



# **SEAMED METAL ROOF COVERINGS**

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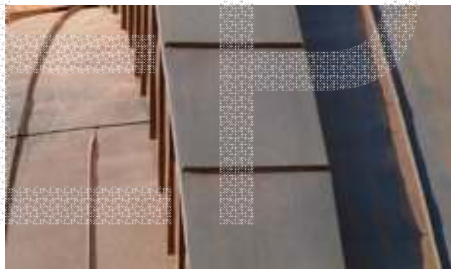
# REVIEW – MATERIALS OF THE METAL ROOF COVERINGS

**Materials (thickness: 0,5 – 1,0 mm):**

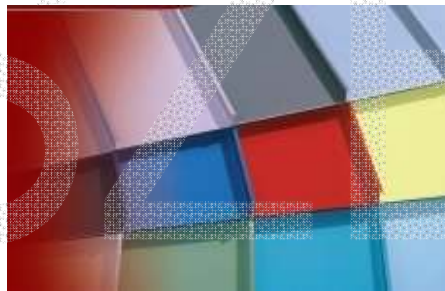
- **aluminum** (material - anodic oxidation - or surface treated) corrugation pattern: trapezoid, wavy or composite profile panels, planks, strips
- **steel** (galvanised or coated) trapezoid, wavy or composite profile panels,
- **copper** profile panels.
- **titanium zink** – modular roof covering (soldered roof coverings will be introduced separately)

**Contact corrosion** has to be considered when building in / connecting metal components :

- water drained away from copper surfaces may not make contact with any other metal;
- a separating layer must be built in between incompatible components;
- the majority of timber conservation substances attack metals;
- concrete and plastered surfaces release calcium-hydroxide that destroys aluminum and zinc.



Copper

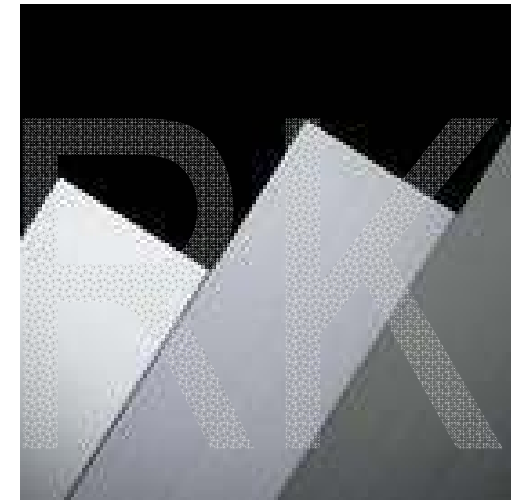


Coated steel



Pre-weathered  
aluminium

Titanium zink: bright-  
rolled, natural and  
pre-weathered





# REVIEW – MATERIALS OF THE METAL ROOF COVERINGS

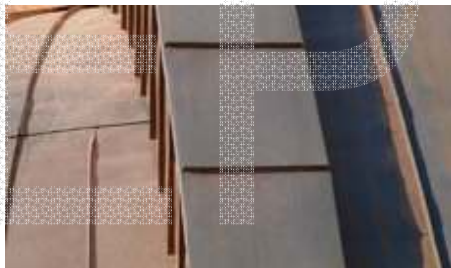
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**Thermal movement:**

- $\alpha: 0,11-0,25 \times 10^{-5}$
- In 85° K, 1 cm in:
  - 4,35 m (aluminium)
  - 6,9 m (copper)
  - 9,8 m (galvanised steel)

**Chemical corrosion:** ventilation!



Copper



Coated steel



Pre-weathered  
aluminium

Titanium zink: bright-  
rolled, natural and  
pre-weathered





# METAL ROOF CLADDINGS – MOSQUE OF PÉCS





# METAL ROOF COVERINGS





# SEAMED METAL SHEET ROOF COVERING: CONICAL SHAPE



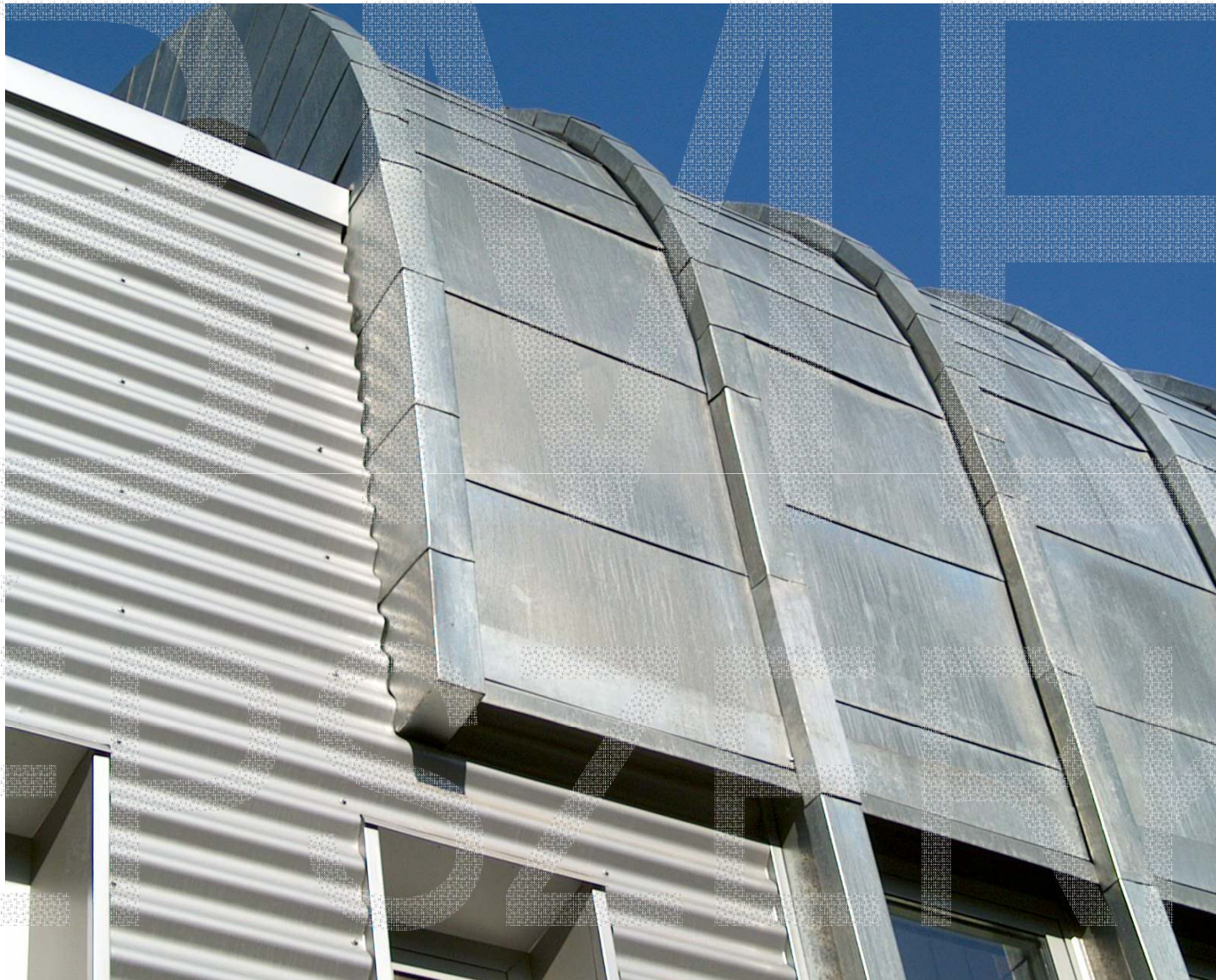


# SEAMED METAL SHEET ROOF COVERING: CURVY SHAPE



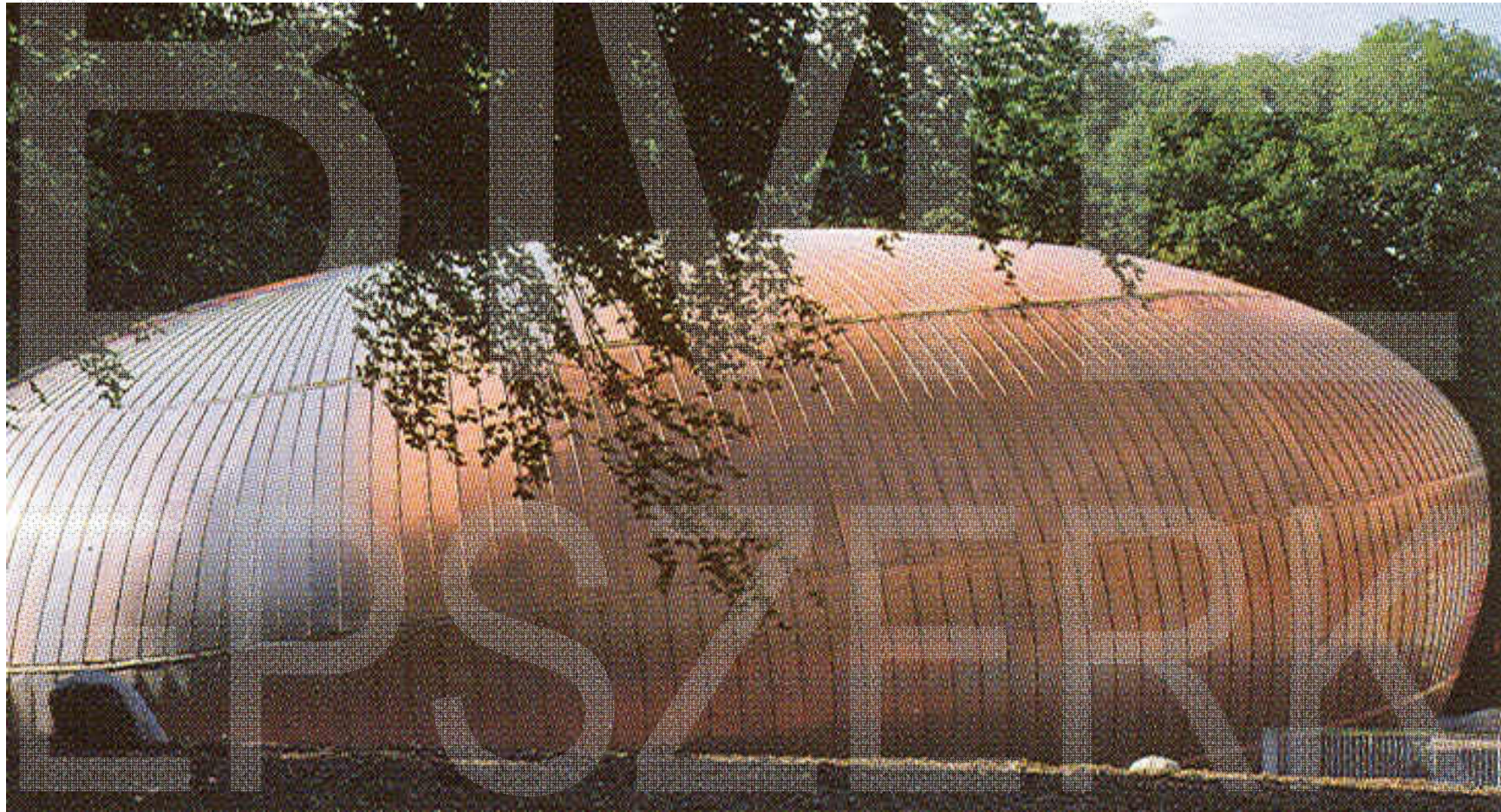


# SEAMED METAL SHEET ROOF COVERING: CURVY SHAPE





# METAL ROOF CLADDING ON CURVY SHAPE





# METAL ROOF CLADDING - TRADITION



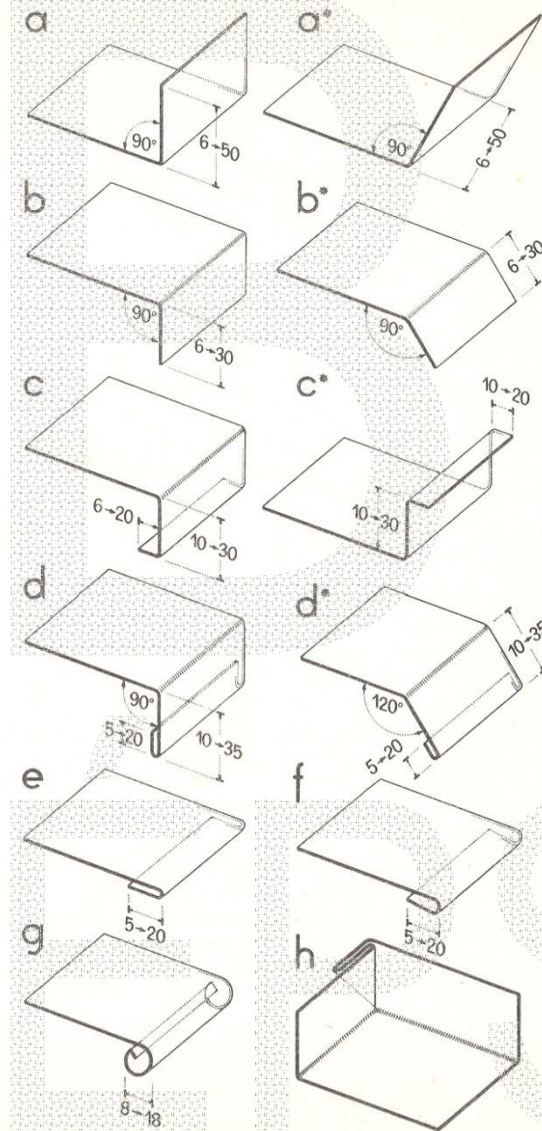


# METAL ROOF CLADDING – UP-TO-DATE

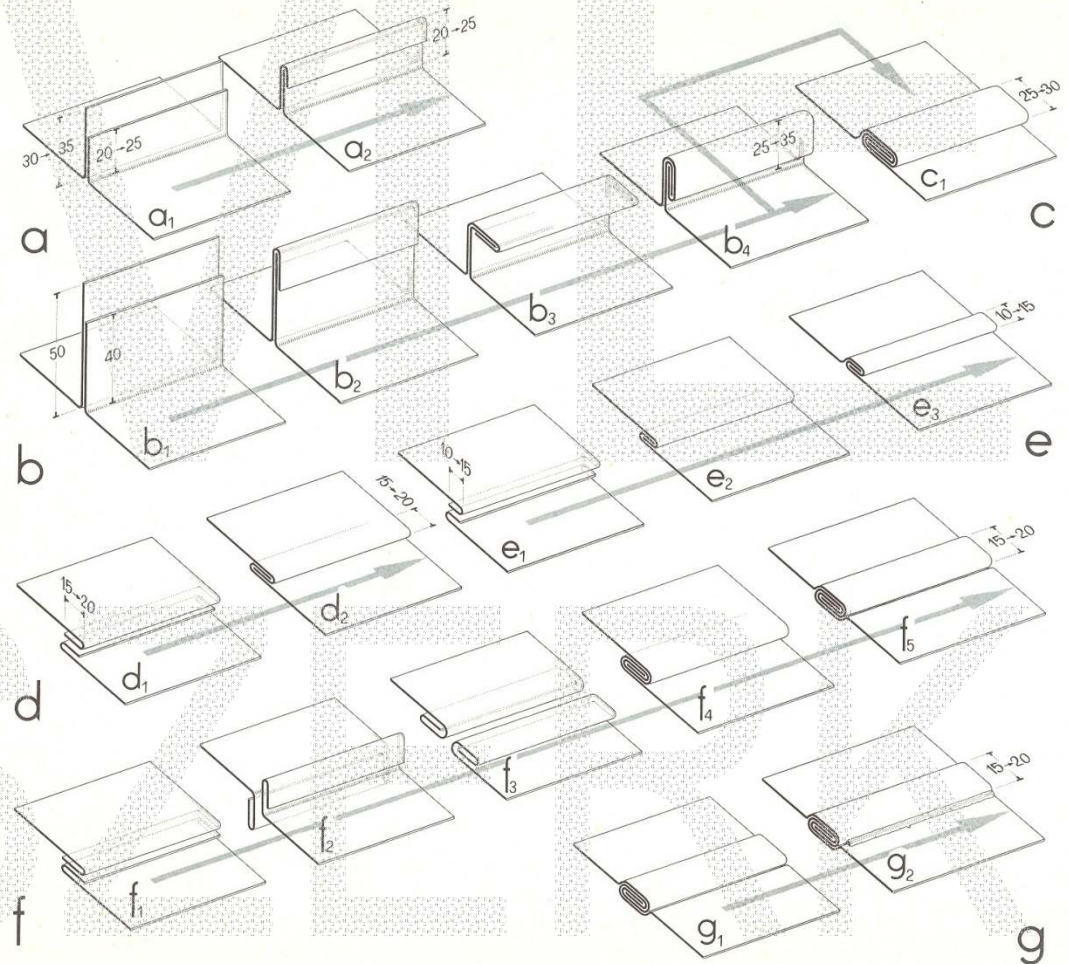




# METAL SHEET: EDGE WORKS, SEAMING



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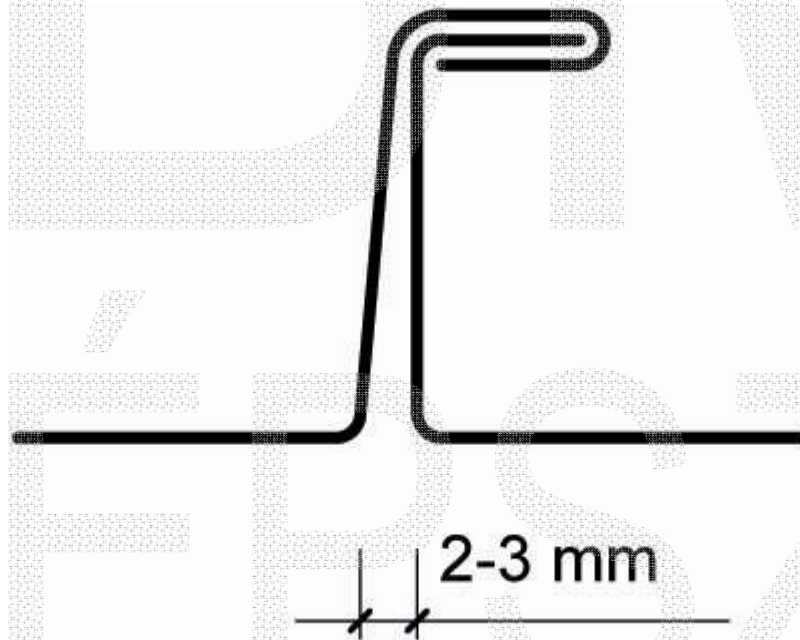
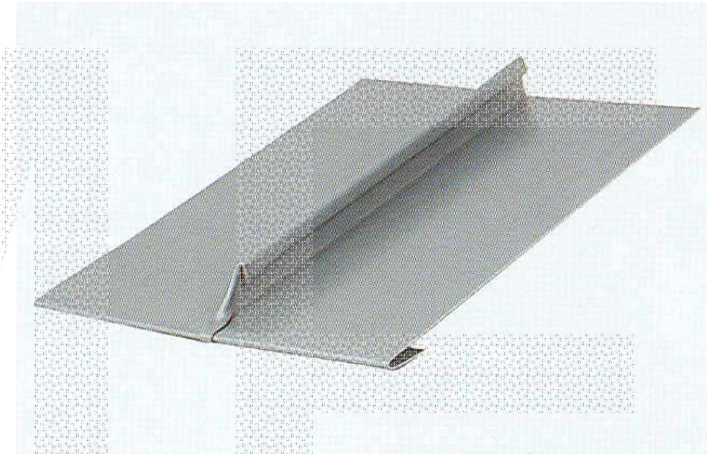




