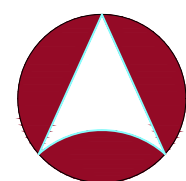


# TASMANIAN STANDARD DRAWINGS

VERSION 3 DECEMBER 2020



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### Northern Region



### Southern Region



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- TSD-E02 EXCLUSIONS 2
- TSD-A01 AMENDMENTS

SCALES: AS SHOWN  
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## STANDARD DRAWING INDEX SHEET

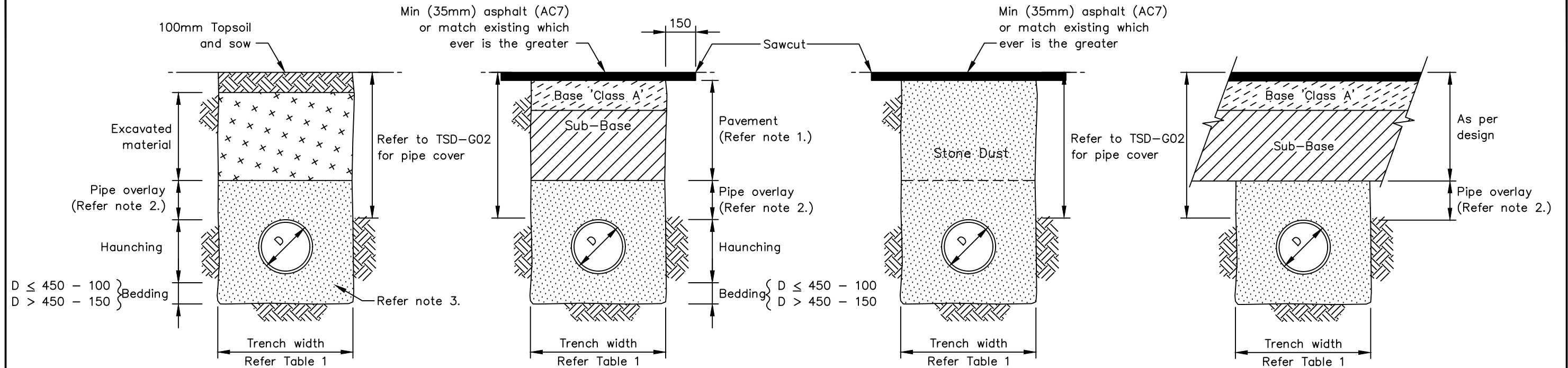
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NON TRAFFICABLE

EXISTING ROADS

• CLASS 4 LOCAL ROADS

EXISTING ROADS

• PARKING LANES – ALL ROADS  
• FOOTPATHS / DRIVEWAYS

NEW ROADS

TABLE 1 – TRENCH WIDTH

PIPE TYPE	NOM. DIA. (D)	TRENCH WIDTH*
Concrete	≤ 1500	D + 300
	> 1500	Design required
Other pipes	100	300
	150	450
	225 – 300	600
	450	750
	450 – 1500	D + 600
	> 1500	Design required

\* Minimum trench widths may be varied above the pipe overlay zone to meet 'Workplace Standards' requirements. (i.e. Trenches greater than 1.5m deep) Excavations over 1.5m may require risk assessment.

TABLE 2

MATERIAL TYPE	TEST METHOD	TRAFFICABLE	NON-TRAFFICABLE
Non-cohesive (i.e. Granular)	Density Index ( $I_D$ ) AS 1289.5.6.1	70	60
Cohesive	Dry Density Ratio ( $R_D$ ) AS 1289.5.4.1 and AS 1289.5.1.1	95	90

NOTES

1. Pavement = 300 min. Granular or match existing which ever is the greater.
2. Pipe overlay depth – Min. 150mm
3. Refer to manufacturers recommendations for bedding, haunching and overlay requirements.
4. Compaction of pipe bedding, haunching and overlay – Refer Table 2.
5. Refer to AS/NZS 3725–2007 Table B1 (H2/HS2 Bedding Support Type)

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**STANDARD DRAWING**  
TRENCH REINSTATEMENT  
FLEXIBLE PAVEMENTS

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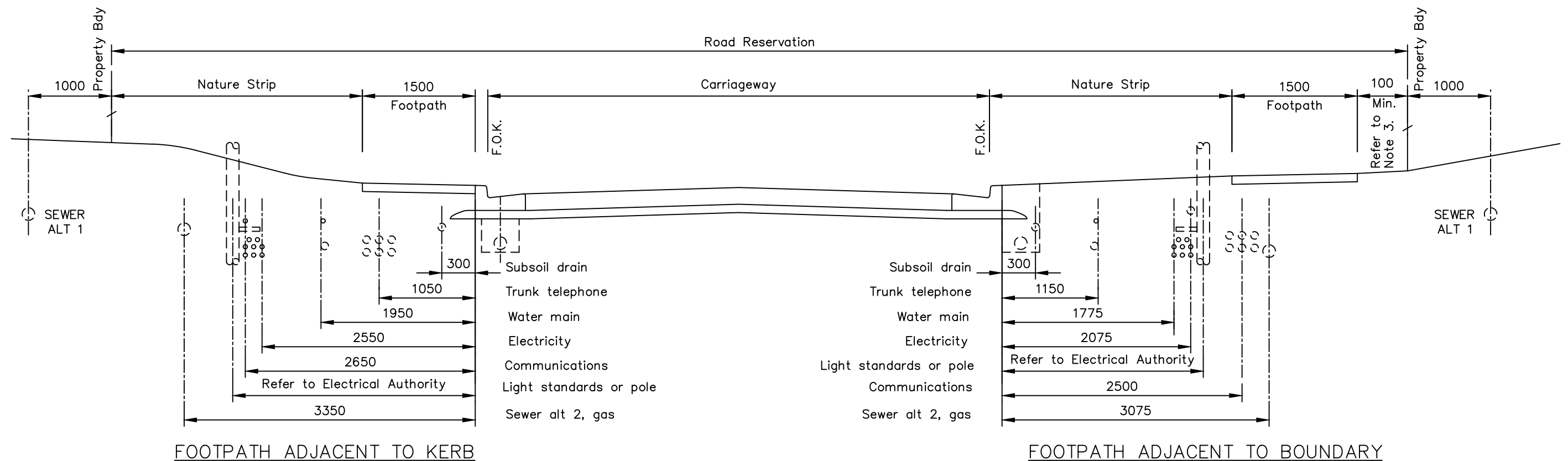
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TSD-G01.v3





#### MINIMUM DEPTH REQUIREMENTS – FOR UNDERGROUND PUBLIC SERVICES

LOCATION			Stormwater	MINIMUM PIPECOVER REQUIRED (mm)		Services
				*Water Mains/Connections (dia 100mm or greater)	(dia < 100mm)	
PRIVATE PROPERTY	Not subject to vehicular loading	Backyards, Gardens areas	450	–	–	For electricity, communications and other services, contact the relevant authority for advice.
	Subject to vehicular loading	Driveways, Parking areas	600	–	–	
PUBLIC PROPERTY	Not subject to vehicular loading	Footpaths, Nature strip	600	600	450	
	Subject to vehicular loading	Vehicular crossing over footpath	600	600	450	
		Non–arterial roads	900	750	600	
		Arterial roads	1200	900	750	
		Gas	–	–	–	750
		Electricity	–	–	–	750
		Communications	–	–	–	600

\* Refer to local water authority for additional cover requirements.

#### NOTES

- Conduits may be required for future services, refer to relevant authorities.
- For electricity, telephone and other services, contact the relevant authorities.
- May need to increase to accommodate services eg. underground power.
- All cover is subject to installation design.
- Refer to AS/NZS 3725–2007.

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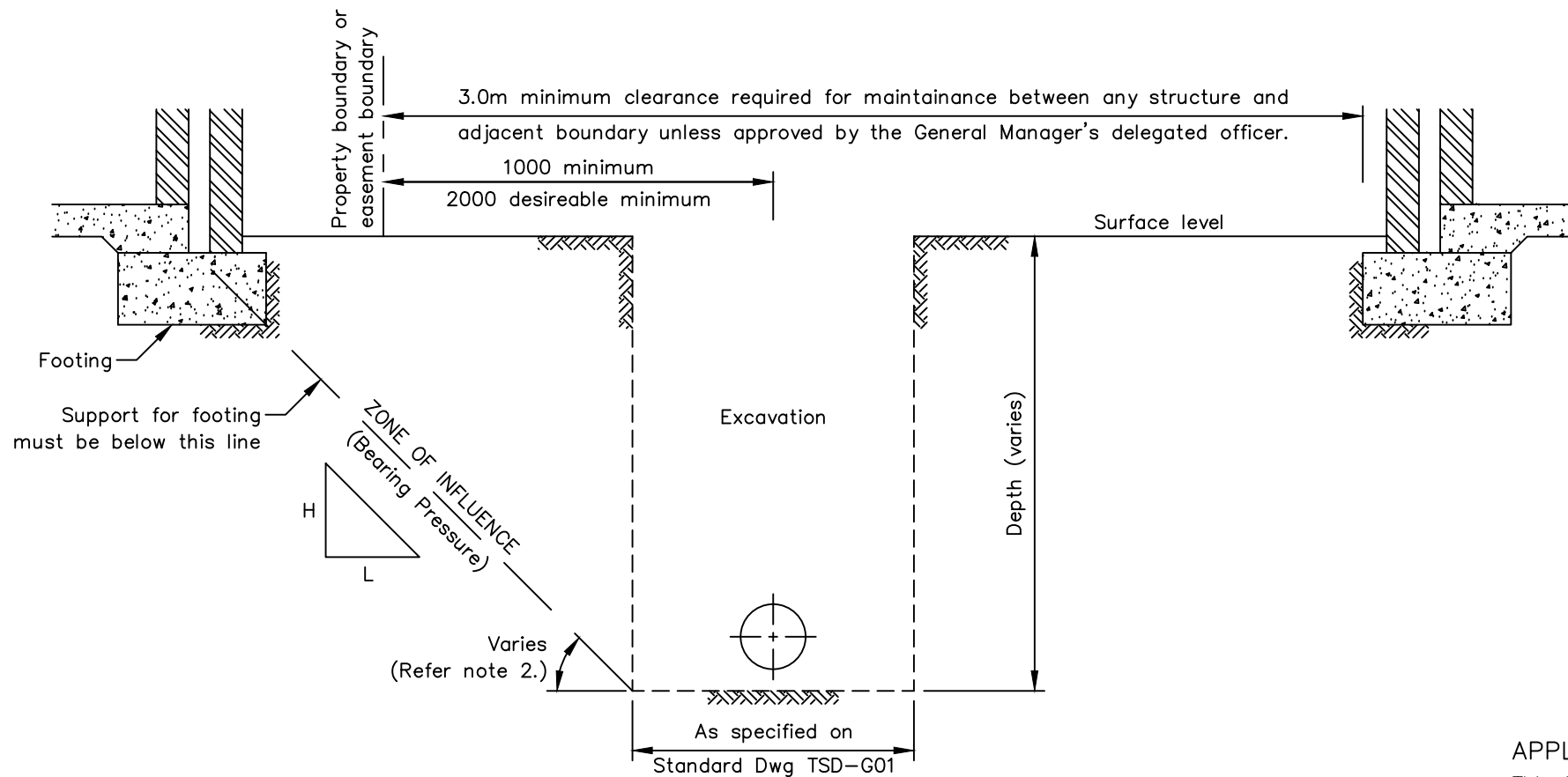
## STANDARD DRAWING URBAN ROADS TYPICAL SERVICE LOCATIONS

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TSD-G02.v3



PIPELINE – TYPICAL SECTION  
(BUILDING ADJACENT TO PIPELINE)  
(Shoring not shown for clarity)  
N.T.S.

