

The University of Newcastle

**Callaghan Campus
Public Domain Manual
September 2021**



This Public Domain Manual supersedes the University's Public Domain Manual (2015 (Rev 2020), The Landscape Technical Manual (2008) and also supersedes elements of the Landscape Management Plan (2012)

The Public Domain Manual was prepared by Spackman Mossop Michaels in consultation with the University of Newcastle (university) Infrastructure Facility Services (IFS).

Drawings and details included in this document are the approved indicative details. It is the responsibility of the installer to check geotechnical and engineering requirements and provided certification.

Rev	Date	Status	Summary of changes	Author	Released by
A	09/10/2020	Draft for UON review	-	TC/SL	MS
B	11/10/2020	Final	-	TC/SL	MS
C	13/09/2021	Minor updates and clarifications	- Clarification on X 15 Orange for eternal switchboards. - Further detail on raised pedestrian pathways - changes to kerbrail requirement on stairwells	Mathew Anderson Breen Roberts	Lynn Herd

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1.

Introduction

1.1 Overview

The University of Newcastle Callaghan Campus is located on the land of the traditional Indigenous owners, the Pambalong clan of the Awabakal nation. Callaghan is located about 10km west of the City of Newcastle and boasts a unique natural bushland character.

This Public Domain Manual (PDM) establishes a suite of products and finishes to deliver the Strategic and Master Plan vision and improve the users experience. It coordinates product choices and provides technical details to help the installation and maintenance of campus facilities.

1.2 Manual Aim

The PDM aim is to respond to the beautiful campus setting to create a contemporary bushland campus. The manual standardises the selection of materials and finishes and provides technical information to help improve efficiencies in the project delivery process. It will also coordinate product choice to facilitate maintenance and reduce operational needs.

The proposed public domain finishes and elements reflect the university values: Excellence, Equality, Engagement and Sustainability to enhance the user experience and provide an inclusive, activated, beautiful and sustainable campus



1.3 Purpose of the Manual

The PDM provides design guidelines, standard products and typical details for external materials including pavements; roads and services; structures, walls and fences; lighting; soft landscaping and outdoor furniture. It will help to improve the public domain quality, legibility and provide continuity across the Campus's diverse landscape. The purpose of the PDM is:

- Provide clear guidelines for the choice of materials and fixtures for future public domain installations and incremental spaces and facilities improvement projects
- Provide guidance to people implementing elements in the public domain
- Deliver efficiencies to the design, documentation, procurement and construction of works in the public domain
- Ensure consistency with the University of Newcastle's sustainability, master plan and development policies
- Increase engagement and consultation with student, staff, stakeholders and the community to improve public domain outcomes
- To respect and respond unique bushland campus character and protect sensitive and/or heritage places.

Application of the PDM will help ensure consistent design and quality expectations for the public realm within the Campus, whether delivered by the University of Newcastle or other parties.

Over time, this will deliver a public domain that has a coherent character, celebrates and protects the natural environment; is inclusive, activated and sustainable.



1.4 Using the Manual

The University of Newcastle PDM is a guide, reference and checklist tool for everyone involved (i.e. delivery managers) in the planning, design, approval, delivery and care of the public domain for the Callaghan Campus. Delivery managers include:

- Asset Managers and Ground Staff
- Precinct Managers
- Project Managers (internal and external)
- Planning and Design consultants

The PDM applies to all work carried out in all habitable public domain areas on the Callaghan Campus which is under the care, control and management of the University of Newcastle. The Manual focuses on the Callaghan Campus, however the elements and standard details can be used across all campuses to help unify and assist maintenance. Consideration of local character and planning control (City of Newcastle) is needed at each locality.

The Manual is to be used in conjunction with the University's Standard Details and Guidelines to ensure new works implemented are coordinated and consistent. All works must comply with Australian Standards, National Construction Code and relevant approval authorities such as Transport for NSW, Hunter Water, Energy Australia and other relevant authorities.

The PDM is structured as follows:

Section 1 - Introduction

Provides the aims, purpose and consultation framework for the preparation of the document and outlines its use and relationship with other documents.

Section 2 - The Campus Environment

Includes a description of the existing Campus including the main public domain places and circulation routes, both existing and proposed, where proposed elements apply.

Section 3 - Objectives and Principles

Describes the design considerations and objectives and principles that inform the selection of elements.

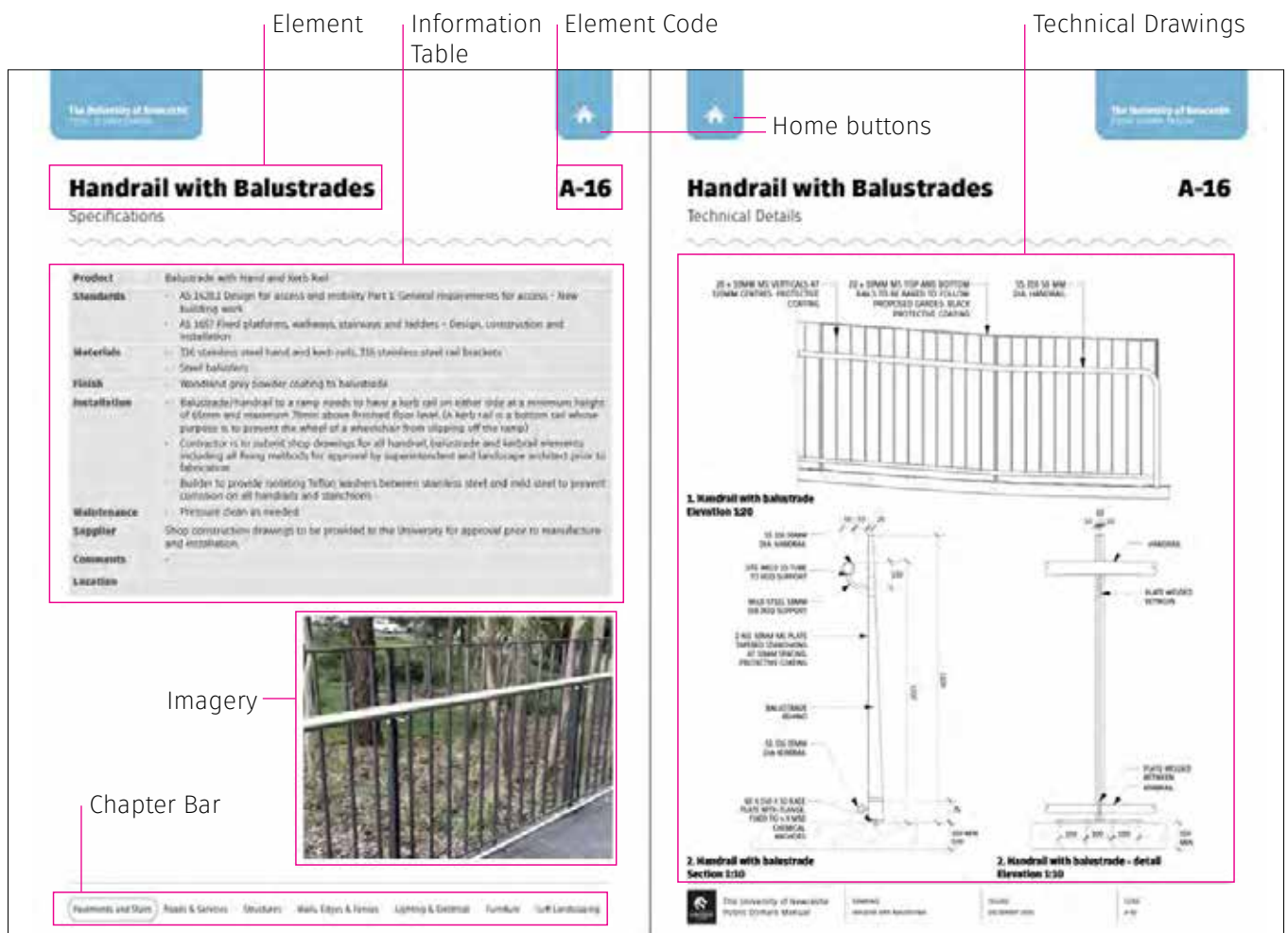
Section 4 - Public Domain Guidelines

Describes the design palette including product information, specification notes and technical details for each element.

The PDM provides standard technical details which have been approved for use. Prior to use, site investigations are required to determine geotechnical conditions and confirm structural design requirements.

The urban design palette sheets are formatted as a double page spread as follows:





Applicable Area

The Landscape Management Implementation Plan (2012) focuses on the management and embellishment of the campus and bushland. This document also relates to the Newcastle Council Tree Management DCP 2012 and Urban Forest Technical Manual (UFTM). The Management Plan provides guidelines for biodiversity bush regeneration offsets needed for pruning, tree removals and development on the Callaghan Campus. A separate Biodiversity Plan will be prepared to manage and improve the bushland areas on campus. This will supersede the Landscape Management Plan.

The PDM focuses on the habitable external campus areas and excludes the natural bushland areas. The management of native bushland areas is covered by the Landscape Management Plan - refer **Figure 1**.

Procurement Requirements

The procurement of services, products and equipment is governed by the University Procurement Policy. The purchase of nominated items must accord with Procurement Policy.

The nominated products, elements and installation details in the PDM are preferred products and details endorsed for construction. The use of alternative equivalent suppliers is acceptable. This must be done in consultation and agreement with the asset managers.

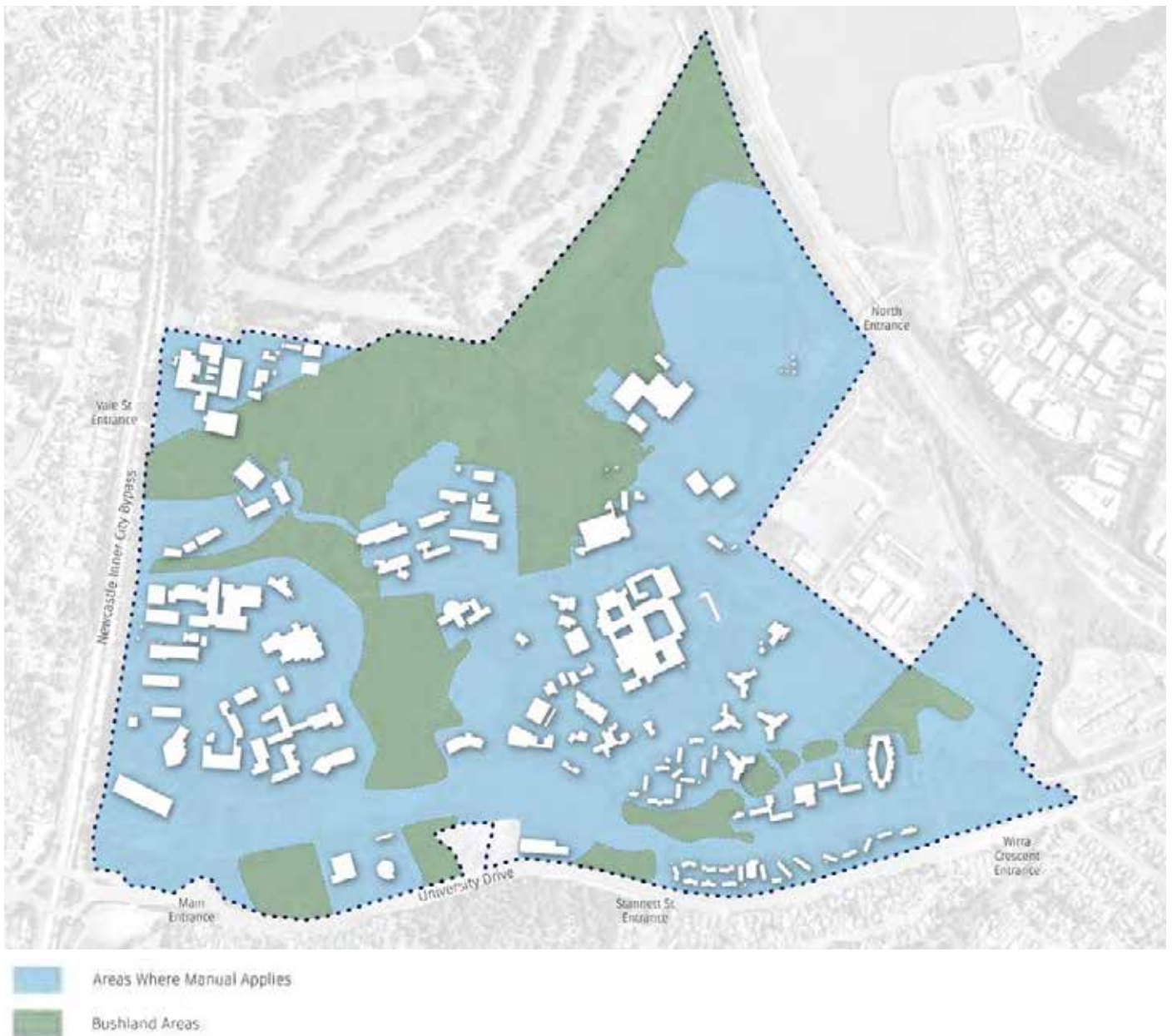


Figure 1: Applicable Areas
(Refer Landscape Management Implementation Plan)

1.5 Reviewing & Updating The Manual

Currently three Design Standards control public domain improvements and landscape management on the Callaghan Campus, which often duplicates information.

Landscape improvement works, new equipment and furniture on campus are implemented by different areas and staff within the University by either smaller asset replacement and maintenance works or as part of larger capital improvement projects. These also include external Project Managers and Design Consultants.

The PDM is a working document that will be reviewed and amended, with new elements added overtime.

It builds on the previous University of Newcastle Public Domain Manual with additions and updates. It also interfaces with and supersedes three other documents that control public domain improvements and landscape management. These include:

- Landscape Technical Manual (2008)
- Landscape Management Implementation Plan (2012) in part
- Public Domain Manual (2015 and 2020).

This update aims to:

- Streamline information duplicated in multiple documents
- Promote ownership among the various University of Newcastle departments responsible for the curation and care of public spaces
- The document and numbering aims to facilitate the easy insertion of additional elements, or deletion of obsolete elements as required.

Revision changes will be documented in the Revisions Summary.

1.6 Relationship with Other Documents

The University of Newcastle Hunter Region Master Plan (Hassell, 2019) was commissioned to establish strategic frameworks, design principles and key business objectives to inform future capital development. The Masterplan vision includes:

- Re-imagine the campus experience with public nodes as flexible event spaces to provide vibrant, engaging and community centric activity hubs
- Provide safe, inclusive and welcoming campuses with legible movement paths and improved transport options
- Provide engaging, high quality and activated campuses which celebrate and enhance the unique character of each campus
- Consolidate the student and academic campus areas to improve access, activation and liveability and encourage industry engagement and enable joint research opportunities
- Unlock the financial opportunities and improve sustainability by increasing utilisation and reducing the campus footprint and operational needs
- Activate and diversify the campus with a mix of student residential and community uses and improve connection to the surrounding community.

The PDM aim is to establish design principles and select elements which when combined achieve a coherent whole that realises the broader objectives identified in the University of Newcastle Hunter Region Master Plan and the New Grows - Environmental Sustainability Plan 2018-2025.

The PDM interfaces and is influenced by several other University Design Standards, Specifications and Plans. The PDM has referenced and is coordinated with these documents where possible, but must be read in conjunction with other Design Guidelines and Specifications as outlined in the following table:

Design Standard	Primary area of interface with the PDM
Access Design Guidelines	Accessibility and Inclusions
Lock Hardware Cylinder and Key Project Briefing Document	Gate and bollard access control
CCTV Specification	Pole types, location and external cabinets
UON-DSS-001 CAD - BIM Drafting and Document Standards	Documentation Standard
UON-ESS-101 General Electrical Specification	Electrical requirements – conduit alignment, power and charge points
UON-ESS-102 Distribution Board Specification	External cabinet location and type
UON-ESS-103 External Lighting Specification	Lighting pole type and position
UON-ESS-112 Main Switchboard Specification	External cabinet location and type
Environmentally Sustainable Design - Project Briefing Document V2	Scope inclusions and material selections
Bushfire Fire Risk Management Plan	Material selection and planting structure
UON Tree Management Procedure for Callaghan Campus	Tree Management, removals process and outset requirements
IT Communication Technical Specification	Help Point, CCTV, Pole types and external cabinets
Landscape Management Plan (Until superseded by Biodiversity Plan)	Interface and management of bushland areas. Tree Management, removals process and offset requirements
Signage Guidelines	Wayfinding and Identification signage

Other plans include:

- New Grow Environmental - Sustainability Plan 2018 - 2025
- Landscape Management Implementation Plan 2012 - Ecological Communities and Plant Palette

There may be conflicts between the National Construction Code, Australian Standards, Design guidelines, authority or statutory requirements. Where a discrepancy has been identified; advise and seek direction from the Asset Manager/s.



2.

Campus Vision

2.1 Vision

The University Strategic Plan 2020-2025 establishes a vision to re-image our campuses. The vision is to create activated, inclusive and welcoming campuses with collaborative learning environments, research facilities and recreational opportunities for students, staff and the community.

The University values included below set the standards expected, encouraged and nurtured in students and staff. They guide decision-making and position the University to achieve its purpose.

Excellence - Pursue the exceptional and strive for innovation in teaching, research and operating environment.

Equity - A commitment to equity, diversity and inclusiveness is fundamental to everything the university does. It believes that every person has the right to participate and succeed.

Engagement - Staff, students, alumni and communities are deeply connected to the challenges and opportunities in the region and beyond.

Sustainability - The university is ethically minded and prioritises responsible management of the environment and financial resources

These values underpin what the University does and shape how it delivers projects to provide a vibrant, engaging and beautiful campus which improves the student experience.

2.2 Objectives

The physical campus is an important aspect of university life. The PDM responds to the beautiful campus setting to create a contemporary bushland campus. The public domain finishes and elements reflect the university values - Excellence, Equality, Engagement and Sustainability - to enhance the user experience and provide an inclusive, activated, beautiful and sustainable campus. The PDM objectives are:

- Provide an inclusive, welcoming and safe campus for students, staff, visitors and the community
- Respectfully acknowledge the traditional landowners and engage with Country and culture to create a meaningful and rich campus environment
- Protect and respond to the campus character
- Support the university business; meet WHS requirements; enhance well-being and improve the student experience
- Improve environmental performance and sustainability and increase biodiversity on Campus
- Create a legible, beautiful and unified public domain
- Maximise life-cycle and maintenance benefits; and reduce capital and operational costs.



2.3 Design Principles

The following principles are based on the University's values and have guided the development of the public domain palette and selection of materials and fixtures:



Achieves Design Excellence

The University aims to achieve a level of design quality that is above and beyond standard practice. This includes:

- High quality design that contributes significantly to the overall impression of campus character
- Achieving, at a minimum, relevant and applicable standards for public domain use
- Avoiding a formulaic approach by promoting site specific design with bespoke, as well as standard University elements
- Embracing technology, including 'Green' technologies, allowing everyone to remain 'connected' whilst in the public domain.



Responds to Existing Character

The PDM focusses on creating the desired image of a vibrant and contemporary 'bushland' campus by providing:

- A unified and coordinated palette of materials and fixtures that promote a distinctive bushland character across campus
- A focus on modern, robust, simple and elegantly detailed designs
- Visual compatibility with existing materials and fixtures to allow for staged improvements.



Maximises Environmental Performance and Life-cycle

The University aims to pursue a sustainability approach to the planning, design and implementation of public domain works by:

- Sourcing materials with low embodied energy and prioritising locally sourced elements to reduce transport costs and to support the local community
- Basing plant species selection on suitability to location, drought, heat and wind tolerance; resistance to pathogens; low water and maintenance requirements; shade provision, life span and habitat embellishment
- Use endemic native plant species where possible
- Selecting repairable furniture
- Maximising waste diversion from landfill
- Choosing recycled materials
- Selecting materials with the ability to withstand climatic conditions and everyday wear and tear, and to resist or deter vandalism
- Undertaking water sensitive urban design (WSUD) principles including water recycling and reuse, and permeable paving
- Considering initial capital cost and ongoing capital costs
- Investigating availability of volume pricing and competitive pricing.



Engages with Country and Culture

The University has a proud record in Indigenous higher education, innovation and engagement with the Indigenous community. The planning process should include:

- Indigenous people either leading or co-leading the Indigenous elements of any design
- Engagement with and guidance by the Aboriginal community and recognised knowledge holders
- Consultation with local Indigenous knowledge holders to gain permission before using more sensitive ideas such as the symbolism, patterns, etc, which constitute cultural intellectual property.



Inclusive to all

The University highly values inclusiveness for all students, staff and visitors to the Campus, so that people can gain access and fully participate in the public domain. The design of the public domain should:

- Provide sufficient space for access to movement around and within the selected furniture and fixtures
- Allow for co-location of accessible alongside non-accessible furniture
- Allow for all pathways to be accessible through the appropriate choice of materials, running and cross slopes, landings and tactiles
- Avoid the need for separate 'accessible' items wherever possible and practical
- Be fit for purpose at the required locations
- Focus on comfort and usability.



2.4 Design Considerations

The selection of materials, fixtures and fittings in the PDM is informed by a number of legislative Acts, standards and other requirements to provide a safe and equitable environment for all Campus users.

Applicable requirements documented in Workplace Health and Safety legislation, Disability Discrimination legislation, State Environmental Planning legislation, Commonwealth and State legislation, National Construction Codes (NCC), the Building Code of Australia (BCA) and Australian and New Zealand Standards (AS/NZS) are the minimum and mandatory compliance requirements.

2.3.1 Australian Standards and other Guidelines

The design, selection and placement of public domain elements shall, at a minimum, conform to relevant Australian Standards, Austroad Guide to Road Design and Transport for NSW specifications.

2.3.2 Disability Discrimination Act Compliance

The Commonwealth Disability Discrimination Act 1992 provides protection for everyone in Australia against discrimination based on disability. As part of its commitment to providing accessible physical infrastructure for its students, staff and visitors, the University of Newcastle has produced an Access Design Guideline (2018). Its purpose is to provide an institution-specific Access Design Guideline for physical infrastructure at the University of Newcastle. It aims to provide a standard suite of access requirements that can be used to guide improvements with the University, and to provide all University staff with a clear understanding of legislative and institutional-specific requirements which should be applied to access of physical infrastructure.

2.3.3 Bushfire Requirements

The existing vegetation and bush campus character are unique; however, it also creates a fire risk.

The bushfire risk varies depending on location and its proximity to bushland which is managed as part of the day to day campus operation. This works includes reducing fire load material; and clearing and management of vegetation to provide separation and establish Asset Protection Zones (APZ).

Careful consideration of vegetation structure (height and density) and material types is required when selecting materials and in planting design as part of the project delivery. Materials will be durable, UV stable and where possible non-combustible.

A Bushfire Risk Management Plan has been prepared for Callaghan and Ourimbah Campus to identify bushfire zones and Bushfire Attack Levels (BAL). Materials, product selection and designs must accord with the Bushfire Management Plan. The Rural Fire Services also has significant resources about building best practice in bushfire areas.

2.3.4 Crime Prevention Through Environmental Design

The Crime Prevention and the Assessment of Development Applications guidelines (NSW Department of Urban Affairs and Planning, 2001) outlines four principles for minimising the opportunity for crime in the design of a building or place:

- Surveillance
- Access control
- Territorial reinforcement
- Space management

Surveillance

The principle of surveillance aims to reduce the attractiveness of crime targets by providing opportunities for effective surveillance by:

- Providing clear sight lines between public and private places
- Effective lighting of public places
- Landscaping that makes places attractive, but does not provide offenders with a place to hide or entrap victims.

Access control

The principle of access control aims to minimise opportunities for crime and increase the effort required to commit crime through design cues that attract, channel or restrict the movement of people through a space.

Territorial reinforcement

The principle of territorial reinforcement aims to reduce opportunities for crime and increase risk to criminals by encouraging the sense of community ownership of a space.

Space management

Linked to the principle of territorial reinforcement, space management ensures that space is appropriately utilised and well cared for. Any design should aim to minimise the need for, and facilitate the ease of, maintenance through:

- The choice of durable materials and finishes that can withstand the inevitable wear-and-tear of public use with minimal maintenance. Where maintenance is necessary, the finishes can generally be repaired on site
- Consistent application of a restricted suite of public domain furniture (bins, bollards, lights, drinking fountains), with coordinated finishes and colours, that facilitates maintenance and repair by limiting the range of spare parts required
- Ease of access to all parts of the Campus for maintenance staff and equipment.

2.3.5 Hostile Vehicle Terrorism

Where large groups of people gather in a public area such as a university campus, there is a potential risk of a vehicle being used for a terrorist act or hostile vehicle terrorism (HVT). Security advice suggests the likelihood of HVT at the Callaghan Campus is low. It is likely to increase in more populated areas such as the Newcastle CBD, commercial and retail hubs and events.

A HVT event is more likely to occur on 'soft targets' with large volumes of people in open areas where a vehicle can approach at high speeds. The use of barriers, bollards and furniture to impede direct vehicle routes and reduce speeds can decrease the risk and likelihood of a HVT event.

2.3.6 Statutory Planning

Universities are classified as Public Authorities for the purpose of the State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017. This allows the University to undertake certain development without the need for consent from a consent authority.

In the Infrastructure State Environmental Planning Policy (ISEPP) identified Landscaping is classified as Exempt Development.

As part of the implementation process, the person responsible for the project delivery should:

- Review scope of works and check the planning approval pathways
- Confirm the approval requirements
- Document or obtain consent (EIS, REF or Development Application)
- Achieve compliance with planning legislation.

2.3.7 Designing with Country

The University of Newcastle is a leader in Indigenous education and employment, and a diverse and welcoming multicultural space whose students and staff are Aboriginal and Torres Strait Islanders, global citizens, locals and those from our region.

The Indigenous Higher Education Framework and the Reconciliation Action Plan establishes and coordinate Indigenous activities, programs and projects on campus. Projects should strive to reconnect place, culture and country, however must be done respectfully, and in consultation with Elders and the Wollotuka Institute.

Careful consideration about cultural appropriation is needed to ensure projects and artwork are appropriate to the local Nations. The Australian Council for the Arts has released a guideline to address key legal, ethical and moral considerations for the use of Indigenous cultural material in the arts. The protocols are a useful resource for anyone working with First Nations artists or within the First Nations arts and cultural sector.

2.7.8 Consultation

The University Strategic Plan 2020-2025 establishes our values of Excellence, Engagement, Equity and Sustainability and a vision to re-imagine our campuses. The vision is to create activated, inclusive and welcoming campuses with collaborative learning environments, research facilities and recreational opportunities for students, staff and the community.

The physical campus is an important part of university life for students and the Callaghan campus is a unique workplace for staff and visitors.

At any one time there could be over several thousand people on our main campus at Callaghan and a key component in creating an engaging, inclusive and activated public domain is giving people the opportunity to help shape their built environment in order to build these connections.

Consultation involves actively seeking the opinions of interested and affected groups and is a two-way flow of information. A genuine engagement and consultation process will help ensure a project, space or new facility will meet a diverse community's needs. This process will also ensure an increase usability and enjoyment by forming connections and instilling a sense of pride in the campus and organisation alike. An effective and genuine consultation process will also save potential time and costs of rework to under-utilised facilities.

The use of an Engagement and Consultation Framework in projects from the start will assist with the selection of the level of participation that defines the stakeholders role in any community engagement program. Ensuring effective consultation will ensure better outcomes for the project and better outcomes for the users of the project.



2.5 Campus Environment

The University of Newcastle's Callaghan Campus is located on the land of the traditional Indigenous owners, the Pambalong clan of the Awabakal nation. It is about 10 kilometres west of the Newcastle Central Business District.

The site is bounded by the Hunter Line rail corridor to the north, University Drive to the south, and the Newcastle Inner City Bypass and Shortland Waters Golf Club, to the west. The 140-hectare campus is bisected by the Bowinbah and Boatman Creeks and wetlands.

Historically, the main campus area was on the western Shortland portion of the site with the student residences located on the eastern side. The central Hunter Precinct was allocated for the Teachers' College. The University and College grew almost in parallel, however with Federal Government reforms the University and Teachers' College were amalgamated in 1989.

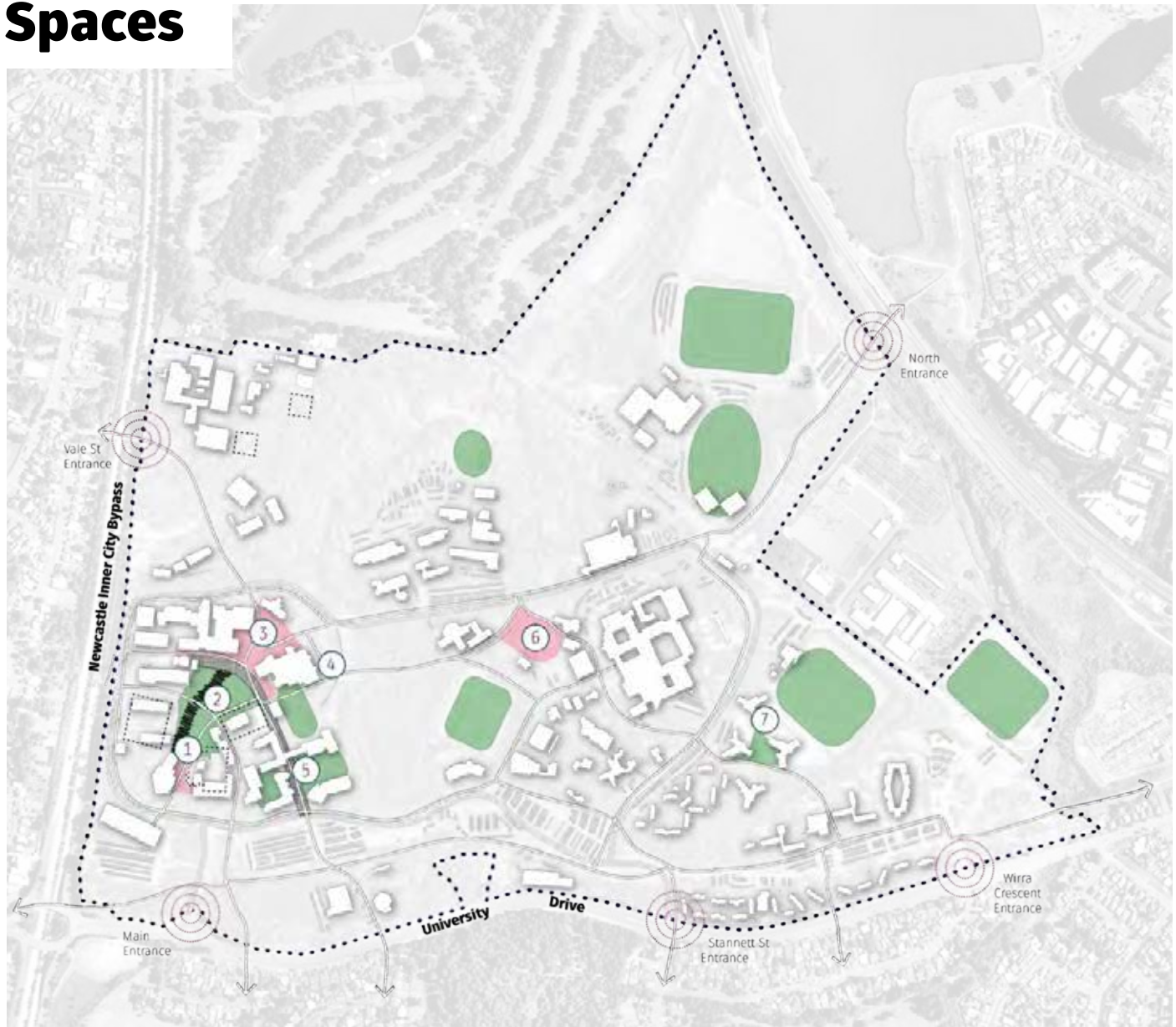
The early 1990's the Hunter and Shortland campuses were consolidated into a single entity and the bushland campus vision was established with extensive re-vegetation planting. New link paths and pedestrian bridges were implemented over the wooded creek gullies to connect the three precincts along the upper slopes.

The Callaghan Campus is an exemplary model of the Australian bushland campus. Paths weave through a wooded canopy and buildings are set within the natural environment. The native flora and fauna covering the campus contribute to the character and identity of the University.

In keeping with the ethos of the bushland campus model, building development has until recently has been low-density and grown in intermittent phases with individual building projects spread across the 140-hectare site. This has resulted in isolated and introverted structures with a complex web of paths, poor access, and a general lack of vibrancy.

Due to the large campus size and to address equality and operational issues, large car parking areas are provided right into the campus core which has created a car dominated environment with poor pedestrian amenity and safety.

Spaces



- | | | | |
|---|-----------------------------------|---|-------------------------|
|  | Parking |  | Campus Gateway |
|  | Lawns & Active Recreation |  | The Great Lawn |
|  | Alumni Walk |  | Auchmuty Plaza |
|  | Primary Path (Smart Path Network) |  | Shortland Social Space |
|  | Shortland Walk |  | Outdoor Learning Lounge |
|  | Future Building |  | Park On The Hill |
|  | Campus Plazas |  | Resident Event Space |



The beautiful bushland character helps unify the campus, however the multitude of different materials and fixtures used degrades the user's experience and reduces legibility and wayfinding around the Campus.

2.5.1 Campus Spaces

The University's Hunter Region Master Plan describes the intention to create a number of distinct precincts around the Campus with specific functions and activities. These Campus spaces include the public spaces on campus that foster social interaction. They are spaces where students, staff, faculty and visitors can meet and interact on formal, ceremonial or primarily informal occasions. These spaces are fundamental to the fostering of an inclusive and engaging campus social environment. They are also critical to the overall impression of campus character and the projection of the desired 'vibrant, contemporary bushland campus' identity.

The Master Plan vision is for these places to be individually designed with an overarching view to enhance the overall student experience, and to better support the way we need to work. Each precinct will be part of a balanced ecosystem which enables multidisciplinary practice, a vibrant student experience, a centralised and navigable campus, and fit for purpose facilities.

