SECTION 10

FLOOR AND FLOOR FINISHES

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Version	Date	Authors	Summary of Changes
P1	09/05/14	WA	Preliminary Issue for review
2	19/8/14		Issue to web

10.0 FLOOR AND FLOOR FINISHES

10.1 General

Floors
Determine the extent of any special floor loads such as library, stacks, compactus and other special uses in schematic design phase. Structural capacity shall be subject to the Principal Consultant's structural engineer certification but generally floors will be a minimum of 4 kPa per m^2 for most uses, 5 KPa per m^2 for basements (if provided), and 6 kPa per m^2 to 10 kPa per m^2 for compactus areas. Consideration shall be given to allowance for an area for future compactus storage of approximately 10% of the Net usable Floor Area (NFA) on each floor, preferably in two separate locations, but not less than $15m^2$ in a single location. A schematic plan showing these zones shall be provided and included in maintenance manuals.

Design
Floor slabs shall be designed for the most economical construction and flexibility of use with due consideration to long-term deflections and the need to provide for penetrations, both initially and during the course of the building's life. Refer Structural Design Section. All floors are to be finished within a maximum tolerance of +/- 3mm in a 3000mm straight edge.

Selection
The selection of floor finishes is very important. It has direct impact on safety (students, staff and visitors) and has potential legal implications if not correctly addressed (e.g. Workers Compensation, Tort Law etc.) A "duty of care" exists where professionals are involved in the selection of products (e.g. architects, interior designers) and responsibility must be undertaken.
Designers shall incorporate the principles & requirements established in AS/NZ Standards and WH&S legislation, to reduce the risk of persons slipping on pedestrian surfaces.
Slip Resistance characteristics shall not be judged by the 'R' rating alone, but must include the Classification of Pedestrian Surface according to Wet PendulumTest to establish the contribution to the floor surface to the risk of slipping when wet.
All flooring shall comply with the Introductory Guide HB 197:1999 published by CSIRO and Standards Australia, for slip resistance.
Considerations during selection must include:

- Functional needs
- Cleaning and maintenance
- Structural
- Footwear standards likely to be worn by students & staff
- Quantitative evaluations and classification information available for each type of surface from the manufacturer, and where not available from the manufacturer must be gained by independent scientific assessment E.G. Wet Slip Resistance by Stanley Skid Resistance Tester (pendulum) from a NATA accredited tester.

All flooring to building entry points and areas where it is reasonable to expect wet occurrences, are to have a classification of contribution to the risk of slipping when wet of Low (W) or very low (V) in accordance with AS/NZS 4586. Note, it is considered 'reasonable' to expect that persons entering a building whilst it is raining, will continue into the building dripping water from umbrellas, bags, backpacks, clothing, shoes etc. for a distance of at least 25 metres. It is usual practice within the University for Staff and students to carry their umbrella/bag/backpack to their lecture/workplace and not to leave such items at building entries. At entries having a high pedestrian rate a floor surface with a 'V' category is preferred.

Termite Control

Anti-termite treatment shall be provided to all buildings. Depending on the application, either chemical or physical barriers in conformity with AS3660 may be employed, using the criteria used in AS3660.3 to determine the most appropriate system. In new buildings the preference is for the use of non-chemical barriers. In existing buildings, the presence of chemical barriers may necessitate the retention of the chemical method of subterranean termite control.

All tree roots which have been exposed during excavation, tree stumps, logs and timber shall be removed from the building site as described in the Brief for the building.

All workmanship and materials shall conform to the requirements of the relevant Standard.

Where chemical barriers and/or termiticides are used, all necessary safety precautions and legal obligations shall be met, to protect on site personnel during installation and building occupants from uncontrolled exposure

An MSDS for chemical termite substances must also be provided to JCU.

The Contractor shall provide the Superintendent with a Certificate of Installation in accordance with AS 3660.1 Appendix A, from the installer of the termite management system.

This certificate is to be submitted to JCU and as a minimum include the following:

- Details of termite prevention work undertaken, including a diagram where appropriate indicating location of/and materials and chemicals used
- Areas of building protected against termite entry
- Any limitations of the procedures for termite protection which may be due to the design of the building.

