Charles Sturt University

Revision 1.0

Infrastructure Design Standards

Module S09: Floor and Window Coverings

Division of Finance (Strategic Infrastructure)
Charles Sturt University

Document Control

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1. Introduction

1.1. Overview

The Charles Sturt University Infrastructure Design Standards (the Standards) outline the University's expectations for its built forms to achieve consistency in the quality of the design and construction of those built forms.

The Standards have been developed to provide guidance to the design team and to assist Facilities Management to drive a consistent approach to the design, construction, commissioning, handover, and operation of new capital projects to ensure the new asset is fully integrated into campus life and conforms to the University's standards and policies.

The successful integration of any new project into the day-to-day operation of campus life cannot be underestimated and is vital to ensuring the new asset provides a fully functional platform for Facilities Management clients and the University. The Standards will ensure Facilities Management is successful in supporting the University's strategic objectives now and into the future. The pitfall of viewing any new project as a standalone entity must be avoided as any new project is an extension of the existing campus.

The Standards are aligned with Charles Sturt's requisites for aesthetic appeal, life cycle maintenance and environmental sustainability, while ensuring that there is sufficient scope for innovation and technological advancements to be explored within each project.

1.2. The University

The history of Charles Sturt University dates to 1895, with the establishment of the Bathurst Experiment Farm. Formed progressively through the merge of regional institutions in south-western and western NSW, Charles Sturt was formally incorporated on 19 July 1989 under the Charles Sturt University Act 1989. As one of Australia's newer universities, Charles Sturt has been built on a tradition of excellence in teaching and research spanning more than 100 years.

With over 40,000 current students studying both on-campus and online, Charles Sturt University is the largest tertiary education institution in regional Australia. The University operates six main campuses across New South Wales in Albury-Wodonga, Bathurst, Dubbo, Orange, Port Macquarie, and Wagga Wagga, alongside specialist campuses in Canberra, Parramatta, and Goulburn. Charles Sturt University is structured around three Faculties: Arts and Education; Business, Justice and Behavioural Sciences; and Science and Health.

1.3. University Vision and Values

Charles Sturt University is committed to building skills and knowledge in its regions by offering choice and flexibility to students, while collaborating closely with industries and communities in teaching, research, and engagement. As a significant regional export industry, the University brings both strength and learning back to

its regions, positioning itself as a market-oriented institution. Its goals are to remain the dominant provider of higher education in its regions and a sector leader in flexible learning.

Charles Sturt University believes that wisdom has the power to transform communities. With perseverance and dedication, the University contributes to shaping resilient and sustainable regions for the future. Acknowledging the deep culture and insight of First Nations Australians, the University's ethos is encapsulated by the Wiradjuri phrase *yindyamarra winhanganha,* which translates to "the wisdom of respectfully knowing how to live well in a world worth living in." Through its values, Charles Sturt University fosters a welcoming community and learning environment that supports innovation, drives societal advancement, and gives back to the regions it serves.

1.4. Using the Infrastructure Design Standards

The Infrastructure Design Standards are written to advise Charles Sturt University performance requirements and expectations that exist above and beyond existing industry codes and standards.

The Infrastructure Design Standards do not repeat codes and standards.

Performance to Codes and Standards are a non-negotiable regulatory minimum of any design solution, to be determined for each project by the design team.

The Standards are to be used by all parties who are engaged in the planning, design, and construction of Charles Sturt's facilities. This includes external consultants and contractors, Charles Sturt's planners, designers, and project managers as well as faculty and office staff who may be involved in the planning, design, maintenance, or refurbishment of facilities. All projects must comply with all relevant Australian Standards, NCC, EEO as well as Local Government and Crown Land Legislation.

