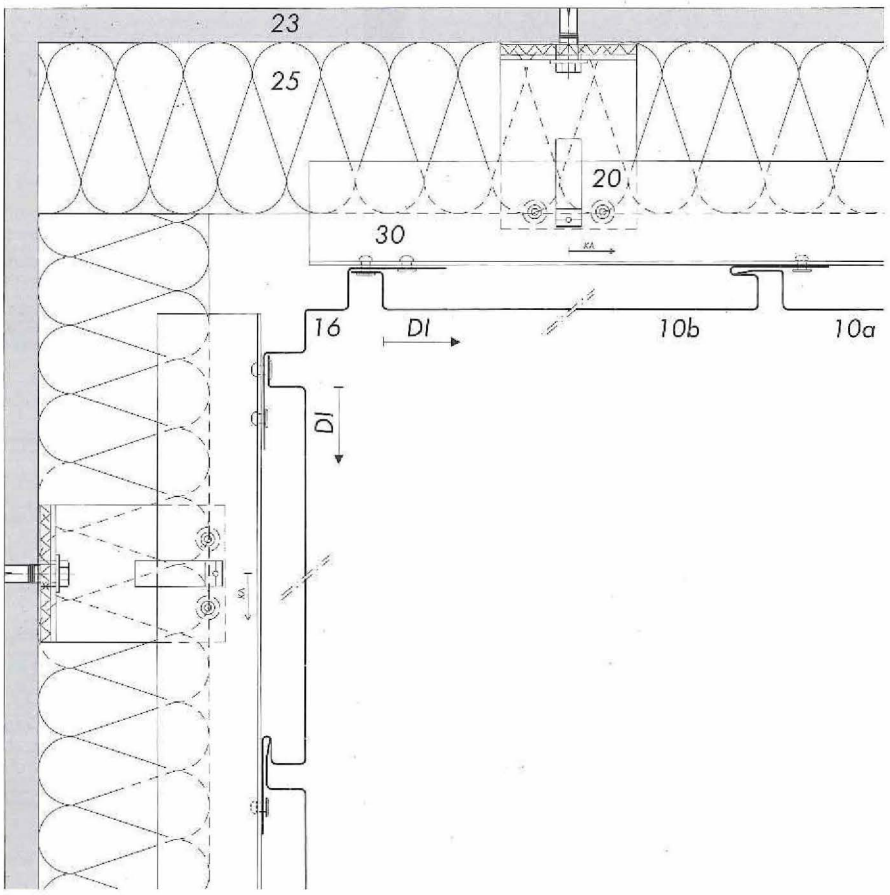

H2.3

2.10.2 Detail H2: Inside Corner

10 RHEINZINK-Reveal Panel, SF 25
- a Standard panel
- b Adapter panel
- c Corner panel groove/groove
- d Corner panel groove/tongue

16 RHEINZINK-Building profile
- Inside corner profile

18 Support profile
- Made of aluminium

20 Substructure
- 2-part: wall bracket with thermal break and vertical profile*

23 Supporting structure

25 Thermal insulation

30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation

CE Controlled expansion of substructure

* Manufacturers' guidelines must be complied with

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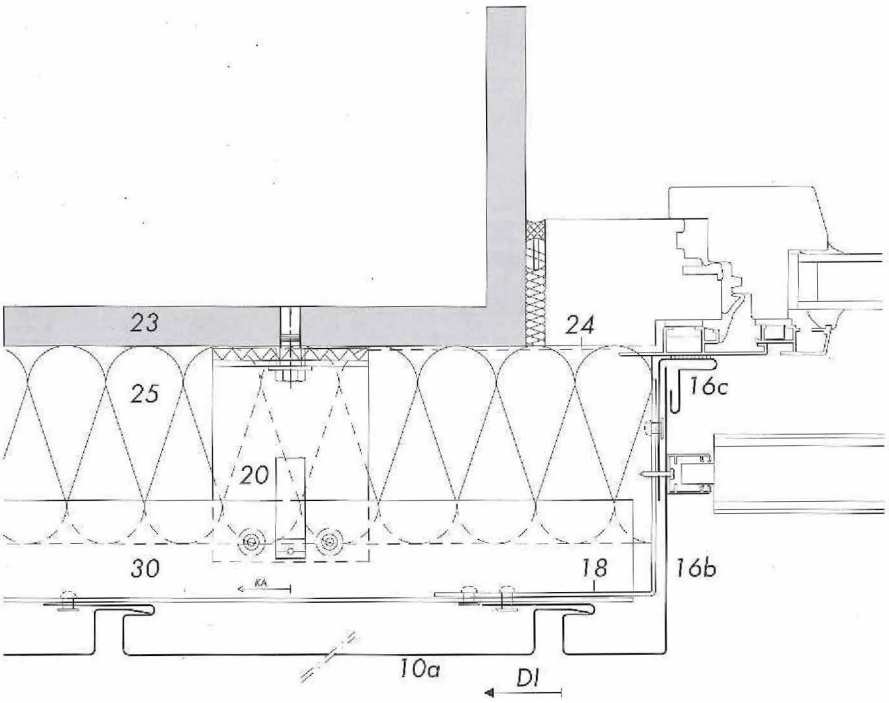
DESIGN – VERTICAL APPLICATION
DETAIL H3: WINDOW JAMB

H3.1



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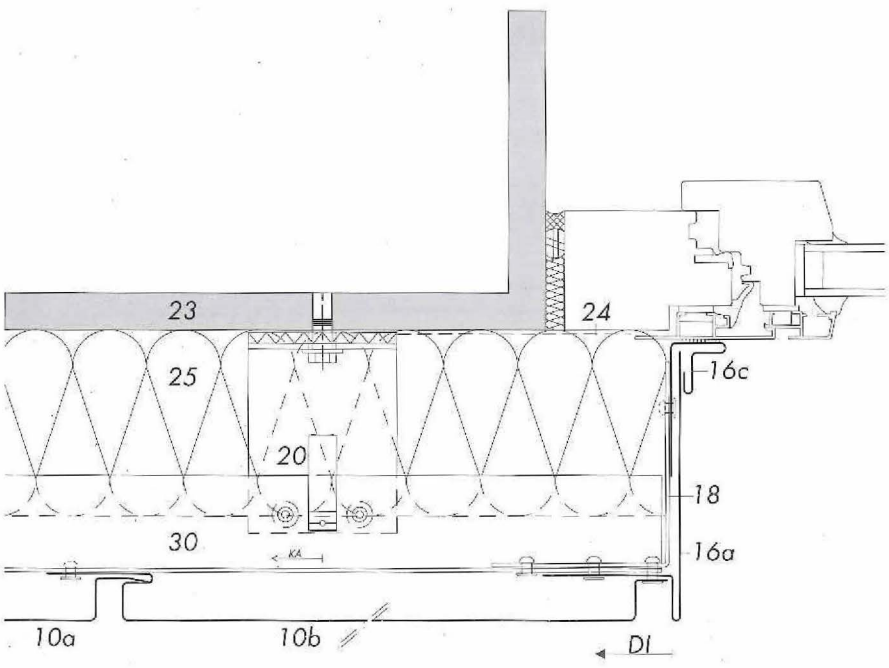
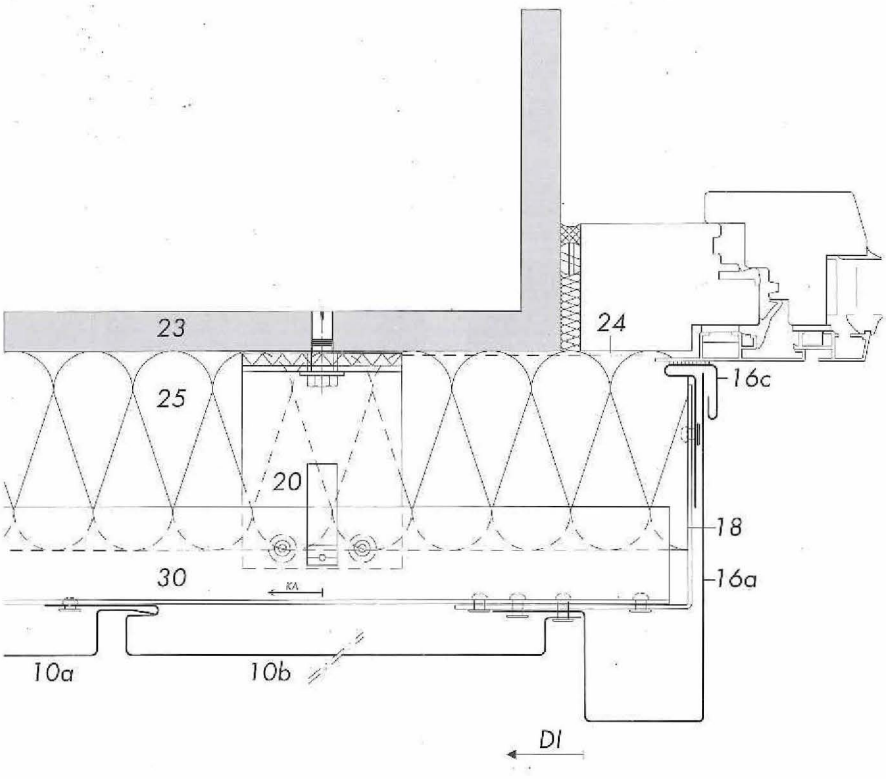


SEA00014616/64

H3.3



2.10.3 Detail H3: Window jamb

10 RHEINZINK-Reveal Panel SF 25
- a Standard panel
- b Adapter panel

16 RHEINZINK - Building profile
- a Jamb profile
- b Jamb profile with groove
- c Receiver strip with sealant tape

18 Support profile
- Made of aluminium

20 Substructure
- 2-part: wall bracket with thermal break and horizontal profile*

23 Supporting structure
24 Airtight sealing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation
CE Controlled expansion of substructure

* Manufacturers' guidelines must be complied with

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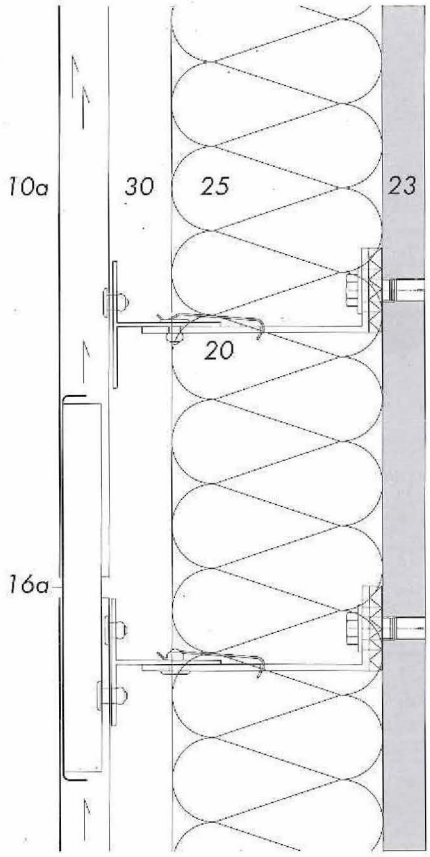
DESIGN – VERTICAL APPLICATION
DETAIL H4: EXPANSION JOINT

H4.1



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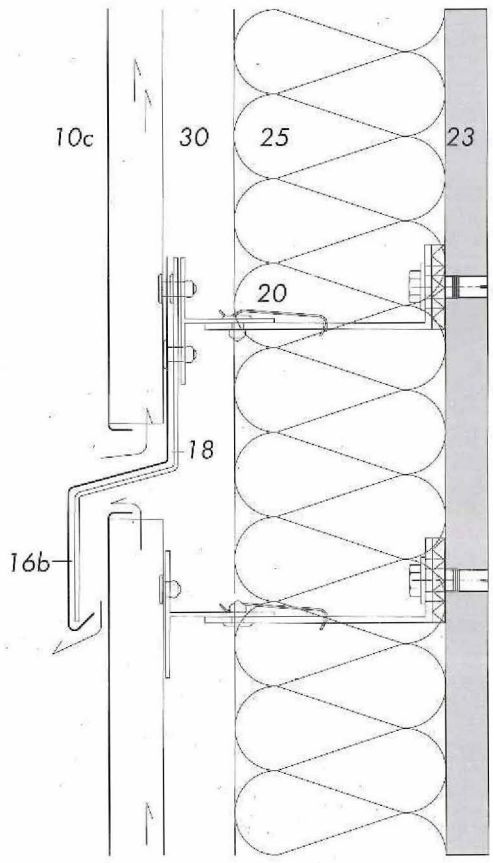

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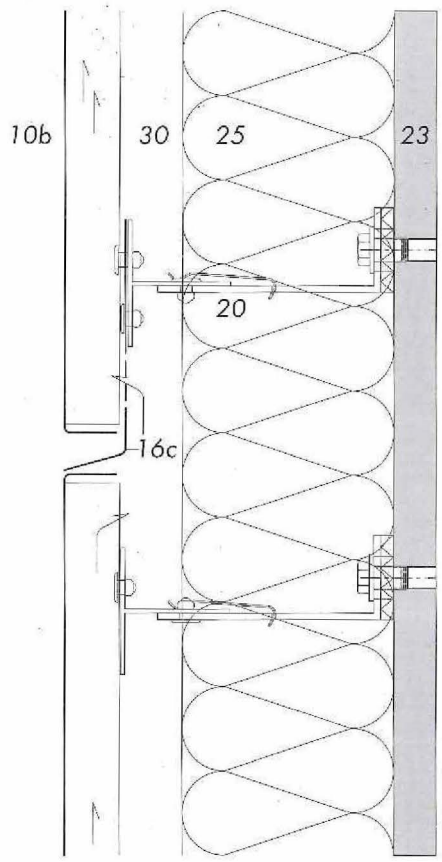
H4.3



2.10.4 Detail H4: Expansion Joint

10 RHEINZINK-Reveal Panel SF 25
- a Standard panel without boxed end
- b Standard panel with long boxed end
- c Standard panel with short boxed end

16 RHEINZINK-Building profile
- a Slave profile
- b Cornice profile
- c Joint profile, partially perforated

18 Support profile
- Made of aluminium

20 Substructure
- 2-part: wall bracket with thermal break and horizontal profile*

23 Supporting structure

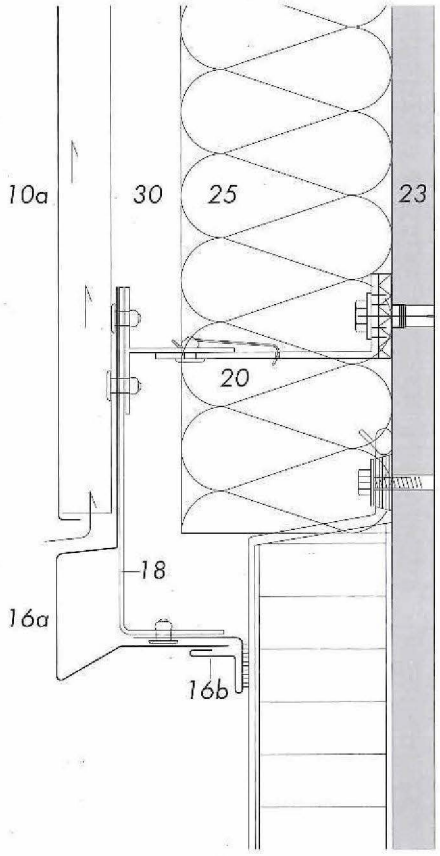
25 Thermal insulation

30 Ventilation space
- Height of ventilation space ≥ 20 mm

* Manufacturers' guidelines must be complied with

DESIGN – VERTICAL APPLICATION
DETAIL V1: BASE

V1.1



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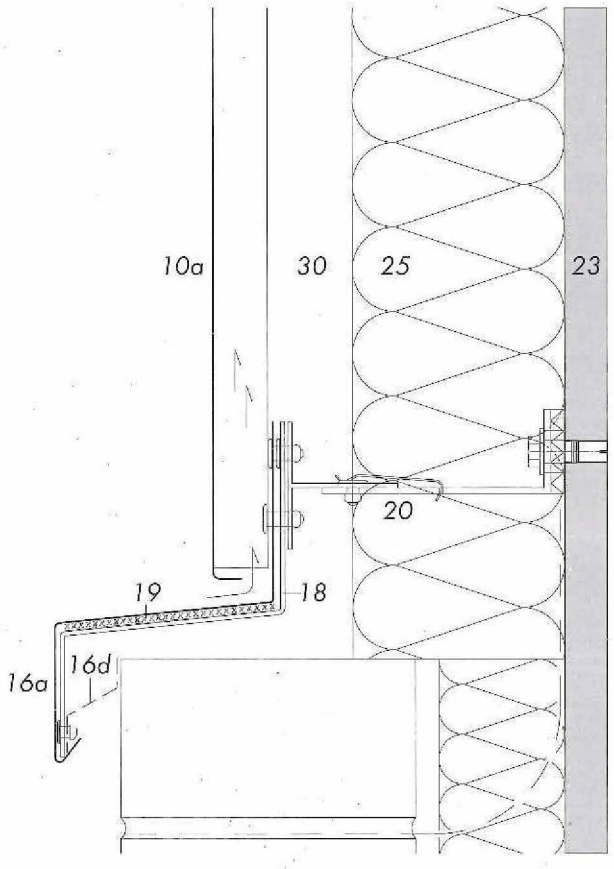

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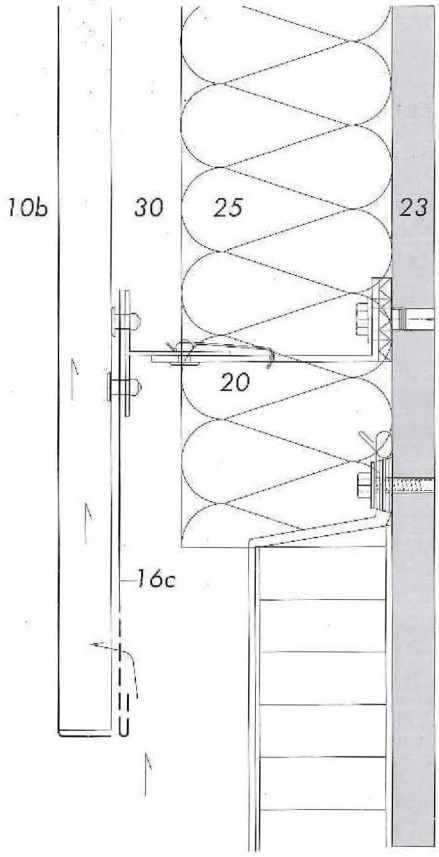
V1.3



2.10.5 Detail V1: Base

10 RHEINZINK-Reveal Panel SF 25
- a Standard panel with short boxed end
- b Standard panel with long boxed end

16 RHEINZINK-Building profile
- a Base profile
- b Receiver strip with sealant tape
- c Ventilation profile, partially perforated
- d Perforated strip

18 Support profile
- Made of aluminium

19 Seperating layer
- Structured underlay

20 Substructure
- 2-part: wall bracket with thermal break and vertikal profile*

23 Supporting structure

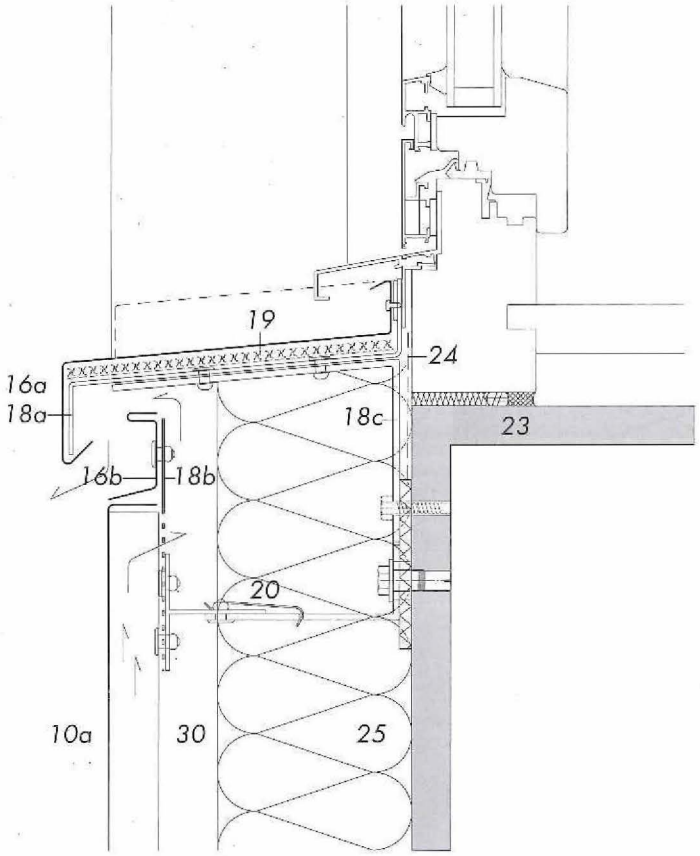
25 Thermal insulation

30 Ventilation space
- Height of ventilation space ≥ 20 mm

* Manufacturers' guidelines must be complied with

DESIGN – VERTICAL APPLICATION
DETAIL V2: WINDOWSILL

V2.1



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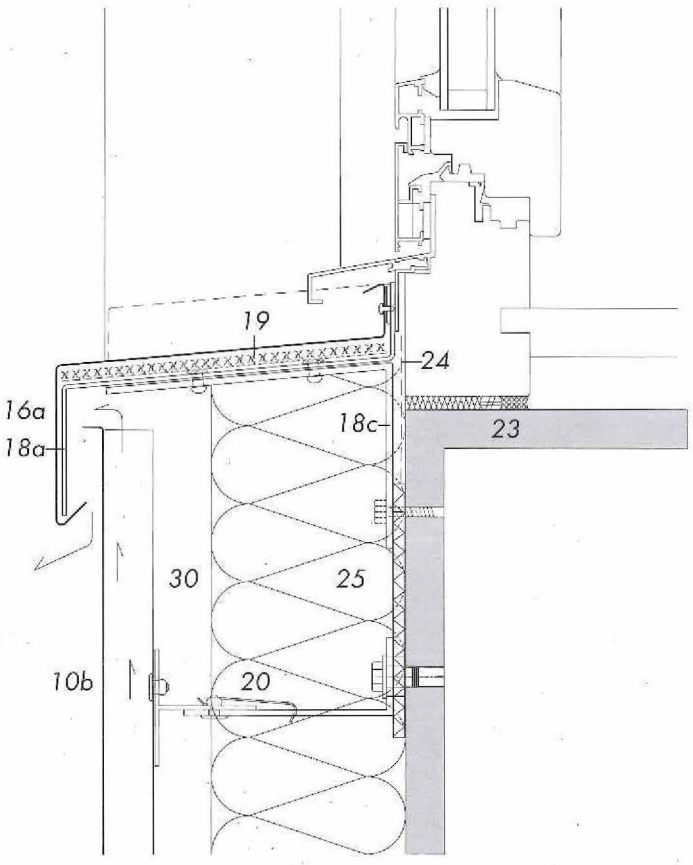

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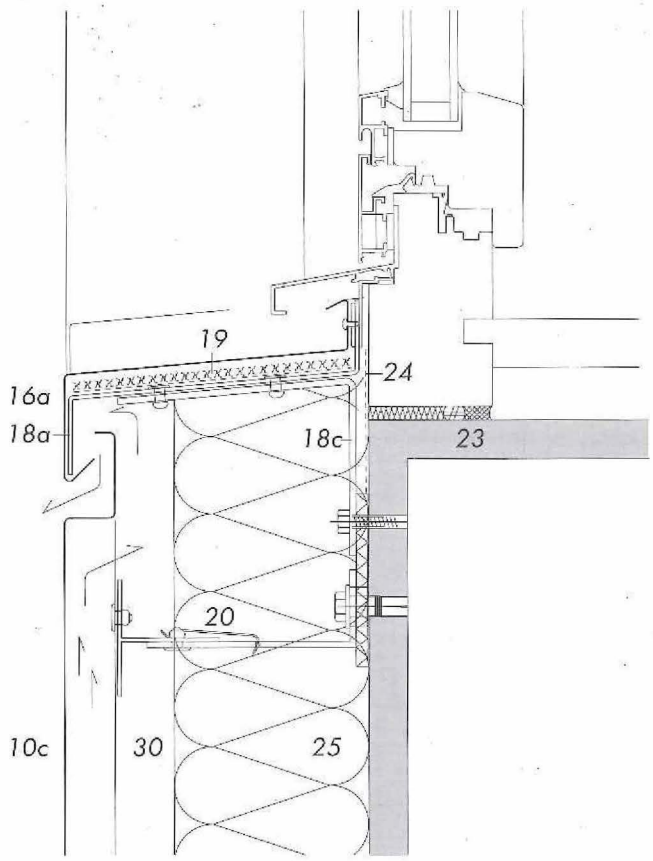
DESIGN – VERTICAL APPLICATION
DETAIL V2: WINDOWSILL

V2.3



2.10.6 Detail V2: Windowsill

10 RHEINZINK-Reveal Panel SF 25
- a Standard panel with long boxed end
- c Adapter panel with boxed end and water drip
- b Standard panel with short boxed end, folded outwards

16 RHEINZINK-Building profile
- a Windowsill profile, slope ≥ 3°
- b Termination profile

18 Support profile
- a Made of aluminium
- b Made of aluminium, partially perforated
- c Support bracket made of corrosion resistant steel with thermal break

19 Seperating layer
- Structured underlay

20 Substructure
- 2-part: wall bracket with thermal break and vertikal profile*

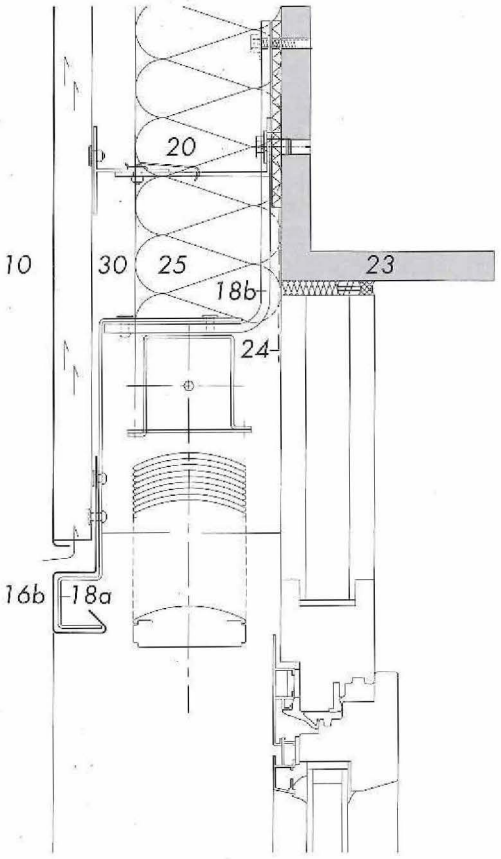
23 Supporting structure
24 Airtight sealing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

* Manufacturers' guidelines must be complied with

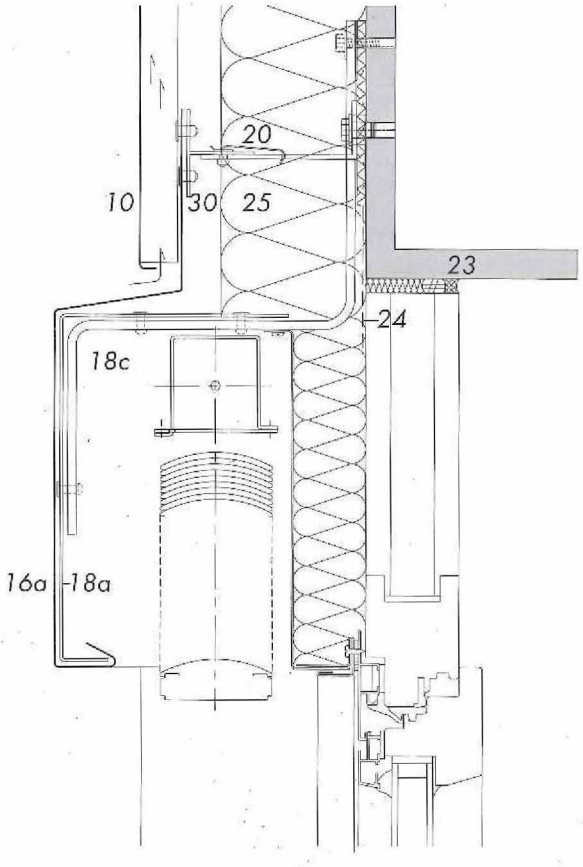
RHEINZINK

DESIGN – VERTICAL APPLICATION
DETAIL V3: WINDOW LINTEL

V3.1



V3.2



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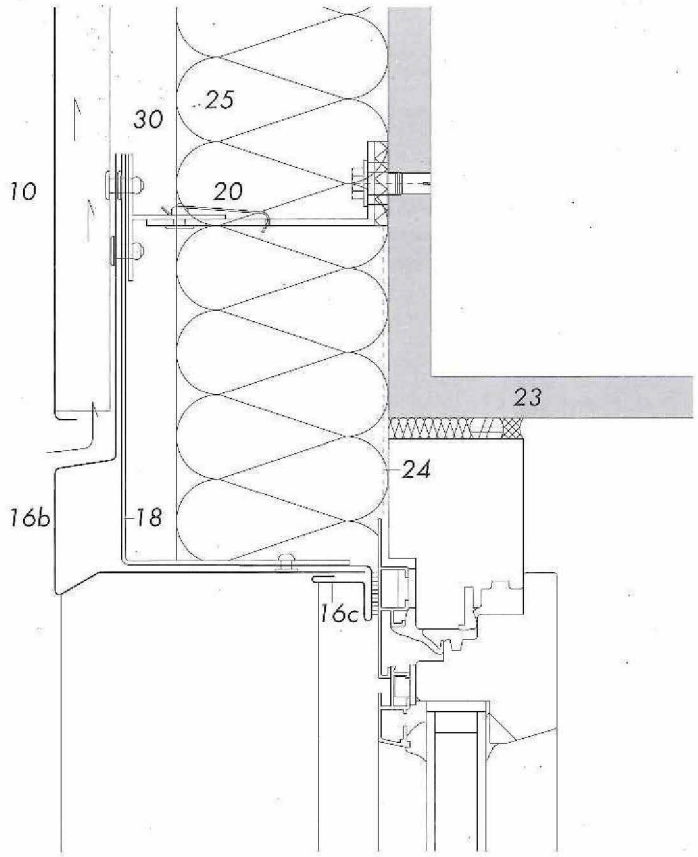
V3.3



2.10.7 Detail V3: Window lintel

10 RHEINZINK-Reveal Panel SF 25
- Standard panel with short boxed end

16 RHEINZINK-Building profile
- a Window lintel box profile
- b Window lintel profile
- c Receiver strip with sealant tape

18 Support profile
- a Made of aluminium
- b Support bracket L-shaped made of corrosion resistant steel with thermal break
- c Support bracket Z-shaped made of corrosion resistant steel with thermal break

20 Substructure
- 2-part: wall bracket with thermal break and horizontal profile*

23 Supporting structure
24 Airtight sealing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

* Manufacturers' guidelines must be complied with

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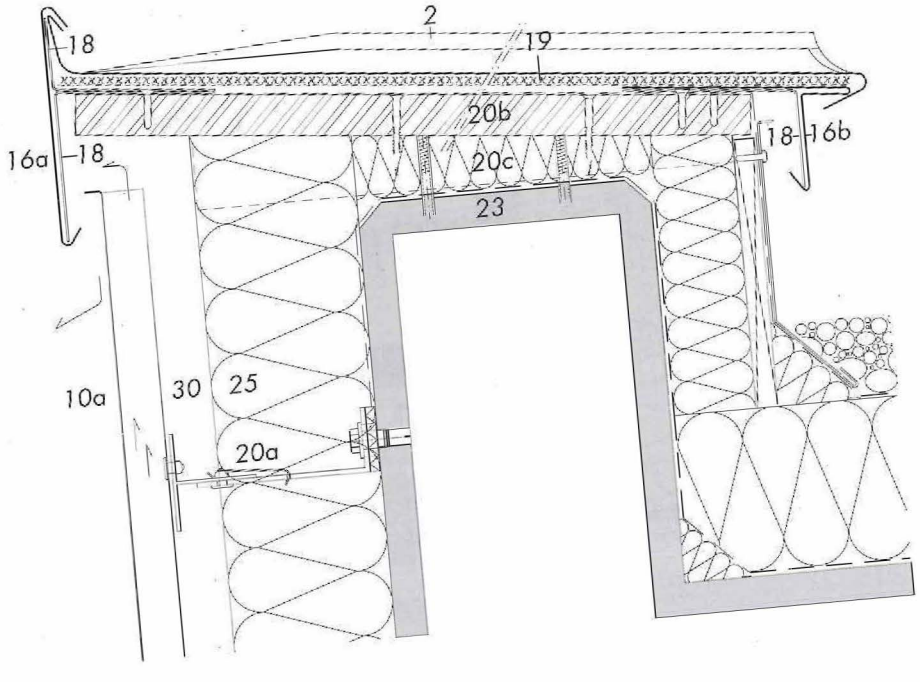
DESIGN – VERTICAL APPLICATION
DETAIL V4: TWO-PART ROOF EDGE

V4.1



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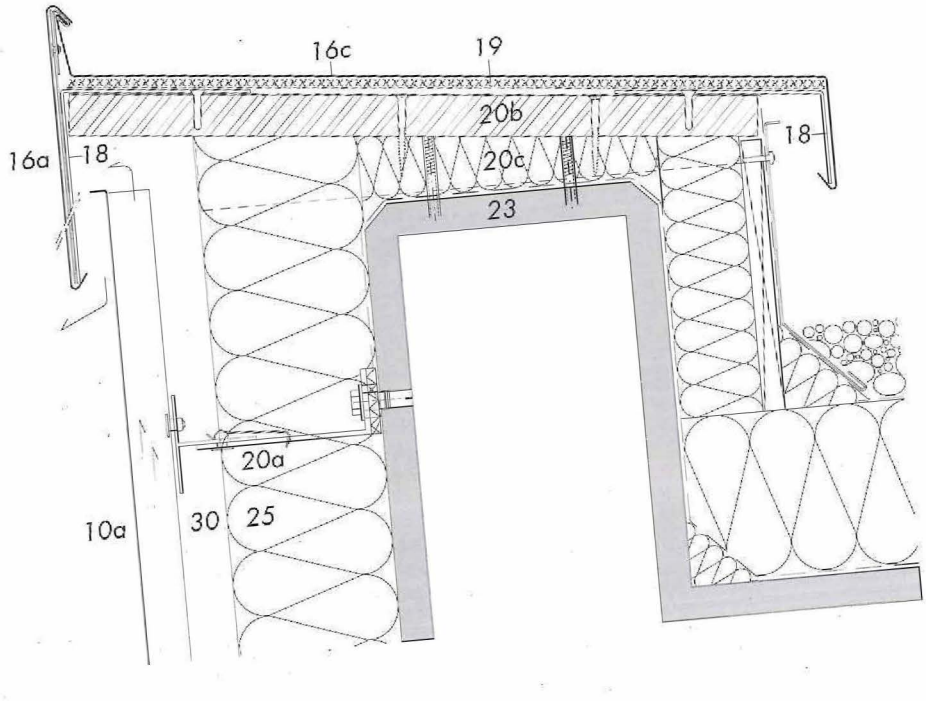

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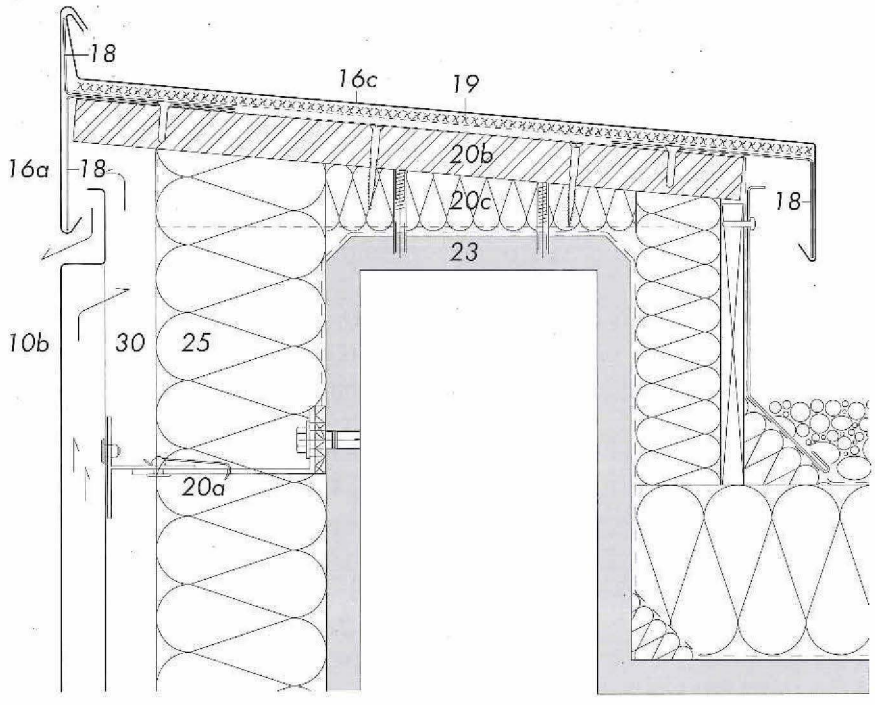
DESIGN – VERTICAL APPLICATION
DETAIL V4: TWO-PART ROOF EDGE

V4.3



2.10.8 Detail V4: Two-Part Roof Edge

2 RHEINZINK-
Double Standing Seam
10 RHEINZINK-Reveal Panel SF 25
- a Standard panel with short boxed end, folded outwards
- b Adapter panel with boxed end and water drip

16 RHEINZINK-Building profile
- a Edge profile
- b Eaves flashing
- c Wall coping

18 Support profile
- Made of aluminium

19 Seperating layer
- Structured underlay

20 Substructure
- a 2-part: wall bracket with thermal break and horizontal profile*
- b Plywood or sterling board
- c Wedged board

23 Supporting structure
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

* Manufacturers' guidelines must be complied with

SEA00014616/75
SEA00014616_0075

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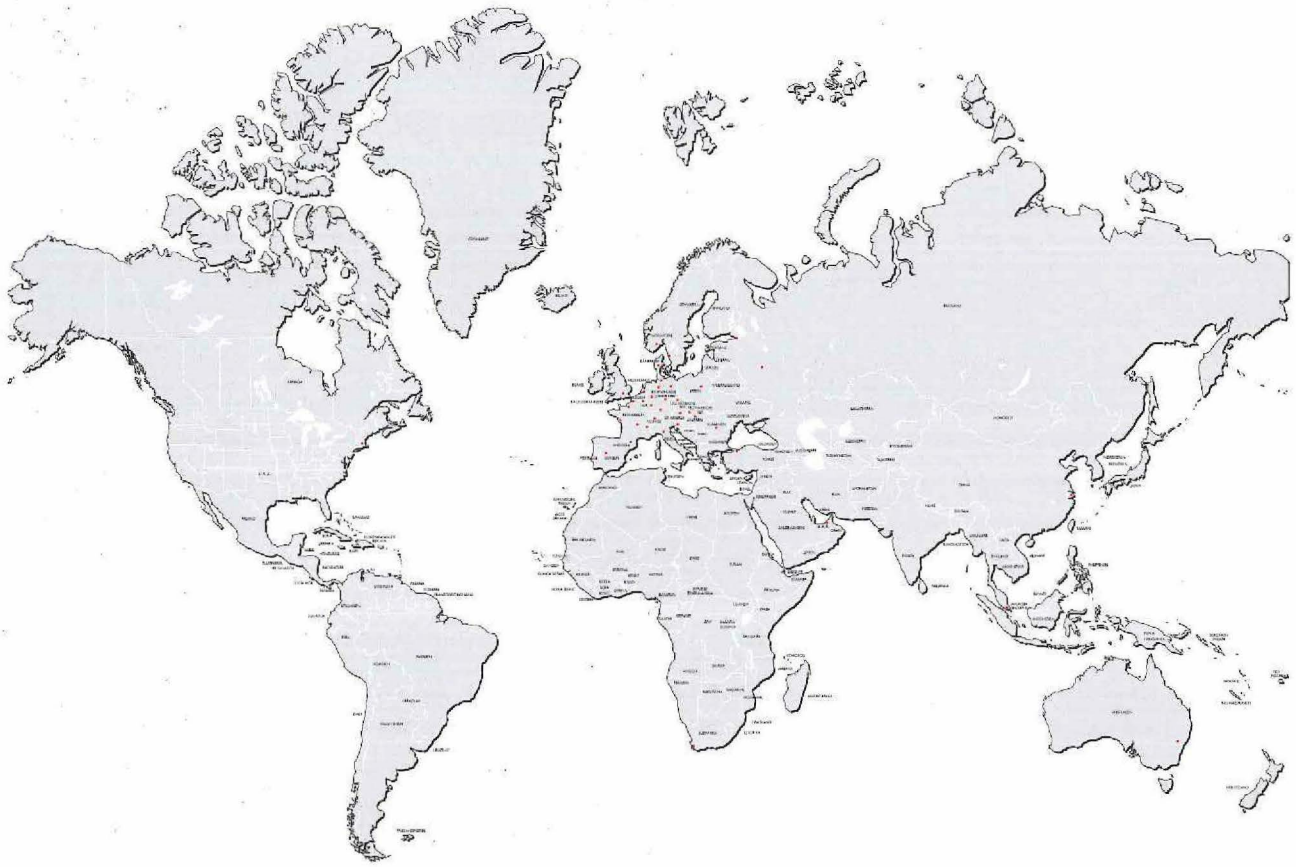
INTERNATIONAL SERVICE CENTRES
APPLICATION ENGINEERING CONSULTATION



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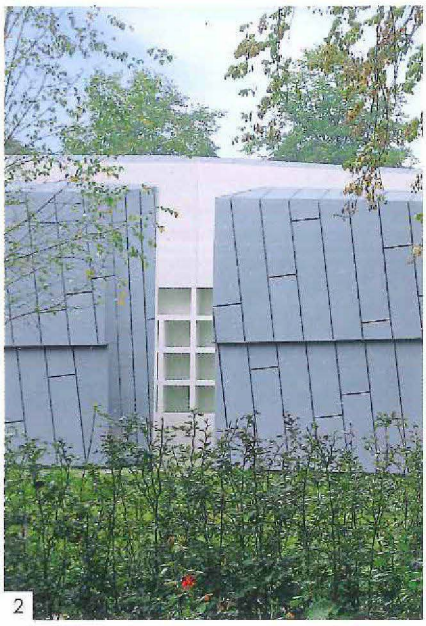

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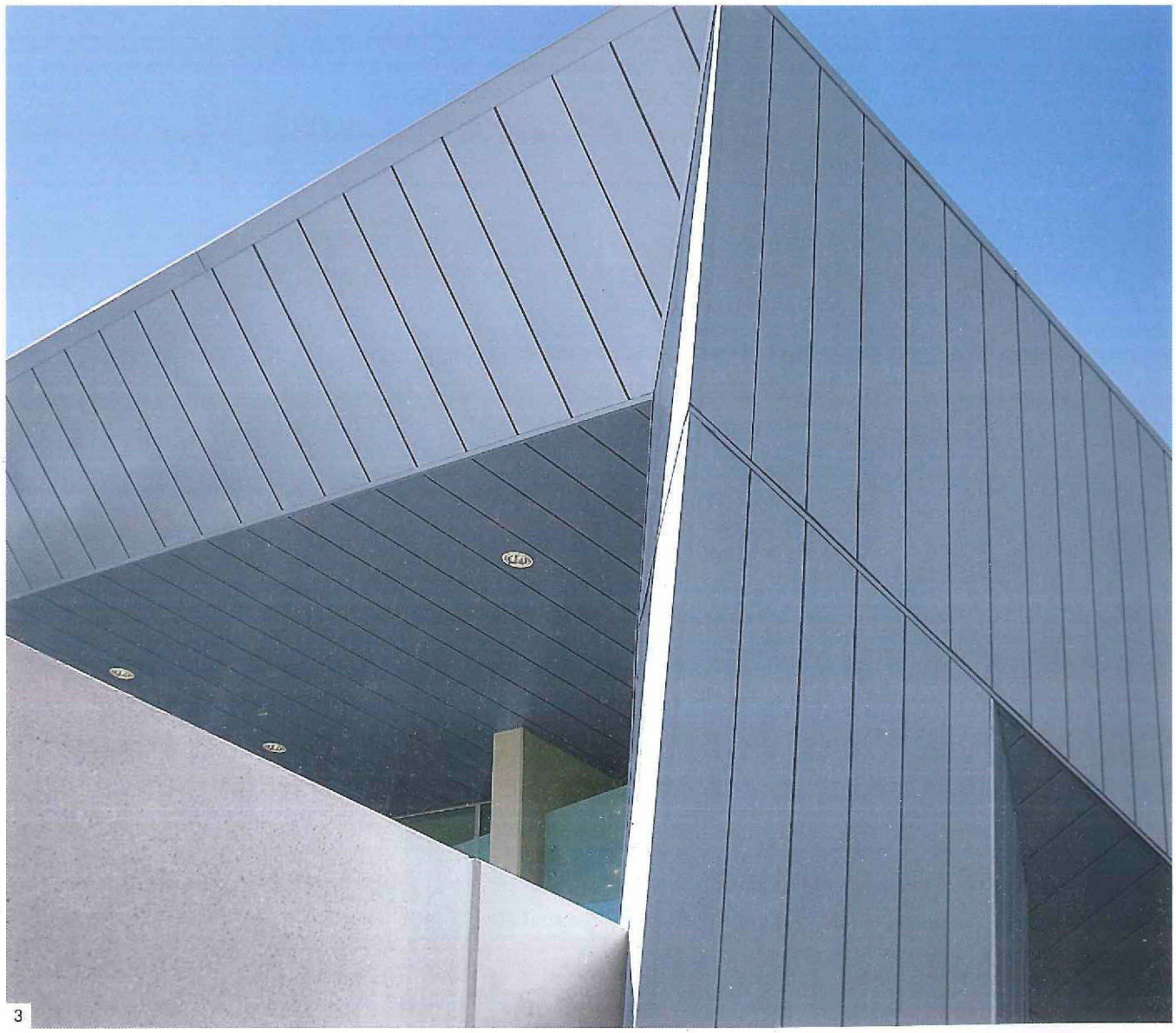
2



3

REFERENCE PROJECTS

4

5

For other project references, please see
www.rheinzink.co.uk

SEA00014616/80
SEA00014616_0080

Titel: **Universität Nottingham, Business School, Nottingham, Great Britain**
Architect: Michael Hopkins & Partners, London, Großbritannien
RHEINZINK-work implemented by:
Carlton Building Services Ltd., Bolton, Großbritannien

1. **Airport, Bydgoszcz, Polen**
Architects: Pracownia Architektoniczna Arus sp. z o.o.,
Bydgoszcz, Poland
RHEINZINK-work implemented by:
F.H.U. Budownictwa Krest, Niepołomice, Poland

2. **Columbarium, De Nieuwe Ooster Begraafplaats, Amsterdam, Netherlands**
Architect: Karres en Brands landschapsarchitecten, Hilversum, Netherlands
RHEINZINK-work implemented by:
Loodgietersbedrijf C.J. Ockeloen v.o.f., Amsterdam, Netherlands

3. **Mt. Druitt Court House, Sydney, Australia**
Architect: Perumal Pedavoli Pty Ltd., Ultimo, Australia
RHEINZINK-work implemented by:
Perumal Pedavoli Pty Ltd., Hornsby, Australia

4. **CargoLifter Werft, Briesen-Brand, Germany**
Architect: SIAT Architektur + Technik, Munich, Germany
SIAT Bauplanung und Ingenieurleistungen GmbH & Co. OHG
RHEINZINK-work implemented by:
Thale Metallbedachung Bauklempnerei, Lingen/Ems, Germany

5. **Artemis Square, Brüssel, Belgium**
Architect: De Borman + Gerard, Brussels, Belgium
RHEINZINK-work implemented by:
Platteau Dakwerken, Deurne, Belgium

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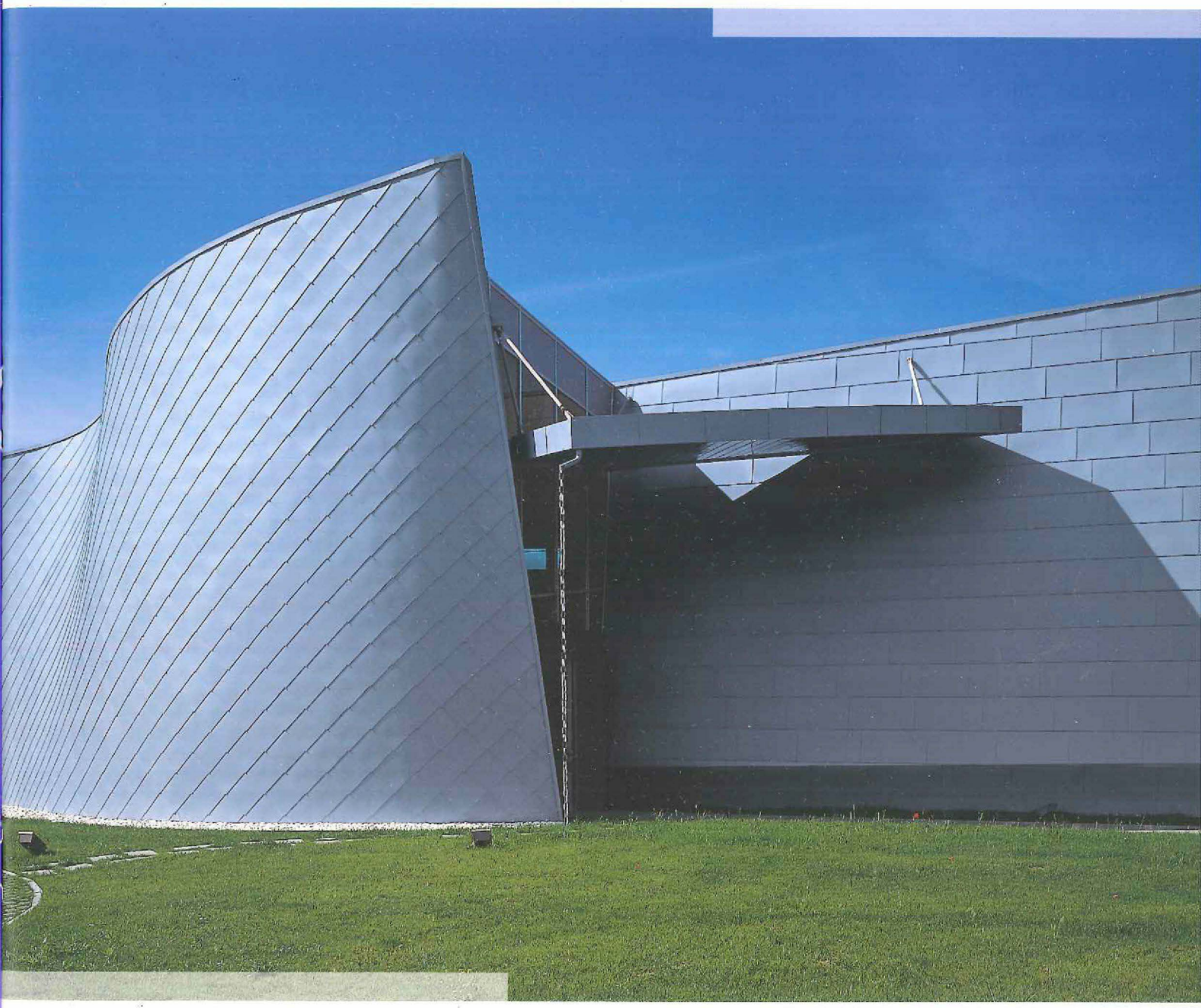
RHEINZINK®



FAÇADE CLADDING

System Solutions for Curtain Walls

SYSTEM OVERVIEW

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Foreword

This brochure is an overview of panel systems available from RHEINZINK worldwide.

This overview shall serve as a guide for planning and design, in accordance with current state-of-the art building engineering and proven development trends. We would explicitly like to point out that situations may arise, in which this type of cladding may not be used or may be restricted in its use. Therefore, the design drawings illustrated herein pertain to standard system details only. The planner must consider how the system itself, along with local and climatic conditions and structural physics will impact the project.

Compliance with application technology and standards described in this document does not preclude personal responsibility.

We reserve the right to make amendments based on developmental changes. For questions pertaining to the system, please contact our Application Engineering Department. Your suggestions are always welcome!

Datteln, March 2010

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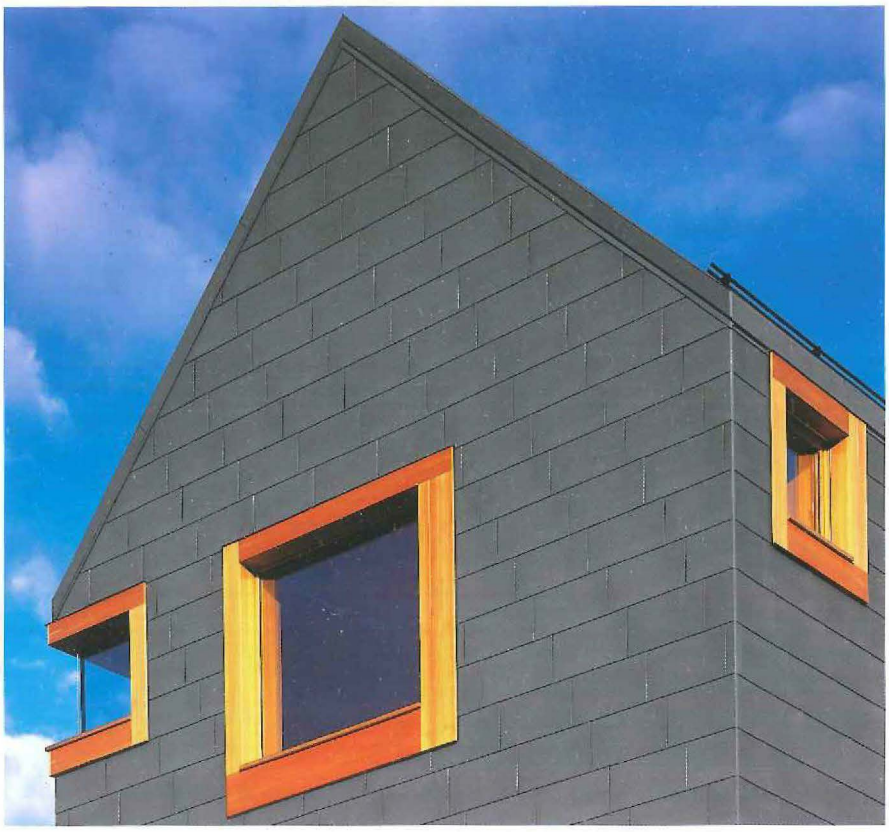
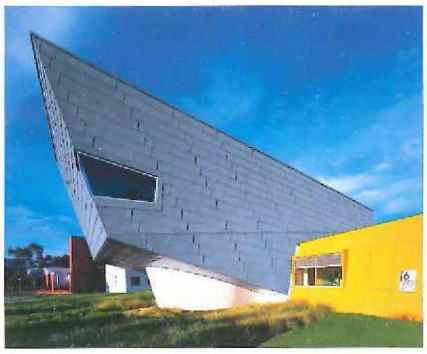


TRUMPF Sachsen GmbH, Neukirch, Germany

Terrace-shaped building, Oswaldgasse, Vienna, Austria

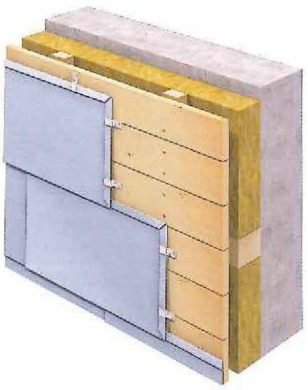


New Lecture Hall, Victoria University, Werribee Campus, Werribee, Australia

RHEINZINK-Flat-Lock Tiles

Flat-lock tiles are used primarily for large curtain wall areas. This is where the visual effect is the most impressive. By using different sizes of tile and by staggering the layout of the joints, the planner can create individual and inspirational façade designs. RHEINZINK-Flat-Lock Tiles are available in "blue-grey" and "graphite-grey" preweathered versions, as well as in the bright rolled version. The bright rolled version opens up additional design potential; natural weathering of this material enhances the nuance of colour of each individual tile, creating a very special effect. For quality assurance and optimal material usage efficiency customized production is recommended.