TABLE 1

SOIL TYPE	ANGLE OF SLOPE (H : L)	
	Compacted Fill	Cut
Stable rock*	2: 3	8: 1
Sand*	1: 2	1: 2
Silt**	1: 4	1: 4
Firm clay	1: 2	1: 1
Soft clay	Not suitable	2: 3
Soft soils**	Not suitable	Not suitable

\* Most sand and rock sites with little or no ground movement from moisture changes.

\*\* Sites include soft soils, such as soft clay or loose sands, landslip, mine subsidence, collapsing soils, soils subject to erosion, reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.

\*\*\* Note: excavations over 1.5m may require benching and or shoring – refer to risk assessment.

## OBJECTIVES

Minimise the risk of:

1. damage caused by an adjacent trench excavation to an existing structure due to;
  - a reduction in support of the footing(s)
  - a change in the moisture content in the vicinity of the footing(s).
2. failure of a pipeline resulting from forces from an adjacent footing in addition to the anticipated backfill and 'In Service' loads on the pipeline.
3. trench collapse and injury to workers during a pipeline installation as a result of forces applied to the trench sides from an adjacent footing.

## APPLICATION

This Standard Drawing applies to Public Utility Pipelines (P.U.P's including supply mains, drains and conduits).

### References:

- AS NZS 3500.2 : 2003 'Plumbing and Drainage' for other pipelines as applicable.
- BCA Housing Provisions
- L.G.A.T. Standard Drawing TSD-G01

## NOTES

1. All foundation designs and proposed P.U.P's. must be submitted for approval prior to the commencement of works.
2. The design of footings and pipelines in the vicinity of footings, must be prepared by a suitably qualified and competent person and consider (but not restricted to) the following:
  - footing type and associated loading
  - existing soil types and properties
  - method of construction (footing/pipeline)
  - pipe class, trench support, trench backfill and 'In Service' loading to meet the objectives listed.
3. Table 1, adopted from the B.C.A. Housing Provisions, provides an indication of the range of the 'Zone of Influence' angle associated with different soil types for Cut/Fill situations.

SCALES: AS SHOWN  
(All scales are correct at A3)

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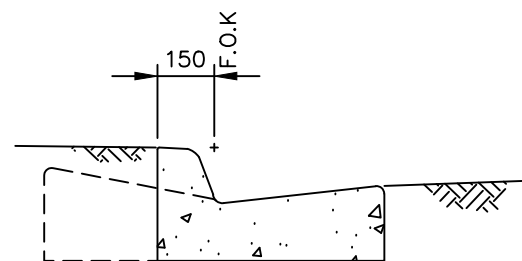
# STANDARD DRAWING GUIDE TO TRENCH EXCAVATION LIMITS ADJACENT TO FOOTINGS

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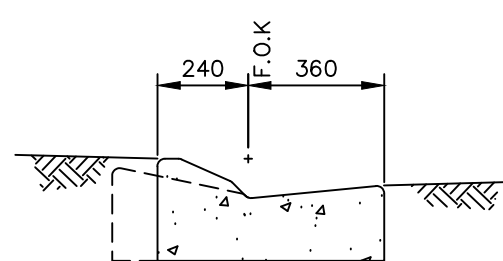
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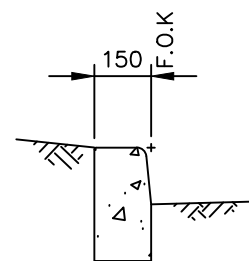
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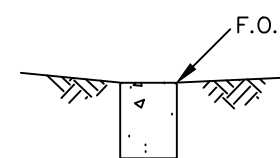
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(TYPE KCS SIMILAR)



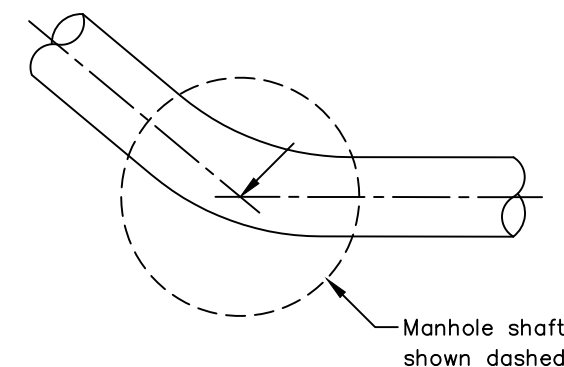
TYPE KCM



TYPE BK



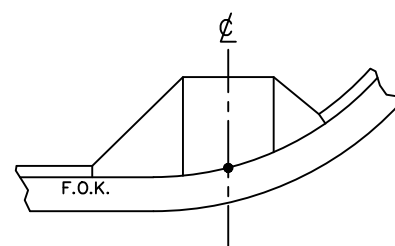
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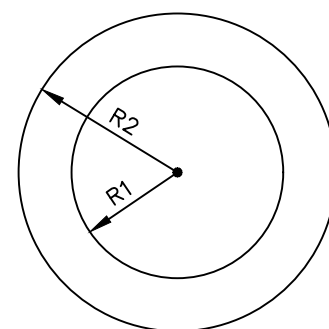
MANHOLE  
(INTERSECTION OF PIPELINES)



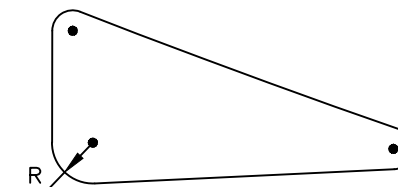
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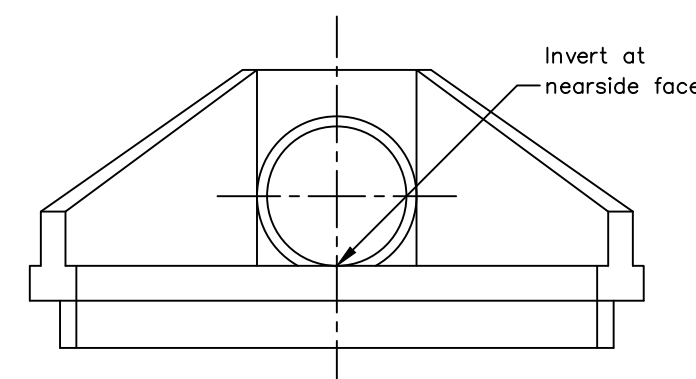
ACCESS RAMP



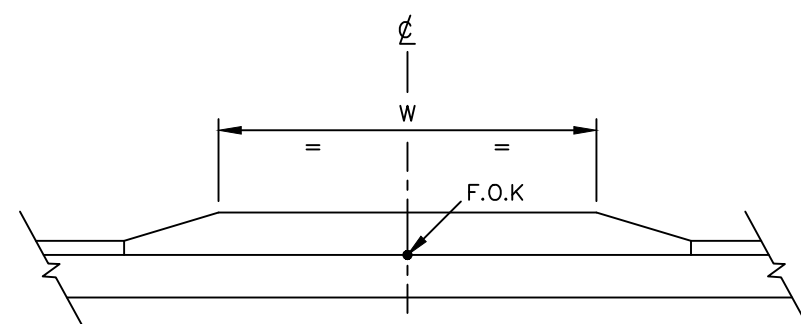
ROUNDBOUT  
(CENTRE OF RADII)



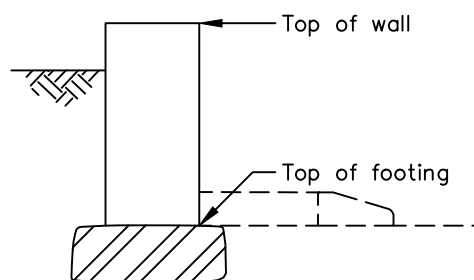
TRAFFIC ISLANDS  
(CENTRE OF RADII)



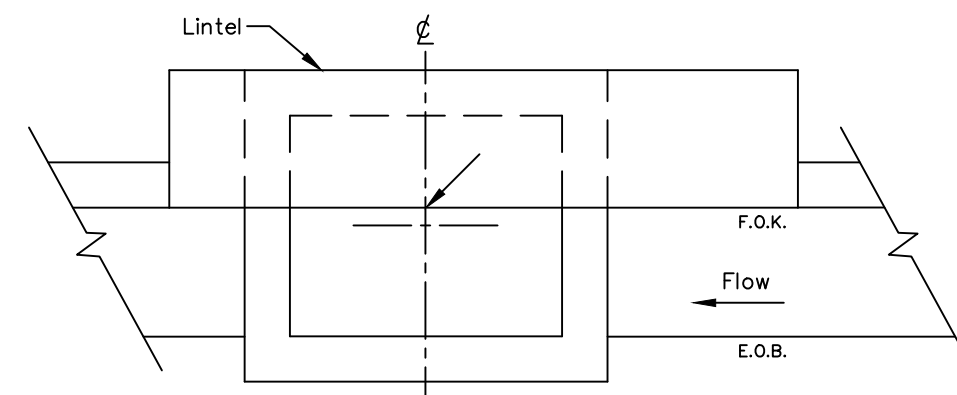
HEADWALL



VEHICULAR CROSSING



RETAINING WALL



SIDE ENTRY PIT – AS SHOWN  
(OTHER PITS – PIT CENTRE UNLESS NOTED)

SCALES: AS SHOWN  
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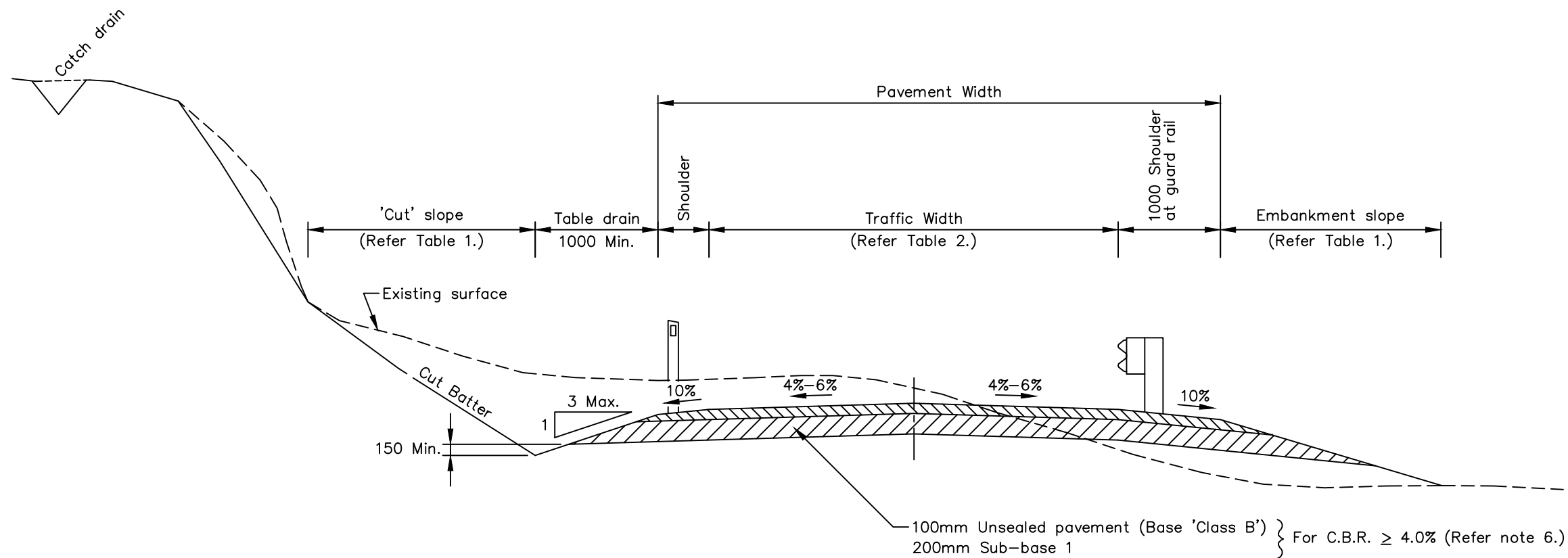
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TYPICAL CROSS SECTION  
SCALE 1 : 50

