



University of Wollongong

Building Elements Design Standards
Version 5 – 2 June 2015

VERSION CONTROL SYSTEM

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TABLE OF CONTENTS

7.	BUILDING ELEMENTS	5
7.1	OVERVIEW	5
7.2	DESIGN PROCESS.....	6
7.3	DESIGN AND CONSTRUCTION GUIDELINES.....	7
7.3.1	General.....	7
7.3.2	External Walls and Windows.....	7
7.3.2.1	Exterior Wall Finishes	7
7.3.2.2	Windows	7
7.3.3	Roofing	8
7.3.4	Substructure	10
7.3.5	Ceilings and Ceiling Finishes	10
7.3.5.1	Insulation.....	10
7.3.5.2	Suspended Ceilings.....	11
7.3.5.3	Ceiling Fixtures.....	11
7.3.5.4	Eave Soffit Linings	11
7.3.5.5	Plantrooms	11
7.3.5.6	Recessed Pelmet.....	11
7.3.6	Floors and Floor Finishes.....	12
7.3.6.1	Floors	12
7.3.6.2	Floor Penetrations	12
7.3.6.3	Floor Finishes - Carpet.....	13
7.3.6.4	Floor Finishes - Sheet Vinyl	13
7.3.6.5	Floor Finishes - Seamless Flooring.....	13
7.3.6.6	Floor Finishes - Ceramic Tiles.....	14
7.3.6.7	Floor Finishes - Junctions	14
7.3.6.8	Floor Finishes - Laboratory Door Thresholds	14
7.3.6.9	Floor Finishes - Door Mats	14
7.3.6.10	Floor Finishes - Colour	14
7.3.6.11	Floor Finishes - Sealants	14
7.3.6.12	Access Floors	14
7.3.7	Internal Walls, Partition and Finishes.....	15
7.3.7.1	Internal Skirting	15
7.3.7.2	Toilet and Shower Areas.....	15
7.3.7.3	Other Wet Areas	16
7.3.7.4	Security	16
7.3.7.5	Services	16
7.3.7.6	Sealants	16
7.3.7.7	Expansion Joints	16
7.3.8	Doors, Hardware and Locks	16
7.3.8.1	Door Frames.....	16
7.3.8.2	Entrance Auto Doors.....	16
7.3.8.3	Automatic Swing Door	18
7.3.8.3	External Doors	18
7.3.8.4	Internal Doors	19
7.3.8.5	Locks.....	19
7.3.8.6	Keys	19
7.3.8.7	Door Furniture	20
7.3.8.8	Push/Pull Plates and Handles.....	20

7.3.8.9	Door Closers	20
7.3.8.10	Kick Plates	20
7.3.8.11	Electro Magnetic Hold-Open Devices	20
7.3.8.12	Door Stops	20
7.3.8.13	Toilet Doors and Locks.....	21
7.3.8.14	Acoustic Seals	21
7.3.9	Furniture and Fittings.....	21
7.3.9.1	Whiteboards, Pin Boards & Directory Boards.....	21
7.3.9.2	Bookshelves for Academic Staff or Support Staff.....	22
7.3.9.3	Directory Boards and Room Names	22
7.3.9.4	Notice Boards.....	22
7.3.9.5	Lecture Theatre Fittings	22
7.3.9.6	Fixed Seating	22
7.3.9.7	Toilet Fixtures	22
7.3.9.9	Kitchenettes.....	23
7.3.8.10	Common Room Kitchens.....	23
7.3.9.11	Chilled Water Drinking Fountains.....	24
7.3.9.12	Furniture.....	24
7.3.9.13	Furniture and Equipment provided by UOW.....	24
7.3.9.14	Compactus.....	25
7.3.9.15	Curtains and Blinds.....	25
7.3.9.16	Projection Screens.....	25
7.3.9.17	Works of Art	25
7.3.9.18	Workstations	26
7.3.10	Disabled Access	26
7.3.11	Service Paths	26
7.3.12	Internal Signage	27
7.3.13	Room Numbering.....	29
7.4	STANDARDS.....	32
7.5	SPECIFICATIONS AND TOLERANCES	33
7.6	EQUIPMENT	35
7.6.1	External Walls and Windows.....	35
7.6.2	Roofing	35
7.6.3	Ceiling and Ceiling Finishes	35
7.6.4	Floor and Floor Finishes	36
7.6.5	Internal Walls, Partitions and Finishes	36
7.6.6	Doors, Hardware and Locks	36
7.6.7	Furniture and Fittings.....	37
7.7	WARRANTY	38
7.8	LIFE CYCLE COSTING.....	39

7. BUILDING ELEMENTS

The building elements are the building's shell, structure and finishes and comprise the following:

- Architectural elements
- Sub-structure
- External walls and windows
- Roofing
- Ceiling and ceiling finishes
- Floors and floor finishes
- Internal walls, partitions and finishes
- Doors, hardware and locks
- Furniture and fittings.

7.1 OVERVIEW

This design standard outlines the design and construction requirements for building elements at UOW.

New buildings and major refurbishments will require the designer to provide significant architectural, structural, and civil engineering input. However, where smaller projects are undertaken that do not require the involvement of a professional architect or engineer, the designer must consider the basic architectural and technical requirements.

The design objective shall be to construct an aesthetically acceptable and functional building or building element, which is environmentally sustainable, and energy efficient.

The designer shall use these standards as the basis for the conceptual and detailed design. However, it is incumbent upon the design engineer to ensure that the type and construction of the building elements are suitable for the facility, are cost efficient and are capable of meeting the UOW's architectural, structural and civil engineering requirements.

Where the design considers that an alternative design approach is more appropriate than that specified in the design standard, the design engineer will advise the principal of the functional, performance or cost benefit that will be achieved through the implementation of the alternate design approach.

7.2 DESIGN PROCESS

This section provides an overview of the design process. The process shall be followed to achieve UOW's desired outcomes.