1.5. Modules

The Standards are divided into the following modules for ease of use, but must be considered in its entirety, regardless of specific discipline or responsibilities:

- S01 Overview and Universal Requirements
- S02 Active Transport
- S03 Acoustics
- S04 Building Management System
- S05 Electrical and Lighting
- S06 Energy Management
- S07 Ergonomics
- S08 Fire and Safety Systems
- **S09 Floor and Window Coverings**
- S10 Furniture
- S11 Heritage and Culture
- S12 Hydraulic

- S13 Information Technology
- S14 Irrigation
- S15 Mechanical Services
- S16 Roof Access
- S17 Termite Protection, Vermin Proofing and Pest Management
- S18 Security Systems
- S19 Signage
- S20 Sustainable Building Guidelines
- S21 Waste Management
- S22 Project Digital Asset and Data Requirements
- S23 Commissioning, Handover and Training

1.6. Related Documents

1.6.1. University Documents

The Standards are to be read in conjunction with the following relevant University documents, including but not limited to:

- Facilities and Premises Policy along with supporting procedures and guidelines
- Charles Sturt University Accessibility Action Plan 2020 - 2023
- Relevant operational and maintenance manuals
- Charles Sturt University Asbestos Management Plan
- Charles Sturt University Signage Guidelines
- Charles Sturt University Modern Slavery Statement
- Charles Sturt University Sustainability Statement
- Charles Sturt University Work Health and Safety Policy
- Charles Sturt University Risk Management Policy
- Charles Sturt University Resilience Policy
- Charles Sturt University Health, Safety and Wellbeing Policy

1.6.2. Federal Legislation

The planning, design and construction of each Charles Sturt University facility must fully comply with current relevant Federal legislation, including but not limited to:

- National Construction Code (NCC)
- Disability Discrimination Act 1992 (DDA)
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC)
- Work Health and Safety Act 2011

1.6.3. NSW State Legislation

The planning, design and construction of each Charles Sturt University facility must fully comply with current relevant Federal legislation, including but not limited to:

- Work Health and Safety Act 2011
- Environmental Planning and Assessment Act 1979 (EP&A Act)
- Building and Development Certifiers Act 2018
- Heritage Act 1977
- Protection of the Environment Operations Act 1997 (POEO Act)
- Design and Building Practitioners Act 2020
- State Environmental Planning Policies (SEPPs)
- Local Government Act 1993

1.6.4. Federal Regulations and Standards

- Relevant Australian or Australian/New Zealand Standards (AS/NZS)
- Safe Work Australia Model Codes of Practice
- Work Health and Safety Regulations 2011
- Disability (Access to Premises – Buildings) Standards 2010
- National Environment Protection Measures (NEPMs)

1.6.5. NSW State Regulations and Standards

- SafeWork NSW Codes of Practice
- Disability (Access to Premises – Buildings) Standards 2010
- Building and Development Certifiers Regulation 2020
- NSW Work Health and Safety Regulation 2017
- Protection of the Environment Operations (General) Regulation 2022
- NSW State Environmental Planning Policies (SEPPs)
- Fire and Rescue NSW Fire Safety Guidelines
- NSW Local Council Development Control Plans (DCPs)

1.6.6. Manufacturer Specifications and Data Sheets

All installation must be carried out in accordance with manufacturer specifications and data sheets to ensure product performance over its intended life and so as not to invalidate any warranties.

1.6.7. Project-Specific Documents

Requirements specific to a particular project, campus, or other variable, will be covered by project specific documentation, such as client briefs, specifications, and drawings. These Standards will supplement any such

project specific documentation. The Standards do not take precedence over any contract document, although they will typically be cross-referenced in such documentation.

Extracts from the Standards may be incorporated in specifications; however, it must remain the consultant's and contractor's responsibility to fully investigate the needs of the University and produce designs and documents that are entirely 'fit for purpose' and which meet the 'intent' of the project brief.

1.7. Discrepancies

The Standards outline the University's generic requirements above and beyond the above-mentioned legislation. Where the Standards outline a higher standard than within the relevant legislation, the Standards will take precedence. If any discrepancies are found between any relevant legislation, the Standards and project specific documentation, these discrepancies should be highlighted in writing to the Manager, Capital Works.

1.8. Departures

The intent of the Standards is to achieve consistency in the quality of the design and construction of the University's built forms. However, consultants and contractors are expected to propose 'best practice / state of the art' construction techniques, and introduce technological changes that support pragmatic, innovative design. In recognition of this, any departures from relevant legislation, or the Standards, if allowed, must be confirmed in writing by the Manager, Capital Works. Any departures made without such written confirmation shall be rectified at no cost to the University.

