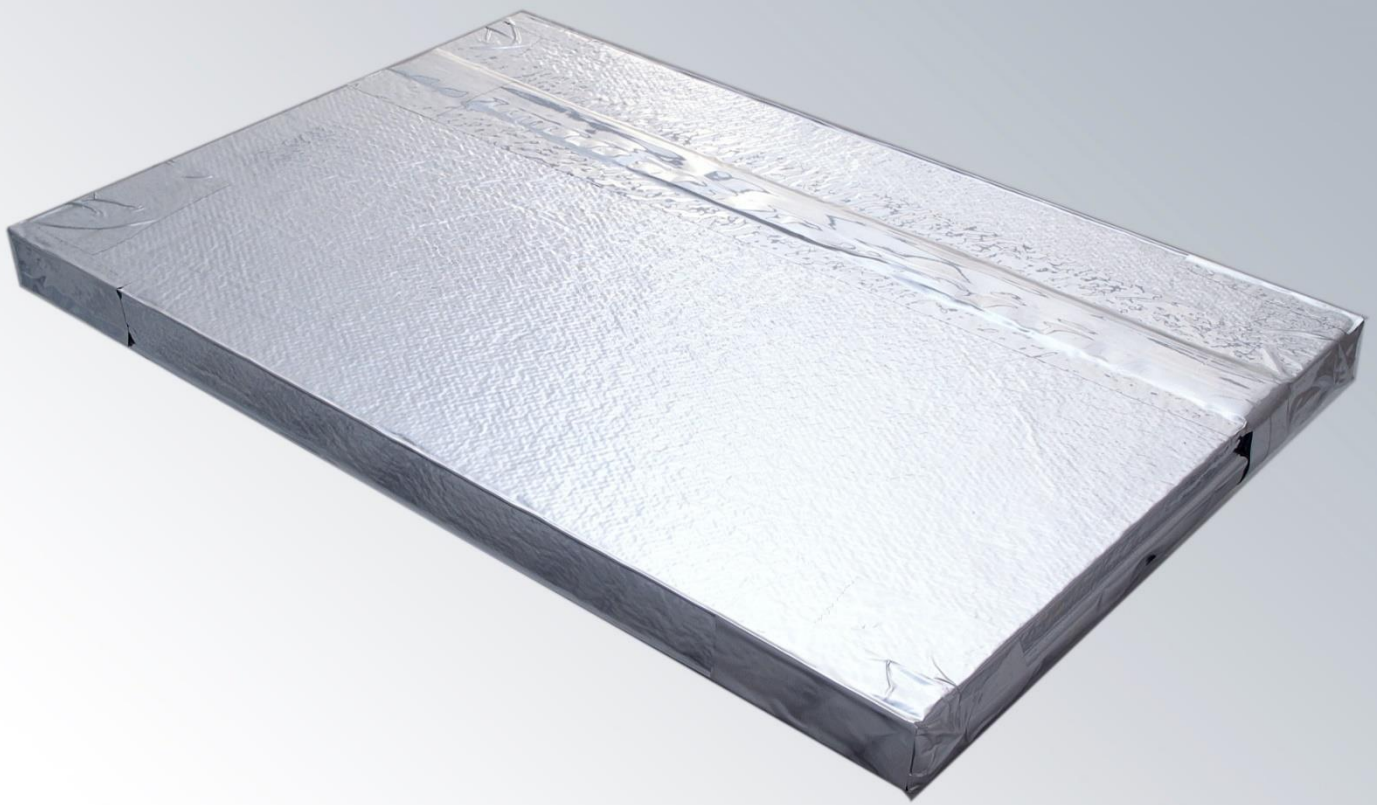
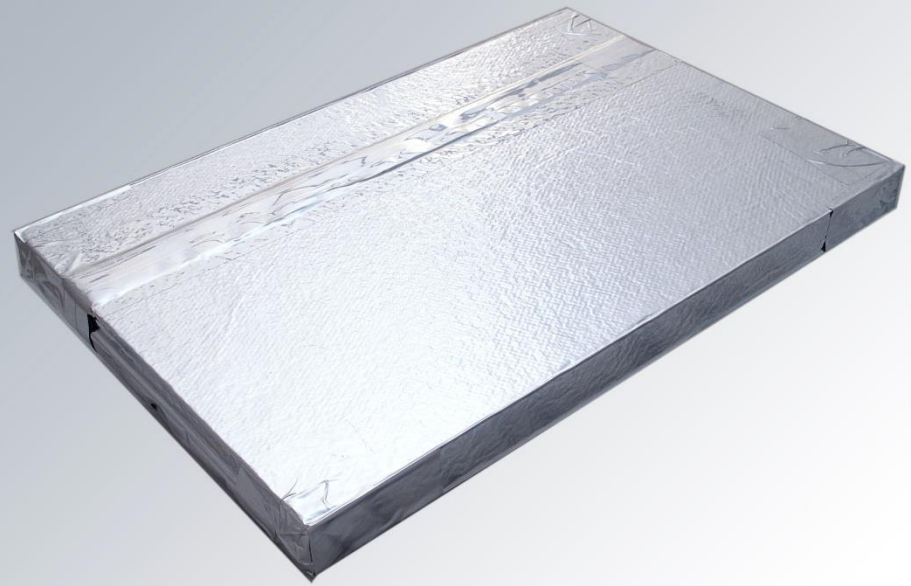
# **VIPA** Congress 2018 Vienna



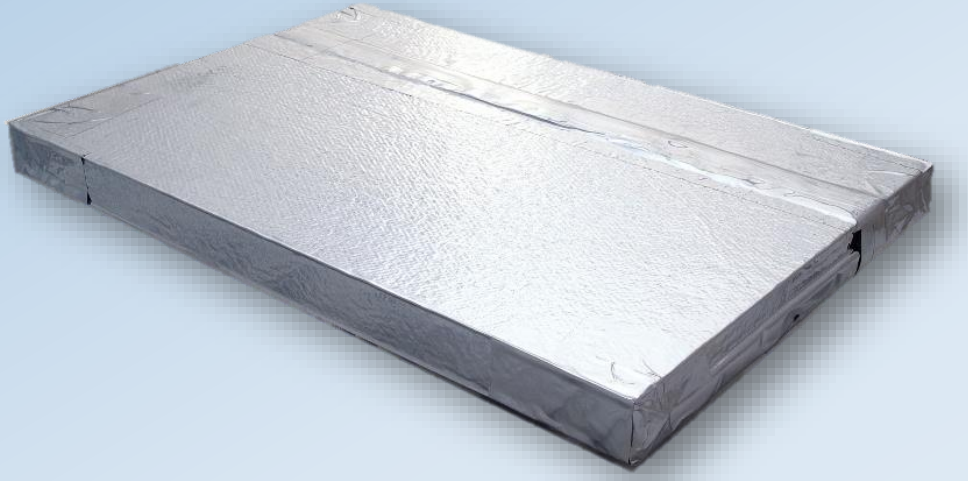


## Presentation: using VIP at construction site

Existing project example: using **V**akuum **I**solations **P**aneel for terrace substructure