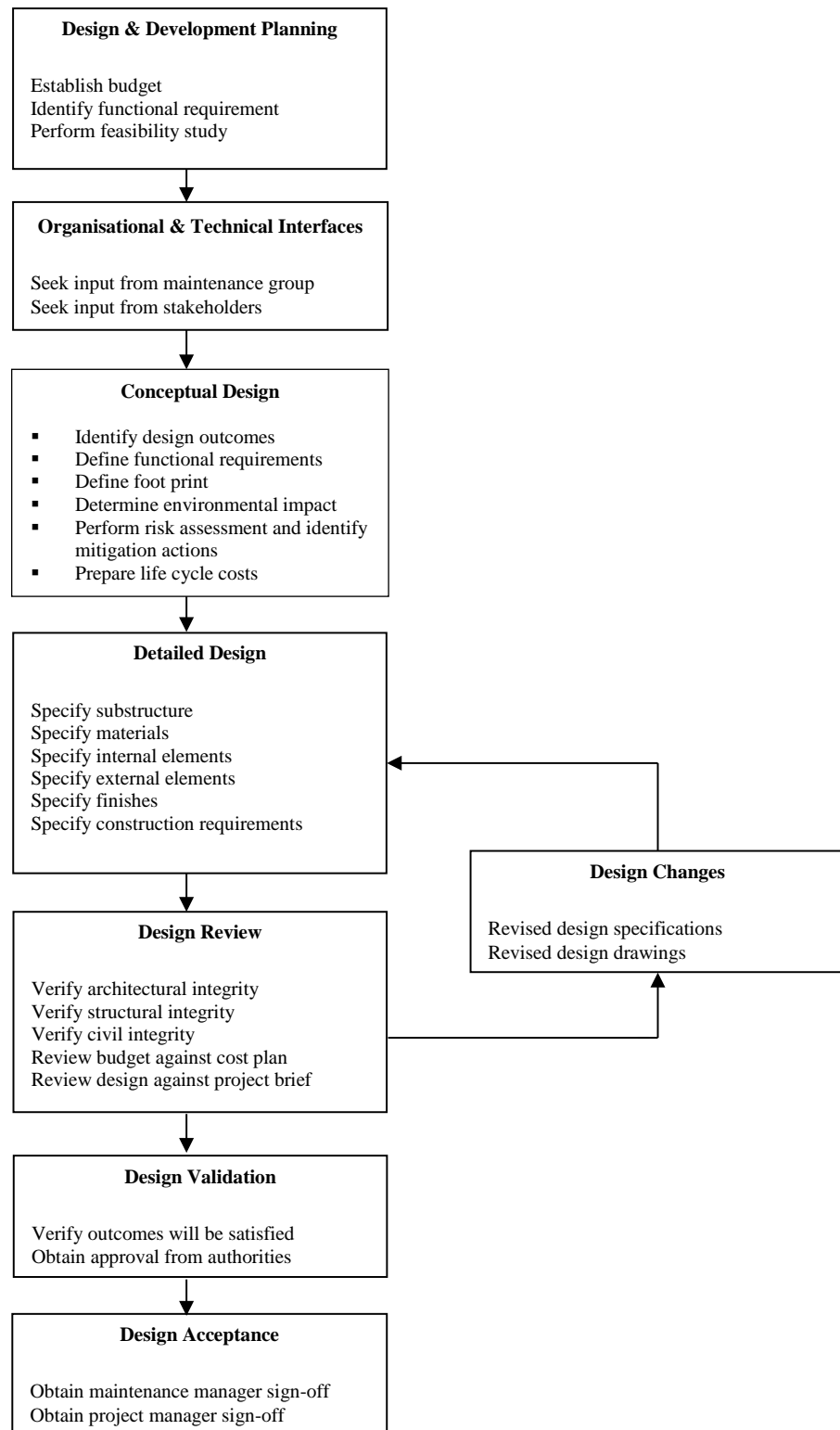


Figure 7.2 - Process Flow

7.3 DESIGN AND CONSTRUCTION GUIDELINES

7.3.1 General

The building design shall be undertaken in accordance with relevant building codes and standards. The design approach shall produce quality facilities and be consistent across each campus.

Each new building shall be designed for a minimum of seventy-five (75) years operational use, unless otherwise nominated by UOW. Samples of proposed architectural finishes shall be submitted to UOW for approval during the conceptual design stage.

The materials selected for each building element shall:

- a. Be durable and resistant to environmental conditions
- b. Support energy efficiency
- c. Not negatively impact on the environment
- d. Minimise maintenance.

7.3.2 External Walls and Windows

The cavities between the inner and outer walls shall be suitably flashed and closed with the wall material. Appropriate drainage of window sections and spandrels shall be provided.

Sealants shall be appropriate for their application and must be colour matched to the finished surface. Sealants shall not be used as the primary water barrier in any application.

Exposed steel shall be protected against environmental conditions and where the design engineer considers that the environmental conditions are not appropriate, alternate materials shall be recommended.

7.3.2.1 Exterior Wall Finishes

The exterior walls shall generally comprise brickwork and concrete or steel for accepted applications. Wall finishes shall be selected to achieve colour and texture and achieve maximum life. Applied finishes such as Granosite coating may be used to obtain the required appearance.

7.3.2.2 Windows

External windows shall be constructed from powder-coated aluminium. All exposed screw fixings, rivets and cut edges, etc must be coloured to match the frames.

Windows shall be constructed to prevent intruders gaining access from the ground.

Windows shall be factory fitted with window locks, all keyed alike. Louvre windows must be avoided where they may provide ease of intruder entry into the building.

All windows shall have provisions for blinds for the control of external light and to provide privacy.

External glass surfaces shall be accessible for internal and external cleaning. Where external access is difficult, a cleaning system or strategy must be developed and submitted to UOW for approval during the conceptual design period.

Windows to non-air-conditioned spaces shall be provided with removable black aluminium framed flyscreens.

7.3.3 Roofing

Roofing shall be selected to meet the architectural and structural preference requirements of each building. Concrete or steel roofing shall be in most cases the preferred material.

Roof flashings and fixing types shall be in accordance with the roof deck manufacturer's instructions. Flashings shall be provided to minimise the use of sealants wherever possible.

7.3.3.1 Roof Access Hatches

Roof access shall be provided from a service area or plant room. A plant room security door or a skylight designed for the purpose of providing access shall be installed to ensure safe and efficient access.

A steel ladder shall be provided where necessary to provide access to roofs. The ladder shall be located in an area that enables efficient removal and replacement of the ladder. A method to secure the ladder shall be provided to ensure that only authorised people can use the ladder. A galvanized roof ladder shall also be provided at changes in roof levels.

7.3.3.2 Roof Walkways

Roof walkways of approved construction must be provided. Where practical and particularly on trafficable concrete roofs guardrails shall be provided at the perimeter of the roof.

Where required by the provisions of the Workplace Health and Safety Act and associated regulations, fall protection devices complete with all accessories shall be provided.

7.3.3.3 Roof Spaces

All roof spaces shall have permanent, fixed, adequate access. They shall be provided with catwalks and be sufficiently lit to enable the roof space to be transverse without danger 24 hours a day.

7.3.3.4 Gutters

Self-cleaning eaves and gutters shall be provided. Gutters shall be fixed with hail and leaf guards to prevent blocking during storms.

Overflow relief provisions shall be installed to all roofs and gutters as a safeguard against flooding caused by downpipe or drain blockages. Overflows shall be discharged clear of building lines and pedestrian bridges or paths. Discharge from overflows shall be visible from the face of the building.

Overflows shall be designed so that the combined clear outlet area of the overflow exceeds the clear outlet area of downpipes serving the gutter. They must be positioned so that in the event of a gutter flooding the risk of flooding to the building is minimal.

7.3.3.5 Sumps in Concrete Roofs

The location of sumps in concrete roofs shall be located so as to take account of slab deflections.

Hail and leaf guards must be provided on all sumps to gutters. All guards must be removable. Leaf guards must project above the top of the sump not less than half the depth of the gutter. Hinged hail guards must extend for 1m each side of the sump.

Hail and leaf guards must be stainless steel and or compatible with gutter and other roofing materials. All guards must be removable to provide access for regular maintenance.

7.3.3.6 Downpipes

Downpipes shall be installed externally wherever possible. Where there is no other option than to install the downpipe internally, care must be taken to ensure access can be gained for maintenance and that a penetration of the downpipe will not result in serious building damage.

The location of all downpipe discharges and sumps shall be determined to achieve efficient maintenance. Grates shall be installed at locations to enable easy access. Rainheads installed at the top of downpipes shall have provision for overflows. Downpipes should not be hard connected at ground level.

7.3.3.7 Insulation

Insulation to roof spaces shall be provided to achieve the required level of acoustic and thermal performance.

Where condensation on the exterior of downpipes located internally is likely to occur and cause nuisance, downpipes must be insulated.

Insulation must also be provided to any downpipe where unacceptable water noise will result. Insulation must be delivered to the site in sealed bags.

7.3.4 Substructure

The designer shall ensure that the sub-structure provides adequate structural stability for the building and consideration shall be given to any future extension that may be likely.

Where below ground functional or service areas are to be provided, the designer shall ensure that the areas can be maintained effectively and provisions have been specified to prevent water penetration and other environmental problems.

The relief of hydrostatic pressure and subsoil drainage must be provided wherever necessary.

7.3.5 Ceilings and Ceiling Finishes

In new buildings, the minimum acceptable ceiling height is 2,700mm for all areas excluding corridors, toilets, storerooms and service areas where the designer shall determine the most appropriate height on a site-by-site basis. The clearance between the top of the ceiling system and the underside of any slab or beam must be not less than 600mm.

In existing buildings where the floor levels and structure do not allow a ceiling height of 2,700mm, approval must be obtained from the Project Manager for a lower ceiling.

Unless otherwise requested ceiling systems shall be a two-way grid with rigid hangers and exposed tee-bar with 1,200 x 600mm module. Wall angles shall be shadow line type.

