SECTION 8

ROOFS

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Version	Date	Authors	Summary of Changes
P1	02/06/14	WA	Preliminary Issue for review
2	19/8/14		Issue to web
	05/05/15	Manager, Infrastructure Services	Cross referenced with other sections
V3	02/07/18	Manager, Infrastructure Services	2018 general review update

8.0 ROOFS

This document is a section of the James Cook University (JCU) Design Guidelines and is not to be read in isolation. Consultants and Contractors are required to comply with all sections of the JCU Design Guidelines.

8.1 Approvals Required during Design

Approval shall be obtained from the JCU Estate Directorate, Deputy Director, Planning and Development in SD for the:

- Use of Membrane roofs
- Colour of the roof sheeting, and the
- Use of lanyards and hook-on points for roof access.

8.2 General

In the case of building renovations, vapour barriers that were disturbed must be reinstated to the required performance standard. Any venting shall be protected to prevent the entry of vermin.

There shall be close collaboration and coordination between the consultants and JCU to ensure effective compliance to this design guideline on a project specific basis.

Consultants will be required to engage in project specific briefing discussions prior to commencing the design documentation phase of the project. This consultation is regarded as a mandatory project milestone and will be validated in the form of a project meeting minute by JCU.

The design of the roof drainage system is to be certified by the Hydraulic Consultant RPEQ as compliant with these Design Guidelines and with relevant codes.

Special care must be taken with fixings to meet cyclonic conditions and that gutters, rain water heads, overflows and splitters, leaf, hail and gutter guards, downpipes and sound insulation and condensation as covered in Section 24 of these design guidelines meet local conditions.

Roof penetrations are to be kept to a minimum and should be avoided where possible

All roof designs to take cognisance of additional support requirements given in Section 22 Ecological Sustainable Designs.

Roofs adjacent to, and overlooked by, windows shall be avoided where possible to minimise glare problems. Where unavoidable, windows are to be protected from glare. The visible edge of roof sheeting shall be avoided.

8.3 Roof Types

All JCU 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 be a minimum of five degrees (5^{o}).

Membrane roofs will not be acceptable except in special circumstances and only with the approval of the JCU Estate Directorate, Deputy Director, Planning and Development during SD.

8.4 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 colour of the roof sheeting must be approved by JCU Estate Directorate, Deputy Director, Planning and Development during SD. Colours which qualify as solar reflective or which incorporate Thermatech solar reflectance technology are preferred.

If a roof is in – or located nearby - a marine or highly corrosive environment, Ultra Colourbond or equivalent is required. This is applicable to the entire Cairns campus and sections of the Townsville campus.

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 and be roofing grade.

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

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'.

8.5 Roof Flashings and Penetrations

Roof flashings generally shall be designed to minimise the use of sealants and shall be fabricated and installed in accordance with the roof deck manufacturer's recommendations. The plumbing designer shall design and specify flashings necessary for roofing penetrations. Flashings, capping's etc. associated with the roofing shall be 0.55mm BMT, prefinished to match the decking. All fixing types are to be as recommended by the roof deck manufacturer. In no instance shall plastic tap-in fixings be used on any exposed section of roofing. All caulking and rivets shall match the colour of the roof and flashings.

Roof installations shall be designed to be vermin and bird proof.

Flashings to penetrations for roof access hatches, skylights and the like shall incorporate a soaker flashing which shall extend to the roof ridge. Flashings to all roof penetrations shall be designed to minimise the collection of leaves and debris. "Decktite" flashings are only acceptable for penetrations where less than two ribs are bridged and when not positioned over a roof sheet joint. Where flashings abut walls, a double 'K' flashing (two piece) flashing is required.

As 'Decktite' flashings and sealants are subject to damage and removal by birds, a Colorbond steel shroud shall be installed to protect the 'Decktite' flashing, and exposed sealants should be protected by Colorbond metal trims.

8.6 Roof Fixings

Roof fixings shall be specified by the architect or structural engineer, different roof pitches require different roof sheet profiles to be utilised, which require fixings to suit the profile and the battens to which they are fixed i.e. timber or metal.

Roof fixings shall be colour matched to the standard colorbond colours of the sheeting to which they are to be attached. Only factory applied, powder coated colour finishes to the screws are acceptable. Site applied paint to the screw heads is not acceptable.

Rivets can be used where required and must be blind rivets to ensure water tightness and must be colour matched to the sheeting upon which they are fixed. The must be of a similar metal as the roof to avoid electrolysis due to dissimilar metals.

Any screws with overtightened waterproof washers are to be removed and replaced so they are seated properly against the sheet metal providing a proper seal.

The roof must be washed down daily to remove all swarf created when installing screws or rivets.

Care must be taken to ensure that swarf does not get sandwiched between the screw seal and the roof sheeting when screwing the sheets down - otherwise the weatherproof seal will be compromised.

8.7 Roof Access

Under the WH&S Act and Regulations, designers have specific legal obligations to design roofs and structures which minimize the risk of falling during both the construction phase and during ongoing maintenance activities.

A safe permanent means of access to the roof shall be provided and shall fall under the Architectural design. All roof access/safety systems shall be RPEQ certified. Lanyards and hook-on points are not preferred and will only be acceptable with approval by the Deputy Director – Planning and Development. This roof access shall be from a service area, through a room, by means of an internally open-able roof hatch or door onto the Roof Safety Zone i.e.: a minimum of 3 metres from the edge of the roof.

A permanent (hot dipped galvanised) steel or aluminium stair ladder should be provided where necessary, preferably located in a plant room or a separately enclosed space.

Ladders 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 access equipment, mechanical fans etc. Walkways must be level i.e. not at the same pitch as the roof supports are not to penetrate the roof decking or allow for the accumulation of debris.

Restrict entry to roof access areas or rooms by provision of locked door with keys available only to authorized maintenance persons. Access back from the roof to the access point must not be lockable and must allow free access back from the roof into the building.

Positioning of plant or equipment on rooftops is not encouraged, and is covered in the engineering services sections of these design guidelines.

8.8 Roof Mesh and Insulation

Provide a minimum 55mm fibre composite blanket bonded to a reflective foil laminate equal to Bradford Anticon laid over galvanized roof safety mesh support (such as ARC AW1 MZ) to comply with AS2423 and fixed on top of the purlin to the whole of the roof area.

The minimum roof/ceiling insulation level for JCU buildings is R4.1 unless the roof has an upper surface absorbance value of more that 0.4.

8.9 Compatibility of Materials

Compatibility of materials used for roofing, flashings, guttering and the like must be considered in the architectural detailing.

8.10 Roof Accessories

All plumbing and associated pipework, mechanical fans, cowls and the like on or projecting above roofs shall be finished to match the roof colour, however all metal framing shall be hot dipped galvanized after fabrication and be left unpainted. Take care in the positioning of roof accessories to avoid shading of solar panel installations.

8.11 Handover Requirements and Warranty Periods

Following completion of roof installation, the principal and roofing contractors shall undertake a witness inspection and sign off of the roof. Ensure the JCU Project Manager and Manager, Strategic Asset and Maintenance, or representative are in attendance and that no swarf is present.

Provide the following DRAFT Roofing Systems warranties after the inspection.

- 10 years for workmanship and watertight installation covering all roofing and walling products

- 15 years from material manufacturer for corrosion

- 12 years from material manufacturer for the Colorbond finish

- 15 years from material manufacturer for the Colorbond Ultra finish

- 10 years from the roof access safety system manufacturer / installer

- 10 years for other products

Provide the FINAL Roofing Systems warranties a minimum 2 weeks prior to Practical Completion.