1.9. Professional Services

All projects at Charles Sturt University require the involvement of adequately skilled and experienced professionals to interpret and implement the Standards. Consultants or contractors lacking proper qualifications and licenses are not permitted to conduct any work.

1.10. Structure of Document

This document is structured into 4 sections:

Section 1 Introduction (this Section).

Section 2 General Requirements – outlines the general requirements or design philosophies adopted at Charles Sturt University.

Section 3 Supporting Documentation – Legislation, Standards, Codes of Practice, University Policies, and other applicable technical references.

Section 4 Specifications (if applicable) – materials specifications and/or preferred lists for materials, processes or equipment used by Charles Sturt University.

2. General Requirements

2.1. Overview

The Floor & Window Coverings module of the Facilities Design Standards outlines the requirements and standards tailored for Charles Sturt University's specific needs and preferences. These specifications are essential for ensuring that the interior spaces of the university buildings not only reflect our identity but also meet functional, safety, and regulatory requirements. This section provides detailed guidelines to follow when specifying, installing, and maintaining floor and window coverings. By adhering to these specifications, the University can ensure that its buildings' interiors uphold our standards of quality, sustainability, and user comfort.

All flooring materials used within the university must adhere to the fire indices and performance standards specified in the relevant Australian Standards. This ensures that the materials used in our facilities meet stringent fire safety criteria, including flame spread, smoke development, and heat release rates. Compliance with these standards is crucial for maintaining safety and minimising risk in the event of a fire. It is the responsibility of all contractors and suppliers to provide documentation verifying that their products meet or exceed these fire safety requirements, ensuring that the university's flooring systems and windows coverings are both safe and reliable.

2.2. Floor Coverings

2.2.1. Carpets

For Charles Sturt University, the selection of floor coverings, particularly carpets, requires careful consideration to meet both functional and sustainability requirements. Only carpet tiles are allowed; broadloom carpet floor finishes are considered unacceptable. There may be circumstances where broadloom carpet may be required (e.g., heritage building under architectural advice). Deviation from carpet tiles will require written approval from the Manager, Capital Works and cannot proceed otherwise. With this it is essential that floor underlay materials are fire and smoke retardant and warranted with the specified carpet tile to uphold safety standards.

When selecting carpet tiles, emphasis should be placed on heavy-duty and hard-wearing modular options with loop pile construction. Colours and patterns must be chosen with long-term flexibility and replacement in mind. To mitigate visual confusion for individuals with vision impairments, it is advisable to steer clear of complexly patterned carpets. Discussions during Gate 3 / Gate 4 should address the potential future non-availability of specific colours or patterns. Carpet finishes must be chosen from the designated manufacturer's standard product range, encompassing colours and patterns. Any customisation requires written approval from the Manager, Capital Works and cannot proceed otherwise. It's advisable to seek confirmation from the Campus Facilities Manager regarding the retention of a portion of carpet tiles for future use. Ideally, an amount equivalent to 1% of the installed area is recommended.

It is imperative that selected carpet tiles are certified under a recognised Product Certification Scheme, ensuring adherence to environmental and sustainability standards. The Carpet Institute of Australia Limited’s

Australian Carpet Classification Scheme (ACCS) offers a standardised approach for evaluating and categorising the performance characteristics of commercial carpets. Through criteria such as appearance retention, wear resistance, flammability, anti-static properties, colourfastness, and environmental impact, the ACCS provides clear and consistent information to aid architects and designers in selecting carpets that meet their specific needs.

Attention should be paid to minimise volatile organic compound (VOC) emissions, especially when choosing carpet adhesives. The significance extends beyond environmental considerations to encompass safeguarding human health. VOCs are known contributors to indoor air pollution, which can result in respiratory irritation, headaches, and allergic reactions. Prioritising low VOC carpet adhesives not only enhances indoor air quality for occupants but also underscores a commitment to promoting well-being.