TABLE 1

SOIL / ROCK TYPE	EMBANKMENT		CUTTING	
	Vertical	Horizontal	Vertical	Horizontal
Solid Rock	—	—	1.00	0.25
Loose Rock	1.00	2.00	1.00	1.33
Sand	1.00	3.00	1.00	3.00
Stiff Clay	1.00	1.00	1.00	1.00
Soft Clay	1.00	3.00	1.00	1.50

TABLE 2

CODE*	A.A.D.T.	(w) TRAFFIC WIDTH	GRAVEL SHOULDER	VERGE	PAVEMENT WIDTH	LOGGING ROUTE	HEAVY VEHICLES	BUS ROUTE	Bends with < 60m sight line
US1	<30	4000 (S)	500	NO	5	NO	< 5%	NO	w + 1000
US2	30 – 100	4000 (S)	1000	NO	6	YES < 5%	< 5 %	YES	w + 1000
US3	100 – 300	5500 (D)	1000	NO	7.5	YES	< 10%	YES	w + 500
US4	> 300	6000 (D)	1000	NO	8	YES	> 10%	YES	w + 500

\*To satisfy a Road Class (eg. US3) the capability to comply with A.A.D.T, LOGGING ROUTE, HEAVY VEHICLE and BUS ROUTE is necessary.  
(S) – SINGLE LANE  
(D) – DUAL LANE

NOTES

- Alignment to satisfy min. Design speed.
- Roadside table drains, cut off drains and culverts to be installed to suit topography.
- Provision for widening or passing bays may be required where sight distance requirements cannot be met or there are limited options for vehicles to pull off the road.
- Refer Sheets TSD–R25 and TSD–R28 Guide Post. Safety barrier and terminal installation to be in accordance with AS5100:2017
- Refer to Austroads AGRD–10 Part 6: Roadside Design, Safety and Barriers
- Design of pavements to consider project traffic loading, sub–grade strength and comply with the procedures in either:
  - A.R.R.B. A.P.R.G. Report no. 21, A Guide to the Design of New Pavements for Light Traffic.
  - Austroads Guide to Pavement Technology 2019 Part 6 'A Guide To The Structural Design Of Road Pavements'

SCALES: AS SHOWN  
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**STANDARD DRAWING**  
RURAL ROADS UNSEALED

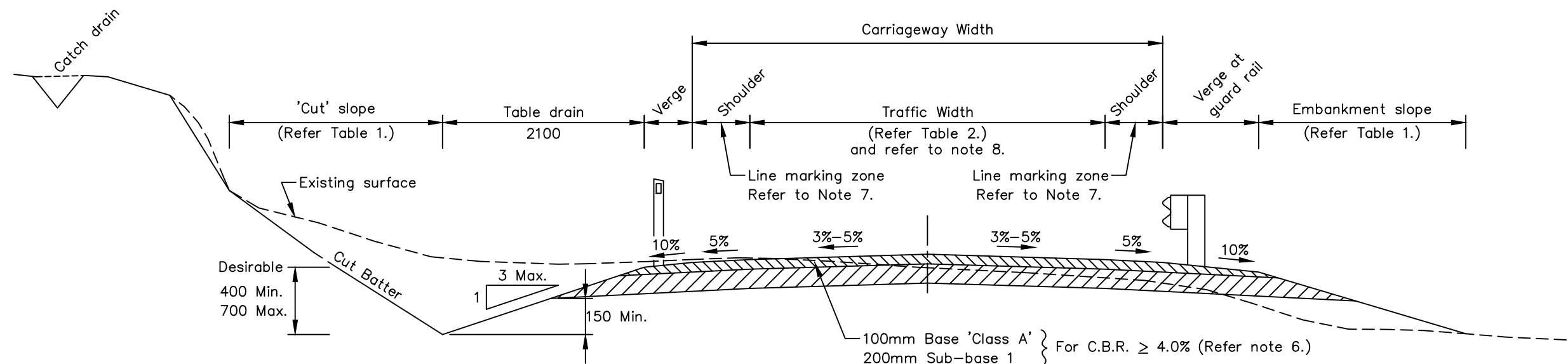
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TSD-R01-v3





TYPICAL CROSS SECTION  
SCALE 1 : 50



TABLE 1

SOIL / ROCK TYPE	EMBANKMENT		CUTTING	
	Vertical	Horizontal	Vertical	Horizontal
Solid Rock	—	—	1.00	0.25
Loose Rock	1.00	2.00	1.00	1.33
Sand	1.00	3.00	1.00	3.00
Stiff Clay	1.00	1.00	1.00	1.00
Soft Clay	1.00	3.00	1.00	1.50

TABLE 2		EXISTING INFRASTRUCTURE	NEW DEVELOPMENT								
CODE*	A.A.D.T.	(w) SEALED TRAFFIC WIDTH	(w) SEALED TRAFFIC WIDTH	SEALED SHOULDER	GRAVEL SHOULDER	VERGE	CARRIAGEWAY WIDTH	LOGGING ROUTE	HEAVY VEHICLES	BUS ROUTE	Bends with < 50m sight line
S1	< 30	4000 (S)	—	—	500	NO	5000	NO	< 5%	NO	w + 1000
S2	30 – 100	4000 (S)	—	—	1000	NO	6000	YES < 5%	< 5%	YES	w + 1000
S3	100 – 300	5500 (D)	5500 (D)	400 <small>Refer Note 7.</small>	500	500	6500	YES	< 10%	YES	w + 500
S4	300 – 2000	6000 (D)	6000 (D)	400 <small>Refer Note 7.</small>	500	500	7000	YES	> 10%	YES	w + 500
S5	> 2000	7000 (D)	7000 (D)	500	500	500	9000	YES	> 10%	YES	w + 500

\*To satisfy a Road Class (eg. S3) the capability to comply with all A.A.D.T, LOGGING ROUTE, HEAVY VEHICLE and BUS ROUTE is necessary.

(S) – SINGLE LANE

(D) – DUAL LANE

# NOTES

- Alignment to satisfy min. Design speed.
- Roadside table drains, cut off drains and culverts to be installed to suit topography.
- Provision for widening or passing bays may be required where sight distance requirements cannot be met or there are limited options for vehicles to pull off the road.
- Refer Sheets TSD–R25 and TSD–R28 Guide Post. Safety barrier and terminal installation to be in accordance with AS5100:2017
- Refer to Austroads AGRD–10: Part 6 Roadside Design, Safety and Barriers.
- Design of pavements to consider project traffic loading, sub–grade strength and comply with the procedures in either:
  - A.R.R.B. A.P.R.G. Report no. 21, A Guide to the Design of New Pavements for Light Traffic.
  - Austroads Guid to Pavement Technology 2019
  - 'A Guide To The Structural Design Of Road Pavements'
- 0.4 metres of shoulder sealed if edge line is to be installed.
- Two coat 'Hot Bitumen' spray seal. Aggregate 10/7 or 14/7 optional.
- Surface type to be determined with consideration to, Vehicle types/turning movement, location and grade.

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**STANDARD DRAWING**  
RURAL ROADS  
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ISSUE DATE: 18-09-2020 DWG No.

TSD-R02-v3

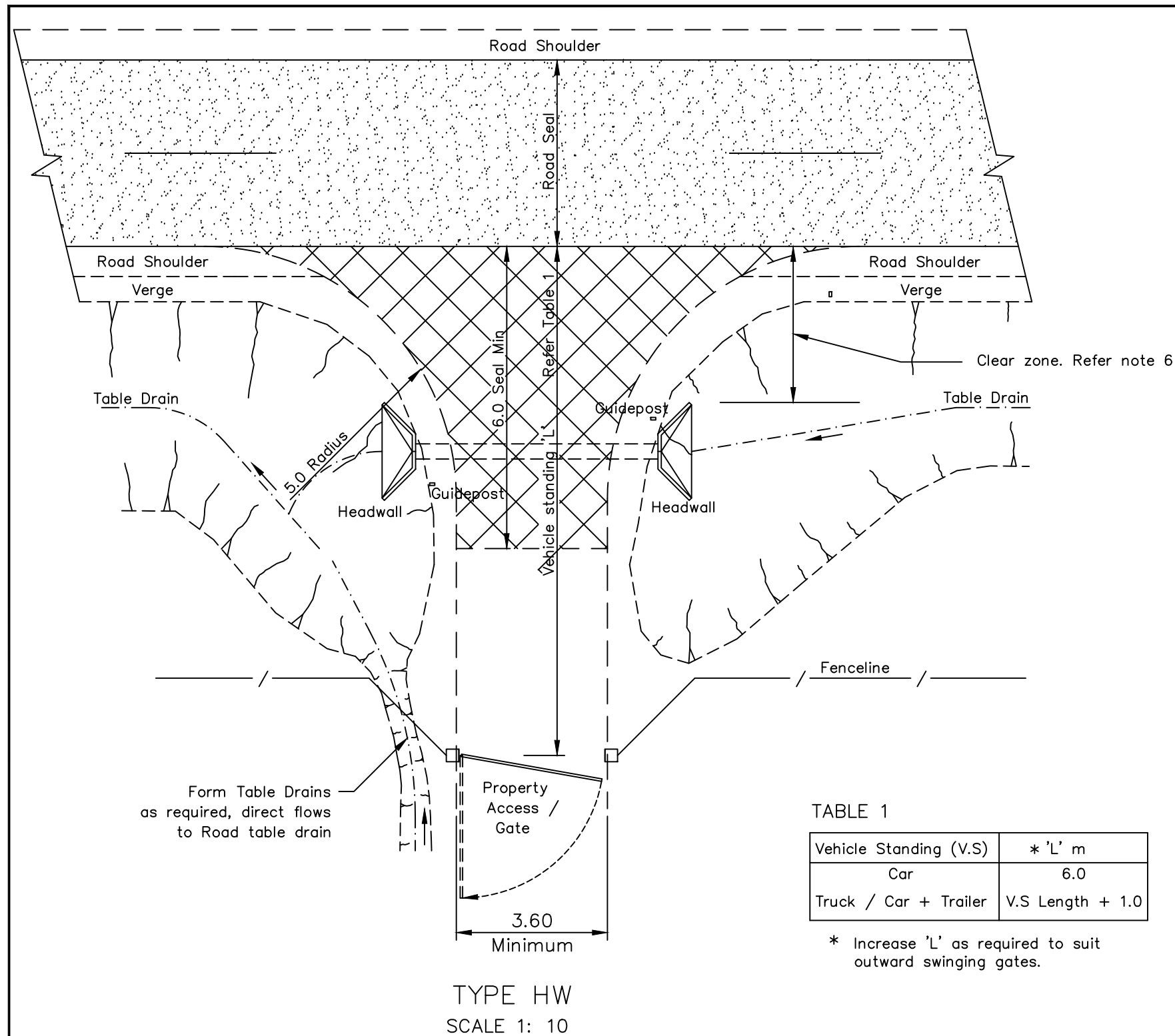


TABLE 1

Vehicle Standing (V.S)	* 'L' m
Car	6.0
Truck / Car + Trailer	V.S Length + 1.0

\* Increase 'L' as required to suit outward swinging gates.