Ceiling tiles must be mineral fibre, fine fissured, 99% humidity resistant with regular edge equal to Armstrong. The acoustic properties of the tiles must be considered in relation to the acoustic requirements of the space(s).

Where considered aesthetically appropriate, a perimeter of screw fixed plasterboard may be used provided UOW approval is obtained during the conceptual design stage of the project.

Water-resistant fibre cement or water resistant plasterboard may be used in wet areas.

7.3.5.1 Insulation

Thermal and acoustic insulation materials for IT ceiling spaces shall be a Group 1 material in accordance with the BCA and AS 150 9705 “Fire Tests – Full scale room test for surface products” or AS/NZS

3837 “Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.

7.3.5.2 Suspended Ceilings

Suspended ceilings shall be provided in all occupied areas in new buildings or in existing buildings, unless deemed inappropriate by UOW.

Ceilings shall generally be suspended as follows:

- A two-way grid suspension system with rigid hangers and exposed tee-bar;
- Tiles installed in dry areas shall be mineral fibre suitable for both air-conditioned and non air-conditioned areas;
- Tiles installed in wet areas shall be pre-painted plasterboard panels.

7.3.5.3 Ceiling Fixtures

Where light fittings, ceiling fans, speakers, smoke detectors/alarms, monitors, projectors etc are to be ceiling mounted, careful consideration shall be given to their location. The designer shall ensure that the ceiling can bear the load and that the structural integrity of the ceiling shall not be compromised by the installation.

7.3.5.4 Eave Soffit Linings

Soffit linings shall be a pre-finished material installed at eight (8) metres from the ground or less, painted fibrous cement adequately fixed and sealed against moisture penetration and corrosion may also be used.

7.3.5.5 Plantrooms

Ceilings shall not be provided to plant rooms unless required for a specific purpose. Structural elements and piped services shall be painted and steel components shall be galvanised.

7.3.5.6 Recessed Pelmet

Timber drop-pelmets may be considered in special circumstances to meet the architectural requirements. Approval must be obtained from UOW before use.

7.3.6 Floors and Floor Finishes

7.3.6.1 Floors

Floor slabs shall be designed to meet the life cycle operational requirements of the building. Floor materials shall be selected to achieve value for money and provide flexibility of use, with consideration given to long-term deflections and the need to provide for penetrations, both initially, and during the course of the building's life.

Pre and Post Stressing may only be used if prior approval has been obtained from UOW. This aspect must be clarified early during the conceptual design stage.

The need to core holes up to 200mm diameter or to provide penetrations up to 1,200mm² in selected areas at a later date shall be taken into account during design. All floors shall be finished with a maximum tolerance of +3mm in a 3,000mm straight edge.

Where specified, provision shall be made for the installation of compactus shelving.

Internal ground slabs shall be provided with an effective membrane complying with the appropriate Australian Standards turned up at the perimeter and with all the joints taped in accordance with best practice.

Floors and walls shall be fully tanked and/or drained where below ground or subject to hydrostatic pressure. Adequate provision for the relief of hydrostatic pressure and subsoil drainage must be provided wherever necessary.

Provisions for pest control shall be provided that are compatible with the floor construction.

7.3.6.2 Floor Penetrations

All floor penetrations and associated service pipes shall be sealed to control noise and water penetration between levels. Where floors are fire rated the detail proposed must comply with the required rating.

Floor wastes must be provided within all wet areas (i.e. laboratories, toilets, plant rooms, tunnels, laundries, etc) and care must be taken to ensure that adequate falls to these points are specified and achieved. Where appropriate, a perimeter kerb must be installed to contain spillages and flooding.

Penetrations of any surface must maintain the fire rating of the material being penetrated (i.e. sealant used must comply with the designed fire rating).

7.3.6.3 Floor Finishes - Carpet

Modular carpet tiles shall be used in new areas and be the nominated standard for the building. Carpet extensions to adjoining areas shall match the existing carpet.

New carpet properties shall be:

- 1,356 grams per m²;
- Heavy duty;
- In accordance with BCA flammability requirements.

All new carpet shall be laid on an underlay. Aluminium safety tread nosings shall be provided on all general stairs and circulation aisles in auditoriums and lecture theatres with carpet.

7.3.6.4 Floor Finishes - Sheet Vinyl

Vinyl shall only be used in those areas identified by UOW in the space description forms provided with the design brief.

Adhesives used in fixing sheet vinyl shall be solvent free and compatible with the vinyl selected. All joints shall be welded.

Vinyl installed in wet areas such as cleaners rooms, common rooms, at servery counters and isolated basins must be an approved anti-slip sheet vinyl covered up the walls to a height of 150mm.

7.3.6.5 Floor Finishes - Seamless Flooring

Polyurethane seamless flooring shall be used in all science laboratories where damage to floor finishes is likely due to spillage of water, chemicals or other materials likely to be used in laboratory classes or research spaces.

The seamless flooring application must cover all walls, plinths and service pipes to a height of 150mm. The polyurethane material must be UV stabilised.

Slip and chemical resistant vinyl may only be used where completely suitable for the application and manufacturers' warranties can be provided.

7.3.6.6 Floor Finishes - Ceramic Tiles

Ceramic tiles shall be used on floors in toilet areas and showers including air locks and nominated fire-rated stairs. Floor tiles to toilet and shower areas shall be anti-slip semi-glazed with matching grout and must finish level with adjacent finishes.

Tiles installed on stair treads shall be anti-slip to suit the application with tread nosing tile of a contrasting colour and matching grout. Tiled stair landings must have a matching skirt tile, minimum 100mm high. Appropriate caulked expansion joints shall be provided as required, including at the junction of tile floors with walls.

7.3.6.7 Floor Finishes - Junctions

Junctions of dissimilar floor finishes shall be achieved using aluminium angles or strips set into the slab. Separation strips are not required between vinyl and carpet tile.

7.3.6.8 Floor Finishes - Laboratory Door Thresholds

At the thresholds to all laboratory doors, an aluminium threshold seal shall be provided to the floor to prevent the flow of any water from the laboratory to other spaces in the event of flooding. The threshold must be designed so as not to inhibit wheelchair access by people with disabilities.

7.3.6.9 Floor Finishes - Door Mats

Doormats shall be provided in mat recesses at each external access point to the building. Mat recesses shall be formed by brass angles set into the concrete. Mat recesses for fire-isolated areas shall be external and must be adequately drained if exposed to weather. Mats shall be rubber backed indoor/outdoor carpet or similar design approved by UOW.

7.3.6.10 Floor Finishes - Colour

The colour of all floor finishes shall be selected in consultation with UOW prior to tender invitation.

7.3.6.11 Floor Finishes - Sealants

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

7.3.6.12 Access Floors

Where required, access floors shall be a steel system or approved equivalent.

7.3.7 Internal Walls, Partition and Finishes

Internal walls, partition and finishes shall be designed to meet the life cycle operational requirements of the building. Materials shall be selected to achieve value for money and provide flexibility of use.

Load bearing walls shall be minimised and restricted to the building core, stairwells, lifts shafts and toilets. All other internal walls and partitions shall be non-load bearing and able to be readily removed and altered at minimum cost.

Partitions and internal walls may be plasterboard on metal stud, or equivalent as required by the application.

Where appropriate, design of partitions and openings in partitions must also comply with the requirements of Australian Standard "Components for the protection of openings in fire resistant walls".

All internal walls and partitions must be designed in accordance with the requirements of Section 3.5 Acoustic Control. Partitions must be insulated with 'Dacron' or wool batts and/or double sheeted on one or both sides as necessary to achieve the required sound transmission loss between spaces.

Details at intersection of partitions and external windows must ensure sound insulation is maintained at that intersection equivalent to that of the remainder of the partition.

7.3.7.1 Internal Skirting

Black vinyl skirting shall be provided to all internal partitions except where metal skirting duct is required, where walls are tiled, or where other floor finishes turn up walls.