2.5.2 Planting

The vision is to provide a contemporary bushland campus with canopy trees and low ground plane with green lawns and lush, native plants ground cover and shrub spaces.

The landscape planting should provide a range of experiences and maximise diversity with seasonal flower and colour display to improve vibrancy and visual amenity on campus as well as and providing habitat. The use of mid-level (1.5m-4m high) plant species should be reduced and avoided in the core public campus areas to provide good sight lines to help wayfinding, activation, safety, and security.

Regeneration and planting activities in the Bushland areas will be covered in the Biodiversity Plan (Landscape Management Plans 2012) to protect threatened species, increase diversity, create habitat, and improve the ecological value on campus.

2.5.3 Legibility, Access and Circulation

Circulation spaces are the predominant public spaces on campus, providing connections for pedestrians, cyclists and vehicles between campus buildings and key activity centres. In general, it is evident that the campus circulation spaces currently prioritise vehicles over pedestrians and cyclists.

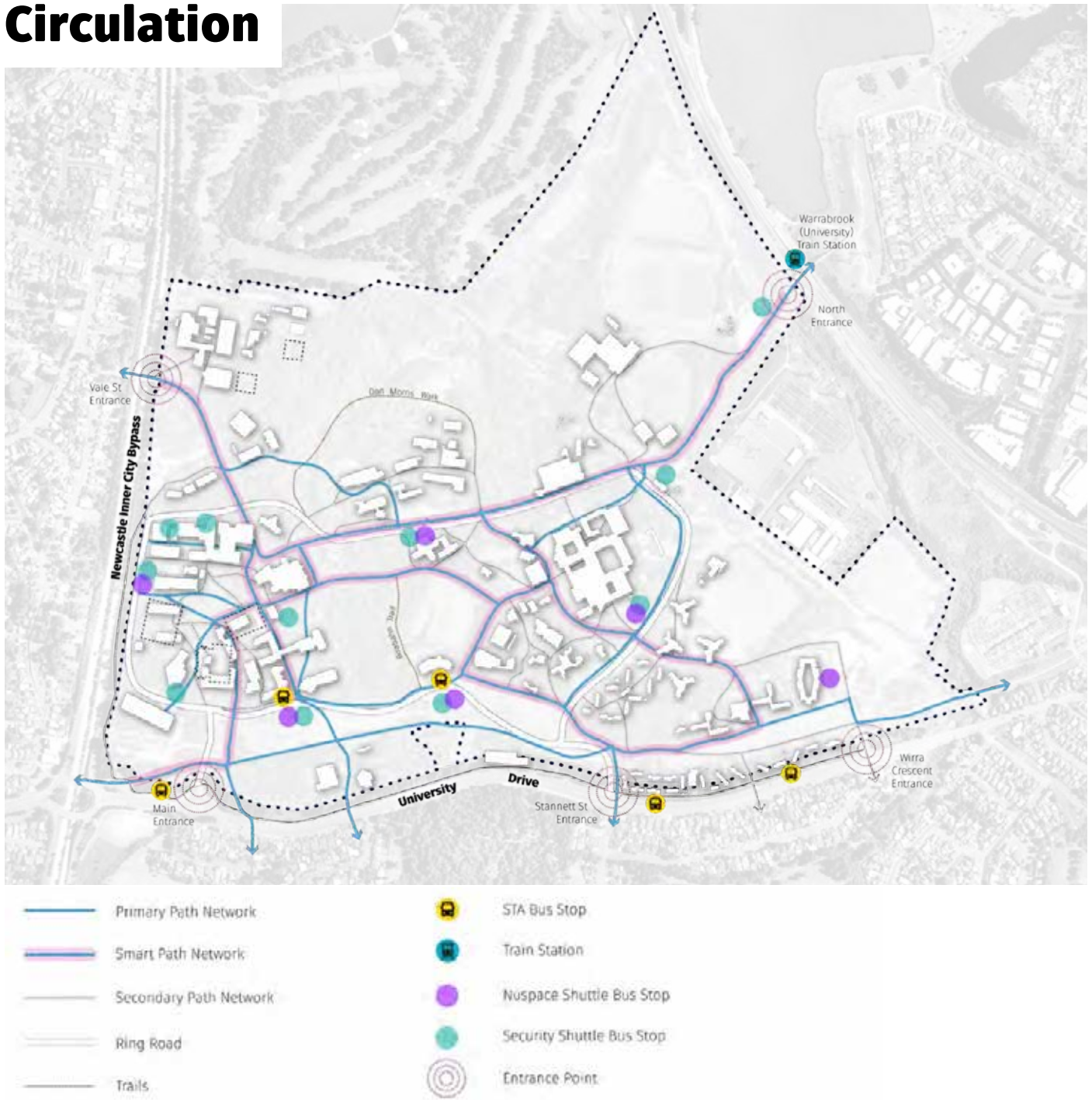
The University's Hunter Region Master Plan and recent facilities development on campus have sought to redress this imbalance – through a Movement Strategy that aims to prioritise pedestrians by:

- Maintaining the campus vehicle ring road and entrance and exit points through to University Drive
- Using the campus ring road as a demarcation area for an internal pedestrian priority zone that restricts vehicle entry where possible
- Locating new car parking facilities outside the campus ring road
- Continuing to deliver the smart path strategy co-locating night-time teaching activities
- Continuing to provide the University's internal bus service for the campus and strengthen the prominence and convenience of public transport stops
- Working with local infrastructure and transport partners to establish the Callaghan Campus as a transport hub.

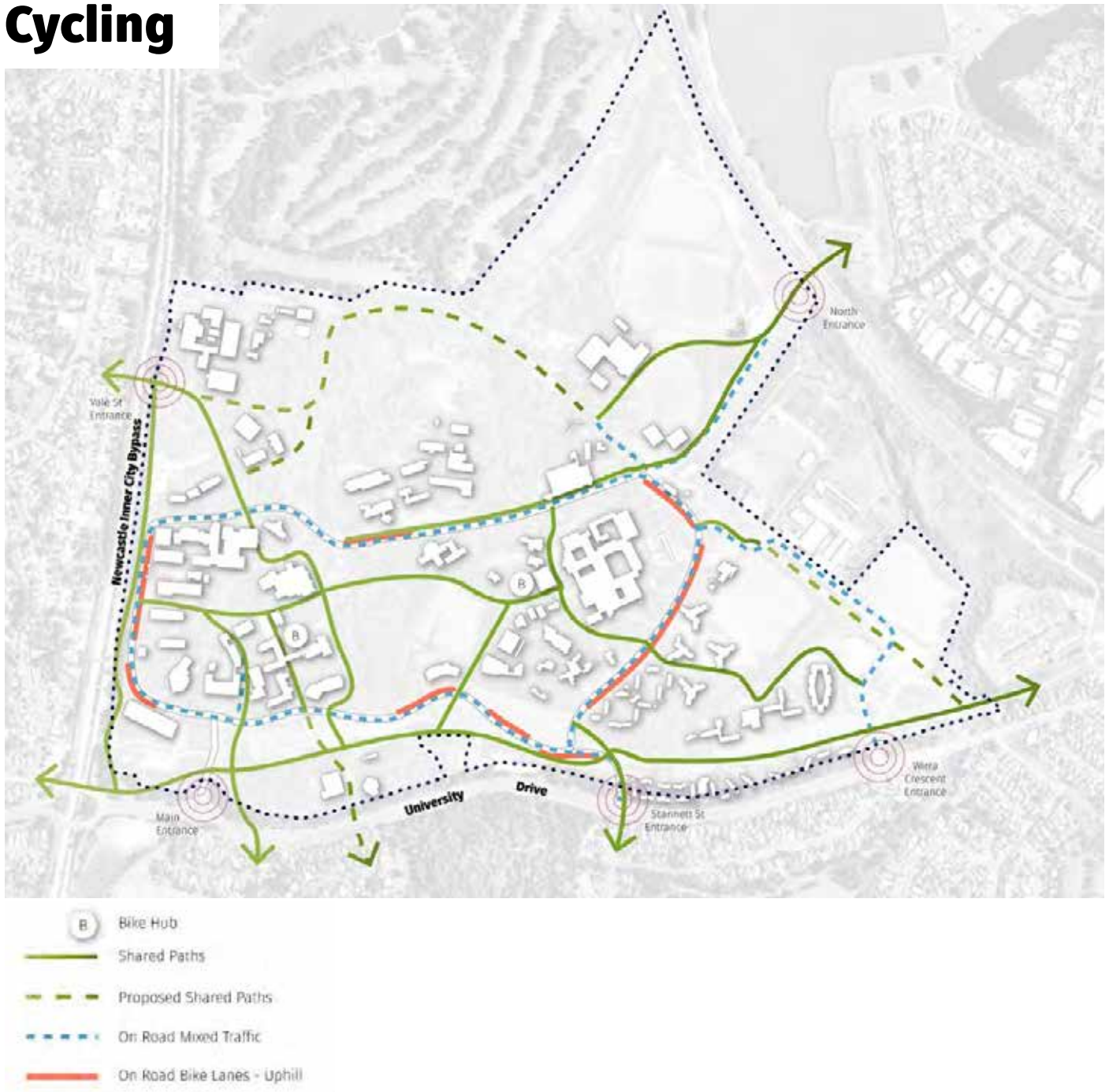
Pedestrian and cyclist priority would be achieved by:

- Implementing a more formalised landscape strategy, surrounding key pathways to allow for clear sight lines and simpler wayfinding, whilst moving through the campus
- Strengthening entry gateways and key connections through activated buildings, public realm treatments and wayfinding devices to reinforce the movement network, improve the arrival experience, walkability and overall campus experience
- Promoting safety, convenience, accessibility and inclusivity in the design of campus connections, including smart paths and a night time strategy and accessibility through a CPTED program with improved lighting, surveillance, activity and safety points.

Circulation



Cycling





3.

Public Domain Guidelines

3.1 Overview

Public domain guidelines and palettes have been developed to promote a cohesive character and sense of identity for the public domain spaces at the Callaghan Campus.



3.2 Public Domain Palette

The PDM provides palettes and specifications for the following elements within the public domain:

- A) Pavements and stairs** as well as associated fittings such as tactile indicators, pit lids and handrails
- B) Road infrastructure**
- C) Built structures** including shelters and bus stops
- D) Walls, edges and fences**
- E) Lighting, electrical and services** including CCTV
- F) Furniture**
- G) Soft landscaping.**

Each element in this chapter is described as follows:

Design Strategy

- Strategy guiding selection of palette/elements, including reference to desired character attributes.

Principles

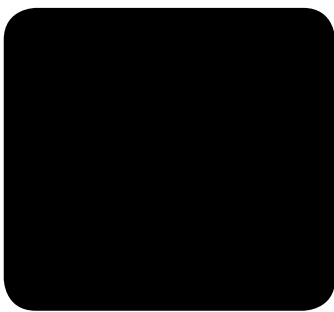
- Guiding principles driven by the Design Strategy, particularly highlighting if any alternative solutions might be appropriate, or if there are particular issues to keep in mind in applying the palette.

Materials/product palettes and their performance criteria

- Nominated fixtures, materials and specifications, including reference to critical standards where relevant, e.g. dimensions, ratings, surface treatments, etc. These are supplemented by technical drawings/ details.

3.3 Campus Colour Swatches

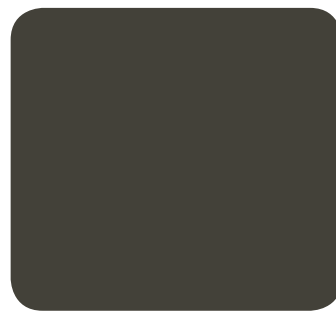
The purpose of the colour palette is to establish standard, recessive paint and powder coat colours for every day elements



Jet Black
RAL 9005



Monument Grey
RAL 9005



Dark Bronze Flat Matt
Interpon Code: YY20BA



Pearl Dark Grey
RAL 9023



Stromboli*
Interpon Code: GK148A



Bondi Blue
Interpon Code: GJ045A

*Stromboli is to be used on all bollards, guard rails and pedestrian holding rails



A

Pavements and Stairs

Design Strategy

The paving material palette has been designed to reinforce the path hierarchy and provide a coherent visual identity throughout the Campus. The materials and finishes create a complementary bushland character of the Campus, which is consistent with the aspirations outlined in the University's Hunter Region Master Plan.

Design Considerations

The proposed pavement uses simple, robust and sustainable materials to reflect the natural bushland and established character. Wide generous path and a restrained palette will unify the campus and improve legibility.

Where possible large paved areas should be minimised to increase permeability and meet WSUD requirements

Careful consideration should be made to ensure the campus is inclusive and all pavements are slip resistant, use green options or recycled content where possible

The paving palette acknowledges the existing situation, and has nominated materials that may be readily sourced, maintained, and repaired following successive phases of construction.

Path Widths

Smart Paths	3 - 4.5m
Primary Paths	2.4 - 3m
Secondary Paths	1.8-2.4m
Local paths	1.5m

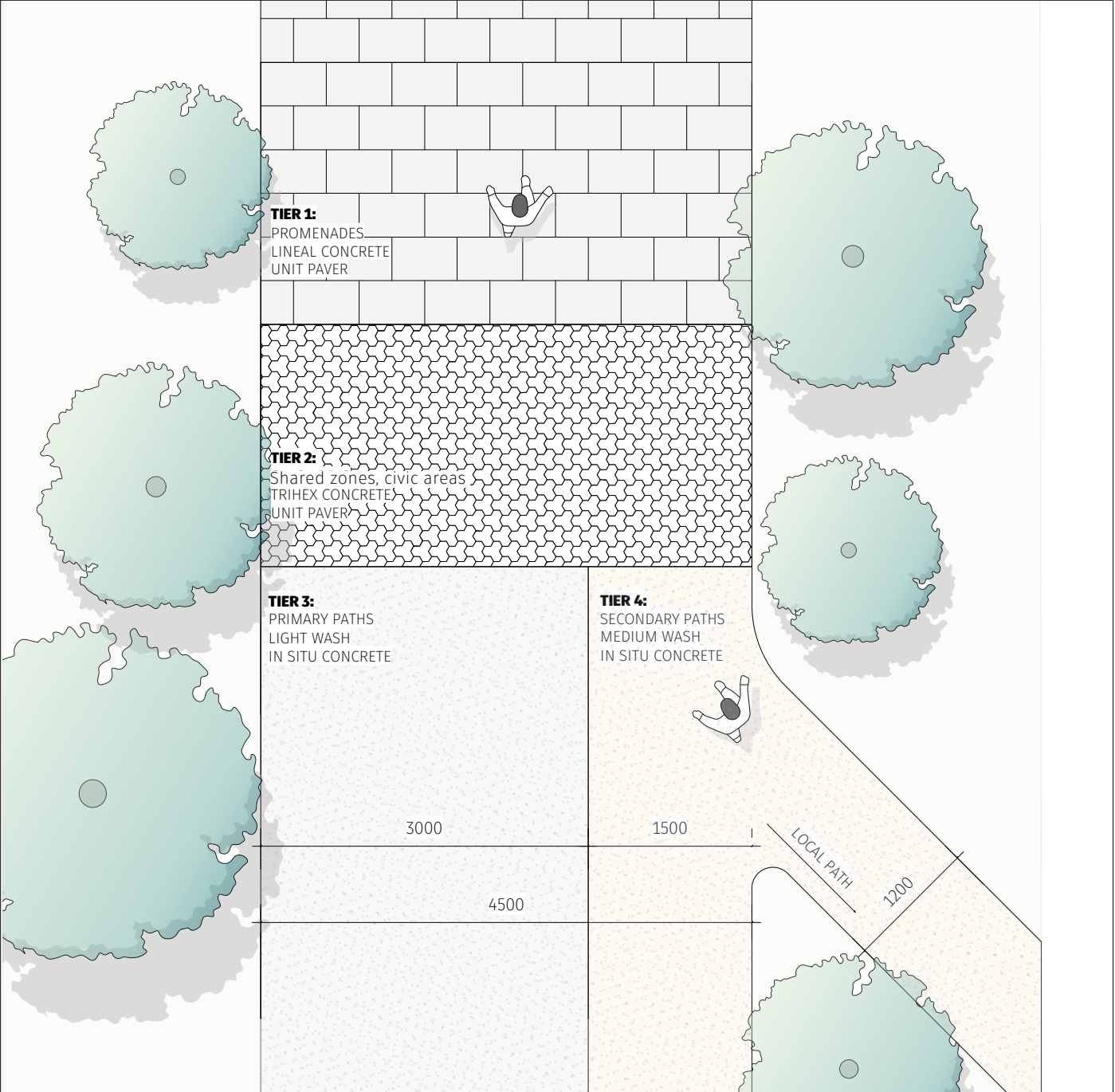
Principles

- Create coherence by consistently expressing the hierarchy of pathways throughout the Campus, whilst allowing for variation where deemed appropriate:

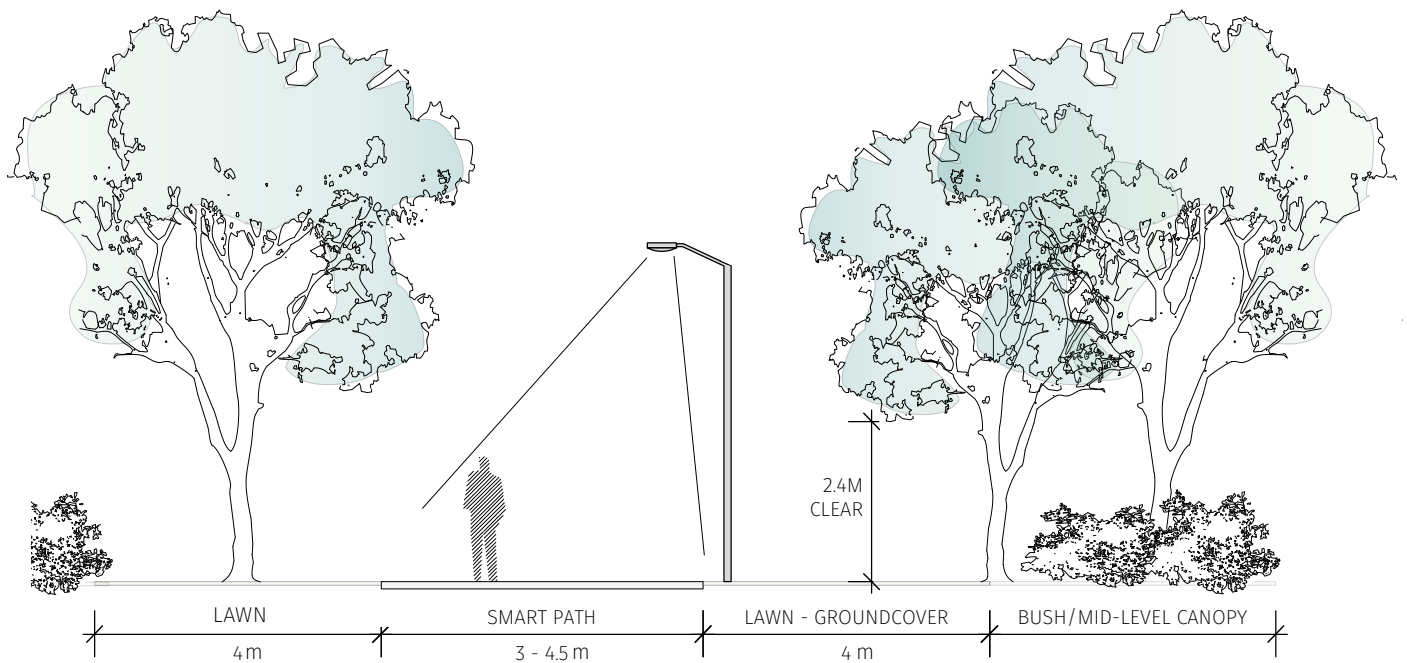
TIER	TREATMENT	LOCATION
1	Large format unit pavers Trihex exposed aggregate concrete paver	Key plazas/civic areas and Shortland Walk
2	Light wash in situ concrete	Smart/Primary paths
3	Medium wash in situ concrete	Secondary and local paths

- Ensure long term supply for replacement pavers to repair and restore the footway
- Comply with all relevant Australian standards regarding accessibility, slip-resistance, and illumination levels
- Paths to be a minimum 1500mm width and 1800mm at overtaking points. Paths to have a maximum 1:20 longitudinal slope and 1:40 crossfall
- Adopt best practises of urban sustainability through recycled materials and low embodied energy costs.
- All service pits are to include infill paving where possible to ensure consistent visual look and feel.
- Employ textural, colour and jointing changes to minimise the monotony of expansive pavement areas
- All external pavements must achieve a P4 wet rating - External Footpath under 1:14 at a minimum.

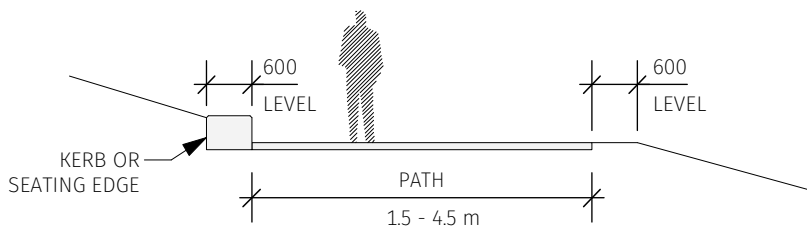
Pavement Types



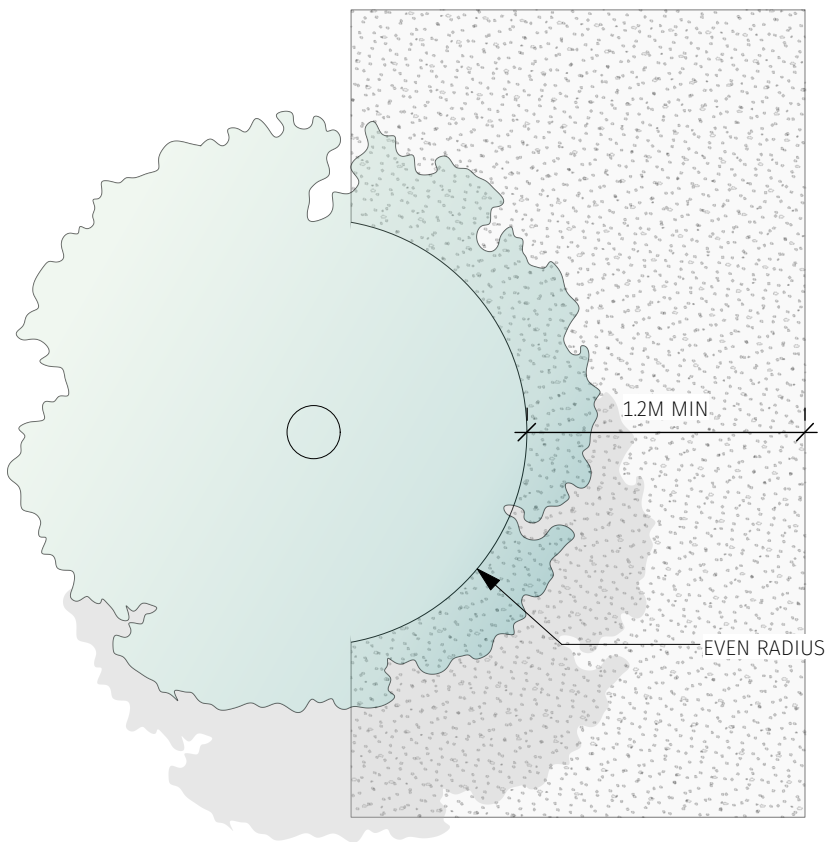
Plan 1:50



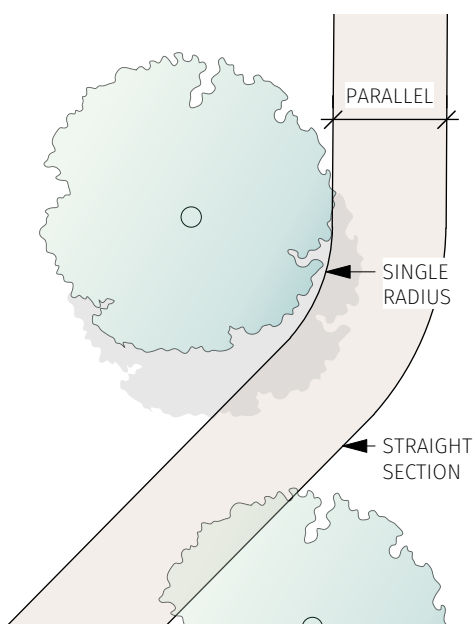
Typical Smart Path
Section 1:100



Path on Slope
Section 1:100



Tree Avoidance in Pavement
Plan 1:50



Note:
Avoid an excessive curvilinear
layout to path

Typical Path Layout - Geometry
Plan 1:100

Large Format Unit Pavers

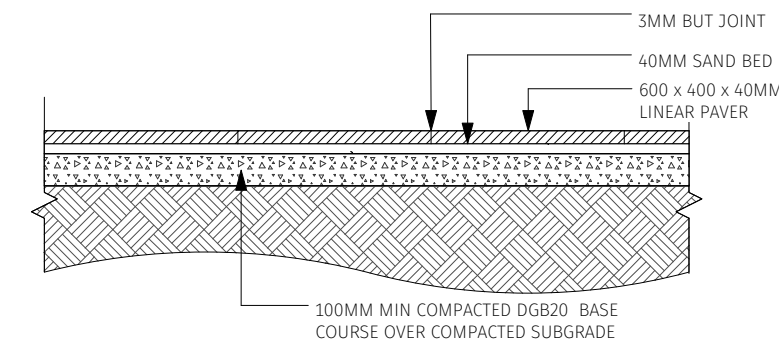
A-01

Product	Concrete Unit Pavers 600X400x60
Standards	• AS/NZS 4455.2:2010 Masonry units, pavers, flags and segmental retaining wall units, Part 2: Pavers and flags • AS 4586-2013 - Slip resistance classification of new pedestrian surface materials
Materials	Exposed aggregate concrete
Finish	• Honed 'Euro' finish
Installation	• Use applicable paver width for vehicle loading - see technical details • Edge to be flush with adjacent surface finishes
Maintenance	• Pressure clean as needed
Supplier	Adbri Masonry Euro Stone Paver: Colour Zurich
Comments	• Gaps to be filled with flexible silicone sealant to match colour • The paving must meet Australian Standards for slip resistance AS 4586-2013 - Slip resistance classification of new pedestrian surface materials - must achieve P4 wet rating • Avoid small cut pavers, minimum length 150mm
Location	• Key plazas/civic areas and Shortland Walk

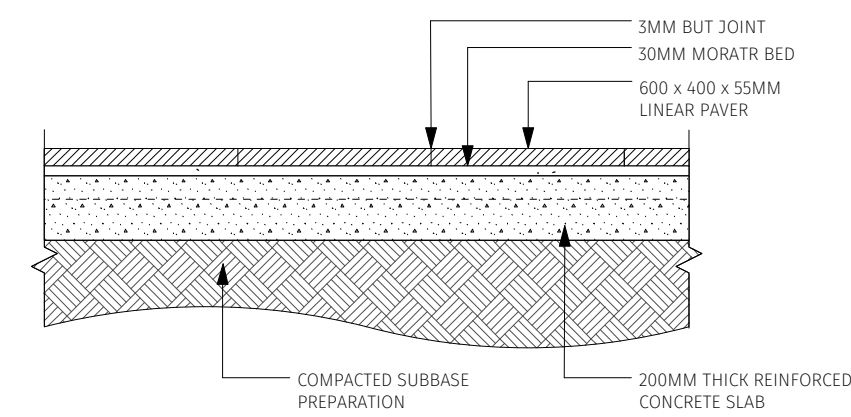


Large Format Unit Pavers

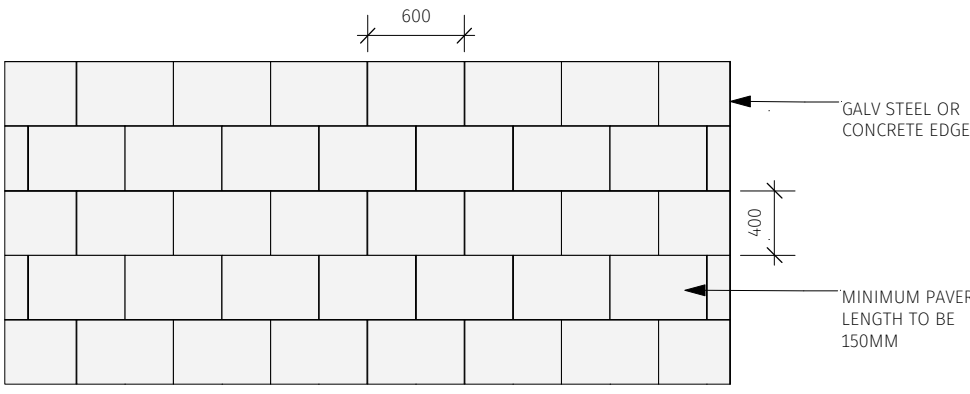
A-01



1. Typical Concrete Unit Paving - Pedestrian
Section 1:20



2. Typical Concrete Unit Paving - Vehicle Loading
Section 1:20



3. Typical Concrete Unit Paving
Plan 1:40

Trihex Unit Pavers

A-02

Specifications

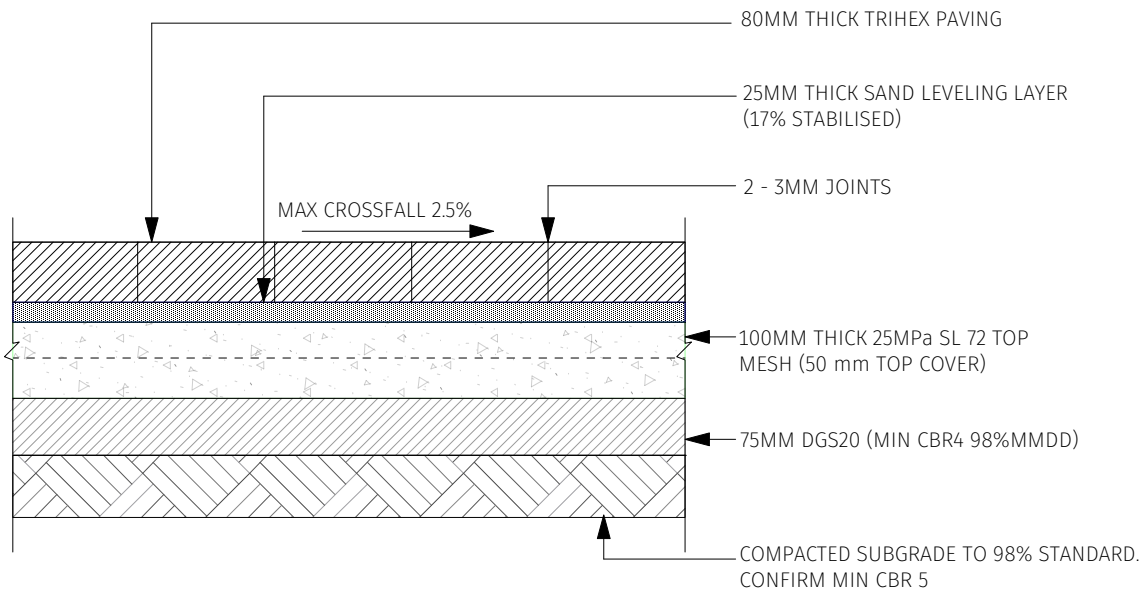
Product	Trihex™ 80 Concrete Paver
Standards	• AS/NZS 4455.2 Masonry units, pavers, flags and segmental retaining wall units, Part 2: Pavers and flags • AS 4586 Slip resistance classification of new pedestrian surface materials
Materials	Natural concrete with basalt aggregate L: 181mm x D: 188mm x H: 80mm
Finish	Honed
Installation	• Edge to be flush with adjacent surface finishes • No header course along garden bed or around service pits
Maintenance	• Pressure clean as needed
Supplier	Adbri Trihex or approved equivalent
Comments	• Consider Adbri Masonry Ecotrihex™ 80 permeable paver WSUD alternative • Avoid use on serpentine pathways • 80mm thick paver suitable for pedestrian and vehicular loading
Location	Civic areas and shared zones



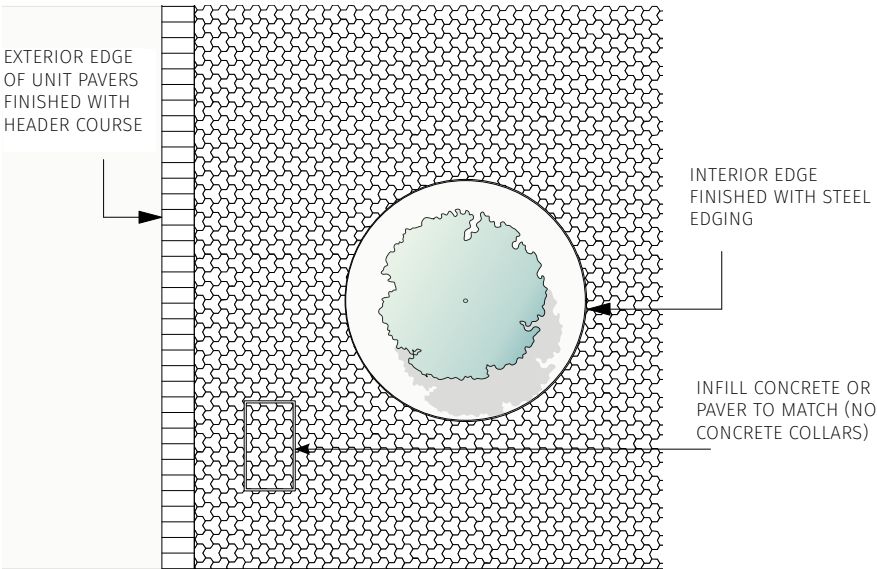
Trihex Unit Pavers

A-02

Technical Details



1. Typical Trihex Unit Paving - Pedestrian Section 1:10



1. Typical Trihex Unit Paving Layout Plan not to scale

- SLAB NOTES
- Confirm depth and density of existing pavements
 - Seek engineer's approval to utilise in lieu of specified base
 - Provide contraction joint in concrete slave at 4.0m centres
 - Provide expansion construction joint at max 12m centres
 - Allow to continue construction joints through brick paving using 'Abelflex' sealed with Dow Corning 888 silicone sealant