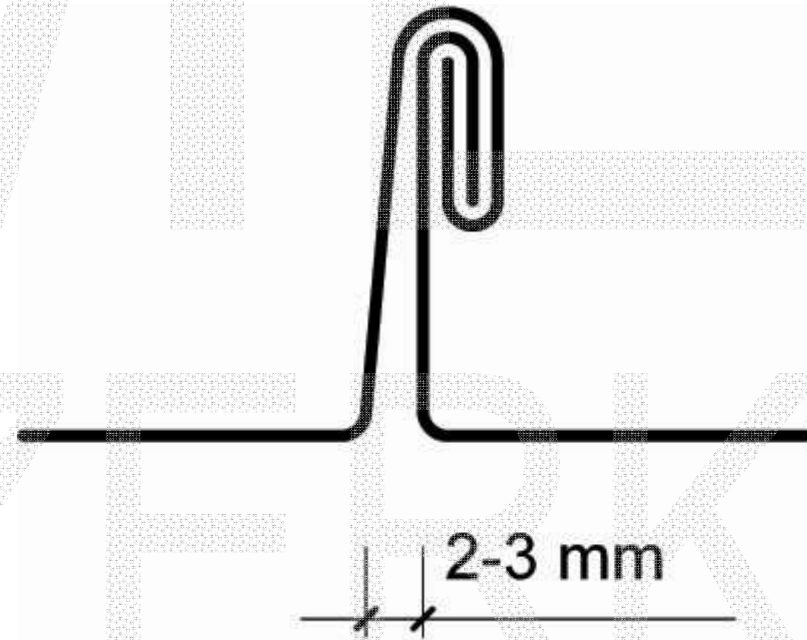
# METAL ROOF CLADDINGS

## SEAMING

**Seaming** is a metalworking processes in which a sheet metal edge is rolled over onto itself. Seam joins the edges of two materials.



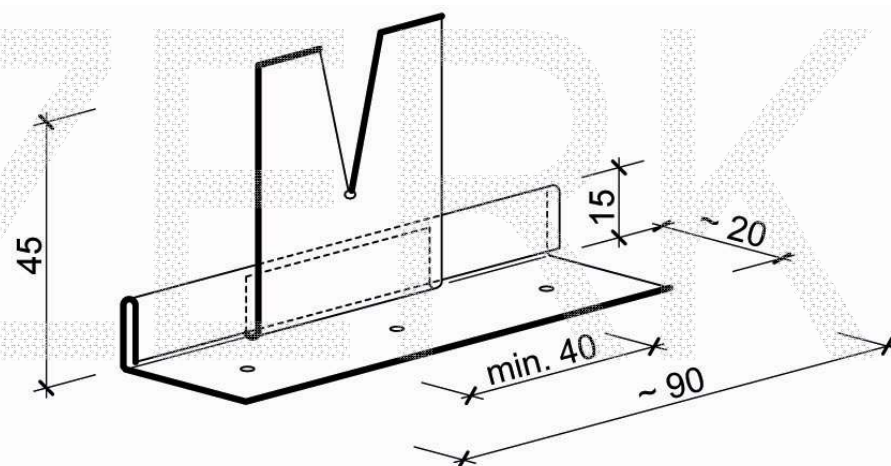
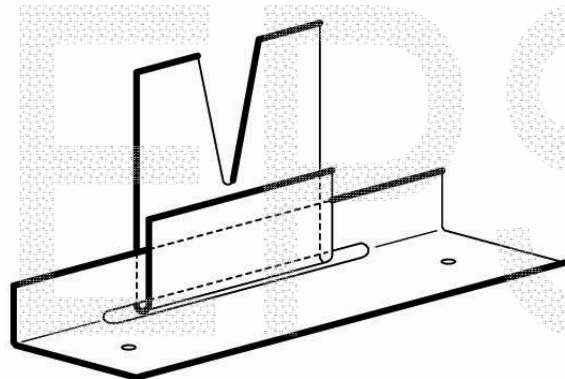
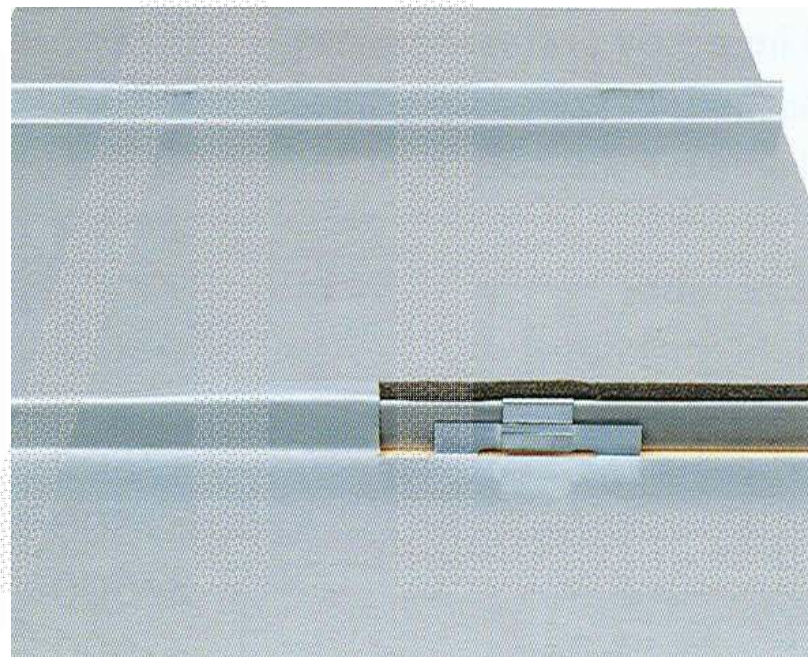
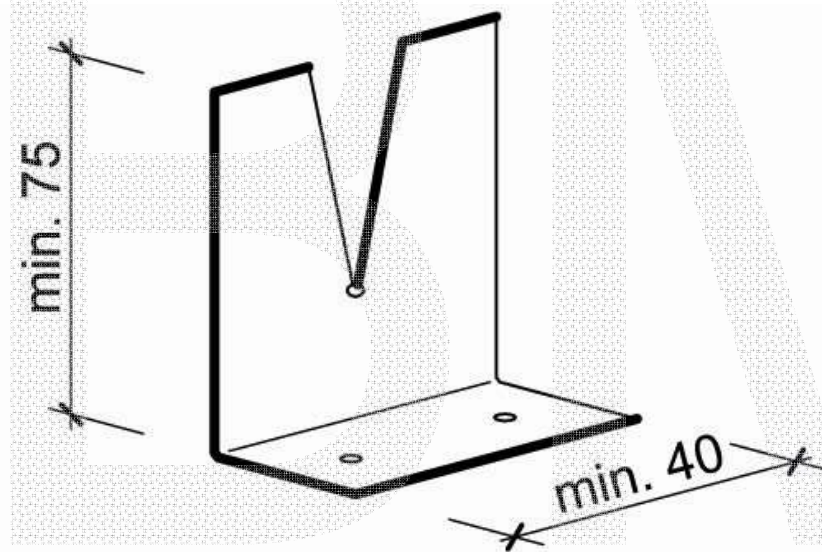
Angled standing seam



Double lock standing seam



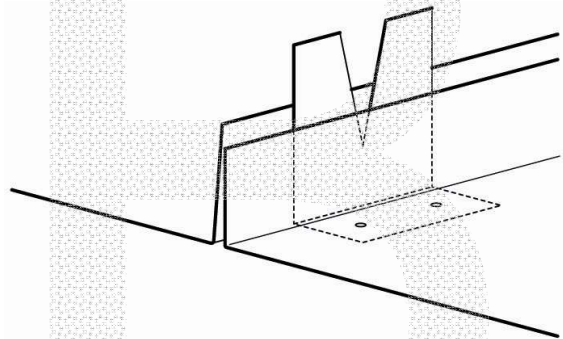
## FIX AND SLIDING FASTENING CLIP



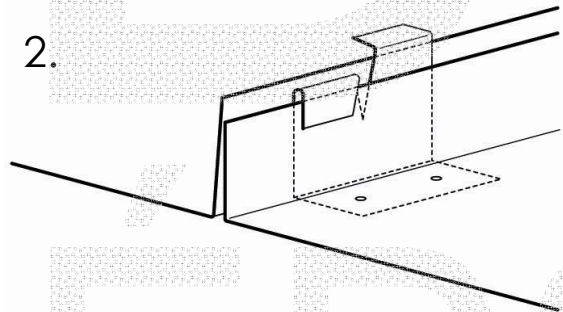


# METAL ROOF CLADDINGS – SEAM AND FIXING CLIP

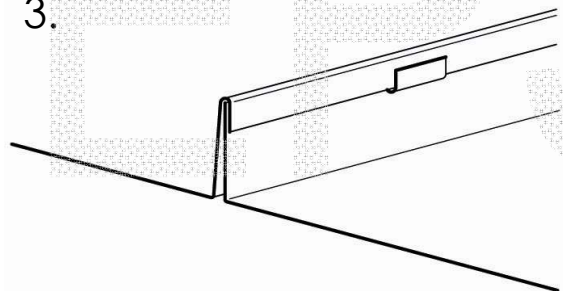
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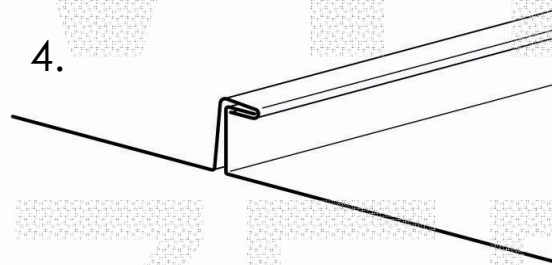
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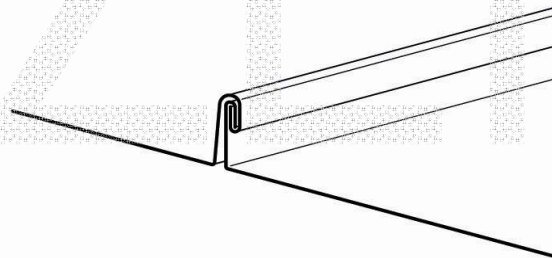
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4.

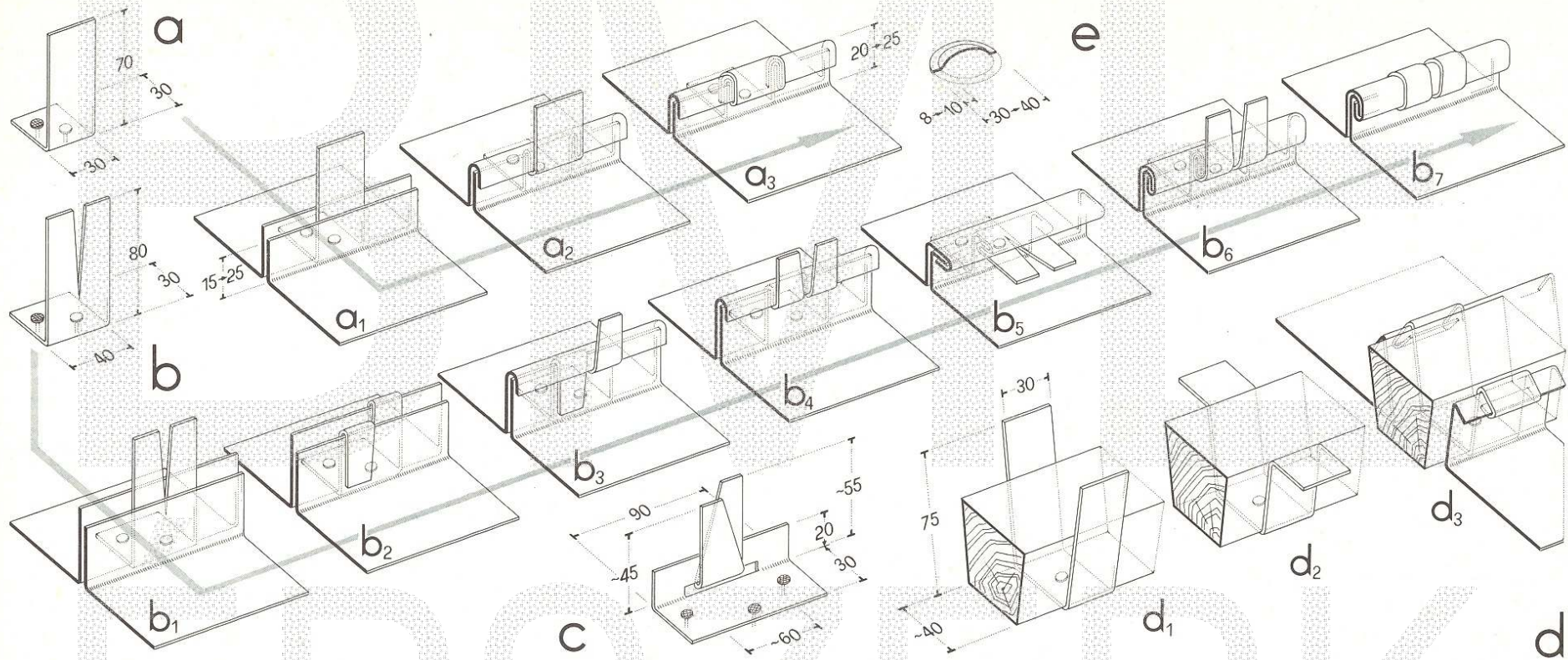


5.





