MAITLAND CITY COUNCIL STANDARD DRAWINGS

THIS DOCUMENT

To be read in conjunction with:

- Maitland City Council's 'Manual of Engineering Standards'
- Relevant Australian Standards
- Austroads guidelines
- Roads & Maritime Services supplements

- Any copy of these documents is uncontrolled. Check the revision date of each sheet against the document held on Maitland City Council's website for currency
- Copyright in this document belongs to Maitland City Council.

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

SD001	FOOTPATH ALLOCATIONS FOR SERVICES & ACCESS
SD002	FOOTWAY PROFILE - NEW SUBDIVISIONS
SD003	TYPICAL CROSS SECTION - RURAL RESIDENTIAL ROADS - NEW SUBDIVISIONS
SD004	STANDARD KERB PROFILES
SD007	FOOTWAY DRIVEWAY CROSSING - GENERAL ARRANGEMENT
SD008	DRIVEWAY PROFILES - RECOMMENDED MAXIMUM GRADES
SD009	DRIVEWAY LOCATIONS - OBSTACLES & OFFSETS
SD010	DRIVEWAYS & KERB LAYBACKS - CONSTRUCTION DETAILS
SD012	DRIVEWAY, FOOTPATH & CYCLEWAY CONSTRUCTION DETAILS
SD013	RURAL DRIVEWAYS - PIPED CROSSING
SD014-15	KERB CROSSINGS
SD019/1	FOOTPATH & KERB RAMP LOCATIONS AT INTERSECTION
SD019/2	KERB RAMPS
SD020	SHARED FOOTPATH / CYCLEWAY SIGNAGE
SD023	BUS STOP FACILITIES - RURAL & URBAN SITES WITH & WITHOUT SHELTERS
SD025/1	CONCRETE ACCESSES & THRESHOLDS
SD025/2	CONCRETE ACCESSES & THRESHOLDS - JOINTS & LAYOUTS
SD025/3	CONCRETE ACCESSES & THRESHOLDS - JOINT DETAILS
SD025/4	CONCRETE ACCESSES & THRESHOLDS - JOINT DETAILS
SD026	CONCRETE DISH CROSSINGS AT INTERSECTIONS
SD027	CUL-DE-SAC OPTIONS
SD029	STREET NAME SIGN POSTING
SD031	MINIMUM INTERSECTION TREATMENT FOR HIGH/HEAVY TRAFFIC GENERATING DEVELOPMENTS
SD032	PAVEMENT WIDENING TO NEW KERB & GUTTER
SD034	SILT TRAP & SWALE FOR UNSEALED HARDSTANDS
SD035	SUB-SOIL DRAINAGE
SD036	KERB STORMWATER OUTLETS & KERB ADAPTOR
SD037	FOOTWAY FLOWPATH
SD038	FLOOD WARNING SIGNAGE
SD039/1	GRATED GULLY PITS WITH EXTENDED KERB INLETS
SD039/2	GRATED GULLY PITS WITH EXTENDED KERB INLETS
SD040	SURFACE INLET PIT
SD043	INTER ALLOTMENT DRAINAGE PIT
SD045	HEADWALL SCOUR PROTECTION - TYPICAL TREATMENT
SD046	DRAINAGE SWALE
SD047	BIORETENTION SYSTEM (PLANTING BED)
SD048	WETLAND SPECIES LIST
SD049	STREET TREE PLANTING - TYPICAL TREATMENT
SD050	CONSTRUCTED WETLAND (WITH DETENTION)
SD052/1	ON-SITE STORMWATER DETENTION PIT
SD052/2	ON-SITE STORMWATER DETENTION TANK & DISPOSAL TRENCH
SD052/3	ON-SITE STORMWATER DISPOSAL TRENCH
SD057	FENCING
SD058/1	STANDARD ACCESS GATE - GENERAL ARRANGEMENT
SF058/2	STANDARD ACCESS GATE - COMPONENTS

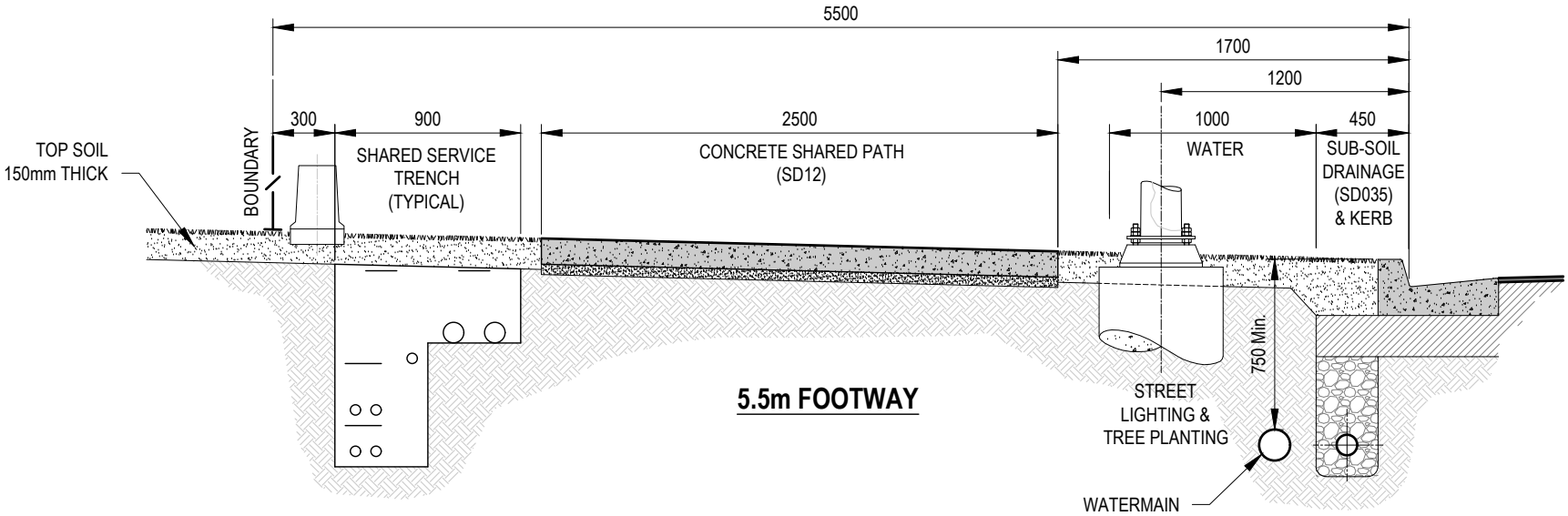
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

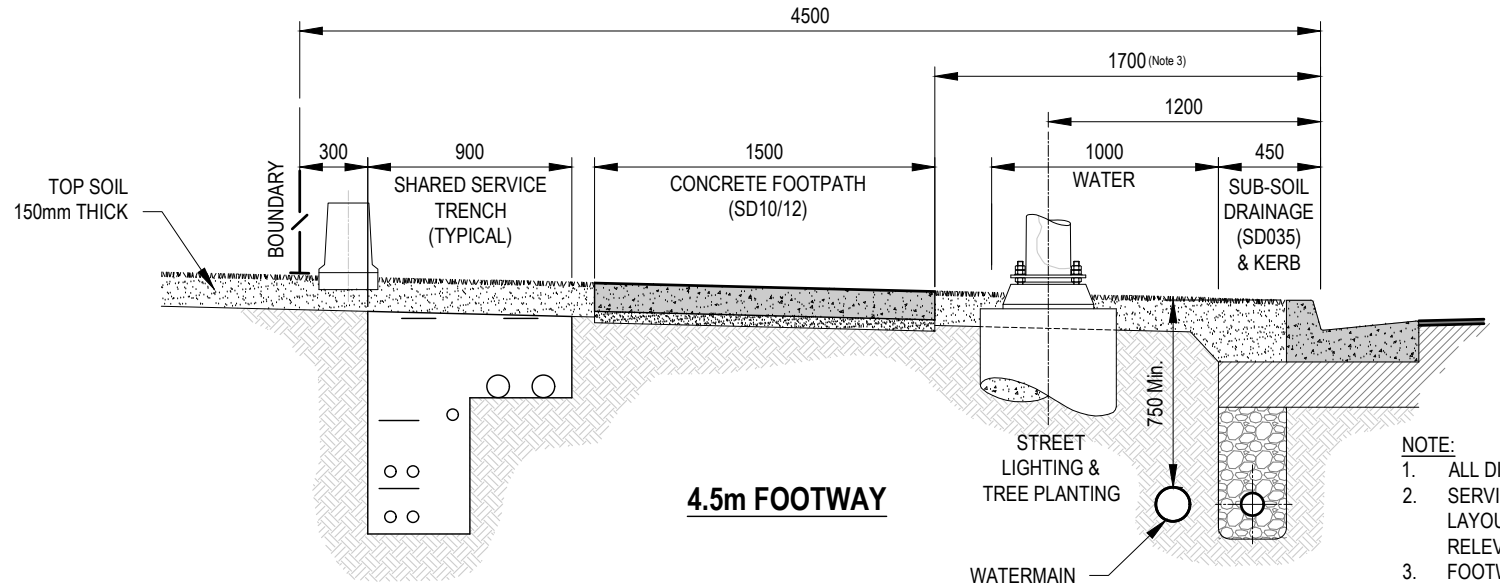
MAITLAND CITY COUNCIL - STANDARD DRAWINGS
INDEX OF DRAWINGS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 23/07/2019

SD000





NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. SERVICE ENCROACHMENTS & VARIATIONS TO THIS LAYOUT SHALL BE REPORTED TO COUNCIL & THE RELEVANT SERVICE AUTHORITY.
3. FOOTWAY BETWEEN KERB & FOOTPATH TO BE FULLY TURFED

maitland city council
infrastructure & works

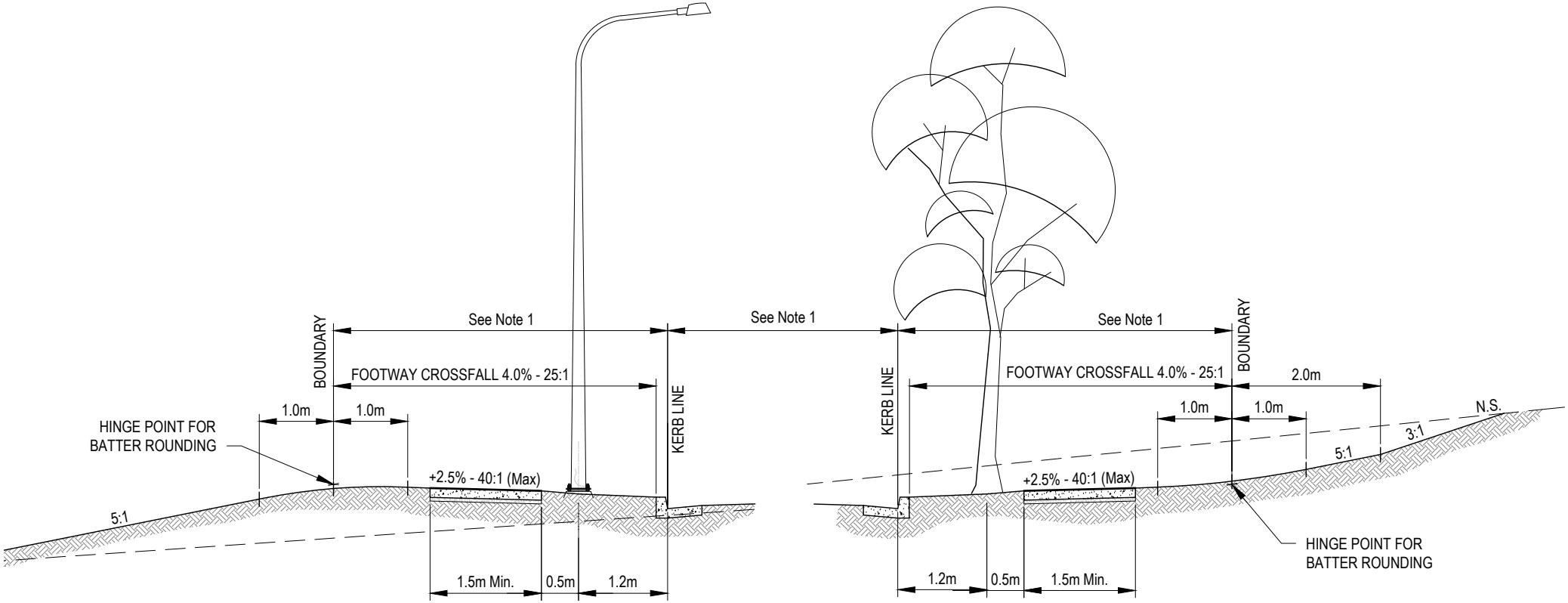
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

FOOTPATH ALLOCATIONS FOR SERVICES & ACCESS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 08/04/2019

SD001



FOOTWAY ON FILL

FOOTWAY IN CUT

NOTE:

1. FOR CARRIAGEWAY, FOOTWAY & FOOTPATH WIDTHS SEE ROAD DESIGN SECTION OF "MANUAL OF ENGINEERING STANDARDS"
2. TYPICAL CROSSFALL ON CARRIAGEWAY TO BE -3% FROM CENTRELINE
3. TYPICAL CROSSFALL ON FOOTWAY TO BE +4.0% (25:1) FROM TOP OF KERB TO BOUNDARY
4. FOR PUBLIC UTILITY ALLOCATIONS IN FOOTWAYS SEE SD001
5. FOOTPATH WARRANT - SEE ROAD DESIGN SECTION OF "MANUAL OF ENGINEERING STANDARDS" MINIMUM FOOTPATH WIDTH 1.5m, CROSSFALL TO BE +2.5% MAXIMUM WITH DESIGN TO SD012 & SD019
6. TREES TO COUNCIL'S "STREET TREE SELECTION GUIDE" OR AS APPROVED - PLANTING IN ACCORDANCE WITH SD049

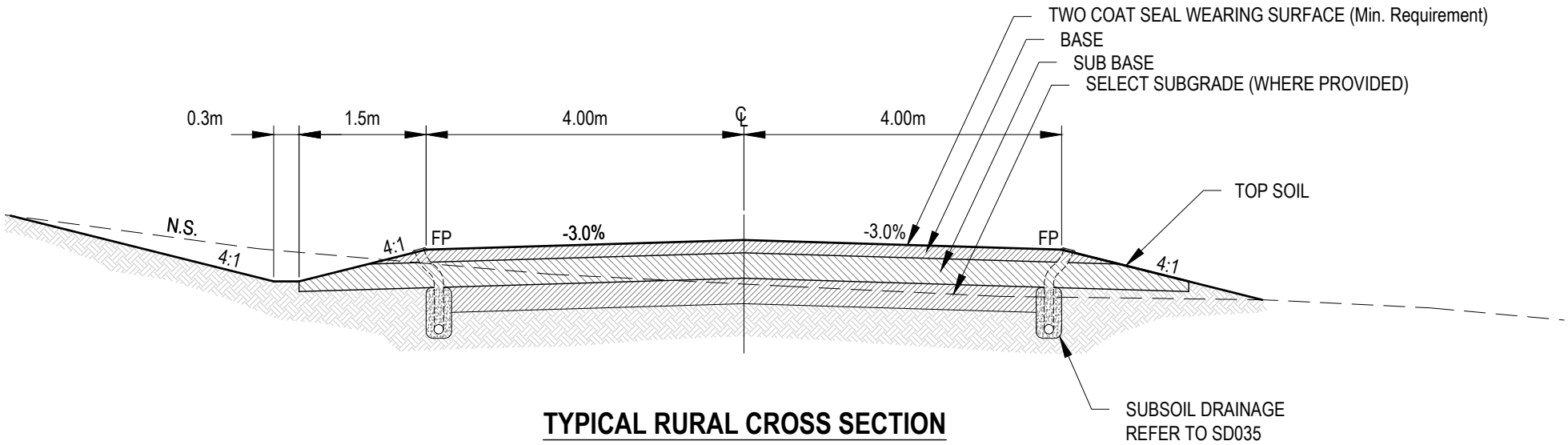
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

FOOTWAY PROFILE
NEW SUBDIVISIONS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 08/04/2019

SD002



TYPICAL RURAL CROSS SECTION

NOTE:

1. EROSION & SEDIMENTATION CONTROL MEASURES ARE TO BE IMPLEMENTED ON TABLE DRAINS, BATTER SLOPES & ANY AREAS DISTURBED DURING CONSTRUCTION IN ACCORDANCE WITH THE "BLUE BOOK" & COUNCIL'S "MANUAL OF ENGINEERING STANDARDS". APPROPRIATE MEASURES SHALL BE IMPLEMENTED FOR BOTH CONSTRUCTION & POST CONSTRUCTION PERIODS.
   TYPICALLY, TABLE DRAINS ARE TO BE PROTECTED WITH TURF, SEED IMPREGNATED JUTE MESH OR OTHER MEASURES APPROVED BY COUNCIL. ALL DISTURBED AREAS ARE TO BE TOPSOIL & SEEDED.
2. DRIVEWAYS SHALL CONFORM TO SD013.
3. FOR ALTERNATIVE WEARING SURFACE TREATMENTS REFER TO COUNCIL'S "MANUAL OF ENGINEERING STANDARDS".
4. FOR SUBSOIL DRAINAGE REFER TO ARRB "UNSEALED ROAD MANUAL".

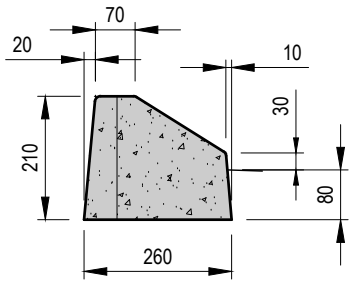
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

TYPICAL CROSS SECTION
RURAL RESIDENTIAL ROADS - NEW SUBDIVISIONS

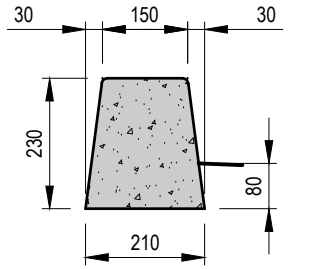
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

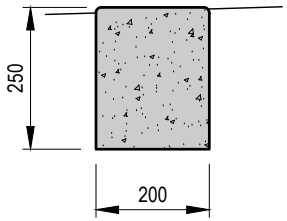
SD003



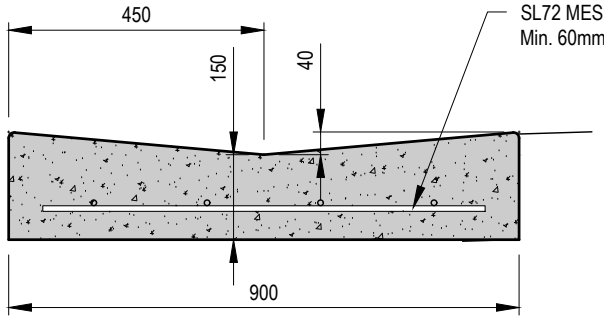
MOUNTABLE KERB
(SF)



KERB ONLY or BARRIER KERB
(SM)



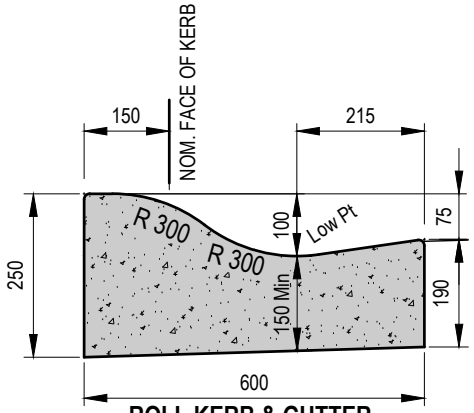
EDGE RESTRAINT
(KS)



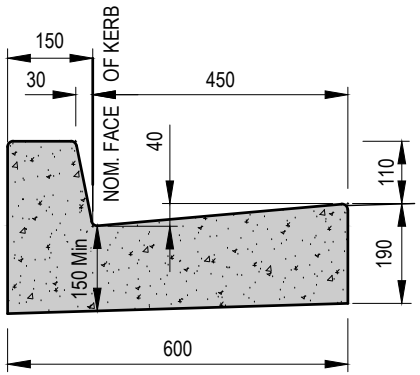
DISH GUTTER
(MODIFIED SB)

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES
2. CONCRETE TO BE 32 MPa UNLESS OTHERWISE SPECIFIED
3. ALL EXPOSED CORNERS RADII 10mm UNLESS SPECIFIED OTHERWISE
4. MINIMUM THICKNESS OF CONCRETE TO BE 150mm



ROLL KERB & GUTTER
(MODIFIED RT)



STANDARD KERB & GUTTER
(MODIFIED SA)

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

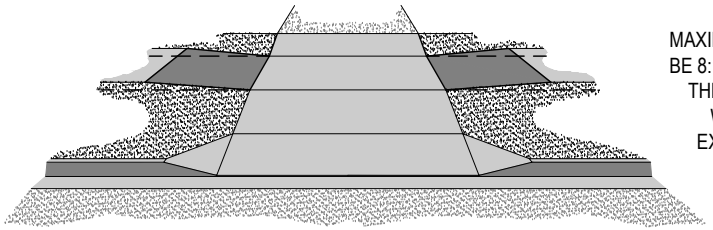
STANDARD KERB PROFILES

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

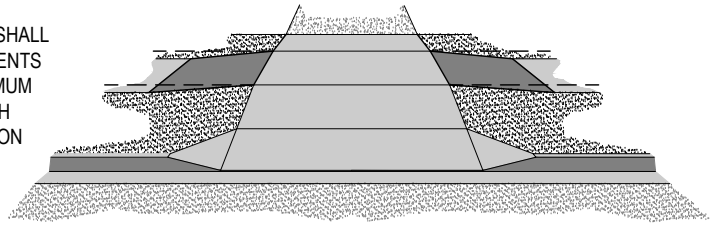
Rev: 23/07/2019

SD004

SHEET 01 of 01



FOOTPATH GRADES MAY BE ADJUSTED TO ACHIEVE COMPLIANT DRIVEWAY GRADES.
MAXIMUM GRADE FOR CONNECTING RAMPS SHALL BE 8:1 FOR 1.5m OR 14:1 FOR LONGER ADJUSTMENTS
THE FOOTPATH IS TO REPLACED WITH A MINIMUM WIDTH OF 1.5m. COLOUR & FINISH TO MATCH EXISTING FOOTPATH. MAXIMUM CROSSFALL ON FOOTPATH SECTION IS 2.5%

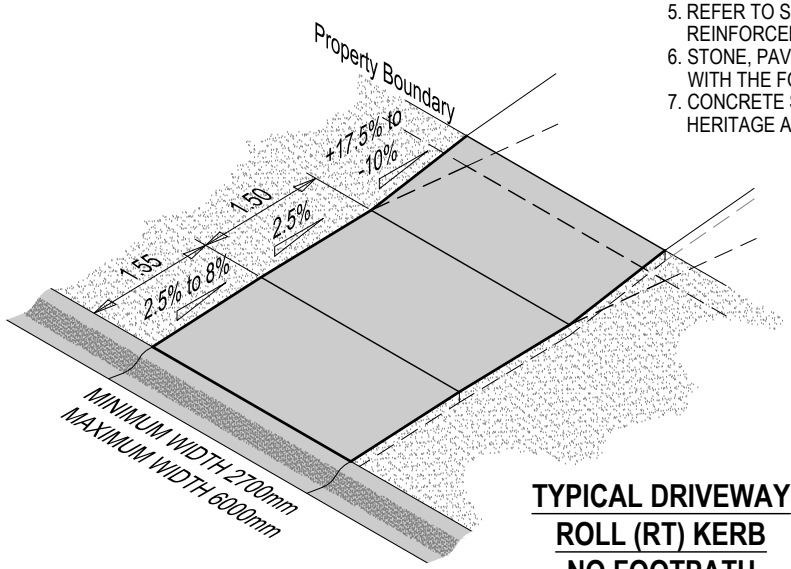


LOW LEVEL FOOTPATH CROSSING

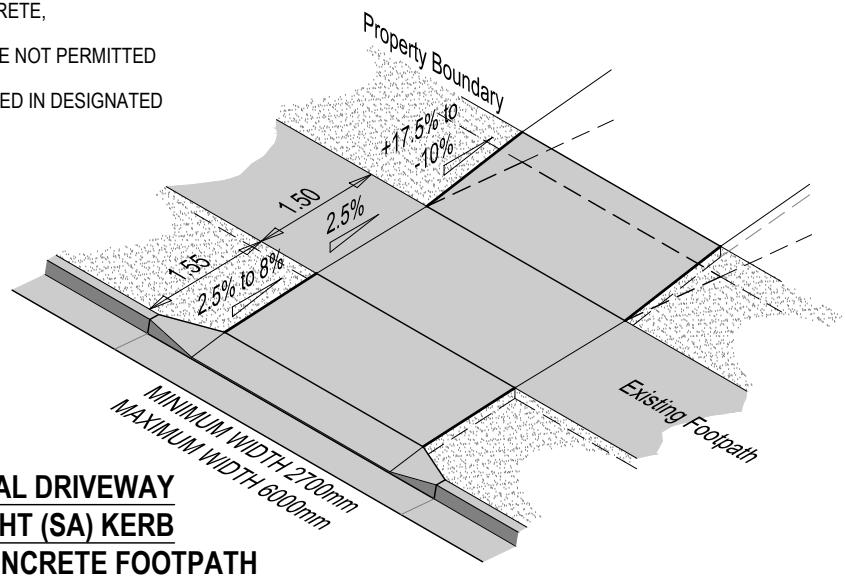
HIGH LEVEL FOOTPATH CROSSING

NOTE:

1. MINIMUM WIDTH OF THE FOOTPATH SHALL BE 1.50m IRRESPECTIVE OF EXISTING FOOTPATH WIDTHS.
2. ALL FINISHED SURFACE LEVELS OF THE FOOTWAY CROSSING SHALL PROVIDE SATISFACTORY VEHICULAR ACCESS TO AS2890.1 OR BETTER. THIS SHALL BE AT ALL POINTS OF THE FOOTWAY CROSSING PROFILE FROM THE KERB SIDE LANE TO BEYOND THE PROPERTY BOUNDARY.
3. FINISHED SURFACE LEVELS SHALL COMPLY TO SD008.
4. VARIATIONS TO THESE STANDARDS WILL REQUIRE INSPECTION & ACCEPTANCE BY COUNCIL'S APPROVING OFFICER.
5. REFER TO SD010 AND SD012 FOR LAYBACK, CONCRETE, REINFORCEMENT & SUB-BASE DETAILS.
6. STONE, PAVER OR FLAG DRIVEWAY SURFACES ARE NOT PERMITTED WITH THE FOOTWAY AREA.
7. CONCRETE STRIP DRIVEWAYS ARE ONLY PERMITTED IN DESIGNATED HERITAGE AREAS



TYPICAL DRIVEWAY
ROLL (RT) KERB
NO FOOTPATH



TYPICAL DRIVEWAY
UPRIGHT (SA) KERB
EXISTING CONCRETE FOOTPATH

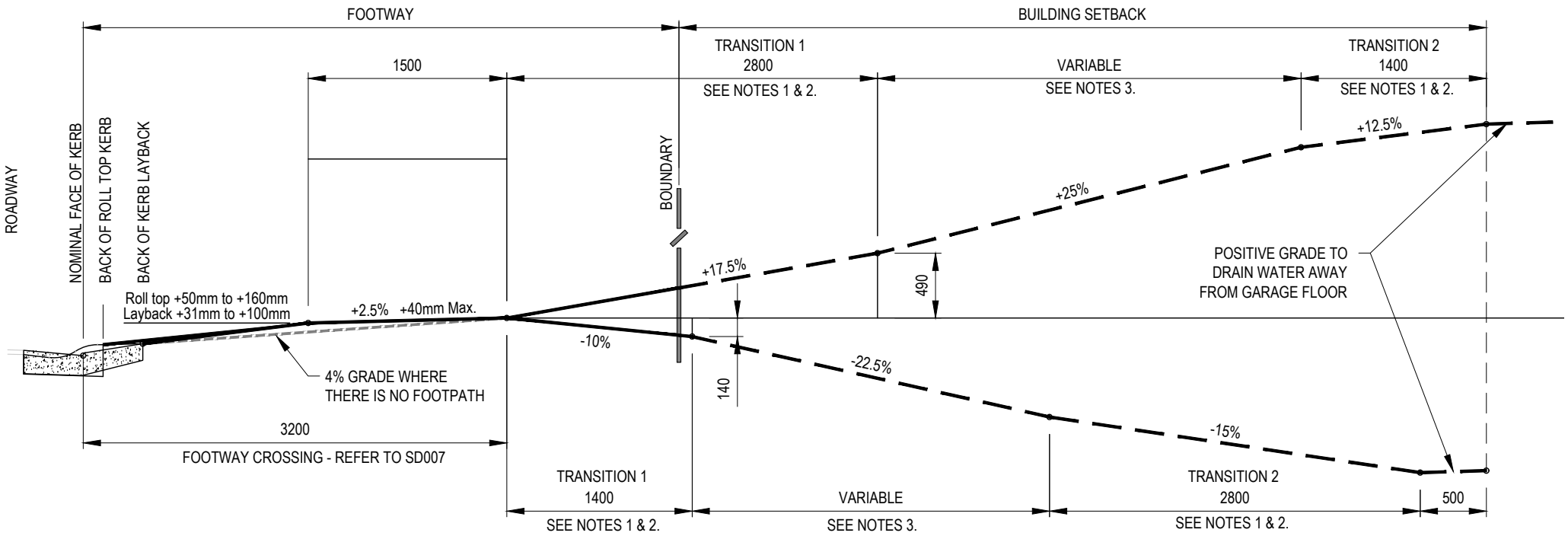
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