Metal skirting duct shall be three channel designed for 240 volts, data, video and telecommunications cabling. The duct shall be aluminium and black powder coated.

7.3.7.2 Toilet and Shower Areas

Walls in toilet and shower areas, including airlocks, shall be finished with quality ceramic tiles from floor to ceiling.

Partition walls to toilets must be a proprietary brand cubicle system with a laminated finish and be supported clear of the floor on stainless steel feet. All other fixing brackets, including acorn nuts, must be stainless steel or chrome-plated brass.

7.3.7.3 Other Wet Areas

Where sink units, tea-making facilities, cleaners' sinks or hand basins are specified, a tile splashback shall be provided. The splashback shall extend above the fixture, to the bottom edge of the fixture and past each side of full return to depth of basin until against sidewalls. All substrate materials shall be water resistant.

7.3.7.4 Security

For security purposes, all corridor partitions shall extend to the underside of slabs and be sheeted on at least one side above the ceiling line.

7.3.7.5 Services

Services shall be located in service ducts easily accessible through lockable doors. Proposed routes of service pipes shall be approved by UOW. Piped services shall not be installed in partitions and walls without prior approval by UOW.

7.3.7.6 Sealants

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

7.3.7.7 Expansion Joints

All control and expansion joints shall be caulked with approved sealants to prevent water penetration.

7.3.8 Doors, Hardware and Locks

7.3.8.1 Door Frames

Door frames shall be provided with hinges and specifications to suit the particular application.

External doorframes shall be aluminium or pressed steel. Pressed steel to be 1.6mm thick and zinc coated, rebated, fully welded and reinforced and back plated for three hinges, lock strike, door closer and two rubber buffers fitted to the lock side. All to be shop primed and installed to manufacturers recommendations.

7.3.8.2 Entrance Auto Doors

All new building entrance doors, and existing doors being upgraded, are to comply with the following requirements in order to meet the requirements for disabled access:

1. Main entrances are to use automatic opening, aluminium framed, glazed sliding doors where practicable, complying with AS 5007-2007 (Powered door for pedestrian access and egress) and AS 4085-1992 (Automatic sliding door assemblies).
2. On all occasions where the existing building perimeter is connected to the University's Electronic Monitoring and Access Control (EMAC) system, main and secondary entrances are to be linked to the EMAC system through the use of electronic locking devices and access card readers. The functional requirements of this system are outlined in the University's EMAC Design Standards. The door status shall be secure, temporary access (access card use), or automatic access (programmed time schedule).
3. All auto doors are to be fitted with an external entry key switch SK4 Lockit well, (two position spring return) with a lock cylinder keyed to UOW Security's "building entry" Bilock key system. The cylinder will be supplied by the University Locksmith.
4. Where such entrances act as required emergency exits (ie. are on paths of egress) from the building, they are to be fitted with fire trip mechanisms to override the electronic locking devices in the event of fire or other emergencies. These mechanisms shall comprise:
 - Local smoke detector, separate from the main fire detector network installed by the integrator and monitored.
 - A break-glass inside the entry. The break-glass is wired in parallel with the door open relay contacts from the access control system. When activated, the break-glass will hold the door open allowing for free egress through the auto door. The break-glass is to be monitored by the access control/alarm system.
 - A dedicated fire trip connection from the Building Fire Detection system connected to the EMAC system so that during a fire alarm the door will be programmed to "failsafe" open where the door is on a path of egress.
 - Fire trip connections shall comply with Notifier FIP connection protocols.
5. After-hours entry through auto doors shall be by use of a card reader (proxy reader) outside the door. The use of an access card shall provide a temporary override of the electric lock.
 - The card reader shall be installed between 900mm and 1200mm above ground level.

6. After hours exit through auto doors shall be by use of a 40mm green "mushroom" double pole button inside the entry. The normally closed contacts of the button shall be connected to the access control system signalling a required exit to shunt the door inhibiting a forced door alarm. The normally open contacts of the button shall be wired directly to the auto door controller also signalling a required exit, as a fail-safe backup.
 - This button is to link directly to the door controller, independently of the access control system.

7.3.8.3 Automatic Swing Door

1. Automatic swing doors are to be fitted with an electronic Mag lock, with battery back-up. Electric locks are to be "Failsafe", unlocking in the event of both a power and battery failure. Electric locks are to be connected to a dedicated or low load 240 volt 10 amp circuit. Power outlets to which the door operator is connected should be out of sight, or out of reach, to prevent use for other purposes (and thus disconnection of supply to the door).
2. In double leaf doors, the second leaf should be secured by a mag lock.
3. A means of monitoring the door status (open or closed).
4. A tumbler type switch is to be installed underneath the pelmet cover, to allow for local control of the door for servicing etc.
5. Preferred controllers are identified in the equipment schedule (University's EMAC Design Standard).

7.3.8.3 External Doors

The number of external doors must be kept to a minimum. All doors are to be self-locking. All trafficable external doors shall open in the direction of egress.

All timber external doors must be solid core. Where exposed to the weather, aluminium doors with laminated safety glass are preferred. The appropriate locking device shall be selected for the door type.

Doors shall be hung using threshold pivot function with concealed overhead closers.

Fire-rated doors shall be paint grade veneer finish mineral core with pressed metal frame. The door hardware will be suitable for the door type and rating.

In trafficable areas where doors are not fully glazed and are not required to be a fire rated, a clear glazed viewing panel shall be provided.

7.3.8.4 Internal Doors

Doors to lecture theatres, seminar rooms and similar teaching spaces and plant rooms shall be designed to meet the acoustic requirements of the room and shall include seals and double glazing where required.

Internal doors shall be plywood faced solid core, edge stripped. Doors in high traffic areas and where allowed by fire regulations, must have a viewing panel. Provide a viewing panel to all laboratory doors including fire doors, to comply with the requirements of the relevant Australian Standards.

Return air grilles in doors must be fixed with concealed screw fixings. Particular attention must be given to acoustic requirements to ensure that the acoustic integrity of the door is not compromised.

Teaching space and laboratory doors shall be minimum leaf and one-half construction and shall open outwards taking care not to swing across traffic paths. Doors to cleaners' rooms, service ducts and small storage cupboards shall also open outwards.

7.3.8.5 Locks

Door cylinders and keys shall comply with UOW's grand master key system. Locks in external aluminium glazed doors must be Lockwood 3582 Series. No locks are to be mounted in the bottom rails of doors.

Where security is required on fire escape stairs and computer labs, Lockwood 3572 Series Electric Locks activated by the building Fire Alarm System must be used and be 'fail safe'. These locks are to have key override on both cylinders in door so they remain 'fail secure', and are to be connected to a monitoring panel in an approved location.

7.3.8.6 Keys

All keying shall be specific UOW Restricted [102 Series](#) Bi-Lock 'U' profile under the UOW key plan. The keying schedule is to be agreed with the Manager Security. Key coding shall be determined in conjunction with Hildebrandt Locksmiths Pty Ltd as per University Key Control Policy.

Construction cylinders will be used during the construction of any new buildings. At Practical Completion, the construction cylinders will be removed and replaced with the bi-lock system by UOW.

The removal and replacement work shall be undertaken by UOW's locksmith and arranged for separately by UOW. Key cylinders shall be stamped with a numbering system provided by the manufacturer.

7.3.8.7 Door Furniture

Furniture for each lock shall be selected to match its application. Lever type handles shall be used and operationally integrated with the electronic security access control.

7.3.8.8 Push/Pull Plates and Handles

Push/pull plates and handles shall be installed on all main access doors, where single lever handles are not installed.

7.3.8.9 Door Closers

Door closers shall be provided to entrance doors, doors with keypads, external doors, internal doors from general office space to public corridors, lecture theatre doors and doors to all teaching spaces, plant-rooms, toilets, air-locks and fire doors.

The type shall be "hold open and delayed action" control. Door closures shall be provided between all air-conditioned zones.