KARNER Bernhard
Firma ROOFTRADE

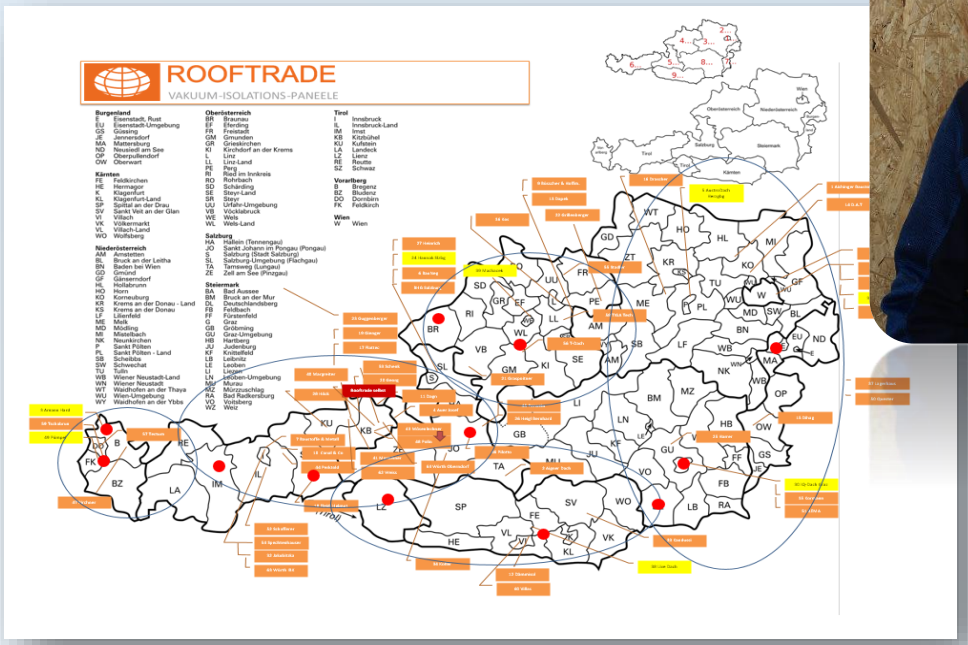
# using VIP at residental buildings



VAKUUM- ISOLATIONS-PANEEL

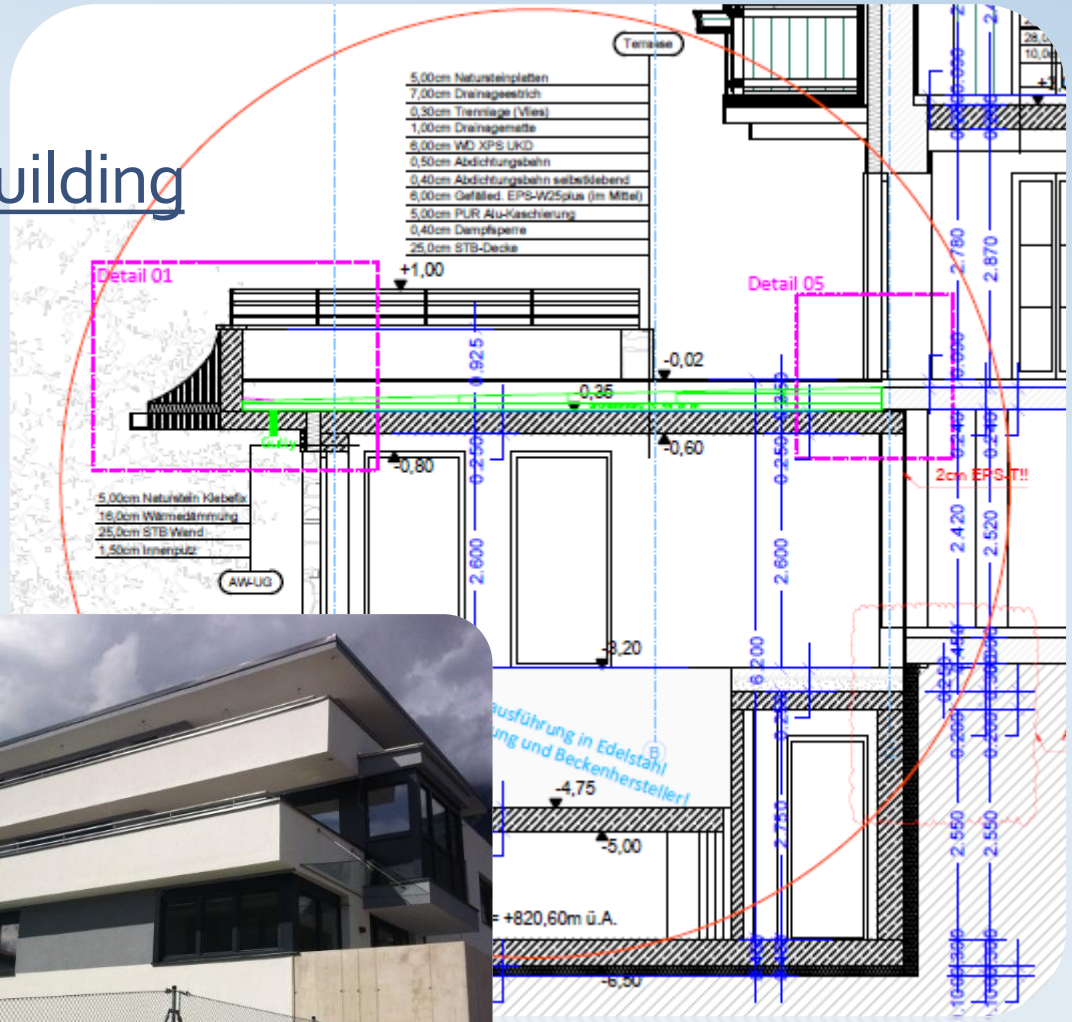
# ROOFTRADE

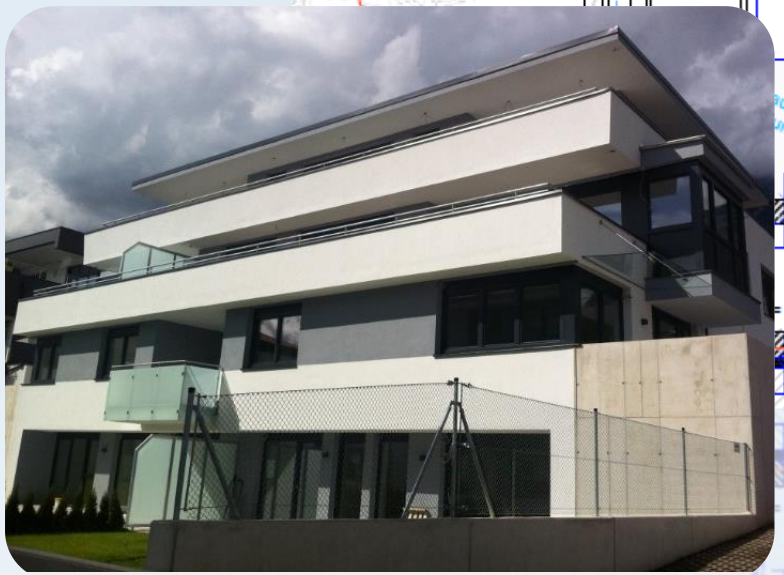
VAKUUM-ISOLATIONS-PANEELE

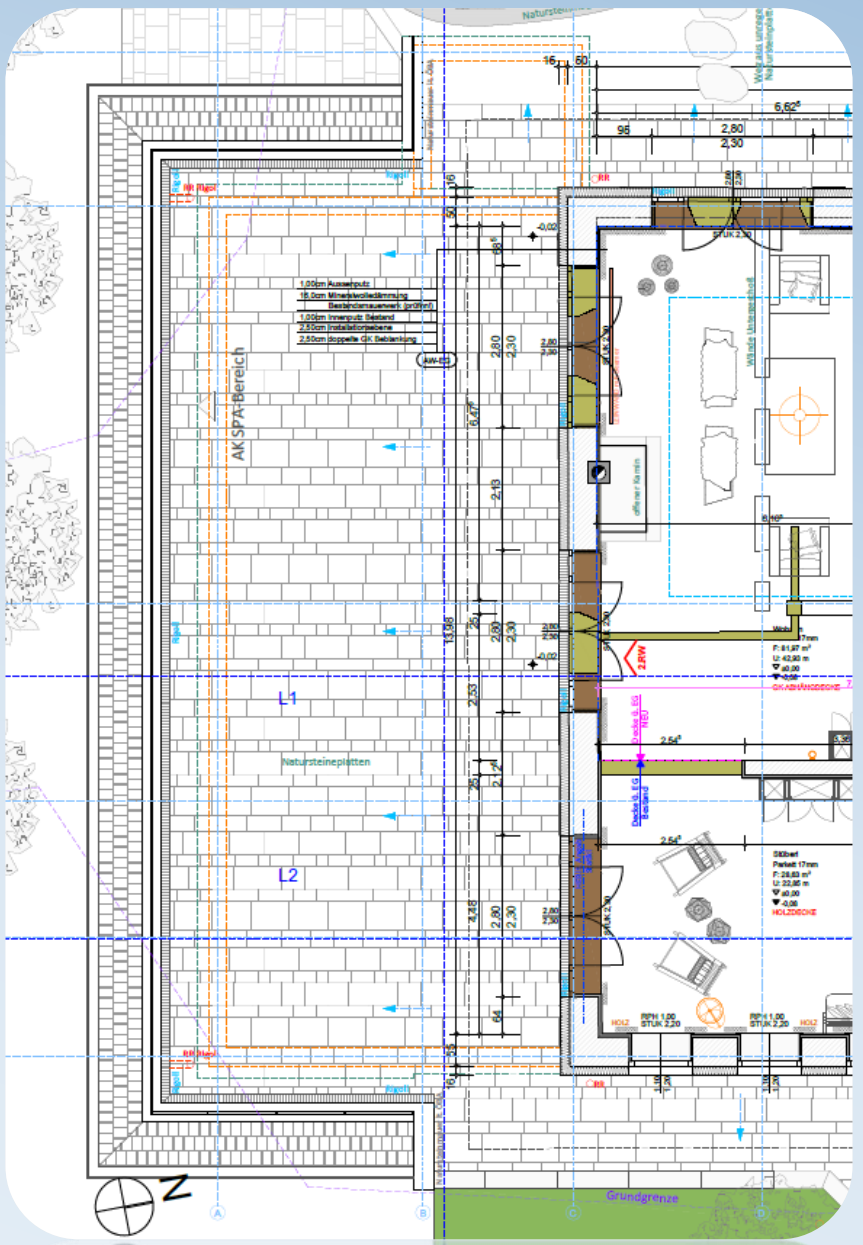


# **VIP** Project

## Terraces - Residental Building

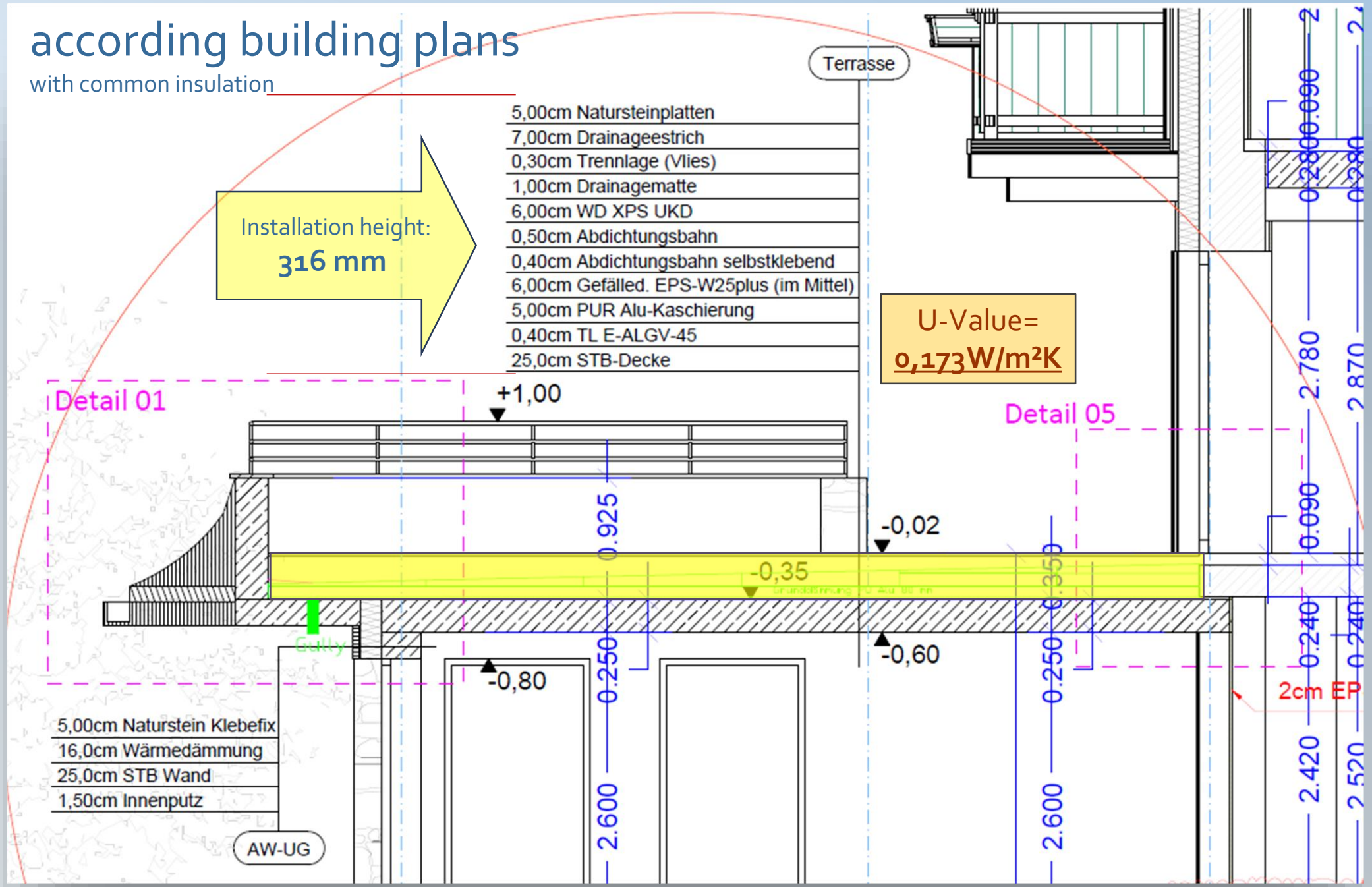




# according building plans

with common insulation



# Plan amendment at construction site !!!

The required insatllation height

of 317 mm

is not possible anymore!

New installation height is 250 mm

# Planning specification in Detail

U-Value Calculation

BV: Example Terrace VIPA

ROOFTRADE
VAKUUM-ISOLATIONS-PANEELE

Specification U-Value: k.A W/m²K

Part of the building: Terrace

| Height | Layer | Product | Thickness | λ | RT Wert d/λ | Ri+Re | U-Value W/m²K |
|---|---|---|---|---|---|---|---|
| 50,00 mm | terrace floor | Natursteinplatten | 50,00 mm | 2,300 | 0,022 | 0,13 | 6,590 |
| 70,00 mm | drainage | Drainageestrich | 70,00 mm | 2,300 | 0,030 | 0,13 | 6,233 |
| 3,00 mm | seperating layer | Trennlage (Vlies) | 3,00 mm | 0,500 | 0,006 | 0,13 | 7,353 |
| 10,00 mm | drainage | Drainagematte | 10,00 mm | 0,000 | | 0,13 | 7,692 |
| 60,00 mm | insulation | XPS | 60,00 mm | 0,040 | 1,500 | 0,13 | 0,613 |
| 5,00 mm | sealing membranes | TL E-KV-5 | 5,00 mm | 0,230 | 0,022 | 0,13 | 6,590 |
| 4,00 mm | sealing membranes | TL E-KV-4 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| 60,00 mm | gradient insulation | Gefälled. EPS -W25plus (im Mittel) | 60,00 mm | 0,036 | 1,667 | 0,13 | 0,557 |
| 50,00 mm | insulation | PUR Alu-Kaschierung | 50,00 mm | 0,022 | 2,273 | 0,13 | 0,416 |