FOOTWAY DRIVEWAY CROSSINGS GENERAL ARRANGEMENT

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 23/07/2019

SD007



LONGITUDINAL SECTION

NOTE:

1. CONFORMS TO AS2890.1-2004 GROUND CLEARANCE TEMPLATE FIGURE C1 B85 VEHICLE - MAXIMUM 2.8m WHEELBASE, MINIMUM 120mm GROUND CLEARANCE.
2. PROFILES WITH GRADES LESS THAN THE MAXIMUM MAY NOT REQUIRE TRANSITIONS OR MAY HAVE ALTERNATE TRANSITION TREATMENTS.
3. CHANGES OF GRADE BETWEEN SECTIONS SHALL NOT EXCEED 15% IN SAGS OR 12.5% OVER CRESTS.
4. MINIMUM LENGTH OF TRANSITION SHALL BE 2.8m FOR A POSITIVE CHANGE IN GRADE AND 1.4m FOR A NEGATIVE CHANGE IN GRADE.
5. MAXIMUM GRADE SHALL BE 25% (1 in 4) WITHIN THE PROPERTY.
6. FOR APPROVAL, DESIGN PROFILES SHALL SHOW EXISTING & FINISHED SURFACE LEVELS AT KERB, AT CHANGES OF GRADE & AT GARAGE FLOOR OR PARKING AREA.
7. PROFILE TO BE APPLIED TO "WORST CASE" SIDE OF DRIVEWAY BEING SIDE WITH SHORTEST LENGTH, AND/OR GREATEST HEIGHT DIFFERENCE BETWEEN KERB AND GARAGE FLOOR LEVEL

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

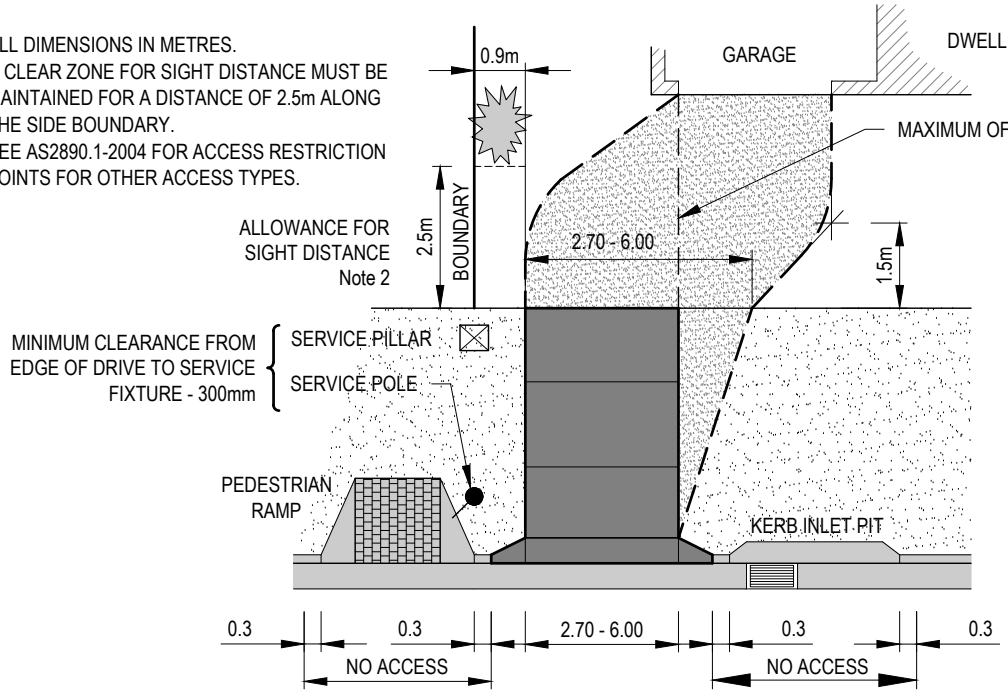
DRIVEWAY PROFILES
RECOMMENDED MAXIMUM GRADES

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

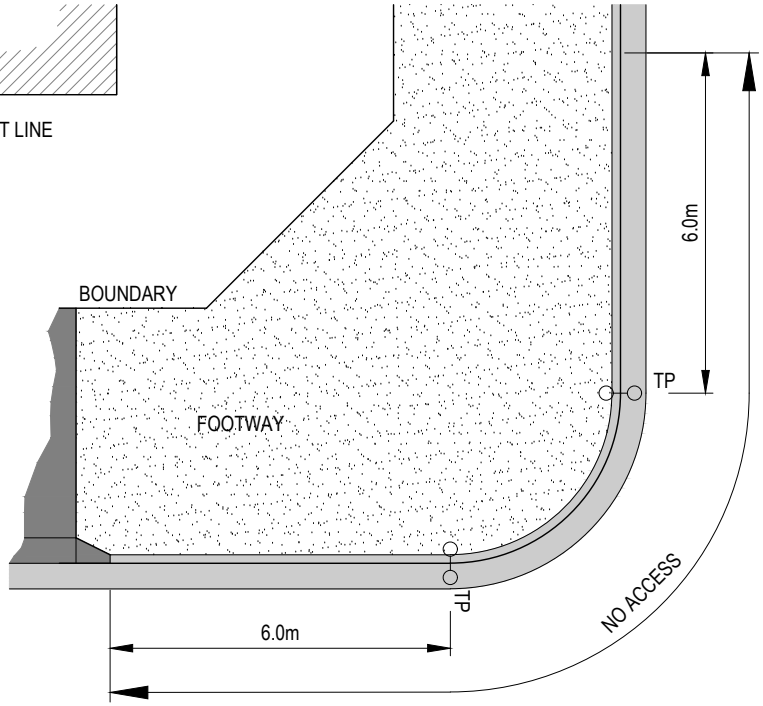
Rev: 08/04/2019
SD008
SHEET 01 of 01

NOTE:

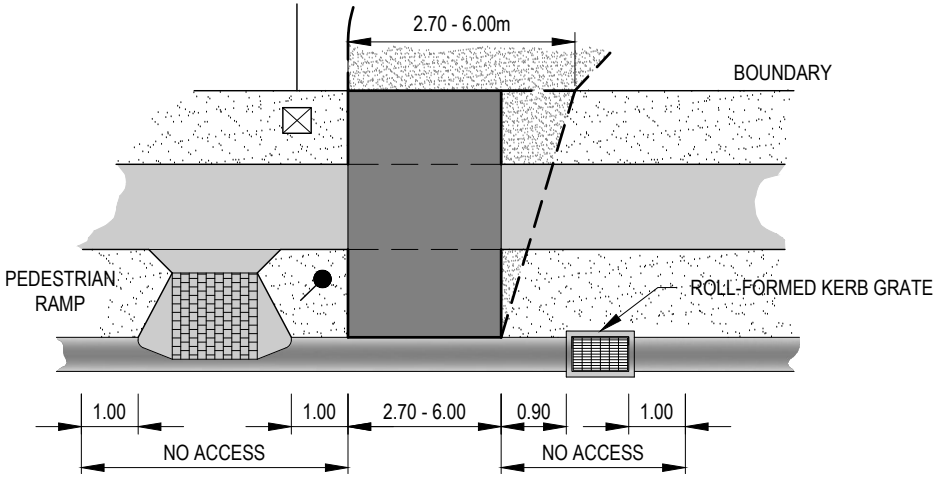
1. ALL DIMENSIONS IN METRES.
2. A CLEAR ZONE FOR SIGHT DISTANCE MUST BE MAINTAINED FOR A DISTANCE OF 2.5m ALONG THE SIDE BOUNDARY.
3. SEE AS2890.1-2004 FOR ACCESS RESTRICTION POINTS FOR OTHER ACCESS TYPES.



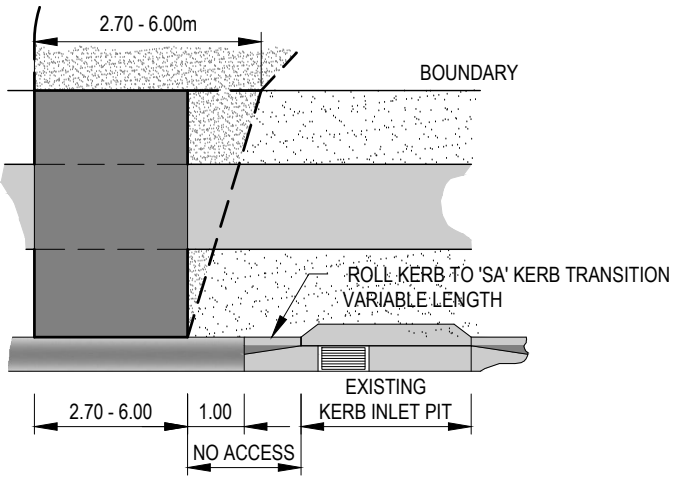
UPRIGHT 'SA' KERB



ACCESS RESTRICTION - INTERSECTIONS



ROLL 'RT' KERB WITH KERB GRATE



ROLL 'RT' KERB WITH 'SA' KERB INLET

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

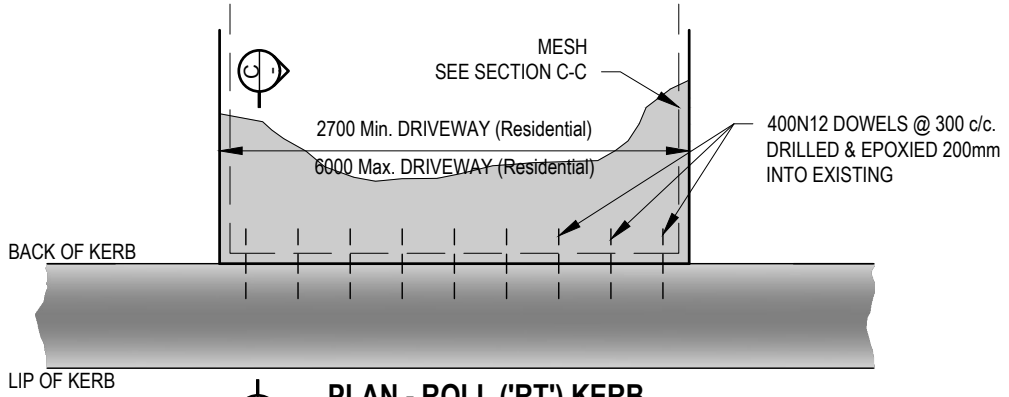
DRIVEWAY CLEARANCES OBSTACLES & OFFSETS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

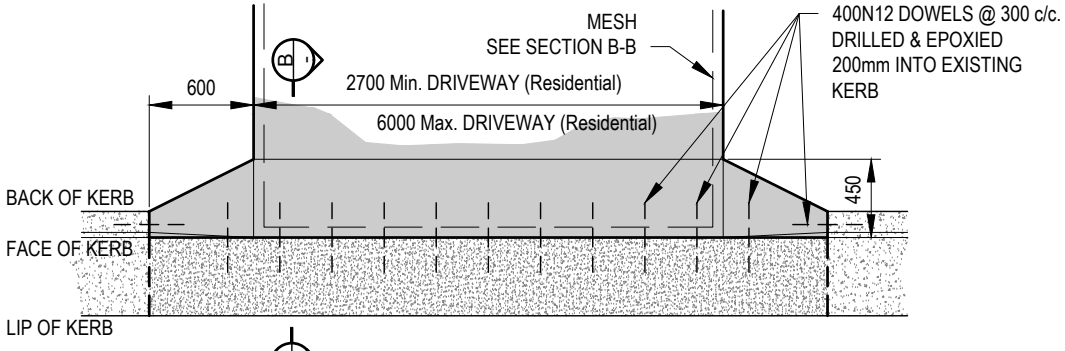
Rev: 22/07/2019

SD009

SHEET 01 of 01

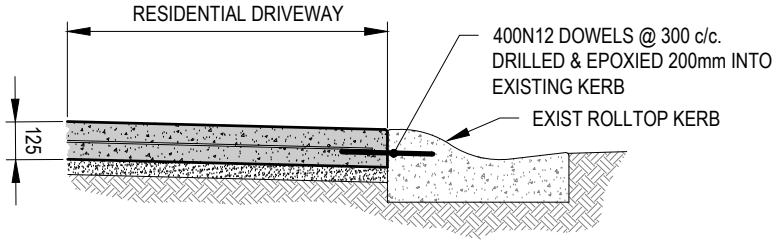


PLAN - ROLL ('RT') KERB
RESIDENTIAL ONLY

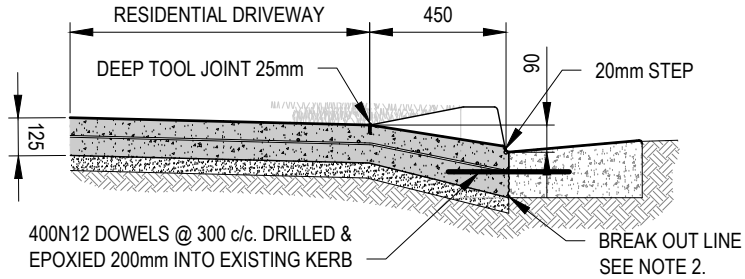


PLAN - UPRIGHT ('SA') KERB
FOR RESIDENTIAL AND COMMERCIAL

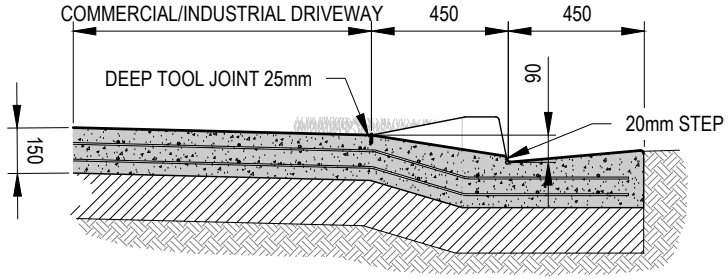
NOTE:
1. ALL DIMENSIONS IN MILLIMETRES
2. ALL CONCRETE TO BE 32MPa
3. SAWCUT BREAKOUT LINE TO MINIMUM DEPTH OF 75mm (NO MASTIC JOINTS PERMITTED).
4. PROVIDE FULL DEPTH EXPANSION JOINT AT BOUNDARY LINE.
5. FOR COMMERCIAL AND INDUSTRIAL ACCESSES - WIDTH AND LAYOUT ARE SIZED TO SUIT TURNING MOVEMENTS OF DESIGN VEHICLES.



SECTION C-C - ROLL ('RT') KERB
RESIDENTIAL



SECTION B-B - UPRIGHT ('SA') KERB
RESIDENTIAL



SECTION B-B - UPRIGHT ('SA') KERB
COMMERCIAL/INDUSTRIAL

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

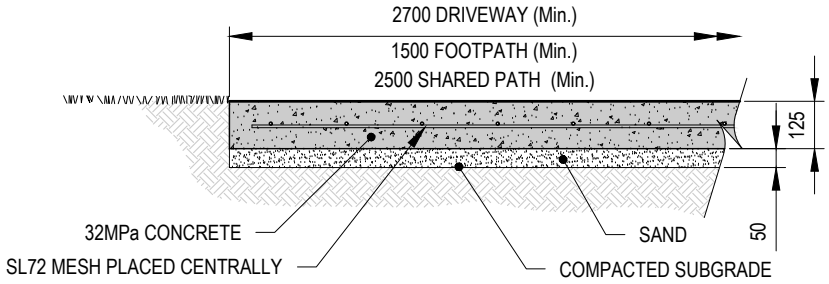
DRIVEWAYS AND KERB LAYBACKS CONSTRUCTION DETAILS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/19

SD010

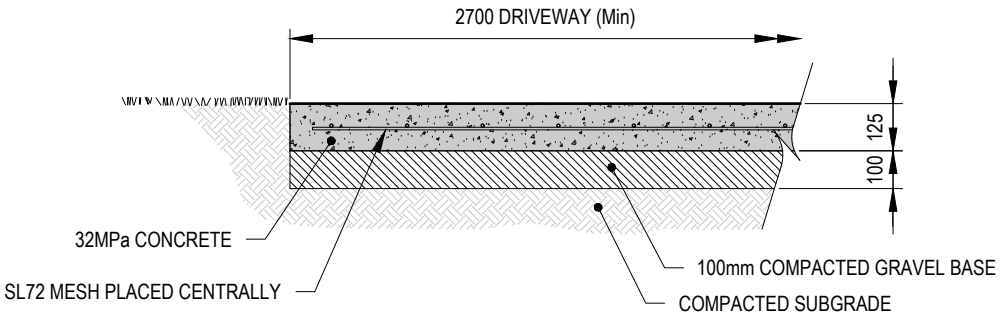
SHEET 01 of 01



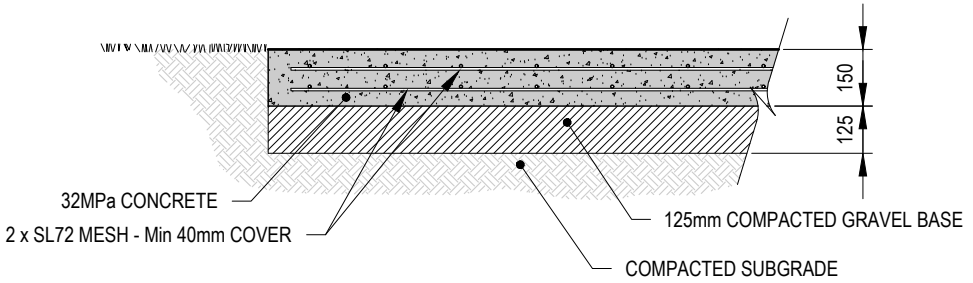
RESIDENTIAL DRIVEWAYS, CYCLEWAYS & FOOTPATHS

NOTE:

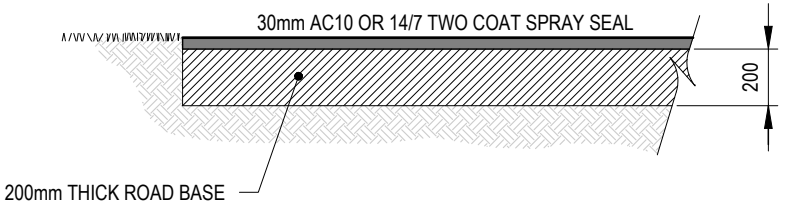
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PROVIDE TRANSVERSE EXPANSION JOINTS AT 8.0m INTERVALS WITH R12 DOWELS, 300mm LONG AT 300mm CENTRES. REFER TO SD025 SHEET3 - JOINT FILLER SHALL BE FULL DEPTH
3. PROVIDE TOOLED DUMMY JOINTS AT 2.0m INTERVALS FOR PAVEMENTS LESS THAN 2.0m WIDE AND AT 4.0m INTERVALS FOR PAVEMENTS UP TO 3.0m WIDE. CUT EVERY 2nd BAR AT JOINT
4. JOINTS WITH EXISTING CONCRETE FOOTPATHS TO BE DOWELLED WITH R12 DOWELS, 300mm LONG AT 300mm CENTRES.
5. ALL DISTURBED EARTH OR GRASSED AREAS TO BE TURFED.
6. FOOTPATH WIDTHS TO SD001.
7. LAYBACKS AND CONNECTIONS TO SD010.
8. RURAL DRIVEWAY TO SD013.
9. KERB RAMP CONNECTIONS TO SD019.
10. CYCLEWAY AND FOOTPATH FINISH TO BE "LIGHT BROOM".



SHARED DRIVEWAYS & ACCESSWAYS INCLUDING MAINTENANCE VEHICLE ACCESS



COMMERCIAL / INDUSTRIAL DRIVEWAY



RURAL DRIVEWAY

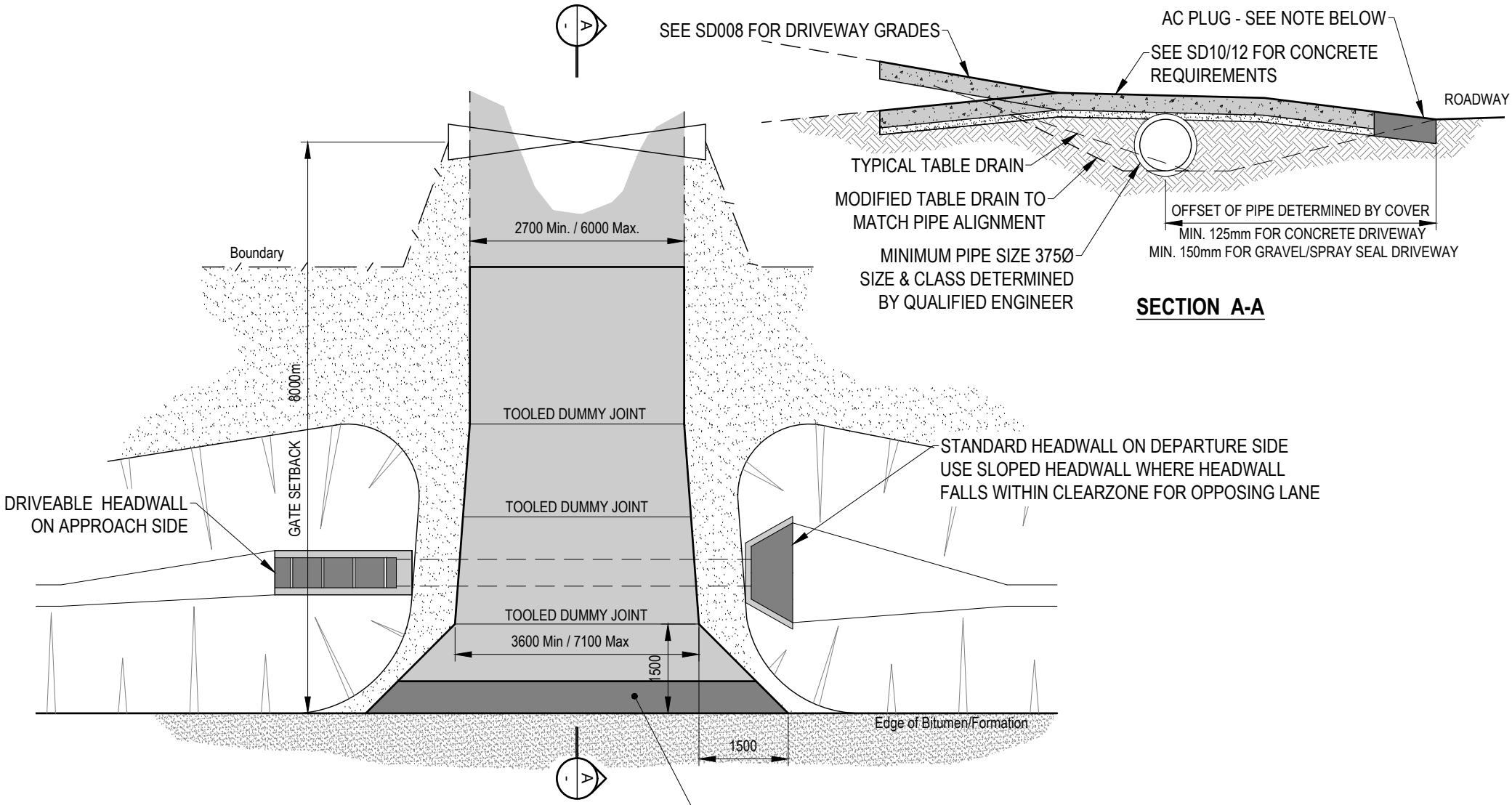
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

DRIVEWAYS, FOOTPATHS AND CYCLEWAY CONSTRUCTION DETAILS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/19

SD012



maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

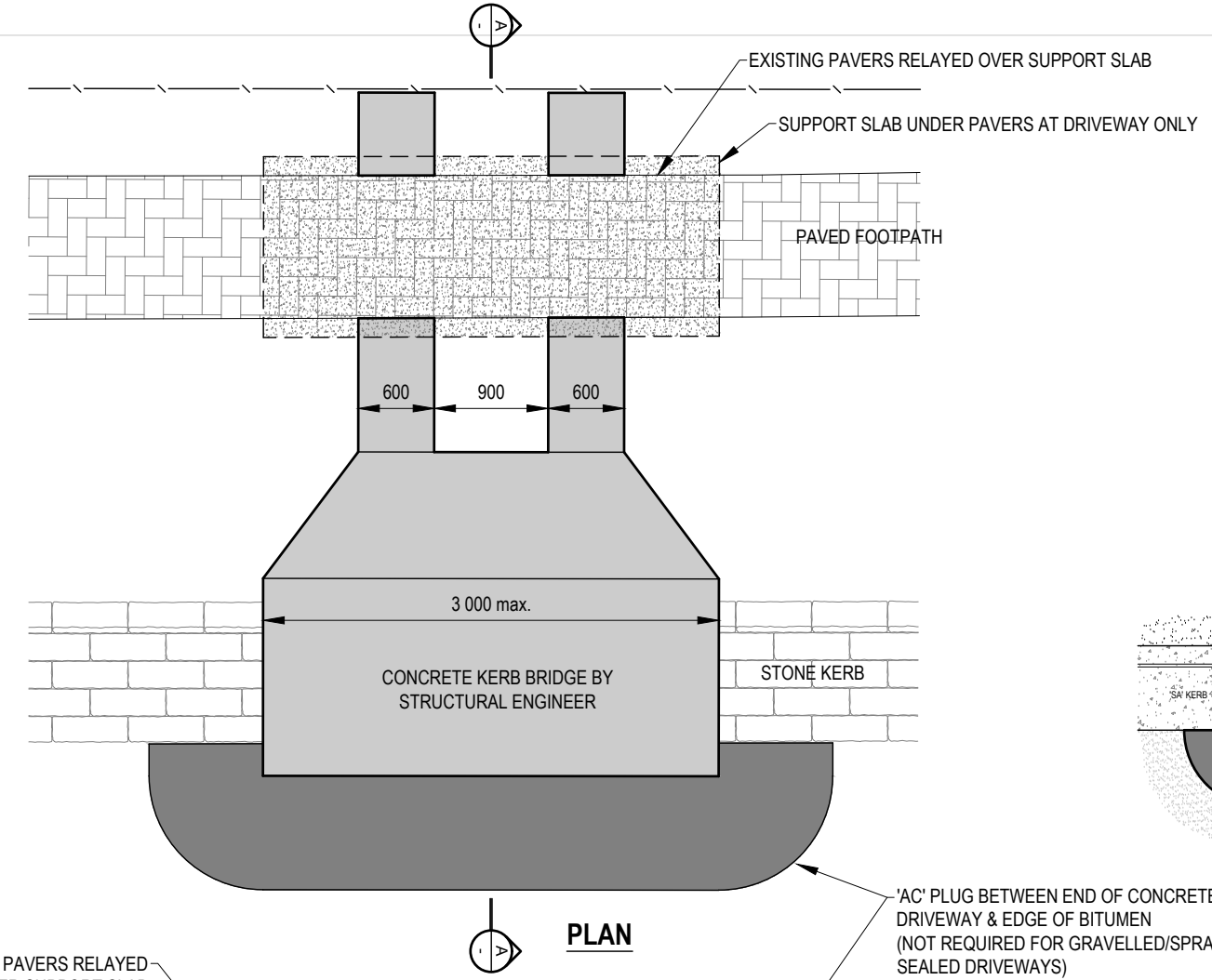
RURAL DRIVEWAYS
PIPED CROSSING

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 04/08/2019

SD013

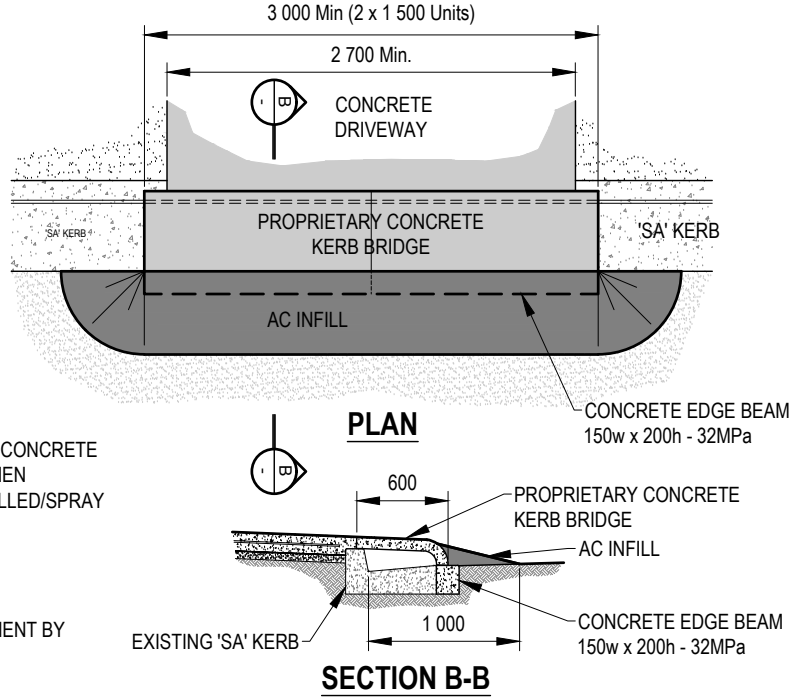
SHEET 01 of 01



TYPICAL KERB CROSSING FOR STONE KERBS IN HERITAGE AREAS

NOTE

1. EXISTING KERB STONES ARE NOT TO BE DISTURBED
2. FOR HERITAGE AREAS, ALL EXPOSED CONCRETE TO BE "MORPETH MIX"
3. ALL CONCRETE TO BE 32MPa
4. CONCRETE STRIPS & FOOTPATHS TO COMPLY TO SD010/12
5. ALL FORMWORK & DEBRIS TO BE CLEARED FROM WATERWAY AFTER COMPLETION