7.3.8.10 Kick Plates

Kick plates shall be stainless steel, screw fixed to the outside face of inward opening doors. Where it is likely that the door will be subject to excessive damage the kick plate may be extended to the mid-rail.

7.3.8.11 Electro Magnetic Hold-Open Devices

Electro magnetic hold-open devices and sequence closers shall be provided to all fire or smoke barrier doors in high traffic areas which must automatically release the door, allowing closure in the event of any smoke or fire alarm activated at the Fire Indicator Board (refer to Fire Services Design Standard).

7.3.8.12 Door Stops

Doorstops shall be installed for any door where the door or furniture may strike a wall or other object.

Where a combination coat hook/door stop is not provided, a floor mounted aluminium/rubber doorstop shall be provided.

7.3.8.13 Toilet Doors and Locks

Cubicle doors shall be laminated on both sides and on all edges to match proprietary cubicle partitions. Hardware shall be 'Efco' or approved equivalent with stainless steel spring hinges.

Doors leading to fully enclosed sanitary compartments for people with disabilities shall comply with the Building Code of Australia and applicable Australian Standards. In the event that the clear space between the closet pan and the nearest part of the doorway is less than 1.2m, then a readily removable door shall be required.

The removal of the door shall be achieved by means of a 25mm gap between the top of the door and the head of the frame, lift-off hinges and two lifting handles mounted on the outside of the door.

7.3.8.14 Acoustic Seals

Where acoustic seals are required, they shall be recessed into the doorjamb, head and the bottom of the door wherever possible.

7.3.9 Furniture and Fittings

UOW has a policy of standardising items of furniture and fittings. Design Consultants shall take into account the existing policy in the selection and specification of all items of furniture and fittings.

Consultants shall ensure that any chairs and other furniture specifics comply with WorkSafe requirements and recommendations. Documentation by the supplier to this effect must be provided with supply.

7.3.9.1 Whiteboards, Pin Boards & Directory Boards

All whiteboards and pin boards of a fixed type and those of sliding, rotating or special nature required for the project shall be provided.

Directory boards shall generally be provided in foyers and on landings. Designers shall verify the specific requirements of individual users during the conceptual design stage of the project.

Pin boards shall be attached to the wall in the faculty/administration offices and common rooms. Pin boards shall be installed adjacent to the doorframe outside teaching rooms, seminar rooms, computer laboratories, common rooms and laboratories. Lockable pin boards are to be installed to the wall in the lift lobbies.

White boards with pen rails shall be installed in seminar rooms, computer laboratories and teaching spaces.

Notice boards shall be installed adjacent to the doorframe outside faculty/administration offices, common rooms and laboratories.

Whiteboards shall be sandwich panel of white vitreous porcelain with galvanized steel backing sheet and aluminium edge trim.

All boards must have concealed, secure fixings. These can be either 'Ramset Hollow Wall' or 'Hilti' Cavity anchors.

7.3.9.2 Bookshelves for Academic Staff or Support Staff

Where bookshelves are to be fixed to steel studwork partitions, the studwork frame shall be reinforced to support the additional load. Design consultants shall verify specific user requirements during the detailed design stage.

7.3.9.3 Directory Boards and Room Names

Provision must be made to allow space for information and directional signage including directory boards in lobbies etc. All signage shall be in accordance with the UOW Sign Standards.

7.3.9.4 Notice Boards

At least one lockable noticeboard not less than 3m in length and must be provided in each lobby.

7.3.9.5 Lecture Theatre Fittings

Lecterns shall be provided with manual controls for adjusting lighting levels, microphone volumes etc.

7.3.9.6 Fixed Seating

Fixed seating with writing tablets shall have upholstered seat pad and back pad. The tablet arms must be constructed to suit both left and right-handed people.

Provision must also be made to accommodate people with disabilities by providing wheelchair spaces. Where writing tablets are provided, the wheelchair user shall be able access the table without assistance.

7.3.9.7 Toilet Fixtures

The following shall be provided in all toilet washbasin areas:

- Vanity bench unit with full width mirror
- Coat hooks
- Paper towel dispenser with built in waste receptacle
- Hand towel dispenser with waste receptacle
- Soap dispenser over each basin or between every second basin
- General power outlet adjacent mirror

- Hand driers

In each toilet cubicle, provide:

- Toilet roll holder
- Coat hook (chrome-plated)

In each unisex toilet for people with disabilities provide:

- Grab rails
- Mirror
- Basin
- Toilet roll holder
- Coat hook (chrome-plated)
- Hand drier
- Wall mounted folding baby change table

In each shower recess provide:

- Soap holder to match fittings
- Coat hooks (chrome-plated)
- Fixed bench seat
- Shower screen door

7.3.9.9 Kitchenettes

In addition to any kitchen provided in a Common Room a small kitchenette shall be provided on each floor. The kitchenette shall contain a sink, hot and cold running water, cupboard, drainer and splashback, space for a refrigerator, microwave and a continuous boiling hot water unit above the sink, a towel rail and one set of drawers with top utensil drawer.

Sink benches shall have a pull out panel dedicated to garbage and capable of holding four plastic containers.

7.3.8.10 Common Room Kitchens

Common room kitchens shall be fitted with an approved dishwasher, a microwave and a continuous boiling water unit over the sink.

Common Room bench tops and service counters shall have laminated bench tops and coved splashbacks. In areas for dirty cup return, stainless steel tops and drip trays with drain incorporated into bench top and a hand towel rail must be provided. When provided in carpeted areas, sink areas must be surrounded by an area of impervious flooring.

7.3.9.11 Chilled Water Drinking Fountains

One chilled water drinking fountain with cup filler shall be provided on each floor level and one additional drinking fountain accessible to people with disabilities shall be provided to each floor level.

7.3.9.12 Furniture

Furniture shall generally be free standing to provide maximum flexibility. The use of built-in furniture must therefore be approved by UOW during the detailed design stage.

Built-in furniture such as cupboards and laboratory benches shall be provided. All built-in furniture units shall have a recessed base finish in black, satin laminate.

Where abutting walls, provide an integral splash back not less than 150mm high caulked to the wall. All cupboards and drawer units where required must be lockable. All built-in furniture, other than in laboratories, must have an approved finish.

Laboratory furniture shall comply with the relevant Australian Standard for the type of laboratory usage.

7.3.9.13 Furniture and Equipment provided by UOW

The University will provide the following items of loose furniture unless otherwise specified:

- Desks
- Chairs (All Types)
- Returns
- Lateral Filing Units
- Coffee Tables
- Light Desks
- Laboratory Stools
- Beds
- Filing Cabinets
- General Purpose Tables
- Refrigerators
- Stationery cupboards
- Hat and coat cupboards
- Lockers
- Microwave ovens

The University will also provide all computers, percolators, cutlery/crockery, and scientific equipment unless otherwise stated. Consultant design drawings shall clearly identify all furniture and

equipment requirements noting, as applicable, all items that are to be supplied by UOW.

Schedules listing types, finishes and quantities required shall be produced at an early stage of the detailed design to enable UOW to purchase the required items.

All electrical or electronic equipment housed inside joinery units shall be adequately ventilated.

7.3.9.14 Compactus

Compactus units, incorporating shelving or hanging rails, shall be supplied and installed as specified. Consideration shall be given to the structural design and capacity of the floor required to support compactus storage units.

7.3.9.15 Curtains and Blinds

Confirm requirements for the provision of curtains and blinds during the conceptual design stage.

7.3.9.16 Projection Screens

Projection screens for slides, overhead projection or film shall be provided in all seminar, classroom and lecture theatres as part of the Contract. Projection screens shall be installed such that the concurrent use of whiteboards in a room is not unduly impeded.

7.3.9.17 Works of Art

The design of all public areas and meeting rooms shall be suitable for the display of the University's Art Collection. Liaison should occur during the detailed design stage with the UOW Curator to designate gallery areas.