| 4,00 mm | vapour barrier | TL E-ALGV-45 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| | cencrete ceiling | STB-Decke | 250,00 mm | 2,300 | 0,109 | 0,13 | 4,189 |
| 316,00 mm | | | | | **5,663** | 0,13 | **0,173 W/m²K** |
| | | Die Berechnungen dienen nur als Anhalt! (Keine Gewährleistung) | | | | | Result |

U-Value Calculation

## BV: Example Terrace VIPA

ROOFTRADE
VAKUUM-ISOLATIONS-PANEELE

Specification U-Value: k.A W/m²K

Part of the building: Terrace

| | Height | Layer | Product | Thickness | λ | RT Wert d/λ | Ri+Re | U-Value W/m²K |
|---|---|---|---|---|---|---|---|---|
| | 50,00 mm | terrace floor | Natursteinplatten | 50,00 mm | 2,300 | 0,022 | 0,13 | 6,590 |
| | 70,00 mm | drainage | Drainageestrich | 70,00 mm | 2,300 | 0,030 | 0,13 | 6,233 |
| | 3,00 mm | seperating layer | Trennlage (Vlies) | 3,00 mm | 0,500 | 0,006 | 0,13 | 7,353 |
| | 10,00 mm | drainage | Drainagematte | 10,00 mm | 0,000 | | 0,13 | 7,692 |
| -20,00 mm | 40,00 mm | insulation | XPS | 40,00 mm | 0,040 | 1,000 | 0,13 | 0,885 |
| | 5,00 mm | sealing membranes | TL E-KV-5 | 5,00 mm | 0,230 | 0,022 | 0,13 | 6,590 |
| | 4,00 mm | sealing membranes | TL E-KV-4 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| | 60,00 mm | gradient insulation | Gefälled. EPS -W25plus (im Mittel) | 60,00 mm | 0,036 | 1,667 | 0,13 | 0,557 |
| -50,00 mm | 0,00 mm | insulation | PUR Alu-Kaschierung | 0,00 mm | 0,022 | 0,000 | 0,13 | 0,000 |
| | 4,00 mm | vapour barrier | TL E-ALGV-45 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| | | concrete ceiling | STB-Decke | 250,00 mm | 2,300 | 0,109 | 0,13 | 0,331 W/m²K |
| | 249 mm | | | | | **2,890** | 0,13 | |

Die Berechnungen dienen nur als Anhalt! (Keine Gewährleistung)