KEY

HW - Head Wall

DCE - Driveable Culvert Endwall

NOTES

- Property Access Seal Types:
  - Adopt the seal type on the adjacent road (Asphalt / hot Sprayed bituminous surfacing).
  - Seal is not required for property access off unsealed roads.
- Offset property entrance gate to provide adequate vehicle standing area clear of road edge, as required.
- Install guideposts at :
  - culvert end walls.
  - the start of the access ('nearside' lane approach only').
- Pipe Culvert.
  - Pipe size, type, class, cover and grade shall be determined by consideration of the drainage catchment, rainfall I.F.D. data and road grade for an AEP 10 years (min).
  - Minimum pipe size - 300 dia.
  - Minimum grade - 1 in 100 (1%).
- Shallow dish crossing may be used as an alternative.
- Refer to Department of State Growth Road Hazard Management Guide - Figures 6 and 7 for clear zone determination. Headwalls inside clear zone are to be driveable.

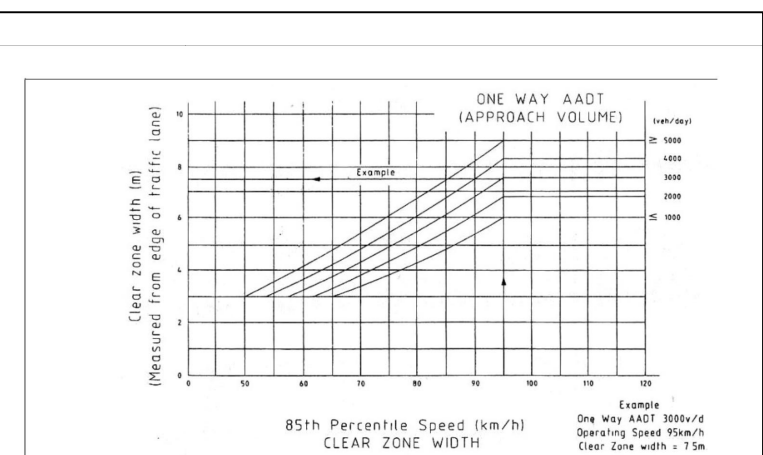


Figure 6: Clear zone width chart (Austroads 2003b)

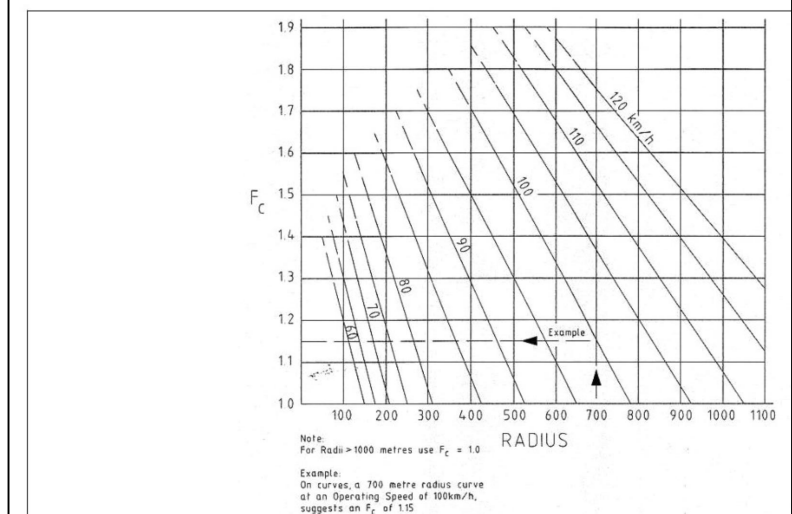


Figure 7: Curve adjustment factors for clear zones (Austroads 2003b)

SCALES: AS SHOWN  
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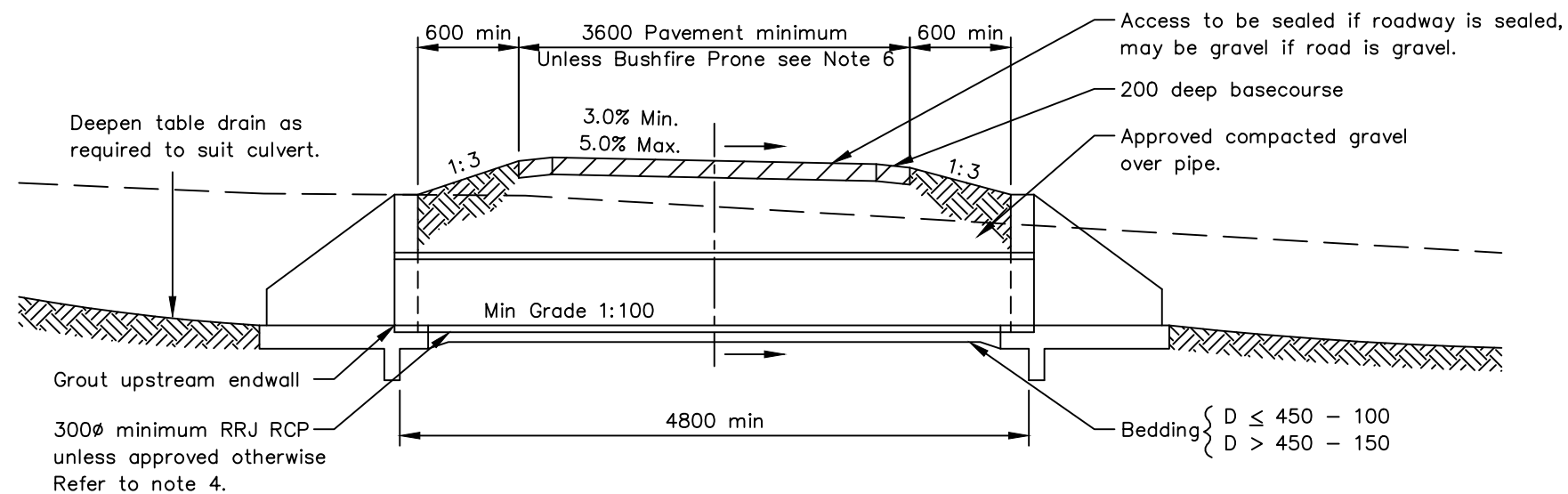


**STANDARD DRAWING**  
RURAL ROADS  
TYPICAL PROPERTY ACCESS

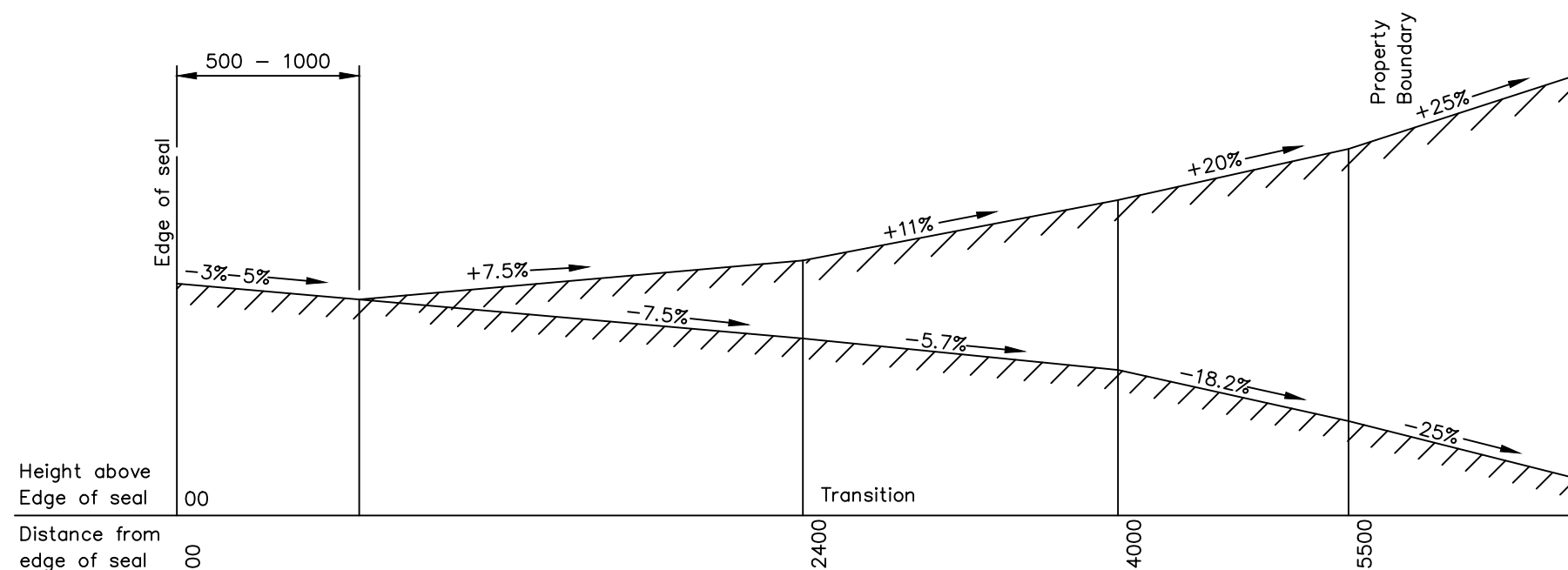
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TSD-R03-v3



CROSS SECTION



DRIVEWAY PROFILE

Culvert removed for clarity

#### NOTES

1. All dimensions in millimetres (mm) unless noted
2. Precast endwall to be winged type or other approved type.
3. Shallow dish crossing may be used as an alternative
4. Min clear cover over driveway culverts shall be:

Pipe Class:	Min Cover:
-Class 2 (Concrete)	600
-Class 3 (Concrete)	400
-Class 4 (Concrete)	300
(All other pipes refer to manufacturers recommendations.)	

5. Install guideposts at culvert ends.
6. Minimum pavement width of 4 metres where access is required for a fire appliance. Additional width may be required for the provision of passing bays.