KERB CROSSING FOR UPRIGHT 'SA' KERBS

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

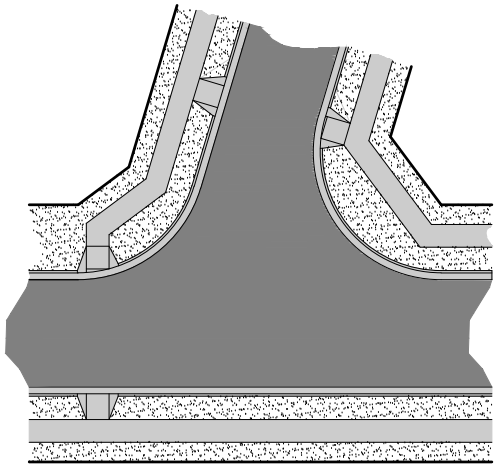
KERB CROSSINGS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

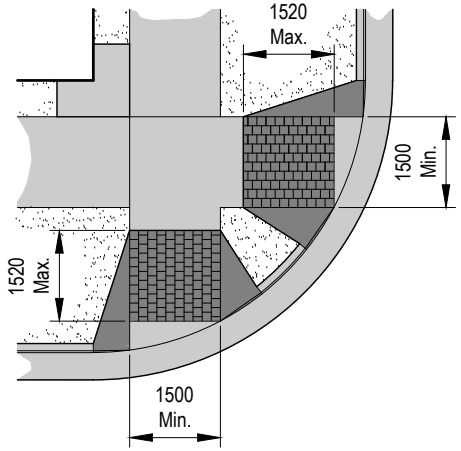
Rev: 08/04/2019

SD014/15

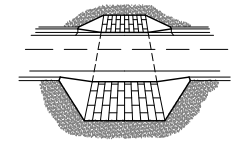
SHEET 01 of 01



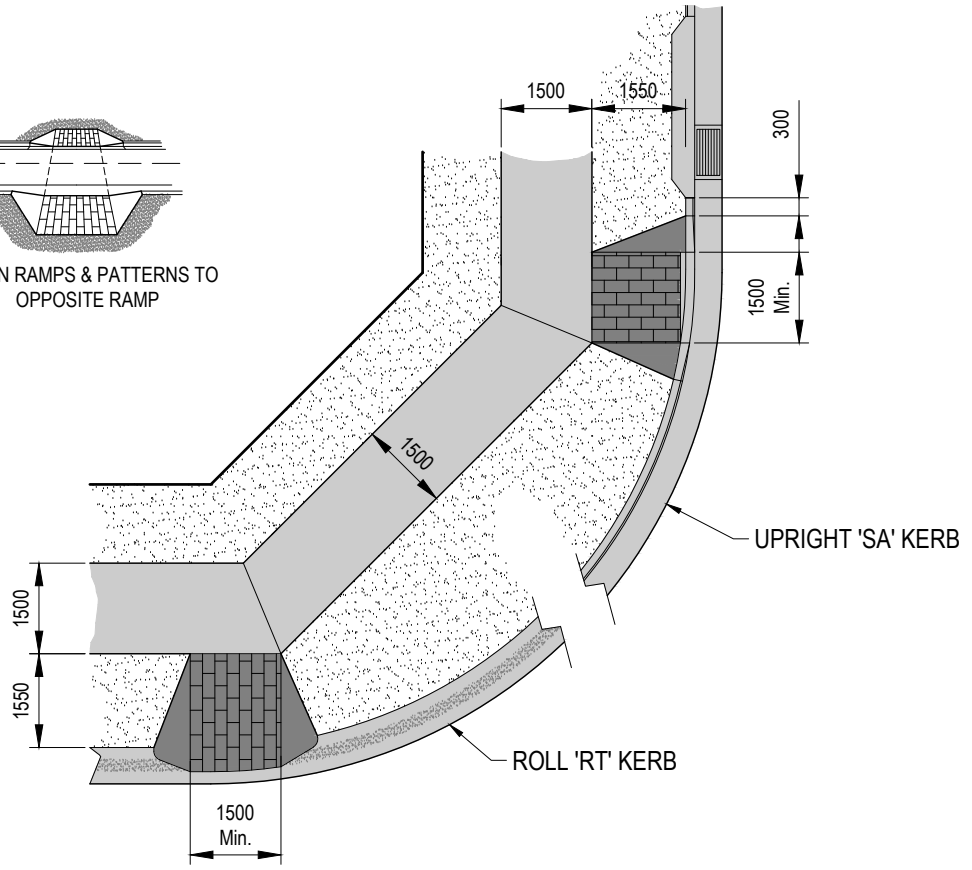
TYPICAL FOOTPATH TREATMENT AT INTERSECTIONS



RAMP & FOOTPATH LAYOUT EXISTING KERB RETURNS



ALIGN RAMPS & PATTERNS TO OPPOSITE RAMP



RAMP & FOOTPATH LAYOUT NEW WORKS

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

FOOTPATH & KERB RAMP LOCATIONS AT INTERSECTIONS

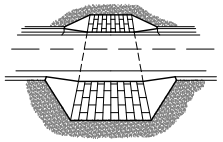
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/2019

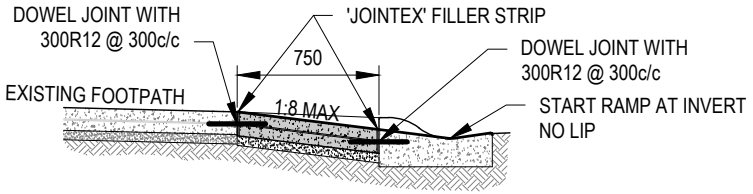
SD019

NOTE:

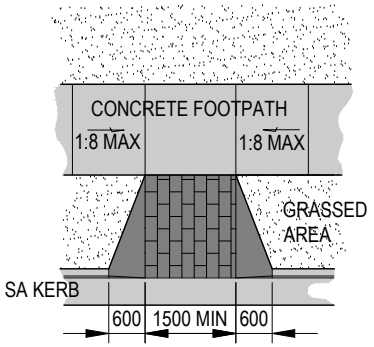
1. JOINTS TO EXISTING PAVEMENTS TO BE DOWELLED WITH 300R12 DOWELS @ 300c/c
2. ALL DISTURBED EARTH OR GRASSED AREAS TO BE TURFED
3. NEW SECTIONS OF FOOTPATH TO BE CONSTRUCTED IN ACCORDANCE WITH SD10/12



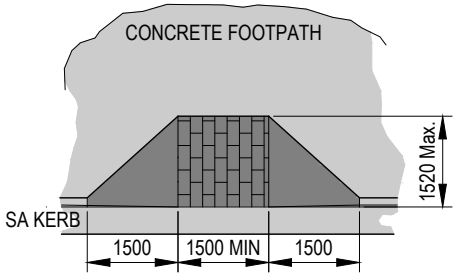
ALIGN RAMPS & PATTERNS TO OPPOSITE RAMP



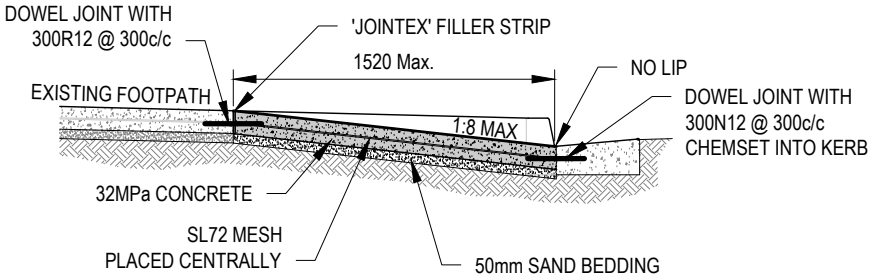
TYPICAL SECTION - ROLL 'RT' KERB



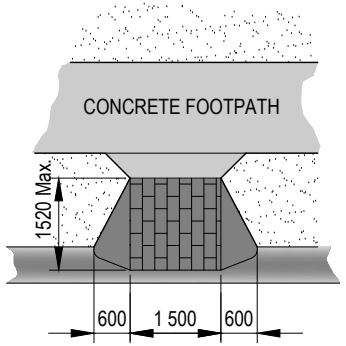
RAMP IN GRASSED FOOTWAY



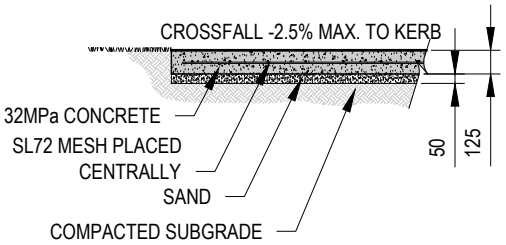
RAMP IN FULL CONCRETE FOOTWAY



TYPICAL SECTION - UPRIGHT 'SA' KERB



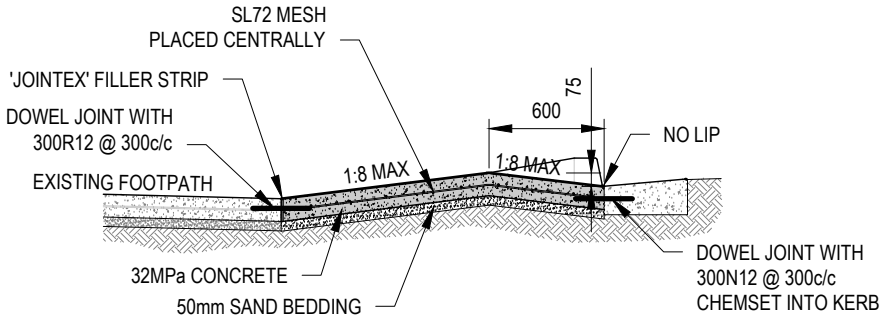
RAMP - ROLL 'RT' KERB



TYPICAL SECTION CYCLEWAYS & FOOTPATHS

FOR CONCRETE FOOTPATHS:

1. PROVIDE TRANSVERSE EXPANSION JOINTS EVERY 8.0m WITH 300R12 DOWELS @ 300 c/c
2. PROVIDE TOOLED DUMMY JOINTS EVERY 2.0m FOR PAVEMENT LESS THAN 2.0m WIDE & 4.0 m FOR PAVEMENTS OVER 2.0m WIDE
3. FINISH TO BE 'LIGHT BROOM'. BROOM OVER JOINTS



TYPICAL SECTION - LOW LEVEL FOOTPATH

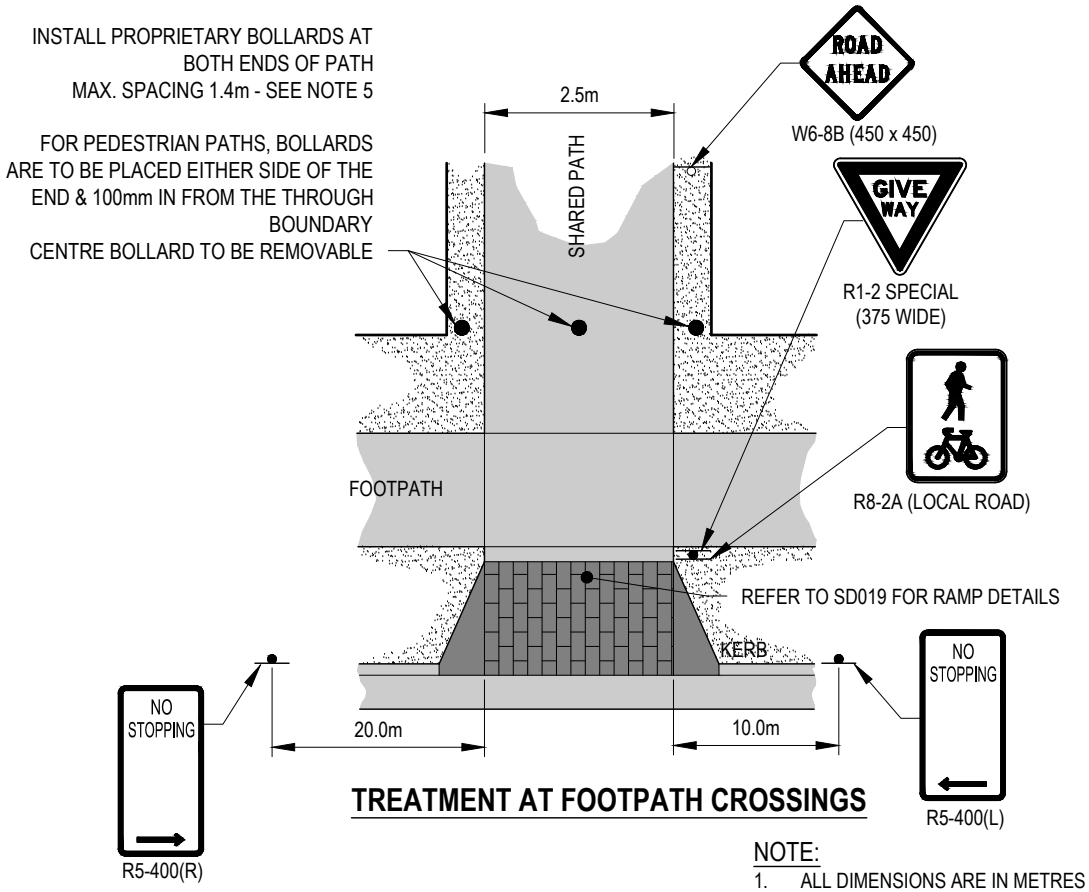
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

KERB RAMPS CONSTRUCTION DETAILS

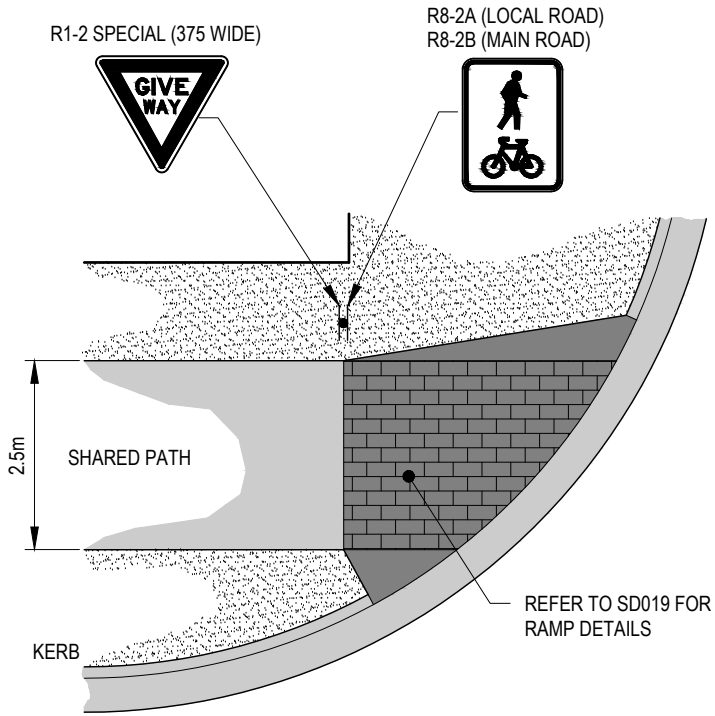
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev:08/04/2019

SD019



TREATMENT AT FOOTPATH CROSSINGS



TREATMENT AT INTERSECTIONS

NOTE:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. PAVEMENT MARKINGS MAY BE SUBSTITUTED FOR SIGNS.
3. REFER TO SD012 FOR CYCLEWAY PAVEMENT DETAILS.
4. ALL REGULATORY SIGNAGE SHALL BE APPROVED BY COUNCIL'S LOCAL AREA TRAFFIC COMMITTEE
5. WHERE PATHWAYS ARE USED FOR MAINTENANCE OR EMERGENCY VEHICLE ACCESS THE BOLLARDS ARE TO BE REMOVABLE & LOCKABLE

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

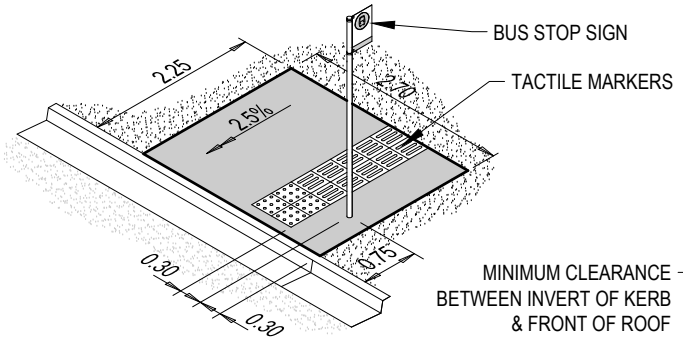
SHARED FOOTPATH / CYCLEWAY SIGNAGE

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

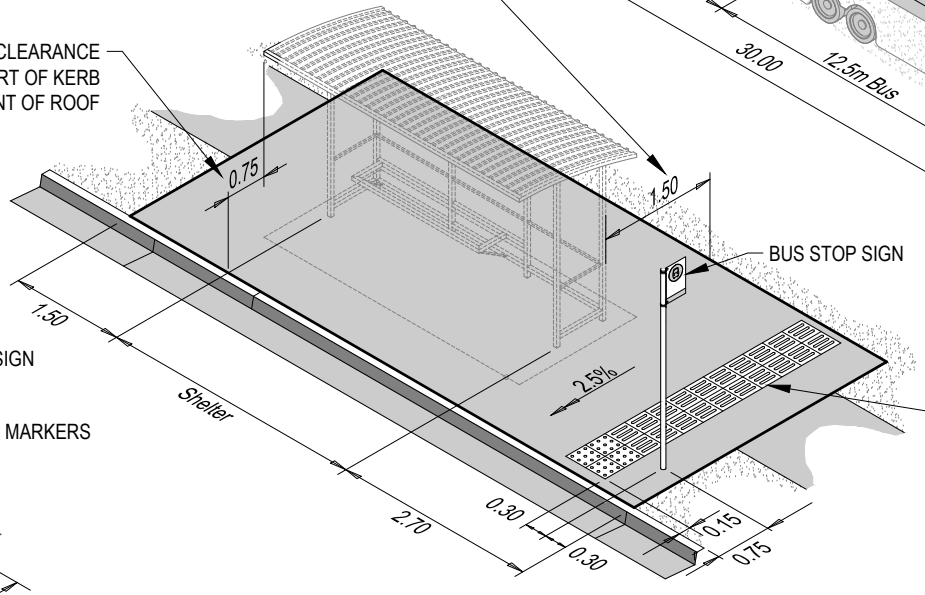
Rev:22/07/15

SD020

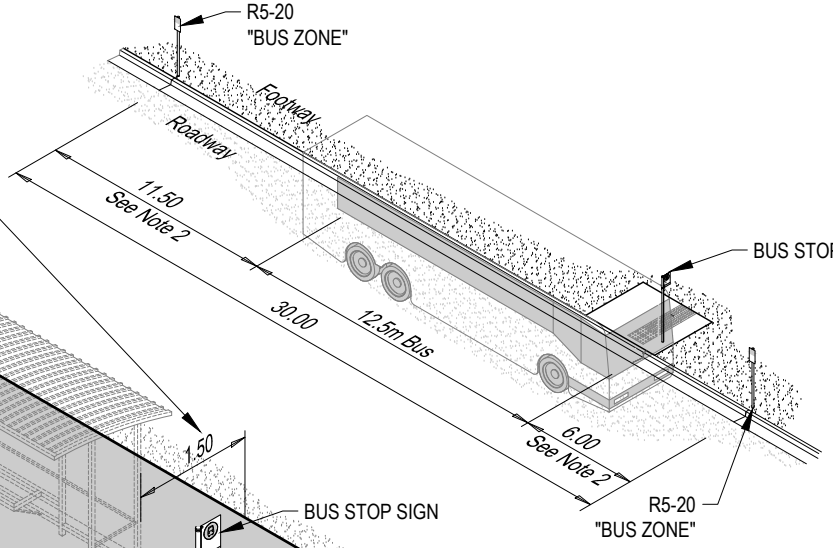
SHEET 01 of 01



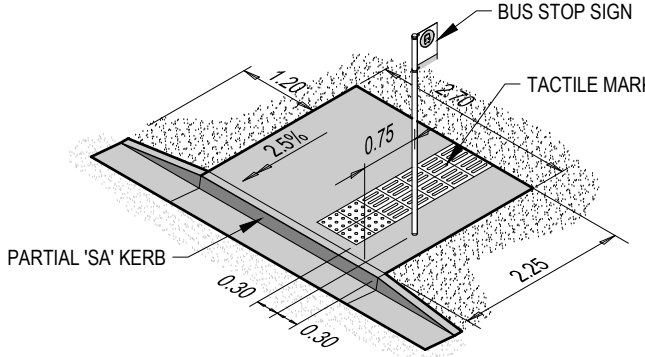
1 - URBAN BUS STOP
EXISTING KERB - NO SHELTER



2 - URBAN BUS STOP - SHELTER
EXISTING KERB



BUS ZONE - SIGNAGE



3 - RURAL BUS STOP
NO KERB - NO SHELTER

NOTE

1. DIMENSIONS ARE BASED ON BUS STOP SIGN POLE & BACK OF KERB
2. BUS STOP SIGN TO BE NOMINATED BY COUNCIL'S TRAFFIC SECTION
3. ALL SIGN POLES TO BE FIXED IN V-LOCK MOUNTING SOCKETS
4. APPROACH & DEPARTURE ZONE LENGTHS MAY BE AFFECTED BY ADJACENT TRAFFIC FACILITIES
5. DIMENSIONS WILL VARY DEPENDING ON SIZE OF SHELTER
6. ALL CONCRETE TO BE 32MPa & 150mm THICK WITH SL72 MESH PLACED CENTRALLY & DOUBLED UNDER SHELTER AREA
7. WHERE THROUGH ACCESS 1.50m WIDE IS NOT AVAILABLE BEHIND THE SHELTER, THE SHELTER MAY BE MOVED BACK TO THE BOUNDARY.

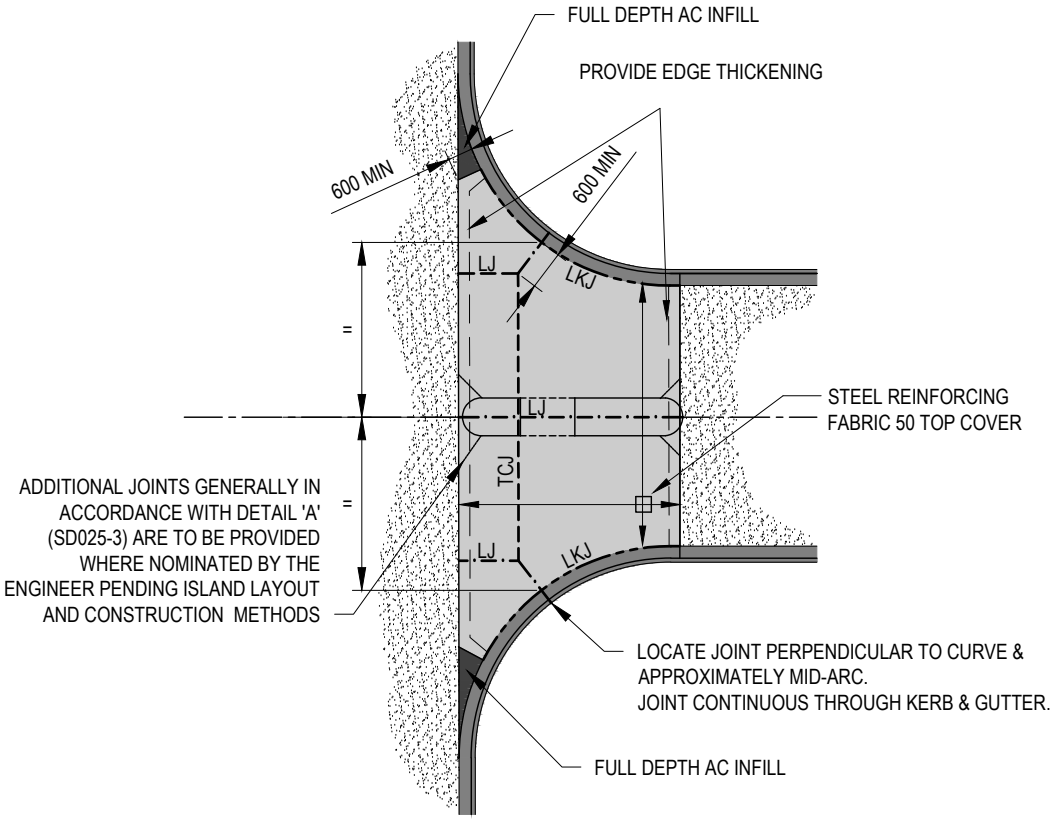
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

BUS STOP FACILITIES - RURAL & URBAN SITES WITH & WITHOUT SHELTERS

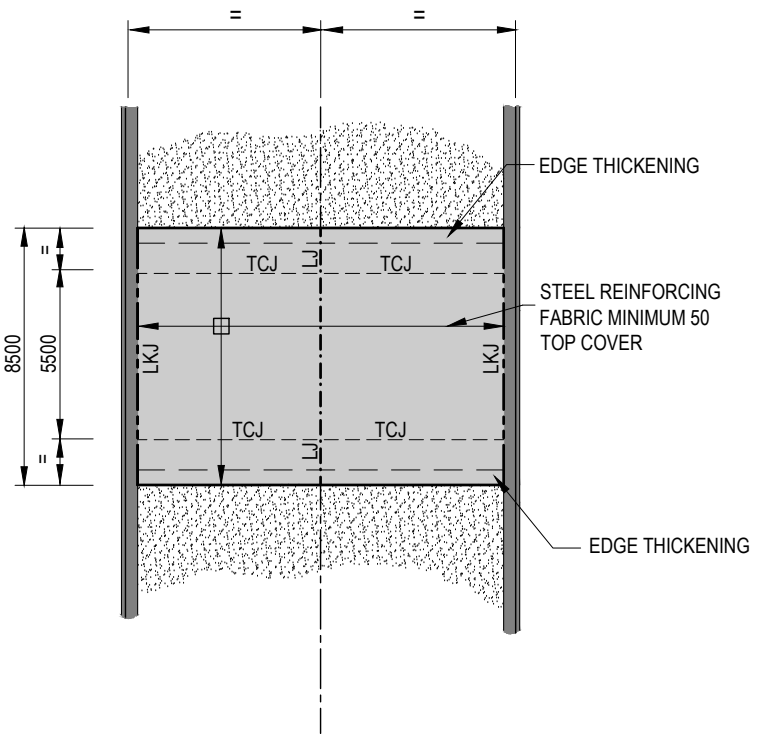
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 17/05/18

SD023



'T' INTERSECTION THRESHOLD PLAN



MID-BLOCK RAISED THRESHOLD PLAN

LEGEND

IJ	═══	ISOLATION JOINT WITH SUBGRADE BEAM
TCJ	– – – – –	TRANSVERSE CONTRACTION JOINT
CJ	– – – – –	CONSTRUCTION JOINT
LJ	–·–·–·–	LONGITUDINAL JOINT
LKJ	——– – ——–	LONGITUDINAL KERB JOINT
EJ	═::═::═::═	EXPANSION JOINT

REFER TO SD025-3 FOR JOINT DETAILS.

