

Public Domain Technical Manual

Blue Mountains City Council



INTRODUCTION

JUNE 2015

This technical manual was first produced in 2009 as a response to the major planning initiative for the Blue Mountains – ***A Map for Action 2000-2005: Towards a More Sustainable Blue Mountains***. The map for Action sets the direction for the Blue Mountains until 2025. Prominent in its themes is the emphasis on better quality design: ***“Innovative urban design promotes sustainable living and creates inspiring places that enhance the distinctive qualities of Blue Mountains towns and villages”***.

This Manual – a series of product and construction details - has been developed as a tool to aid BMCC fulfill the Map's targets and manage the city's many and varied physical assets across the towns and natural areas of the local government area by:

- Establishing product and construction standards for the public domain
- Limiting and coordinating the range of assets to achieve a better balance of unity and diversity, and a higher urban design standard across the city
- Improving robustness and durability of both products and materials
- Improving efficiency in the upholding of maintenance standards.

This fourth edition of the Technical Manual demonstrates a change of format to a loose-leaf folder arrangement in order to more easily manage additions to the manual. Regular users who have hard copy should verify their edition against the table of contents in the on-line version (which can be accessed [here](#)).

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Sheet Format:

The Public Domain technical sheets are provided in a consistent graphic format to aid use and interpretation:

Guideline Reference Number:
P – Pavement guideline
4 – Number four guideline for pavements

Guideline Name

Representative Image:
Image of the recommended treatment in a similar application provided as a broad reference.

General Plan Information:
Key design principles are provided in plan form. They serve as an example for site specific design.

Location: Appropriate locations and settings for use of the specific guideline treatment

Principles:
Summary of key principles important for application in design development and

Materials:
Summary of main materials components including supply details where applicable

General Technical Information:
General application of key installation requirements for preparation, installation, fixing and finishing. Provided as an example for site specific application.

Public Domain Technical Manual

Construction Joint
Sawn Joint
5000
2500

SHOT BLAST CONCRETE

P4

Location:

- To new plaza/edge areas to provide materials theme consistency with existing built fabric
- To pathway links to Village Centres and residential areas

Principles:

- Design concrete construction and sawn jointing to integrate with overall public domain design / pattern of space
- Fall where possible to 'soft' drainage solution (soft landscape areas and other non piped scenarios where possible)
- Provide site specific structural design of concrete slab based on required loadings and site subgrade bearing capacity
- Light abrasive finish to pathways links in village centres and residential footpaths provides different identity to metropolitan subdivisions (std concrete)

Materials:

- Basalt / quartz aggregate (5-20mm grade) (asat mix as required to reinforcement works)
- Light sand or grit abrasive finish (shot blasting) to exposed surface - light blasting to reveal fine aggregates and a few stone of the coarse aggregates (Note: public risk and environmental run off during blasting)

Note: public risk & environmental runoff hazards during blasting must be adequately managed.

Typical Plan - Plaza Pavement

1500nom

Property boundary

Lawn

Construction Joint

Kerf

Sawn Joint

Exposed aggregate concrete pathway

Typical Plan - Pathway to nature strip

Flexible filter board at construction joints

Provide 15mm toolled edge with 5mm pencil round to all edges

50mm sand bedding course over clay subgrade conditions

Reinforcement in accordance with site specific engineering requirements

Compacted subgrade to 98% Standard Dry Density

March 2008

CONTENTS

*New to this edition

Introduction

Standard Format

Part 1: Town & Village Centres

Pavements - P

P1	Clay Brick pavement	P6	Shared Standard Footpath
P2	Sandstone pavement	P7	Footpath Opening Rectification
P3	Asphalt pavement with clay brick header course	P8	Asphalt Path
P5	Permeable Pedestrian Footpath	P9*	Standard Concrete Pavement – Town Centre

Kerbs & Drainage – K

K1	200mm Concrete Kerb and Gutter	K4	Concrete Vehicular Crossing – Commercial & Town Centres
K2	150mm Concrete Kerb and Gutter	K5	Concrete Vehicular crossing – Residential
K3	Concrete Pram Ramp	K6*	Road Threshold Treatment – Town Centre

Furniture – F

F1	General furniture arrangement	F6b*	Bollard - standard
F2	On Street Trading	F6c*	Bollard – casual setting
F3a	Backed Seat Arrangement	F7a	Bubbler
F3b	Town Seat Schedule	F8	Bicycle Rack
F4a	Seats: standard installation	F9	Bicycle Hitching Rail
F4b	Park Seat	F10	Flagpole
F5a	Rubbish Bins: Standard	F11	Major Bus Shelter
F5b	“Katoomba” Rubbish Bin & Retrofit	F12	Minor Bus Shelter
F5c	“Lawson” Rubbish Bin	F13*	Street Balustrade
F 6a	Bollard – Town Centre	F14*	Planter & Seat

Planting – PI

PI1	Street Tree Planting in Pavement	PI6	Porous Grout Around Trees
PI2	Street Tree Planting in Linked Pits with Structural Soil	PI7	Garden Bed Planting
PI3	Street tree Planting in Grass verge	PI8	Planter Boxes
PI4	Street Tree Barrier	PI9	Planting mixes, fertilisers & Mulch Schedule
PI5	Temporary tree Staking		

Signage - S

S1*	Road Signage system & standards	S3*	Pedestrian Wayfinding
S2*	Town Entry Sign	S4*	Place Label

Part 2: Natural Areas, Parks and Reserves**Introduction****Walking Track Infrastructure – WT**

WT1	Board Walk	WT9	Water Bar Stone
WT2a	Foot Bridge Type 1	WT10	Water Bar Timber
WT2b	Foot Bridge Type 1	WT11a	Foot Bridge Type 2
WT3	Steps Guideline`	WT11b	Foot Bridge Type 2
WT4	Stone Steps	WT12	Board Walk Type 2
WT5	Timber Steps	WT13	Cross Drain Bush Timber
WT6	Cross Drain Timber	WT14	Cross Drain Earth
WT7	Cross Drain Stone	WT15	Cross Drain Bush Rock
WT8	Stepping Stones	WT16*	Cross Drain Concrete

Fire Trail – FT

FT1	Rail Gate	FT3	Fire Trail Signage
FT2	Swing Gate	FT4*	Swing Gate with Quad Lock

Natural Area Furniture NF

NF1	Seat Type 1	NF4	Camping Pad
NF2	Seat Type 2	NF5	Fire Ring
NF	Picnic Setting		

Fencing and Barricades FB

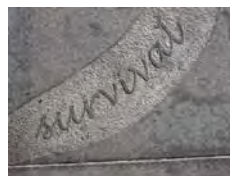
FB1	Type A Barrier	FB5	Bollards Steel
FB2	Type C Barrier	FB6	Bollards Treated Pine
FB3	Mesh Fence	FB7	Post & Cable
FB4	Boulders		

Natural Area Signage NS

NS1	Track Head Signage Type A (4 sheets)	NS6	Lettering & Symbols For Routed Signs
NS2	Track Head Signage Type B (4 sheets)	NS7	Directional Signage
NS3	Track Head Signage Type C (4 sheets)	NS8	Timber Totem Type A & B
NS4	Track Head Signage Type D (4 sheets)	NS9	Steel Totem Type C
NS5	Routed Locality Sign	NS10*	Shelter Sign

Public Domain Technical Manual

Part 1: Town & Village Centres



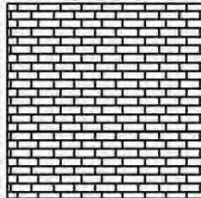
CONTENTS P

***New to this edition**

Pavements - P

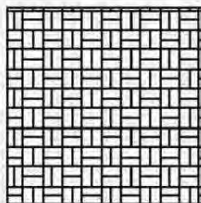
- P1 Clay Brick pavement
- P2 Sandstone pavement
- P3 Asphalt pavement with clay brick header course
- P4 ~~Concrete pavement (Shotblast)~~
- P5 Permeable Pedestrian Footpath
- P6 Shared Standard Footpath
- P7 Footpath Opening Rectification
- P8 Asphalt Path
- P9* Standard Concrete Path – Town Centre

PAVEMENTS



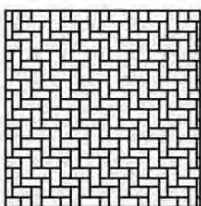
Stretcher Bond

- Commonly used to footpath situations where length exceeds width
- Lay perpendicular to direction of pedestrian flow



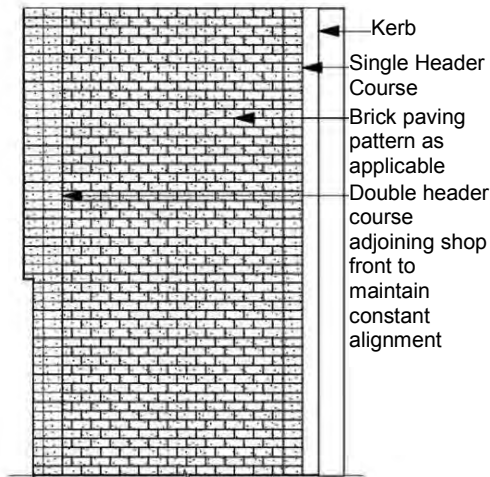
Basket Weave

- Often used to more open areas to paving to avoid directional emphasis
- Enhances visual detail and interest
- Useful where paving needs to turn corners

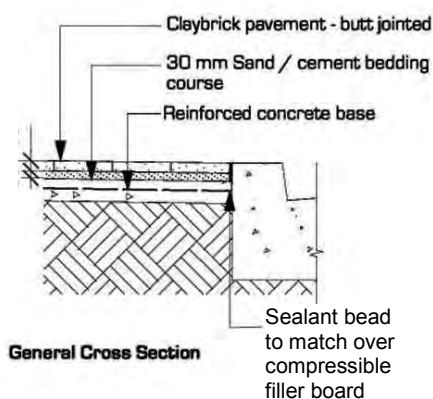


Herringbone

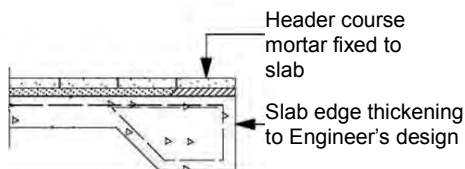
- Often used to more open areas of paving to avoid directional emphasis
- Enhances visual detail and interest
- Useful where paving needs to turn corners



Typical Plan



General Cross Section



Cross Section to unconstrained edges

CLAY BRICK PAVEMENT P1



Location:

To main street footpaths of Village Centres

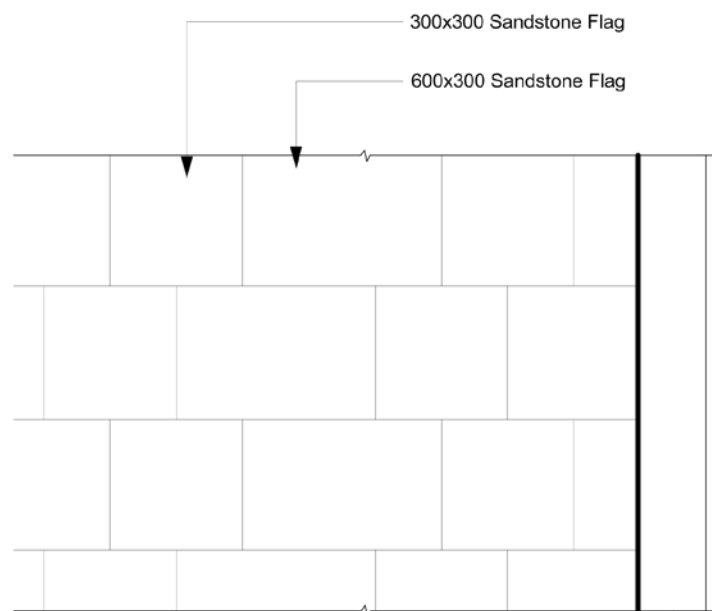
Principles:

- Small format paving provides different identity to metropolitan town centres
- Earth tones of quality dark paver complement bushland setting
- Potential to use design layout variations for design effect
- Brick paving not to be used to gradients over 1[v]:14[h] – use brick header course and asphalt pavement infill in these situations [refer P3]

Materials:

230x110x50mm "Blue" paver

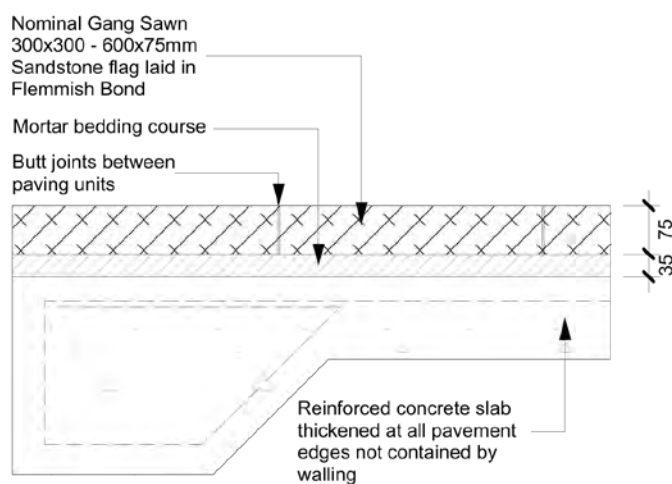
PAVEMENTS



Typical Plan

Provide joint sealant to match sandstone over flexible jointing material

Kerb, wall or where no restraint provided provide edge thickening to slab



Typical Cross Section

SANDSTONE P2
PAVEMENT**Location:**

- * To new public spaces of high public domain significance
- * Avoid use adjoining food provision or other uses generally where spillages and food waste occurs

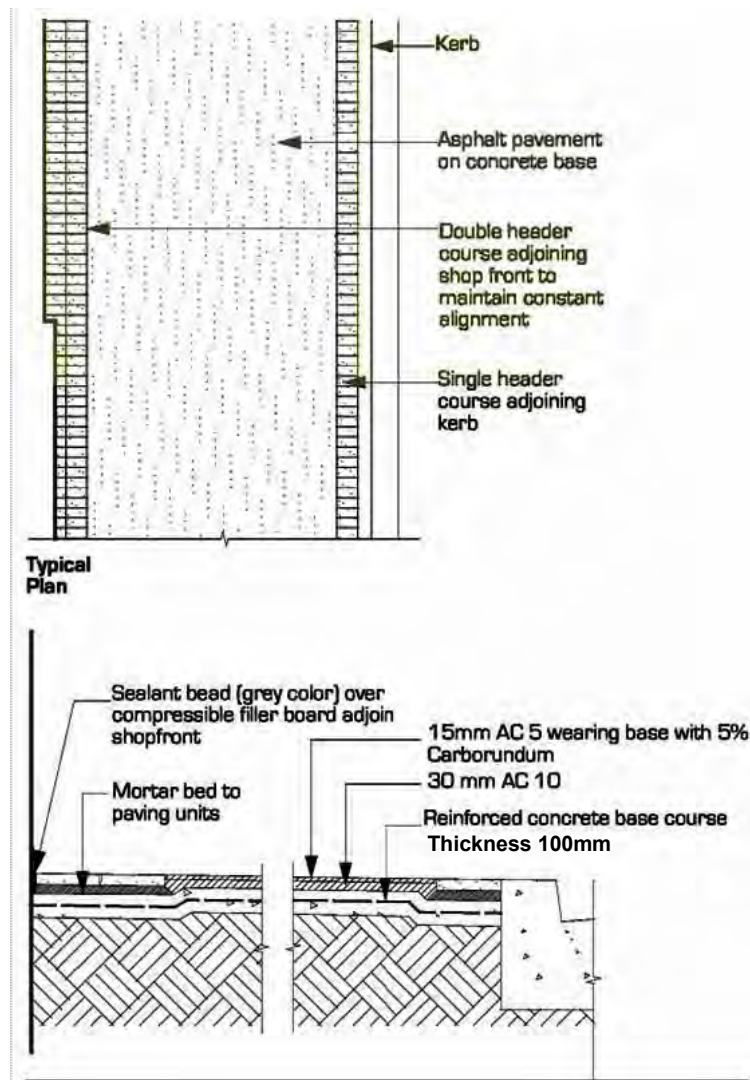
Principles:

- * Quality pavement treatment with strong contextual link to geology and early pavement treatments to sites

Location:

- * 300 x 300 x 600 x 75mm Sandstone flags
- * Gang Sawn Unbanded Stone. Eg. "Piles Creek", Pyrmont Yellow Block", Capricorn Gem

PAVEMENTS



ASPHALT PAVER WITH CLAY BRICK HEADER COURSE **P3**

**Location:**

To main street footpaths of secondary villages, and secondary main streets in town centres

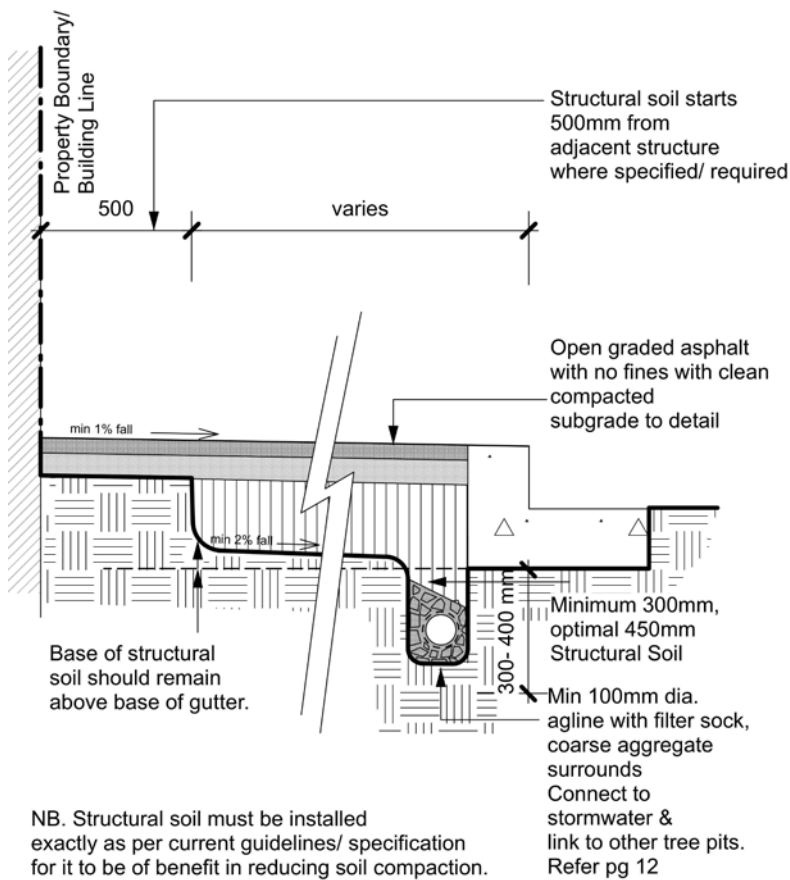
Principles:

- Cost effective pavement treatment
- Thematic link to fully paved streets through clay brick edging
- Quality asphalt finish through AC5 wearing course and concrete sub-base [to prevent settlement]
- Apply merit based assessment and according to engineer's design

Materials:

- AC5 wearing course with 5% Carborundum additive
- Concrete sub-base
- 230x110x50mm "Blue" paver

PAVEMENTS



Indicative Permeable Paving & Structural Soil Detail Section
NTS

PERMEABLE P5 PEDESTRIAN FOOTPATH over structural soil (open graded asphalt)



Locations:

In town centres where Tree planting is adjacent

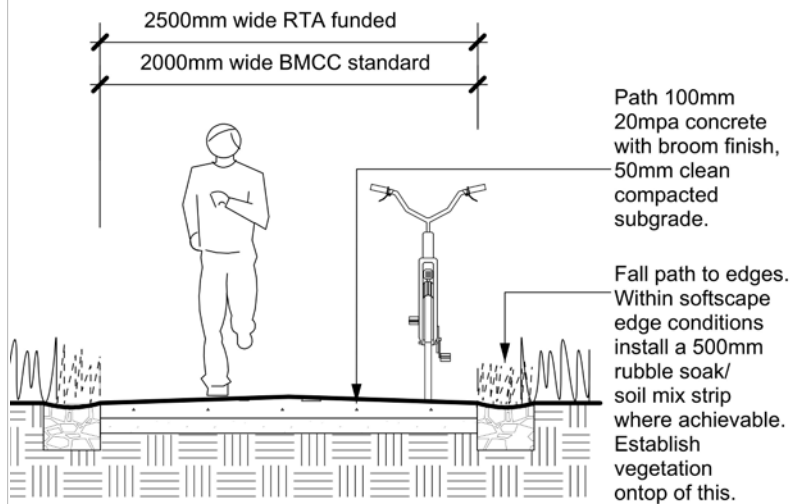
Principles:

- Must consider existing subsurface strata & hydrology
- Must be designed in conjunction with sub-surface drainage system
- Use in locations where appropriate tree planting (or other landscape treatment) may be used to polish stormwater.

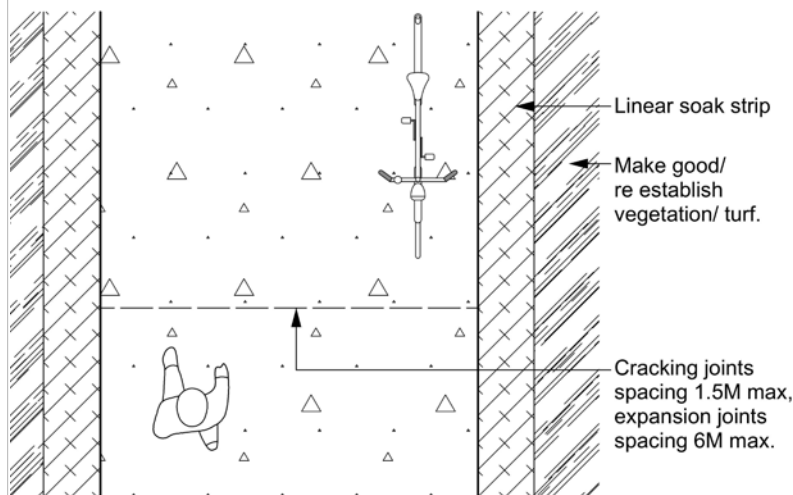
Materials:

300-450mm depth of Benedict Sand & Gravel Structural Soil, or similar;
50mm open graded asphalt (no fines) as footpath surface;
Permeable membrane;
10mm diam. Ag. Line with filter sock and 20mm aggregate backfill.

PAVEMENT



**Shared Standard Footpath
Typical Section
NTS**



**Shared Standard Footpath
Typical Plan
NTS**

SHARED STANDARD FOOTPATH **P6**

**Location:**

- Must be considered in context of Strategic Footpath Planning and local Bicycle Network Plan.
- Must be planned from a whole route perspective

Principles:

- Refer to Austroads Standards Australia: Part 14 "Bicycles and Best Use Practice Standard"
- Width (2 or 2.5 M depends on funding source)
- Cracking joints spacing 1.5M max, expansion joints spacing 6M max.
- Final detailing will vary from site to site and be influenced by gradient, aspect and climate.
- Section detail will change at vehicular crossings

Materials:

Concrete

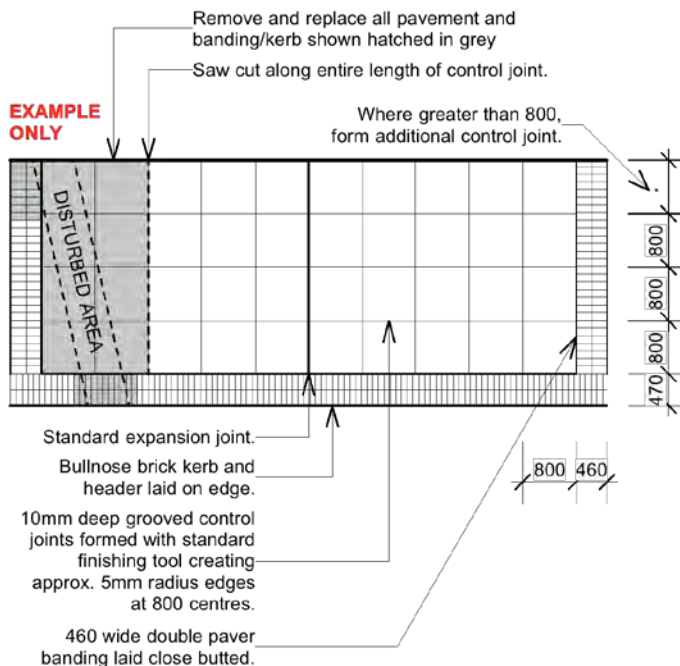
Clean fill

Expansion joints to specification

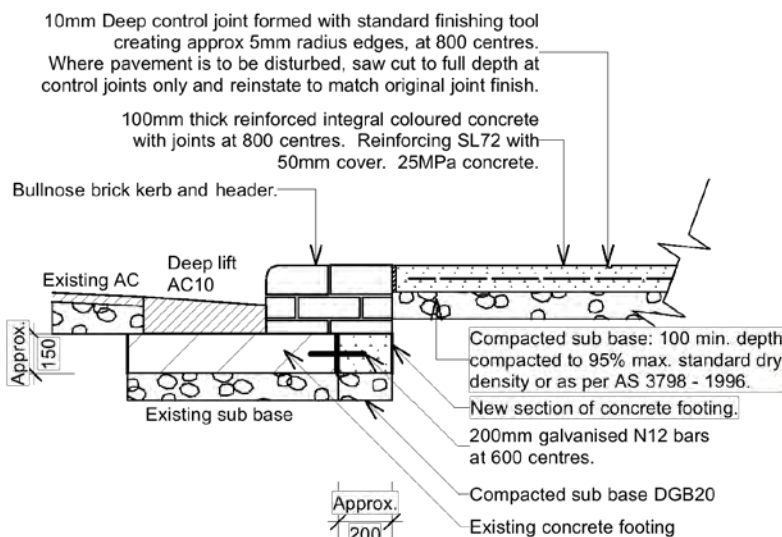
PAVEMENTS

Where any disturbance to pavement occurs:

Saw cut along entire length of nearest undisturbed joint to each side of disturbance and remove pavement. Reinstall to match existing surrounding finish.
Where paver banding or brick kerb is disturbed, remove full width of concrete footing and masonry and sufficient length to replace any effected pavers/bricks.
Minimum length of footing and masonry to remove and replace is 800mm.
Reinstall to match existing.



TYPICAL PRIMARY TREATMENT RECTIFICATION PLAN SCALE 1:100



TYPICAL PRIMARY TREATMENT SECTION SCALE 1:25

FOOTPATH OPENING RECTIFICATION INTEGRAL COLOURED CONCRETE PRIMARY NODAL AREAS

P7



Location:

- In major pedestrian nodes. Refer to Katoomba Footpath Kerb and Gutter Treatment Masterplan PP01 for exact locations.

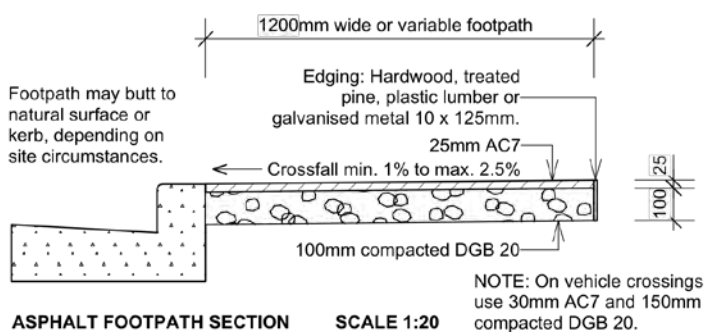
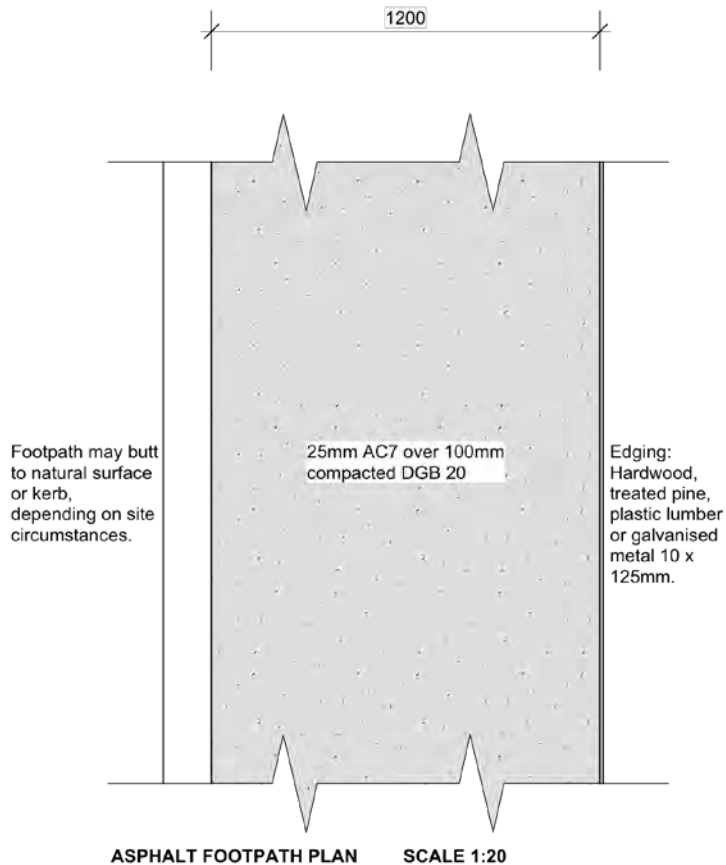
Principles:

- To repair pavements to their original condition and to match surrounding pavement by carrying out repairs in a defined and consistent manner.
- Removal and reinstatement of pavement is to extend to the nearest jointing or change in material in every direction.
- Dimensions, jointing and finish of reinstated pavement is to match original pavement as closely as possible. No extra joints are to be formed. Only whole masonry units are to be reinstated, except where replacing a unit previously cut to size.

Materials:

- Integral Coloured Concrete - Concrete Colour Systems 'Suntan' in grey cement. Cove finished with wooden float. Divided into 800mm x 800mm panels with formed control joints.
- Federation Blend standard dry pressed brick.
- Federation Blend single bullnose dry pressed brick.
- Federation Red cobble paver.
- All bricks/pavers sourced from Namoi Valley Brickworks P/L.

PAVEMENT DETAIL

ASPHALT FOOTPATH **P8****Location:**

- * To residential streets and other locations outside centres of major towns.

Principles:

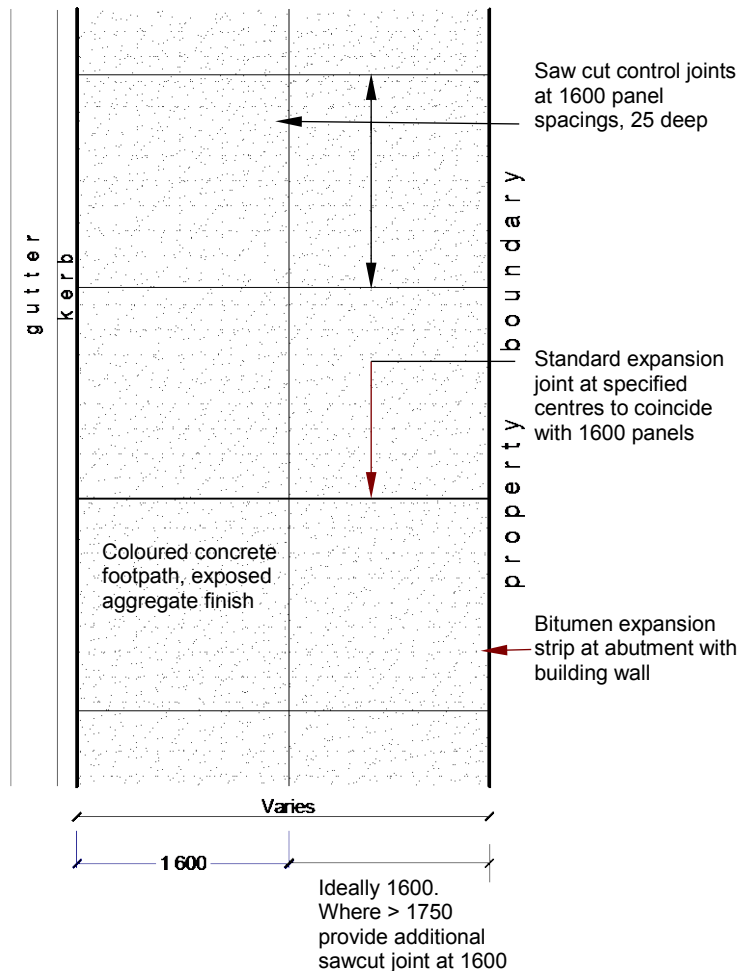
- * Simple, robust and serviceable footpaths to areas outside major town centres.

Materials:

- * Asphaltic Concrete 7
- * DGB 20
- * Edging material where necessary. Consider use of alternative materials such as plastic lumber or galvanised metal edge strips.

TYPICAL TREATMENT DETAIL

Exposed aggregate concrete with 1600mm joints or sawcuts.



VILLAGE CENTRE FOOTPATHS

P9

**Location:**

- Centres other than Katoomba & Springwood
- Limited to town and village centre main streets

Principles:

- To provide a robust, slip resistant surface which can be easily repaired
- Rectification of footpaths must be as per P7

Materials:

- Integral Coloured Concrete Systems (CCS) to colour specified by BMCC Urban Designer in consultation with Asset Manager
- Exposed aggregate finish lightly washed or sand blasted.
- Divide into 1600mm x 1600mm saw cut panels as shown
- Aggregate as per specification
- Coordinate saw cuts with expansion joints

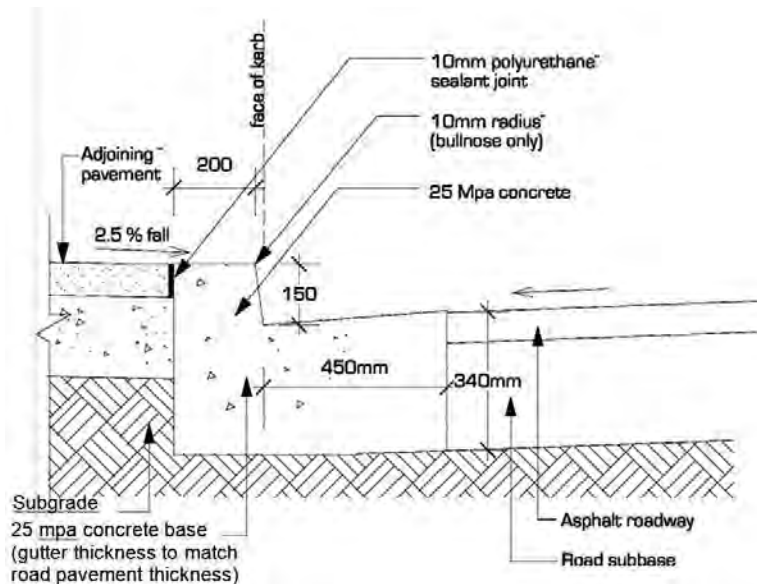
CONTENTS

***New to this edition**

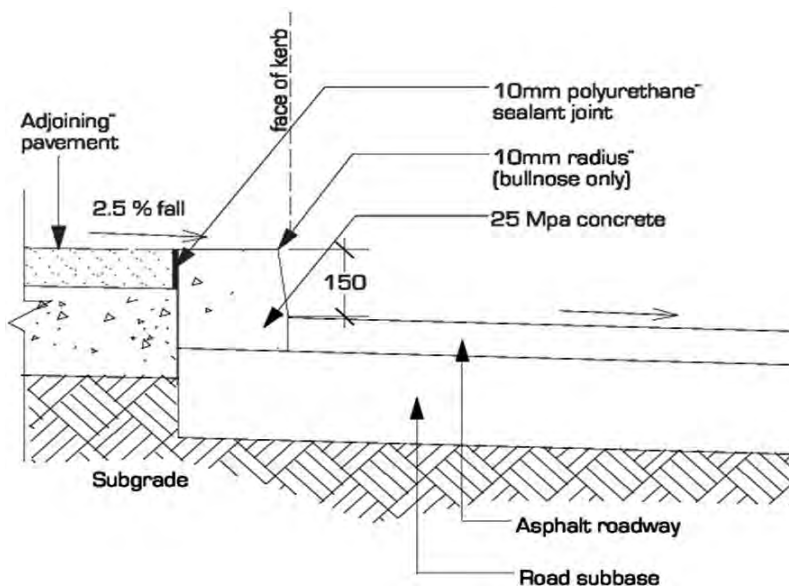
Kerbs & Drainage – K

- K1 200mm Concrete Kerb and Gutter
- K2 150mm Concrete Kerb and Gutter
- K3 Concrete Pram Ramp
- K4 Concrete Vehicular Crossing – Commercial
& Town Centres
- K5 Concrete Vehicular crossing – Residential
- K6* Road Threshold Treatment – Town Centre

KERBS AND DRAINAGE



Section: 200mm Kerb & Gutters NTS



Typical cross Section: 200mm Concrete kerb only NTS

200MM K1
CONCRETE KERB &
GUTTER**Location:**

To all village centres

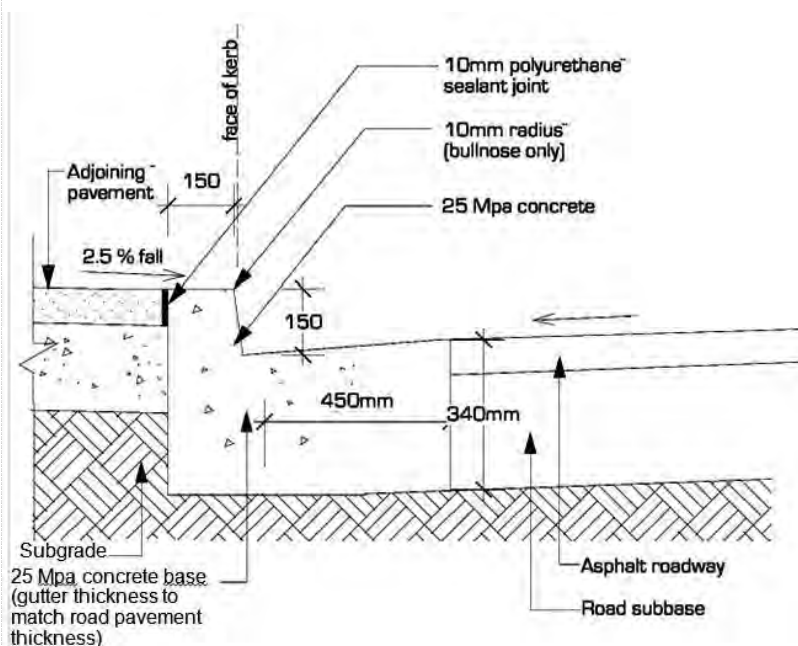
Principles:

- Provide plain concrete kerbs (no colouring – including white) to applicable streets.
- Hand forming of kerbs is preferred to extruded construction where it is necessary to achieve the preferred kerb profile.
- Ensure square corner at back of kerb with minimum rounding (5mm radius max.)
- Optional use of 200mm wide precast concrete kerb on concrete base (e.g. to heritage precincts).
- Provide site specific installation detail.

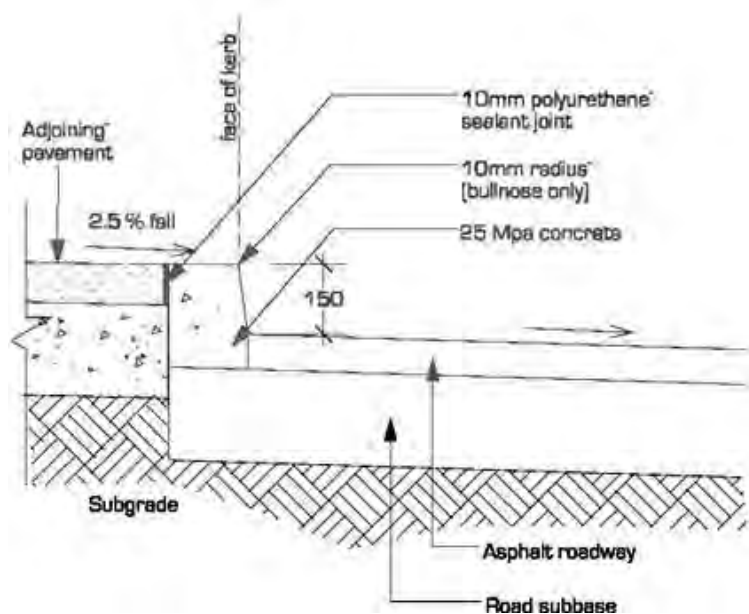
Materials:

- Where a decorative finish is required lightly abrasive blast kerb surface to expose aggregate – coordinate with pavement.
- 25 Mpa generally.

KERBS & DRAINAGE



Typical Cross Section: 150mm Concrete Kerb & Gutter NTS



Typical Cross Section: 150mm Concrete Kerb only NTS

150MM K2 CONCRETE KERB & GUTTER

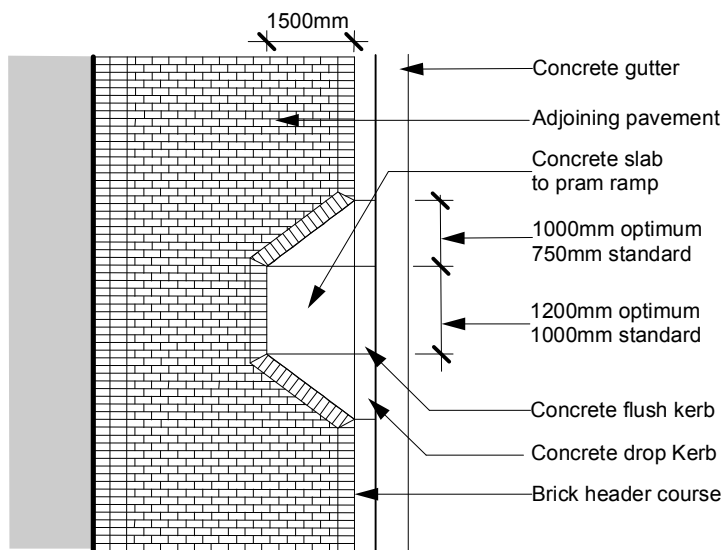


Location:
To residential areas.