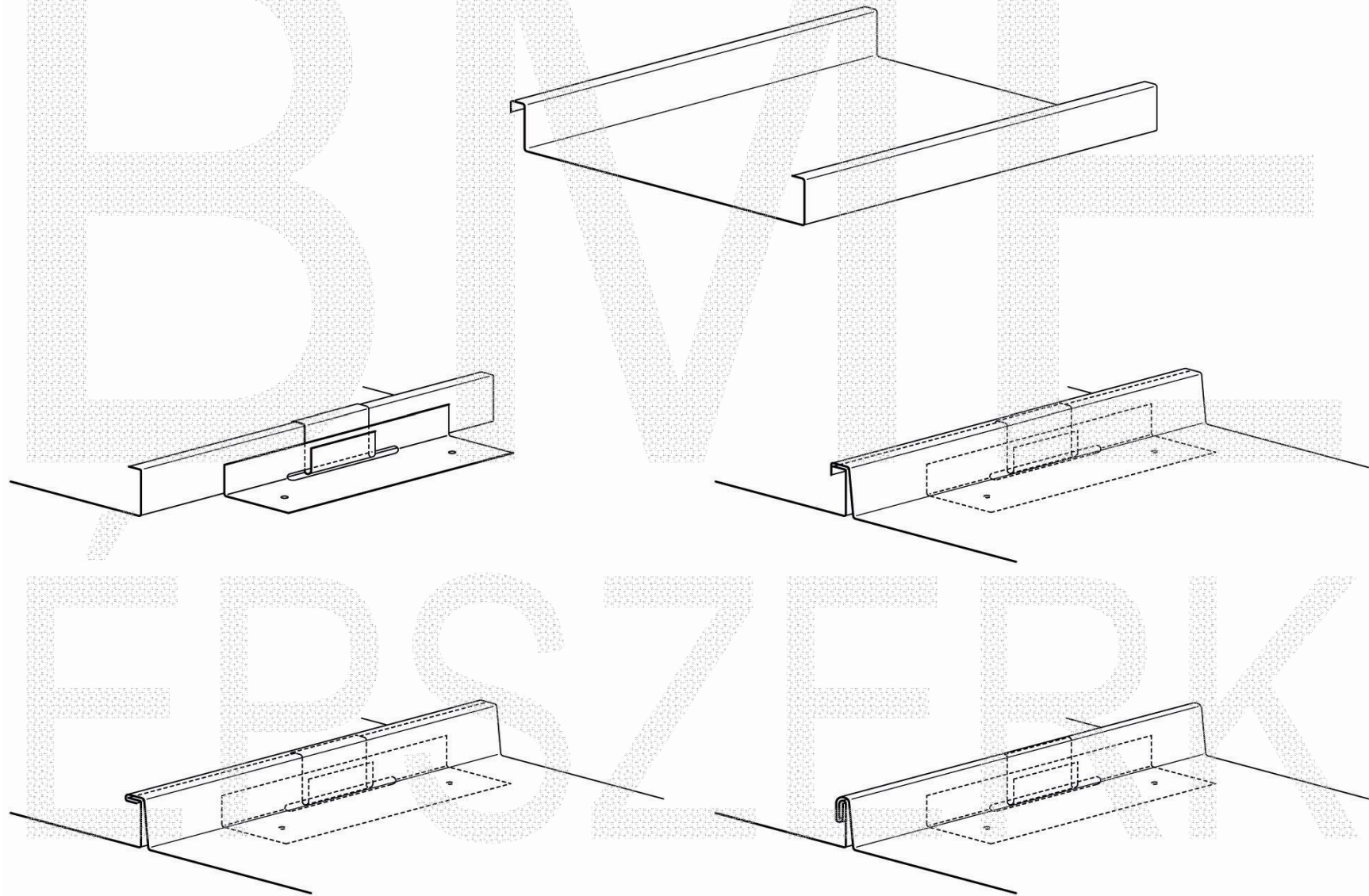
# SEAMED METAL ROOF CLADDINGS – FASTENING ELEMENTS



- a: simple fixing clip
- b: double fixing clip
- c: sliding double fixing clip (thermal movement)
- d: metal sheet roof covering with batten connections

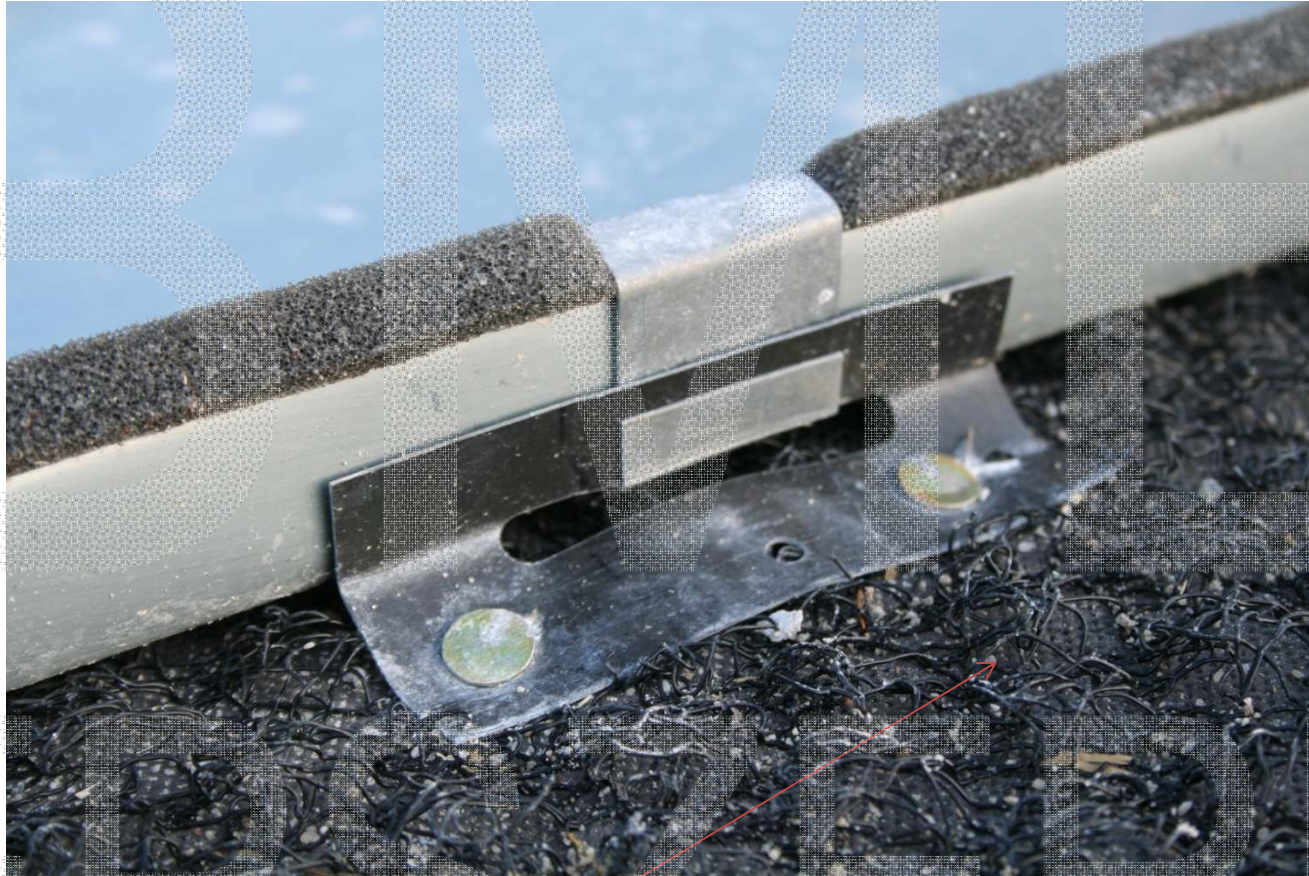


# SEAMED METAL ROOF CLADDINGS – PRE - MOULDED





# SEAMED METAL ROOF CLADDINGS INCREASING THE WATERTIGHTNESS



- **Sealed seams:** below 7° pitch angle , snowy areas, above snow collectors
- **ventilating layer:** between 7-9° pitch angle
- **ventilated underlayer folia:** between 3-10° pitch angle

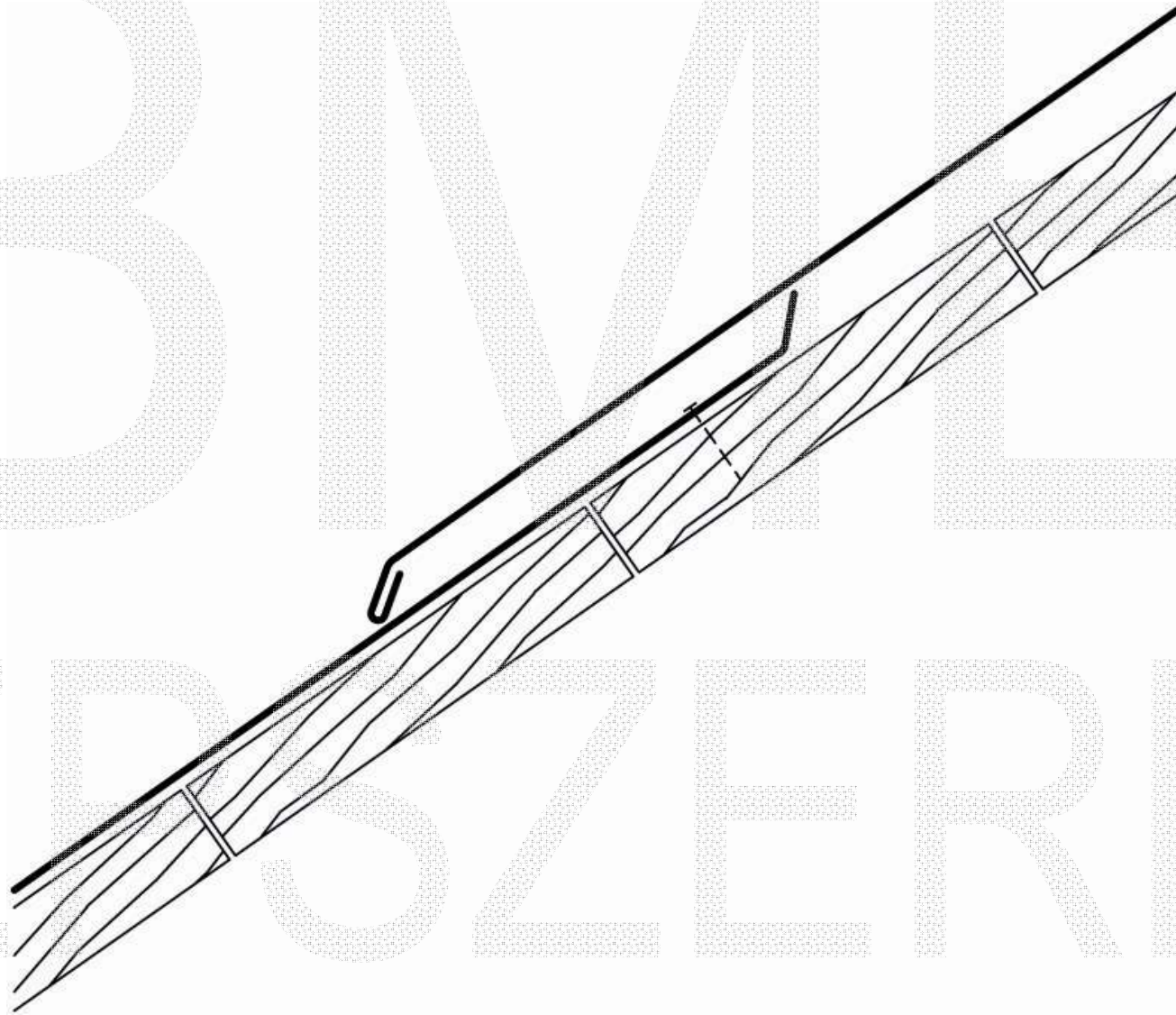


# METAL ROOF COVERINGS – FOLDING TONGS





# METAL ROOF CLADDINGS – AXIAL LAPPING





# METAL ROOF CLADDINGS



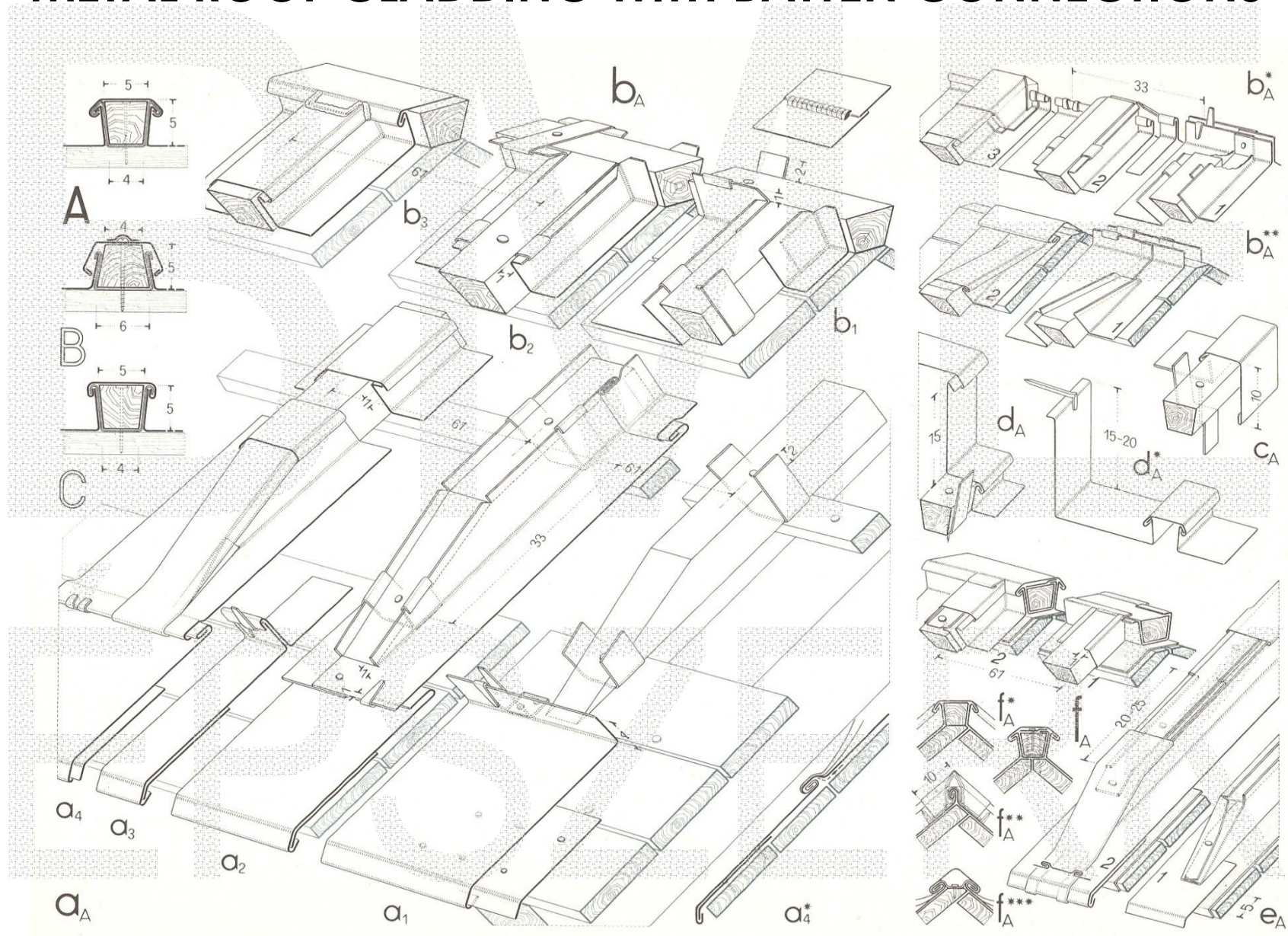


# METAL ROOF CLADDING UNDER CONSTRUCTION



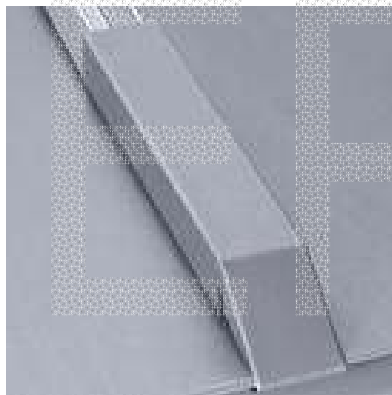
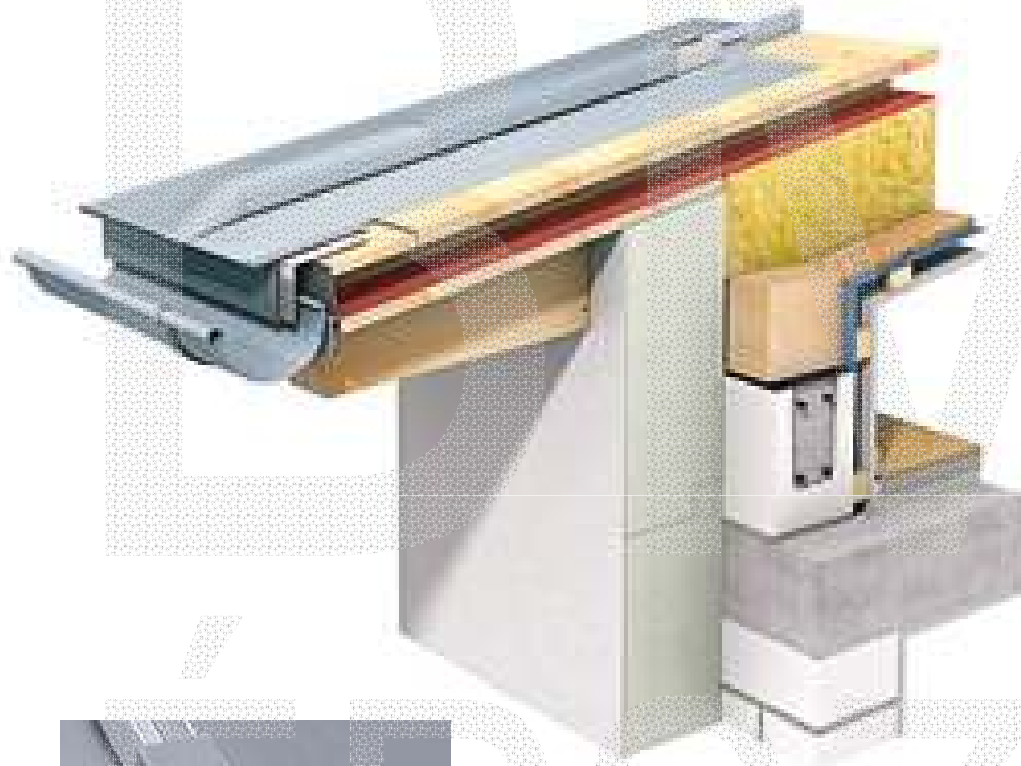