* PEDESTRIAN RAMPS OMITTED FOR CLARITY

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONCRETE ACCESSES & THRESHOLDS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

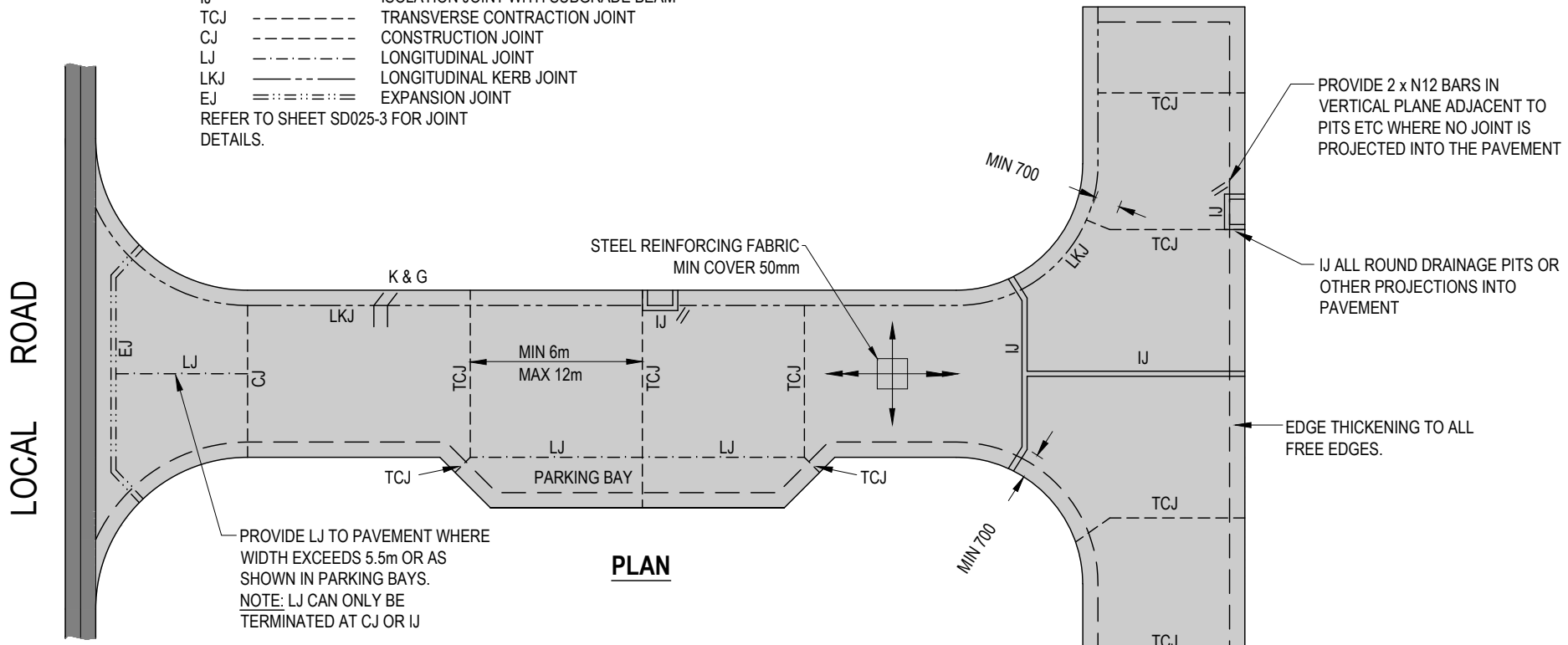
Rev:01/07/15

SD025

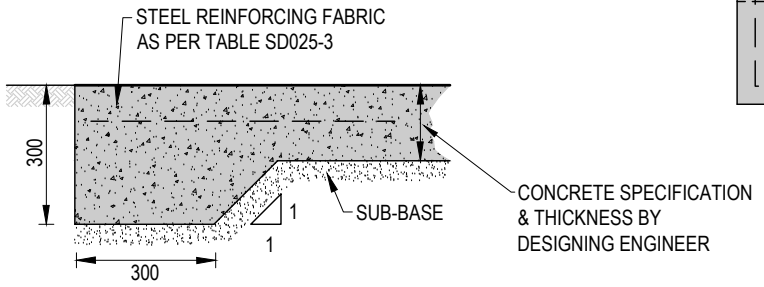
LEGEND

IJ	═══	ISOLATION JOINT WITH SUBGRADE BEAM
TCJ	- - - - - -	TRANSVERSE CONTRACTION JOINT
CJ	- - - - - -	CONSTRUCTION JOINT
LJ	— · — · — · —	LONGITUDINAL JOINT
LKJ	—— - - ——	LONGITUDINAL KERB JOINT
EJ	═ ∷ ═ ∷ ═ ∷ ═	EXPANSION JOINT

REFER TO SHEET SD025-3 FOR JOINT DETAILS.



PLAN



EDGE THICKENING DETAIL

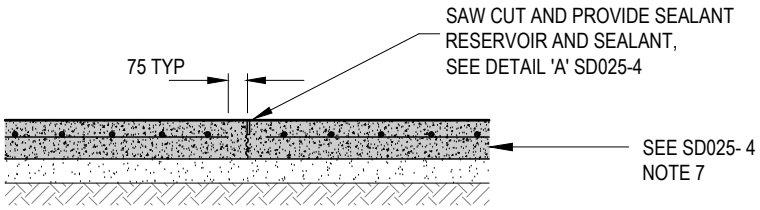
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONCRETE ACCESSWAYS & THRESHOLDS JOINTS & LAYOUTS

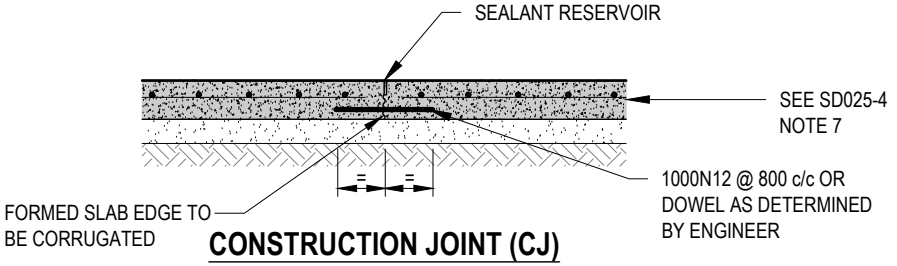
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

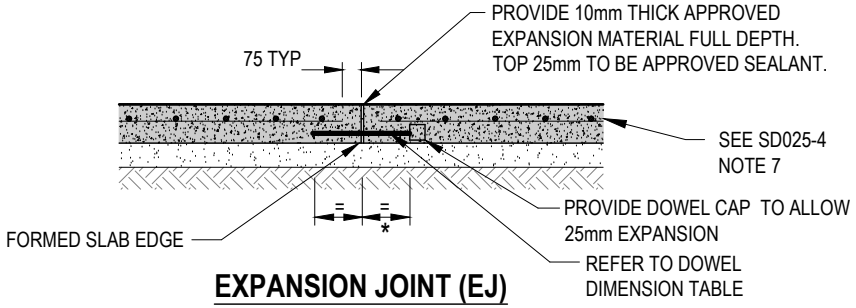
SD025



TRANSVERSE CONTRACTION JOINT (TCJ)

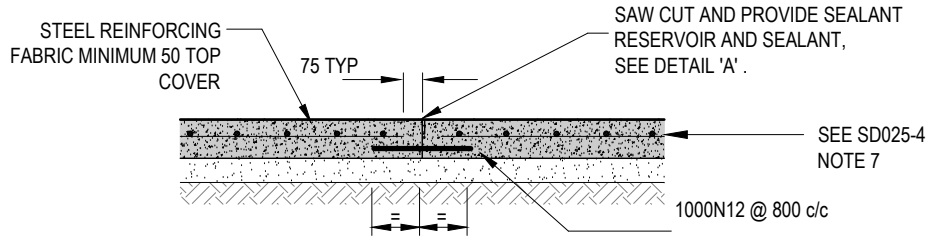


CONSTRUCTION JOINT (CJ)

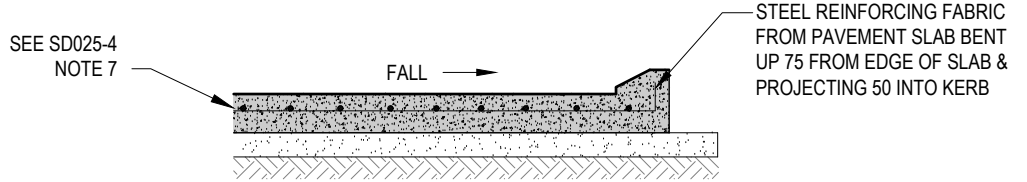


EXPANSION JOINT (EJ)

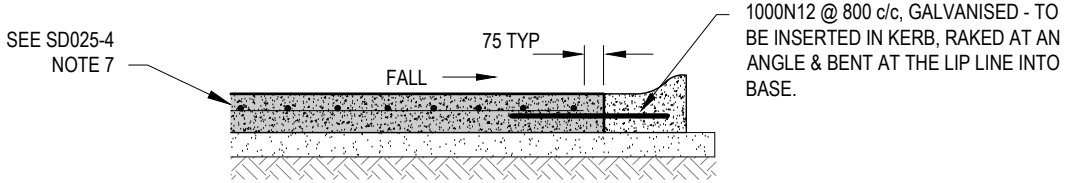
DOWEL TO BE DEBONDED



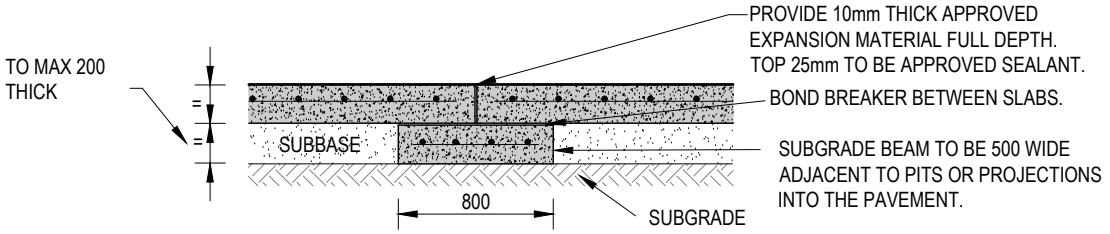
LONGITUDINAL JOINT (LJ)



INTEGRAL KERB



LONGITUDINAL KERB JOINT (LKJ)



ISOLATION JOINT (IJ) WITH SUBGRADE BEAM

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONCRETE ACCESSWAYS & THRESHOLDS
JOINT DETAILS

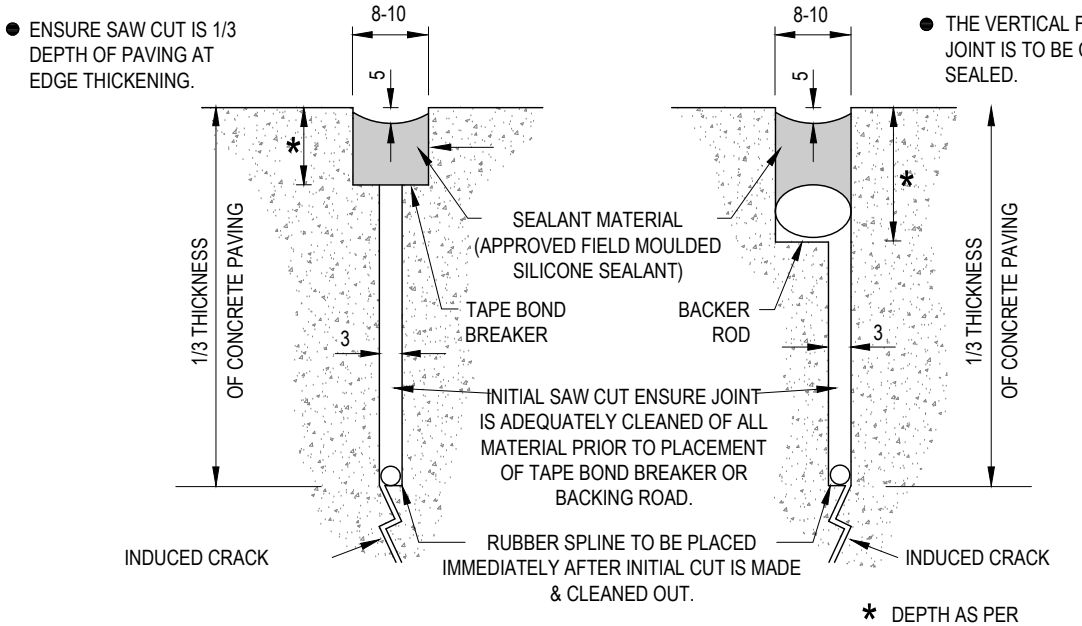
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 08/04/2019

SD025

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH MAITLAND CITY COUNCIL ENGINEERING REQUIREMENTS.
3. ALL EXPOSED CONCRETE EDGES TO BE ROUNDED TO A 5mm RADIUS.
4. ALL DOWELS TO BE EFFECTIVELY DEBONDED WHERE SPECIFIED.
5. SAW CUTS TO BE CARRIED OUT AT A TIME TO ENSURE CRACKS ARE INDUCED AT THE JOINT LOCATIONS AND TO MINIMISE SPALLING.
   UNPLANNED CRACKS IN SLABS MAY RENDER THEM UNACCEPTABLE.
6. PROVIDE APPROVED CURING COMPOUND TO FINISHED CONCRETE SURFACE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
7. REFER TO STEEL REINFORCING FABRIC TABLE.
8. ALL DOWELS & DEFORMED BARS TO BE PLACED CENTRALLY.
9. PAVEMENT THICKNESS, JOINT LAYOUT & TYPE SUBJECT TO GEOTECHNICAL INVESTIGATION, DESIGN & APPROVAL BY COUNCIL'S REPRESENTATIVE.
10. THESE STANDARDS ARE TO BE READ IN CONJUNCTION WITH THE "CEMENT & CONCRETE ASSOCIATION OF AUSTRALIA". CONCRETE PAVEMENT DESIGN FOR RESIDENTIAL STREETS (T51).
11. MINIMUM COMPRESSIVE STRENGTH (FC) TO BE MIN. 32MPa AT 28 DAYS (INCL. ADJACENT KERB & GUTTER & SUBGRADE BEAM).
12. PAVEMENT EDGE THICKENING WILL BE REQUIRED WHERE NO KERBING IS PROPOSED UNLESS OTHERWISE APPROVED.
13. LATERAL SUBSOIL LINES WILL BE REQUIRED AT THE INTERFACE OF FLEXIBLE AND RIGID PAVEMENTS IN ADDITION TO COUNCIL'S STANDARD REQUIREMENTS.
14. WHERE LONGITUDINAL GRADES EXCEED 15% OR PROTECTION OF ADJACENT PAVEMENTS OR STRUCTURES IS NECESSARY, SLAB ANCHORS (ANCHOR BLOCKS) SHALL BE PROVIDED.
15. JOINTS IN KERBS SHALL BE OF ADEQUATE DEPTH TO ENSURE POSITIVE CRACK INDUCTION (NOT TOOLED DUMMY JOINTS) & ARE TO BE LOCATED TO ALIGN WITH JOINTS IN ADJACENT PAVING OR K&G.
16. ALL DEFORMED BARS TO BE GRADE 500Y.



DETAIL 'A'
ALTERNATE METHODS

* DEPTH AS PER MANUFACTURERS RECOMMENDATIONS

MESH

CONCRETE THICKNESS (mm)	STEEL REINFORCING FABRIC (AS 1204)
165 min	F82 or F828
175	F82 or F828
200	F82 or F828

DOWELS

CONCRETE THICKNESS (mm)	DOWEL DIAMETER (mm)	DOWEL LENGTH (mm)
165 min	28	450
175	28	450
200	33	450
ALL DOWELS PLACED AT 300mm CENTRES TO BE GRADE 250R STEEL BARS		

NOTE: ALL DOWELS WITHIN A JOINT ARE TO BE ALIGNED PARALLEL WITH THE LINE JOINING THE CENTROIDS OF ADJOINING SLABS.

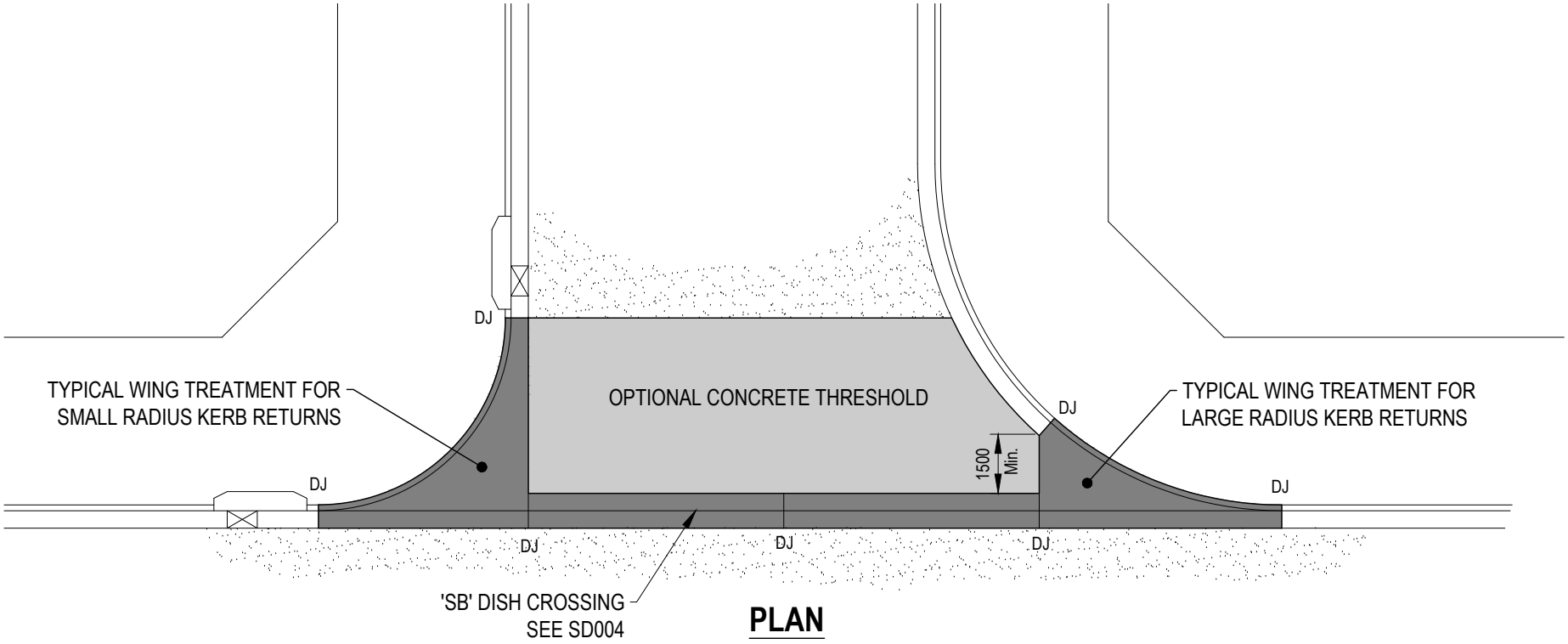
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONCRETE ACCESSWAYS & THRESHOLDS
JOINT DETAILS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev:08/04/2019

SD025



PLAN

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES
2. DISH DRAIN TO BE MINIMUM 150mm THICK, REINFORCED WITH SL72 MESH PLACED CENTRALLY
3. WINGS TO BE FORMED & POURED INTEGRAL WITH KERB
4. ALL CONCRETE 32MPa
5. **'DJ'** ALL JOINTS TO BE DOWELLED (400 N12 @ 300c/c)
6. KERB RAMPS DELETED FOR CLARITY. SEE SD019/1 & SD019/2 FOR LOCATIONS

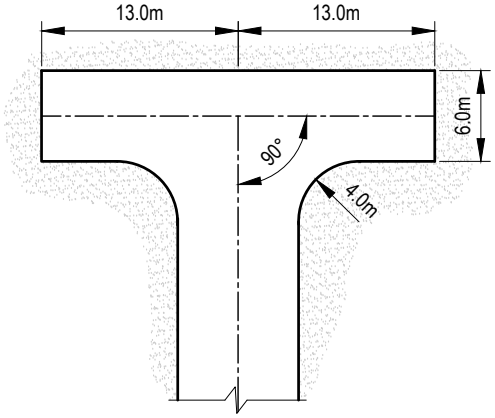
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONCRETE DISH CROSSINGS AT INTERSECTIONS

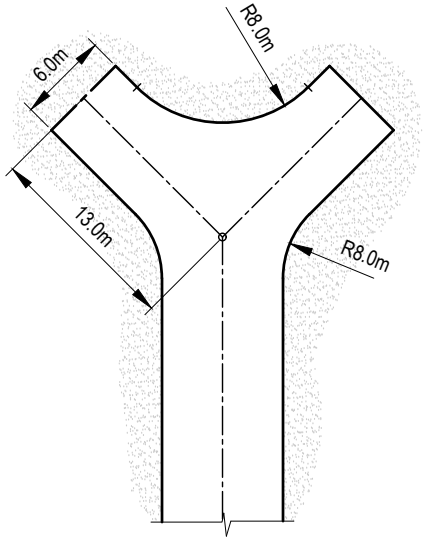
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

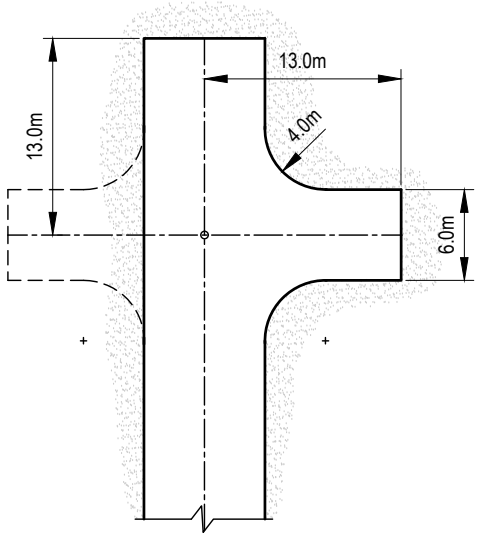
SD026



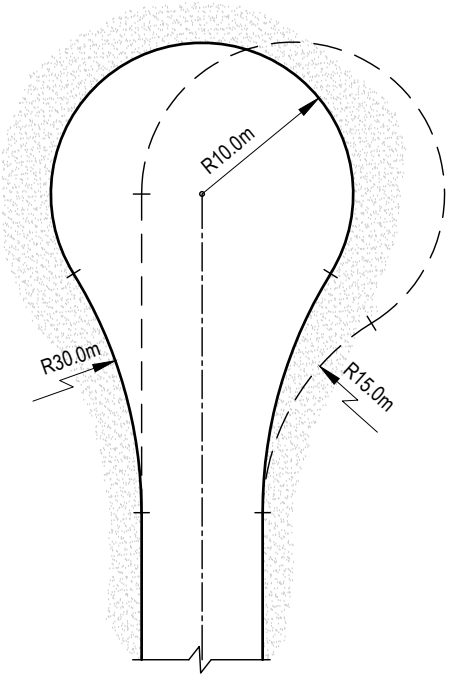
T-HEAD



Y-HEAD



MODIFIED T-HEAD



CIRCULAR HEAD

NOTE:

1. INCOMING WIDTHS DETERMINED BY ROAD CATEGORIES SETOUT IN THE ROAD DESIGN SECTION OF COUNCIL'S "MANUAL OF ENGINEERING STANDARDS" .
2. NOTWITHSTANDING THE ABOVE DIMENSIONING, AUSTRALIAN STANDARD *AS 2890.2 - PARKING FACILITIES PART 2: OFF-STREET COMMERCIAL VEHICLE FACILITIES* SHALL BE USED TO VERIFY ADEQUATE MANOEUVRING AREA.
3. ALTERNATIVE LAYOUTS WILL BE CONSIDERED BY COUNCIL.

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

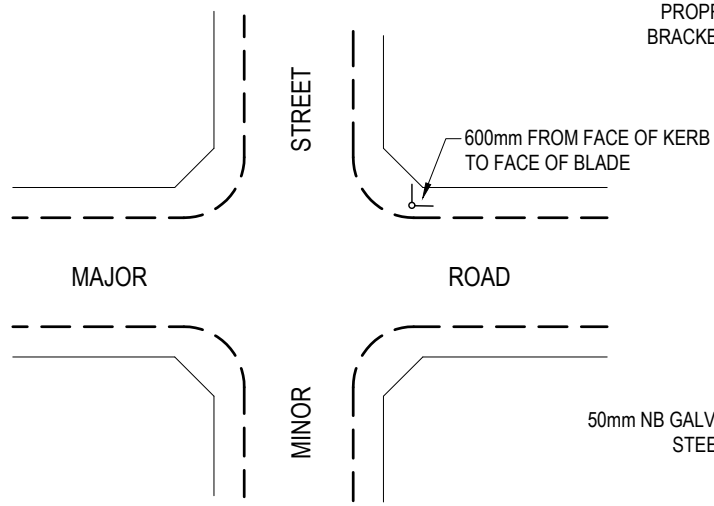
CUL-DE-SAC OPTIONS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

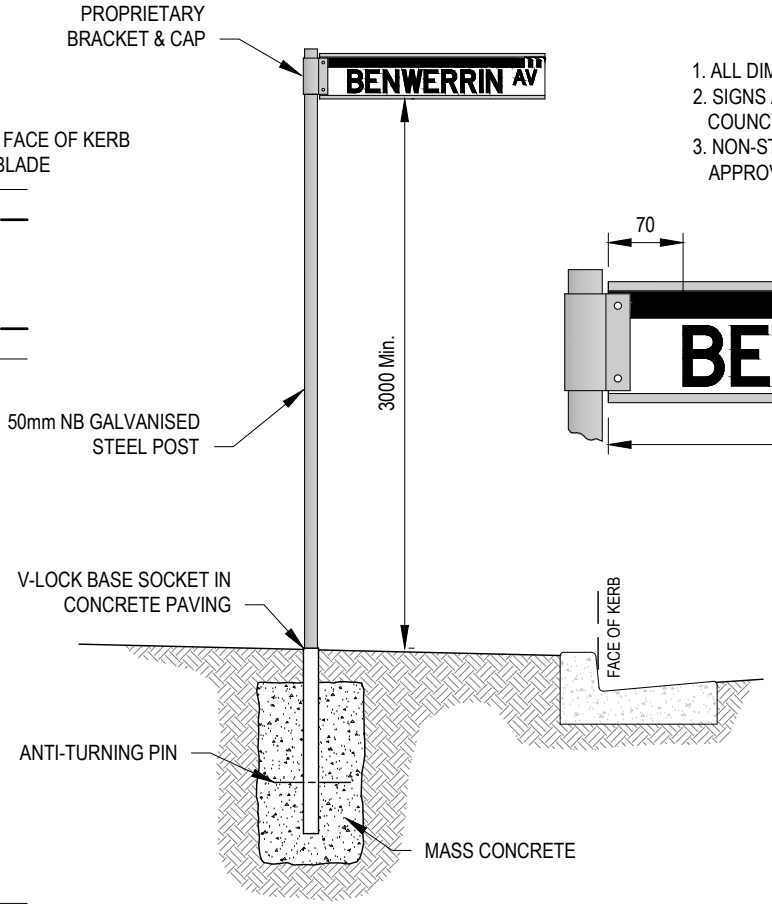
Rev: 01/07/15

SD027

SHEET 01 of 01

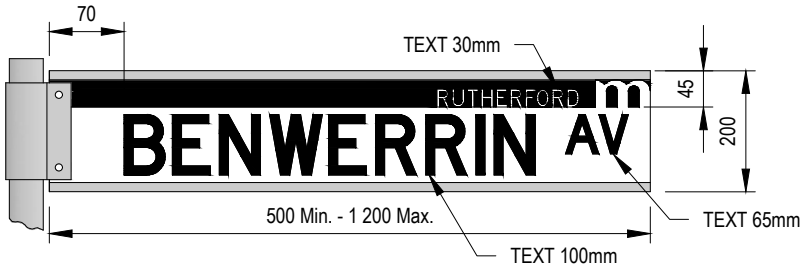


CROSS STREET INTERSECTION

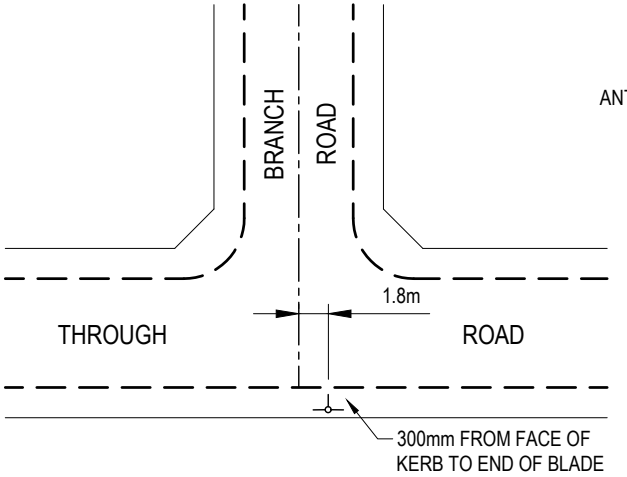


POLE

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. SIGNS ARE TO BE ERECTED BY THE DEVELOPER UNDER COUNCIL'S SUPERVISION.
3. NON-STANDARD SIGNS MAY BE USED SUBJECT TO PRIOR APPROVAL BY COUNCIL.