Stainless steel mesh barriers which comply with the requirements of Section 6 Floors and Floor Finishes of AS3660.1 are to be used to provide protection against termite entry. Stainless steel mesh barriers shall also be used between the slab edge and the wall, and across wall cavities in masonry wall structures. The use of chemically impregnated barrier systems shall not be used without the specific approval of Estate Office.

Timber used in construction should be of a type of naturally termite-resistant timbers per AS3660.

10.2 Membranes

All ground slabs shall have, as a minimum, a membrane equivalent to 300 microns Fortecon IR3 (Impact Resistance Grade No.3).

Where required by the application, floors and walls shall be fully tanked using an approved proprietary waterproofing membrane system. These installations shall be detailed and installed strictly in accordance with manufacturer's recommendations in an installation which shall be warranted in terms of both materials and workmanship. In certain applications the water testing of the completed installation may be appropriate.

10.3 Floor Finishes

Floor coverings for each area are shown in the Space Data Sheets as a guide. In selection of floor finishes the Principal Consultant shall take account of the range of conditions they will be subject to. Give due consideration to ‘resistance to pedestrian slippage’.

Non-slip, non-porous finishes shall be used on floors of all toilet areas and showers, and shall finish level with adjacent surfaces.

For heavily trafficked areas, it is highly desirable to use rubber flooring. This product can either be in sheet or tile form. A commercial grade vinyl such as ‘Tarkett’ Optima or similar is also acceptable.

Special consideration must be given to labs and other areas using chemical substances. Cove to walls shall have a solid backing.

For specific areas (e.g. theatre – sprung floor), consider the feasibility of "mechanical-jointing" of materials (as against chemical bonding) to facilitate future recovery."

Carpet

Alternative 1 Interface carpet tiles 500 x 500
Alternative 2 Onterra carpet tiles 500 x500
Alternative 3 Alternatives and broadloom by approval JCU

Other Carpet Tiles may be considered for approval by JCU. Note, brand and style should be verified as being a type that the manufacturer will accept return of at end of life for recycling at no charge to JCU.
Installation: direct stick method. Note, adhesive should be a No-VOC or Low-VOC type in accordance with manufacturers recommendations.
Carpet shall not be used in wet areas or around cold water drinking fountains to prevent or inhibit mould growth. Provide an area of non-slip sheet vinyl or tiled flooring with a minimum plan distance from the drinking fountain of 1m.

Broadloom carpet may be permitted in particular limited applications and shall be directly adhesive fixed to the concrete floor. JCU shall be consulted prior to making any decision about Broadloom carpet.

Vinyl Finishes

Vinyl shall only be used in those areas as noted in the Space Data Sheets and shall be 2mm thick **Tarkett** 'Eminent' or **Armstrong** 'Accolade'.
All vinyl flooring shall comply with the Introductory Guide HB 197:1999 published by CSIRO and Standards Australia, for slip resistance.
Corridors and circulation areas directly connecting laboratories, but not comprising primary circulation through the building, shall have vinyl finish.
All joints shall be welded. Vinyl shall be fixed to floor using adhesive equal in all respects to 'Polymer 265'.
Vinyl to wet areas such as toilets, cleaner's rooms, common rooms at servery counters, isolated basins and drinking fountains, shall be an approved non-slip safety sheet vinyl equivalent to 'Armstrong Accolade Safe Plus' with a minimum slip resistance of R10.
To wet areas where barefoot use will occur e.g. pool surrounds, change rooms, shower and drying areas, Altro T20 safety flooring shall be used.
Approved anti-static vinyl shall be installed in all areas subject to static electricity discharge eg. TER rooms, bio-boxes etc.
In areas where foot traffic noise may cause disturbance or where the foot surface needs to be softer such as physiotherapy areas where staff and students will be standing/working for long periods, 4mm 'Acoustifloor' cushion vinyl may be required.
Concrete floor slabs to receive vinyl flooring shall be properly prepared in accordance with the sheet manufacturer's printed instructions including grinding to remove ridges and all hollows filled with an approved levelling compound, to provide a clean level surface.