SCALES: AS SHOWN  
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## STANDARD DRAWING

### RURAL ROADS

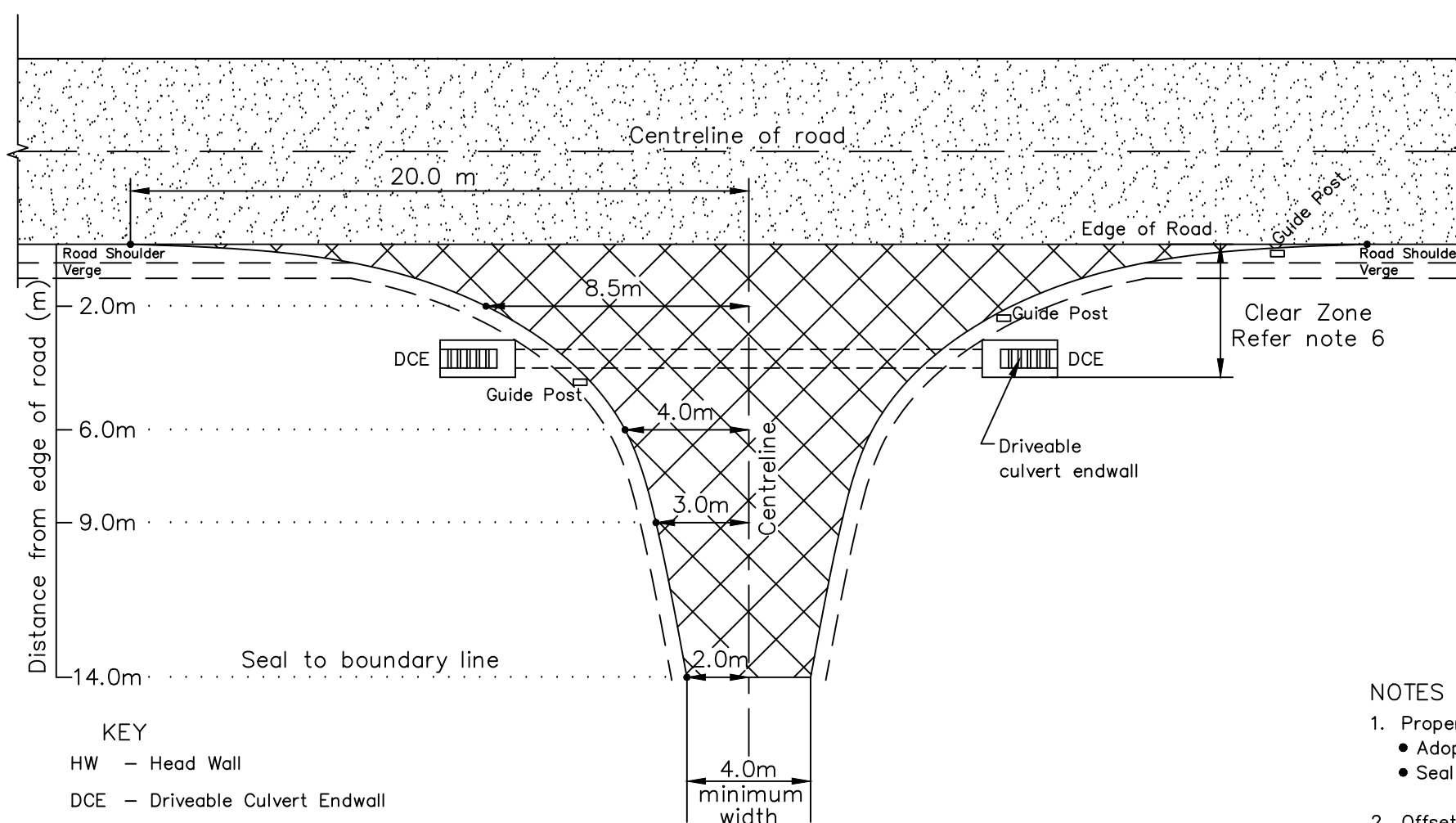
### TYPICAL DRIVEWAY PROFILE

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### STANDARD OBJECTIVES

1. Maximise road safety.
2. Reduce the extent of debris being tracked onto the roadway.
3. Provide vehicle standing area clear of the road edge.
4. Contain stormwater runoff within the road table drains.

### NOTES

1. Property Access Seal Types:
  - Adopt the seal type on the adjacent road (Asphalt / Hot Sprayed bituminous surfacing).
  - Seal is not required for property access off unsealed roads.
2. Offset property entrance gate to provide adequate vehicle standing area clear of road edge, as required.
3. Install guideposts at :
  - culvert end walls.
  - the start of the access ('nearside' lane approach only').
4. Pipe Culvert.
  - Pipe size, type, class, cover and grade shall be determined by consideration of the drainage catchment, rainfall I.F.D. data and road grade for an A.R.I. of 5 years (min).
  - Minimum pipe size — 300 dia.
  - Minimum grade — 1 in 100 (1%).
5. Refer to Department of State Growth Hazard Management Guide — Figures 6 and 7 on TSD-R03 for clear zone determination. Headwalls inside clear zone are to be driveable

DRIVEWAY TYPE 'A' Caters for:	LENGTH
Long Rigid Trucks	12.5m
Long Mini B-Doubles	19.0m
Truck + Trailer Combinations	19.0m

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## STANDARD DRAWING

### TRUCK ACCESS TO RURAL PROPERTIES 'TYPE A'

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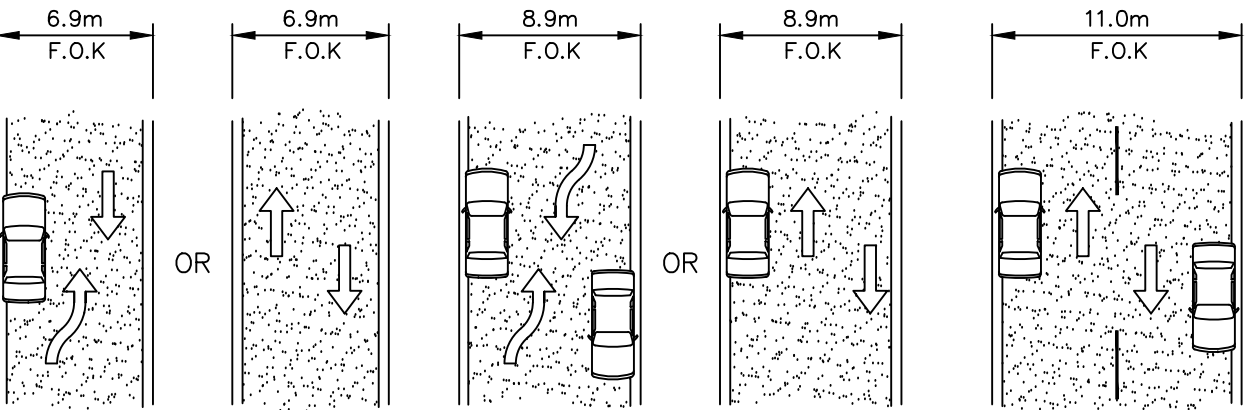
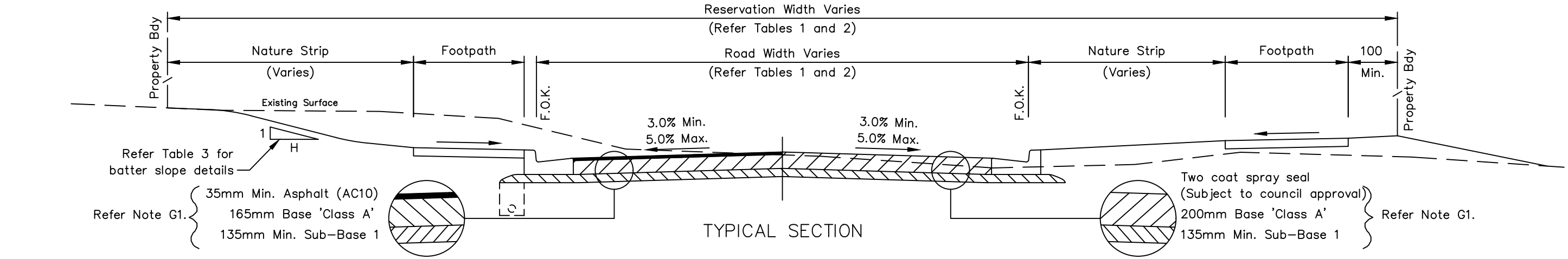


TABLE 1 – ROAD REQUIREMENTS (RESIDENTIAL)

ROAD TYPES	ROAD TYPE	ROAD LENGTH / NUMBER OF TENEMENTS	MINIMUM ROAD WIDTH	MINIMUM RESERVATION WIDTH	MINIMUM FOOTPATH REQUIREMENTS	NOTES (TABLE 1) a. Road and reservation widths shown are the minimum required. Increased widths for any road class may required to accomodate any or all of the following: ● high numbers of commercial vehicles e.g. Buses, Semi Trailers and B–Doubles ● high traffic volumes ● provision for bicycles b. Intermediate road widths between the following ranges are not permitted. ● 6.9m and 8.9m (F.O.K) ● 8.9m and 11.0m c. The General Manager’s delegated officer. may approve variations to any of the requirements in this Table to suit specific project outcomes. d. Council bylaws apply.
1 – Arterial	Detail design required					
2 – Sub Arterial						
3 – Collector	Through Road	Any length	11.0m	20.0m	Both Sides	
4 – Local	Through Road	Any length	8.9m	18.0m	One Side Only	
	Cul–De–Sac	Length > 150m	8.9m	18.0m	One Side Only	
	Cul–De–Sac	Length ≤ 150m and / or No. of equiv. tenements ≤ 15	6.9m	15.0m	One Side Only	

TABLE 2 – ROAD REQUIREMENTS (COMMERCIAL / INDUSTRIAL)

ROAD CLASS	ROAD TYPE	ROAD LENGTH / NUMBER OF TENEMENTS	MINIMUM ROAD WIDTH	MINIMUM RESERVATION WIDTH	MINIMUM FOOTPATH REQUIREMENTS	NOTES (TABLE 2) 1. Footpath provision to suit Commercial / Industrial development. 2. Notes a. and c. from Table 1.
3 – Collector	Through Road	Detail design required				
4 – Local	Through Road or Cul–De–Sac	Lot Size < 10,000m <sup>2</sup>	11.0m	18.0m	(Refer note)	
		Lot Size ≥ 10,000m <sup>2</sup>	10.0m	18.0m	(Refer note)	



TYPICAL LANE CONFIGURATIONS

TABLE 3 – MAXIMUM BATTER SLOPES

MATERIAL TYPE	EMBANKMENT		CUTTING	
	VERT.	HORIZ.	VERT.	HORIZ.
Solid Rock	1	0.25	1	0.25
Loose Rock	1	1.33	1	1.33
Soil	1	1.50	1	1.50
Sand	1	3.00	1	3.00

NOTES

- G1. Pavement depths shown are the minimum required. Final depths are determined by structural calculations based on the actual sub-grade C.B.R. and design traffic loads, in accordance with the Austroads publication: 'A Guide To The Structural Design Of Road Pavements'. The base course is shown to facilitate ease of construction. It may be reduced to a minimum of 100mm, provided the overall pavement depth (including seal) is ≥ 300mm
- G2. References:  
• TSD–R09 & TSD–R10 – Driveways  
• TSD–R11 – Footpaths
- G3. References: Road crossfall greater than 5% must be approved by the General Manager's delegated officer.
- G4. Surfacing type to consider grades/vehicle type and turning movements.