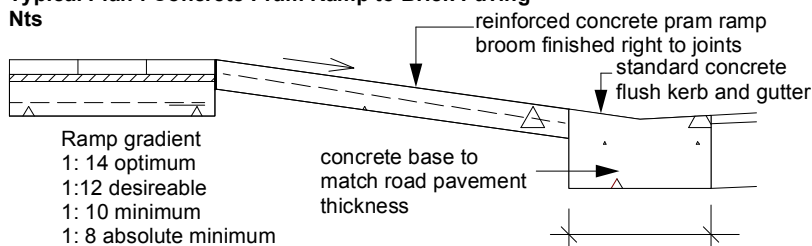
Principles:
Standard concrete kerb treatment

Materials:
Concrete to AS 3600 1994

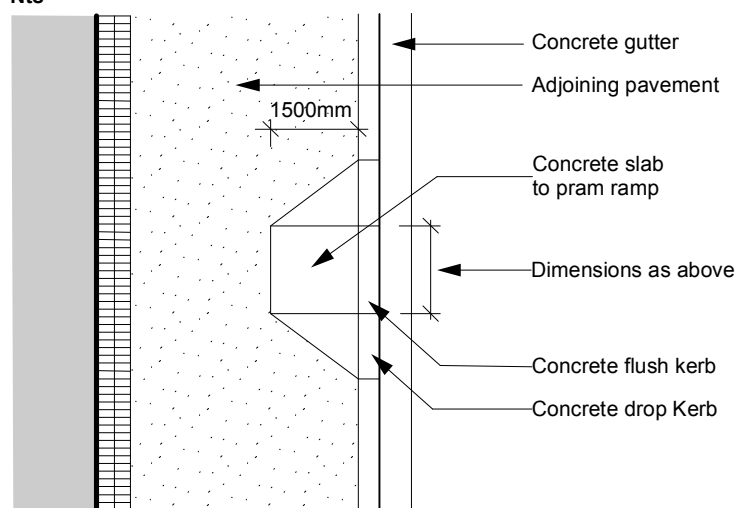
KERBS AND DRAINAGE



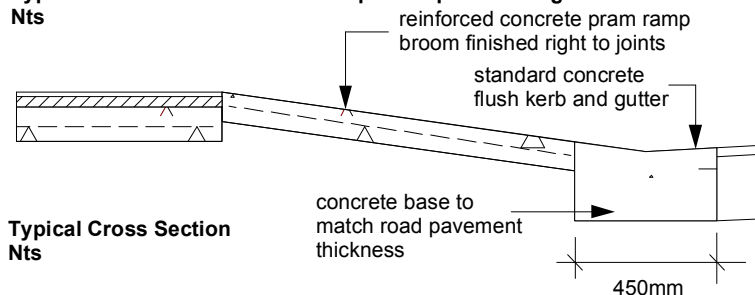
Typical Plan : Concrete Pram Ramp to Brick Paving
Nts



Typical Cross Section
Nts



Typical Plan : Concrete Pram Ramp To Asphalt Paving
Nts



Typical Cross Section
Nts

CONCRETE PRAM RAMP K3



Location:

- * To brick paved or asphalt footpath as applicable
- * To crossing points in residential areas

Principles:

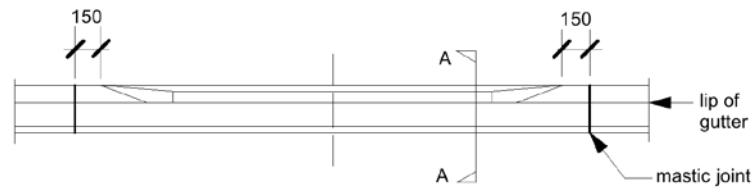
- * Incorporate kerb ramps to streetscapes as warranted and informal pedestrian crossing points
- * Kerb ramps to meet disabled access requirements with maximum grade to any pedestrian trafficable surface of 1: 8 minimum grade
- * Provide color contrast to brick and asphalt pavements

Materials:

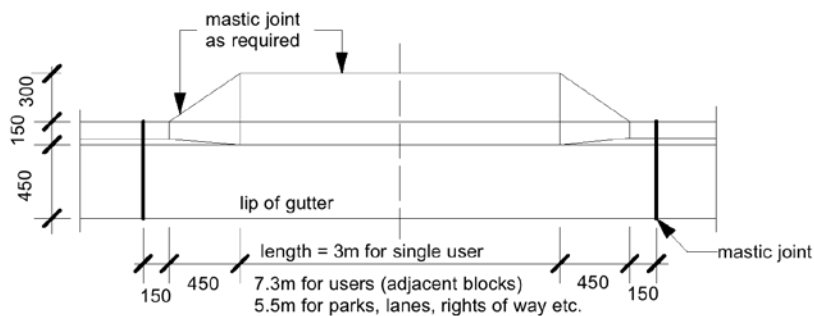
Broom finished concrete

All concrete works to be in accordance with AS3600 : 1994

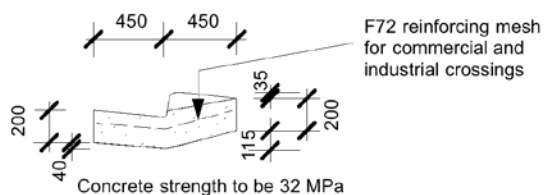
KERBS AND DRAINAGE



ELEVATION



PLAN



Note : All commercial and industrial layback crossings to have one layer of F72 reinforcing mesh centrally located

SECTION A-A

CONCRETE VEHICULAR CROSSING - COMMERCIAL, TOWN CENTRES **K4**



Location:

- * To driveway crossings across footpaths in Town Centres

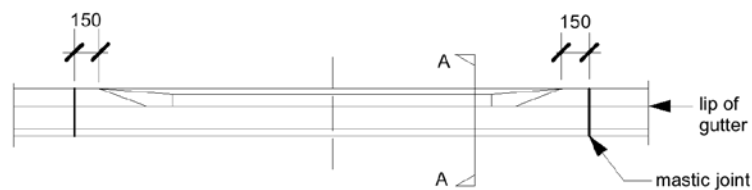
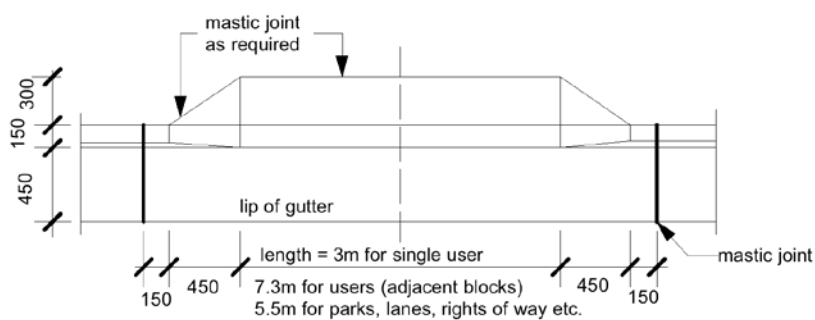
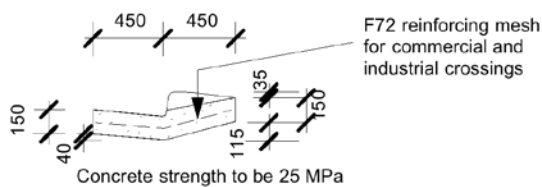
Principles:

- * Standard treatment at all driveway cross overs

Principles:

- * Concrete crossing
- * Driveway:
To brick paved or asphalt footpath:
- interlock pavement as per 3.3 Pavement - Materials Principles

To nature strip / concrete paths:
- concrete driveway

KERBS AND DRAINAGE**ELEVATION****PLAN**

Note : All commercial and industrial layback crossings to have one layer of F72 reinforcing mesh centrally located

SECTION A-A
**CONCRETE
VEHICULAR
CROSSING -
RESIDENTIAL**
K5**Location:**

- * To driveway crossings across footpaths

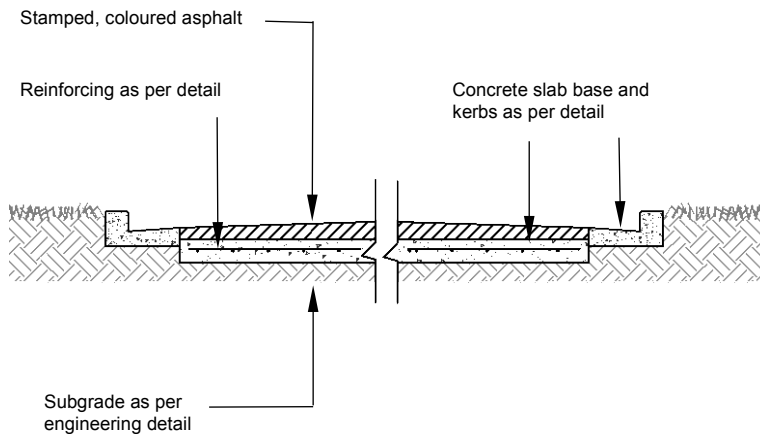
Principles:

- * Standard treatment at all driveway cross overs

Principles:

- * Concrete crossing
- * Driveway:
To brick paved or asphalt footpath:
- interlock pavement as per 3.3 Pavement - Materials Principles

To nature strip / concrete paths:
- concrete driveway



Indicative cross section:
Stamped asphalt threshold

Notes:

- **Each site must be assessed on merit and subject to specific engineering design, as circumstances will vary.**
- Each element must be designed for robustness, durability, slip resistance and low maintenance.
- Changes in pattern and material colour will define different areas and edges within the zone.
- Colour coordinate with other elements within the town streetscape.
- Stamping is preferable to stenciling to provide a durable and textured surface that is legible to both drivers and pedestrians.
- Pattern should be simple. Stretcher brick pattern is preferred.

ROAD K6 THRESHOLD TREATMENT

Location:

Shared Zones in town and village centres

Principles:

- Refer to RMS 'Shared Zone Policy & Guidelines'.
- Pavement surface should highlight that there is a change in road environment.
- Pavement surface must be clearly distinguishable by colour, texture and materials.
- Surface is designed to be robust and durable

Materials:

- Concrete for slab base and edges to relevant standard.

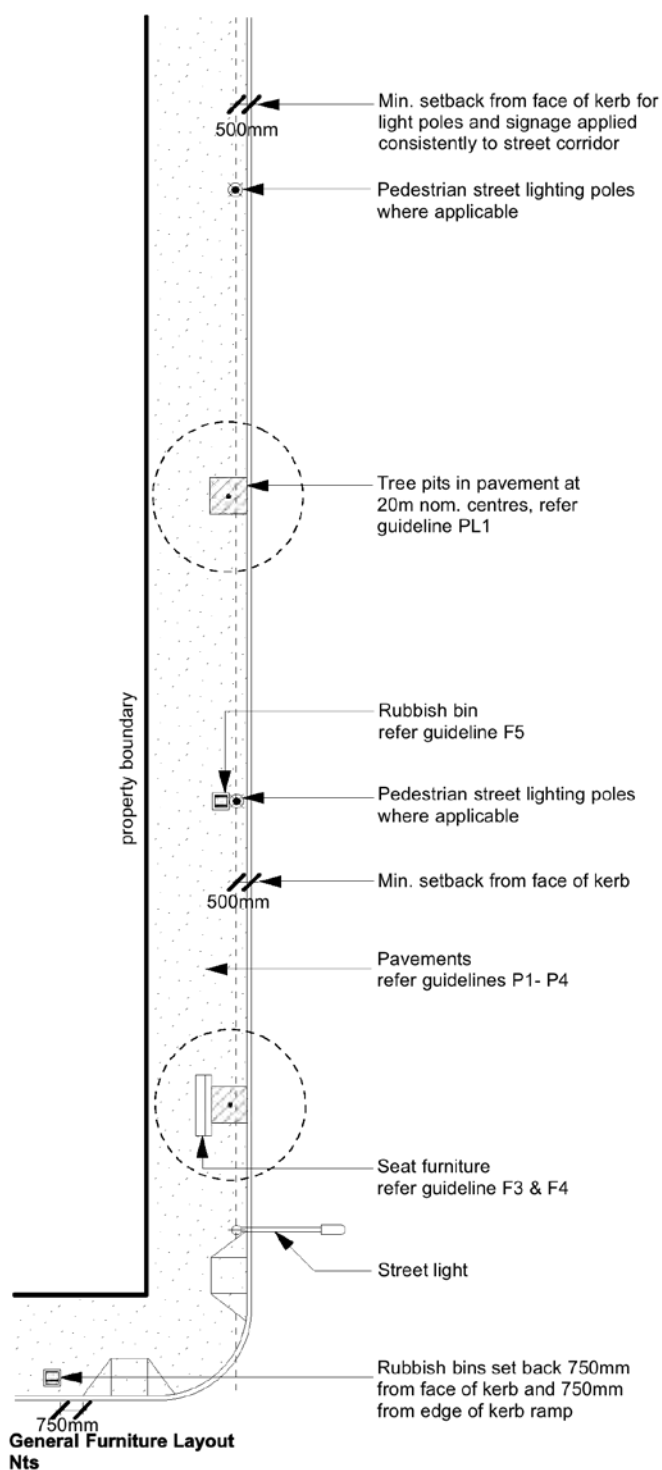
CONTENTS

***New to this edition**

Furniture – F

- F1 General furniture arrangement
- F2 On Street Trading
- F3a Backed Seat Arrangement
- F3b Town Seat Schedule
- F4a Seats: standard installation
- F4b Park Seat
- F5a Rubbish Bins: Standard
- F5b “Katoomba” Rubbish Bin & Retrofit
- F5c “Lawson” Rubbish Bin
- F 6a Bollard – Town Centre
- F6b* Bollard - Standard
- F6c* Bollard – casual setting
- F7 Bubbler
- F8 Bicycle Rack
- F9 Bicycle Hitching Rail
- F10 Flagpole
- F11 Major Bus Shelter
- F12 Minor Bus Shelter
- F13* Street Balustrade
- F14* Planter & Seat

FURNITURE

GENERAL FURNITURE ARRANGEMENT **F1****Location:**

To all Village Centre streets

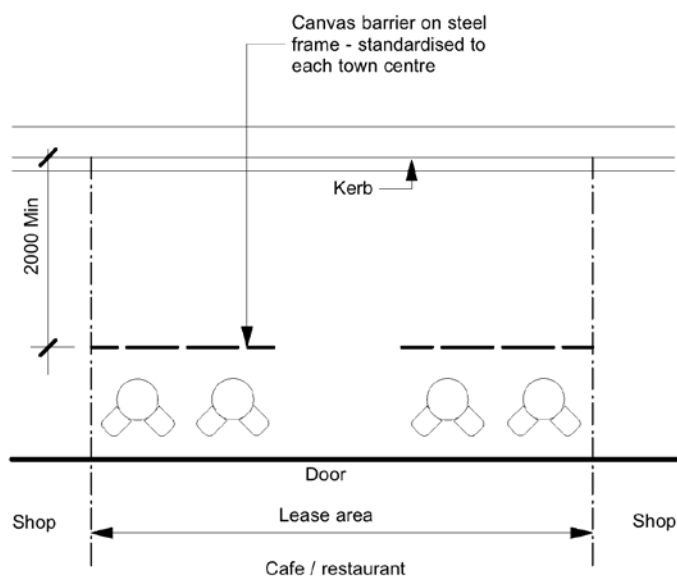
Principles:

- Placement and spacing of furniture should relate to functional requirements
- Street furniture elements should be set out as part of an integrated streetscape design scheme
- Light poles and signage to have a minimum of 500mm clearance from face of the kerb
- Kerbside furniture elements alignment 750mm from face of kerb
- 2 metre minimum clear line of pedestrian travel preferred along shopfront

Materials:

Refer to individual street furniture guidelines

FURNITURE



Typical Layout For On Street Furniture
Nts

ON STREET TRADING F2



Location:

Where appropriate and where on street trading licenses / leases apply

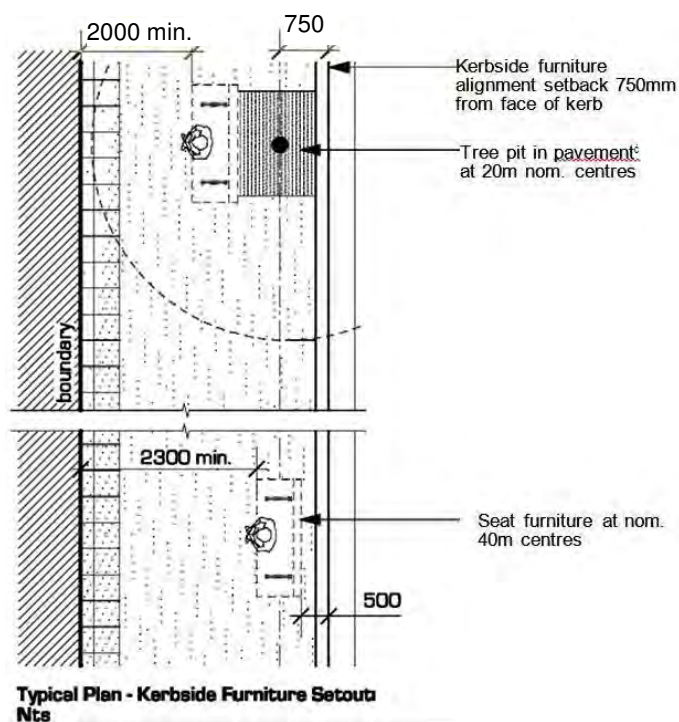
Principles:

- * Every situation should be addressed on its merits with flexibility in applying standards where site specific conditions demand
- * Trading out to street footpaths limited to maximise consistency of clear path of pedestrian travel
- * Footpath outdoor seating areas to maintain 2m minimum width clear path of pedestrian travel between edge of seating areas and alignment of street lighting poles / furniture or kerbline where no vertical obstructions occur

Materials:

Not applicable

FURNITURE



BACKED SEAT ARRANGEMENT F3A

Location:

To village centre footpaths and other central public spaces where a seat style has NOT been selected (refer F3b "Town Seat Schedule").

Principles:

- Seat style can be a major expression of village identity & diversity. Scope must be allowed for active Village Associations & Chambers of Commerce to select.
- Where there is no village preference for a seat style, the default option from the seat schedule – F3b – is required.
- Install seats to street footpaths in kerbside furniture alignment (750mm from face of kerb)
- Maintain 2 metre min. clearance from building frontage to seat.
- Seats & other furniture to be set out as part of coordinated streetscape design integrated with pavement, crossovers, street trees and lightpoles.
- Do not install seats lengthways to grades over 1[v]:25[h].
- Seats must be installed & fixed to manufacturer's specification.
- Where the armrest is optional, evaluate on user demographic i.e. high elderly presence.

FURNITURE

Note: While particular products listed are the preferred models, manual users may find products that are equal or equivalent to those listed – consult with BMCC's urban designer. Manual users are encouraged to canvass a range of suppliers for best prices.

DEFAULT

For use where communities do NOT have an organized preference for a seat style within a town or village centre. To be coordinated with bench model as needed.

SFA Galleria seat ©

Seat Type: CMG101

Size: Standard

Leg type: Splay

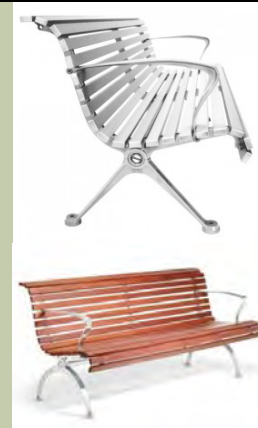
Batten: Jarrah

Finish: Cast aluminium powder coated black

optional arms – angle armrest AM2 - detachable

(Note: armrests preferred where an elderly demographic indicates)

TOWN SEAT SCHEDULE **F3b**



Default Seat style - sample
Street Furniture Australia ©

BLACKHEATH

Furphy Foundry: Premier Seat © Village name cast into frame

Ends: GOV13E

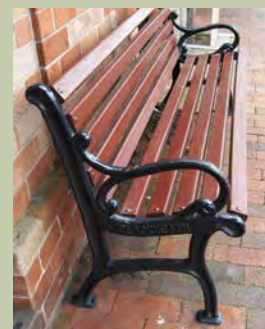
Slats: Hardwood timbers

Length: 1.9M

Attachment: Bolt-down

Finish: Powder coat Black

Modification: Seat End Strengtheners in high vandalism areas



Blackheath seat – sample

ECHO POINT

Town & Park Furniture:

Timber & Aluminium Metro table seat © model TSSD/T

Slats: Select grade hardwood eco-timber planking

Attachment: Surface post mounted with bolt-downs



Echo Point table bench – sample

Town & Park Furniture

SSD/T Metro Seat ©

Timber & aluminium dual assembly (surface post) with armrests

Slats: Select grade hardwood eco timber 2000mm long

Ends: Powder coated silver

Attachment: Surface mounted, bolt down



Echo Point seat - sample

GLENBROOK

Combined seat & planter custom made by BMCC, maintained by Glenbrook Chamber of Commerce



Glenbrook planter/seat

KATOOMBA

Emerdyn Mall Seat © em001

Hardwood slats

Sub surface or in-ground fixing

Hot dip galv. Steel under-frame powder coated

Arms optional



Katoomba seat - sample

KATOOMBA - CARRINGTON PARK and other formal parks

Botton & Gardiner

Bench Seat 9 External BS9aX ©

Cast Aluminium frame

Powder coat black

Jarraah slats, exterior oil

No arms

Wall mounted



Top mounted bench – sample

Botton & Gardiner
 Bench Seat 9 External BS9aX ©
 Cast aluminium frame
 Powder coat black
 Jarrah slats, exterior oil
 With optional arms
 Fixing to match existing

Backed seat (optional arms where an elderly demographic supports)
 Botton & Gardiner

Product Code:
 Size:
 Leg Type:
 Batten:
 Finish:



Bench with arms – sample



Backed Seat with optional arms - sample

LAWSON

SFA Galleria seat ©
 Seat Type: CMG101
 Size: Standard
 Leg type: Arch
 Batten: Jarrah
 Finish: Cast aluminium
 optional arms – angle armrest AM2 - detachable
 (Note: armrests preferred where an elderly demographic indicates)



Galleria Seat - sample

LEURA

Emerdyn
 Product Code: em009 ©
 Size: 1800
 Fixture: 4 bolt points
 Battens: Jarrah 20mmx25mm
 Finish: Hot dip galv. & powder coated



Leura seat - sample

SPRINGWOOD

SFA Galleria seat ©

Seat Type: CMG101

Size: Standard

Leg type: Splay

Batten: Jarrah

Finish: Cast aluminium powder coated black

Armrests optional - detachable are strongly preferred



Springwood seat - sample

WENTWORTH FALLS

Furphy Foundry: Council Seat © Village name plate attached to arm

Ends: GOV3

Slats: Hardwood timbers

Length: 1.8M

Attachment: Boltdown

Finish: Powder coat Claret 32774

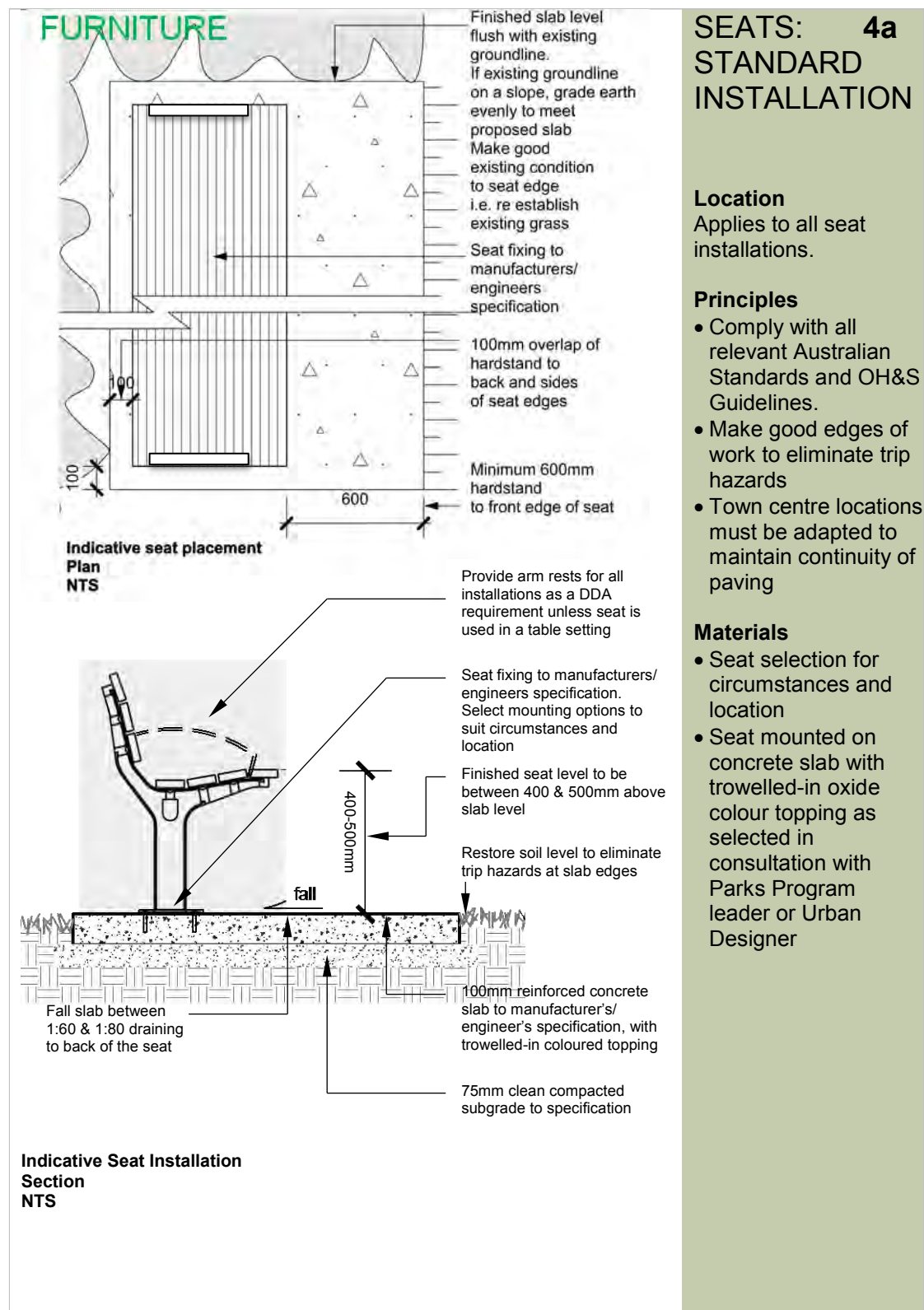
Modification: Seat End Strengtheners

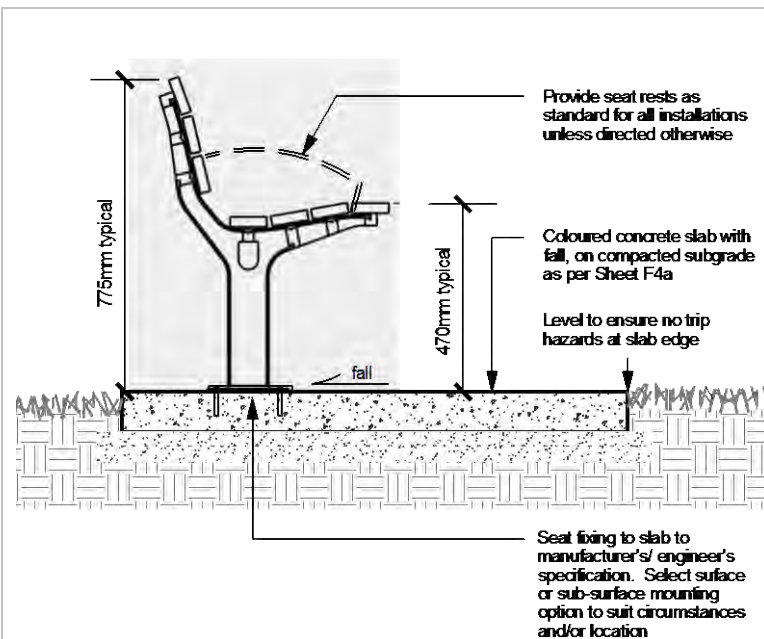


Wentworth Falls seat - sample



Wentworth Falls seat - detail





Park Seat Typical section NTS

Armrests: Armrests are a DDA requirement unless seat is used to create a table setting.

Leg Support: Cast Aluminium Powder Coated*

Mounting: Surface or Subsurface depending on site

Slab/seat relationship: as per detail F4a.
Ensure seat is mounted level.

PARK SEAT F4b



Location

To areas outside of town centres including high vandalism areas.

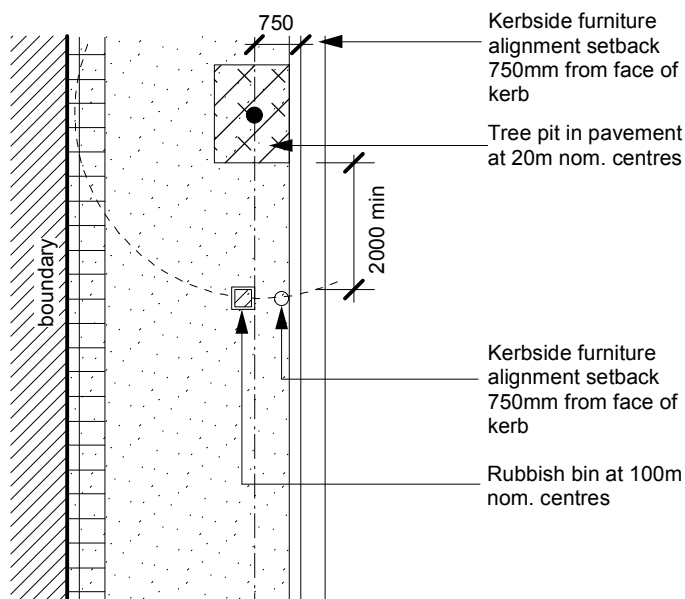
Principles

- Maintain 2m minimum radius clearance to other furniture & planting & coordinate locations & orientation in the setting.
- Do not install lengthwise in locations where gradients are greater than 1:35
- Make good to edge of slab to minimize/ eliminate trip hazards as per detail F4a

Materials

- Street Furniture Australia PS7-DDA, 1.8M long
- Seat Battens: 85x30mm eco certified oiled h/wood
- Concrete slab base with trowelled-in oxide colour topping as selected in consultation with Parks Program leader or Urban Designer

FURNITURE



Typical Plan - Kerbside Furniture Setout Nts

Gossi Park bin enclosure as specified

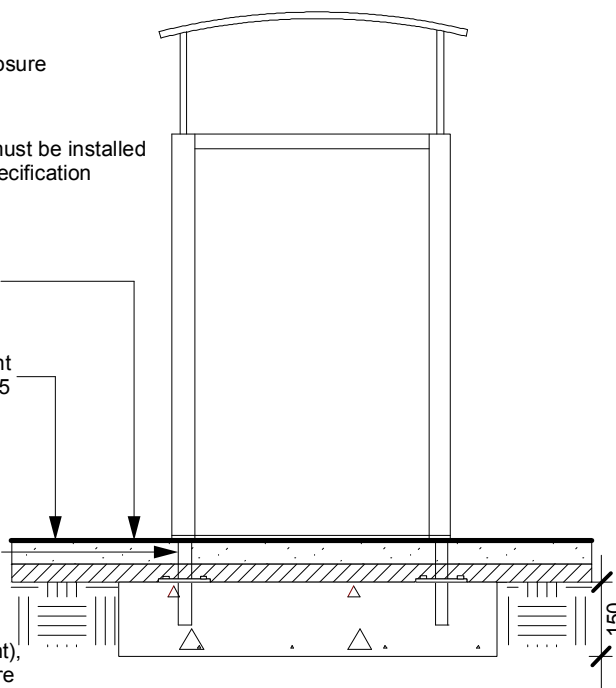
Note: rubbish bins must be installed to manufacturers specification

Finish surface level

Pedestrian pavement refer guideline P3-P5

Surface mount and fix to mass concrete footing 830 x 830 x 150mm (under pedestrian pavement), ensure that enclosure is installed plumb with bin opening facing shopfront

Typical Section - Bin Nts



RUBBISH BIN STANDARD F5a



Location:

Village centres

Principles:

- * Install bins to street footpaths in kerbside furniture alignment (750mm from face of kerb)
- * Maintain 2 metre minimum clearance from building frontage to bin
- * Install bins to practical locations to service access junctions and outdoor seating areas in close proximity to maintenance access
- * Bins and other furniture to be setout as part of coordinated streetscape design integrated with pavement, crossovers, street trees and light poles
- * Gossi Park Bin is preferred model where vandalism is likely to occur

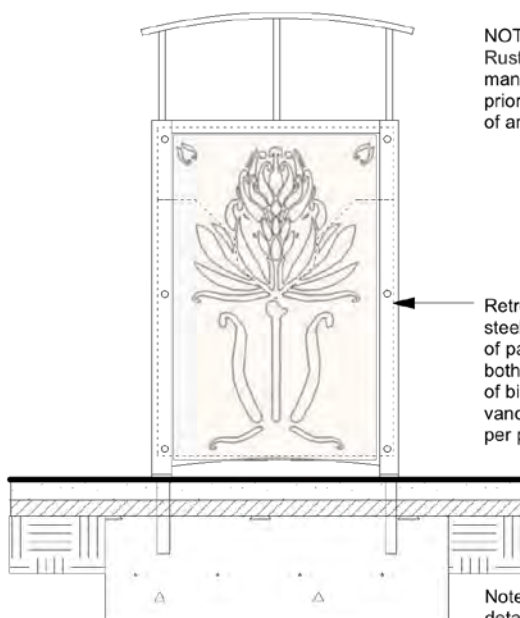
Materials:

Equal or equivalent to Gossi Park Bayside Bin ©120L
Frame Colour : Olive Mist
(Gloss enamel)

FURNITURE



Colorbond steel sheet of two colours cut so that "Waratah" motif reads as:
Flower : top section - Colorbond "Headland"
Stems and leaves : lower section - Colorbond "Cottage Green"



NOTE: Apply Dulux Quit Rust All Metal Primer to manufacturers directions, prior to painting or repair of any metal surfaces.

Retrofitted colorbond steel sheet fixed to inside of panel to strengthen both cutout sides of bin enclosures. Six vandalproof nuts and bolts per panel.

Note : Mounting as per detail F5a

SIDE ELEVATION

RUBBISH BIN RETROFIT **F5b**

Location:
Katoomba Street

Principles:

- * To strengthen the cutout side panels of the Katoomba St bins an additional steel panel coloured to enhance the waratah motif will be fixed to the inside of the motif panels

Materials:

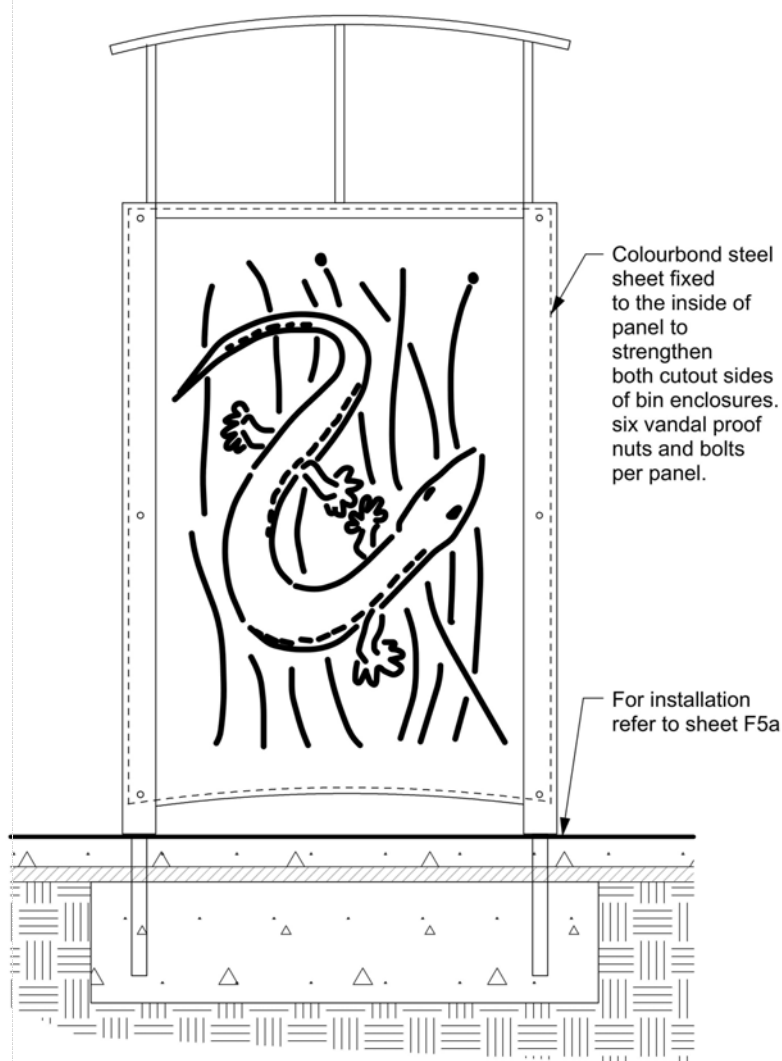
Katoomba bin with perforated motif

Frame - Dulux colorbond - Jasper (Gloss Enamel)

Internal strengthening sheet of colorbond (2 per bin) in -
Headland
(Top colour - Gloss Enamel)
Cottage Green
(Bottom colour - Gloss Enamel)

Fixing - 6 vandalproof bolts & nuts per panel

FURNITURE



Lawson Town Centre Bin
Typical Section
NTS

LAWSON RUBBISH BIN F5c



Locations:
 Lawson Town Centre

Principles:

- Provide a place specific bin which displays the chosen motif of the town
- Links to existing themes and materials used elsewhere
- Install bins to street footpaths in kerbside furniture alignment (750mm from face of kerb)
- Maintain 2 metre minimum clearance from building frontage to bin
- Install bins to practical locations to service access junctions and outdoor seating areas in close proximity to maintenance access
- Bins and other furniture to be setout as part of coordinated streetscape design integrated with pavement, crossovers, street trees and light poles

Materials:

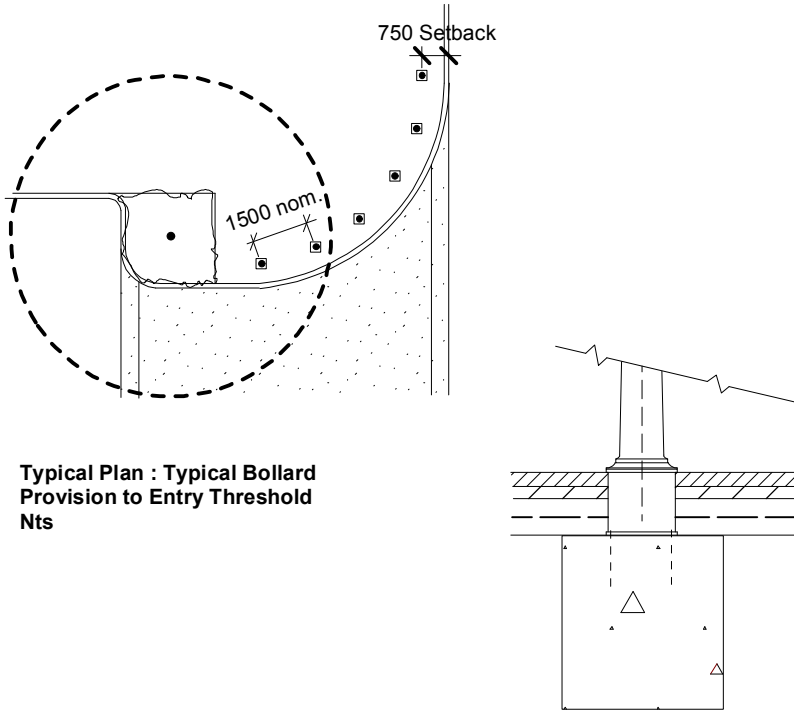
'Katoomba' bin with 'Lawson' laser cut motif

Frame- Dulux colourbond- Jasper (Gloss enamel)

Internal strengthening sheet of colourbond (2 per bin) in Charcoal

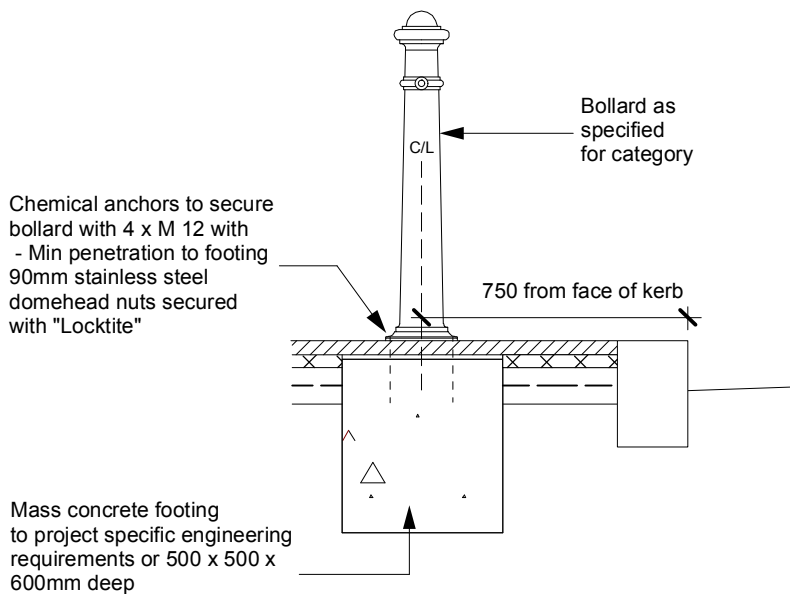
Fixing- 6 vandalproof nuts & bolts per panel.

FURNITURE



Typical Plan : Typical Bollard Provision to Entry Threshold Nts

Indicative Bollard Fixing Sub - Surface Mounted Nts



Indicative Bollard Fixing Surface Mounted Nts

TRADITIONAL F6a BOLLARDS



Note : In this image installation is adapted to street gradient

Location:

Village Centres where required

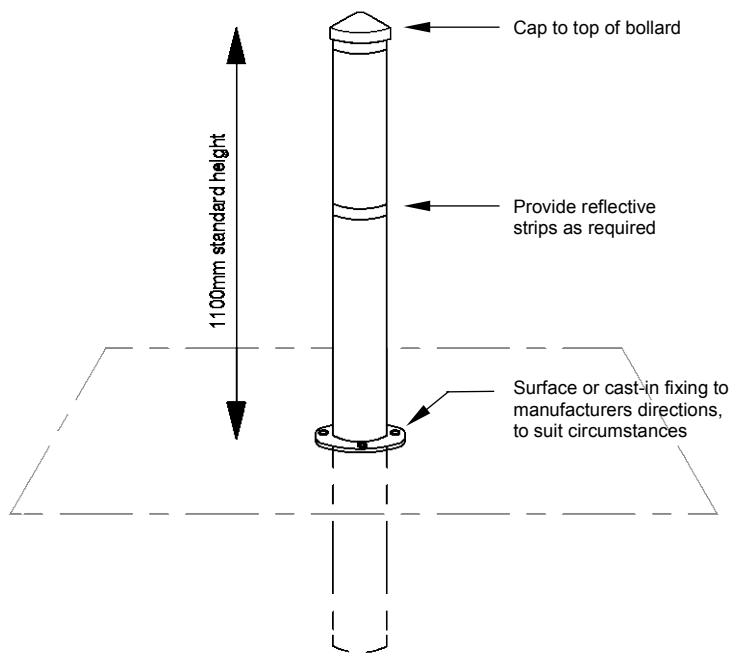
Principles:

- * Install bollards to street footpaths in kerbside furniture alignment (750mm from face of kerb) where applicable
- * Provide bollards to reinforce pedestrian holding points at intersections
- * Provide bollards to limit / control vehicular access to at grade access areas
- * Provide removable bollard fixings to areas as applicable to enable removal for special events
- * Provide surface or subsurface fixing as applicable and in a consistent basis across town localities

Materials:

Street Furniture Australia B4 Bolard® or equivalent - Dulux "Charcoal"® Powdercoated Aluminium finish

Footing design may vary depending on context



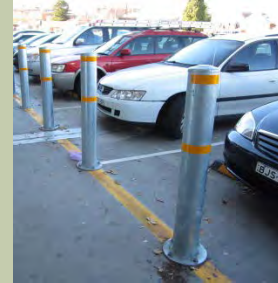
Indicative steel bollard detail:

Notes:

Steel finish type to suit setting (see Materials)

Bollard to be concrete filled for heavy duty situations

STEEL BOLLARD **F6b**



Location

Village centre carparks where a non- traditional style is required

Principles

- Provide bollards to reinforce pedestrian/ vehicle separation at key locations
- Provide bollards to limit/control vehicular access to at-grade pedestrian areas
- Provide removable bollards as applicable to enable removal for special events
- Provide surface or subsurface fixing as applicable
- Reflective strips may be added as required

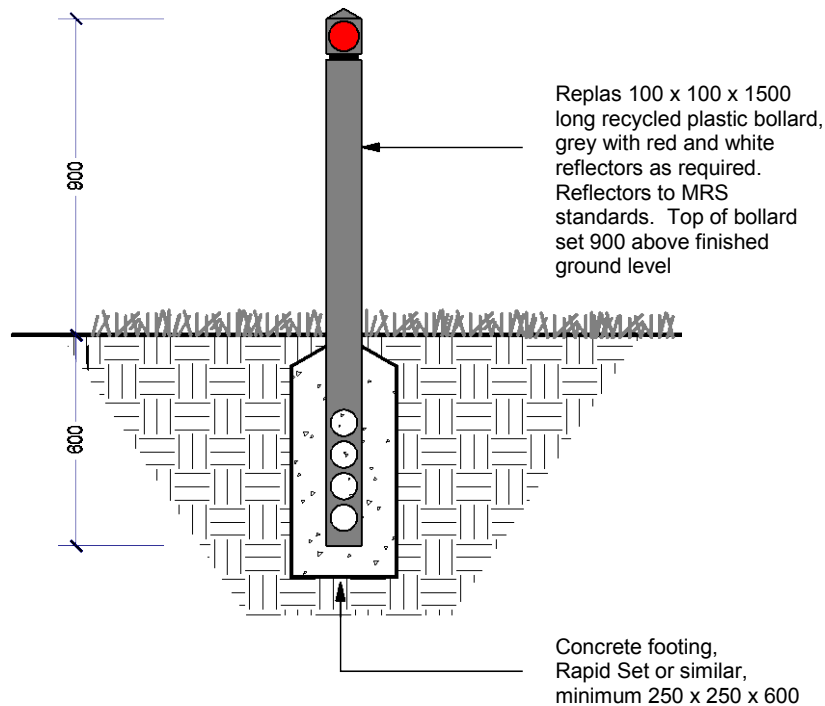
Materials

Standard pipe bollards, generally 150mm dia. with cap.

Formal settings: Use *stainless steel* finish.

Town centres: Use *brushed steel* finish.

Carparks: Use *galvanized steel* finish



NOTE: Consultation must be undertaken with other internal stakeholders before installation to determine location, spacing and extent.

==

RECYCLED PLASTIC BOLLARDS **F6c**



Location

Out-of-town areas and local parks where required

Principles

- Install to footpaths and parks where separation is required between pedestrians and vehicles
- Provide to limit or control vehicular access to natural areas as required
- Provide surface or sub-surface fixing as required

Materials

Replas square grey bollard or equivalent
Reflector quantity, colour and orientation as required depending on location

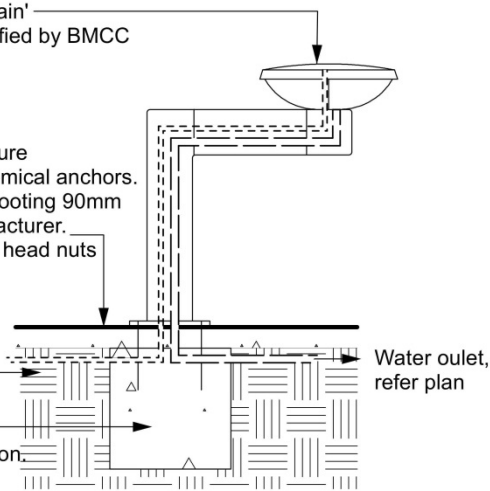
FURNITURE

'Cascade Drinking Fountain'
Proprietary item as specified by BMCC

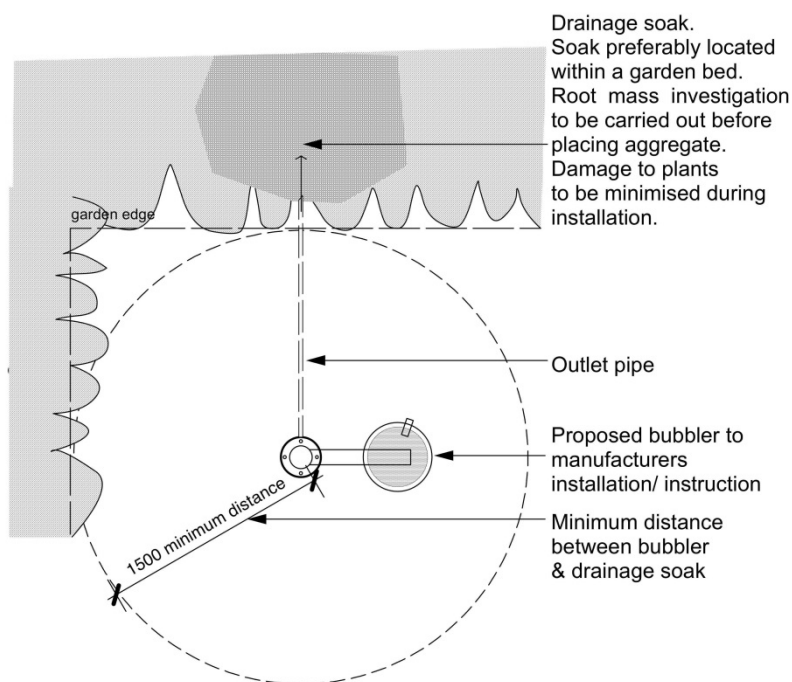
Chemical anchors to secure
bubbler with 4 x M12 chemical anchors.
Minimum penetration to footing 90mm
or as specified by manufacturer.
90mm hot dip galv dome head nuts
secured with 'Locktite'

Water inlet to hydraulic
engineer/ plumber
specification

Footing to engineer/
manufacturers specification.