- **Individual tile sizes**
- **High degree of design freedom**
- **Three patinating surfaces**
- **Environmentally declared product**



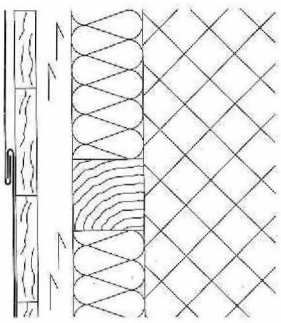


Fig. Cover Page: Operations Building, Montegranaro, Italy

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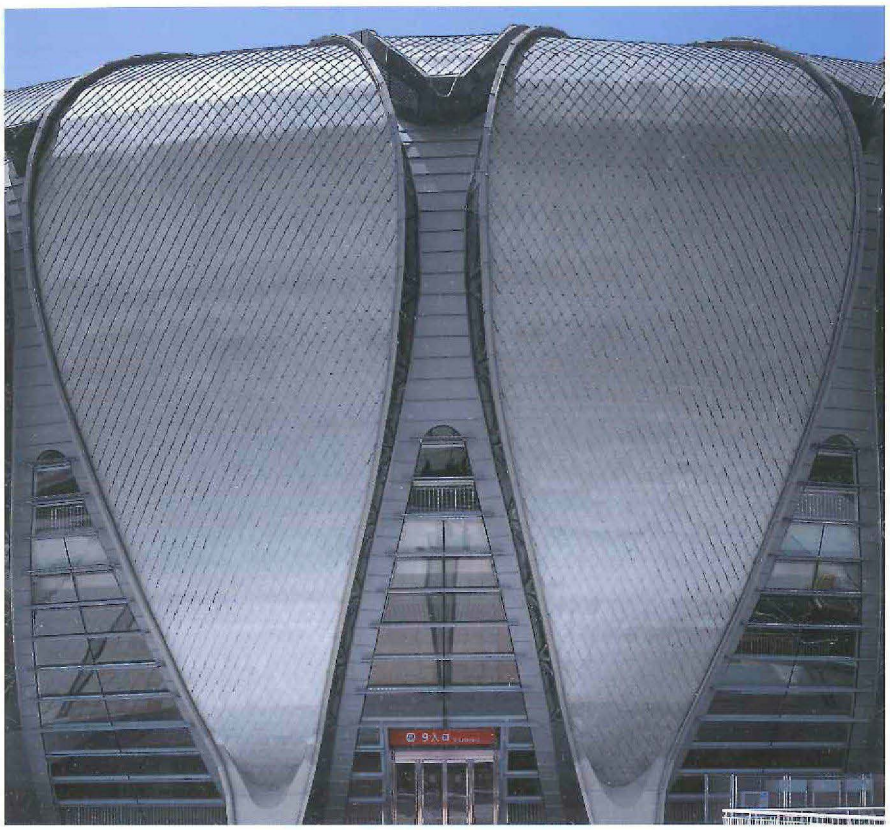


Olympic Stadium, Jinan, China

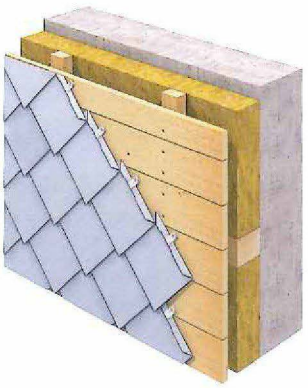
Head Offices of Berlinwasser Holding AG, Berlin, Germany

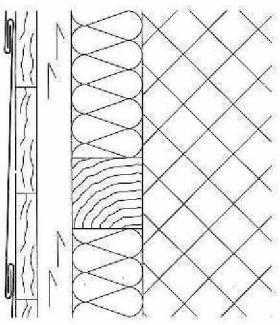
Sir Colin Campbell Building, University of Nottingham, Great Britain

RHEINZINK-Small Tiles

Square and diamond-shaped tiles make up RHEINZINK's small tile group. As with the flat lock tile these tiles have forward facing edges on the top surface and backward facing edges on the lower surface to form simple lock joints. The small format of these tiles ensure a secure and aesthetically pleasing solutions can be achieved, particularly for geometrically complicated buildings. Virtually all corners and curves can be accommodated. Dormer, chimney head and roof edges are some of the more conventional applications for small tiles.

- **Available in various sizes**
- **Flexible adaptation to building shapes**
- **Three patinating surfaces**
- **Durable and maintenance free**





RHEINZINK

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Lehmann Küchen GmbH warehouse, Rust, Germany

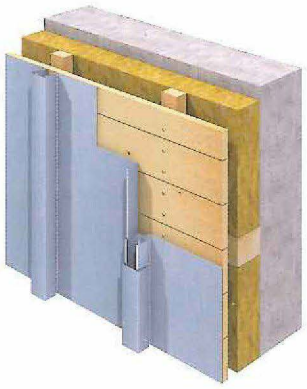
Lehmann Küchen GmbH warehouse, Rust, Germany

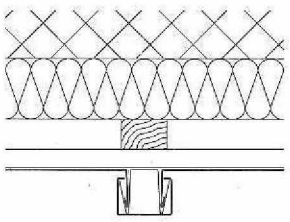
Private Residence, Smallingerland, Netherlands

RHEINZINK-"Solar PV Standing Seam" and "Solar PV Click Roll Cap"

These are two RHEINZINK-solar solutions that are perfect combinations of ecological energy production and aesthetic architecture using a conventional seaming technique:efficient thin-film modules are full-surface adhered and permanently fixed to RHEINZINK-panels. These can be installed onto roofs and façades – with concealed fasteners –using proven RHEINZINK-seaming techniques such as the double or angled standing seam and the click roll cap system. Thanks to "triple junction" technology, these systems can produce energy even through diffused light.

- **Building-integrated photovoltaic**
- **Reliable impermeability**
- **High efficiency via thin-film technology**
- **Architectural charm**





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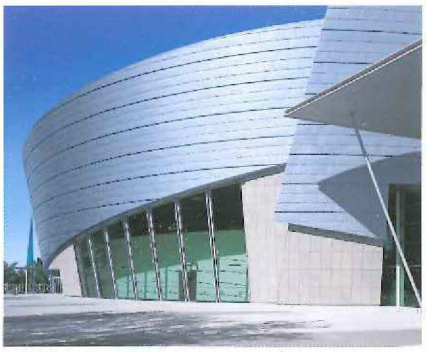
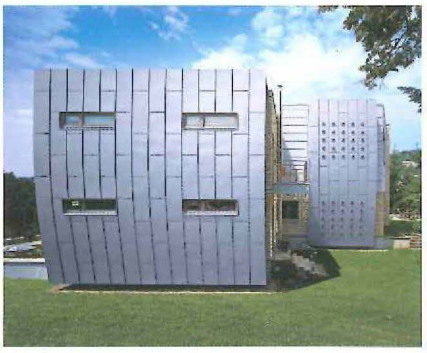
Zinkhaus, Copenhagen, Denmark



Perth Convention & Exhibition Centre, Perth, Australia

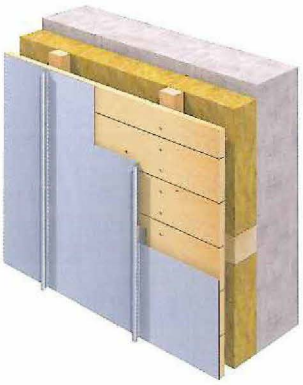


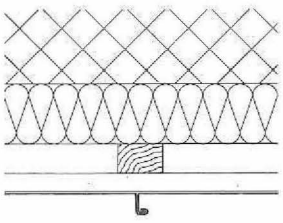
Villa, Prague, Czech Republic

RHEINZINK-Seam Technology

RHEINZINK-seam systems join individual panels longitudinally. The angled standing seam is used primarily for curtain walling. Its distinguishing feature is the bold accentuation of its seams (approx. 12 mm width). A variety of panel lengths and widths, allows even the most elaborate shapes to be realized using seam technology. The forming of the profile by machine guarantees consistency of the panel edges and closing of the seams.

- **Suitable for almost every building shape or style**
- **A variety of panel widths is available**
- **Three patinating surfaces**
- **Little or no maintenance or service required**





RHEINZINK

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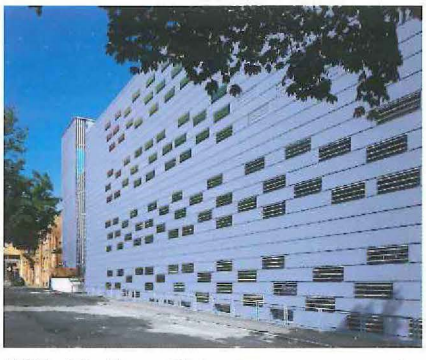
Private Residence, Cantù, Italy

Telenor, Fornebu, Norway

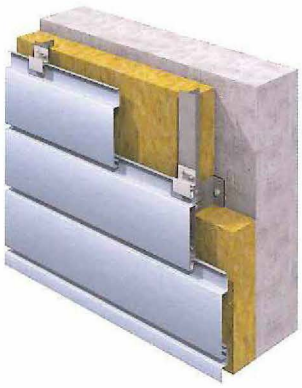


FERI, Maribor, Slovenia

RHEINZINK-Horizontal Panel System

Horizontal panels are similar to reveal panels in appearance. The panels are fabricated with flanges that interlock; they are attached indirectly via a precisely-defined 20 mm groove, using a special RHEINZINK-mounting clip. This ensures that thermal expansion can be accommodated without any difficulty.

- **Horizontal façade segmentation**
- **Panels are available in various widths**
- **Sliding fastening system**
- **Panel lengths of up to 6,0 m are available**



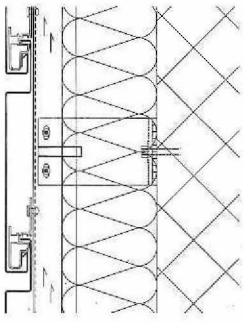


Fig. right: Private Residence, Straden, Austria

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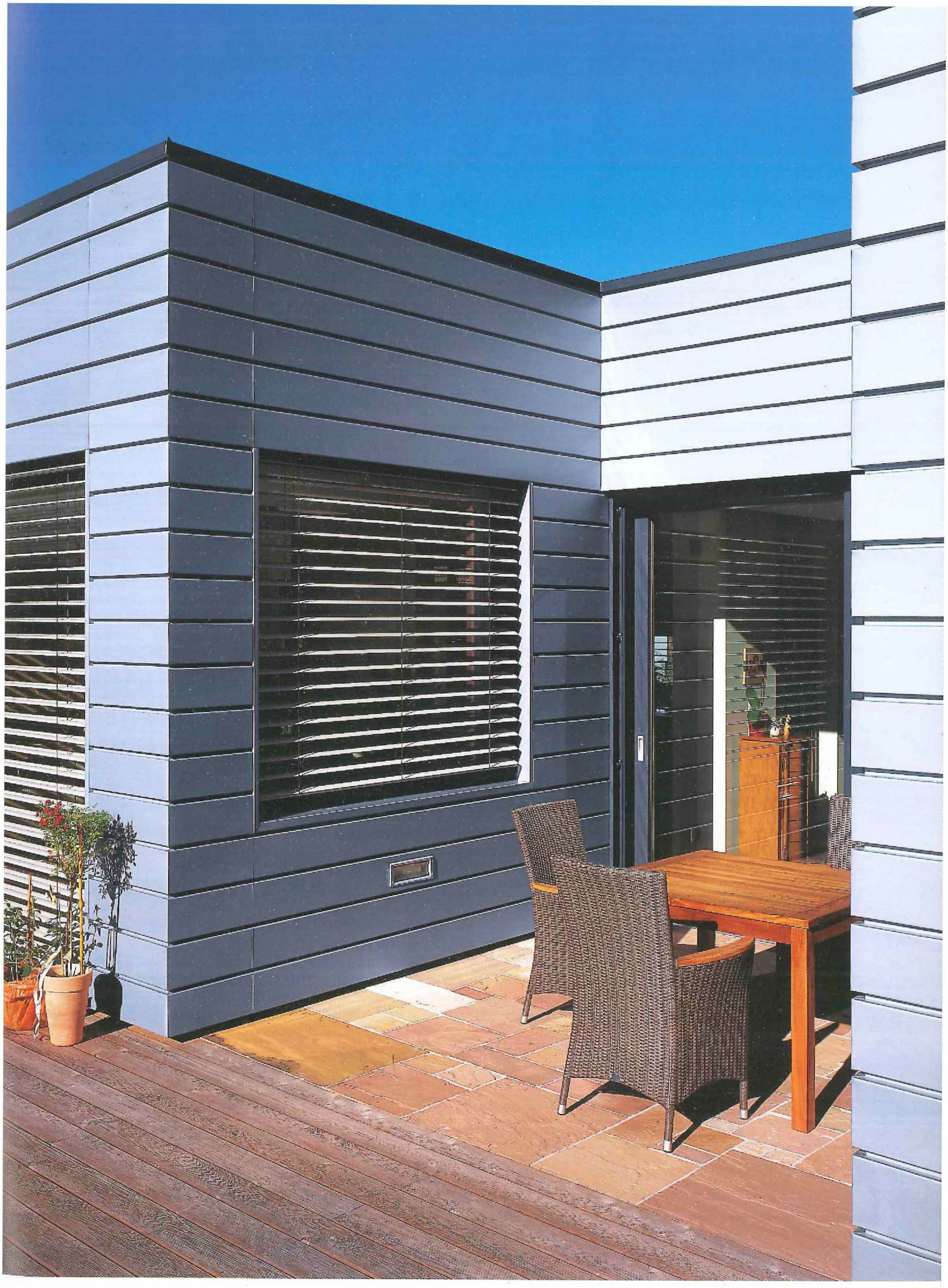


RHEINZINK®

Train Station Passageway, Uster, Switzerland

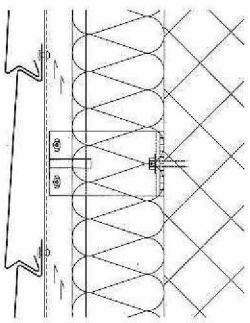
Private Residence, Empel, Netherlands

MG AVU Galerie der modernen Kunst Akademie bildender Kunst, Prague, Czech Republic

RHEINZINK-Shiplap Panel

Due to its layered characteristics and shadowless joint, the shiplap panel is a particularly unique façade cladding, reminiscent of wooden façades. When exposed to light and shade, interesting shadows and sharp contours appear because of its profile geometry. Precision profile manufacturing (in accordance with detailed planning and pre-defined panel dimensions) guarantees efficient and optimum installation on site.

- **Layered sheath look**
- **A variety of panel widths are available.**
- **Two preweathered surfaces**
- **No maintenance or painting**



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University of Nottingham, Business School, Nottingham, Great Britain

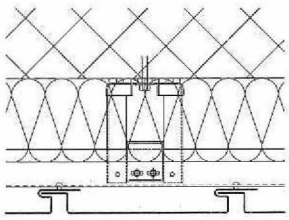
Theater am Marientor (previously: Les Misérables), Duisburg, Germany

Tropical Islands, Briesen-Brand, Germany

RHEINZINK-Reveal Panels

The benefit of the reveal panel is the choice of bay widths (200-333 mm) and variable joint widths of 0-30 mm. With the flexibility of vertical and diagonal installation, the reveal panel offers the architect an exceptional amount of freedom in implementing their design ideas. Configured panels with an extremely wide range of shapes can be realized. Therefore, permanent quality solutions can be implemented very quickly when it comes to renovations or retrofitting installations.

- **A panel system, with different visual effects**
- **Choice of reveal and panel widths**
- **Preweathered surface quality**
- **Environmentally declared product**



RHEINZINK®

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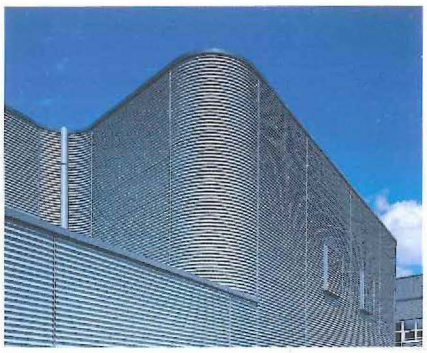
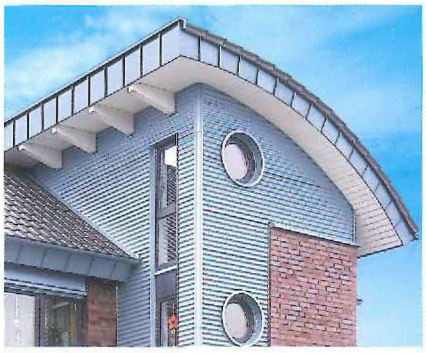
Private Residence, Berlin, Germany



Multisport Complex, Walferdange, Luxembourg

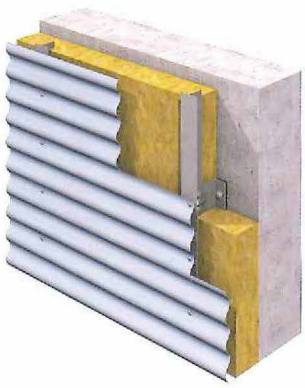


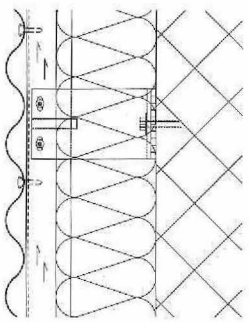
Private Residence, Datteln, Germany

RHEINZINK-Corrugated Profiles

The fluid design of the conventional sine wave gives the corrugated profile a soft appearance. Various types of installation – horizontal, vertical or diagonal – permit detailed panelization or clearly visible segmentation of the façade image, panel by panel. The soft interplay of light and shadow creates a vitality on these large surfaces that is both aesthetically interesting and appealing.

- **Flexible application as a result of large formats**
- **Accentuated façade design**
- **Preweathered surface quality**
- **Diverse corrugated formats upon request**





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Verbier Gondola Station, Verbier, Switzerland

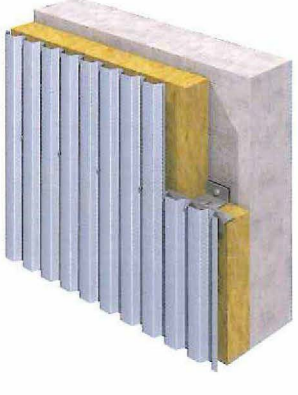
Rosenberg School, Neuhausen, Switzerland

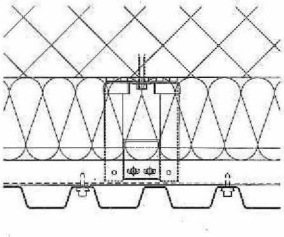
Verbier Gondola Station, Verbier, Switzerland

RHEINZINK-Trapezoidal Profiles

The sharp-edged rib-shaped design of the trapezoidal profile conveys a cool language of form whether arranged horizontally, vertically or diagonally. The strong contrast which is produced when light strikes it, is of greater intensity than in the corrugated profile, which is somewhat subdued. The option of choosing between A or B as the visible side, makes this a façade cladding with two faces.

- **Flexible installation by using large formats**
- **Clean design lines**
- **Preweathered surface quality**
- **Diverse bead formats upon request**





RHEINZINK

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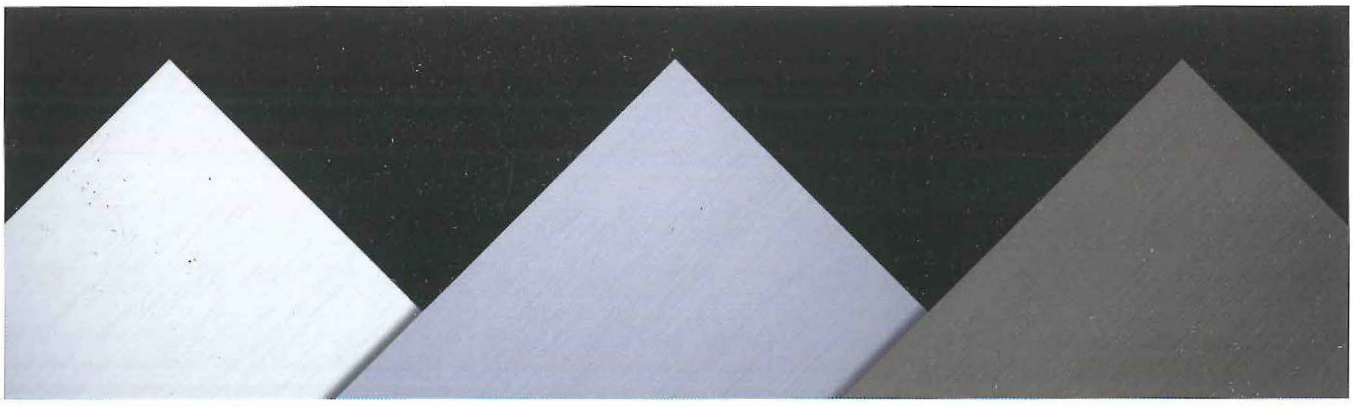

RHEINZINK-bright rolled *RHEINZINK-"preweathered pro blue-grey"* *RHEINZINK-"preweathered pro graphite-grey"*

Three natural surfaces

The ecological Material

Within the realm of sustainable building, the environmental compatibility of building products is becoming increasingly important. This, in turn, influences the decision-making of building owners and planners when selecting materials. Apart from durability, the focus is on the amount of energy used during production, the rate of recycling and the energy savings attained as a result of the high rate of recycling.

Durable and sustainable

Traditionally, environmental compatibility has been extremely important to RHEINZINK. Ecological standards are set during raw material extraction and processing: energy consumption is extremely low. Modern production equipment reduces emissions to a minimum. RHEINZINK is 100% recycleable; a lifespan of several decades, also sets very high standards. Apart from exemplary ecological properties, the "self-healing" material surface is telling: the protective, aesthetic patina which develops through weathering, naturally evens out any scratches or other smaller damage, thereby guaranteeing maintenance-free lifespan lasting decades. This applies equally to the bright rolled and "preweathered pro" RHEINZINK surfaces. Once the roof, façade cladding or roof drainage system has run its course, RHEINZINK is still very valuable: as the energy expended for recyling is only about 5% of the primary energy content and, because the goal is to get up to 60% of the raw material price for high-purity zinc scrap metal, to decide for RHEINZINK is to decide in favour of future generations. Thanks to the high rate of recycling – over 95% – a further reduction of energy requirements for primarily material is achieved.

In the RHEINZINK manufacturing process, any production scrap is fed back into the smelting process without any additional pre-treatment.

Lasting Values

With a service life lasting several generations, RHEINZINK sets very high standards. The 30-year quality guarantee underscores the longevity of the 100% recycleable material. Now that adds to the security and dependability of the material.

QUALITY ZINC Certificate

TÜV Certificate DIN EN ISO 9001:2008 and ISO 14001:2004

IGEF Certificate

ECO Environmental Declaration

Please see www.rheinzink.com and www.follow-your-inspiration.com for many other exemplary solutions for working creatively with RHEINZINK. We would also be pleased to send you detailed information on the diverse RHEINZINK-Program!

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RHEINZINK®

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www.rheinzink.co.uk

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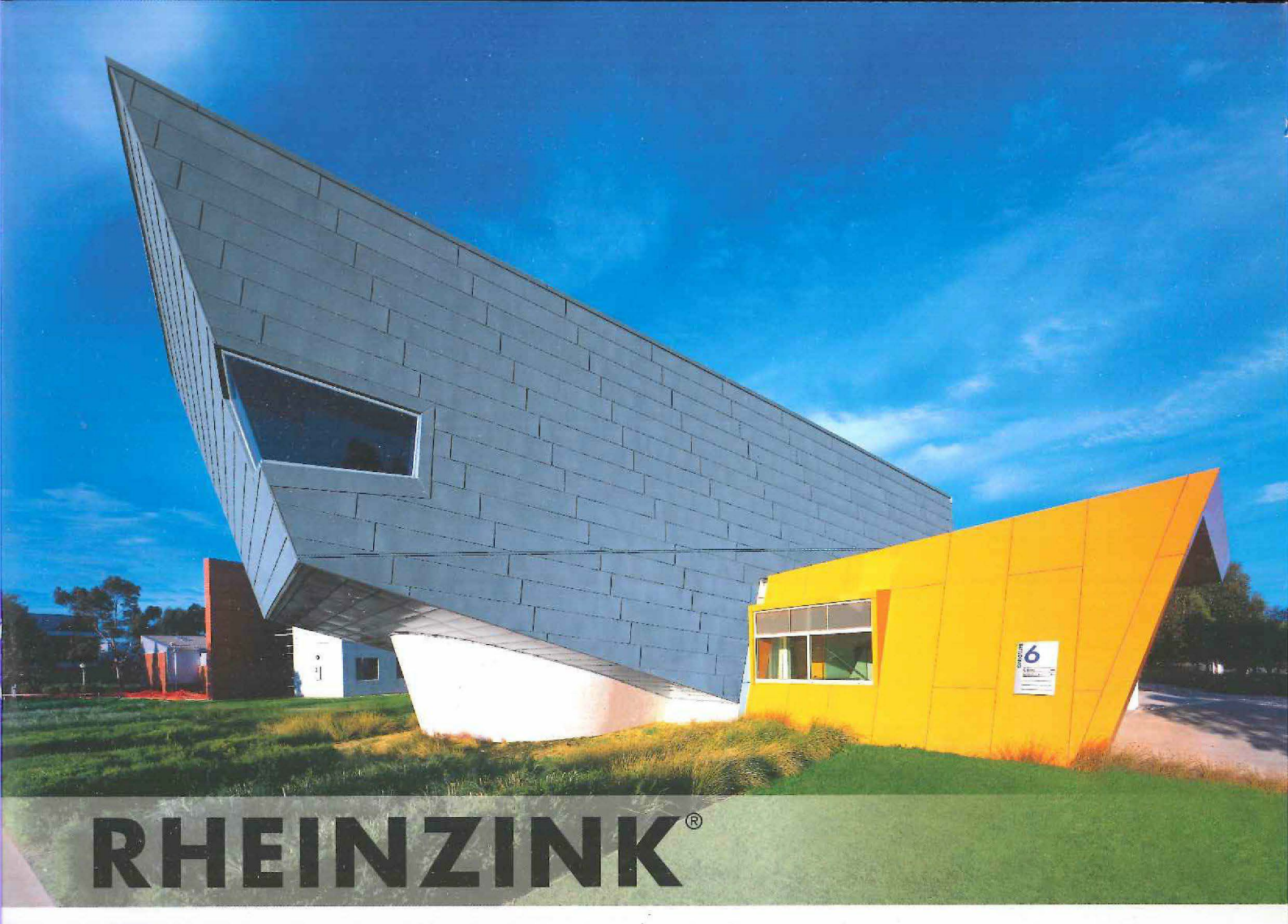

RHEINZINK®

RHEINZINK®-PROFILE TECHNIQUE FOR FACADES

FLAT-LOCK TILES

DESIGN AND APPLICATION

RHEINZINK

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Foreword

This installation manual – RHEINZINK® System Techniques for Flat-lock Tile Façades – is based on practical experience and our current status of knowledge in research and development.

The manual describes a general application of RHEINZINK tiles for façade cladding worldwide. It is the basis for proper planning and application technology in standard cases. However, there could be instances, in which this type of cladding can only be used in a restricted manner or not at all. The detail drawings in the manual describe the standard details of the systems.

In consideration of the current status of structural engineering and definite development trends, this manual provides a guideline for the designer as well as for the company executing the work. The planner must take into account the impact of the system application, the local and climatic conditions and the demands in terms of structural physics on the respective building. Using these guidelines does not preclude independent thinking and responsibility. We reserve the right to undertake changes, which result from further development of the systems.

Should you have any questions with respect to these systems, please contact our Department of Application Engineering. We welcome any suggestions you may have with respect to our products.

Datteln, September 2008

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RHEINZINK® – THE MATERIAL

1. RHEINZINK® Material

1.1 Alloy and quality

According to DIN EN 988, RHEINZINK® material is titanium zinc. RHEINZINK®-alloy consists of electrolytic high-grade fine zinc with a purity of 99.995 %, conforming to DIN EN 1179. The alloy has exact percentages of copper and titanium.
RHEINZINK®-products are certified according to DIN EN ISO 9001:2000 and are subject to voluntary testing by TÜV Rheinland Group (the relevant local inspection and monitoring body) according to the stringent requirements of the Quality Zinc Criteria Catalogue *(available upon request)*.

Ecological relevance
RHEINZINK® is a natural material, which meets today's strict ecological requirements in many areas. Environmental protection is evident in the production, transportation and installation of this material. State-of-the art facilities, well thought-out logistics and favourable processing properties attest to this.
Environmentally conscious handling is documented through the adoption of ISO 14001, the Environmental Management System, tested and certified by the TÜV Rheinland Group.
Other significant aspects of the overall ecological assessment of zinc are:

- **Natural material**
- **Low energy requirement**
- **Durability**
- **An established cycle for valuable resources**
- **High percentage of recycling**

Other significant properties of zinc are:

- **Vital trace element**
- **Extensive resources**

RHEINZINK® has been declared as an environmentally sound building product according to ISO 14025 type III by the Institute Construction and Environment. The environmental product declaration includes the entire life cycle of RHEINZINK products, from raw material extraction to production and use phase, right up to the end-of-life stage and recycling. An integral part of the environmental product declaration is a life cycle assessment (LCA) according to ISO 14040 (certificate available upon request).

RHEINZINK® provides protection against electromagnetic radiation
There is a very controversial discussion in the public domain surrounding electromagnetic radiation; within this context, the International Society for Electro-Smog Research (IGEF e.V.) has analyzed and determined the protective properties of RHEINZINK®. The result: more than 99 % of electromagnetic radiation are screened off by RHEINZINK®. Biological tests on humans confirm this and indicate a harmonizing effect on heart, circulation and nervous system, especially when grounded, and a relaxing effect on the whole body.

Guarantee
RHEINZINK offers a 30-year guarantee on it's material – This is the longest guarantee allowed by German law.

1.2 Material properties

- Density (spec. weight) 7,2 g/cm³
- Melting point 418 °C
- Recrystallization temperature > 300 °C
- Coefficient of thermal expansion (longitudinal): 2,2 mm/m x 100 K
- Coefficient of thermal expansion (transversal): 1,7 mm/m x 100 K
- Modulus of elasticity ≥ 80000 N/mm²
- Magnetic properties: non- magnetic
- Combustibility: non- combustible

Mechanical properties
(longitudinal)

RHEINZINK® bright rolled, RHEINZINK® "preweathered pro blue-grey":

- Yield strength ($Rp_{0,2}$): > 110 N/mm²
- Tensile strength (Rm): > 150 N/mm²
- Total elongation (A 50): ≥ 40 %
- Vickers hardness (HV 3): ≥ 40

RHEINZINK® "preweathered pro graphite-grey":

- Yield strength ($Rp_{0,2}$): ≥ 130 N/mm²
- Tensile strength (Rm): ≥ 170 N/mm²
- Total elongation (A 50): ≥ 60 %
- Vickers hardness (HV 3): ≥ 45

Material thickness (mm)	Weight (kg/m²)
0.70	5.04
0.80	5.76
1.00	7.20

RHEINZINK®-Weight according to material thickness in kg/m² (numbers have been rounded)

* *recognized environmental symbol for building products put out by the Environmental Agency*

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1.3 RHEINZINK®-"preweathered pro blue-grey", "preweathered pro graphite-grey" and bright rolled:

Many years ago, RHEINZINK developed the "preweathered pro blue-grey" finish and, as of 2003, the "preweathered pro graphite-grey" finish, to be used specifically for façades, where a "finished look" of the RHEINZINK®-surface is required when the product is delivered.
By using a process, which is unique worldwide, it is possible to change the surface so that it looks very much like a naturally weathered surface – both in colour and in structure – without impairing the process capability nor the natural formation of the protective layer.
Insofar as possible, preweathering the material reduces the appearance of surface reflections, which are typical for thin sheet metal (the appearance of oil canning).
In 1988, a large-scale production facility was put into operation, in which coils of up to 1000 mm wide (blue-grey and bright rolled) or 700 mm (graphite-grey) are cleaned and scoured (followed by the pickling of the surface).
This process results in an even colour, which, however, cannot be compared to RAL-colour.
By undergoing a new organic surface treatment, this material, which is 100 % recyclable, is protected, for the most part, from processing traces such as fingerprints. It also provides better protection during storage and transportation.

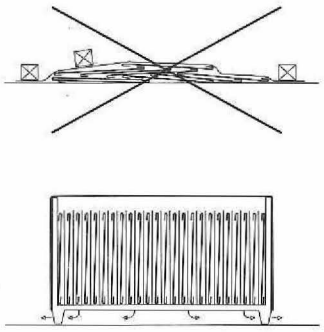
Recommendation:
Oil-free cloth gloves should be used during processing and handling.

Generally speaking, in order to eliminate the possibility of visual disparities, material should be ordered from the same batch for a specific project.
Surface disparities are purely visual and, as a rule, disappear bit by bit as the patina forms.

In order to protect the surface during transportation, storage and installation as well as from negative influences during construction, the façade systems are provided with a thin strippable film. **This is a one-sided protective adhesive film, which should be removed at the end of each working day, immediately following installation.**

1.4 Storage and transportation

Always store and transport RHEINZINK®-products in a dry, well-ventilated area.



Storage and transportation of tiles (schematic)

Note:
For optimum storage on the construction site, please ask construction management for a dry, well-ventilated space or use containers.
Do not place cover sheets directly on the material.

1.5 Surfaces

RHEINZINK®-façades do not require cleaning and maintenance. As a result of natural weathering, the façade will get slightly darker with time.

1.6 Structural physics

- Weather protection
- Moisture regulation
- Thermal economy
- Rear ventilation
- Sound proofing/fire protection

The rear-ventilated façade is a multi-layered system, which, when designed properly, guarantees permanent functional capability.
By functional capability, we mean that all requirements pertaining to structural physics are met. This is described in detail below.

By separating the rain screen façade from the thermal insulation and supporting structure, the building is protected from the weather.

The supporting outer walls and the insulation remain dry and thus fully functional. Even when driving rain penetrates open joints, it is quickly dried out as a result of the air circulation in the ventilation space.

The bracket-mounted rear-ventilated façade protects the components from severe temperature influence. Heat loss in the winter and too much heat gain in the summer are prevented.

Thermal bridges can be reduced considerably.

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In the case of rounded parapets and dormer girders, the substructure and thermal insulation should be protected from penetrating moisture with a suitable layer.

1.7 Windproofing

This does not apply to the rear-ventilated façade, as this component itself cannot be windproof.
The building must be windproof before the rear-ventilated façade is installed. A solid brick or concrete wall will ensure that the building is windproof. Penetrations (e.g. windows, ventilation pipes, etc.) must be sealed from the building component to the supporting structure.
In the case of a skeleton construction, the wall surface must also be sealed.
If the building envelope is improperly sealed (wind suction, wind pressure), there is a high degree of ventilation/ energy loss, which, along with drafts, creates unpleasant room temperature.
Dew or condensation can be expected on the leeward side of the building.
Air circulation in the room should be provided through air conditioning or by opening the windows.

1.8 Weather protection

Rear-ventilated façade cladding protects the supporting structure, the water-proofed thermal façade insulation, and the substructure, from the weather.
Bracket-mounted rear-ventilated façades provide a high degree of protection from driving rain.
Because of the physical structure, it is impossible for the rain or capillary water transfer to reach the insulating layers. Furthermore, moisture can always be drawn out through the ventilation space. This allows the insulating layers to dry out quickly, without impeding thermal insulation.

1.9 Moisture

Rear-ventilated façade cladding provides protection from driving rain and moisture. Moisture penetration as a result of diffusion does not occur in the rear-ventilated façade.
When the supporting structure is windproof, the diffusion current density is too small to cause the dew point temperature to drop.

1.10 Thermal economy

In order to understand the thermal economy of the rear-ventilated façade, we must first consider the various heat flow rates, as well as the air exchange between the rear-ventilation space and the outside air, separately, in terms of structural physics.

1.10.1 Thermal insulation
In the winter, heat flow from the inside to the outside is referred to as a heat transfer co-efficient (U-value).
The smaller the value, the smaller the quantity of heat escaping to the outside. The U-value is determined by the heat conductivity of the thermal insulation and insulation thickness.
The high-grade thermal insulation is a contribution to environmental protection and pays for itself in a relatively short period of time through low heating costs.

1.10.2 Summer thermal insulation
Summer thermal insulation should provide comfort: The amount of heat flowing from the outside to the inside should remain as small as possible. Proper thermal insulation, as well as a certain mass in the construction itself, will help to achieve this objective.
The advantage of a bracket-mounted, rear-ventilated façade, is that a large portion of the heat which streams onto the cladding is diverted through convective air exchange.

1.10.3 Thermal bridges
Thermal bridges are elements of the building envelope, that have high thermal conductivity (have high U-values) and are continuous from the warm side to the cold side of the thermal insulation.
Apart from general design-dependent thermal bridges of a building, e.g. protruding balconies, the installation of the substructure must be taken into account in the case of a rear-ventilated façade.
Thermal bridges can be reduced significantly by installing an insulating strip between the supporting structure and the substructure (Thermostopp).
Proper installation of the insulation reduces the formation of thermal bridges.

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1.11 Fire protection

Metal façades with a metal substructure and appropriate fasteners meet the highest requirements for non-combustibility (Building Material Class A1, DIN 4102). In the case of bracket-mounted, rear-ventilated façades, it may be necessary to install firestops.

1.12 Rear-ventilation

The free ventilation cavity between the façade cladding and the layer behind it must be at least 20 mm. Building tolerances and the slant of a building must be taken into account. In some places, this rear-ventilation space may be reduced locally up to 5 mm – e.g. by means of the substructure or the unevenness of the walls.

1.12.1 Air intake and exhaust openings

The rear-ventilation space requires air intake and exhaust openings. These openings must be designed so that their functionality is guaranteed for the lifetime of the building. Their functionality may not be hindered through dirt or other external influences. The openings are located at the lowest and highest point of the façade cladding, as well as in windowsill and window lintel areas, and penetrations. In the case of higher, multi-storey buildings, additional air intake and exhaust openings should be provided (e.g. at each floor).

1.13 Soundproofing

To prove that a façade design is soundproof, the entire wall structure, as well as each building component (windows, etc.) must be defined. The use of proper static fasteners will prevent any potential noise development as a result of the cladding.

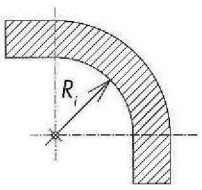
1.14 Processing

Bending radii

Zinc and its alloys are anisotropic, which means they have different properties parallel and across to the rolling direction.

The mechanical effects of this anisotropy is reduced to such a degree with RHEINZINK® through the alloys and the rolling process, that RHEINZINK®, independent of the direction of rolling, can be folded at 180° without cracking. When processing in order to manufacture a cold-rolled or pressed profile, it is recommended that the minimum radii be complied with (see Table).

Material thickness	Bending radius R_i Min.
0.70 mm	1.23 mm
0.80 mm	1.40 mm
1.00 mm	1.75 mm



Recommended bending radii (inner radius) for RHEINZINK®

1.15 Other applicable standards and guidelines

All trades must adhere to applicable DIN EN-/DIN-standards.
Guidelines for the design of metal roofs/outer wall cladding and sheet metal work. Government regulations, building codes.

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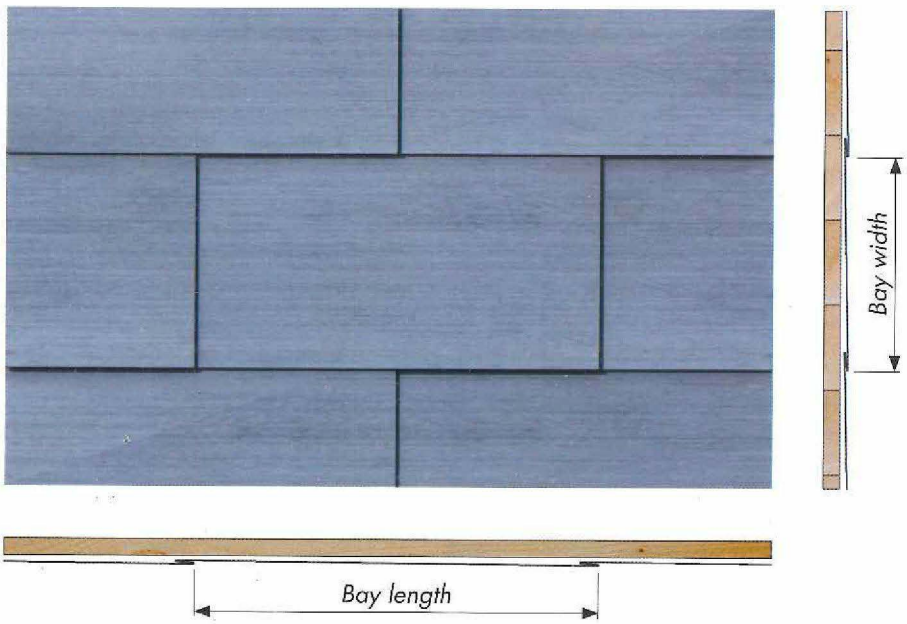
PROFILE GEOMETRY

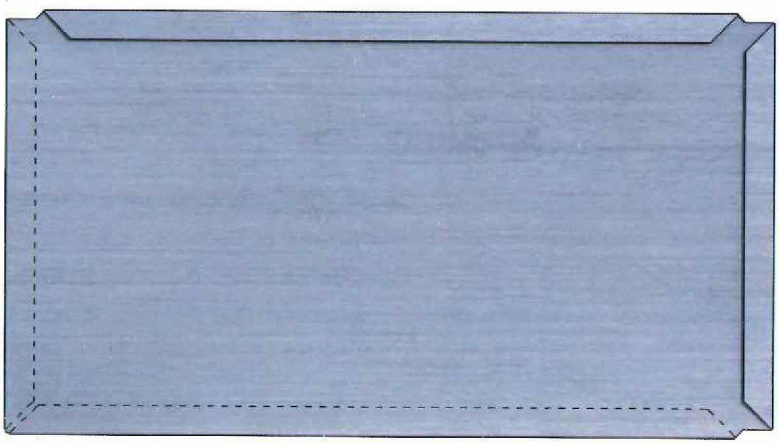
2. RHEINZINK®-Profile group GR 8 Flat-lock tile

Using the RHEINZINK®-Flat-lock tile, the designer has almost endless options in structuring the design of his building. The Flat-lock tile can be installed vertically, horizontally and diagonally. Even complex building shapes with convex and concave designs can be realized. Standard tile widths of 333 – 600 mm are available. Baywidths of > 600 mm must be discussed and coordinated with RHEINZINK's Department of Application Engineering.

System profile



View with system profile



View of Flat-lock tile

2.1 Profile geometry

Material thickness
s = 0.70 mm/0.80 mm/1.00 mm
Face width = baywidth

Standard sizes in mm	Weight 1.00 mm
333 x 600 mm	~9.90 kg/m²
400 x 800 mm	~8.54 kg/m²
500 x 1000 mm	~8.90 kg/m²
600 x 1200 mm	~8.62 kg/m²

All sizes in between can be produced.

Application for outside areas
- Façades
- Soffits
- Parapets
- Roofs

Application for inside areas
- Walls
- Ceilings

Fasteners
Flat-lock tiles are screwed/riveted indirectly to the substructure using RHEINZINK®- tile clips.
This type of indicect fixing allows for linear expansion of tiles up to 3000 mm.

Tolerances
Length and width: +3 mm

Installation tips
- Direction of installation from bottom to top
  – from right to left
  – from left to right
- The protective film must be removed immediately following installation
- Only tested and approved fasteners and clips may be used, e.g. RHEINZINK®- tile clips.
- Flat-lock tiles are manufactured with a plus-tolerance of 3.00 mm larger than ordered.

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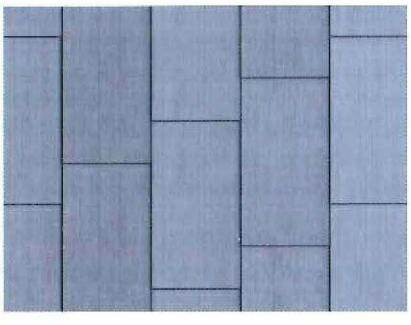
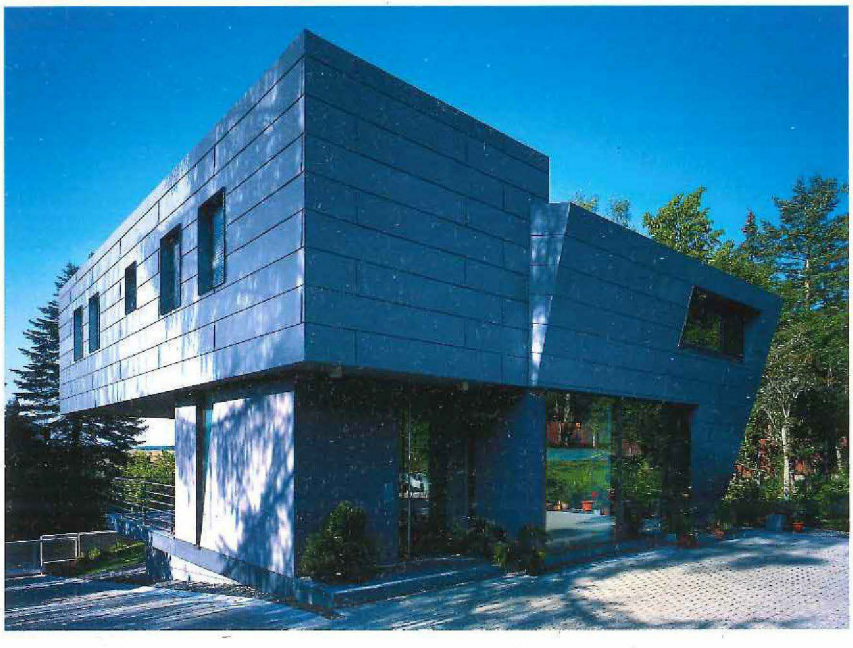
Weber State University, USA

2.1.1 RHEINZINK®-Flat-lock tile, vertical installation

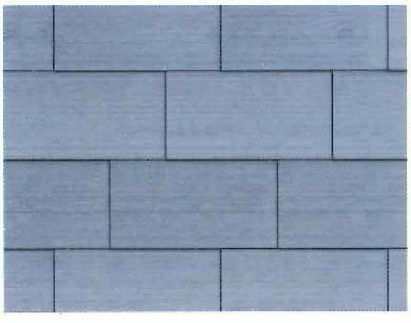


RHEINZINK®-Flat-lock tile, GR 8, vertical installatiion 1/4 staggered



Apartment building, Coburg, Germany

2.1.2 RHEINZINK®-Flat-lock tile, horizontal installation



RHEINZINK®-Flat-lock tile, GR 8, horizontal installation 1/3 staggered

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JOINT FORMATION

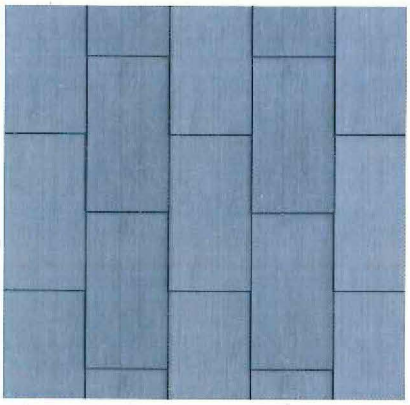
2.2 Tile Layout

2.2.1 Staggered Joint layout

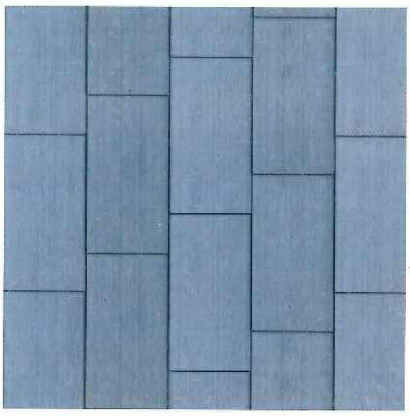
2.2.1.1 General vertical or horizontal installation

The design possibilities are virtually endless. It is up to the designer whether to use 1/2 staggered, a "random structure" or a 1/3 or 1/4 staggered.
Another variation is the formation of a cross-joint. The cross-joint is a visually calm, statically balanced design.
The random structure is borrowed from nature. It is an extremely vibrant design visually, which integrates the adaptor tiles discreetly into the overall design. Because of the flexibility of the diverse baywidths, it is ideally suited for the grid system in renovations.
A diagonally staggered installation has a dynamic, vibrant and exciting energy.

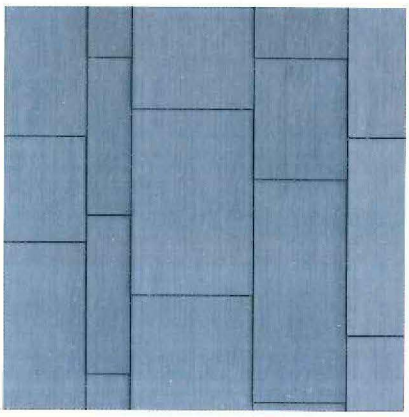
View of vertical installation



1/2 staggered



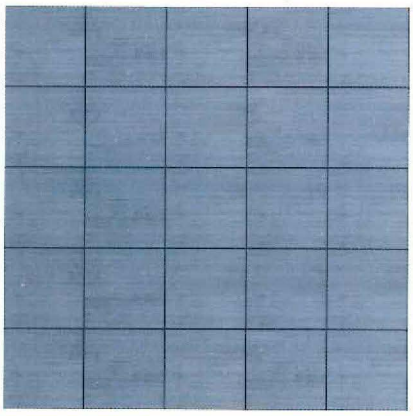
1/4 staggered



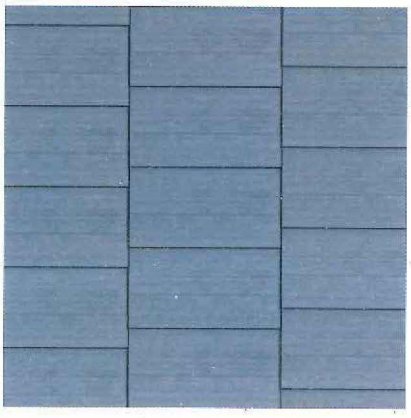
Random structure

View of horizontal installation

1/3 staggered



Cross-joint



Diagonal staggered

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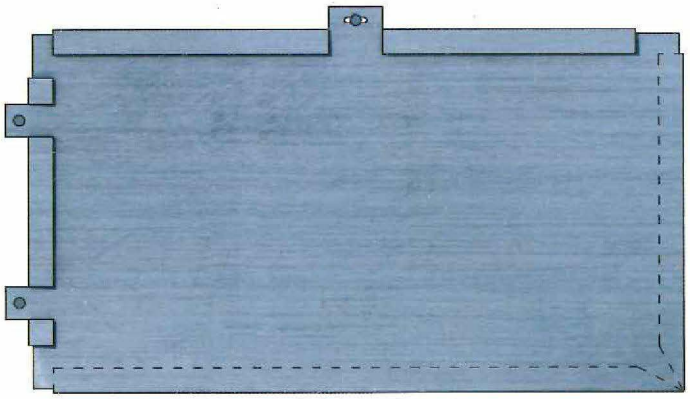
2.3 Thermal expansion

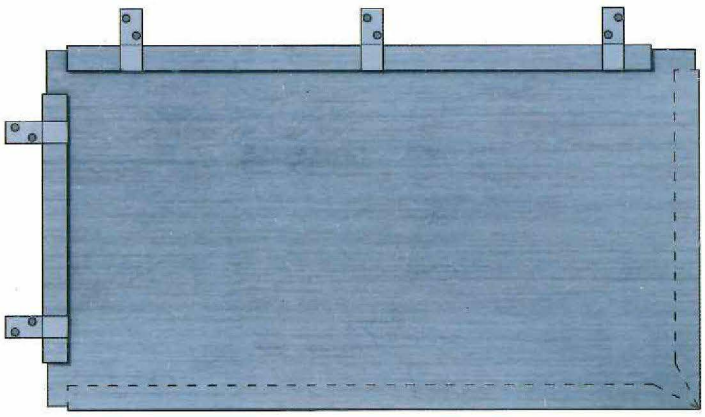
As a rule, Flat-lock tiles are fastened indirectly to the substructure using certified RHEINZINK®- tile clips or continuous cleats. The general waviness typical of thin sheet metal is determined by material thickness and the source material selected. 1.00 mm thick RHEINZINK®-material is less wavy than 0.7 mm or 0.8 mm thick titanium zinc. It is standard to use sheet material for RHEINZINK®-Flat-lock tile production. This in turn, results in a less wavy appearance. Indirect fastening allows for unimpeded expansion of the tiles.

Possible tile sizes

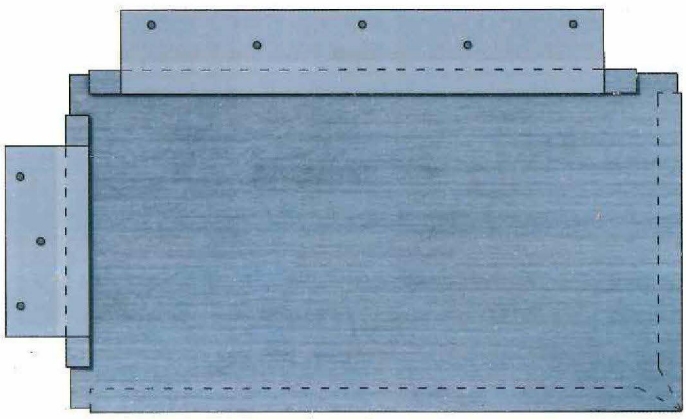
- ≤ 800 x ≤ 3000 mm, 1.00 mm material thickness
- ≤ 500 x ≤ 4000 mm, 1.00 mm material thickness



Direct fastening of tiles



Indirect fastening of tiles



Continuous cleats are used in edges and corners to accommodate potential high wind suction loads.