2.2.1. Vinyl

Vinyl floor surfaces will be selected to provide durable, non-slip, and visually appealing finishes suitable for various levels of wear. Vinyl finishes must be chosen from the designated manufacturer's standard product range, encompassing colours and patterns. Any customisation requires written approval from the Manager, Capital Works and cannot proceed otherwise. To mitigate visual confusion for individuals with vision impairments, it is advisable to steer clear of complexly patterned vinyl floor finishes.

Areas such as staff rooms, student common spaces, and wet areas like bathrooms and kitchenettes will feature hard surfaces like sheet vinyl or approved alternatives. In lunchrooms, vinyl may be limited to specific areas near sinks, dishwashers, and wet bench spaces. For wet and dry laboratory spaces, consideration should be given to finishes with higher durability and chemical resistance. Additionally, anti-static vinyl or marmoleum is recommended for wet and dry labs, electronic laboratories, and IT/Comms Rooms.

Vinyl products must be certified under a recognised Product Certification Scheme, ensuring adherence to environmental and sustainability standards. The Vinyl Council of Australia’s Best Environmental Practice (BEP) product verification scheme acknowledges PVC items that have undergone independent evaluation to meet rigorous criteria and guidelines for PVC manufacturing. Its goal is to identify products manufactured with consideration for the environmental and social impacts throughout their life cycle.

2.2.2. Ceramic Tiles

Tile selection must meet specified slip resistance criteria, favouring fully vitrified porcelain or natural non-porous stone tiles for high-traffic commercial zones. Additionally, tiled floors in wet areas must be designed to slope toward the waste with minimal tile cutting required, and control joints should be integrated into large-tiled floor areas. Grout, essential for cohesion and cleanliness, should be a proprietary polymer-modified extra-fine variant boasting antimicrobial properties. Thorough sealing of tiles and grout is mandated to prevent unsightly staining.

2.2.3. Timber

Timber flooring is generally discouraged for use in facilities due to its high maintenance requirements, except for specific applications like gymnasium floors or specialised spaces such as performing arts areas. When timber flooring is necessary, careful consideration must be given to the substructure and choice of finish seal to suit its intended future use. Proper allowance must be made for the expansion and contraction of wood due to temperature and humidity variations. The selected timber should offer long-term durability and require relatively low maintenance. Engineered timber flooring products must meet the specified formaldehyde level limits outlined in relevant Australian Standards. It is strictly prohibited to use any endangered rainforest species in projects.

Procured timber flooring products should be certified by eco/sustainability certifying organizations, such as those accredited by the Australasian Timber Flooring Association Chain of Custody Certification (COC). This certification system ensures the traceability of wood or forest products from their origin in certified forests to their final use as timber products by consumers. In Australia, two primary timber certifying organizations, namely the Australian Forest Certification Scheme (AFCS) and the Forest Stewardship Council Australia (FSC), oversee sustainable timber practices.

2.2.4. Epoxy and Polyurethane Coatings

Though often used interchangeably, polyurethane and epoxy are distinct coatings, each with unique properties and benefits. Both are durable resin systems suitable for environments subject to physical impacts, such as university facilities and laboratories.

Epoxy coatings excel in surface tolerance and can adhere effectively to various substrates. There are different types of epoxies available, each offering specific attributes such as chemical resistance or quick curing times. Key advantages of epoxy coatings include:

- Strong Bonding to Concrete: Epoxies chemically and mechanically bond with concrete substrates, making them an excellent choice for concrete surfaces.
- Thick Build Coats: Epoxies can be applied in thick layers, allowing them to self-level and fill in cracks or imperfections, creating a smooth surface.
- Long-Term Durability: Epoxy treatments result in a harder, more resilient surface with high impact resistance, suitable for use as a primer, intermediate coat, or topcoat.

In contrast to epoxy, polyurethane coatings are softer and more flexible, which makes them suitable for surfaces that experience movement or require scratch resistance. Polyurethane's flexibility helps accommodate concrete cracks without transferring through the coating. Key benefits of polyurethane coatings include:

- UV Resistance: Polyurethanes maintain their integrity and appearance when exposed to sunlight.
- Impact and Abrasion Resistance: They offer excellent resistance to physical wear and tear.
- Gloss Retention: Polyurethane coatings maintain their glossy finish over time.
- Colour Stability: They retain their colour without significant fading.