**Indicative Bubbler Fixing
Mounted to Top of Slab
NTS**



**Distance to Drainage Soak
Indicative Bubbler Fixing Plan
NTS**

BUBBLER F7a

**Location:**

To parks where intensity of
usage and demographics justify

Principles:

- Wheel chair accessible model generally preferred.
- Optional dog bowl & tap preferred
- Install adequate drainage.
- Locate rubble pits in low or non foot traffic areas well away from bubbler.
- Maintain 2 metres minimum radius clearance to other furniture and planting & co ordinate location and orientation in the setting.
- Do not install in locations where gradients are greater than 1: 20

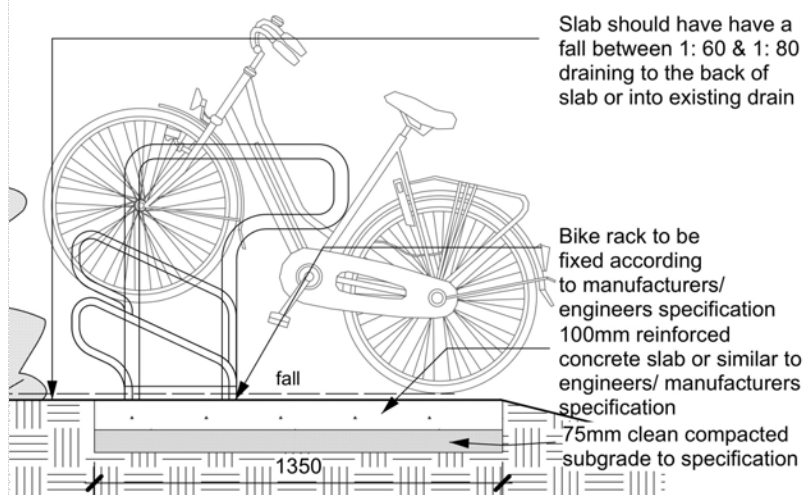
Materials:

Furphy Foundry
GOV64 WCA Wheel Chair
Accessible Bubbler © or
equivalent

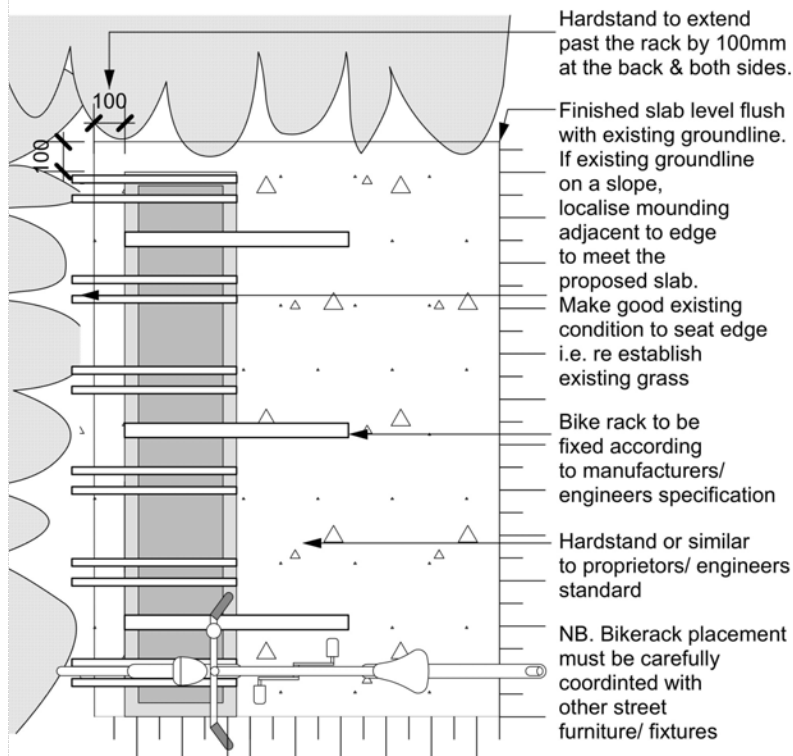
Dog bowl & self-closing tap

Powder coat 'Pale Eucalypt'
S4221

FURNITURE



**Indicative Bike Rack Rail Placement
Section
NTS**



**Indicative Bike Rack Rail Placement
Section
NTS**

BICYCLE RACK F8

**Location:**

Used at high intensity sites such as rail stations and aquatic centres where multiple racks and longer stays are required.

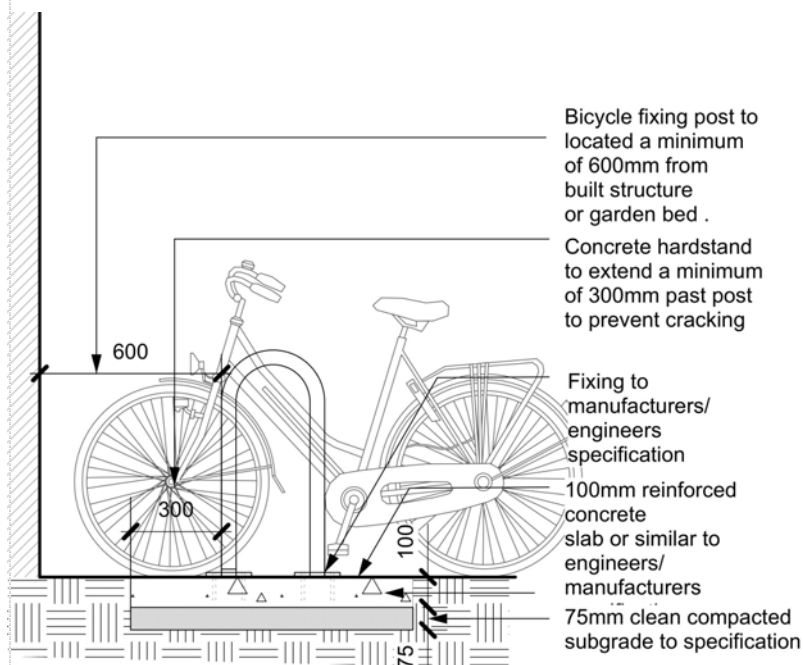
Principles:

- Must be coordinated with location of other furniture and fittings
- Mounting may vary according to circumstances, but security of mount must be a high priority

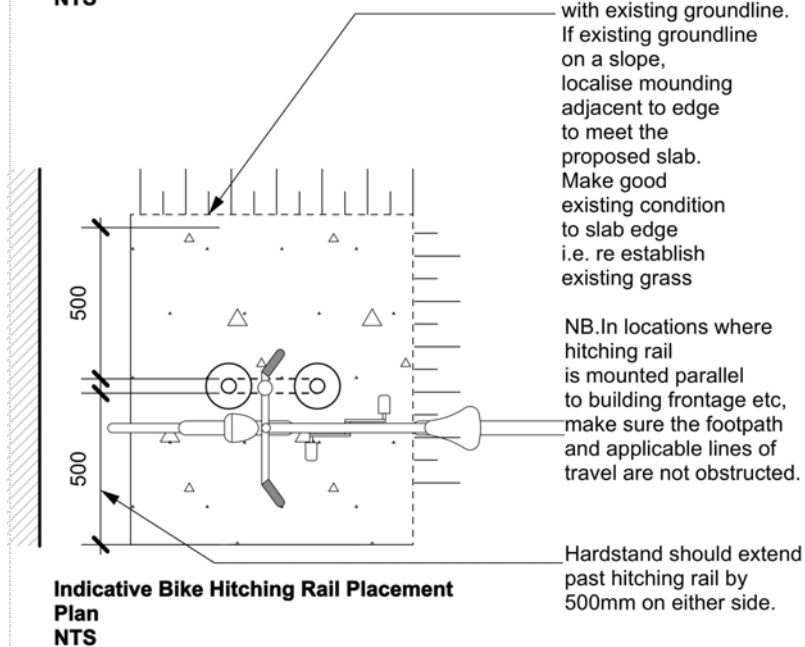
Materials:

Securabike © CBR65C or equivalent

FURNITURE



Indicative Bike Hitching Rail Placement Section NTS



Indicative Bike Hitching Rail Placement Plan NTS

BICYCLE F9
HITCHING RAIL

Note: narrow model preferred

Location:

To town and village centres where space is limited. More than one may be used.

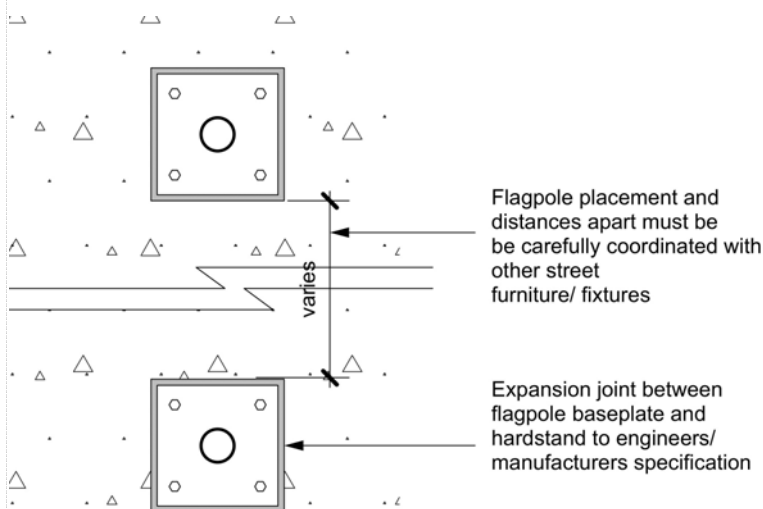
Principles:

- Where short to medium term parking is required
- Must be coordinated with location of other furniture and fittings
- Mounting may vary according to circumstances, but security of mount must be a high priority

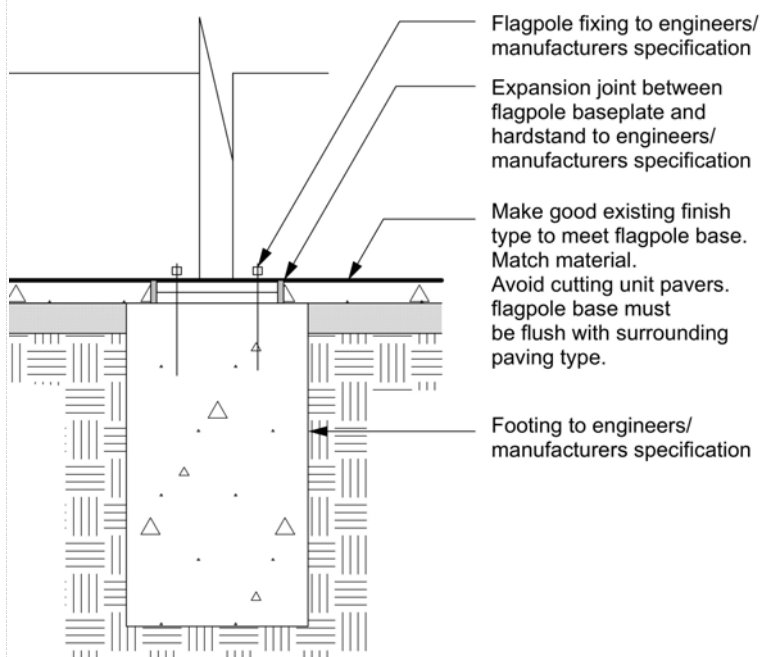
Materials:

Securabike BR475B or equivalent in stainless steel

FURNITURE



Indicative Flagpole Placement Plan NTS



Indicative Flagpole Installation Section NTS

FLAGPOLE F10



Location:

In town & village centres in locations where flags are required for ceremonial purposes and on formal occasions.

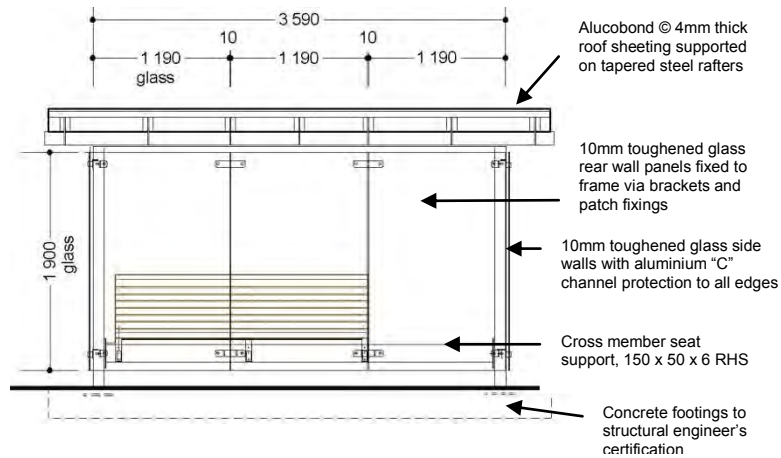
Principles:

- Locations need to be carefully coordinated with other fittings and street features
- Allow adequate space for ceremonial occasions around flagpole

Materials:

Tapered aluminum pole with anodized finish, internal and lockable halyard

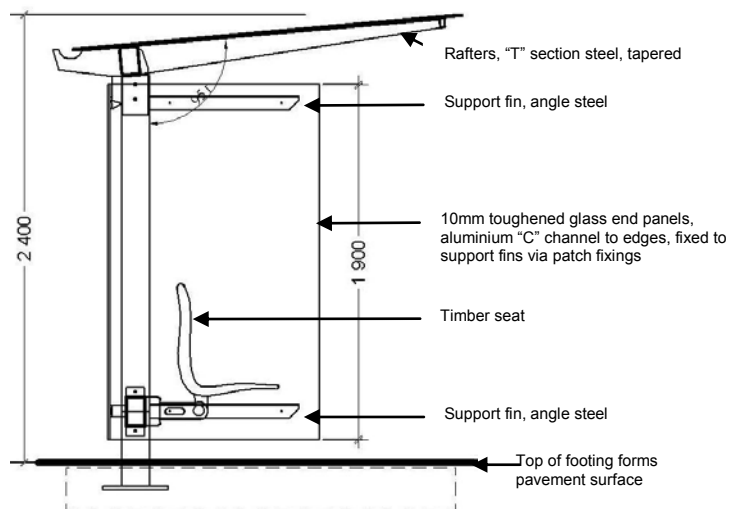
MAJOR BUS SHELTER



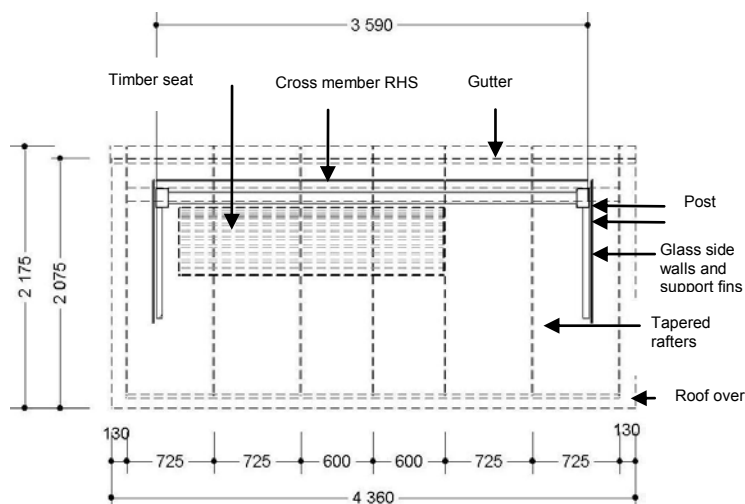
TYPICAL FRONT ELEVATION

THREE PANEL BUS SHELTER *

(* no. of glass panels along rear wall)



TYPICAL SECTION



TYPICAL PLAN (3 PANEL)

MAJOR BUS SHELTER F11

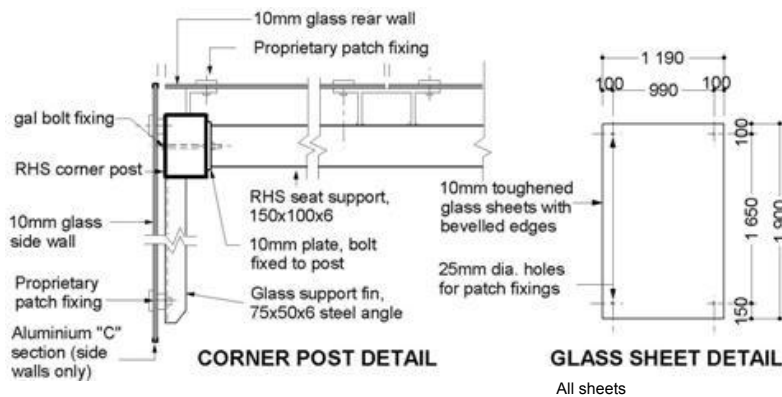
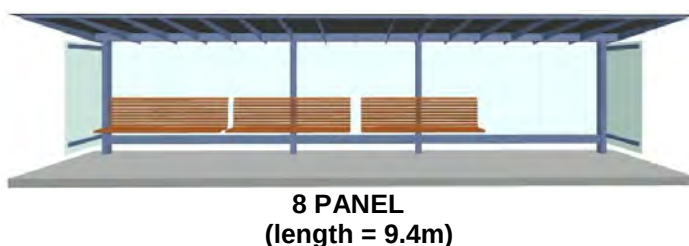


Location:

- In accordance with State Transit "Bus Stop Style Guide"
- In consultation with local bus companies
- In major town centers only
- In areas of excellent night lighting & high surveillance
- Where clear sight lines and minimum vegetation can be maintained, especially at rear

Principles:

- Standardized fabrication materials and details for a range of widths.
- Shown here as a "3 panel" shelter. BMCC have detailed drawings for a range of panel widths (2, 3, 6 and 8 panels).
- Standard footing design by structural engineer for all widths, foundation types and wind loads.
- Top of footing is finished floor of shelter where practicable
- No advertising to glass panels
- All glass faces protected by sacrificial clear anti-graffiti film
- Cut out section of film to fix bus timetable information to back face of rear glass panel
- Drain roof water from downpipe to garden bed, turf or street gutter as appropriate. Ensure no water flows onto concrete floor within shelter area.

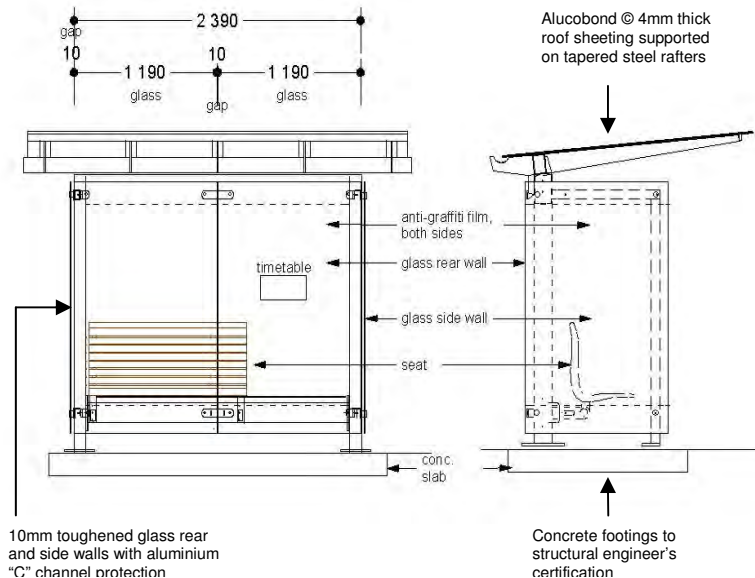
DETAILS**RANGE OF LENGTHS****Notes:**

1. "PANEL NUMBER" (eg. 2,3,6 and 8) refers to the number of glass panels along rear wall
2. "LENGTH" is the distance between the inside faces of the corner posts
3. Other lengths can be obtained by adding bays. The maximum length between support posts is 3400mm
4. Full fabrication drawings and specifications for this range of bus shelters and a Small Bus Shelter (see sheet F12) are available from the BMCC Principal Urban Designer

Materials:

- Structural Steel:
 - Posts and base plate hot dipped galvanized.
 - Remainder of steelwork not galvanized
- Roofing:
 - Alucobond © sheet (4mm aluminum composite)
- Glass:
 - 10mm toughened glass with beveled edges
 - Proprietary stainless steel patch fixing
 - All glass panels to be the same dimensions and fixing hole locations
- Clear Anti-Graffiti Film:
 - Apply to both sides of glass except where bus timetable information is fixed.
 - Glass Scratch Removalists
1300 858 835
- Seats
 - Jarrah slats, 70 x 30mm, exterior oil finish
 - Cast aluminum seat brackets
- Paint System:
 - All steelwork painted with *Dulux* ACRATHANE ® IF system (High gloss acrylic finish) to *Dulux Data Sheet PC218* requirements
- Colour: To match *Dulux* Charcoal Pearl 18796
- Full fabrication drawings and specifications are available from BMCC Principal Urban Designer

SMALL BUS SHELTER



FRONT AND SIDE ELEVATION

**Notes:**

1. Detailed drawings and specifications for this small bus shelter and a range of larger bus shelter lengths are available from BMCC Principal Urban Designer

SMALL BUS SHELTER

F12

**Location:**

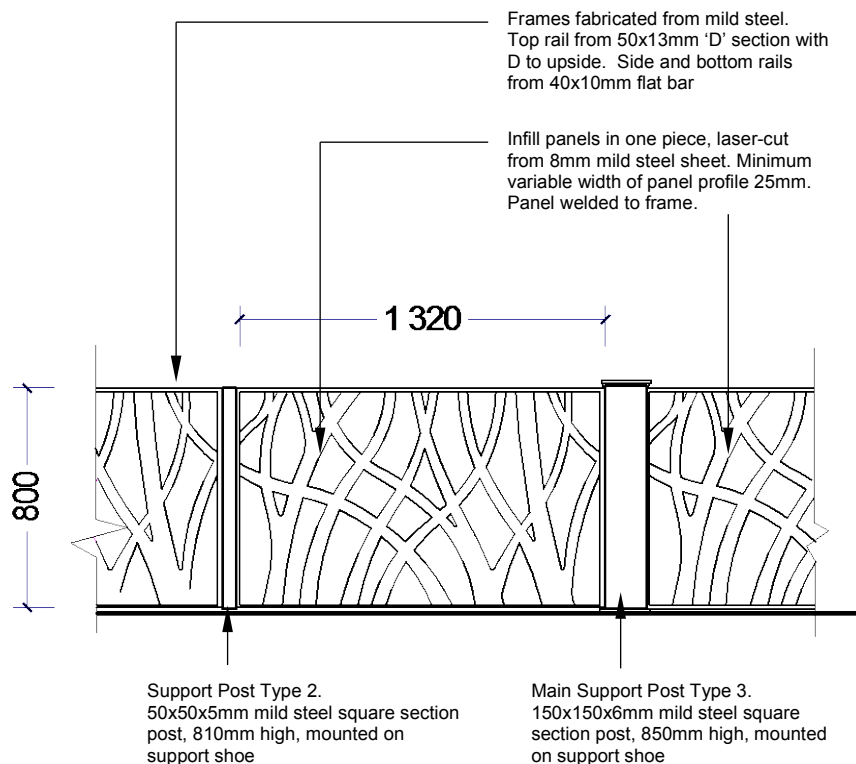
- In accordance with State Transit "Bus Stop Style Guide"
- In consultation with local bus companies
- In town and village centers
- In areas of excellent night lighting & high surveillance
- Where clear sight lines and minimum vegetation can be maintained, especially at rear

Principles:

- Standardized fabrication materials and details.
- No advertising to glass panels
- All glass faces protected by sacrificial clear anti-graffiti film
- Cut out section of film to fix bus timetable information to back face of rear glass panel
- Drain roof water from downpipe to garden bed, turf or street gutter as appropriate. Ensure no water flows onto concrete floor within shelter area.

Materials:

- See Major Bus Shelter (F11)
- Full fabrication drawings are available from BMCC Principal Urban Designer



PANEL ELEVATION NTS

Note: All connections fully welded. Panels and posts to be galvanised after fabrication and finished with black powdercoat paint finish. Sharp metal edges to be removed

Note: Full fabrication and installation drawings and laser cutting files can be obtained by contacting Council's Urban Designer.

STREET F13 BALUSTRADE



Location

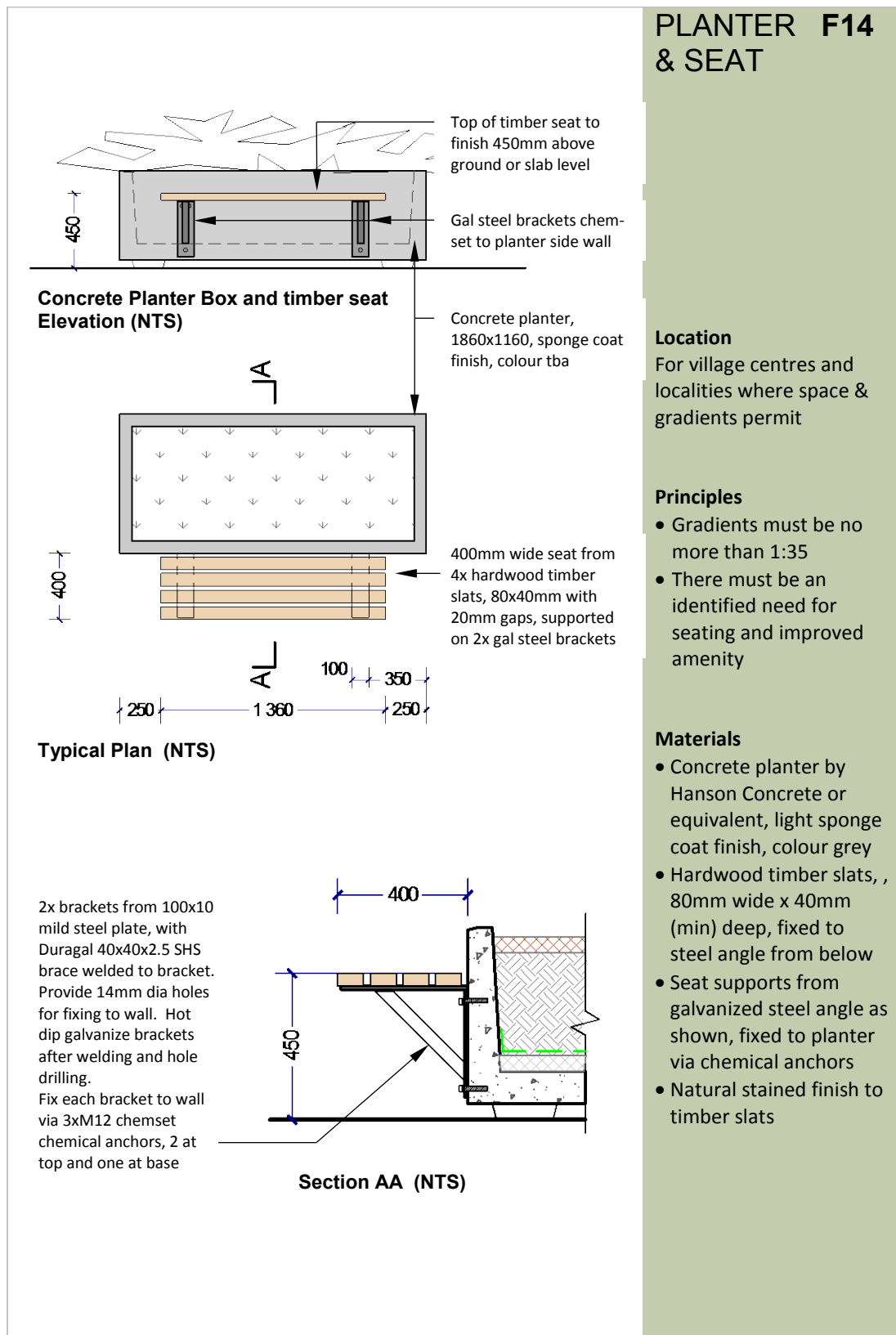
To town and village main streets where control of pedestrian desire lines is a high priority

Principles

- Balustrade design will be specific to individual towns
- Must only be used where control of pedestrian desire lines is a high priority or to quarantine outdoor dining areas from vehicles

Materials

Mild steel post and laser-cut panel, galvanized and powder-coated. All connections fully welded.

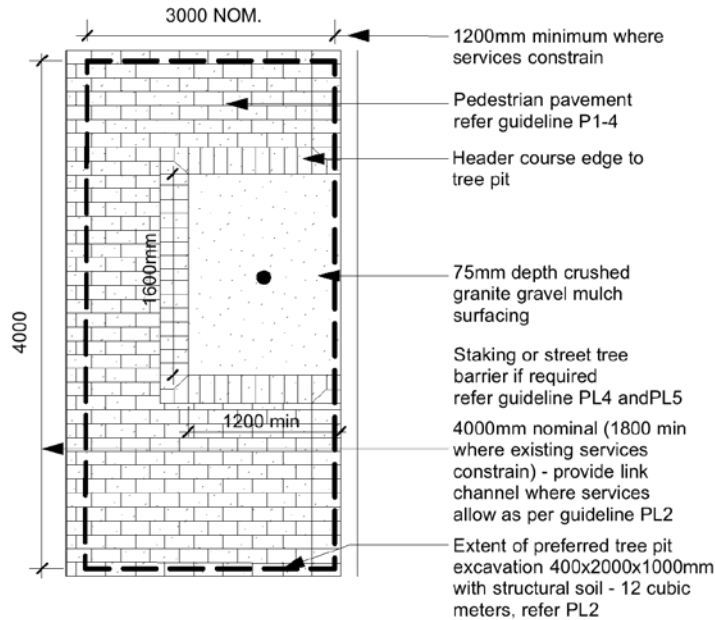


CONTENTS

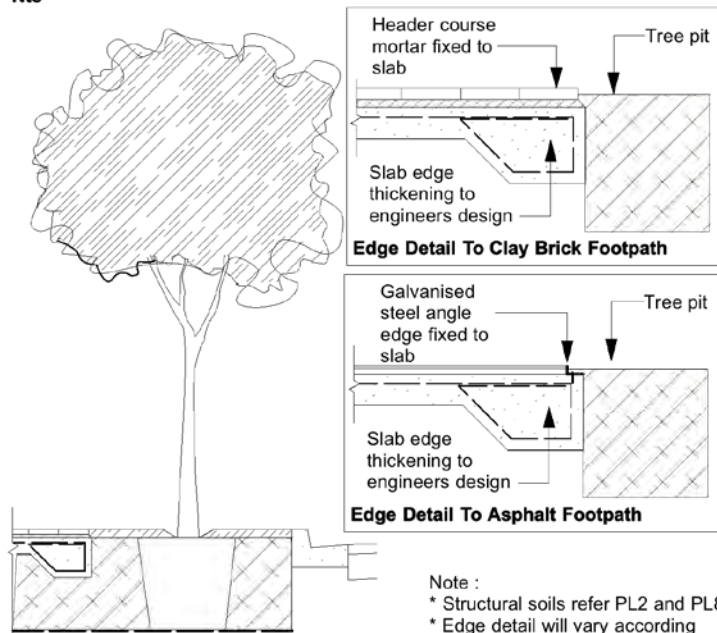
***New to this edition**

Planting – PI

- PI1 Street Tree Planting in Pavement
- PI2 Street Tree Planting in Linked Pits with Structural Soil
- PI3 Street tree Planting in Grass verge
- PI4 Street Tree Barrier
- PI5 Temporary tree Staking
- PI6 Porous Grout Around Trees
- PI7 Garden Bed Planting
- PI8 Planter Boxes
- PI9 Planting mixes, fertilisers & Mulch Schedule

PLANTING

Typical Plan - Kerbside Tree In Clay Brick Paving
Nts



**Typical Cross Section
Kerbside Tree**
Nts

Note :
* Structural soils refer PL2 and PL8
* Edge detail will vary according to circumstances - refer to paving detail

STREET TREE PLANTING IN PAVEMENT **PL1**



Street tree planting - sample

Location:

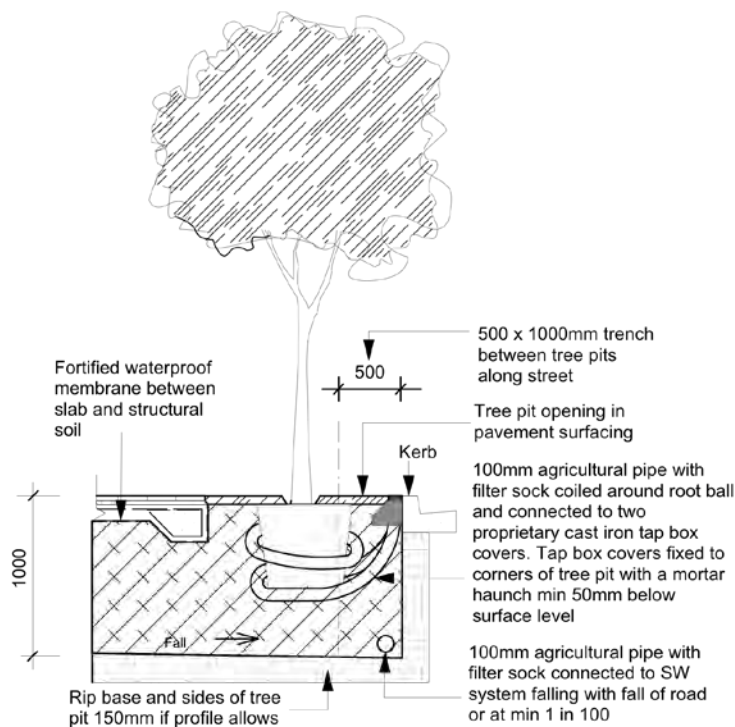
Street trees in streets with hard paved footpaths zones where linking pits is not feasible

Principles:

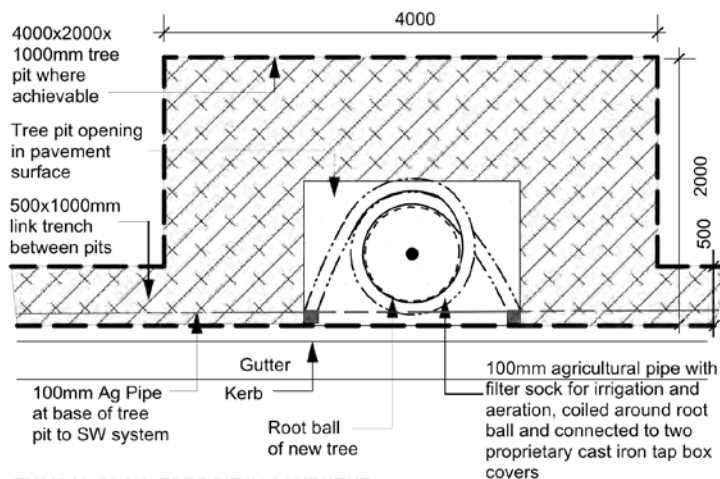
- * Street tree planting should adhere to recommendations of Street Tree Masterplan
- * Street tree species to be approved by Council
- * Continue tree planting along entire street blocks and where applicable integrate with existing planting themes
- * Mature existing trees should be subject to a programme of replacement as required due to aboriginal lifespan, to ensure tree canopy to street corridors is maintained

Materials :

Refer to PL3 for structural soils, PL4 for planting mixes and mulches and PL5 for tree guards

PLANTING

**TYPICAL CROSS SECTION: TREE PIT IN PAVEMENT
STRUCTURAL SOIL AND KERB TRENCH TREATMENT
NTS**



**TYPICAL PLAN: TREE PIT IN PAVEMENT
STRUCTURAL SOIL AND KERB TRENCH TREATMENT
NTS**

STREET TREE PL2 PLANTING IN LINKED PITS WITH STRUCTURAL SOIL

Location:

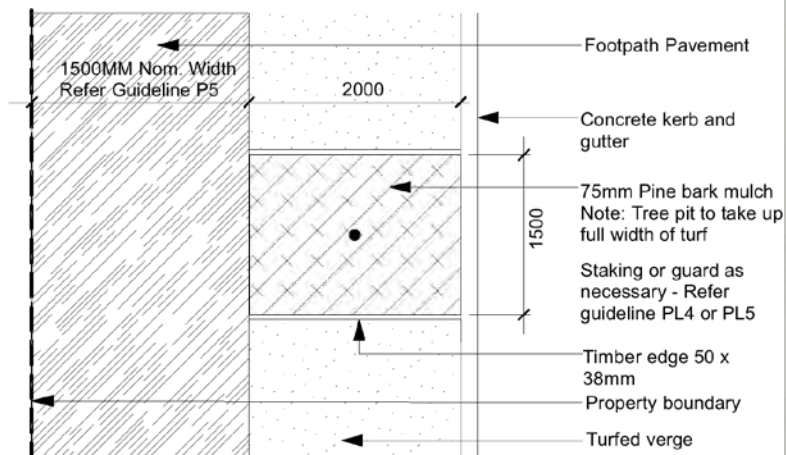
To new street tree planting within paved footpath areas where services allow

Principles:

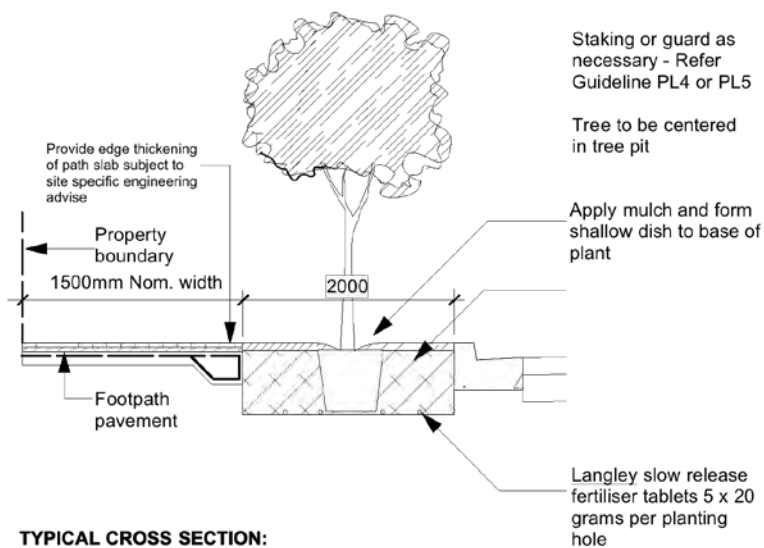
- * Provide structural soil treatment to new planting pits where feasible within paved foot path areas, to overcome limitations of organic mixes to support, pavement above tree pit (paving traditionally limited to outside tree pit opening area)
- * Where services allow, connect street tree planting pits with a water permeable channel along the inside of the kerbline (1000x500mm) backfilled with structural soil
- * Where services allow deep rip subsoil to sides and bottom of tree pit prior to backfilling with structural soil mix

Materials :

Refer cross section and specification notes this sheet.

PLANTING

**TYPICAL PLAN:
TREE PLANTING IN GRASS VERGE
NTS**



**TYPICAL CROSS SECTION:
TREE PLANTING IN GRASS VERGE
NTS**

STREET TREE IN GRASS VERGE **PL3**



Street tree planting - sample

Location:

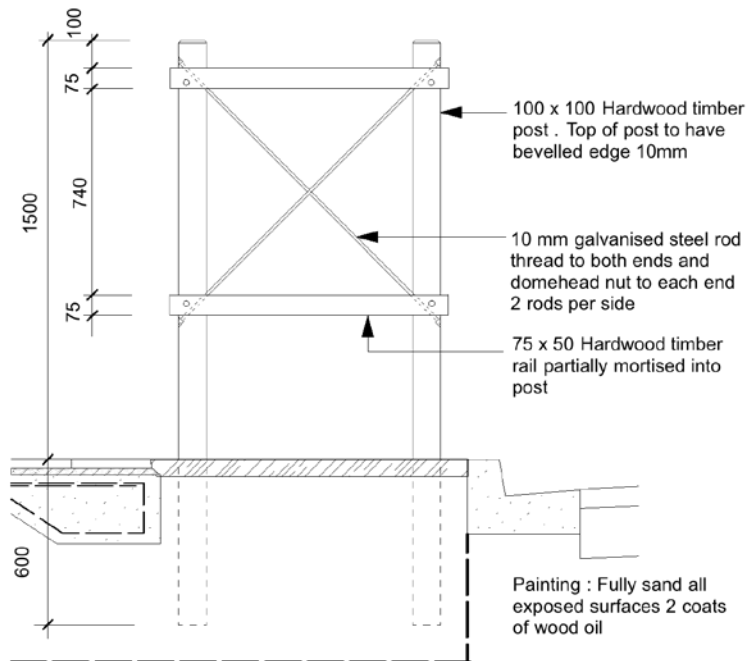
Street trees in residential areas

Principles:

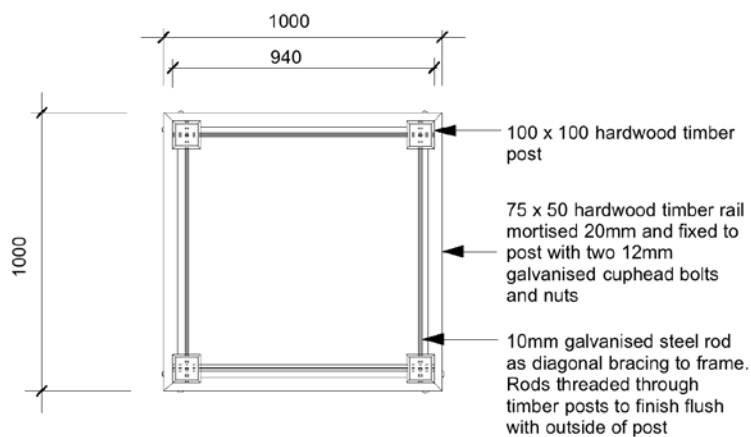
- * Street tree planting should adhere to recommendations of Street Tree Masterplan
- * Street tree species to be approved by Council
- * Continue tree planting along entire street blocks and where applicable integrate with existing planting themes
- * Mature existing trees should be subject to a programme of replacement as required due to aboriginal lifespan, to ensure tree canopy to street corridors is maintained.

Materials :

Refer to PL3 for structural soils, PL4 for planting mixes and mulches and PL5 for tree guards

PLANTING

TREE BARRIER - ELEVATION
NTS



TREE BARRIER - PLAN
NTS

STREET TREE BARRIER **PL4**



Location:

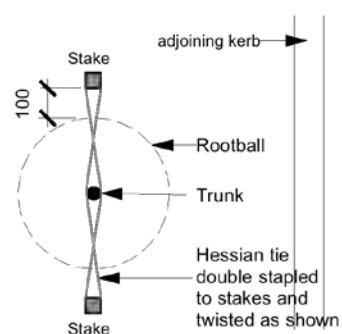
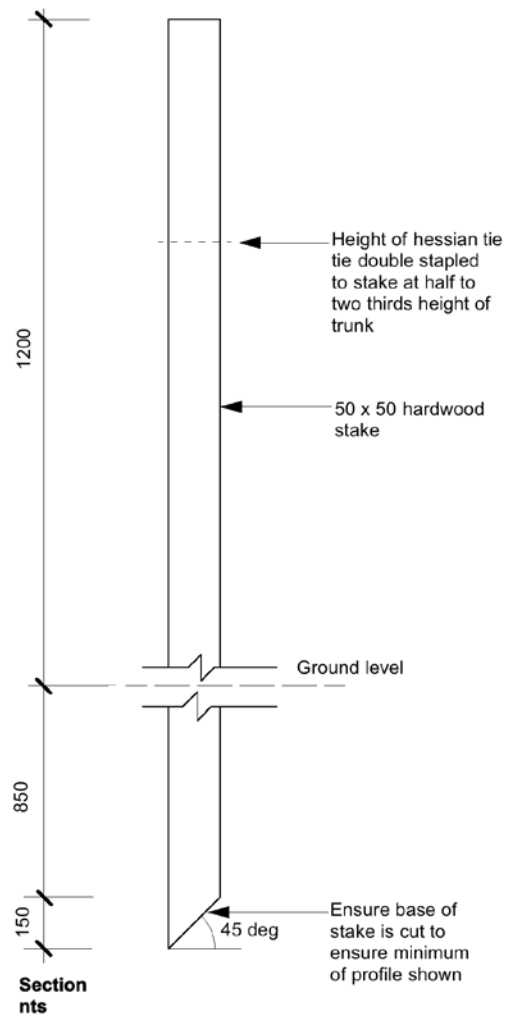
Where trees are likely to be vulnerable to trampling or runover by cars

Principles:

- * Provide unified street tree barrier treatment to entire LGA
- * Tree staking should be removed at a maximum of 5 years from tree installation
- * Pavement context - busy public spaces where young trees may require protection

Materials :

Hardwood timber , 10mm galvanised steel rod and thread, proprietary wood oil

PLANTING**TEMPORARY TREE STAKING PL5****Location:**

As required

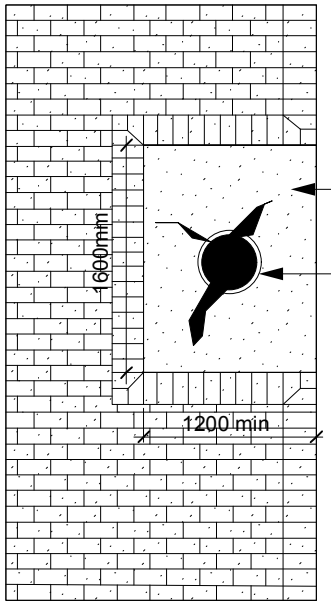
Principles:

- Provide unified staking treatment to entire LGA
- Tree staking should be removed at a maximum of 3 years from tree installation

Materials :

Hardwood stakes and hessian ties

PLANTING

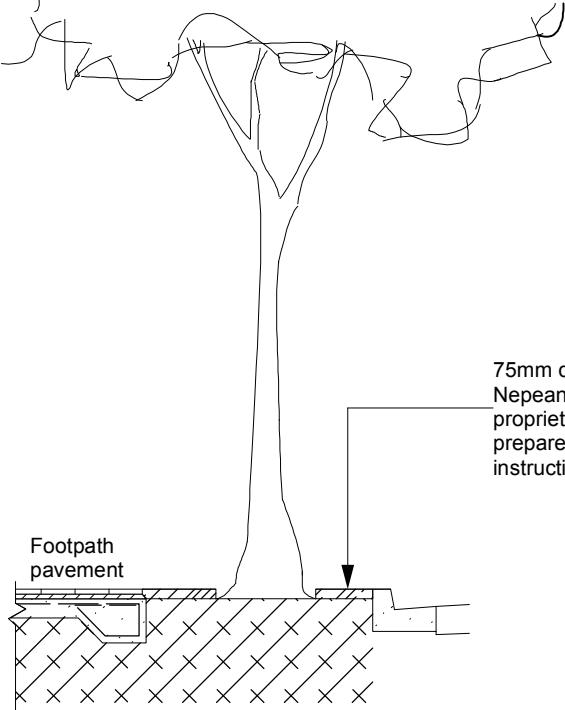


75mm depth of 10mm diam. Nepean river gravel blended with proprietary porous grout prepared to manufacturers instructions. Installation to suit individual tree situation to be determined on site.

