6 Floors and Floor Finishes

6.1 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 Section 12 Structural Design. All floors are to be finished within a maximum tolerance of +/- 3mm in a 3000mm straight edge.

6.2 Finished Floor Surface

General

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 Pendulum Test 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:

6.2.1 Functional needs

6.2.2 Cleaning and maintenance

6.2.3 Structural

6.2.4 Footwear standards likely to be worn by students & staff

6.2.5 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.

6.3 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 USP.

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 USP and as a minimum include the following:

6.3.1 Details of termite prevention work undertaken, including a diagram where appropriate indicating location of/and materials and chemicals used

6.3.2 Areas of building protected against termite entry

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

6.4 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.

6.5 Floor Finishes

Carpet

UNIVERSITY STANDARD	
Alternative 1	Interface carpet tiles 500 x 500 **Patterned Dark Grey colour with underlay**
Alternative 2	100% wool to 90% wool/10% nylon carpet **PVC Rug, Kasbah Grey Colour or selected from manufacture's standard colour, with underlay. Commercial grade; Minimum of 10-12 years service life and warranty; low flammability rating; suitable for continuous use subject to office castor chairs; Stain proof; Easy to clean and with Sound acoustic properties.**
Alternative 3	**TBC**

Other Carpet Tiles may be considered for approval by USP FM Operations Section. 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 USP.

Installation: direct stick method. Note, adhesive should be a No-VOC or Low-VOC type. Where manufacturers specification calls for a particular adhesive that isn't no or low VOC details of the proposed adhesive is to be provided to the USP Project Coordinator for approval prior to work commencing.

In high traffic areas, (such as libraries, primary thoroughfares) the use of Carpet tiles may especially be required or warranted. Determine requirement in such cases with the USP Project Coordinator.

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.

Foyers of buildings or other similar areas, where water may be tracked inside on rainy days, should allow for adequate drainage and slip resistant surfaces. See Section - Door mats
For alternate solutions seek approval from USP.

Vinyl / Linoleum Sheet adhered Floor Coverings

UNIVERSITY STANDARD

Alternative 1	**TBC after confirmation from Management on usage**
Alternative 2	

Alternative 3	

Sheet floor coverings shall have welded joints and be fixed to floor using adhesives in accordance with the manufacturer's instructions. The flooring shall be either coved up all walls, plinths and service pipes to a height of 100/150mm or fitted with black PVC skirting - refer Section 5 Internal Walls.

Approved anti-static vinyl shall be installed in any areas subject to static electricity discharge such as data rooms, bio-boxes and other specialised areas.

Any alternatives must be by approval only and should be of a type that does not need to be sealed or stripped of sealers, only swept and mopped to maintain cleanliness and good appearance.

Rubber Sheet adhered Floor Coverings

May be considered & must be accepted for use by the USP FM Project Coordinator.

Ceramic Tiles & Quarry Tiles

UNIVERSITY STANDARD	
Alternative 1	Matt **Black 600 × 600**mm **Ceramic Tiles** manufactured by **NIRO**
Alternative 2	**Matt Dark Grey 600 × 600mm Ceramic Tiles** manufactured by **NIRO**
Alternative 3	Equivalent to above, by approval USP **Manager Design**. Note Section 6.2 regarding required 'V' or 'W' slip coefficient of friction.

Ceramic tiles shall be used on floors of all toilet areas and showers including air-locks and, where required, in fire-rated passageways and general use stairs. 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:

PHYSICAL PROPERTIES	STANDARD	VALUES
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
CoefficientofLinearorThermalExpansion	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

Ceramic tiles shall be used on floors of all toilet areas and showers including air-locks and general use stairs. Floor tiles to toilet and shower areas shall be anti-slip with dark grout (**black** or similar) and shall finish level with adjacent finishes. Floor tiles to toilet and shower areas shall be minimum **300mm × 300mm** unglazed or semi-glazed.

Any existing installations of porous unglazed tiles shall be replaced or cleaned and re- sealed as part of any refurbishment works, and tested to ensure a suitable slip resistance result is achieved.