In situ Concrete

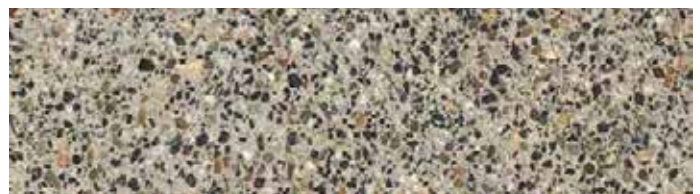
A-03

Specifications

Product	Boral Spitfire Concrete Mix - Code NS857226P Oracle Code 239316
Standards	- AS 3972 General purpose and blended cements - AS 4586 Slip resistance classification of new pedestrian surface materials - P4 Wet External Pavement
Materials	Grey concrete with Spitfire mix containing: - Boral Cement - Berrima SL 295 - Fly Ash Australia – Eraring P/Station 100 10/7mm River Gravel Independent Quarry Rosebrook 347 10/7mm Basalt Boral Resources Quarry Peats Ridge 391 10/7mm Limestone Boral Resources Quarry Marulan 355 - Man Sand Boral Resources Quarry Seaham 170 - Dune Sand Boral Resources Quarry Stockton 564 - Plastiment 10 Sika 1383ml/m³ - Retarder N Sika 593ml/m³ - Slump (mm) 80 The use of recycled content and green concrete is recommended where possible
Finish	Exposed aggregate finish Main and shared paths: - Light wash on 3m wide body pavement - Medium wash 1.5m wide edge on side and at intersections Secondary Paths - medium wash Medium wash finish to edges and intersections
Installation	- Concrete shall be deposited in horizontal layers, without separation of the aggregates and shall be compacted by vibration, tamping, spading or slicing. - Provide expansion joints as appropriate but spaced no more than 6m. Centres equal to path width - 6m max. The contraction and construction joints shall be straight, continuous and normal to the surface of the concrete pavement. 3mm saw cut control joints - Sikaflex filler to expansions joints - Black - Max .5% crossfall
Maintenance	Pressure clean as needed
Supplier	Boral or approved equivalent
Location	Primary, secondary and local paths



Light wash finish

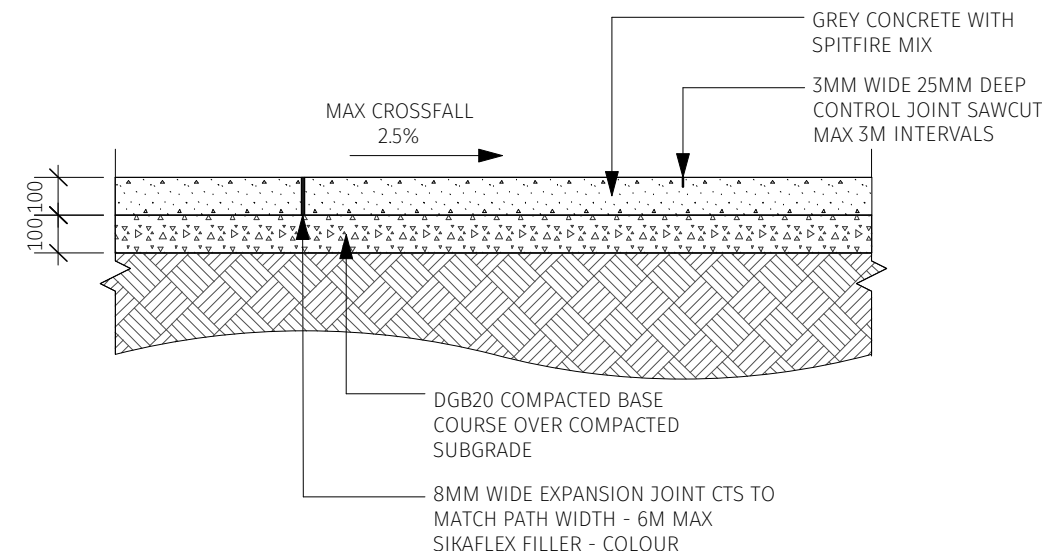


Medium wash finish

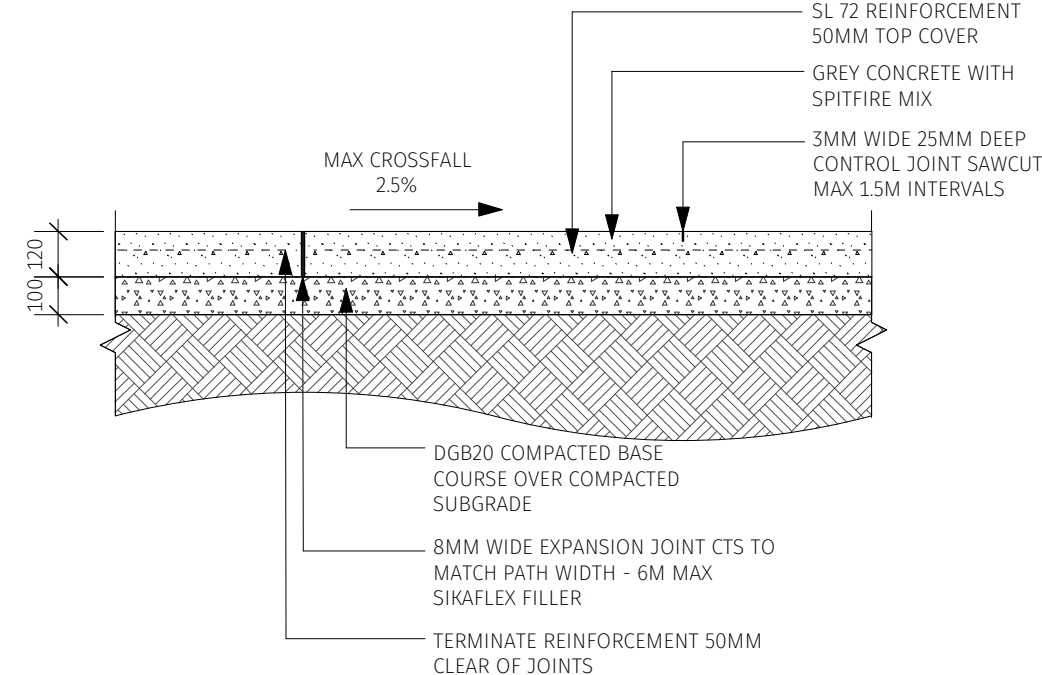
In situ Concrete

A-03

Technical Details



1. Typical Concrete Paving - Pedestrians Section 1:20



SLAB NOTES

- Details are indicative and shall be verified by a geo-technical engineer based on site conditions

2. Typical Concrete Paving - Light Vehicle Loading Section 1:20

Granular Surfaces

A-04

Specifications

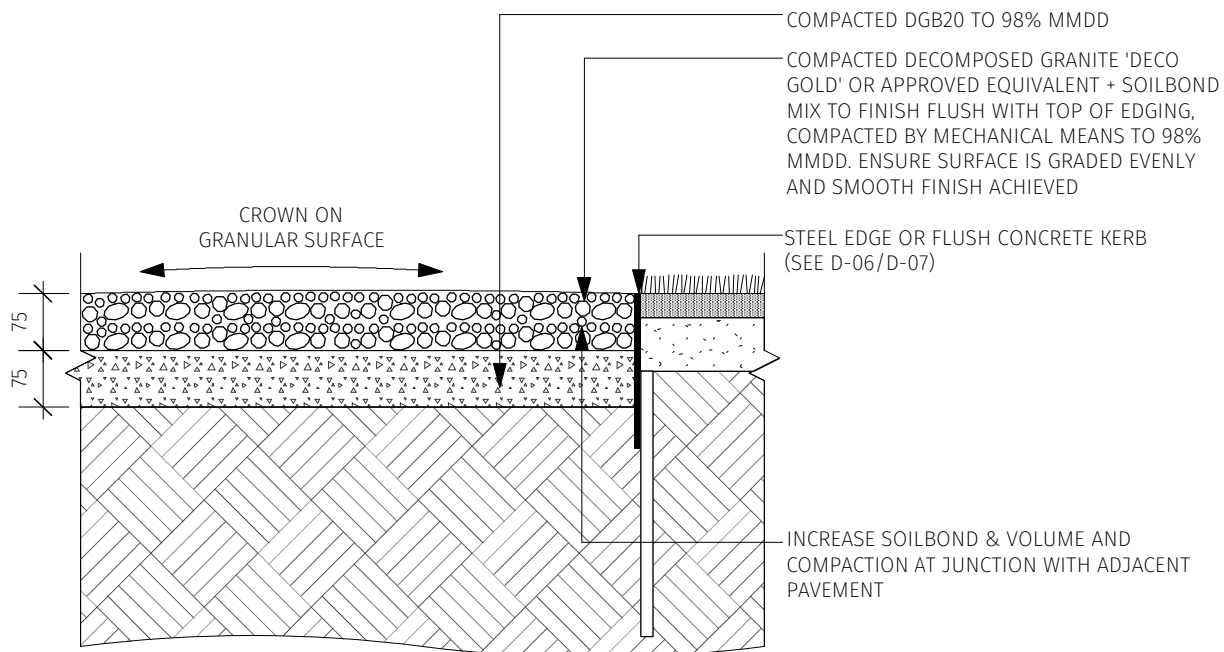
Product	Decomposed granite surface
Standards	AS 1289.5.4.1 Methods for testing soils for engineering purposes AS 1428
Materials	• 'Deco Gold' gravel or approved equivalent • Soil Bond
Finish	• Soil Bond applied to gravel to provide effective binding • Granitic gravel mulch to finish flush with adjacent surface
Installation	• Subbase: 75mm Min DGB 20 compacted to 98% DWD • 2 - 3% binding: Soil Bond to manufactures specification • 75mm depth decomposed granite • Maximum slope 1:60 • Ensure even cross-fall and crown path to provide positive drainage • Additional compaction and soil bond volume required at path junctions and where granular surface meets adjacent surface • Steel or concrete edge (refer to edges section) Increase compaction and soilbond volume at path junctions to infinish flush
Maintenance	• Patch and relay pathways with new mix of soil bond and gravel • For small scale jobs, watering cans can be used to apply soil bond
Supplier	Gravel: Local landscape supplier nominated from above specifications Soil Bond or approved equivalent soilbond.com.au
Comments	Not to be used in drainage corridors or areas susceptible to high stormwater run-off. 1:60 max longitudinal fall
Location	-



Granular Surfaces

A-04

Technical Details



1. Typical Decomposed Granite Surface Section 1:10

Porous Tree Surrounds

A-05

Specifications

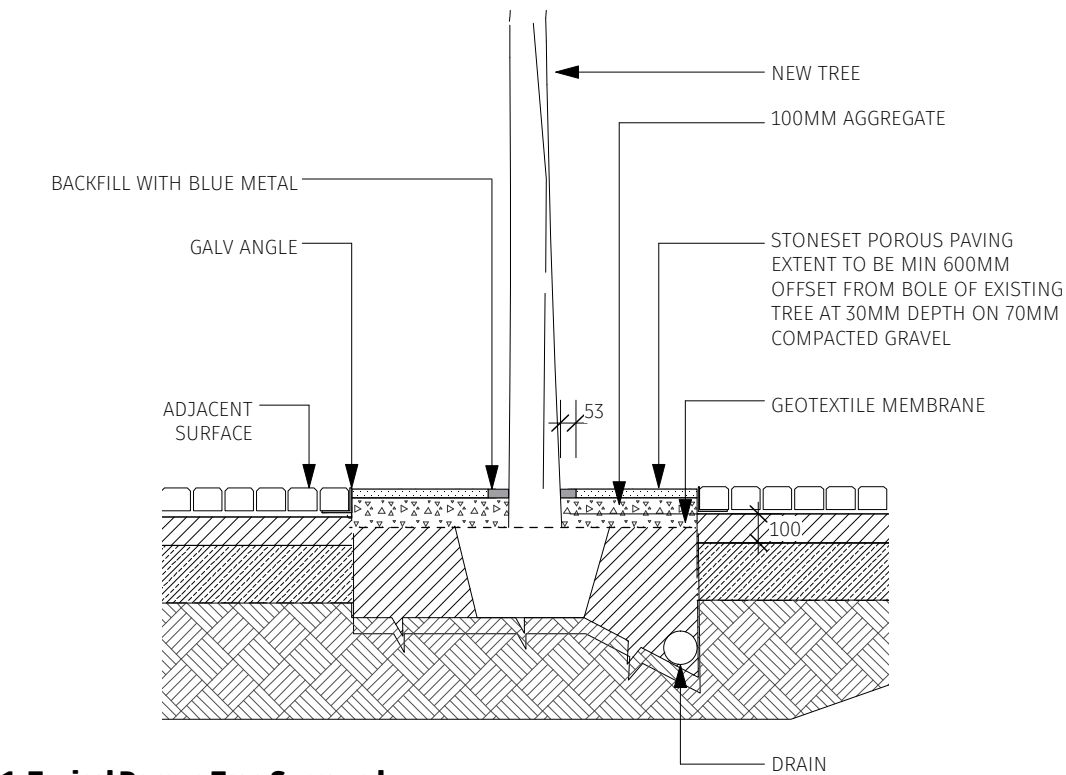
Product	Resin bonded aggregate tree surround
Standards	AS 4586 Slip resistance classification of new pedestrian surface materials - P4 Wet External Pavement
Materials	6mm Apollo, Cudgee & Charcoal blend
Finish	Flush with adjacent surface
Installation	- Varies based on installation to new or existing tree - Bottom layer of structural soil as per advice from arborist - Geotextile membrane to prevent upward migration of subgrade - Compacted porous road base dependent on new or existing tree 30mm depth porous paving
Maintenance	Monitor for subsidence and top up to finish flush with adjoining paving as required
Supplier	Stoneset or approved equivalent stoneset.com.au
Comments	- Where possible avoid tree placement within pavements - Where there is ample room, accommodate trees with path bendout so tree sits in adjacent garden bed
Location	Surrounding any tree within pavement



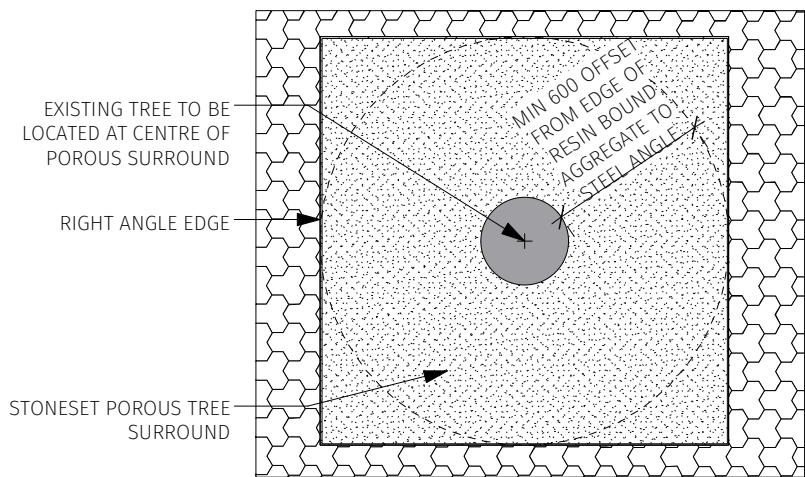
Porous Tree Surrounds

A-05

Technical Details



1. Typical Porous Tree Surround
Section 1:25



2. Typical Porous Tree Surround
Plan 1:25

- NOTES
- 300mm diameter tree ring back filled with loose stone for new trees
 - See Stoneset Porous Tree Surround specification advice (available at www.stoneset.com.au) for more details
 - For existing trees, remove enough soil for 30mm Stoneset layer. Level and compact as required

Tactile Indicators

A-06

Specifications

Product	Warning and Directional Tactile Ground Surface Indicators
Standards	- AS 1428.4 1 Means to assist the orientation of people with vision impairment - Tactile ground surface indicators - AS 4586 Slip resistance classification of new pedestrian surface materials
Materials	- Grade 316 stainless steel indicators with 25 mm shaft - Grade 316 stainless steel with carborundum insert
Finish	5mm thick, machined concentric circle face or moulded polymer insert - Black carborundum insert
Installation	- Install to manufacturers specification - Avoid installing TGSIs on a steep slope and on service/ utility pits - Install warning TGSIs at stairs, ramps, medians where the footpath and road surface are flush, overhead hazards and bus stops - Increase stair landing widths to min 1000mm to accommodate entirety of tactile installation to avoid installation into adjacent unit paving - Do not use plastic tactile indicators or plates
Maintenance	- Ensure tactiles and blades are securely fastened to ground surface - Regular maintenance checks to be carried out and include replacement of missing / lifting domes
Supplier	D-TAC or approved equivalent dtac.com.au
Comments	- TGSIs provide cues to aid people who are blind or vision-impaired with their orientation. - Warning TGSIs indicate an approaching hazard, for example at the top and bottom of stairs and ramps, or where footpath is flush with the road.
Location	-



316 stainless steel warning tactile indicator with carborundum inserts
DTAC SILICON CARBIDE CLASSIC WARNING TACTILE



316 stainless steel directional tactile indicator with carborundum insets
PRODUCT CODE: DIR0140



316 stainless steel warning tactile indicator
PRODUCT CODE: DT0100



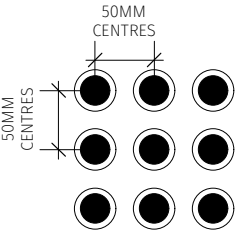
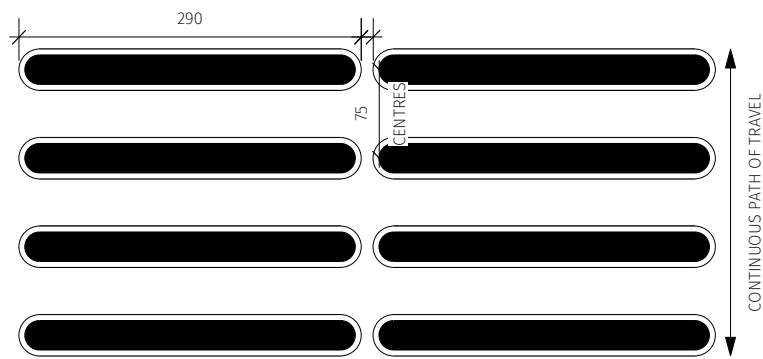
316 stainless steel directional tactile indicator
PRODUCT CODE: DIR0120

Products

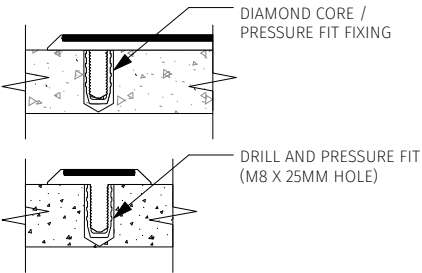
Tactile Indicators

A-06

Technical Details



1. Tactile Indicators Dimensions
Plan 1:10



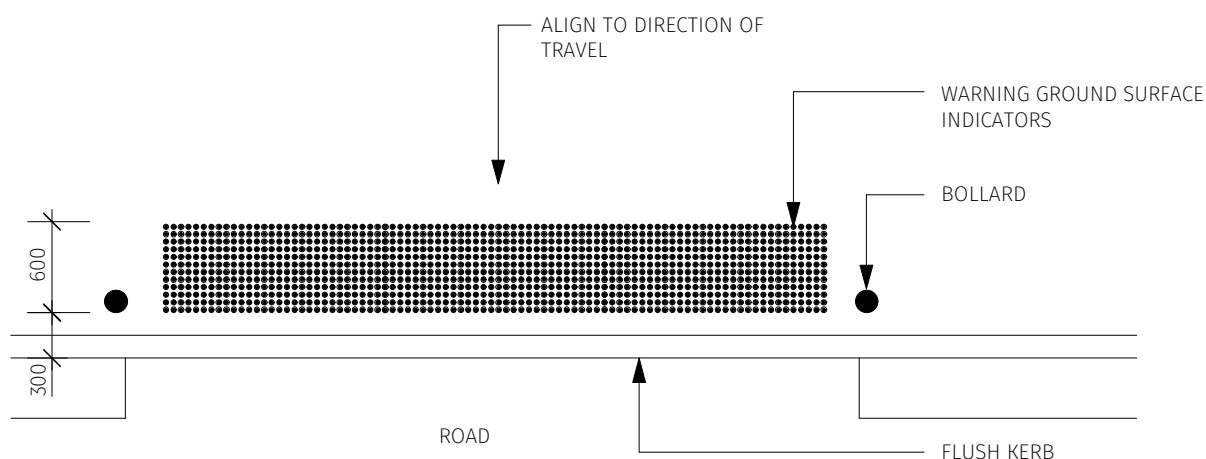
2. Tactile Installation
Section 1:2

- NOTES
- All tactile indicator installation to follow AS 1428.4 1: Means to assist the orientation of people with vision impairment - Tactile ground surface indicators

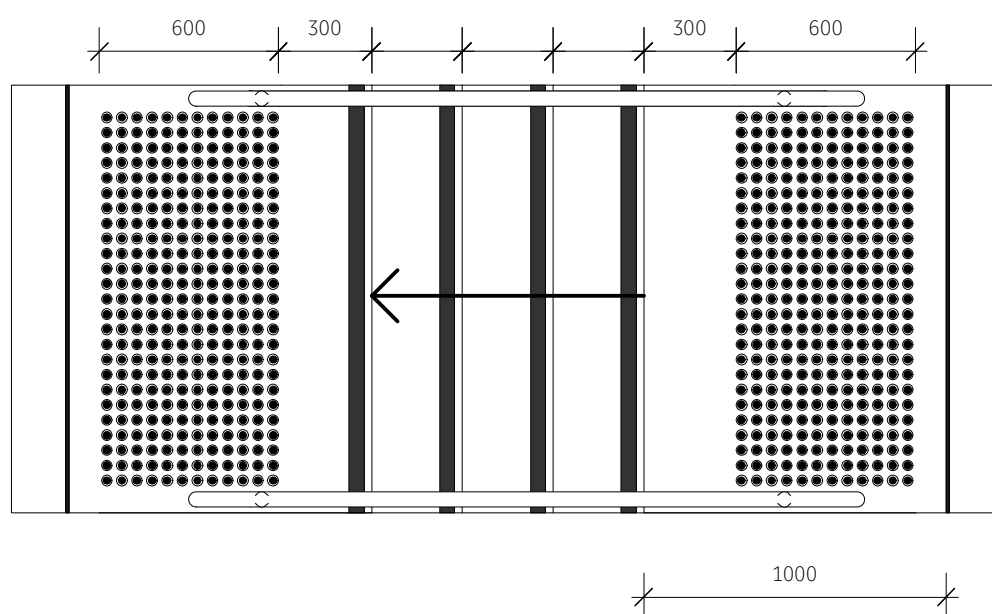
Tactile Indicators

A-06

Technical Details



4. Tactile Indicators at Flush Kerb Plan 1:50



5. Tactile Indicators - Stairs Plan 1:25

NOTES

- All tactile indicator installation to follow AS 1428.4 1: Means to assist the orientation of people with vision impairment - Tactile ground surface indicators

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Service Pit Lids - Infill

A-07

Specifications

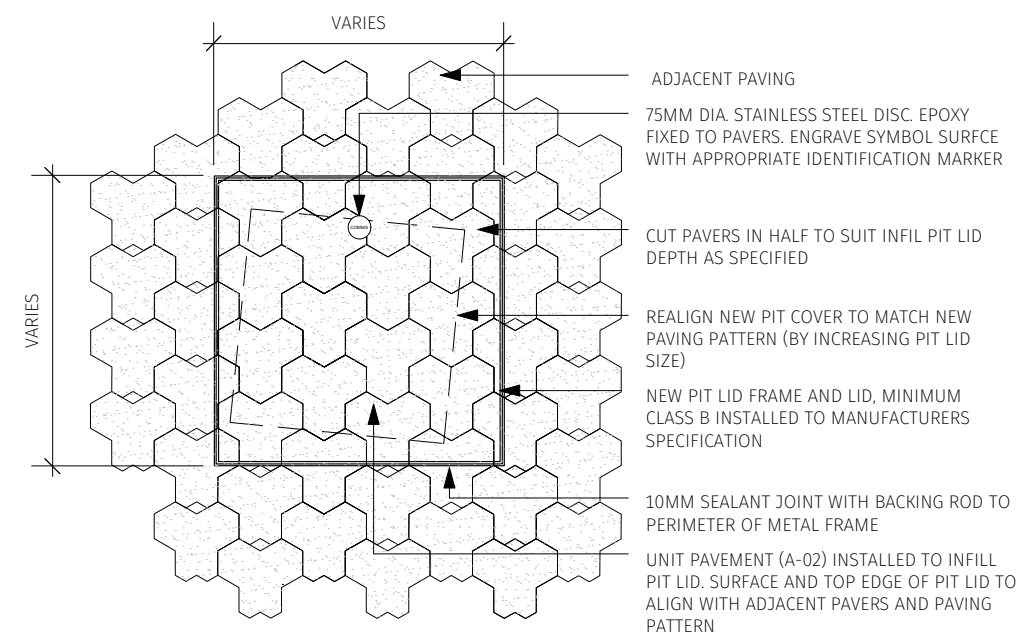
Product	Infill pit cover
Standards	- AS 3996 Access covers and grates - AS/NZS 3661.1 Slip resistance of pedestrian surfaces
Materials	- Steel Infill access cover and frame: 75mm diameter, 10mm thick - SS grade 316 disk - No 4 grit polish to achieve non-slip finish - Class b min - Class C minimum in trafficable areas
Finish	- If installed on pavement, fill lid with adjacent surface material - Name of service to be labelled on lid
Installation	- Construct and set all pits to the adjacent design levels 30mm thick paving to match surrounding pavement - No concrete collars - Align pit cover to match paving pattern & general direction of travel to avoid cutting slithers of pavers - Continue paving pattern within metal casing - Pit lid infills to have approx. 3mm gap on sides so as to not touch the lid 10mm sealant joint with backing rod around perimeter of metal frame
Maintenance	Clean pit lid with brush and then soft brush to clear rust from lid
Supplier	Durham or approved equivalent durham.com.au
Comments	Cross reference with site layout drawings prior to installation as conditions may vary with regard to dimensions. This manual refers to pit lids on pathways and general trafficable areas. This guideline does not cover pit lids on roadways.
Location	-



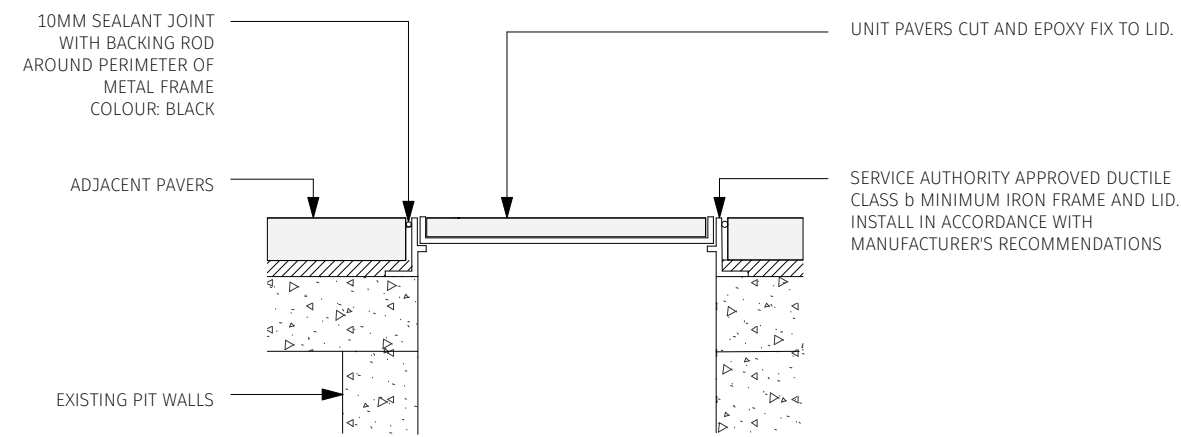
Service Pit Lids - Infill

A-07

Technical Details



1. Service Pit Lids - Infil
Plan 1:10



2. Service Pit Lids - Infil
Section 1:10

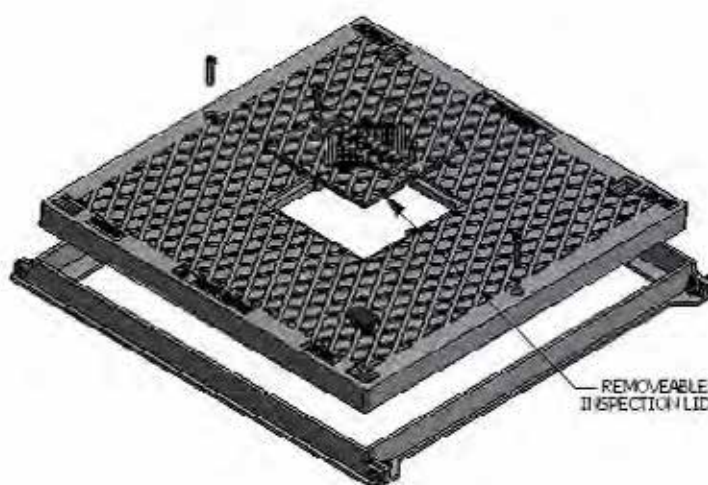
- NOTES
- PAVER UNIT INSERTS TO BE FLUSH WITH & MATCH ADJACENT PAVING SURROUNDS.
 - CONTINUE OVER JOINTS ACROSS THE COVER REGARDLESS OF ITS ORIENTATION
 - NO CONCRETE COLLAR

Service Pit Lids - Cast Iron

A-08

Specifications

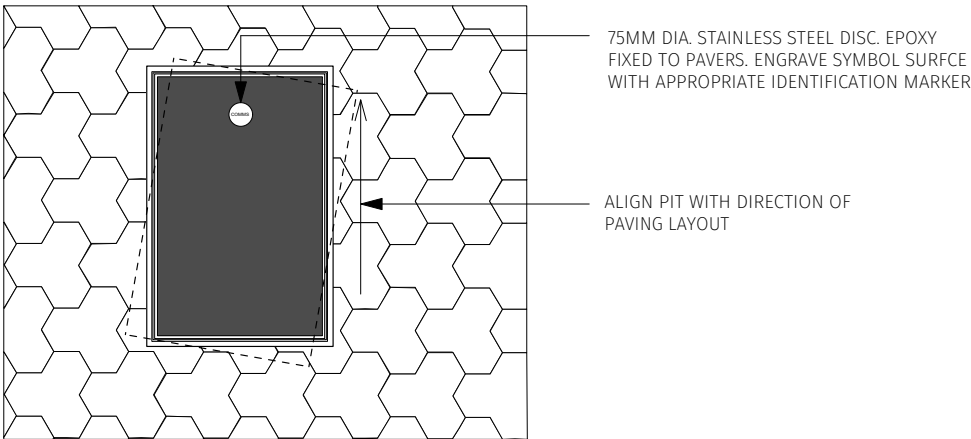
Product	Cast Iron Pit Lid
Standard(s)	- AS 3996 Access covers and grates - AS/NZS 3661.1 Slip resistance of pedestrian surfaces
Materials	Cast iron - Class B min Class C min in trafficable areas
Finish	-
Installation	- Align pit to path of travel - Size and type to requirement of pit/relevant authority
Maintenance	Clean pit lid with brush and then soft brush to clear rust from lid
Supplier	Durham or approved equivalent durham.com.au
Comments	- Use infil pit lids as first option - Names of services to be labelled on lid (brass plate label) - For road service pit lid specification engage engineer
Location	-



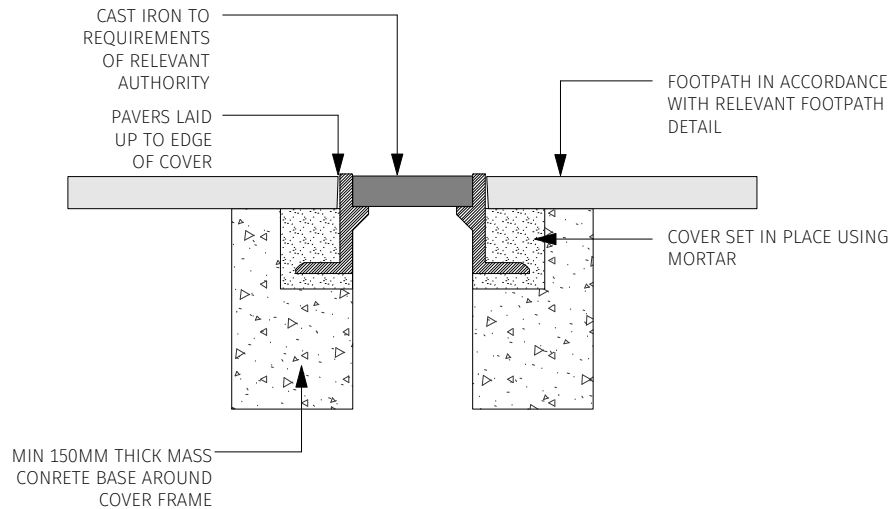
Service Pit Lids - Cast Iron

A-08

Technical Details



1. Service Pit Lids - Cast iron
Plan 1:10



2. Service Pit Lids - Cast iron
Section 1:10

- NOTES
- NO CONCRETE COLLAR

Stormwater Pits

A-09

Specifications

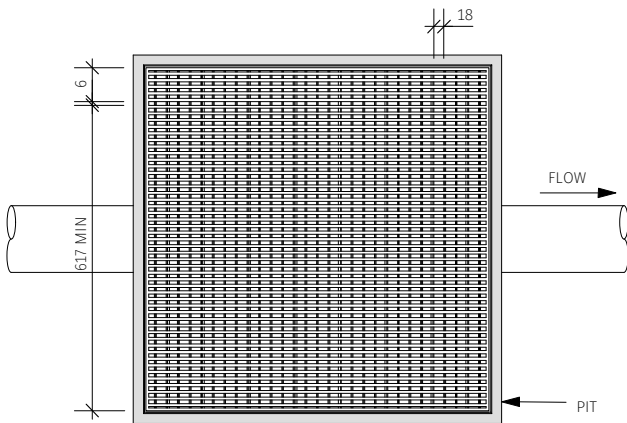
Product	Galvanised steel stormwater grate and pit Class B min Class C min in trafficable areas
Standards	- AS 3996 Access covers and grates - AS/NZS 3661.1 Slip resistance of pedestrian surfaces
Materials	ACO Drain® - Type 66 Polycrete® Pit – polymer concrete pit and grate Grate for the Type 66 pit shall be standard non-locking / locking* and grate type: 5 Star Heelsafe® Anti-Slip grate (330kg nominal wheel load).
Finish	Galvanised or cast iron
Installation	- Type 66 pit shall be manufactured from polyester resin polymer concrete or in situ concrete and installed in accordance with the manufacturer's installation instructions. - Install parallel to path of travel - No concrete collar
Maintenance	- Clean with soap, warm water rinse and wipe dry. - Under no circumstances treat with metal scouring pads, metal scrapers or wire wool as these will contaminate surfaces leaving rust spots
Supplier	ACO or approved equivalent acodrain.com.au
Comments	Where possible, direct storm water to garden beds with suitable planting layers and water tolerant plants
Location	-