Where trunk is regular in section a gap of 50mm extra to the trunk in radius shall be left to allow for growth. A uniform template shall be used around the inner edge of the porous grout as a temporary form

Kerb

Typical Plan - Kerbside Tree In modular Paving With Porous Grout - Gravel Mulch Nts



75mm depth of 10mm diam. Nepean river gravel blended with proprietary porous grout prepared to manufacturers instructions.

Footpath pavement

Typical Plan - Kerbside Tree In modular Paving Nts

POROUS GROUT AROUND TREES PL6



Location:

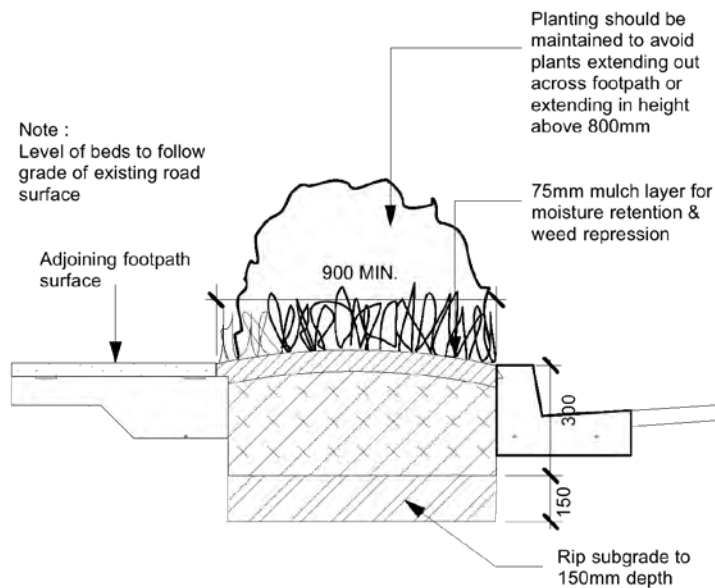
As deemed appropriate around trees in a paved context

Principles:

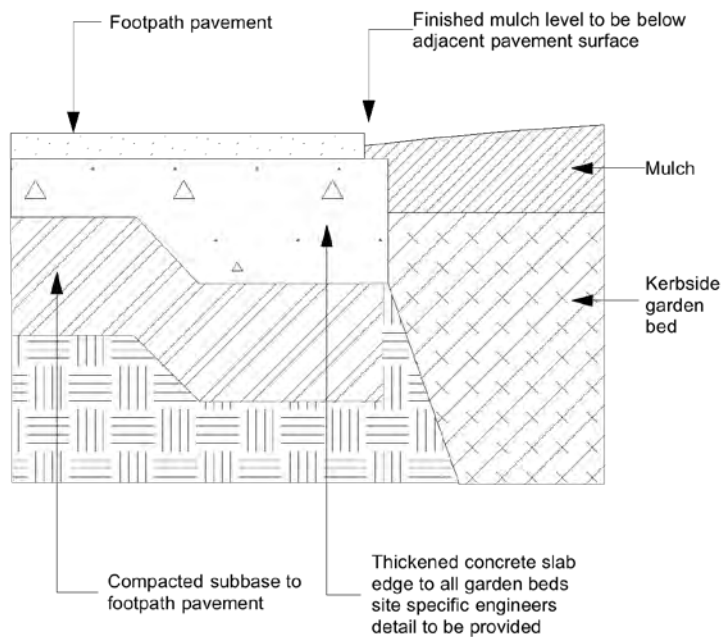
- * Provide unified tree treatment to entire LGA

Materials :

Proprietary porous grout such as xxxx, 10mm diameter washed Nepean river gravel

PLANTING

**Typical Cross Section : Kerbside gardens
Nts**



**Typical Cross Section : Pavement edge to kerbside gardens
Nts**

**GARDEN BED PL7
PLANTING****Location:**

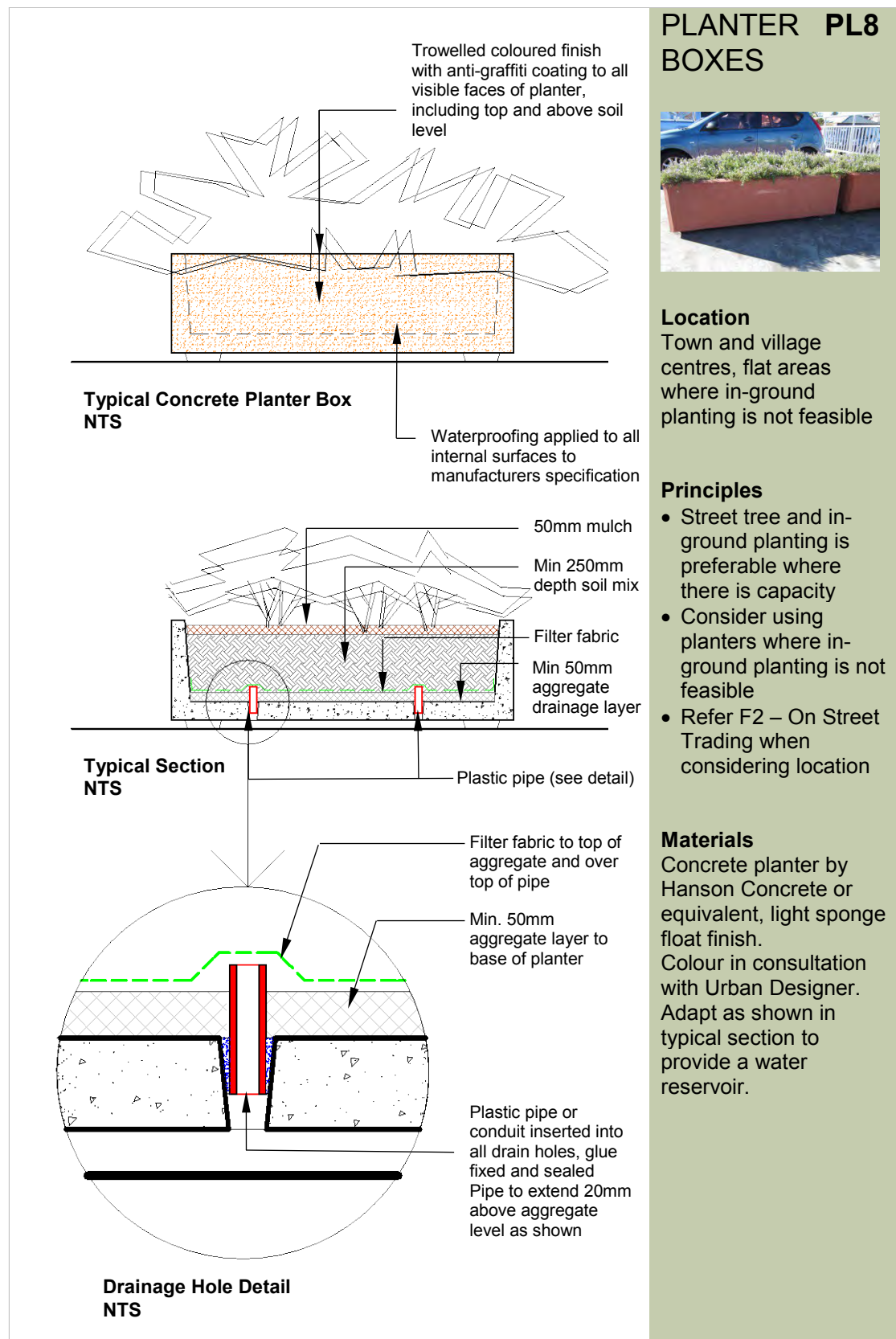
Streets as appropriate where the
existing footpath width is greater
than 2400mm and minimum clear
line of pedestrian access of 2000mm
can be maintained

Principles:

- * If street garden bed planting is appropriate as a component of specific centre character, incorporate in ground garden beds in preference to planter boxes or pots
- * Reinforce definition of entry points and thresholds with street garden beds
- * Ensure that the finished level of garden bed grade is below adjacent footpath levels to avoid excess mulch or water dispersal onto gutters and pavements
- * Consider ongoing maintenance of street garden beds in regard to plant selection and appropriate locations

Materials:

Refer PL9 for planting mixes and mulch



PLANTING**Planting Mixes and Soils - Criteria**

Type	Location	Description (Planting Mix)	Criteria	Note
Tree pits	Pavements	Structural Soil	Where carrying pavement loading	Refer PL1 & PL2
Tree pits	Grass verge	Site soil modified with 10% OM		Refer PL3
Garden beds	Pavements	Planting Mix		Refer PL7
Turfed areas	General	Topsoil		Refer PL3
Planters	General	Light weight soil		Refer PL8

Surface and Mulches - Criteria

Type	Location	Description (Mulch)	Criteria	Note
Tree pits	Pavements	Terrabond © or equivalent		Refer PL1
Garden beds	Pavements	Horticultural grade pine bark		Refer PL7
Planters	General	Horticultural grade pine bark		Refer PL8

Fertilising - Criteria

Type	Species	Description (Fertiliser)	Criteria	Note
Tree pits	Native	Osmocote © Plus Native Gardens or equivalent	Native planting	
	Exotic	Osmocote © TOTAL All Purpose or equivalent	Exotic planting	
Garden beds	Native	Osmocote © Plus Native Gardens or equivalent	Native planting	
	Exotic	Osmocote © TOTAL All Purpose or equivalent	Exotic planting	
Turfed areas		Shirley's No. 17	Grassed areas	Top dress in October
Planters	Ornamental	Osmocote © TOTAL All Purpose or equivalent	Exotic planting	

Planting Mixes - Materials

Planting Mix	Lightweight Soil	Topsoil
50% Coarse washed river sand 20% Sandy loam 30% Composted organics, comprising composted sawdust, pine bark, mushroom and spent coffee grounds	10% Coarse washed river sand 30% Sandy loam 20% Composted H / W sawdust 10% Botany humus mix 10% Compacted pine bark	40% Coarse sand 60% Black soil Black soil shall be fertile, friable sand loam of coarse to medium texture. It shall not be set hard or become difficult to work as a consequence of drying out and shall be capable of handling when moist. Composition shall contain between 10-25% clay or more than 75% coarse sand with a min. humus content of 4% by mass organic matter.

Surface Mulches - Materials

Planting Mix	Terrabond ©
Horticultural grade pine bark chip of maximum size 15 x 15mm grade	Terrabond © or equivalent

PLANTING MIXES, FERTILISERS & MULCH SCHEDULE**PL9****Location:**

Varies - refer to table

Principles:

- People appropriate planting mediums to soft landscape footpath zones, garden beds and turfed areas to maximise the long term viability of plant growth, form and health
- Provide appropriate mulch types for street tree planting to maximise moisture retention, suppress weed growth, and provide aesthetically attractive finish that integrates with adjoining materials
- Cater for long term maintenance considerations of street tree planting and in particular footpath maintenance and watering

Materials:

Refer to table - this sheet

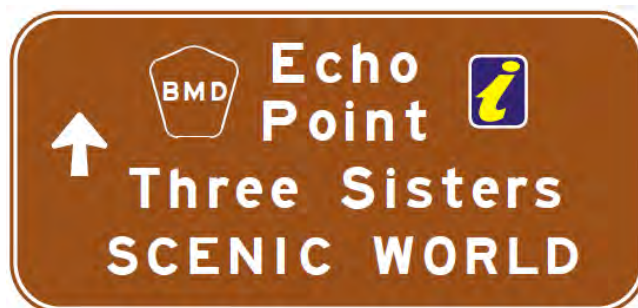
CONTENTS

***New to this edition**

Signage - S

- S1 Road Signage system & standards
- S2 Town Entry Sign
- S3 Pedestrian Wayfinding
- S4 Place Label

ROAD SIGNAGE

**Notes:**

The use of upper and lower case is used to distinguish between “natural” destinations (lower case) and “urban” or manmade destinations (upper case).

ROAD SIGNAGE S1**Location:**

Determined on a site specific basis after consultation with BMCC Asset managers and traffic engineers. All signage in the road reserve is determined and managed by BMCC.

Principles:

Design by Survey & Design section of BMCC in accordance with AS 1743 – *Road Signs Specifications* using specialist software.

All major signage on regional roads subject to approval by Roads & Maritime Authority.

Colours:

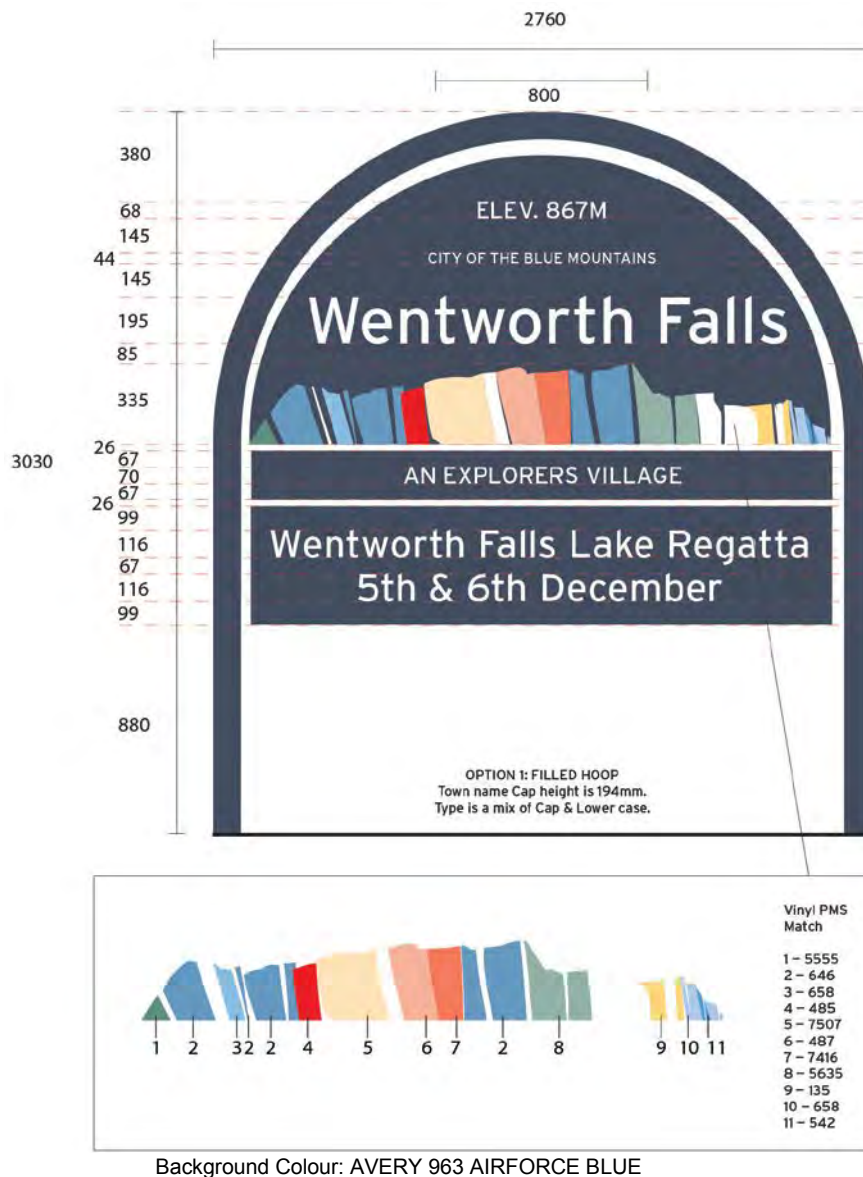
White on green: Community facilities;
White on Blue: Directional signs including some street names;
White on Brown: Tourism destinations;

The use of international pictograms is encouraged where appropriate

Materials:

Class 1 High Intensity White
ECF Films
Aluminium sheet

TOWN ENTRY SIGNAGE



NOTES:

- Signs shown use current worse case scenarios for text.
- The depth of all panels is a fixed depth and a minimum height for panels is set
- Depth of the optional third panel is fixed at 497mm
- Use Caps and Lowercase on Town names and Festival information. Caps only to be used for elevation, town slogan and City of Blue Mountains
- Festival Information is commonly in two lines
- Text specifications: All text is Interstate Regular, sizes as indicated above in mm. Justification is horizontally centred on sign unless otherwise indicated.

TOWN ENTRY SIGN S2



Location:

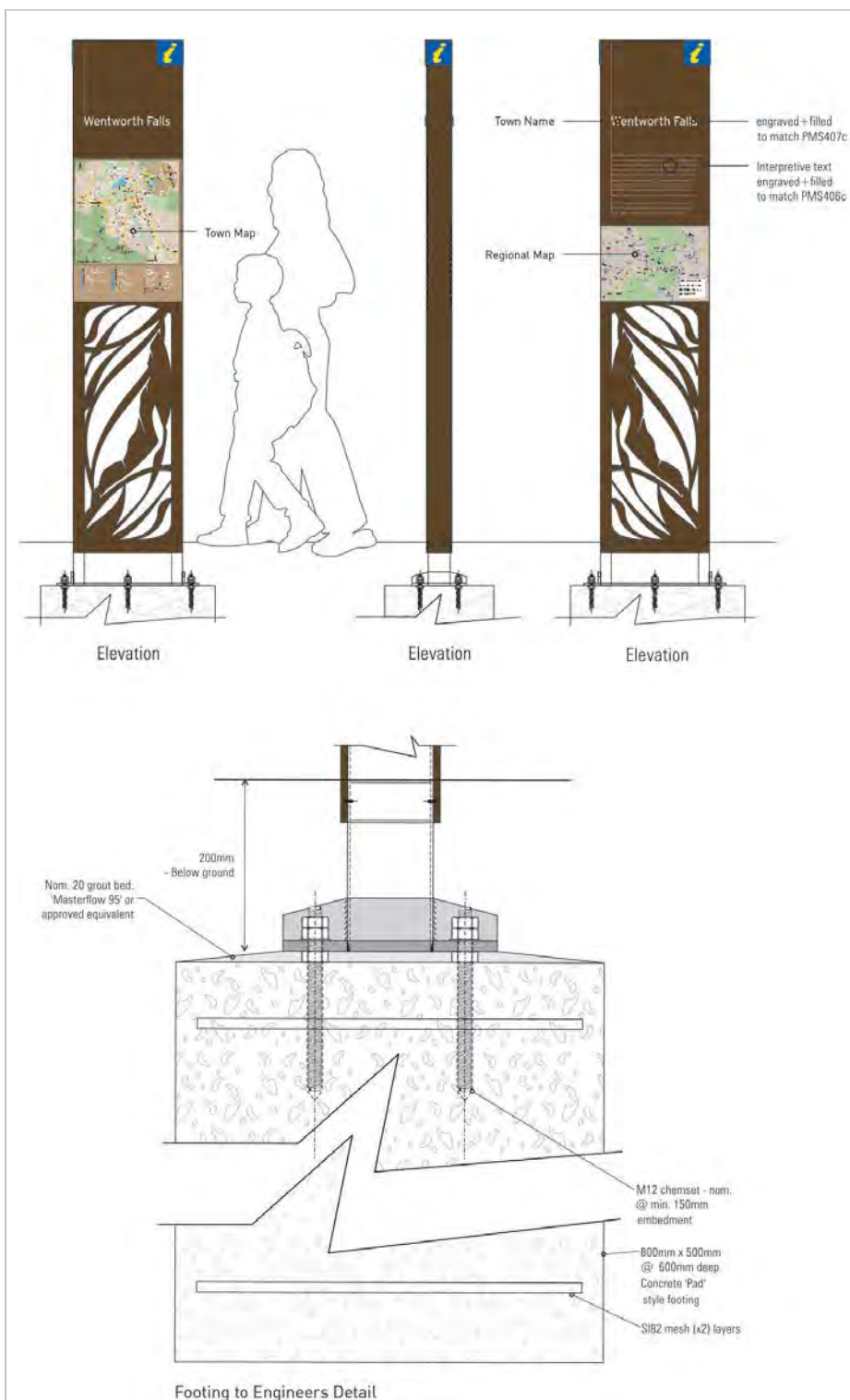
Near town/village boundaries on GWH and regional roads. Should be placed to allow long sightlines and does not obscure potential hazards or conflict with other signage.

Principles:

- Key information only – minimise characters in consideration of driver speeds of 60-80kph.
- All signs have considered RTA recommendations for road sign type sizes placement and colours.
- Contrast between dark background and white type as per Aus Standards and recommended by the RTA.
- No more than two fixed panels.

Materials:

Class 1 high intensity white
Cast Vinyl 900 series
Aluminium sheet



Interpretive Text
45pt on 65pt leading
D=130 words in Enigma

PEDESTRIAN WAYFINDING S3



Locations:

In town centres & other prominent locations. Each site assessed on its merits by Urban Designer in consultation with Asset manager and others.

Principles:

- Locations must be selected to maximize pedestrian exposure to information and minimize conflicts with amenity & other services
- Robust frame designed with minimized surface to avoid bill-posting
- Cut metal continues BMCC and Tourism branding
- Maps are printed on vinyl and can be updated

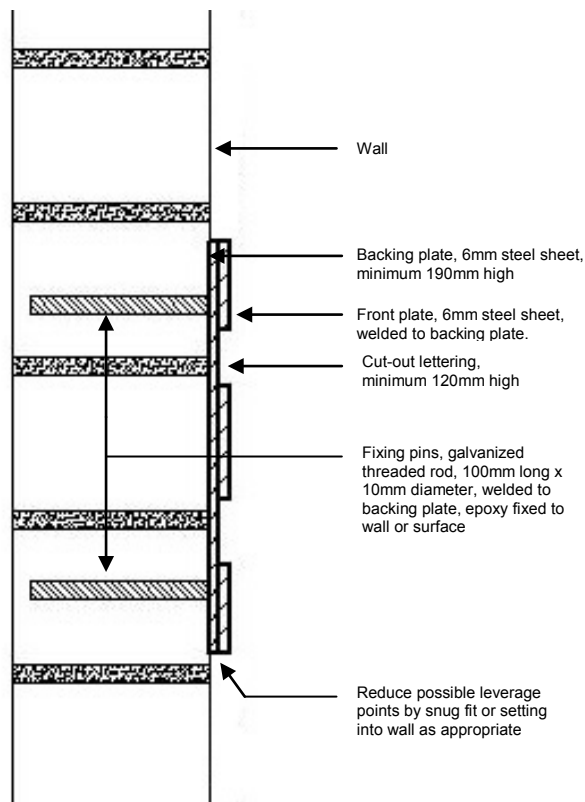
Materials:

Steel frame
8mm aluminium bottom feature face panel
Polyurethane painted Bronze Metallic finish
Concrete footing and fixings to engineer's specifications.

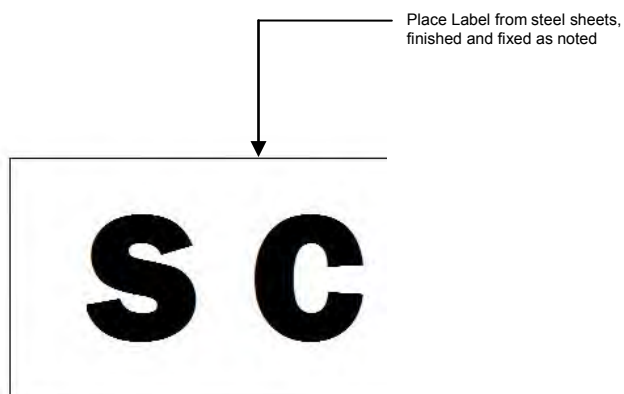
NOTE

Full fabrication details can be obtained from BMCC Principal Urban Designer.

PLACE LABEL



SECTION



FRONT VIEW

PLACE LABEL S4



Location:

- In consultation with local community groups
- In town and village centres and places of significance which merit their own sign
- In areas of excellent night lighting & high surveillance
- Where clear sight lines and minimum vegetation can be maintained

Principles:

- Standardized fabrication materials and details
- Simple robust theft-resistant design expressive of the town and village context
- Ensure minimum leverage points for vandalism
- Font Oliver, MixAGB or similar sans serif, minimum 120mm high

Materials:

Either:

- From 6mm thick mild steel sheet, envelope finished with two coats of "Axolotl" metal finish "Rust Patina" to manufacturers specification (Axolotl Metal Finishes, www.axolotl.com.au)

Or:

- HW350 Xlerplate weathering steel sheet (CorTen), 6mm thick may be suitable where rust staining below sign is acceptable
- All joints to be welded and ground smooth before finishing
- Sign fixed to surface via metal fixing pins and 2 pack epoxy glue or as directed
- In brick or block surfaces, position fixing pins to avoid mortar joints

Public Domain Technical Manual

Part 2: Parks & Reserves



PART 2: NATURAL AREAS

Introduction

Part 2 of the Technical manual was developed to meet the need to standardise design and structures required in bushland areas and other natural environments in order to protect natural assets from inappropriate use and to facilitate ongoing sustainable public access.

Built structures in Council's Parks and Reserves assist the land manager in balancing the conservation needs of an environmental area with the impacts of public access. Much of Council's 5500ha public reserve system has high conservation value as it contains significant diversity of plants and animals, many of which are rare or threatened. These reserves also contain an extensive network of walking tracks, bike trails, picnic areas and lookouts, many of which are well patronised by locals and tourists alike. The provision of well designed and built, unobtrusive visitor facilities allows for conservation and public recreation to be compatible - in most circumstances.

Sustainable Asset Management:

Council has put considerable work into the development of sustainable asset management practices in the organisation, including the Sustainable Asset Management (SAM) Plans for Walking Tracks and Lookouts and SAM Plans for Natural Areas. Extensive work has also been carried out on the historic significance of walking tracks and the management practices required for their maintenance and restoration with particular reference to the "Conservation Management Plan (CMP) for Walking Tracks of State Heritage Significance in the Blue Mountains" completed by National Parks and Wildlife Services, but including Council Managed walking tracks. These documents should be referenced in conjunction with these construction specifications. The Technical Manual provides the specific construction detail to clearly fabricate and install many of the structures referenced in the SAM plan for walking tracks and the CMP.

The range of structures in this document include walking tracks (steps, foot bridges and board walks) lookout fencing, vehicle barricades and other items such as gates and signage. Shelter structures are not covered.

Design and Detail Sheets:

These designs have been developed over many years, from a range



of current and historic construction practices, and have been documented in an effort to standardise current best practice. Consequently the design and construction details seek to integrate appropriate character and detailing with robustness and durability. The choice of construction materials and methods are based on a range of factors including durability, availability, and environmental impact, practicality of application, aesthetics and cost. Some of the commonly used materials in the construction of built assets in natural areas include the following:

- Sand stone - newly quarried or reclaimed
- Australian hardwood timber – reclaimed or sourced from managed State forest
- Treated timber – Plantation pine treated with ACQ
- Hot dipped galvanised steel - untreated or painted as specified

The remoteness and harsh conditions of bushland reserves make them some of the most challenging locations to construct built assets for public access. Consequently it is not always possible to meet the required building codes and standards. However every effort has been made to make these structures as practical and as durable as possible.

Future Directions:

These design sheets are by no means static, and will be further developed, refined and modified over time, in response to changing materials, methods and standards. Comments or suggestions regarding any of these structures should be directed to Councils Bushland Management Officer.



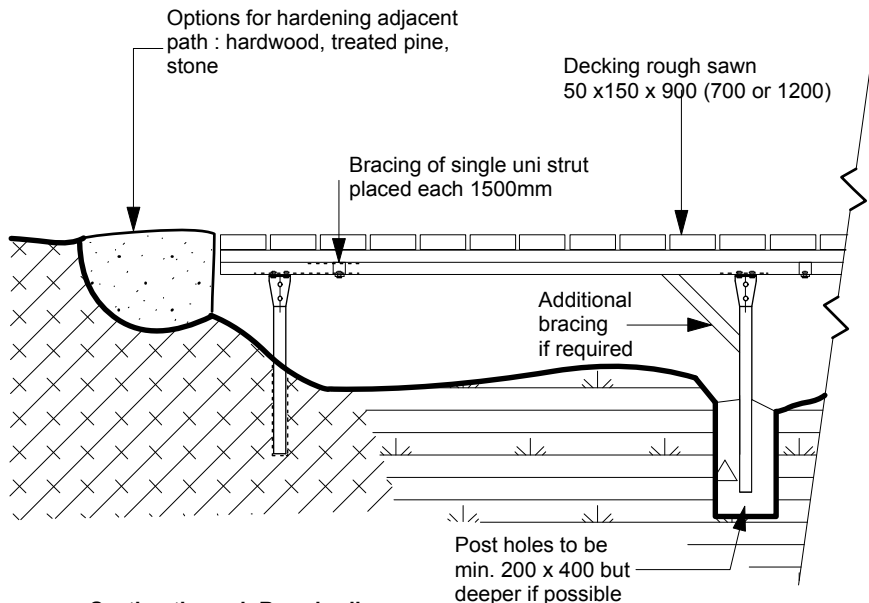
CONTENTS

***New to this edition**

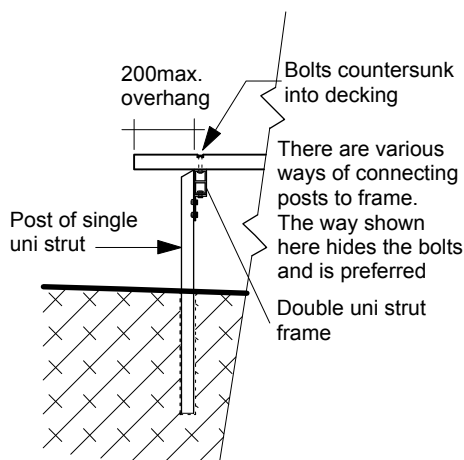
Walking Track Infrastructure – WT

WT1	Board Walk
WT2a	Foot Bridge Type 1
WT2b	Foot Bridge Type 1
WT3	Steps Guideline`
WT4	Stone Steps
WT5	Timber Steps
WT6	Cross Drain Timber
WT7	Cross Drain Stone
WT8	Stepping Stones
WT9	Water Bar Stone
WT10	Water Bar Timber
WT11a	Foot Bridge Type 2
WT11b	Foot Bridge Type 2
WT12	Board Walk Type 2
WT13	Cross Drain Bush Timber
WT14	Cross Drain Earth
WT15	Cross Drain Bush Rock
WT16*	Cross Drain Concrete

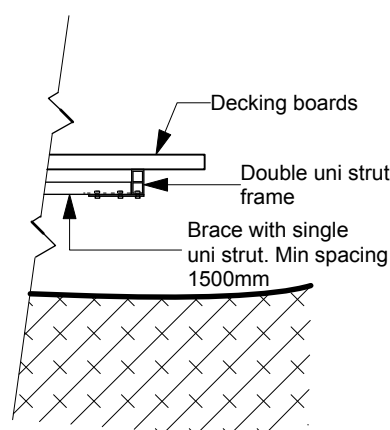
WALKING TRACK INFRASTRUCTURE



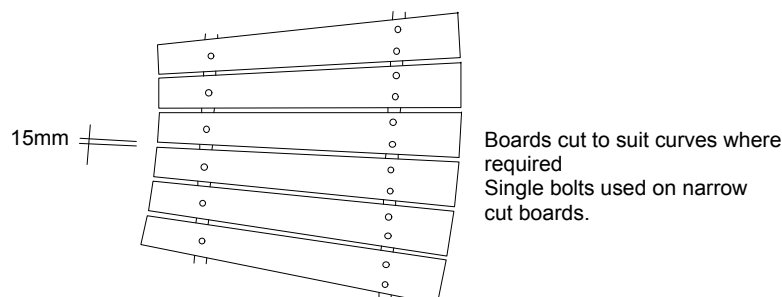
Section through Boardwalk
Nts



Section view of Post Connection
Nts



Section view of Bracing Connection
Nts



Plan of Curved Boardwalk
Nts

BOARD WALK TYPE 1

WT1



Location:

Walking tracks where track passes through wet, boggy, unstable or sensitive terrain. May be used to control movement for other reasons such as heritage.

Principles:

- * Desirable to curve boardwalks as much as possible to eliminate straight lines and sharp corners
- * Direction of framework to approximately follow deck to ensure no large overhangs
- * Thicker timbers on deck will allow for overhangs
- * Sometimes a straight frame is suitable with decking cut around natural features

Materials:

Note : This design is based on the Uni Strut proprietary system Tyco International Ltd.

Materials for 3 metre section Double

Double uni strut - 6m
Single uni strut (for legs) - 6m
Single uni strut (for braces) - 3m
P1359 leg support bracket - 6
P1067 brace plate - 6
Structural bolts & nuts (for legs) - 24
Structural bolts & nuts (for brace) - 18
Bolts & nuts for decking - 72
Decking - 18m
Concrete (20kg bags) - 6

Framework
All parts Hot Dip Galvanised

Decking
Class 1 hardwood timber
150 x 50 x 900mm (options 700 or 1200) rough sawn treated with LOSP
- Wax Wood

References:

C. Delap, Landlign Environmental Contracting - Sketches 2007

WALKING TRACK INFRASTRUCTURE

**FOOT
BRIDGE
TYPE 1**
WT2a
**Location:**

Walking tracks crossing creeks where stepping stones are not appropriate. Class 1 to 5 tracks.

Principles:

- * A carry in structure is preferable to one that requires mechanical lifting to site
- * A Geotechnical Survey may be required to inform the proper design of bridge footings
- * A minimum setback from the creek bank of 500mm is important to avoid the structure causing soil erosion and risk of undermining of footing by bank erosion
- * Careful siting of bridge crossing is important
- * Width of footbridge to suit path and volume appropriate to walking track - 900 / 1200mm

Materials:

Concrete Footing
Concrete Strength : Min 25Mpa
Reinforced

Framework

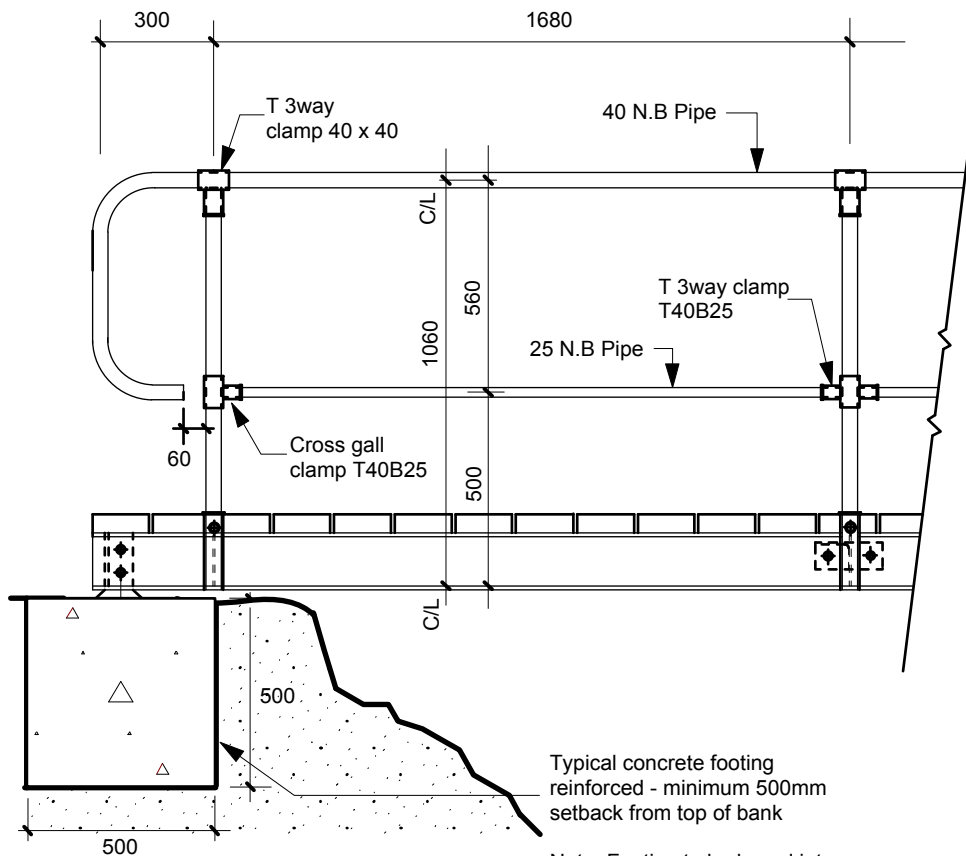
All parts Hot Dip Galvanised, medium guage
40 N.B Pipe
25 N.B Pipe
Beams (depend on span)
T 3way clamp 40 x 40
Cross gall clamp T40B25
T 3way clamp T40B25

Decking

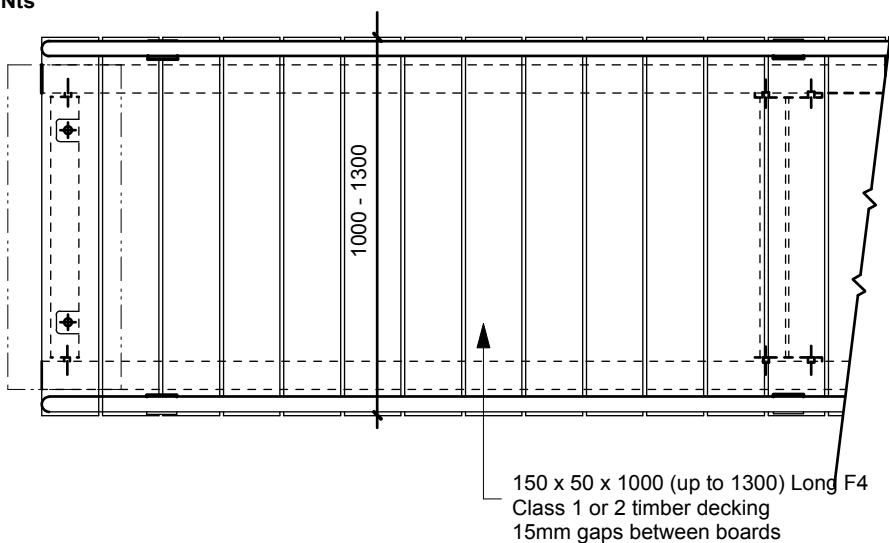
Deck fixings HDG cup head bolts and nuts and washers
Class 1 or 2 hardwood timber
150 x 50mm rough sawn

Colour options for metalwork

- * Dulux "Charcoal" ©
 - * Galvanised
 - * Colorbond "Plantation" ©
- Note : Where coloured finish is determined, use low sheen two part epoxy paint.

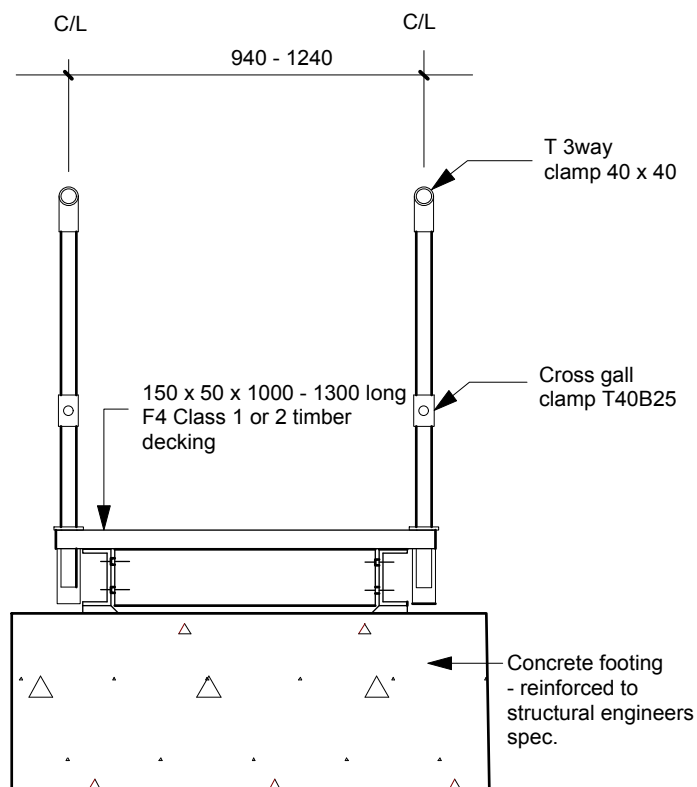


**Typical Side Elevation of Bridge
Nts**



**Typical Plan of Bridge
Nts**

WALKING TRACK INFRASTRUCTURE



Typical End Elevation - Footbridge
Nts

FOOT BRIDGE TYPE 1

WT2b



Location:

Walking tracks crossing creeks where stepping stones are not appropriate

Principles:

- * A carry in structure is preferable to one that requires mechanical lifting to site
- * A Geotechnical Survey may be required to inform the proper design of bridge footings
- * A minimum setback from the creek bank of 500mm is important to avoid the structure causing soil erosion and risk of undermining of footing by bank erosion
- * Careful siting of bridge crossing is important
- * Width of footbridge to suit path and volume appropriate to walking track - 900 / 1200mm

Materials:

Concrete Footing
Concrete Strength : Min 25Mpa
Reinforced

Framework

All parts Hot Dip Galvanised, medium guage
40 N.B Pipe
25 N.B Pipe
Beams (depend on span)
T 3way clamp 40 x 40
Cross gall clamp T40B25
T 3way clamp T40B25

Decking

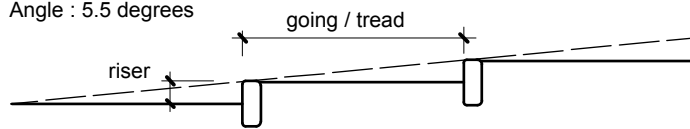
Deck fixings HDG cup head bolts and nuts and washers
Class 1 hardwood timber
150 x 50mm rough sawn -
Treated with LOSP - Wax Wood

Colour options for metalwork

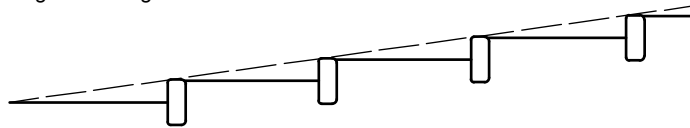
- * Dulux "Charcoal" ©
 - * Galvanised
 - * Colorbond "Plantation" ©
- Note : Where coloured finish is determined, use low sheen two part epoxy paint.