All tile layouts shall be approved by **Design Manager**

Stairs and Fire-isolated Passageways

Quarry or ceramic tiles to fire-rated passageways and stairs including stair treads and risers shall be unglazed, shall be non-slip to suit the application with tread riser and nosing tile of a contrasting colour and matching grout. Tiled stair landings shall have a matching skirting tile ½ tile high or minimum 100mm high. Appropriate caulked expansion joints shall be provided as required, including the junction of tiles floors with walls, installed in accordance with manufacturer's recommendations.

Colour selection for visual contrast shall comply with AS 1428.1 for stair tread nosings.

Stair tread nosings shall be Latham; heavy duty, slip resistant metal extrusion and purpose made for the application. Stair nosings on masonry stairs shall be recessed so that the top of the nosing is flush with the tread.

Stair tread nosings in tiered theatres shall be Latham with luminescent infill to front two bars and remaining bars sparkling black infill.

For alternate solutions seek approval from USP **Design Manager**

6.6 Joints

Joints of dissimilar floor finishes shall be achieved using brass angles or strips set into the slab and fixed with epoxy cement.

6.7 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 trip hazards.
For alternate solutions seek approval from USP **Design Manager**

6.8 Lift

Generally apply non slip vinyl flooring to lifts in accordance with Section 5 Internal Walls. Carpet or Pirelli rubber flooring with low relief studs may be approved by USP in special circumstances. Ceramic Tiles shall not be used in lift cars.

6.9 Sealants

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

6.10 Underlay

Underlay as substrates to a floor finish over, for example, existing timber floors, shall be submitted for approval, and shall only be installed used in accordance with the manufacturer's instructions.

6.11 Toilet & Shower Areas, Plant Rooms

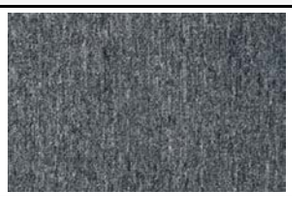
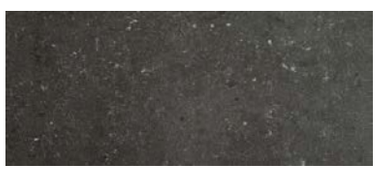
As these areas have the likelihood of being hosed down during cleaning, all toilet areas including airlocks and disabled toilets shall be deemed wet areas and are to be waterproofed to satisfy the requirements of AS 3740 for Category 1 wet areas. All wet areas are to have installed an approved impervious flooring using either copper or stainless steel tray, fibreglass reinforced acrylic membrane or purpose built base or flooring. The preferred design detail is a 50mm set-down floor slab to achieve a continuous floor level without thresholds at doorways. The set-down area is overlaid with the waterproofing membrane system and cementations screed laid to falls. The membrane should turn up at the perimeters onto the fibre cement

wall lining substrate - refer Section 5 Internal Walls. Refer to the James Hardie Bathroom Construction Fixing Manual and AS3740 Appendices A and B for indicative details.

Plant rooms having any water services (including chilled or condenser water) and or air handling units shall be bunted and tanked to cater for maintenance in changing out valves, cleaning coils etc.

6.12 Access Floors

Access floors where required by the Space Forms shall be a "Unistrut MK.25A" gridless system as required for the room function. A 150 high flat black PVC is skirting to be used.

Floor Finishes		
Item	**Image**	**Description**
Carpet		Interface carpet tiles 500 x 500 Patterned Dark Grey colour with underlay
Carpet		Interface carpet tiles 500 x 500 Patterned Charcoal Grey colour with underlay
Vinyl Flooring		SPC (Stone Plastic Composite)Vinyl Plank Flooring, Light Oak timber-look finish, commercial grade, click-lock installation, complete with acoustic underlay and accessories.
Vinyl Flooring		SPC (Stone Plastic Composite)Vinyl Plank Flooring, Light Oak timber-look finish, commercial grade, click-lock installation, complete with acoustic underlay and accessories.
Ceramic & Quarry Tiles		Matt Black 600 × 600mm Ceramic Tiles manufactured by NIRO.
Ceramic & Quarry Tiles		Matt Dark Grey 600 × 600mm Ceramic Tiles manufactured by NIRO.