# METAL ROOF CLADDING WITH BATTEN CONNECTIONS



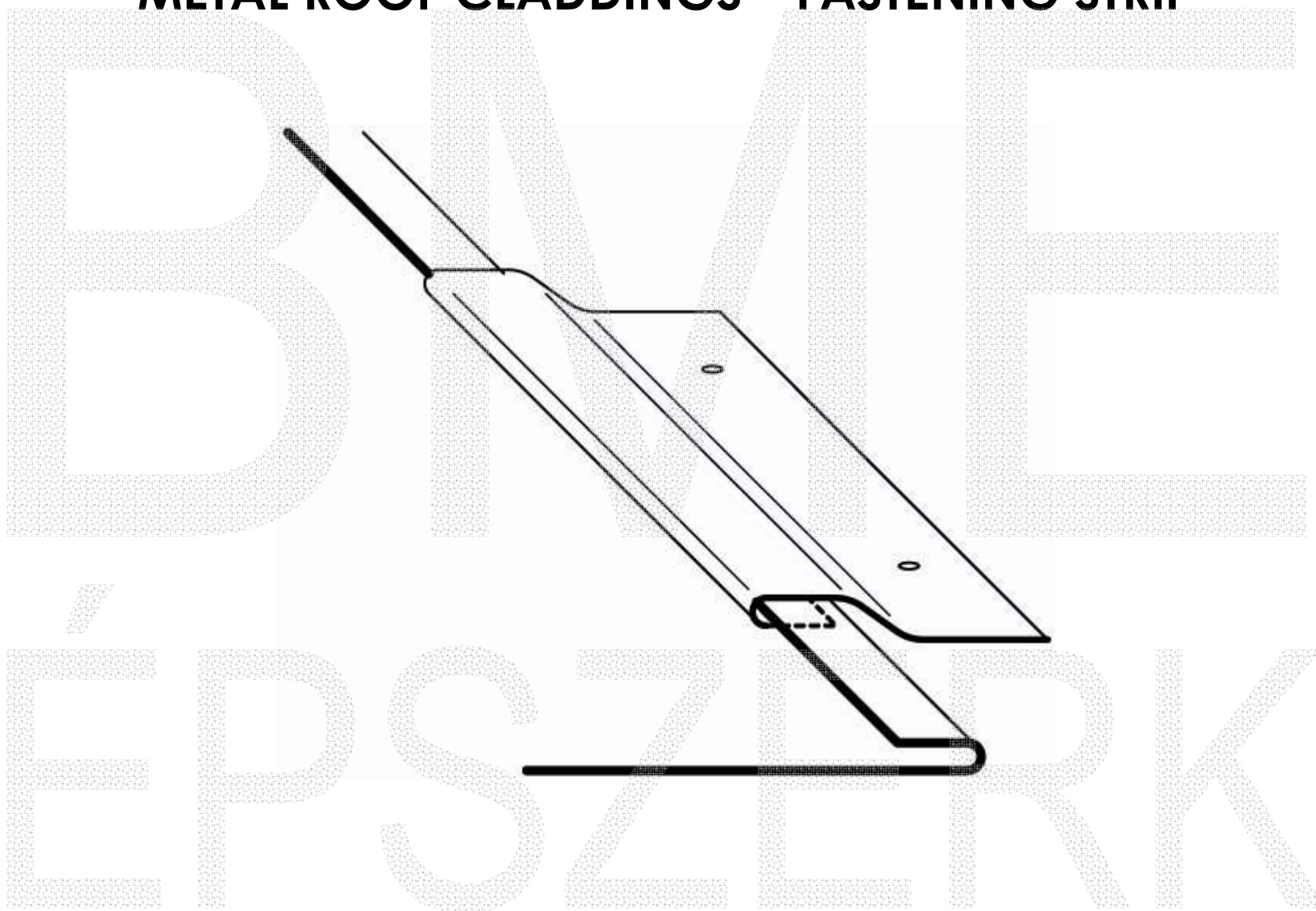


# METAL ROOF COVERINGS – CLICK STRIP SYSTEM





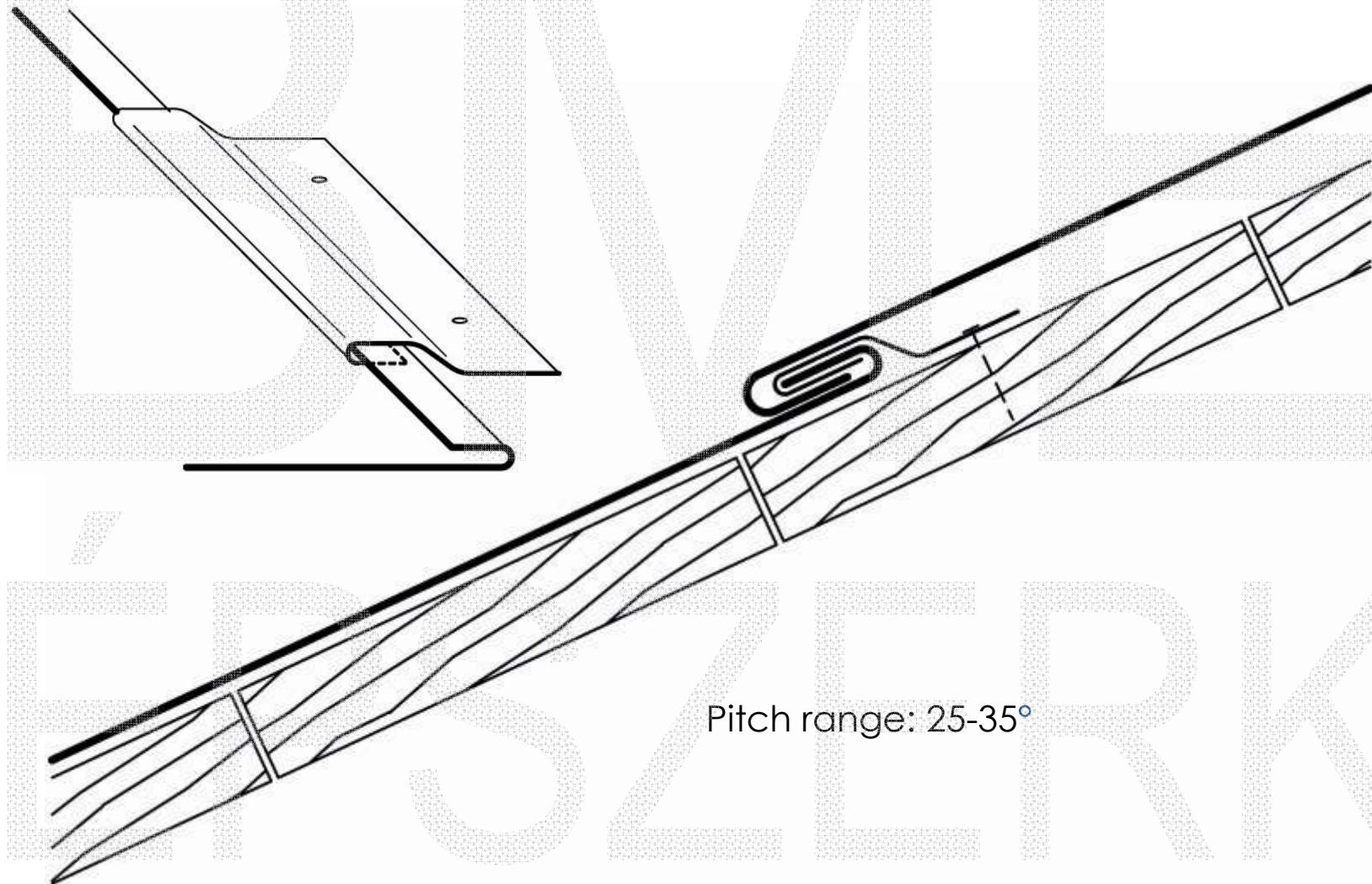
## METAL ROOF CLADDINGS – FASTENING STRIP





# METAL ROOF CLADDINGS

## AXIAL LAPPING WITH SEAM DRESSED DOWN FLAT





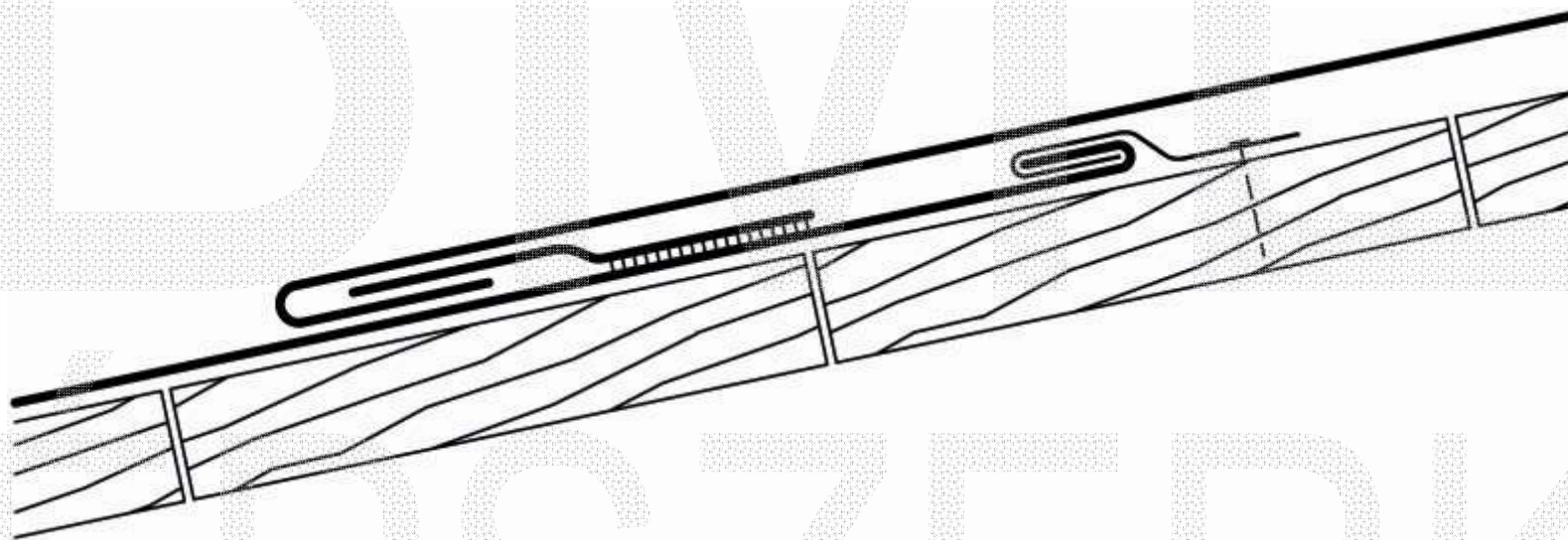
# **METAL ROOF CLADDINGS**

## **AXIAL LAPPING WITH SEAM DRESSED DOWN FLAT**





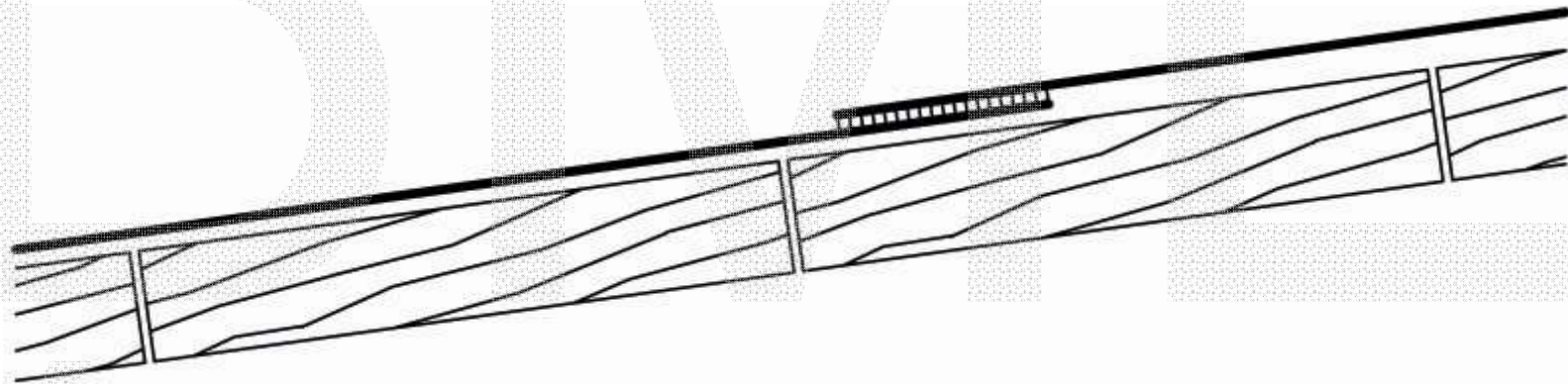
# METAL ROOF CLADDINGS – AXIAL LAPPING WITH FLASHING



Pitch range: 11-25°



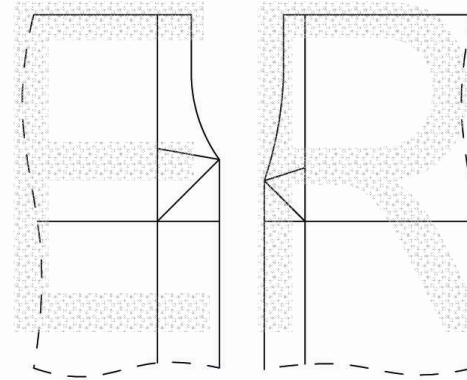
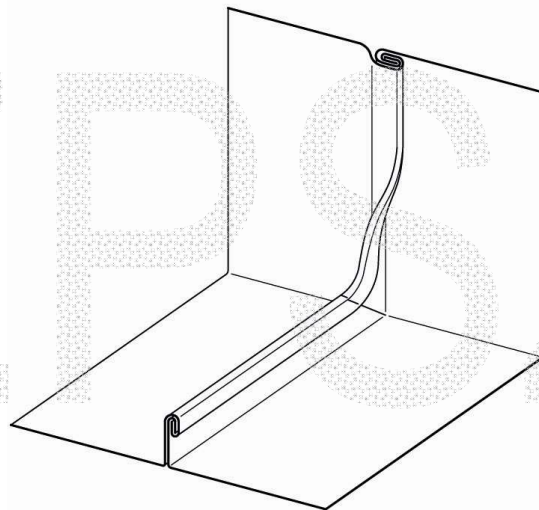
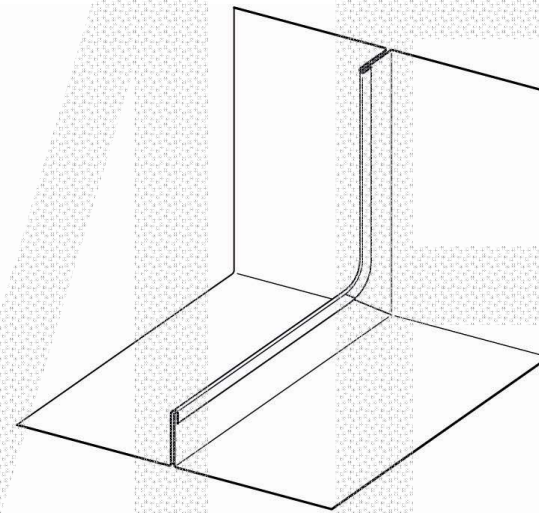
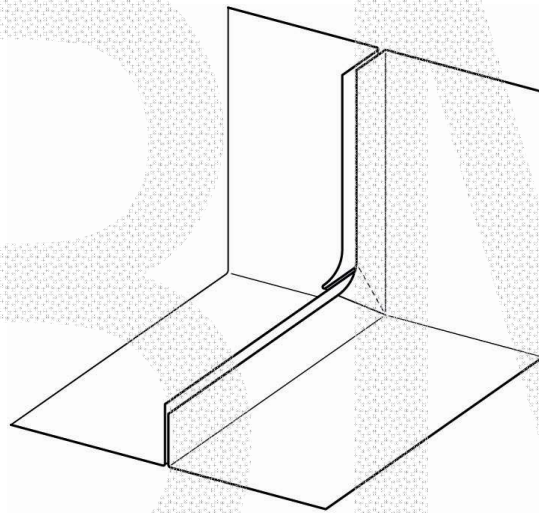
# METAL ROOF CLADDINGS – SOLDERED AXIAL LAPPING