(0,173) W/m²K

U-Value Calculation

## BV: Example Terrace VIPA

ROOFTRADE
VAKUUM-ISOLATIONS-PANEELE

Specification U-Value: k.A W/m²K

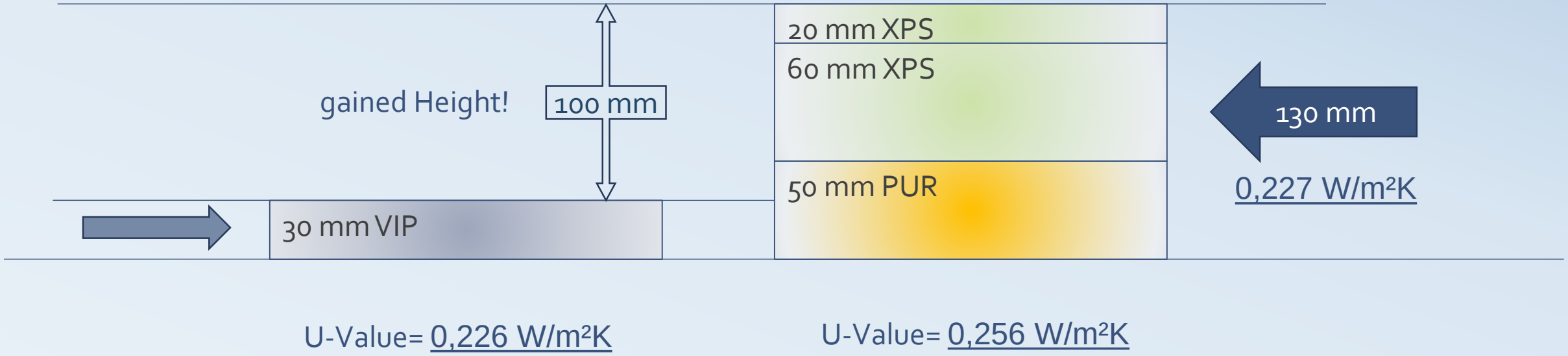
Part of the building: Terrace

| Height | Layer | Product | Thickness | λ | RT Wert d/λ | Ri+Re | U-Value W/m²K |
|---|---|---|---|---|---|---|---|
| 50,00 mm | terrace floor | Natursteinplatten | 50,00 mm | 2,300 | 0,022 | 0,13 | 6,590 |
| 70,00 mm | drainage | Drainageestrich | 70,00 mm | 2,300 | 0,030 | 0,13 | 6,233 |
| 3,00 mm | seperating layer | Trennlage (Vlies) | 3,00 mm | 0,500 | 0,006 | 0,13 | 7,353 |
| 10,00 mm | drainage | Drainagematte | 10,00 mm | 0,000 | | 0,13 | 7,692 |
| 0,00 mm | insulation | XPS | 0,00 mm | 0,040 | 0,000 | 0,13 | 0,000 |
| 5,00 mm | sealing membranes | TL E-KV-5 | 5,00 mm | 0,230 | 0,022 | 0,13 | 6,590 |
| 4,00 mm | insulation | TL E-KV-4 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| 60,00 mm | gradient insulation | Gefälled. EPS -W25plus (im Mittel) | 60,00 mm | 0,036 | 1,667 | 0,13 | 0,557 |
| 30,00 mm | insulation | VIP | 30,00 mm | 0,007 | 4,286 | 0,13 | 0,226 |
| 4,00 mm | vapour barrier | TL E-ALGV-45 | 4,00 mm | 0,230 | 0,017 | 0,13 | 6,785 |
| | concrete ceiling | STB-Decke | 250,00 mm | 2,300 | 0,109 | 0,13 | 4,189 |
| 236,00 mm | | | | | 6,176 | 0,13 | 0,159 W/m²K |
| | | Die Berechnungen dienen nur als Anhalt! (Keine Gewährleistung) | | | | | Result |

(250mm)

(0,173 W/m²K)