The following requirements apply to such areas:

- Designated walls in display or gallery areas should receive no direct sunlight.
- Walls generally should be free from obstructions, switches, ducts and the like to maximise the available surface area and be finished in an appropriate surface and colour.
- Lighting in designated gallery areas should provide an even illumination of walls where artworks will be displayed.
- Where incandescent lighting such as spotlights or wall washers are used, they should be dimmable to allow adjustment of the lighting level between 50 lux for works on

paper and 150 lux for works on canvas. Where spotlights are used, they must be at least 2 metres from walls.

- Where fluorescent lighting is used, such lighting must use low UV fluorescent lamps or have lamps fitted with UV absorbing polyester sleeves.
- Where UOW art works are to be located, provide hanging tracks to the length of the wall.

The UOW Curator must be consulted at an early stage on all projects where UOW artworks are proposed or located. This is essential to ensure that adequate arrangements are made to place artworks appropriately and to protect and/or relocate any affected artworks.

7.3.9.18 Workstations

Where workstations are required, they must be supplied with all required services including adequate lighting, power and data and communication connections (refer to ITS).

All workstations shall comply with all WorkCover requirements and recommendations.

7.3.10 Disabled Access

The designer shall ensure that provisions for access for people with disabilities are taken into consideration in the design and selection of all building elements.

New buildings shall comply with the requirement for access and egress for disabled persons specified in the Building Code of Australia.

Where existing buildings undergo minor refurbishments that do not require mandatory compliance with the BCA, the designer shall endeavour to provide adequate disabled access provisions where possible.

The designer shall also ensure that other legislation which is relevant to the new or refurbished area such as OH&S is also considered. In many cases the provision of access and egress requirements are not mandatory under local government act, however they are mandatory under other legislation.

7.3.11 Service Paths

The designer shall ensure that all new buildings are designed with adequate services paths for each building element and building service (also refer to the building services design standards).

The service paths shall be designed for logical use and run vertically and horizontally throughout the building. Provision for easy access shall be a key

design objective for future maintenance and the addition of new services and removal of redundant ones.

The total space allowed for service paths shall be commissioned with a minimum 50% spare capacity. As-installed drawings shall show all service paths including any provided for future usage that are not currently in use.

Where required adequate separation between services must be maintained and appropriate labelling attached.

7.3.12 Internal Signage

General Guidelines

Directional signs need to be obviously identifiable and should be placed in areas where a person reaches a decision point. They should be situated so that they do not cause obstruction and are well lit. Signs are difficult to identify and read if they are positioned against a background of low-level sunlight or artificial light.

Fixing a sign at eye level with easy access for close viewing is an advantage for all.

The legibility of signs is improved for people with low vision if light coloured lettering is set on a dark background.

To minimise glare, avoid reflective glass and ensure that the sign has a matt surface.

Tactile signs (such as embossed letters, raised pictograms and direction arrows) should only be used where they can be easily reached (1200 - 1600mm from floor).

If special signage such as Braille, tactile/raised text and large print signage is intended for visually impaired people, then reference should be made to the Building Code of Australia - 2007 (Section D3.6), Australian Standards AS1428.1 - 2001 and AS1428.2 - 1992.

Door Signage

Door signs denoting the purpose and/or allocation of the room are to be as follows:

- Signs are to be made of aluminium extruded rails containing silver grey laminated plastic panels of either 495 x 37mm for a single row of text or 495 x 50mm where two lines of text are required. If more than 2 rows of text are needed then multiple panels, or a taller custom-made rail and panel may be used, using the same colours and materials. All door signs shall be 495mm wide.

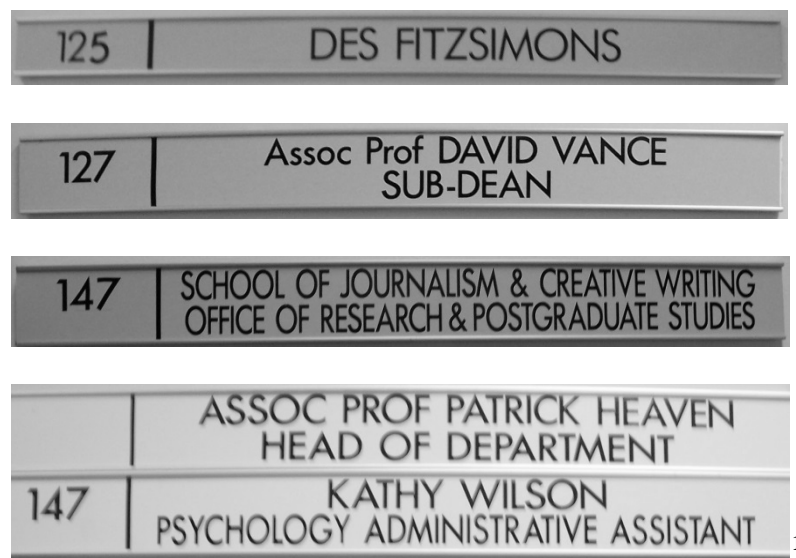
- Lettering is to be black, using the “Futura #2 medium urw” font. Letters must be 20mm high for a single line sign, or 17.5mm high for multi-line signs. The width of characters may be compressed to enable more characters across a line, up to a maximum compression of 1.6:1. They may not be expanded in width from the standard font.

The sign panel is divided into two sections by a vertical line 90mm from the left edge.

- The left section is to contain the room number.
- The right section is for the name and title of the occupant, or the name or use of the room.
- Text within each section is centre aligned

If multiple sign panels are used on one door, the room number section should be included on each panel, but the room number should only appear on the bottom panel.

Examples of Door signs:



Signs are to be attached central to the door with the lower edge of the lowest panel 1600mm above floor level.

Where signs need to be visible from the outside of the room when the door is latched open (e.g. for lecture theatres), it may be appropriate to mount the door sign on the lintel immediately above the door or on the wall beside the door (at a height of 1600mm).

¹ Note that these signs have been photographed in different lighting situations from close proximity. They are in reality all the same shade of grey and perfectly straight.

Safety Signs

Safety signage must comply with the current Building Code of Australia Design Standards (e.g. refer BCA 2007 Volume 1 Sections D2.23, E4.5, E4.6 – noting that this may be an incomplete list of references and the document may be superseded).

Fire Hydrant and other emergency facility signs require 50mm high lettering in panels matching the design used for doors (as described above).

External Signs

For external buildings signs (building names, safety signs, no smoking, etc) the lettering must be black and sized appropriately. Fonts may be chosen from:

- Helvetica medium;
- Helvetica medium condensed; or
- Trade Gothic (the University corporate font).

External signage and entrances should be clearly visible at night if the building is used after dark.

Temporary Signage

To maintain a consistent appearance, all temporary signage is to be arranged through FMD, or its preferred contractor.

Temporary signage fonts, colours and sizes may vary from the above standards, according to the desires of the requestor. However, the signwriter reserves the right to seek formal University approval should there be any concern.

7.3.13 Room Numbering

The University has an established system for allocation of room numbers which shall be adopted from the developed sketch plan stage.

The principles are as follows:

General

- The first character of the room number shall define the floor level.
- The next 2 or 3 characters shall define the room number within the floor – 2 characters generally, but 3 if it is likely there will be more than 100 rooms on the floor.
- For example rooms on the ground floor would be numbered G01, G02, etc. Rooms on the first floor would be numbered 101, 102, 103, etc (or

if more than 100 rooms on the floor G001, G002, ...1001, 1002, 1003, etc.)

- The first room number should be allocated to the first usable space encountered on entry through the main entrance of the building, and each successive number should be allocated to each room in the order they would be encountered when following the corridor. Where multiple corridors are encountered, the leftmost path would be numbered first. Where two rooms are encountered simultaneously, the leftmost would be numbered first.