FINGER BOARD



"T" INTERSECTION

SIGN LOCATION

1. STREET NAME SIGNS TO BE PROVIDED AT ROUNDABOUTS AND MAJOR INTERSECTIONS WHERE SHOWN ON THE APPROVED ENGINEERING PLANS OR AS DIRECTED BY THE ENGINEER.
2. SIGN POST LOCATIONS MAY BE VARIED BY THE ENGINEER WHERE POWER POLES OR SIMILAR OBSTRUCT VIEW.

SIGN SPECIFICATION

SIGN COLOUR

STREET NAME BLADE :BLACK LETTERS ON WHITE REFLECTORISED BACKGROUND

DIRECTIONAL SIGN BLADE : BLACK LETTERS ON WHITE REFLECTORISED BACKGROUND

SIZE & SHAPE

SIGNS SHALL BE RECTANGULAR, HAVE A BLADE WIDTH OF 200mm, A MINIMUM LENGTH OF 500mm & MAXIMUM LENGTH OF 1200mm.

REFLECTIVE MATERIAL

THE BACKGROUND SHALL CONSIST OF CLASS 1 MATERIAL, LAMINATED TO THE EDGE OF BLADE.

LETTERING

LETTERS & NUMERALS FOR STREET NAMES SHALL BE SERIES 'D', AS SPECIFIED IN AS1744,
WHERE THE TEXT PRODUCES A SIGN GREATER THAN 1200mm IN LENGTH, THE LETTERING MAY BE MADE PROPORTIONALLY NARROWER BUT NOT NARROWER THAN SERIES 'C'.

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

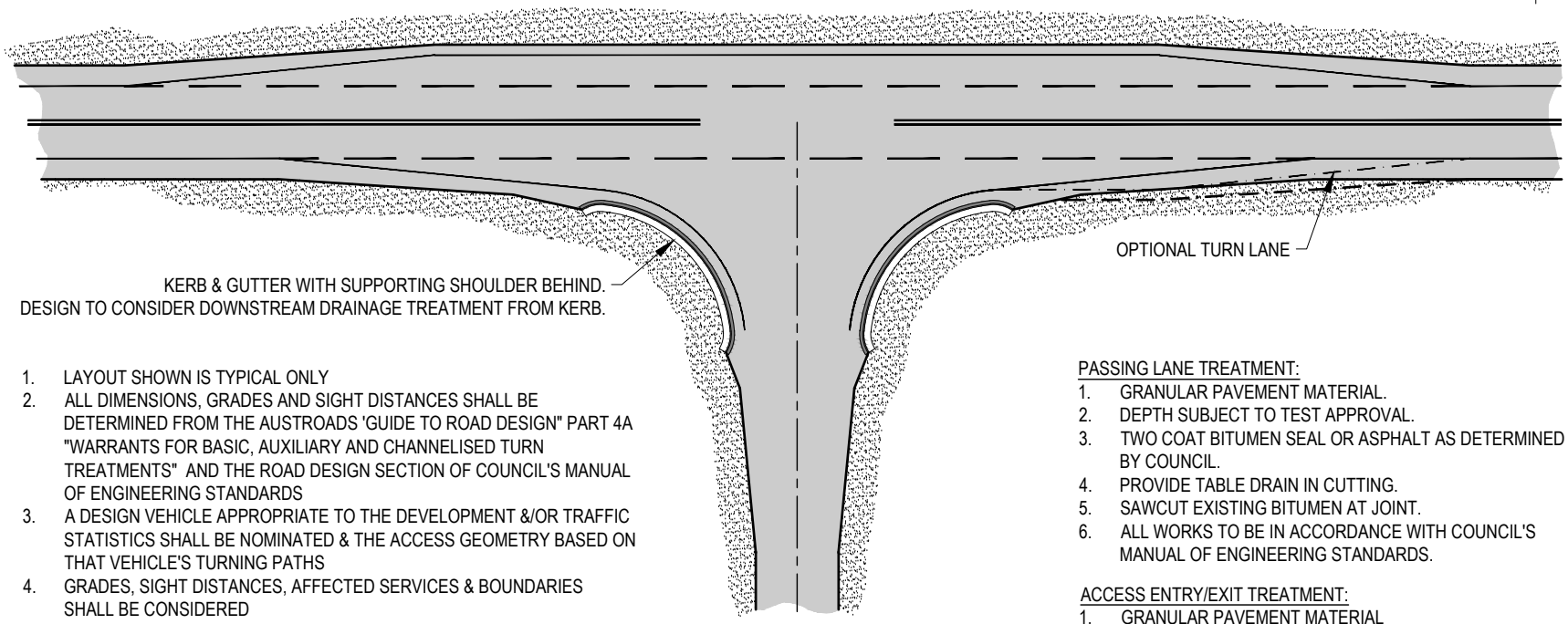
STREET NAME SIGN POSTING

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 15/03/2017

SD029

SHEET 01 of 01



1. LAYOUT SHOWN IS TYPICAL ONLY
2. ALL DIMENSIONS, GRADES AND SIGHT DISTANCES SHALL BE DETERMINED FROM THE AUSTROADS 'GUIDE TO ROAD DESIGN" PART 4A "WARRANTS FOR BASIC, AUXILIARY AND CHANNELISED TURN TREATMENTS" AND THE ROAD DESIGN SECTION OF COUNCIL'S MANUAL OF ENGINEERING STANDARDS
3. A DESIGN VEHICLE APPROPRIATE TO THE DEVELOPMENT &/OR TRAFFIC STATISTICS SHALL BE NOMINATED & THE ACCESS GEOMETRY BASED ON THAT VEHICLE'S TURNING PATHS
4. GRADES, SIGHT DISTANCES, AFFECTED SERVICES & BOUNDARIES SHALL BE CONSIDERED
5. LINEMARKING & SIGNAGE SUBJECT TO LOCAL TRAFFIC COMMITTEE ASSESSMENT

PASSING LANE TREATMENT:

1. GRANULAR PAVEMENT MATERIAL.
2. DEPTH SUBJECT TO TEST APPROVAL.
3. TWO COAT BITUMEN SEAL OR ASPHALT AS DETERMINED BY COUNCIL.
4. PROVIDE TABLE DRAIN IN CUTTING.
5. SAWCUT EXISTING BITUMEN AT JOINT.
6. ALL WORKS TO BE IN ACCORDANCE WITH COUNCIL'S MANUAL OF ENGINEERING STANDARDS.

ACCESS ENTRY/EXIT TREATMENT:

1. GRANULAR PAVEMENT MATERIAL
2. COMPACTED DEPTH MINIMUM 200mm
3. TWO COAT BITUMEN FLUSH SEAL
4. WHERE PIPE CROSSING IS REQUIRED SEE SD013-1 FOR HEADWALL DETAILS

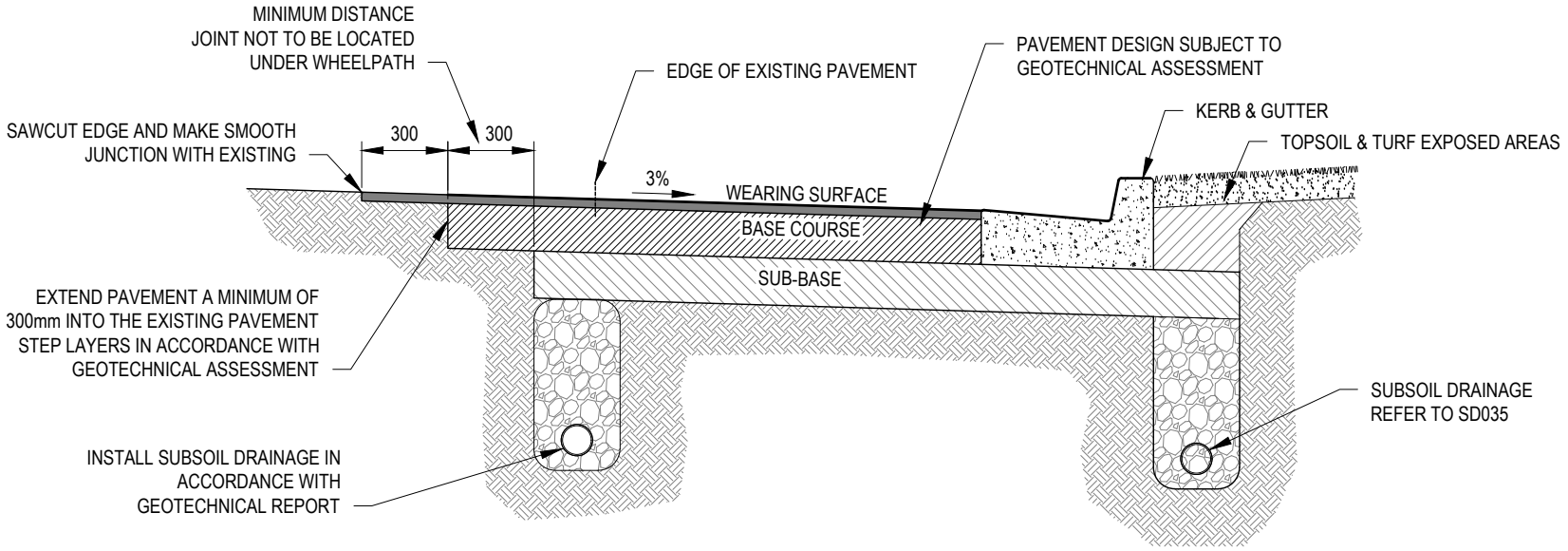
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

MINIMUM INTERSECTION TREATMENT FOR HIGH/HEAVY TRAFFIC GENERATING DEVELOPMENTS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 08/04/2019

SD031



TYPICAL SECTION

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES
2. PAVEMENT JOINS NOT TO BE PLACED UNDER WHEELPATHS.

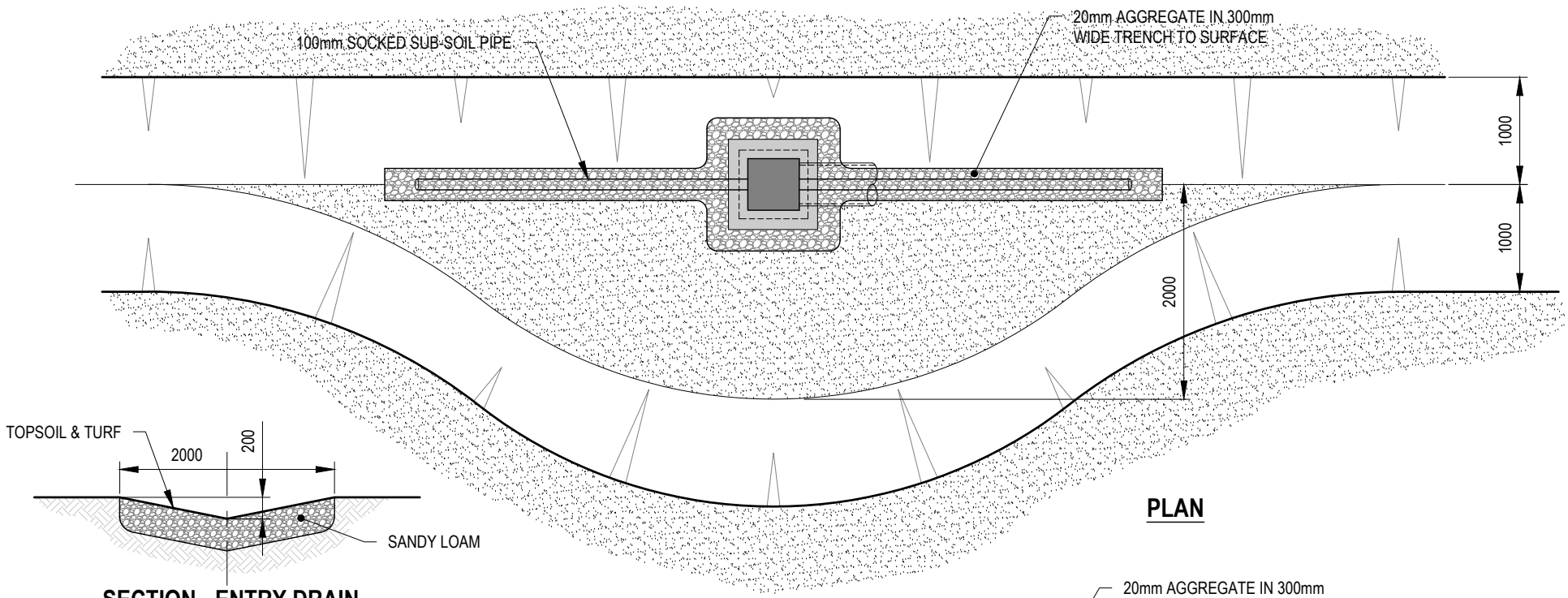
maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

PAVEMENT WIDENING TO NEW KERB & GUTTER

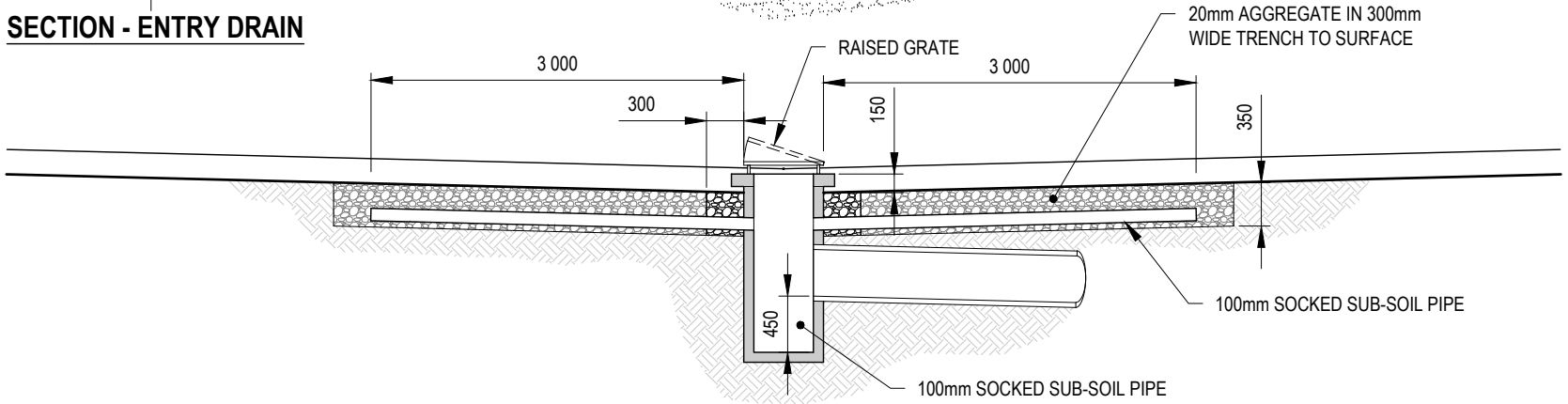
Rev: 08/04/2019

SD032



PLAN

SECTION - ENTRY DRAIN



LONGITUDINAL SECTION

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

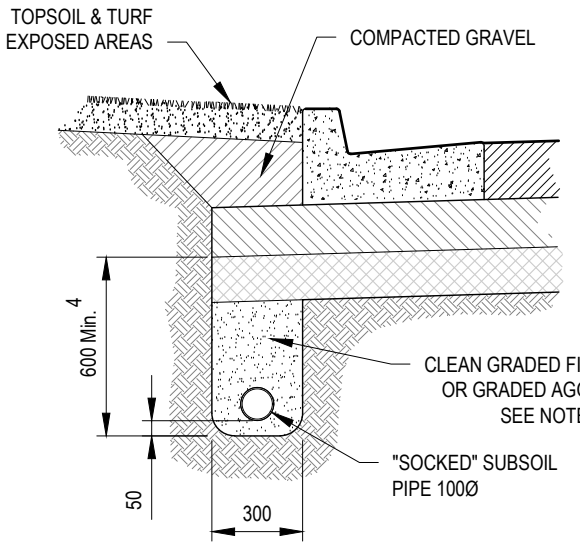
SILT TRAP & SWALE FOR UNSEALED HARDSTANDS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

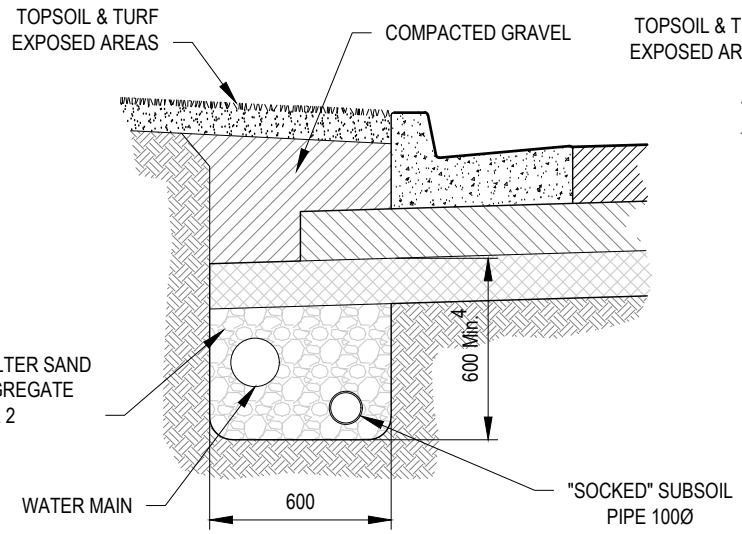
Rev: 01/07/15

SD034

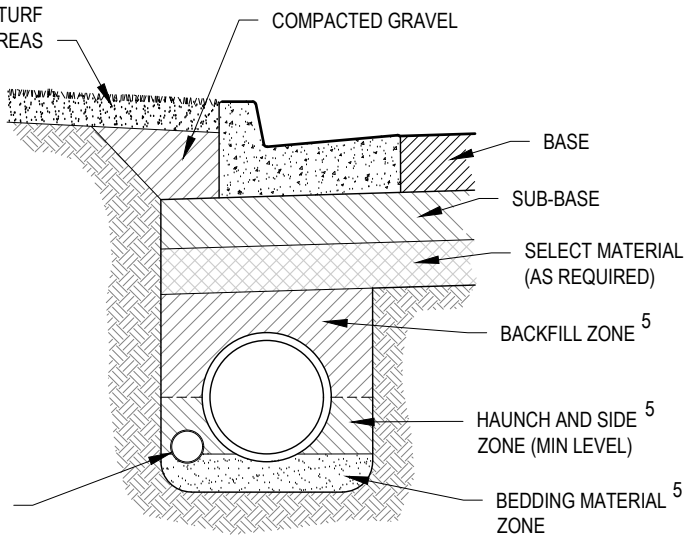
SHEET 01 of 01



TYPICAL INSTALLATION



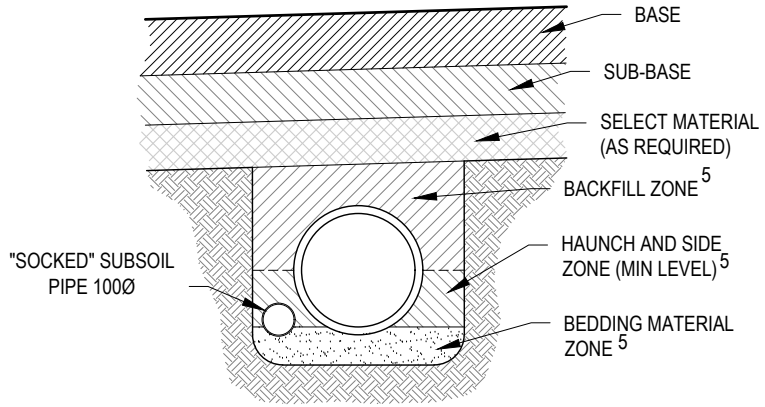
SHARED TRENCH
(WITH WATER MAIN)



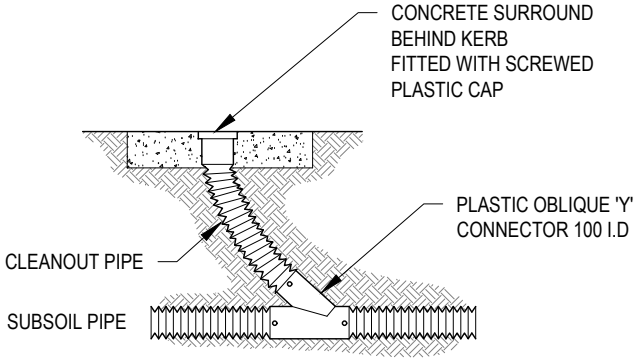
STORMWATER TRENCH
(ALL STORMWATER PIPES)

NOTE:

1. TYPE, LOCATION AND EXTENT OF ADDITIONAL SUBSOIL DRAINAGE SHALL BE IN ACCORDANCE WITH A GEOTECHNICAL CONSULTANT'S ASSESSMENT.
2. A NOMINAL SIZE AGGREGATE (10mm MAXIMUM) MAY BE SUBSTITUTED FOR THE FILTER SAND
3. FLUSH POINTS SHALL BE PROVIDED AT UPSTREAM DEAD ENDS & CRESTS & AT MAXIMUM OF 60m CTRS.
4. DEPTH MAY BE VARIED IN A ROCK SUBGRADE.
5. SEE THE CONSTRUCTION SECTION OF THE MANUAL OF ENGINEERING STANDARDS FOR TRENCH MATERIAL SPECIFICATION. EACH ZONE MAY BE ONE HOMOGENEOUS APPROVED MATERIAL.



STORMWATER TRENCH UNDER ROAD
(ALL STORMWATER PIPES)



FLUSH POINT

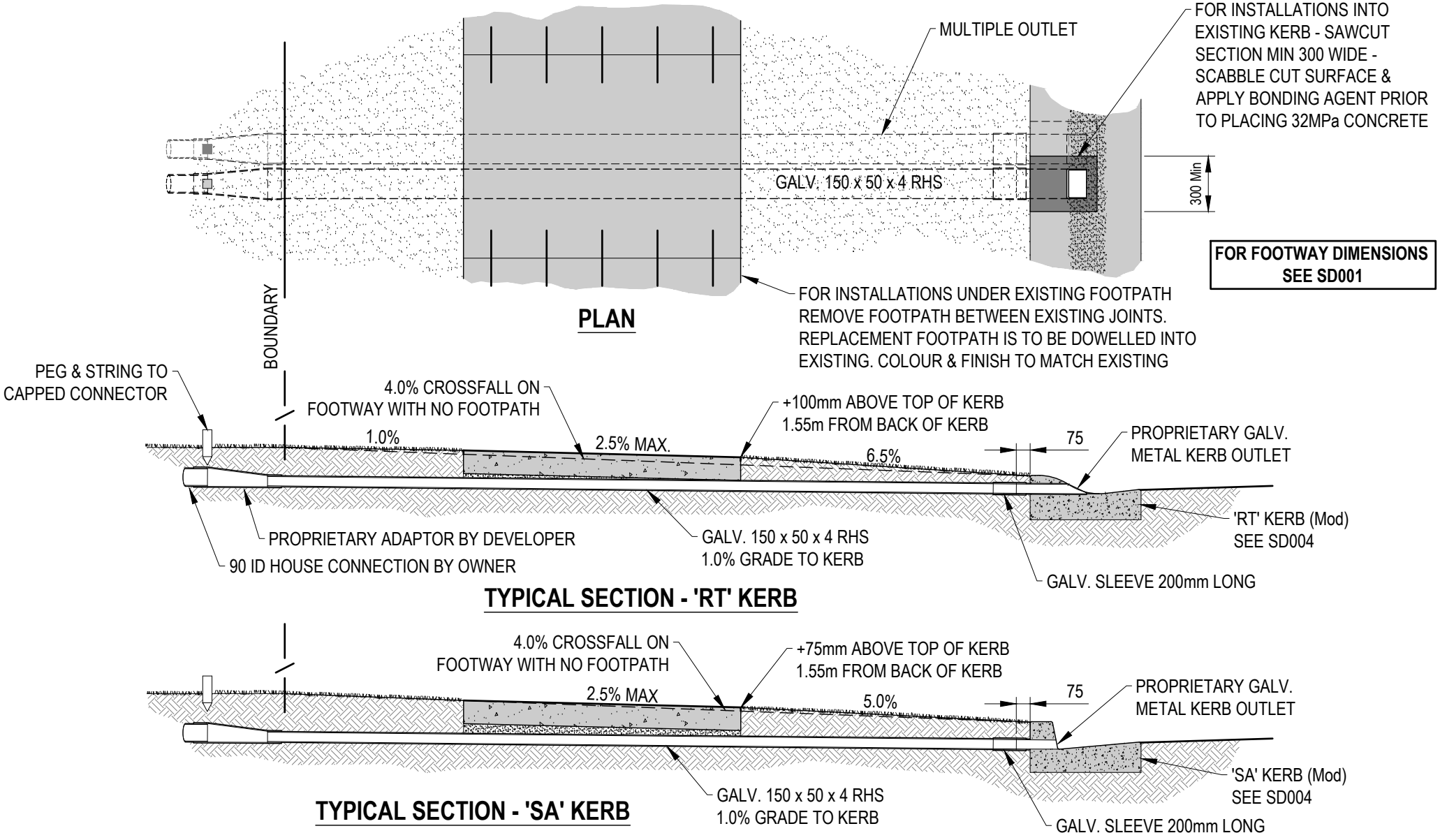
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

SUB-SOIL DRAINAGE

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/2019

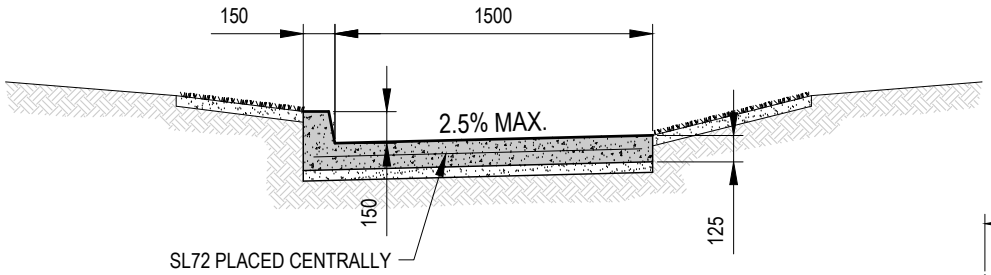
SD035



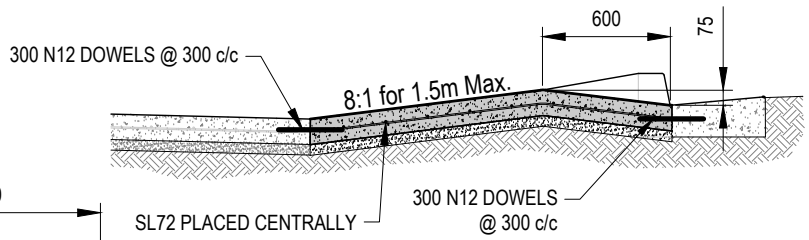
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

KERB STORMWATER OUTLETS & KERB ADAPTER

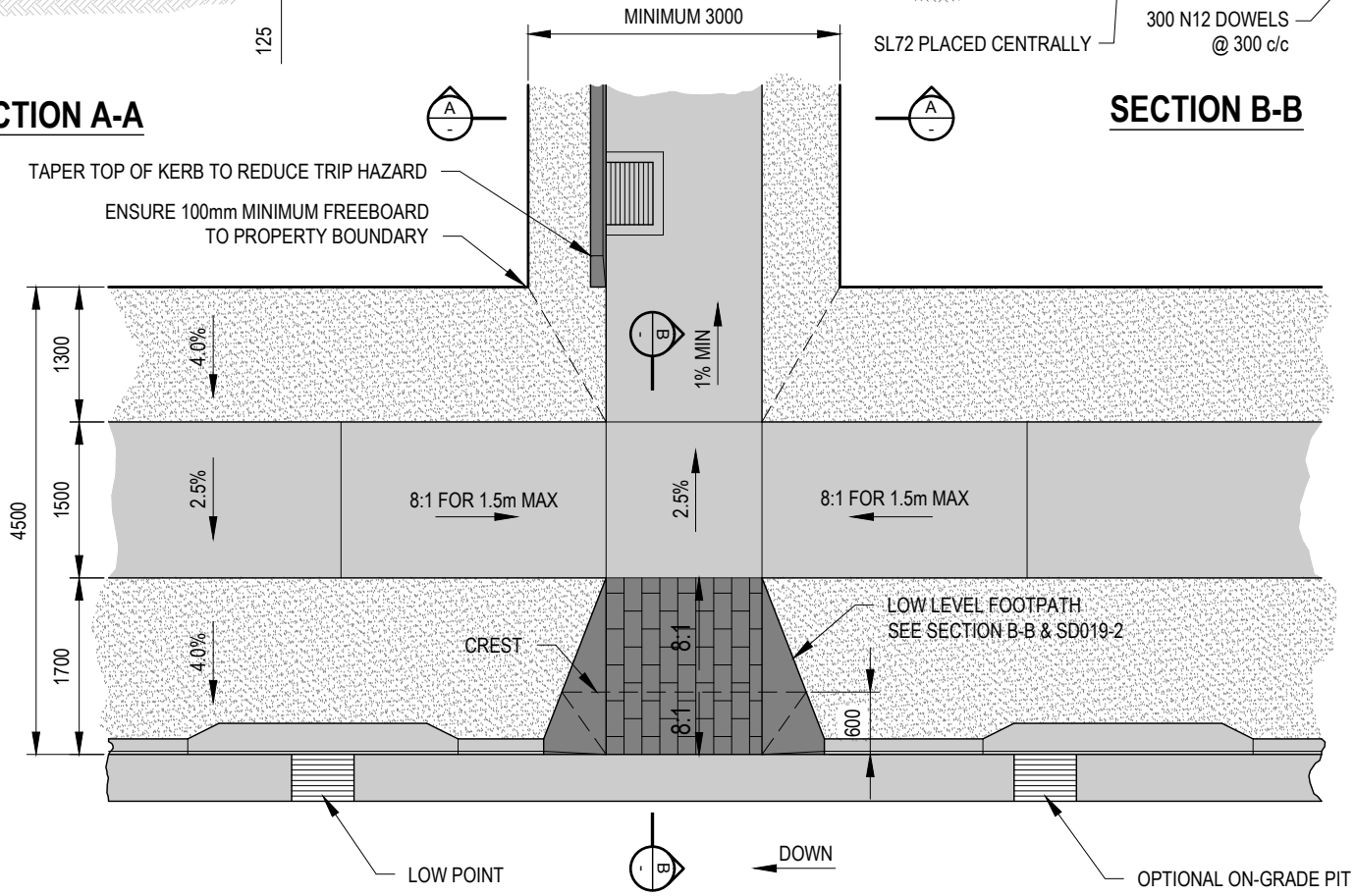
Rev: 01/07/15
SD036
SHEET 01 of 01



SECTION A-A



SECTION B-B



PLAN

NOTE:

1. DETAILS SHOWN ARE APPLICABLE AT UPSTREAM ENTRIES TO FLOW PATHS ONLY.
2. SHAPE AND GRADES OF FOOTPATH AND PRAM RAMPS TO BE IN ACCORDANCE WITH SD019-2.
3. REFER TO SD10 FOR JOINT REQUIREMENTS IN CONCRETE PAVING.
4. FLOW PATH AND RAMP AREAS TO BE FULLY CONCRETED.