# Thickness and U-Value compared to the used insulation

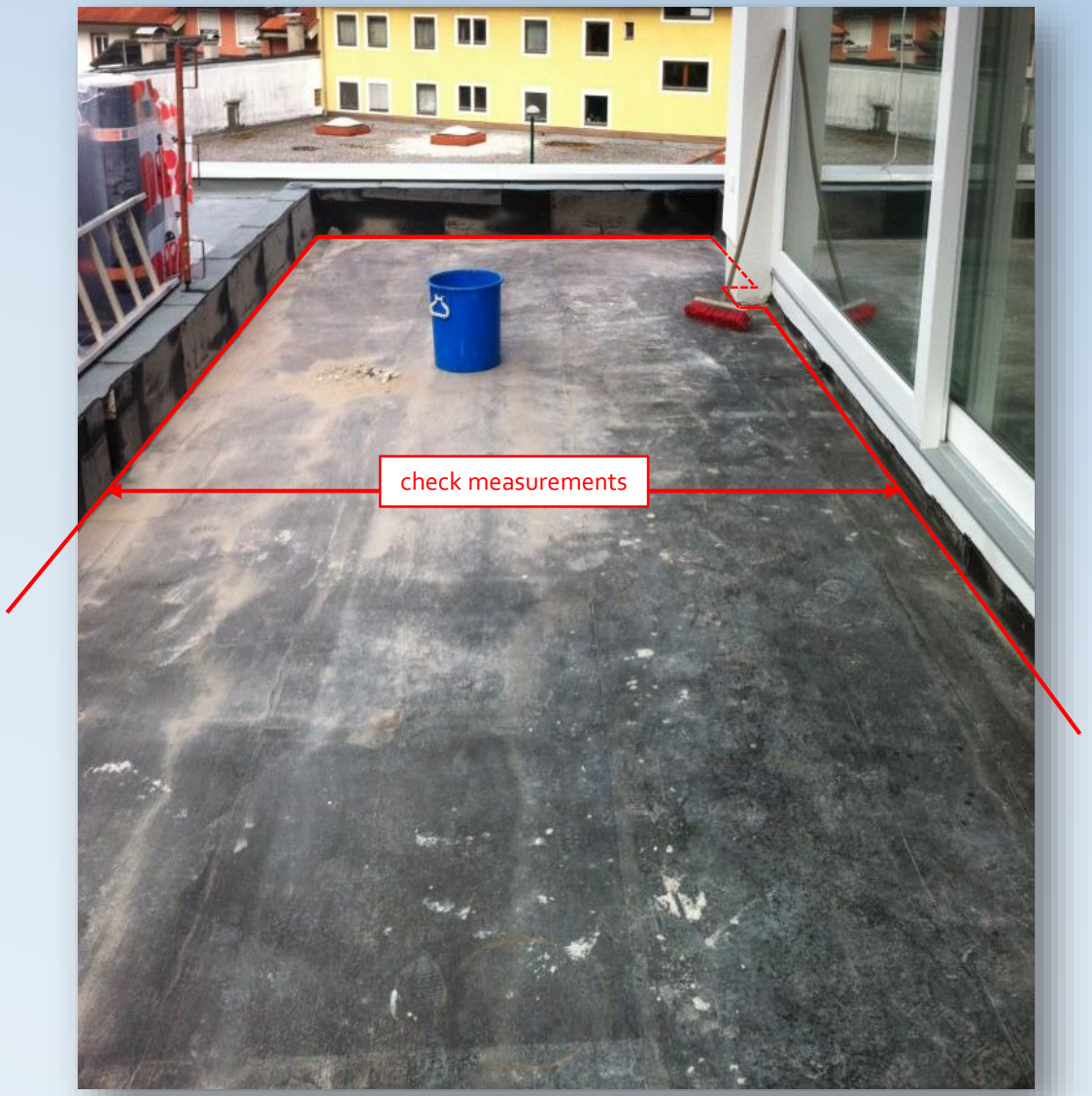



U-Value= 0,226 W/m²K

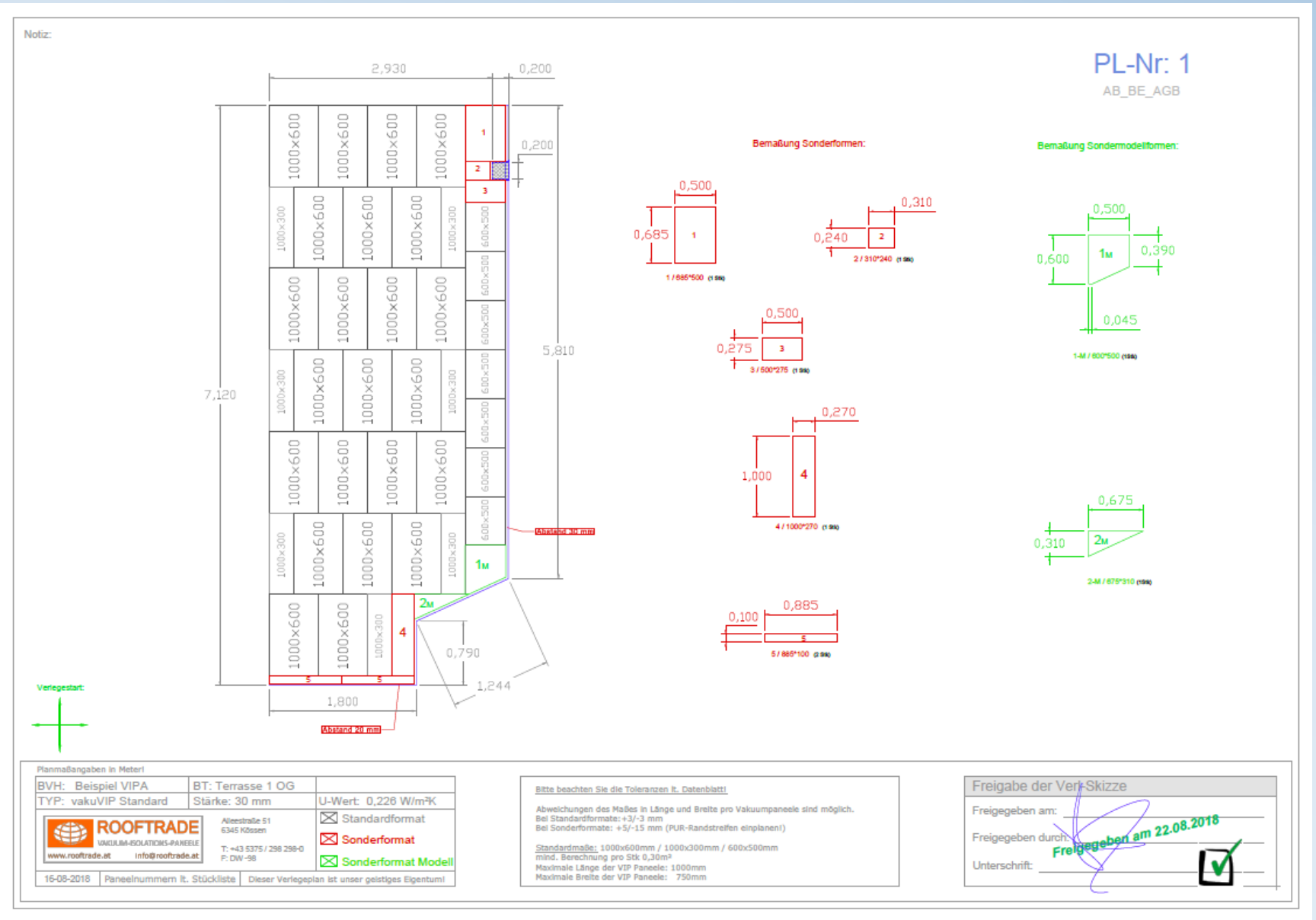
U-Value= 0,256 W/m²K

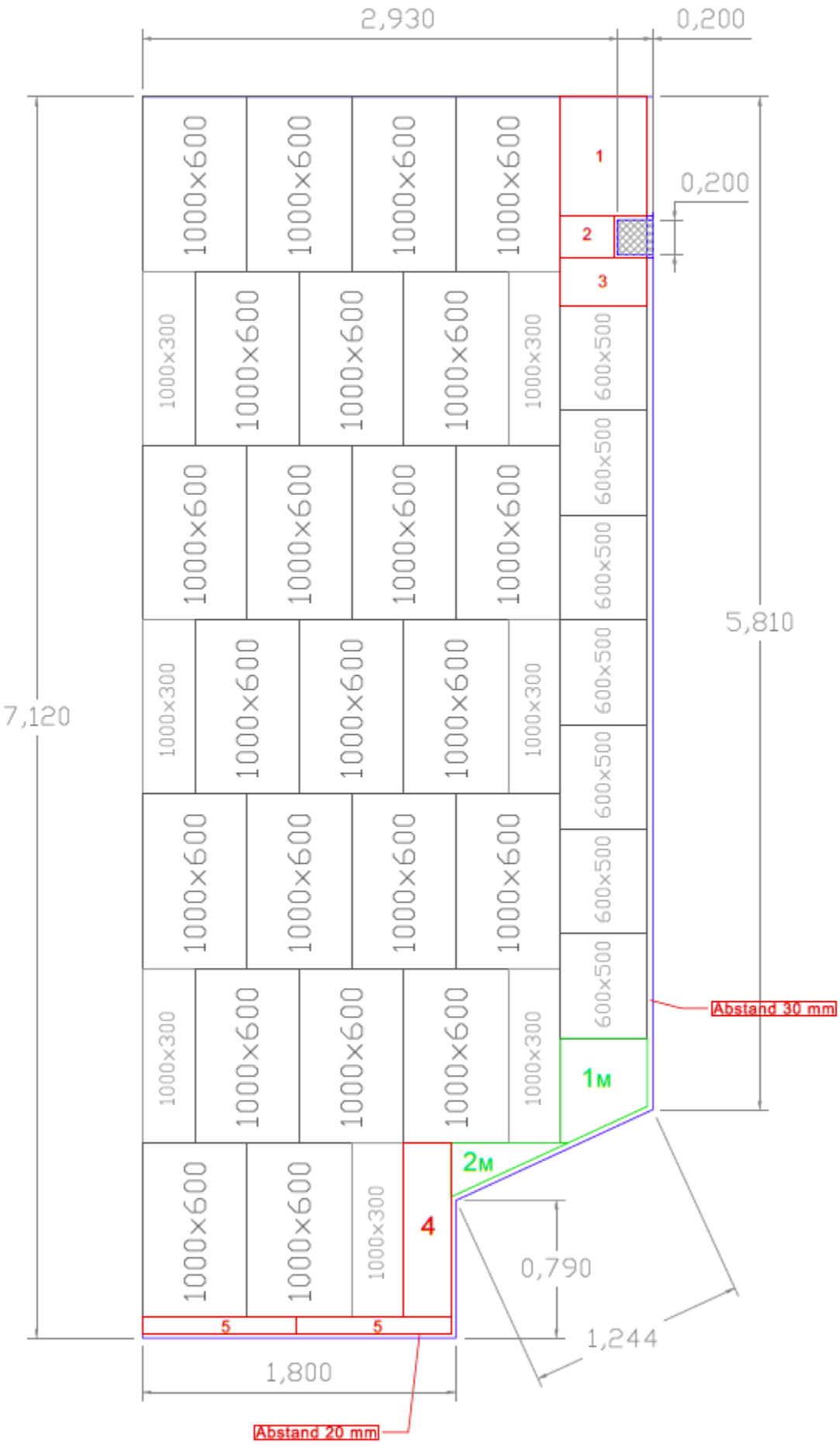
# Phase A : Preparation and Production

1. exact measurements
2. draw assembly plan
3. create quantity list
4. check and release of assembly plan
5. production and delivery VIP



# Example Assembly Plan




2,930
0,200
0,200
7,120
5,810
1000×600
1000×300
600×500
1
2
3
4
5
1м
2м
Abstand 30 mm
Abstand 20 mm
0,790
1,244
1,800

| Kunde/BV: | BV-VIPA | ROOFTRADE VAKUUM-ISOLATIONS-PANEELE |
|---|---|---|
| Vaku-VIP: | Standard 30 mm | *StkZ_BE-AB-AGB sortiert n. Bauteil 17.08.2018* |

| | | | |
|---|---|---|---|
| STANDARD-FORMAT 1000x600 mm (A) | 23 Stk | 13,80m² | 18,00m² |
| STANDARD-FORMAT 1000x300 mm (B) | 7 Stk | 2,10m² | |
| STANDARD-FORMAT 600x500 mm (C) | 7 Stk | 2,10m² | |
| SONDER-FORMAT | 6 Stk | 1,84m² | 1,84m² |
| MODELL-FORMAT | 2 Stk | 0,60m² | 0,60m² |
| **Standard 30 mm** — **Summe ALLE Formate 30mm** | **45 Stk** | **20,44 m²** | |

| Bauteil | PlanNr | VIP-Stärke i.mm | Art Format | l | b | Stk | m² | Nr | AF |
|---|---|---|---|---|---|---|---|---|---|
| Terrasse 1-OG | PL1 | 30 mm | 1000x600 mm | 1000 mm | 600 mm | 23 Stk | 13,80m² | A | A |
| Terrasse 1-OG | PL1 | 30 mm | 1000x300 mm | 1000 mm | 300 mm | 7 Stk | 2,10m² | B | B |
| Terrasse 1-OG | PL1 | 30 mm | 600x500 mm | 600 mm | 500 mm | 7 Stk | 2,10m² | C | C |
| Terrasse 1-OG | PL1 | 30 mm | SONDERFORMAT | 685 mm | 500 mm | 1 Stk | 0,34m² | 1 | S |
| Terrasse 1-OG | PL1 | 30 mm | SONDERFORMAT | 310 mm | 240 mm | 1 Stk | 0,30m² | 2 | S |
| Terrasse 1-OG | PL1 | 30 mm | SONDERFORMAT | 500 mm | 275 mm | 1 Stk | 0,30m² | 3 | S |
| Terrasse 1-OG | PL1 | 30 mm | SONDERFORMAT | 1000 mm | 270 mm | 1 Stk | 0,30m² | 4 | S |
| Terrasse 1-OG | PL1 | 30 mm | SONDERFORMAT | 885 mm | 100 mm | 2 Stk | 0,60m² | 5 | S |
| Terrasse 1-OG | PL1 | 30 mm | MODELLFORMAT | 600 mm | 500 mm | 1 Stk | 0,30m² | 1 | M |
| Terrasse 1-OG | PL1 | 30 mm | MODELLFORMAT | 675 mm | 310 mm | 1 Stk | 0,30m² | 2 | M |
| | | ENDE | | | | | | | |

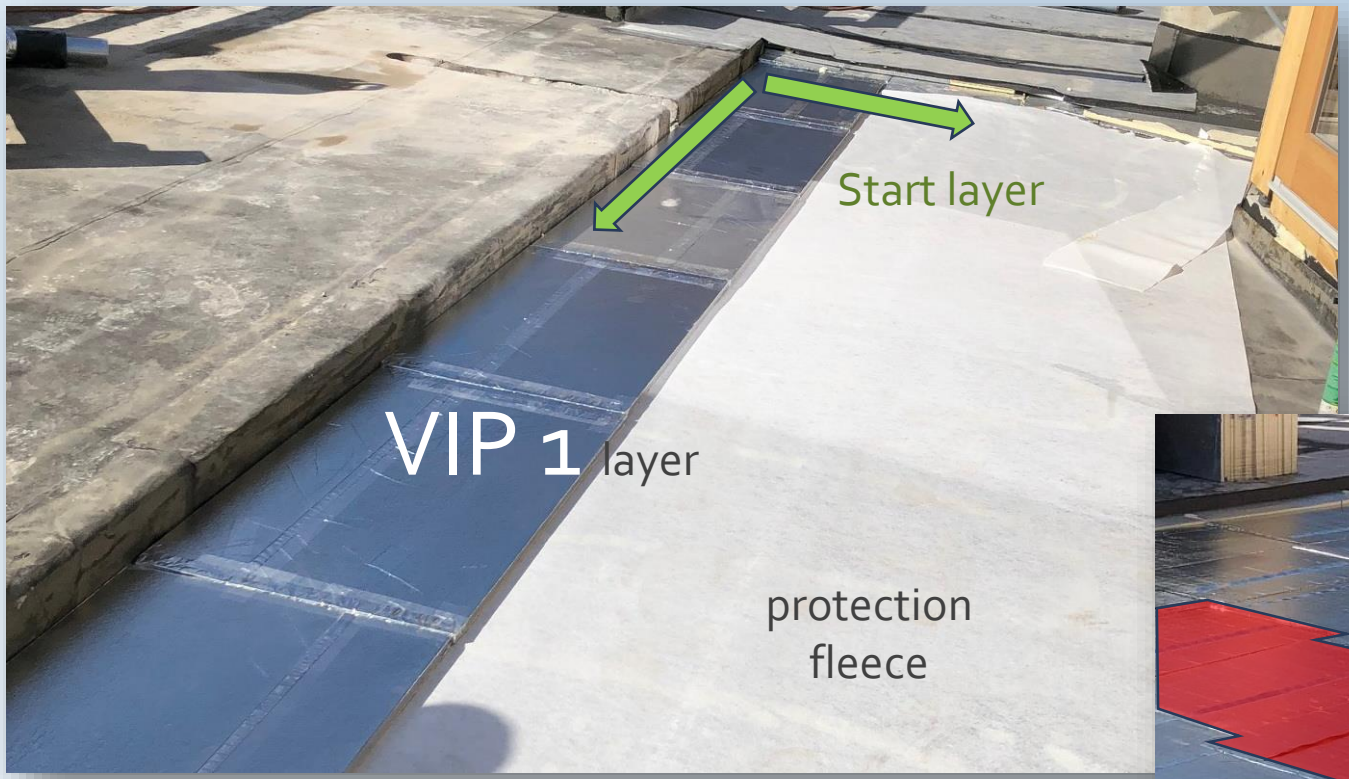
# **Phase B :** Laying **VIP** at residental building