Pitch range:  $3^{\circ} <$

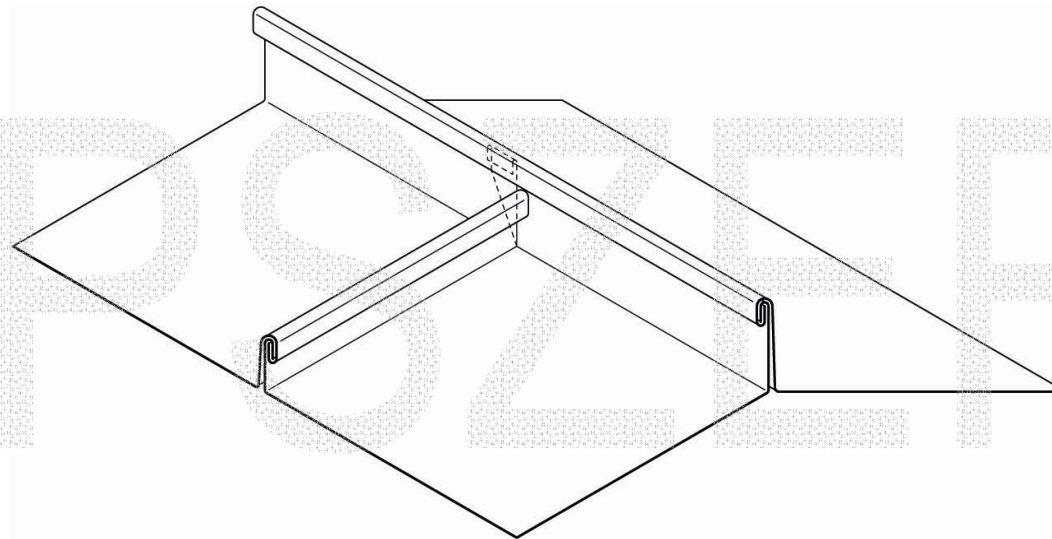
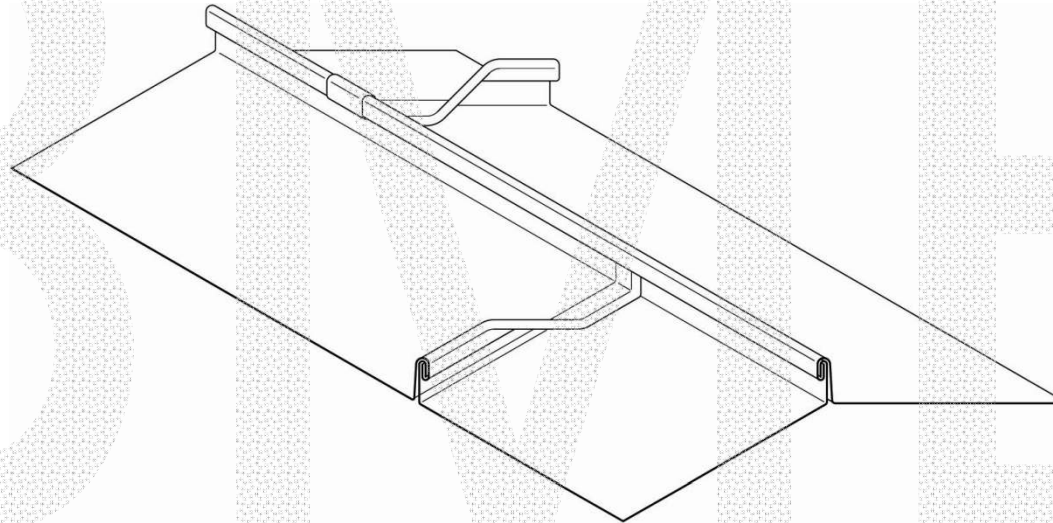


# SEAMED METAL ROOF CLADDINGS





# RIDGE ALTERNATIVES WITH STANDING SEAM



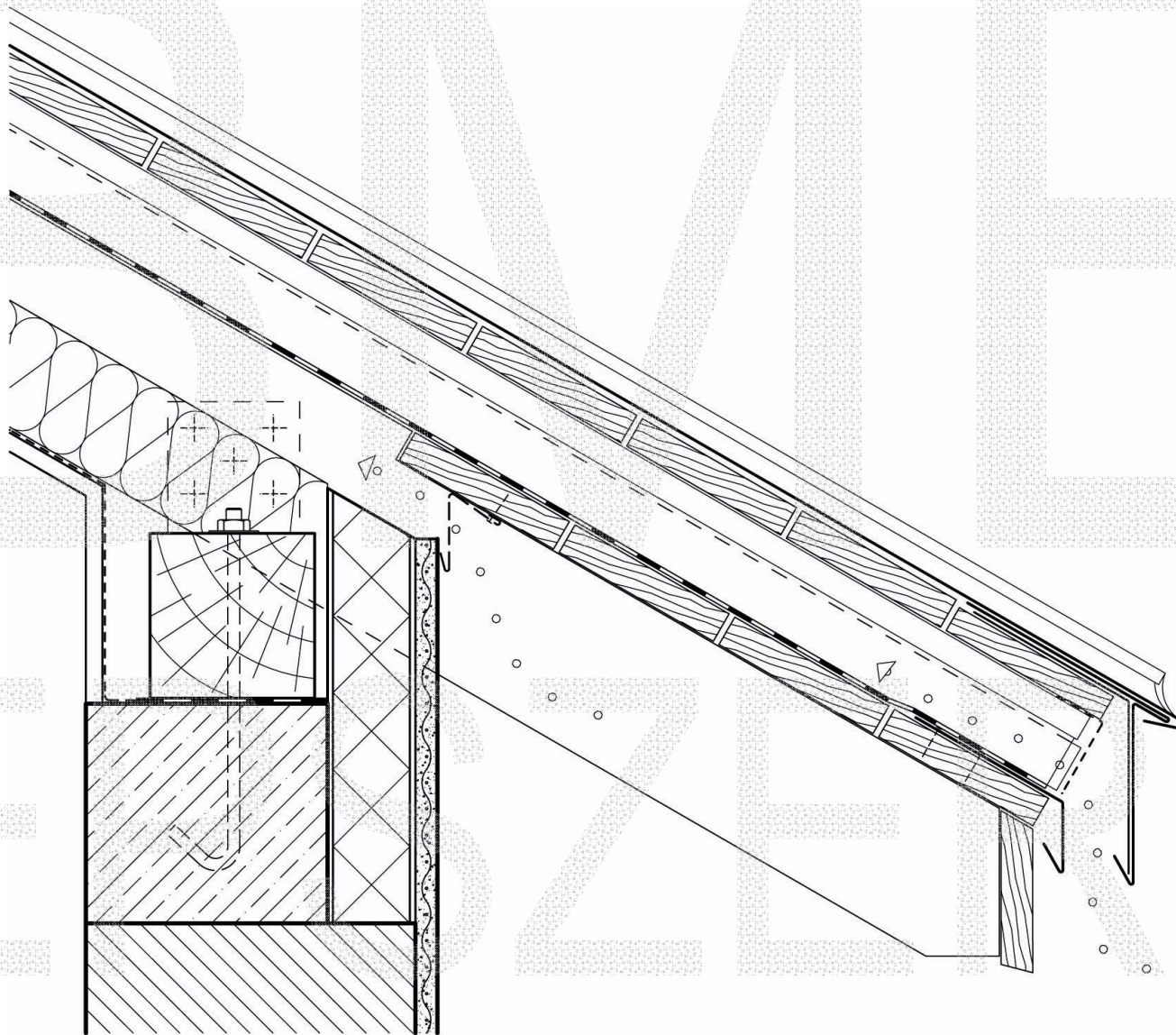


# SEAMED ROOF COVERINGS – STRIP CLADDINGS



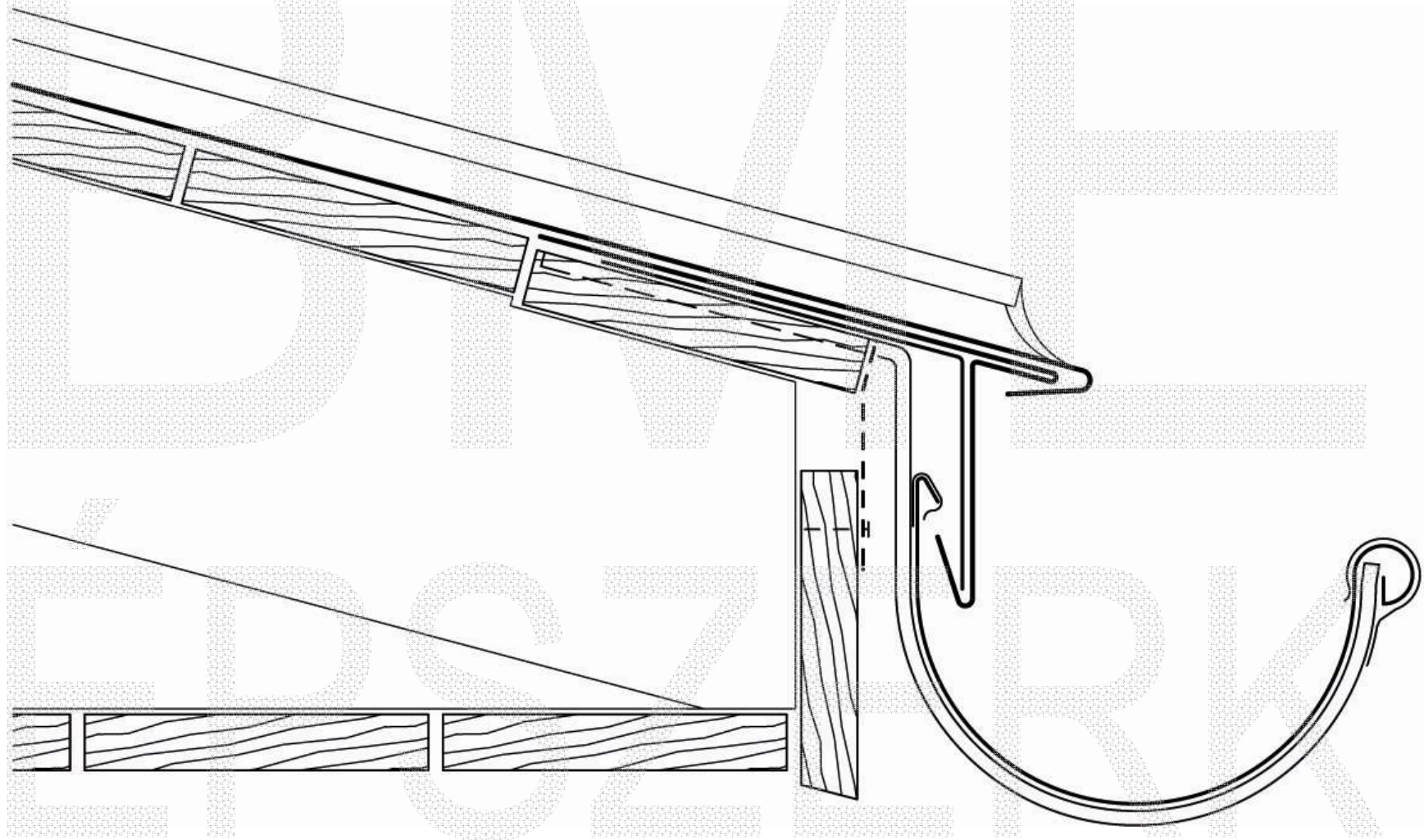


# SEAMED ROOF CLADDINGS – EAVES DETAIL WITHOUT GUTTER



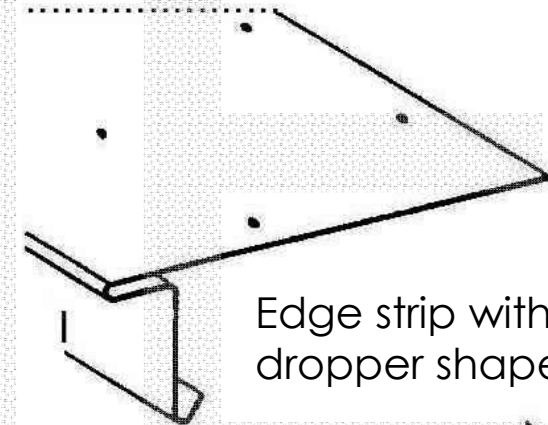
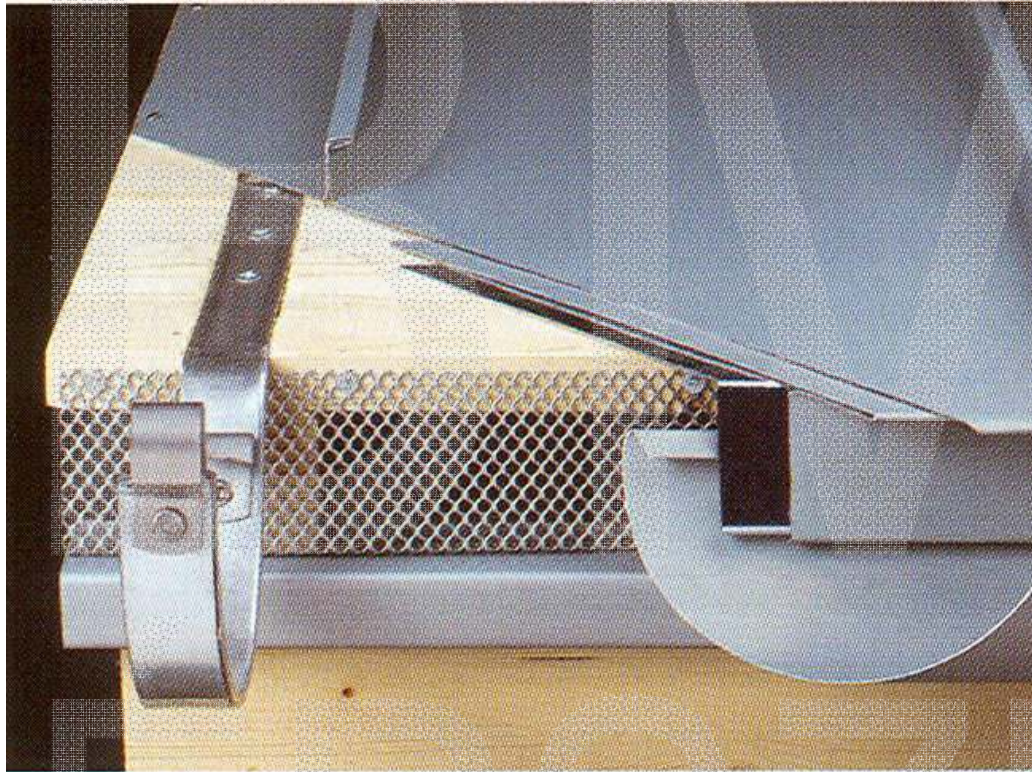