Both polyurethane and epoxy coatings have their merits, but they serve different purposes and come with different costs. Polyurethanes generally cost more than epoxies but can be a more cost-effective choice in specific applications. Epoxy coatings are preferred for their rigidity and strong adhesion, making them suitable for hard surfaces and concrete priming. Polyurethane coatings, with their superior aesthetic qualities and protective characteristics, offer comprehensive protection for flexible and dynamic substrates.

Ultimately, choosing between polyurethane and epoxy will depend on the specific requirements of the area being coated, such as durability needs, aesthetic preferences, and exposure conditions.

2.2.5. Alternative Floor Finishes

When considering finishes beyond the previously specified options of carpet, vinyl, ceramic tile, or timber, comprehensive information regarding durability, cleaning procedures, and manufacturer warranties must be provided to the Manager, Capital Works for review and approval before their inclusion in any project.

2.3. Mat Wells

For all exterior-accessible doors, recessed doormats are a necessity. These mats can be placed indoors or outdoors, provided there's adequate weather protection. They should span the full width of the door at a minimum and ideally allow occupants to take two full steps upon them. Depending on space availability, mats may extend past the door vestibule or airlock into the building, necessitating careful consideration of floor finish transitions. The depth of the concrete recess housing the mat should be precisely constructed without reliance on packing to ensure uniform support and prevent buckling over time. Fully reversible matting is preferable to facilitate maintenance access. In fire-isolated areas, matting must possess fire-resistant properties to align with the fire rating specifications of the designated area. Collaboration with Campus Facilities Managers is required to determine any project-specific maintenance access requirements and other design nuances.

2.4. Coving

Coving is an epoxy mortar applied to the junction between walls and floors, creating a radius that integrates seamlessly with the existing floor system. This design helps prevent bacteria from accumulating in the wall-floor junction. After installation, the coving shall be coated with an impermeable epoxy or polyurethane coating system which will be selected in alignment with the functional requirements of the space. Coving is suitable for use in:

- Food and beverage production areas
- Laboratory and clinical environments
- Commercial kitchens
- Cool rooms and freezers
- Wet areas

Contractors are to ensure that coving height complies with Australian Standards and local council regulations.

2.5. Food and Beverage Spaces

Flooring in spaces designated for food preparation or assembly must meet water-resistant and greaseproof standards to adhere to the NSW Food Regulation 2015 and the ANZ Food Standard Code – Safety Standards (3.2.3 Food Premises and Equipment). Additionally, floor surfaces, including tile joints in these areas, must withstand food acids, typically achieved through epoxy grout. In areas requiring frequent wet cleaning, the chosen floor materials must remain unaffected by germicidal cleaning solutions. Construction elements such as finish, trim, floors, and walls in food preparation zones must be void of any crevices or spaces that could harbor rodents and insects, in accordance with relevant Public Health regulations.

2.6. Internal Glass Partitioning

Internal glass partitions should typically remain untreated to allow natural light to penetrate the building's internal areas freely. However, if privacy concerns necessitate treatment, decorative translucent film should be utilised in alignment with University branding standards. The use of blinds or curtains is prohibited due to their adverse effects on security patrols, passive thermal treatment effectiveness, increased maintenance, and elevated cleaning requirements, leading to higher life cycle costs. Where glass is provided, must be a portion remains clear for visual safety. Staff to refrain from covering internal glass partitions with posters or other materials. Exemptions from this approach are for research spaces and learning and teaching spaces that require variable light control along with spaces were blinds form part of a security or confidentially solution (e.g., counselling space).

2.7. External Window Coverings

External window treatment shall be selected from a commercial quality range of products that considers, ease of operation, natural light control, thermal control qualities, anti-glare issues, type of air conditioning systems, ongoing maintenance costs and ease of cleaning. Blinds shall be non-flammable in alignment with the NCC and relevant Australian Standards with installation allowing for ease of maintenance and replacement of parts.

For laboratories and learning and teaching spaces, the degree of blockout will be coordinated by the Project Officer and architects as part of the design process. Motorised blinds shall be connected to the Building Management System or Classroom Audiovisual Management System.