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

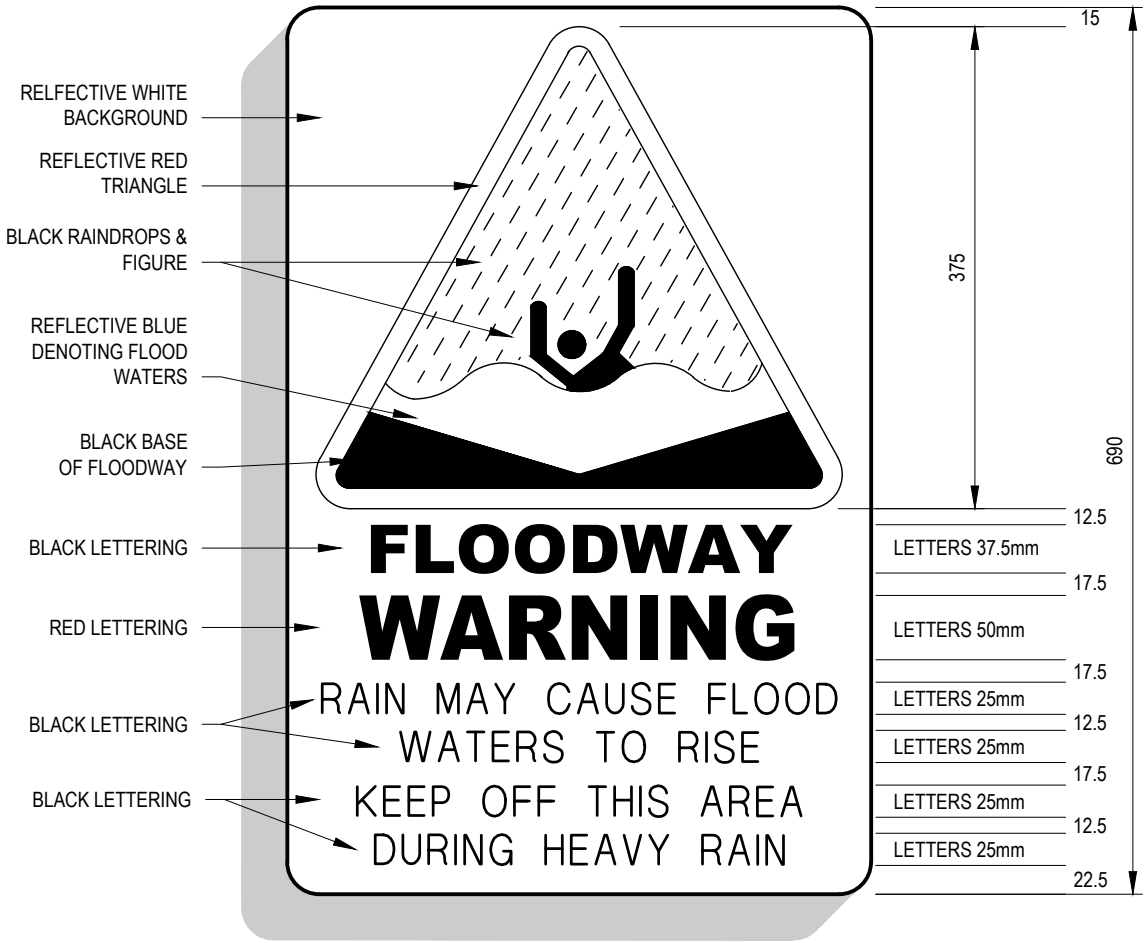
FOOTWAY FLOWPATH

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 08/04/2019

SD037

SHEET 01 of 01



NOTE: ALL LETTERING TO BE "E" SERIES

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

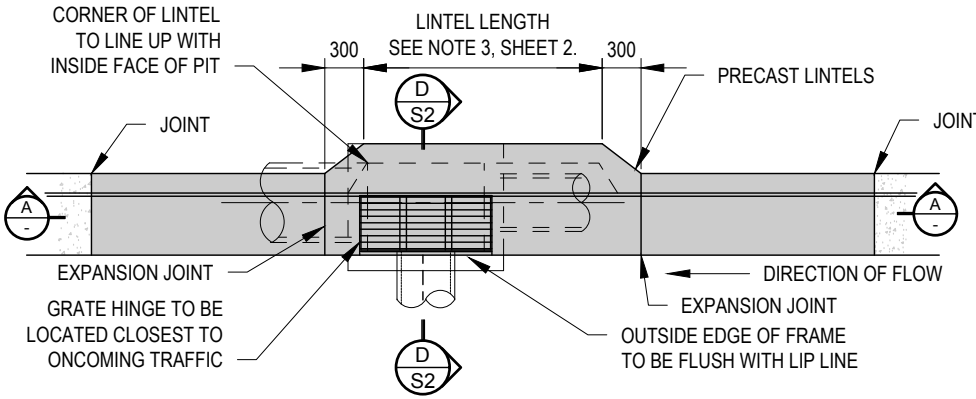
FLOOD WARNING SIGNAGE

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

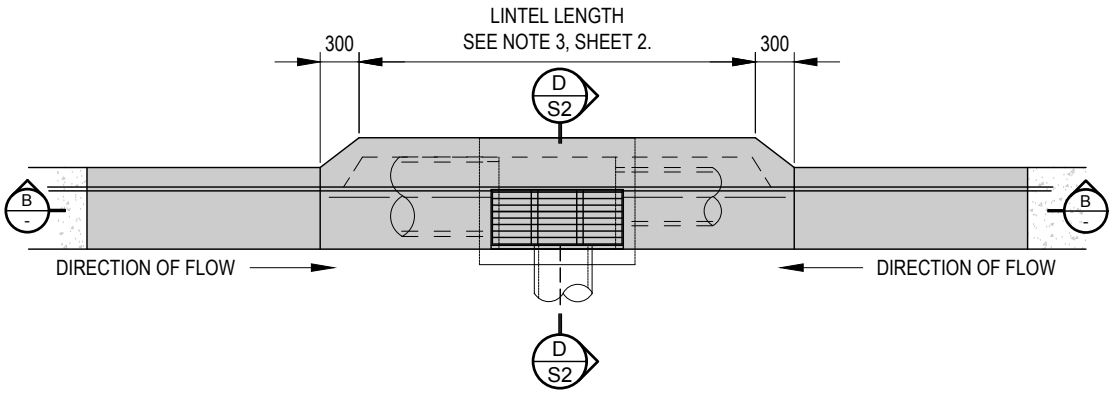
Rev: 01/07/15

SD038

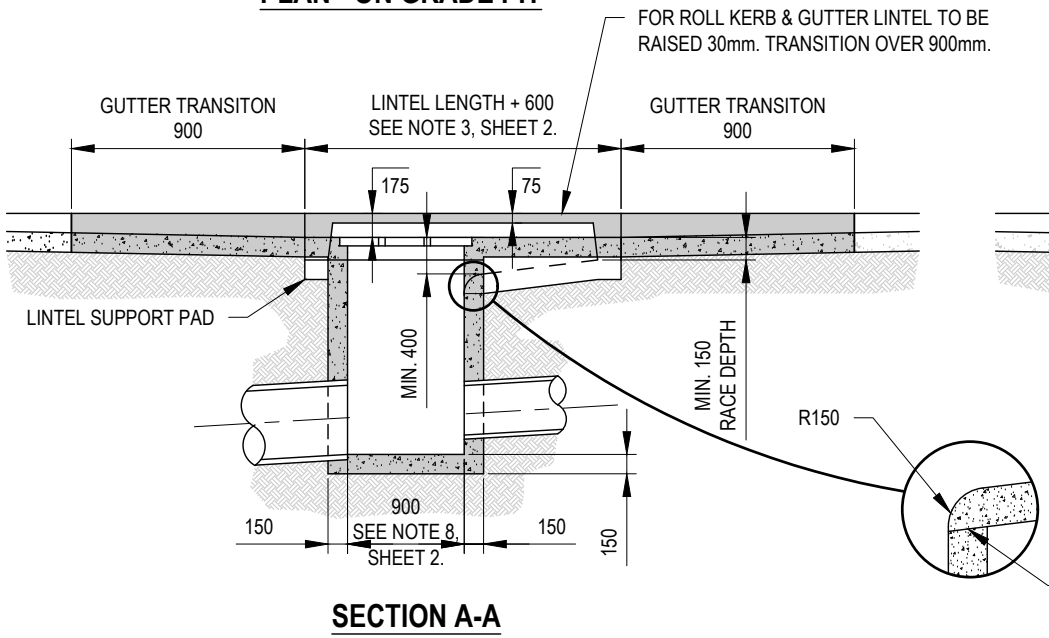
SHEET 01 of 01



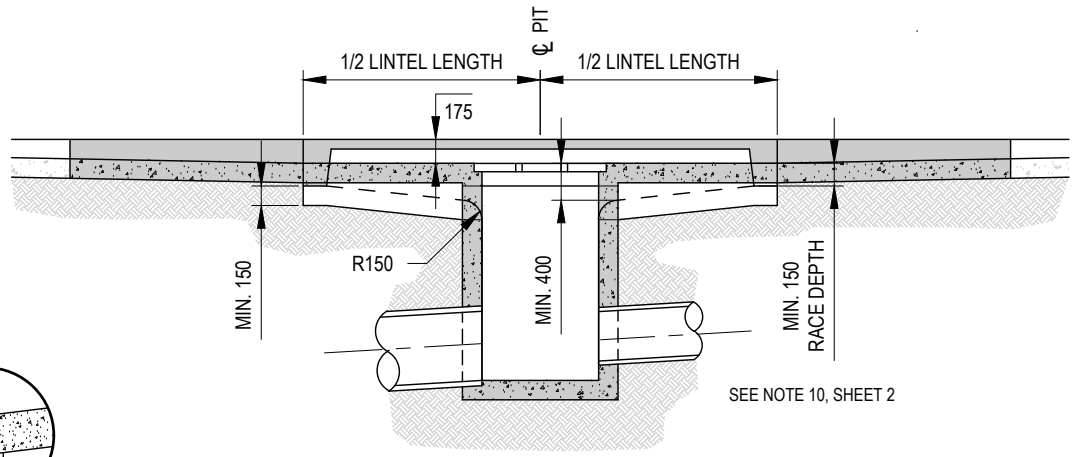
PLAN - ON GRADE PIT



PLAN - SAG PIT



SECTION A-A



SEE SHEET 39-2
FOR SECTION D-D

SECTION B-B

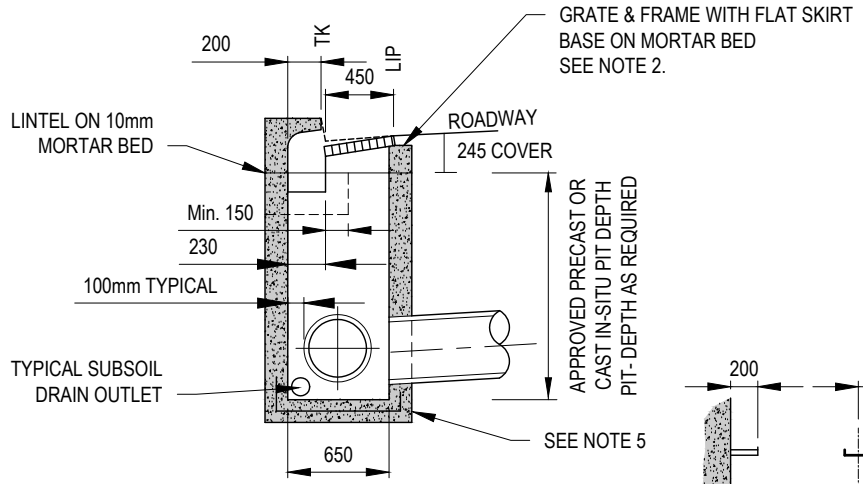
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

GRATED GULLY PITS WITH EXTENDED KERB INLETS

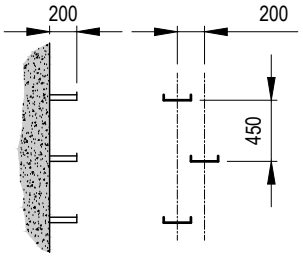
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

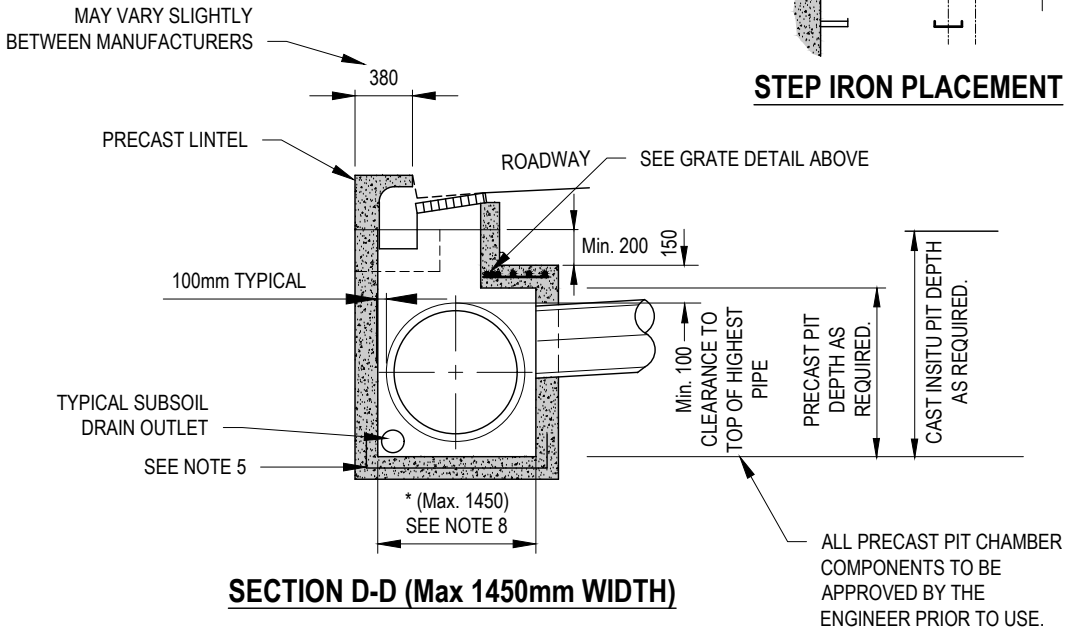
SD039



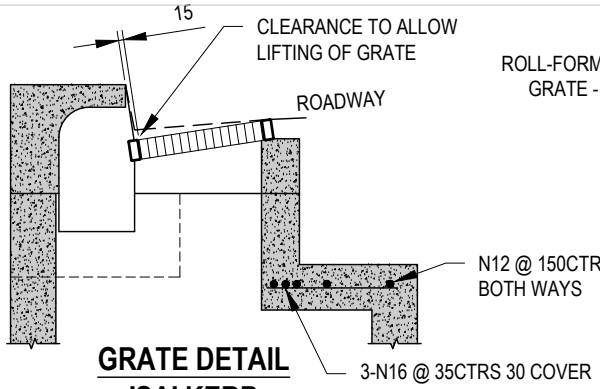
SECTION D-D (Min 650mm WIDTH)



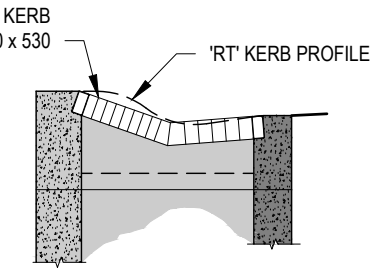
STEP IRON PLACEMENT



SECTION D-D (Max 1450mm WIDTH)



GRATE DETAIL 'SA' KERB



GRATE DETAIL 'RT' KERB

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. GRATES TO BE;
   - CLASS 'B' FOR OFF ROAD AREAS
   - CLASS 'C' - MEDIUM DUTY FOR LIGHT TRAFFIC AREAS
   - CLASS 'D' FOR ROADS & COMMERCIAL AREAS
3. GRATES ARE TO BE HOT DIP GALVANISED 80-85 MICRONS THICK. ALL GRATES TO BE PROVIDED WITH HINGE PINS.
4. ALL LINTELS TO BE APPROVED PRECAST TYPE. DIMENSIONS SHOWN ON PLAN TO DENOTE CLEAR OPENINGS, MIN SIZE 1.2m. DIMENSIONS MAY VARY BETWEEN MANUFACTURERS.
5. PROVIDE STEP IRONS FOR PITS DEEPER THAN 1.2m.
6. MINIMUM THICKNESS OF WALLS AND BASE TO BE 150mm.
7. ALL PITS TO HAVE A MINIMUM OF SL82 MESH IN BASE AND N12 "L" STARTER BARS (450 LEGS) @ 400 CTRS.
8. PITS BETWEEN 1.5m & 2.5m DEEP TO HAVE SL82 MESH CENTRALLY PLACED IN WALLS FOR FULL DEPTH WITH N12 "L" CORNER BARS (450 LEGS) @ 400 CTRS.
9. PITS DEEPER THAN 2.5m OR LONGER THAN 900 OR 1450 WIDE SHALL BE DESIGNED BY A QUALIFIED ENGINEER.
10. PITS POURED IN MULTIPLE HEIGHT SECTIONS SHALL INCLUDE SL82 MESH OR 400N12 STARTER BARS @ 300 c/c.
11. COMPRESSIVE STRENGTH (FC) FOR CAST INSITU CONCRETE SHALL BE A MINIMUM 32 MPa @ 28 DAYS.
12. NO RENDERING PERMITTED IN STRUCTURAL COMPONENTS.
13. THIS STANDARD REFERS TO PITS CONSTRUCTED ADJACENT TO FLEXIBLE PAVEMENTS. TOTAL ISOLATION OF PITS IS REQUIRED ADJACENT TO RIGID PAVEMENTS.
14. ALL PITS TO BE ADEQUATELY STREAMLINED AND BENCHED.
15. FOR PITS LOCATED AT KERB RETURNS REFER TO SD009

STEP IRON NOTE:

1. STEP IRONS TO COMPLY TO AS1657.
2. STEP IRONS TO BE HOT DIPPED GALVANISED OR PLASTIC.
3. STEPS TO BE FIXED INTO THE PIT WALL WITH AN EPOXY RESIN COMPOUND.

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

GRATED GULLY PITS WITH EXTENDED KERB INLETS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

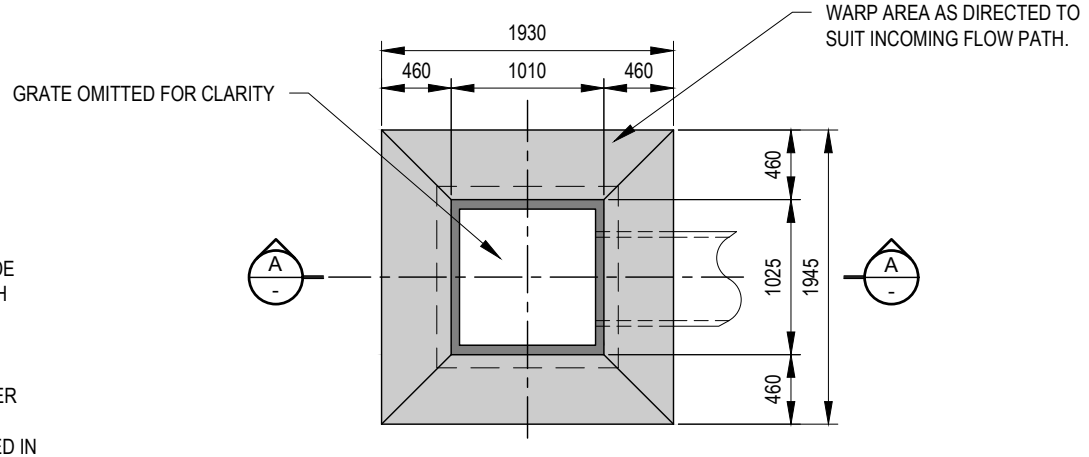
Rev: 08/04/2019

SD039

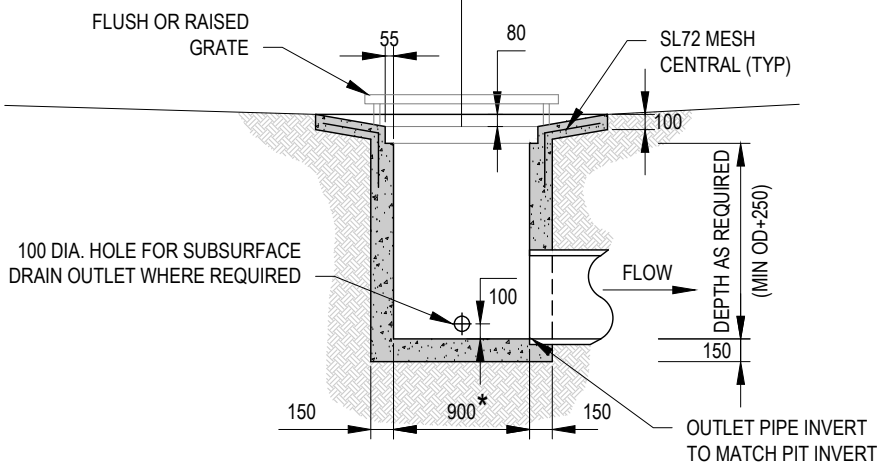
NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. FOR DETAILS OF GULLY GRATING AND FRAME SEE WEDLOCK GRATE CODE PC9090B OR APPROVED EQUIVALENT. ALL GRATES TO BE PROVIDED WITH LOCKING BOLTS. HINGES TO BE LOCATED ON UPSTREAM SIDE.
3. PROVIDE STEP IRONS FOR PITS DEEPER THAN 1.2m REFER TO SD039.
4. MINIMUM THICKNESS OF WALLS AND BASE TO BE 150mm.
5. ALL PITS TO HAVE A MINIMUM OF SL82 MESH IN BASE AND N12 "L" STARTER BARS (450 LEGS) @ 400 c/c.
6. PITS BETWEEN 1.5m & 2.5m DEEP TO HAVE SL82 MESH CENTRALLY PLACED IN WALLS FOR FULL DEPTH WITH N12 "L" CORNER BARS (450 LEGS) @ 400 c/c.
7. PITS DEEPER THAN 2.5m OR LONGER THAN 900 OR 1450 WIDE SHALL BE DESIGNED BY A QUALIFIED ENGINEER.
8. PITS POURED IN MULTIPLE HEIGHT SECTIONS SHALL INLCUDE SL82 MESH OR 400N12 STARTER BARS @ 300 c/c.
9. COMPRESSIVE STRENGTH (FC) FOR CAST INSITU CONCRETE SHALL BE A MINIMUM 25 MPa @ 28 DAYS.
10. NO RENDERING PERMITTED IN STRUCTURAL COMPONENTS.
11. ALL PITS TO BE ADEQUATELY STREAMLINED AND BENCHED.
12. PROVIDE MIN 450mm PINNED TURF SURROUND.
13. SHAPE ADJACENT AREAS TO ASSIST WATER COLLECTION.

*	PIPE DIAM RANGE
900	600mm TO 750mm INCL
1200	825mm TO 900mm INCL



PLAN



SECTION A-A

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

SURFACE INLET PIT

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

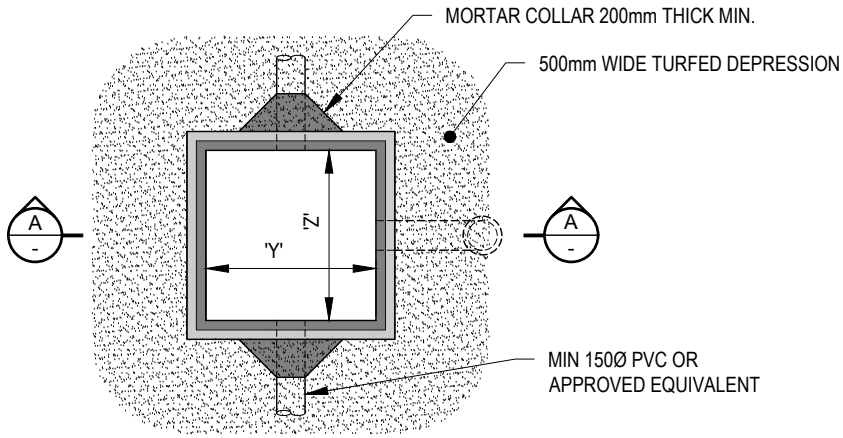
Rev: 08/04/2019

SD040

SHEET 01 of 01

MINIMUM PIT DIMENSIONS

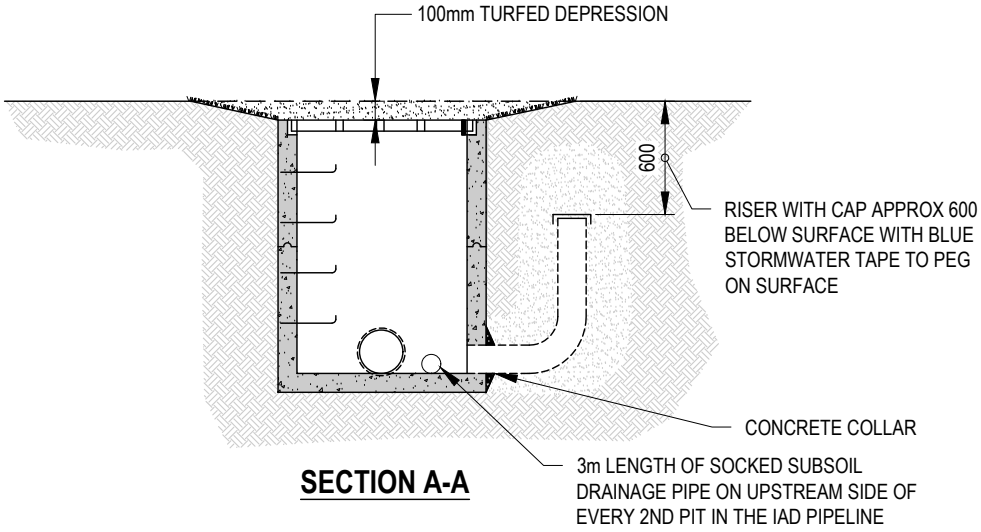
PIT DEPTH	<900	900 - 1200	>1200
`Y'	450	600	600
`Z'	450	600	900



PLAN

NOTE:

1. INTER-ALLOTMENT DRAINAGE PITS SHALL BE PROVIDED TO THE LOW CORNER OF EACH LOT UNLESS OTHERWISE PROVIDED.
2. PITS WILL ALSO BE PROVIDED AT CHANGES OF PIPE SIZE, CHANGES IN GRADE, CHANGED IN PIPE TYPE OR CLASS AND CHANGES IN DIRECTION OF 45° OR GREATER. SUCH PITS ARE TO BE A MINIMUM INTERNAL SIZE OF 450 x 450 APPROVED PRECAST OR CAST INSITU.
3. PITS SHALL BE COVERED BY AN APPROVED GRATE TO PROVIDE AN ADEQUATE SURFACE WATER INLET. ALL GRATES ARE TO BE PROVIDED WITH EITHER "J" BOLTS OR PINS TO PREVENT REMOVAL. PITS SURROUNDS WILL BE TURFED AND PEGGED OR NETTED TO A MINIMUM WIDTH OF 500mm.
4. PIT INLET GRATES SHALL BE DEPRESSED 100mm BELOW SURROUNDING GROUND LEVEL TO ASSIST SURFACE WATER COLLECTION.
5. PROVIDE STEP IRONS FOR PITS DEEPER THAN 1.2m. REFER TO SD039. SUCH PITS ARE TO HAVE A MINIMUM INTERNAL SIZE OF 900 x 600mm.
6. CONNECTION FOR ROOF WATER FOR SINGLE RESIDENTIAL DWELLINGS SHALL BE PROVIDED VIA A 150mm DIA. STUB INTO THE SIDE OF THE PIT.
7. PIPE CONNECTION TO PIT TO BE SEALED WITH MINIMUM 100mm MORTAR COLLAR FOR SEAL AND SUPPORT.