## SEAMED ROOF CLADDINGS - GUTTER

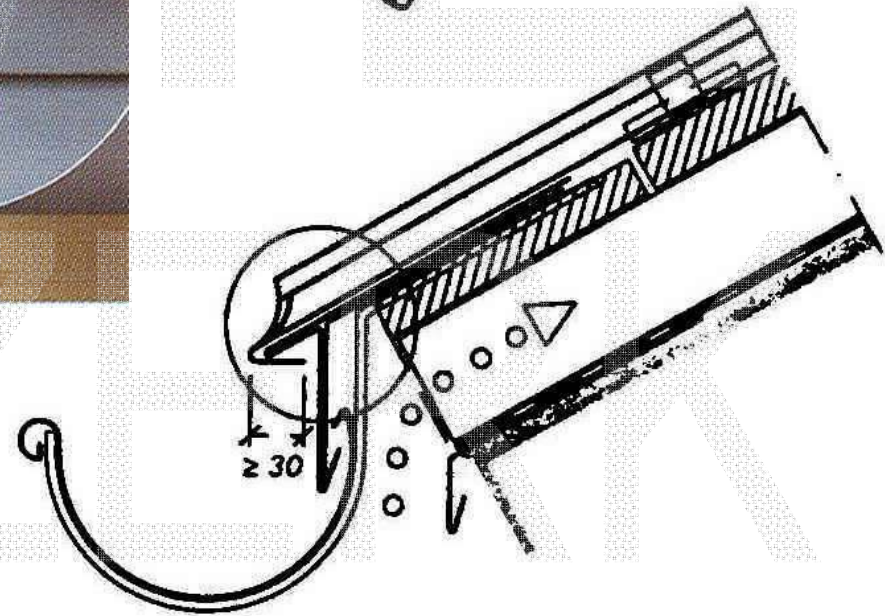




# METAL ROOF CLADDINGS – EAVES AND GUTTER

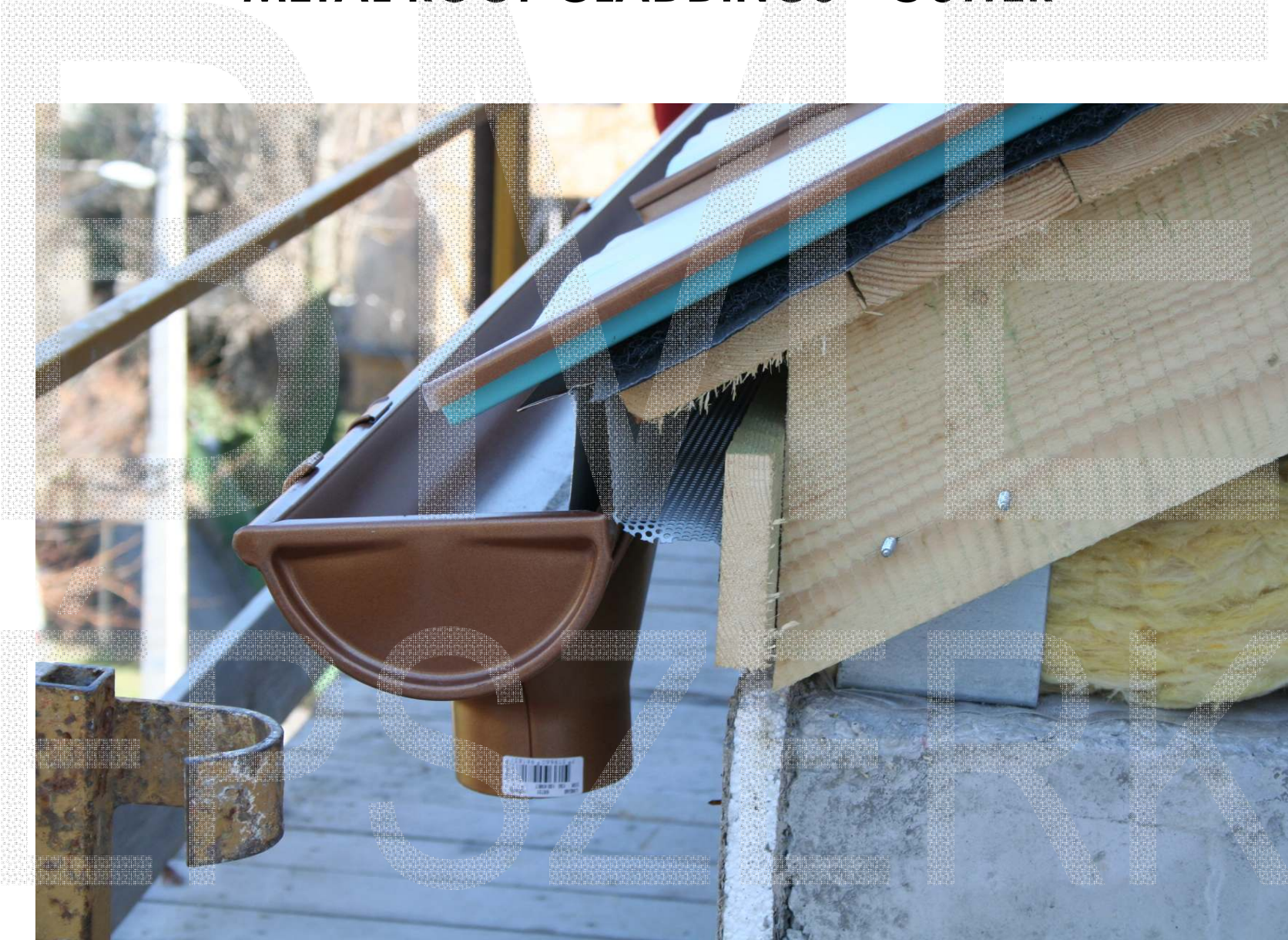


Edge strip with water dropper shape





# METAL ROOF CLADDINGS - GUTTER



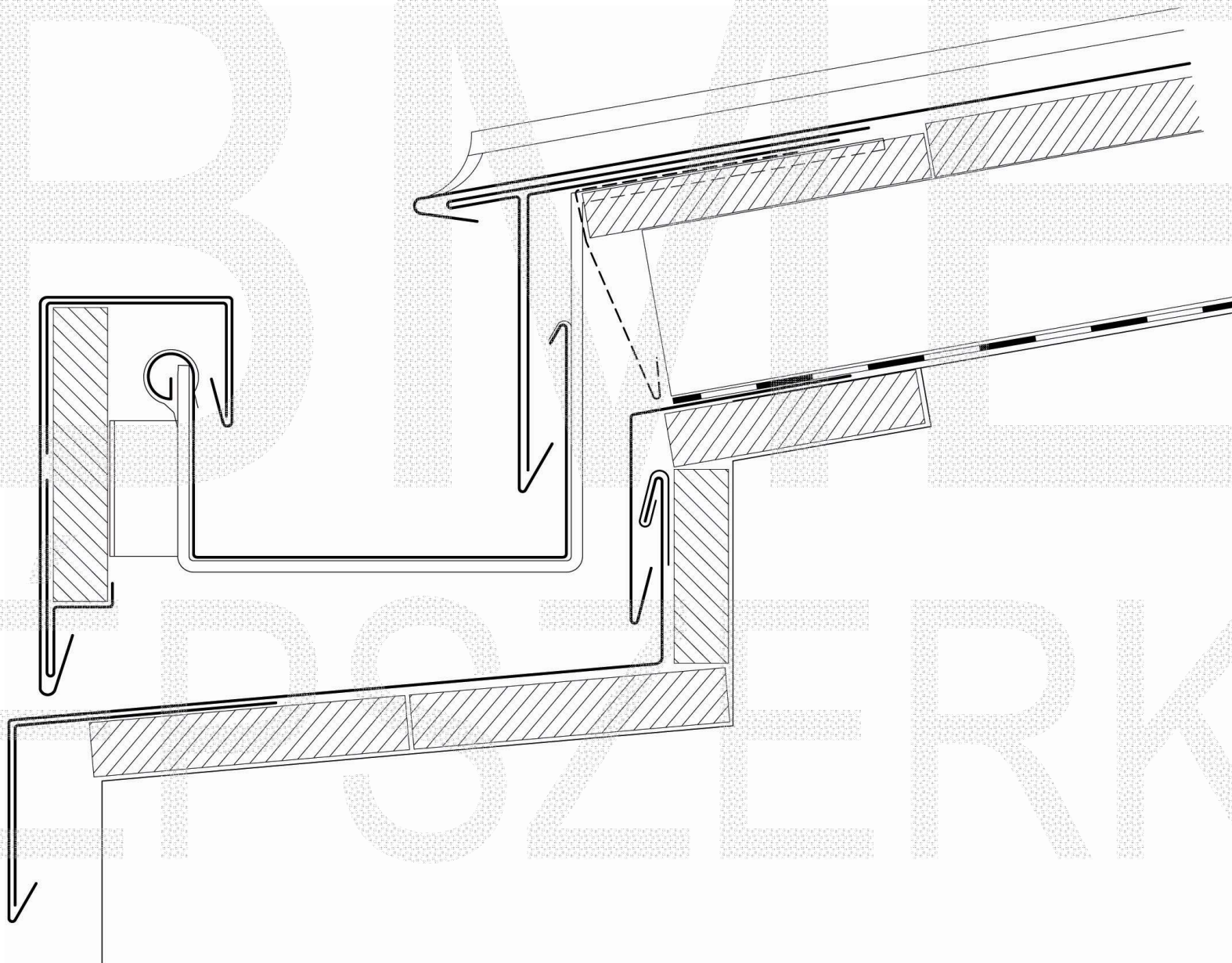


# METAL ROOF CLADDINGS – SNOW GUARD SYSTEM





# METAL ROOF CLADDINGS – GUTTER ON TOP OF THE CORNICE





# METAL ROOF CLADDINGS – GUTTER ON TOP OF THE CORNICE





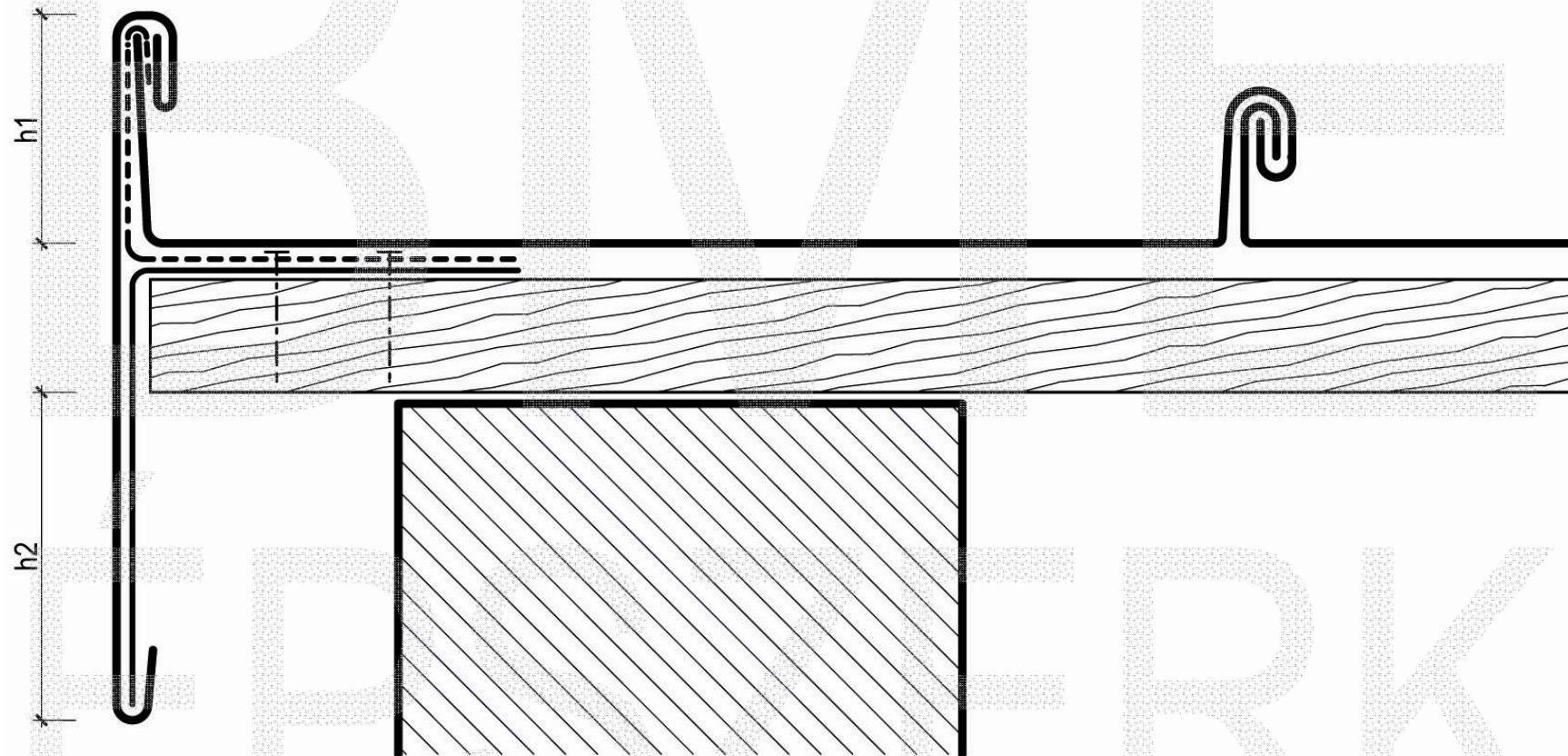
# METAL ROOF CLADDINGS – GUTTER ON TOP OF THE CORNICE