WALKING TRACK INFRASTRUCTURE

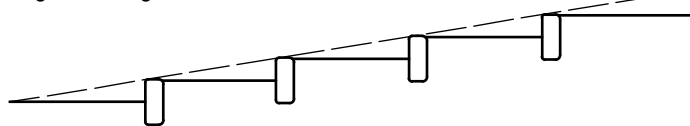
Grade : 1 in 10
Angle : 5.5 degrees



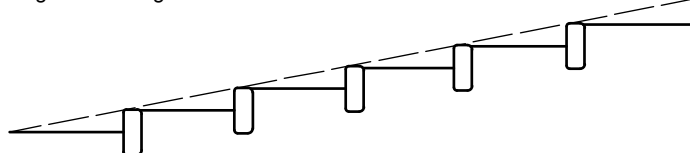
Grade : 1 in 7
Angle : 8.0 degrees



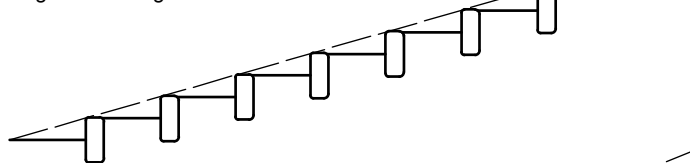
Grade : 1 in 6
Angle : 9.3 degrees



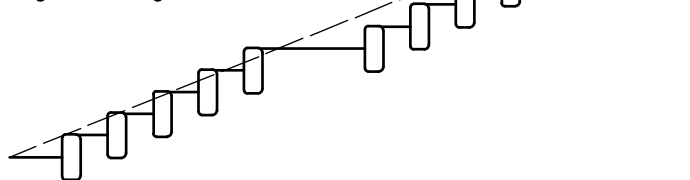
Grade : 1 in 5
Angle : 11.0 degrees



Grade : 1 in 4
Angle : 16.0 degrees



Grade : 1 in 3
Angle : 22.0 degrees



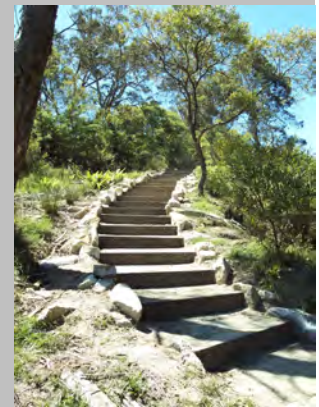
Useful formula

$$\text{Grade angle} = \frac{\text{No. of steps required}}{2.5} \text{ in } 5\text{m}$$

Guideline for new steps
Nts

STEPS GUIDELINE

WT3



Location:

Walking tracks - Class 2 - 5
Variable requirements for
landings refer to AS 2156 Walking
Tracks

Principles:

- * 1 in 10 maximum grade without steps
- * min. tread 300mm
- * max. tread 600 / 900mm
- * 600 - 700 treads are uncomfortable for walkers therefore install steeper flights with landings
- * Steps should be in similar profile to surroundings
- * Consideration to limiting the amount of waste produced, the amount of corner stones required and their sizes, and the amount of material needed in other areas

Materials:

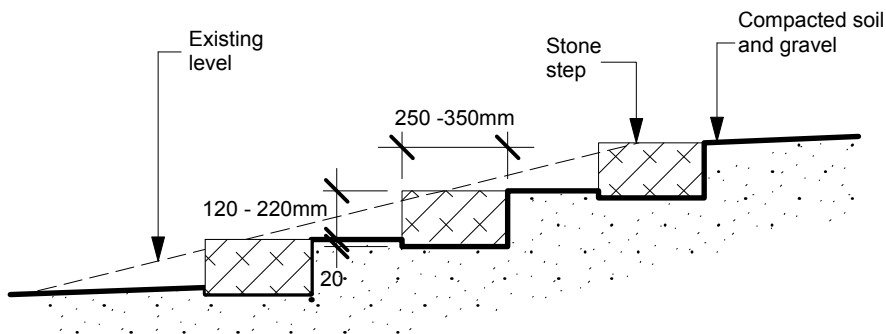
As specified - stone, timber

References:

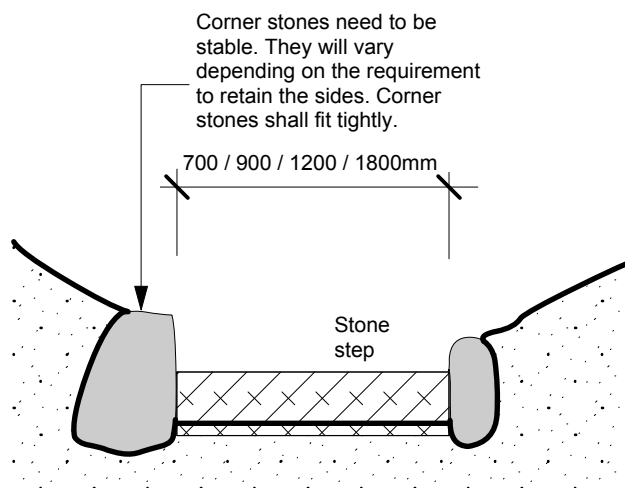
Smith J., Beaver D. , Betteridge C.
C.M.P. Walkingtracks of State
Heritage Significance in the Blue
Mountains, NPWS 2004

WALKING TRACK INFRASTRUCTURE

Note : Riser height to be consistent for track sections



Typical Section of Steps
Nts



Front View of Steps
Nts

STONE STEPS

WT4



Location:

Walking tracks Class 2 - 5.
Restoration of existing tracks constructed in sandstone. New work in high use or high profile sites.

Principles:

- * Steps to be planned according to the slope of the track
- * The number and spacing of steps shall be determined according to Steps Guideline WT3
- * Curved steps are aesthetically pleasing however short sections of straight are also suitable
- * Width of steps to be 700 / 900 / 1200 / 1800 as appropriate to site and walking track volumes

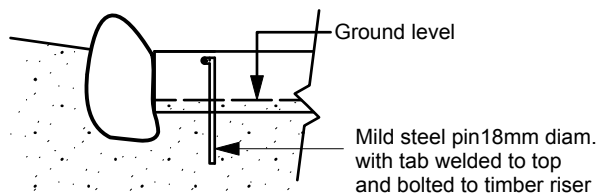
Materials:

Newly quarried or reclaimed sandstone
Approximate size - 200(h) x 250 - 350 x 700/900/1200

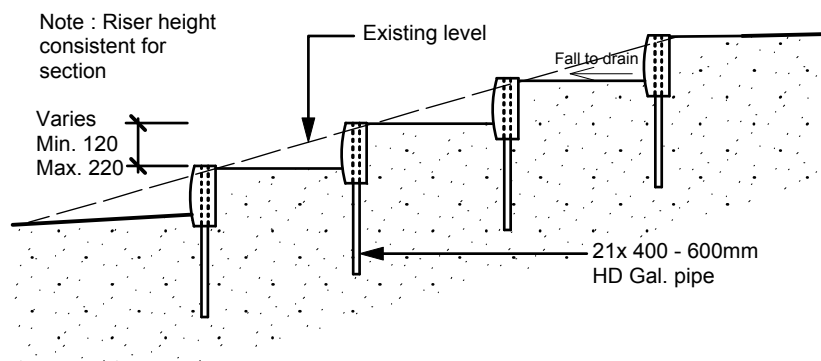
References:

C. Delap, Landlign Environmental Contracting - Sketches 2007

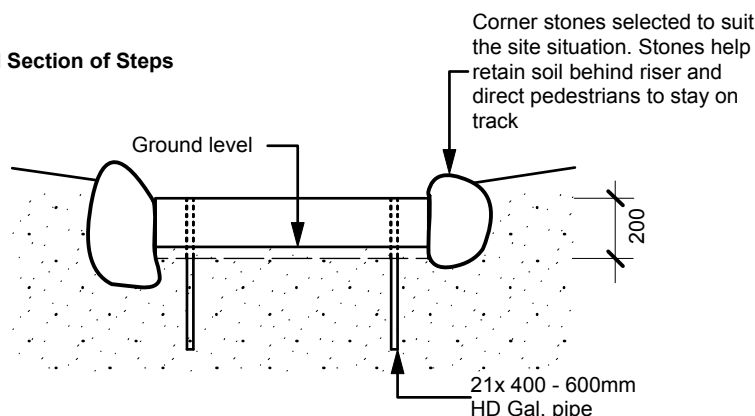
WALKING TRACK INFRASTRUCTURE



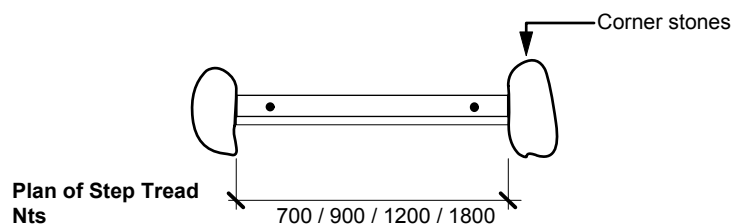
**Front View of Steps - Mild Steel Pin Fixing
Nts**



**Typical Section of Steps
Nts**

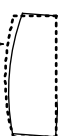


**Front View of Step Tread
Nts**



**Plan of Step Tread
Nts**

Final position of timber riser to be level, not leaning back or forward



Timber risers shall be installed on an angle so that when backfilled it is pushed forward to be level across the top. If the top step does not go forward then it should be levered forward and jammed with back fill

**Timber Riser to be Level
Section Nts**

TIMBER STEPS

WT5



Location:

Walking tracks Class 2 - 5.
New trackwork, restoration of historic tracks (utilise hardwood or railway sleepers)

Principles:

- * Steps to be planned according to the slope of the track
- * The number and spacing of steps shall be determined according to Steps Guideline WT3
- * Curved steps are aesthetically pleasing however short sections of straight are also suitable
- * Width of steps to be 700 / 900 / 1200 / 1800 as appropriate to site and walking track volumes

Materials:

Riser :
ACQ treated pine, treated hardwood or reclaimed railway sleepers 200 x (75 - 100)

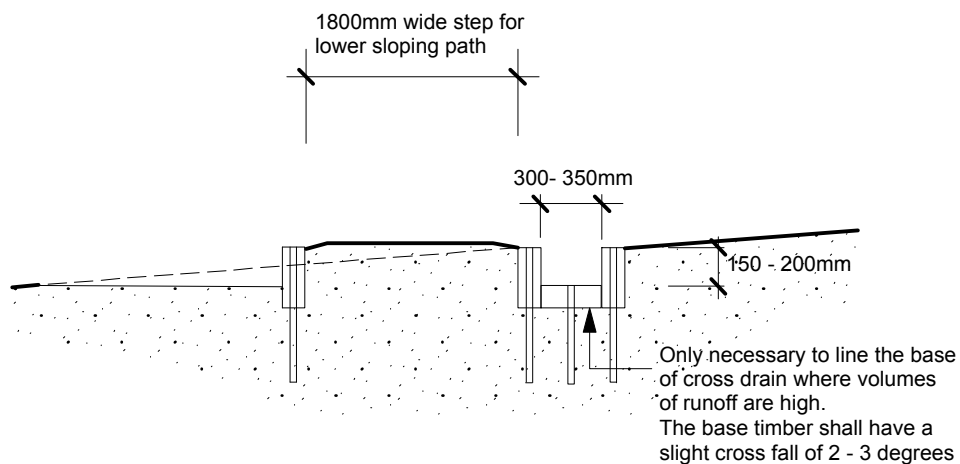
Fixings Options :
21mm HDG pipe
18mm mild steel pin with fixing tab
18mm threaded reinforcing bars

Corner stones :
Sandstone
Other local stone

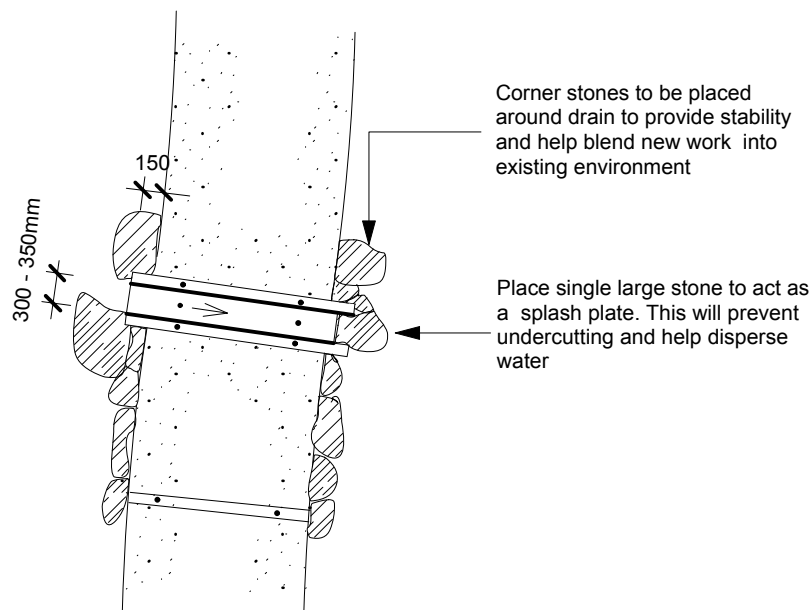
References:

C. Delap, Landlign Environmental Contracting - Sketches 2007

WALKING TRACK INFRASTRUCTURE



**Section Through Timber Cross Drain
(Open Culvert)**
Nts



**Plan Timber Cross Drain
(Open Culvert)**
Nts

CROSS DRAIN WT6 TIMBER



Location:

Walking tracks class 2 - 5
New trackwork, restoration of historic tracks (utilise hardwood or railway sleepers)

Note : cross drains on class 1 track require cover grate or a culvert

Principles:

- * Placement and spacing of cross drains should relate to functional requirements

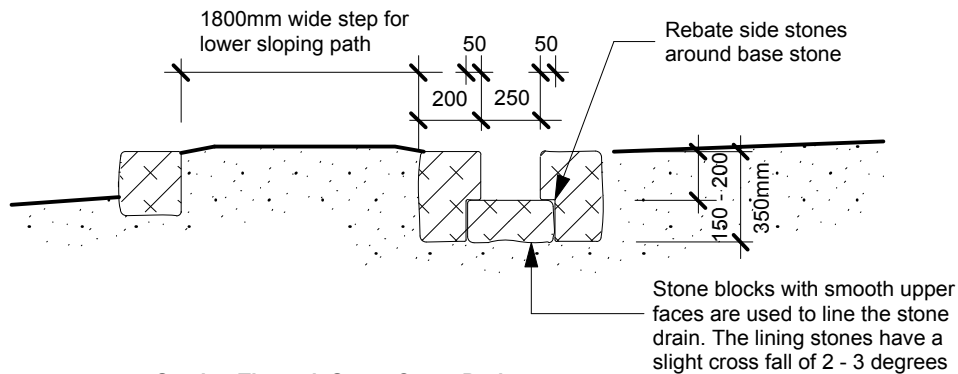
Materials:

Riser Options :
200 x 75 or 100mm
ACQ treated pine, treated hardwood or reclaimed railway sleepers

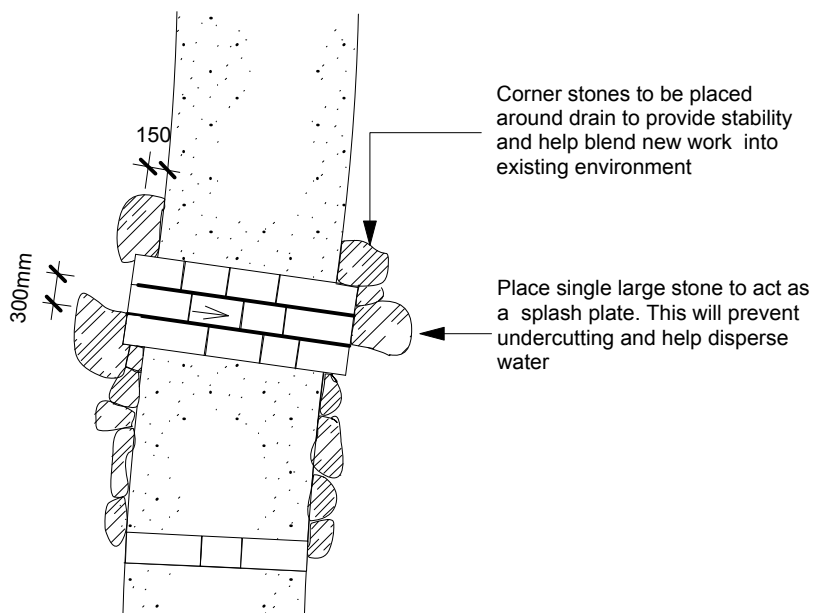
Fixings Options :
21mm HDG pipe
18mm mild steel pin with fixing tab
Threaded reinforcing bars 14mm

Corner stones :
Sandstone
Other local stone

WALKING TRACK INFRASTRUCTURE



**Section Through Stone Cross Drain
(Open Culvert)**
Nts



**Plan Stone Cross Drain
(Open Culvert)**
Nts

CROSS DRAIN STONE

WT7



Location:

Walking tracks - Class 2 - 5.
Cross drain on class 1 track require cover grate.

Principles:

- * Placement and spacing of cross drains should relate to functional requirements

Materials:

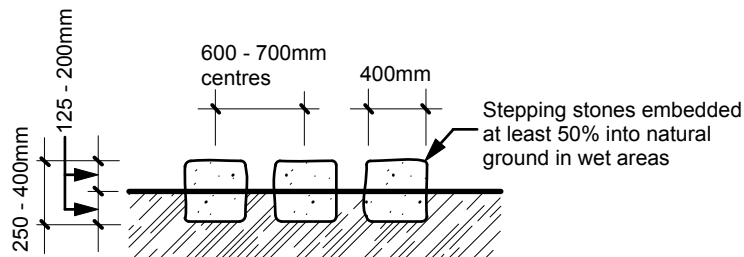
Newly quarried or reclaimed sandstone. Preferable stone dimensions 200 x 350 x (300 - 500)

References:

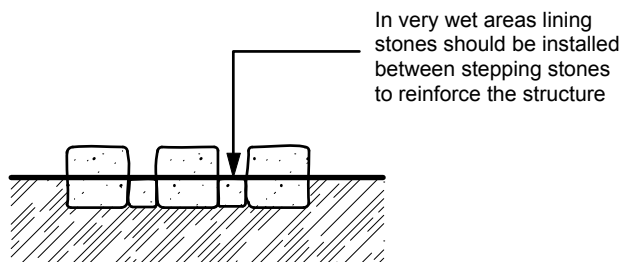
Smith J., Beaver D., Betteridge C.
C.M.P. Walkingtracks of State
Heritage Significance in the Blue
Mountains, NPWS 2004

WALKING TRACK INFRASTRUCTURE

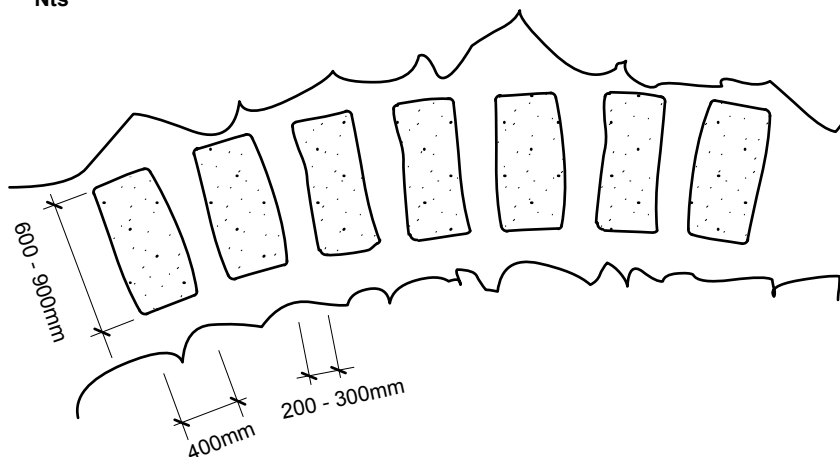
Note : In very boggy areas the stone hole may need to be dug down to a solid base to support rubble fill as a better prepared sub-base



Typical Stepping Stones
Nts

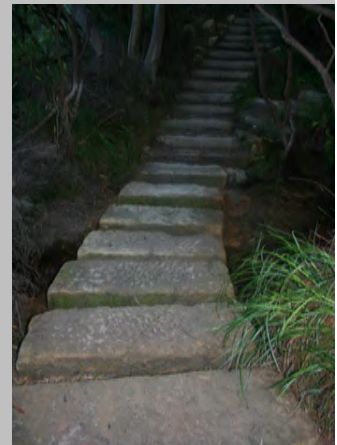


Lining Stones In Very Wet Areas
Nts



Plan of Typical Stepping Stone Layout
Nts

STEPPING STONES **WT8**



Location:

Walking track Class 3 - 5.
Permanently wet areas of walking tracks or small creek crossings

Principles:

- * Use stepping stones to traverse wet areas or minor side creeks
- * Use when stone is available on site or easily transported to the site and after safety and environmental issues have been considered

Materials:

Local stone or selected new quaried sandstone, reclaimed stone or formed concrete with oxide

Stone dimensions - 250 - 400 (H) x 250 - 400 (D) x 600 - 900 (W)

References:

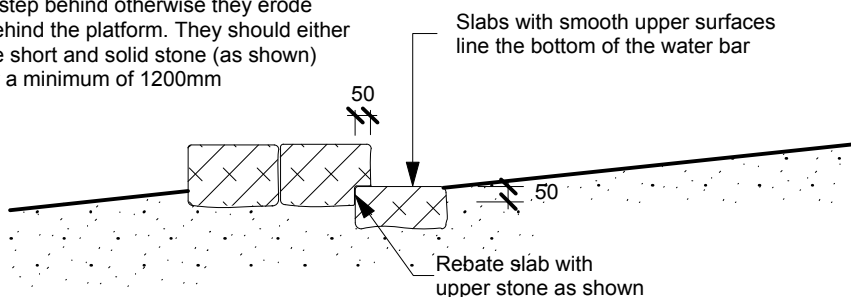
Smith J., Beaver D., Betteridge C.
C.M.P. Walkingtracks of State
Heritage Significance in the Blue Mountains, NPWS 2004

WALKING TRACK INFRASTRUCTURE

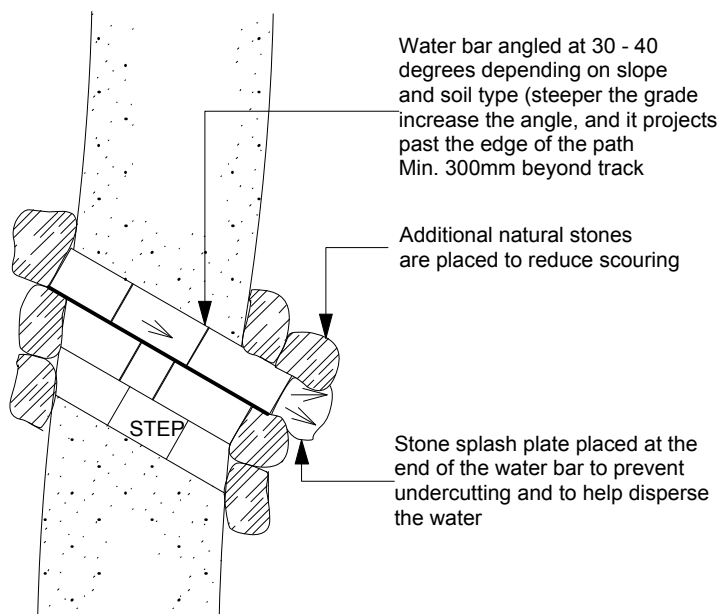
WATER BAR & CROSS DRAIN SPACING GUIDE

Track Grade (Ratio)	Average Spacing (Metres)
1:100 - 1:10	45 - 100
1:10 - 1:5	25 - 45
1:5 - 3:10	12 - 25
3:10 - 4:10	8 - 12

Note: Water Bars should always have a step behind otherwise they erode behind the platform. They should either be short and solid stone (as shown) or a minimum of 1200mm



Section Through Stone Water Bar
Nts



Plan of Stone Water Bar
Nts

WATER BAR **WT9** STONE



Location:

Walking tracks Class 2 - 5,
top of stairs

Principles:

- * Placement and spacing of water bars cannot be determined by any rule. Every situation will need to be treated individually after assessment of :
 - soil stability
 - length and steepness of slope
 - rainfall (quantity and intensity)
 - amount of water entering track
 - tread material
 - availability of places to divert the water
- * Every opportunity should be taken to remove water from the track. Refer to Water Bar Spacing Guide for maximum spacings only.
- * Water bars should be self cleaning. This is achieved by setting the angle down slope so that the bar neither erodes nor fills with debris.
- * The bar must be high enough to divert the flow, but not so high that walkers regard it as a barrier. The water bar should not be visible from below, but should merge with the profile of the track.

Materials:

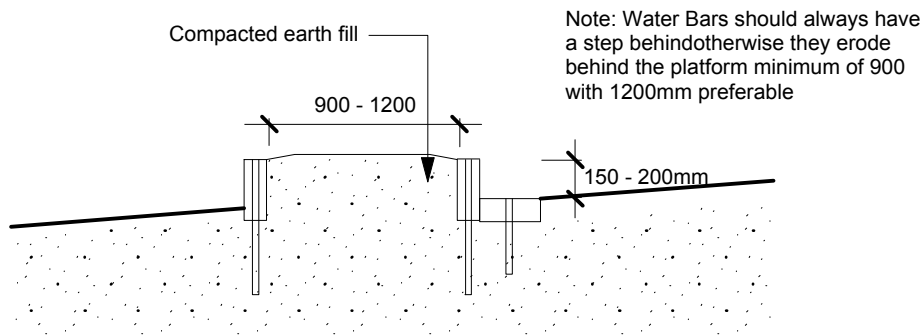
Newly quarried or reclaimed sandstone. Preferable stone dimensions 200 x 350 x (300 - 500)

References:

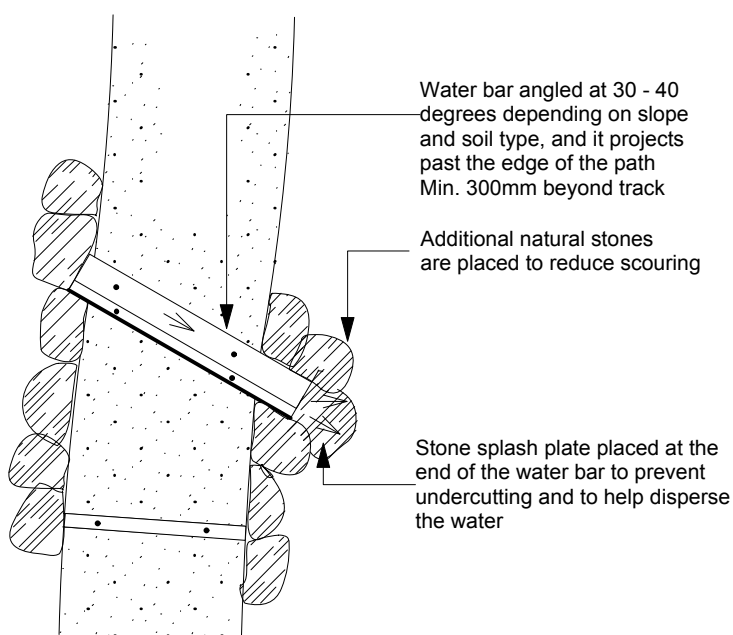
Historic Walking Track Erosion Control Works Soil Conservation Service, Lithgow

Smith J., Beaver D. , Betteridge C. C.M.P. Walkingtracks of State Heritage Significance in the Blue Mountains, NPWS 2004

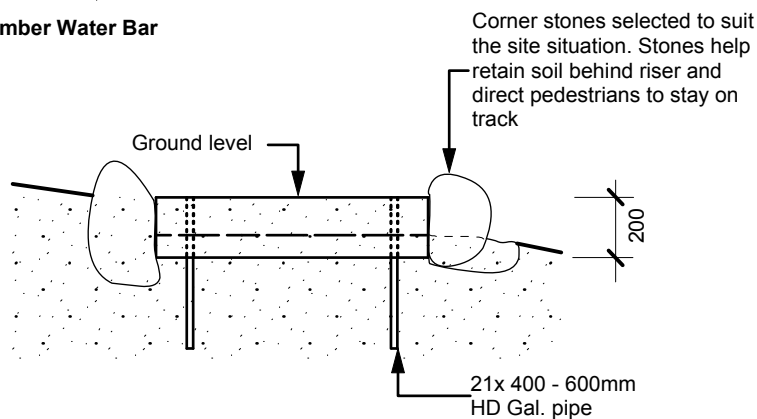
WALKING TRACK INFRASTRUCTURE



**Section Through Timber Water Bar
Nts**



**Plan Timber Water Bar
Nts**



**Section View of Front of Water Bar
Nts**

WATER BAR WT10 TIMBER



Location:

Walking tracks

Principles:

- * Placement and spacing of water bars cannot be determined by any rule. Every situation will need to be treated individually after assessment of :
 - soil stability
 - length and steepness of slope
 - rainfall (quantity and intensity)
 - amount of water entering track
 - tread material
 - availability of places to divert the water
- * Every opportunity should be taken to remove water from the track. Refer to Water Bar Spacing Guide WT9 for maximum spacings only.
- * Water bars should be self cleaning. This is achieved by setting the angle down slope so that the bar neither erodes nor fills with debris.
- * The bar must be high enough to divert the flow min. 100mm - max. 200mm, but not so high that walkers regard it as a barrier. The water bar should not be visible from below, but should merge with the profile of the track.

Materials:

Riser Options:

ACQ treated pine, txreated hardwood or reclaimed railway sleepers

Fixing Options :

21mm HDG pipe
18mm mild steel pin with fixing tab
Threaded reinforcing bars 14mm

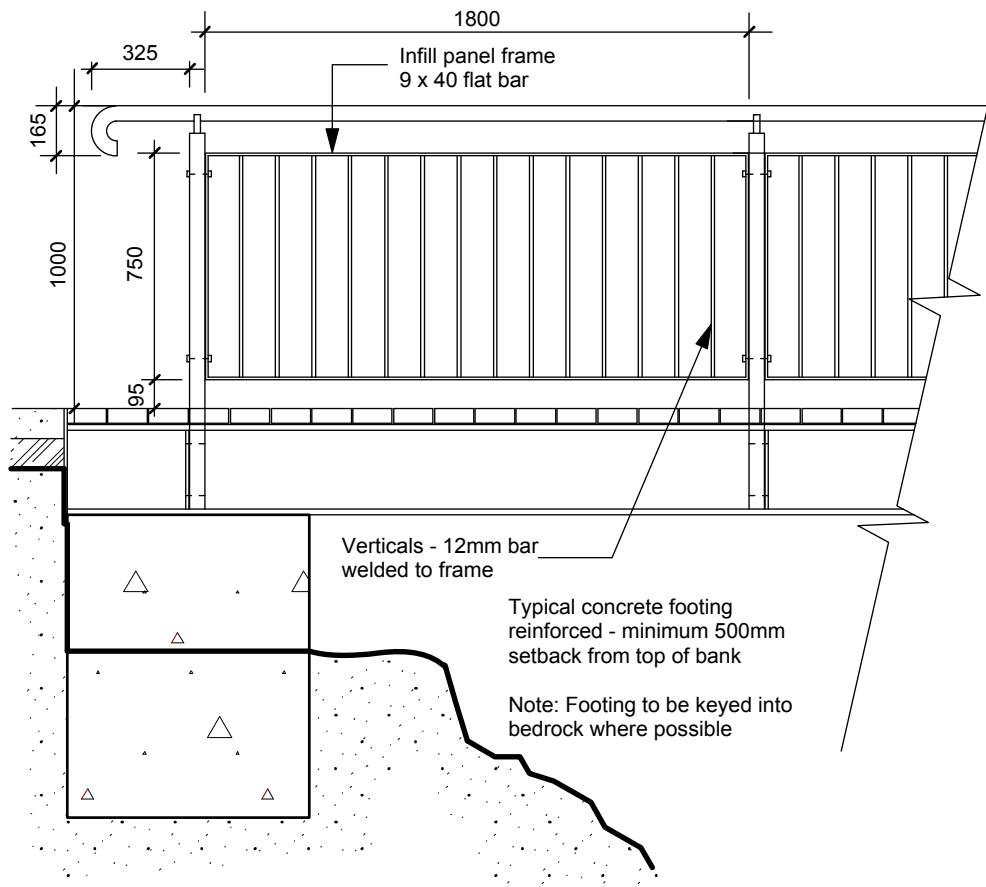
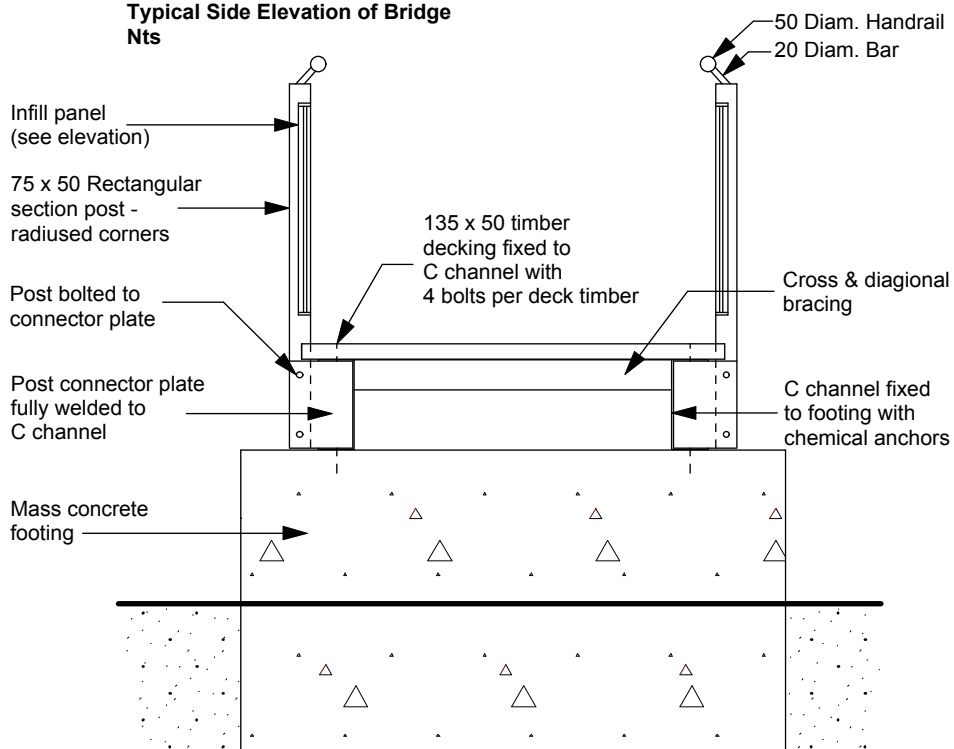
Corner stones :

Sandstone
Other local stone

References:

Blamey N. Walking Track Management Manual, Department of Lands, Parks and Wildlife, Tasmania 1987

WALKING TRACK INFRASTRUCTURE

Typical Side Elevation of Bridge
NtsTypical Section Through Bridge at End Footing
NtsFOOT
BRIDGE
TYPE 2

WT11a



Location:

Walking tracks crossing creeks
where stepping stones are not
appropriate. Class 1 to 3 tracks.

Principles:

- * This bridge is only suitable where mechanical lifting of structure is possible
- * A Geotechnical Survey may be required to inform the proper design of bridge footings
- * A minimum setback from the creek bank of 500mm is important to avoid the structure causing soil erosion and risk of undermining of footing by bank erosion
- * Careful siting of bridge crossing is important
- * Width of footbridge to suit path and volume appropriate to walking track - 1200 - 1400mm

Materials:

**Note : Bridge requires design
by structural engineer and sizes
of sections may change**

Concrete Footing
Concrete Strength : Min 25Mpa
Mass footings

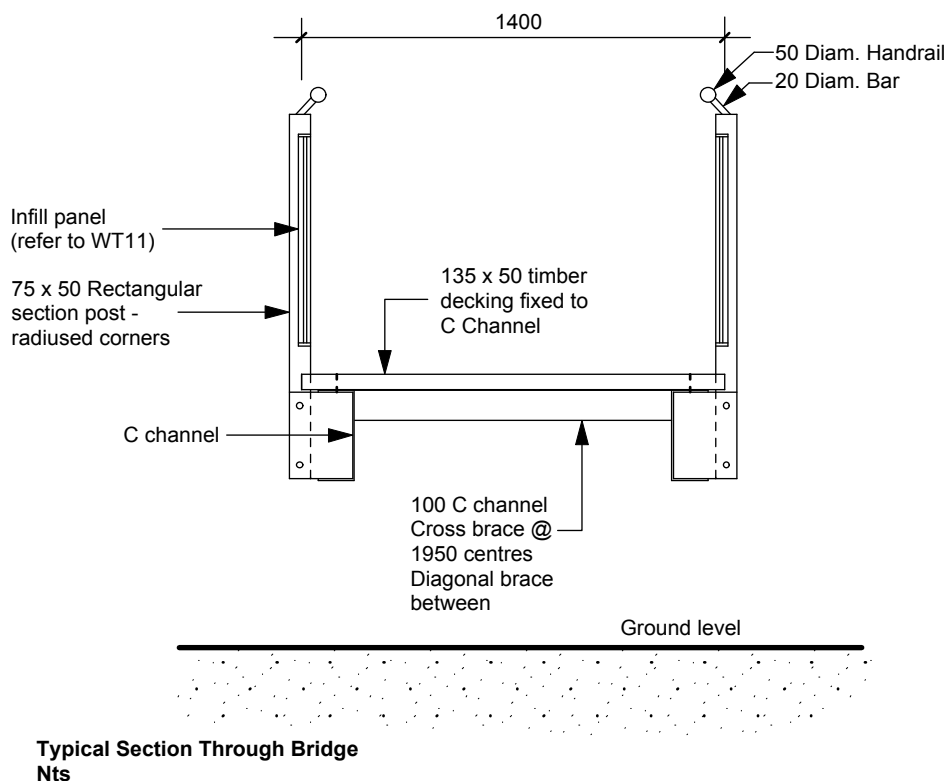
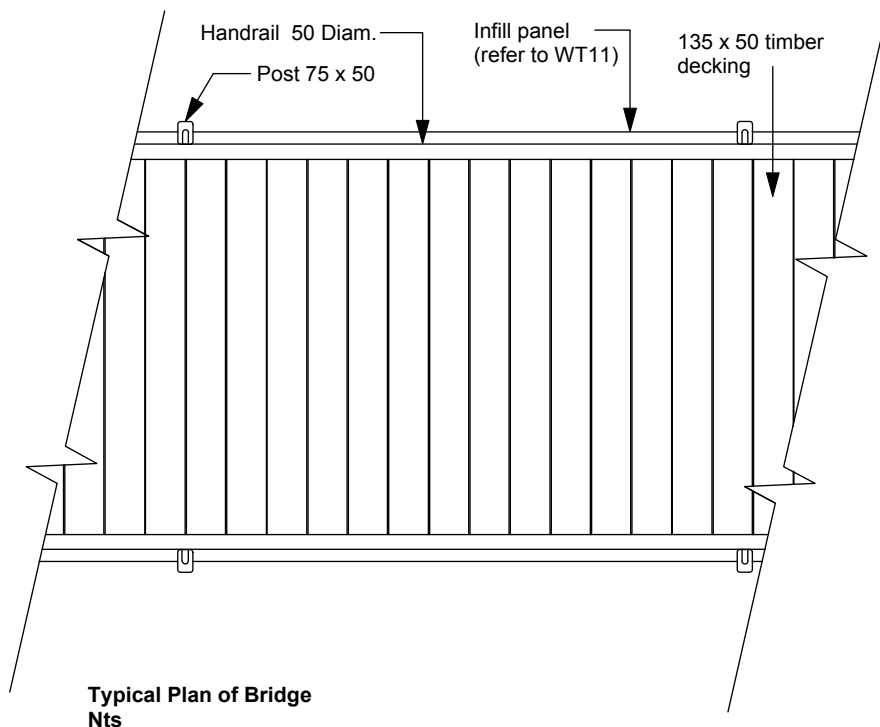
Framework
All parts Hot Dip Galvanised

Decking
Deck fixings HDG cup head bolts
and nuts and washers
Class 1 hardwood timber
130 x 50mm rough sawn sustainably
harvested and treated with LOSP
- Wax wood

Colour options for metalwork

- * Dulux "Charcoal" ©
 - * Galvanised
 - * Colorbond "Plantation" ©
- Note : Where coloured finish is
determined, use low sheen two
part epoxy paint.

WALKING TRACK INFRASTRUCTURE



FOOT BRIDGE TYPE 2 WT11b



Location:

Walking tracks crossing creeks where stepping stones are not appropriate. Class 1 to 3 tracks.

Principles:

- * This bridge is only suitable where mechanical lifting of structure is possible
- * A Geotechnical Survey may be required to inform the proper design of bridge footings
- * A minimum setback from the creek bank of 500mm is important to avoid the structure causing soil erosion and risk of undermining of footing by bank erosion
- * Careful siting of bridge crossing is important
- * Width of footbridge to suit path and volume appropriate to walking track -1200 - 1400mm

Materials:

Concrete Footing
Concrete Strength : Min 25Mpa
Mass footings

Framework

All parts Hot Dip Galvanised

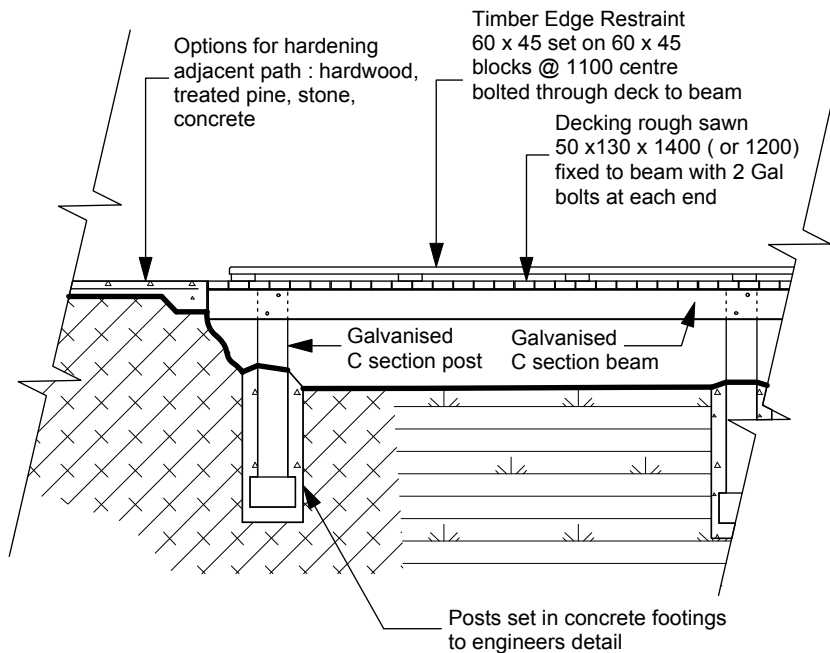
Decking

Deck fixings HDG cup head bolts and nuts and washers
Class 1 hardwood timber 130 x 50mm rough sawn - treated with LOSP - Wax Wood

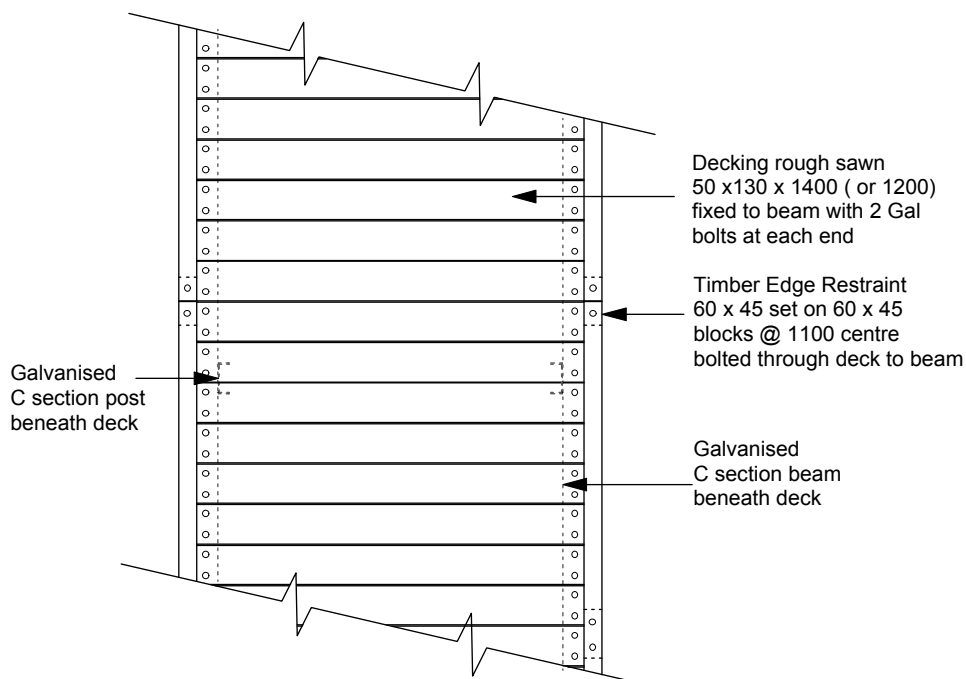
Colour options for metalwork

- * Dulux "Charcoal" ©
 - * Galvanised
 - * Colorbond "Plantation" ©
- Note : Where coloured finish is determined, use low sheen two part epoxy paint.

WALKING TRACK INFRASTRUCTURE



Section through Boardwalk
Nts



Plan of Boardwalk
Nts

BOARD WALK TYPE 2

WT12



Location:

Walking tracks where track passes through wet, boggy, unstable or sensitive terrain. May be used to control movement for other reasons such as heritage.