Sub-Rooms

- Where rooms are accessed indirectly through another room, or might otherwise be considered as annexes of a larger room, they may be given the same room number with an alphabetic suffix, e.g. Room 204 may have two smaller rooms adjoining it called 204A and 204B.
- This numbering may also apply should a room be subsequently divided into two or more rooms, to avoid having to renumber other rooms on the floor.
- Where parts of a room are used for distinctly different purposes and there is a need to define these separate areas, such as a library room with computer desks in one area and book shelves in another where utilisation studies are aided by the differentiation, parts of the room may be given separate identities. Suffixes from the end of the alphabet are used for this. The larger part of the room retains the main room number, e.g. 142, while the other sections are identified as 142Z, 142Y, 142X, etc. As this identification is for administrative purposes, these suffixes will generally not appear on signage.

Corridors

- Corridors shall generally be numbered with the last number available in the room number sequence, e.g. G99, 2999.
- If large areas of corridor may be used for other purposes than merely accessing rooms (e.g. for tea-making facilities, function areas, public seating, etc), then the sections of the corridor may be identified using the general corridor number with a suffix from the end of the alphabet. (e.g. G99Z, G99Y, etc). It would be unlikely that these suffixes will appear on signage.

Toilets, Plant-rooms, etc.

- Toilets and smaller purpose built storerooms, cleaners rooms etc., are numbered differently. They start with the floor number, but the second character defines the type of room and subsequent numbers separate them. These numbers are only to be used for small, purpose-built rooms that are unlikely to change in purpose for the life of the building. If the purpose of a room could conceivably change from

year to year then the generic numbering system defined above should be used.

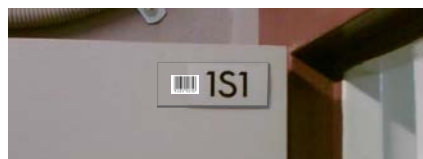
- “T” is for Toilet (e.g. GT1, 1T1, 1T2, etc).
- “S” is for Storeroom (e.g. GS1, 3S2).
- “P” is for Plant room (e.g. 1P1, 1P2).
- “C” is for Cleaners room (e.g. 2C1, GC2).
- “K” is for Kitchenette (e.g. 3K1).

Room Number on Doors

- All rooms that are given a room number in the above schema (with the exception of corridors) must have their number attached to all doors (or doorways) leading into the room.
- Room numbers may be attached to the door as part of regular door signage (as defined in 7.3.12 above, or they may be on silver grey 37mm high laminated plastic in 25mm black lettering attached near the top hinge-side corner of the door. See examples (with barcodes on) below.

Barcode Labels on Doors

A likely future is that we will use bar-code labels to assist in the mechanical identification of rooms for such things as asset management and room utilisation studies. The ideal location of such labels is on the same small laminated plastic panels attached on the top hinge-side corner of the door, used where no regular door sign exists.



Note that space should be left for bar-code labels of up to 40mm width to be added on the left or right of the text (as shown in photos).

Bar-code labels should not be attached to regular door signs (in the middle of the door) for aesthetic reasons. Where bar-code labels are to be added to doors with regular signage, the same style of laminated plastic panels, as above, should be used (at the top, hinge-side) to receive the bar-code label. This is to make it easier to remove and replace the label should the door be repainted.

Changes to Room Numbers

- Room numbering is used for several important identification purposes and any changes to room numbers must be accompanied by updates to all of the following:

- Smoke detectors ‘descriptors’ located in the Fire Panel software program.
 - Electrical schedules within DB boards.
 - Emergency lighting and exit signs software.
 - The fire block plan located at the fire panel.
 - Essential services master documentation in Facilities Management Division (FMD).
 - Door signage.
 - FMD Floor Plans.
- The overriding concern for room numbering and the building systems is to ensure that emergency systems are able to direct emergency services quickly to correct locations.

7.4 STANDARDS

The design shall comply with the latest versions of all relevant codes and standards in force at the time of specification. Table 7.1 below contains a list of the relevant codes and standards.

Issuing Body	Document Number	Title
Australian Building Codes Board	BCA 2006	Building Code of Australia
Standards Australia	AS 1428.1	Design for access and mobility
Standards Australia	AS 3084	Telecommunications installations - Telecommunications, pathways and spaces for commercial buildings
Standards Australia	AS 3080	Telecommunications installations - Generic cabling for commercial premises
Standards Australia	AS 3000	Electrical installations
Standards Australia	AS 2713	Lighting and the visual environment for screen based tasks
Standards Australia	AS 1680	Interior lighting
Standards Australia	AS 2466	Guide to the design of microform workstations
Standards Australia	AS 2946	Suspended ceilings, recessed luminaires and air diffusers
Standards Australia	AS/NZS 2785	Suspended ceilings - design and installation
Standards Australia	AS 2358	Adhesives
Standards Australia	AS 3958.2	Selection of tiling system
Standards Australia	AS 3958.1	Guide to the installation of ceramic tiles
Standards Australia	AS 1385	Textile floor coverings - Metric units and commercial tolerances for measurement
Standards Australia	AS 2454	Textile floor coverings - Definitions, terminology and structure classification
Standards Australia	AS 2455	Textile floor coverings - Laying practice
Standards Australia	AS 1884	Floor coverings - Resilient sheet and tiles - laying and maintenance

Issuing Body	Document Number	Title
Standards Australia	AS 1889	PVC floor tiles
Standards Australia	AS 1889.1	Semi rigid floor tiles
Standards Australia	AS 1889.2	Flexible floor tiles
Standards Australia	AS 3553	Adhesives for floor and wall applications
Standards Australia	AS 1170.2	Structural design actions – Wind actions
Standards Australia	AS 3660.1	Protection of buildings from subterranean termites
Standards Australia	AS 2048	Code of Practice for installation and maintenance of aluminium windows in buildings
Standards Australia	AS 1905.2	Components for the protection of openings in fire resistant walls
UOW	OHS064	OH&S Consideration for Design (http://staff.uow.edu.au/workingsafely/design/OHS064-OHS_Design_Guidelines.pdf)

Table 7.1 - Codes and Standards

7.5 SPECIFICATIONS AND TOLERANCES

The building elements shall be provided with the following:

Functions	Requirement
Anodising	> 20 microns
Gutter width	> 450 mm
Gutter depth	> 150 mm
Distance of overflow discharge from the face of the building	> 150 mm
Ceiling height (excluding service areas, store rooms and toilets)	> 2,700 mm
Distance of underside of slab or beams from ceiling	> 600 mm
Clearance between bottom of slab or beam and ceiling	> 400 mm
Ceiling tile width	600 mm
Ceiling tile length	1,200 mm
Ceramic tile width – showers and toilet areas	> 50 mm
Ceramic tile length – showers and toilet areas	> 50 mm
Plasterboard partitions lining	13 mm
Steel stud frames	> 64 mm
Insulation for partition thickness	> 60mm
Skirting duct height	150 mm
Door height	2,040 mm
Door width	870 mm
Internal door thickness	> 38mm

Functions	Requirement
Door hinge height	100 mm
Door hinge depth	75 mm
Fire door viewing panel height	600 mm
Fire door viewing panel width	600 mm
Viewing panel height in door within high traffic areas	800 mm
Viewing panel width in door within high traffic areas	150 mm
Height of viewing panel from floor in door within high traffic areas	1,400 mm
Distance of viewing panel from latch edge of the door with high traffic areas	175 mm
Door kick plate height from bottom of door	200 mm
Door kick plate width	870 mm
Door kick plate depth	0.9 mm
Door lock height above the floor	1,000 mm
Faculty/Admin office pinboard height	1,000 mm
Faculty/Admin office pinboard width	1,200 mm
Faculty/Admin office whiteboard height	1,000 mm
Faculty/Admin office whiteboard width	1,200 mm
Faculty/Admin office noticeboard height	410 mm
Faculty/Admin offices noticeboard width	410 mm
Teaching room pinboard height	300 mm
Teaching room pinboard width	450 mm
Teaching room pinboard height from floor	1,500 mm
Seminar room and computer laboratory pinboard height	1,000 mm
Seminar room and computer laboratory pinboard width	1,200 mm
Seminar room and computer laboratory whiteboard height	1,000 mm
Seminar room and computer laboratory whiteboard width	Full width of wall
Common room pinboard height	1,000 mm
Common room pinboard width	1,200 mm
Lift lobby pinboard height	1,000 mm
Lift lobby pinboard width	1,200 mm
Lift lobby lockable notice board height	1,000 mm
Lift lobbies lockable notice board width	> 3,000 mm
Coat hook height above the floor	1,800 mm