SCALES: AS SHOWN  
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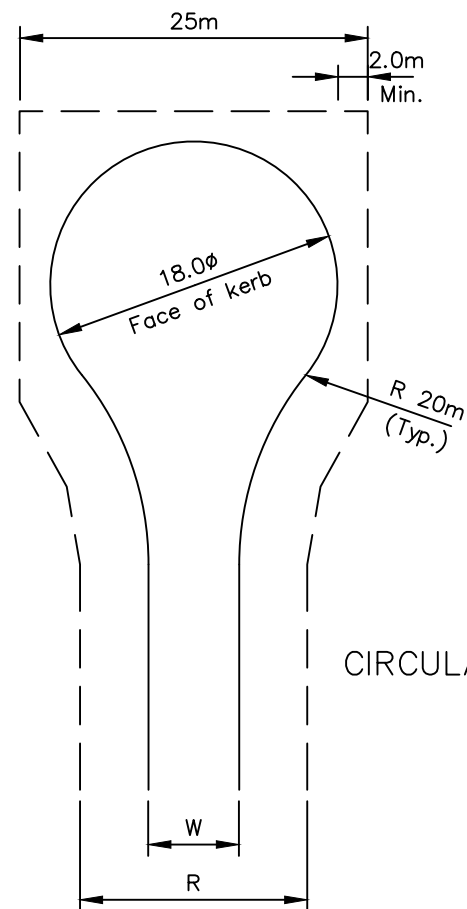


**STANDARD DRAWING**  
URBAN ROADS  
TYPICAL SECTION AND PAVEMENT WIDTHS

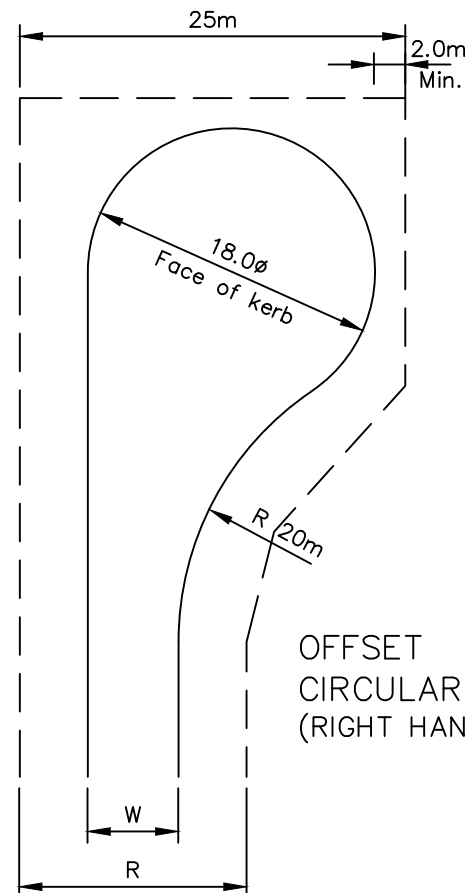
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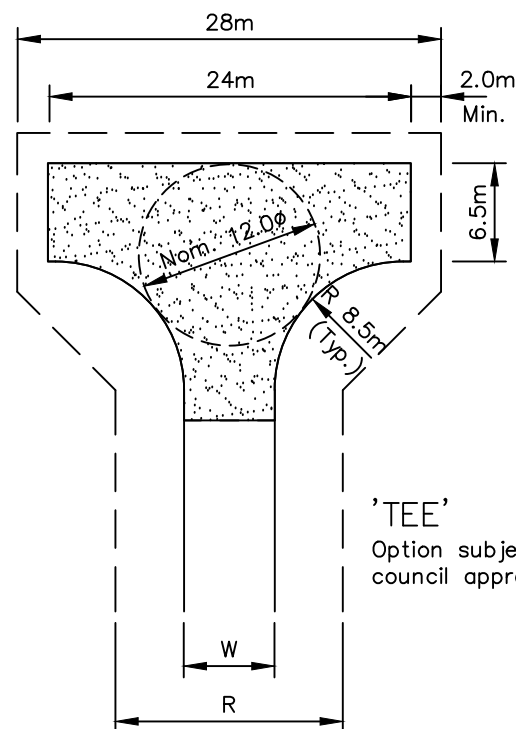
CIRCULAR



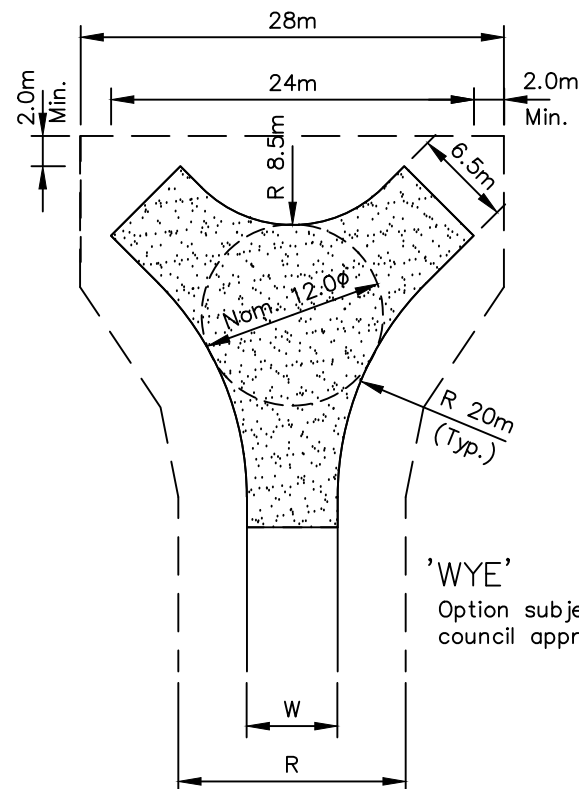
OFFSET  
CIRCULAR  
(RIGHT HAND SHOWN)

#### NOTES

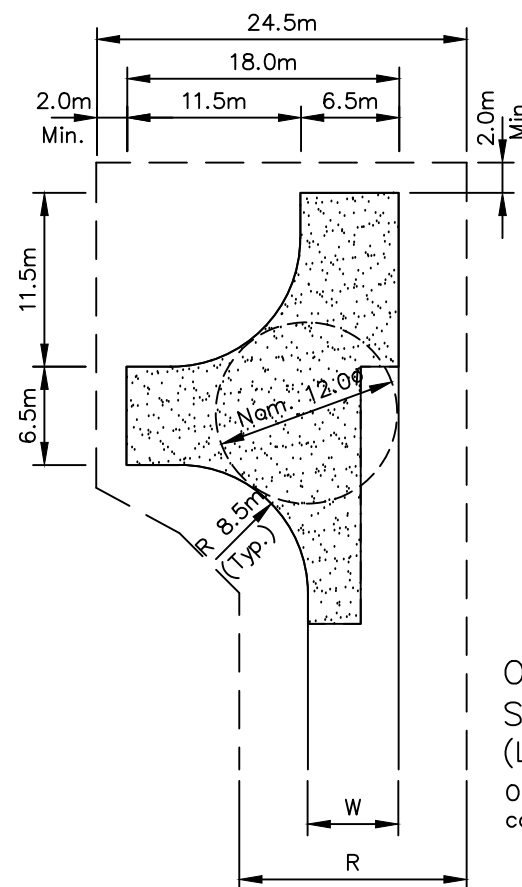
- The general layout and dimensions accommodate the wheelpaths for a:
  - Single Movement Turn by a design car – turning circle 12.0m
  - Three Point Turn by a design service vehicle – 8.8m long
- The road pavement shown represents the:
  - extent of pavement construction (No barrier kerbs).
  - face of kerb (barrier kerb type).
  - The minimum 2.0m clearance from the extent of the turning head to the road reserve boundary provides for service conduits, signage, vehicle overhang, pedestrian movement etc.
- Refer Sheet TSD-R06 for:
  - Road width (W) face of kerb to face of kerb.
  - Road reserve width (R)



'TEE'  
Option subject to  
council approval.



'WYE'  
Option subject to  
council approval.



OFFSET  
SQUARE  
(LEFT HAND SHOWN)  
Option subject to  
council approval.

#### KEY

- ROAD RESERVE
- NO PARKING ZONE

SCALES: AS SHOWN  
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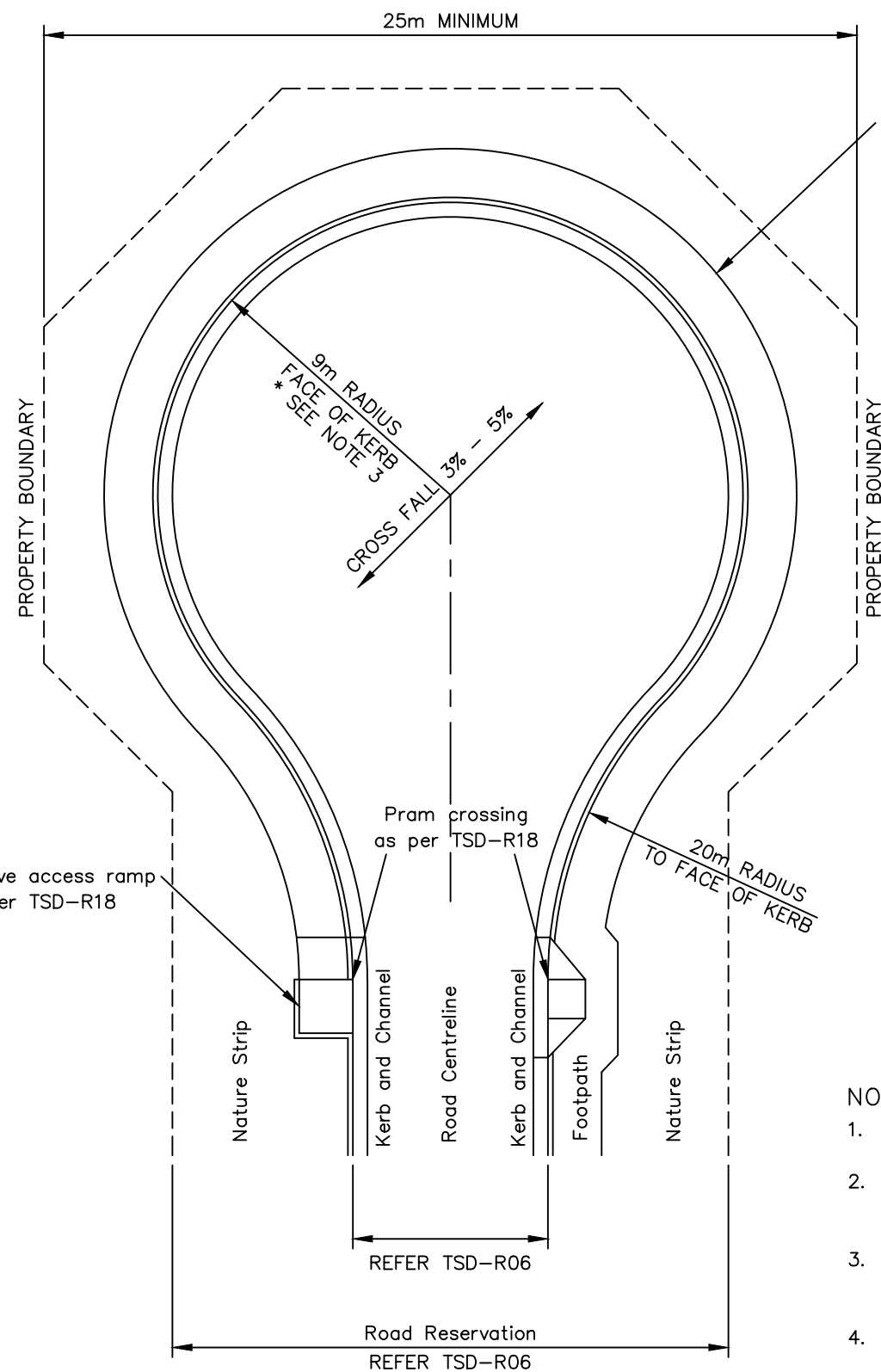
### URBAN ROADS