Principles:

- * Desirable to cure boardwalks as much as possible to eliminate straight lines and sharp corners
- * Direction of framework to approximately follow deck to ensure no large overhangs
- * Thicker timbers on deck will allow for overhangs
- * Sometimes a straight frame is suitable with decking cut around natural features

Materials:

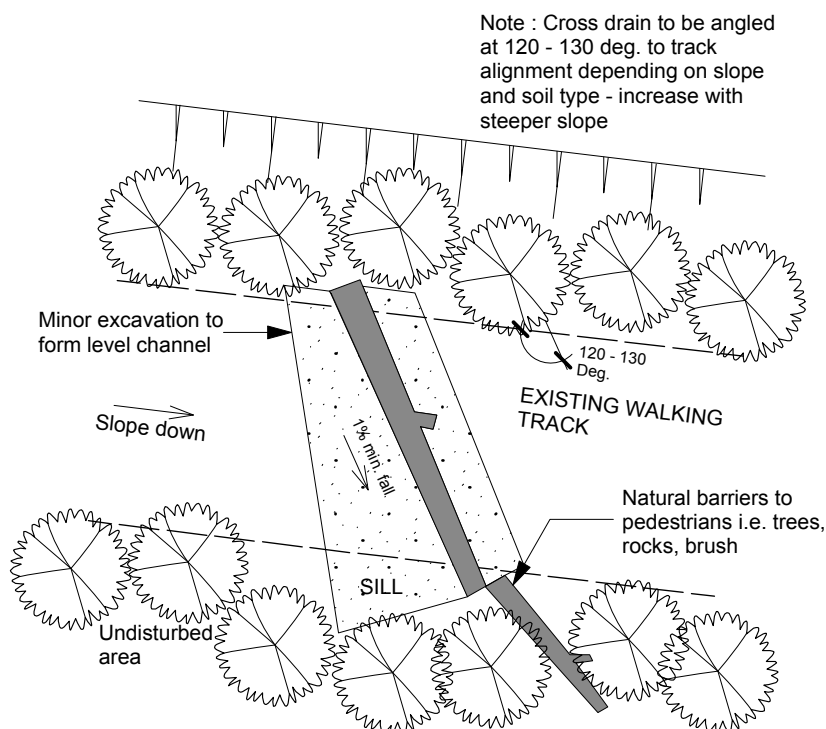
Note : Boardwalk requires design by structural engineer and sizes of sections may change

200 x 75 C section posts
200 x 75 C section bearers
Steel sections for bracing beneath deck
Bolts, nuts & washers for decking
Decking timber 130 x 50
Edge restraint timber 60 x 45
Concrete for post footings

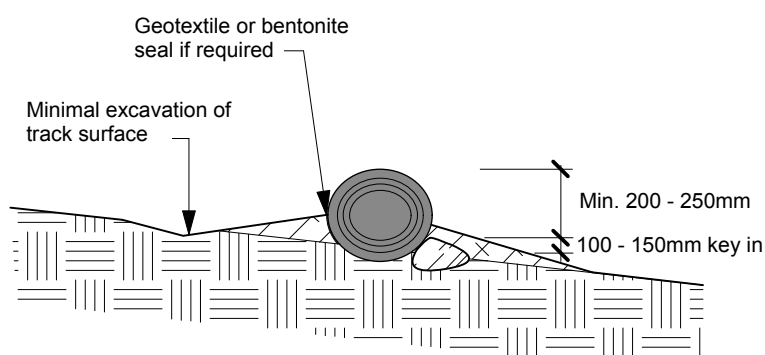
Framework
All parts Hot Dip Galvanised

Decking
Class 1 hardwood timber
130 x 50 x 1400mm (option - 1200)
rough sawn sustainably harvested and treated with LOSP - Wax Wood

WALKING TRACK INFRASTRUCTURE



Plan - Bush Timber Cross Drain (Open Culvert)
Nts



Section - Bush Timber Cross Drain (Open Culvert)
Nts

WATER BAR & CROSS DRAIN SPACING GUIDE

Track Grade (Ratio)	Average Spacing (Metres)
1:100 - 1:10	45 - 100
1:10 - 1:5	25 - 45
1:5 - 3:10	12 - 25
3:10 - 4:10	8 - 12

CROSS DRAIN BUSH TIMBER

WT13

Location:

Walking tracks class 3 - 6

Principles:

- * To be used as a semi permanent or permanent measure to address erosion problems of walking track associated with uncontrolled water runoff. On site material to be utilised thereby reducing time and cost associated with installation of drainage on walking tracks. Water bars should be maintained 1 to 2 times per year. Eroded material deposited at the water bar outlet or in front of it may be removed and added to the lee side of the water bar and integrated into the walking track surface
- * Placement and spacing of cross drains should relate to functional requirements
- * Refer to spacing guide

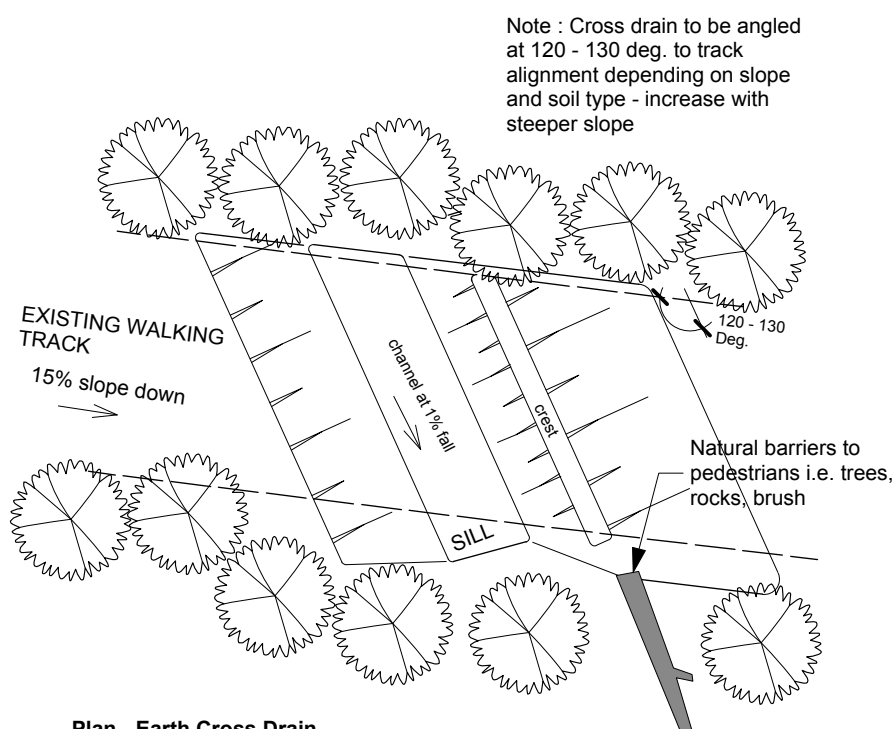
Materials:

Select round straight logs with a diameter approx. 200mm. Length should cover entire track width and extend approx. 300mm beyond track edge. Select sound timber that is not rotten or split. New timber from live trees may be selected once an environmental assessment has been carried out. In this case select the more durable timber where possible.

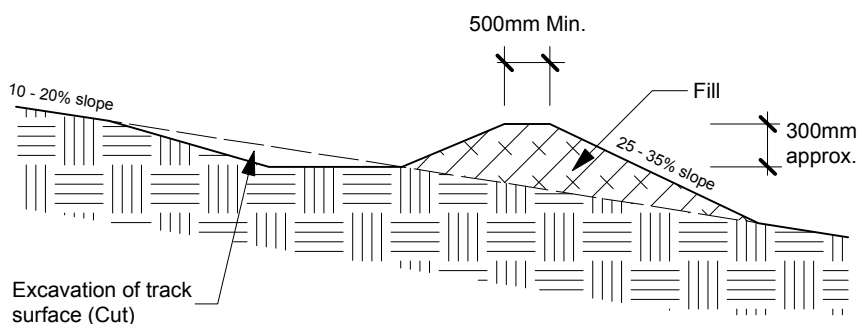
References:

Dept. Land Soil Conservation
Services - Historic Walking Track
Cross Drainage for BMCC 2006

WALKING TRACK INFRASTRUCTURE



**Plan - Earth Cross Drain
(Open Culvert)**
Nts



**Section Through Earth Cross Drain
(Open Culvert)**
Nts

WATER BAR & CROSS DRAIN SPACING GUIDE

Track Grade (Ratio)	Average Spacing (Metres)
1:100 - 1:10	45 - 100
1:10 - 1:5	25 - 45
1:5 - 3:10	12 - 25
3:10 - 4:10	8 - 12

CROSS DRAIN EARTH

WT14

Location:

Walking tracks class 3 - 6

Principles:

- * To be used as a semi permanent or permanent measure to address erosion problems of walking track associated with uncontrolled water runoff. On site material to be utilised thereby reducing time and cost associated with installation of drainage on walking tracks. Water bars should be maintained 1 to 2 times per year. Eroded material deposited at the water bar outlet or in front of it may be removed and added to the lee side of the water bar and integrated into the walking track surface.
- * Placement and spacing of cross drains should relate to functional requirements
- * Refer to spacing guide

Materials:

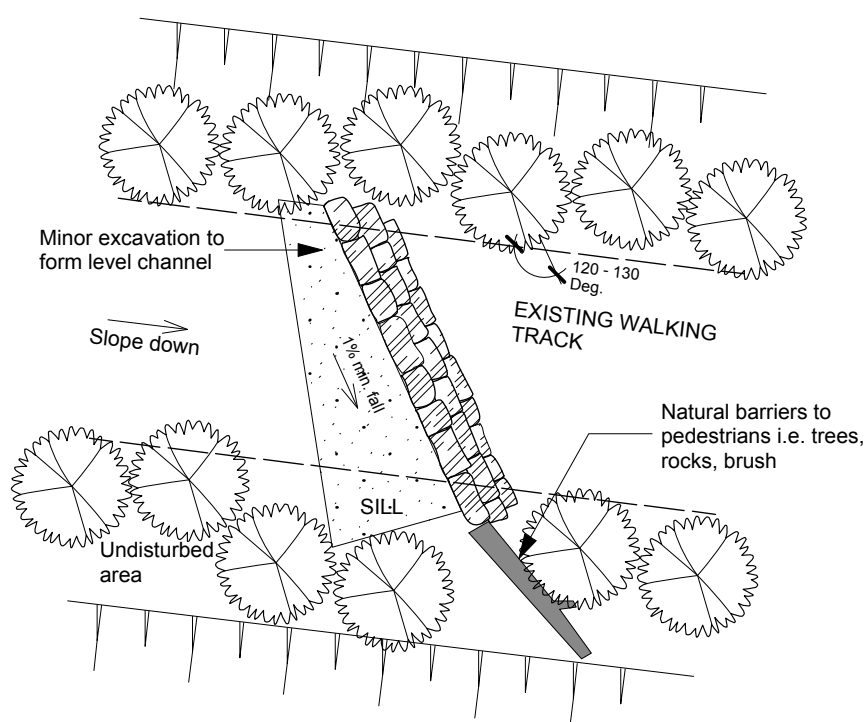
Earth - sourced from onsite utilising a cut and fill of the walking track surface.

Areas of sediment deposition may be used for additional material source.

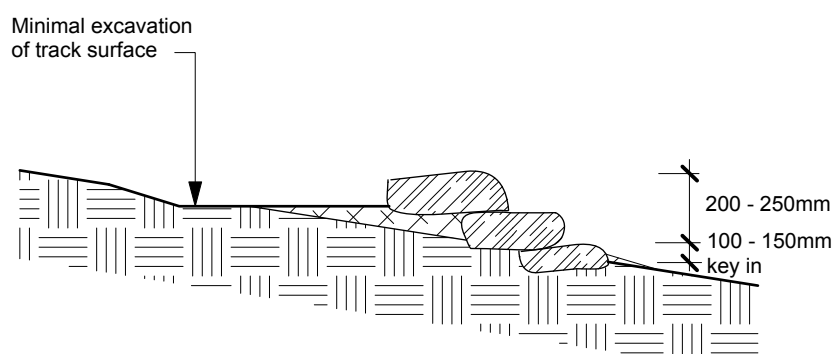
References:

Dept. Land Soil Conservation
Services - Historic Walking Track
Cross Drainage for BMCC 2006

WALKING TRACK INFRASTRUCTURE



**Plan - Bush Rock Cross Drain
(Open Culvert)**
Nts



**Section Through - Bush Rock Cross Drain
(Open Culvert)**
Nts

WATER BAR & CROSS DRAIN SPACING GUIDE

Track Grade (Ratio)	Average Spacing (Metres)
1:100 - 1:10	45 - 100
1:10 - 1:5	25 - 45
1:5 - 3:10	12 - 25
3:10 - 4:10	8 - 12

CROSS DRAIN BUSH ROCK

WT15

Location:

Walking tracks class 3 - 6

Principles:

- * To be used as a semi permanent or permanent measure to address erosion problems of walking track associated with uncontrolled water runoff. On site material to be utilised thereby reducing time and cost associated with installation of drainage on walking tracks. Water bars should be maintained 1 to 2 times per year. Eroded material deposited at the water bar outlet or in front of it may be removed and added to the lee side of the water bar and integrated into the walking track surface.
- * Placement and spacing of cross drains should relate to functional requirements
- * Refer to spacing guide

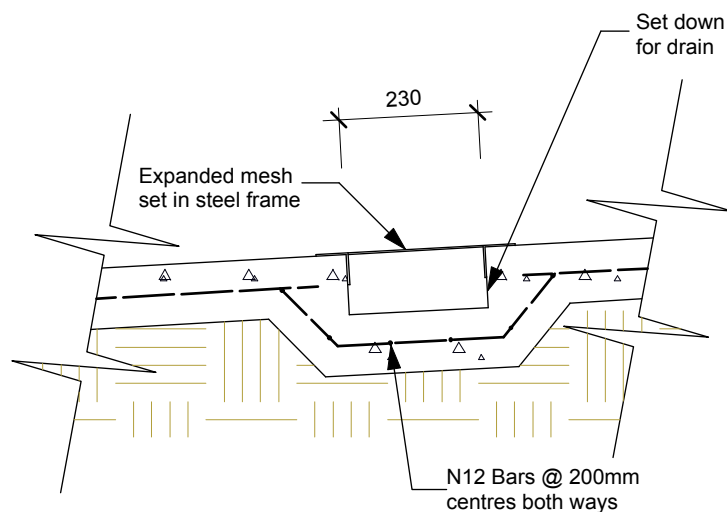
Materials:

Utilise rock on site if suitable and able to be stacked and maintain a sound structure that does not collapse on the pressure of foot traffic. Environmental assessment to be undertaken if sourcing bush rock from natural habitat. Where possible select material for existing disturbed areas.

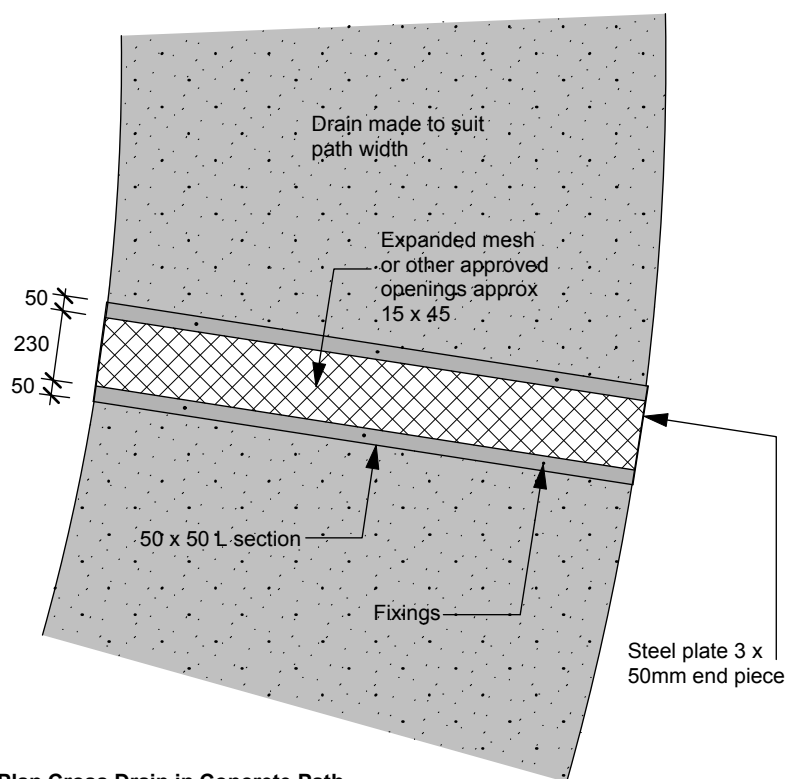
References:

Dept. Land Soil Conservation
Services - Historic Walking Track
Cross Drainage for BMCC 2006

WALKING TRACK INFRASTRUCTURE



Section Cross Drain in Concrete Path
Nts



Plan Cross Drain in Concrete Path
Nts

CROSS DRAIN CONCRETE WT16



Location:

Walking tracks - Class 1 - 2

Principles:

* Placement and spacing of cross drains should relate to functional requirements

Materials:

3mm guage steel

Expanded mesh - max opening 15 x 45

Fully hot dip galvanised

CONTENTS

***New to this edition**

Fire Trail – FT

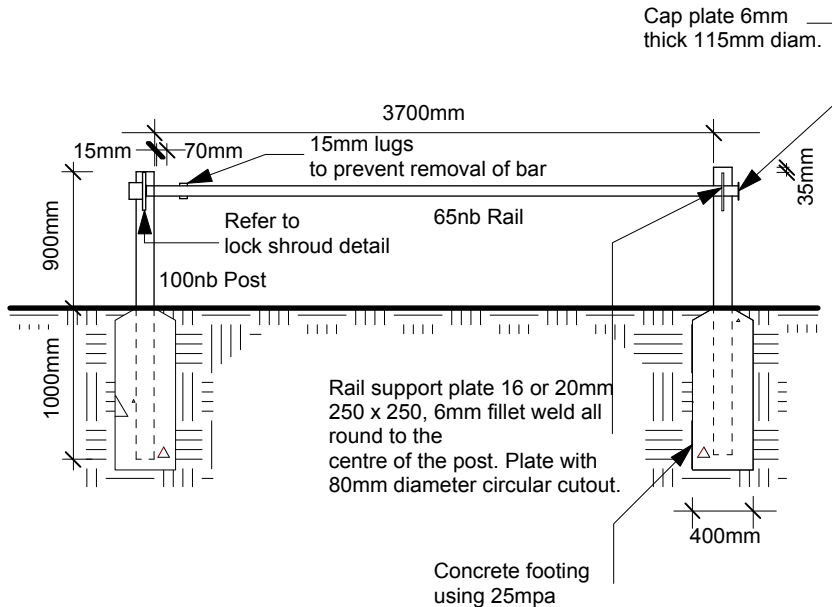
FT1 Rail Gate

FT2 Swing Gate

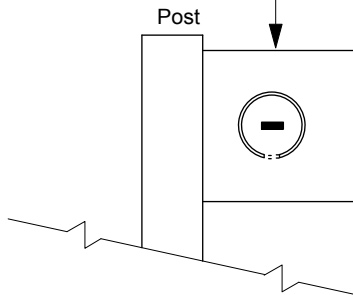
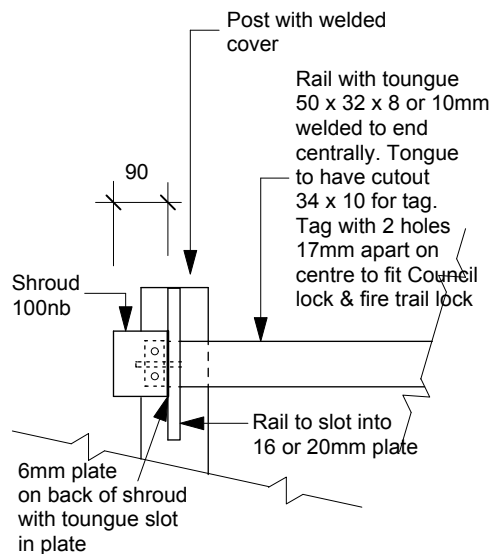
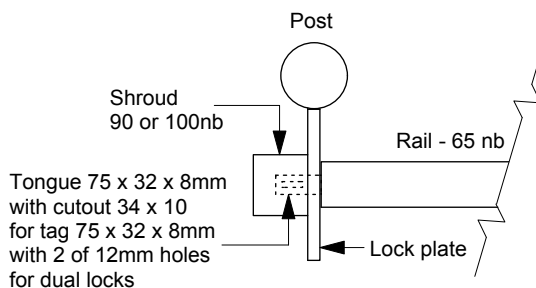
FT3 Fire Trail Signage

FT4* Swing Gate with Quad Lock

FIRE TRAIL

Typical Rail Gate
Nts

Lock plate
250 x 250 x 16 or 20mm
welded to post with
90 or 100nb shroud
fully welded to lock plate
and cutout (34 x 10) in
plate as shown for lock
tongue

Post & Lock Shroud
Side View
NtsPost & Lock Shroud
Front View
NtsPost & Lock Shroud
Top View
NtsSLIDING
RAIL GATE FT1

Location:

Fire trails, service roads, access to parks

Principles:

- * Rail gate to be used in non vandal prone areas to prevent vehicular entry on trails and access points
 - * Setback from roads or access ways must be considered.
- General requirements :
- Min distance of 8m is required as a threshold to the gate for service vehicles

Site specific layouts are required

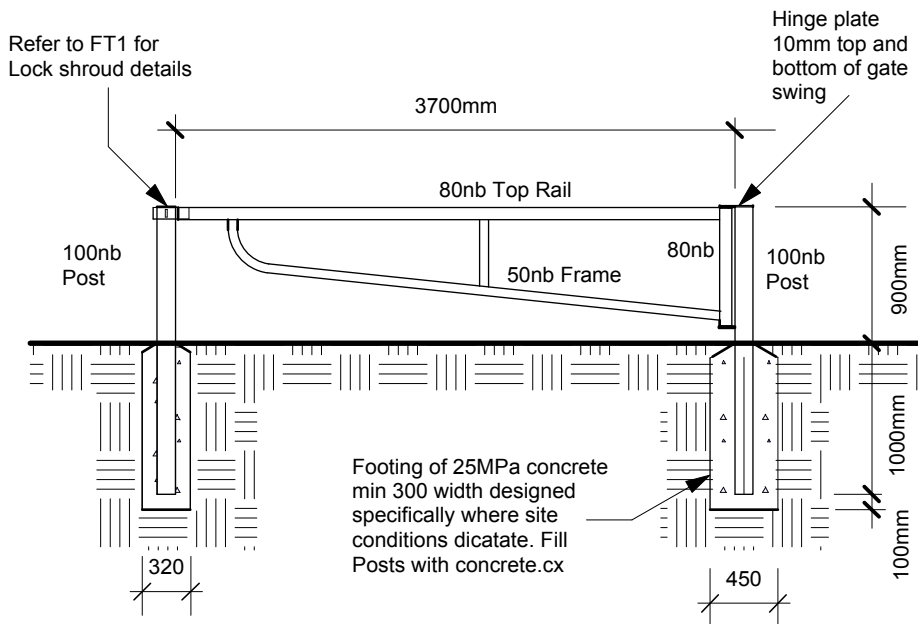
Materials:

5mm gauge steel
Fully hot dip galvanised

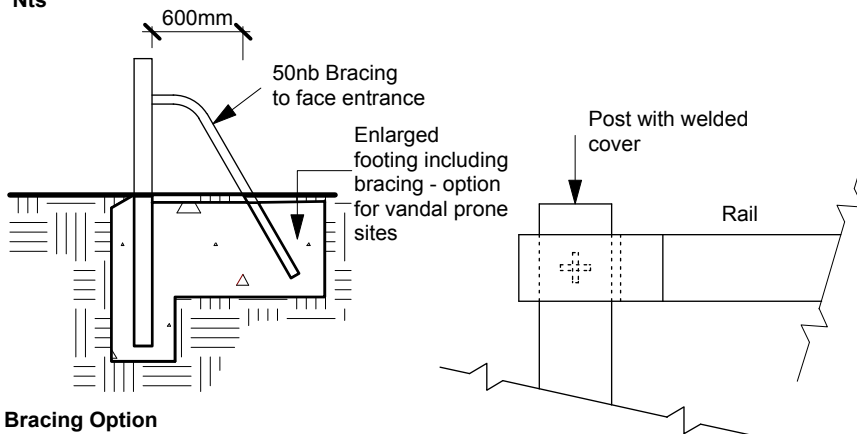
Colour options

- * Dulux "Charcoal" ©
- * Galvanised
- * Colorbond "Plantation" ©

FIRE TRAIL

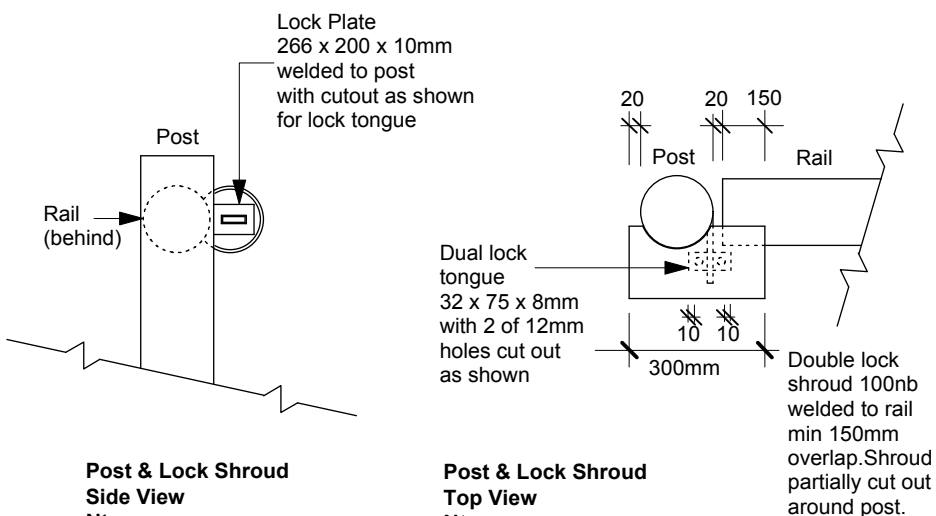


Typical Swing Gate
Nts



Bracing Option
For High Vandalism Prone Sites
Nts

Post & Lock Shroud
Front View
Nts



Post & Lock Shroud
Side View
Nts

Post & Lock Shroud
Top View
Nts

SWING GATE

FT2



Location:

Fire trails, service roads, access to parks

Principles:

- * Swing gate to be used in vandal prone areas to prevent vehicular entry on trails and access points
 - * Setback from roads or access ways must be considered.
- General requirements :
- Min distance of 8m is required as a threshold to the gate for service vehicles

Site specific layouts are required

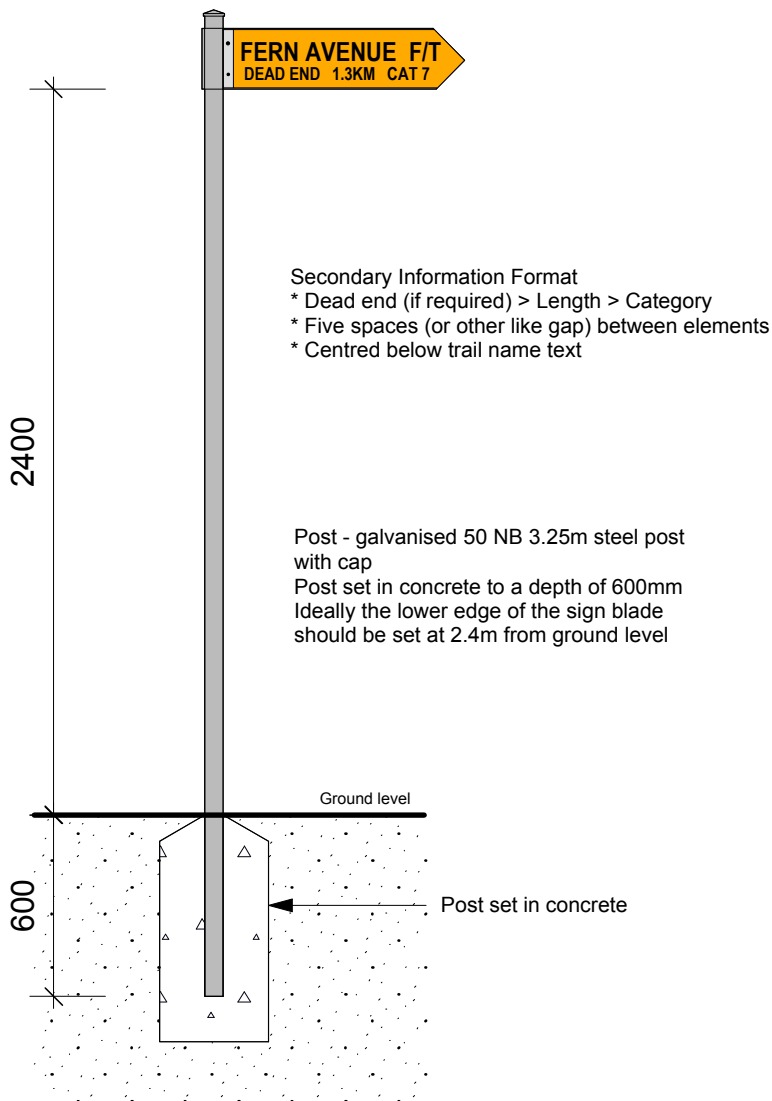
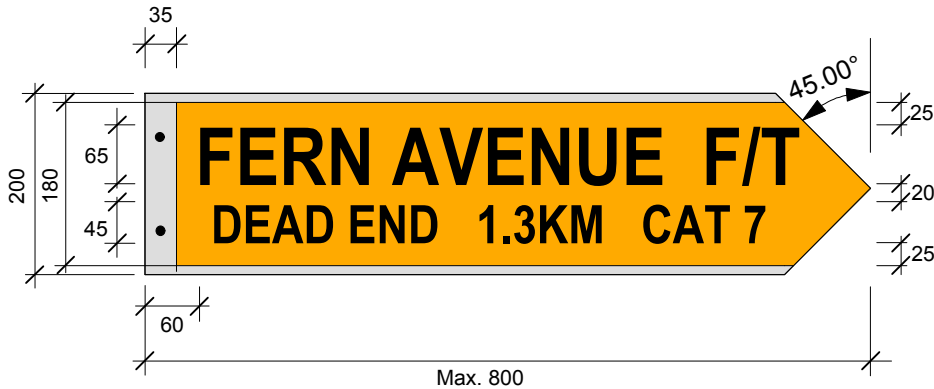
Materials:

5mm gauge steel
Fully hot dip galvanised

Colour options

- * Dulux "Charcoal"©
- * Galvanised
- * Colorbond "Plantation"©

FIRE TRAIL



Elevation of Typical Fire Trail Sign
Nts

FIRE TRAIL SIGNAGE FT3

**Location:**

Generally located at track entrances. Additional signage may be located where other trails branch off from or meet a track.

Principles:

- * To inform fire fighters of their location as well as the names and attributes of the fire trail on which they are working
- * All Fire Trails listed on the District Fire Trail Register must be signposted

Materials:

Extruded aluminium "I" section street blade 200mm in height

Reflective background - Yellow, class 1 retro-reflective

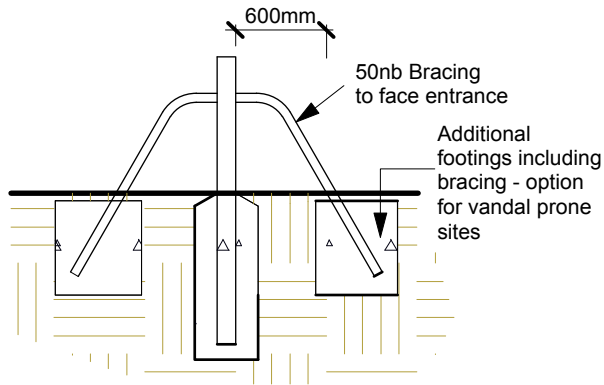
Lettering - Black, non reflective vinyl, all upper case

Trail Name Font : Hi-Road 65mm

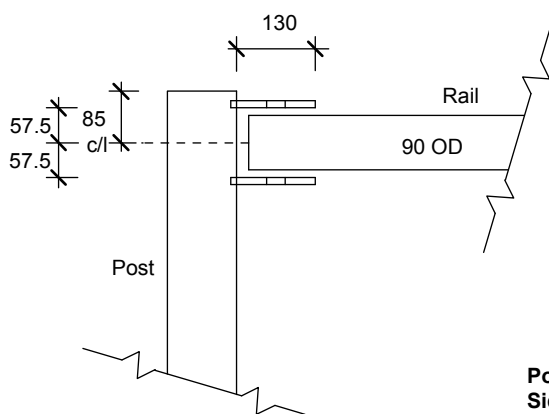
Secondary Information Font : Hi-Road 45mm

Standard galvanised street blade

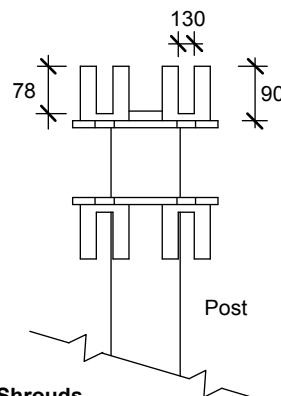
FIRE TRAIL



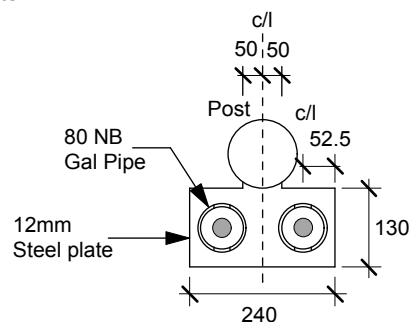
**Double Bracing Option
For Very High Vandalism Prone Sites
Nts**



**Post & Lock Shrouds
Front View
Nts**



**Post & Lock Shrouds
Side View
Nts**



**Post & Lock Shroud
Top View
Nts**

Note : Gate to same detail as
Swing Gate Detail FT2
with modifications and options
as shown on this page

SWING GATE WITH QUAD LOCK

FT4



Location:

Fire trails, service roads, access to parks

Principles:

* Swing gate with quad lock and double bracing option to be used in high vandal prone areas, particularly in areas where illegal dumping is occurring, to prevent vehicular entry on trails and access points

* Setback from roads or access ways must be considered.

General requirements :

- Min. distance of 8m is required as a threshold to the gate for service vehicles

Materials:

5mm guage steel
Fully hot dip galvanised

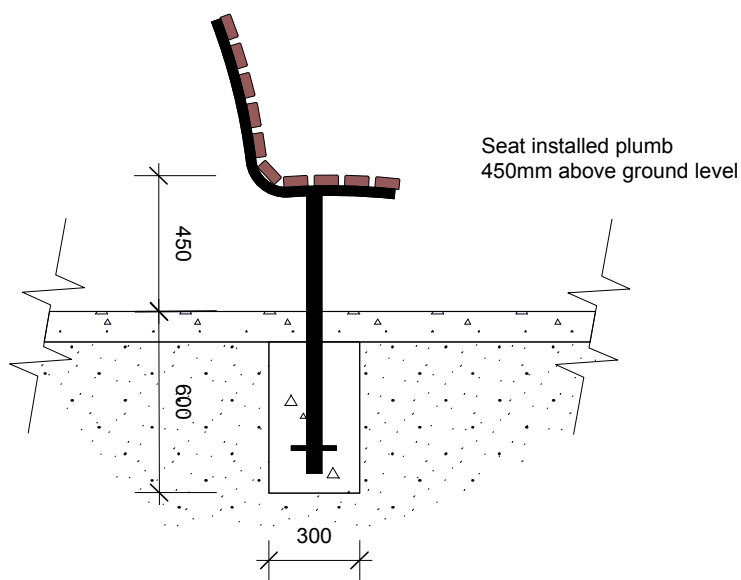
CONTENTS

***New to this edition**

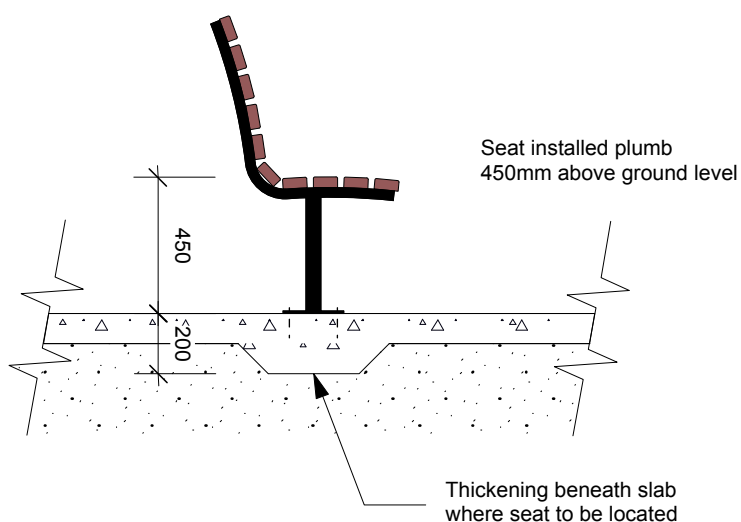
Natural Area Furniture NF

- NF1 Seat Type 1
- NF2 Seat Type 2
- NF3 Picnic Setting
- NF4 Camping Pad
- NF5 Fire Ring

NATURAL AREAS FURNITURE



Side Elevation of In Ground Seat
Nts



Side Elevation of Base Plate Mount Seat
Nts

SEAT
TYPE 1

NF1

**Location:**

In picnic areas, lookouts and other strategic locations where a simple seat is required.

Principles:

- * Ensure seat is located to maximise its usefulness
- * Ensure that surrounding ground has an even grade and preferably is not steeply sloping

Supplier:

Moodie Outdoor Products
Ph : 02 9816 1133

- * Playmaker 2010 seat - 9 slats
- base plate mount - Code : 18748
- * Playmaker 2010 seat - 9 slats
- inground mount - Code : 18745

Materials:

Timber : hardwood - tanalith E treated spotted gum from regrowth forests

Steel frame : 50 & 32mm medium galvanised pipe

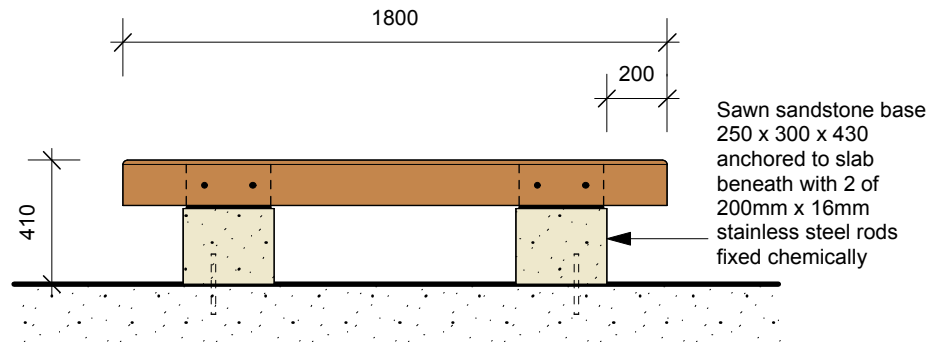
Mounting : surface fixed to concrete slab or subsurface set in concrete footing

Paint :

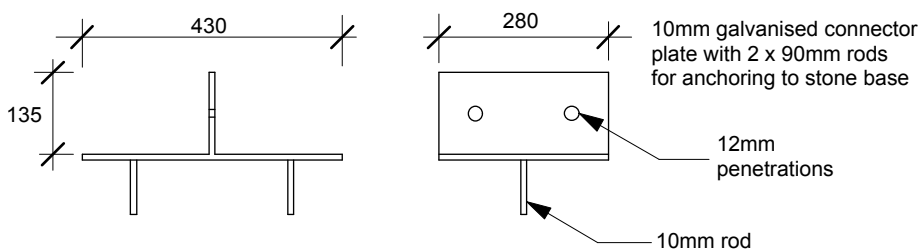
Prime using oil based undercoat such as Dulux "Preblock"© or equivalent
Paint Type Dulux - "Weathershield"© or equivalent.

Main Body Colour :
Dulux "Mission Brown"
Frame support : Gloss Black

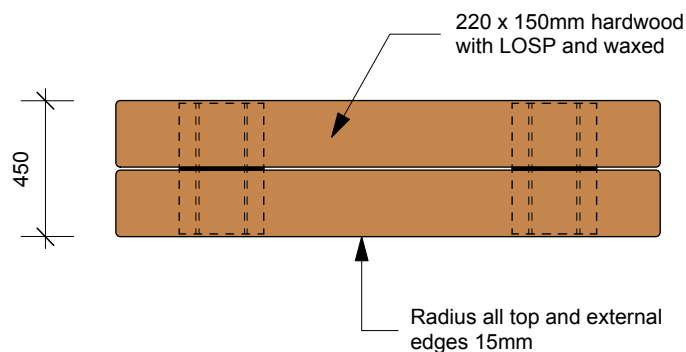
NATURAL AREAS FURNITURE



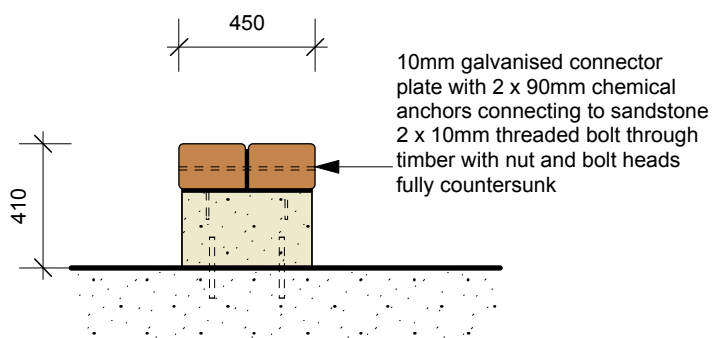
Side Elevation of Seat
Nts



Details of Connection Plate
Nts



Plan View
Nts



End Elevation
Nts

Note : Where connected to concrete slab slab should be thickened beneath to 200mm

SEAT
TYPE 2

NF2

**Location:**

Natural areas requiring higher quality more individual seating selection

Principles:

* Use in areas where a simple seat made from natural materials would be suitable

Materials:

Sandstone base blocks (2 per seat) of sawn sandstone 250 x 300 x 430

Timber - hardwood - recycled or sustainably harvested and treated with LOSP

All fittings and connections fully hot dip galvanised or stainless steel

Paint :
Hardwood waxed

NATURAL AREAS FURNITURE

PICNIC SETTING

NF3

Location:

In picnic areas

Principles:

- * Ensure picnic setting is located to maximise its usefulness
- * Ensure that surrounding ground has an even grade and preferably is not steeply sloping

Supplier:

Moodie Outdoor Products
Ph : 02 9816 1133

* Playmaker 2010 Clearline single leg setting Code : 18769

Materials:

Timber : hardwood - tanalith E treated spotted gum from regrowth forests

Steel frame : 50 & 32mm medium galvanised pipe

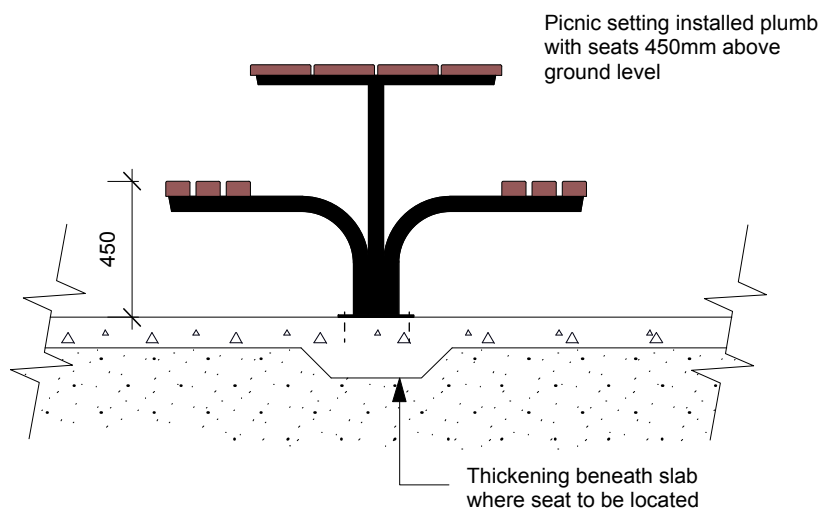
Mounting : surface fixed to concrete slab or subsurface set in concrete footing

Paint :

Prime using oil based undercoat such as Dulux "Preblock"® or equivalent
Paint Type Dulux - "Weathershield"® or equivalent.

Main Body Colour :
Dulux "Mission Brown"
Frame support : Gloss Black

Both in ground and base plate mounts available

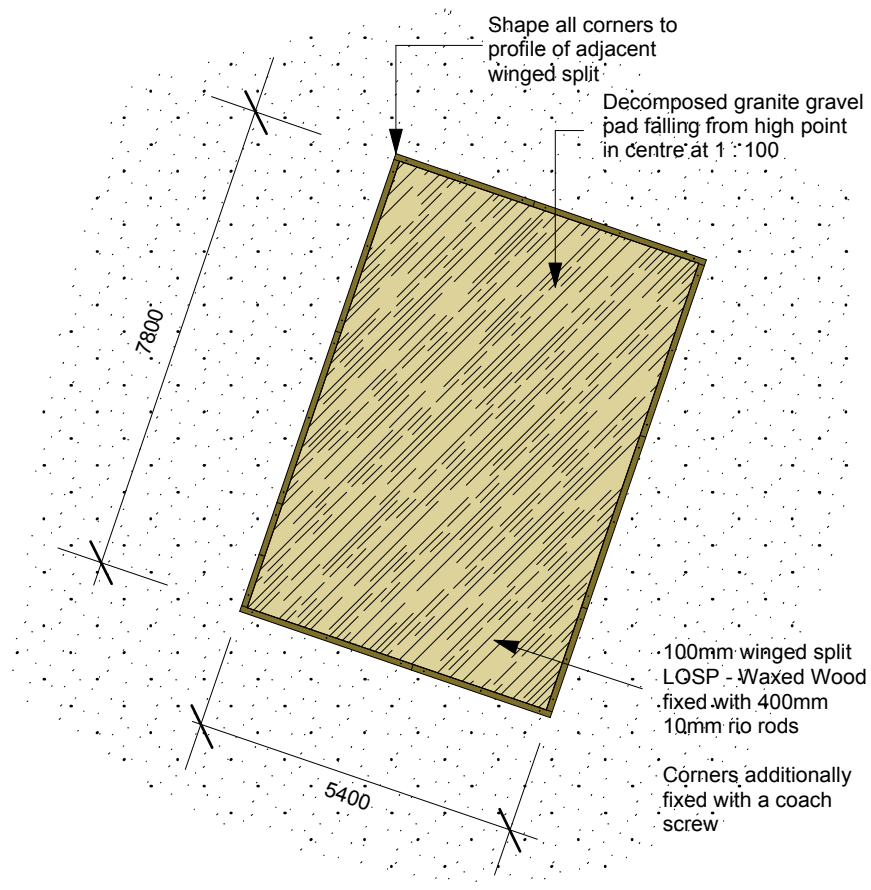


**Elevation of Picnic Setting
Nts**

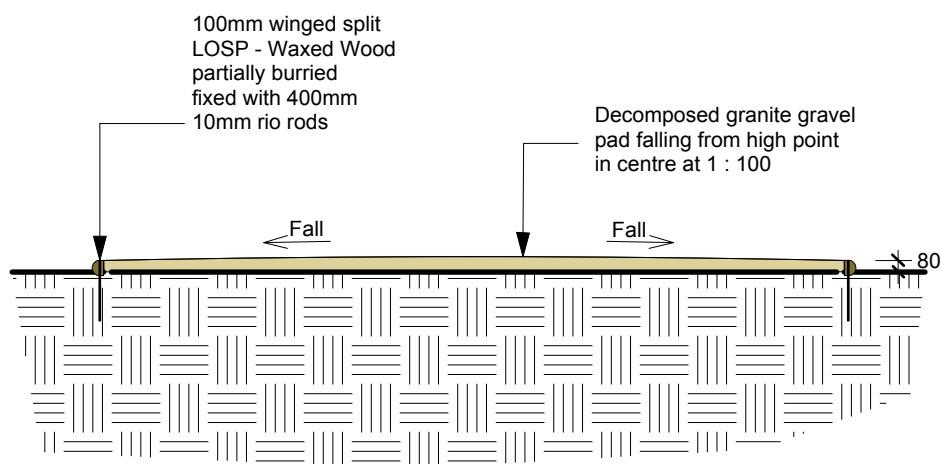
NATURAL AREAS FURNITURE

CAMPING
PAD

NF4



Plan of Raised Camping Pad
Nts



Section through Camp Pad
Nts

Location:

Designated camping areas.