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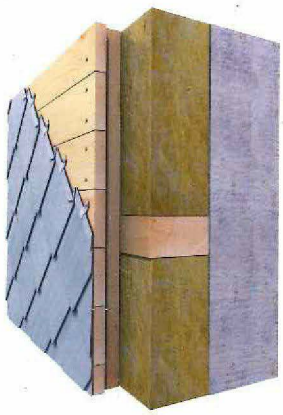
SUBSTRUCTURES

2.4 Substructures

Sketches 1a, 1b:
Wooden substructure

Advantages:
- Tiles can be fastened at all points of the substructure
- Full-surface support provides protection from impact

Disadvantages:
- The cost of installing thick insulation material is very high
- The cost and timing involved to adjust positive and negative tolerances on the supporting structure is high
- Only B2-designs are possible (Fireproof Classification B2, DIN 4102)



Sketch 1a

Sketch 1b

Sketches 2a, 2b:
Metal substructure

Advantages:
- Fireproof design of A1-façades is possible (Fireproof Classification A1, DIN 4102)
- The cost of installing thick insulation material is reasonable
- Tolerances in the supporting structure can be adjusted easily

Disadvantages:
- Increased cost of installation

Sketch 2a

Sketch 2b

Sketches 3a, 3b:
Combined substructure of wood/metal

Advantages:
- The cost of installing thick insulation materials (> 120 mm) is reasonable
- Full-surface support provides protection from impact
- Tiles can be fastened at all points of the substructure

Disadvantages:
- Fireload because of the wood content the façade construction

Sketch 3a

Sketch 3b

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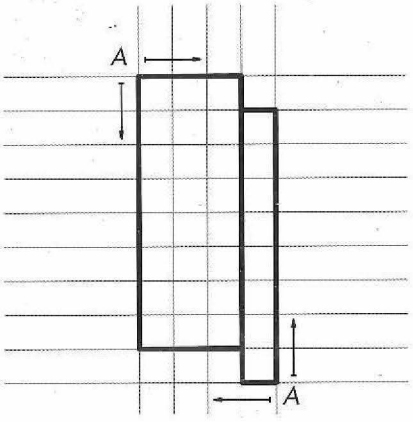
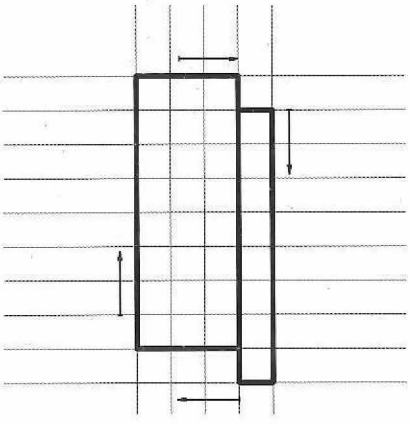


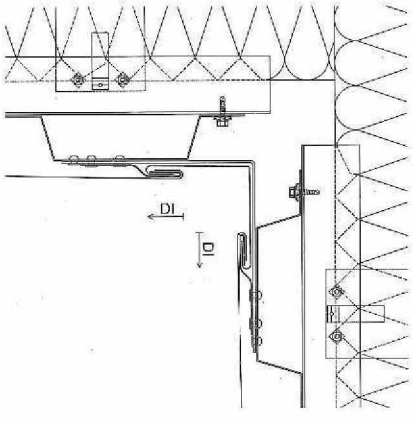
Installation from various starting points



Continuous installation

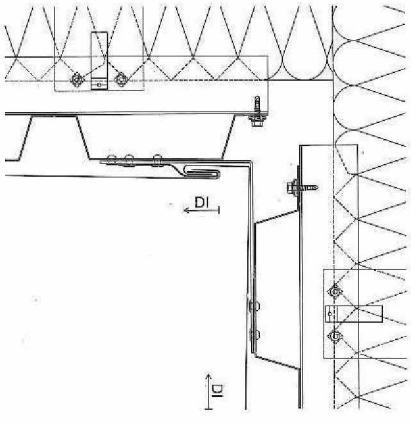
2.5 Installation sequences

Direction of installation (DI)
Start at the left and at the right
Flat-lock tiles are installed from the bottom to the top. The direction of installation – from right to left or from left to right - is determined by the appearance desired. Building tolerances can only be balanced slightly using individual Flat-lock tiles. Tolerance equalization by using adaptor tiles should not exceed 15 mm of the overall height, in order not to impede the aesthetics. The overall length should be proportional to the overall height.



Inside corner

The inside corner profile allows installation to be done to the left and to the right using two different installation teams.



Inside corner using adaptor tiles

When this type of installation is used, a continuous horizontal visual orientation is accentuated.

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DETAIL DESIGN

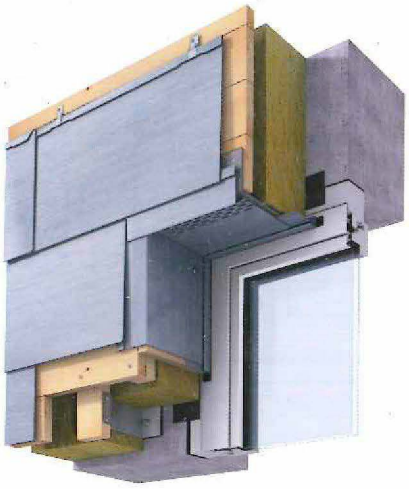
2.6 Detail design

The design and quality of details determines the appearance of the façade. Details such as building corners, window reveals, roof edges, bases, as well as connections and terminations can be transformed with special tiles or building profiles. It is an indication of a good overall design, if the components are well-coordinated.
Three fundamental design variations are indicative of this.

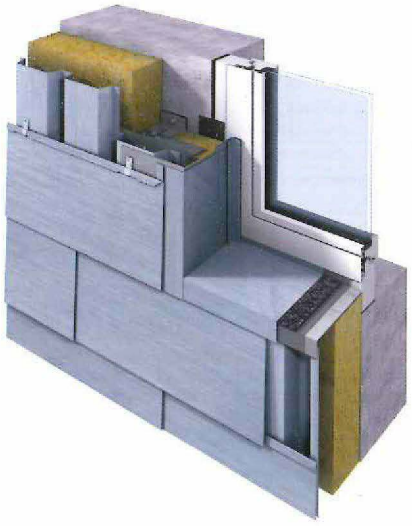
Width of building profile or section
The spectrum ranges from sharp-edged profiles to profiles that are several centimeters wide. Exact planning makes it possible to design all of the connection and structural profiles the same, or, to vary these proportionately, as desired.

Projection of profiles
Depending on the detail design, profiles either protrude from the façade surface or are flush with it. The overview clarifies the principle of flush connections:

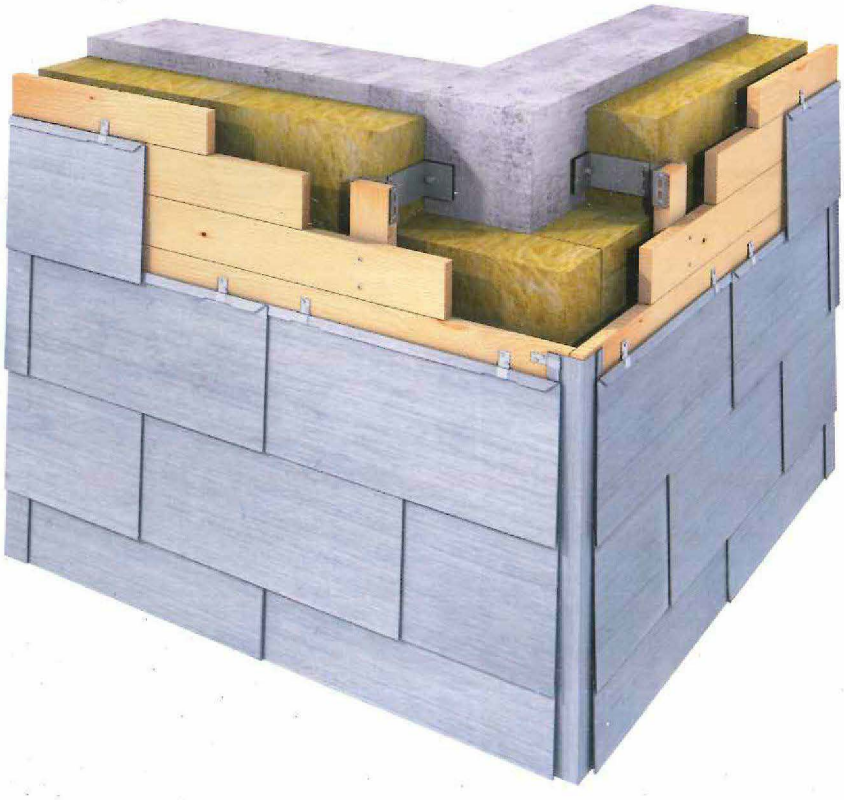
- Window lintel
  Installation of RHEINZINK®-Flat-lock tile on full-surface wooden sheathing. Lintel and reveal profiles form a frame with a face of ca. 60 mm. The lintel profile is partially perforated and comes with a drip edge.
- Windowsill
  The frame width of the lintel and reveal panels is determined by the face of the windowsill. In this case, the substructure is designed as Fireproof Classification A1 (DIN 4102).
- Outside corner
  The outside corner profile corresponds directly with the window connection profiles. Due to the flush design, the visual affect is very conservative.



Window lintel/ Wood-metal-substructure



Window reveal/ Metal-substructure



Outside corner/wood-metal-substructure

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2.7 Details

2.7.1 General instructions

Third party Trades
Contracting third party trades for the façade cladding connections is necessary and unavoidable in most cases, to ensure impermeability. Because of the warranty obligations on the part of the craftsman, sub-contracting connections and fasteners to third party trades (e.g. windows), must always be approved by the project manager of the trade in question.

Wall construction
Layered construction is commensurate with a rear-ventilated metal façade. A solid brick or concrete wall serves as the supporting structure. Of course, it can also be substituted with a column or steel support structure.

Substructure
see Chapter 2.4

Load effect
The surface loads (wind suction/wind pressure), which affect the façade and the distance of the fasteners associated therewith, should be taken from the current Sheet Metal and Roofing Code. We would be happy to advise you on the system loads of RHEINZINK®-Tiles for individual cases.

Installation instructions
Detailed discussion pertaining to installation sequences has been left out deliberately, because in practical terms, these are heavily influenced by the supporting trades such as window and steel construction, etc.
Installation sequences should be determined separately for each project, taking into account the interfaces and installation sequence for each project. Noteworthy deviations are pointed out for different details.

Drip edges
The requirements as set out by standards and regulations must be taken into account for detail design, for example, drip edges over stucco façades (soiling as a result of atmospheric deposits).

Diagonal installation
RHEINZINK®-Flat-lock tiles can also be used in a diagonal façade segmentation.
In most instances, the technical design of the structure, in this case, corresponds to that of horizontal installation.

2.7.2 Pictogram

Horizontal sections (see Page 22)
H1: Outside corner
H2: Inside corner
H3: Window reveal
H4: Joint/lengthwise expansion separation

Vertical section (see Page 23)
V1: Base
V2: Windowsill
V3: Window lintel
V4: Roof edge

Variations
In some cases, variations are shown for the same detail (e.g. window lintel with/without sun shade). These are marked and explained with additional texts or drawings.

Applicability
The details and designs outlined here are suggestions, which were carried out on various projects. The detail suggestions must always be coordinated responsibly, taking into account the applicable standards and stipulations, as well as the designer's intentions for the project.

Building height	Overlap	Distance to drip edge
≤ 8 m	≥ 50 mm	≥ 20 mm
> 8 m ≤ 20 m	≥ 80 mm	≥ 20 mm
> 20 m	≥ 100 mm	≥ 20 mm

Distance and overlap dimensions for flashings (e.g. windowsills, wall copings, verge profiles, etc.)

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PLANNING GRID

2.8 Planning grid

The grid principle in façade construction
A metal façade consists of components, which have been industrially manufactured with high degree of production precision.
These components determine the aesthetics through precise horizontal and vertical segmentation.
Penetrations and terminations, which are not coordinated with the axial segmentation are obtrusive.
The following instructions serve to provide for proper planning of façade segmentation:

Principles
Generally speaking, a distinction must be made between new buildings and renovations when discussing grid difficulties.

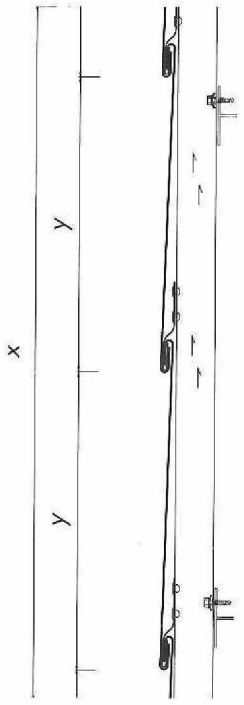
In the case of new buildings, the façade grid can be matched to the design; penetrations such as windows, chimney pipes, etc. are always ancillary to the grid.

However, when it comes to renovations, the penetrations (e.g. windows) are immovable, so that the grid must be coordinated with the penetrations. Aesthetically speaking, a random structure is best suited for this.
The following principles apply to grid deviations:

- One should start or end with a whole module (x or y) at the transitions
- Dimensional discrepancies of maximum 15 mm (deviations from module x or y on two-dimensional profiles) are not noticeable.
- Dimensional tolerances (dimensional change of x or y) which cannot be corrected, must be compensated in the windowsill or roof edge area.
- Adaptations or displacements of grid heights (height coordinates) can only be carried out in the roof edge and/or base area.

Module Y
Y corresponds to the smallest unit of the façade segmentation, which repeats itself, e.g. the baywidth. Grid module Y determines the precise location of penetrations and transitions. In the case of Flat-lock tiles, dimension y can be produced with bay widths of 333 mm to 800 mm, depending on the project. Dimensions > 600 mm must be discussed and agreed upon with RHEINZINK's Department of Application Technology.
The baywidth (y) is determined by the face or surface view of the tile from drip edge to drip edge.

Dimension X
All of the segments marked with an x are a whole multiple of the selected module y and, as a rule, correspond to the baywidth of a tile.



Random structure, horizontal installation

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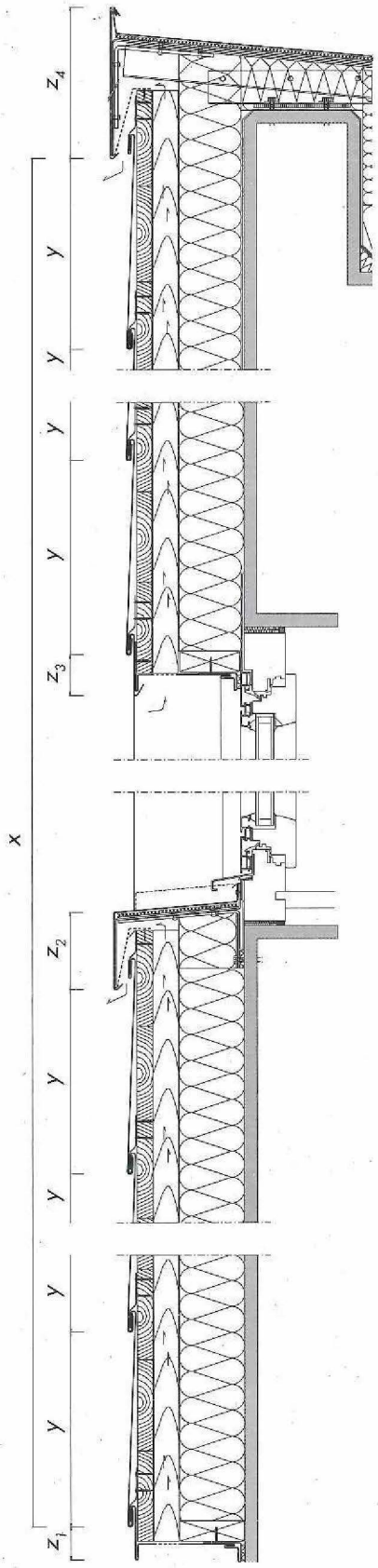
PLANUNGSRASTER



Position Z_4: Roof edge

Grid for new buildings, respectively renovations

If the height coordinates of the roof edge do not fit into the grid selected, the following corrective measures may be selected:

- Change the roof edge profile/slope
- Lower or raise the parapet or the roof edge frame.

As a rule, both of these possibilities only exist if the flat roof is being renovated at the same time.

- Changing module X or Y

Position Z_3: Window lintel
Position Z_2: Windowsill
Grid planning for new buildings

- Determine recess of building shell
- Establish window frame profiles
- Establish location of window
- Establish profile geometry of window connections
- Develop design details within the grid

Grid planning for renovation projects

- Establish window frame profile, new/old
- Establish location of window, new/old
- Establish the profile geometry of window connections
- Establish design details within the grid

If the location of the window or detail does not fit into the grid, the following corrective measures may be selected:

- Change the profile geometry of the window lintel profile or the windowsill
- Adapt to the height of the window
- Change the slope of the windowsill
- Change the X or Y module

Position Z_1: Base

Grid planning for new buildings, respectively renovations

- Define potential deviations toward the top or the bottom
- Establish the profile geometry of the base detail

If the location of the base does not fit into the grid, the following corrective measures may be selected:

- Move the façade connection toward the top or the bottom
- Change the profile geometry of the base profile
- Lower or raise the base brickwork, if it has been planned for or if it already exists

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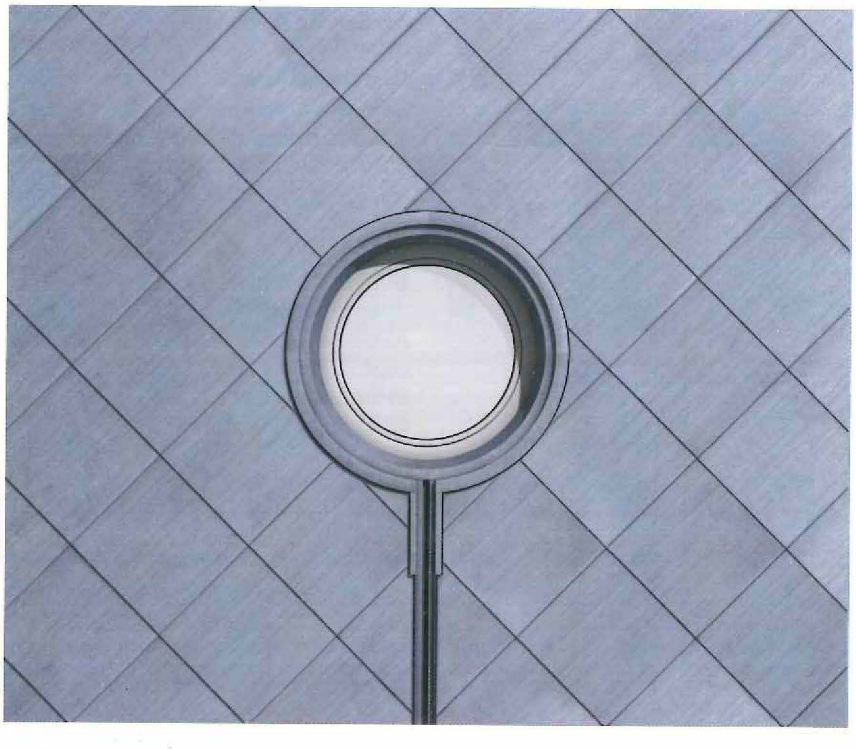
SEA00014616_0114

FACADE DESIGN

2.9 Examples of applications

RHEINZINK®-Square tile
Diagonal installation with pre-rounded window profiles



RHEINZINK®-Flat-lock tile
Horizontal installation, 1/2 staggered, flush window profile, profile width > 60 mm; baywidth and bay length of Flat-lock tile coordinated with overall design.

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SEA00014616_0115

RHEINZINK®-Flat-lock tile
Vertical installation, random structure, window surround and outside corner - very conservative visually.

RHEINZINK®-Flat-lock tile
Horizontal installation, window profiles and outside corner – matched to fit the face width.

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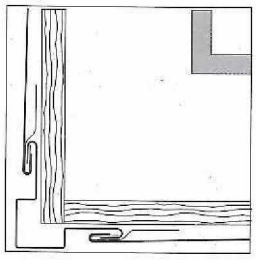
SEA00014616_0116

DESIGN
OVERVIEW OF HORIZONTAL APPLICATION

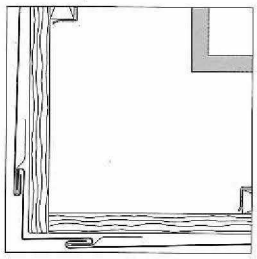
2.10 Flat-lock tile design, Horizontal section

2.10.1 Detail H1: Outside corner
Page 24
2.10.2 Detail H2: Inside corner
Page 26
2.10.3 Detail H3: Window reveal
Page 28
2.10.4 Detail H4: Connections/
Terminations
Page 30

Detail H1: Outside corner



H1.1



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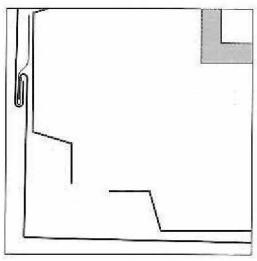
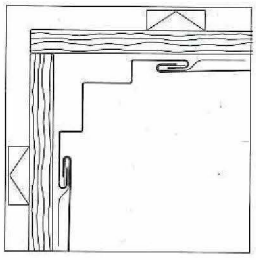
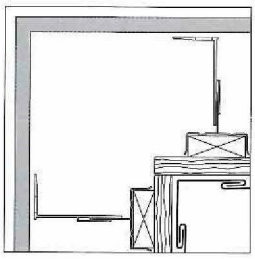


H1.3

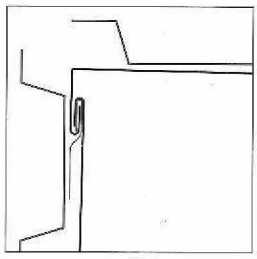
Detail H2: Inside corner



H2.1

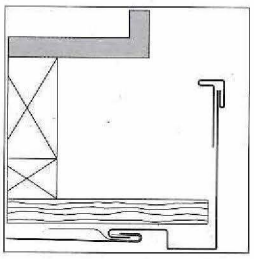


H2.2

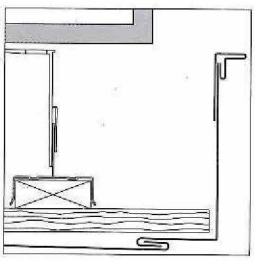


H2.3

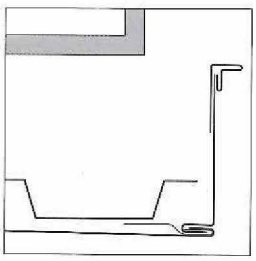
Detail H3: Window reveal



H3.1

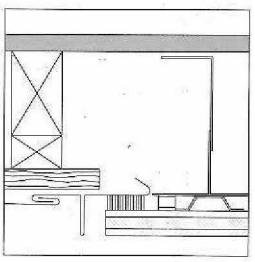


H3.2

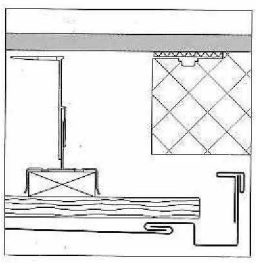


H3.3

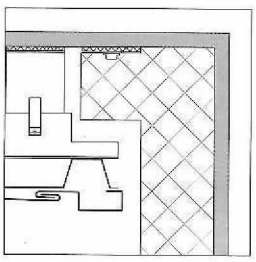
Detail H4: Connections/Terminations



H4.1



H4.2



H4.3

Wooden substructure

Wood-metal-substructure

Metal substructure

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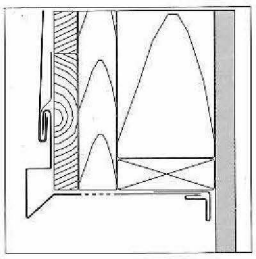
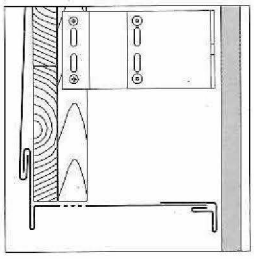
SEA00014616_0117

DESIGN
OVERVIEW OF HORIZONTAL APPLICATION

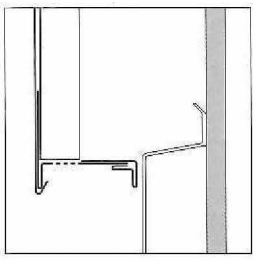
Detail V1: Base



V1.1

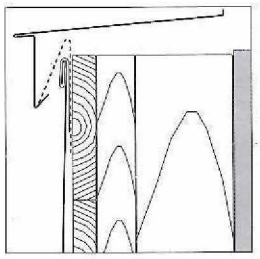


V1.2

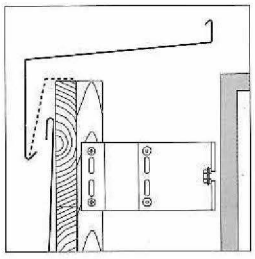


V1.3

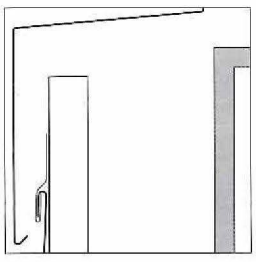
Detail V2: Windowsill



V2.1

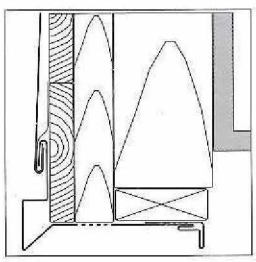


V2.2

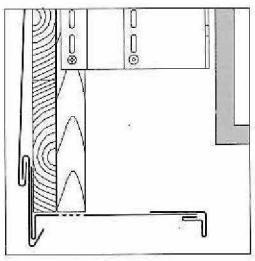


V2.3

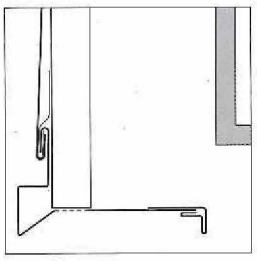
Detail V3: Window lintel



V3.1

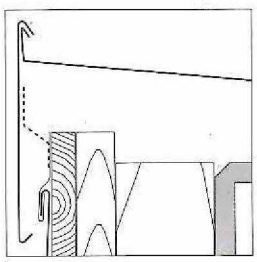


V3.2

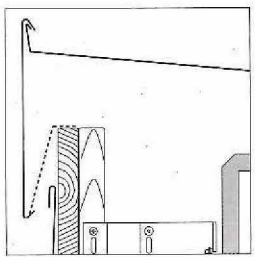


V3.3

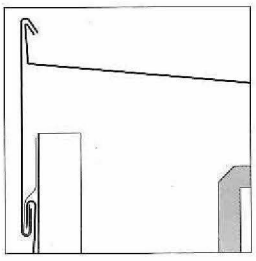
Detail V4: Roof edge



V4.1



V4.2



V4.3

Wooden substructure

Wood-metal-substructure

Metal substructure

2.10 Flat-lock tile design, Vertical section

2.10.5 Detail V1: Base Page 32
2.10.6 Detail V2: Windowsill Page 34
2.10.7 Detail V3: Window lintel Page 36
2.10.8 Detail V4: Roof edge Page 38

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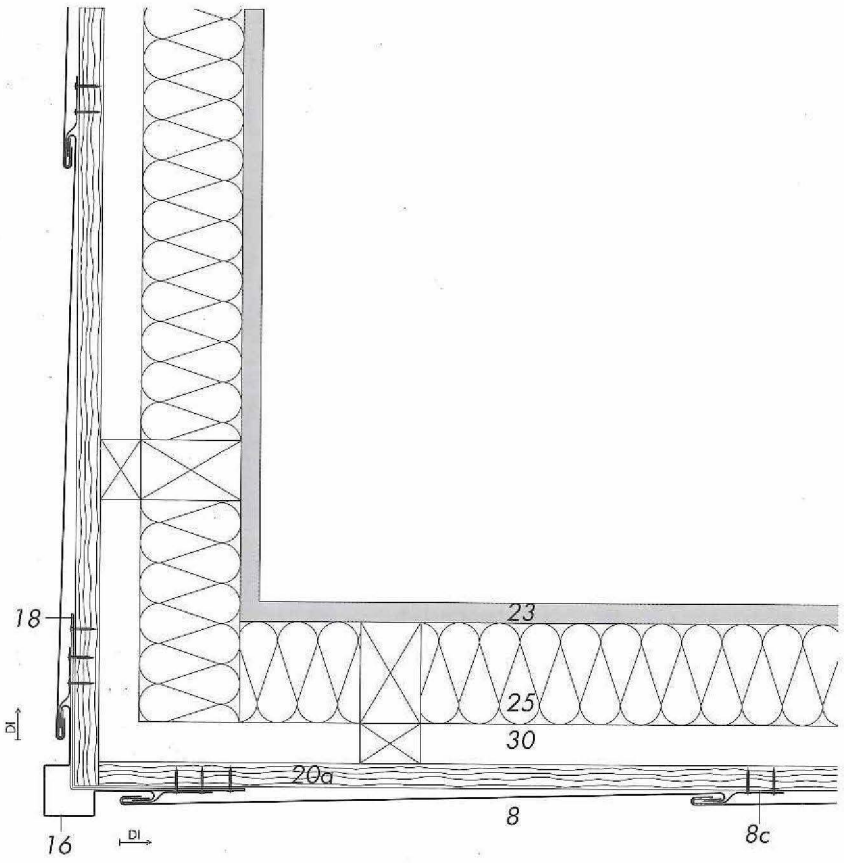
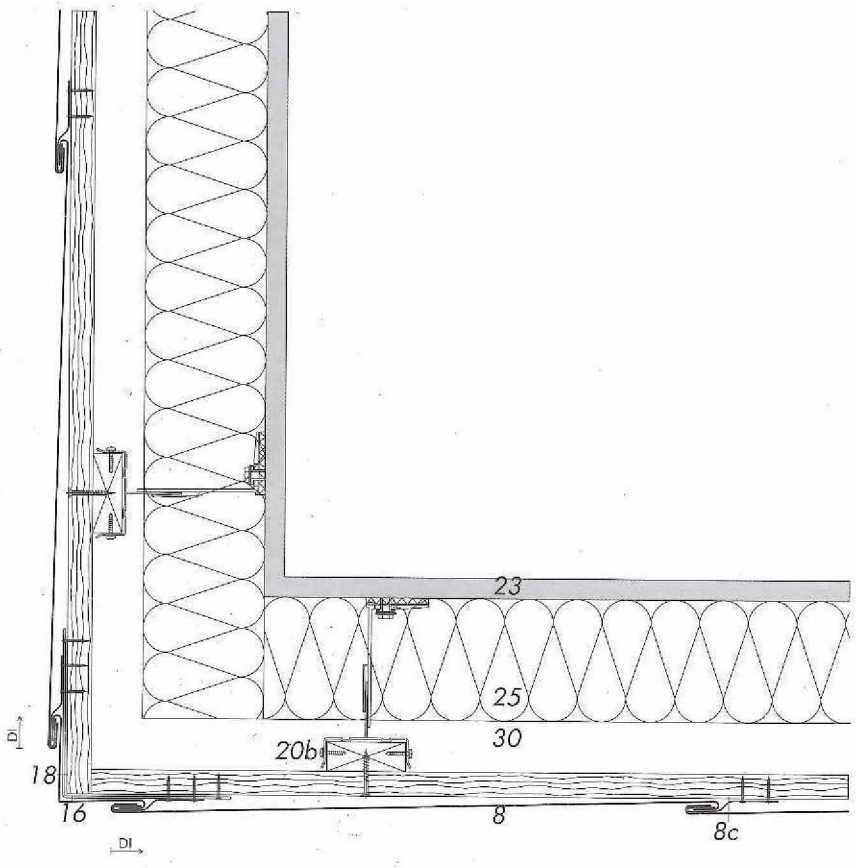
DESIGN – HORIZONTAL APPLICATION
DETAIL H1, OUTSIDE CORNER

H1.1



H1.2



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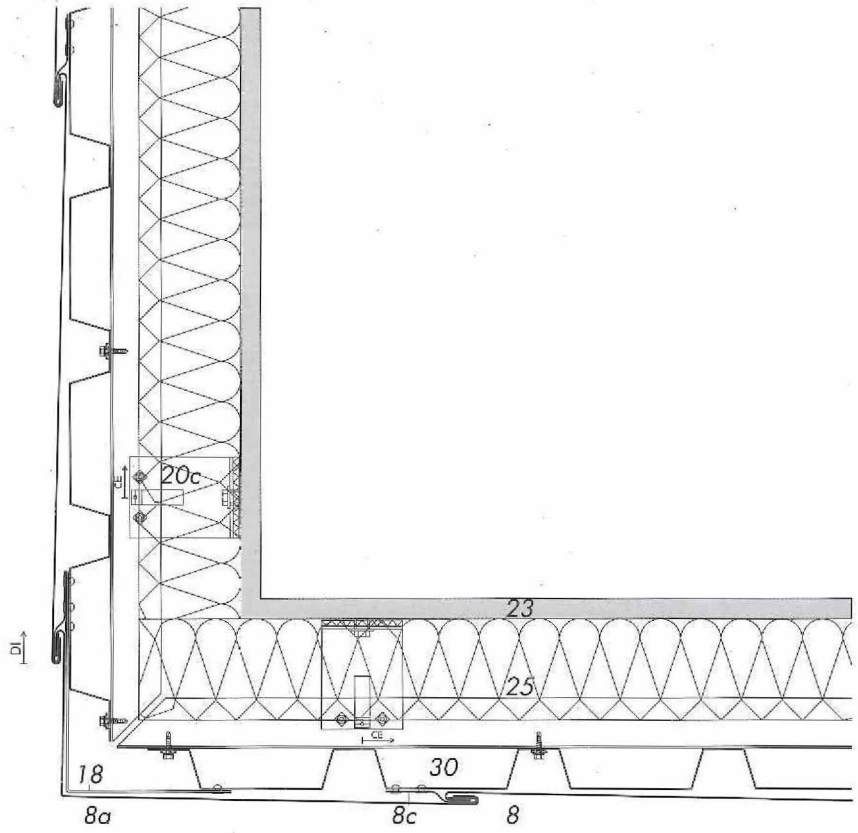
SEA00014616_0119

DESIGN – HORIZONTAL APPLICATION
DETAIL H1, OUTSIDE CORNER

H1.3



2.10.1 Detail H1: Outside corner

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- a Adapter tile
- c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- Outer corner profile

18 Support profile
- Made of aluminium

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermo-stopp*
- c Bracket system with Thermo-stopp* and coated steel trapezoidal profile

23 Supporting structure
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation
CE Controlled expansion of substructure

*Manufacturers' guidelines must be complied with

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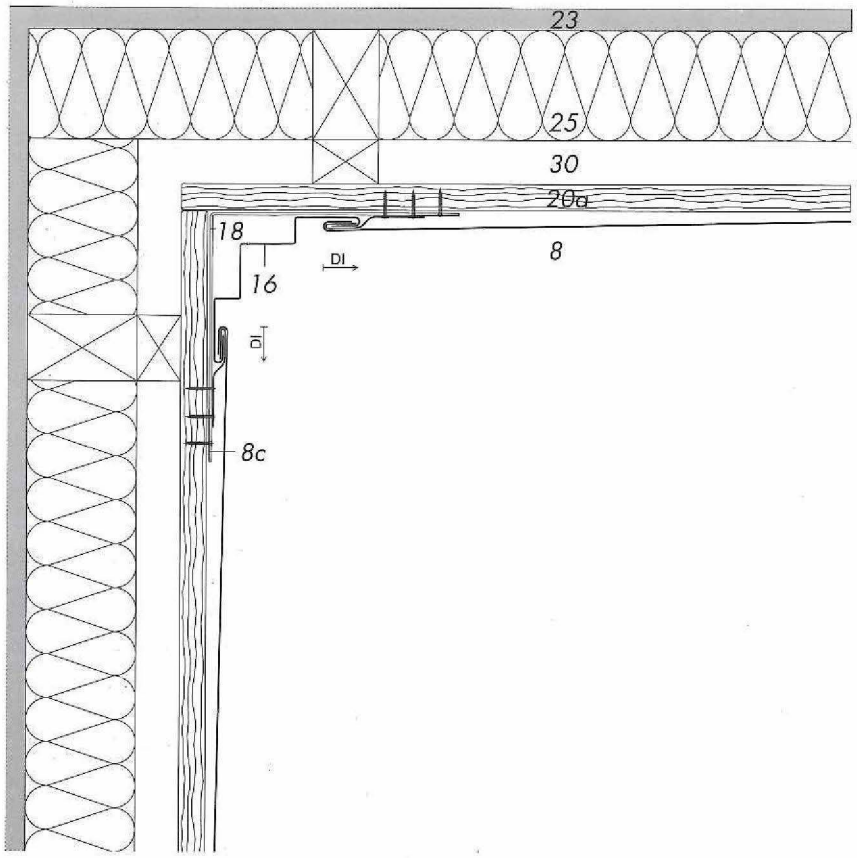
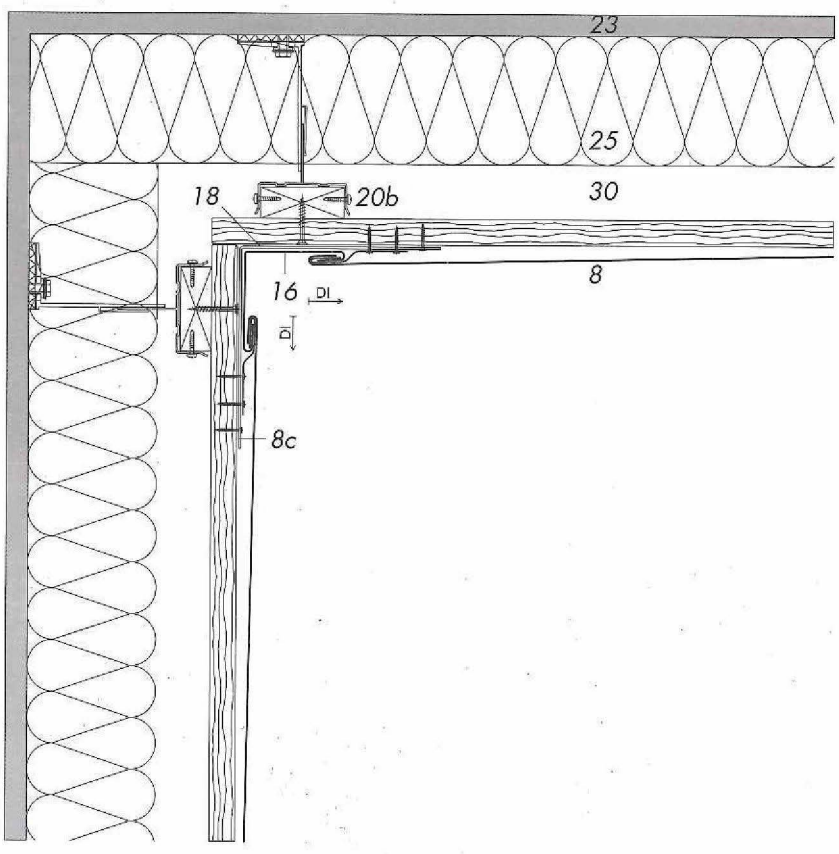
SEA00014616_0120

DESIGN – HORIZONTAL APPLICATION
DETAIL H2, INSIDE CORNER

H2.1



H2.2



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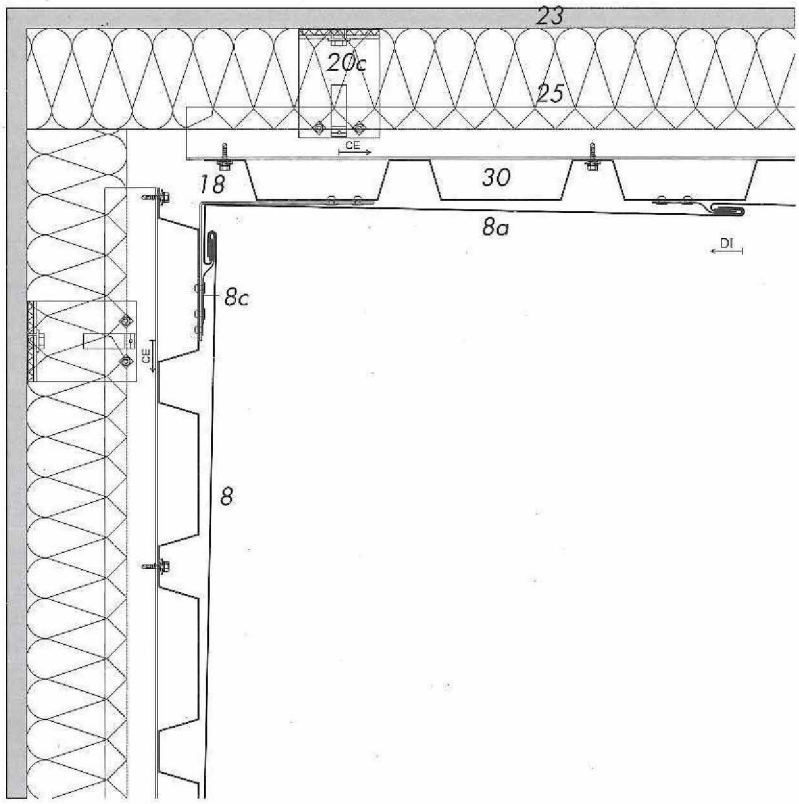
SEA00014616_0121

DESIGN – HORIZONTAL APPLICATION
DETAIL H2, INSIDE CORNER



H2.3

2.10.2 Detail H2: Inside corner

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
  - a RHEINZINK®-Adapter tile
  - c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- Inside corner profile

18 Support profile
- Made of aluminium

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermostopp*
- c Bracket system with Thermostopp* and coated steel trapezoidal profile

23 Supporting structure
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

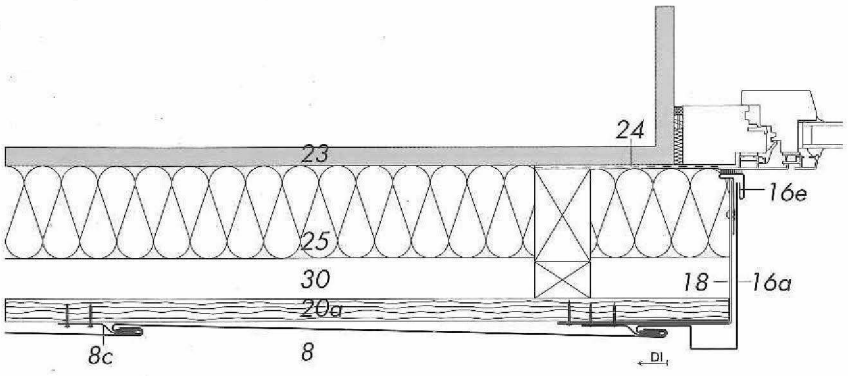
DI Direction of installation
CE Controlled expansion of substructure

*Manufacturers' guidelines must be complied with

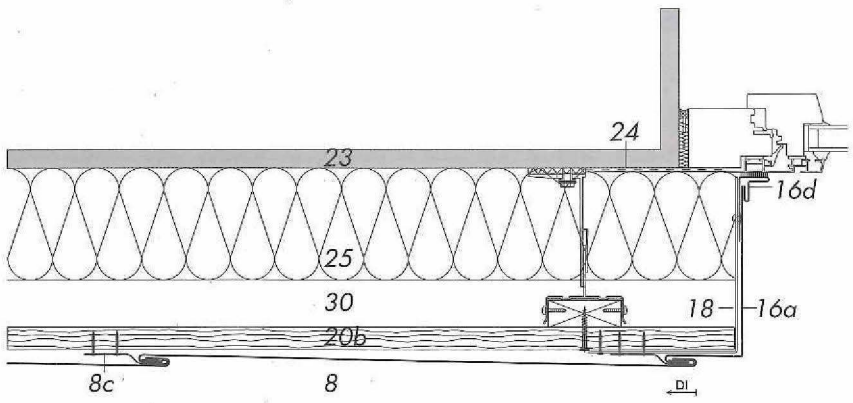
SEA00014616/122
SEA00014616_0122

DESIGN – HORIZONTAL APPLICATION
DETAIL H3, WINDOW REAVEAL

H3.1



H3.2



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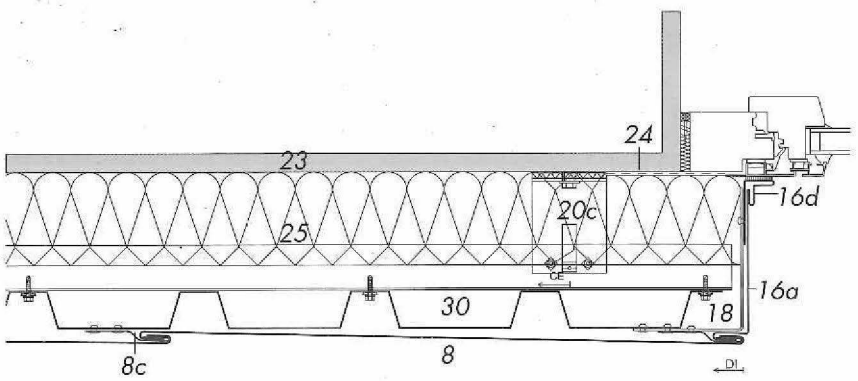
SEA00014616_0123

DESIGN – HORIZONTAL APPLICATION
DETAIL H3, WINDOW REAVEAL



2.10.3 Detail H3: Window reveal

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- a Jamb profile
- d Plug-in pocket with visible mounting leg and sealing strip
- e Plug-in pocket with non-visible mounting leg and sealing strip

18 Support profile
- Made of aluminium

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermo-stopp*
- c Bracket system with Thermo-stopp* and coated steel trapezoidal profile

23 Supporting structure
24 Wind proofing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation
CE Controlled expansion of substructure

*Manufacturers' guidelines must be complied with

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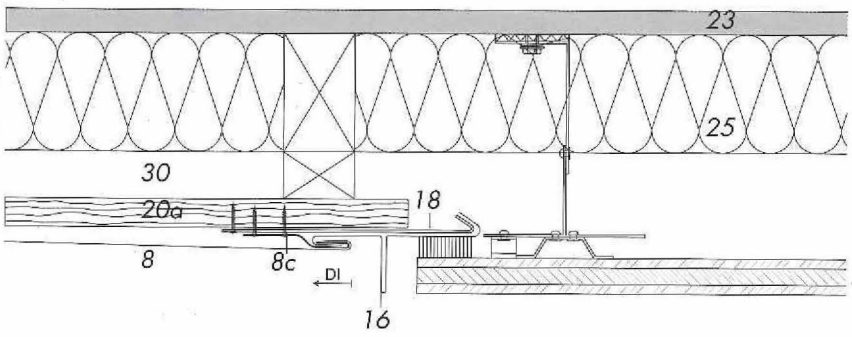
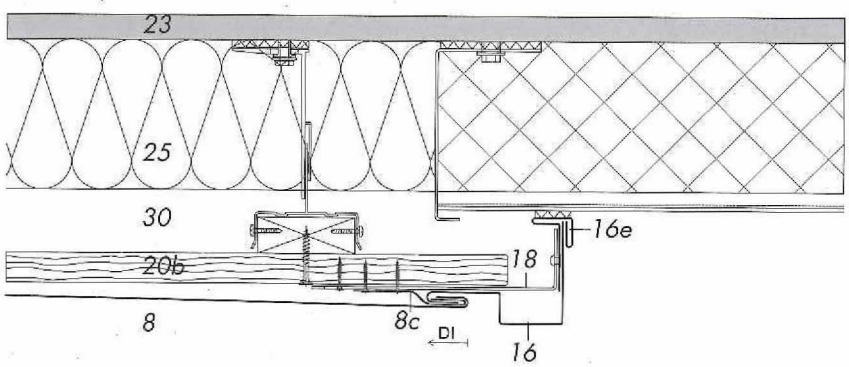
SEA00014616_0124

DESIGN – HORIZONTAL APPLICATION
DETAIL H4, CONNECTIONS AND TERMINATIONS

H4.1

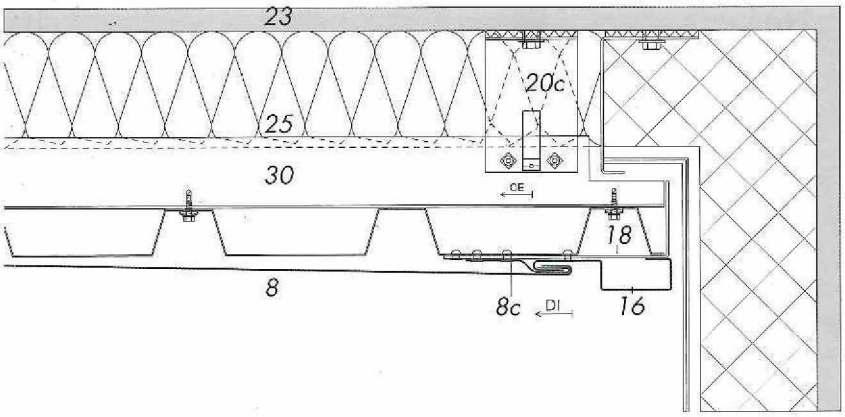


H4.2



SEA00014616/125

DESIGN – HORIZONTAL APPLICATION
DETAIL H4, CONNECTIONS AND TERMINATIONS



H4.3

2.10.4 Detail H4: Connections/ Terminations

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- Connection/termination profile
- e Plug-in pocket with non-visible mounting leg and sealing strip

18 Support profile
- Made of aluminium

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermo-stopp*
- c Bracket system with Thermo-stopp* and coated steel trapezoidal profile

23 Supporting structure
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

DI Direction of installation
CE Controlled expansion of substructure

*Manufacturers' guidelines must be complied with

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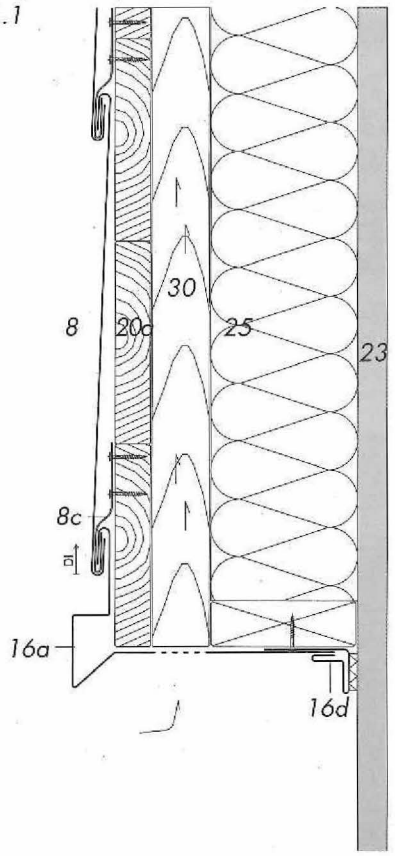
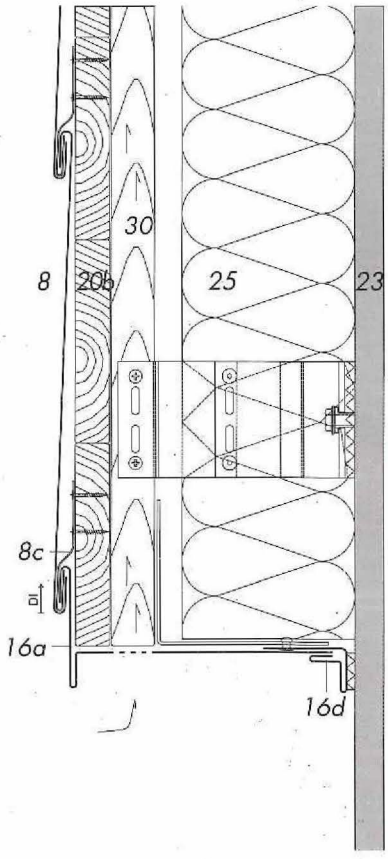
SEA00014616_0126

DESIGN – HORIZONTAL APPLICATION
DETAIL V1, BASE

V1.1

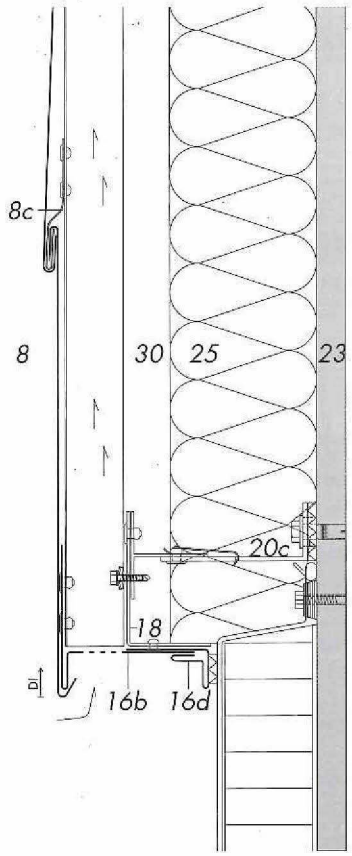


V1.2



SEA00014616/127

DESIGN – HORIZONTAL APPLICATION
DETAIL V1, BASE



V1.3

2.10.5 Detail V1: Base

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- a Base profile, partially perforated
- b Base trim, partially perforated
- d Plug-in pocket with visible mounting leg and sealing strip

18 Support profile
- Made of aluminium

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermo-stopp*
- c Bracket system with Thermo-stopp* and coated steel trapezoidal profile

23 Supporting structure

25 Thermal insulation

30 Ventilation space
- Height of ventilation space ≥ 20 mm

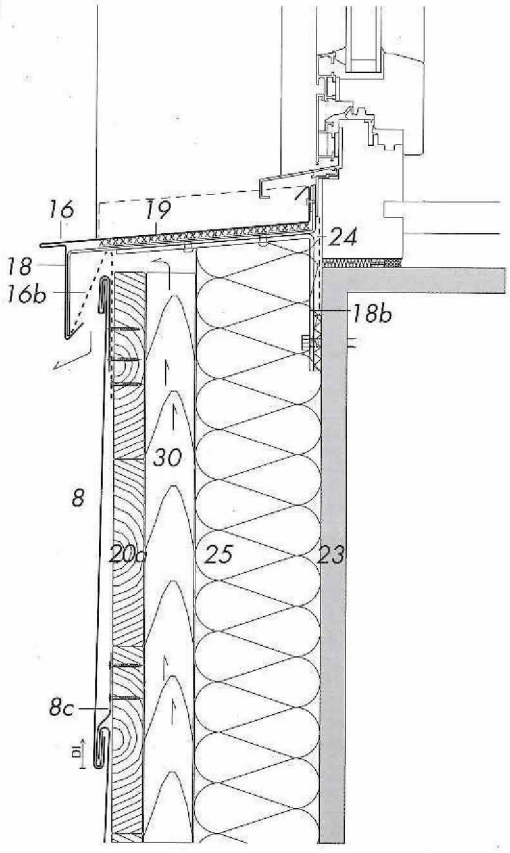
DI Direction of installation

*Manufacturers' guidelines must be complied with

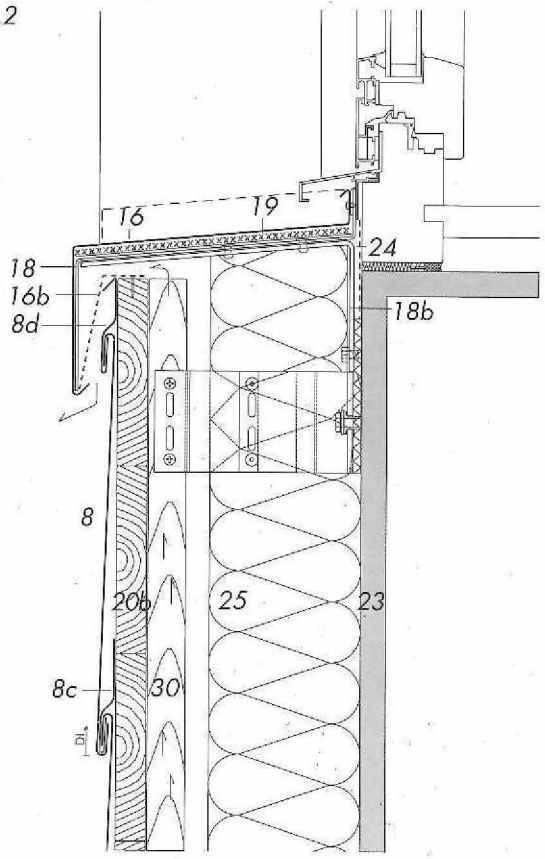
SEA00014616/128
SEA00014616_0128

DESIGN – HORIZONTAL APPLICATION
DETAIL V2, WINDOWSILL

V2.1



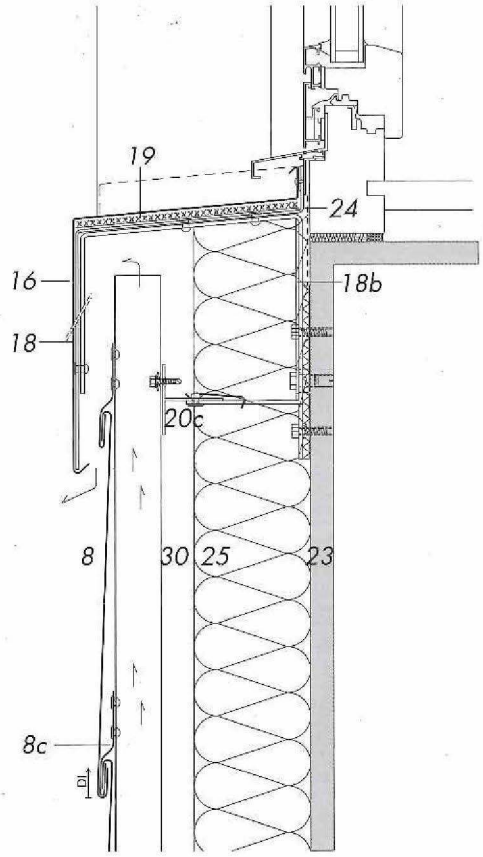
V2.2



SEA00014616/129
SEA00014616_0129

DESIGN – HORIZONTAL APPLICATION
DETAIL V2, WINDOWSILL

V2.3



2.10.6 Detail V2: Windowsill

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- c RHEINZINK®-Tile clip
- d RHEINZINK®-Continuing clip with water drip