### CUL-DE-SAC TURNING HEADS

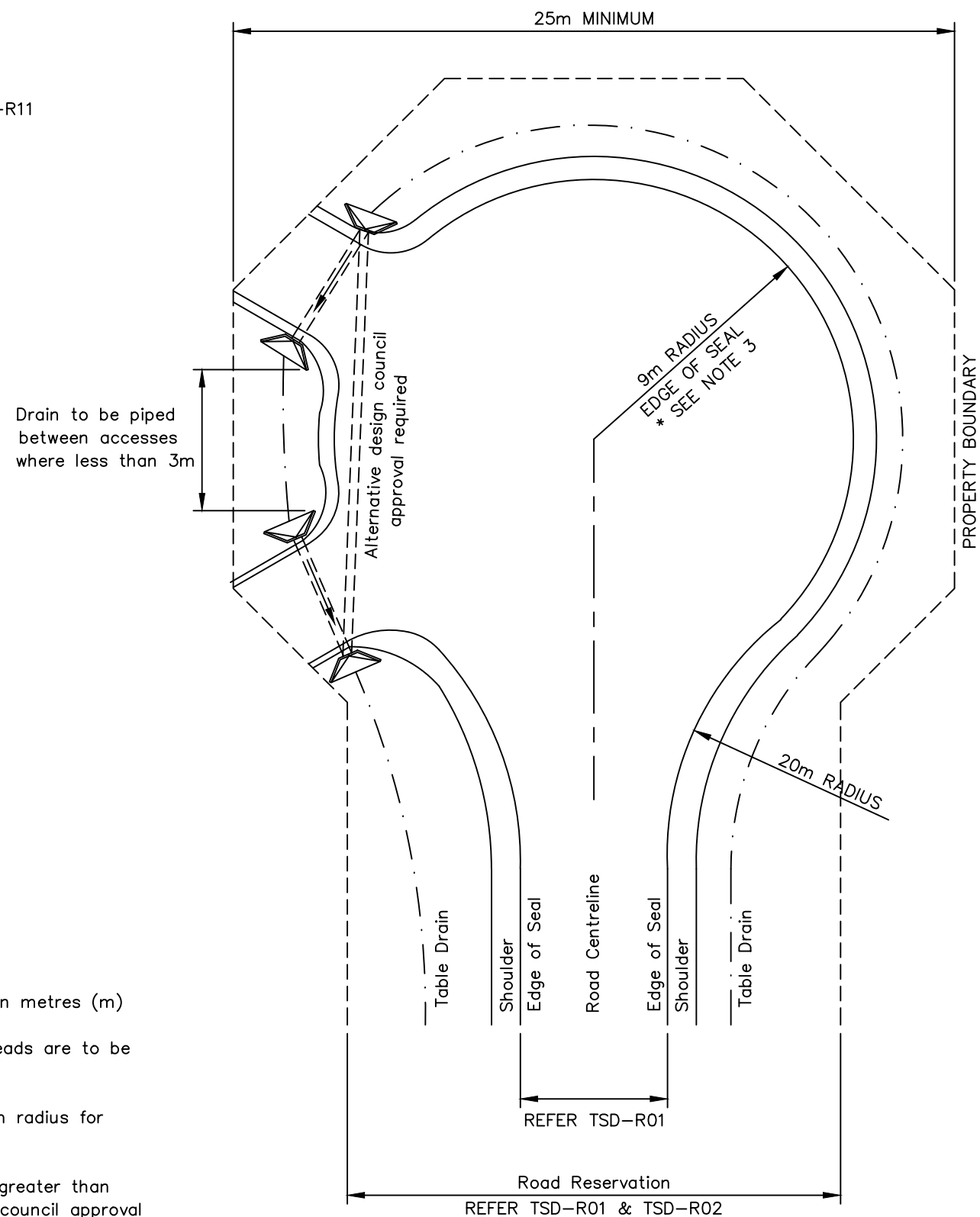
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URBAN TYPE CUL-DE-SAC



RURAL TYPE CUL-DE-SAC

#### NOTES

1. All dimension in metres (m)
2. Cul-de-sac heads are to be asphalted
3. Minimum 12.5m radius for industrial.
4. For cross fall greater than 5% seek local council approval
5. Where required on a bushfire management plan the radius to be increased to 12 metre radius. Increase reservation width from 25 metres to 31 metres.

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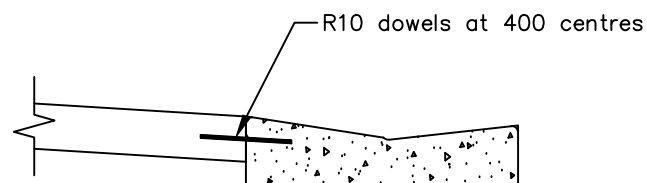
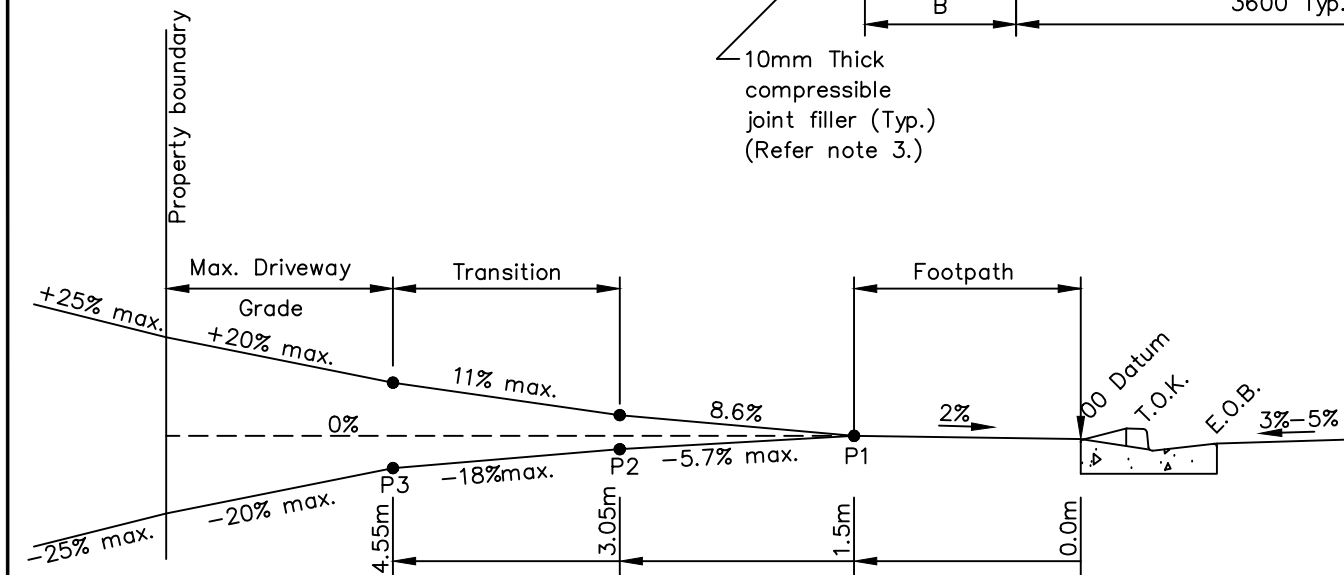
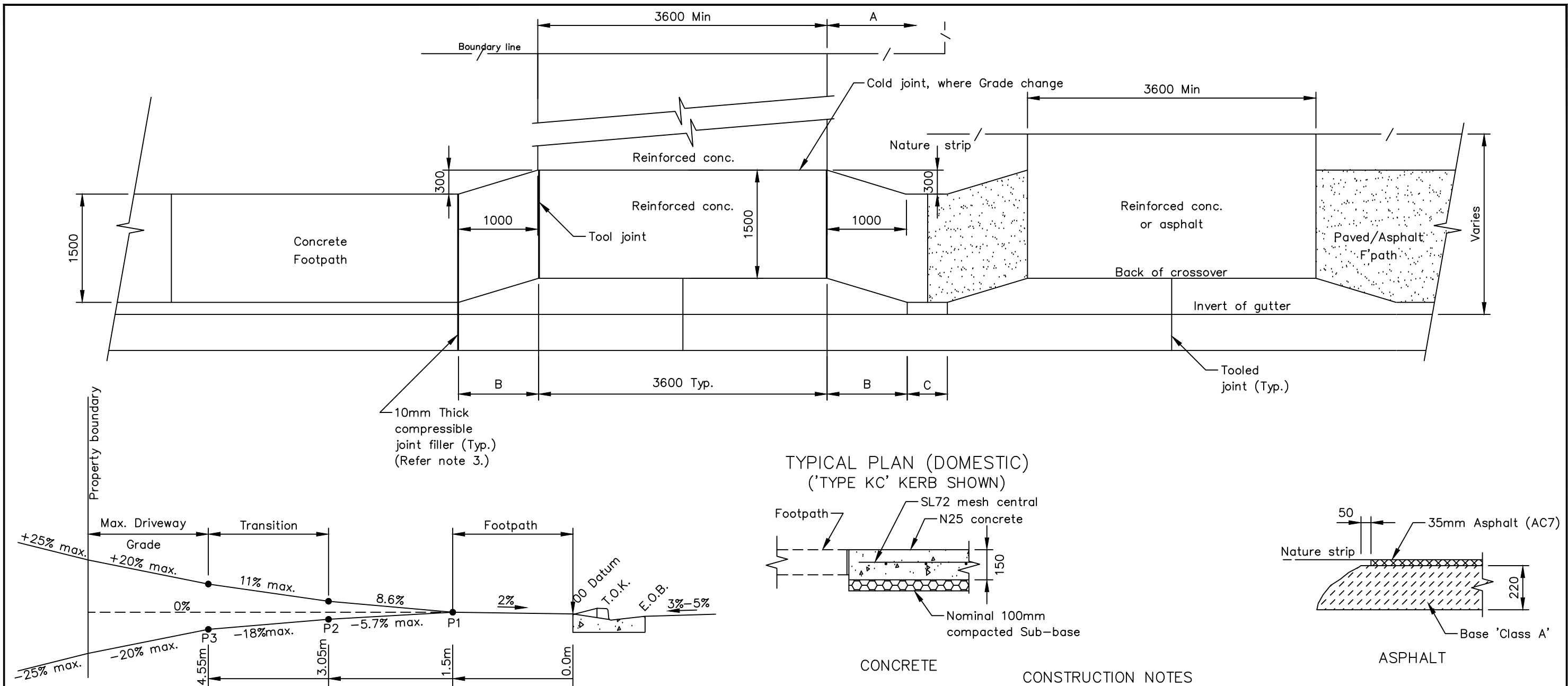
### TYPICAL CUL-DE-SAC DETAILS URBAN AND RURAL

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DIMENSION TABLE – PLAN VIEW		
Dim.	Description	Notes
A	Boundary Offset	New Subdivisions – 1000mm min. Established areas – Match existing
B	Transition (Wing)	Types ‘KC’ and ‘KCM’: B = 1000mm
C	Min. kerb Length	Delete transitions and construct continuous crossing if ‘C’ IS < 500mm

#### CONSTRUCTION NOTES

1. Concrete surfaces – Edge tooled, broom finish.
2. The Principal may increase depth of base course(s) for subgrade strength (C.B.R. < 4.0%)
3. Extend 10mm compressible joint filler through concrete footpaths only (Refer sheet TSD–R11, Footpaths).