Principles:

- * 1 pad per camp site within camping area
- * Ensure that surrounding ground has an even grade and preferably is not steeply sloping
- * Fire rings should be placed in relationship to each camp pad or shared between two camp pads

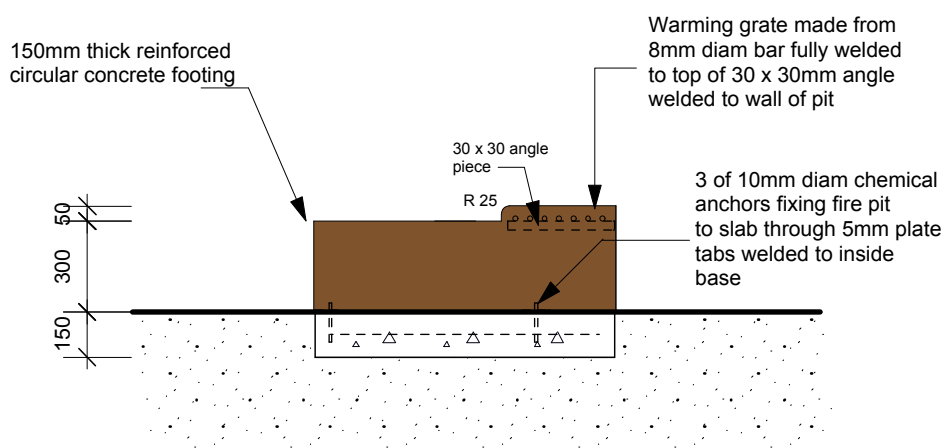
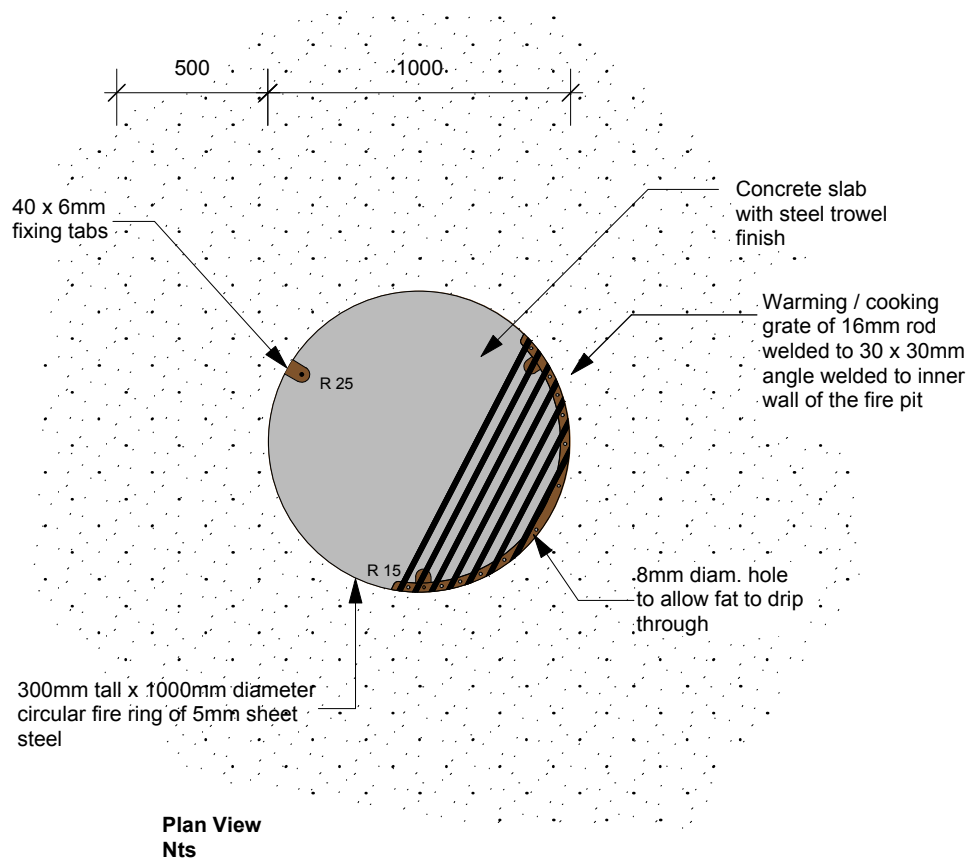
Materials:

Timber : 100mm Diam treated pine winged split

Stakes : 400mm 10mm ridged rio rod.

Gravel : Selected decomposed granite

NATURAL AREAS FURNITURE



FIRE RING NF5



Location:

Camping areas where Council permits camp fires

Principles:

- * Locate one fire ring per camp site
- * Ensure that placement is well away from unmaintained bushland

Materials:

Ring and made from 5mm sheet steel
Fixings fully welded

Paint :
None.

CONTENTS

***New to this edition**

Fencing and Barricades FB

FB1 Type A Barrier

FB2 Type C Barrier

FB3 Mesh Fence

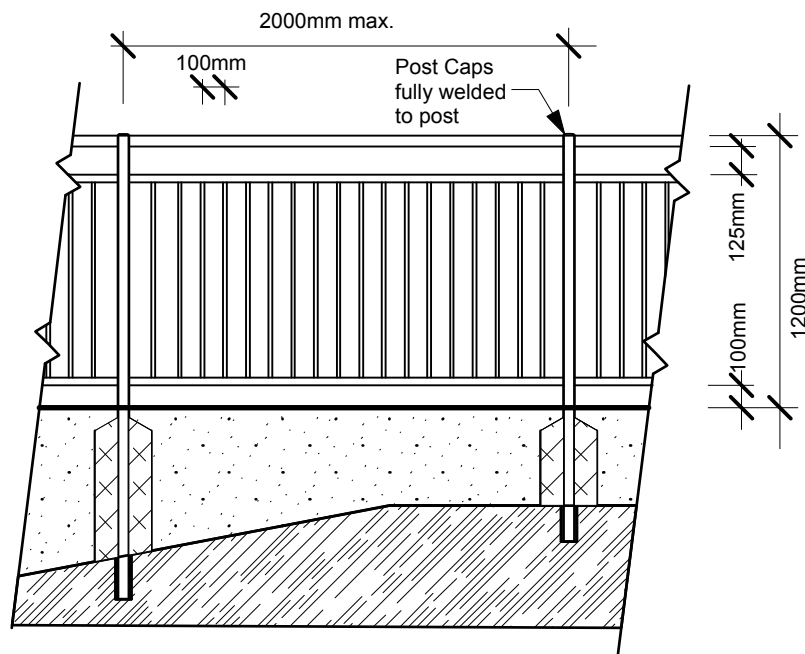
FB4 Boulders

FB5 Bollards Steel

FB6 Bollards Treated Pine

FB7 Post & Cable

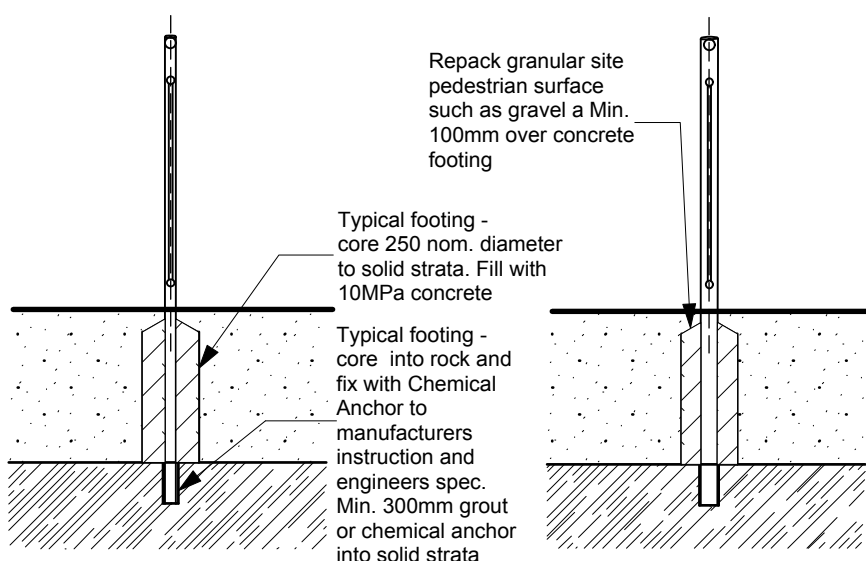
FENCING AND BARRICADES



Typical Handrail Panel
Nts

Notes :

- * All members to be hot dip galvanised
- * Connections of rails to posts to be butt welded
- * All other welds to be 5mm continuous fillets
- * Footings to be designed by structural engineer on a site specific basis



Typical Handrail Section
Post 48.3 CHS
Nts

Typical Handrail Section
Post 76.1 CHS
Nts

TYPE A BARRIER FB1



Location:

Lookouts, walking tracks where there is a risk of injury from falls. When there is a risk of fall refer to Table 2, AS 2156.2 - 2001 Allowable Barrier Type For Effective Fall Height to determine required barricade for given situation

Principles:

- * Barriers to comply to AS 2156.2-2001x
- * The design and installation process shall consider geotechnical factors
- * Structural engineering design will be required in many circumstances
- * Barriers to be designed for site specific situation including curved to site
- * Fully welded structure required' at lookouts

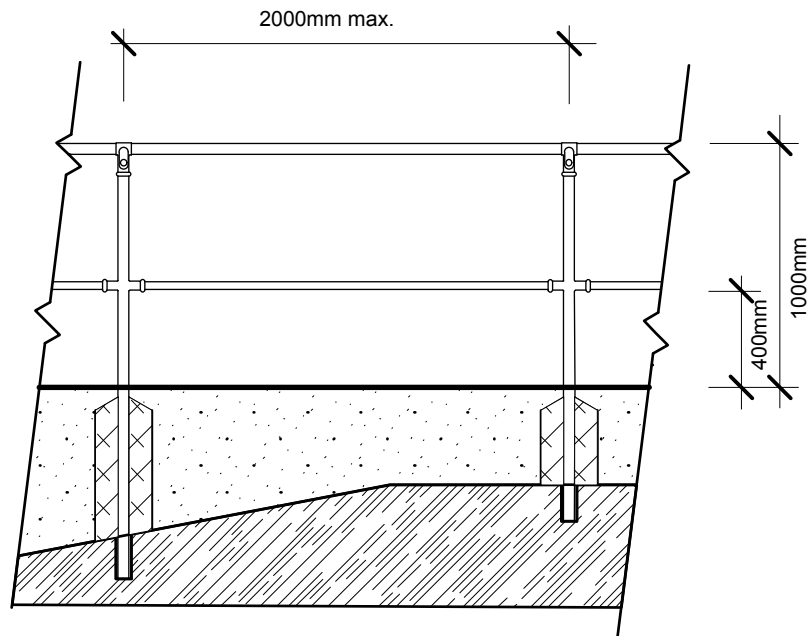
Materials:

- All members HDG, medium guage
- * 48.3 x 3.2 CHS Top Rail
 - * 33.7 x 3.2 CHS Mid Rails
 - * 16 Dia Bar Verticals
 - * Post Type A 48.3 x 4 CHS
 - * Post Type B 76.1 x 3 CHS
 - * 10 MPa Concrete
 - * Chemical anchor

Colour options

- * Dulux "Charcoal" ©
 - * Galvanised
 - * Colorbond "Plantation" ©
- Note : Where coloured finish is determined, use low sheen two part epoxy paint.

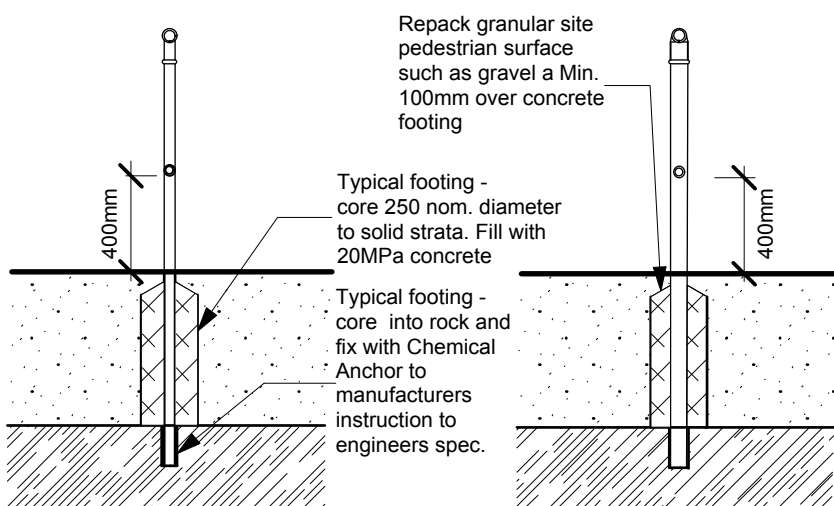
WALKING TRACK INFRASTRUCTURE



Typical Handrail Panel
Nts

Notes :

- * All members to be hot dip galvanised
- * Minimise site welding
- * Connections to be Uni - Fit © universal fittings
- * Footings to be designed by qualified engineer on a site specific basis
- * Type C Barrier can be fixed to a foot bridge or board walk



Typical Handrail Section
Post 48.3 CHS
Nts

Typical Handrail Section
Post 76.1 CHS
Nts

TYPE C BARRIER

FB2



Location:

Walking tracks, board walk, footbridges. When there is a risk of fall refer to Table 2, AS 2156.2 - 2001 Allowable Barrier Type For Effective Fall Height

Principles:

- * Barriers to comply to AS 2156.2-2001
- * The design and installation process shall consider geotechnical factors
- * Structural engineering design will be required in many circumstances
- * Barriers to be designed for site specific situation including curved to site

Materials:

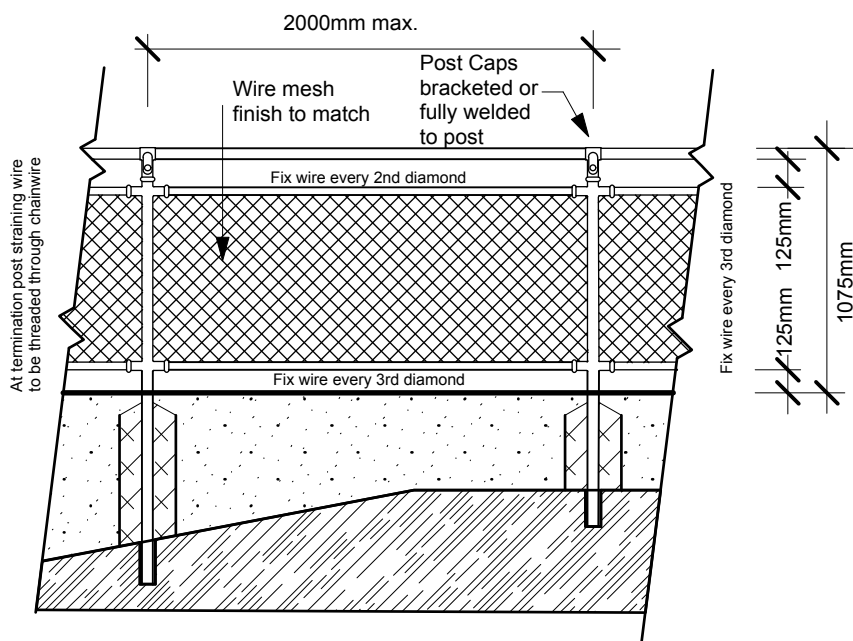
All members HDG, medium guage

- * 48.3 x 3.2 CHS Top Rail
- * 33.7 x 3.2 CHS Mid Rail
- * 16 Dia Bar Verticals
- * Post Type A 48.3 x 4 CHS
- Post Type B 76.1 x 3 CHS
- * 20 MPa Concrete
- * Chemical anchor

Colour options

- * Dulux "Charcoal"
 - * Galvanised
 - * Colorbond "Plantation"
- Note : Where coloured finish is determined, use low sheen two part epoxy paint.

FENCING AND BARRICADES

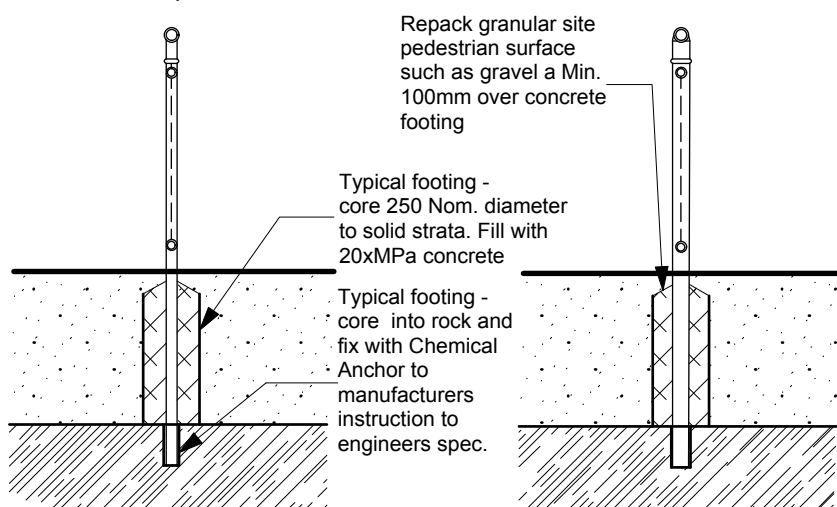


Typical Handrail Panel

Nts

Notes :

- * All members to be hot dip galvanised
- * Minimise site welding
- * Connections to be Uni - Fit © universal fittings
- * Footings to be designed by qualified engineer on a site specific basis
- * Mesh Fence can be fixed to a foot bridge or board walk
- * Mesh is to be tight so that diamonds do not compress



Typical Handrail Section

Post 48.3 CHS

Nts

Typical Handrail Section

Post 76.1 CHS

Nts

MESH
FENCE

FB3

Location:

Walking tracks, board walk, footbridges. When there is a risk of fall refer to Table 2,
AS 2156.2 - 2001 Allowable Barrier Type For Effective Fall Height

Principles:

- * Barriers to comply to AS 2156.2-2001
- * The design and installation process shall consider geotechnical factors
- * Structural engineering design will be required in many circumstances
- * Barriers to be designed for site specific situation
- * Curve to site in straight sections

Materials:

All members HDG, medium guage

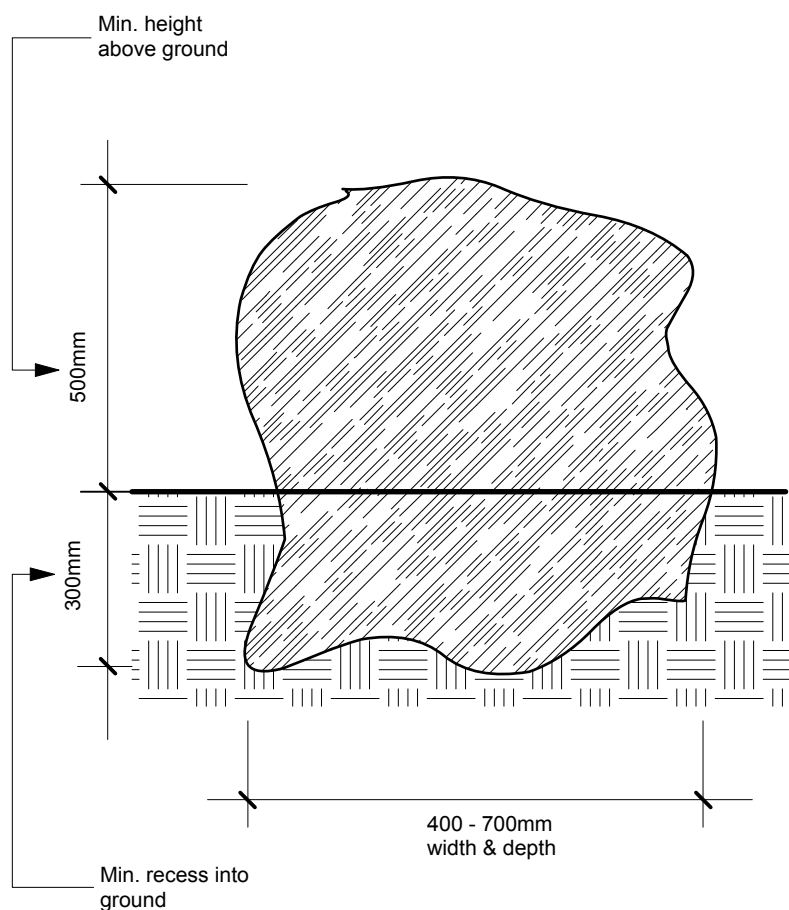
- * 48.3 x 3.2 CHS Top Rail
- * 33.7 x 3.2 CHS Mid & Bottom Rails
- * Post Type A 48.3 x 4 CHS
Post Type B 76.1 x 3 CHS
- * 20 MPa Concrete
- * Chemical anchor

Colour options

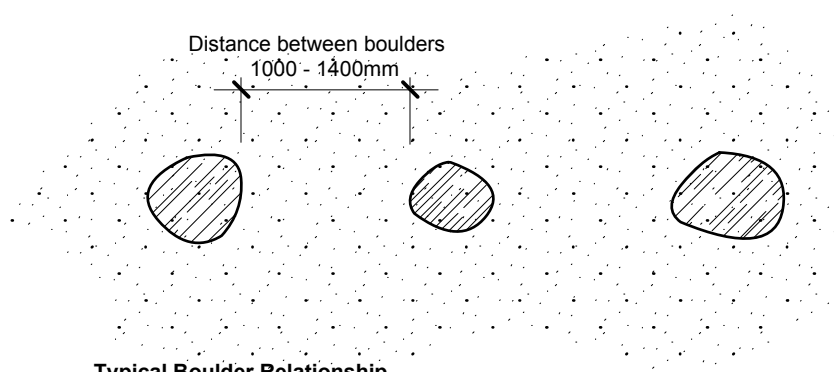
- * Dulux "Charcoal"
- * Galvanised
- * Colorbond "Plantation"

Note : Where coloured finish is determined, use low sheen two part epoxy paint.

FENCING AND BARRICADES



Typical Boulder Installation
Nts



Typical Boulder Relationship
Nts

BOULDERS FB4



Location:

Entry points, start of walking tracks, car parking, other situations where prevention of unauthorised vehicular access

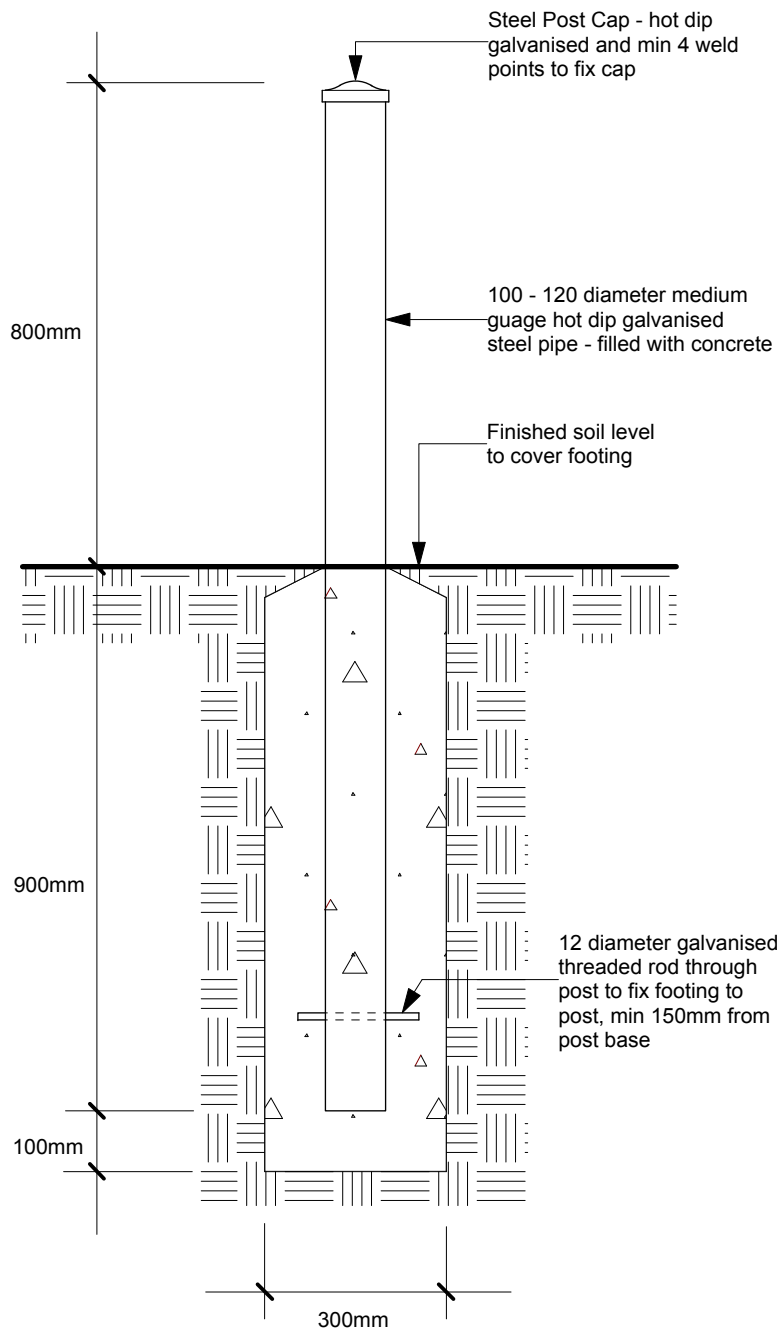
Principles:

- * Placement and spacing of boulders should relate to functional requirements

Materials:

Sandstone boulders as available
Minimum size 800 x 400 x 400mm

FENCING AND BARRICADES



**Typical Bollard
Nts**

BOLLARDS - FB5 STEEL



Location:

Walking tracks, camping and day use areas, parks, car parks - particularly to be used in sites prone to vandalism

Principles:

- * Spacing to be related to application on a site specific basis
- * Max distance apart 1400mm
- * Min distance apart 700mm
- * For any one site spacing to be equal

Materials:

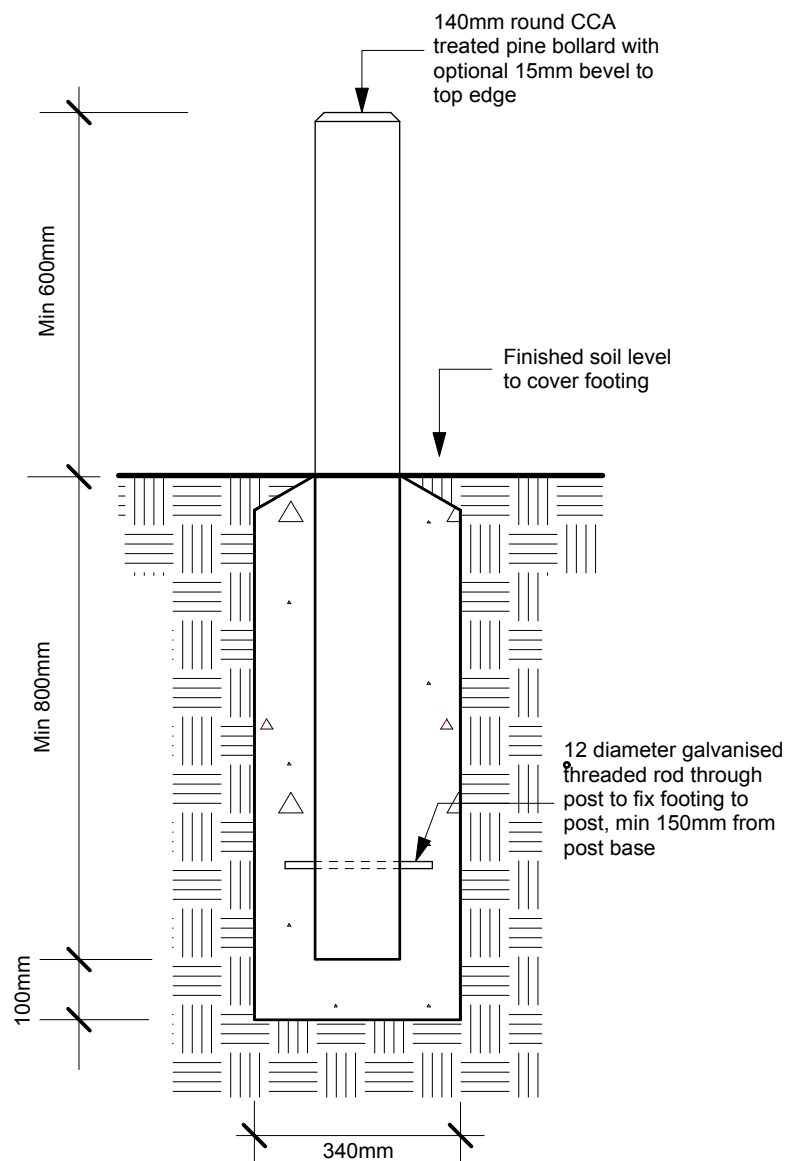
100 - 120NB Medium guage hot dip galvanised pipe

Colour options

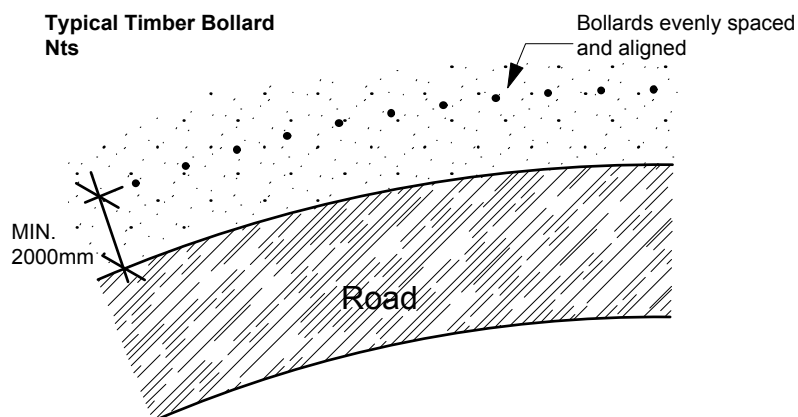
- * Dulux "Charcoal" ©
- * Galvanised
- * Colorbond "Plantation" ©

Concrete 10 MPa

FENCING AND BARRICADES



Typical Timber Bollard
Nts



Plan of Typical Layout
Nts

BOLLARDS TREATED PINE FB6



Location:

Walking tracks, car parks, edge of open space areas to control pedestrian and vehicular movement

Principles:

- * Spacing to be related to application on a site specific basis
- * Max distance apart 1400mm
- * Min distance apart 700mm
- * Reflectors to be used where adjacent to roads car parks
- * Min of 2m from edge of a sealed road

Materials:

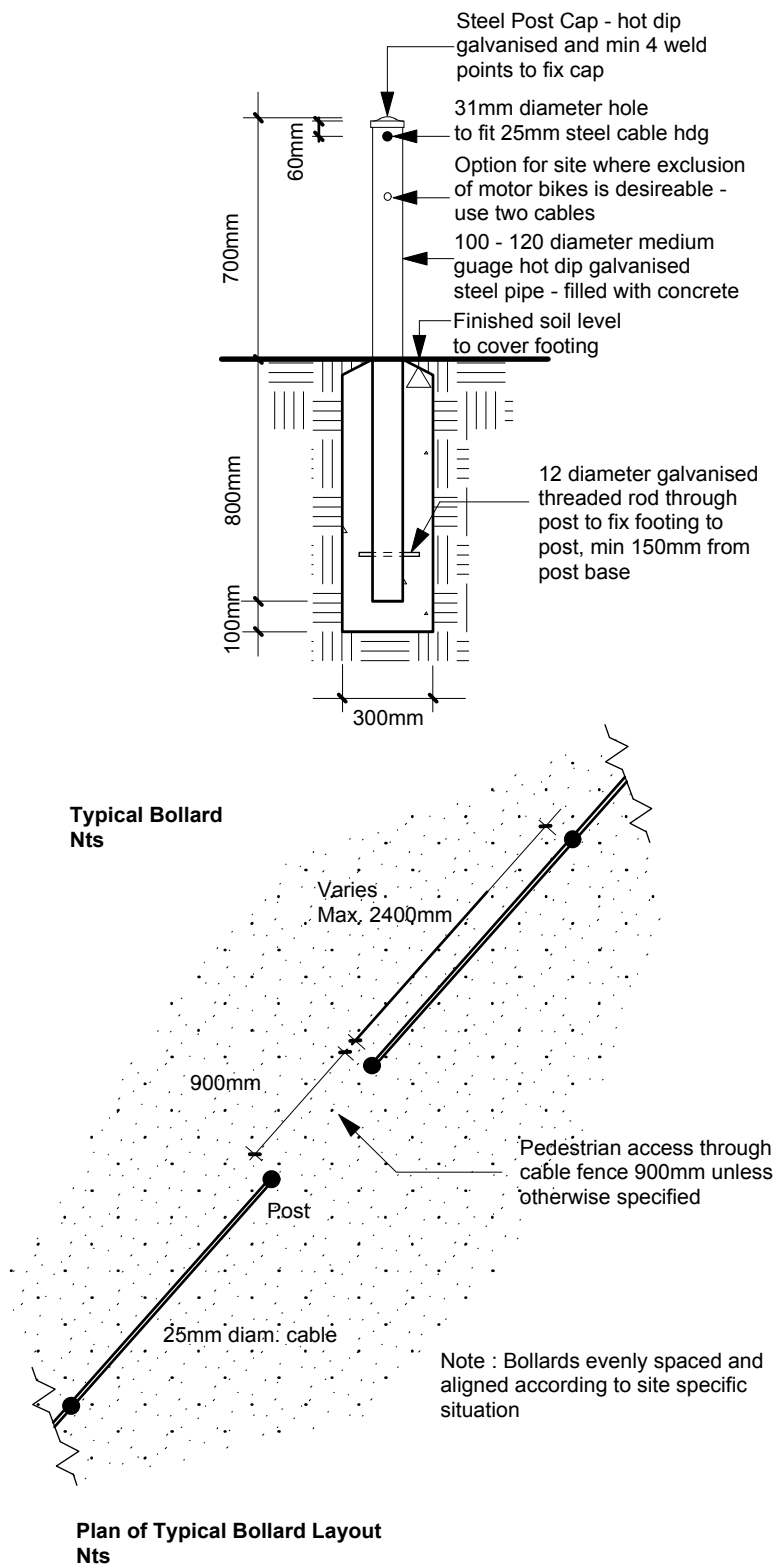
CCA H4 Treated Pine Round 140mm diameter unless otherwise specified

Concrete 10MPa

Finishes :

- * Natural
- * Cabots Timbershade© - "Ebony"

FENCING AND BARRICADES



POST & CABLE

FB7


Location:

Walking tracks, camping and day use areas, parks, car parks - particularly to be used in sites prone to vandalism.

Principles:

- * Max distance apart 2400mm
- * For any one site spacing to be equal
- * Exclude motor vehicles and motor bikes - use two cables

Materials:

100 - 120NB Medium gauge hot dip galvanised pipe 1500mm
Galvanised cap to suit

Colour options

- * Dulux "Charcoal"
- * Galvanised
- * Colorbond "Plantation"

Concrete 10 MPa

25mm hdg roped steel cable

Tension clamps HDG at each end post

CONTENTS

***New to this edition**

Natural Area Signage NS

- NS1 Track Head Signage Type A (4 sheets)
- NS2 Track Head Signage Type B (4 sheets)
- NS3 Track Head Signage Type C (4 sheets)
- NS4 Track Head Signage Type D (4 sheets)
- NS5 Routed Locality Sign
- NS6 Lettering & Symbols For Routed Signs
- NS7 Directional Signage
- NS8 Timber Totem Type A & B
- NS9 Steel Totem Type C
- NS10* Shelter Sign

NATURAL AREA SIGNAGE

TRACK HEAD SIGNAGE TYPE A NS1

Location:

At major visitor nodes or localities such as Echo Point or Knapsack Park entry points & main tourist trackheads

Principles:**Scale of Content**

* the time required for an average reader to complete sign should be limited to one to two minutes

Essential Content

- * reserve name
- * track name (s)
- * track map
- * track grades + pictograms, distance, time, special status (if any) and features
- * track difficulty rating
- * appropriate risk warnings and advisory information
- * management agency name(s) + logo(s)
- * photographs

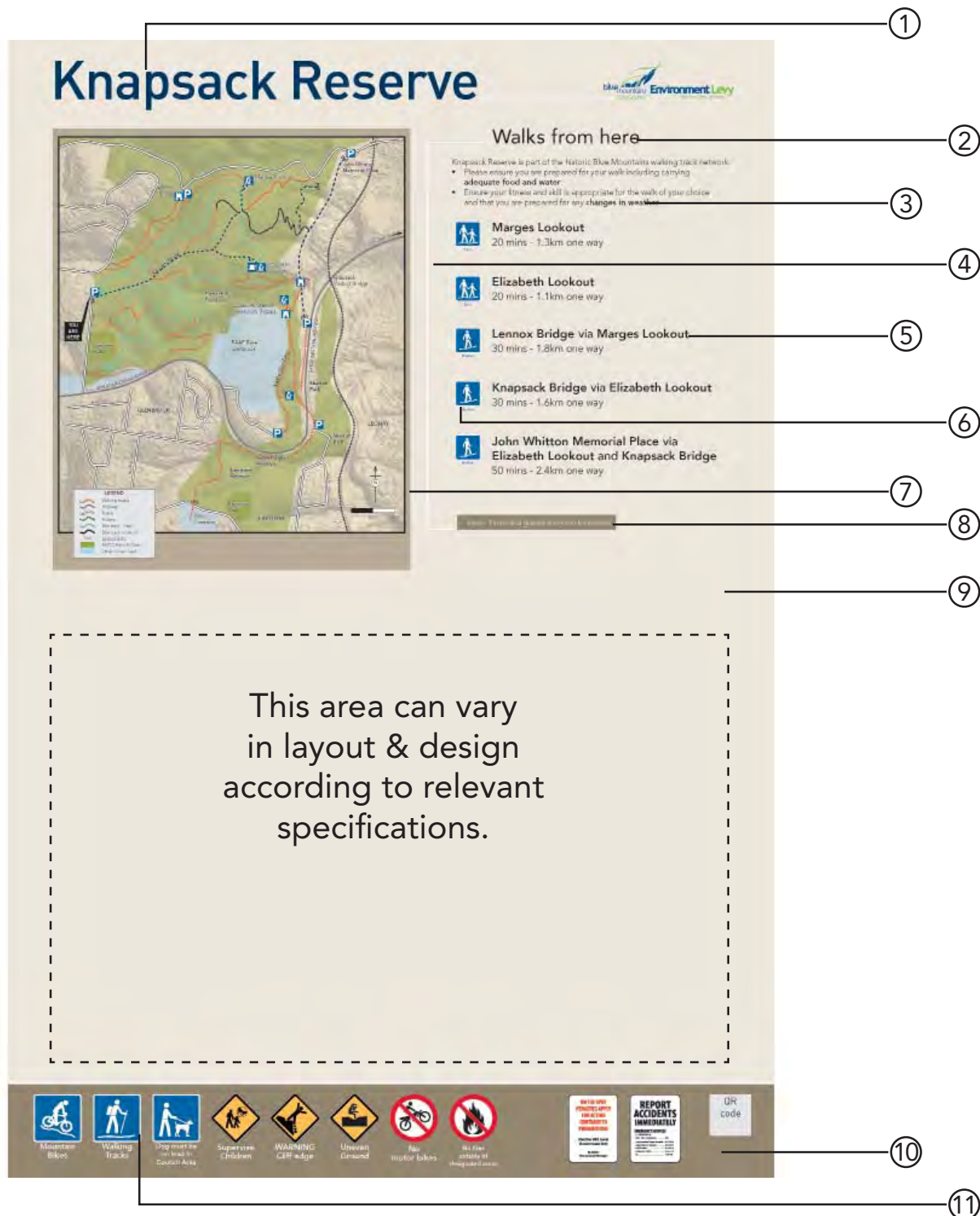
Optional Content

- * regulatory information / symbol signs eg. no dogs, no riding
- * additional information on track features
- * reserve / area map
- * statement on catchment significance (where relevant)
- * additional interpretive content
- * public transport information
- * agency or emergency contact information

Materials:

Refer to Style Guide following

Track Head sign 800x1200mm - sign type A



1 - Caption:
PMS 7463. Font DIN Medium

2 - Sub Caption:
Black. Font Avenir 60pt

3 - General text
Black. Avenir heavy & light 24pt

4 - Detail lines:
White. Line thickness 1.5mm

5 - Message text:
Black. Font: Avenir heavy 36pt, light 30pt

6 - Information symbols:
PMS 301. Size 26x26mm

7 - Map background colour:
PMS 7530

8 - Message bar:
PMS 7531. Font: White Avenir ight 21pt

9 - Background colour:
PMS 7527

10 - Regulatory symbol bar:
PMS 7531

11 - Regulatory symbols:
Size 50x50mm. Font: White Avenir heavy

Symbols colours: Blue: PMS 301, Yellow: PMS 136, Red: PMS 186
Black, White, Text: White

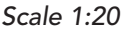
Track Head sign 800x1200mm - sign type A



All measurements are in millimetres

Maps and Track Profile Colour Guide

PMS 356	BCC Parks & Ovals	PMS 7495	Council Reserves	PMS 7479	NPWS
PMS 277	Other Crown Land				



6 - Aluminium Top Cap:
Aluminium top cap painted 2 pack
Dulux 'Bluestone Rock'.

NATURAL AREA SIGNAGE

TRACK HEAD SIGNAGE
TYPE B NS2**Location:**

At medium tourist trackheads or localities linked to one or several major tracks e.g. Centennial Glen, Mt York Day Use Area

Principles:**Scale of Content**

* the time required for an average reader to complete sign should be limited to one minute.