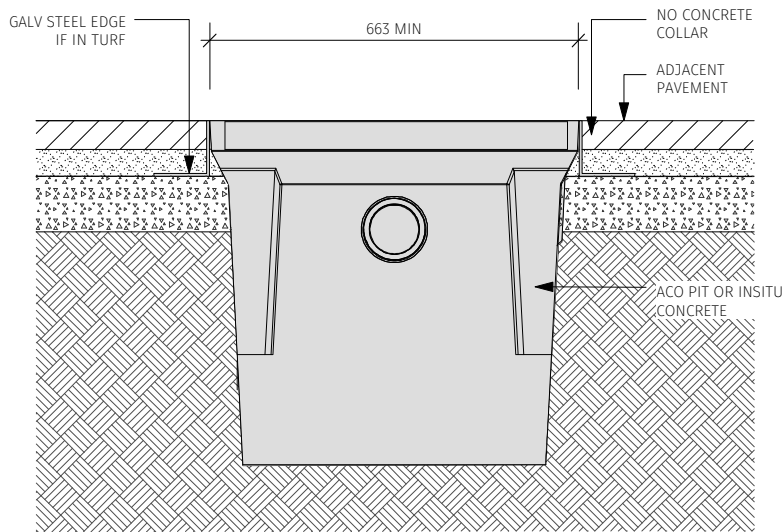
Stormwater Pits

A-09

Technical Details



1. Stormwater pit lid
Plan 1:10



2. Stormwater pit lid
Elevation 1:10

Service Marker

A-10

Specifications

Element	Pit lid service marker
Materials	Stainless steel plate marker Mushroom head fixing spikes
Finish	-
Installation	• Drill 5mm hole into the base material to a depth deeper than the embedment required • Using a hammer or mallet drive the anchor through the fixture into the another hole the until the head is fimly seated against the fixture
Maintenance	-
Supplier	Mascot Engineering mascoteng.com.au HTD Kerbmarkers kerbmarkers.com.au or approved equivalent
Comments	Text Height: 8mm Font: Arial Diameter: 75mm



Service Marker

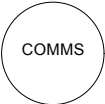
A-10

Technical Details

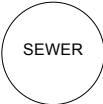




DRAINAGE PIT LID
IDENTIFICATION



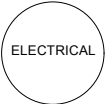
COMMUNICATIONS PIT LID
IDENTIFICATION



SEWER PIT LID
IDENTIFICATION



WATER PIT LID
IDENTIFICATION



ELECTRICITY LID
IDENTIFICATION

75mm DIA.
SS MARKER

TEXT HEIGHT 8mm
TEXT FRONT: ARIAL

1. Services Identification Markers

Trench Grates

A-11

Specifications

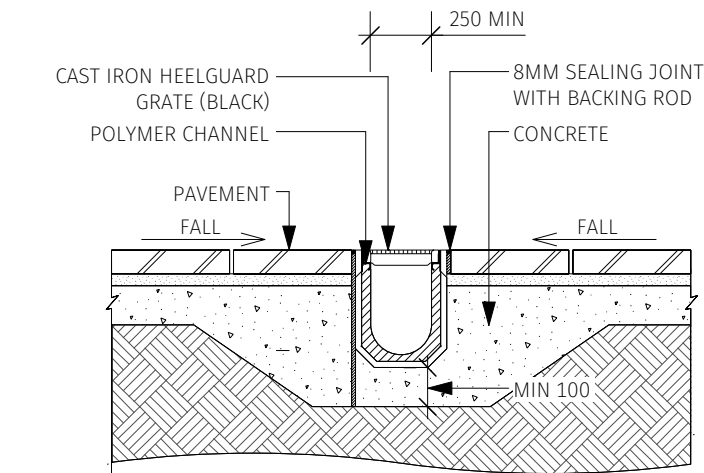
Product	Trench Drainage Grate and Channel
Standards	• AS 3996 Access covers and grates • AS/NZS 3661.1 Slip resistance of pedestrian surfaces
Materials	• Durham D-Rain drainage system cast iron grate • Polymer or in situ concrete channel
Finish	-
Installation	• No concrete collar
Maintenance	• Regularly clear debris build-up
Supplier	Durham or approved equivalent durham.com.au
Comments	• Must be heel and cycle safe • Must be minimum 250mm wide to allow clearing
Location	-



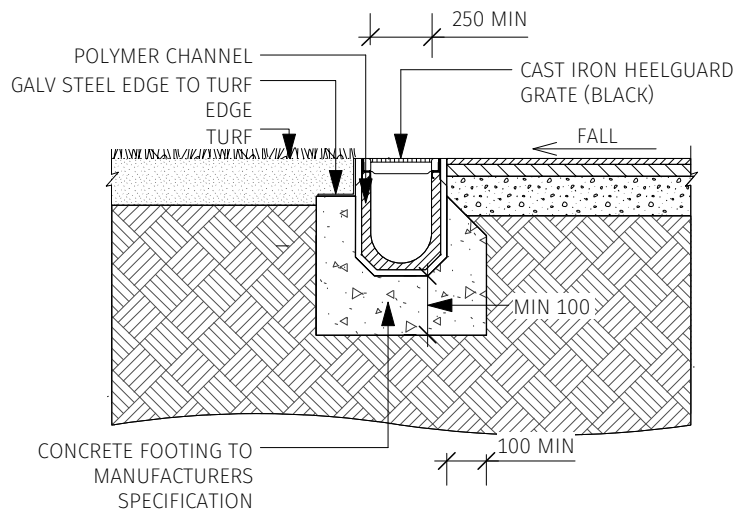
Trench Grates

A-11

Technical Details



1. Trench Grates
Section 1:10



2. Trench Grates - Adjoining Turf
Section 1:10

Stairs - In Situ Concrete

A-12

Specifications

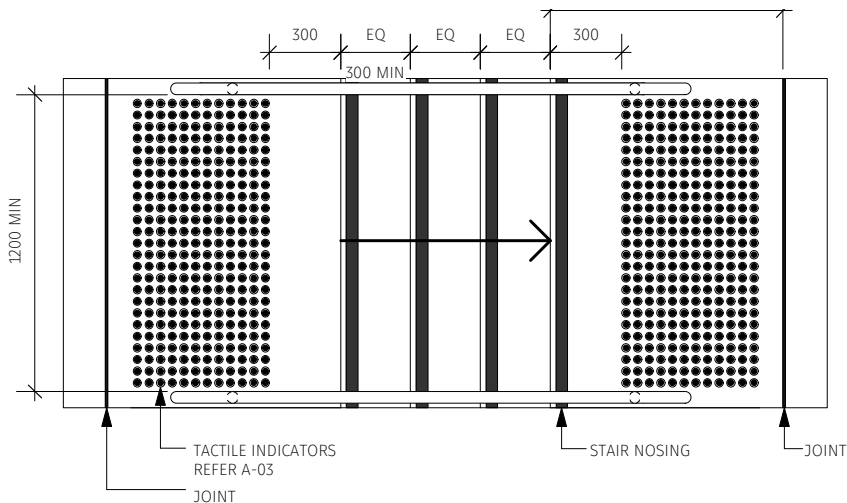
Product	Reinforced insitu concrete steps over compacted subgrade
Standard	• HB 84-2006 Guide to Concrete Repair and Protection • AS 1657 Fixed Platforms, Walkways, Stairways & Ladders • AS 1428 Design for access and mobility
Materials	• Cast in-situ reinforced concrete • 20mmØ aggregate
Finish	Wood float - no visible edge/tool marks
Installation	• Extend top stair tread 1m for tactile indicators
Maintenance	• Pressure clean regularly
Supplier	-
Comments	• Set stairs back a minimum of 1M from adjacent pathways so handrails and TGSIs do not encroach on the path of travel • Stairs are to have TGSIs and nosings installed to comply with AS1428.4.1. • Refer to Handrails, Balustrades, TGSIs and Stair Nosing sections for more information. • Avoid disappearing and corner stairs
Location	-



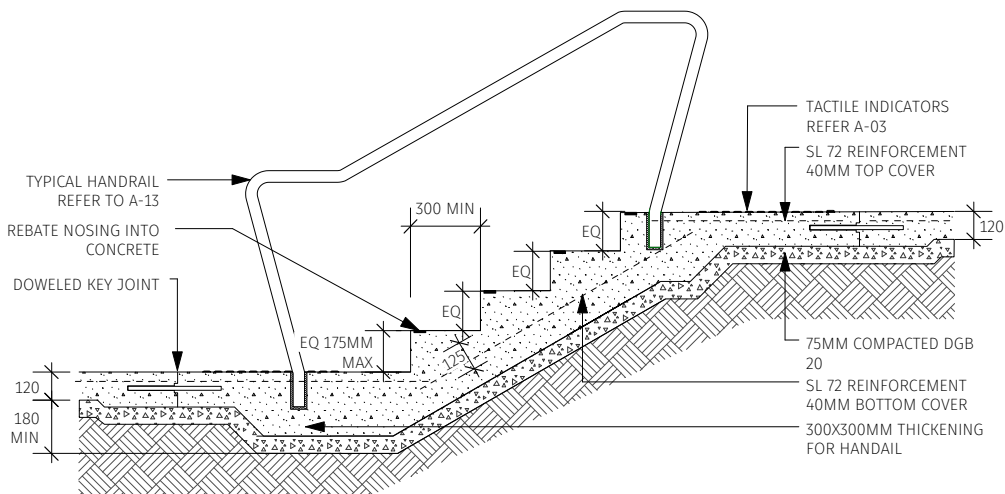
Stairs - In Situ Concrete

A-12

Technical Details



1. Stairs - In Situ Concrete
Plan 1:25



2. Stairs - In Situ Concrete
Section 1:25

- NOTES
- Risers max 175MM
 - Treads min 300MM
 - Ensure compliance with AS 1657
 - Step relationship $2R + G = 550 - 700$
 - Engineered design required for 6 stairs or greater

Stair Nosing

A-13

Specifications

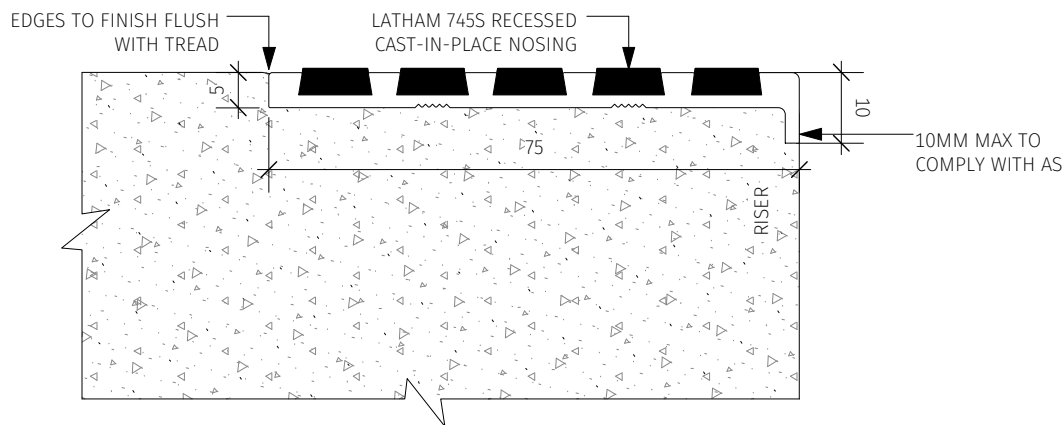
Product	Stair nosing
Standards	- AS1428.1 Design for access and mobility Part 1: General requirements for access - New building work - AS 4586 Slip resistance classification of new pedestrian surface materials. External footpaths must achieve a P4 wet rating.
Materials	Aluminium Suregrip silicon carbide mineral granules or Staircare Nosing Tape (Black) or approved equivalent
Finish	-
Installation	- Install 15mm from edge of tread - Flush with tread 50 to 75mm wide
Maintenance	High-pressure hose to remove superficial dirt
Supplier	Nosing Insert: Latham or approved equivalent latham-australia.com Nosing Tape: Staircare or approved equivalent staircare.com.au
Comments	Ensure nosing is installed flush with tread to prevent pooling water
Location	-



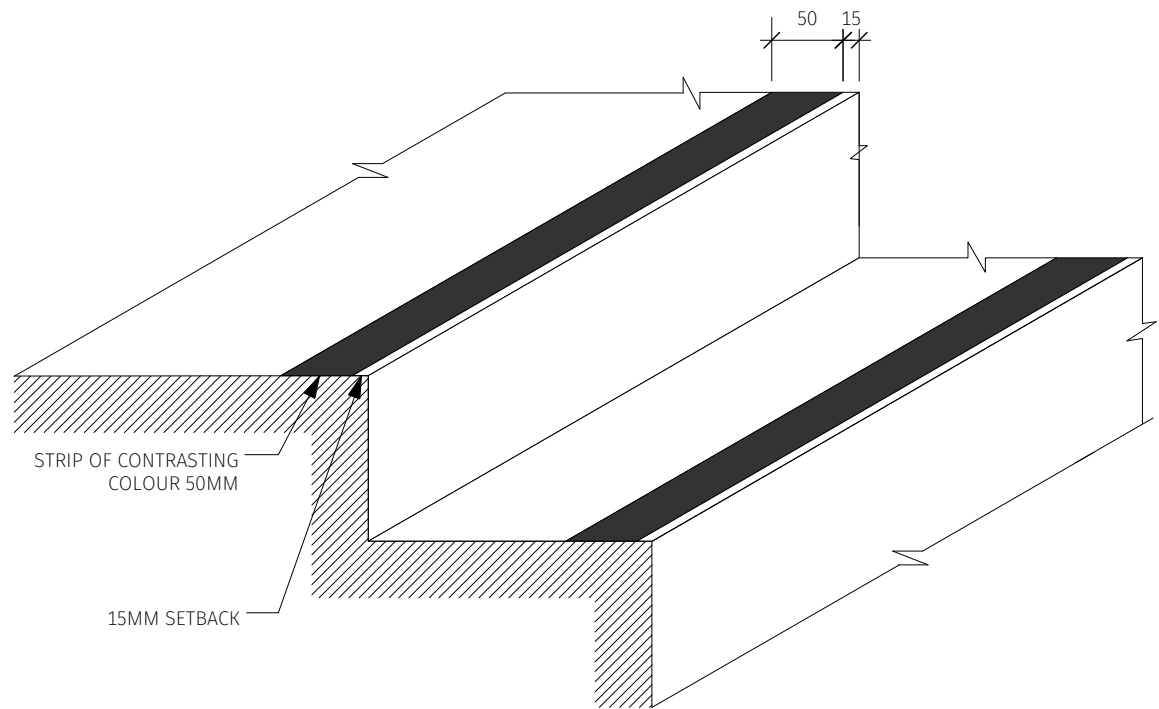
Stair Nosings

A-13

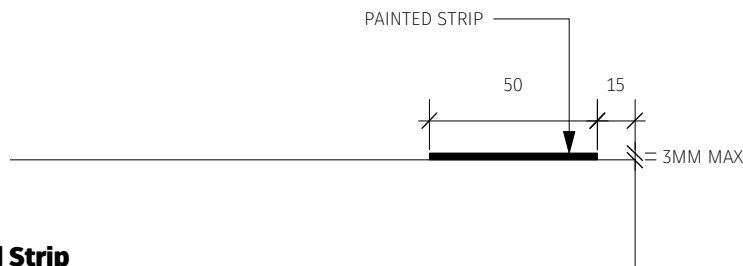
Technical Details



1. Recessed Stair Nosings Section Actual Size



2. Contrast Tape Isometric 1:5



3. Painted Strip Section 1:5

Hand Rails - Free Standing

A-14

Specifications

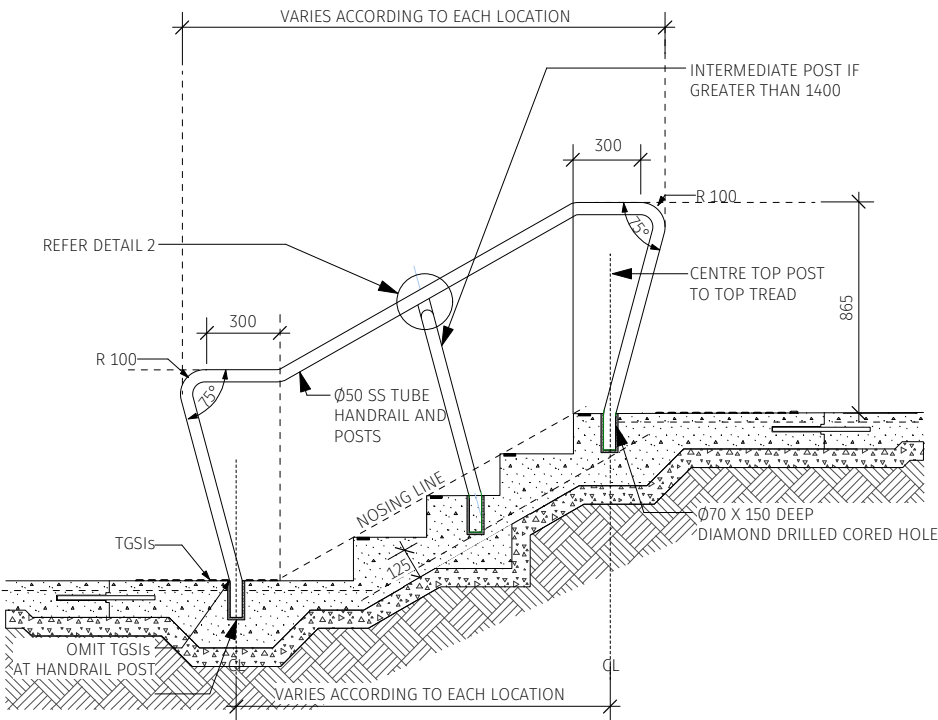
Product	Stainless steel freestanding handrail
Standards	- AS1428.1-2009 Design for access and mobility Part 1: General requirements for access - New building work - AS 1657:2018 Fixed platforms, walkways, stairways and ladders - Design, construction and installation
Materials	316 marine grade stainless steel
Finish	2B raw material with 600 grit polish finish
Installation	Surface or sub-surface mounted
Maintenance	- Clean as needed using a soft cloth or brush with a mild detergent - Deeper scratches and damage should be polished professionally. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor repolishing be required, use metal polishing liquids.
Supplier	Shop construction drawings to be provided to the University for approval prior to manufacture and installation.
Comments	- Free standing hand rail is to be used on stairs, walkways and ramps where a simple handrail is required and where there is no transition to a balustrade. - Handrails are to be installed on both sides of the stair, walkway or ramp, or centre.
Location	-



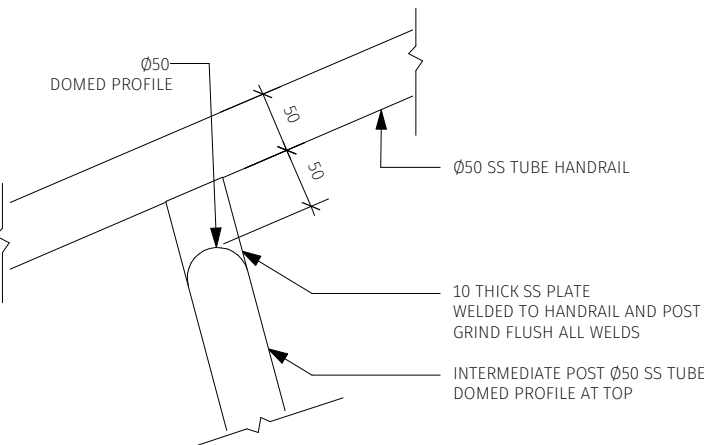
Hand Rails - Free Standing

A-14

Technical Details



1. Free standing handrail
Section 1:25



2. Handrail fixing to support
Elevation 1:20

- NOTES
- Ø50 GRADE 316 SS TUBE HANDRAIL AND POSTS TO BE MANUFACTURED AS ONE UNIT. GROUT IN HANDRAIL POSTS TO CORED HOLES IN CONCRETE USING NON-SHRINK GROUT FILLED FLUSH TO TOP OF HOLES COLOUR MATCH GROUT TO CONCRETE
 - PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO HANDRAIL MANUFACTURE

Handrails - Wall Mounted

A-15

Specifications

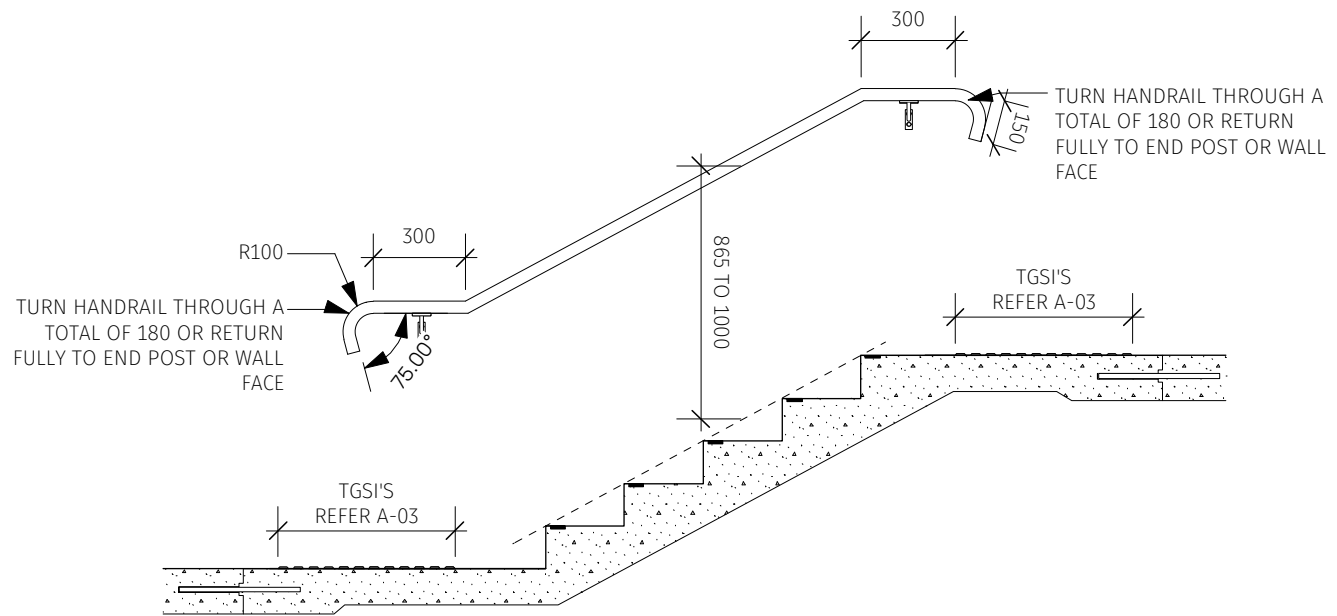
Product	Stainless steel wall mounted handrail
Standards	- AS 1428.1 Design for access and mobility Part 1: General requirements for access - New building work - AS 1657:2018 Fixed platforms, walkways, stairways and ladders - Design, construction and installation
Materials	316 Marine Grade Stainless Steel
Finish	2B raw material with 600 grit polish finish
Installation	Surface mounted to wall with stainless steel fixings
Maintenance	- Clean as needed using a soft cloth or brush with a mild detergent - Deeper scratches and damage should be polished professionally. A natural patina of minor scratches will always occur on highly polished surfaces. However, should minor re-polishing be required, use metal polishing liquids
Supplier	Shop construction drawings to be provided to the University for approval prior to manufacture and installation.
Comments	- Stainless steel wall mounted handrail is to be used on stairs, walkways, and ramps adjacent to a wall - Handrails are to be installed on both sides of the stair, walkway or ramp - All handrails shall meet requirements as set out in AS 1428
Location	-



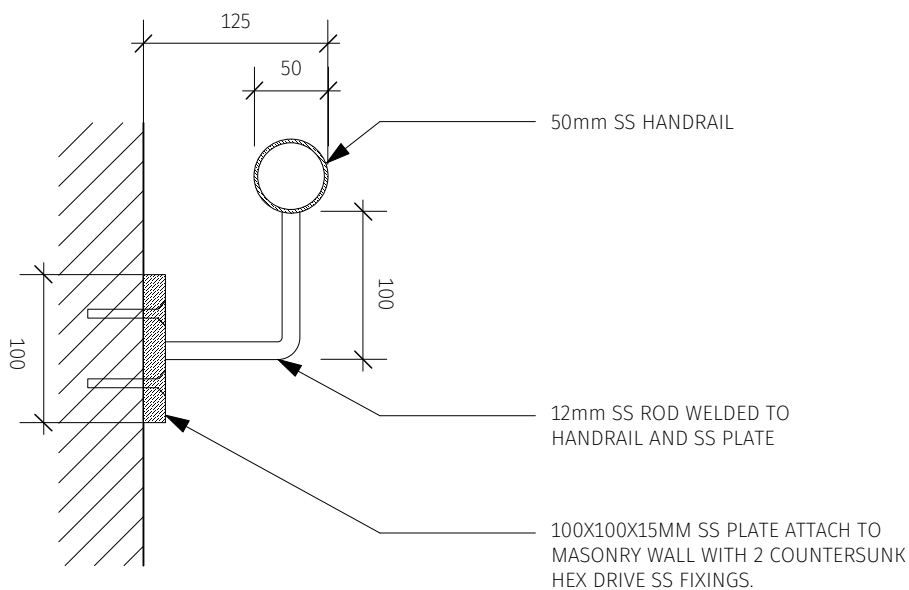
Handrails - Wall Mounted

A-15

Technical Details



1. Fixed handrail Elevation 1:20



2. Handrail fixing Section 1:5

Handrail with Balustrades

A-16

Specifications

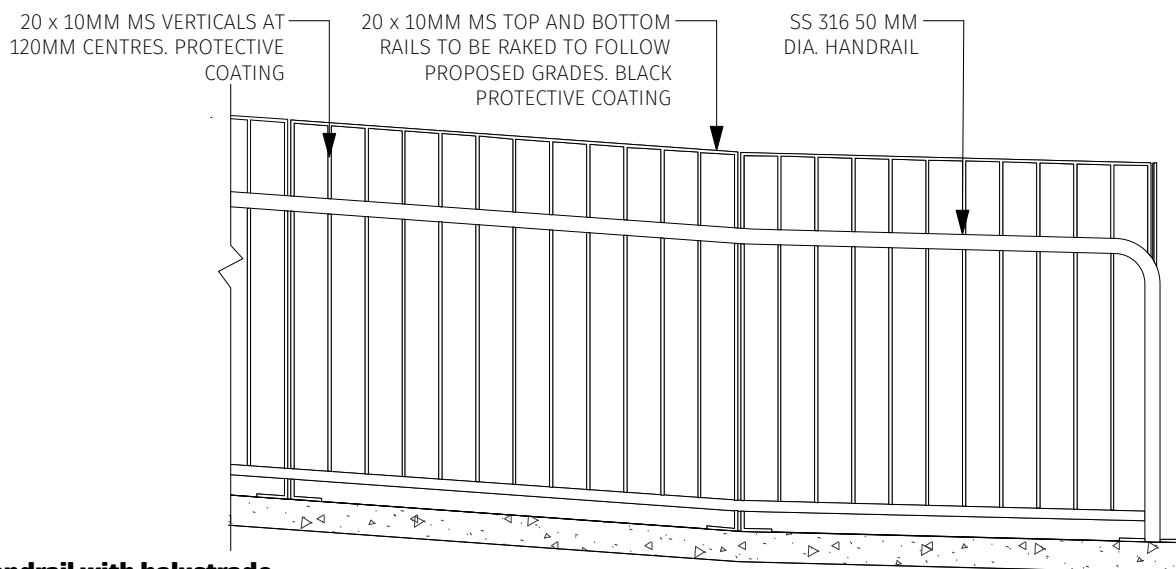
Product	Balustrade with Hand and Kerb Rail
Standards	- AS 1428.1 Design for access and mobility Part 1: General requirements for access - New building work - AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation
Materials	316 stainless steel hand and kerb rails, 316 stainless steel rail brackets - Steel balusters
Finish	Woodland grey powder coating to balustrade
Installation	- Balustrade/handrail to a ramp needs to have a kerb rail on either side at a minimum height of 65mm and maximum 75mm above finished floor level. (A kerb rail is a bottom rail whose purpose is to prevent the wheel of a wheelchair from slipping off the ramp) - Contractor is to submit shop drawings for all handrail, balustrade and kerbrail elements including all fixing methods for approval by superintendent and landscape architect prior to fabrication - Builder to provide isolating Teflon washers between stainless steel and mild steel to prevent corrosion on all handrails and stanchions
Maintenance	Pressure clean as needed
Supplier	Shop construction drawings to be provided to the University for approval prior to manufacture and installation.
Comments	The Kerbrail is not required on stairs
Location	-



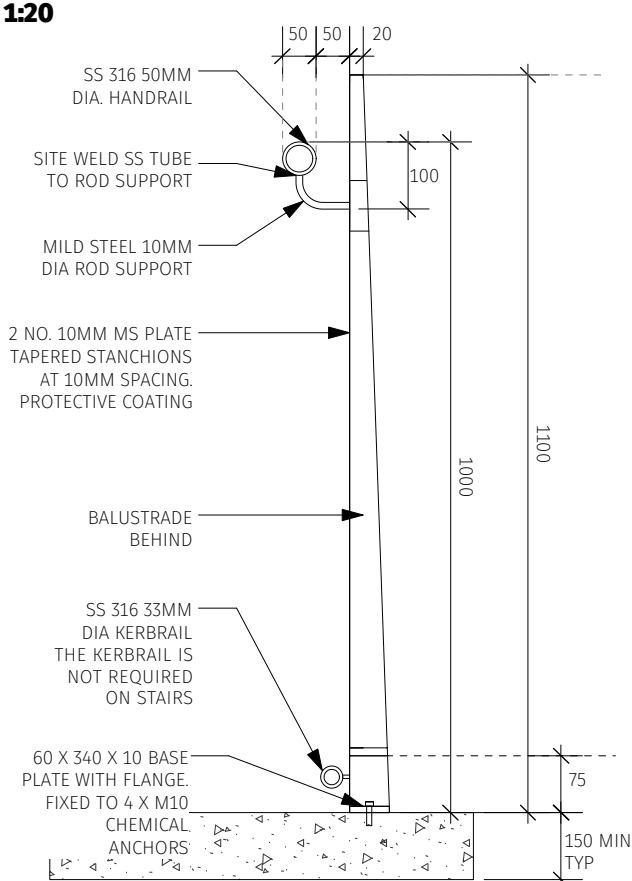
Handrail with Balustrades

A-16

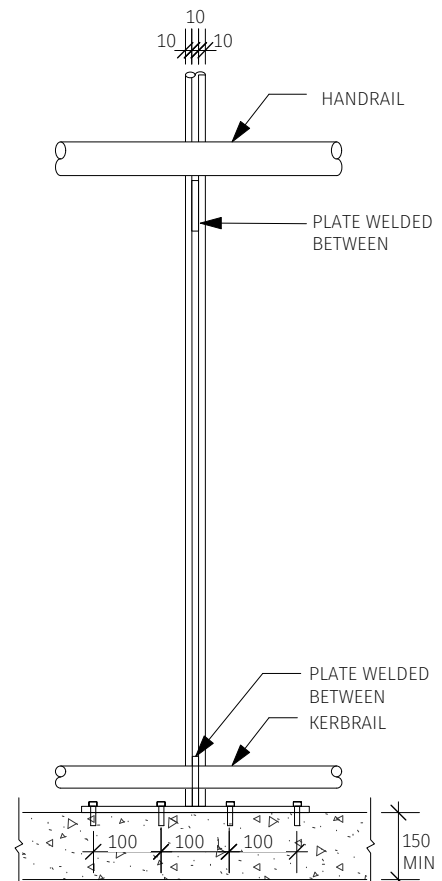
Technical Details



1. Handrail with balustrade
Elevation 1:20



2. Handrail with balustrade
Section 1:10



2. Handrail with balustrade - detail
Elevation 1:10



B

Road Infrastructure

Design Strategy

The design strategy for road infrastructure focuses on prioritising the public domain amenity for pedestrians and bike riders on campus. The aim is to reduce the physical and visual impacts of vehicles on the student experience and increase the use of bikes for short trips and active transport on Campus.