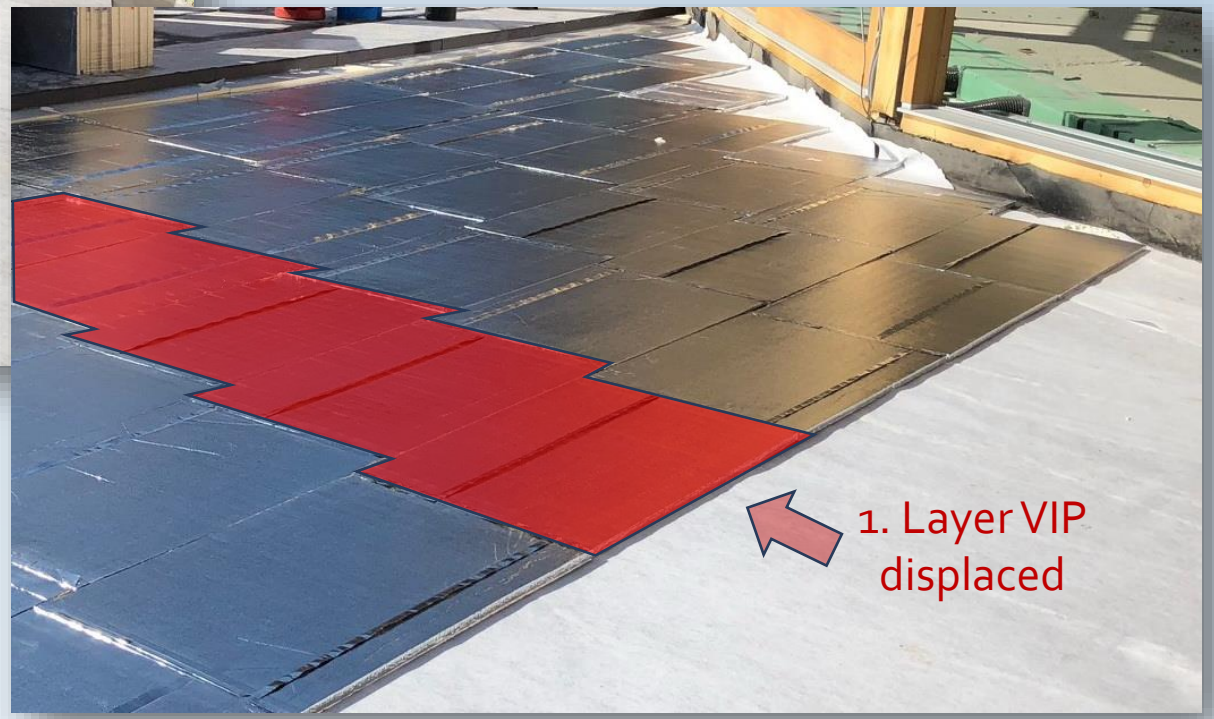
Challenge for the tradesman!

BT1-TOP87
BT1-TOP86
Vorsicht Glas!
BT1-TOP85
BT1-TOP84

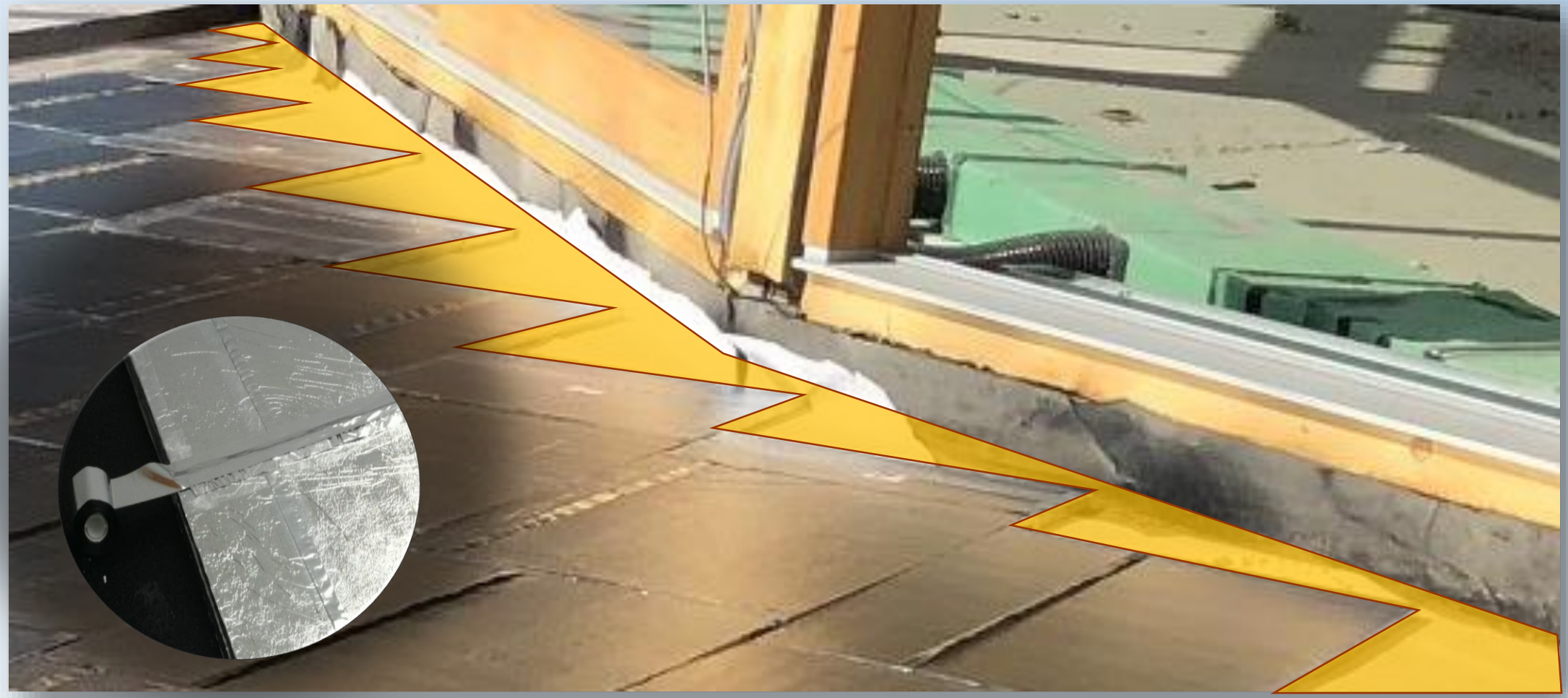
# Example Installation:

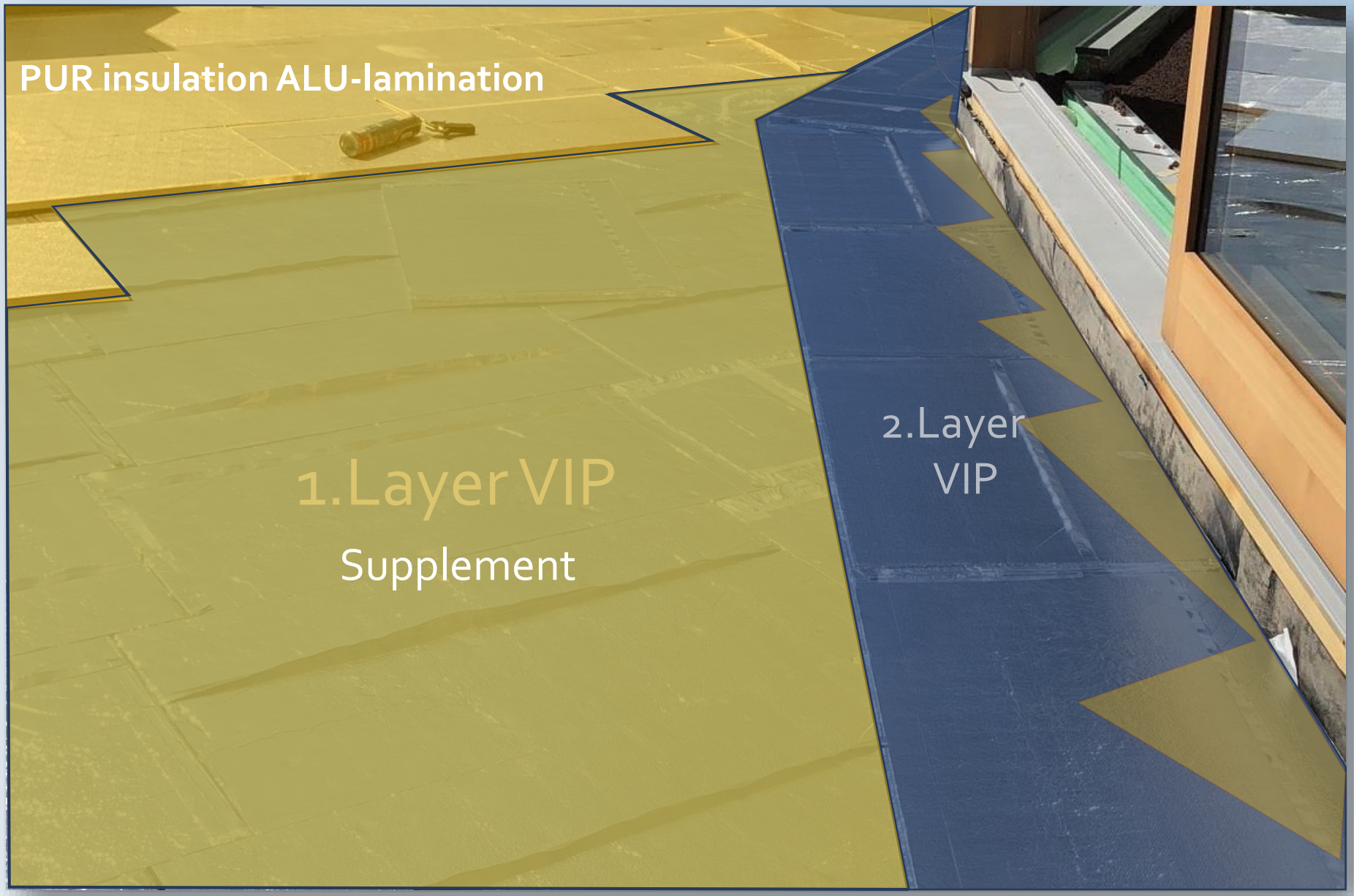
## 2 layers
## **VIP** with **PUR** supplement