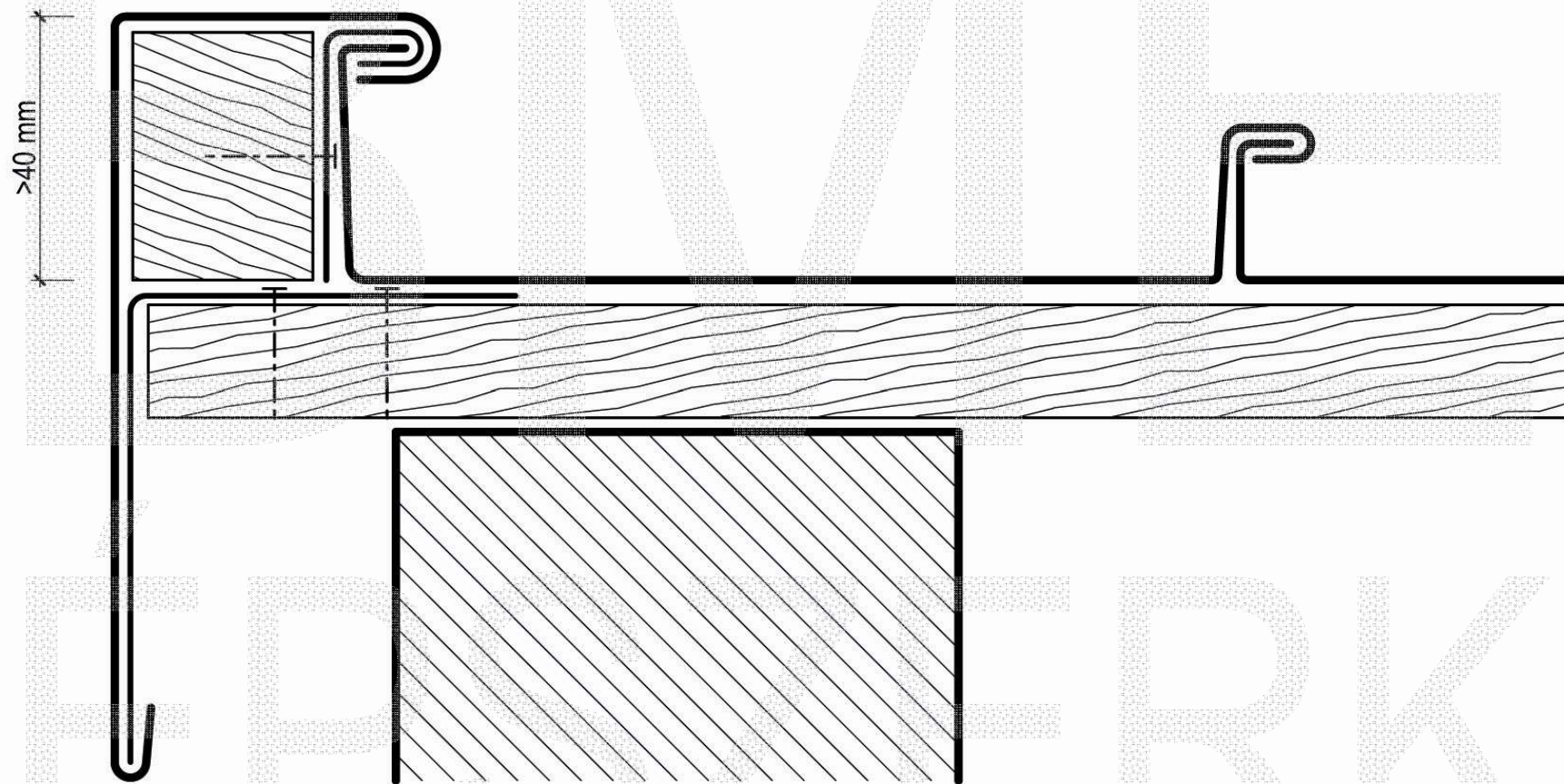
# SEAMED ROOF CLADDINGS

## VERGE WALL DETAIL WITHOUT BATTEN



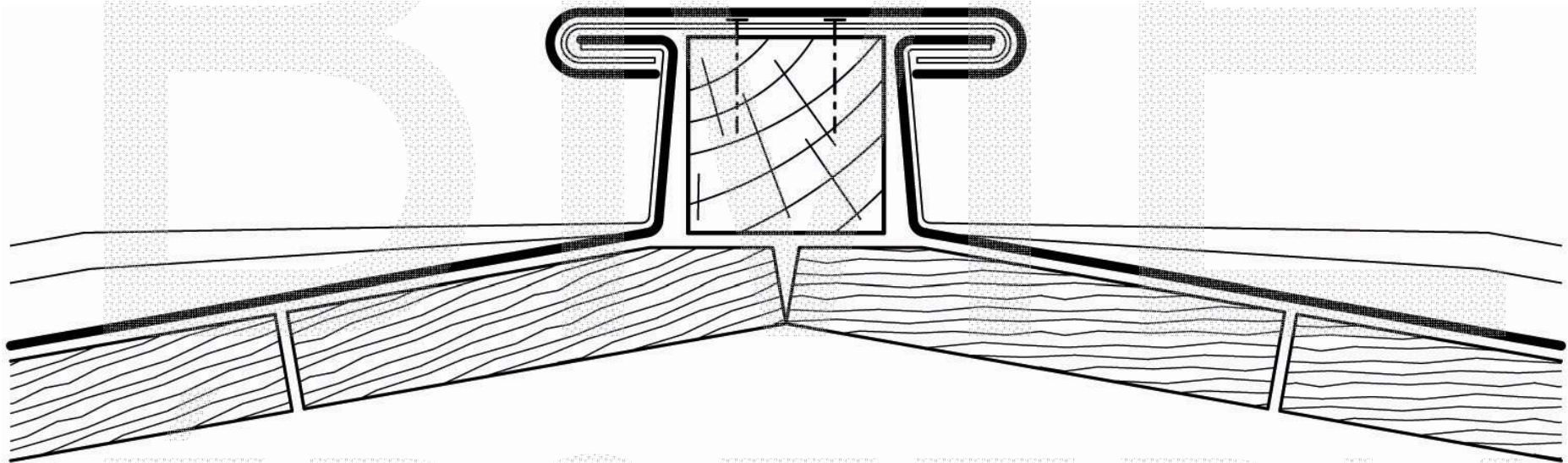


# SEAMED ROOF CLADDINGS VERGE WALL DETAIL WITH BATTEN



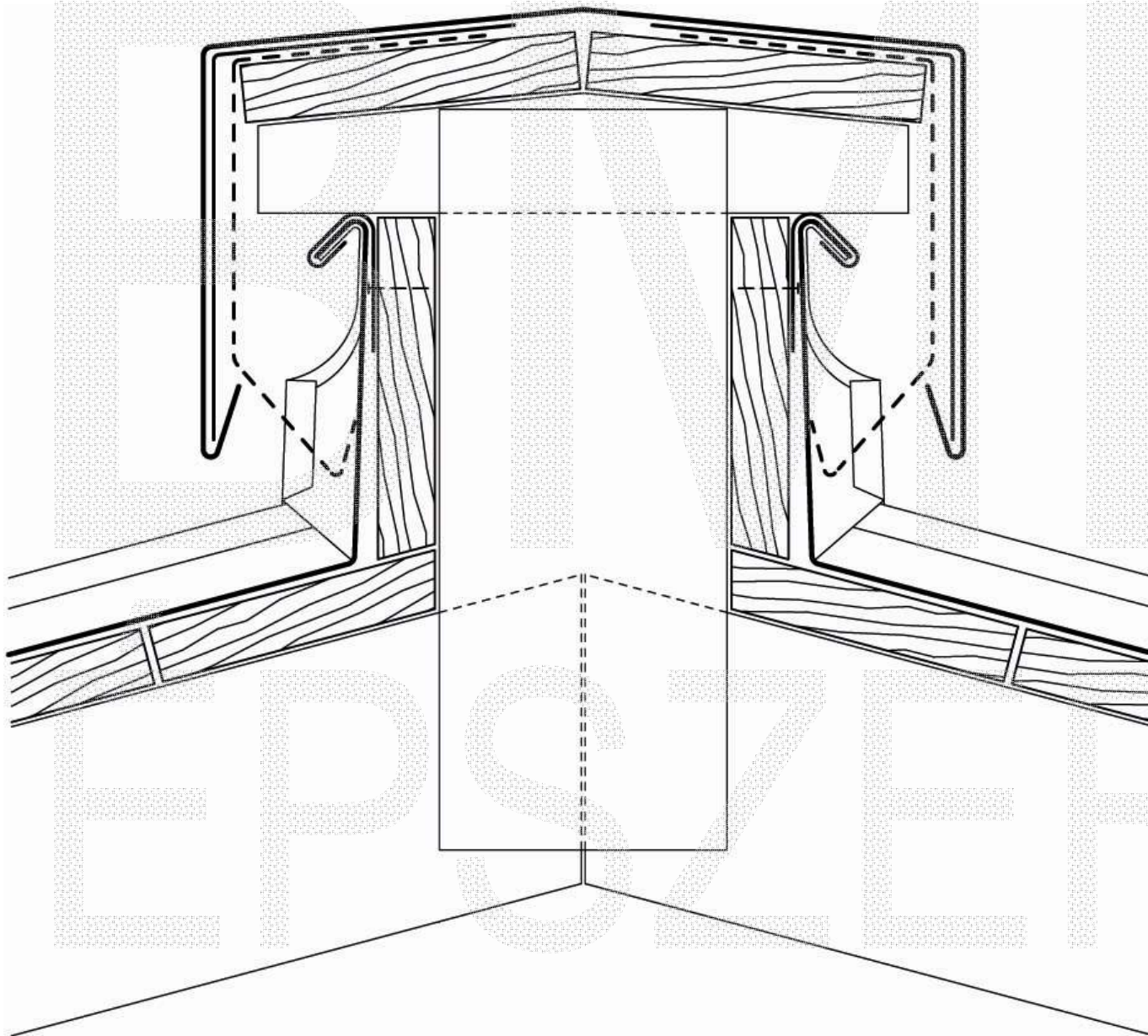


# SEAMED ROOF CLADDINGS - RIDGE DETAIL WITH BATTEN



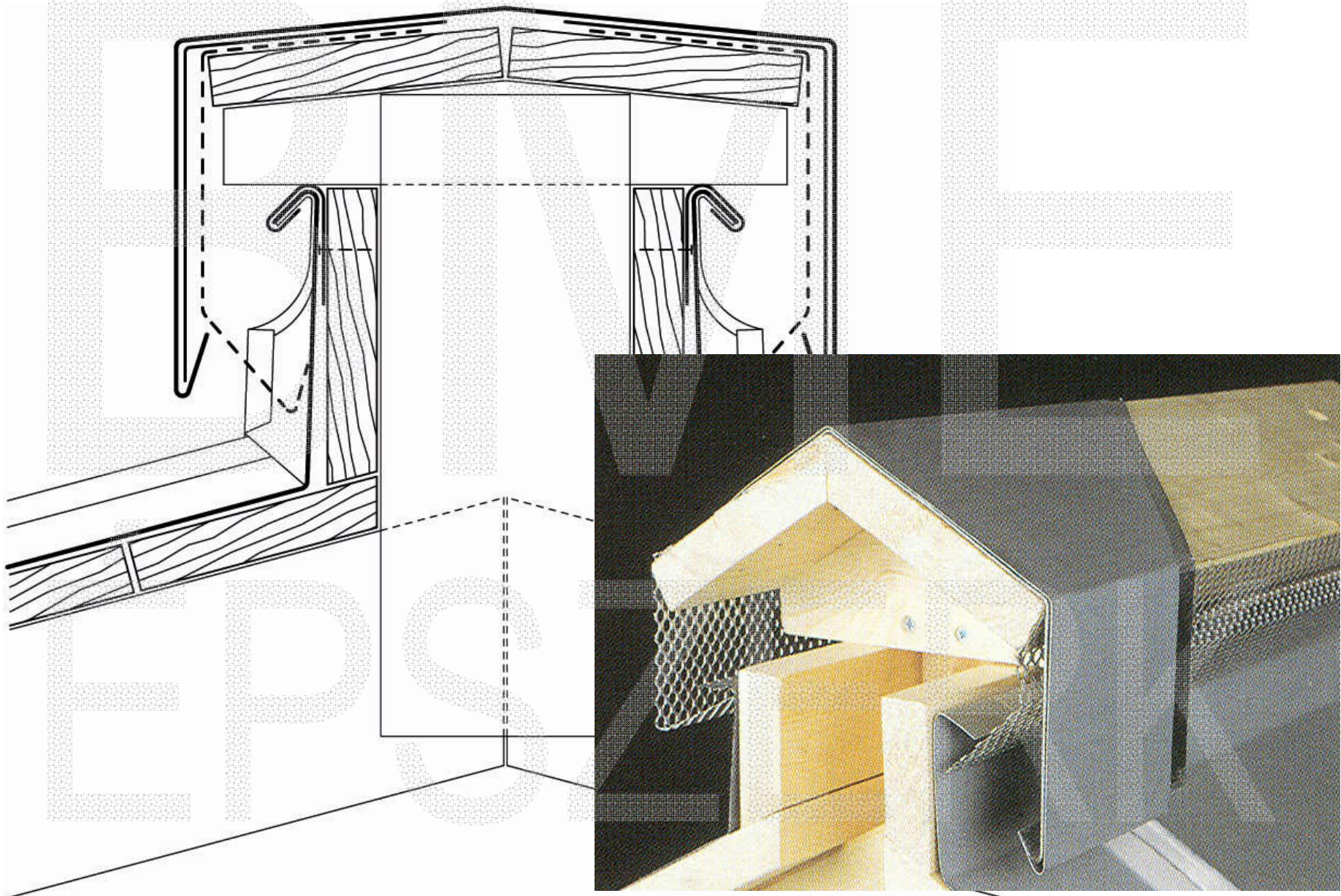


# SEAMED ROOF CLADDINGS – VENTILATED RIDGE DETAIL



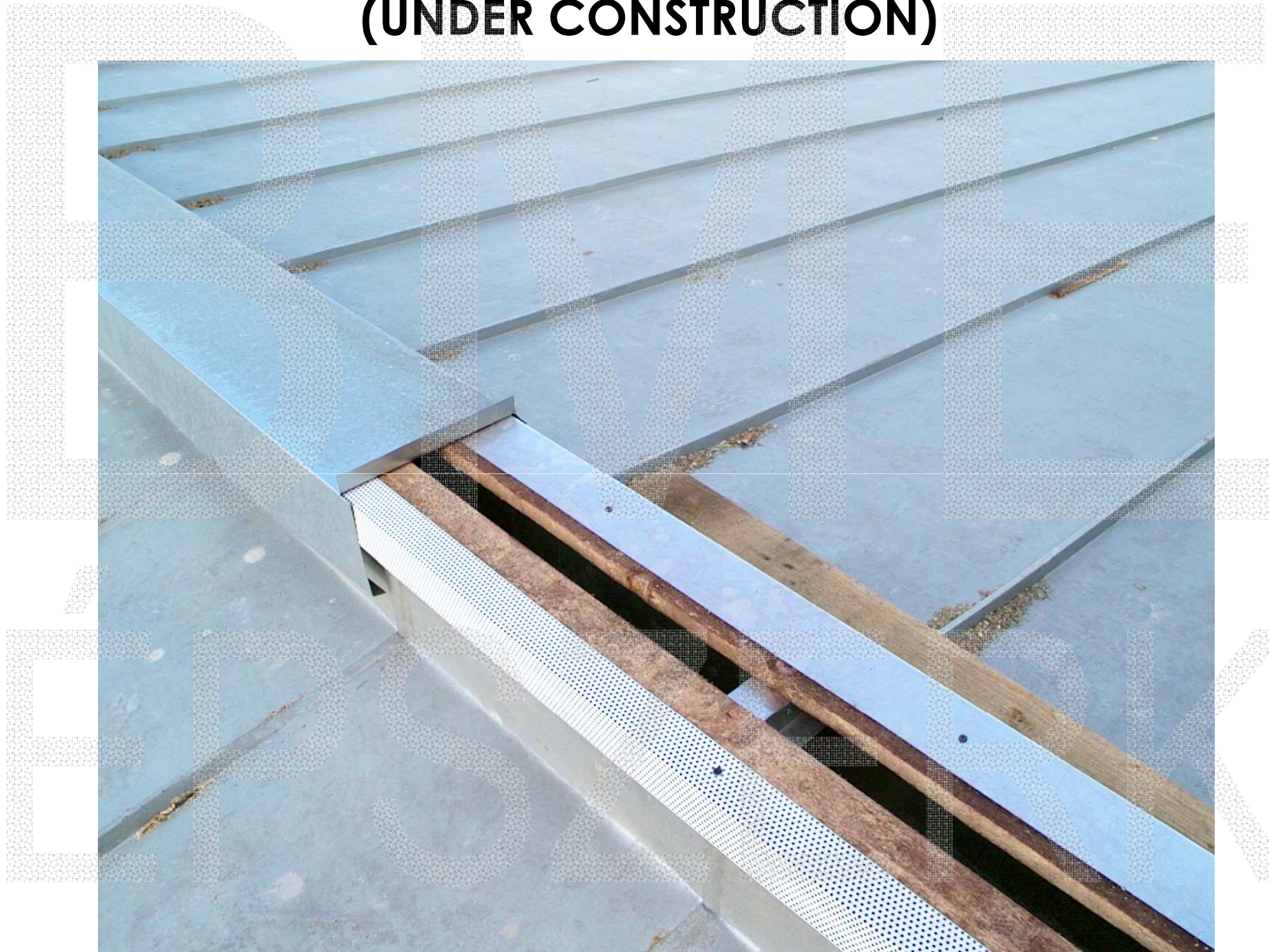


# SEAMED ROOF CLADDINGS – VENTILATED RIDGE DETAIL





# SEAMED ROOF CLADDINGS – VENTILATED RIDGE (UNDER CONSTRUCTION)





# SEAMED ROOF CLADDINGS

## HIP POINT OF A VENTILATED RIDGE





# METAL ROOF CLADDINGS - VALLEY



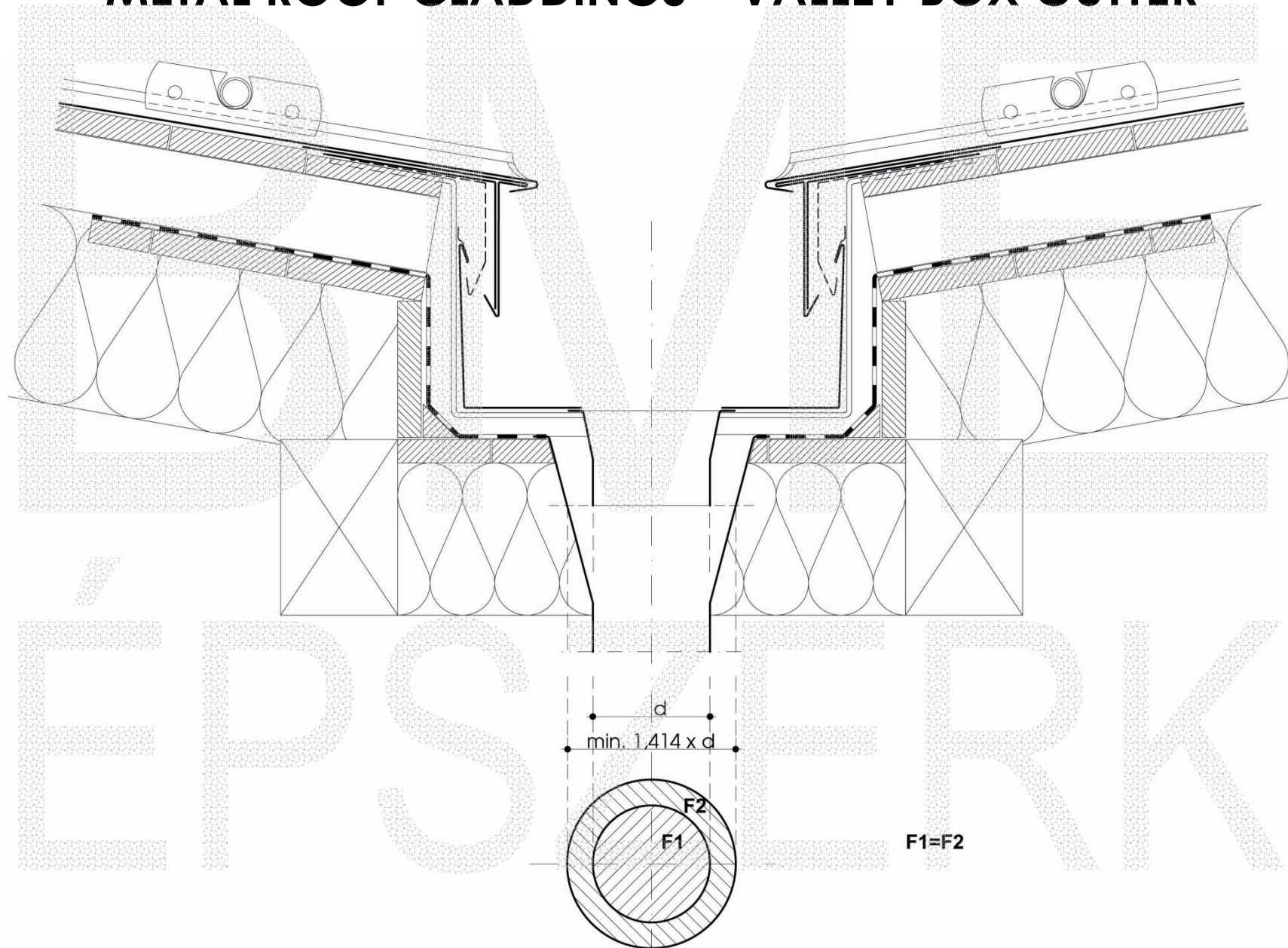