16 RHEINZINK®-Building profile
- Window sill profile, slope ≥ 3°
- b Perforated strip

18 Support profile
- Made of aluminium
- b Made of corrosion resistant steel with Thermostopp

19 Seperating Layer
- Structured Layer

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermostopp*
- c Bracket system with Thermostopp* and coated steel trapezoidal profile

23 Supporting structure
24 Wind proofing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

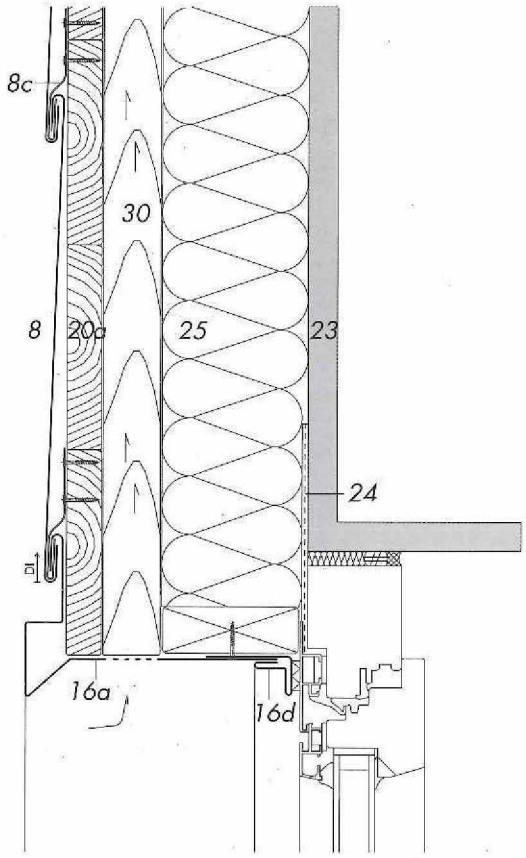
DI Direction of installation

*Manufacturers' guidelines must be complied with

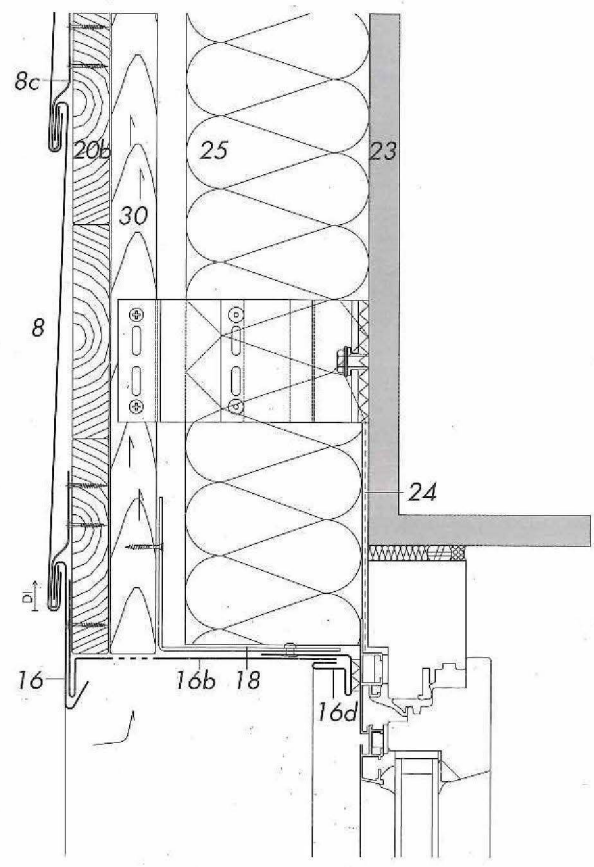
SEA00014616/130
SEA00014616_0130

DESIGN – HORIZONTAL APPLICATION
DETAIL V3, WINDOW LINTEL

V3.1



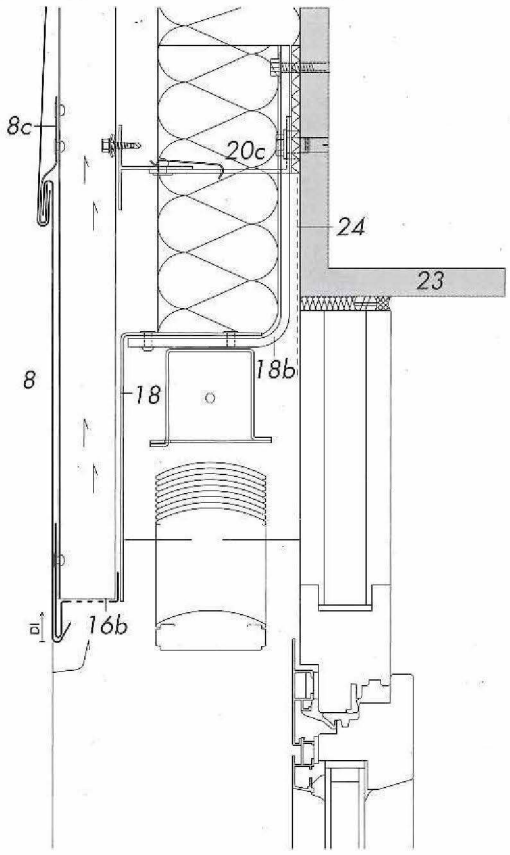
V3.2



SEA00014616/131
SEA00014616_0131

DESIGN – HORIZONTAL APPLICATION
DETAIL V3, WINDOW LINTEL

V3.3



2.10.7 Detail V3: Window lintel

8 RHEINZINK®-Flat-lock Tile, GR 8
- Standard tile
- c RHEINZINK®-Tile clip

16 RHEINZINK®-Building profile
- Lintel profile
- a Partially perforated
- b Base trim, partially perforated
- d Plug-in pocket with visible mounting leg and sealing strip

18 Support profile
- Made of aluminium
- b Made of corrosion resistant steel with Thermostopp

20 Substructure
- a Wooden sheathing on batten
- b Wooden sheathing on batten and bracket system with Thermostopp*
- c Bracket system with Thermostopp* and coated steel trapezoidal profile

23 Supporting structure
24 Wind proofing
25 Thermal insulation
30 Ventilation space
- Height of ventilation space ≥ 20 mm

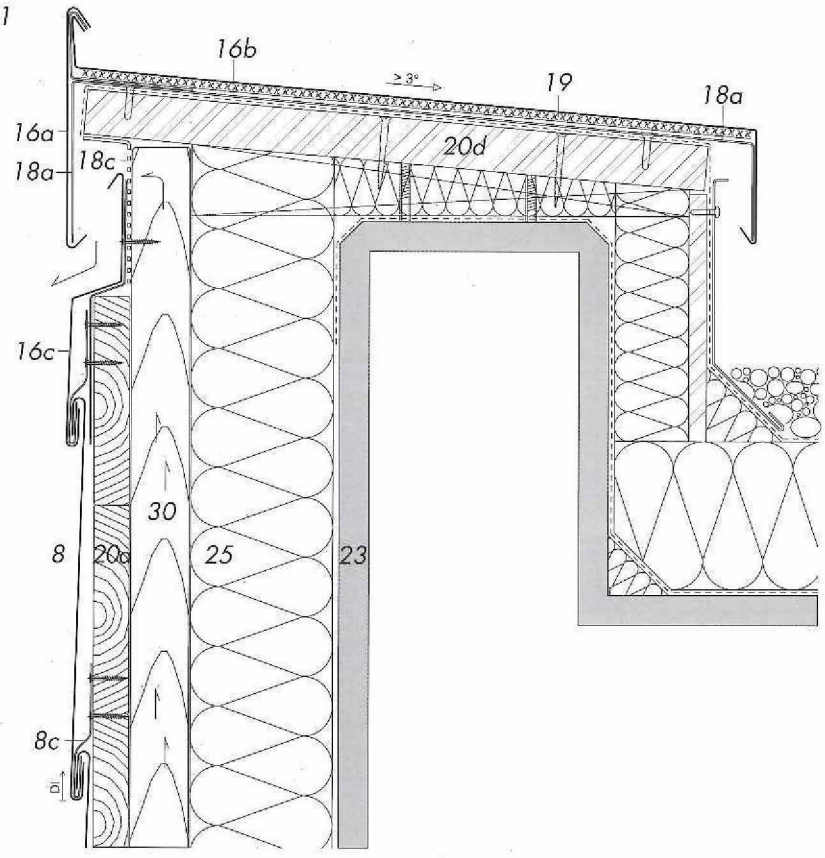
DI Direction of installation

*Manufacturers' guidelines must be complied with

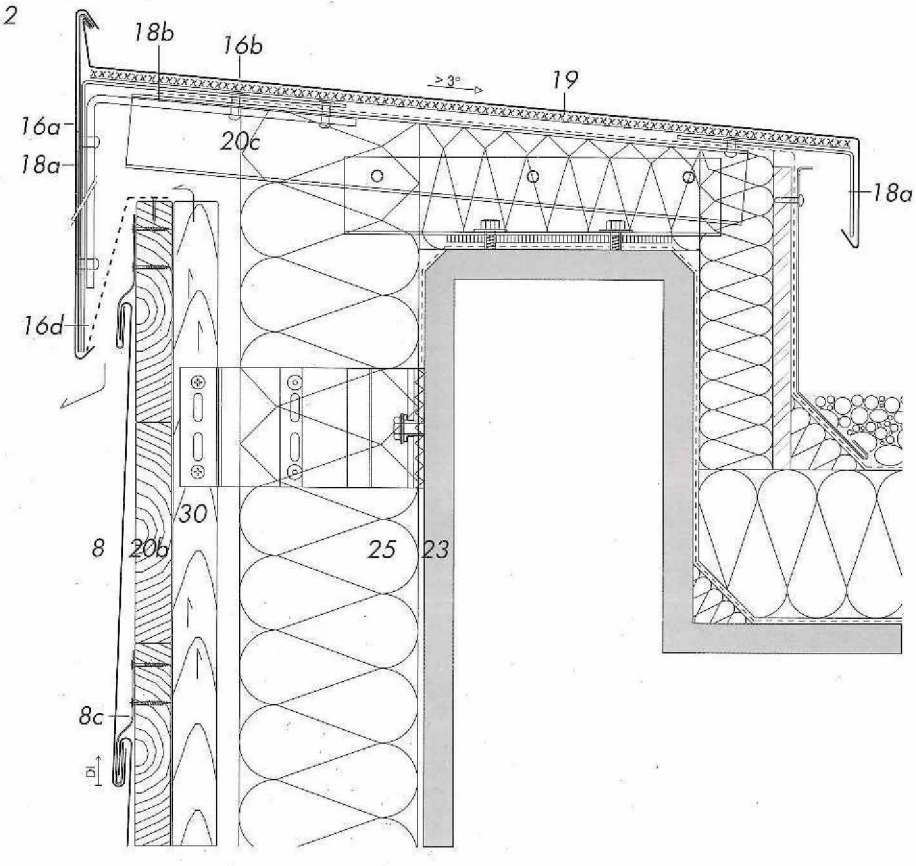
SEA00014616/132
SEA00014616_0132

DESIGN – HORIZONTAL APPLICATION
DETAIL V4, ROOF EDGE

V4.1

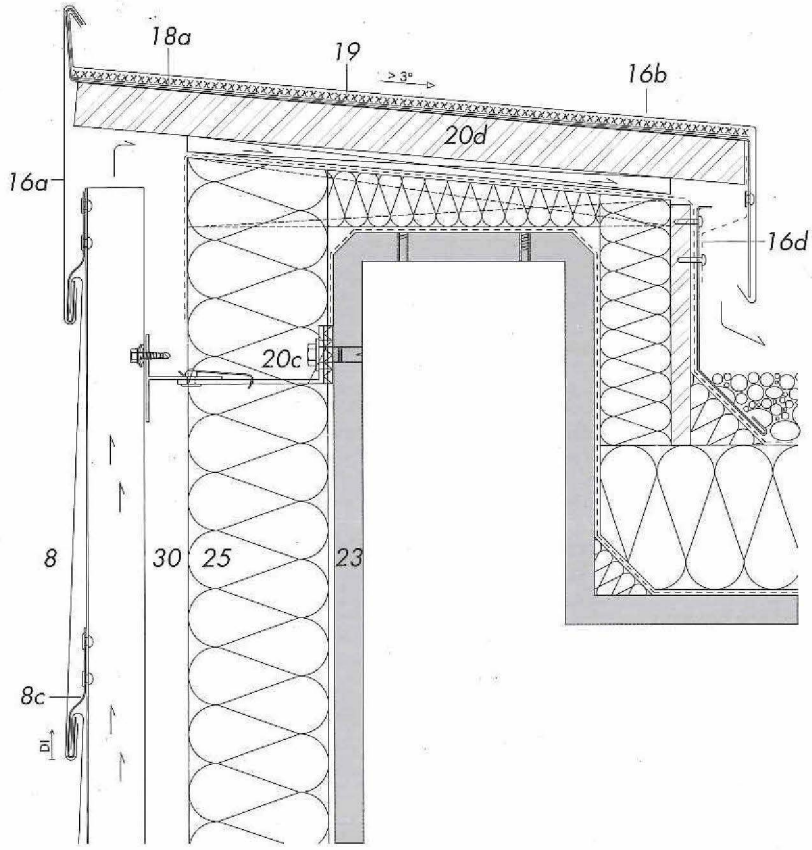


V4.2



SEA00014616/133
SEA00014616_0133

DESIGN – HORIZONTAL APPLICATION
DETAIL V4, ROOF EDGE



V4.3

2.10.8 Detail V4: Roof edge

- 8 RHEINZINK®-Flat-lock Tile, GR 8
  - Standard tile
  - c RHEINZINK®-Tile clip
- 16 RHEINZINK®-Building profile
  - a Edge profile
  - b Wall coping, slope ≥ 3°
  - c Termination profile with water drip
  - d Perforated strip
- 18 Support profile
  - a made of aluminium
  - b made of corrosion resistant steel
  - c made of aluminium, partially perforated
- 19 Seperating Layer
  - Structured Layer
- 20 Substructure
  - a Wooden sheathing on batten
  - b Wooden sheathing on batten and bracket system with Thermo-stopp*
  - c Bracket system with Thermo-stopp* and coated steel trapezoidal profile
  - d Plywood or sterling board on wedged board
- 23 Supporting structure
- 25 Thermal insulation
- 30 Ventilation space
  - Height of ventilation space ≥ 20 mm
- DI Direction of installation

*Manufacturers' guidelines must be complied with

SEA00014616/134
SEA00014616_0134

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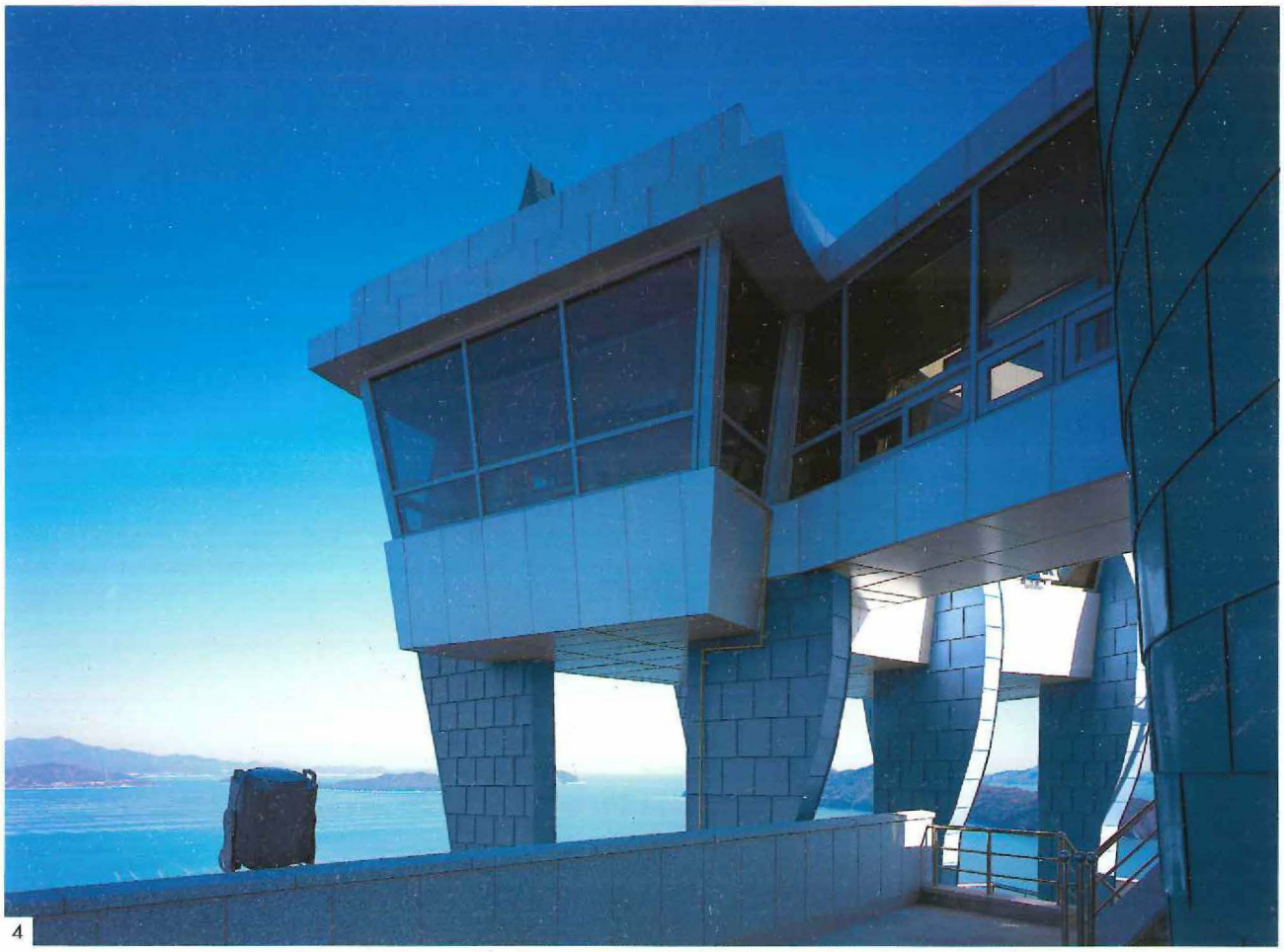

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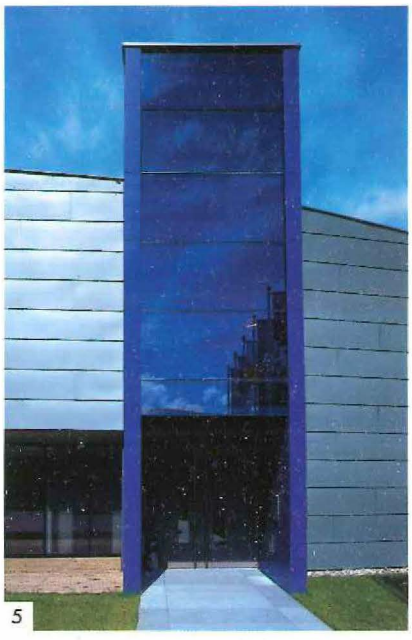

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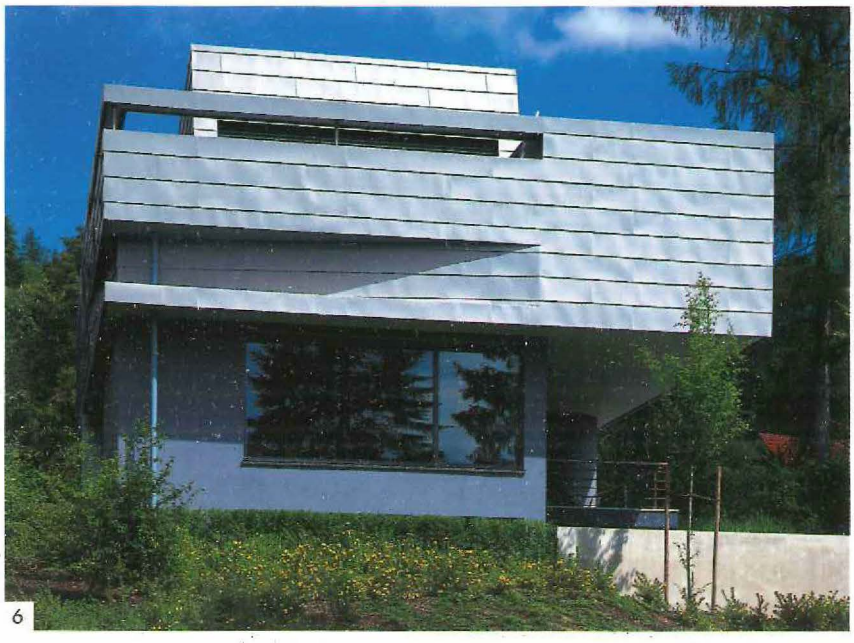

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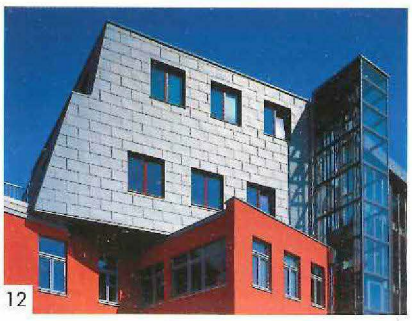
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Additional project references
can be found on
the Internet at
www.rheinzink.com

SEA00014616/137
SEA00014616_0137

SEA00014616/138
SEA00014616_0138

ILLUSTRATIONS

Title:
New lecture hall, Victoria University, Werribee Campus, Werribee, Victoria, Australia
Architect: Michael McKenna Pty Ltd., Melbourne, Australia
RHEINZINK®-work done by:
HM METALCRAFT Pty Ltd., Victoria, Australia

1. **Weissbad Hotel, "Flickflauder" Restaurant, Weissbad, Switzerland**
Architects: agps architecture, Zürich, Switzerland
RHEINZINK®-work done by:
Stephan Sutter, Appenzell, Switzerland
Renato Egli, St. Gallen, Switzerland
and Blumer-Lehmann AG, Gossau SG, Switzerland

2. **Apartment building, Linz, Austria**
Architect: Arkade Project Group, Linz, Austria
RHEINZINK®-work done by:
Edtbauer GmbH, Pasching, Austria

3. **Factory building, W. Zultner & Co. KG, Graz, Austria**
Architect: ARGE Domenig-Eisenköck, Graz, Austria
RHEINZINK®-work done by:
Gruber Ges. m.b.H., St. Stefan/Lavanttal, Austria

4. **Observation Tower, Haenam Gun, Jeon-Nam Province, Korea**
Architect: Mr. Park, Dong-Joon/4-A Architect, Wolsan-Dong, Nam-Gu, Gwang-Ju City, Korea
RHEINZINK®-work done by:
Mijie Industrial Co., Ltd., Seoul, Korea

5. **Tirolia Spedition GmbH, Ebbs, Austria**
Architect: Architekturhalle Wulz-König, Telfs, Austria
RHEINZINK®-work done by:
Weißbacher Spenglerei, Wörgl, Austria

6. **Apartment building, Coburg, Germany**
Architect: Archi Viva, Coburg, Germany
RHEINZINK®-work done by:
Albert Nemmert, Ahorn, Germany

7. **Apartment building, Linz, Austria**
Architect: Atelier Sturmberger-Moser, Leonding, Austria
RHEINZINK®-work done by:
Spenglerei Horst Mayr jun., Leonding, Austria

8. **Friendship House, London, Great Britain**
Architect: MacCormac Jamieson & Prichard, London, Great Britain
RHEINZINK®-work done by:
Boss Metals Ltd., Surrey, Great Britain

9. **Haus der Presse, Berlin, Germany**
Architect: Jo. Franzke, Architekten BDA, Frankfurt, Germany
RHEINZINK®-work done by:
Lummel GmbH & Co. KG, Karlstadt/Main, Germany
Bernd-R. Bahn GmbH, Berlin, Germany

10. **Friendship House, London, Great Britain**
Architect: MacCormac Jamieson & Prichard, London, Great Britain
RHEINZINK®-work done by:
Boss Metals Ltd., Surrey, Great Britain

11. **Tirolia Spedition GmbH, Ebbs, Austria**
Architect: Architekturhalle Wulz-König, Telfs, Austria
RHEINZINK®-work done by:
Weißbacher Spenglerei, Wörgl, Austria

12. **Health Centre, Berlin, Germany**
Architect: Alten Architects, Berlin, Germany
RHEINZINK®-work done by:
Bauklempnerei Ness, Berlin, Germany

13. **Edinburgh Airport Traffic Control Tower, Edinburgh, Scotland**
Architect: Reid Architecture, London, Great Britain
RHEINZINK®-work done by:
Lummel GmbH & Co. KG, Karlstadt/Main, Germany

SEA00014616/139

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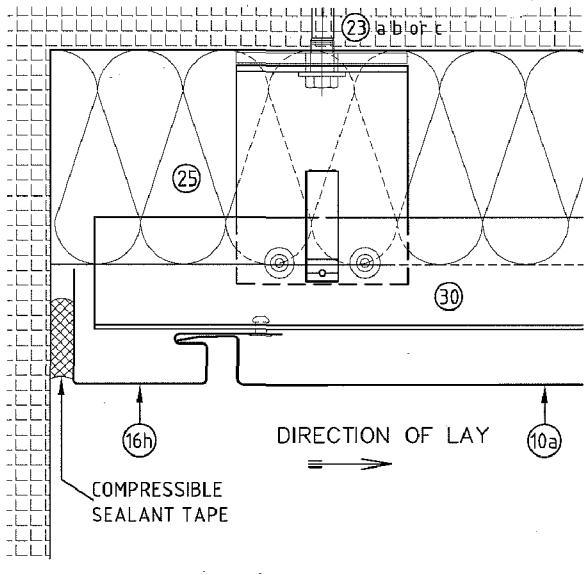
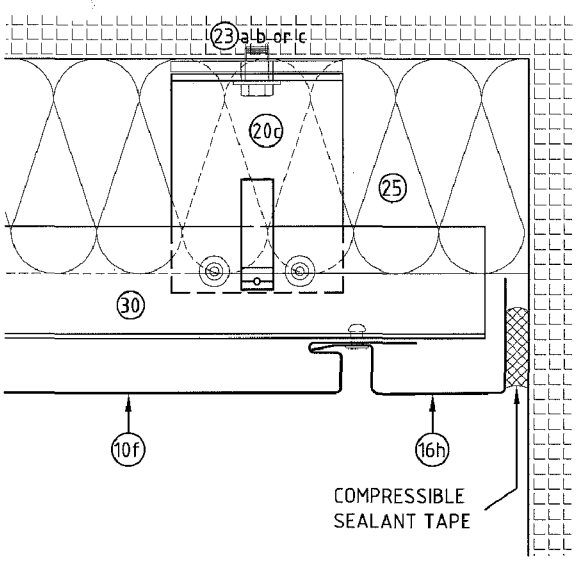


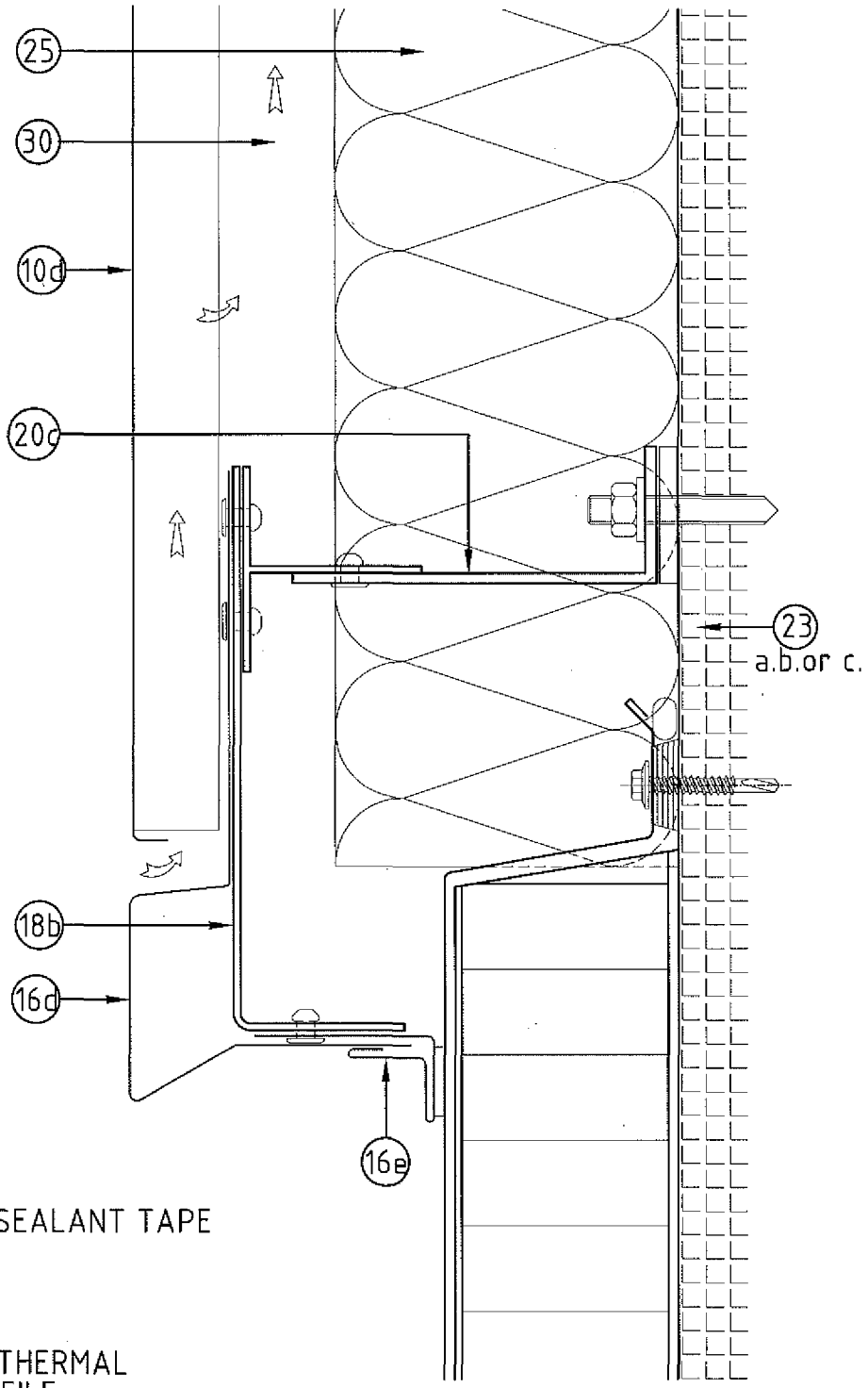


LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    f. ADAPTER PANEL
16. RHEINZINK PROFILE
    h. JAMB PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL (Vertical) VERTICAL ABUTMENT DETAIL			RHEINZINK U.K.
Scale : 1:2.5 @ A4	Date	OCT 2011	Wyvern House 55–61 High Street,Frimley Surrey, UK GU167HJ Tel: [redacted] Fax:
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG



LEGEND

10. RHEINZINK SF PANEL
    d. STANDARD PANEL
    WITH SHORT BOXED END
16. RHEINZINK PROFILE
    d. BASE PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
18. SUPPORT ANGLE
    b. MADE OF ALUMINIUM
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL BASE DETAIL (Vertical) (Option 1)			RHEINZINK U.K.
Scale : 1:2 @ A4	Date	FEB 2011	Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

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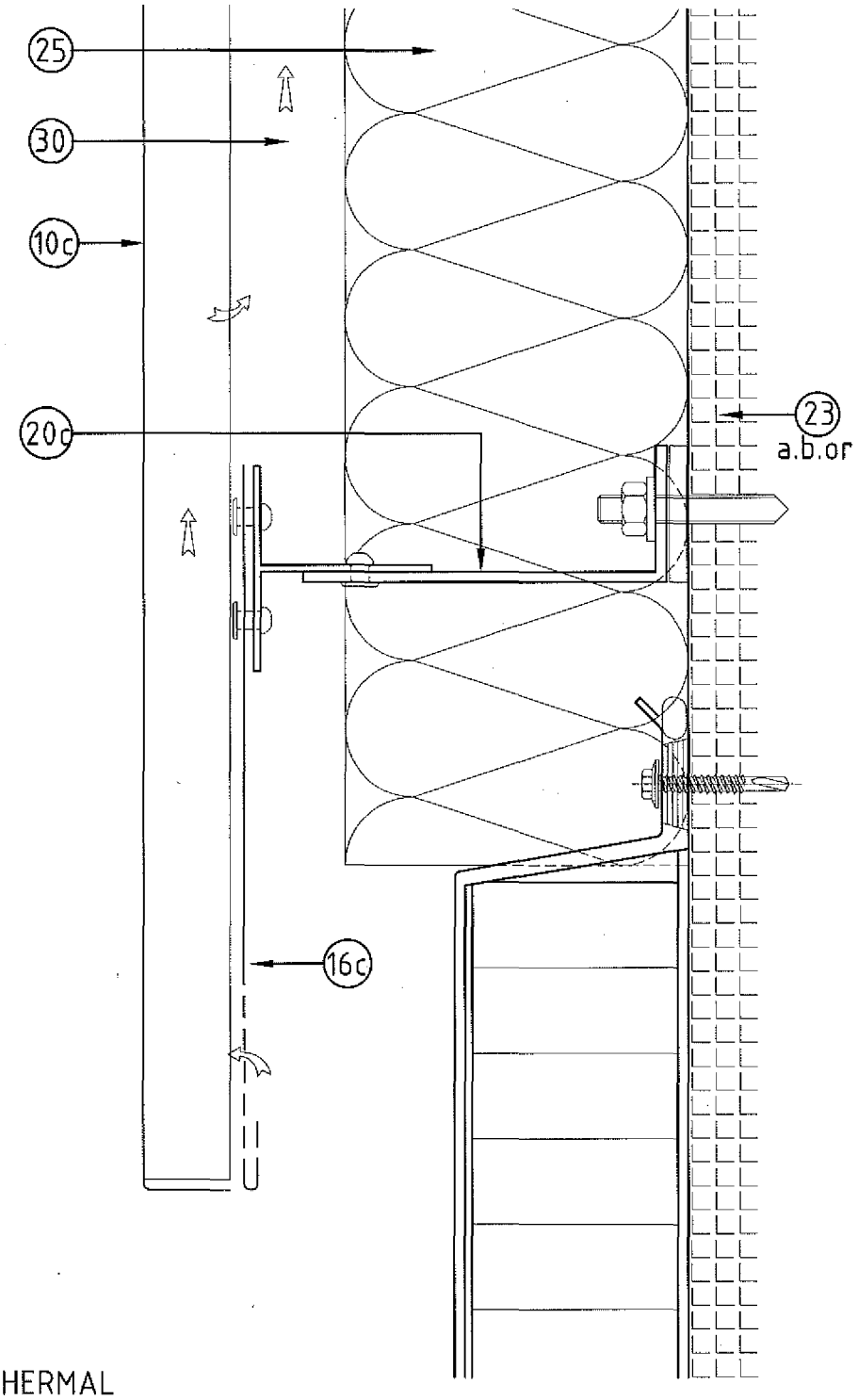

LEGEND

10. RHEINZINK SF PANEL
    c. STANDARD PANEL WITH BOXED END
16. RHEINZINK PROFILE
    c. PERFORATED STRIP
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL BASE DETAIL (Vertical) (Option 2)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A4	Date	FEB 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

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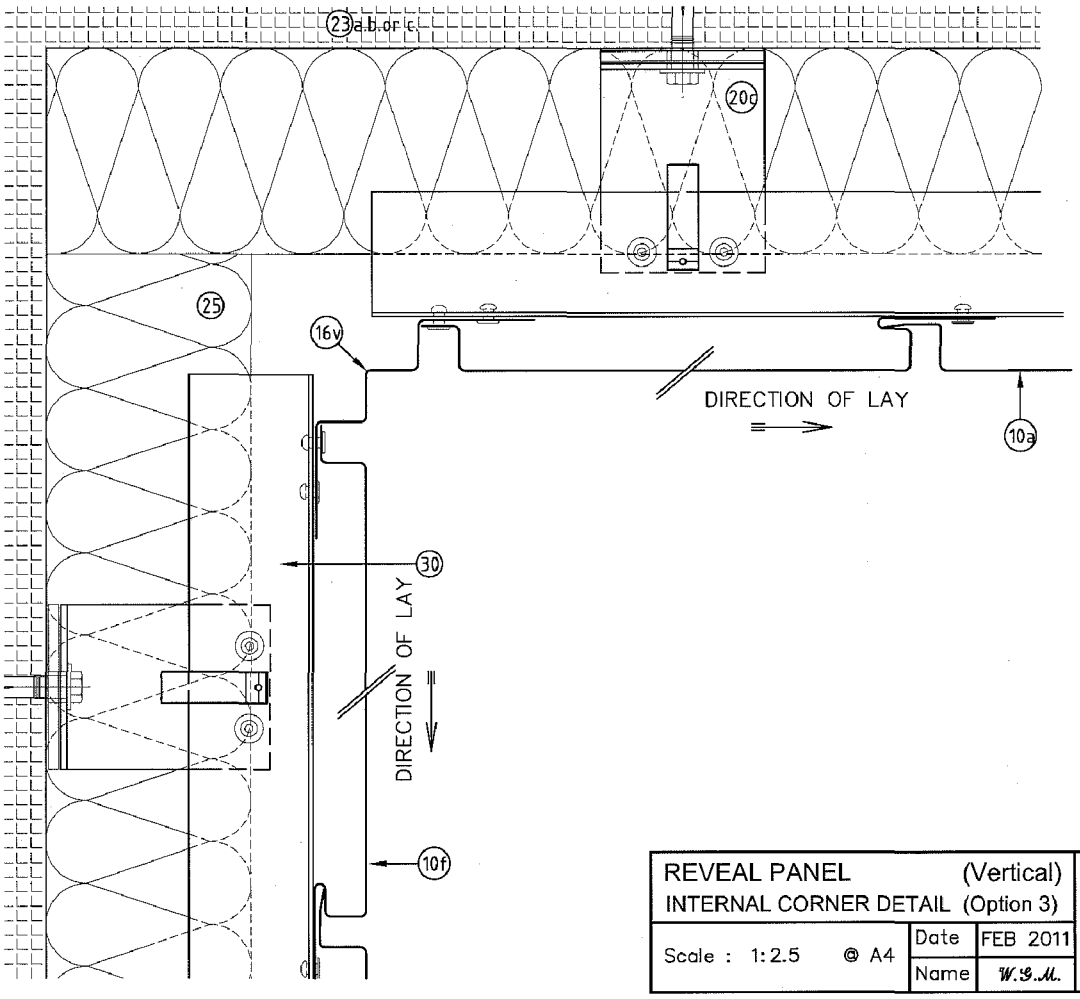

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    f. ADAPTER PANEL
16. RHEINZINK PROFILE
    v. CORNER PROFILE
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL (Vertical)
INTERNAL CORNER DETAIL (Option 3)

Scale : 1:2.5 @ A4

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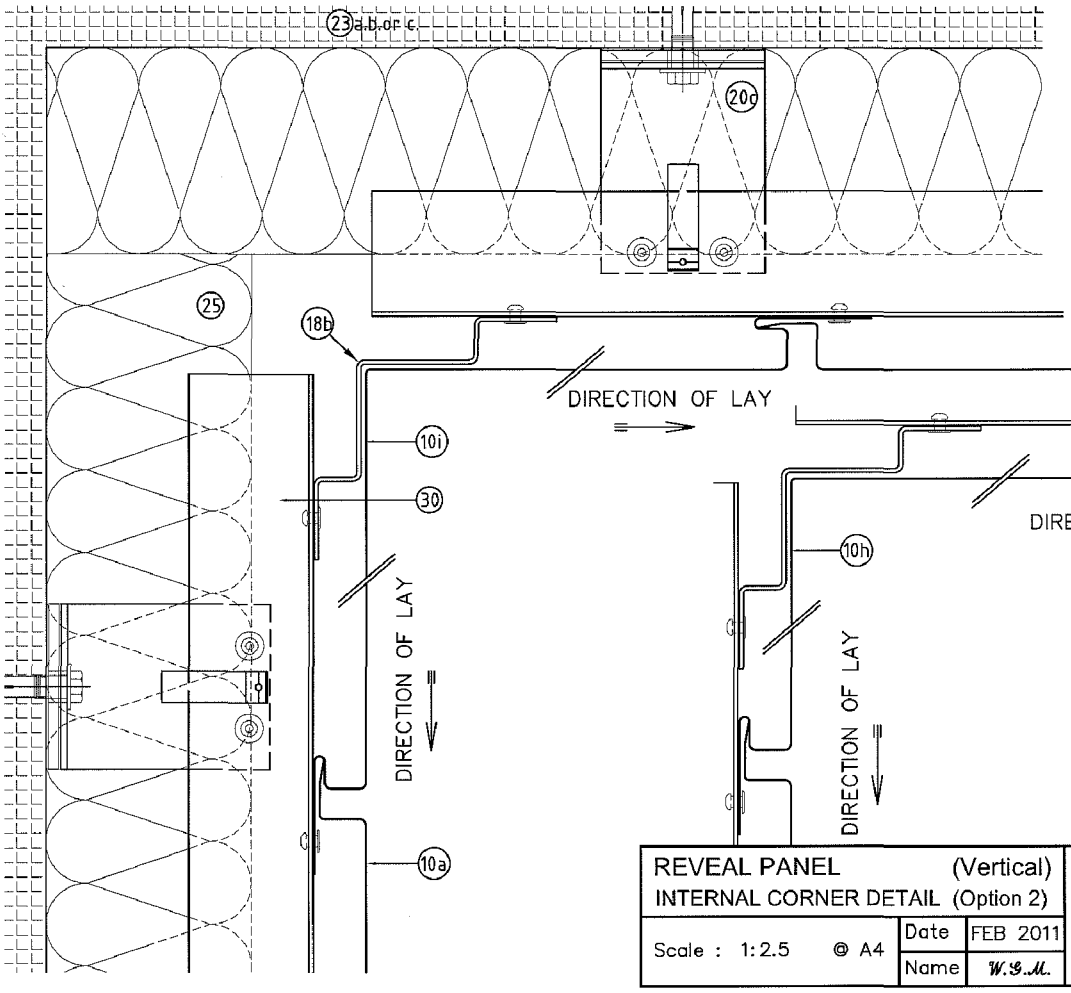

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    i. CORNER PANEL (GROOVE-GROOVE)
    h. CORNER PANEL (GROOVE-TONGUE)
18. SUPPORT ANGLE
    b. MADE OF ALUMINIUM
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL (Vertical)
INTERNAL CORNER DETAIL (Option 2)

Scale : 1:2.5 @ A4

Date FEB 2011
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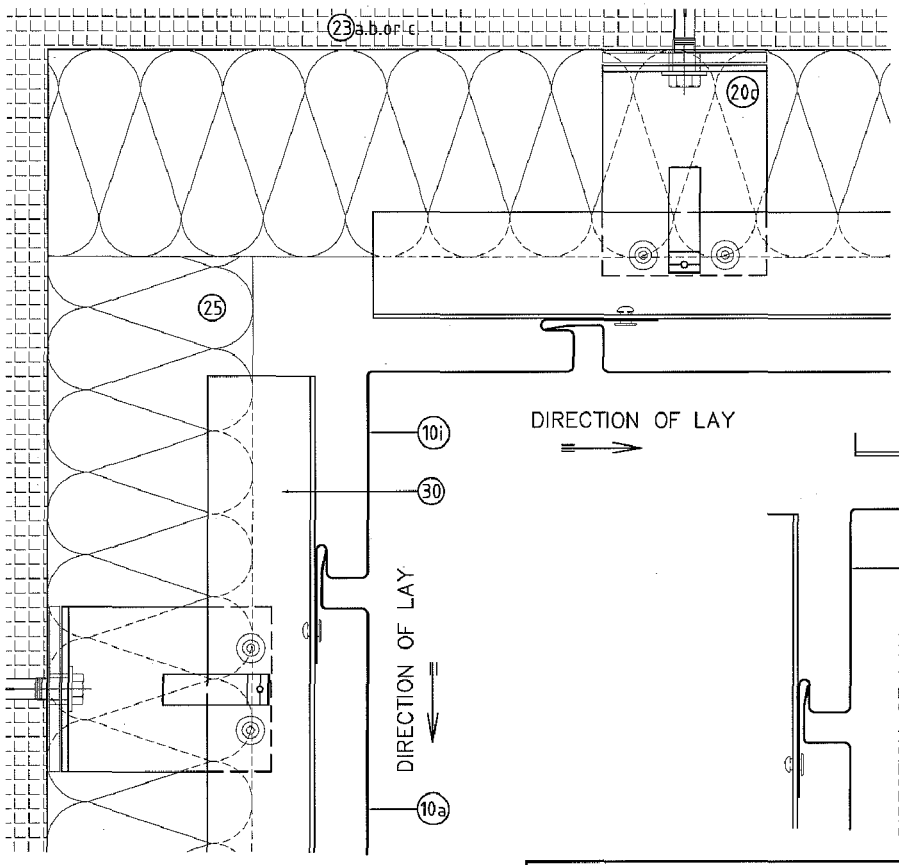


LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    i. CORNER PANEL (GROOVE-GROOVE)
    h. CORNER PANEL (GROOVE-TONGUE)
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

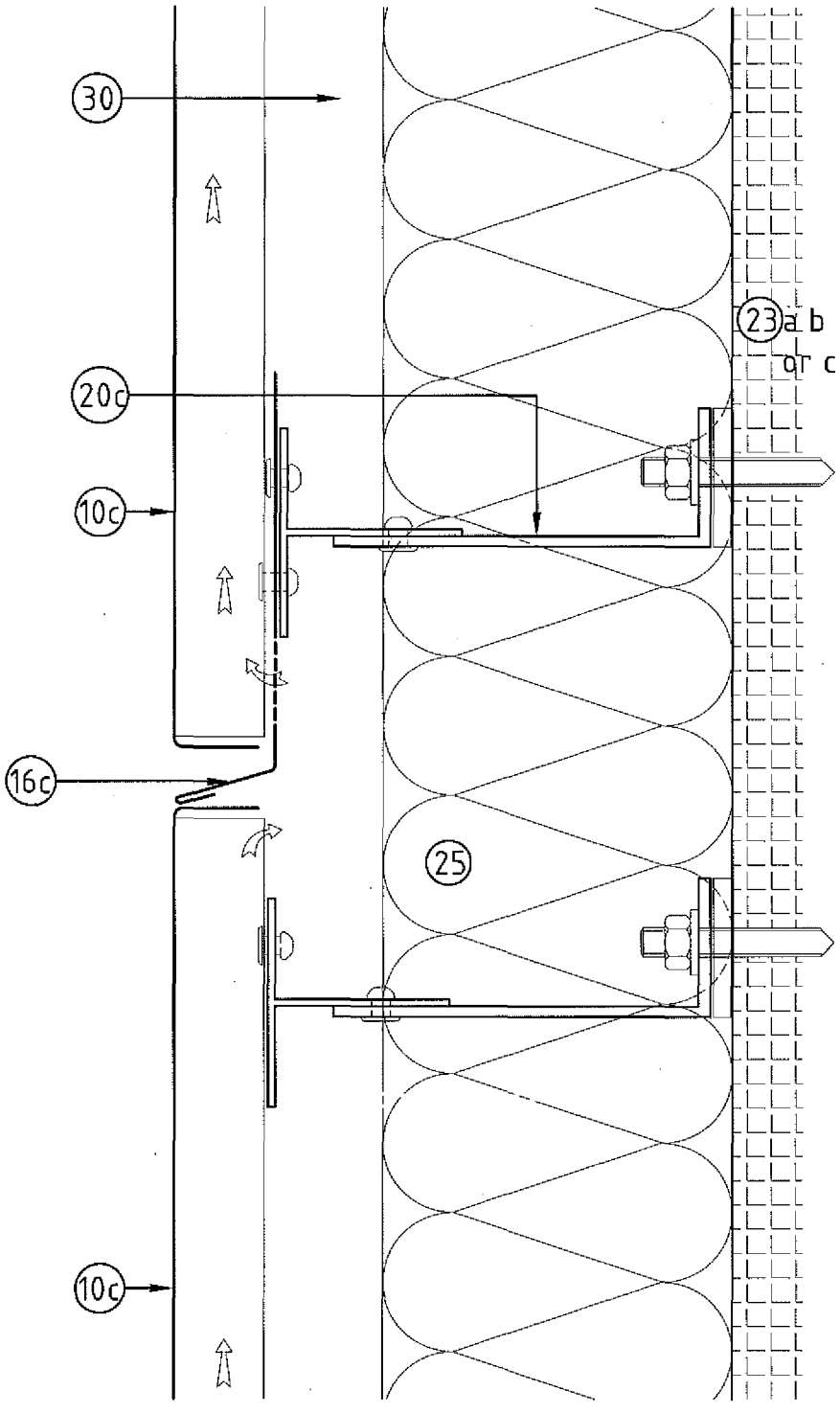
REVEAL PANEL (Vertical) INTERNAL CORNER DETAIL (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: Fax [redacted]
Scale : 1:2.5 @ A4	Date	FEB 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

P:\Zeichnungen\Reveal Panels\Vertical\dwg\Internal Corner Option 1.dwg, 18/10/2011 10:56:08

LEGEND

10. RHEINZINK SF PANEL
    c. STANDARD PANEL WITH BOXED END
16. RHEINZINK PROFILE
    y. VERTICAL JOINT PROFILE PARTIALLY PERFORATED
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



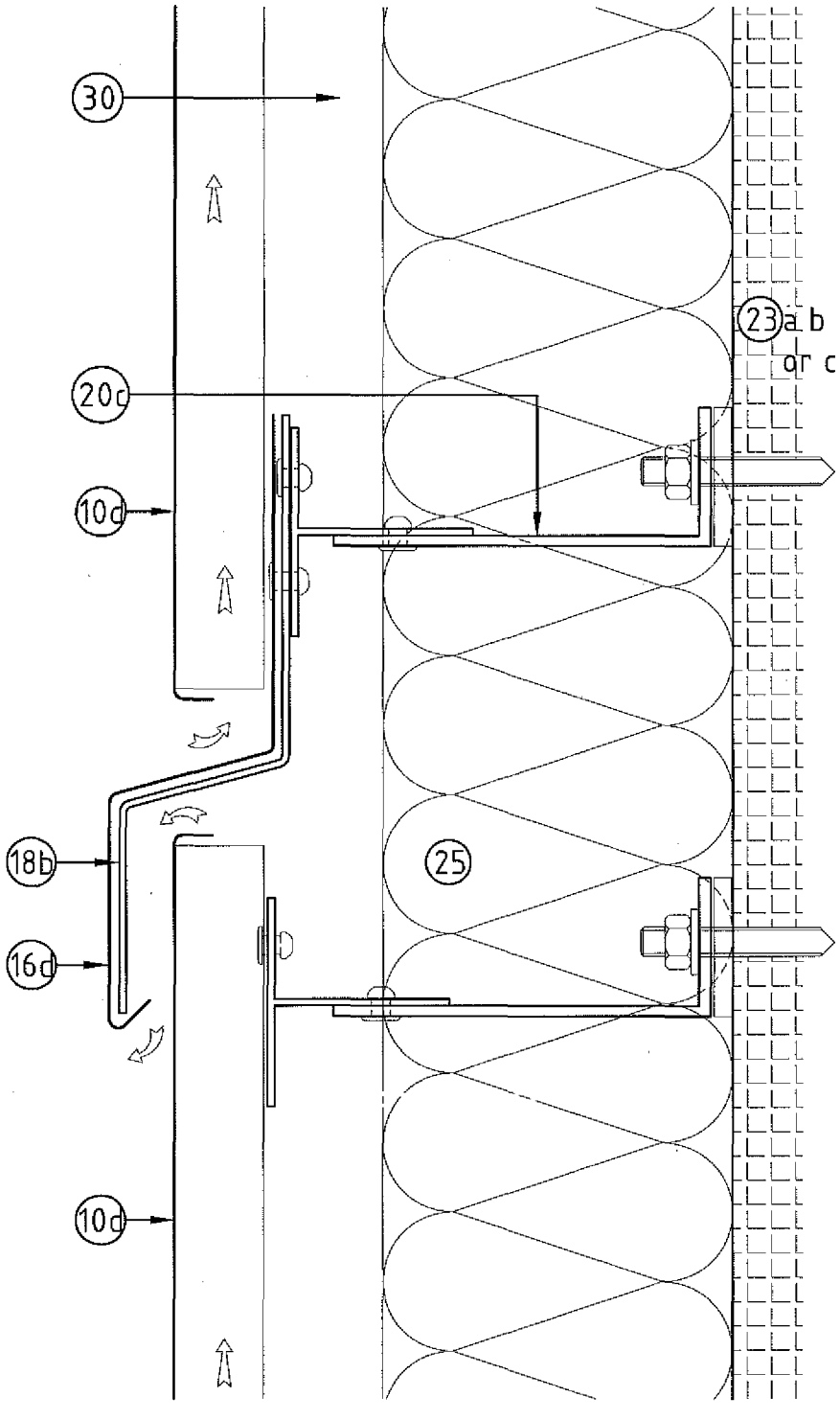
REVEAL PANEL (Vertical) HORIZONTAL JOINT DETIL Option 3)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

P:\Drawings\Reveal Panels\Vertical\dwg\SF Horizontal Joint Option 3.dwg, 26/10/2011 13:10:40

LEGEND

10. RHEINZINK SF PANEL
    d. STANDARD PANEL
    WITH SHORT BOXED END
16. RHEINZINK PROFILE
    d. BASE PROFILE
18. SUPPORT PROFILE
    b. ALUMINIUM
20. SUBSTRUCTURE
    c. BRACKET SYSTEM
    WITH THERMAL BREAK
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