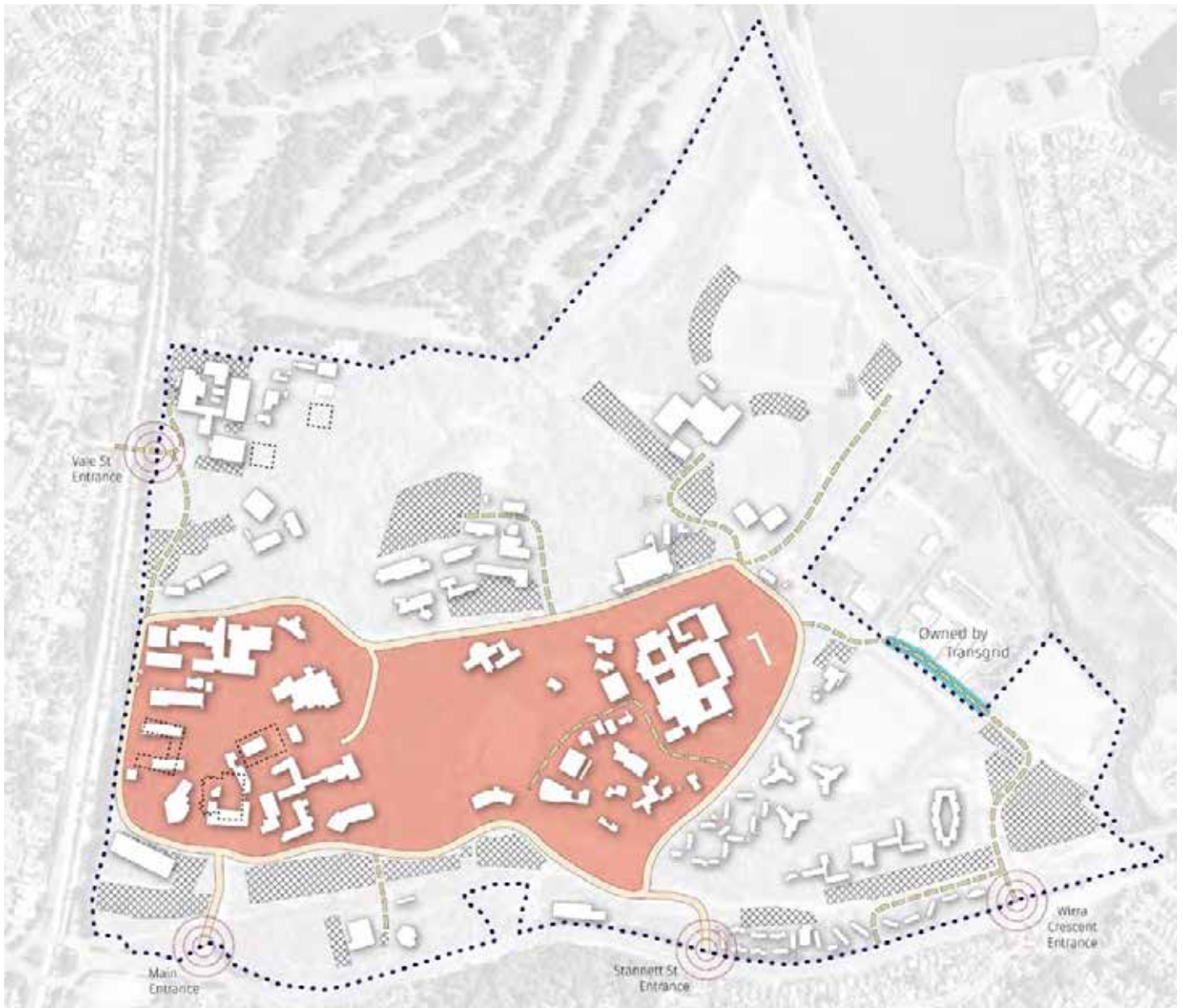
Design Considerations

- To make all road on campus consistent with the typical road environment to improve legibility, use and safety. Paving, linemarking and signage should adopt Transport for NSW standards and Austroads standards where possible
- Prioritise pedestrians throughout the campus, particularly on roads within the Ring Road.
- Measures to manage traffic are to be balanced with pedestrian experience and the existing geometry of streets

Principles

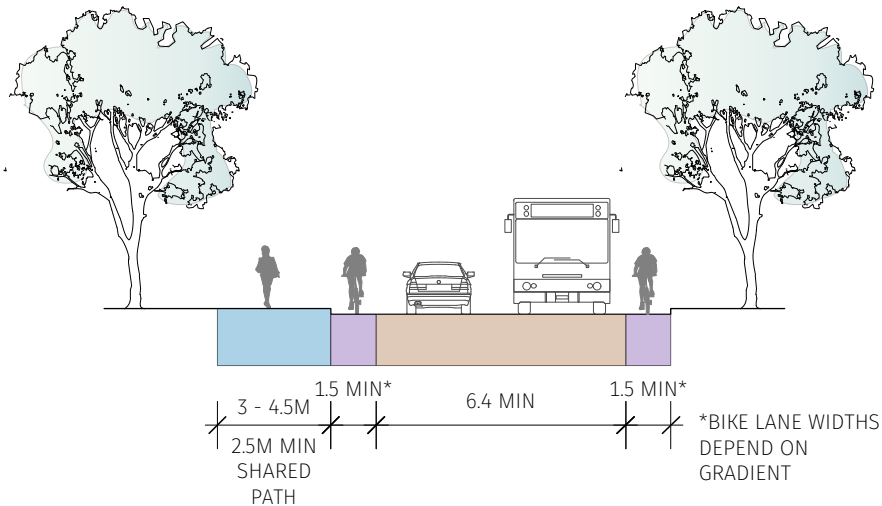
- Recognise the reservation width of existing roads on Campus is fixed
- Minimise regulatory traffic signage to reduce visual clutter
- Provide traffic calming devices to reduce speeds
- Ensure pedestrian crossings are installed where needed on main circulation routes
- All shared areas to have a vehicular speed limit of 10kmh
- Consider the use of sustainable materials such as green concrete and Reconophalt where possible
- Incorporate planting and shade trees to roads and car parks to improve amenity and reduce hard surfaces
- Incorporate WSUD principles to capture water runoff and divert to surrounding garden beds.
- All new roads to be designed to site specific geotechnical requirements.



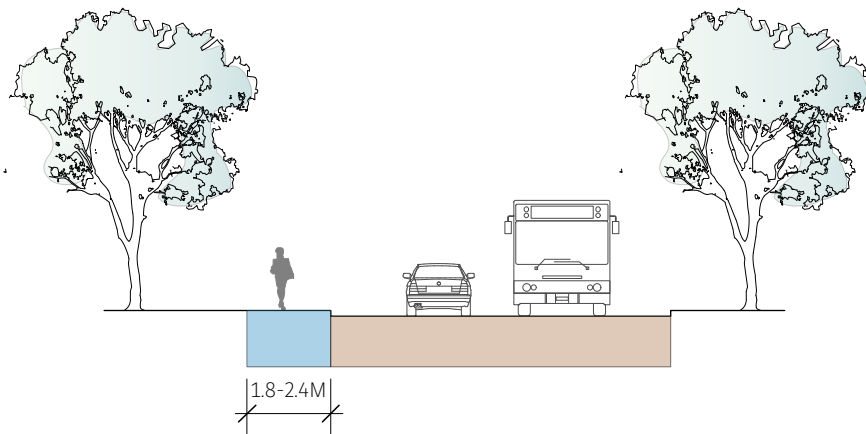


- Remove Carparking and Prioritise Pedestrians
- Parking
- Ring Road
- Secondary Road
- Future Building Footprint
- Future Building Footprint
- Entrance Point
- Entrance Point

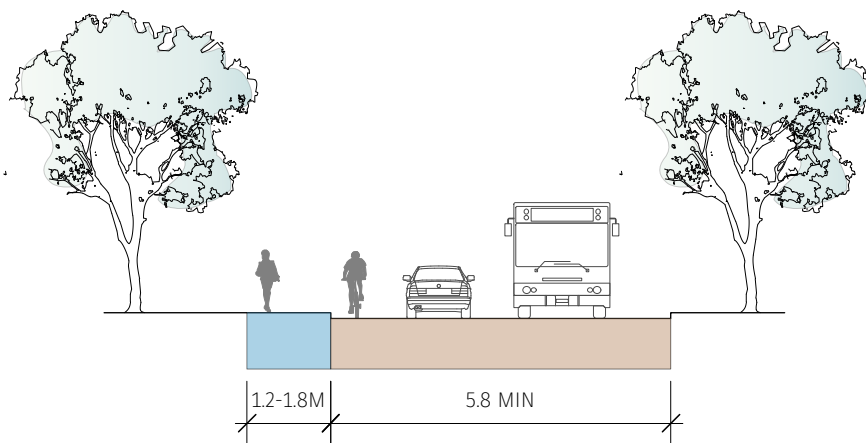
Road Corridor Sections



Typical Section Ring Road with Smart Path

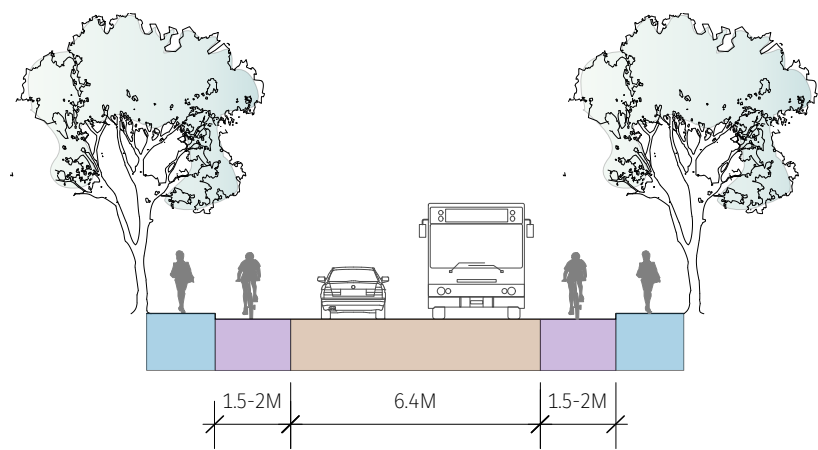


Typical Section Ring Road

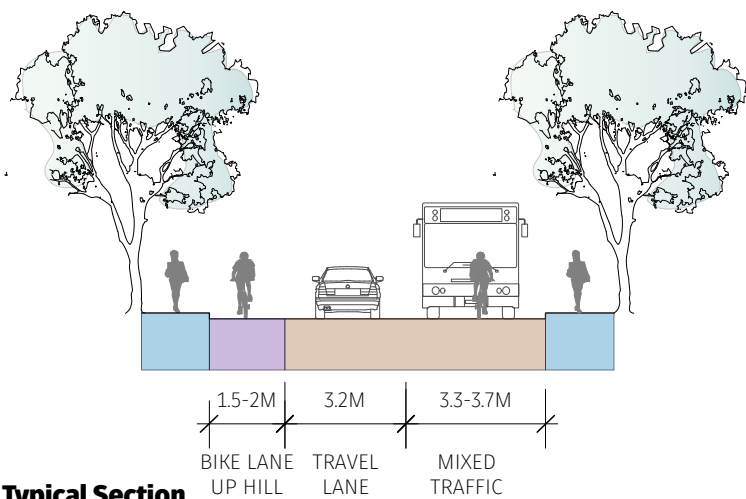


Typical Section Secondary Road

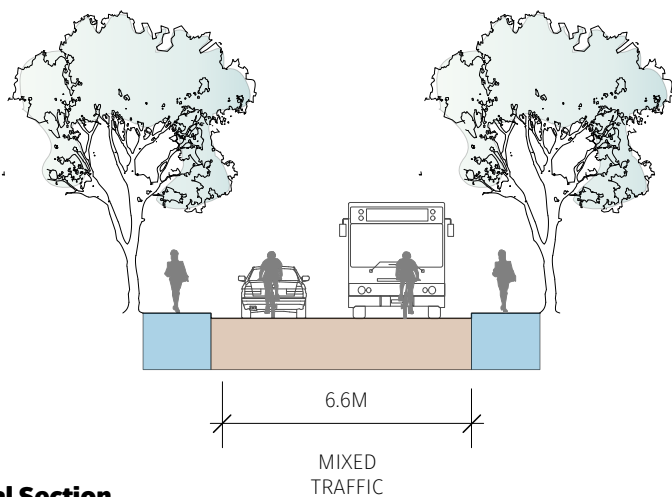
Road Corridor Sections



Typical Section
Ring Road Level 2

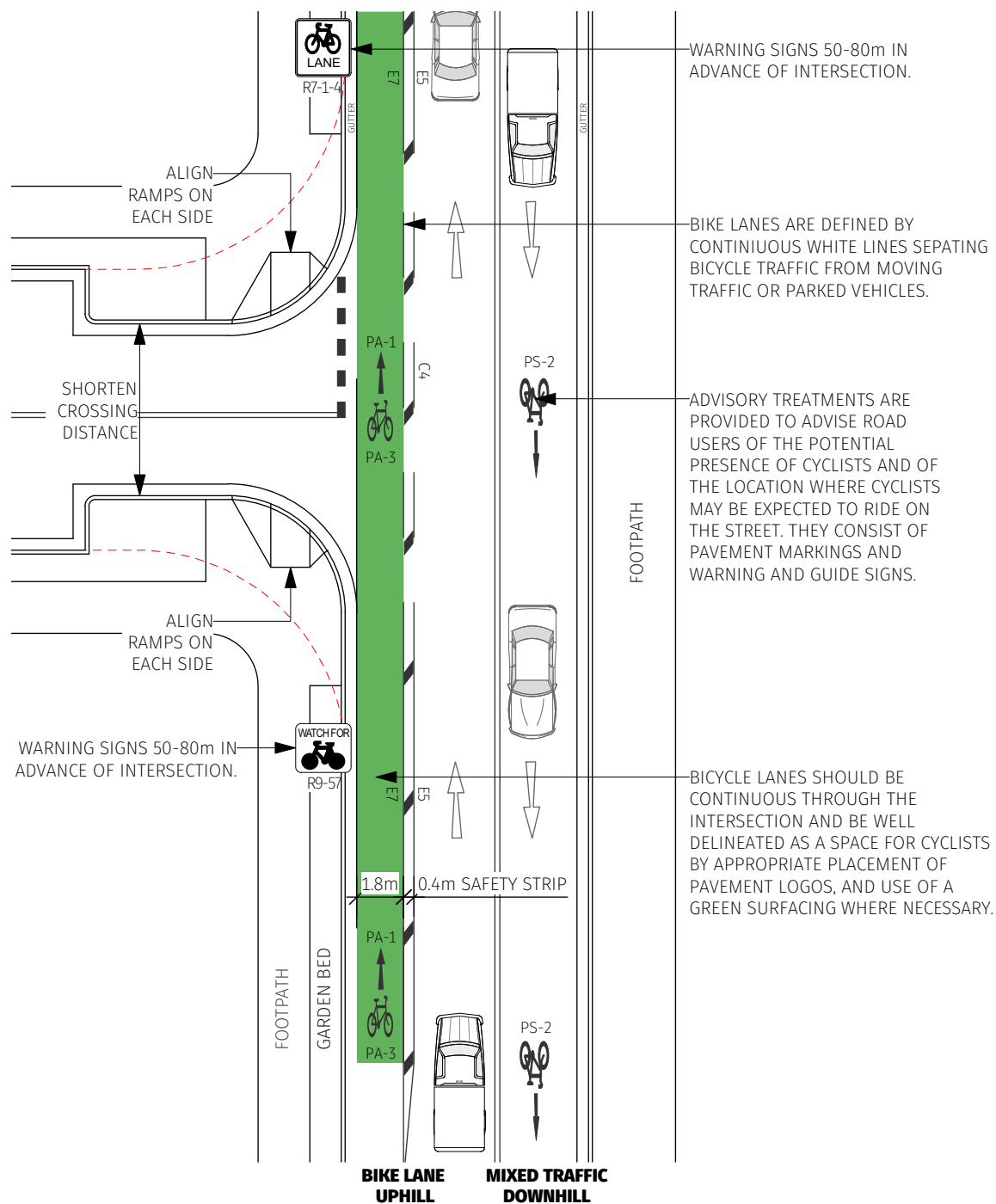


Typical Section
Ring Road on Grade



Typical Section
Secondary Road - Mixed Traffic

Cycleways at Intersections



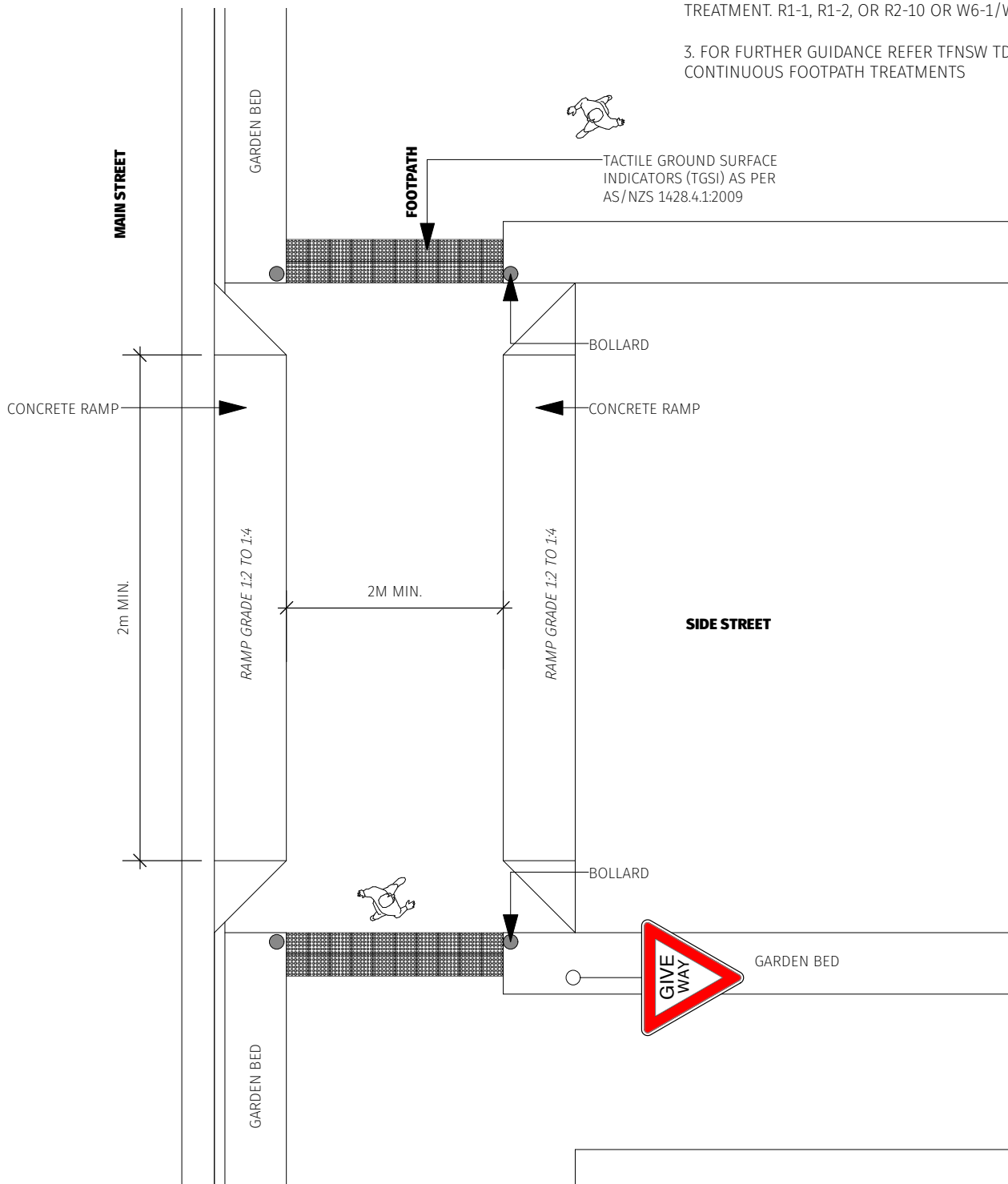
Footpath Continuation

NOTES

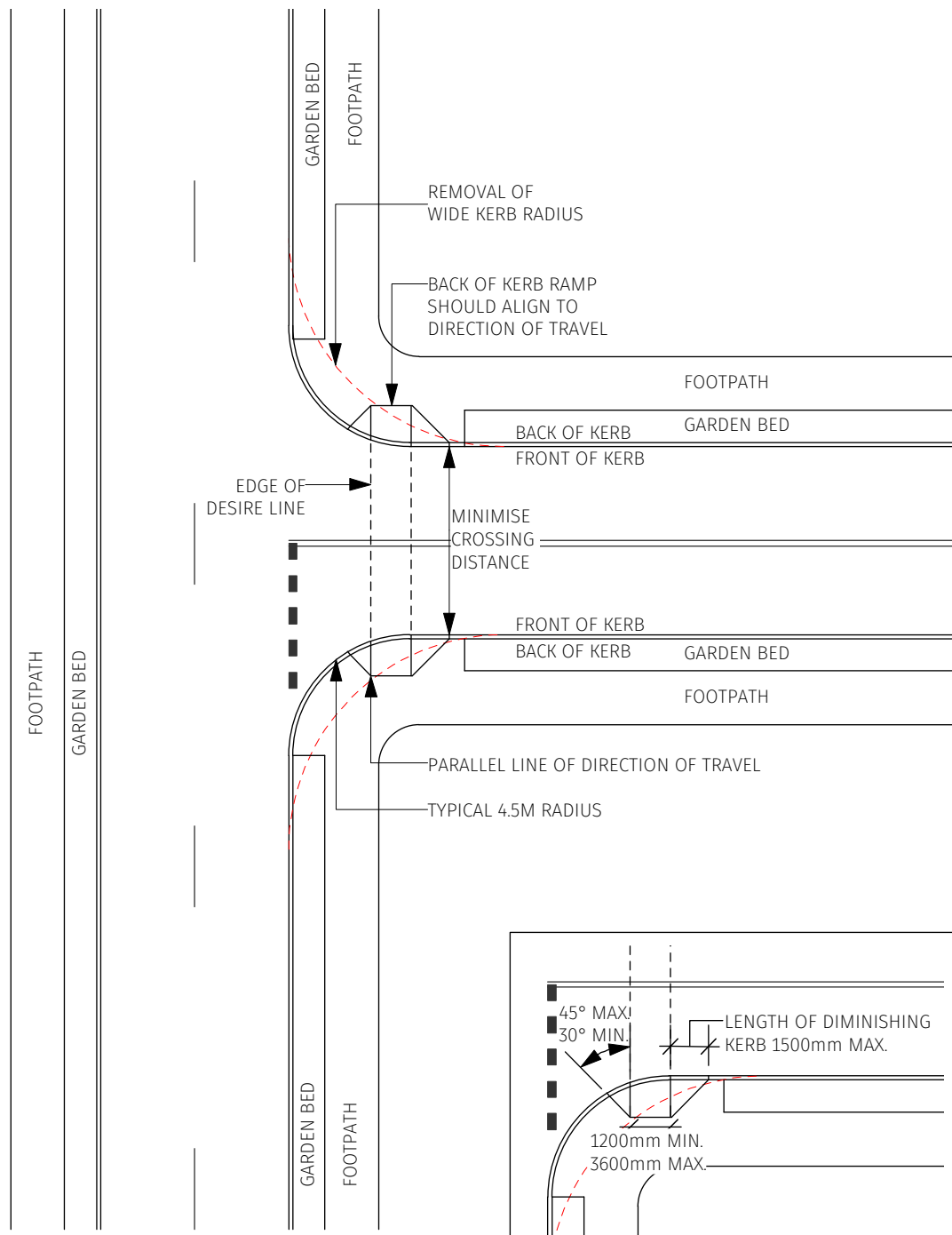
1. PREFERABLY 2M MIN, BUT WILL DEPEND ON ORIGINAL WIDTH OF FOOTPATH. PATH MAY NEED TO BE WIDENED TO ACCOMMODATE THE TREATMENT

2. STOP, GIVEWAY OR WARNING SIGN REQUIRED IF VEHICLES EXITING FROM SIDE STREET ACROSS THE TREATMENT. R1-1, R1-2, OR R2-10 OR W6-1/W8-23

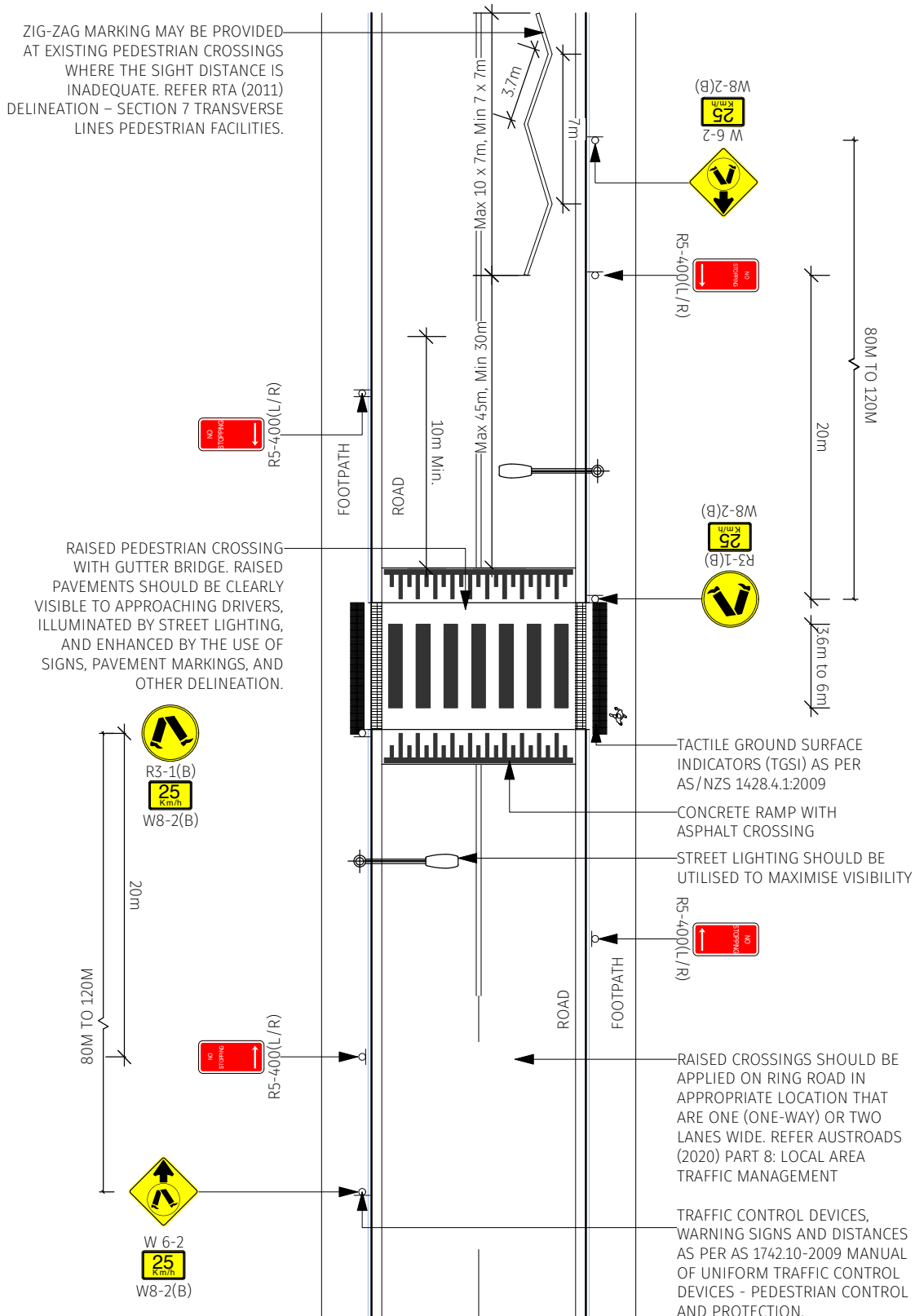
3. FOR FURTHER GUIDANCE REFER TFNSW TDT2013/05 CONTINUOUS FOOTPATH TREATMENTS



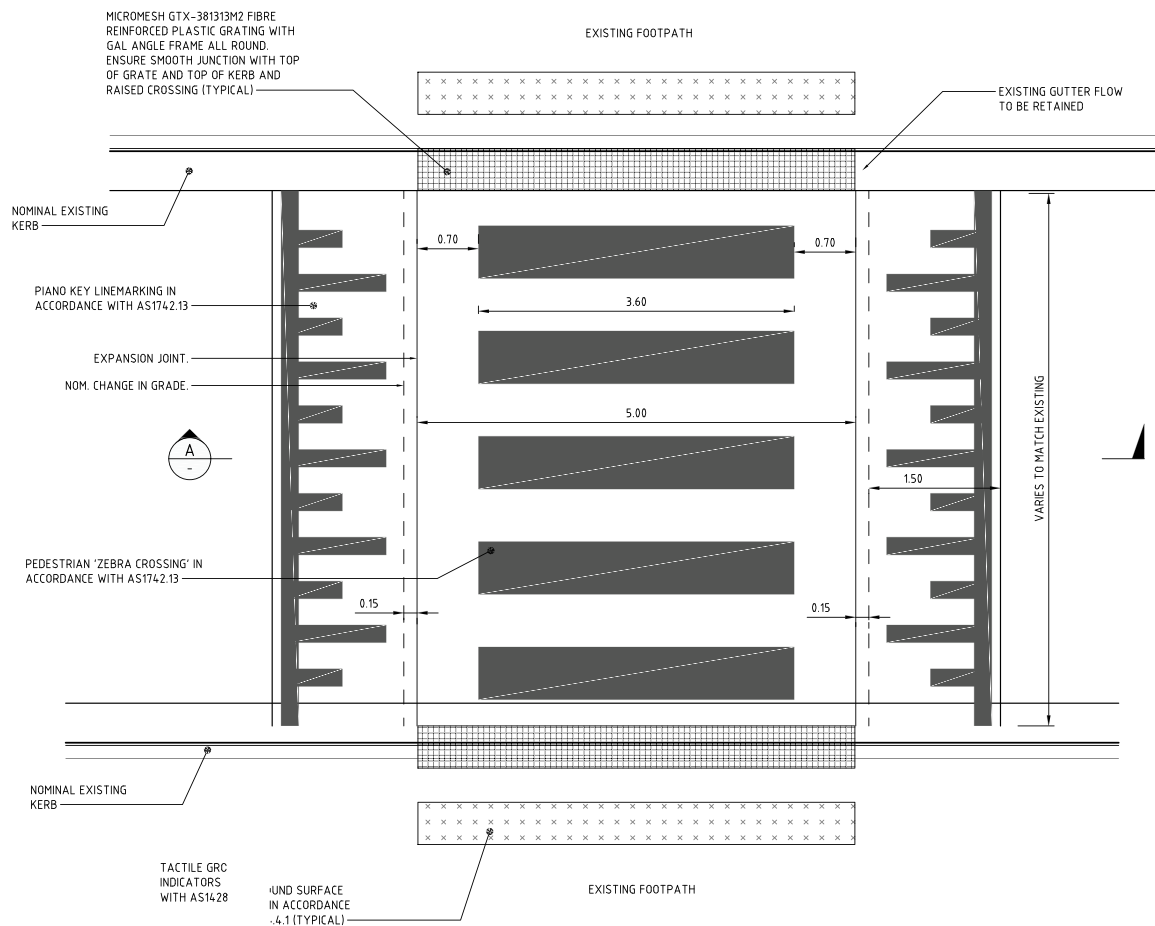
Kerb Ramps



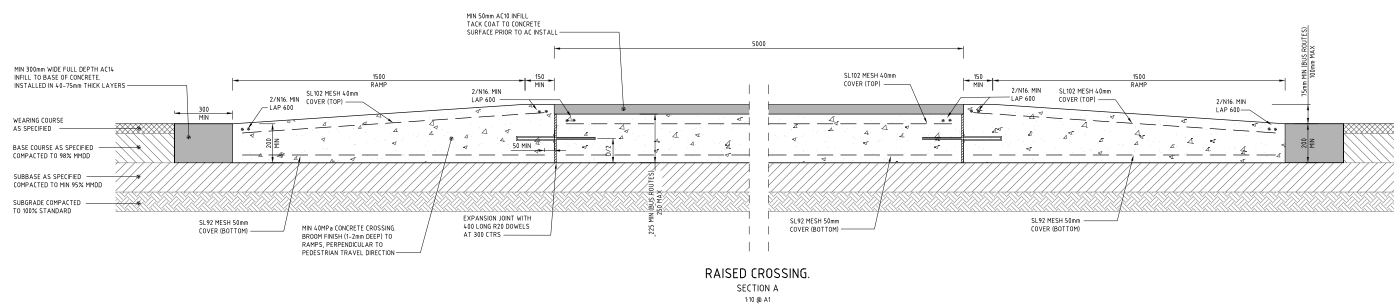
Raised Pedestrian Crossing



Raised Pedestrian Crossing



RAISED CROSSING.
PLAN
1:40 @ A1



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Road Pavements

B-01

Specifications

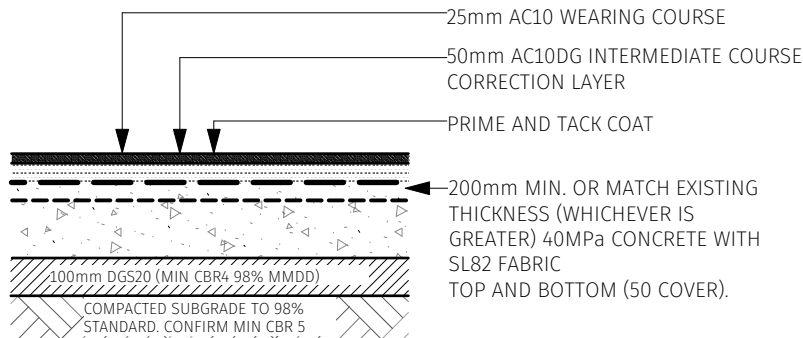
Product	Flexible Road Pavement
Standards	• Austroads Guide to Traffic Management • AS 1742 Manual of uniform traffic control devices • AS 1743 Road sign specifications • AS 2890.1 Parking facilities part 1: Off-street car parking • Austroads Guide to Pavement Technology Part 8: Pavement Construction • AS 2150 Hot mix asphalt - A guide to good practice • Linemarking to Delineation (Transport for NSW)
Materials	• The use Reconophalt is recommended where possible • AC 10 wearing course min 25mm • Base course • Sub-base course • Sub-grade course For unit paver road surface see A-02 (Trihex Paving)
Installation	• The thickness of asphalt layer(s) within a pavement should be determined by the structural requirements of the pavement • Adequate compaction of asphalt is essential to ensure that the design performance of the mix and expected service life are achieved. The compaction should be uniform and achieve a high density.
Maintenance	See Austroads' Guide to Pavement Technology Part 7: Pavement Maintenance https://austroads.com.au/publications/pavement/agpt07
Supplier	-
Comments	• Used on all road surfaces across campus, with the exception of shared environments. For shared environments use Trihex Paver (A-02) • If there is to be a shared space with standard paving across road and sidewalk, ensure speed limits are set to 10km an hour
Location	• Roads