Utilising tinted glass is preferable over post-manufacture tinted film for added durability and efficiency. Additionally, incorporating external awnings to mitigate heat and glare reaching the glass surface should be contemplated in the design process. However, it's essential to ensure that these awnings, when installed, do not hinder the operation of window opening or closing mechanisms. If fly screens are required, the screens should form part of the window system and be easily removed from the inside for cleaning.

3. Supporting Documentation

3.1. Supporting Legislation

National Construction Code of Australia (NCC) 2022

Work Health and Safety Act 2011 (NSW)

Food Regulation 2015 (NSW)

Food Standards Australia New Zealand Act 1991 (Cth)

3.2. Supporting Standards

Standard Number	Standard Title
AS 1288:2021	Glass in buildings - Selection and installation
AS 1428.1:2021	Design for access and mobility, Part 1: General requirements for access - New building work
AS 1428.2:1992	Design for access and mobility, Part 2: Enhanced and additional requirements - Buildings and facilities
AS 1884:2021	Floor coverings - Resilient sheet and tiles - Installation practices
AS 2047:2014	Windows and external glazed doors in buildings
AS 2208:2023	Safety glazing materials in buildings
AS 2455.1:2019	Textile floor coverings - Installation practice, Part 1: General
AS 2455.2:2019	Textile floor coverings - Installation practice, Part 2: Carpet tiles
AS 2663.2:1999	Textiles — Fabrics for window furnishings, Part 2: Coated curtain fabrics
AS 3733:2018	Textile floor coverings - Cleaning maintenance of residential and commercial carpeting
AS 3740:2021	Waterproofing of domestic wet areas
AS 3958:2023	Installation of ceramic and stone tiles
AS 3959:2018	Construction of buildings in bushfire-prone areas (Amd 2:2020)
AS 4586:2013	Slip Resistance Classification of New Pedestrian Surface materials
AS 4663:2013	Slip Resistance Measurement of Existing Pedestrian Surfaces
AS 13006:2020	Ceramic tiles - Definitions, classification, characteristics and marking (ISO 13006:2018 (ED.3.0) MOD)
ISO 13746:2019	Textile floor coverings - Guidelines for installation and use on stairs
AS/NZS 1170.2:2021	Structural design actions, Part 2: Wind actions
AS/NZS 2311:2009	Guide to the painting of buildings
SA HB 197:1999	Handbook: An introductory guide to the slip resistance of pedestrian surface materials
SA HB 198:2014	Handbook: Guide to the Specification and Testing of Slip Resistance of Pedestrian Surfaces
ISO 5684:2023	Floor covering adhesives and products for flooring installation - Assessment and classification of low volatile organic compound (VOC) products

3.3. Industry Codes of Practice

Australia New Zealand Food Standards Code - Standard 3.2.3 - Food Premises and Equipment
https://www.legislation.gov.au/F2008B00577/latest/versions

Trade Practices (Consumer Product Safety Standard - Corded Internal Window Coverings) Regulations 2010
https://www.legislation.gov.au/F2010L01930/latest/text

Competition and Consumer (Corded Internal Window Coverings) Safety Standard 2014
https://www.legislation.gov.au/F2014L00363/latest/text

Blind Manufacturers' Association of Australia Industry Guidelines
https://bmaa.net.au/industry-guidelines/

The Australian Carpet Classification Scheme Fact Sheet
https://www.carpetinstitute.com.au/wp-content/uploads/2014/02/ACCSFactSheet.pdf

The Australian Carpet Classification Scheme User Guide
https://www.carpetinstitute.com.au/wp-content/uploads/Carpets086_ACCS-Use-Guide-longV16.pdf

Best Environmental Practice PVC v2.0
https://www.vinyl.org.au/images/2306_BEP_2.0_Guidelines_-_Final.pdf

Window Film Association of Australia and New Zealand
https://www.wfaanz.org.au/regulations-buildings/

3.4. University Documents

Charles Sturt University Facilities and Premises Policy
https://policy.csu.edu.au/document/view-current.php?id=465

3.5. Other Resources

Indoor Air Quality Fact Sheet
https://www.carpetinstitute.com.au/wp-content/uploads/2014/02/indoor_quality1.pdf