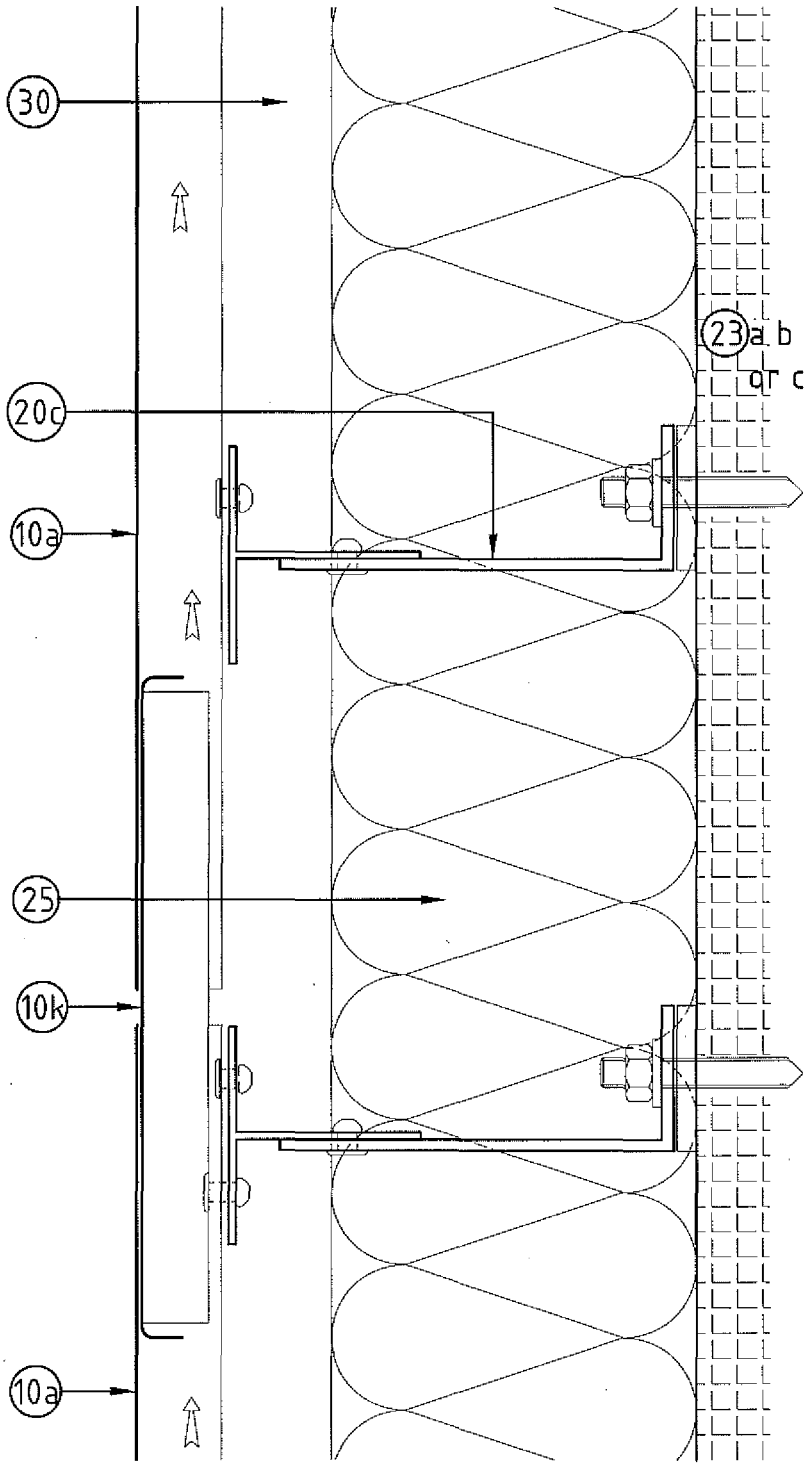
REVEAL PANEL (Vertical) HORIZONTAL JOINT DETAIL Option 2)			RHEINZINK U.K.
Scale : 1:2 @ A3	Date	OCT 2011	Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

I:\Drawings\Reveal Panels\Vertical\dwg\SF Horizontal Joint Option 2.dwg, 26/10/2011 14:25:41

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    k. SLAVE PROFILE
    WITH STOP ENDS
20. SUBSTRUCTURE
    c. BRACKET SYSTEM
    WITH THERMAL BREAK
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL (Vertical) HORIZONTAL JOINT DETAIL (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	OCT 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

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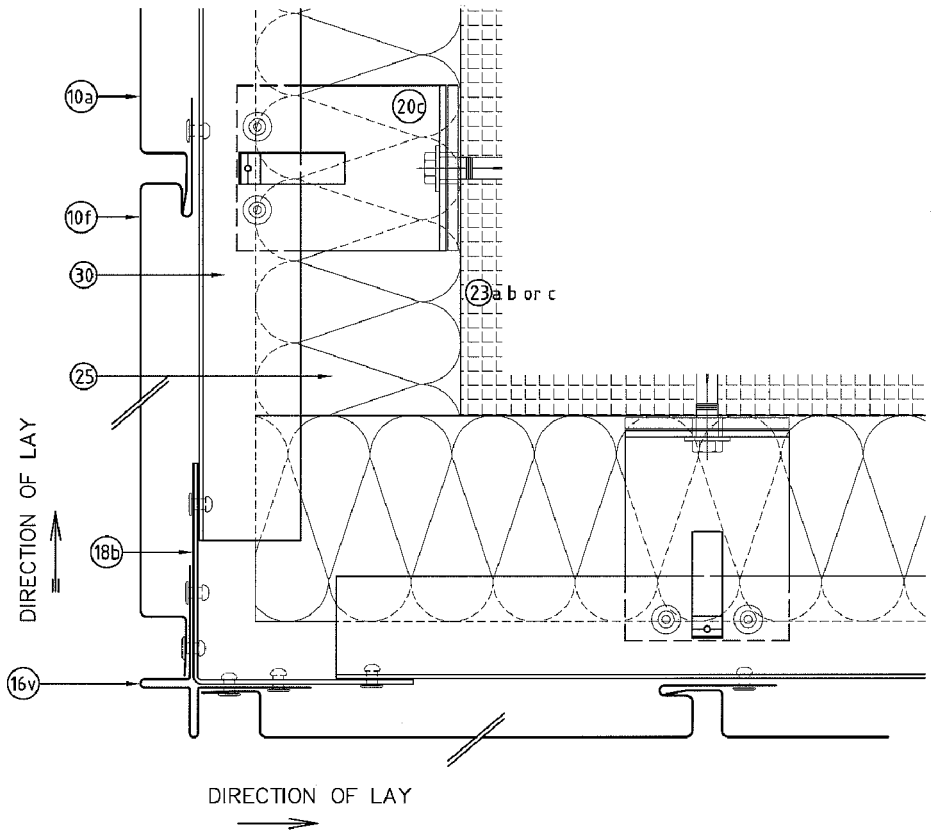
SEA00014616_0149

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    f. ADAPTER PANEL
16. RHEINZINK PROFILE
    v. CORNER PROFILE
18. SUPPORT PROFILE
    b. ALUMINIUM
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



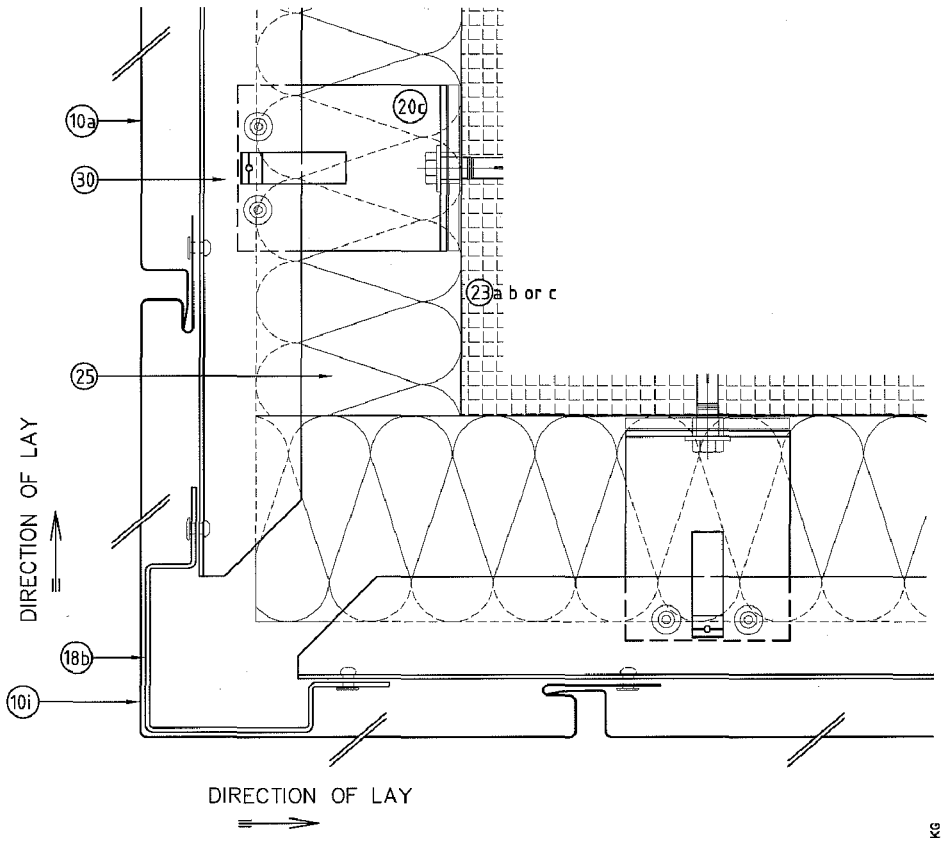
REVEAL PANEL (Vertical) EXTERNAL CORNER DETAIL (Option 3)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2.5 @ A4	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

SEA00014616_0150

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    i. CORNER PANEL
    (GROOVE-GROOVE)
18. SUPPORT PROFILE
    b. ALUMINIUM
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL (Vertical) EXTERNAL CORNER DETAIL (Option 2)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2.5 @ A4	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

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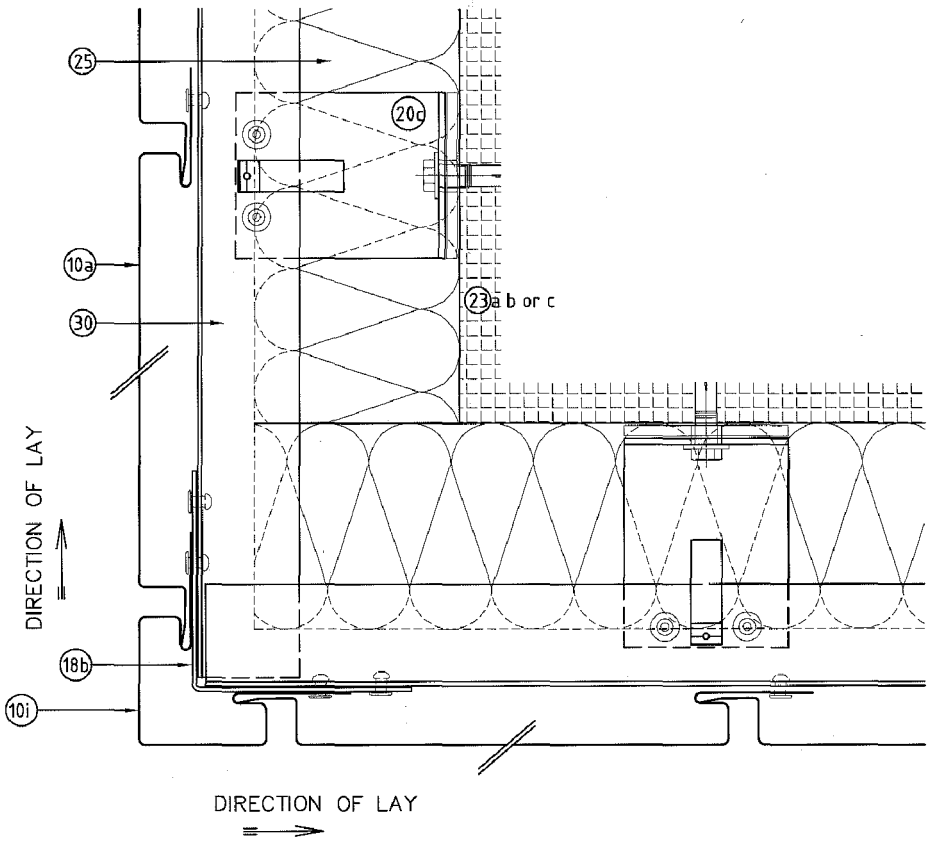
LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
    i. CORNER PANEL
    (GROOVE-GROOVE)
18. SUPPORT PROFILE
    b. ALUMINIUM
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL (Vertical) EXTERNAL CORNER DETAIL (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: Fax: [redacted]
Scale : 1:2.5 @ A4	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

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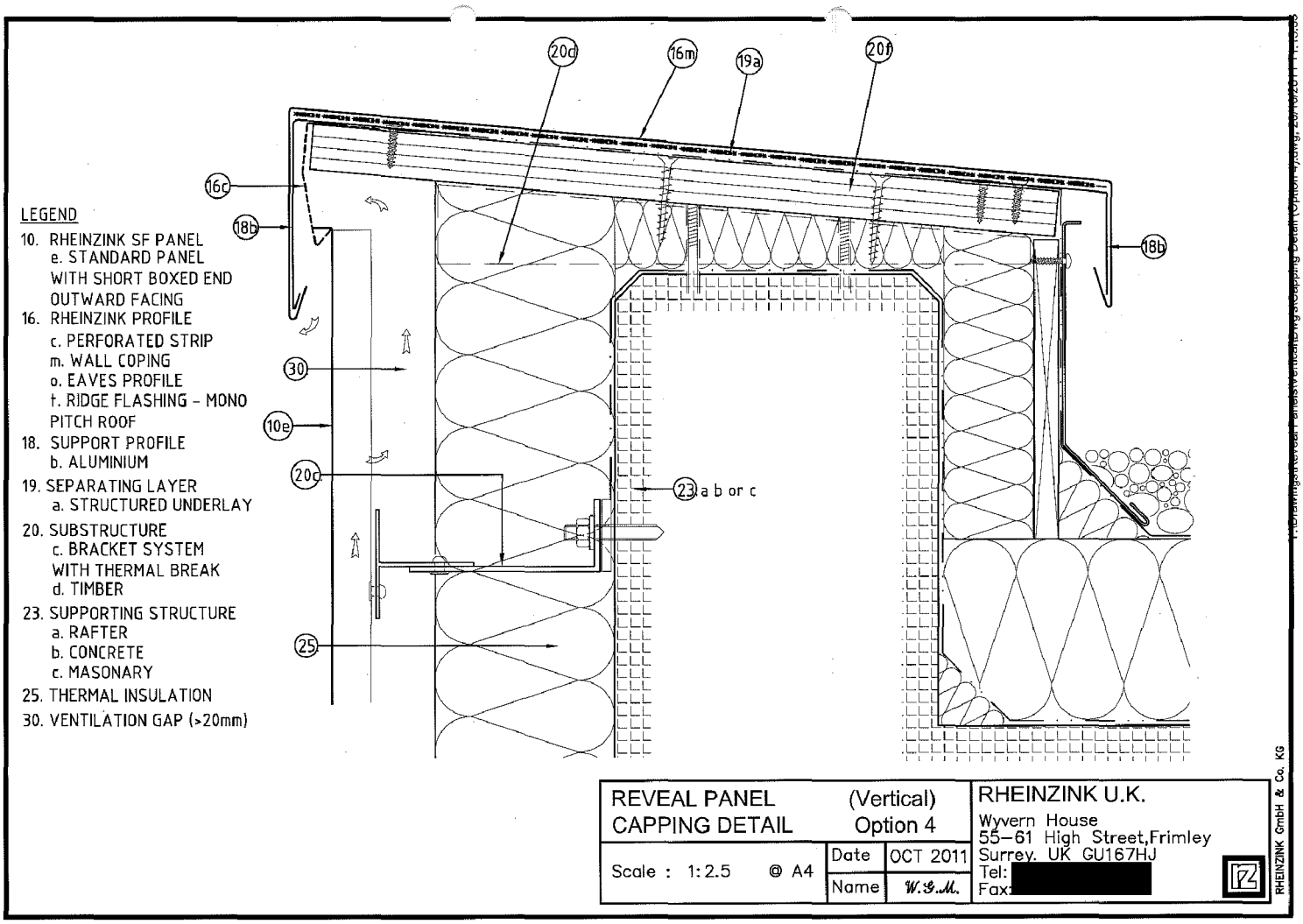

LEGEND

10. RHEINZINK SF PANEL
    e. STANDARD PANEL WITH SHORT BOXED END OUTWARD FACING
16. RHEINZINK PROFILE
    c. PERFORATED STRIP
    m. WALL COPING
    o. EAVES PROFILE
    t. RIDGE FLASHING - MONO PITCH ROOF
18. SUPPORT PROFILE
    b. ALUMINIUM
19. SEPARATING LAYER
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
    d. TIMBER
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL CAPPING DETAIL	(Vertical) Option 4	
Scale : 1:2.5 @ A4	Date	OCT 2011
	Name	W.S.M.

RHEINZINK U.K.
Wyvern House
55–61 High Street,Frimley
Surrey. UK GU167HJ
Tel: [redacted]
Fax:

RHEINZINK GmbH & Co. KG

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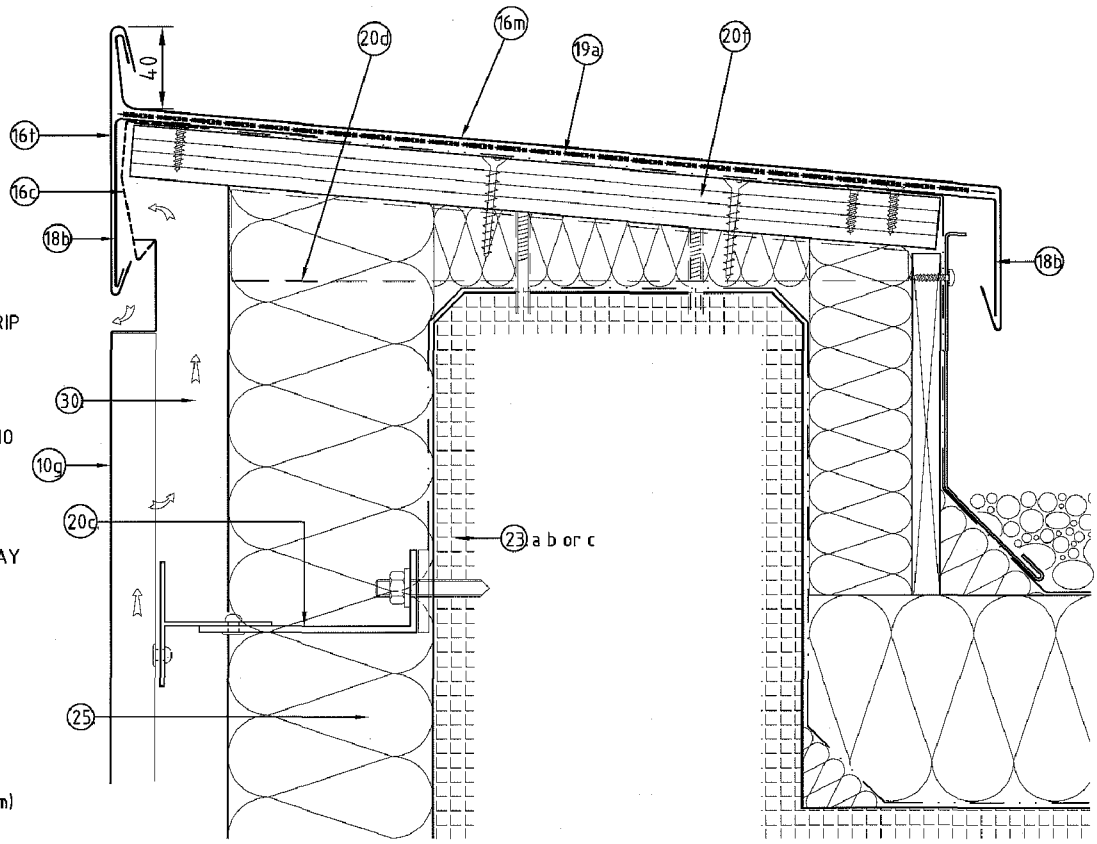

LEGEND

10. RHEINZINK SF PANEL
    g. ADAPTER PANEL WITH BOXED END AND DRIP
16. RHEINZINK PROFILE
    c. PERFORATED STRIP
    m. WALL COPING
    o. EAVES PROFILE
    t. RIDGE FLASHING - MONO PITCH ROOF
18. SUPPORT PROFILE
    b. ALUMINIUM
19. SEPARATING LAYER
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
    d. TIMBER
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL CAPPING DETAIL	(Vertical) Option 3	RHEINZINK U.K.
Scale : 1:2.5 @ A4	Date: OCT 2011	Wyvern House, 55–61 High Street, Frimley, Surrey. UK GU167HJ
	Name: W.S.M.	Tel: [redacted] Fax: [redacted]

RHEINZINK GmbH & Co. KG

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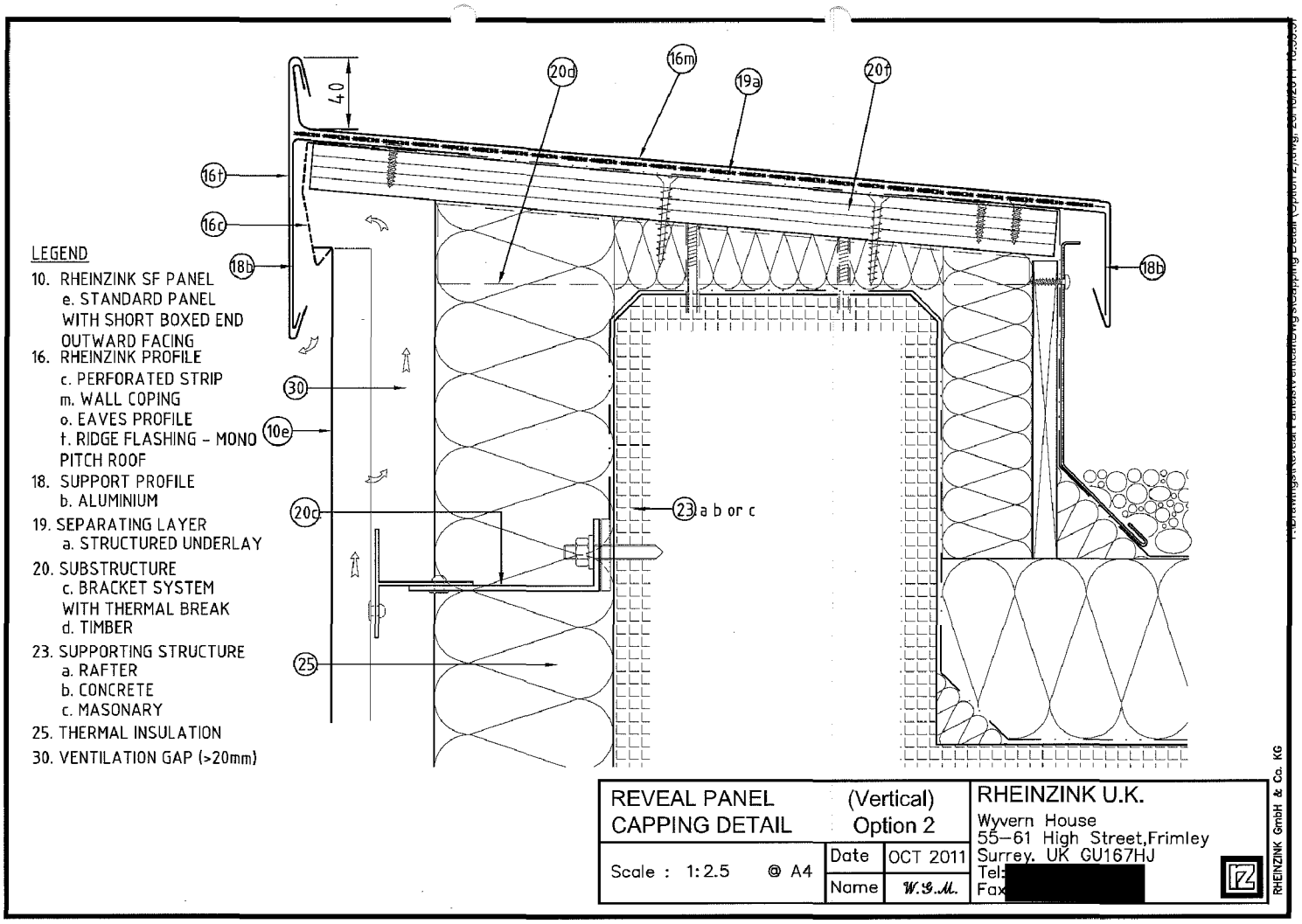

LEGEND

10. RHEINZINK SF PANEL
    e. STANDARD PANEL WITH SHORT BOXED END OUTWARD FACING
16. RHEINZINK PROFILE
    c. PERFORATED STRIP
    m. WALL COPING
    o. EAVES PROFILE
    t. RIDGE FLASHING - MONO PITCH ROOF
18. SUPPORT PROFILE
    b. ALUMINIUM
19. SEPARATING LAYER
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
    d. TIMBER
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL CAPPING DETAIL	(Vertical) Option 2	RHEINZINK U.K.
Scale : 1:2.5 @ A4	Date: OCT 2011	Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax
	Name: W.S.M.	

RHEINZINK GmbH & Co. KG

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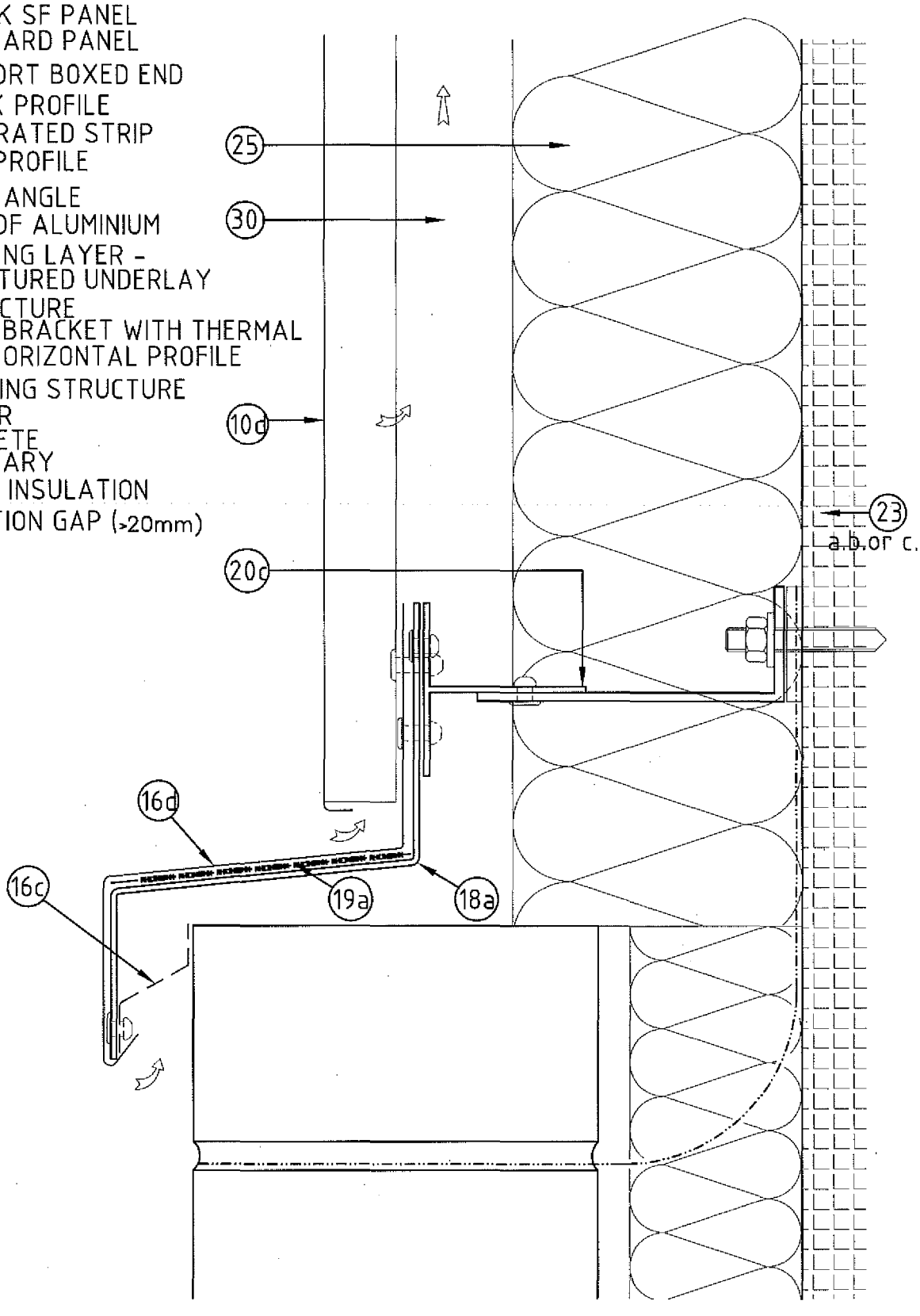
LEGEND

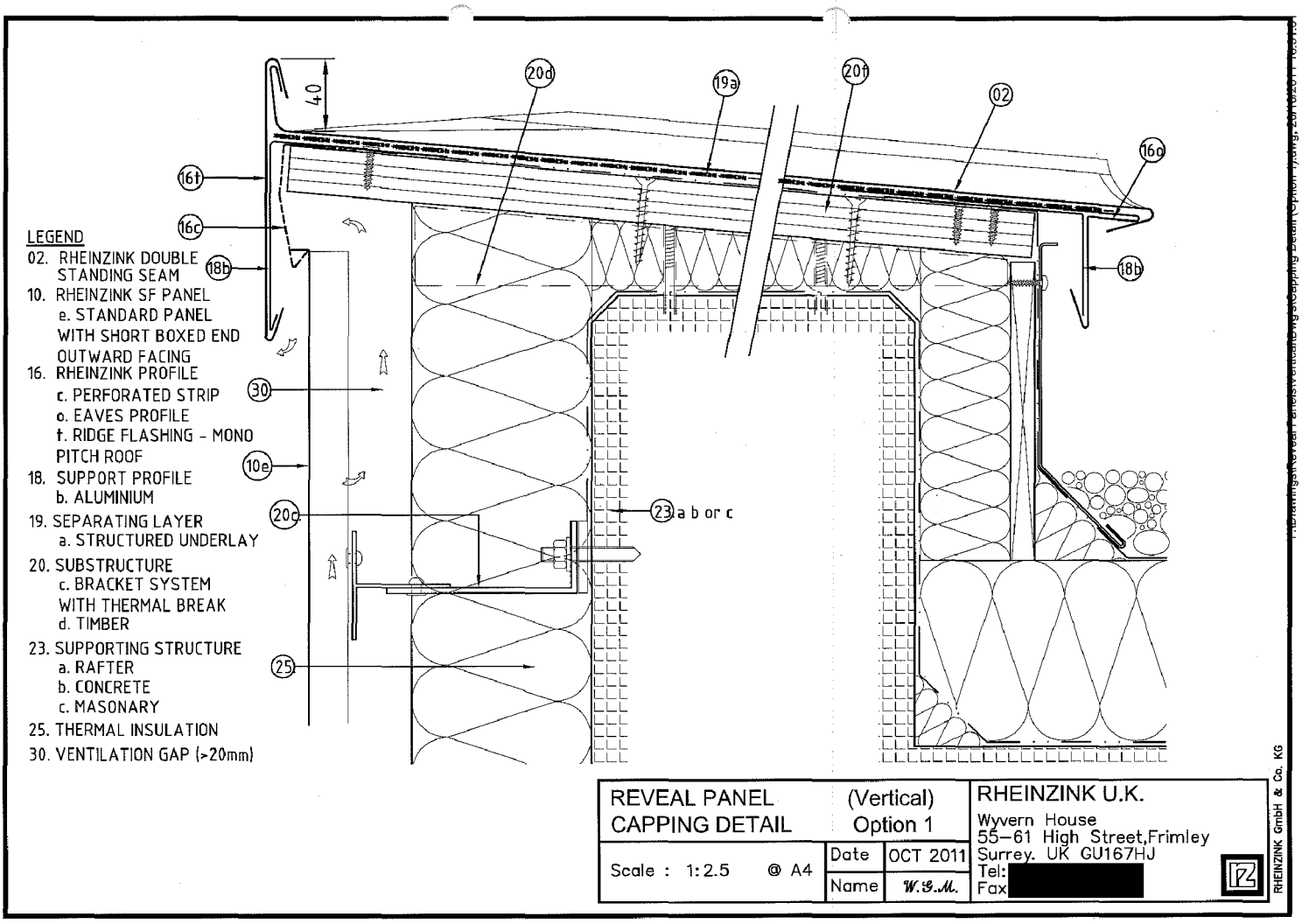
10. RHEINZINK SF PANEL
    d. STANDARD PANEL
    WITH SHORT BOXED END
16. RHEINZINK PROFILE
    c. PERFORATED STRIP
    d. BASE PROFILE
18. SUPPORT ANGLE
    b. MADE OF ALUMINIUM
19. SEPARATING LAYER -
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL (Vertical) BASE DETAIL ON PLINTH			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax:
Scale : 1:2 @ A4	Date	FEB 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

I:\Drawings\Reveal Panels\Vertical\Dwg's\BASE DETAIL ON PLINTH.dwg, 15/10/2011 15:03:25



LEGEND

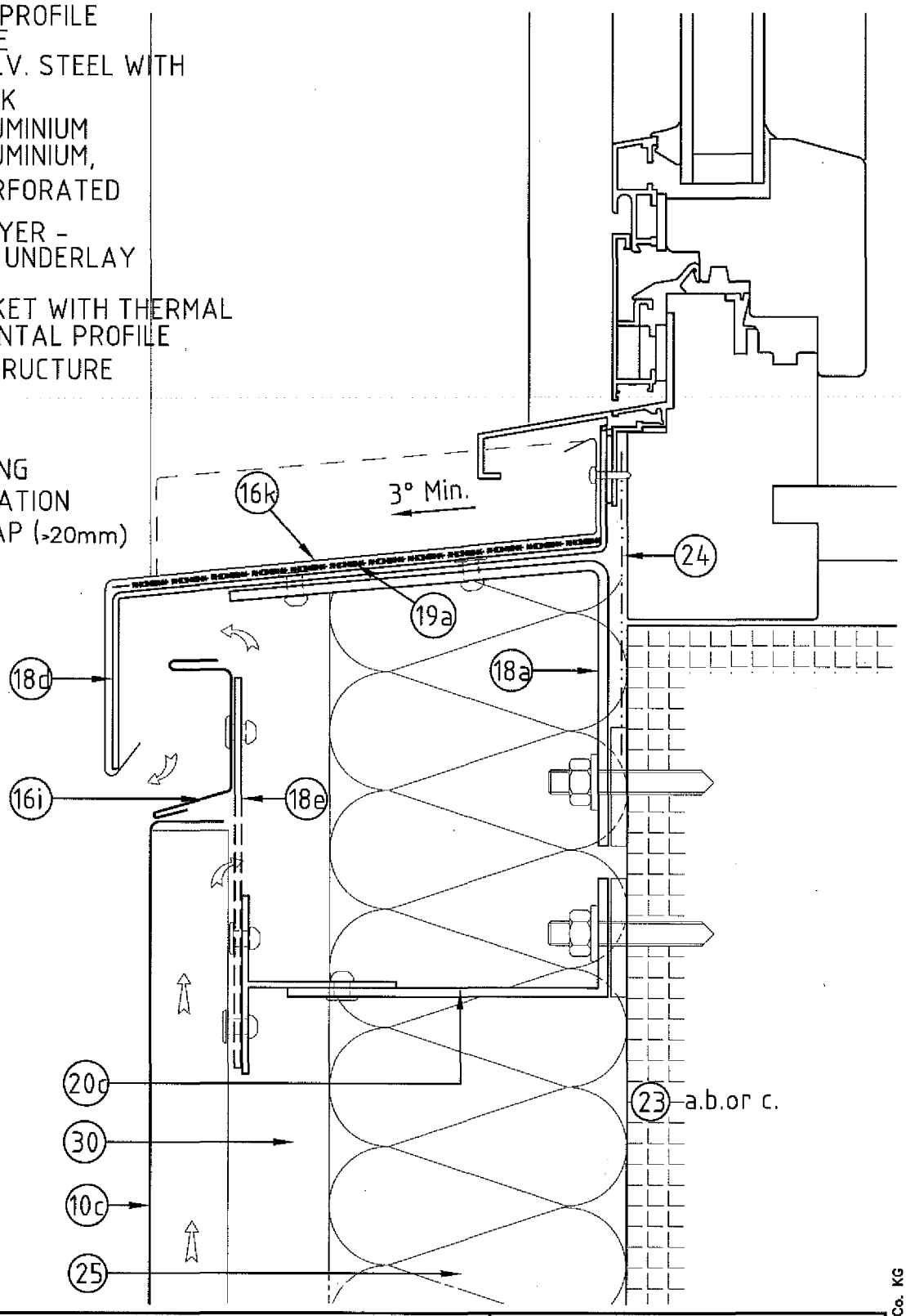
02. RHEINZINK DOUBLE STANDING SEAM
10. RHEINZINK SF PANEL
e. STANDARD PANEL WITH SHORT BOXED END OUTWARD FACING
16. RHEINZINK PROFILE
c. PERFORATED STRIP
o. EAVES PROFILE
f. RIDGE FLASHING - MONO PITCH ROOF
18. SUPPORT PROFILE
b. ALUMINIUM
19. SEPARATING LAYER
a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
c. BRACKET SYSTEM WITH THERMAL BREAK
d. TIMBER
23. SUPPORTING STRUCTURE
a. RAFTER
b. CONCRETE
c. MASONARY
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL CAPPING DETAIL	(Vertical) Option 1	RHEINZINK U.K.	
Scale : 1:2.5 @ A4	Date	OCT 2011	Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: Fax [redacted]
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

LEGEND

10. RHEINZINK SF PANEL
    c. STANDARD PANEL
    WITH BOXED END
16. RHEINZINK PROFILE
    k. CILL PROFILE SLOPE >3°
    i. TERMINATION PROFILE
18. SUPPORT ANGLE
    a. MADE OF GALV. STEEL WITH
    THERMAL BREAK
    d. MADE OF ALUMINIUM
    e. MADE OF ALUMINIUM,
    PARTIALLY PERFORATED
19. SEPARATING LAYER -
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL
    BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL (Vertical) WINDOW CILL DETAIL (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	SEP 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

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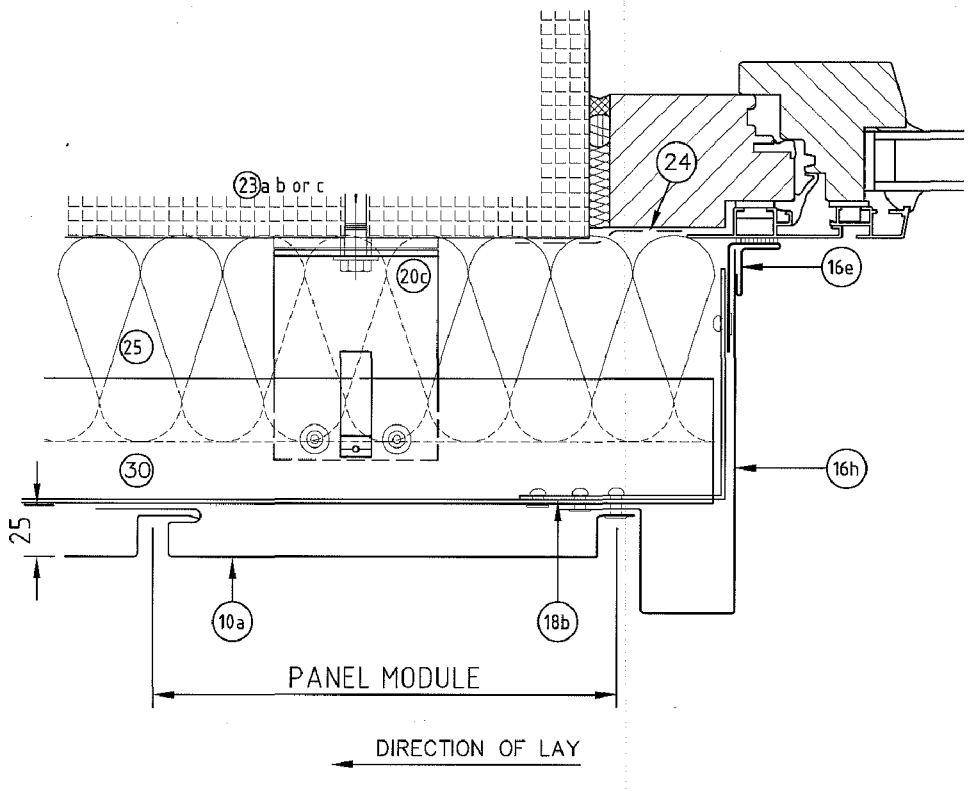

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
16. RHEINZINK PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
    h. JAMB PROFILE
18. SUPPORT PROFILE
    b. ALUMINIUM
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

STECKFALZPANEEL (REVEAL PANEL) VERTICAL JAMB DETAIL (Option 3)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: Fax: [redacted]
Scale : 1:3 @ A4	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

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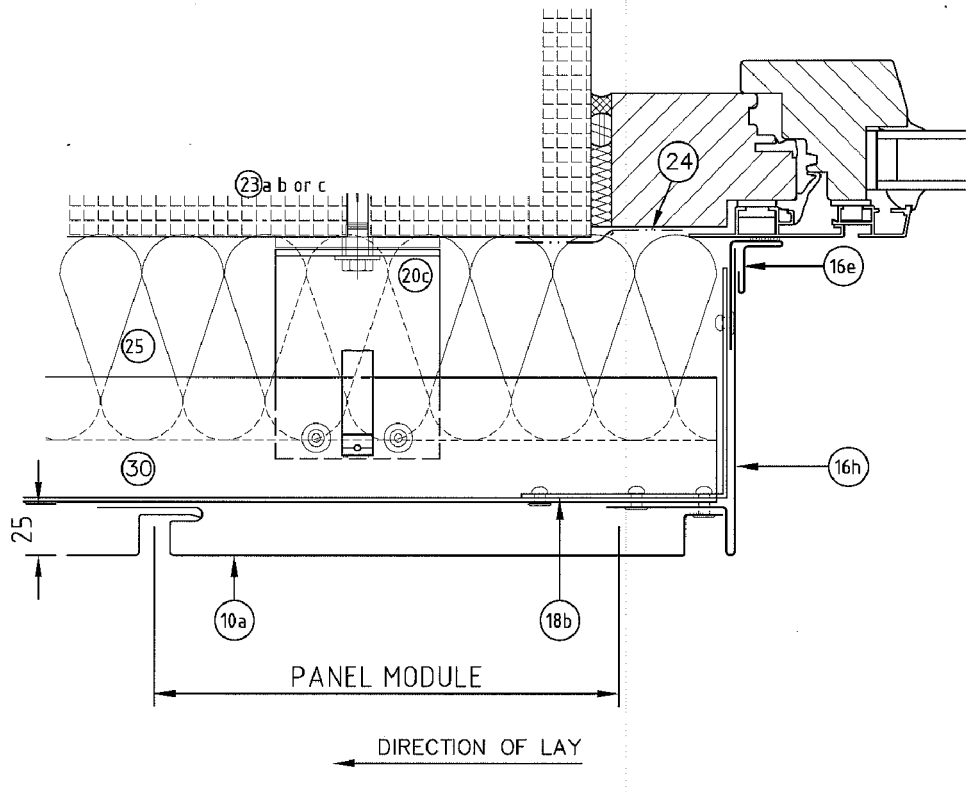

LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
16. RHEINZINK PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
    h. JAMB PROFILE
18. SUPPORT PROFILE
    b. ALUMINIUM
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

STECKFALZPANEEL (REVEAL PANEL) VERTICAL JAMB DETAIL (Option 2)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey, UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:3 @ A4	Date	JUN 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

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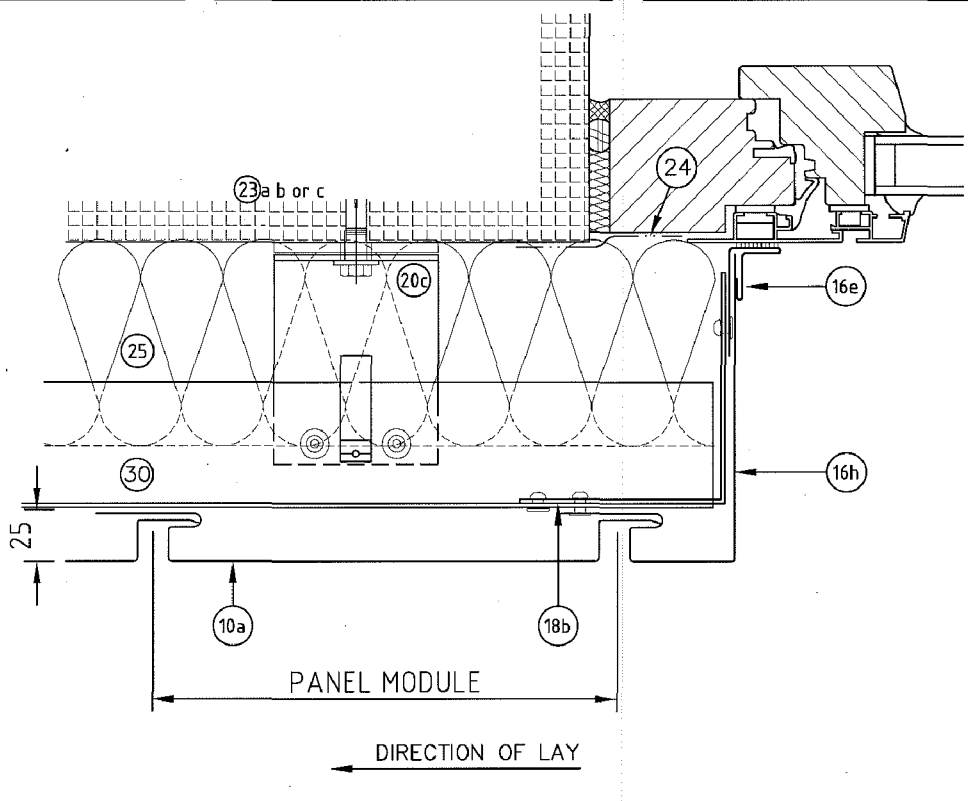
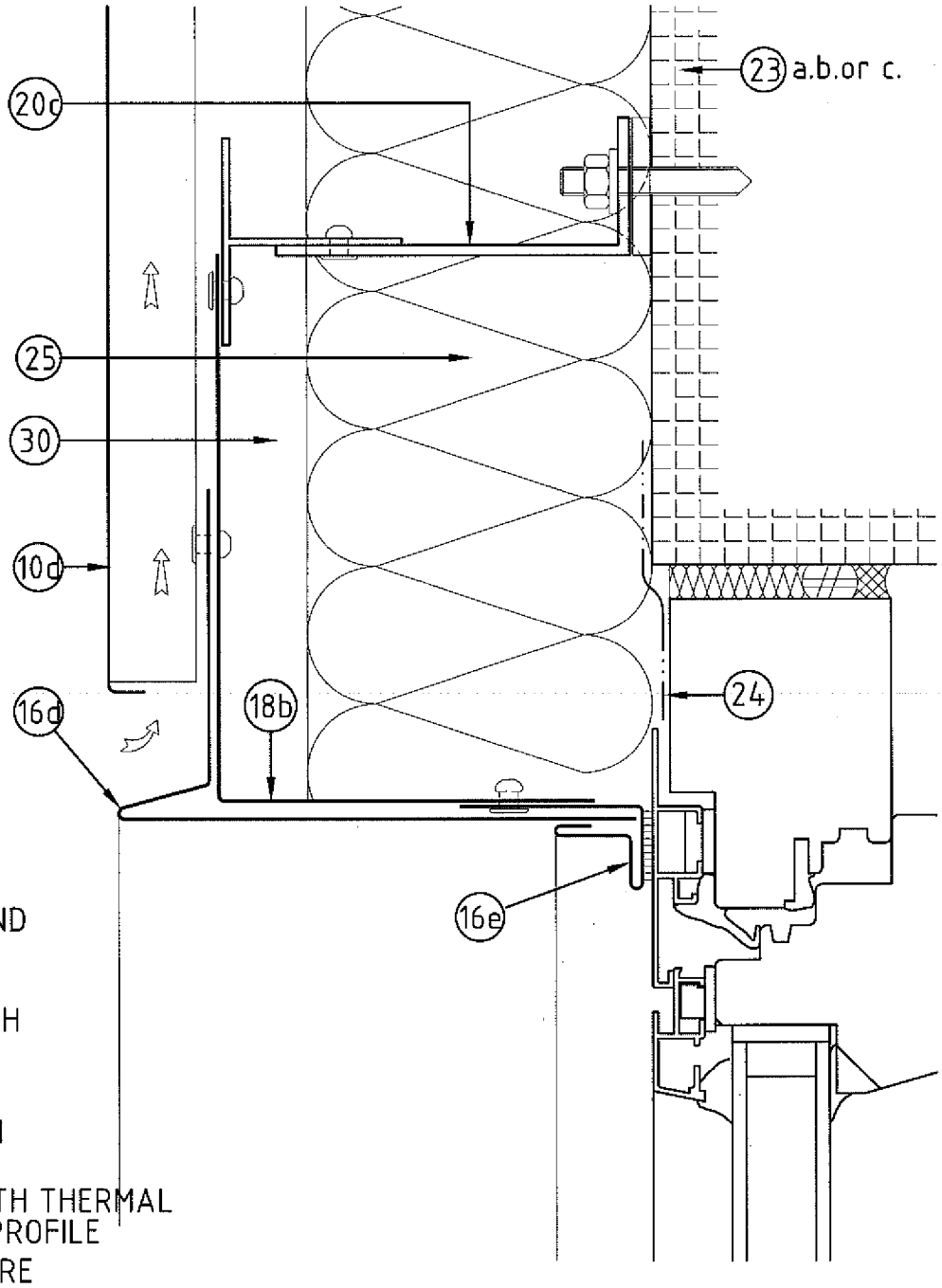


LEGEND

10. RHEINZINK SF PANEL
    a. STANDARD PANEL
16. RHEINZINK PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
    h. JAMB PROFILE
18. SUPPORT PROFILE
    b. ALUMINIUM
20. SUBSTRUCTURE
    c. BRACKET SYSTEM WITH THERMAL BREAK
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

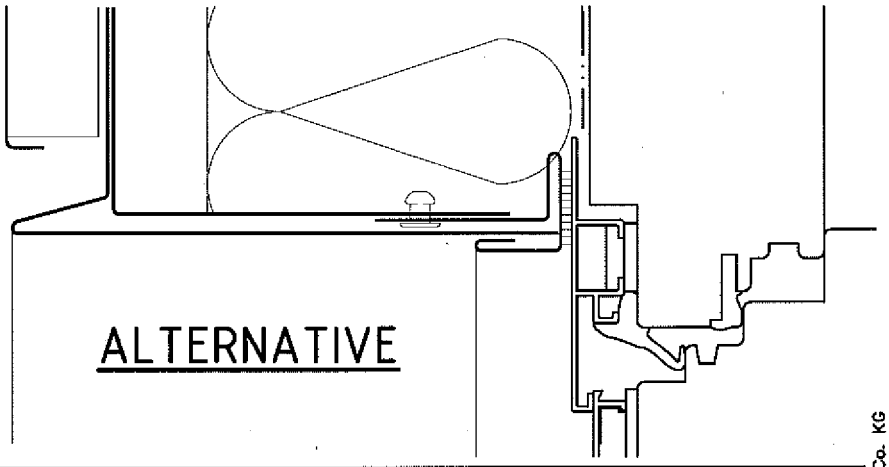
STECKFALZPANEEL (REVEAL PANEL) VERTICAL JAMB DETAIL (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: Fax: [redacted]
Scale : 1:3 @ A4	Date	OCT 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG



LEGEND

10. RHEINZINK SF PANEL
    d. STANDARD PANEL WITH SHORT BOXED END
16. RHEINZINK PROFILE
    d. BASE PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
18. SUPPORT ANGLE
    b. MADE OF ALUMINIUM
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



ALTERNATIVE

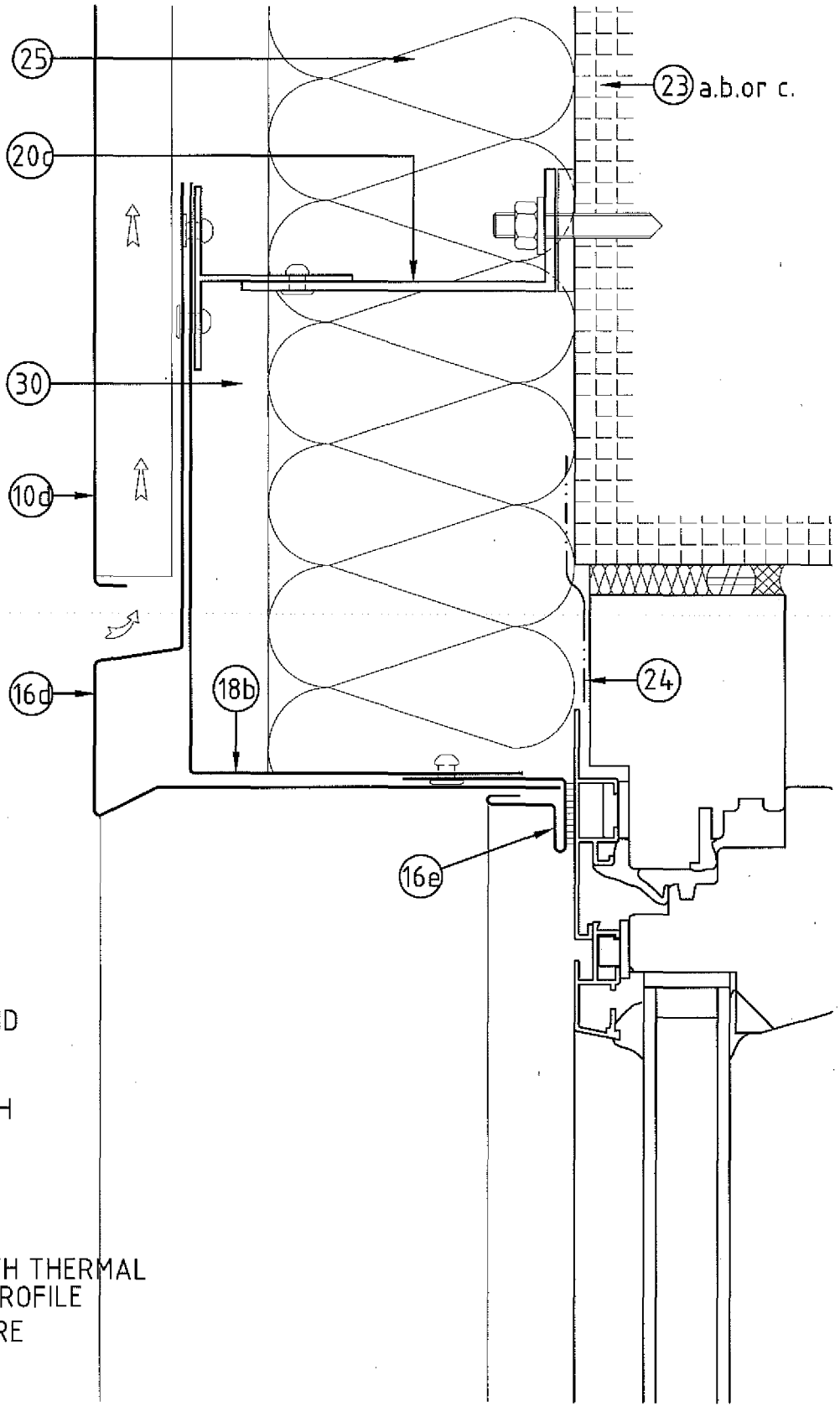
REVEAL PANEL (Vertical)
WINDOW HEAD DETAIL (Option 2)

Scale : 1:2 @ A3

Date	SEP 2011
Name	W.G.M.

RHEINZINK U.K.
Wyvern House
55–61 High Street,Frimley
Surrey. UK GU167HJ
Tel: [redacted]
Fax: [redacted]

RHEINZINK GmbH & Co. KG



LEGEND

10. RHEINZINK SF PANEL
    d. STANDARD PANEL WITH SHORT BOXED END
16. RHEINZINK PROFILE
    d. BASE PROFILE
    e. RECEIVER STRIP WITH SEALANT TAPE
18. SUPPORT ANGLE
    b. MADE OF ALUMINIUM
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)

REVEAL PANEL WINDOW HEAD DETAIL (Vertical) (Option 1)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	SEP 2011	
	Name	W.S.M.	