Ceramic Tiles & Quarry Tiles
Tiles shall only be used in those areas as noted in the Space Data Sheets.
Alternative 1 Johnson Waringa Vitrified Tiles 200 x 200 or 300 x 300mm
Alternative 2 Equivalent to above, by approval JCU. Note Section regarding required 'V' or 'W' slip coefficient of friction.

Install tiles using flexible thin-bed adhesives suited to the applications.
Particular care should be given in the selection of tiles to ensure slip resistance and serviceability.
Porous unglazed tiles are not to be used in any new installation.

All tiles shall comply with the following criteria:
Surface qualities ISO 10545-2 Length and width +/- 0.6%
Warpage of edges + or - 0.5%
Thickness + or - 0.5%
Wedging + or - 0.6%
Flatness + or - 0.5%
Water Absorption ISO 10545-3 0.5%
Modulus of Rupture ISO 10545-4 27 N/mm2
Deep Abrasion ISO 10545-6 205 mm2
Coefficient of Linear or Thermal Expansion ISO 10545-8 90 K-1
Resistance to Thermal Shock ISO 10545-9 No visible defects
Moisture Expansion ISO 10545-10 0.05%
Crazing Resistance ISO 10545-11 No visible defects
Chemical Resistance ISO 10545-13 No visible defects
Resistance to Stains ISO 10545-14 No visible defects
Slip Resistance in accordance with AS/NZS 4586. Refer to 'An Introductory Guide to Slip Resistance of Pedestrian Surface Materials' HB 197:1999 published by CSIRO & Standards Australia

Floor tiles shall be anti-slip with dark grout (charcoal or similar) and shall finish level with adjacent finishes. Careful consideration must be given to the colour selection of floor tiles to ensure an acceptable visual appearance of the tiles after cleaning as a result of the anti-slip finish.
Appropriate caulked expansion joints shall be provided as required including the junction of tiles floors with walls. All tile layouts shall be approved by the Superintendent.

10.4 Nosings, Junctions, Sealants & Trims

Nosings to edges of tiers and steps in aisles in Lecture Theatres are an illuminated type and are specified in Electrical Services section.

Provide a 50mm x 6mm flat clear anodised edge trim to the junction of the platform and riser in tiered floor Lecture Theatres. The trim is to be screw fixed to the riser at the top edge before the floor coverings are installed.
Junctions of dissimilar floor finishes shall be achieved using brass angles or strips set into the slab. Separation strips are not required between vinyl finishes and carpet tile.

Sealants
Sealants shall be selected to be appropriate for their application and shall be colour matched to the finished surface.

Joints
Joints of dissimilar floor finishes shall be achieved by utilisation of ramping using floor levelling compounds to achieve a constant finished floor surface height. Use of brass angles or strips set into the slab and fixed with epoxy cement may be considered where practicable however a constant floor height is to be achieved.

10.5 Door Mats

Door mats shall be provided at normal access doors at ground level to the building on the inside of the door. Mats shall be formed by inserting into general carpet at doorways by overlaying and double cutting door mat carpet adhesive fixed to floor.

Door mat carpet shall be Autex "Indoor/Outdoor" "Widetrack", "Images" Autex “Decord” sheet carpet or Interface Flor “Entry Level” Barrier Matting 500 x 500mm adhesive fixed as recommended by manufacturer.

Door mat extent: a least the width of the door opening x minimum 3m inside the door.
Door mats must not pose a trip hazard.

10.6 Lift

Generally apply non slip vinyl flooring to lifts. Carpet or Pirelli rubber flooring with low relief studs may be approved in special circumstances. Ceramic Tiles shall not be used in lift cars.

10.7 Access Floors

Access floors where required by the Space Data Sheets shall be a purpose made steel support frame with an accessible plywood flooring system, or proprietary system such as Tasman Access Flooring.

10.8 Plant Rooms

Floors to Plant Rooms, Lift Motor Rooms and accessible Service Cupboards shall be painted with an approved paving paint. Walls, floor and ceiling of all plant rooms shall be painted unless otherwise directed.