SECTION A-A

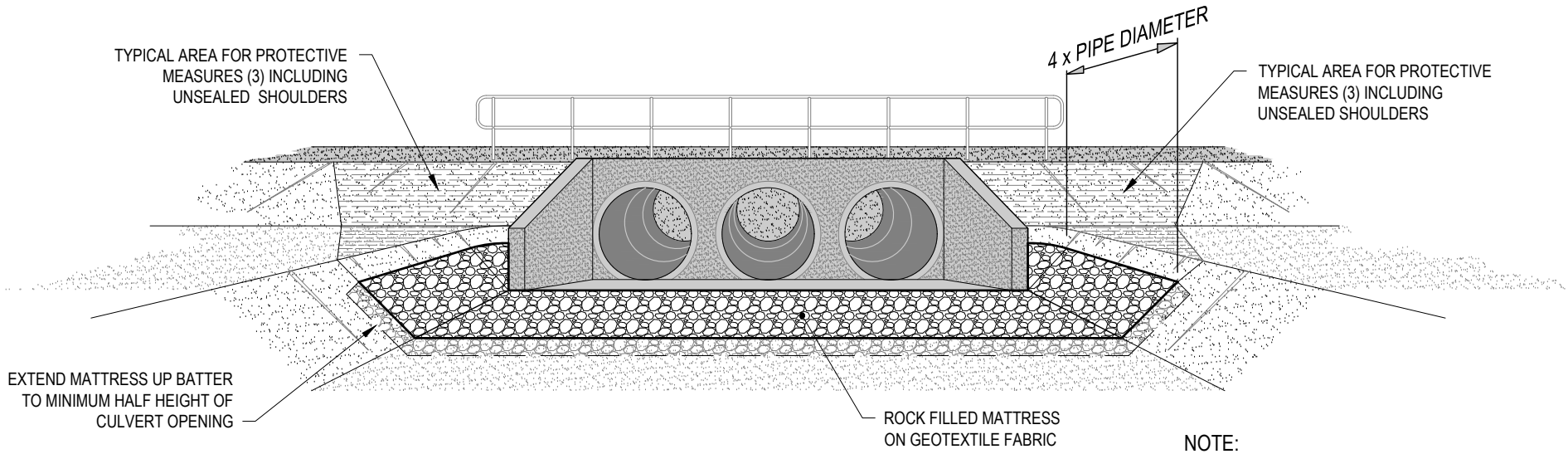
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

INTER ALLOTMENT DRAINAGE PIT

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

SD043



NOTE:

1. SAFETY FENCING SHALL BE PROVIDED ABOVE HEADWALL SUBJECT TO PROXIMITY OF PEDESTRIANS.
2. ENERGY DISSIPATERS SHALL BE INCLUDED IN THE DESIGN AS REQUIRED
3. WHERE THERE IS A POSSIBILITY OF OVERFLOW OF THE ROAD, SCOUR PROTECTION MEASURES ARE TO BE IMPLEMENTED ON SHOULDERS AND BATTERS

maitland city council
infrastructure & works

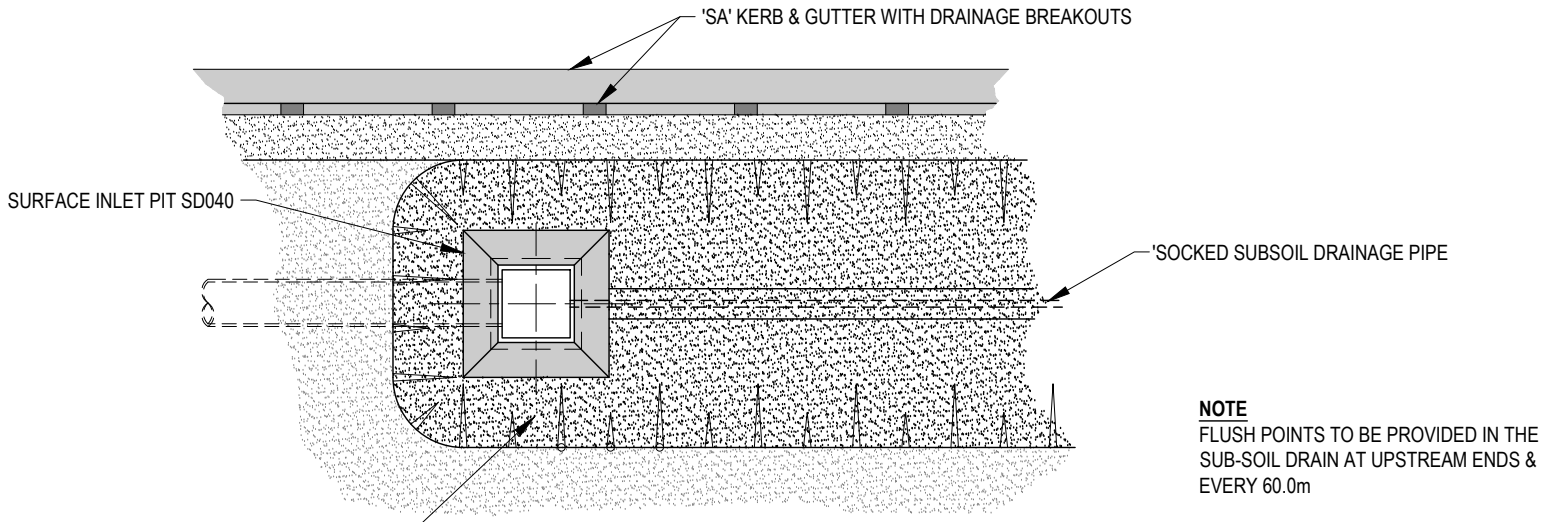
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

HEADWALL SCOUR PROTECTION TYPICAL TREATMENT

Rev: 08/04/2019

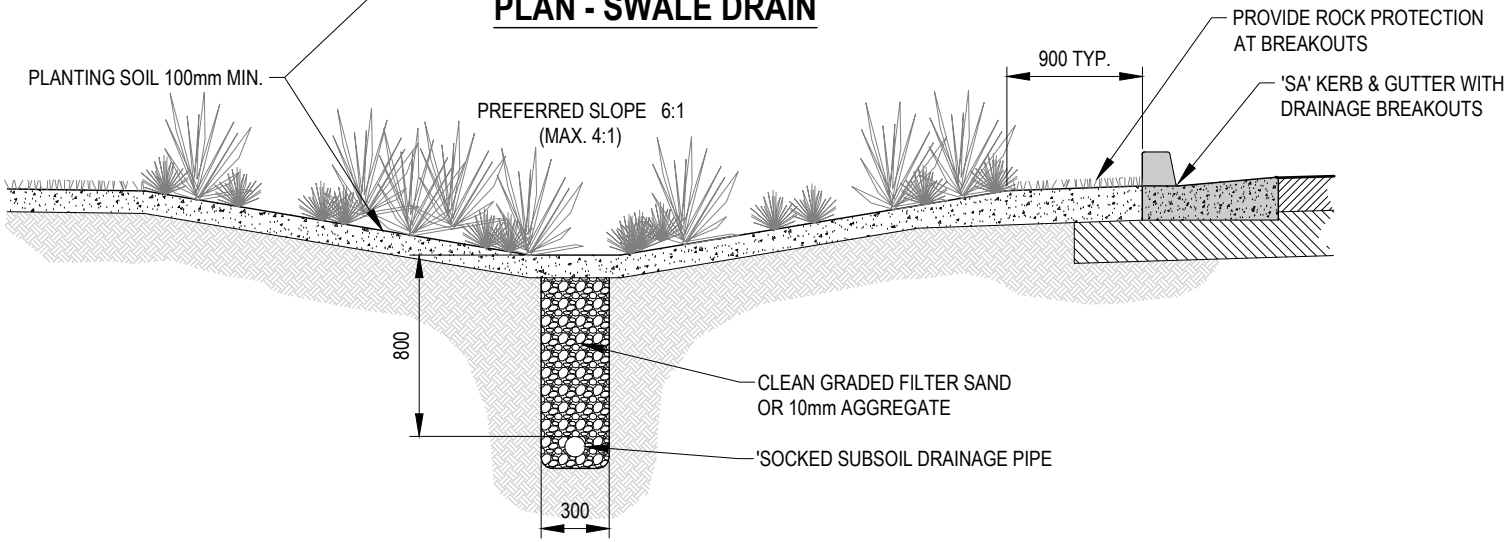
SD045

SHEET 01 of 01



NOTE
FLUSH POINTS TO BE PROVIDED IN THE SUB-SOIL DRAIN AT UPSTREAM ENDS & EVERY 60.0m

PLAN - SWALE DRAIN



TYPICAL SECTION - SWALE DRAIN

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

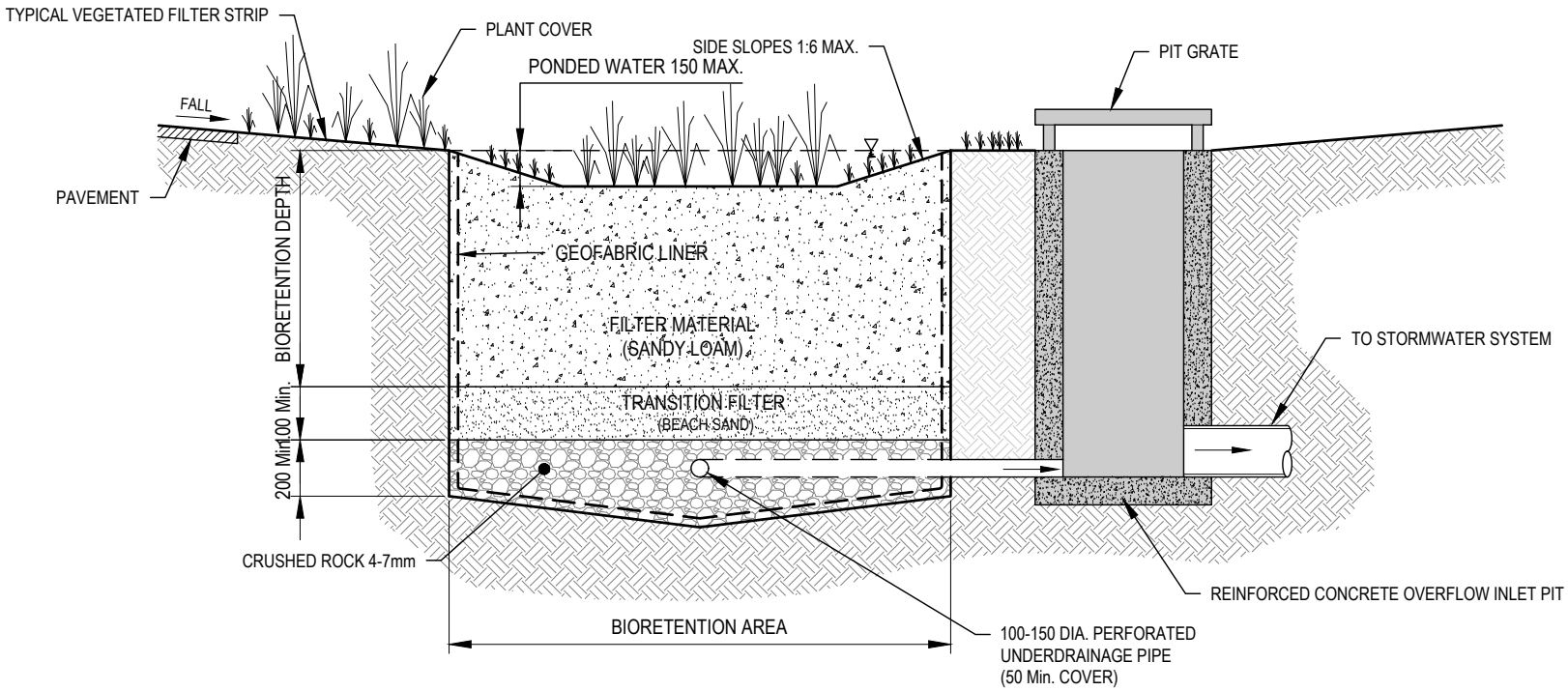
DRAINAGE SWALE

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

SD046

SHEET 01 of 01



NOTE:

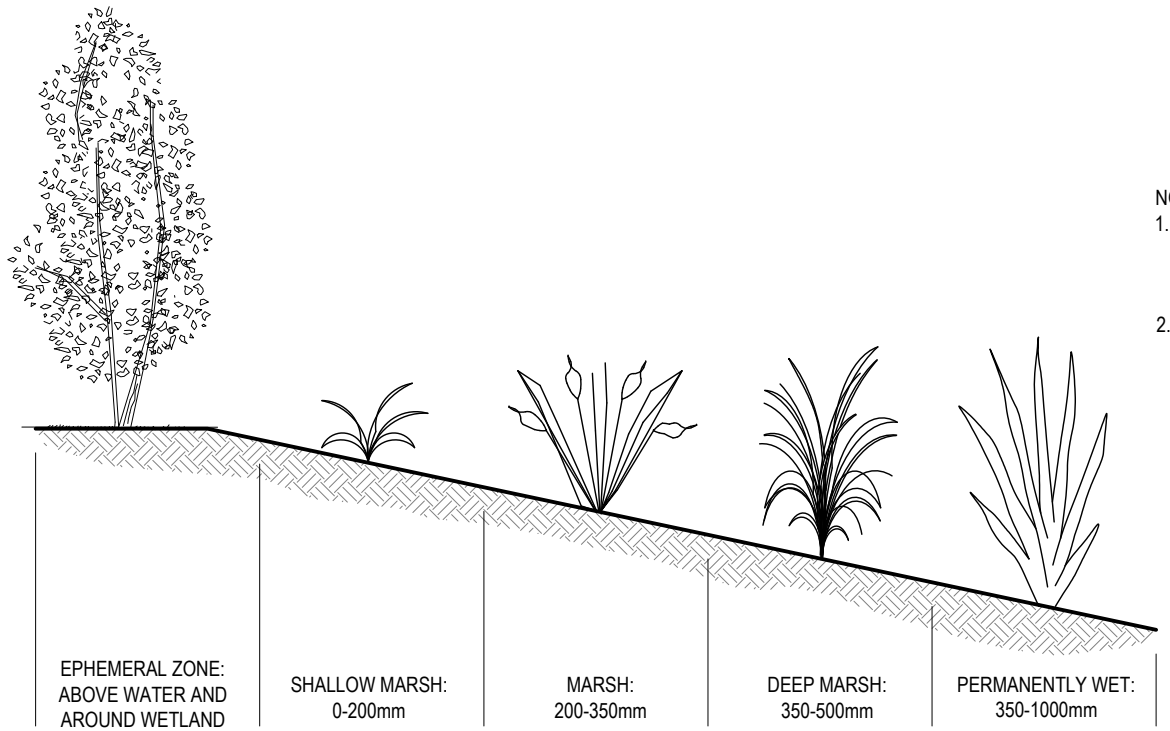
1 ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE

2. THE BIORETENTION SYSTEM SHALL BE DESIGNED BY A SUITABLY QUALIFIED ENVIRONMENTAL ENGINEER TAKING INTO ACCOUNT THE FOLLOWING:
   - TREATABLE VOLUME
   - TREATABLE FLOW RATE
   - MAXIMUM PONDED DEPTH (150mm)
   - MAXIMUM SIDE SLOPES (1:6)
   - FILTER MEDIA HYDRAULIC PERMEABILITY
   - PLANT SPECIES
   - SURFACE AREA AND DIMENSIONS OF SYSTEM
   - FILTER AREA AND DEPTH
   - UNDERDRAINAGE PIPE SIZE
   - TRANSITION SAND LAYER
   - BACK FLUSH FOR UNDERDRAINAGE PIPES
   - HIGH FLOW BYPASS
   - LOW PERMEABILITY LINER (IF REQUIRED)
3. THE BIORETENTION SYSTEM SHALL NOT BE USED FOR SEDIMENT CONTROL DURING CONSTRUCTION.
4. PITS AND GRATES IN ACCORDANCE WITH COUNCIL STANDARDS.

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

BIORETENTION SYSTEM (PLANTING BED)

Rev: 01/07/15
SD047
SHEET 01 of 01



NOTE:
1. ANY TREES SURROUNDING WETLAND SHOULD BE DISTANCED TO ALLOW ACCESS BY MAINTENANCE PLANR IN AND AROUND WETLAND.
2. ALL WEATHER ACCESS IS REQUIRED TO WETLAND.

EPHEMERAL ZONE (ABOVE WATER LEVEL AND AROUND WETLAND):

- Eucalyptus camaldulensis Red River Gum
- Tristaniopsis laurina Water Gum
- Callistemon salignus Willow Bottlebrush
- Banksia integrifolia Coast Banksia
- Casuarina glauca Swamp Oak
- Syzygium paniculatum Magenta Lilly Pilly
- Melaleuca quinquenervia Broad-leaved Paperbark
- Melaleuca styphelioides Black Tea Tree

SHALLOW MARSH (0 - 200mm):

- Baumea articulata Jointed Twig-rush
- Bolboschoenus caldwellii Club-rush
- Bolboschoenus fluviatilis Stream Club-sedge
- Eleocharis acuta Spike-rush
- Juncus usitatus Common-rush
- Schoenoplectus validus River Club-rush

MARSH (200 - 350mm):

- Lepironia articulata
- Eleocharis acuta Spike-rush
- Carex inversa Knob Sedge

DEEP MARSH (350 - 500mm):

- Baumea articulata Jointed Twig-rush
- Bolboschoenus caldwellii Club-rush
- Eleocharis acuta Spike-rush
- Juncus usitatus Common-rush
- Schoenoplectus validus River Club-rush
- Triglochin procerum Water Ribbons
- Vallisneria gigantea Ribbonweed

PERMANENTLY WET (350 - 1000mm):

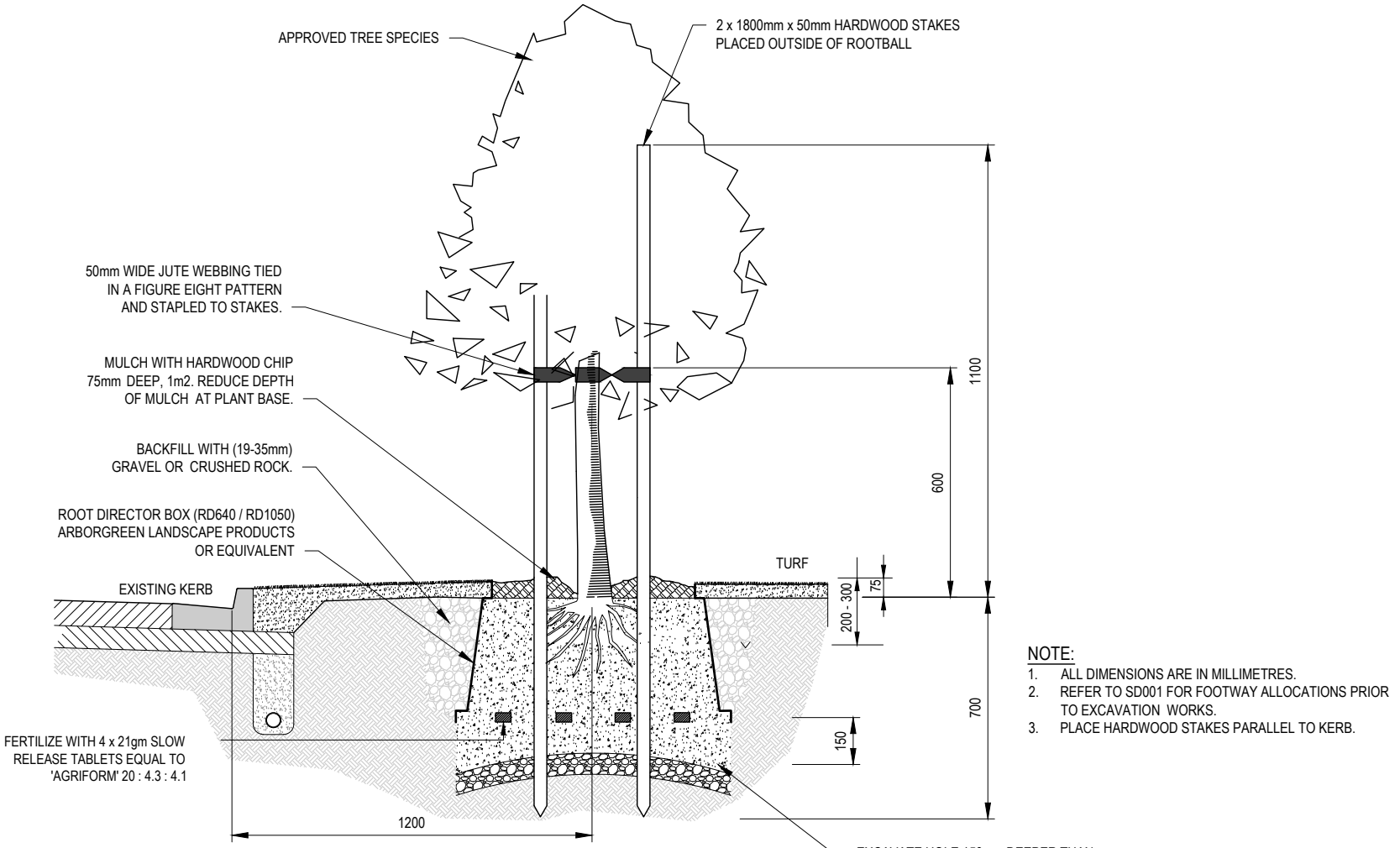
- Bolboschoenus caldwellii Club-rush
- Ceratophyllum demersum Hornwort
- Ranunculus inundatus Buttercup
- Triglochin procerum Water Ribbons
- Vallisneria gigantea Ribbonweed

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

WETLAND SPECIES LIST

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15
SD048
SHEET 01 of 01



TYPICAL SECTION

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SD001 FOR FOOTWAY ALLOCATIONS PRIOR TO EXCAVATION WORKS.
3. PLACE HARDWOOD STAKES PARALLEL TO KERB.

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

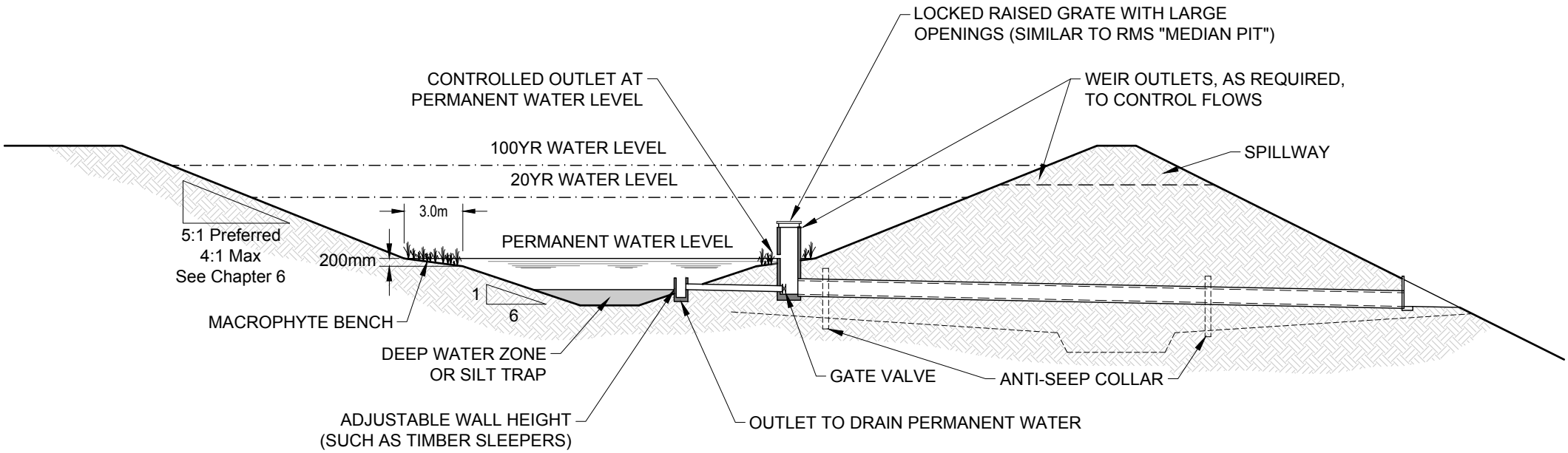
STREET TREE PLANTING
TYPICAL TREATMENT

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/2019

SD049

SHEET 01 of 01



TYPICAL ARRANGEMENT

maitland city council
infrastructure & works

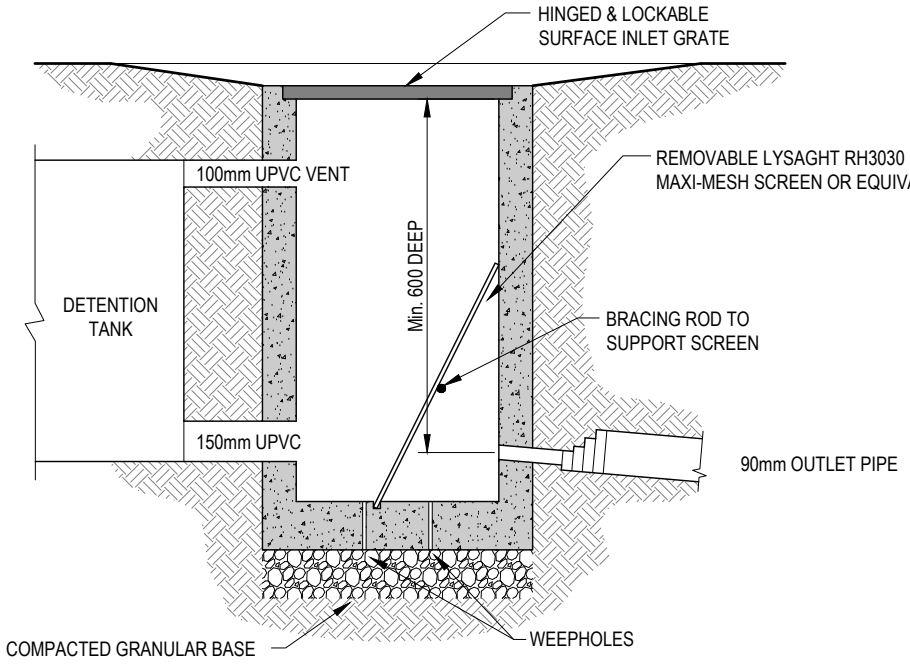
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

CONSTRUCTED WETLAND (with Detention)