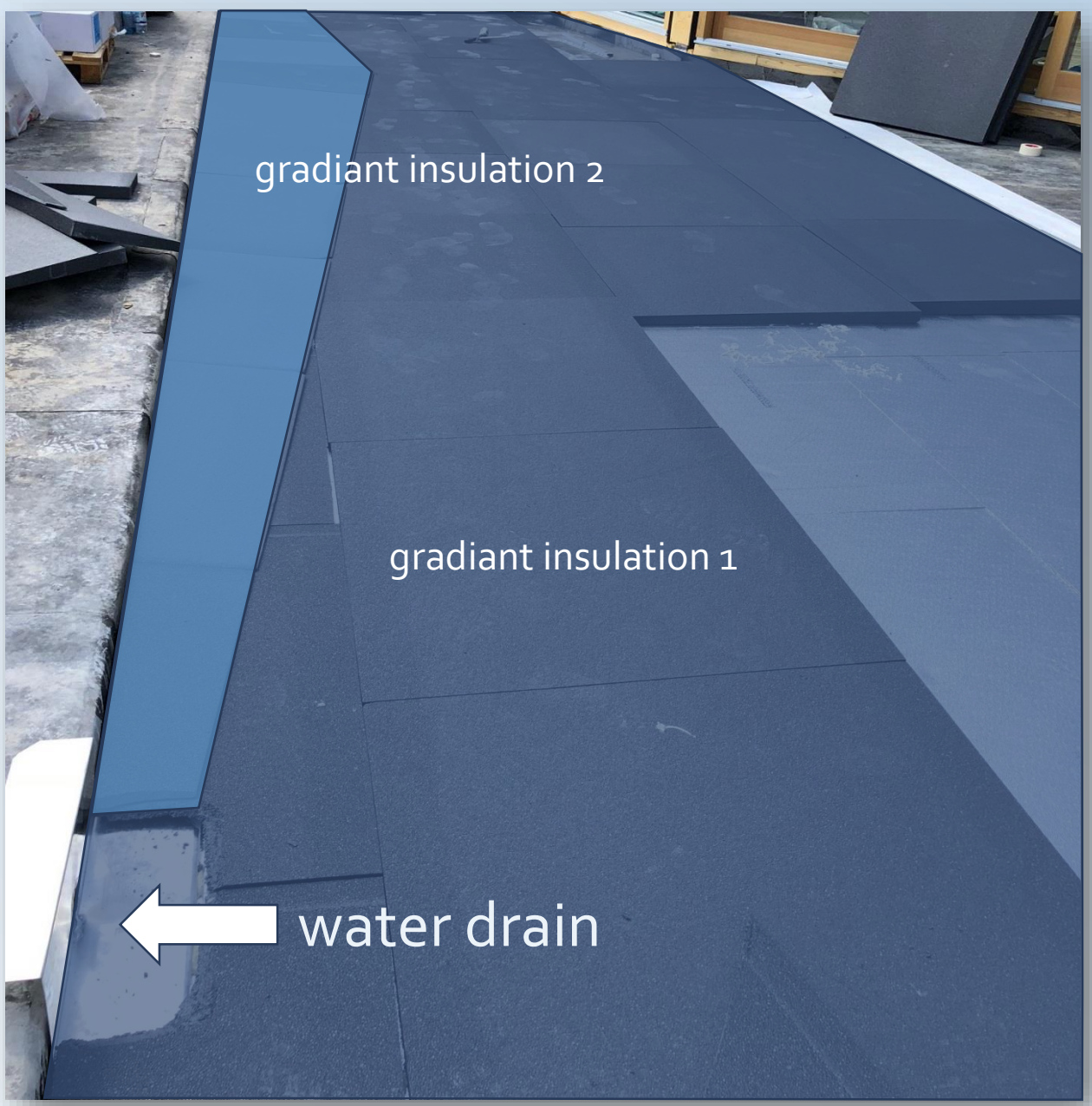


# Complete the open areas with PUR insultion

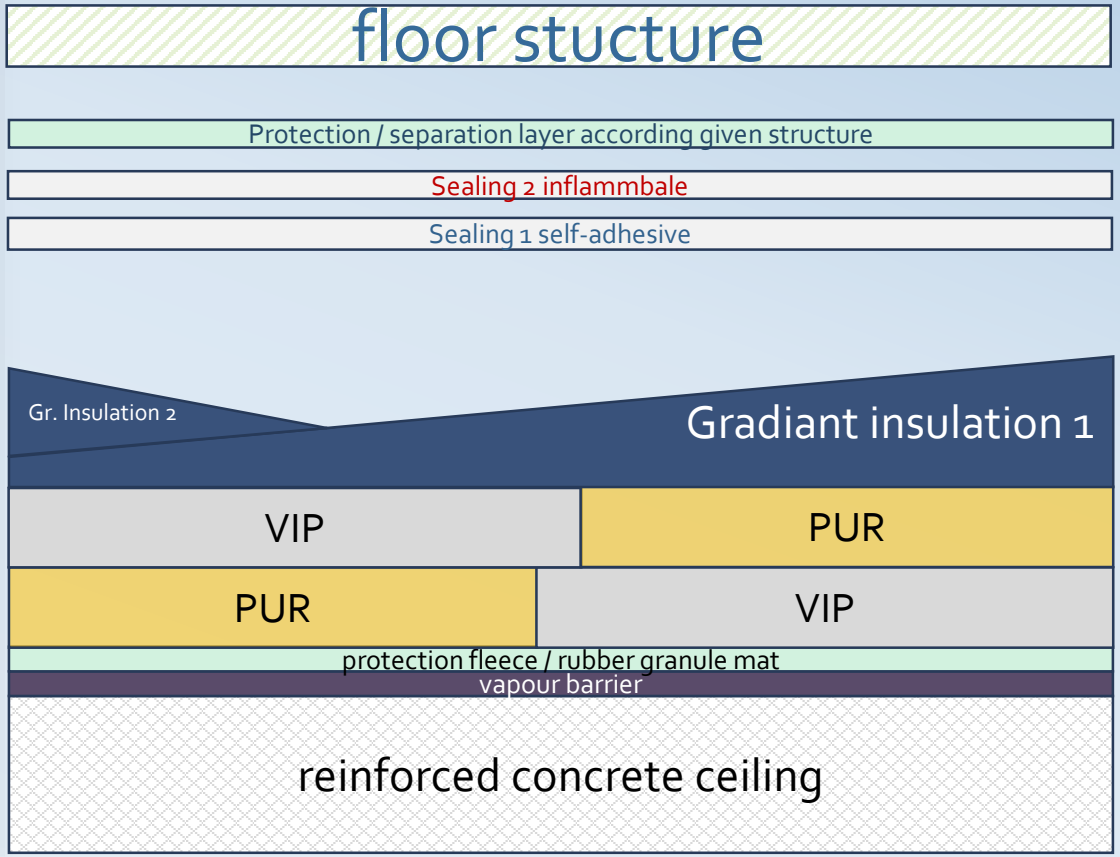



PUR insulation ALU-lamination
1.Layer VIP
Supplement
2.Layer
VIP




# Basic structure is complete.

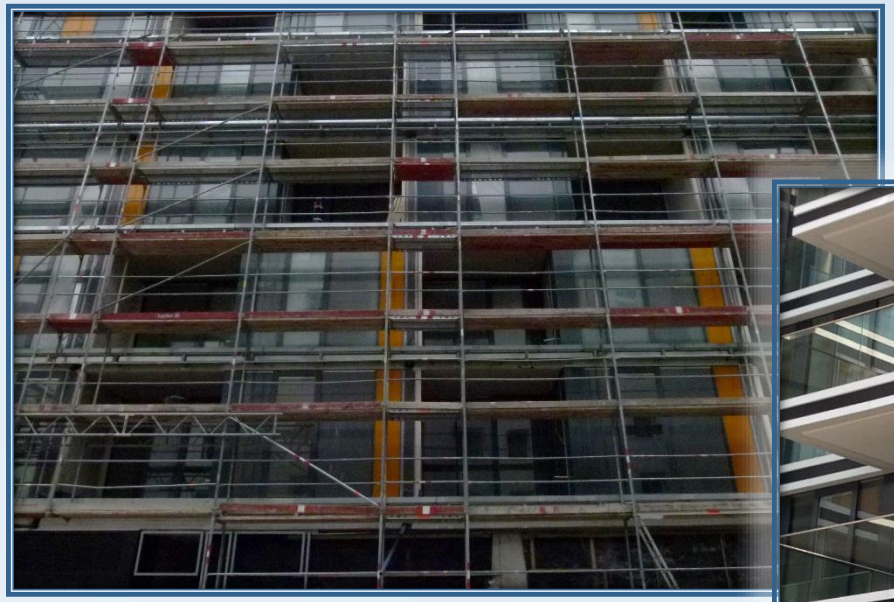
The sealing and the desired floor construction can be started.



# VIP is not just a problem solver in construction!

Example NEW CONSTURCTION: building project-
Beatrixgasse WIEN 3rd-District
laid surface approx. 400 m² spread over 52 parts.

The construction is located in the immediate vicinity of the VIPA Conference 2018 and will be completed shortly.



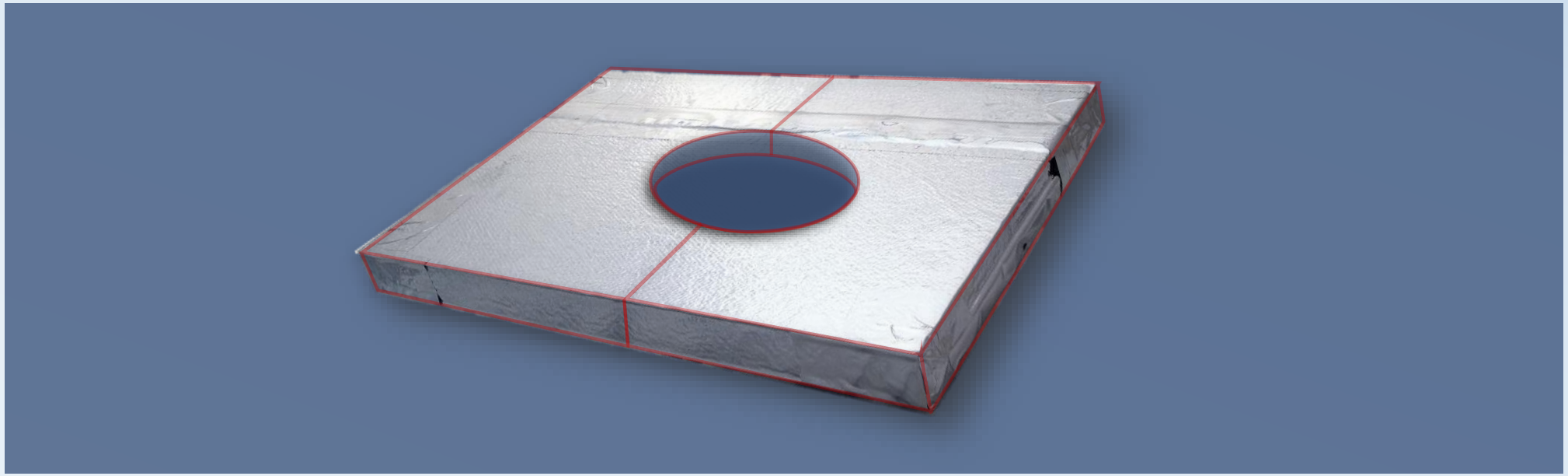
# The yellow lines show you where we used VIP at this construciton site

# Résumé

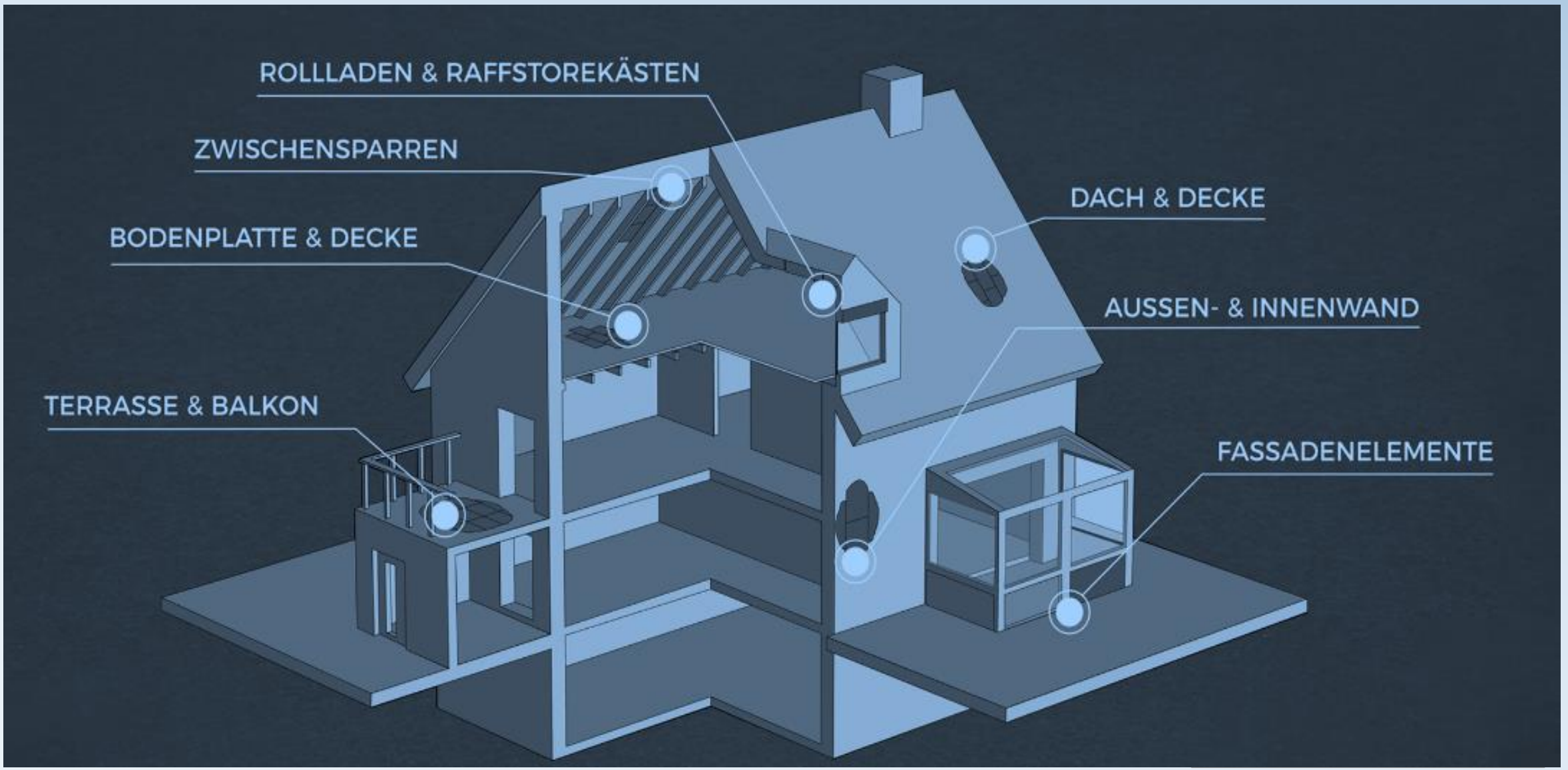
- Only VIP was able to meet the requirements of low construction height, as in the example was shown .
- Another positive aspect of **VIP** are an uncomplicated recycling process an as well the non-flammable filler.
- A modern and slim building envelope is diffecult to realise in an energy efficient way without **VIP.**

- The challenge for the processor is the careful handling at construction site due to the relatively light vulnerability of the shell.

- Circular cutouts in **VIP** elements could guarantee even better partial results in the U-Value calculation.



# In ist production variety, **VIP** allows many tasks to be solved in construction!



# Vakuum Isolation Paneele

An indispensable building material  in modern construction and in the renovation of object.

Without VIP, many projects would not be feasable!

*„Thank you for your attention!“*