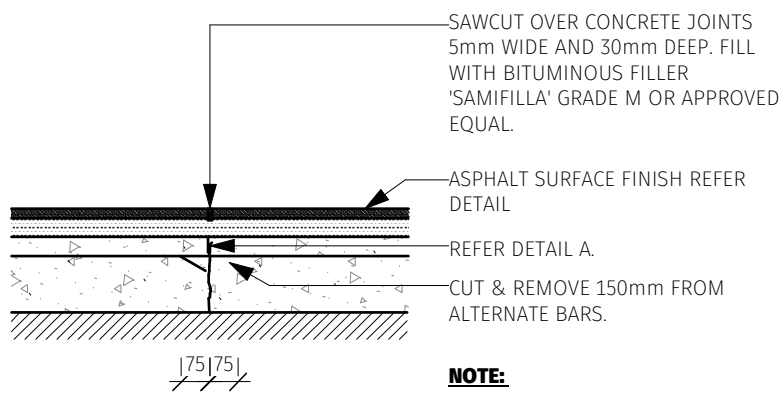
Road Pavements

B-01

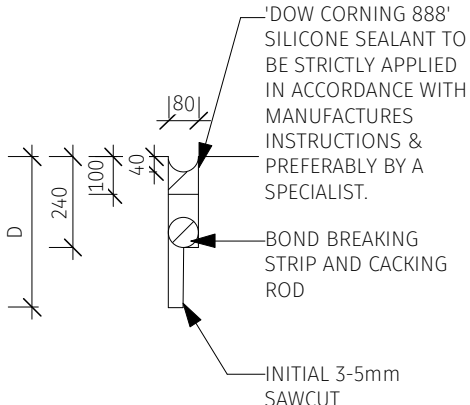
Technical Details



1. Asphalt Road
Section 1:20

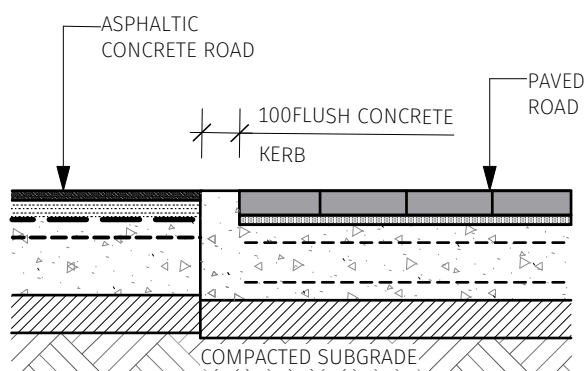


NOTE:
JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING (MAX 24 HOURS)



Detail A
D = 40 mm FOR 150 SLAB
D = 50 mm FOR 200 SLAB

2. Asphalt Road Contraction Joint
Section 1:20



2. Joint - Asphalt Road and Paved Road
Section 1:20

Kerbs and Gutters

B-02

Specifications

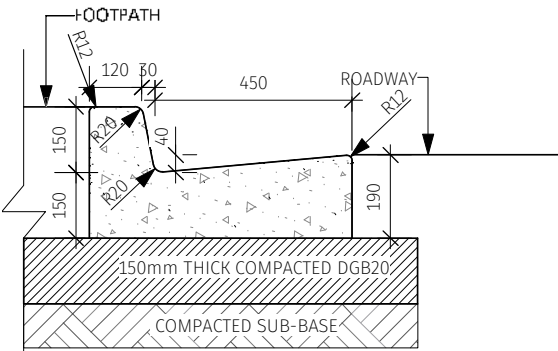
Product	RMS Type SA Barrier Kerb
Standard	• RMS QA Specification R15 Kerbs and gutters • AS 2876 Concrete kerbs and channels (gutters) – Manually or machine placed
Materials	• 25MPa concrete • Natural DGB20
Finish	• Finished using a steel float to work the coarse aggregate back from the exposed surfaces
Installation	• Concrete to fill formwork without voids • All corners and edges shall be left neatly rounded using an edging tool • Expansion joints to be constructed at 6m intervals
Maintenance	-
Supplier	-
Comments	• Avoid single pour kerbs • If there are no kerbs (eg. shared areas) install tactile indicators to signify edge of pathway
Location	-



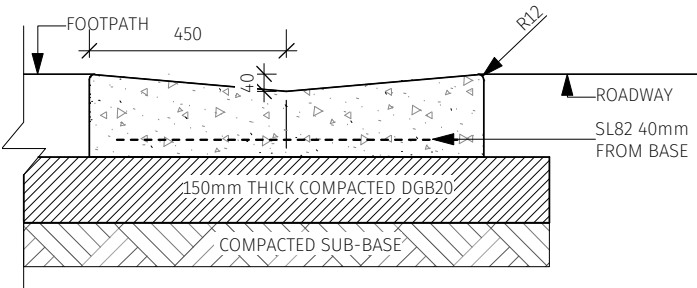
Kerbs and Gutters

B-02

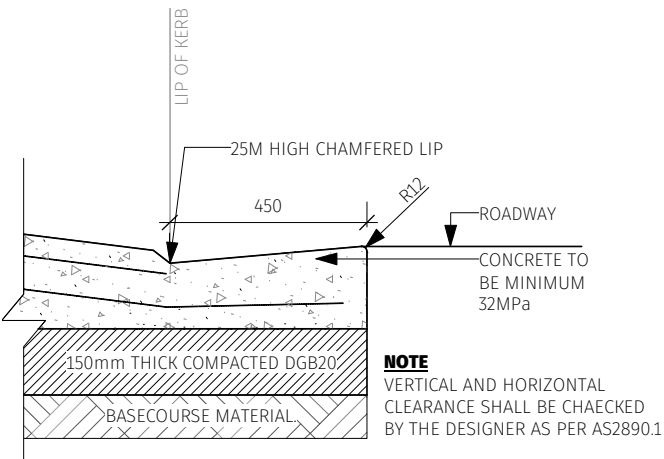
Technical Details



1. Barrier Kerb
Section 1:15



2. Dish Crossing
Section 1:15



3. Concrete Vehicle Crossing
Section 1:15

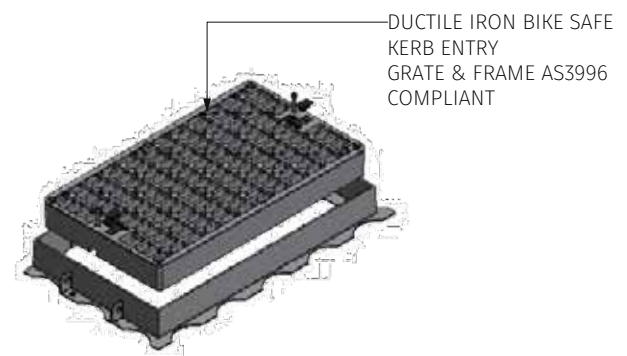
- NOTES
- ALL KERBS TO BE MIN 25MPA CONCRETE UNLESS NOTED OTHERWISE
 - ALL KERBS TO BE STEEL TROWEL FINISHED
 - ALL EDGES SHALL BE TOOL FINISHED WITH 12MM RAD
 - 50MM WIDE EDGING TOOL EXPANSION JOINTS SHALL BE PLACED AT 6M INTERVALS
 - REFER B-04 FOR TYPICAL KERB RAMP DIMENSIONS

Kerb Inlets

B-03

Specifications

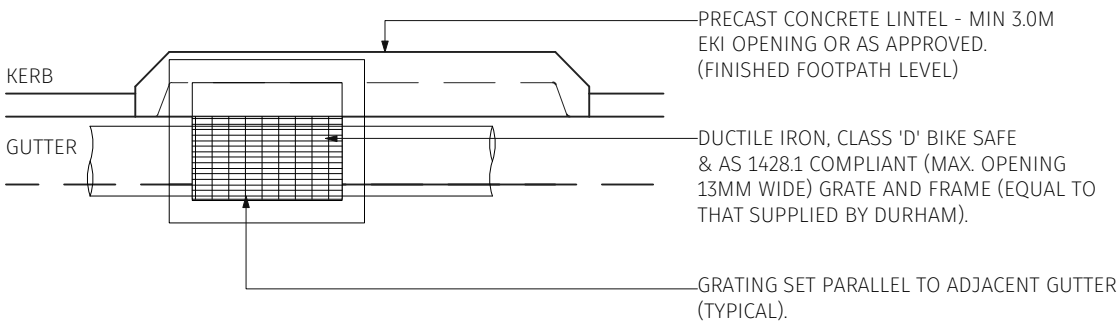
Product	Extended Kerb Inlet Lintel and Ductile Iron Bike Safe Kerb Entry Grate and Frame
Standards	- AS 1428.1-2009 Design for access and mobility, Part 1: General requirements for access - New building work - AS 3996-2019 Access covers and grates
Materials	Precast concrete lintel and ductile iron grate
Finish	- Lintels to match existing adjacent kerb type - Cast in situ lintels are not to be used unless shown on the construction plans or approved otherwise
Installation	- Prepare foundation, install lintel, pit and connect pipes, to manufacturer's recommendations - Precast concrete lintels shall have a minimum 3m extended kerb inlet (EKI) opening where possible - All stormwater structures shall be designed to an appropriate loading capacity to suit the loading capacity of the specified grate (Class 'D' for trafficable areas and Class 'C' for areas only subjected to pedestrian activity). The loading criteria shall comply with AS3996 and the ultimate-limit state design load shall be the same as the ultimate-limit state design load for the specified loading classification of the grate (210KN for Class 'D' and 150 KN for Class 'C' Grates)
Maintenance	Repair as necessary
Supplier	Lintel: Rocla or approved equivalent rocla.com.au Grate: Durham or approved equivalent durham.com.au
Comments	-
Location	Stormwater pits on roads



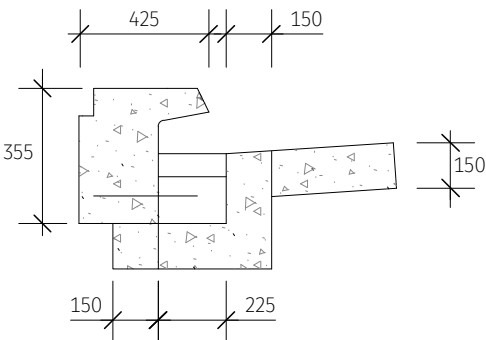
Kerb Inlets

B-03

Technical Details



1. Typical Gully Pit With Extended Kerb Inlet
Section 1:50



2. Typical Gully Pit Section
Section 1:50

Regulatory Signage

B-05

Specifications

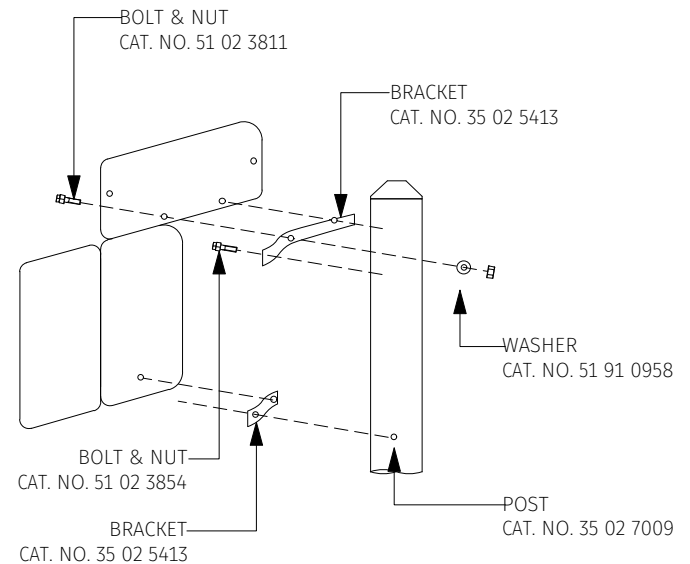
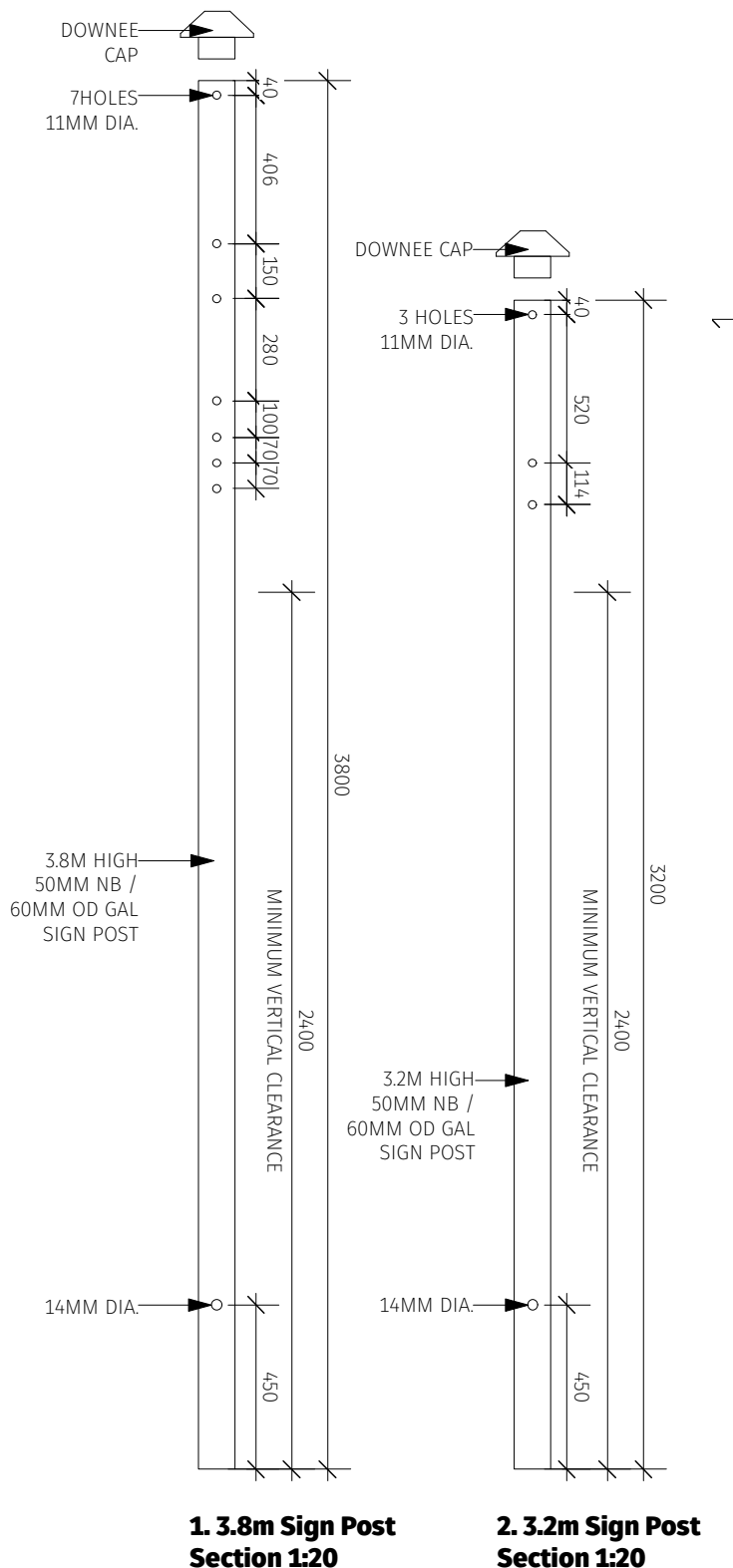
Product	Standard road sign and pole
Standards	AS/NZS 1742. 10 - 2009 Manual of uniform traffic control devices
Materials	- Hot dipped galvanised steel tube pole - Sign sheeting to meet requirements of Australian/ New Zealand Standard AS/NZS 1906.1
Finish	-
Installation	As per Transport for NSW specification
Maintenance	-
Supplier	Supplier to meet Transport for NSW specifications (text, sign, font and logos)
Comments	- Road signage across campus to read identically to typical NSW public road. - All signage to follow Transport for NSW sign types as described in signage database: https://www.rms.nsw.gov.au/cgi-bin/index.cgi?action=searchtrafficsigns.form
Location	-



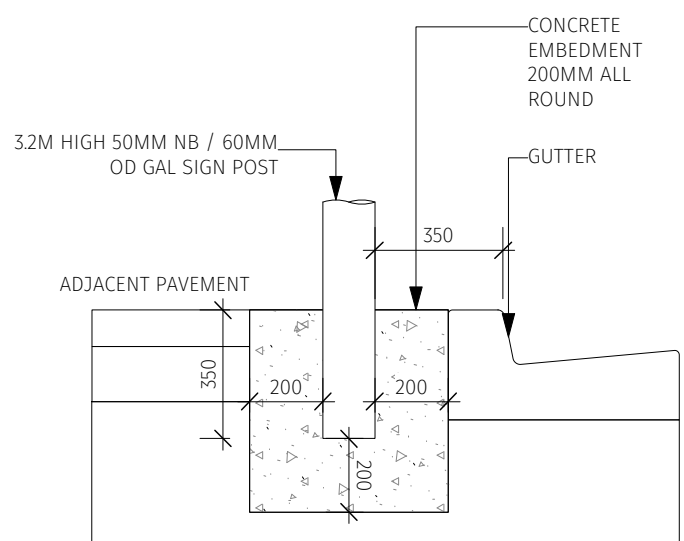
Regulatory Signage

B-05

Technical Details



3. Sign Assembly Support (Small Sign)
Axonometric 1:20



4. Sign Post Footing
Section 1:20

Wheel Stops

B-06

Specifications

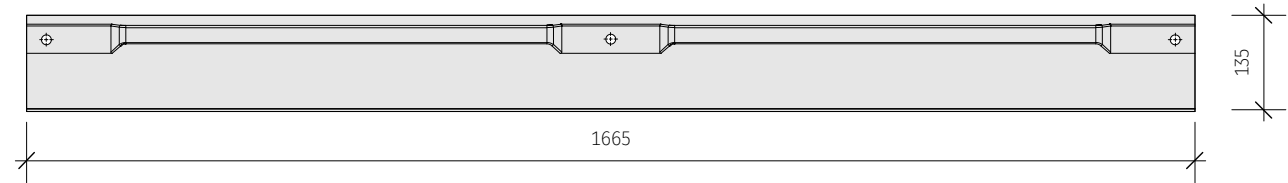
Product	Replas Wheel Stop
Standards	• AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking • Austroads Guide to Traffic Management Part 11: Parking
Materials	• Recycled plastic
Finish	• Grey colour as per Replas colour options
Installation	• See technical details sheet
Maintenance	-
Supplier	Replas Australia replas.com.au
Comments	• Used in car parks to prevent damage to walls, garden beds, pathways and other vehicles • All wheel stops can be routed with text, for reserved parking or company branding, while the blue colour is idea for 'accessible' parking
Location	-



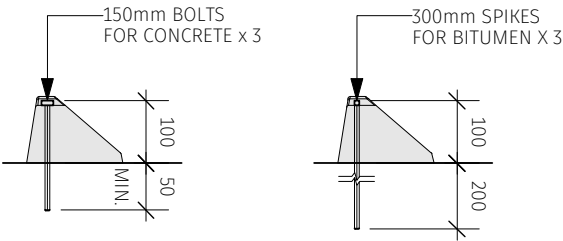
Wheel Stops

B-06

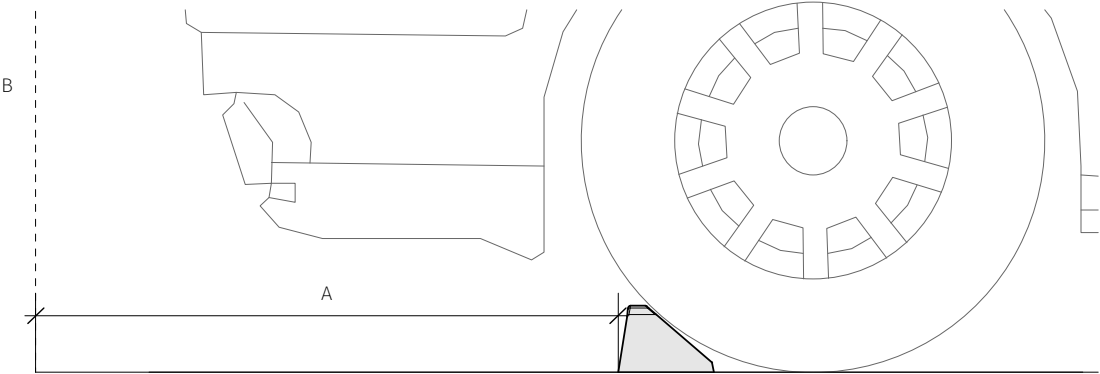
Technical Details



1. Wheelstop
Plan 1:10



2. Fixing Detail
Section 1:10



3. Wheel Stop
Elevation 1:10

Parking Direction	Wheel stop distance to front of parking space			
	Parking to kerb ≤ 150mm high (B)		Parking to kerb ≥ 150mm high (B)	
	Wheel stop height		Wheel stop height	
	90	100	90	100
Front-in (A)	630	620	830	820
Rear-in (A)	910	900	1110	1110

Cyclist and Pedestrian Holding Rail

B-07

Specifications

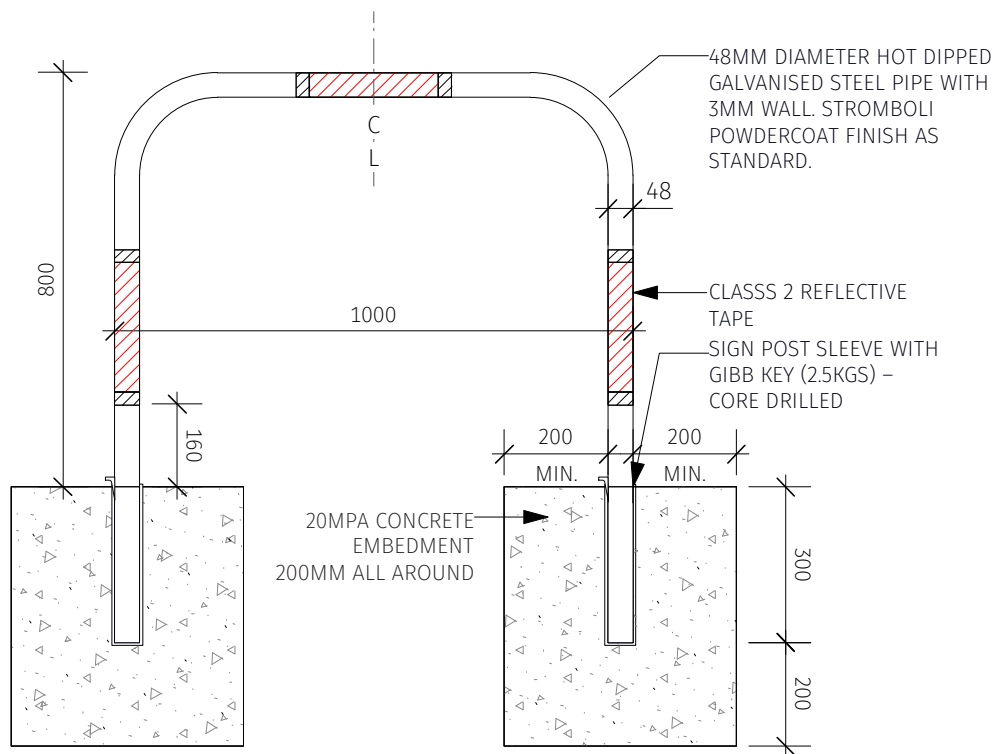
Product	Standard U-rail bike guard rail
Standards	-
Materials	Galvanised steel
Finish	- Powdercoat Stromboli (Interpon code GK148A) - Class 2 reflective markings, subsurface mounted.
Installation	- Install as per manufacturers recommendations - Ensure consistent with RMS NSW Bicycle Guidelines - Reflective tape to RMS Standard - Guard rail length varies according to each specific location
Maintenance	Pressure clean as required
Supplier	Industroquip or approved equivalent industroquip.com.au RampChamp (Core-drilled sleeve option) or approved equivalent rampchamp.com.au
Comments	-
Location	-



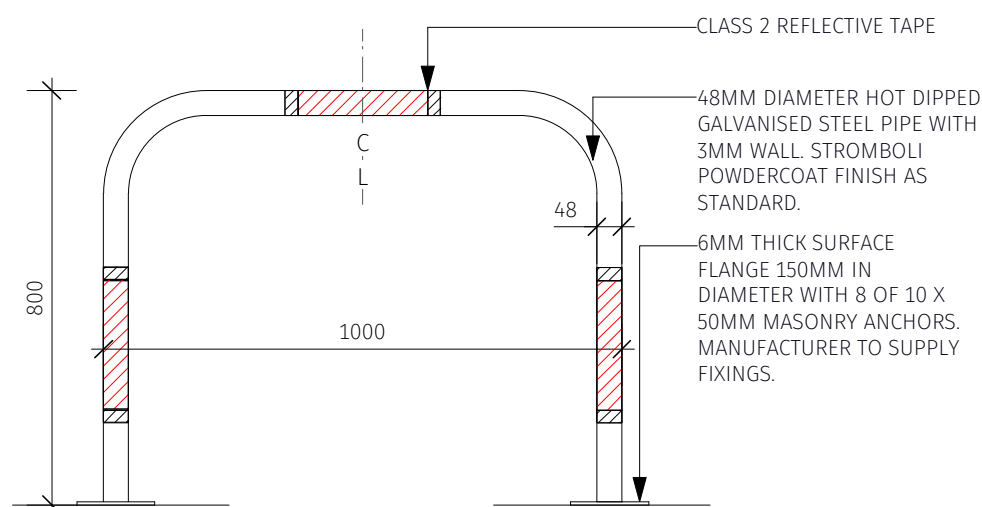
Cyclist and Pedestrian Holding Rail

B-07

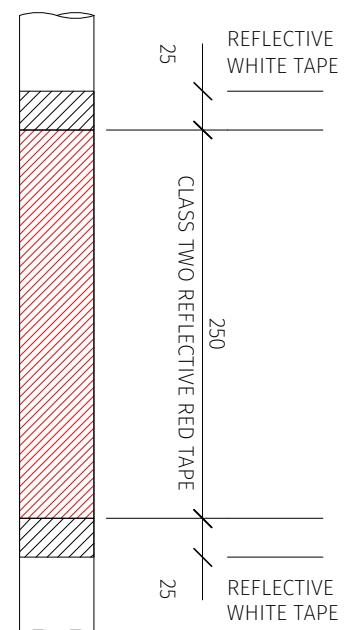
Technical Details



**1. Below Ground Bike Grab Rail
Section 1:15**



**2. Surface Mounted Bike Grab Rail
Section 1:15**



**3. Reflective Tape
Detail 1:15**

At Grade Pedestrian Crossing

B-08

Specifications

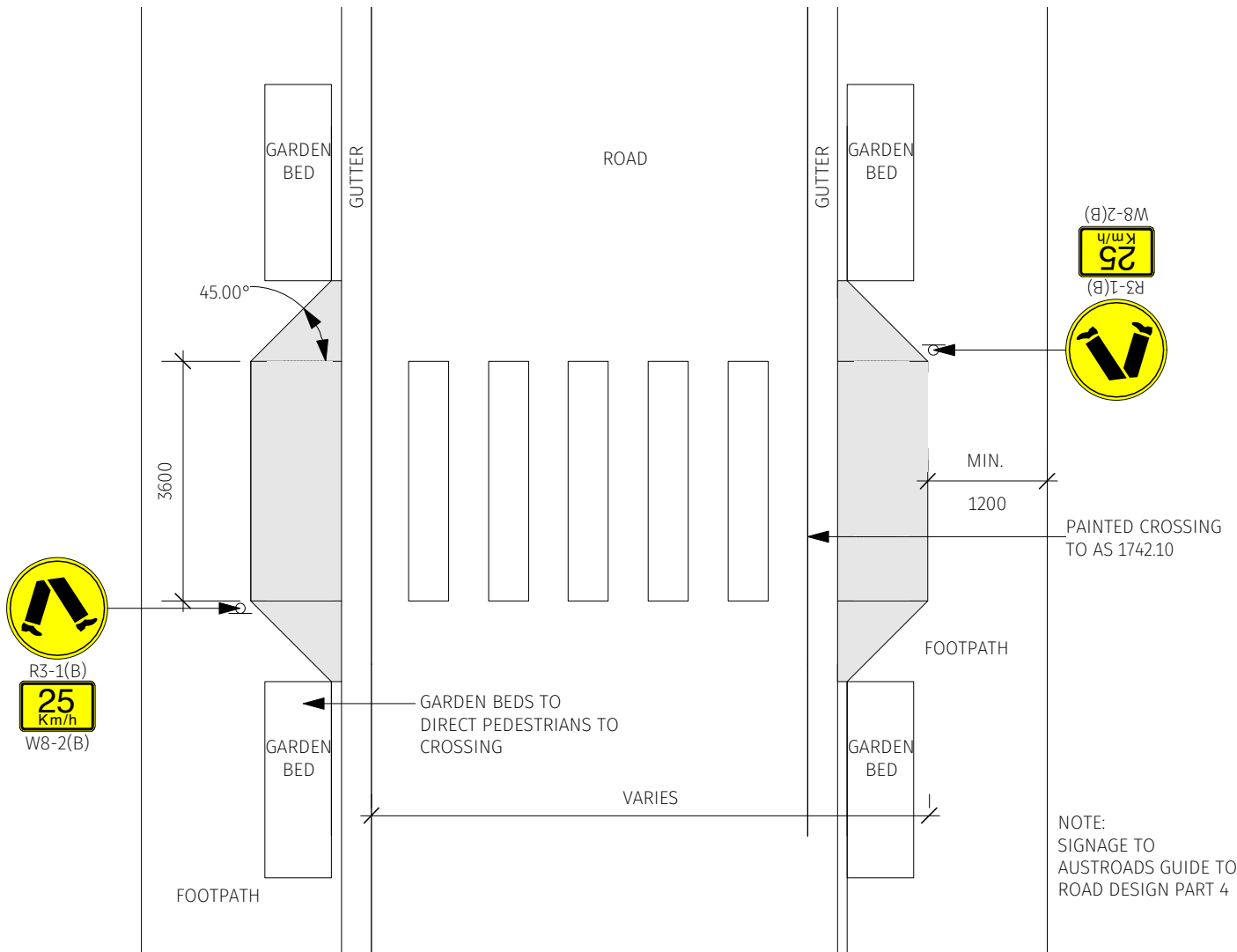
Element	Pedestrian crossing
Standard	• Austroads Guide to Road Design Part 4: Intersections and Crossings - General • Austroads Guide to Traffic Management Part 8: Local Area Traffic Management • AS/NZS 1742. 10 - 2009 Manual of uniform traffic control devices • AS/NZS-1158.4 - Lighting for roads and public spaces Part 4: Lighting of pedestrian crossings
Materials	Paint to TfNSW Specification D&C 3351
Finish	-
Installation	• Ramps to be provided at any points where pedestrians cross the road • If work is undertaken to upgrade the kerb on one side of the road, ensure to include the opposite kerb in scope of work to promote standard kerb treatments
Maintenance	Pressure clean as needed
Supplier	-
Comments	• Wherever practicable the crossing should be at right angles to the carriageway
Location	-



