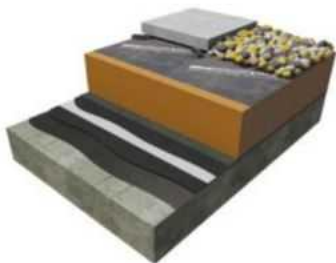


Inverted Roofs



5 Broadgate, London

"One of the main advantages of this form of construction is its simplicity. With the weatherproofing acting also as a vapour barrier, the need for complicated calculation can often be avoided. In addition there are advantages in speed of weatherproofing, ease of drying out, avoidance of entrapped moisture, in-built protection of the weatherproofing and the ability to upgrade the insulation without disturbing the weatherproofing.

This system is preferred to other forms."

Government's Property Service Agency - Technical Guide to Flat Roofing, Section 2.11

Typical specification

Most inverted roofs are installed on concrete decks. Alternative materials like plywood or calcium silicate boards can be installed onto timber joists or metal deck substrates, or metal/insulation composite panels can be used. Waterproofing systems (built-up bitumen felt, mastic asphalt, single ply, cold applied and hot melt) are installed (using various methods) to the deck. Hot melt is fully bonded to the deck.

To comply with relevant codes of practice and BBA certification most of the waterproofing systems require a minimum of 1 in 80 drainage falls to be introduced either within the structure or using a screed. An inverted roof using hot melt waterproofing does not require falls. Extruded polystyrene (XPS) insulation is loose-laid on to the top of the waterproofing system (some waterproofing membranes need to be isolated from the XPS).

Water Control Layer (WCL)

A proprietary Water Control Layer (WCL) is installed loose-laid on top of the insulation. The loose laid insulation and separation layer needs to be weighed down to prevent wind uplift. Ballasting materials are used such as round washed stones or concrete pavers on supports, the minimum ballast weight required is 80kg/m².

Key considerations

Although one of the main benefits of inverted roof design is that the waterproofing membrane is totally protected, there are two important design factors to be considered.

Firstly, the structural deck should be capable of supporting the weight loading of an inverted roof system, which would usually be 95kg/m² minimum.

Secondly, it is essential to ensure that the waterproofing system is fully tested (usually electronically or flood test) for damage prior to the installation of the insulation and loading coat (ballast/pavers/green roof).

Failure to discover and repair any damage could lead to the time consuming and costly removal of the loading coat and insulation to access the waterproofing system.