
7.00 Roofs

All the requirements of this Section are Mandatory.

7.01 Roofs Generally

All GU buildings shall have pitched roofs. The minimum pitch shall not be less than the roofing manufacturer's recommendations for the particular materials adopted, however the roof pitch must never be less than five degrees (5°).

Membrane roofs will not be acceptable except in special circumstances and only with the approval of the Deputy Director (PD&C) CLF.

All plumbing vent pipes, other pipework, mechanical fans, cowls and the like located on or projecting above the roof shall be finished to match the roof colour. All metal framing exposed above the roof shall be hot dip galvanised after fabrication and be left unpainted.

Roof design shall minimise the number of penetrations through the decking or membrane.

7.02 Roof Deck Materials

Roofs shall generally be metal pan roof decking, manufactured from G550 hi-tensile colour coated (Colorbond) steel in accordance with AS 1397 and AS 2728-Category 3, with a thickness of 0.48mm BMT.

The deck profile shall be equivalent to Stramit 'Speed Deck Ultra' and fixed on concealed clips in accordance with the manufacturer's printed instructions. All sealants, fixings and accessories shall match the colour of the roof.

Ends of sheets must be turned up at ridges, penetrations and abutments, and turned down into gutters using specialist tools.

The colour of the roof sheeting must be approved by CLF.

If vertical linings are required where not exposed to view, they shall be in colour matched profiled steel wall sheeting with a thickness of 0.42mm BMT, equivalent to Stramit 'K-Panel'.

7.03 Flashings and Cappings

Roof flashings, cappings and trims shall be designed to minimise the use of sealants, and shall be fabricated and installed in accordance with the roof deck manufacturer's recommendations.

Flashings, cappings etc. associated with the roofing shall be fabricated from Colorbond steel of the same thickness and colour as the roof sheeting. All fixing types are to be as recommended by the roof deck manufacturer and colour matched to the flashing.

Where the ends of the roof sheeting are clearly visible above the eaves gutter, install a colour matched steel angle trim with the vertical leg positioned downwards and the other leg fixed to the top of the rib, with sufficient space between the vertical leg and the end of the decking pans to allow water run-off.

Flashings to penetrations for roof access hatches, skylights, exhaust vents and the like shall incorporate a soaker flashing which shall extend to the roof ridge whenever possible. Flashings to all roof penetrations shall be designed to minimise the collection of leaves and debris. All box gutters shall have over flashings fitted under the end of the roof decking to the trimming purlin.

'Decktite' flashings are acceptable for circular penetrations, only where they are installed in a manner which does not impede roof drainage or allow ponding, and strictly in accordance with the manufacturers printed instructions.

Where flashings abut walls, a double 'K' flashing is required. Refer GU Standard Detail Drawing No GSD-107.

On some campuses, 'Decktite' flashings and sealants are subject to damage and removal by birds. Where this is a problem, a Colorbond steel shroud shall be installed to protect the 'Decktite' flashing, and exposed sealants should be protected by Colorbond metal trims. The PD&C Project Manager should be consulted as to the likely requirement for these measures.

7.04 Roof Insulation

To the whole of the roof area, provide an R3 insulation blanket with foil faced backing laid over galvanised wire safety mesh fixed on top of the purlins.

7.05 Gutters

Generally – Gutters for the harvesting of rainwater for reuse in toilet flushing or landscape irrigation, shall be installed on all buildings unless otherwise advised by CLF.

If rainwater is not to be harvested, then gutters should be avoided wherever possible, and the rainwater should be allowed to discharge directly to the ground, clear of the building façade and pedestrian pathways etc where it can be collected in gravel filled trenches with agricultural drains for discharge into the stormwater system.

Box gutters **shall not** be installed unless there is no other viable design solution.

Materials – All gutters including accessories shall be fabricated from Type 304 stainless steel with a minimum thickness of 0.9mm with a pacified polished finish. All joints shall be riveted and silicon sealed. In corrosive environments such as the Gold Coast campus, gutters shall be fabricated from Type 316 stainless steel

Eaves Gutters – Eaves gutters shall be of a self cleaning design as shown on GU Standard Drawing No. GSD-106.