At Grade Pedestrian Crossing

B-08

Technical Details



1. At Grade Pedestrian Crossing
Typical Layout Plan 1:100

Raised Pedestrian Crossings

B-09

Specifications

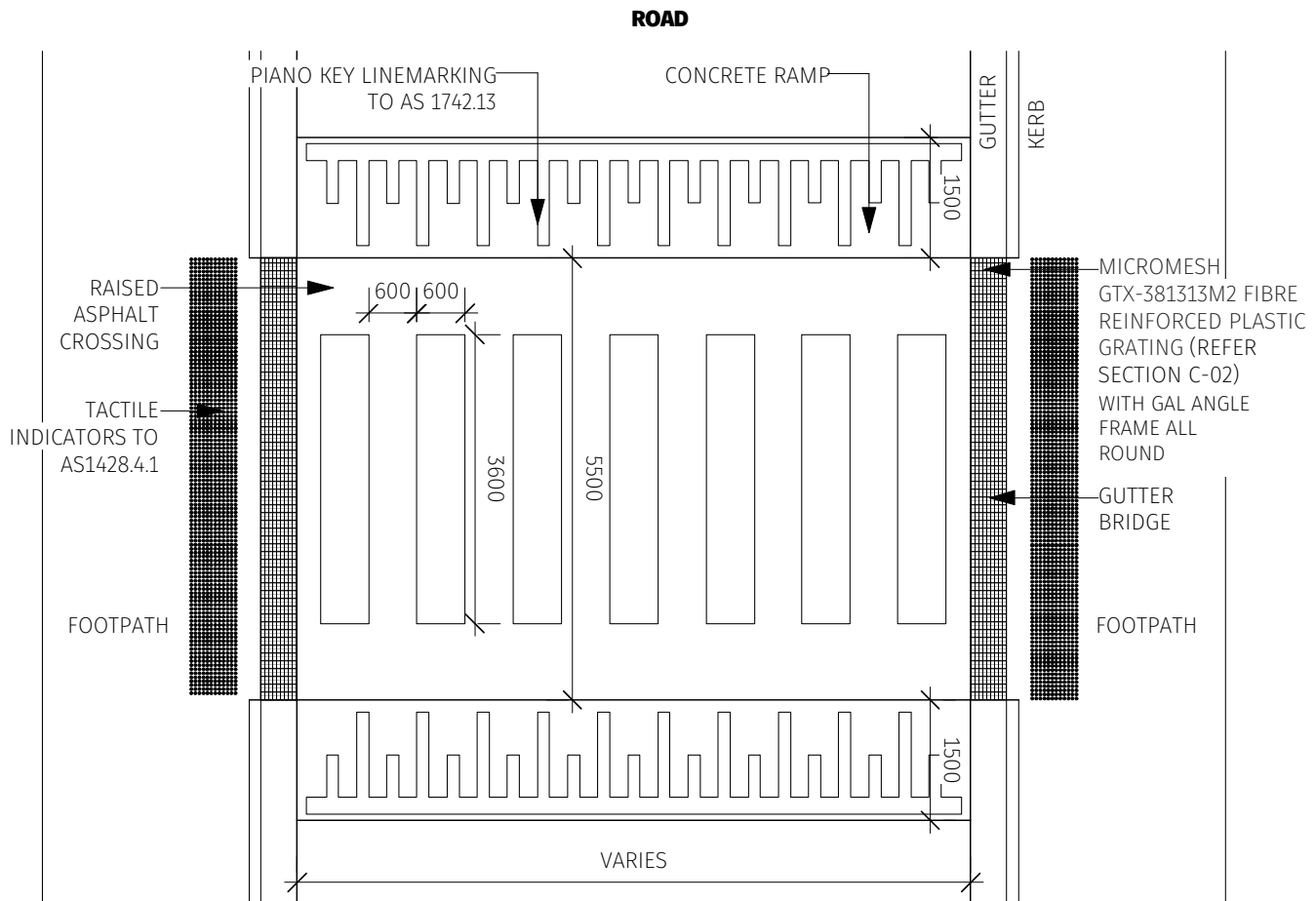
Product	Raised pedestrian crossing
Standards	• Austroads Guide to Road Design Part 4: Intersections and Crossings - General • Austroads Guide to Traffic Management Part 8: Local Area Traffic Management • AS/NZS 1742. 10 - 2009 Manual of uniform traffic control devices • AS/NZS-1158.4 - Lighting for roads and public spaces Part 4: Lighting of pedestrian crossings
Materials	• For high profile areas, match the dominant surrounding paving with painted white line markings • For all other areas asphalt with white line markings may be applied
Finish	• Platform - asphaltic concrete wearing course (AC10), road base (AC20) • Ramp - concrete • Gutter bridge - mircomesh fibre grating
Installation	• A sawcut chase is required at the approach & Departure side of the hump (minimum of 50mm deep by 300mm wide) • AC road base to be placed in two equal layers, advised by civil engineers • Linemarking to be advised by traffic engineer • Warning sign installation to be advised by traffic engineer • Raised pedestrian crossings should be orientated perpendicular to the direction of traffic flow to ensure both front wheels of a vehicle begin to rise or fall on the ramps concurrently
Maintenance	• Pressure clean as required.
Supplier	-
Comments	• Provide safe pedestrian movement across roads • Site along main pedestrian access routes where a crossing is required • Maintain sightlines for pedestrians at entry of crossing with 2m setback of trees and shrubs • Alternative trihex paver treatment can be applied to the platform
Location	-



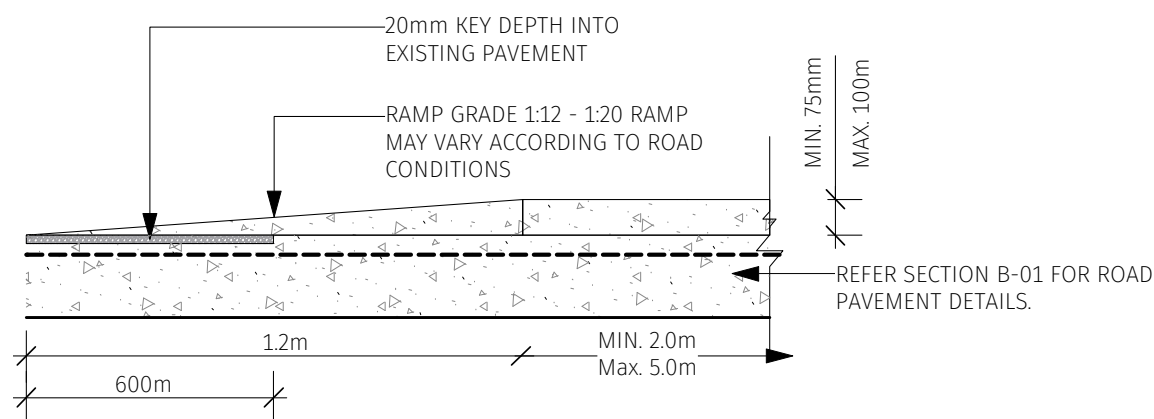
Raised Pedestrian Crossings

B-09

Technical Details



1. Raised Pedestrian Crossing Plan 1:100



2. Indicative Dimensions of a Raised Pedestrian Crossing Section 1:20

Speed Humps - Carpark

B-10

Specifications

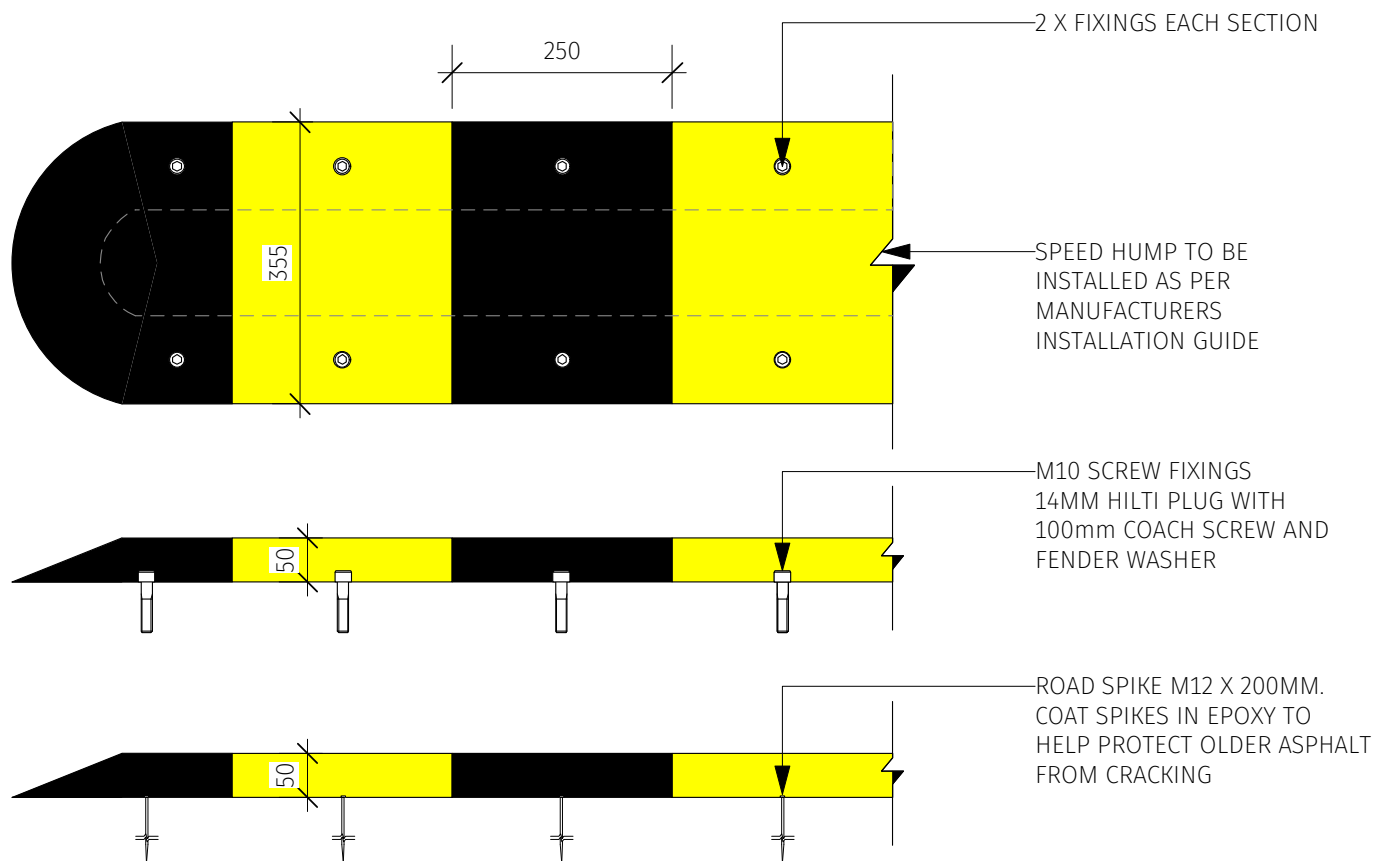
Product	Enforcer Rubber Speed Hump
Standards	AS/NZS 2890.1 Parking facilities - Off-street car parking
Materials	New and recycled rubber
Finish	Solid colour (black or yellow)
Installation	- Suited to use in concrete or asphalt - Two fixing each section. 14mm hilti plug with a 100mm coach screw and 12mm washer
Maintenance	Replace modules as necessary
Supplier	Safety Express or approved equivalent safetyexpress.com.au
Comments	- Spaced at no less than 10 metres along any one aisle or roadway - Humps shall not impede pedestrian or wheelchair traffic on any accessible travel path - Sold as modular units - Can be used with or without end caps
Location	- To be used in Campus car parks and driveways only - Do not use on roads



Speed Humps - Carpark

B-10

Technical Details



1. Rubber Speed Hump Plan/Section 1:10

Speed Humps - Roads

B-11

Specifications

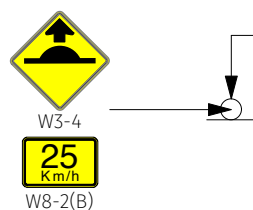
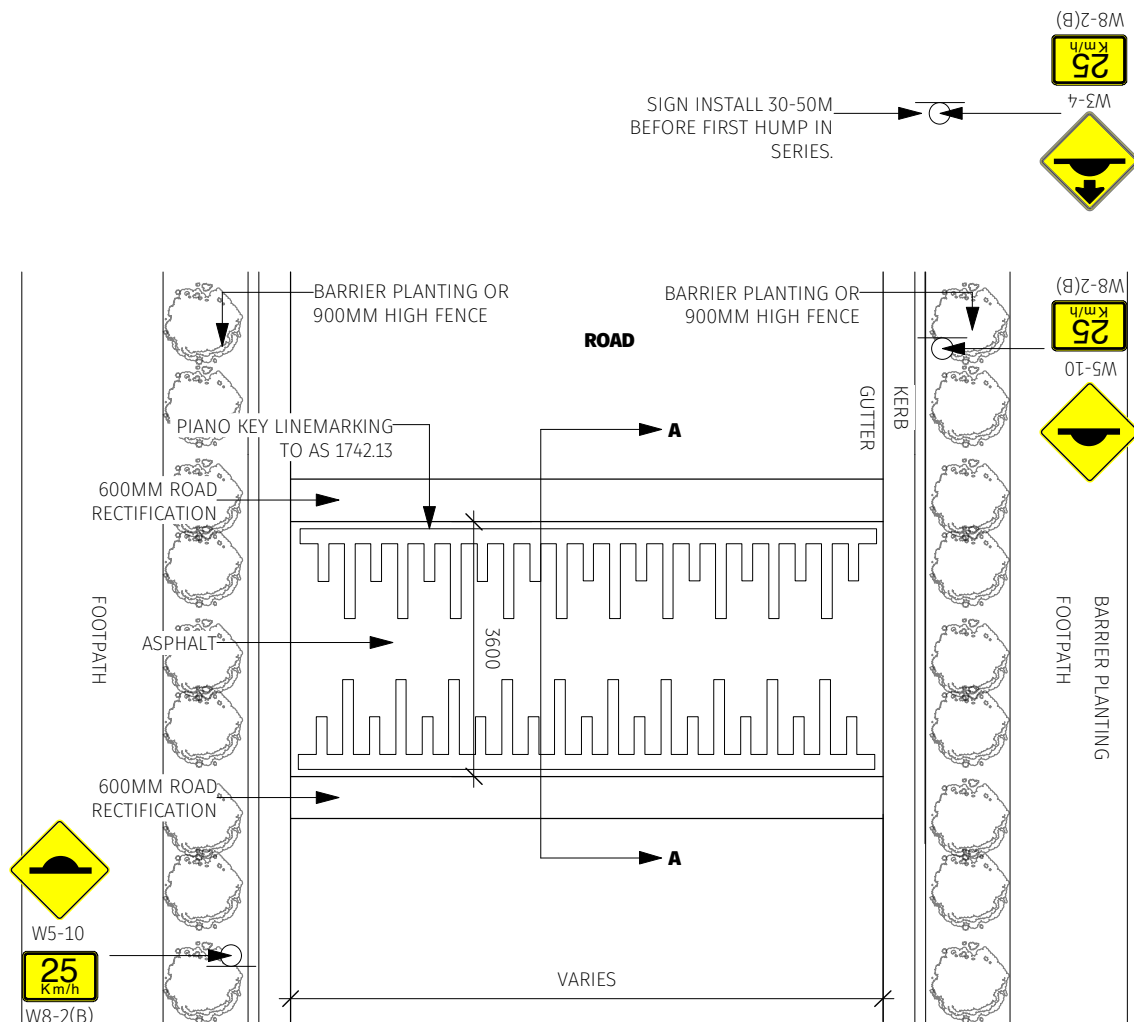
Product	Watt's profile speed hump
Standards	• Austroads Guide to Road Design Part 4: Intersections and Crossings - General • Austroads Guide to Traffic Management Part 8: Local Area Traffic Management (2016) • AS/NZS 1742. 10 - 2009 Manual of uniform traffic control devices
Materials	• Asphaltic concrete
Finish	• Asphaltic concrete wearing course (AC10) Road base (AC20)
Installation	• A sawcut chase is required at the approach & departure side of the hump (minimum of 50mm deep by 300mm wide) • AC road base to be placed in two equal layers, advised by civil engineers • Linemarking to be advised by traffic engineer • Warning sign installation to be advised by traffic engineer • Raised pedestrian crossings should be orientated perpendicular to the direction of traffic flow to ensure both front wheels of a vehicle begin to rise or fall on the ramps concurrently.
Maintenance	-
Supplier	-
Comments	• To be used in roads • Can be combined with pedestrian crossing • Spacing of devices should not be less than 80m and generally not more than 120 to 150m • Spaced to maintain speed limit of 20 - 40kmh • Humps shall not impede pedestrian or wheelchair traffic on any accessible travel path • If not a crossing plant garden beds or erect fencing adjacent to restrict pedestrian use.
Location	-



Speed Humps - Roads

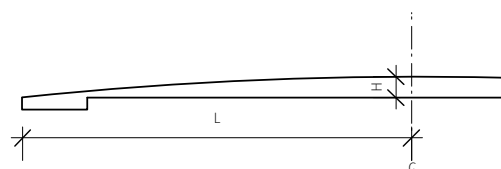
B-11

Technical Details



**1. Speed Hump
Plan/Section 1:100**

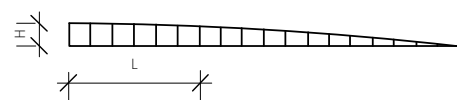
SIGN INSTALL 30-50M BEFORE
FIRST HUMP IN SERIES.



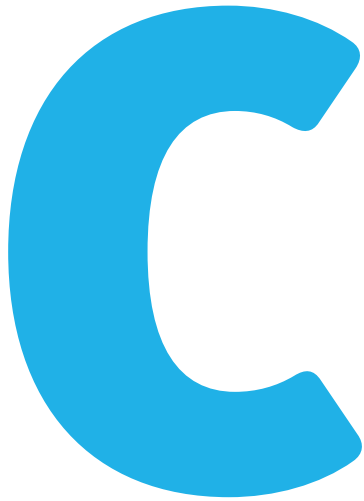
SECTION A - A

L (mm)	0	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
H (mm)	100	100	99	97	95	93	90	86	81	76	71	65	58	51	43	34	25	16	5

**2. Speed Hump
Detail**







Structures

Design Strategy

Built structures include shade shelters, bus shelters, decking, small storage and service buildings. The goal of inclusion in the Public Domain Manual is to provide guidance on material palette and principles, while allowing room for bespoke designs to be developed that are site specific and responsive to place. The choice of approach would be guided by the structure's purpose, it's relevance to wayfinding within the Campus, whether it seeks to establish a point of interest or be recessive, and how it might reinforce a site-specific response to place.

Design Considerations

- All structures, including shelters, bus stops and walkways to be DDA compliant
- Materials used in construction to have a minimum Bushfire Attack Level of 29
- Colour selection and design details of structures to take design cues from the surrounding built environment
- Sustainable construction practices and materials.

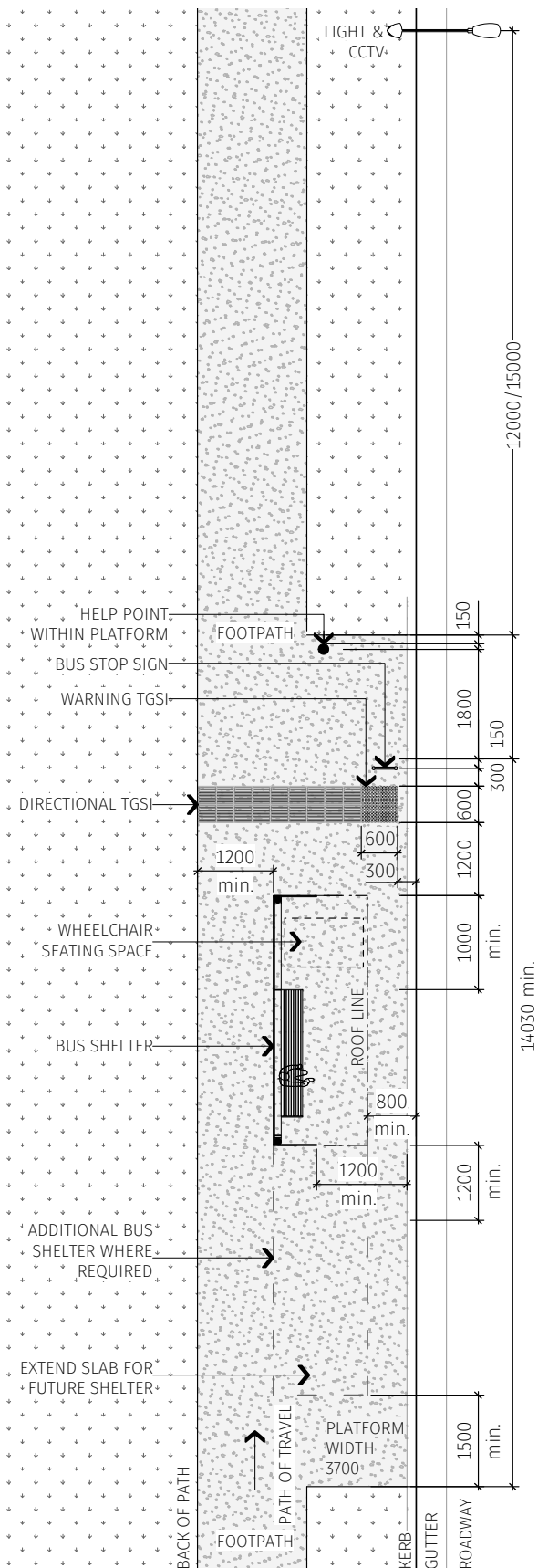
Principles

- Use materials that are robust and complement the campus character
- Create coherence by consistently expressing the hierarchy of materials throughout the Campus, whilst also allowing variation where deemed appropriate.
- Ensure shelters provide adequate environmental protection
- Structures must not impede pedestrian access or accessible path of travel.

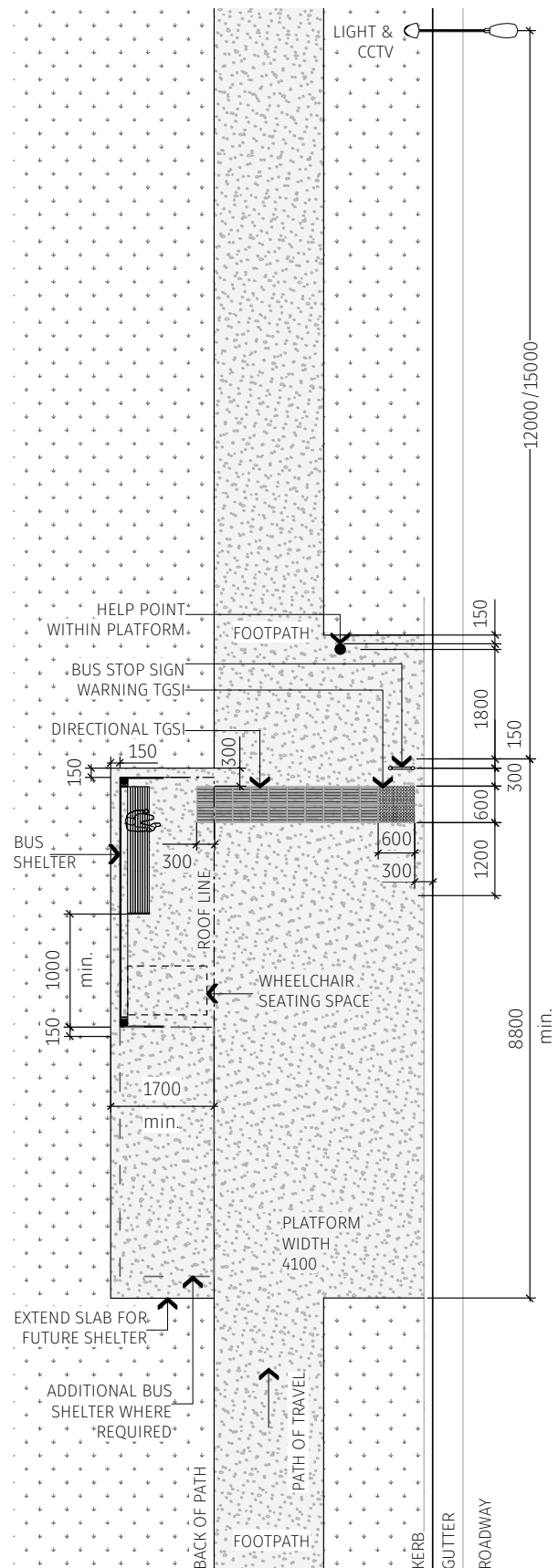
Ramps and Deck Structures

- Pedestrian walkway structures are included in the following preferential hierarchy:
 1. Concrete (Kangatrak)
 2. Micro Mesh
 3. Composite decking (Ekodeck 'Alpine Ash')





A
Bus stop shelter in front of footpath



B
Bus stop shelter behind footpath

Concrete Planks

C-01

Specifications

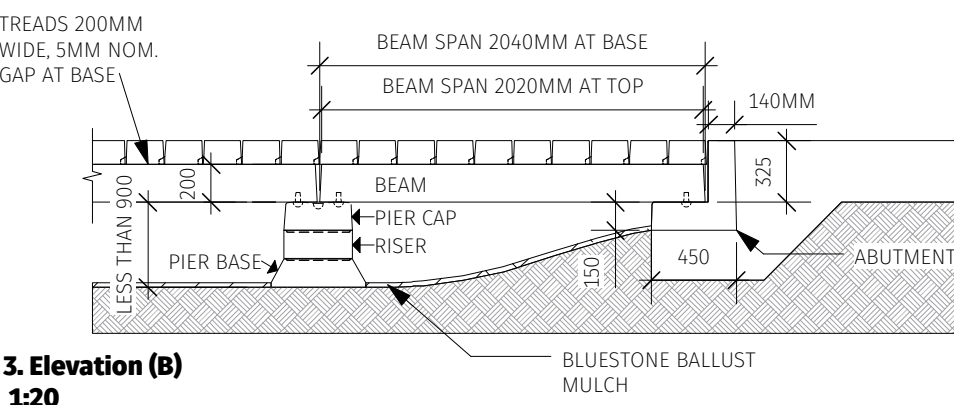
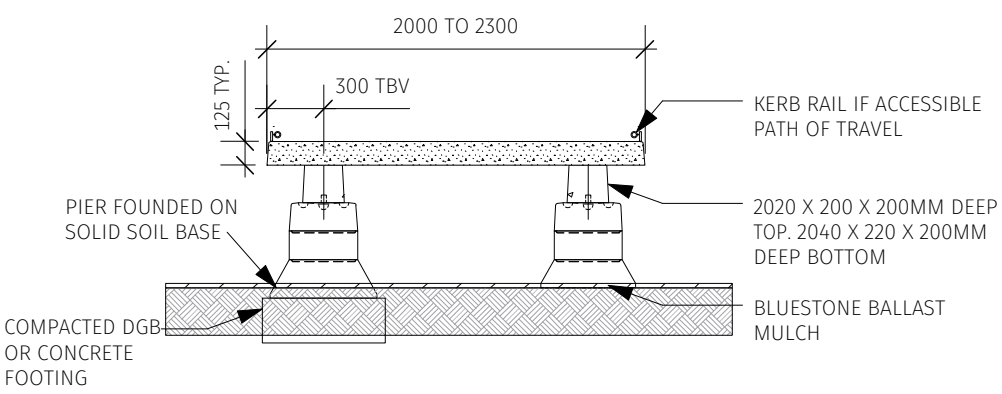
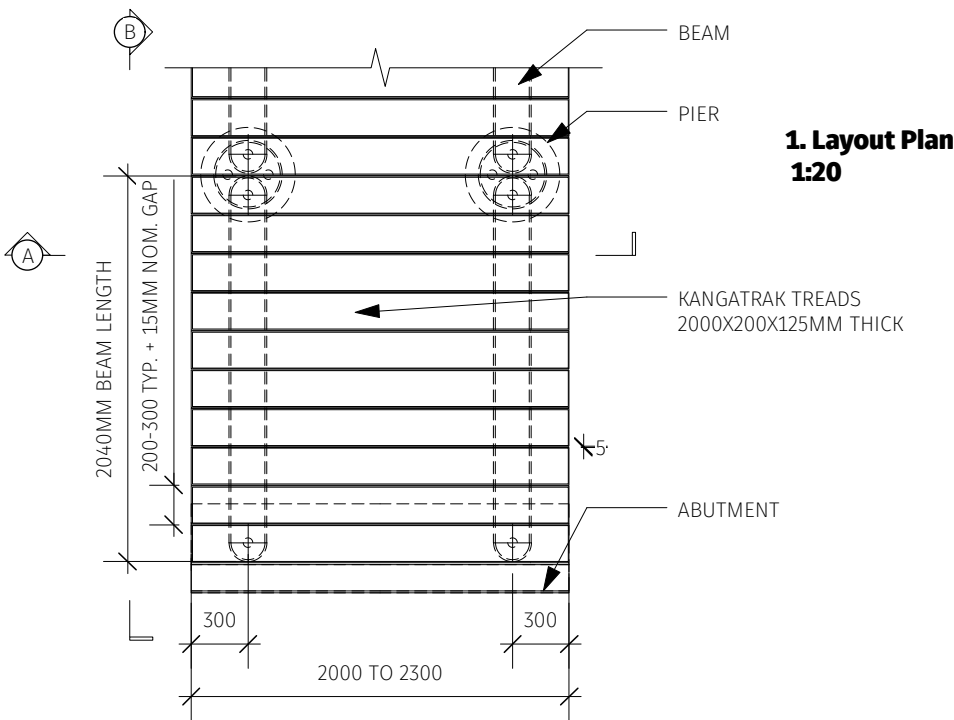
Product	Concrete plank boardwalk / decks
Standards	• AS 1428.1 Design for access and mobility-General requirements for access - New building work • AS 1657 Fixed platforms, walkways, stairways and ladders design, construction and installation • AS 4586 Slip resistance classification of new pedestrian surface materials
Materials	• Concrete piers, beams and treads • Tread width: 2m, 2.3m, 3m, 3.4m • Beams: 2m, 3m x 200 x 200nom • Pier Base: (rounded) 500 nom dia • Pier Rise: (rounded) 362 nom dia • Pier Cap: (rounded) 362 nom dia • Pier Square Tile: (square) 500mm dia
Finish	• Non-slip Koala - exposed aggregate.
Installation	• Modular system comprising piers, beams and treads installed directly onto the ground surface, or on prepared rock base • Handrails and balustrades to be used only where required
Maintenance	• Pressure clean as needed
Supplier	KangaTrak or approved equivalent kangatrak.com.au
Comments	• Raised pedestrian walkway and decks. Kerb rail needed for accessible path of travel
Location	• Raised decks and ramps



Concrete Planks

C-01

Technical Details



- NOTES
- 50Mpa Concrete Mix to standard design
 - Reinforcement not shown
 - Bearing assumed on ground under is 150IPa safe bearing pressure
 - Beams and abutments off form finish colour to architects specification
 - Treads and kerbs to have 'timber look' finish, colour to architects specification

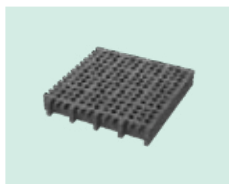
Mesh Platforms

C-02

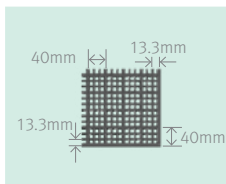
Specifications

Product	Fibre reinforced plastic mesh
Standards	- AS 1428.1 Design for access and mobility-General requirements for access - New building work - AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation - AS 4586 Slip resistance classification of new pedestrian surface materials
Materials	Micromesh GTX-381313M2 Fibre Reinforced Plastic Grating
Finish	- Micromesh: 'Light Grey' - Steel protective coating: Duratec Elements Powder Coat - Colour: Monument Flat 90E7724Z
Installation	To engineer's detail and specification
Maintenance	- Clean on a regular schedule to avoid any build up of soil or dirt - Oil / Grease / Food / Drink: remove and mop as soon as possible - Spray with a hose / pressure washer/use warm soapy water and a medium bristle brush
Supplier	Treadwell or approved equivalent treadwellgroup.com.au
Comments	- Raised pedestrian walkway - Maximum gap 8mm
Location	Raised decks and ramps