RHEINZINK GmbH & Co. KG

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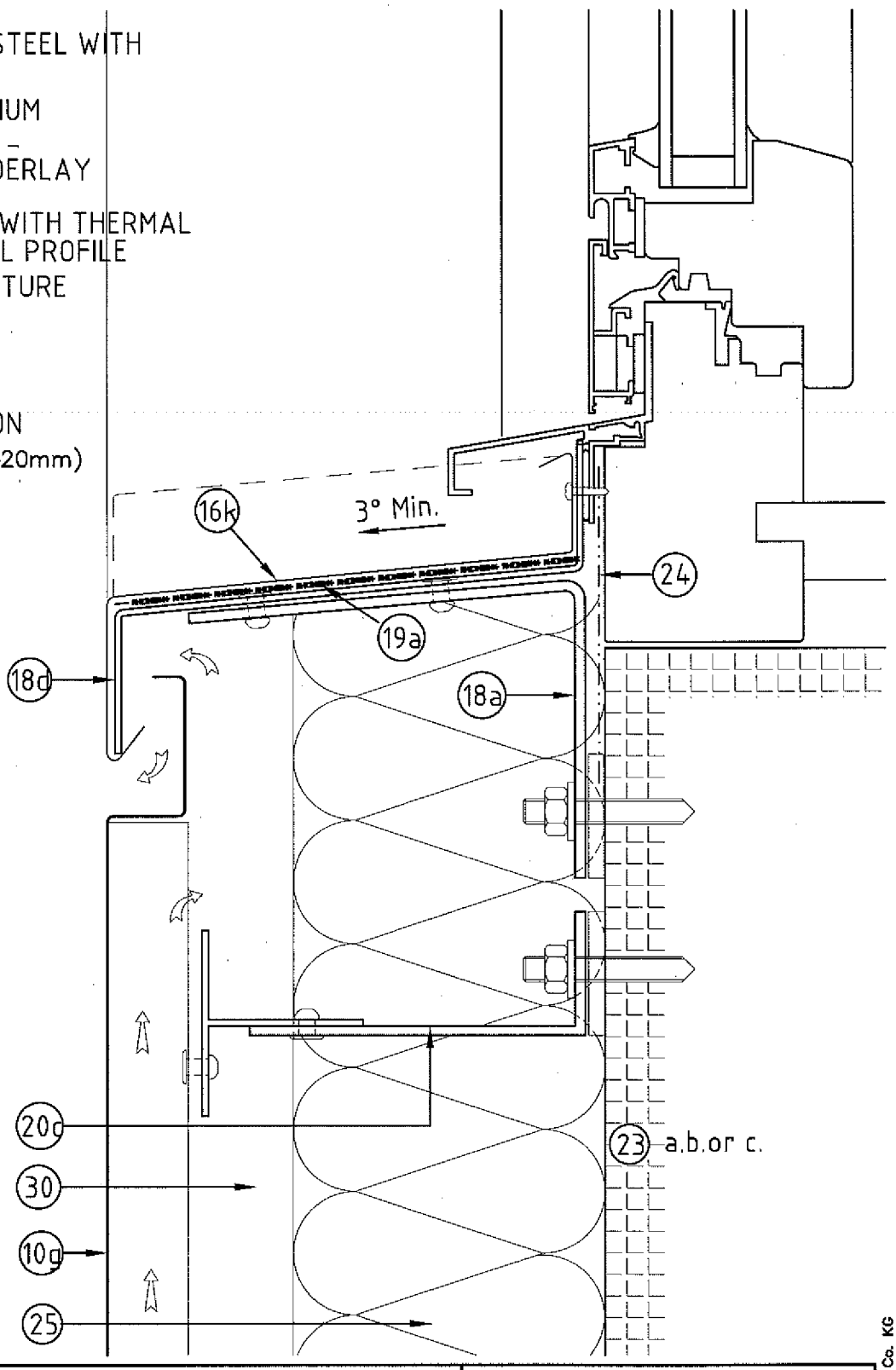
LEGEND

10. RHEINZINK SF PANEL
    g. ADAPTER PANEL
    WITH BOXED END AND DRIP
16. RHEINZINK PROFILE
    k. CILL PROFILE SLOPE >3°
18. SUPPORT ANGLE
    a. MADE OF GALV. STEEL WITH
    THERMAL BREAK
    d. MADE OF ALUMINIUM
19. SEPARATING LAYER -
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL
    BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



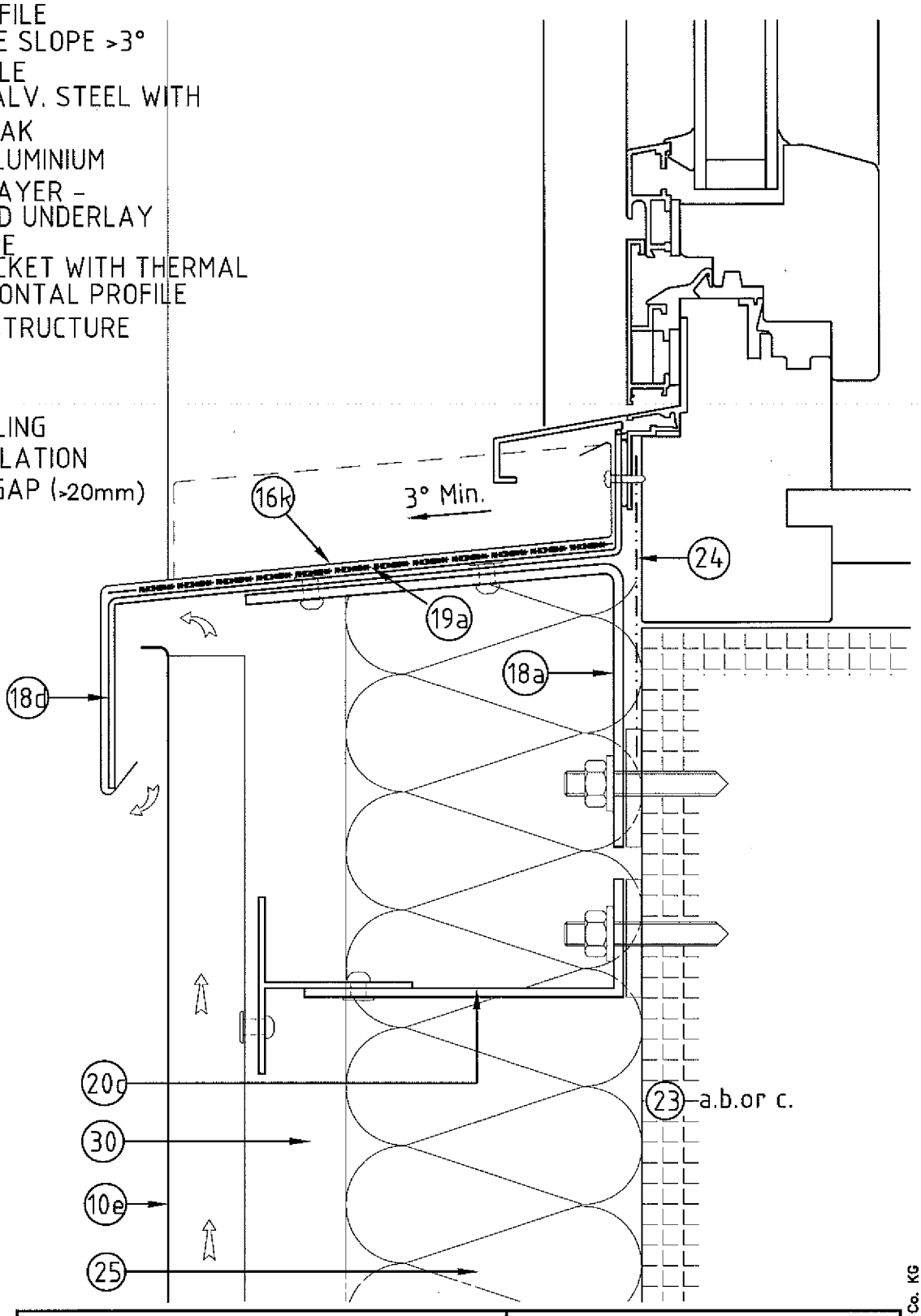
REVEAL PANEL (Vertical) WINDOW CILL DETAIL (Option 2)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	SEP 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

SEA00014616/164
SEA00014616_0164

LEGEND

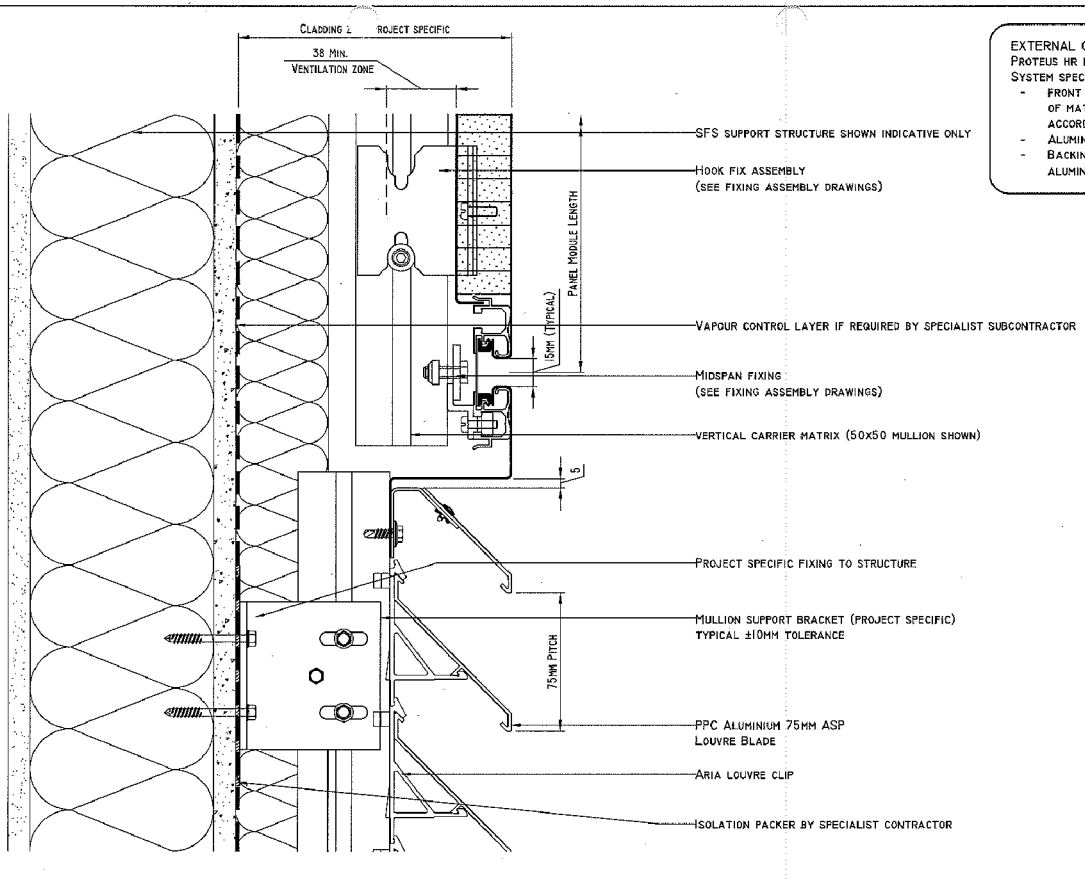
10. RHEINZINK SF PANEL
    e. STANDARD PANEL WITH SHORT BOXED END OUTWARD FACING
16. RHEINZINK PROFILE
    k. CILL PROFILE SLOPE >3°
18. SUPPORT ANGLE
    a. MADE OF GALV. STEEL WITH THERMAL BREAK
    d. MADE OF ALUMINIUM
19. SEPARATING LAYER -
    a. STRUCTURED UNDERLAY
20. SUBSTRUCTURE
    c. FIXING BRACKET WITH THERMAL BREAK ,HORIZONTAL PROFILE
23. SUPPORTING STRUCTURE
    a. RAFTER
    b. CONCRETE
    c. MASONARY
24. AIRTIGHT SEALING
25. THERMAL INSULATION
30. VENTILATION GAP (>20mm)



REVEAL PANEL WINDOW CILL DETAIL (Vertical) (Option 3)			RHEINZINK U.K. Wyvern House 55–61 High Street,Frimley Surrey. UK GU167HJ Tel: [redacted] Fax: [redacted]
Scale : 1:2 @ A3	Date	SEP 2011	
	Name	W.G.M.	

RHEINZINK GmbH & Co. KG

SEA00014616/165
SEA00014616_0165



EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:

- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

REVISION	DATE	AMENDMENT	DRAWN

KME Architectural Solutions Partner

UNIT 5 GLEBE ROAD
EAST GILLIBRANDS
SKELMERSDALE
LANCASHIRE, WN8 9JP
TEL [redacted]
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DO NOT SCALE FROM THIS DRAWING

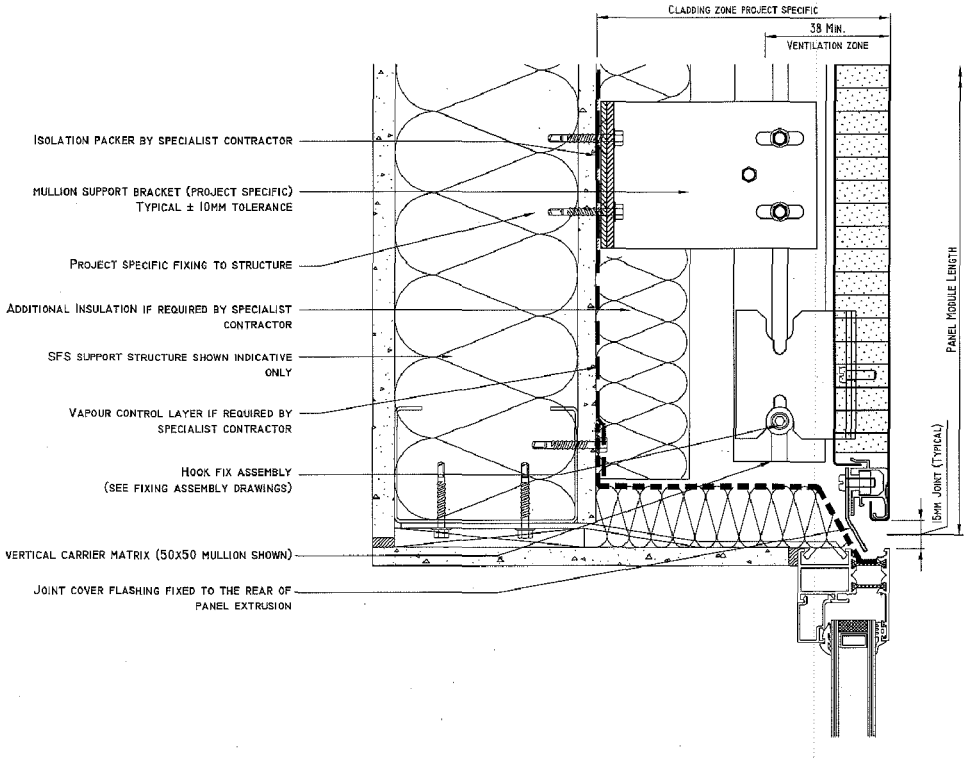
SYSTEM	PROTEUS HR
TITLE	PANEL INTERFACE WITH 75MM ASP LOUVRE HEAD ON A SFS STRUCTURE BY 50x50 MULLION
SECTION	VERTICAL

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MARCH 10	XX		1:2 @ A3

DRAWING NO	DRAWING SIZE	REVISION
100_2_10_1_510_10	A3	*

SEA00014616_0166

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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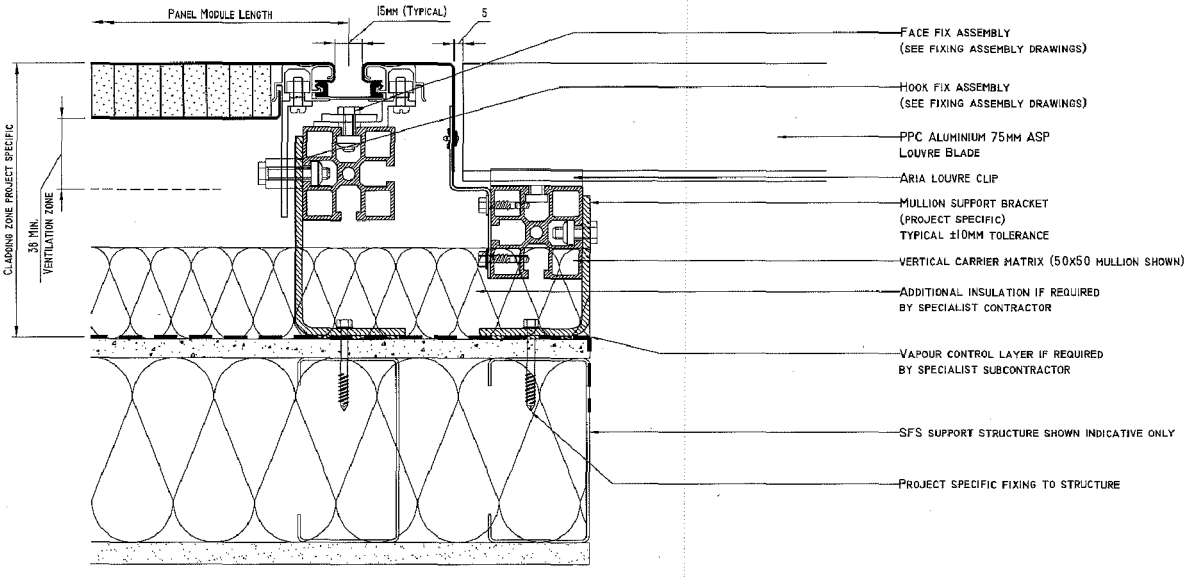
DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL TO FLUSH GLAZING ON SFS BY 50X50 MULLION			
SECTION	VERTICAL SECTION			
DRAWN BY: R.J	DRAWN DATE: MAR 10	APPROVED BY: *	APPROVED DATE: *	SCALE: 1:2
DRAWING NO: 100_2_10_1_211_10			DRAWING SIZE: A3	REVISION: *

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL INTERFACE WITH 75MM ASP LOUVRE ON A SFS STRUCTURE BY 50X50 MULLION			
SECTION	PLAN			
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MARCH 10	XX		1:2 @ A3
DRAWING NO			DRAWING SIZE	REVISION
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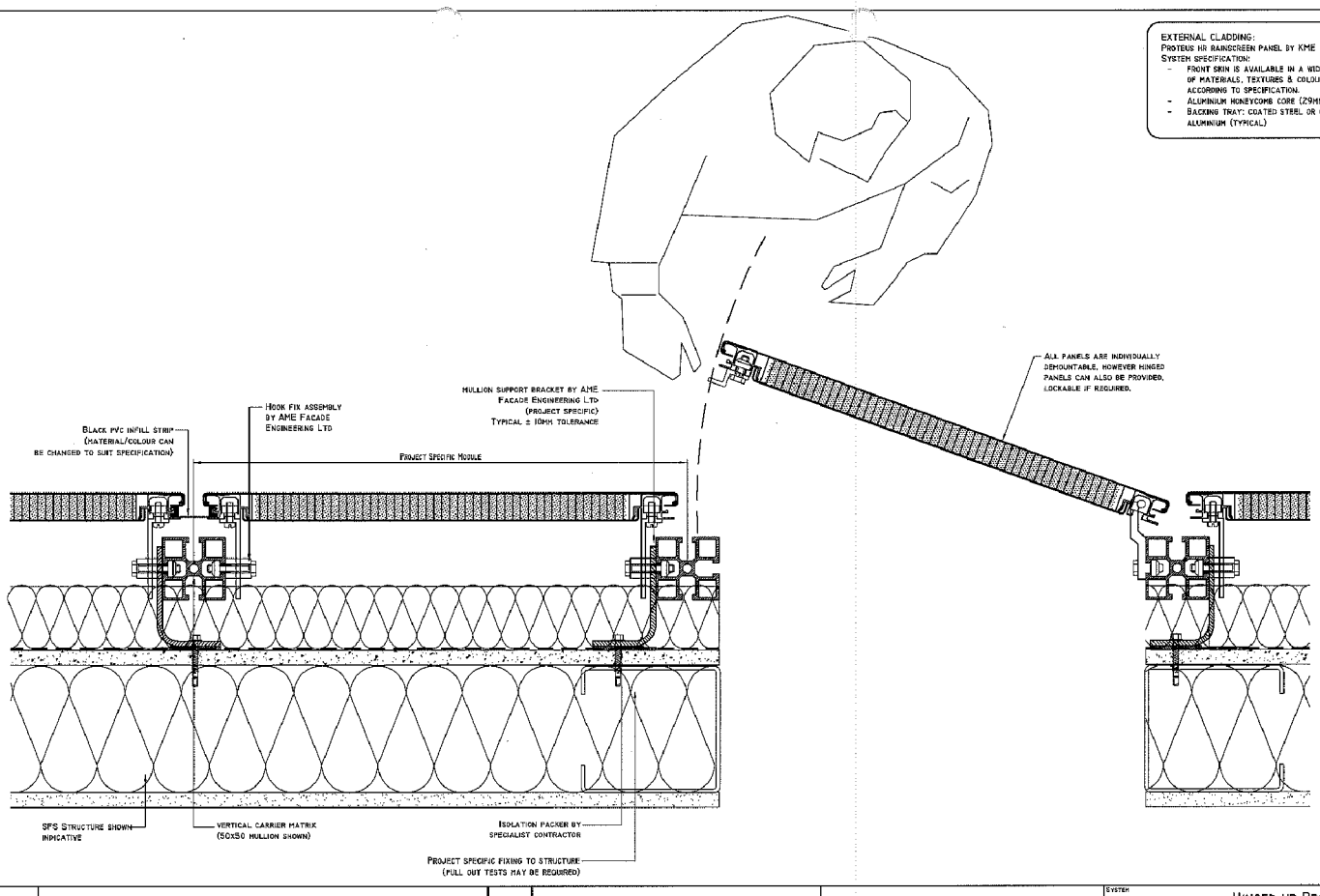

rev	date	Amendment	drawn

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System	HINGED HR PROTEUS HR
Drawing Title	HINGED PANEL TO PANEL ON A SFS STRUCTURE BY 50x50 MULLION
Section	HORIZONTAL

Drawn By	Drawn Date	Approved By	Approved Date	Scale
M.H	March 10	*	*	1:2

Drawing No	Drawing Size	Revision
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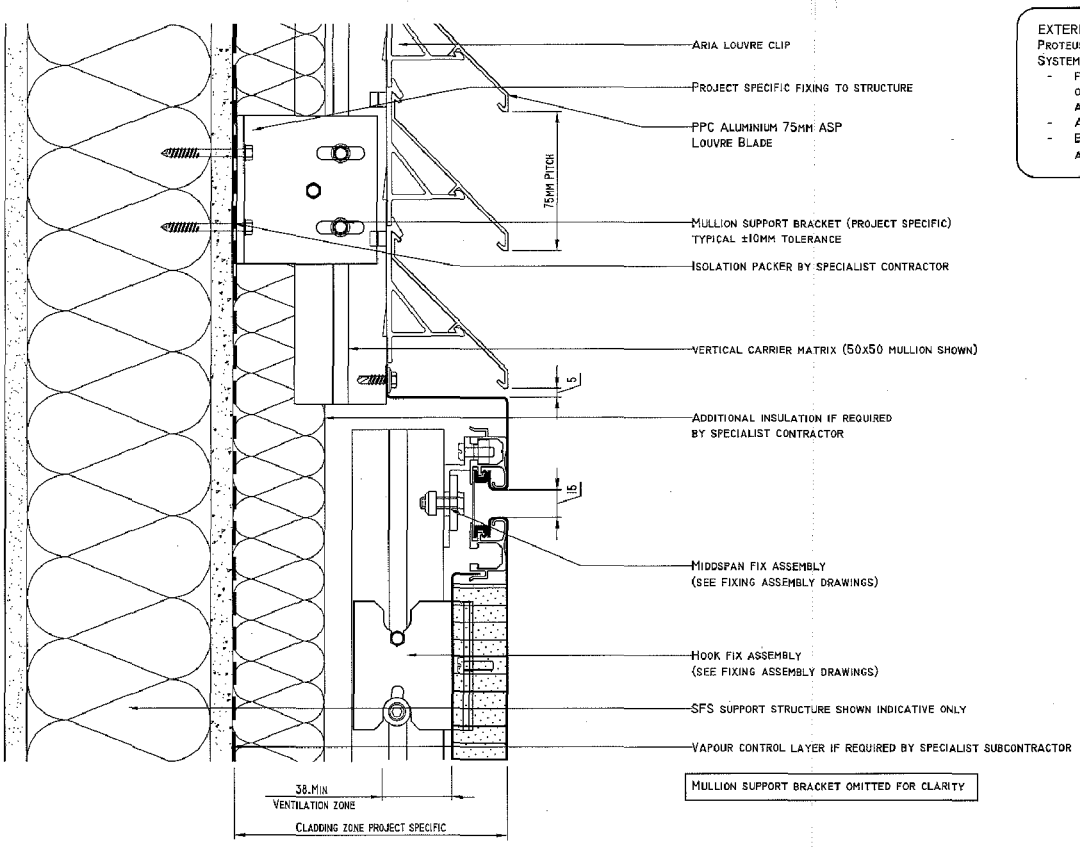
SEA00014616_0169



EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

REVISION	DATE	AMENDMENT	DRAWN

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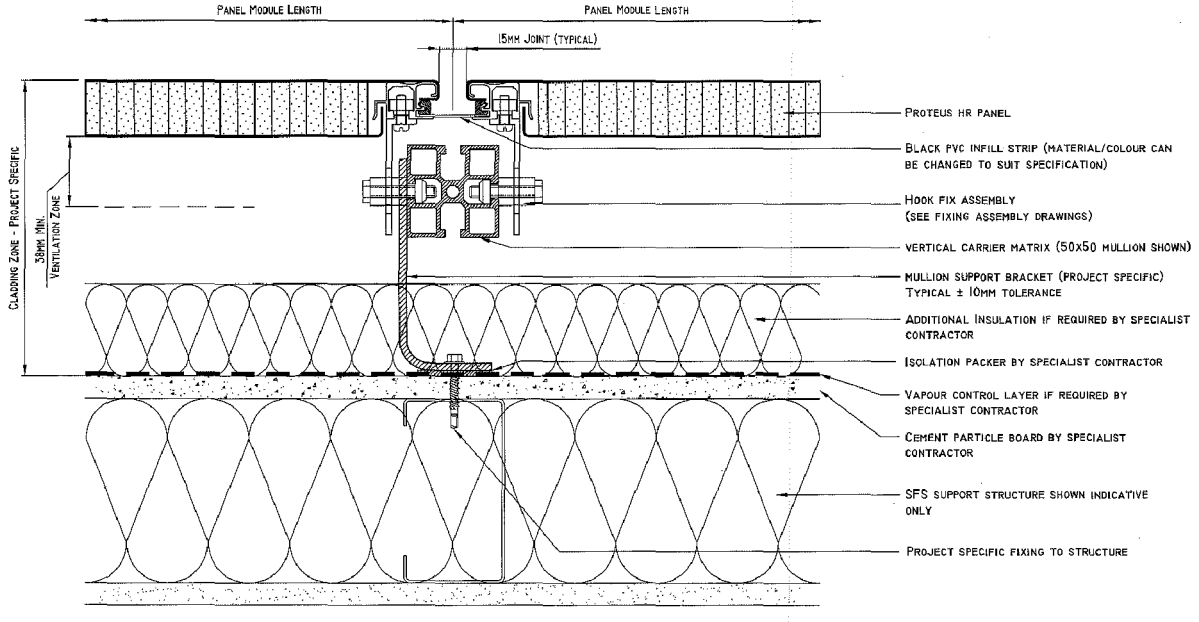
SYSTEM	PROTEUS HR			
TITLE	PANEL TO 75ASP CILL ON A SFS STRUCTURE BY 50x50 MULLION			
SECTION	VERTICAL			
DRAWN BY: R.J	DRAWN DATE: MARCH 10	APPROVED BY: XX	APPROVED DATE:	SCALE: 1:2 @ A3
DRAWING NO: 100_2_10_1_520_10			DRAWING SIZE: A3	REVISION: *

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME.
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



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SYSTEM	PROTEUS HR
TITLE	PANEL TO PANEL ON A SFS STRUCTURE BY 50x50 MULLION
SECTION	HORIZONTAL SECTION

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2

DRAWING NO	DRAWING SIZE	REVISION
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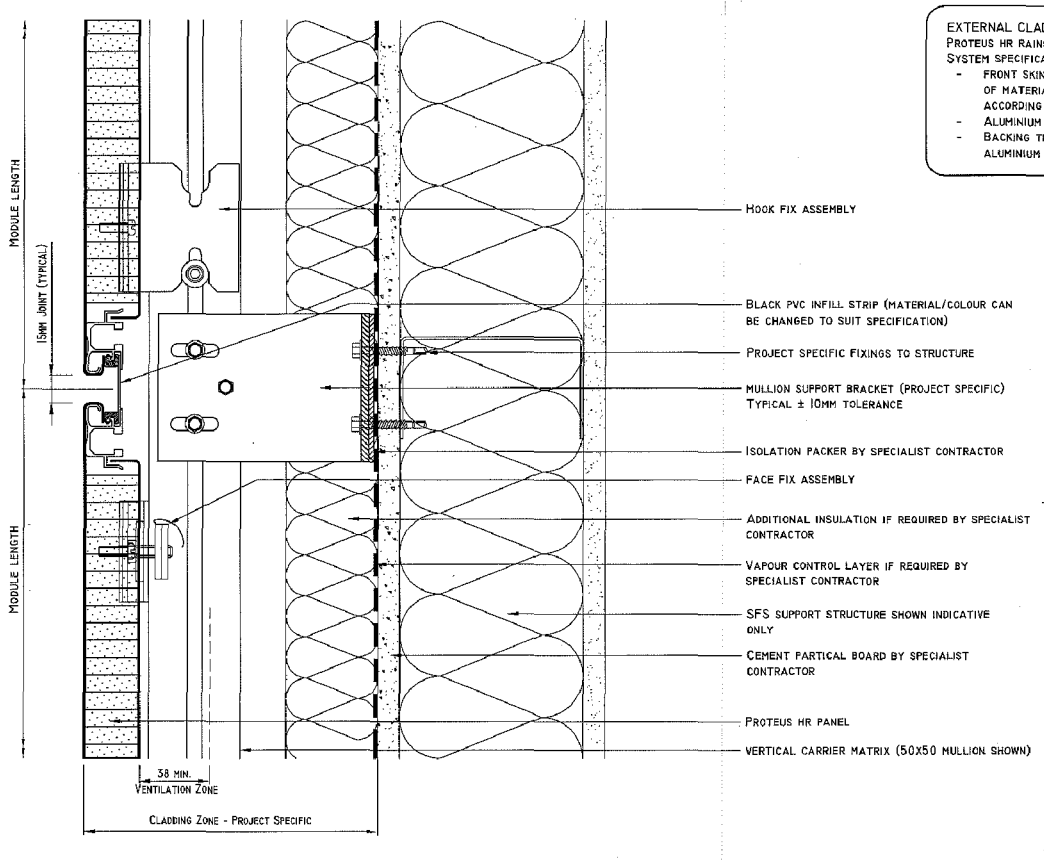

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

REVISION	DATE	AMENDMENT	DRAWN

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SYSTEM	PROTEUS HR
TITLE	PANEL TO PANEL ON A SFS STRUCTURE BY 50X50 MULLION
SECTION	VERTICAL SECTION

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
DMW	MAR 2010	*	*	1:2

DRAWING NO	DRAWING SIZE	REVISION
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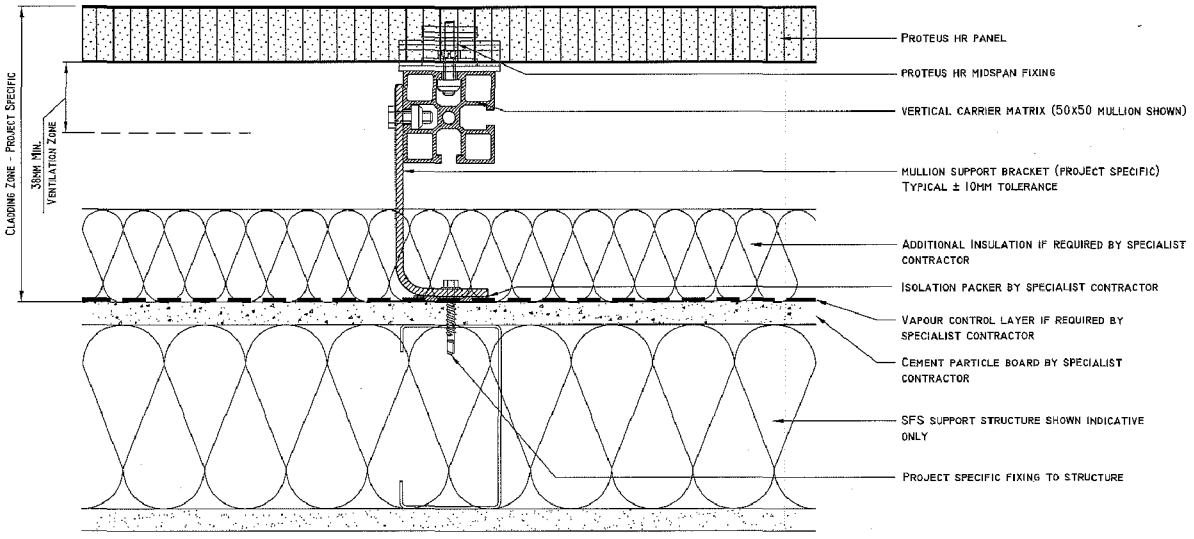
EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME.
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL AT MIDSPAN ON A SFS STRUCTURE BY 50X50 MULLION			
SECTION	HORIZONTAL SECTION			
DRAWN BY: R.J	DRAWN DATE: MAR 11	APPROVED BY: *	APPROVED DATE: *	SCALE: 1:2
DRAWING NO: 110_1_10_1_100_10			DRAWING SIZE: A3	REVISION: *

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
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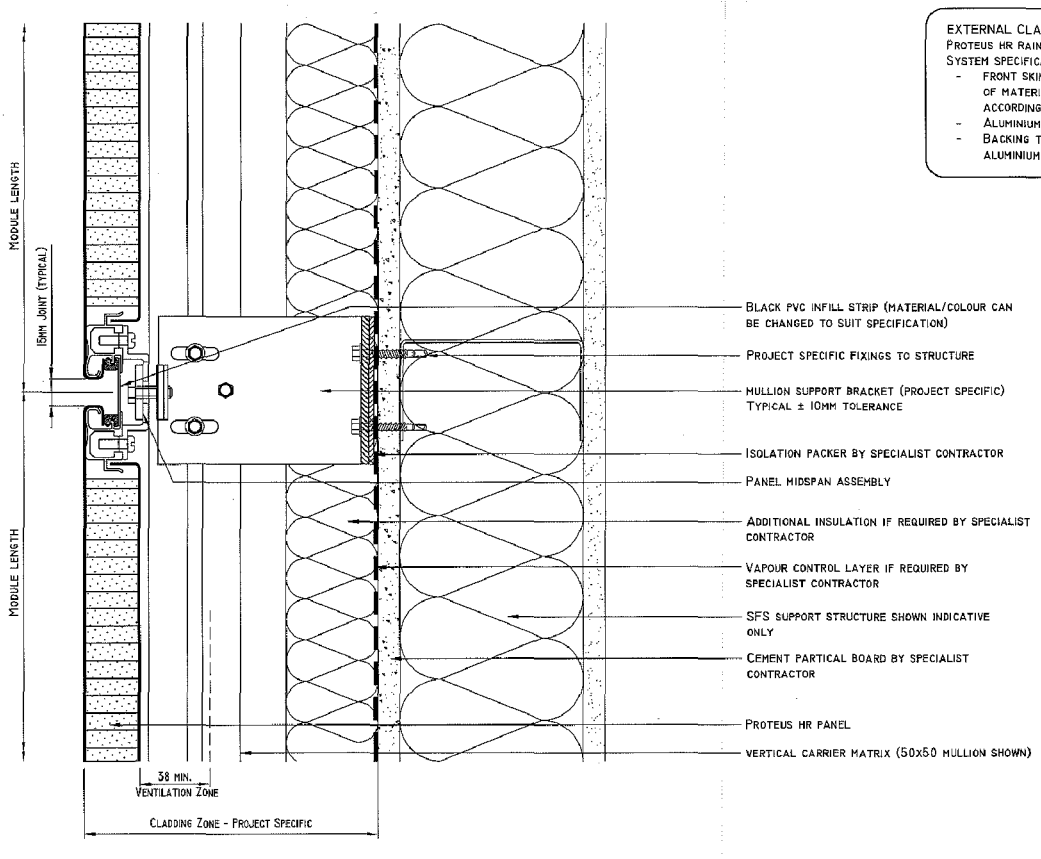
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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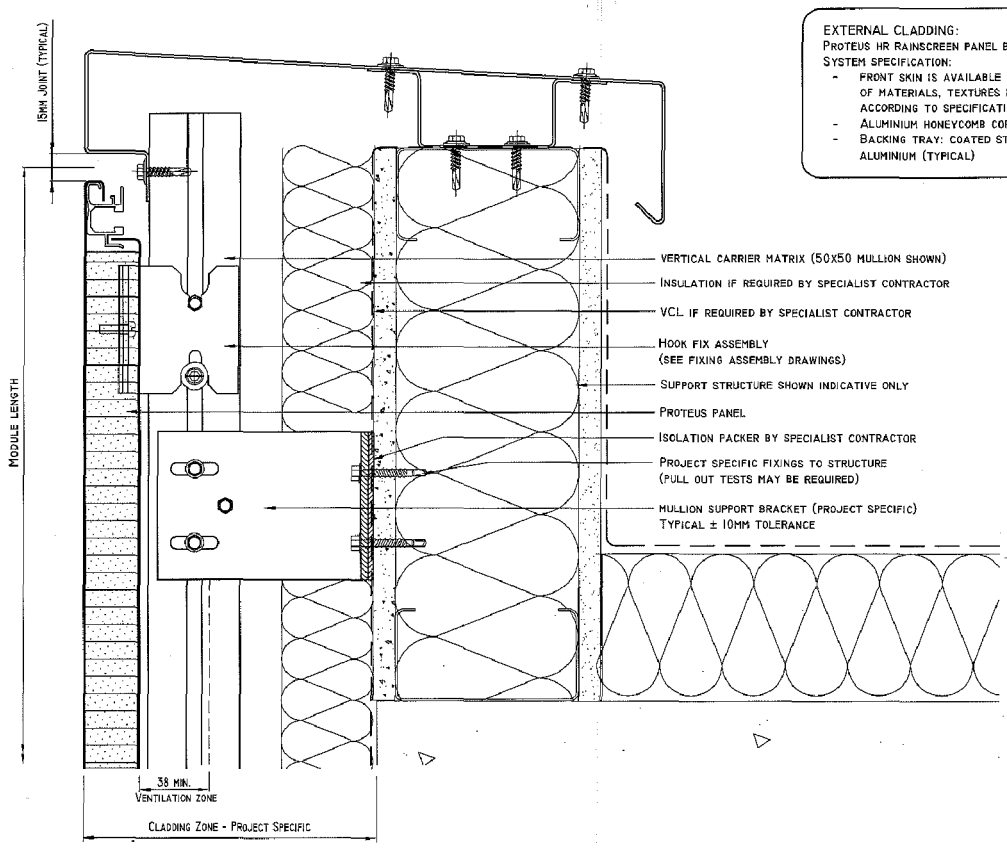
DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL MIDSPAN ON A SFS STRUCTURE BY 50X50 MULLION			
SECTION	VERTICAL SECTION			
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 2011	*	*	1:2
DRAWING NO			DRAWING SIZE	REVISION
110_2_10_1_100_10			A3	*



EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
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- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

REVISION	DATE	AMENDMENT	DRAWN

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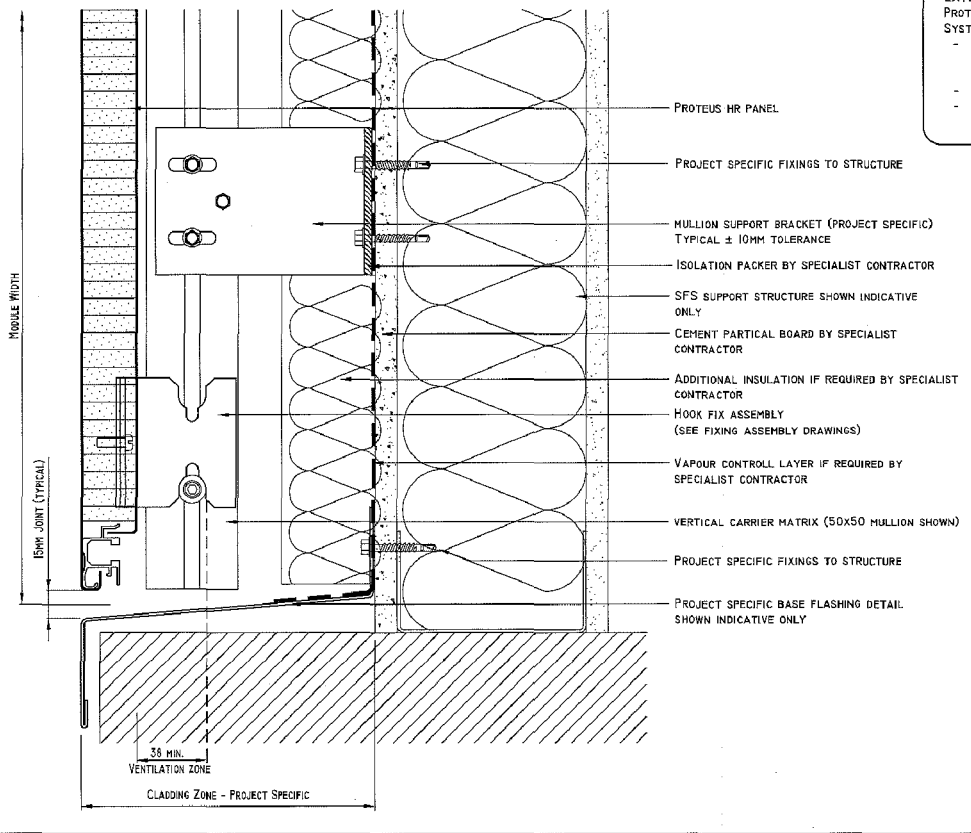
LANCASHIRE, WN8 9JP
TEL [redacted]
FAX

DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL TO TYPICAL CAPPING DETAIL ON A SFS STRUCTURE BY 50 x 50 MULLION			
SECTION	TYPICAL VERTICAL SECTION			
DRAWN BY: DMW	DRAWN DATE: MAR 2010	APPROVED BY: -	APPROVED DATE: -	SCALE: 1:2
DRAWING NO: 100_2_10_1_300_10			DRAWING SIZE: A3	REVISION: *

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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SYSTEM	PROTEUS HR
TITLE	PANEL TO BASE DETAIL ON A SFS STRUCTURE BY 50X50 MULLION
SECTION	VERTICAL SECTION

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
DMW	MAR 2010	*	*	1:2

DRAWING NO	DRAWING SIZE	REVISION
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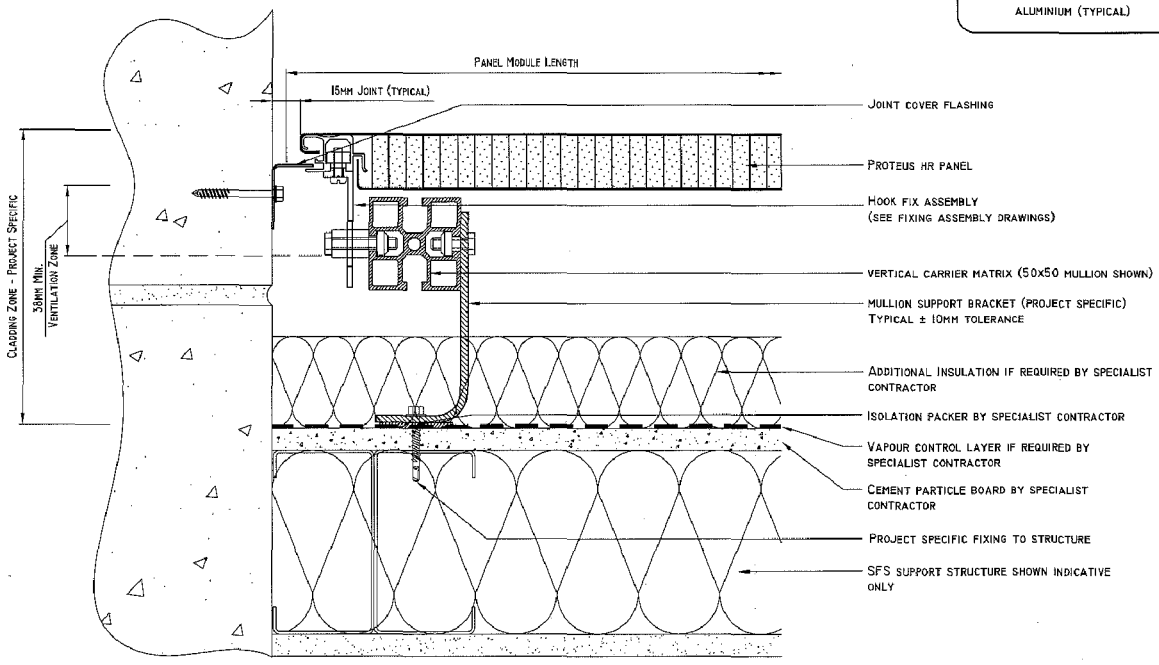
EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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SYSTEM	PROTEUS HR
TITLE	PANEL TO BLOCKWORK ON A SFS STRUCTURE BY 50X50 MULLION
SECTION	HORIZONTAL SECTION

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
D.M.W.	MAR 10	*	*	1:2

DRAWING NO	DRAWING SIZE	REVISION
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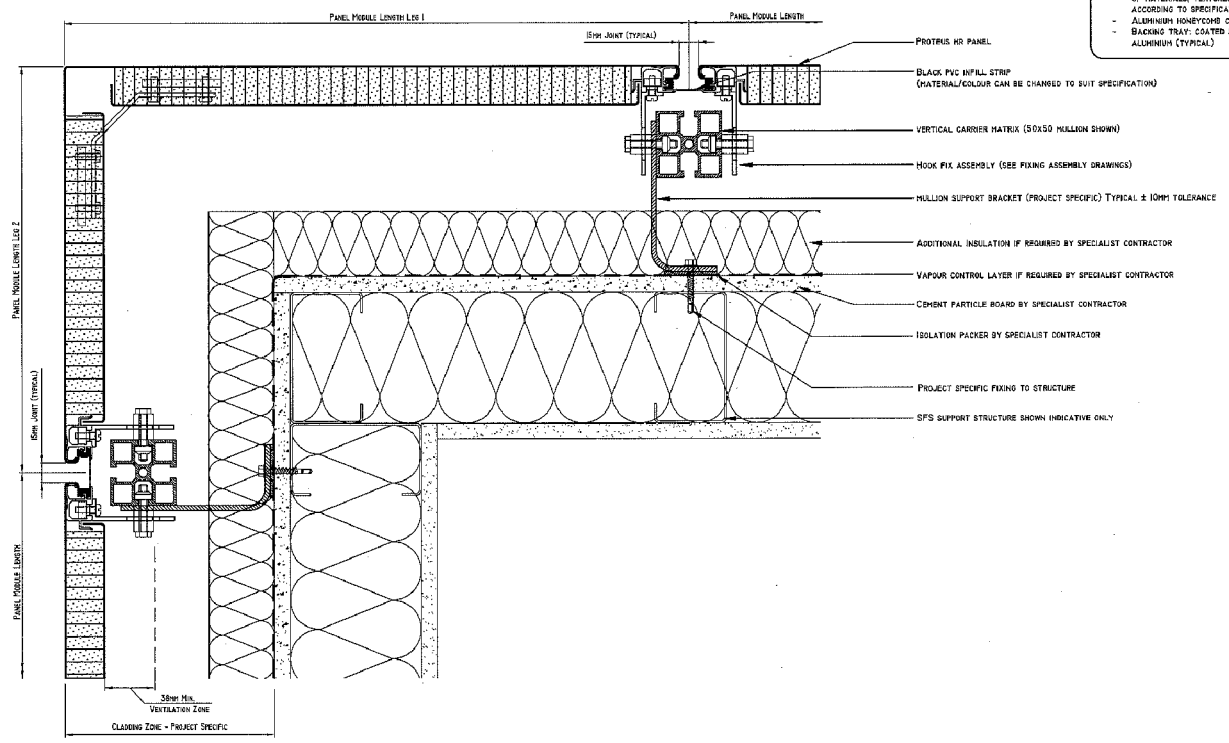
EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



rev	date	Amendment	drawn

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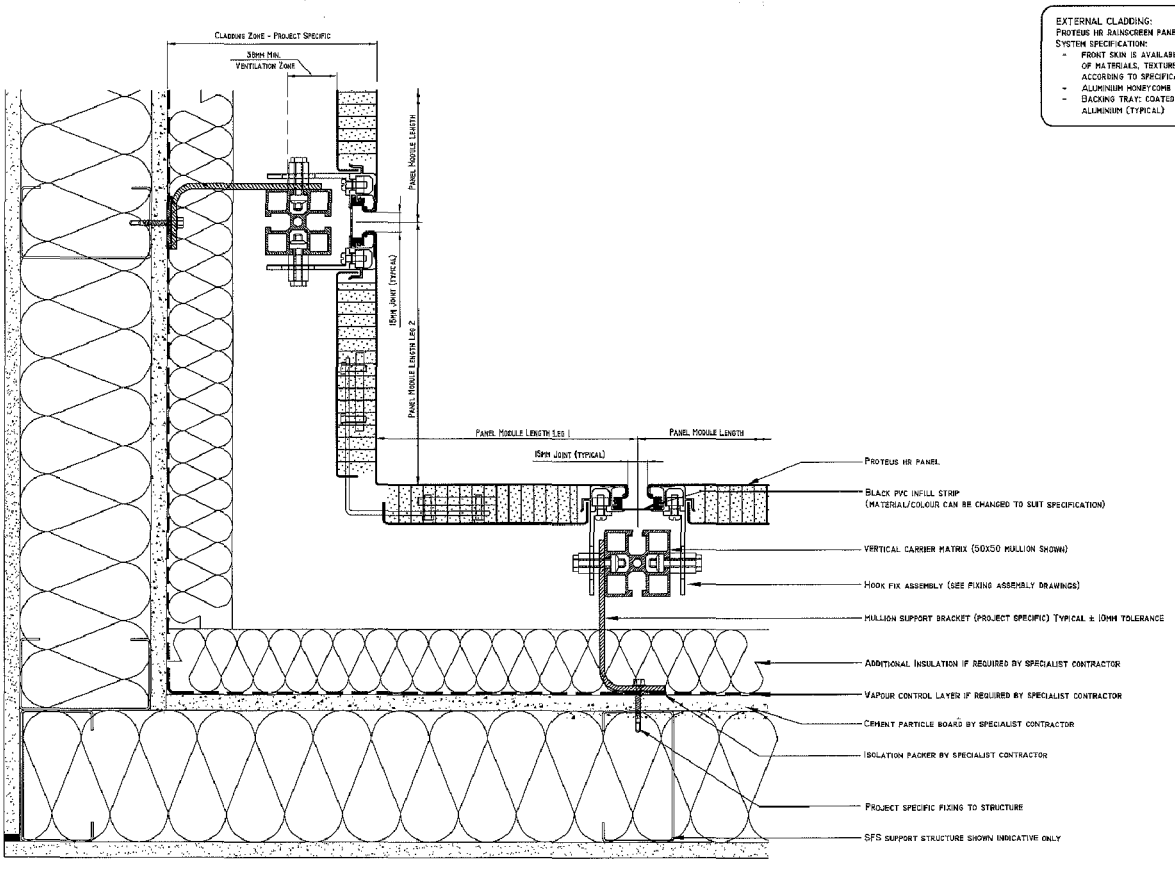
DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR
DRAWING TITLE	PANEL TO EXTERNAL CORNER ON SFS BY 50x50 MULLION
SECTION	HORIZONTAL

DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
D.M.W.	MARCH 10	*	*	1:2

DRAWING NO	DRAWING SIZE	REVISION
100_1_10_2_100_10	A2	*



EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

rev	date	Amendment	drawn

KME Architectural Solutions Partner

UNIT 5 GLEBE ROAD
EAST GILLIBRANDS
SKELMERSDALE
LANCASHIRE WN8 9JP
TEL [redacted]
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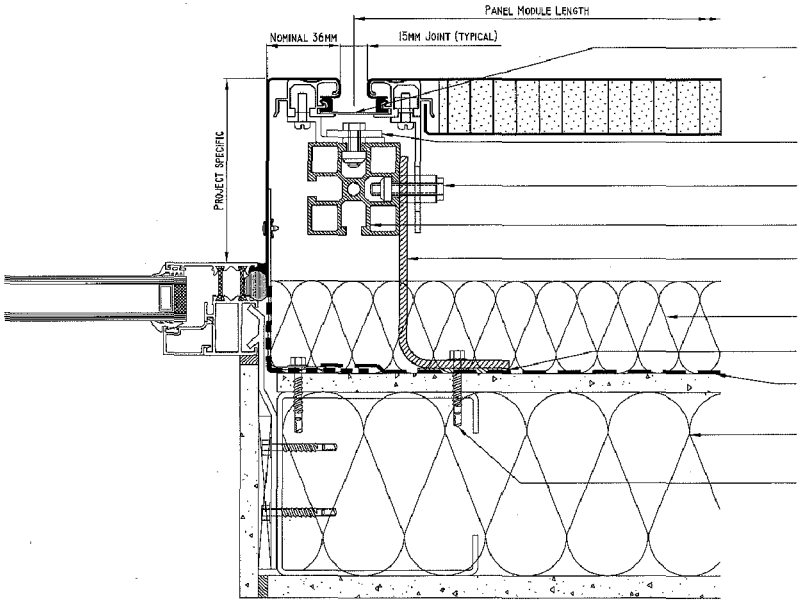
DO NOT SCALE FROM THIS DRAWING

System	PROTEUS HR
Drawing Title	INTERNAL CORNER ON SFS BY 50X50 MULLION
Section	HORIZONTAL

Drawn By	Drawn Date	Approved By	Approved Date	Scale
D.M.W.	MARCH 10	*	*	1:2

Drawing No	Drawing Size	Revision
100_1_10_3_100_10	A2	*

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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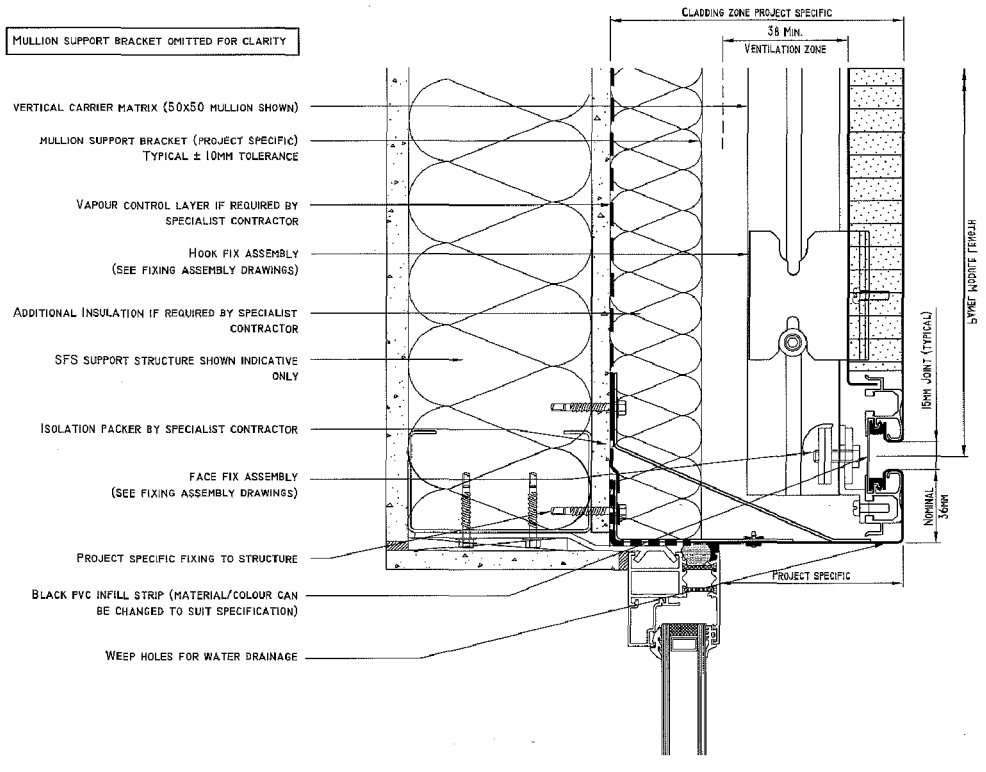
DO NOT SCALE FROM THIS DRAWING