# METAL ROOF CLADDINGS - VALLEY



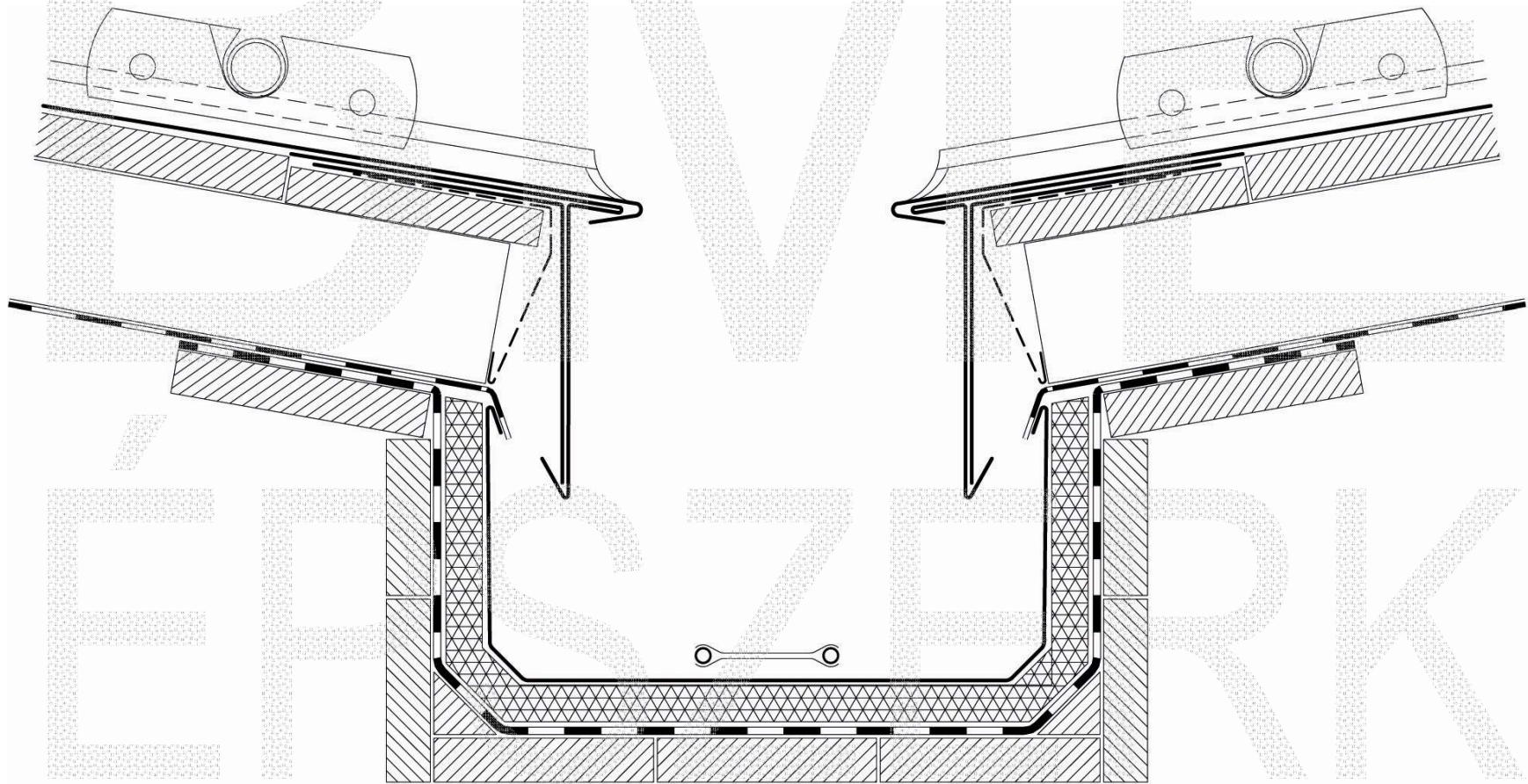


# METAL ROOF CLADDINGS – VALLEY BOX GUTTER



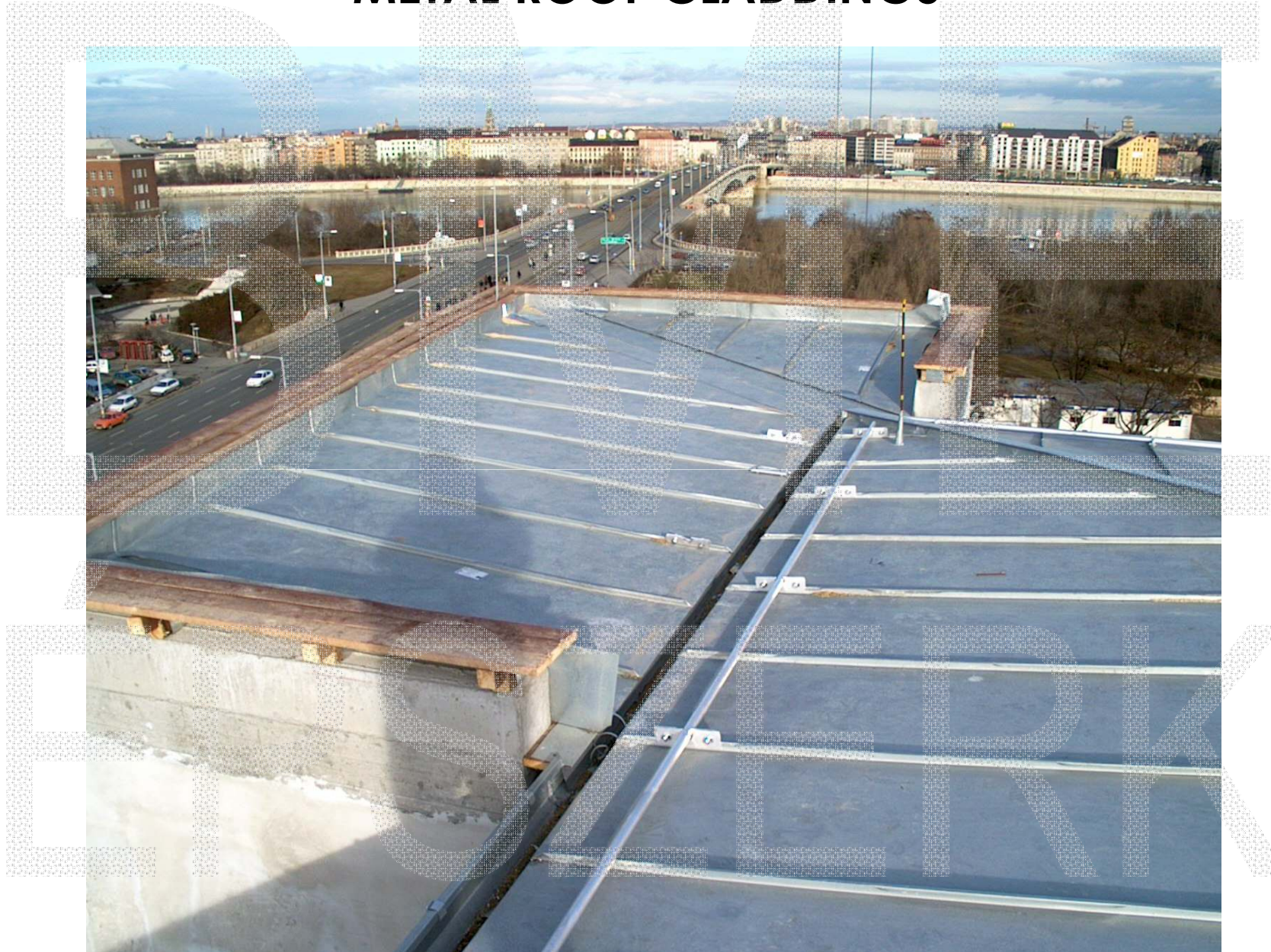


# METAL ROOF CLADDINGS – VALLEY BOX GUTTER



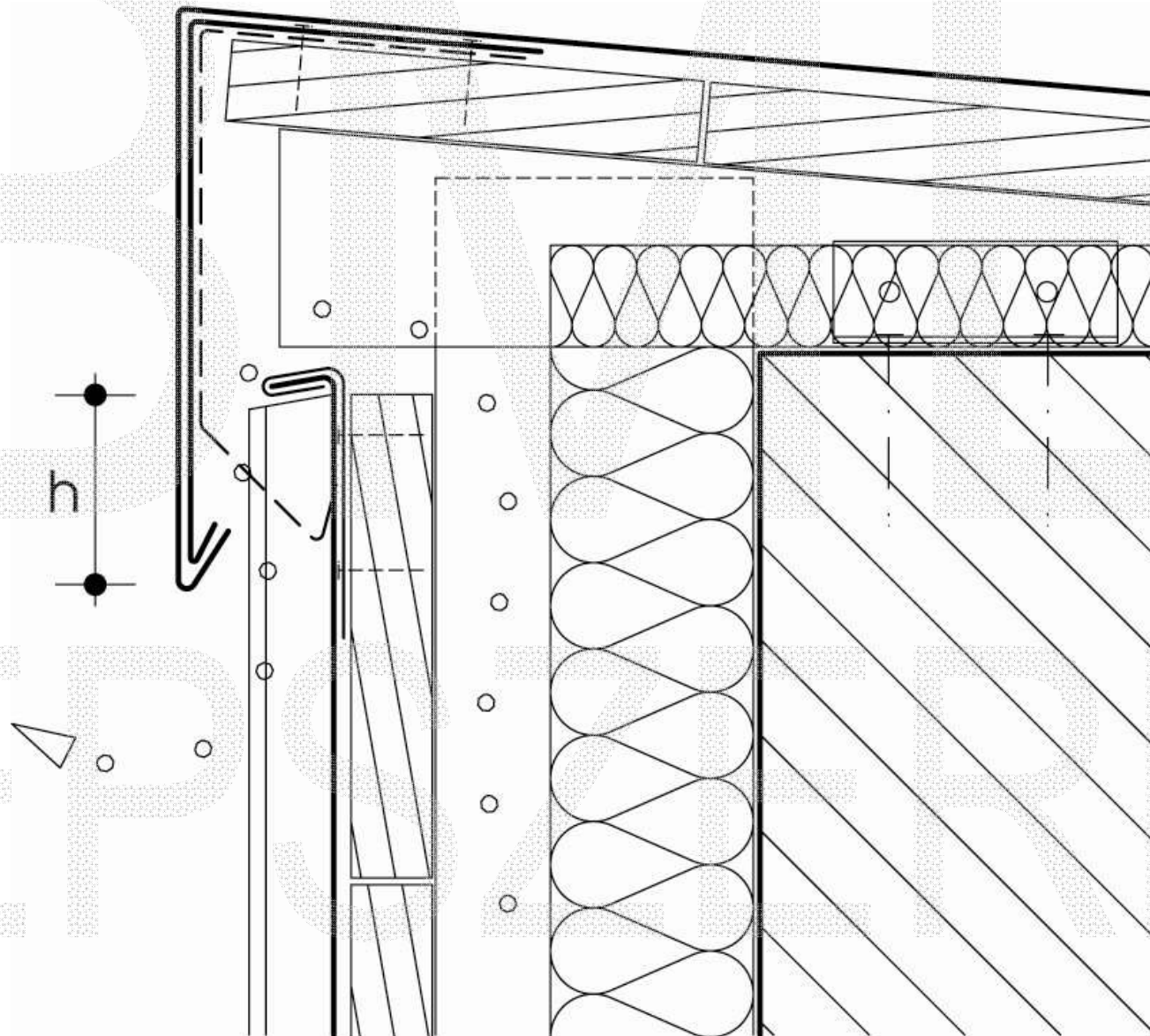


# METAL ROOF CLADDINGS



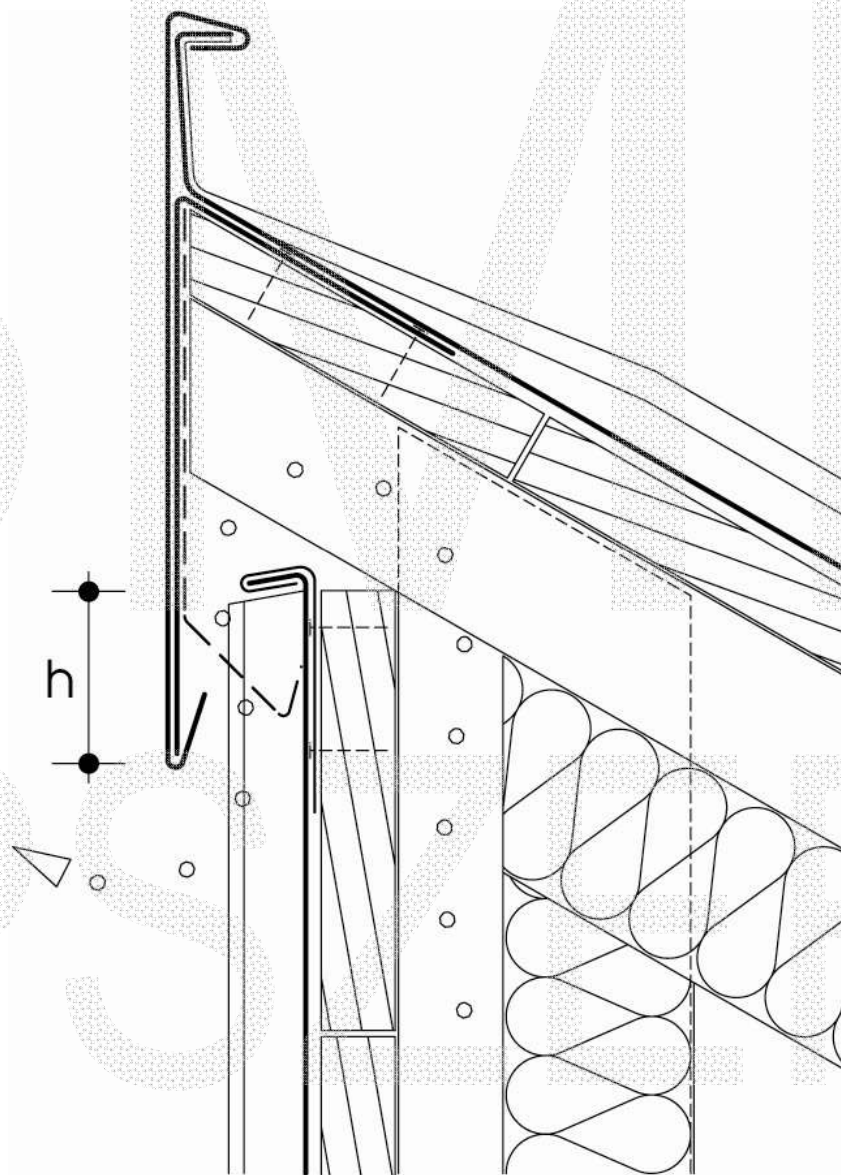


# METAL ROOF CLADDINGS – ROOF-WALL CONNECTION



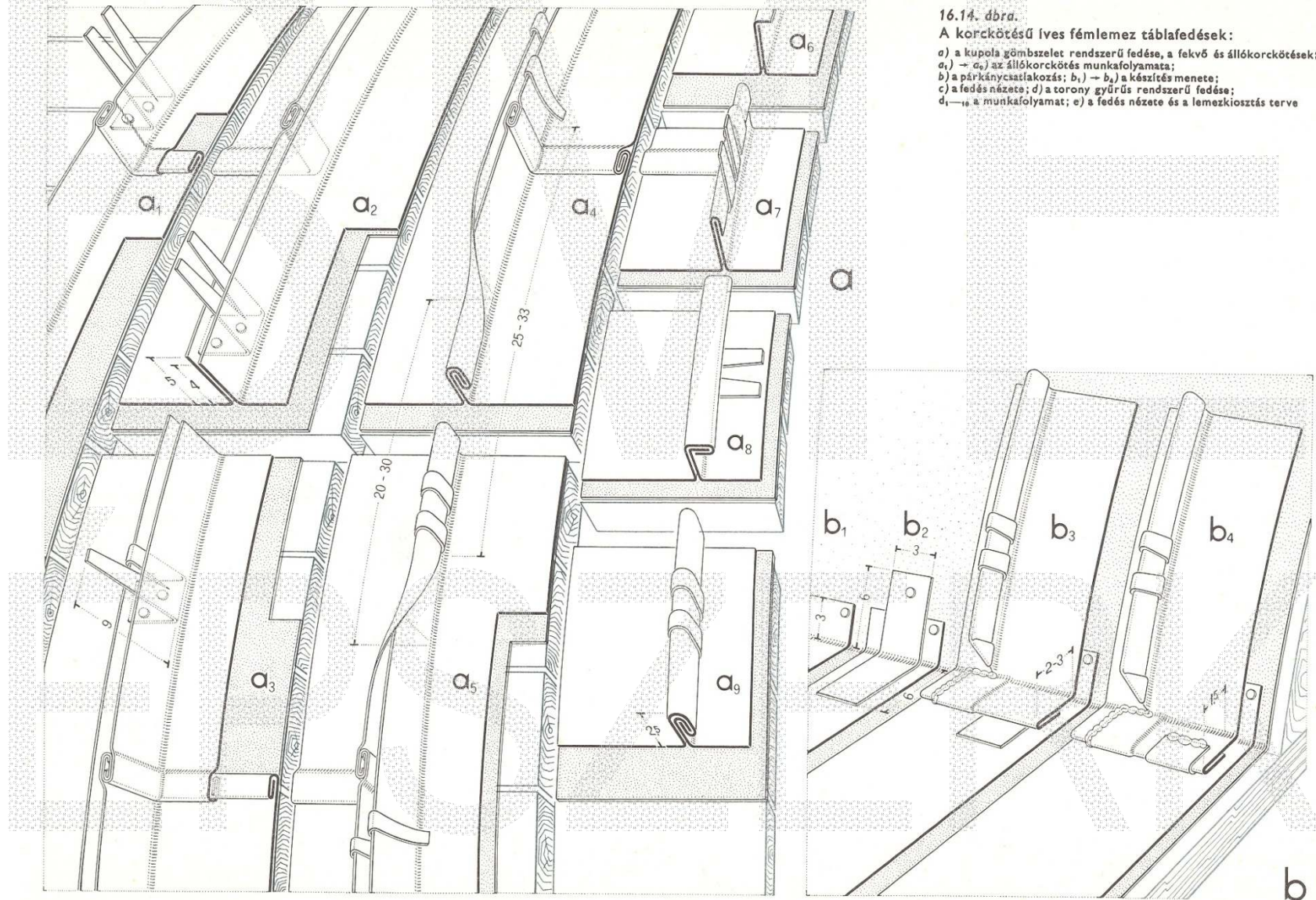


# METAL ROOF AND ELEVATION CLADDINGS





# CURVY AND CONICAL SEAMED METAL ROOF CLADDING





# METAL ROOF CLADDINGS – CHEMICAL CORROSION





# COATED STEEL ROOF CLADDINGS – AGEING





# METAL ROOF CLADDINGS – IMPROPER CRAFTSMANSHIP





