A handbook of thermal bridging details incorporating InstaClad Ltd insulated thermal profile solutions

Book 6 — Thermo-Pro Soil Pipe solution for insulating on retrofit External Wall Insulation.

Prepared for *InstaGroup Ltd*

by the *BBA*

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Purpose of the handbook

This handbook was prepared for InstaGroup Ltd and it provides a thermal bridging junction detail for the retrofit of a soil pipe junction using two insulation solutions. The drawings provided are for typical details and show all the elements essential in achieving the calculated ψ-values. All other site requirements and all relevant building regulations must be taken into consideration when implementing the details.

Each detail in this handbook includes drawings of the junction, ψ-values calculated by an experienced thermal modeller and a process checklist for use on site to facilitate the achievement of the calculated ψ-values.

A more detailed description for each section of a Constructive Detail can be found in the original Guidance Note.

List of constructive details

There is a total of 1 detail, labelled CD0058.

Detail number	Detail title	Page
CD0058	Thermo-Pro Soil Pipe	4

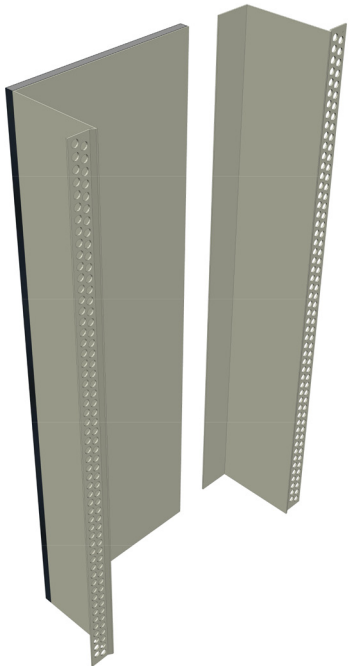
How to use this handbook

The details have been prepared taking into consideration a range of wall constructions used in the UK over the last 50 years. Therefore the conductivity applied to the wall element was 3.49 $W \cdot m^{-1} \cdot K^{-1}$ as this was the worst case found.

The ψ-values are provided for different thicknesses of insulation. For each band the ψ-value is calculated for the worst case after considering the effect of thickness and conductivity of insulation independently. This ψ-value can therefore be taken for the complete range of thicknesses quoted.

In all of the details the wall finish drawn is 13 mm dense plaster. This was chosen for consistency and also as it is a common construction method.

A series of tips on interpreting the information in each Constructive Detail, is given below, starting from the first to the last page.



InstaClad Thermo-Pro ZED Profile and facing plate with Aerogel solution.

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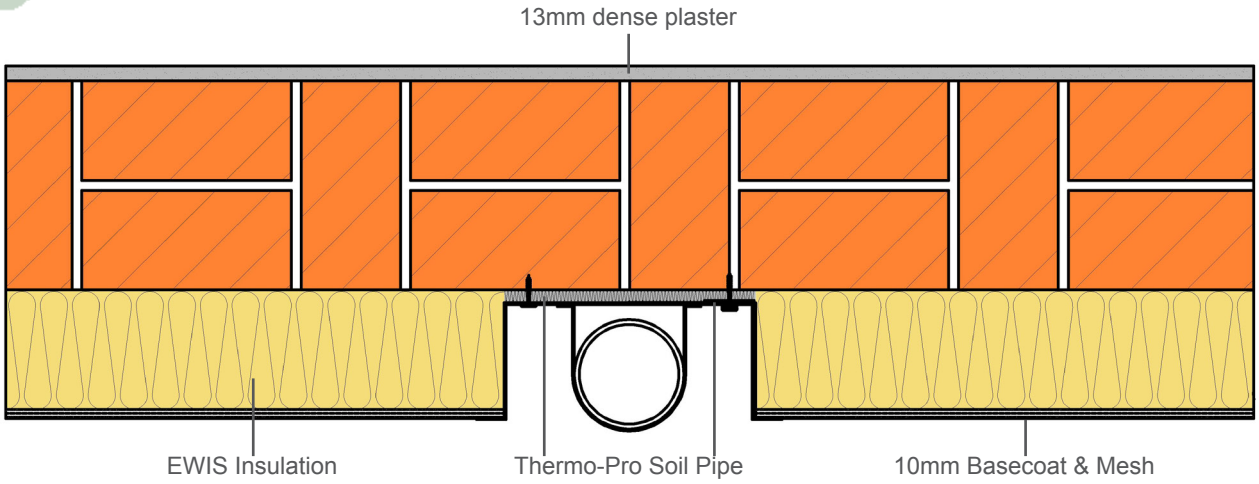
Soil pipe thermal bridge junction

InstaClad Thermo-Pro Soil Pipe

CD0058



This indicative guidance illustrates good practice for design and construction with respect to achieving thermal performance and air barrier continuity only. It must be implemented taking due regard of site conditions and all other requirements imposed by Buiding Regulations.

Notes

- A cavity distance of 250 mm was assumed for the soil pipe break in the EWIS insulation.
- Insulation thickness between 90 mm - 300 mm were used.
- Insulation conductivity between 0.030 - 0.044 $W \cdot m^{-1} \cdot K^{-1}$.
- Each result was calculated using an internal 13 mm dense plaster with a conductivity of 0.57 $W \cdot m^{-1} \cdot K^{-1}$ and an external 10 mm basecoat and mesh with a conductivity of 1.0 $W \cdot m^{-1} \cdot K^{-1}$.
- 1.2 mm thick aluminium with a conductivity of 160 $W \cdot m^{-1} \cdot K^{-1}$ has been used on both ZED profiles and facing plate.

Calculated ψ values for this detail

All values are in $W \cdot m^{-1} \cdot K^{-1}$

Soil Pipe Junction	EWIS Insulation of less than or equal to 160 mm		EWIS Insulation between 161 mm - 230 mm		EWIS Insulation between 231 mm - 300 mm	
	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature Factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature Factor	ψ-value ($W \cdot m^{-1} \cdot K^{-1}$)	Temperature Factor
No Thermo-Pro	2.57	0.64	2.63	0.64	2.66	0.64
Thermo-Pro	0.56	0.90	0.60	0.90	0.63	0.91

In order to gain a U value for a wall containing the soil pipe junction, the following equation should be used:

$$U = U_o + \left[\frac{L \cdot \psi}{A}\right]$$

- U_o - U Value of the wall without the soil pipe
- L - Length of the junction
- ψ - Psi value
- A - Total area of the wall

Soil pipe thermal bridge junction

InstaClad Thermo-Pro Soil Pipe

CD0058

Guidance Checklist

Date: ..... Site Manager/Supervisor: .....

Site name: ..... Plot No: .....

Ref.	Item	Yes / No	Inspected (initials & date)
1.	Is the EWIS insulation thickness between 90 mm - 300 mm?	☐ ☐	.....
2.	Is the EWIS insulation conductivity between 0.030 - 0.044 $W \cdot m^{-1} \cdot K^{-1}$?	☐ ☐	.....
3.	Has an internal finish been applied?	☐ ☐	.....
4.	Has an external finish been applied to the EWIS insulation?	☐ ☐	.....
5.	Has the Thermo-Pro insulated profile been used?	☐ ☐	.....
6.	Is the soil pipe cavity distance 250 mm?	☐ ☐	.....

Notes (include details of any corrective action)

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