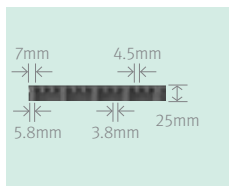
GTX-381313M2



Isometric View



Plan View



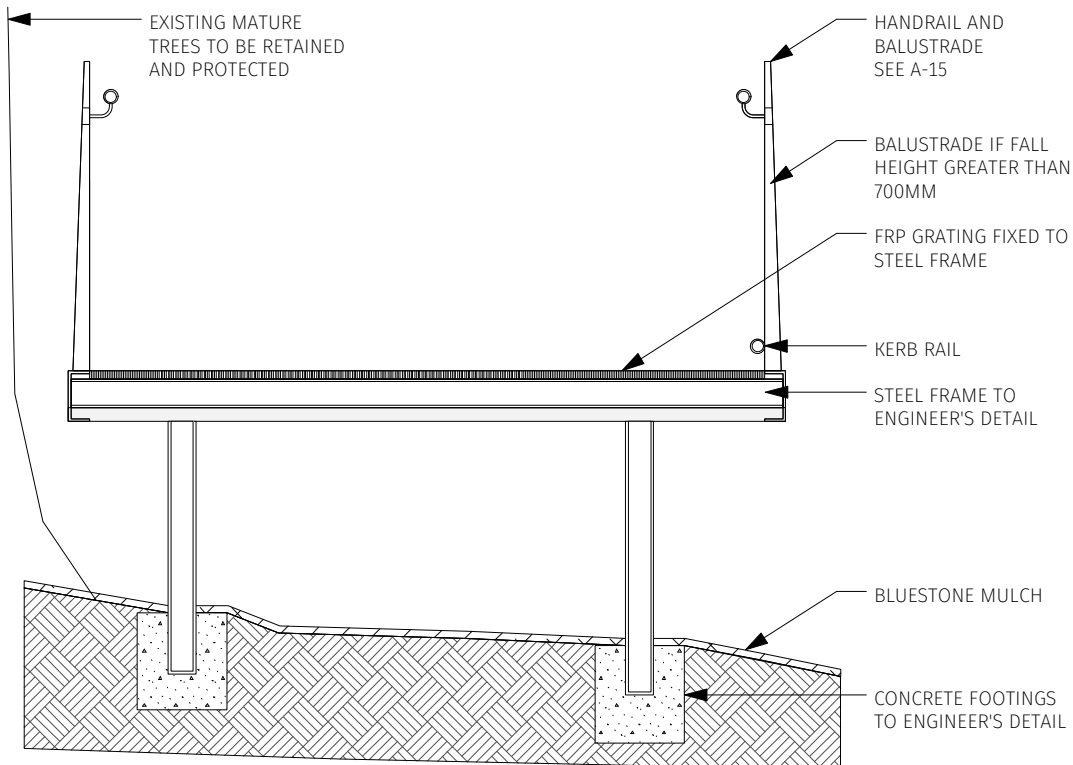
Elevation View



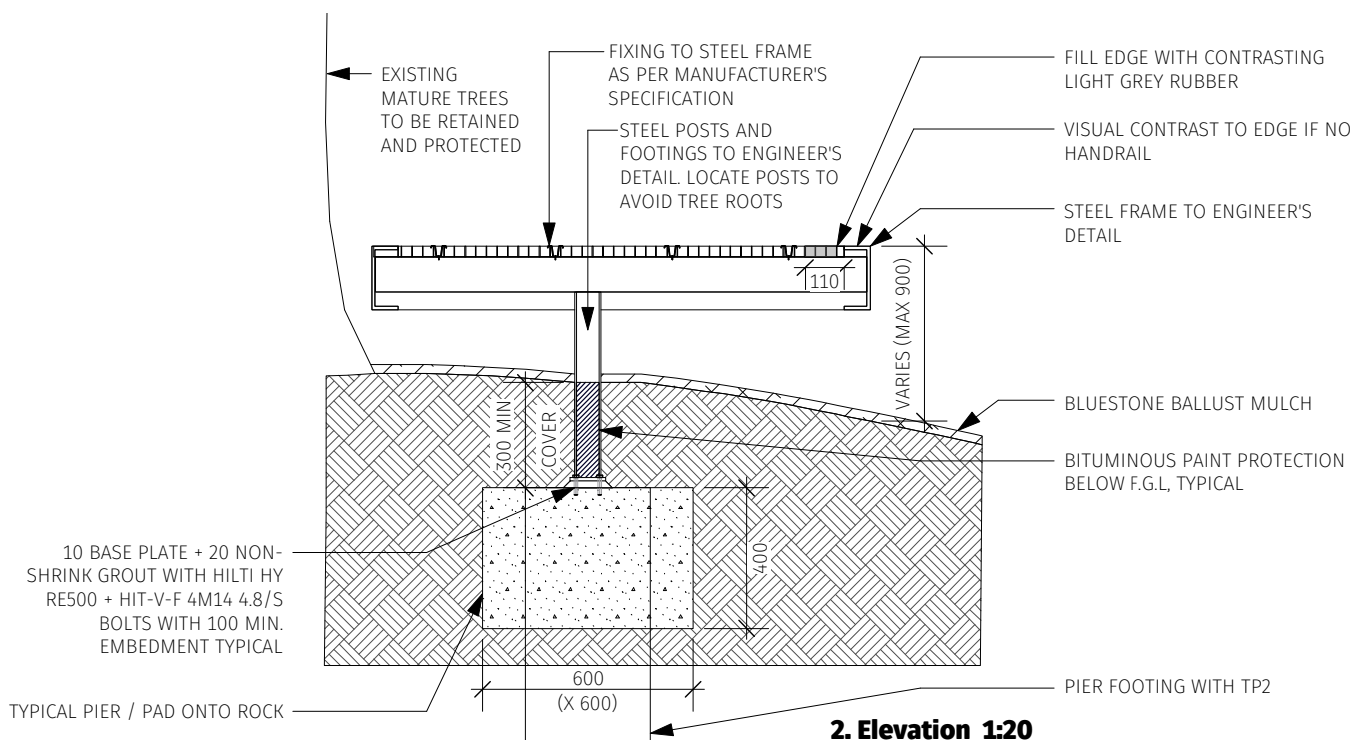
Mesh Platforms

C-02

Technical Details



1. Section 1:25



2. Elevation 1:20

Decking

C-03

Specifications

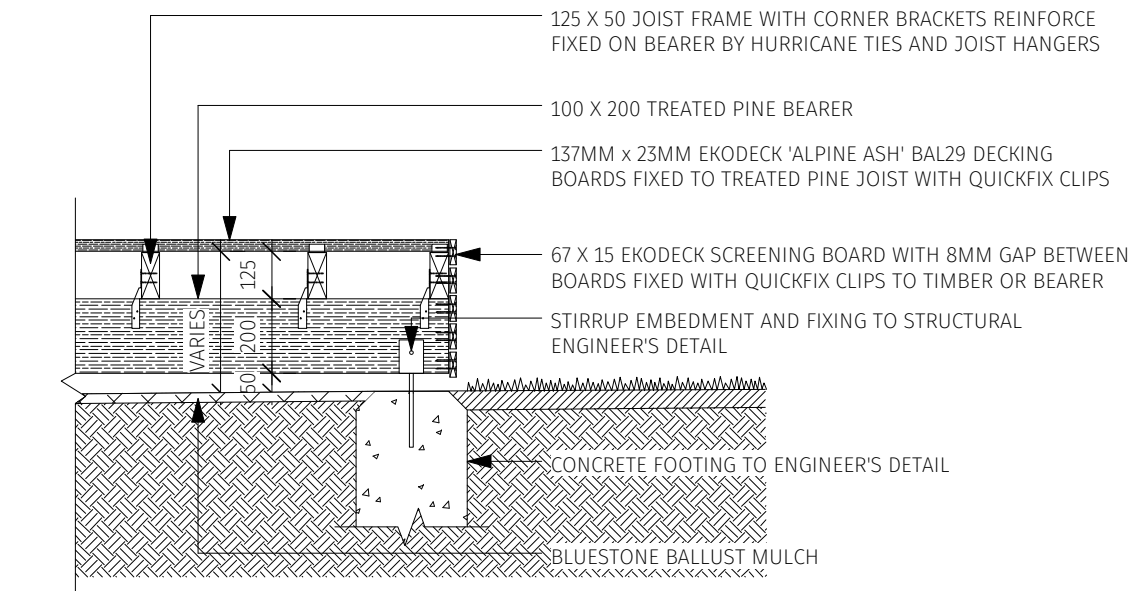
Product	Recycled Plastic Composite Decking
Standards	• AS 1428.1 Design for access and mobility-General requirements for access - New building work • AS 1657 Fixed platforms, walkways, stairways and ladders Design, construction and installation • AS 4586 Slip resistance classification of new pedestrian surface materials
Materials	• Ekodeck co-extruded composite decking
Finish	• Alpine Ash
Installation	• As detailed and specified by project landscape architect, and project structural engineer
Maintenance	• Scrub with hot water and dishwashing liquid using a stiff decking brush • Rinse with pressure washer • Cleaning requirements will vary depending on product use, surrounding environment and weather exposure. It is recommended a general clean is performed at least annually
Supplier	Ekodeck or approved equivalent ekodeck.com.au
Comments	• Ekodeck is a pre-finished product. Use care when storing, handling and installing to avoid damage • Ekodeck boards are made for installation with the Quickfix Hidden Fastening System • Boards are double sided. Install the board with correct choice of colour facing up • Note significant expansion in hot weather - use proper fixing to manufacturer's recommendations
Location	• Raised decks and ramps



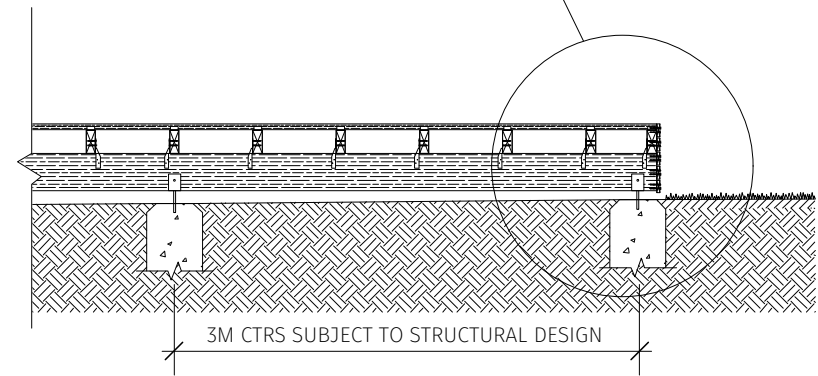
Decking

C-03

Technical Details



1. Section 1:20



2. Section 1:40

Bus Shelters

C-04

Specifications

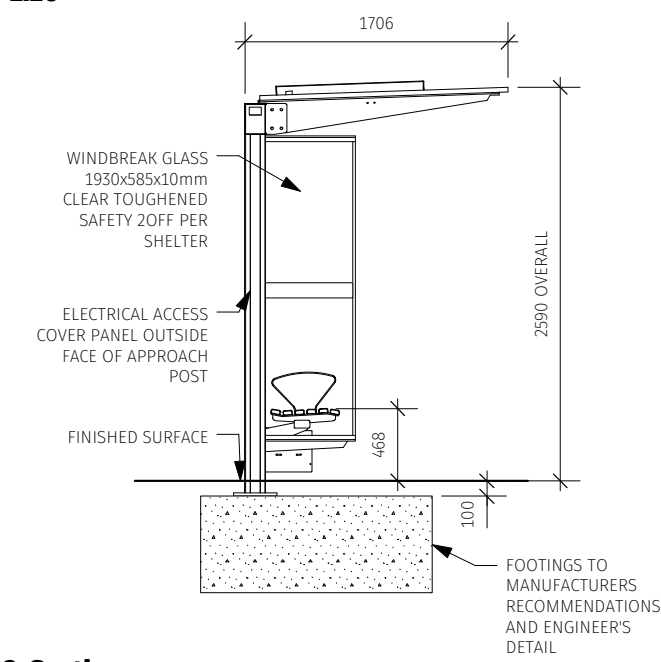
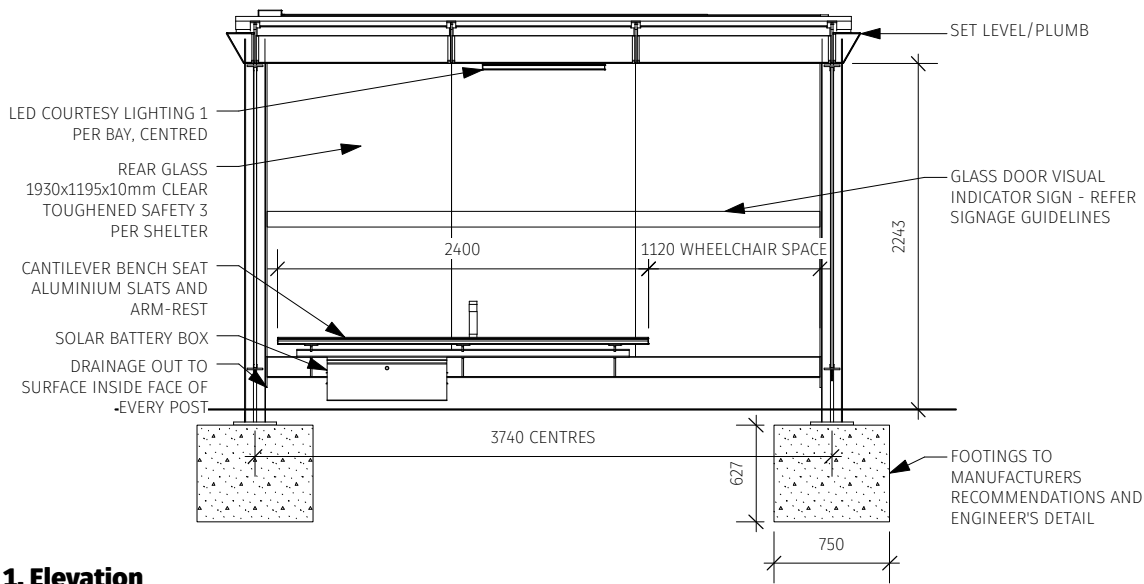
Product	Bus and Shuttle Shelters
Standards	- AS 1428.1 Design for access and mobility-General requirements for access - New building work - AS/NZS 1428.4.1:2009 Design for access and mobility – Part 4.1: Means to assist the orientation of people with vision impairment: Tactile ground surface indicators
Materials	- Aluminium Frame - Toughened safety glass or perforated mesh - Aluminium roof - LED lighting
Finish	- Stoddart Evo Shelter standard length 4110 - Powder coated aluminium frame - Colour: Elements® Monument® Flat 90E7724Z
Installation	- Install on even surface - Installation by supplier recommended or to supplier's specifications
Maintenance	Pressure clean and remove graffiti as needed
Supplier	Stoddart or approved equivalent stoddart.com.au
Comments	- All bus stops to have signage, kerbs, platform, bus shelter, tactile indicators and seating - Bus stops must be identifiable - All seats to meet DDA requirements - Shelters must provide lighting and charging points - Shelters to have transparent glass or perforated mesh - Maintain clear pathway access to bus stop - Each bus stop to have a help point, or a visible help point near the bus stop
Location	Bus and security shuttle stops



Bus Shelters

C-04

Technical Details



Picnic Shelters

C-05

Specifications

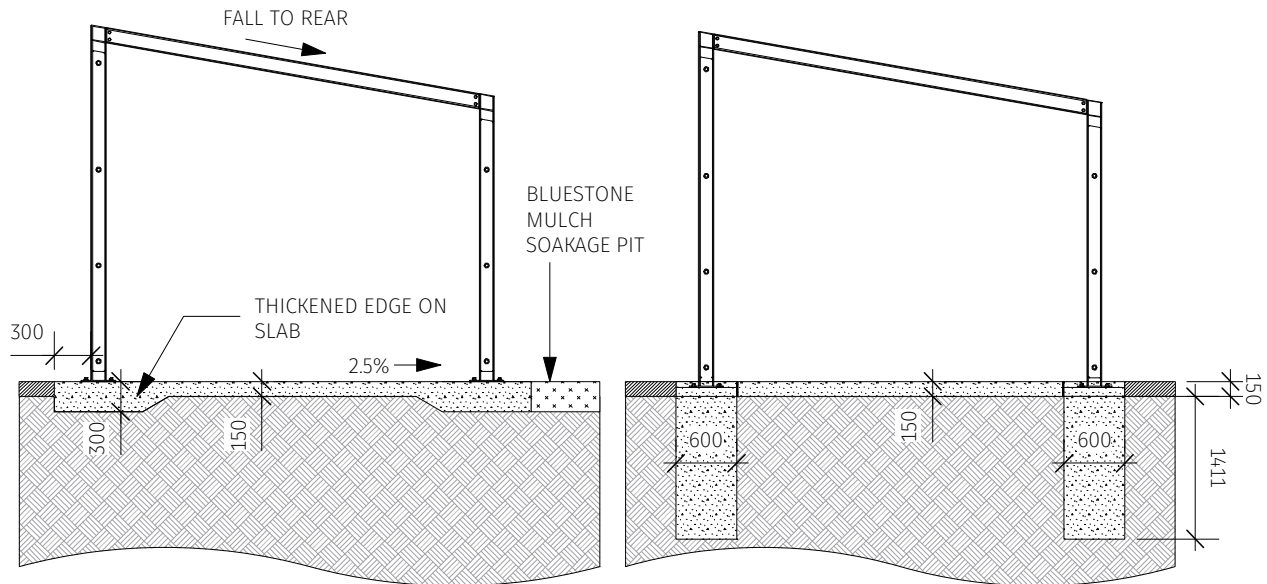
Product	Picnic Shelter
Standards	• AS 1428 Design for access and mobility • AS 1170 Structural design actions – General Principles • AS 4100 Steel structures • AS 2312 Guide to the protection of structural steel
Materials	Mod Beaches™ Shelter 44 • Steel Frame • Class 1 Australian Hardwood Soffit, Screens and Post embellishment • Colourbond Roof
Finish	• Painted in Dulux Weathermax System • Oiled Hardwood
Installation	• Surface-mounted or cast in post connection • Cross fall to be kept to a minimum with surface mounted shelters.
Maintenance	• Hand Clean as needed • Re-oil timber when necessary
Supplier	Fleetwood Urban Pty Ltd or approved equivalent Fleetwoodurban.com.au
Comments	• Provides shade for picnic areas or seating elements • Architectural feature for activity areas • Ensure adequate circulation space between furniture and shelter column
Location	• Outdoor seating and areas



Picnic Shelters

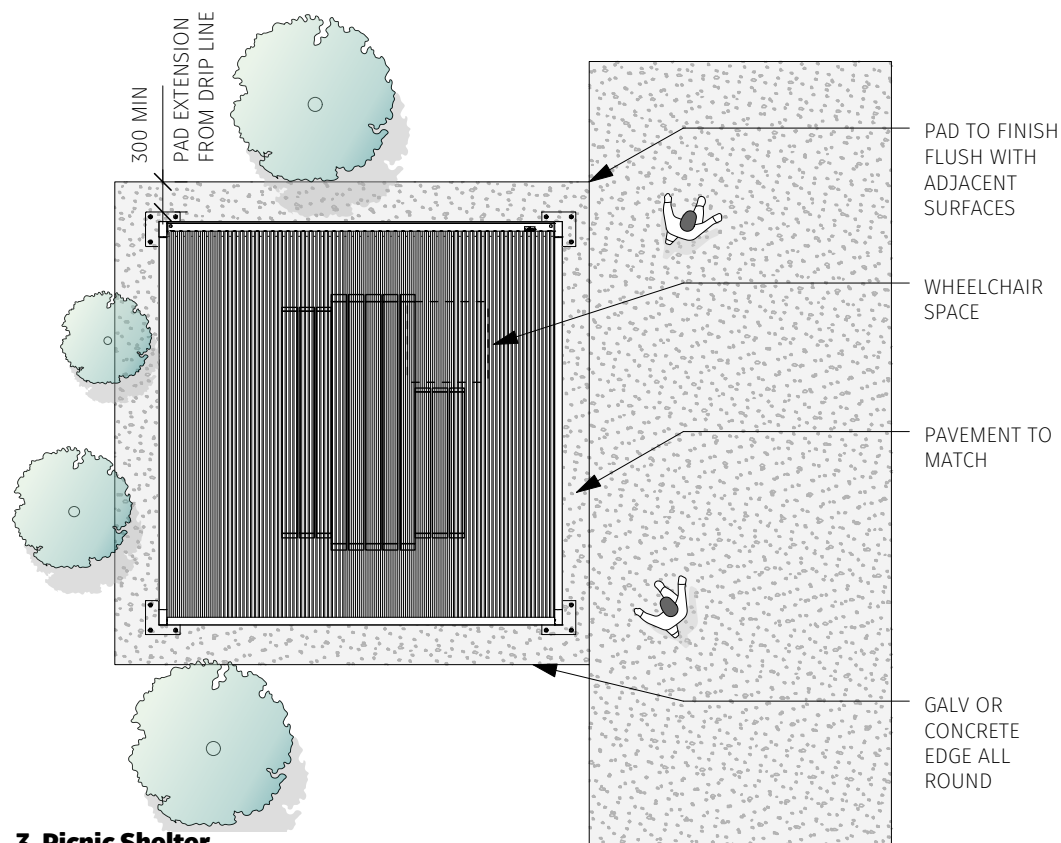
C-05

Technical Details



1. Picnic Shelter - Surface fixed
Section 1:75

2. Picnic Shelter - Sub-surface fixed
Section 1:75



- NOTES
- Foundations and slab to engineer's and manufacturer's specification

Umbrellas

C-06

Specifications

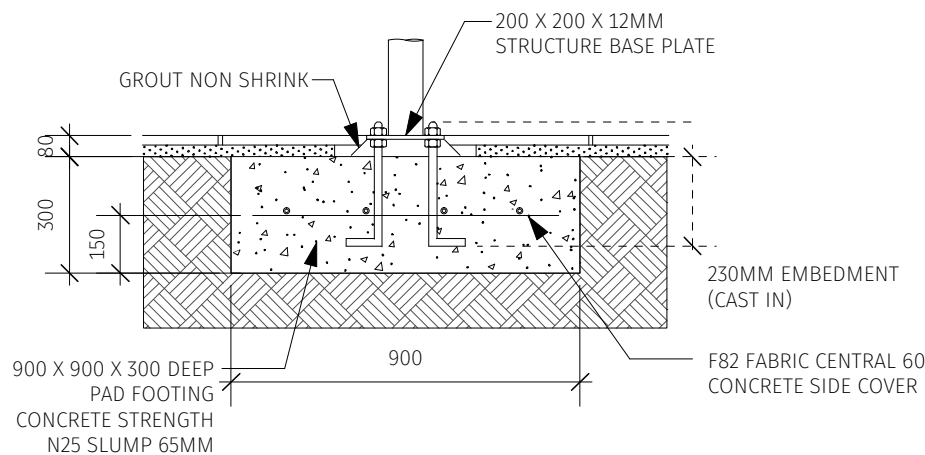
Product	Shade Umbrellas
Standards	- AS 1428.1 Design for access and mobility-General requirements for access - New building work - AS 4174:2018 Knitted and woven shade fabrics - AS 1530.1-1994 (R2016) Methods for fire tests on building materials, components and structures Combustibility test for materials - AS4100 Steel structures - AS3600 Concrete structures - AS/NZS1170.0, AS/NZ1170.1, AS/NZ1170.2
Materials	Makmax 'Centra' 3.2 x 3.2 (8.0 sqm) Membrane Architectural grade PVC coated polyester fabric with PVDF finish to both sides Steel Finish Tubular steel components finished with TriplexTM brand steel protection system; abrasive blast to Class 3, application of spray galvanising in aluminium and zinc and two coats of powdercoat Zinc & Powder Coated Steelwork Hardware Nuts, bolts and washers, wire rope cables, rigging screws, pole sleeve and shackles are stainless steel Gr.304/Gr.316
Finish	- Use three colours max in one area - Do not use white - Frame powder coat colour: Elements[®] Monument[®] Flat 90E7724Z
Installation	Footings to suit to local conditions
Maintenance	- The period and nature of the maintenance requirements depends on the exposure of the umbrella to climatic conditions (rain, hail, wind) and airborne pollutants (leaves, dust pollutants, bird droppings, sea air, etc) - Inspect every 3 months. - Clean every 6 months
Supplier	Makmax Umbrellas or approved equivalent makmax-umbrellas.com.au
Comments	- Specific inspections should be performed immediately after an unusual or exceptional event, including but not limited to: - Storm with winds over 70km/h - Heavy hail
Location	-



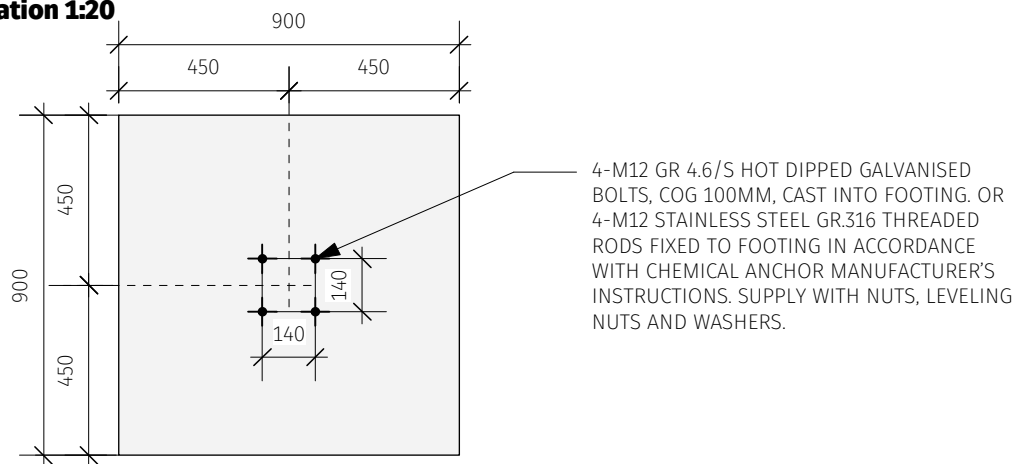
Umbrellas

C-06

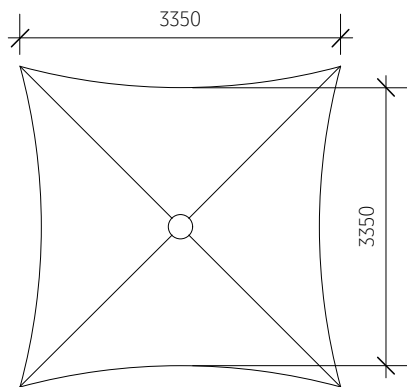
Technical Details



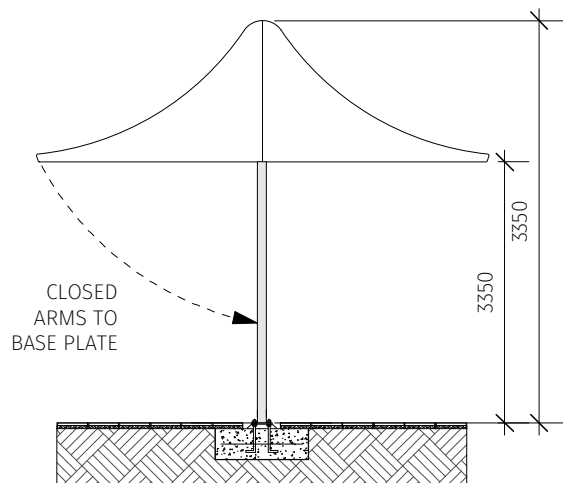
1. Footing Details
Elevation 1:20



2. Footing Details
Plan 1:20



3. Umbrella Reach - Plan 1:75



4. Umbrella Dimensions - Elevation 1:75

Shade Sails

C-07

Specifications

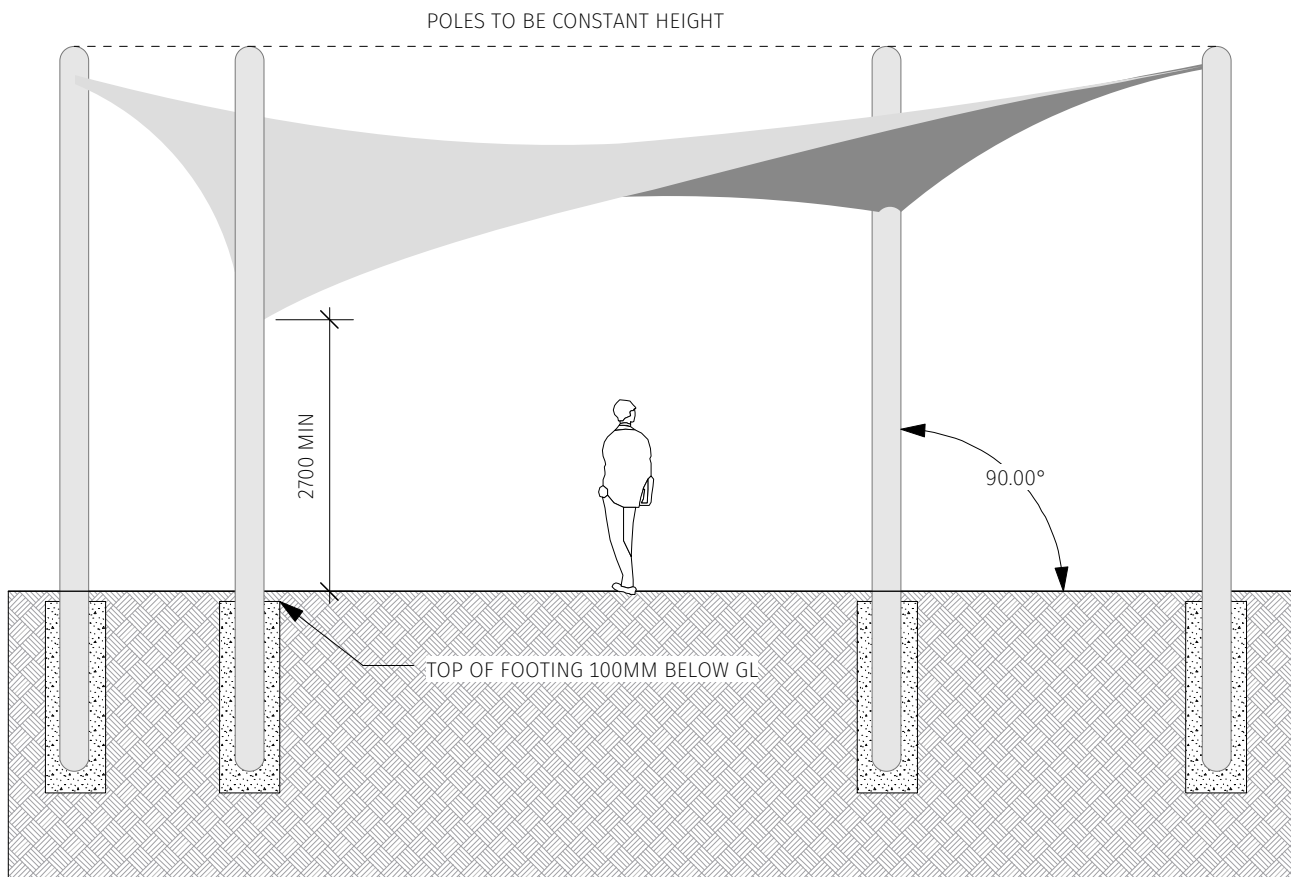
Product	Shade Structures
Standards	- AS 1428.1 Design for access and mobility-General requirements for access - New building work - AS 4174:2018 Knitted and woven shade fabrics
Materials	- Commercial 95™ Shadecloth - CHS (round) posts - UV rated pure PTFE sewing thread
Finish	- Charcoal shade cloth - Hot dip galvanised framework - Powder coat Elements® Monument® Flat 90E7724Z
Installation	- No proprietary element - constructed and installed on a case-by-case basis - Approx. 600mmØ x 2000mm bored piers - based on standard soil types and bearing capacity - All members to be welded.
Maintenance	Clean as needed
Supplier	Greenline or approved equivalent greenline.com.au
Comments	- High roofs preferred (2.7m min height) - Ensure adequate circulation space between furniture and shelter column (min 1.5m all sides) - Ensure sufficient pitch to roof to prevent leaf accumulation - Shade cloths should sit on top of frames, not below, to stop accumulation in recesses - All posts to be vertical and the same height - Commercial 95 – 10yr warranty against UV degradation
Location	-



Shade Sails

C-07

Technical Details



1. Shade Sail Principles Section 1:75

External Storage & Plants

C-08

Specifications

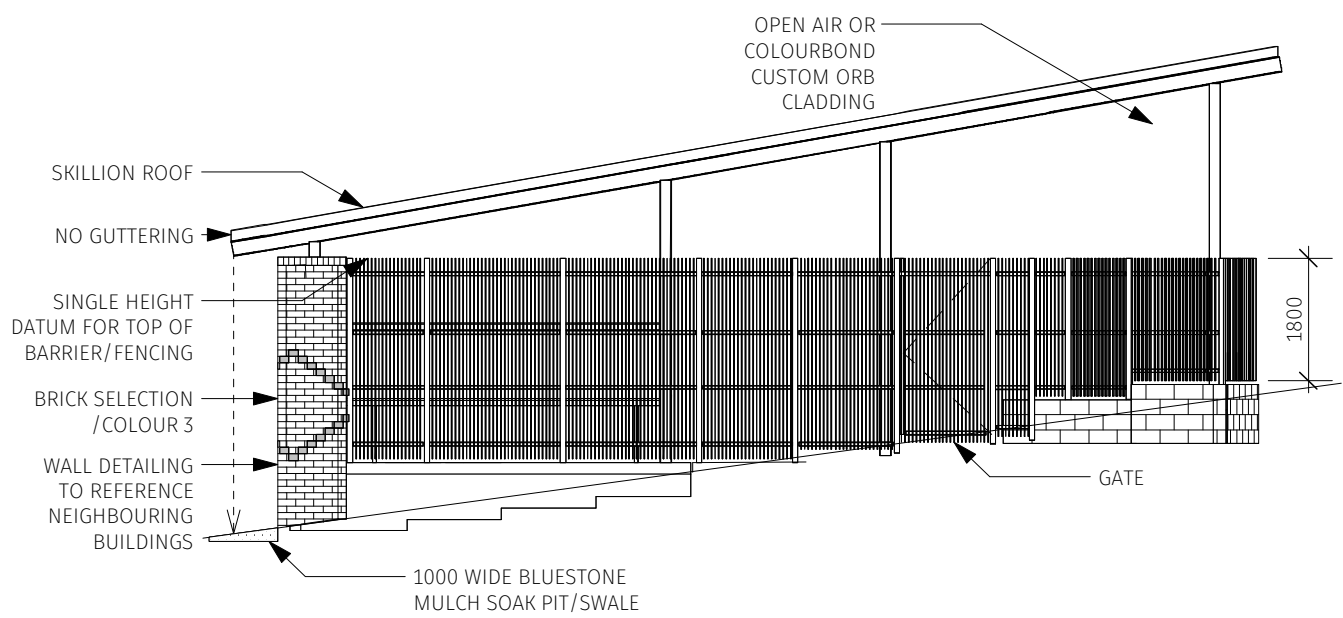
Product	External storage structures
Standards	AS 4332 The storage and handling of gases in cylinders AS 1940 The storage and handling of flammable and combustible liquids AS 1725 Chain link fabric fencing, Part 1: Security fences and gates - General requirements
Materials	• Brick Walling • Steel slatting or black wire fencing • Custom Orb Cladding • Trimdek
Finish	• Complementary to surrounding built features
Installation	• As per engineer's requirements
Maintenance	• Pressure clean and remove graffiti as needed
Supplier	-
Comments	• Ensure design falls in line with neighbouring architecture. (Related to surrounding building brickwork style and colour) • Dual entries and exits to all enclosures • No guttering • Skillion roof • Black wire mesh at top of brick wall where required • Fence enclosure height single height datum or custom orb • Ensure enclosure is fitted with see-through panelling if required for security purposes
Location	• Gas and service store building



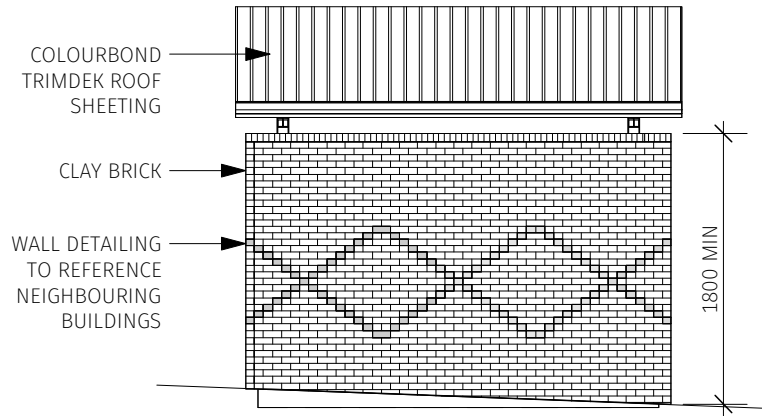
External Storage & Plants

C-08

Technical Details



1. Typical External Storage Building
Side View 1:100



1. Typical External Storage Building
Side View 1:100