SYSTEM				PROTEUS HR
TITLE				PANEL TO RECESSED GLAZING ON SFS BY 50X50 MULLION
SECTION				HORIZONTAL SECTION
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2
DRAWING NO			DRAWING SIZE	REVISION
100_1_10_1_200_10			A3	*

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)

MULLION SUPPORT BRACKET OMITTED FOR CLARITY



REVISION	DATE	AMENDMENT	DRAWN

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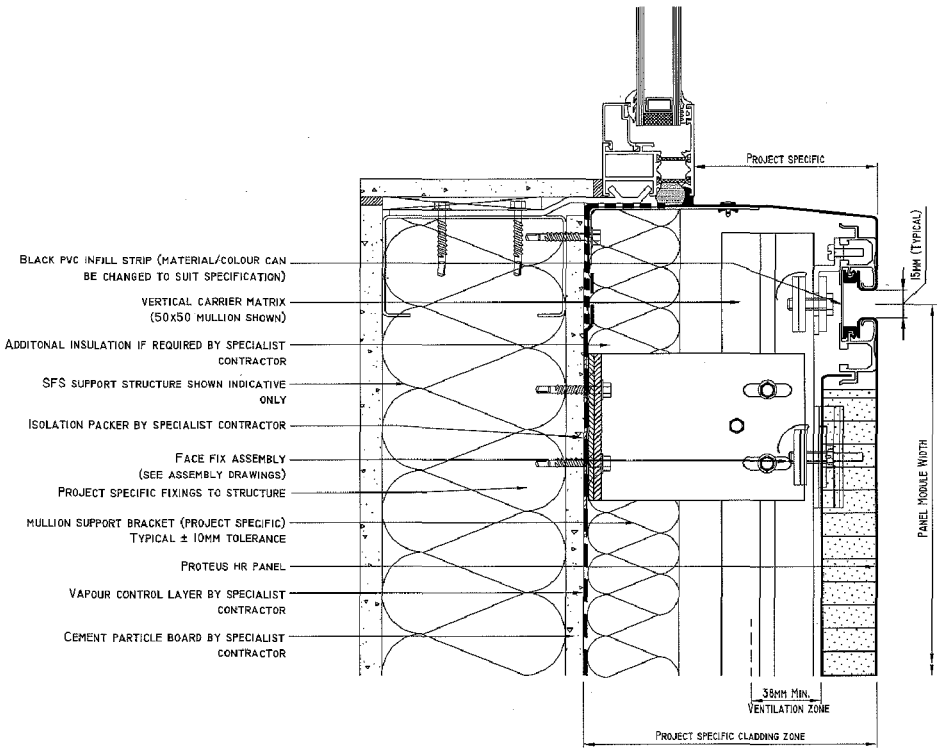
DO NOT SCALE FROM THIS DRAWING

SYSTEM				PROTEUS HR
TITLE				PANEL TO RECESSED GLAZING HEAD ON SFS BY 50X50 MULLION
SECTION				HORIZONTAL SECTION
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2
DRAWING NO			DRAWING SIZE	REVISION
100_2_10_1_210_10			A3	*

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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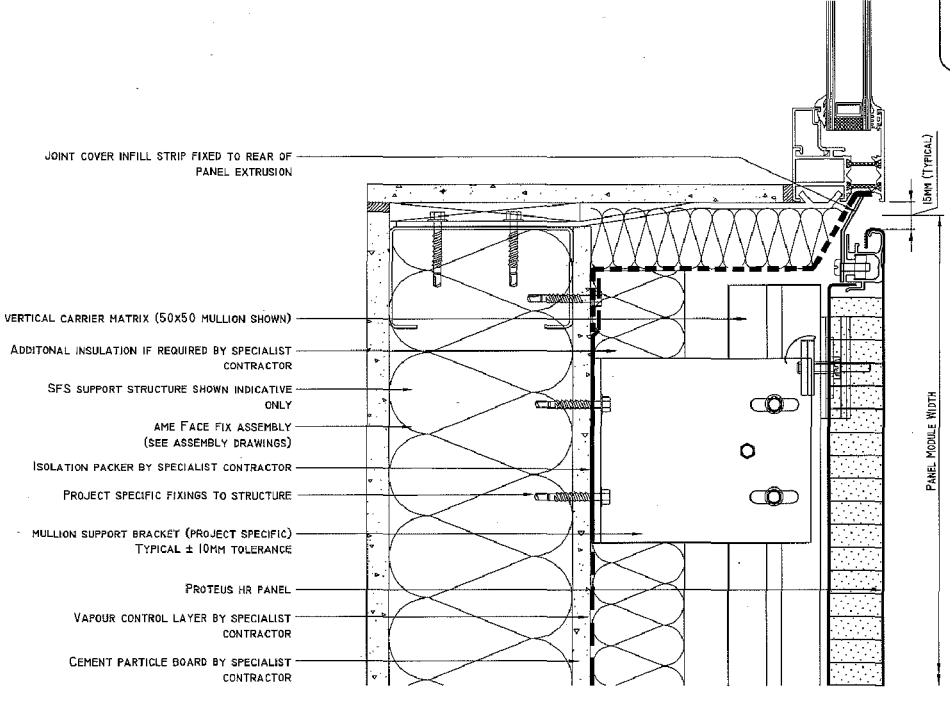
DO NOT SCALE FROM THIS DRAWING

SYSTEM				PROTEUS HR
TITLE				PANEL TO RECESSED GLAZING ON SFS BY 50x50 MULLION
SECTION				HORIZONTAL SECTION
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2
DRAWING No			DRAWING SIZE	REVISION
100_2_10_1_220_10			A3	*

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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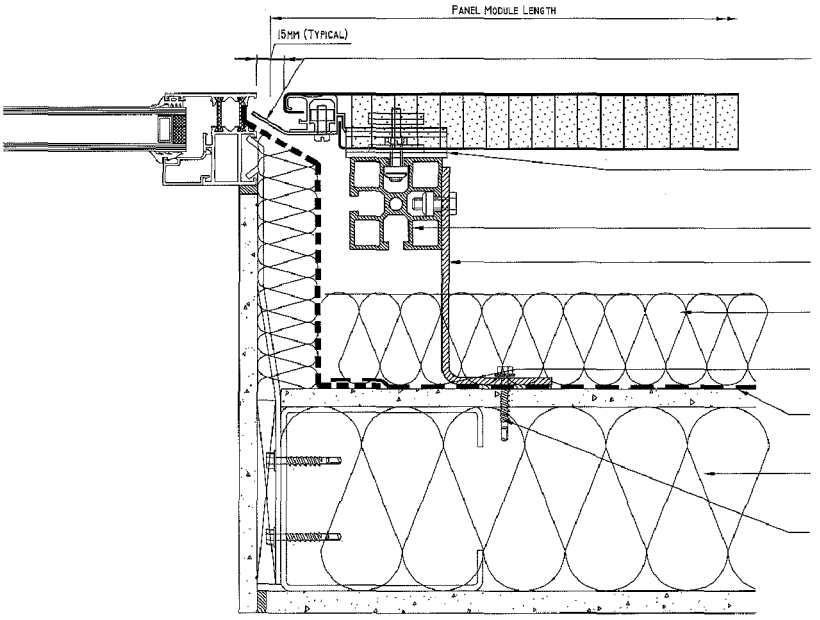
SYSTEM				PROTEUS HR
TITLE				PANEL TO FLUSH GLAZING ON SFS BY 50x50 MULLION
SECTION				HORIZONTAL SECTION
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2
DRAWING NO			DRAWING SIZE	REVISION
100_2_10_1_221_10			A3	*

EXTERNAL CLADDING:
PROTEUS HR RAINSCREEN PANEL BY KME
SYSTEM SPECIFICATION:
- FRONT SKIN IS AVAILABLE IN A WIDE RANGE OF MATERIALS, TEXTURES & COLOURS ACCORDING TO SPECIFICATION.
- ALUMINIUM HONEYCOMB CORE (29MM TYPICAL)
- BACKING TRAY: COATED STEEL OR COATED ALUMINIUM (TYPICAL)



REVISION	DATE	AMENDMENT	DRAWN

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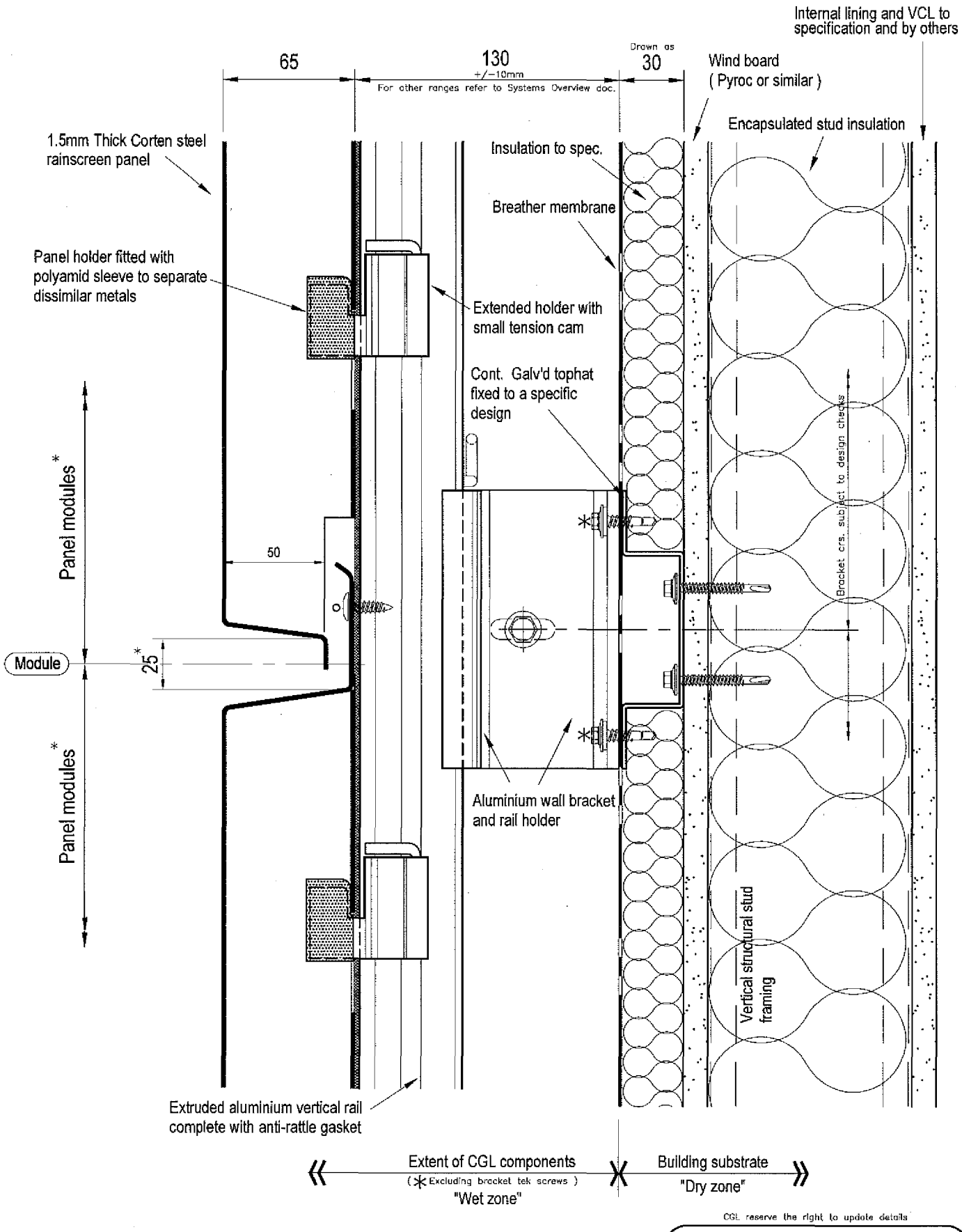
DO NOT SCALE FROM THIS DRAWING

SYSTEM	PROTEUS HR			
TITLE	PANEL TO FLUSH GLAZING ON SFS BY 50X50 MULLION			
SECTION	HORIZONTAL SECTION			
DRAWN BY	DRAWN DATE	APPROVED BY	APPROVED DATE	SCALE
R.J	MAR 10	*	*	1:2
DRAWING NO			DRAWING SIZE	REVISION
100_1_10_1_201_10			A3	*



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CGL® SYSTEMS
Weather Protection Products

2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title: Indicative 50-65 Rainscreen system details
Corten steel horizontal joint

Date: April 08 | Scale: 1:2.5@A4

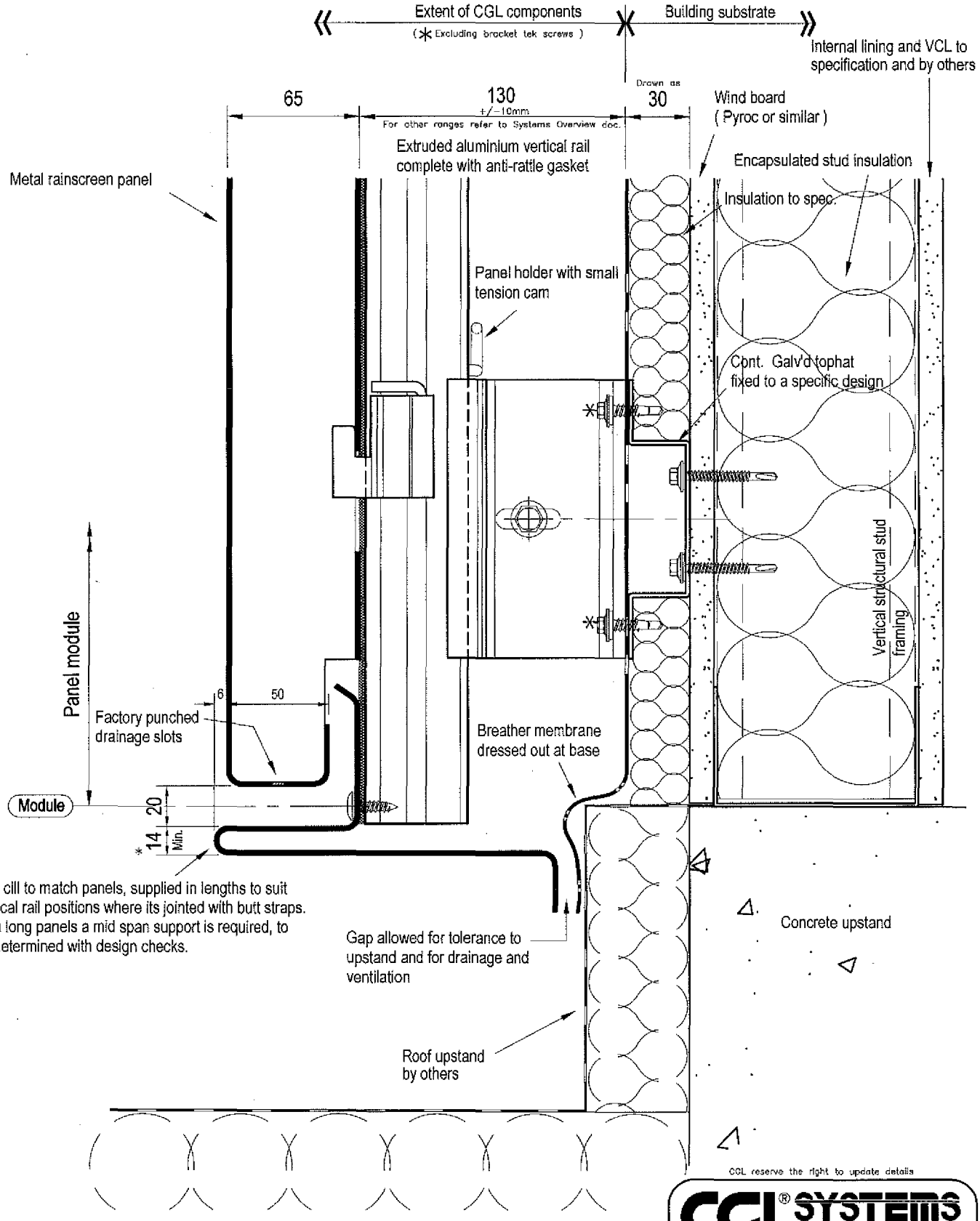
Drawing No.: RS-CN-50-65 / S / 2 | Rev

Notes:

* = Standard 20mm horizontal joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.
Non CGL components are indicative and subject to contractors project specification

o = Security screw minimum 1 per panel, not CGL supply.

SEA00014616_0185



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2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Drip cill detail
Date	April 08
Scale	1:2.5@A4
Drawing No.	RS-50-65 / S / 5
Rev	

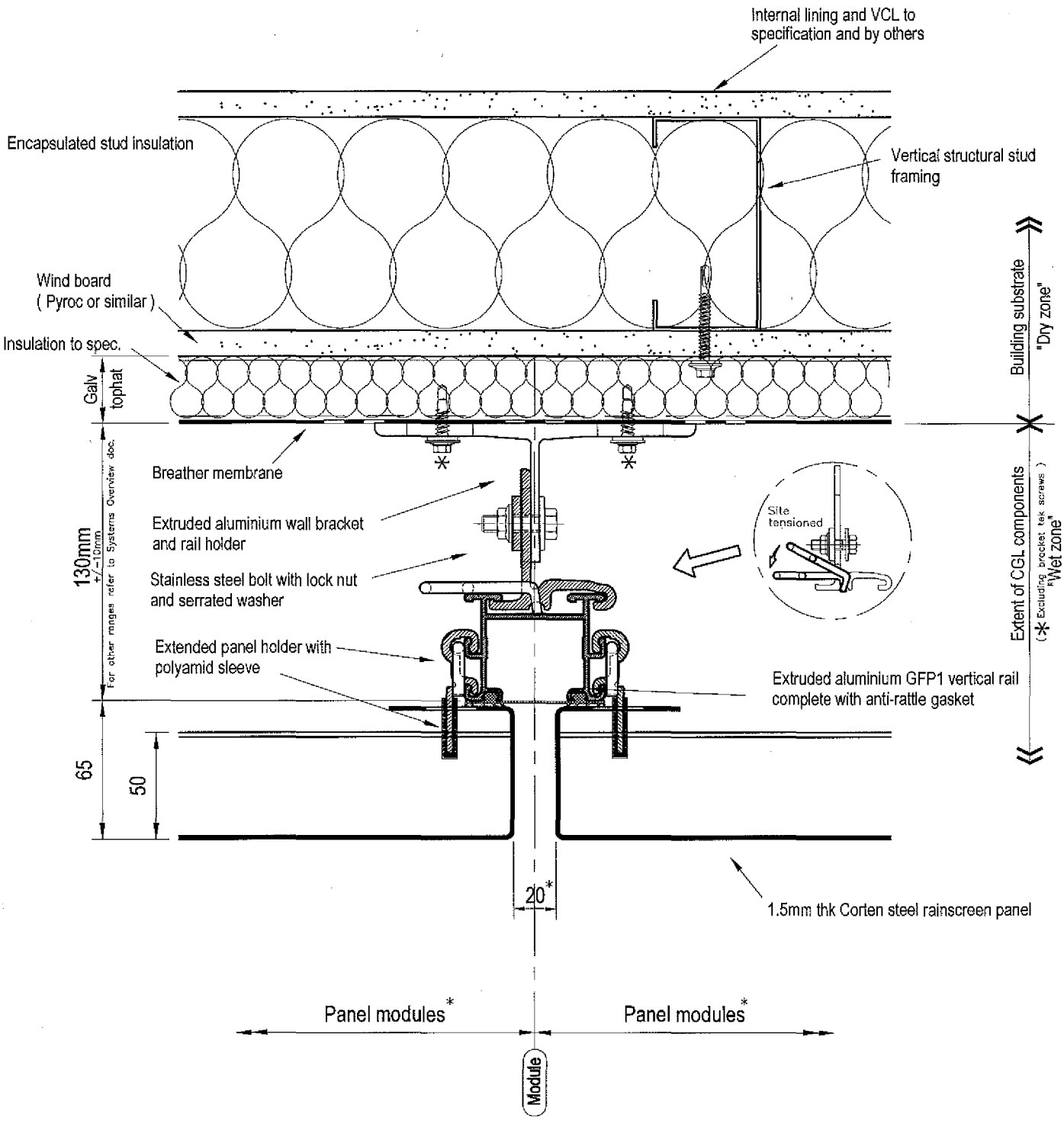
Notes:

Detail applicable to aluminium, zinc and stainless steel.

* = 14mm is minimum for 2mm aluminium, it will differ for other materials and gauges.

To be read in conjunction with "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification



Notes:

* = Standard 20mm vertical joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.
Non CGL components are indicative and subject to contractors project specification

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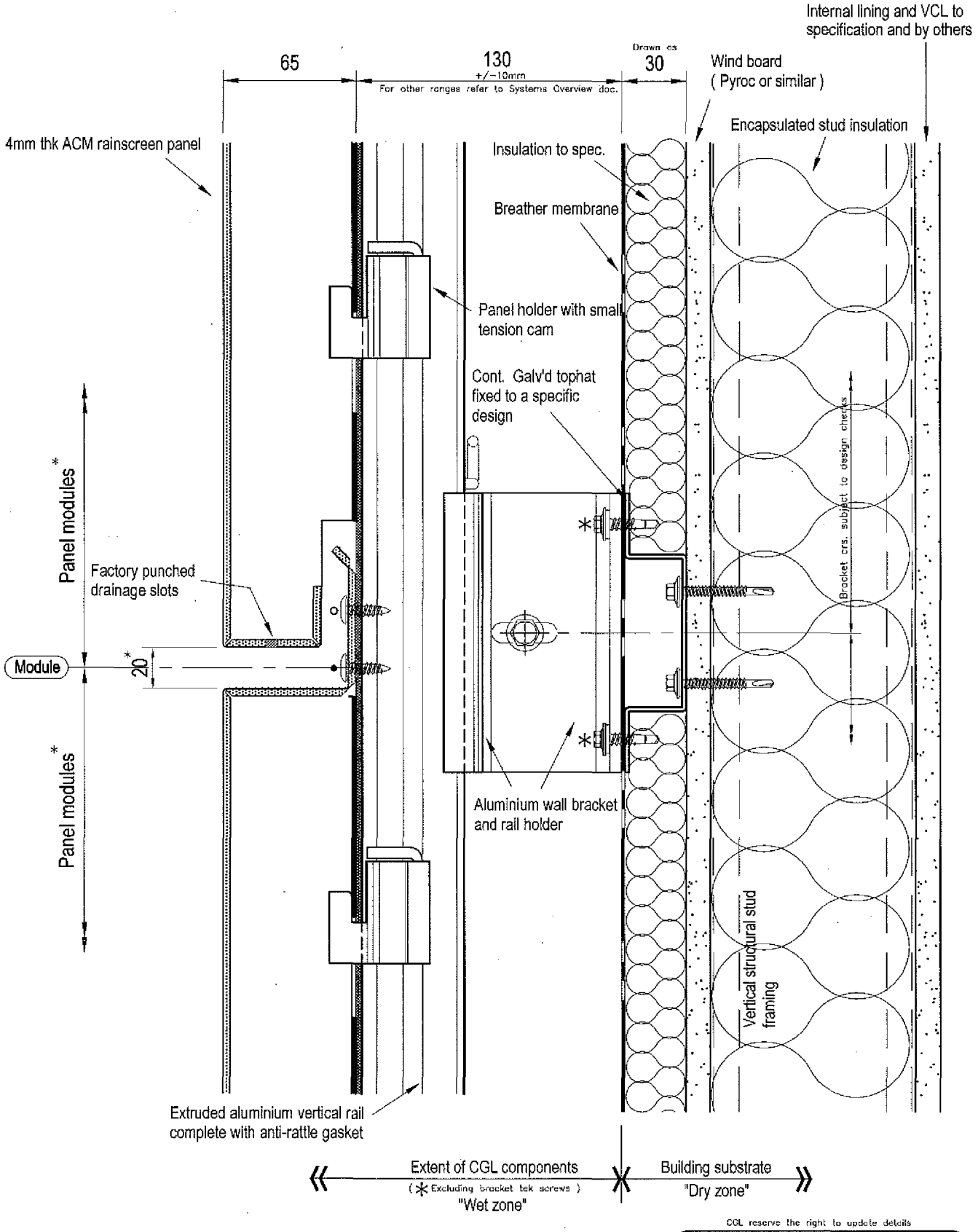
2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Corten steel vertical joint
Date April 08	Scale 1:2.5@A4
Drawing No. RS-CN-50-65 / S / 1	Rev



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2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Section through ACM horizontal joint
Date	April 08
Scale	1:2.5@A4
Drawing No.	RS-ACM-50-65 / S / 2
Rev	

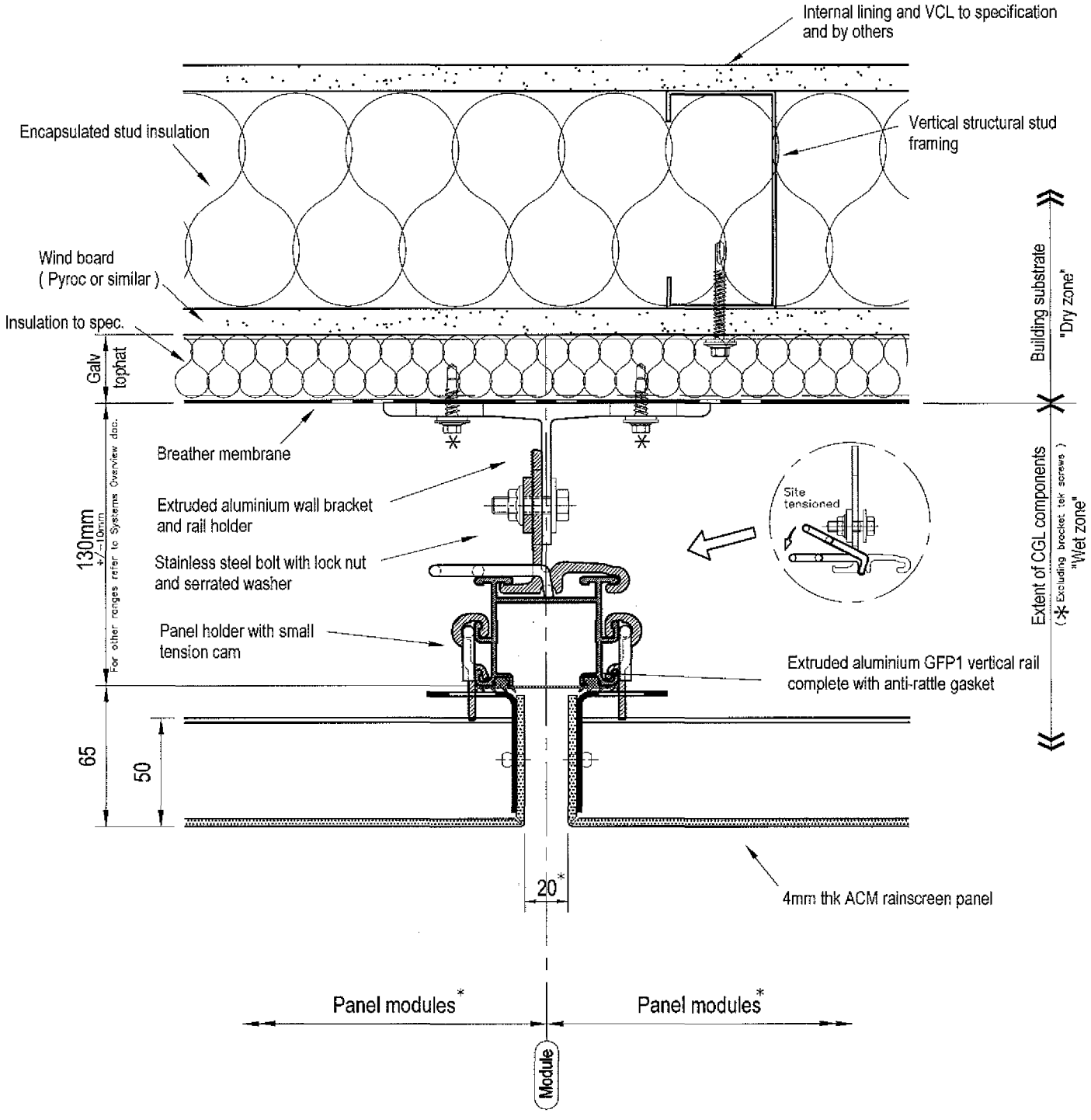
Notes:

* = Standard 20mm horizontal joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

• = Security screw above +3000mm, minimum 1 per panel, not CGL supply.

o = Security screw below +3000mm, minimum 1 per panel, not CGL supply.



Notes:

* = Standard 20mm vertical joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.
Non CGL components are indicative and subject to contractors project specification

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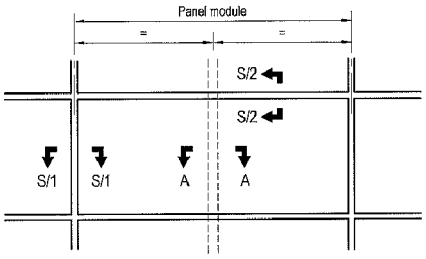
2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Section through ACM vertical joint
Date	April 08
Scale	1:2.5@A4
Drawing No.	RS-ACM-50-65 / S / 1
Rev	

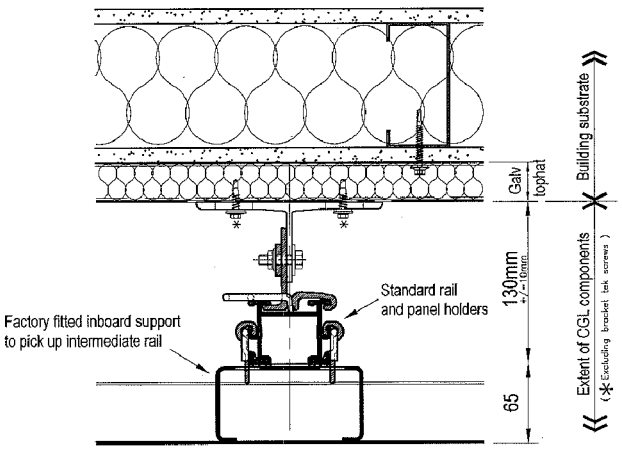
Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification
For panel module parameters refer to "Systems overview" document.



Elevation on horizontal panel mid span bracket

All construction build up and notes per RS-50-65-S1 & 2



Section A-A

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2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
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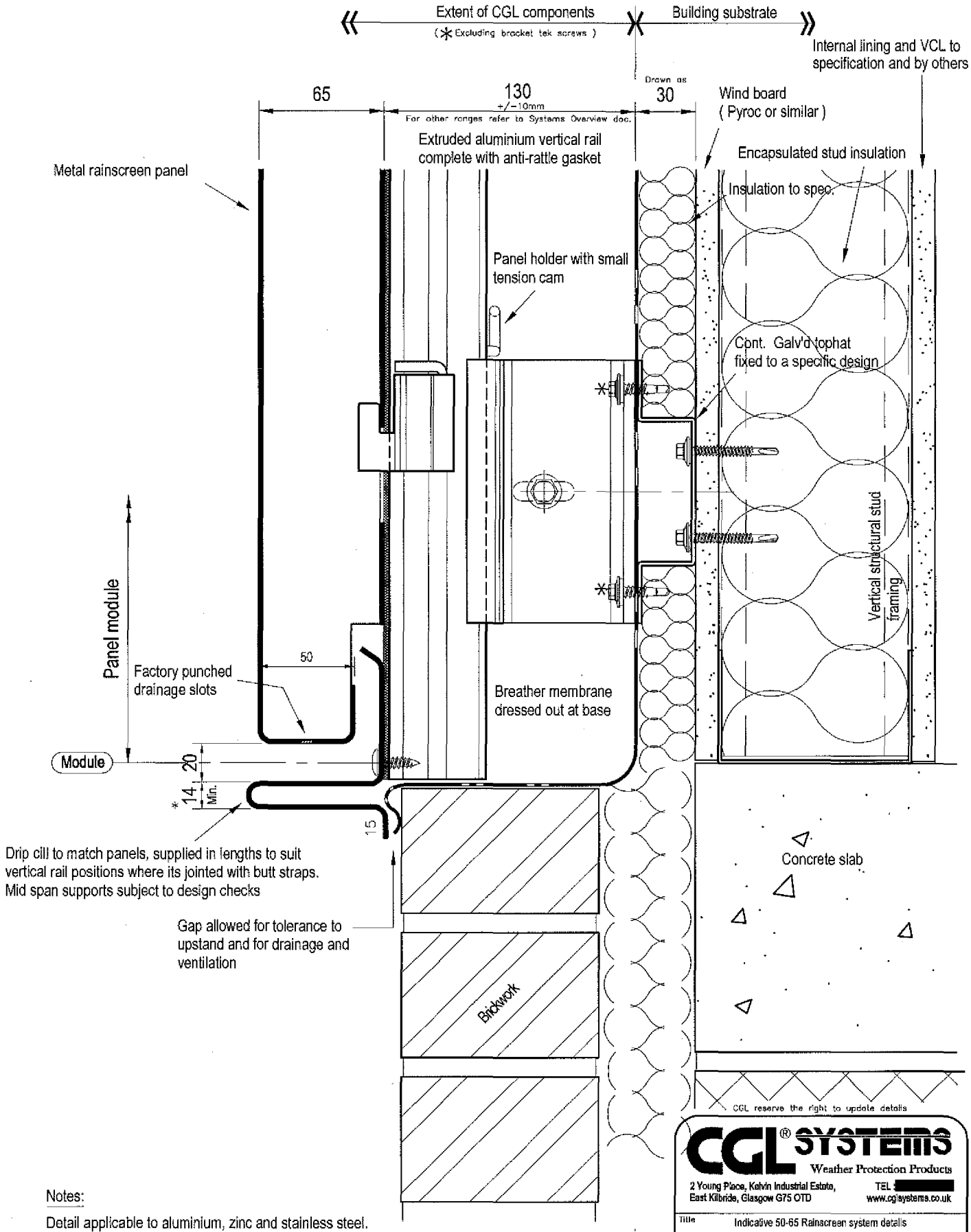
Title	Indicative 50-65 Rainscreen system details
	Panel mid span fixing
Date	April 08
Scale	1:4@A4
Drawing No.	RS-50-65 / S / 18
Rev	



Notes:

Detail applicable to aluminium, zinc and stainless steel.

* = 14mm is minimum for 2mm aluminium, it will differ for other materials and gauges.

To be read in conjunction with "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

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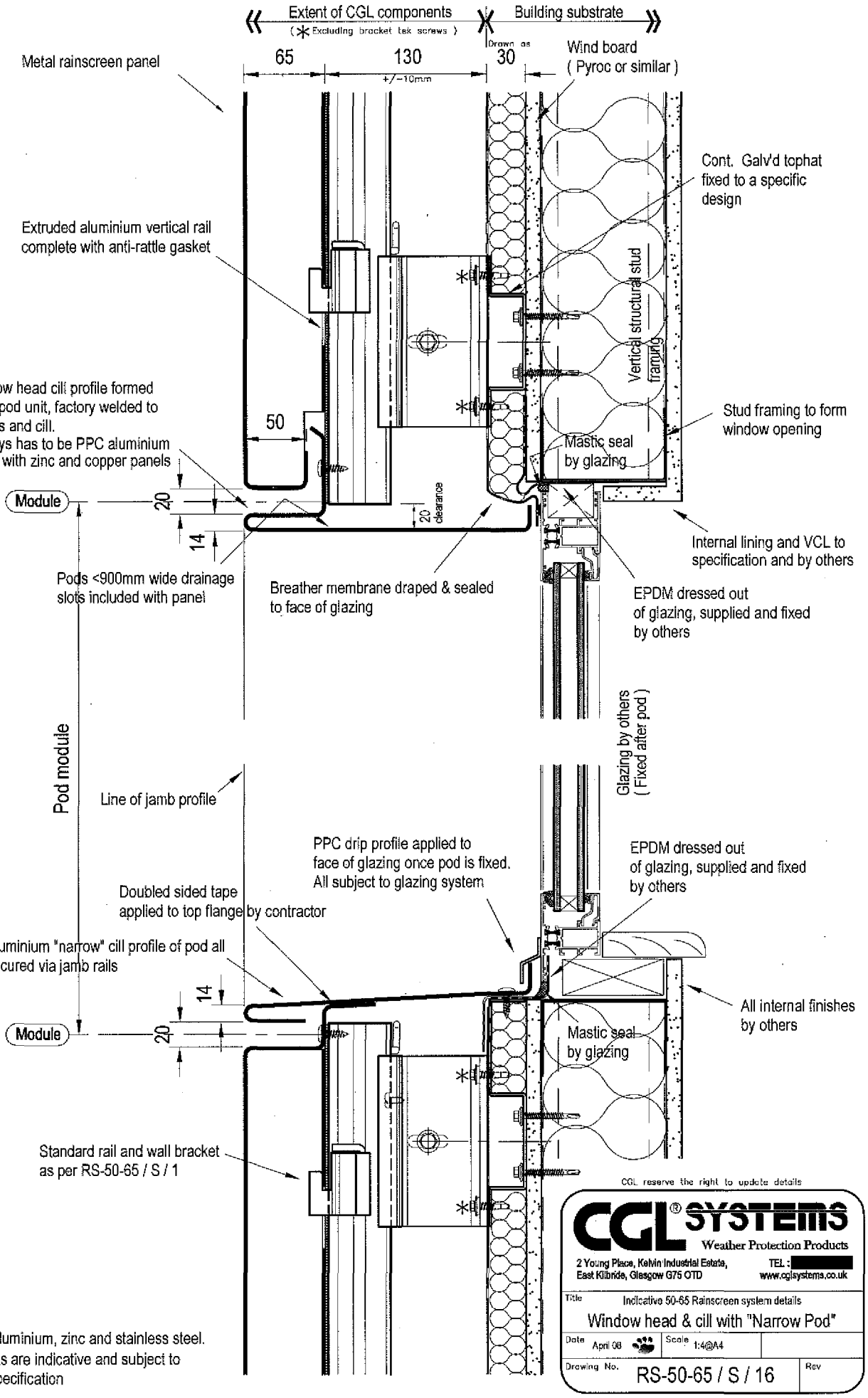
TEL [redacted]
www.cglsystems.co.uk

Title: Indicative 50-65 Rainscreen system details

Drip cill detail

Date: April 08 | Scale: 1:2.5@A4

Drawing No.: RS-50-65 / S / OP5 | Rev



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Weather Protection Products

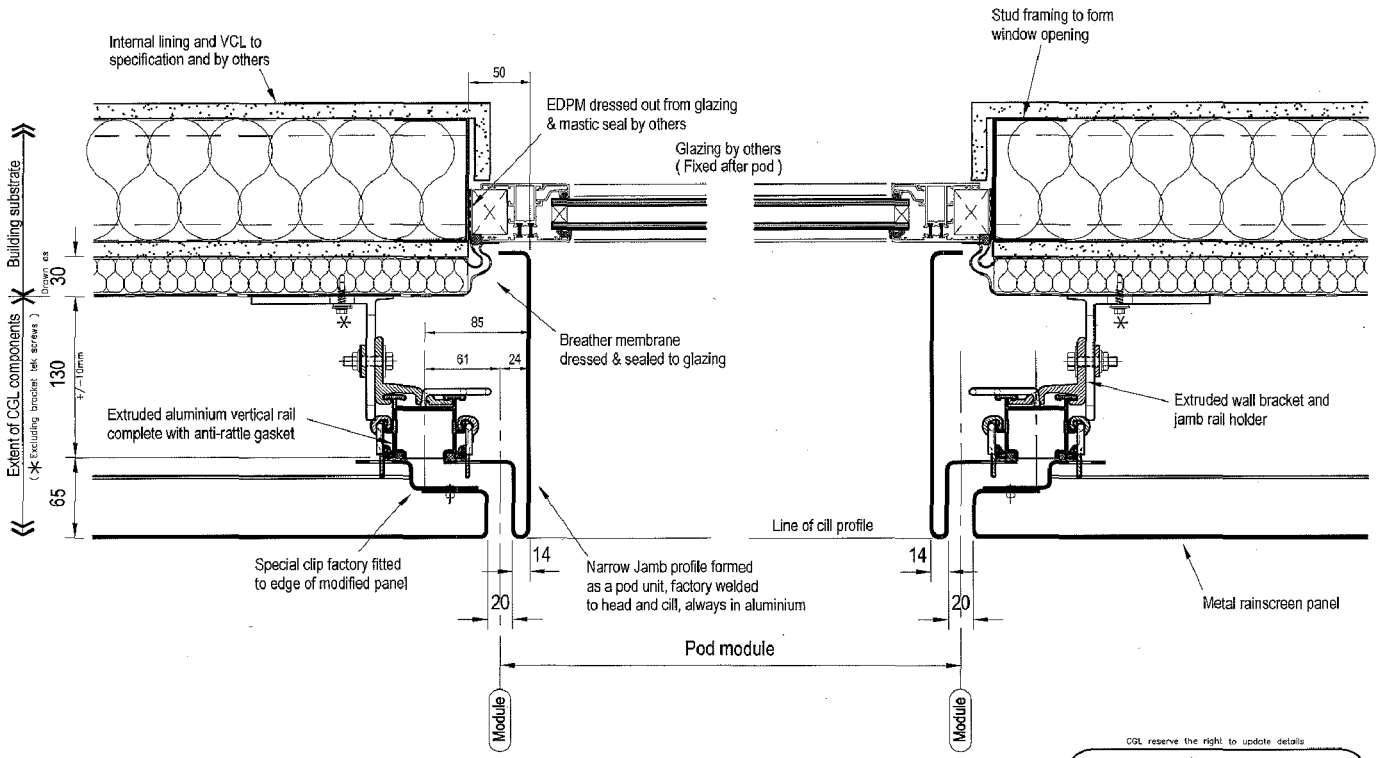
2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title: Indicative 50-65 Rainscreen system details
Window head & cill with "Narrow Pod"

Date: April 08
Scale: 1:4@A4
Drawing No.: RS-50-65 / S / 16
Rev:

Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification



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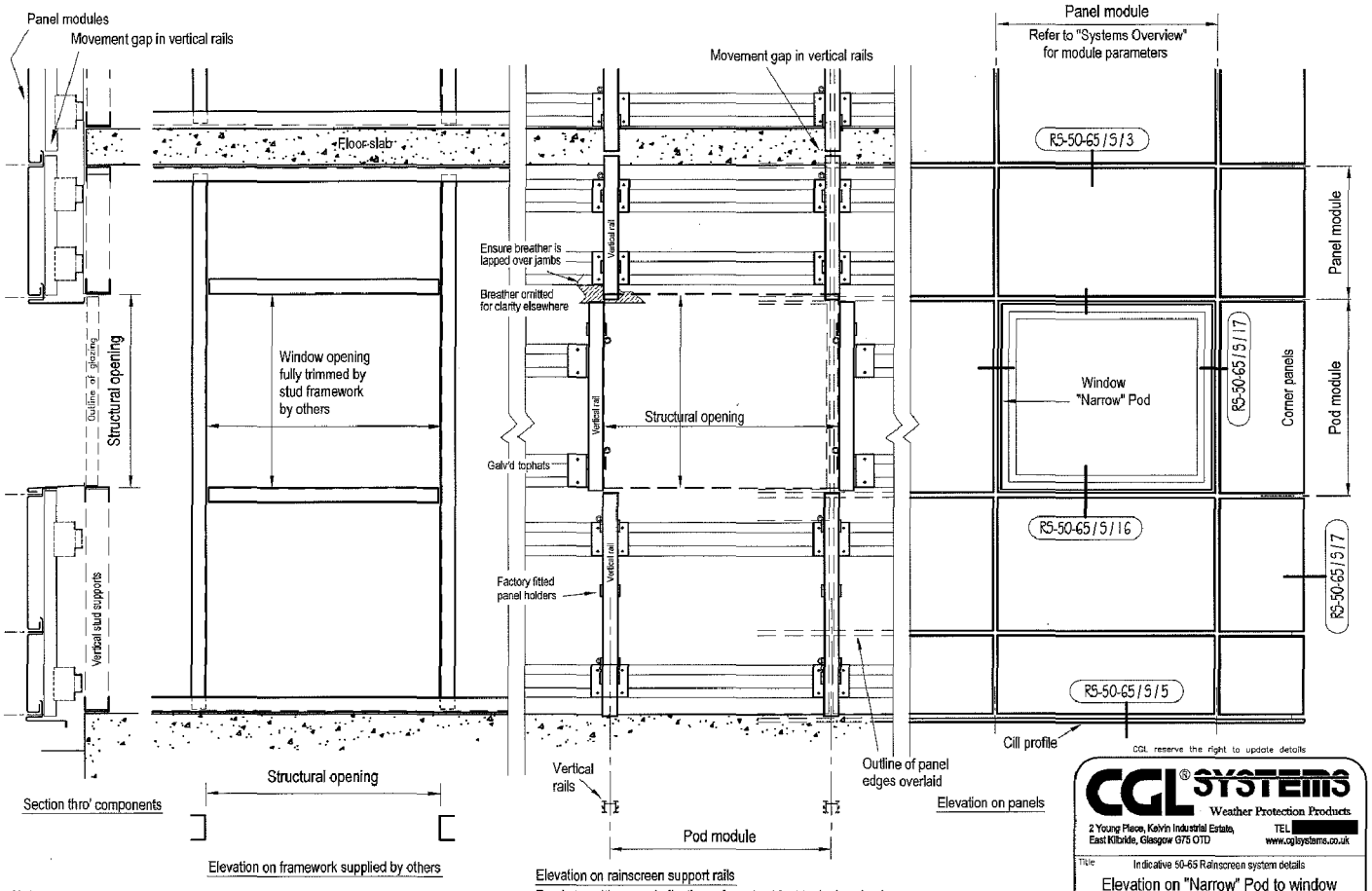
2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details Window jamb with "Narrow Pod"
Date	April 09
Scale	1:4@A4
Drawing No.	RS-50-65 / S / 17
Rev	

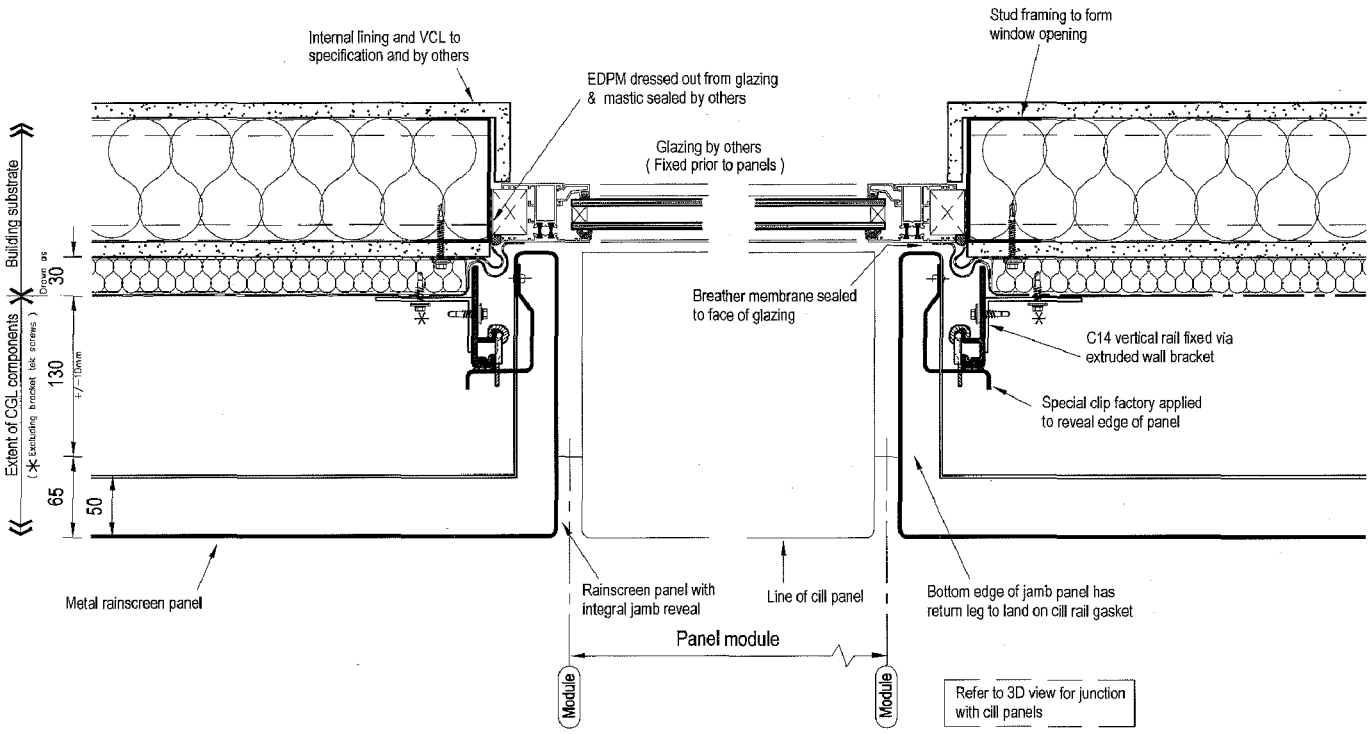
Notes:

Detail applicable to aluminium, zinc and stainless steel. Narrow pod is always supplied in PPC aluminium.
Non CGL components are indicative and subject to contractors project specification



Notes:

Detail applicable to aluminium, zinc and stainless steel but the narrow pod unit must always be made from aluminium.
Non CGL components are indicative and subject to contractors project specification



Particular attention with sealing around glazing is required as rails discharge water at the head detail

Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification

CGL reserve the right to update details

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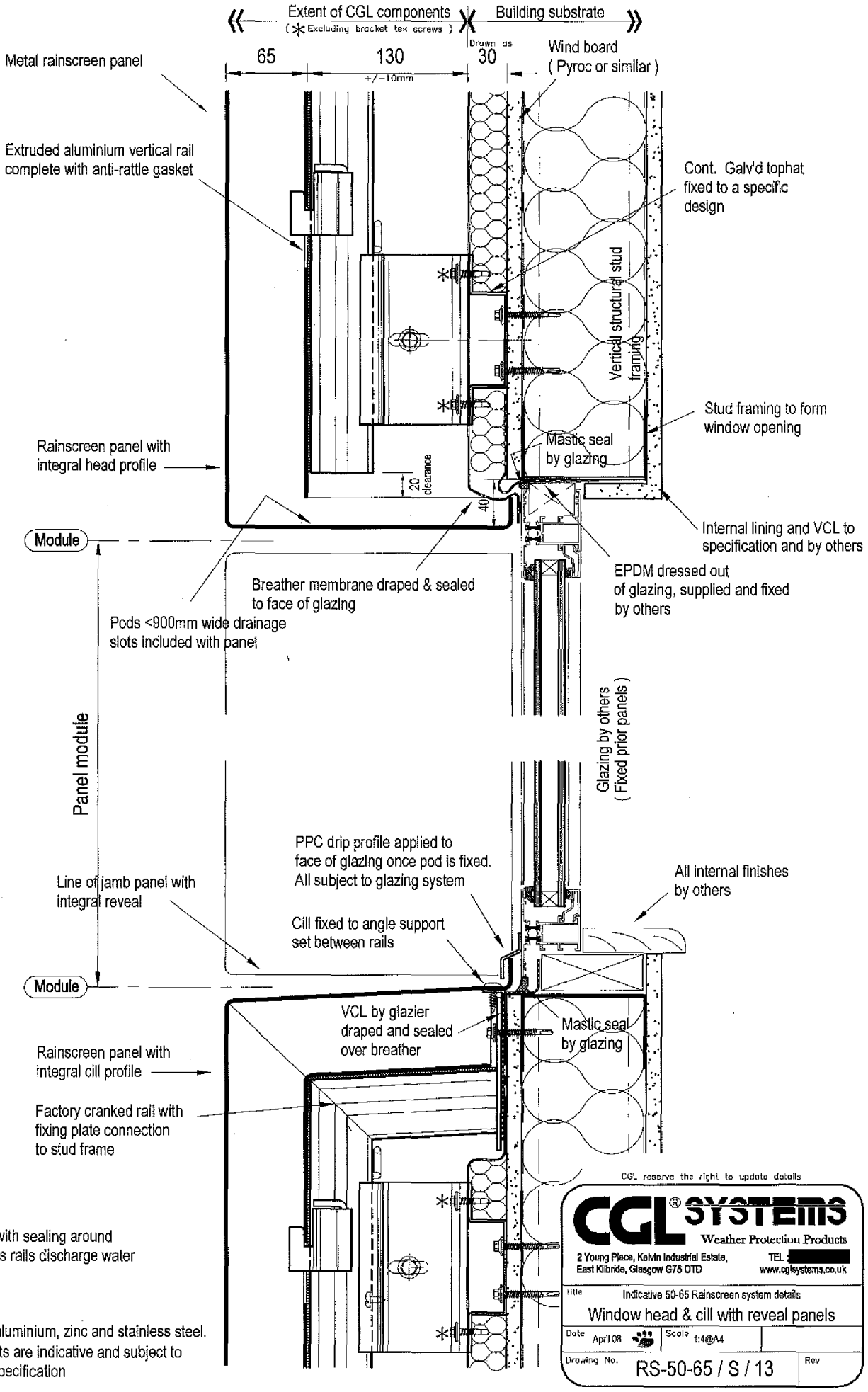
2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Window jamb with integral reveal panel
Date	April 09
Scale	1:4@A4
Drawing No.	RS-50-65 / S / 14
Rev	



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Weather Protection Products

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East Kilbride, Glasgow G75 0TD
TEL [redacted]
www.cglsystems.co.uk