Expansion Joints – Continuous lengths of gutter shall have expansion joints. These joints shall comprise stop ends with a saddle flashing over.

Overflows & Spitters – Any box gutters shall incorporate overflows as a safeguard against flooding caused by downpipe or drain blockages. Overflows shall be located at the high end of each gutter and the discharge from the overflow shall be visible. Horizontal overflows shall discharge a minimum of 150mm from the face of the fascia or building façade. The cross sectional area of each overflow shall be the equivalent of the downpipe from the gutter sump.

Where the overflow discharges directly from the gutter end through the fascia or external wall, the material shall match the gutter lining, however if the overflow is required to travel any distance to discharge, the material shall be the same as for downpipes.

Where spitters are used, they shall also discharge 150mm from the face of the fascia or external wall, and shall be fabricated in No. 4 polished Type 304 stainless steel.

Leaf Guards – All box gutter sumps shall be fitted with stainless steel mesh removable leaf guards. Leaf guards shall project above the top of the sump not less than half the gutter depth at the sump.

7.06 Downpipes

All exposed downpipes shall generally be constructed of 1.6mm thick Type 304 stainless steel with all joints welded. In corrosive environments such as the Gold Coast campus, down pipes shall be fabricated from Type 316 stainless steel.

Tested UPVC will be considered as an alternative for particular applications, in which case they shall be painted to blend with the external wall finish where exposed.

The minimum diameter of downpipes shall be 150mm.

All downpipe brackets shall be a stand off type fabricated from stainless steel for stainless steel downpipes, and painted hot dip galvanised steel for UPVC downpipes.

Downpipes shall not be built into walls or columns.

If a downpipe is located internally, it shall be insulated to eliminate noise transfer into occupied spaces.

The downpipe foot shall not be connected directly to drains, but shall discharge over a **grated** stormwater sump designed to prevent leaves from entering the drains and to avoid water splashing over paths and walls. Sumps to drains which connect to storage tanks shall be fitted with a stainless steel mesh removable basket to minimise the possibility of small leaves and other debris such as cigarette butts entering the tanks.

All downpipes and all gutters shall be hydrostatically tested to the maximum head possible.

All downpipe design is to be approved by CLF.

7.07 Roof Access & Walkways

Access is required to all roofs. Where this cannot be achieved via the continuation upward of an external escape stair, access from inside the building shall be by means of a lockable roof hatch or a door. Access by means of hatch or door shall be situated within the roof safety zone.

Where an external stair is utilised to gain access, a secure barrier shall be provided at the landing on the highest occupied floor level to prevent unauthorised access to the roof.

Where access is via a roof hatch, a permanent steel stair should be provided. The stair shall preferably be located in a plant room, or in a separately enclosed space.

Ladders fabricated from hot dip galvanised steel shall be provided between changes in roof levels, and between access doors from plant rooms and the roof surface if required.

Walkways shall be provided across roofs to provide access to equipment, mechanical fans etc. Walkways shall be of aluminium construction equivalent to that manufactured by Juralco. Walkways which do not require supports that penetrate the roof decking are preferred.

All access stairs, ladders and walkways shall comply with AS 1657.

7.08 Roof Safety System

Provide a fall-restraint safety system in accordance with the provisions of Qld Part G101 of the BCA. The installation shall also comply with the relevant Australian Standards.

Preference shall be given to systems where the anchorage points or cable supports are mechanically attached to the roof deck ribs and do not rely on posts penetrating the roof sheeting to attach to the roof framing.

Consultation with the CLF Campus Facilities Manager is required when selecting the system, to ensure the components of the selected system are compatible with existing systems utilised on other campus buildings.

The system installer must provide all appropriate certification that the system complies with the relevant Standards and regulations.

Supply a minimum of one harness to be located in a lockable steel cabinet at each point of access onto the roof.