Table 7.2 - Minimum Performance Standards

7.6 EQUIPMENT

The following are considered appropriate building elements:

7.6.1 External Walls and Windows

Equipment	Type	Manufacturer	Model
Window System	65mm High Performance Sliding Window	Lidco	421 System
Window System	50mm Perimeter Top-hung Awning Window	Lidco	911 System
Window Lock	Multi Bolt Keyed Window Lock	Lockwood	Lockwood 880
Window Catches	Window Catches	Alucatch	Various
Lockable Chain Winder	Lockable Chain Winder (folding handle)	Whitco	MK8

Table 7.3 – External Walls and Windows

7.6.2 Roofing

Equipment	Type	Manufacturer	Model
Guttering	Eaves Gutter	ACE Gutters	Half Round Gutter
Downpipes	Round	BlueScopeSteel	Lysaght Downpipes
Leaf Guard	Leaf Guard	Easy Flow	Easy Flow Leaf Gaurd
Overflow Relief Pops	Overflow Relief Pops	Stratco	Custom Made
Roof Flashings	Soaker Flashing	Stratco	Various
Roof Flashings	Roof Flashings	BlueScope Steel	Various
Fall Protection	Roof Fittings	SALA	Various
Eave Soffit Linings	Pre-finished	Colorbond	Various

Table 7.4 – Roofing

7.6.3 Ceiling and Ceiling Finishes

Equipment	Type	Manufacturer	Model
Tiles - Plasterboard	1200 x 600mm pre-painted plasterboard panels	Gyprock	Freshtone
Soffit Linings	Mini-corrugated profile	BlueScope Steel	Lysaght Mini Orb
Ceiling Tiles	Mineral fibre – Dry area use	Armstrong	RH90
Ceiling Tiles	Wet area use	Freshtone	Gyprock

Table 7.5 – Ceiling and Ceiling Finishes

7.6.4 Floor and Floor Finishes

Equipment	Type	Manufacturer	Model
Carpet	Modular Carpet Tiles	Interface	Various
Sheet Vinyl	2mm Vinyl Sheet	Armstrong	Nylex
Tiles	Ceramic	Amber	Various
Door Mats	For recessed areas	Various	Various
Access Floors	Raised floor	Unistrut	Various

Table 7.6 – Floor and Flooring Finishes

7.6.5 Internal Walls, Partitions and Finishes

Equipment	Type	Manufacturer	Model
Linings	6mm Villaboard Lining	James Hardie	Various
Linings	13mm Plasterboard Lining	Boral	Standard Core
Linings	13mm Plasterboard Lining	Boral	Wet Area Plasterboard
Linings	13mm Plasterboard Lining	Boral	FireSTOP
Linings	13mm Plasterboard Lining	Boral	Wet Area FireSTOP
Linings	13mm Plasterboard Lining	Boral	SoundSTOP
Skirting	Black vinyl skirting 150mm high	Armstrong	Various
Tiles	Ceramic	Amber	Various

Table 7.7 – Internal Walls, Partitions and Finishes

7.6.6 Doors, Hardware and Locks

Equipment	Type	Manufacturer	Model
Internal Door	Timber Doors	Corinthian Doors	PMADIN
Fire Door	Fire Door	Corinthian Doors	FRDP
Mortice Lock	Short Backset Mortice lock	Lockwood	3582
Mortice Lock	Standard Backset Mortice Lock	Lockwood	3572
Electric Mortice Lock	Standard Backset Electric Mortice Lock	Lockwood	3570
Door Furniture	Brass Door Furniture (Timber)	Lockwood	2800 Series
Door Hardware	Door Hardware	EFCO	Various

Equipment	Type	Manufacturer	Model
Door Closers	Easy-Action Door Closer	Dorma	TS 83
Door Closers	Easy-Action Door Closer	Dorma	TS 73V
Hinges	Commercial Grade Stainless Steel Hinge	AuStyle	45107
Digital Keypads (Mechanical)	Key Override	Lockwood *	3572DKLK6SC 3572DKRK6SC
Digital Keypads (Mechanical)	Key Override	Borg **	Digital Ritefit Digital Lock SC
Electric Mortice Lock	Short Backset Electric Mortice Lock	Lockwood	3580 Series
Door Furniture	Brass Door Furniture Aluminium	Lockwood	5800 Series

Table 7.8 – Doors, Hardware and Locks

Note: * When removed doors must be repaired.
 ** Retrofit to existing holes.

7.6.7 Furniture and Fittings

Equipment	Type	Manufacturer	Model
Pinboard	Krommenie boards (1200mm x 900mm)	Vista	VKB209
Whiteboard	Porcelain whiteboards and aluminium frame	Various	Various
Lockable Glass Cabinet	Melamine Cabinet	White	Various
Noticeboard	Lockable Aluminium Frame Noticeboard	Comprador	Various
Book Shelf	White Melamine Book Shelf	Various	Various
*Paper Towel Dispenser (high volume amenities)	Hand Towel Roll H1 White	Tork	551000
*Paper Towel Dispenser (low volume amenities)	Hand Towel Interfold H2 White	Tork	552030
Bin (wall hung)	50 Litre B1 White	Tork	563000
* Soap Dispenser	Proline 1 Litre Cartridge Dispenser r	Deb	2127
* Toilet Roll Holder (high volume toilets)	Toilet Paper Jumbo Roll T1	Tork	554030
Toilet Roll Holder (low volume toilets)	Toilet Paper Roll Twin T4	Tork	557000
Toilet Roll Holder (disabled cubicle)	Dual Roll Controlled Delivery	Bradley	5224
Hand Driers in male/ female amenities in locations adjacent	Jet Towel Electric Hand Drier	Mitsubishi	JT-SB216JSH-W

Equipment	Type	Manufacturer	Model
to teaching venues/offices			
Hand Driers in male/ female amenities in other locations	Electric Hand Drier	Dyson	
Hand Driers in Unisex accessible amenities	Electric Hand Drier	Bobrick TrimLine	B7128
Chilled Water Drinking Fountains	In-built recessed cooler	Aqua Cooler	IBWR
Coat Hook	Chrome plated coat hook	Various	Various
Continuous boiling hot water	Instant boiling	Zip	Various
Seating	Fixed seating table arms	Camatic	Various

Table 7.9 – Furniture and Fittings

* On request can be supplied by UOW Cleaning Department (2 weeks' notice)

7.7 WARRANTY

The designer shall ensure that all components are supplied with the following minimum warranty periods:

System/Equipment	Warranty Period
Substructure	15 Years
Walls	15 Years
Windows	3 Years
Roofing	15 Years
Ceiling Tiles	5 Years
Carpet	5 Years
Vinyl Floor Coverings	5 Years
Ceramic Tiled Floors/Walls	5 Years
Paint Finishes	3 Years
Doors	2 Years
Locks	2 Years
Furniture	12 Months
Fittings	2 Years

Table 7.10 - Warranty Periods

7.8 LIFE CYCLE COSTING

The designer shall prepare life cycle costing as part of the conceptual design process. Due to the high cost of building elements and the significant difference in cost between elements it is important that the designer prepare individual life cycle costs for each of the following major group elements:

- a. Shell.
- b. Interior Elements.
- c. Finishes.
- d. Fittings.
- e. Furnishings.

Building elements can last for periods of up to seventy-five (75) years under normal conditions. Therefore the period of financial interest should be determined by the projected life of each element.

These costs will include:

- a. Materials.
- b. Initial construction.
- c. Regular and reactive maintenance.