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

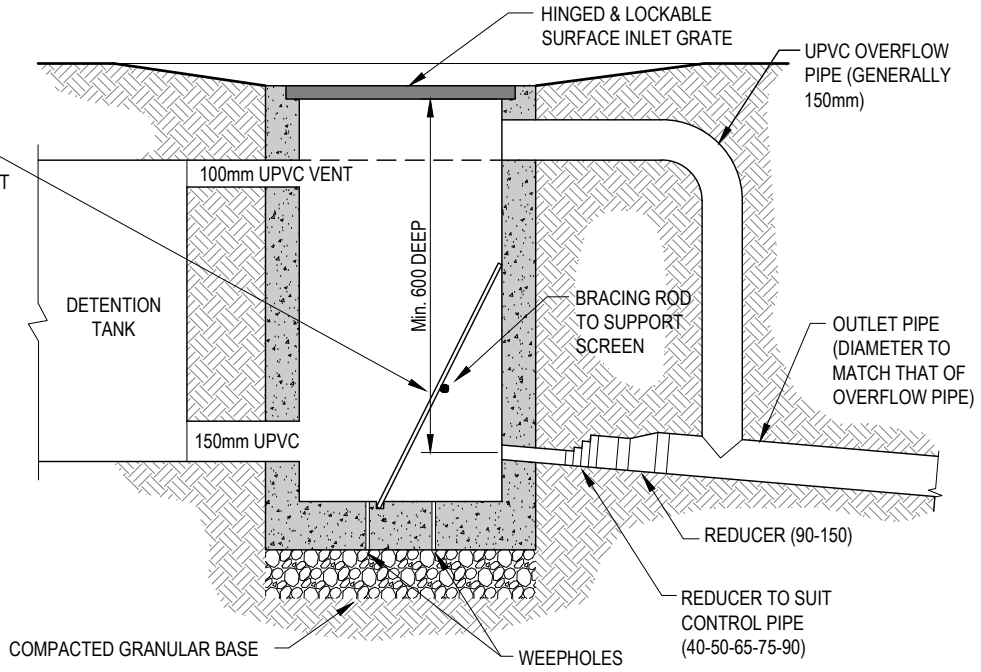
Rev: 01/07/15

SD050



WITHOUT OVERFLOW PIPE

(WHERE SURFACE OVERFLOW AVAILABLE)



WITH OVERFLOW PIPE

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. STORMWATER PIPES TO BE SEWER GRADE ACROSS PUBLIC FOOTWAY.
3. CONCRETE COMPRESSIVE STRENGTH 32MPa.
   SIDE WALLS OF ALL PITS DEEPER THAN 1500 ARE TO BE REINFORCED WITH ONE LAYER OF SL82 MESH RETURNED 300 INTO BASE. WHERE REQUIRED INCREASE CONCRETE STRENGTH TO 32MPa.
4. DEPTH OF PIT NOT TO EXCEED 2000mm.
5. PROVIDE STEP IRONS FOR PITS DEEPER THAN 1200mm REFER TO SD039.
6. ALL EXPOSED EDGES TO BE ROUNDED WITH 20mm RADIUS

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

ON-SITE STORMWATER DETENTION PIT

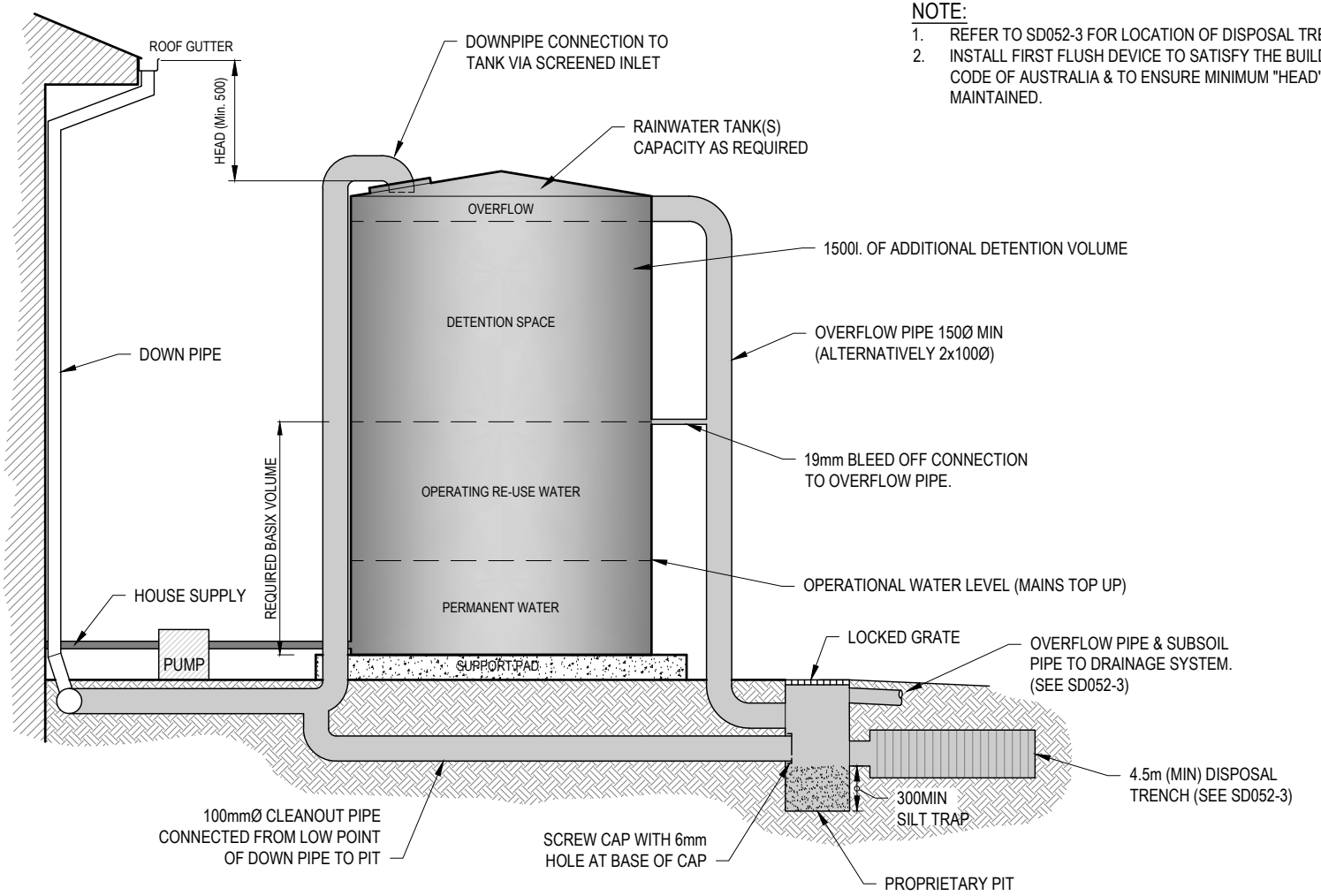
MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

SD052

SHEET 01 of 03

NOTE:
1. REFER TO SD052-3 FOR LOCATION OF DISPOSAL TRENCH.
2. INSTALL FIRST FLUSH DEVICE TO SATISFY THE BUILDING CODE OF AUSTRALIA & TO ENSURE MINIMUM "HEAD" IS MAINTAINED.



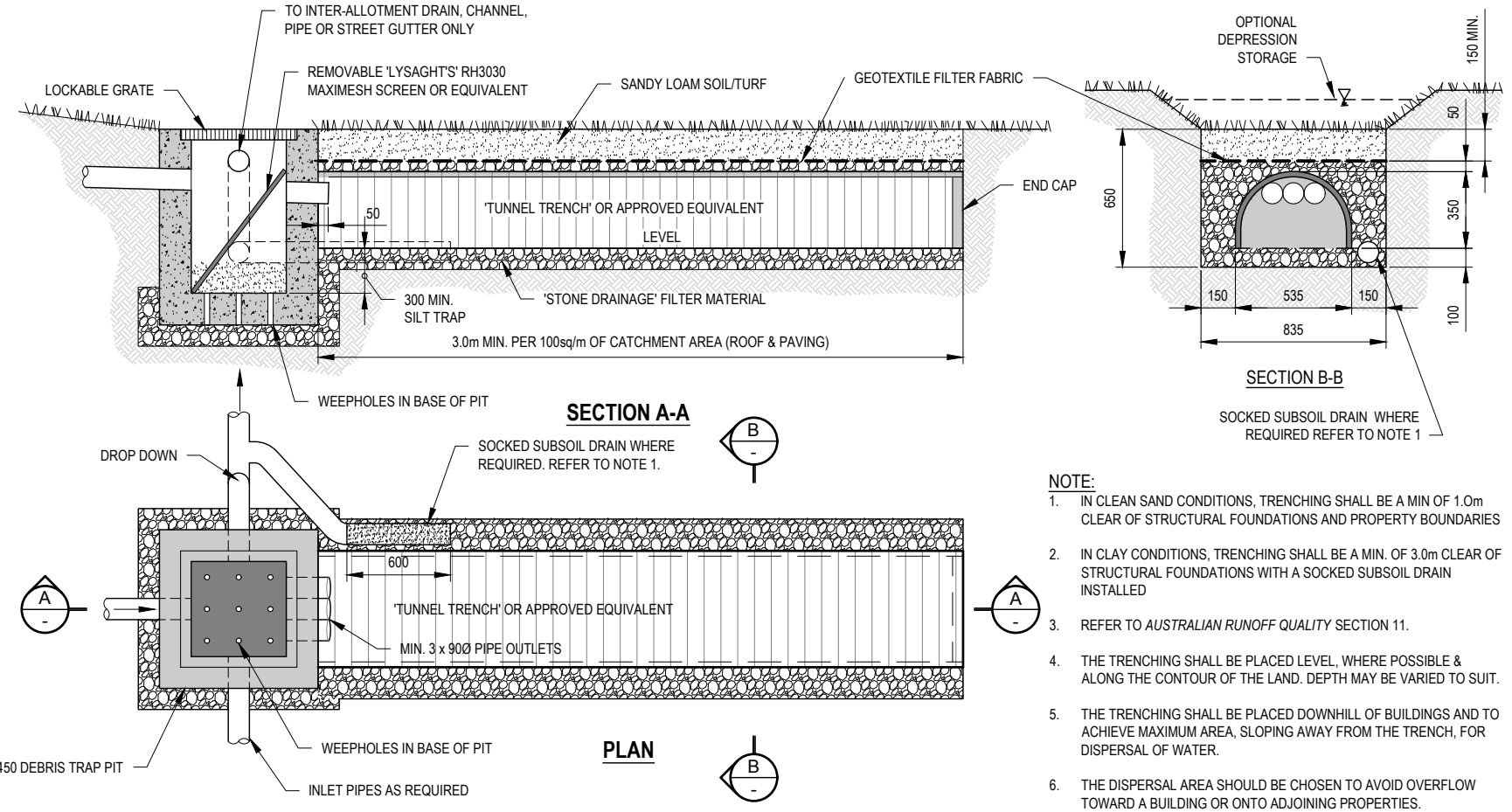
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

ON-SITE STORMWATER DETENTION TANK & DISPOSAL TRENCH

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

SD052



NOTE:

1. IN CLEAN SAND CONDITIONS, TRENCHING SHALL BE A MIN OF 1.0m CLEAR OF STRUCTURAL FOUNDATIONS AND PROPERTY BOUNDARIES
2. IN CLAY CONDITIONS, TRENCHING SHALL BE A MIN. OF 3.0m CLEAR OF STRUCTURAL FOUNDATIONS WITH A SOCKED SUBSOIL DRAIN INSTALLED
3. REFER TO *AUSTRALIAN RUNOFF QUALITY* SECTION 11.
4. THE TRENCHING SHALL BE PLACED LEVEL, WHERE POSSIBLE & ALONG THE CONTOUR OF THE LAND. DEPTH MAY BE VARIED TO SUIT.
5. THE TRENCHING SHALL BE PLACED DOWNHILL OF BUILDINGS AND TO ACHIEVE MAXIMUM AREA, SLOPING AWAY FROM THE TRENCH, FOR DISPERSAL OF WATER.
6. THE DISPERSAL AREA SHOULD BE CHOSEN TO AVOID OVERFLOW TOWARD A BUILDING OR ONTO ADJOINING PROPERTIES.

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

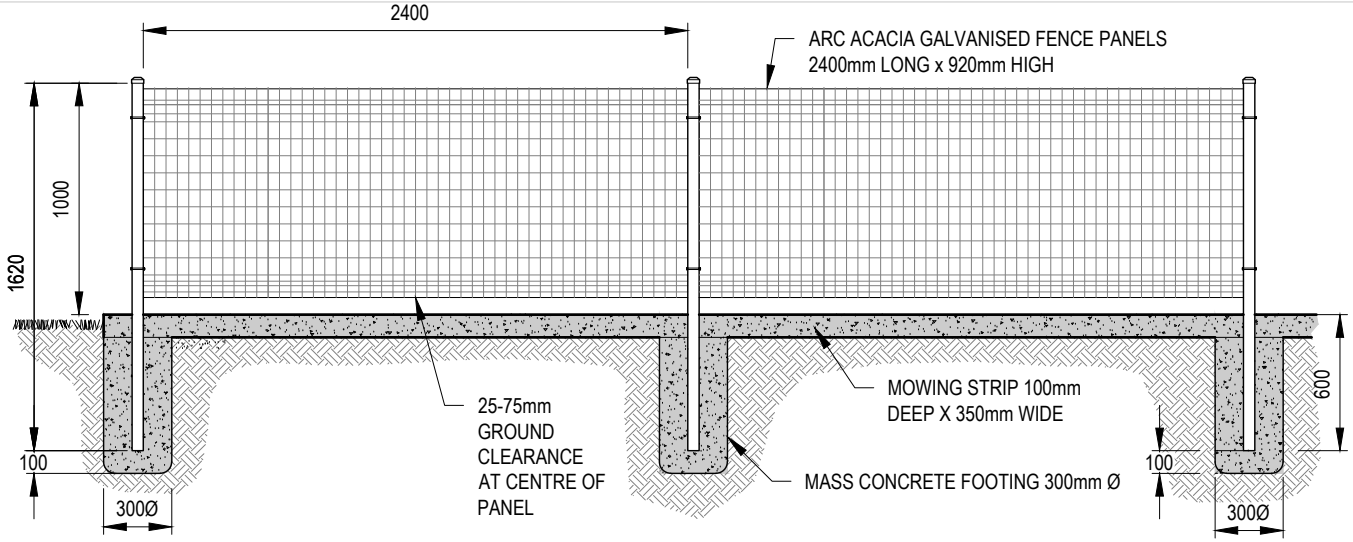
ONSITE STORMWATER DISPOSAL TRENCH

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 01/07/15

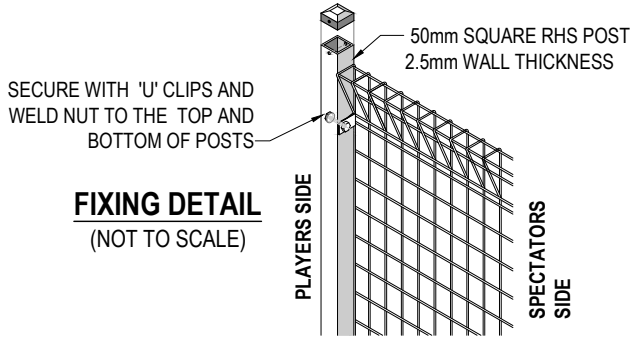
SD052

SHEET 03 of 03



WELDMESH FENCE

(NOT TO SCALE)

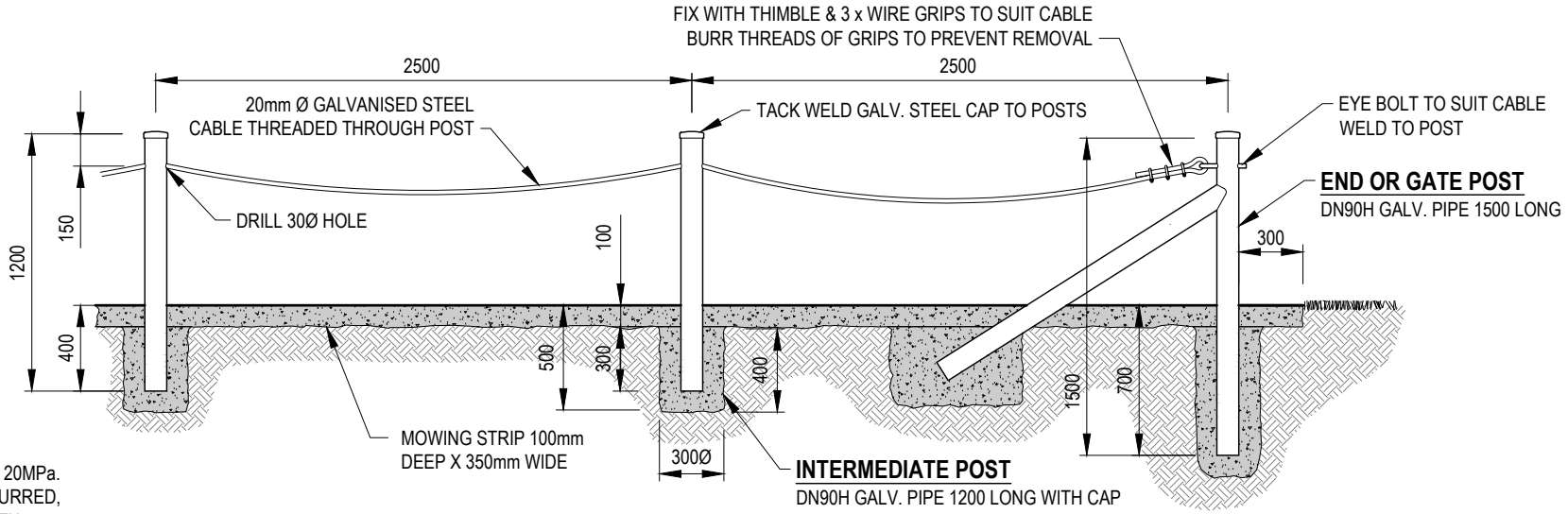


FIXING DETAIL

(NOT TO SCALE)

NOTE

1. ALL DIMENSIONS ARE IN MILLIMETRES
2. 20MPa CONCRETE
3. INSTALL CONTROL JOINT AT EACH POST
4. INSTALL EXPANSION JOINT AT EVERY 6th POST



POST & CABLE FENCE

(NOT TO SCALE)

NOTE

1. FOOTING CONCRETE TO BE 20MPa.
2. ALL WELDS ARE TO BE DEBURRED, CLEANED & PROTECTED WITH COLD GALVANISED PAINT.

maitland city council
infrastructure & works

po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

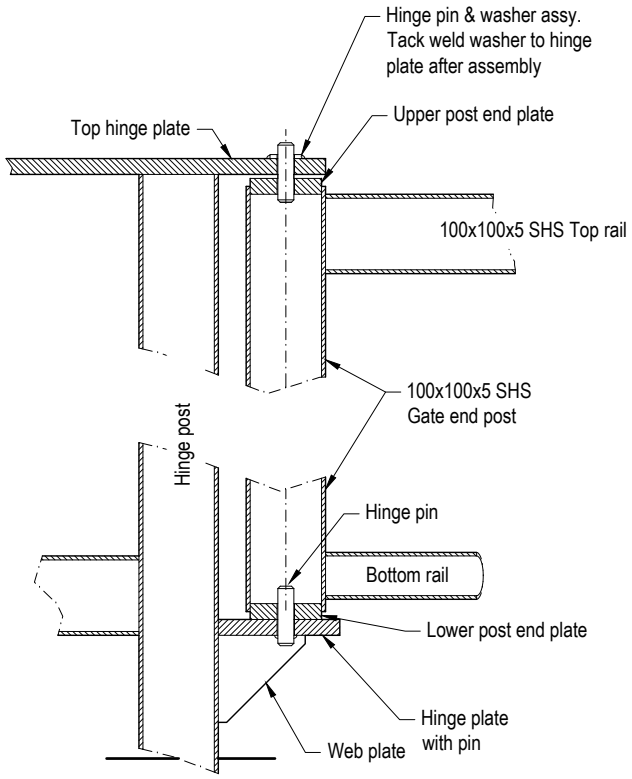
FENCING

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

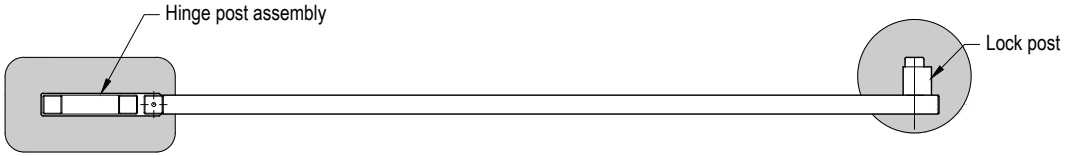
Rev: 01/07/15

SD057

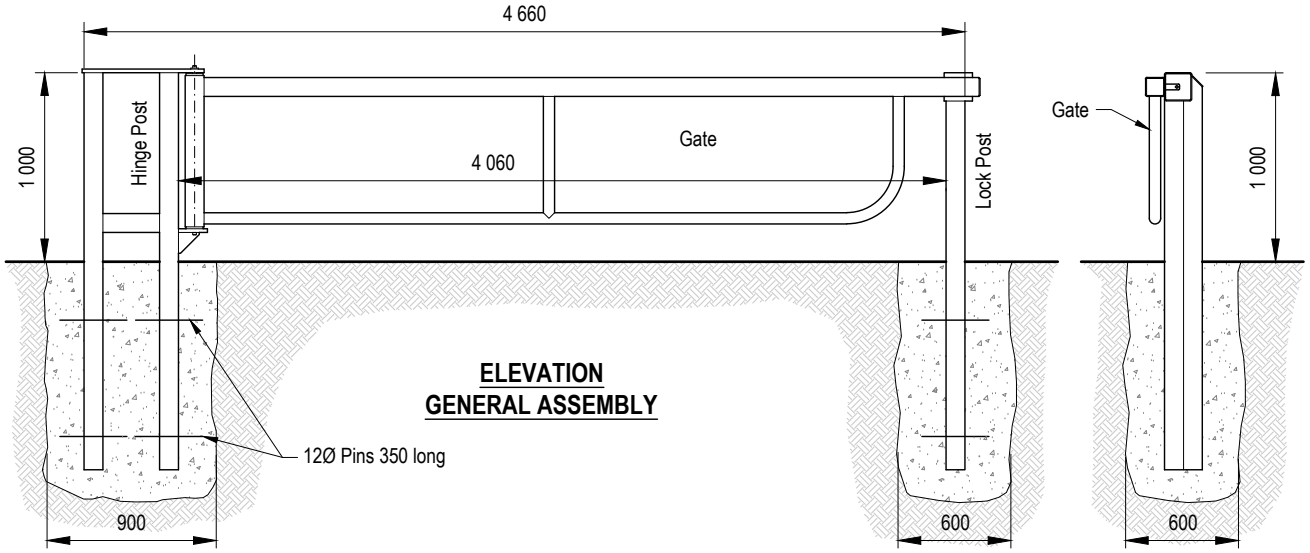
SHEET 01 of 01



HINGE ASSEMBLY DETAIL



PLAN - GENERAL ASSEMBLY



ELEVATION
GENERAL ASSEMBLY

LOCK POST

NOTE
1. All dimensions are in millimetres
2. All welds to be 6mm continuous fillet
3. Gate & posts to be hot dipped galvanised after fabrication
4. All field welds to be cold galvanised
5. All concrete to be 20MPa

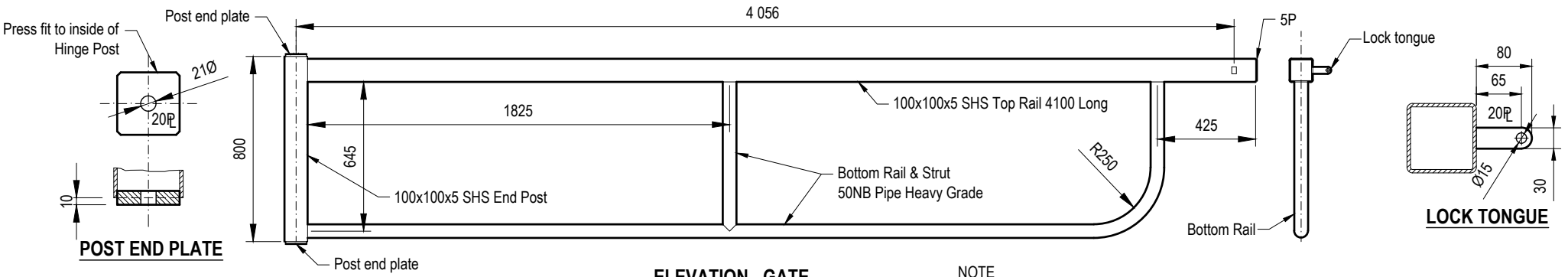
maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

STANDARD ACCESS GATE GENERAL ARRANGEMENT

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

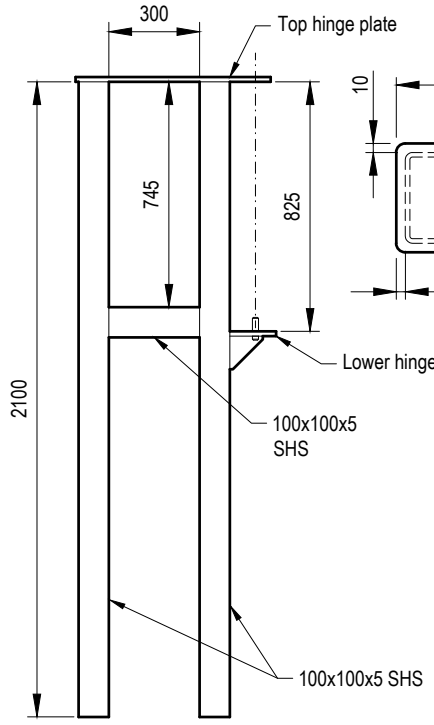
Rev: 22/07/2019

SD058

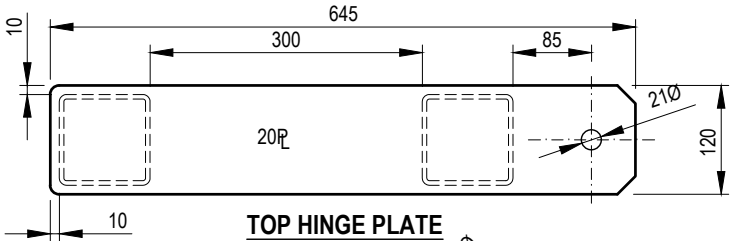


NOTE

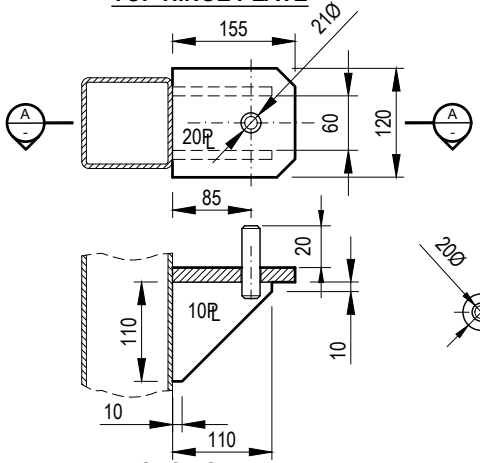
1. All dimensions are in millimetres
2. All welds to be 6mm continuous fillet
3. Gate & posts to be hot dipped galvanised after fabrication
4. All field welds to be cold galvanised
5. All concrete to be 20MPa



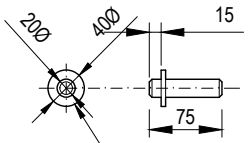
HINGE POST



TOP HINGE PLATE

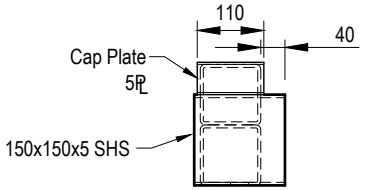


SECTION A-A
LOWER HINGE ASSEMBLY

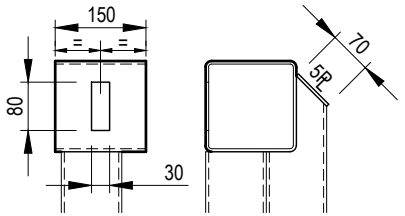


Washer required for top pin only. Weld to pin.
Field weld washer to hinge plate after gate assembly

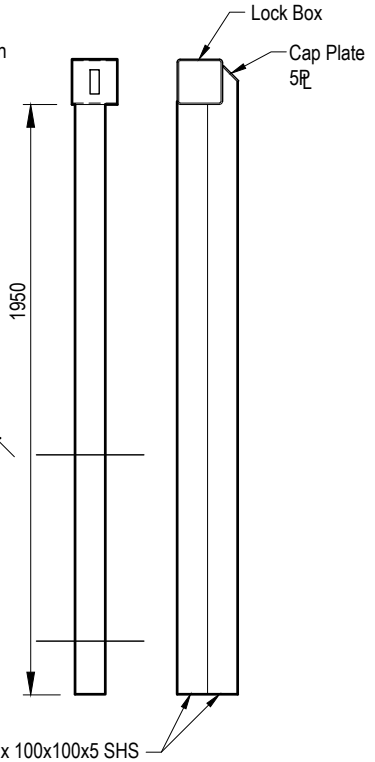
HINGE PIN



Plan



LOCK BOX



LOCK POST

See Sheet 58/1 for hinge assembly detail

maitland city council
infrastructure & works
po box 220, maitland nsw 2320
email: mcc@maitland.nsw.gov.au

STANDARD ACCESS GATE COMPONENTS

MANUAL OF ENGINEERING STANDARDS - STANDARD DRAWINGS

Rev: 22/07/2019
SD058
SHEET 02 of 02