Title: Indicative 50-65 Rainscreen system details

Window head & cill with reveal panels

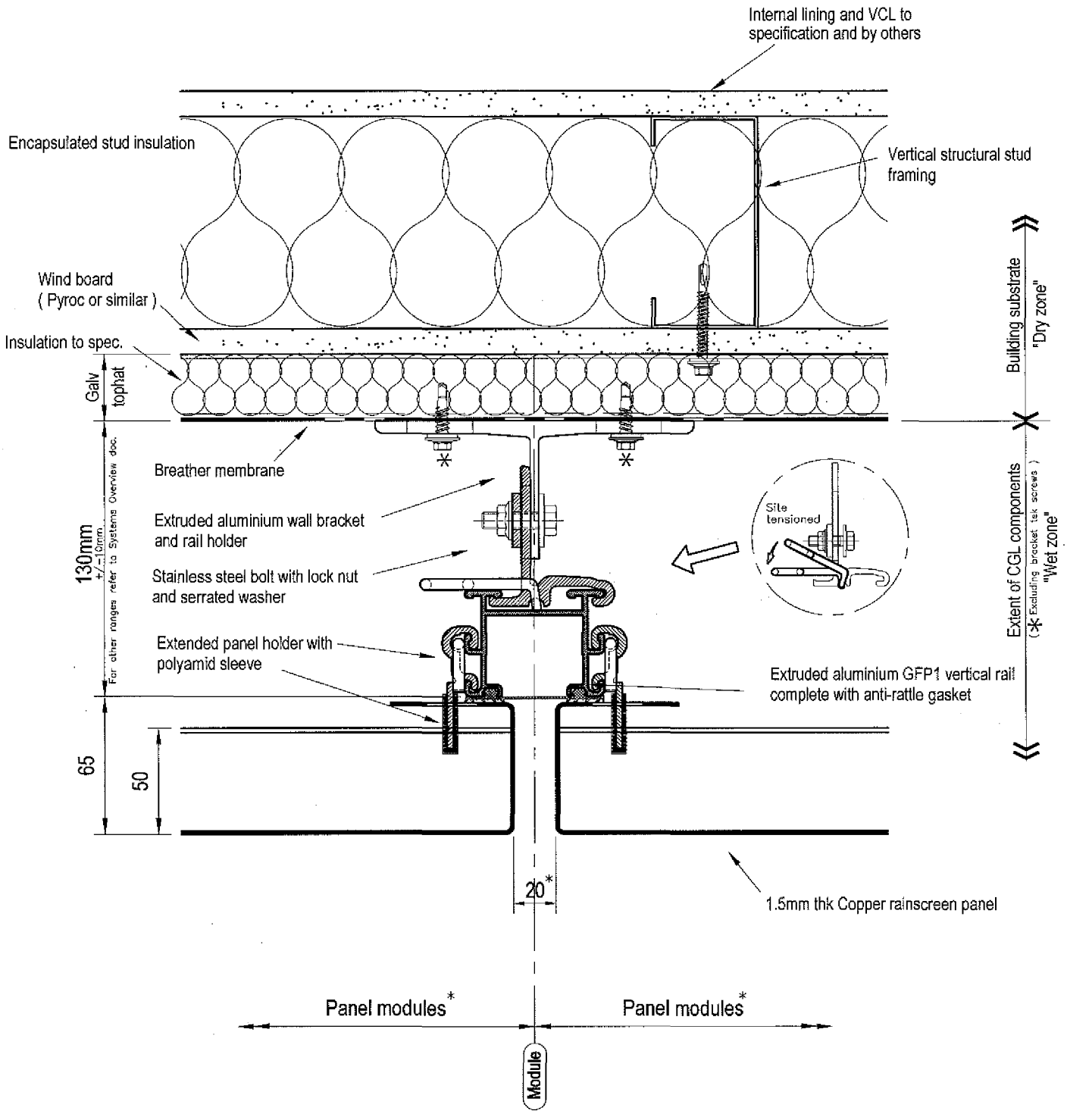
Date: April 08 | Scale: 1:4@A4

Drawing No.: RS-50-65 / S / 13 | Rev

Particular attention with sealing around glazing is required as rails discharge water at the head detail

Notes:

Detail applicable to aluminium, zinc and stainless steel. Non CGL components are indicative and subject to contractors project specification



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TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details
	Copper vertical joint
Date April 08	Scale 1:2.5@A4
Drawing No. RS-CO-50-65 / S / 1	Rev

Notes:

* = Standard 20mm vertical joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.
Non CGL components are indicative and subject to contractors project specification

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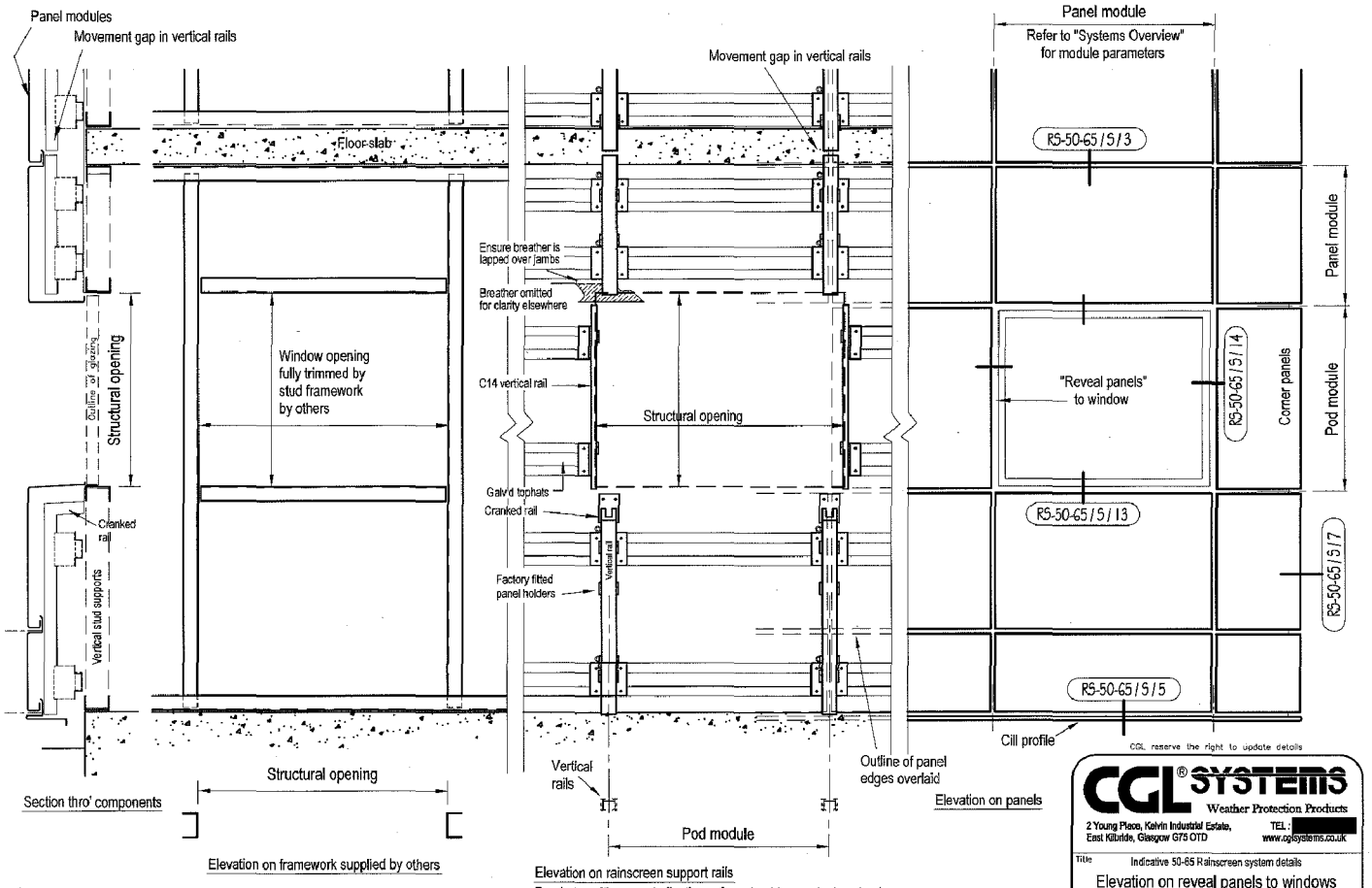
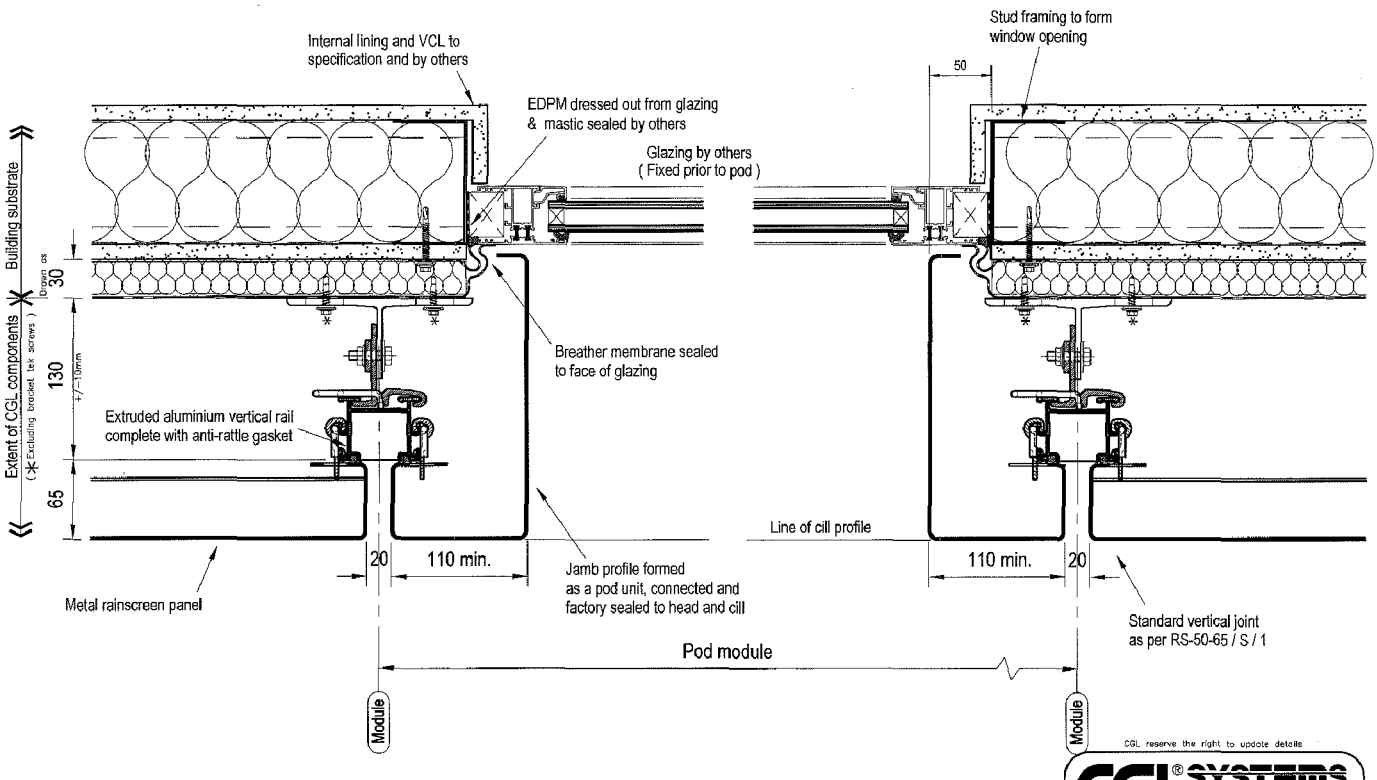


Notes:

Detail applicable to aluminium, zinc and stainless steel.

Non CGL components are indicative and subject to contractors project specification



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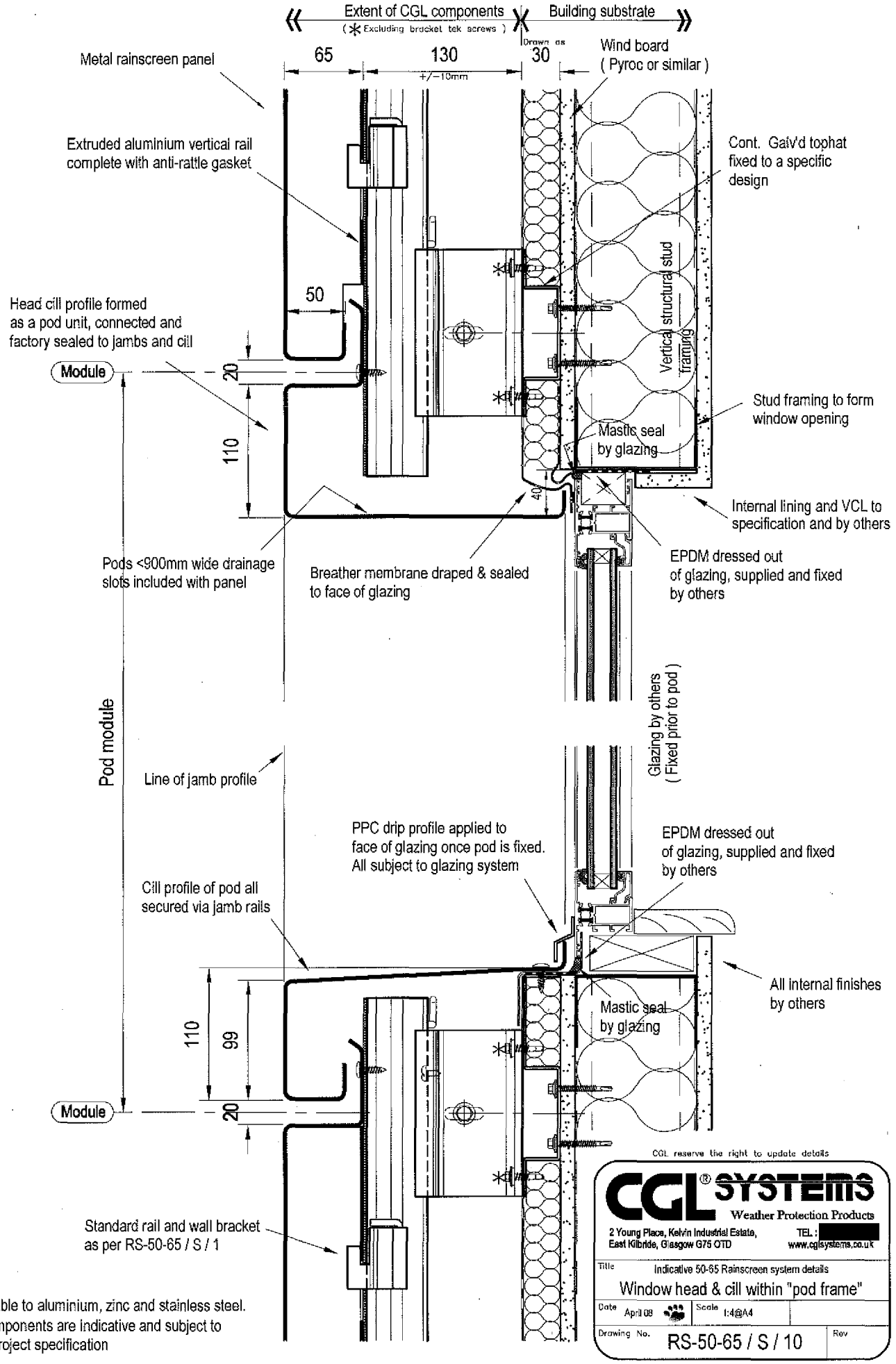
Weather Protection Products

2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow G75 0TD
TEL : [redacted]
www.cglsystems.co.uk

Title	Indicative 50-65 Rainscreen system details Window jamb with "pod frame"
Date	April 08
Scale	1:4@A4
Drawing No.	RS-50-65 / S / 11
Rev	

Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification



Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification

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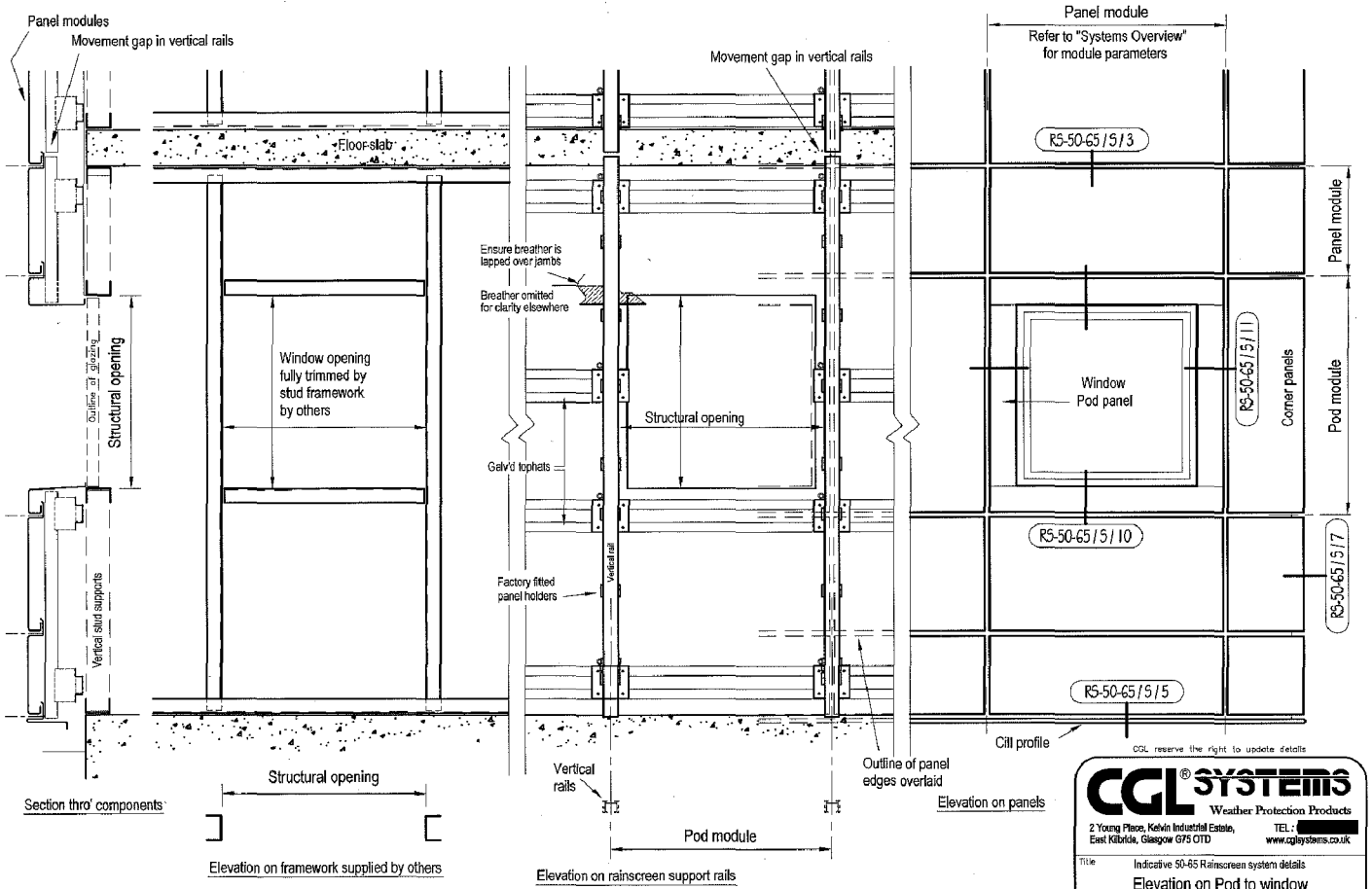
TEL : [redacted]
www.cglsystems.co.uk

Title: Indicative 50-65 Rainscreen system details
Window head & cill within "pod frame"

Date: April 08 | Scale: 1:4@A4

Drawing No.: RS-50-65 / S / 10 | Rev



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Notes:

Detail applicable to aluminium, zinc and stainless steel.
Non CGL components are indicative and subject to contractors project specification

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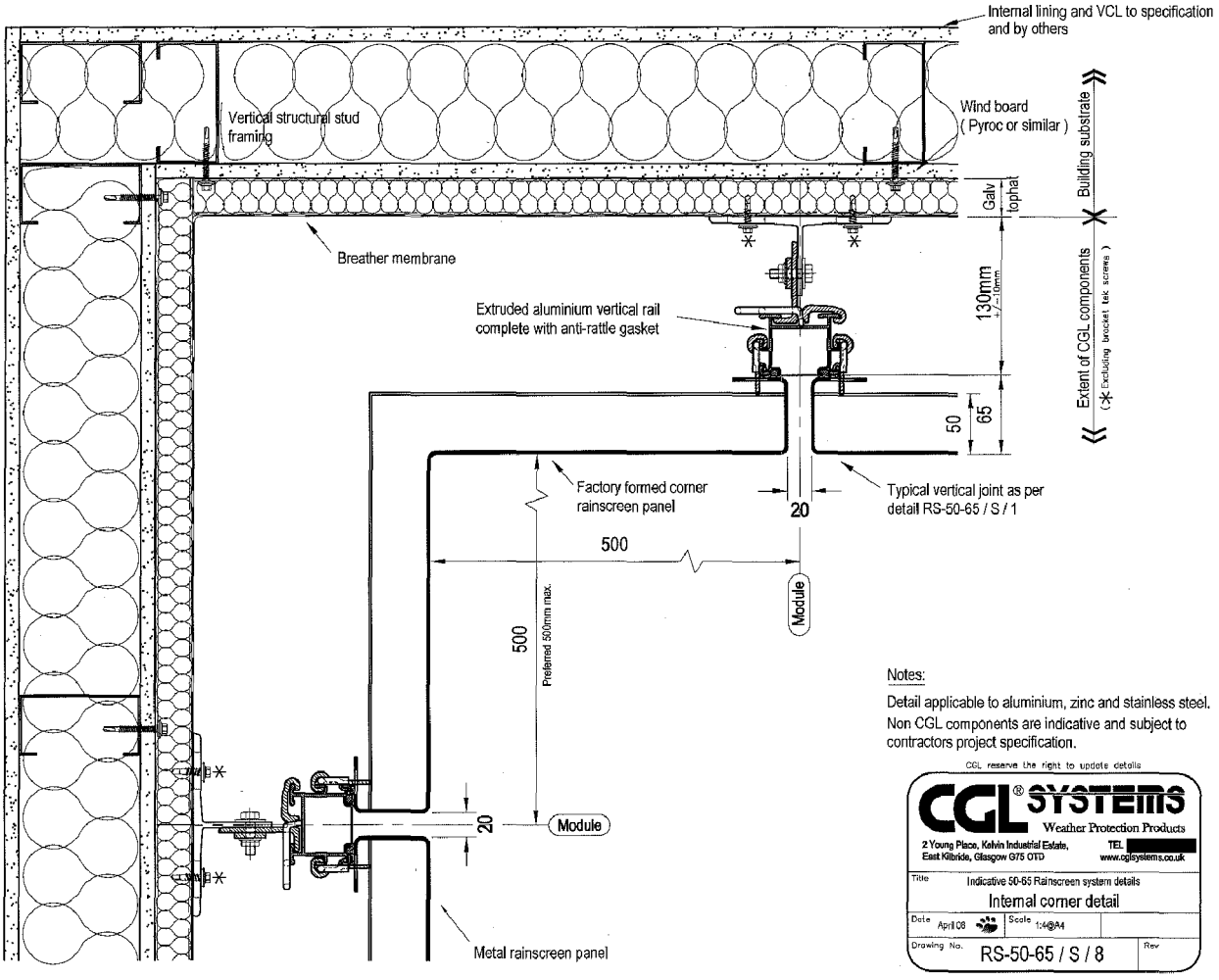
Title: Indicative 50-65 Rainscreen system details
Elevation on Pod to window

Date: April 09 | Scale: 1:20@A4

Drawing No.: RS-50-65 / S / 9 | Rev



Notes:

Detail applicable to aluminium, zinc and stainless steel.

Non CGL components are indicative and subject to contractors project specification.

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Title: Indicative 50-65 Rainscreen system details

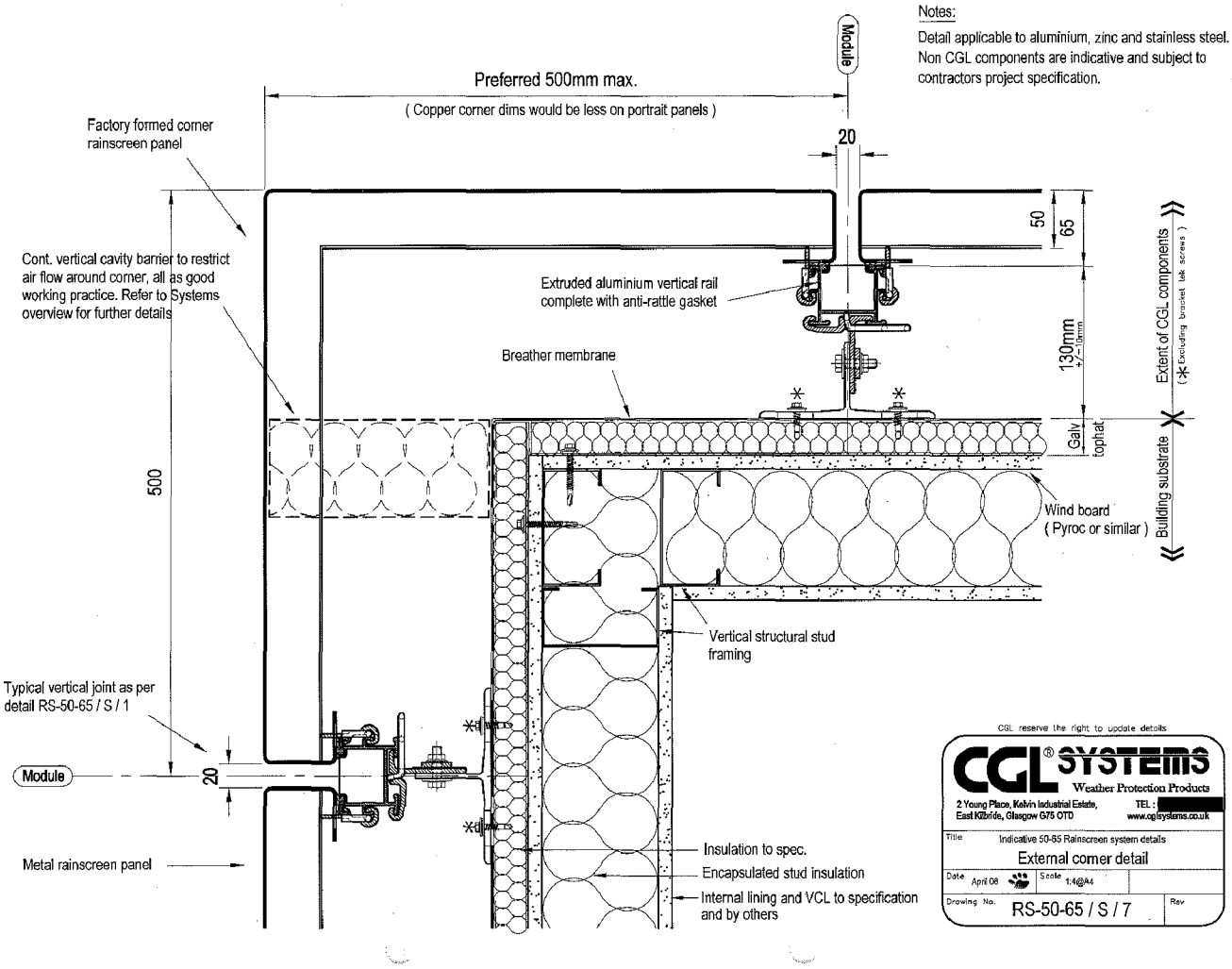
Internal corner detail

Date: April 08 | Scale: 1:4@A4

Drawing No.: RS-50-65 / S / 8 | Rev

Notes:

Detail applicable to aluminium, zinc and stainless steel. Non CGL components are indicative and subject to contractors project specification.



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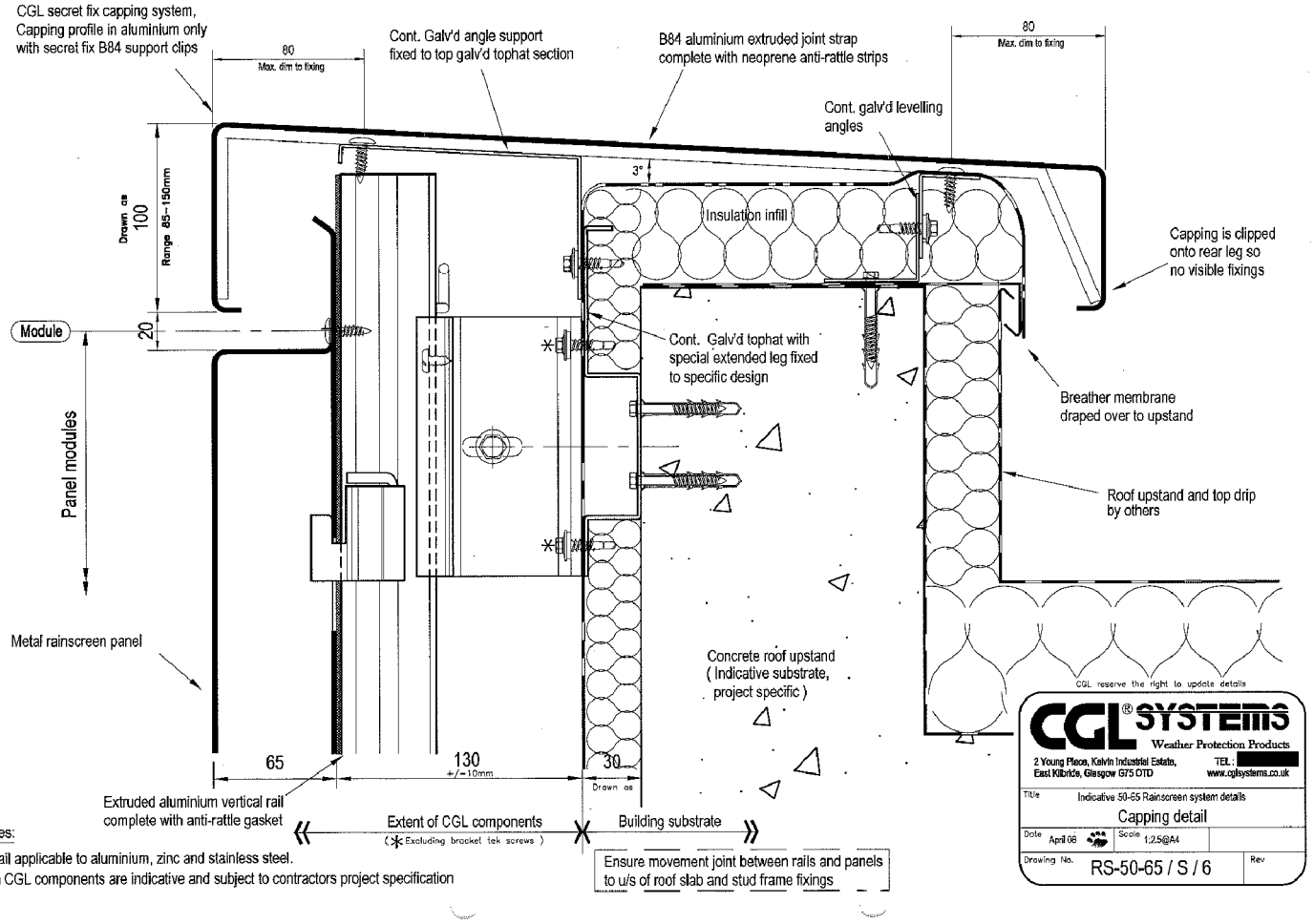
Title	Indicative 50-65 Rainscreen system details
	External corner detail
Date	April 08
Scale	1:4@A4
Drawing No.	RS-50-65 / S / 7
Rev	

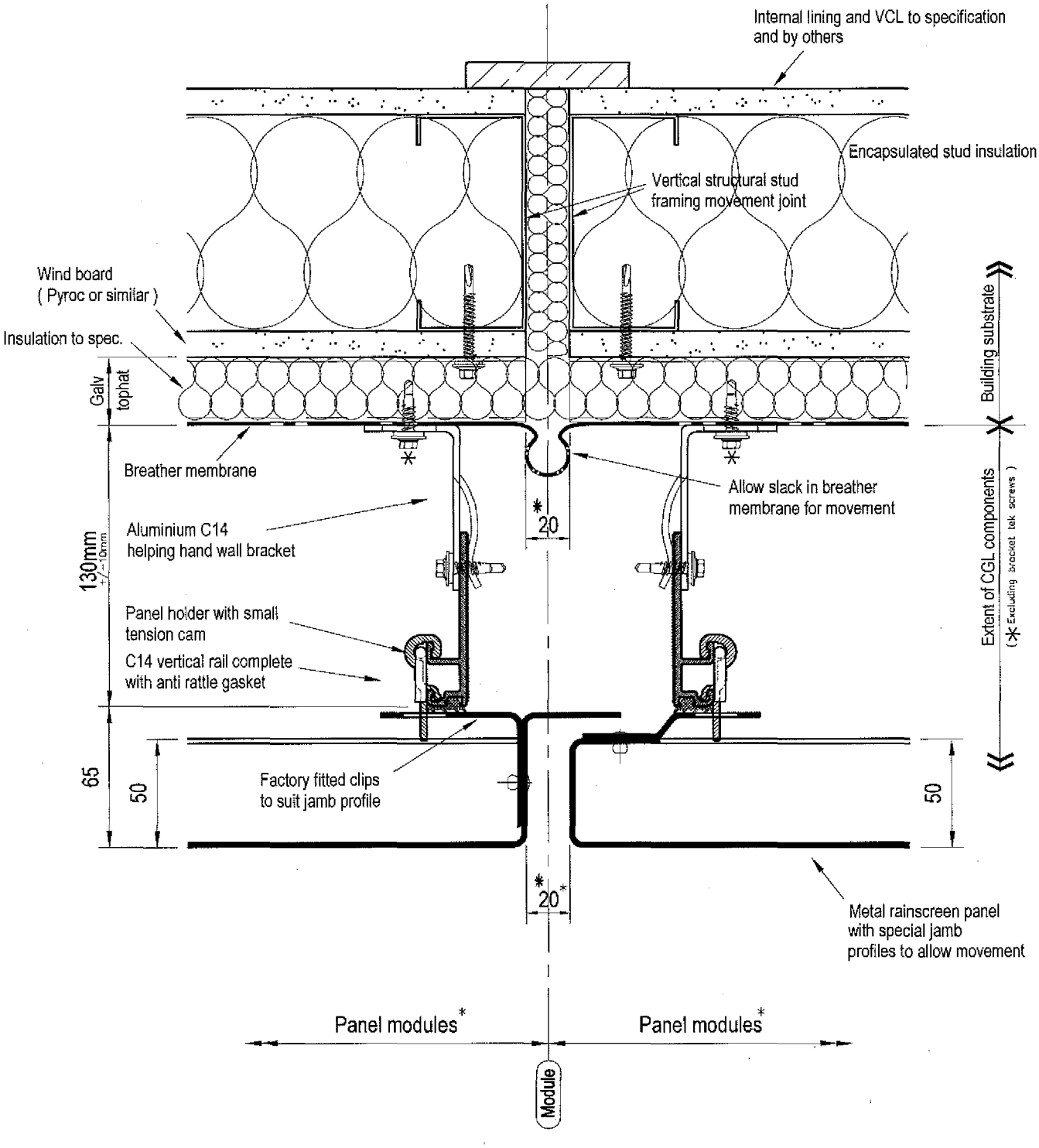


Notes:

Detail applicable to aluminium, zinc and stainless steel.

Non CGL components are indicative and subject to contractors project specification

SEA00014616_0204



Notes:

Detail applicable to aluminium, zinc and stainless steel.

* = Movement joints must be co-ordinated.

* = Standard 20mm vertical joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

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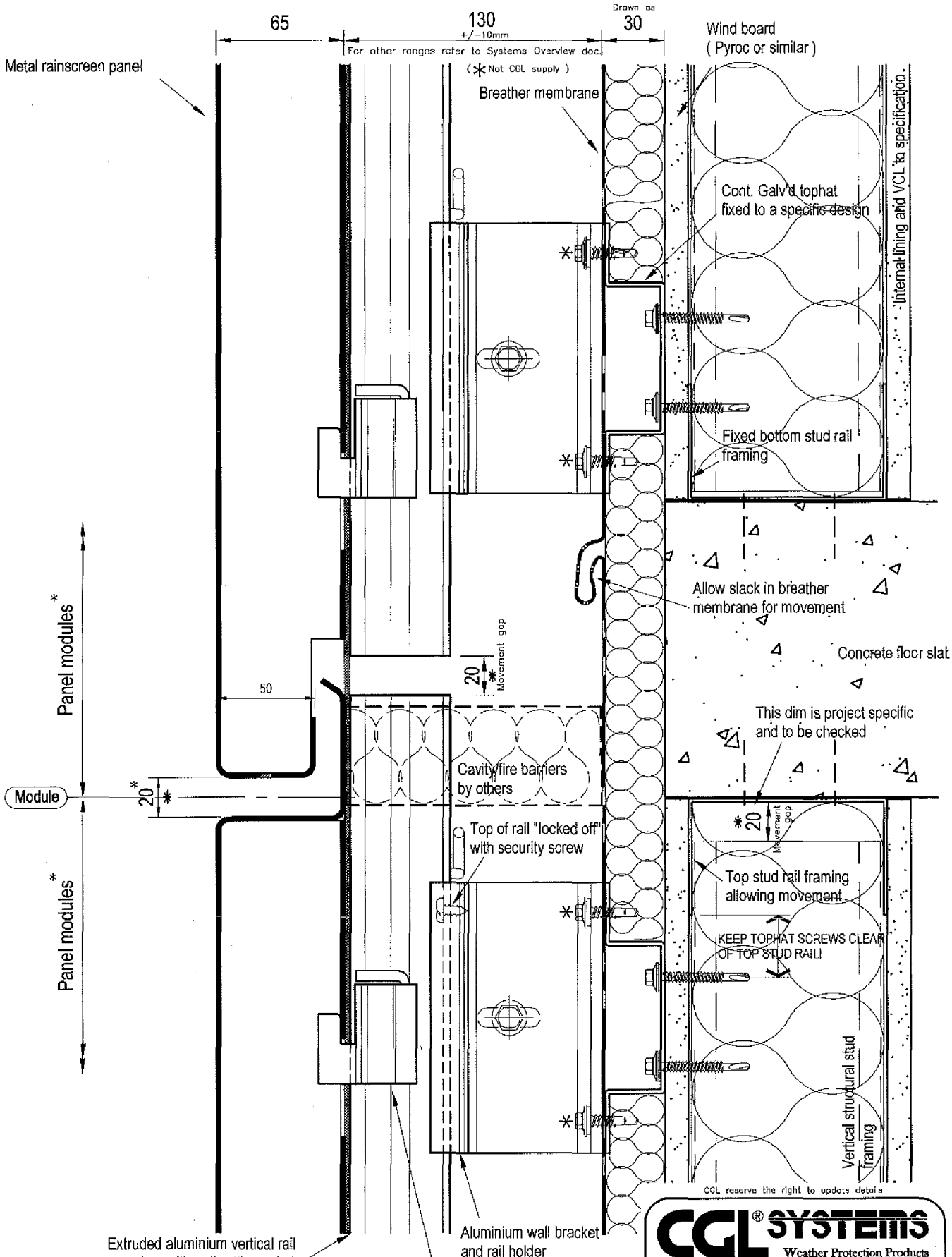
Title: Indicative 50-65 Rainscreen system details

Typical vertical expansion joint

Date: April 08 | Scale: 1:2.5@A4

Drawing No.: RS-50-65 / S / 4 | Rev



Notes:

Detail applicable to aluminium, zinc and stainless steel.

✱ = Movement joints must be co-ordinated.

* = Standard 20mm horizontal joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

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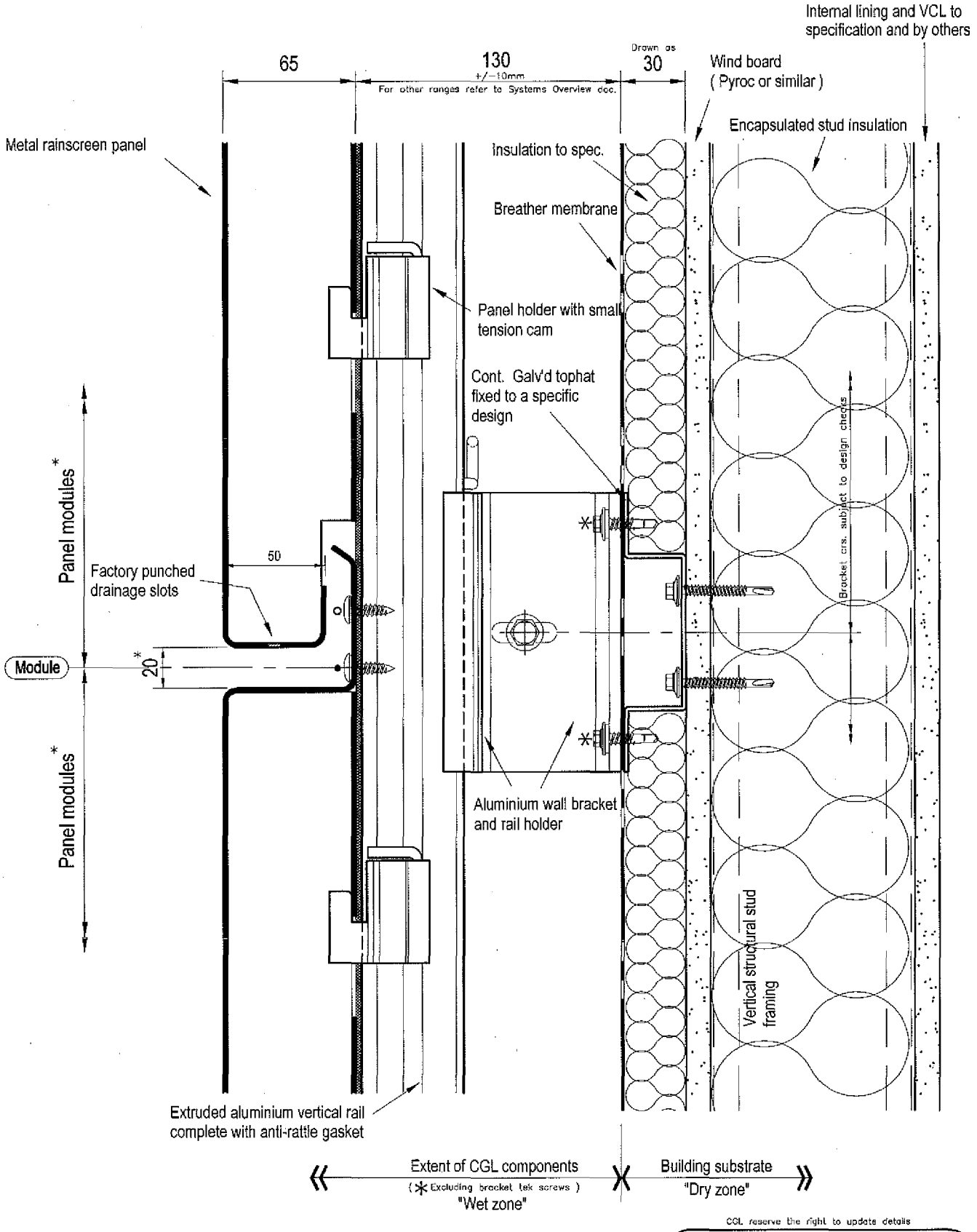
Title: Indicative 50-65 Rainscreen system details

Typical movement joint at floor levels

Date: April 08 | Scale: 1:2.5@A4

Drawing No.: RS-50-65 / S / 3 | Rev:



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Title: Indicative 50-65 Rainscreen system details
Section through horizontal joint

Date: April 08 | Scale: 1:2.5@A4

Drawing No.: RS-50-65 / S / 2 | Rev

Notes:

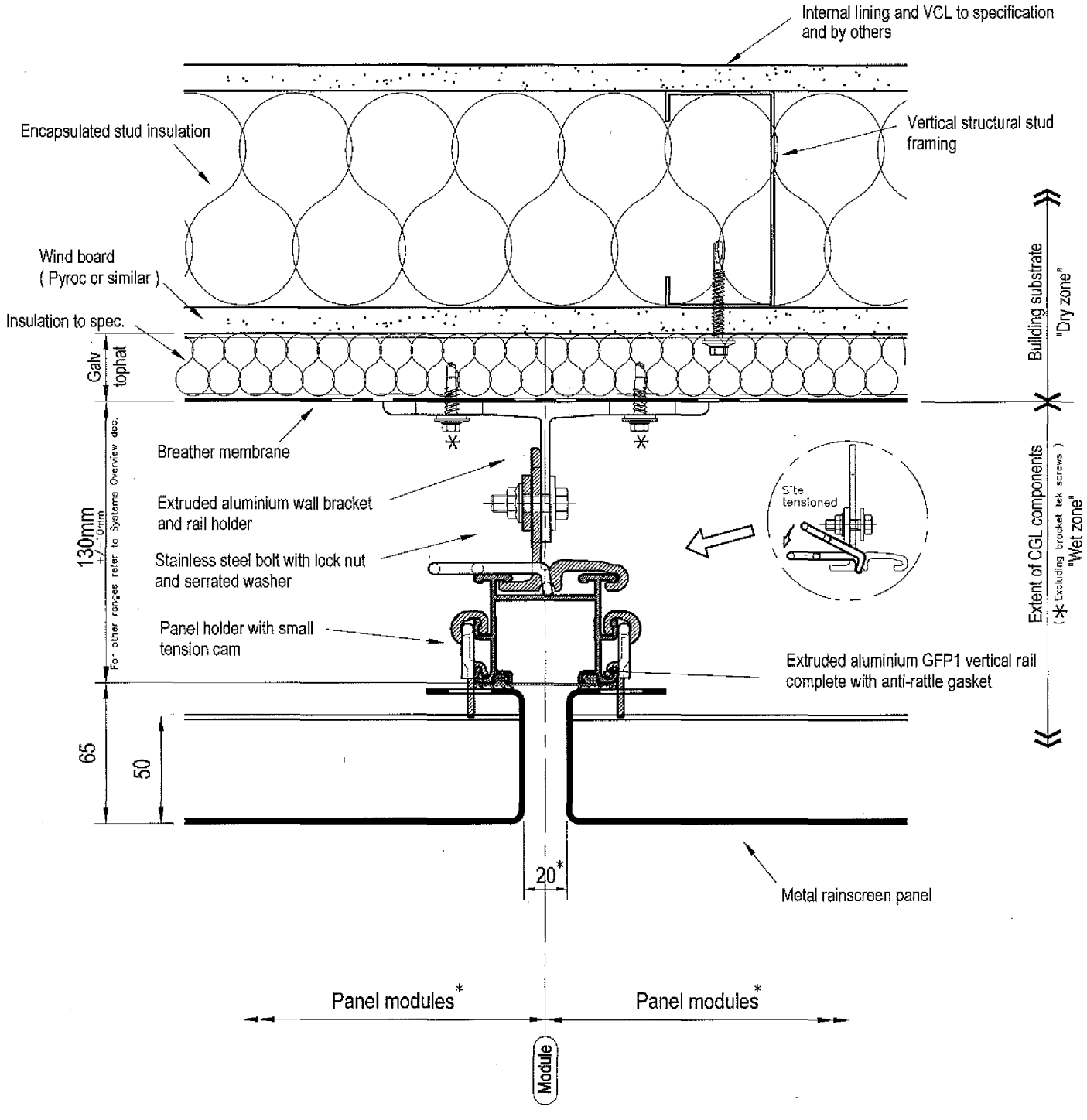
Detail applicable to aluminium, zinc and stainless steel.

* = Standard 20mm horizontal joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

• = Security screw above +3000mm, minimum 1 per panel, not CGL supply.

o = Security screw below +3000mm, minimum 1 per panel, not CGL supply.



Notes:

Joint applicable to aluminium, zinc and stainless steel.

* = Standard 20mm vertical joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

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Title	Indicative 50-65 Rainscreen system details Section through vertical joint
Date	April 08
Scale	1:2.5@A4
Drawing No.	RS-50-65 / S / 1
Rev	

This model is available in a 3D dwf viewer to facilitate navigation of all components in any direction

To be read inconjunction with head, cill and jamb sections on details RS-50-65 / _ / 12,13 + 14

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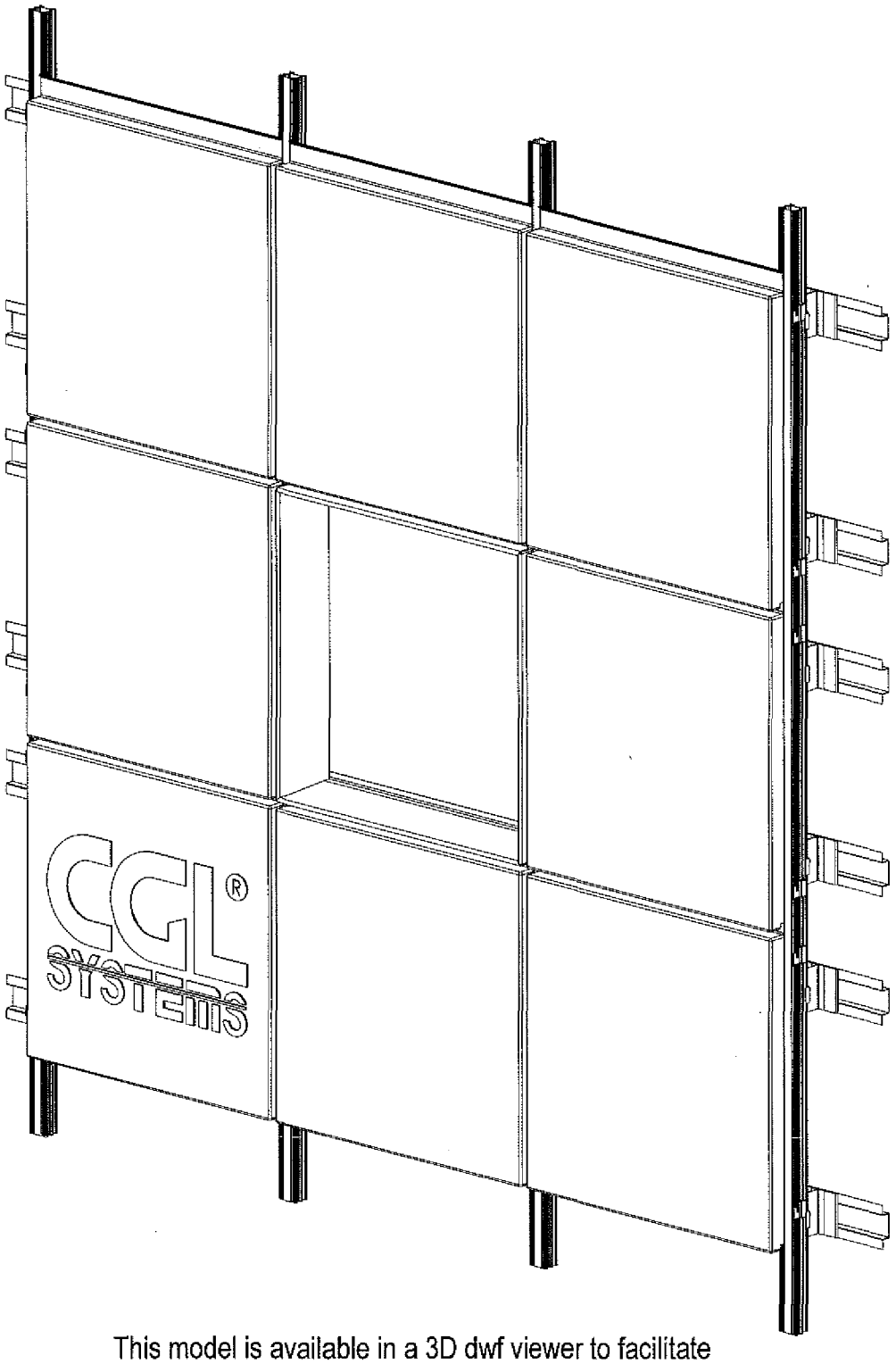
Title: Indicative 50-65 Rainscreen system details

Isometric view of "Reveal Panels"

Date: July 08 | Scale: N.T.S.

Drawing No.: RS-50-65 / RP Iso | Rev:



This model is available in a 3D dwf viewer to facilitate navigation of all components in any direction

To be read inconjunction with head, cill and jamb sections on details RS-50-65 / _ / 15,16 + 17.

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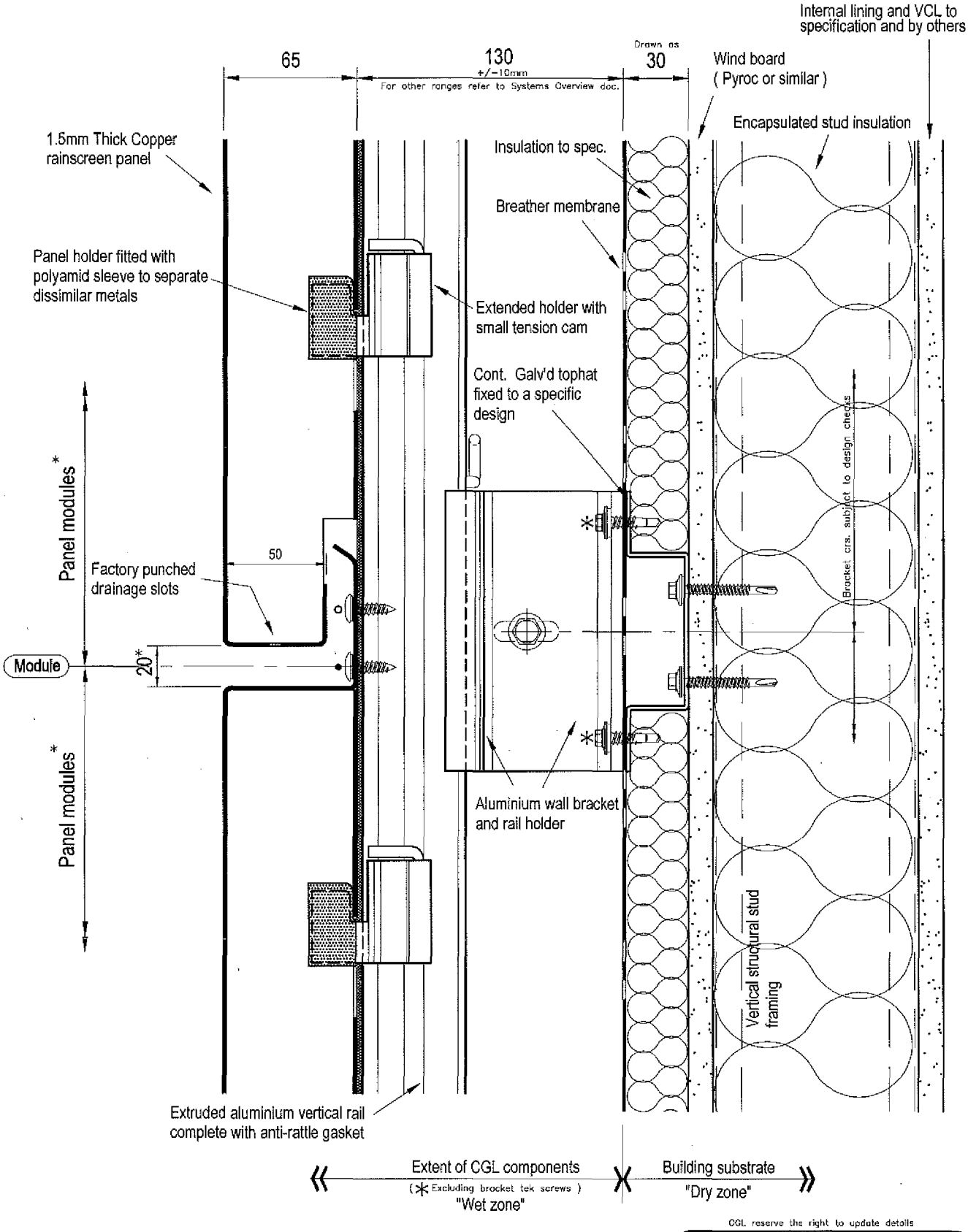
Title	Indicative 50-65 Rainscreen system details Isometric view of "Narrow Pod"
Date	July 05
Scale	N.T.S.
Drawing No.	RS-50-65 / N-Pod Iso
Rev	



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Title: Indicative 50-65 Rainscreen system details
Copper horizontal joint

Date: April 08 | Scale: 1:2.5@A4

Drawing No. RS-CO-50-65 / S / 2 | Rev

Notes:

* = Standard 20mm horizontal joint to allow panel removal.
For panel module parameters refer to "Systems Overview" document.

Non CGL components are indicative and subject to contractors project specification

• = Security screw above +3000mm, minimum 1 per panel, not CGL supply.

o = Security screw below +3000mm, minimum 1 per panel, not CGL supply.