Essential Content

- * reserve name
- * track name (s)
- * track map
- * track grades + pictograms, distance, time, special status (if any) and features
- * track difficulty rating
- * appropriate risk warnings and advisory information
- * management agency name(s) + logo(s)

Optional Content

- * track features
- * regulatory information / symbol signs eg. no dogs, no riding
- * additional information on track features
- * reserve / area map
- * statement on catchment significance (where relevant)
- * additional interpretive content
- * public transport information
- * advisory information
- * agency or emergency contact information

Materials:

Refer to style guide following

Track Head sign 800x650mm - sign type B



1 - Caption:
PMS 7463. Font DIN Medium

5 - Message text:
Black. Font: Avenir heavy 36pt, light 30pt

9 - Message bar:
PMS 7531. Font: White Avenir light 21pt

2 - Sub Caption:
Black. Font Avenir 60pt

6 - Information symbols:
PMS 301. Size 26x26mm

10 - Regulatory symbol bar:
PMS 7531

3 - General text
Black. Avenir heavy & light 24pt

7 - Map background colour:
PMS 7530

11 - Regulatory symbols:
Size 50x50mm. Font: White Avenir heavy

4 - Detail lines:
White. Line thickness 1.5mm

8 - Background colour:
PMS 7527

Symbols colours:
Blue: PMS 301
Yellow: PMS 136
Red: PMS 186
Black
White
Text: White

Track Head sign 800x650mm - sign type B

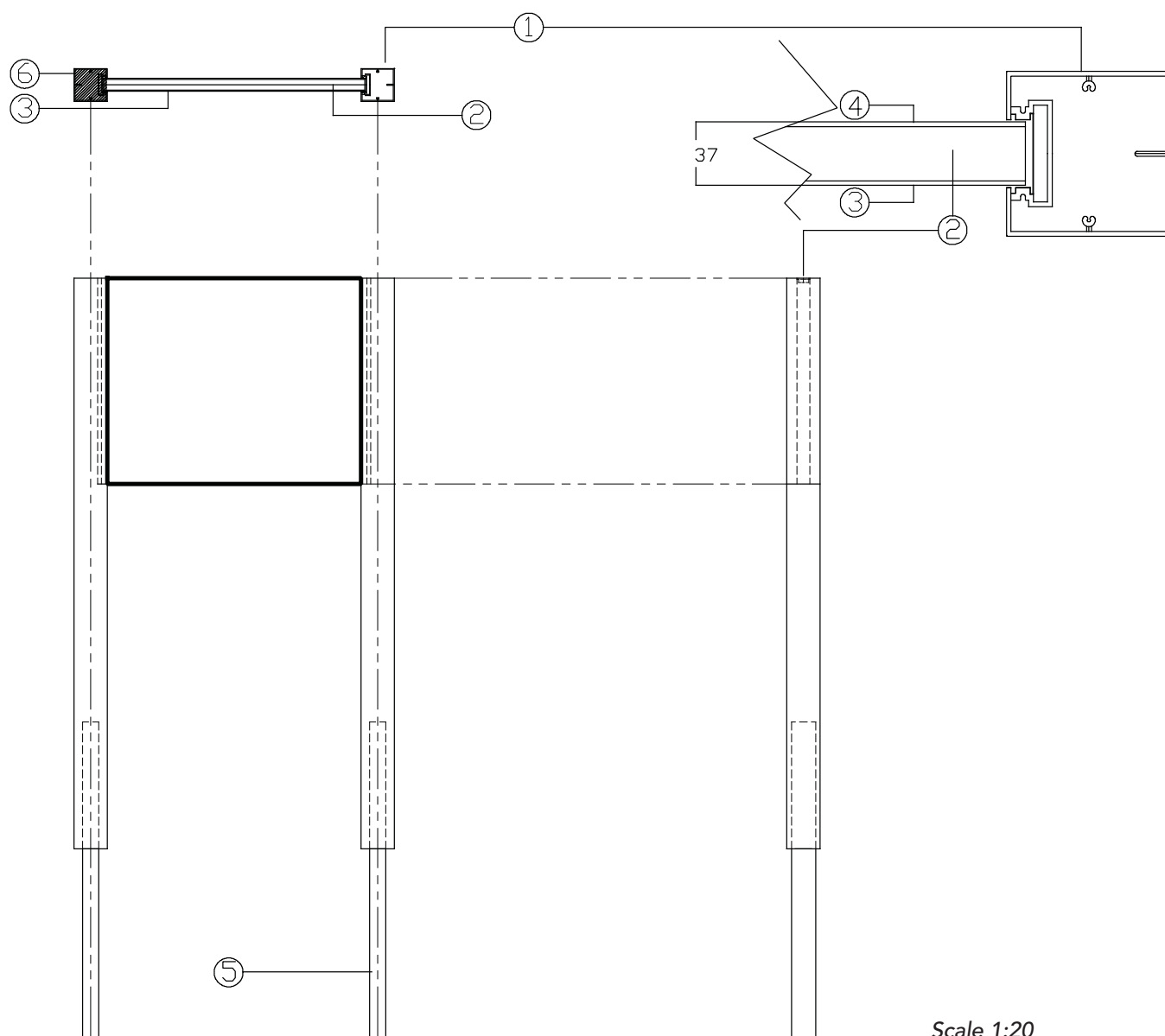


All measurements are in millimetres

Maps and Track Profile Colour Guide

PMS 356	BCC Parks & Ovals	PMS 7495	Council Reserves	PMS 7479	NPWS
PMS 277	Other Crown Land	PMS 2995	Adjoining LGA Reserve 1	PMS 7462	Adjoining LGA Reserve 2
PMS 7494	Inset Map Background Colour	PMS 7517	Track Profile Land Cross Section	PMS 301 White	Track Profile Sky Cross Section

Track Head sign 800x650mm - sign type B



Scale 1:20

1 - Aluminium Modular Post:

104x104mm Aluminium modular posts. 50mm slot. 2 pack paint. Dulux 'Bluestone Rock'. Posts supplied with all hardware including slot infill strip and screws.

2 - Modular Aluminium Panel Rail:

Aluminium panel rail top & bottom of the sign. Natural anodised aluminium.

3 - Aluminium Sign:

3mm aluminium sign. Full colour digital print with Armsign Polycure coating.

4 - Backing Panel:

3mm backing panel painted, 2 pack Dulux 'Bluestone Rock'. 30mm thick poly styrene insert between sign and backing panel.

5 - Steel Post:

75x50x1000mm SHS galvanised steel post. Minimum 600mm secured in the ground with concrete footing.

6 - Aluminium Top Cap:

Aluminium top cap painted 2 pack Dulux 'Bluestone Rock'.

NATURAL AREA SIGNAGE

TRACK HEAD NS3 SIGNAGE TYPE C

**Location:**

At minor tourist trackheads or major track junction e.g. Berghofers Pass

Principles:**Scale of Content**

* the time required for an average reader to complete sign should be limited to half a minute

Essential Content

- * reserve name
- * track name (s)
- * track map
- * track grades + pictograms, distance, time, special status (if any) and features
- * track difficulty rating
- * appropriate risk warnings
- * management agency name(s) + logo(s)

Optional Content

- * track features
- * regulatory information / symbol signs eg. no dogs, no riding
- * additional information on track features
- * reserve / area map
- * statement on catchment significance (where relevant)
- * public transport information
- * advisory information
- * agency or emergency contact information

Materials:

Refer to style guide following

Track Head sign 600x450mm - sign type C



1 - Caption:
PMS 7463. Font DIN Medium

5 - Message text:
Black. Font: Avenir heavy 26pt, light 21pt

9 - Background colour:
PMS 7527

2 - Sub Caption:
Black. Font Avenir 42pt

6 - Information symbols:
PMS 301. Size 20x20mm

10 - Regulatory symbol bar:
PMS 7531

3 - General text
Black. Avenir heavy & light 20pt

7 - Map background colour:
PMS 7530

11 - Regulatory symbols:
Size 35x35mm. Font: White Avenir heavy

4 - Detail lines:
White. Line thickness 1mm

8 - Message bar:
PMS 7531. Font: White Avenir light 16pt

Symbols colours:
Blue: PMS 301
Yellow: PMS 136
Red: PMS 186
Black
White
Text: White

Track Head sign 600x450mm - sign type C



All measurements are in millimetres

Maps and Track Profile Colour Guide

PMS 356	BCC Parks & Ovals	PMS 7495	Council Reserves	PMS 7479	NPWS
PMS 277	Other Crown Land	PMS 2995	Adjoining LGA Reserve 1	PMS 7462	Adjoining LGA Reserve 2
PMS 7494	Inset Map Background Colour	PMS 7517	Track Profile Land Cross Section	PMS 301 White	Track Profile Sky Cross Section



NATURAL AREA SIGNAGE

TRACK HEAD SIGNAGE
TYPE D **NS4****Location:**

At low-key local trackheads

Principles:**Scale of Content**

* very limited number of words

Essential Content

- * track name (s)
- * track grades + pictograms, distance, time
- * track difficulty rating
- * appropriate risk warnings
- * management agency name(s) + logo(s)

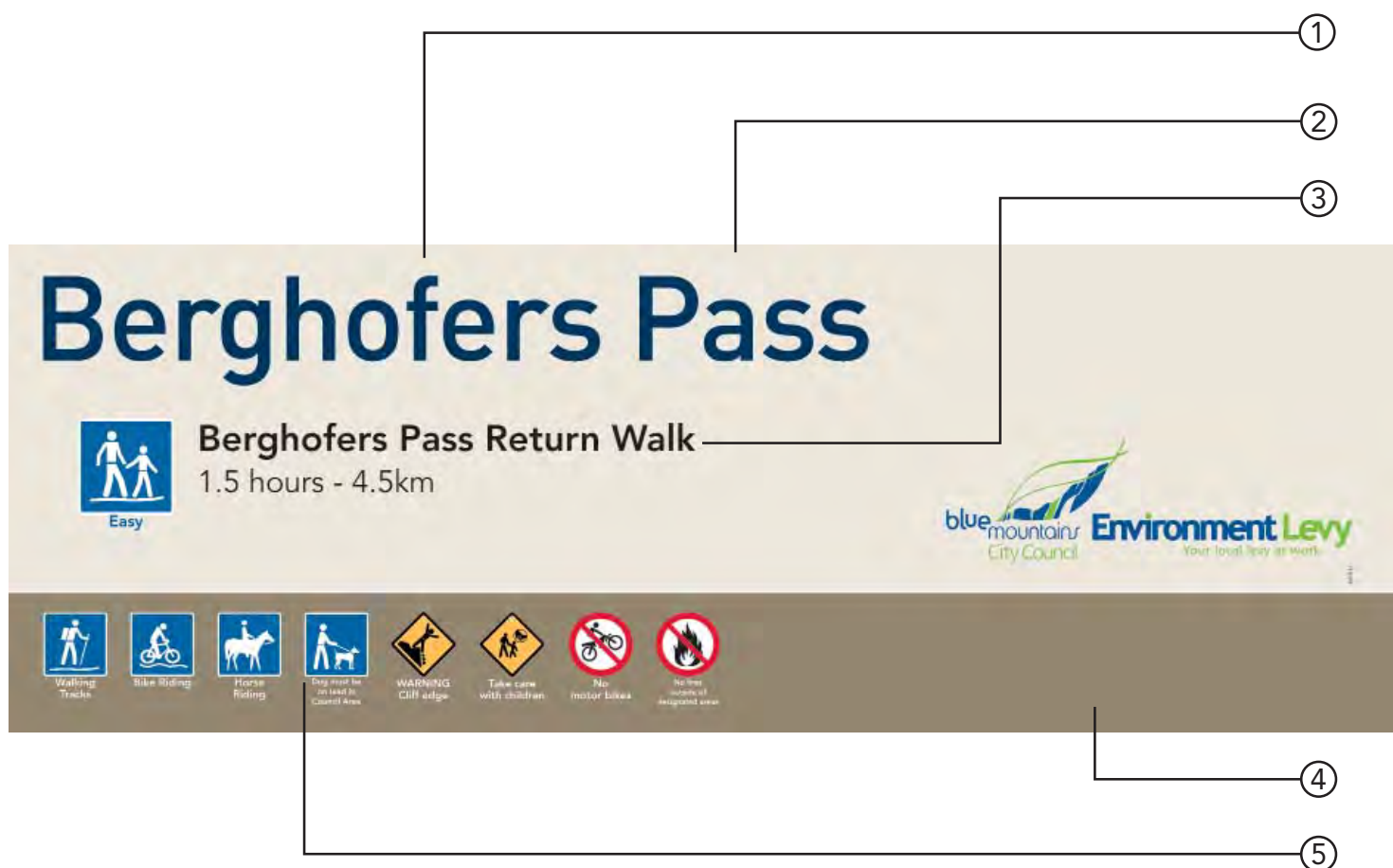
Optional Content

- * reserve name
- * regulatory information / symbol signs eg. no dogs, no ridingx
- * agency or emergency contact information

Materials:

Refer to style guide following

Track Head sign 1200x420mm - sign type D



1 - Caption:
PMS 7463. Font DIN Medium

3 - Message text:
Black. Font: Avenir heavy 90pt, light 75pt

5 - Regulatory symbols:
Size 55x55mm. Font: White Avenir heavy

2 - Background colour:
PMS 7527

4 - Regulatory symbol bar:
PMS 7531

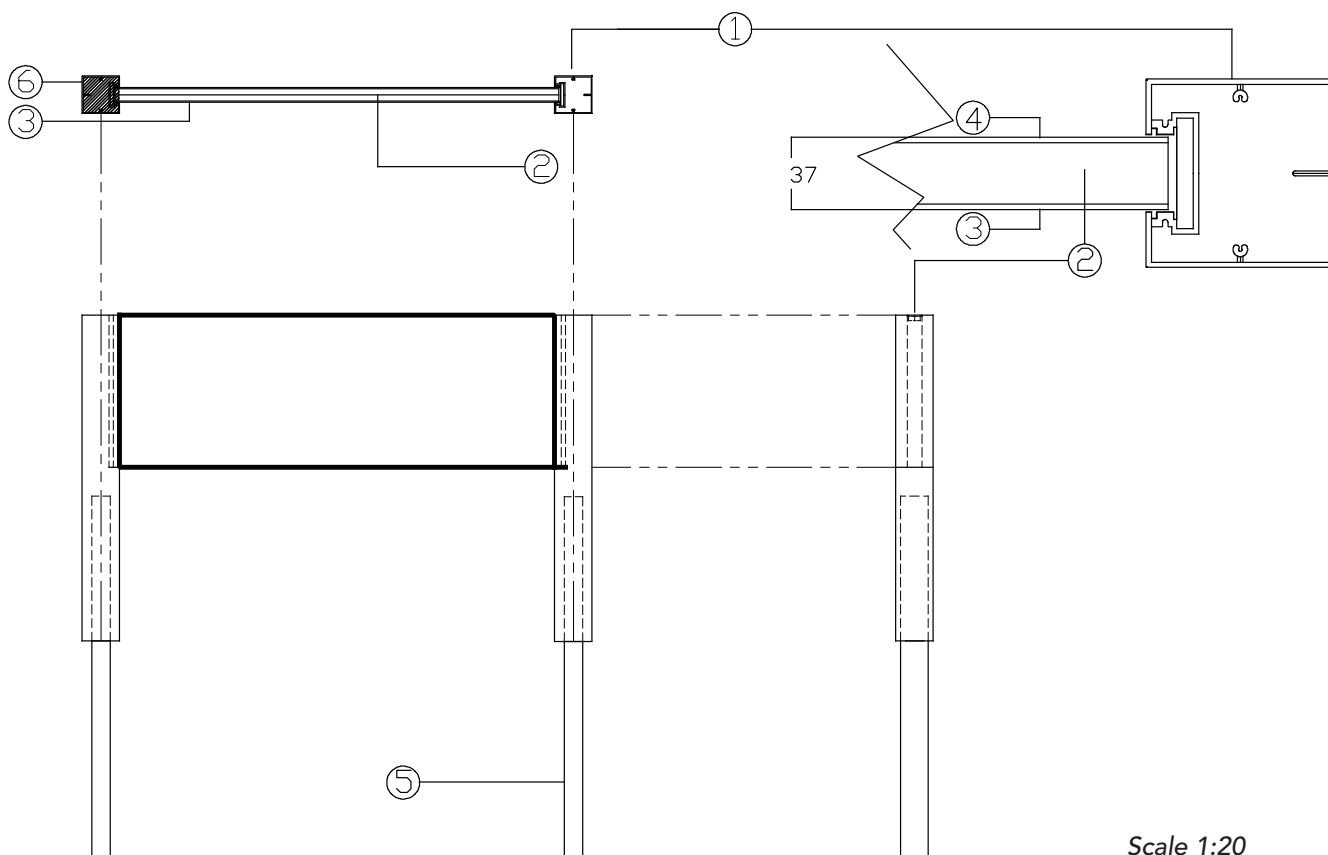
Symbols colours:
Blue: PMS 301
Yellow: PMS 136
Red: PMS 186
Black
White
Text: White

Track Head sign 1200x420mm - sign type D



All measurements are in millimetres

Track Head sign 1200x420mm - sign type D



Scale 1:20

1 - Aluminium Modular Post:
104x104mm Aluminium modular posts.
50mm slot.
2 pack paint. Dulux 'Bluestone Rock'.
Posts supplied with all hardware
including slot infill strip and screws.

**2 - Modular Aluminium
Panel Rail:**
Aluminium panel rail top & bottom of
the sign. Natural anodised aluminium.

3 - Aluminium Sign:
3mm aluminium sign. Full colour digital
print with Armsign Polycure coating.

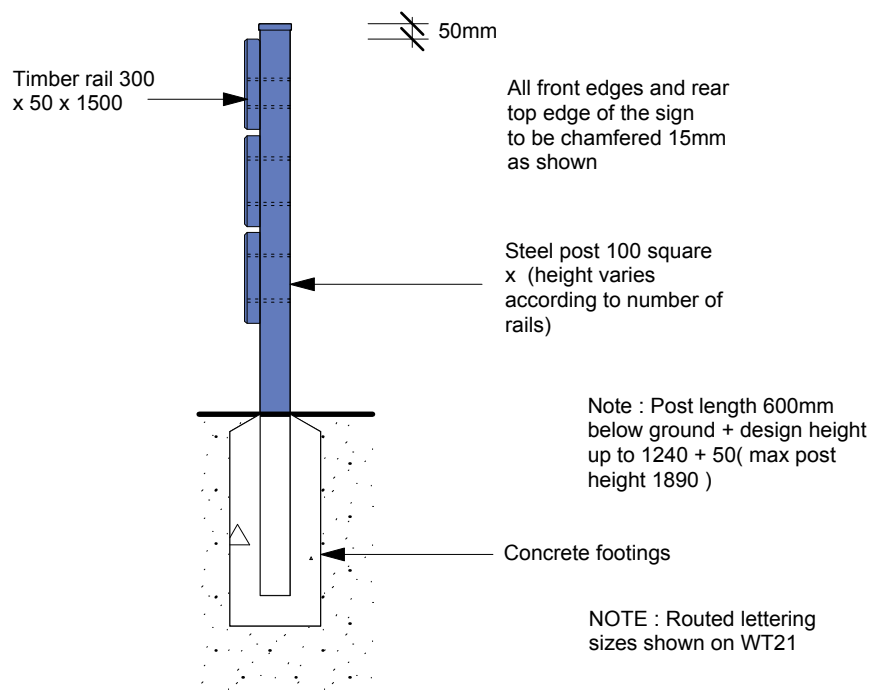
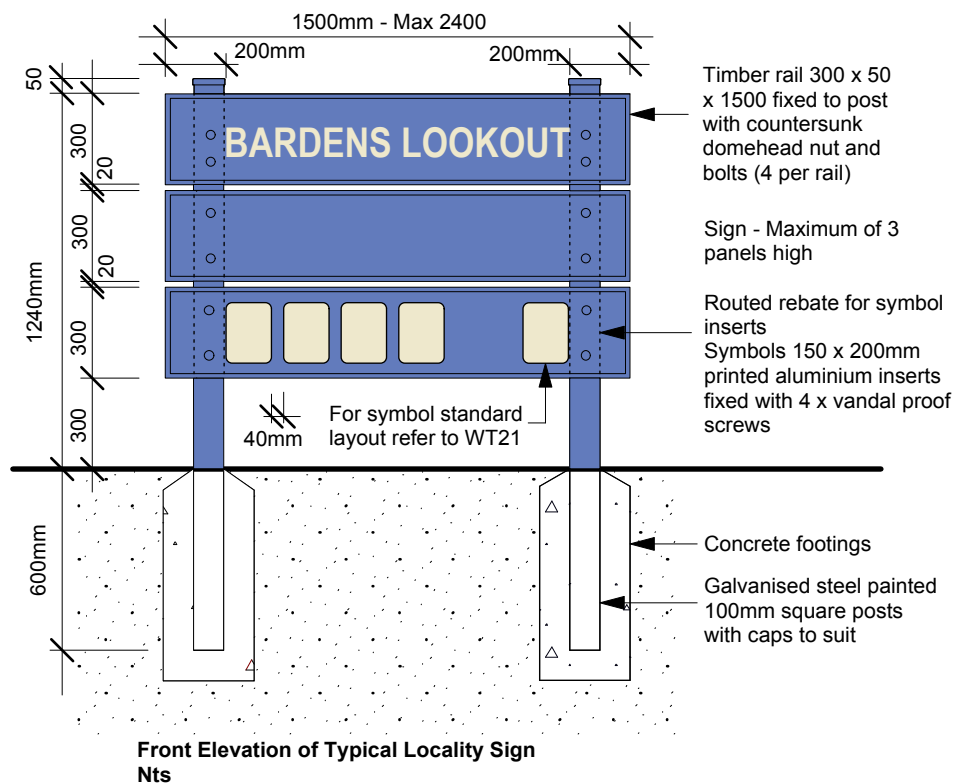
4 - Backing Panel:
3mm backing panel painted, 2 pack
Dulux 'Bluestone Rock'. 30mm thick
poly styrene insert between sign and
backing panel.

5 - Steel Post:
75x50x1000mm SHS galvanised steel
post. Minimum 600mm secured in the
ground with concrete footing.

6 - Aluminium Top Cap:
Aluminium top cap painted 2 pack
Dulux 'Bluestone Rock'.

NATURAL AREA SIGNAGE

Length of sign determined by largest writing + 200mm each end



ROUTED LOCALITY SIGN

NS5



Location:

At localities such as car parks, picnic areas, parks and other major visitor nodes

Principles:

- * Locate at road or car park entry in safe and clearly visible location
- * All relevant user information shall be displayed by symbols

Materials:

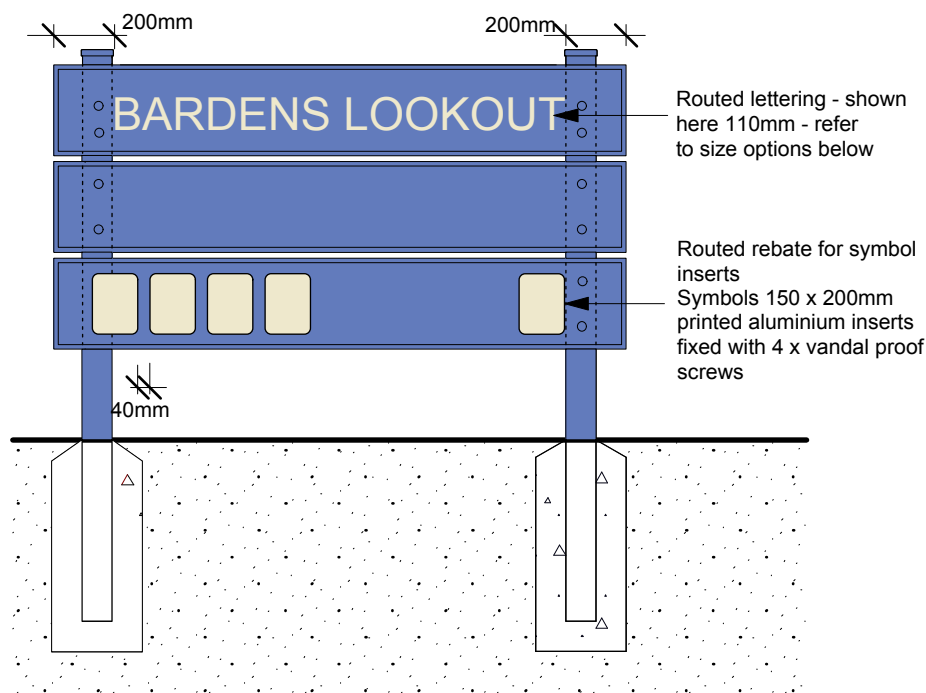
All timber D.A.R.
Finger jointed pine rails 300 x 50mm x Variable up to max. 2400mm (Max sign length 2400mm)
Steel Posts 100 x 100 x Varies
Steel cap
Symbols 150 x 200mm printed aluminium inserts fixed with vandal proof screws (4 to each insert)
Galvanised dome head nut and bolt 10mm diam. (4 per rail)
Concrete for footings - 20Mpa

Paint :

Prime using oil based undercoat such as Dulux "Preplock"® or equivalent
Paint Type Dulux - "Weathershield"® or equivalent.
Main Body Colour :
Dulux "Bluestone Rock"® - 94080
Routed Lettering Colour :
"Oyster"

NATURAL AREA SIGNAGE

Length of sign determined by largest writing + 200mm each end



Front Elevation of Typical Locality Sign
Nts

Symbol Sequence & Placement

- * Symbols should be placed left to right in the following order
- * White on blue permitted activities occur first with the primary activity of the locality placed first followed in order of priority
- * Black on yellow warning signs are placed second in order of priority
- * Red on black and white prohibition symbols are placed third in order of priority
- * The Council symbol and phone number is right justified

Symbol Sequence & Placement

Finished sizes of routing available :

- * 40mm
- * 60mm
- * 70mm
- * 110mm
- * 125mm
- * 170mm

LETTERING & SYMBOLS FOR ROUTED SIGNS

NS6



Location:

Routed signs

Principles:

- * Lettering to be sized suitable to be legible relating to the distance and speed of viewing i.e. pedestrian or motor vehicle
- * Symbols to follow standard order and be placed in a logical sequence

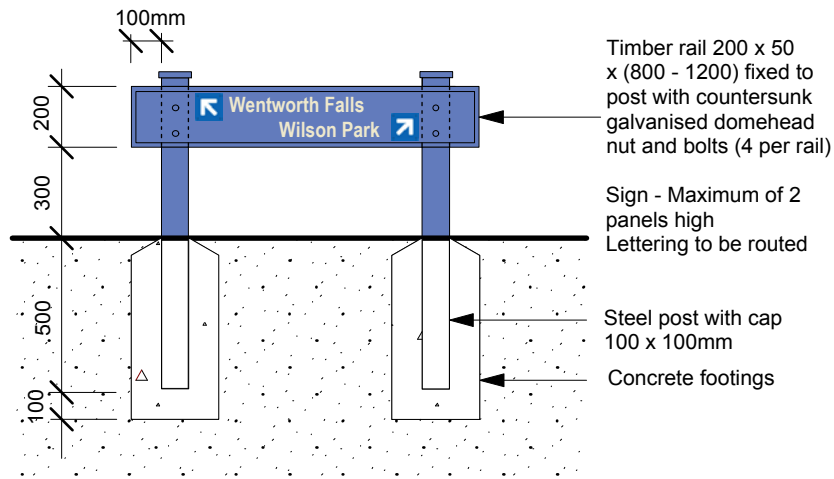
Materials:

Symbols 150 x 200mm printed aluminium inserts

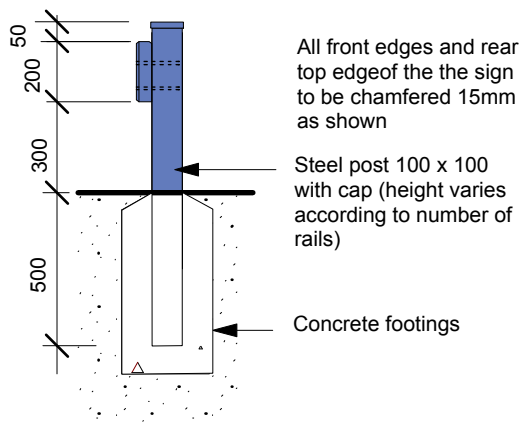
Blue symbols to be standard blue "Trish's Blue 5a"

Font - routed lettering is applied in the standard font - Arial

NATURAL AREA SIGNAGE



**Front Elevation of Directional Sign
Nts**



**Front Elevation of Totem Post
Nts**

DIRECTIONAL NS7 SIGNAGE



Location:

At path junctions and secondary entry points and along paths at strategic locations

Principles:

- * Locate in safe and clearly visible location
- * Ensure correct orientation for accuracy of sign

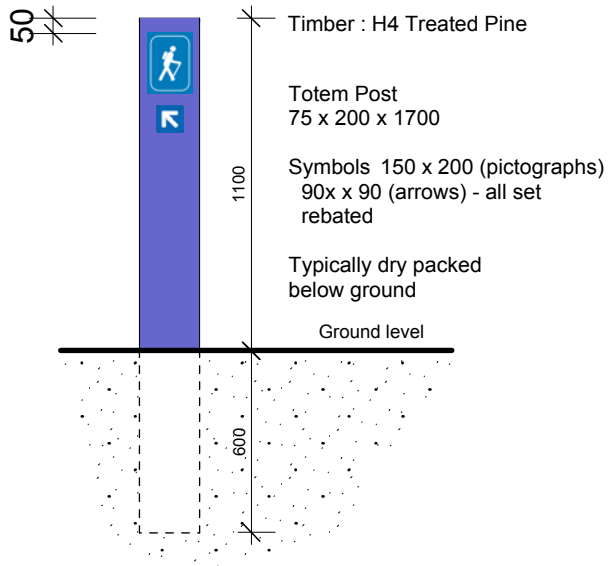
Materials:

Finger jointed pine rails
Directional Sign
Rail - 200 x 50 x 800mm (Max sign length 1200mm)
Post - 100 x 100 steel with cap
Galvanised dome head nut and bolt 10mm diam. (4 per rail)

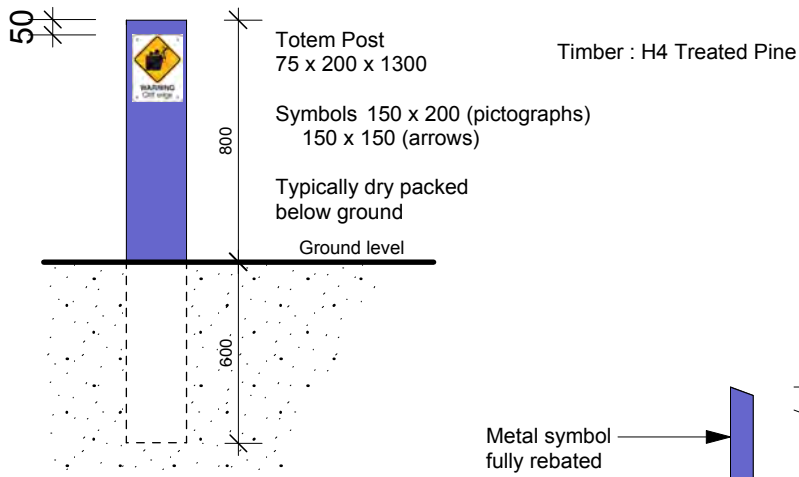
Concrete for footings - 20 Mpa

Paint :
Prime using oil based undercoat such as Dulux "Preplock"© or equivalent
Paint Type Dulux -"Weathershield"© or equivalent.
Main Body Colour:
Dulux : "Bluestone Rock"©94080
Routed Lettering Colour:
"Oyster"

NATURAL AREA SIGNAGE

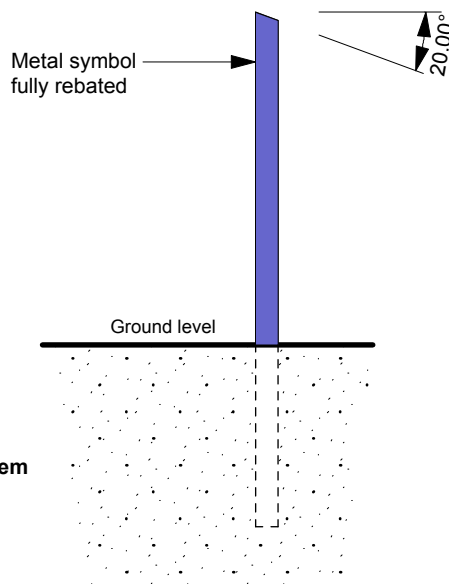


Front Elevation of Type A Totem
Nts



Front Elevation of Type B Totem
Nts

Side Elevation of Type A Totem
Nts

TIMBER
TOTEM
TYPE A & B

NS8



Location:

At track junctions and secondary entry points and along tracks at strategic locations

Principles:

- * Locate at track entry in safe and clearly visible location
- * Ensure correct orientation for accuracy of totem

Materials:

All timber D.A.R.
Treated pine H4
(Max totem length 1700mm)
Totem 1100 or 800 out of ground
600 buried - usually dry packed
with option to use concrete footing
if required
Concrete for footings - 20Mpa
Symbols 150 x 200mm printed
aluminium inserts fixed with vandal
proof screws (4 to each insert)

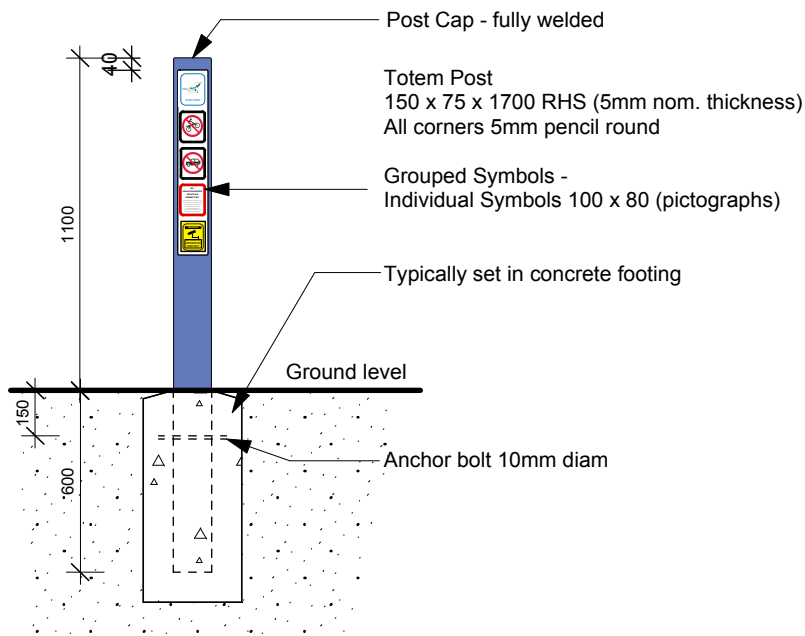
Paint :

Prime using oil based undercoat
such as Dulux "Preplock"® or
equivalent
Paint Type Dulux - "Weathershield"®
or equivalent.

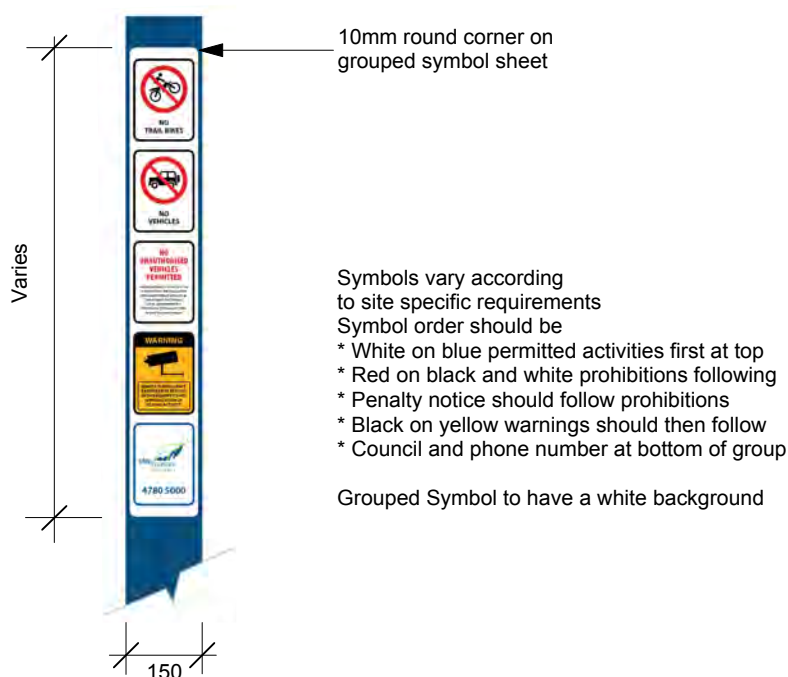
Main Body Colour :

Dulux "Bluestone Rock"® - 94080
Routed Lettering Colour :
"Oyster"

NATURAL AREA SIGNAGE



Front Elevation of Steel Totem
Nts



Detail Elevation of Typical Grouped Symbols
Nts

STEEL TOTEM TYPE C

NS9



Location:

At track junctions and secondary entry points and along tracks at strategic locations

Principles:

- * Locate at track entry in safe and clearly visible location
- * Ensure correct orientation for accuracy of totem

Materials:

Steel post 150 x 75 with steel cap fully welded, xxxfully hot dip galvanised
(Max totem length 1700mm)
600 buried - with concrete footing
Concrete for footings - 20Mpa
Grouped symbols printed on 1.6mm aluminium sheet
3M digitally printed non reflective with 1150 3M tedlar anti graffiti over laminate

Paint :

Prime using oil based undercoat such as Dulux "Preplock"© or equivalent
Paint Type Dulux -"Weathershield"© or equivalent.

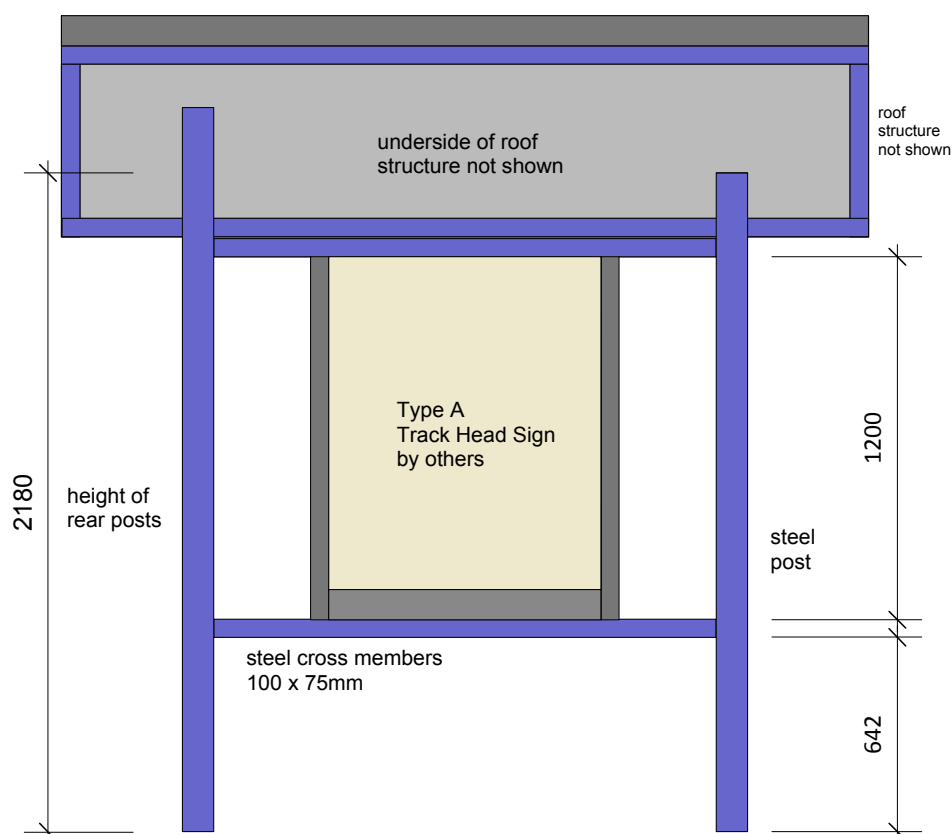
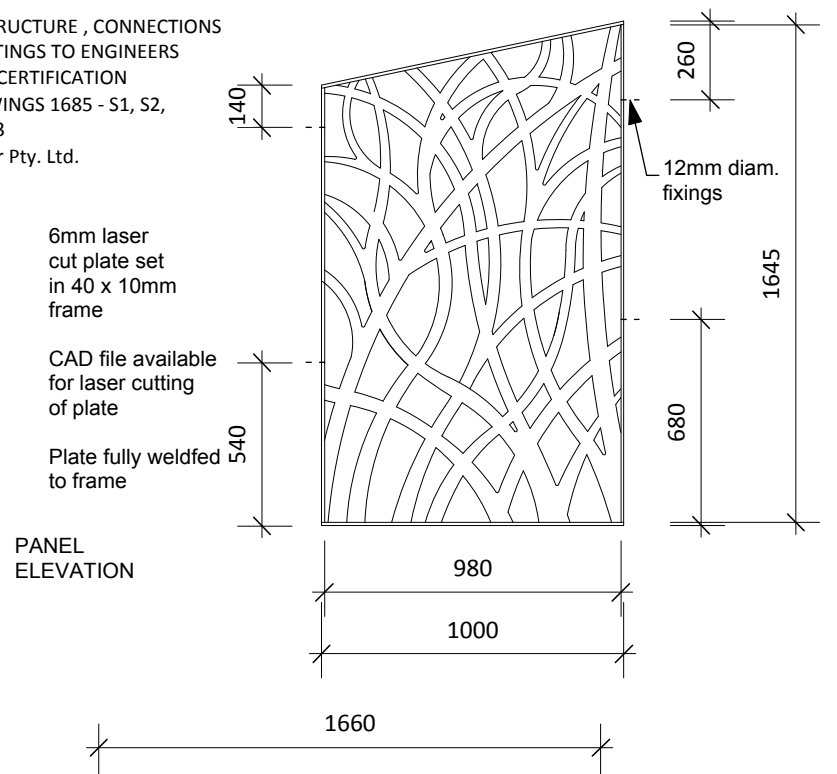
Main Body Colour :

Dulux "Bluestone Rock" - 94080

Alternate Option Main Body Colour
Dulux powdercoat colour "Estate"

NATURAL AREA SIGNAGE

NOTE : STRUCTURE , CONNECTIONS
AND FOOTINGS TO ENGINEERS
DETAIL & CERTIFICATION
SEE DRAWINGS 1685 - S1, S2,
N1, N2, N3
C.G. Hilder Pty. Ltd.

SHELTER
SIGNNS10
Sheet 1

Location:

At major visitor nodes or localities
such as Katoomba Falls
Reserve entry points & main tourist
trackheads

Principles:

Essential Content

* Type A Sign - refer to Sheet NS1

Options

* Side panel can be mounted on
the left or right in relation to sight
specific considerations

Materials:

Steel frame : Refer to Engineers
Drawings - C.G. Hilder Pty Ltd
Dr No. 1685 - S1, S2, N1, N2, N3

Mounting : Posts set in concrete
footing. Refer to Engineers
Drawings - C.G. Hilder Pty Ltd
Dr No. 1685 - S1, S2, N1, N2, N3

Paint :

Posts and frame : Two pack system
in finished in Dulux "Bluestone Rock"
with manufacturers preparation,
primers and undercoats

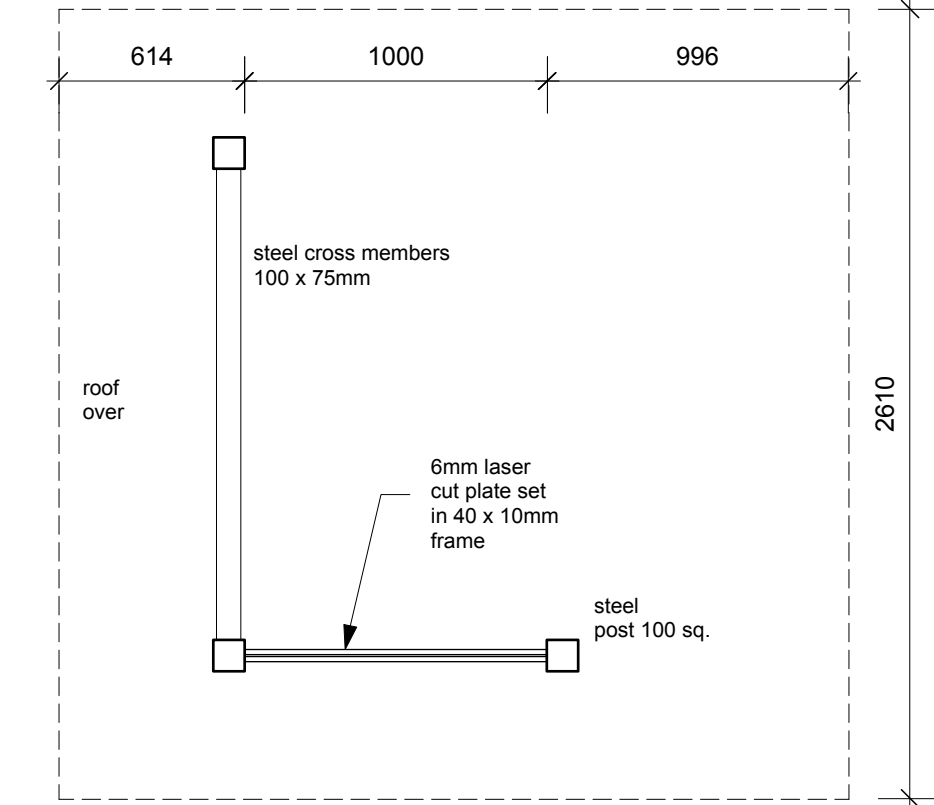
Side Panel : Two pack system
finished in Gloss Black with
manufacturers preparation, primers
and undercoats

Roof sheeting and flashing
: "Colorbond" Woodland Grey

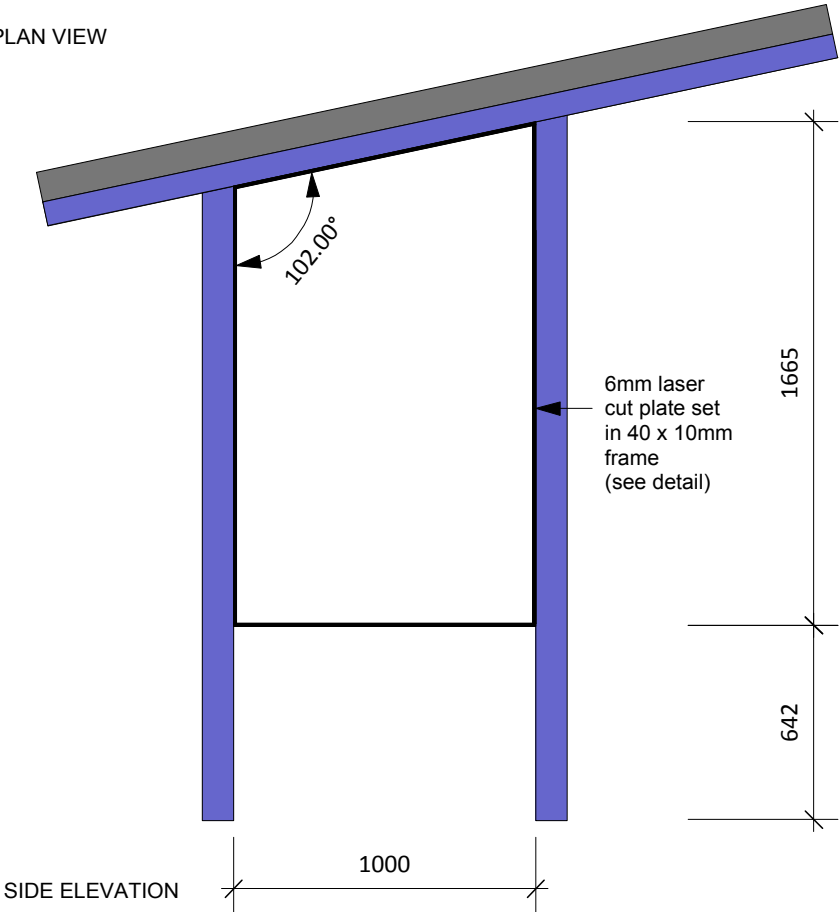
NATURAL AREA SIGNAGE

SHELTER
SIGN

NS10
Sheet 2



PLAN VIEW



SIDE ELEVATION