#### DESIGN NOTES

4. Design driveway profiles (tabulated) are in accordance with the requirements of ‘AS/NZS 2890.1 : 2004’ using ‘Standard Design Vehicles’:
  - B85 Vehicle – Domestic driveways (including 1 – 2 units)
  - B99 Vehicle – Light commercial, large unit development.
5. An approved engineering design is required for varying site conditions and for driveways used by ‘Non Standard’ vehicles, detailing the structural, plan geometry and vertical profile requirements.
6. Maximum driveway width to be determined by a Council Officer
7. Fibre reinforcement is permissible but must be approved by the General Manager’s delegated officer and the local council

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## STANDARD DRAWING

### URBAN ROADS

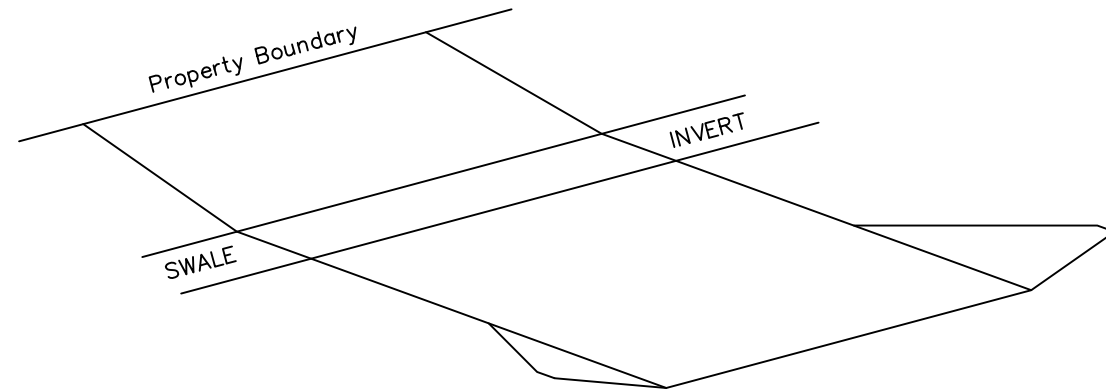
### DRIVEWAYS

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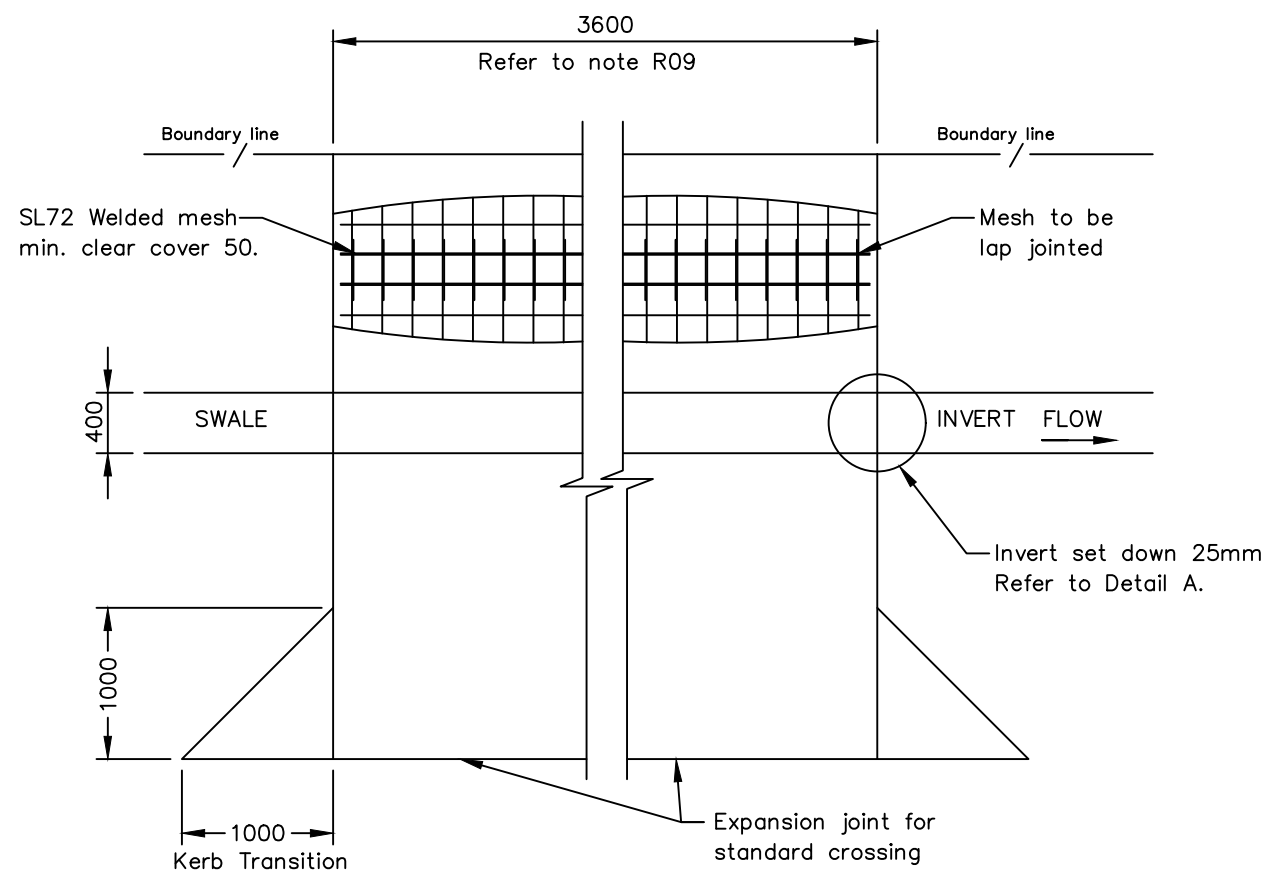
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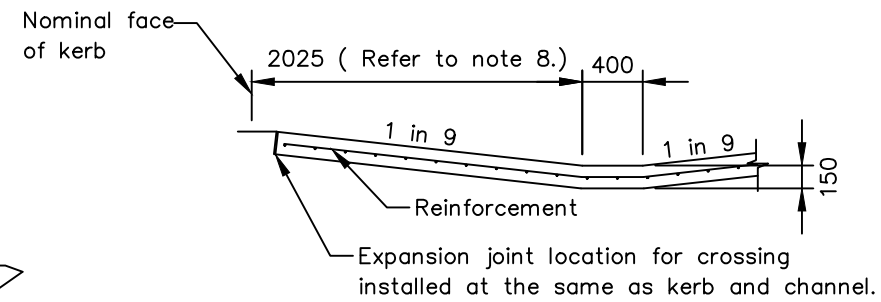




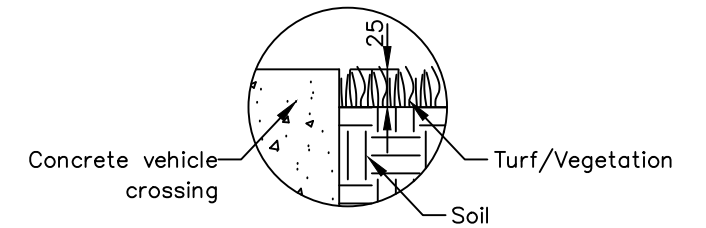
PERSPECTIVE VIEW



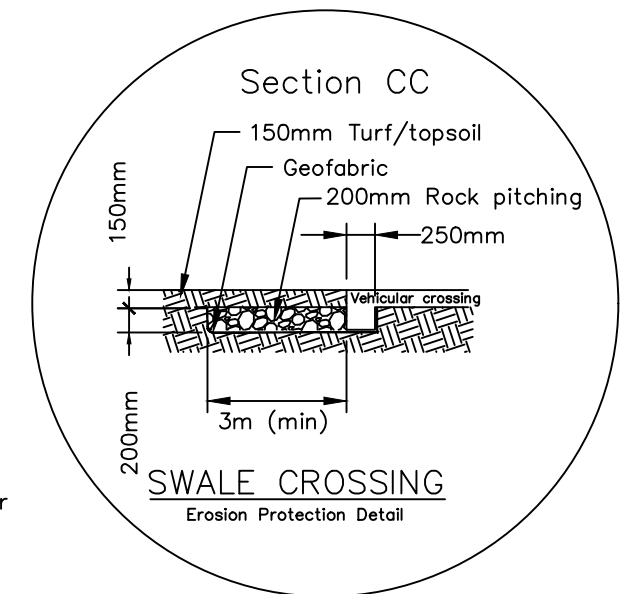
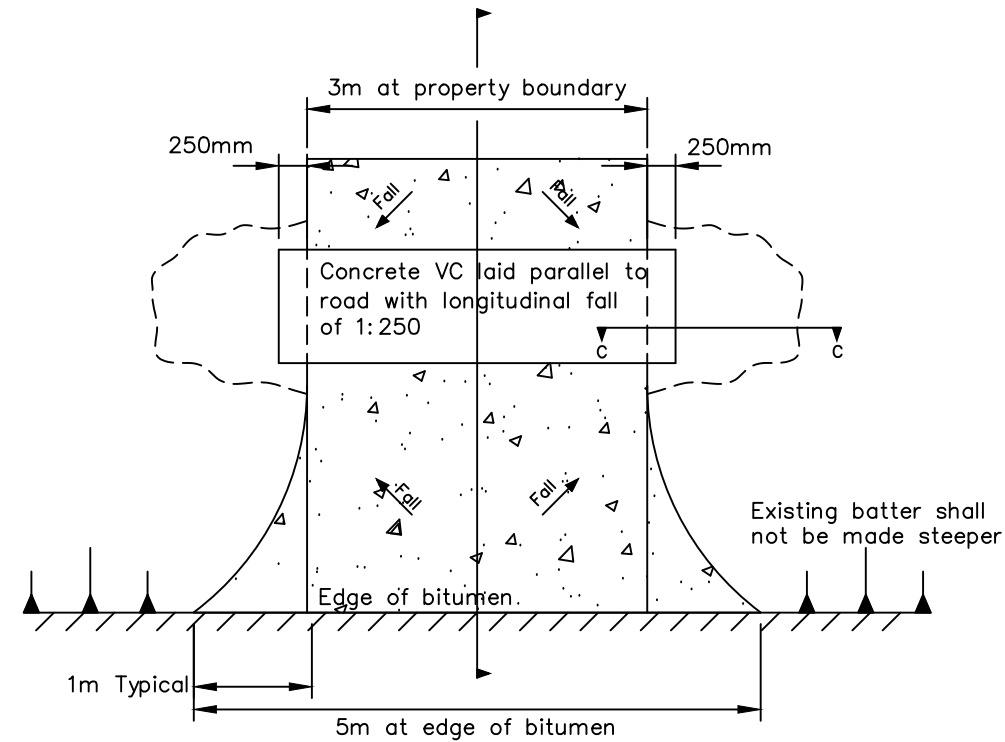
PLAN



TYPICAL SECTION (DOMESTIC)



DETAIL A



#### CONSTRUCTION NOTES

1. Concrete surfaces – Edge tooled, broom finish.
2. The Principal may increase depth of base course(s) for subgrade strength (C.B.R. < 4.0%)
3. Extend 10mm compressible joint filler through concrete footpaths only (Refer sheet TSD-R11, Footpaths).
4. The thickness of decorative surfacing, where approved, is additional to thickness shown.
5. An approved engineering design is required for varying site conditions and for driveways used by 'Non Standard' vehicles, detailing the structural, plan geometry and vertical profile requirements.
6. This crossing is not for commercial vehicles.
7. All concrete to be grade N25 (min)
8. Distance from nominal face of kerb may vary with swale width. Grades are recommended maximums for vehicle access.
9. Dimensions in millimetres (U.N.O)

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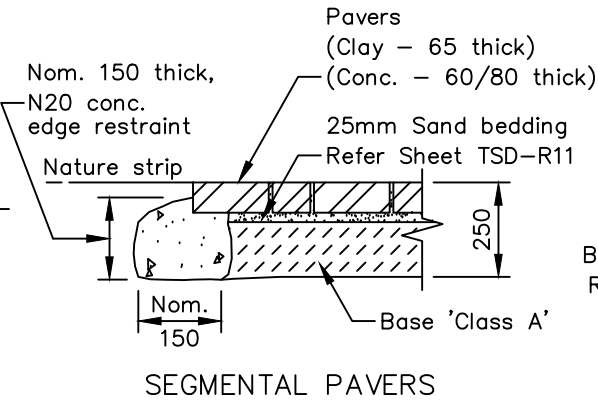
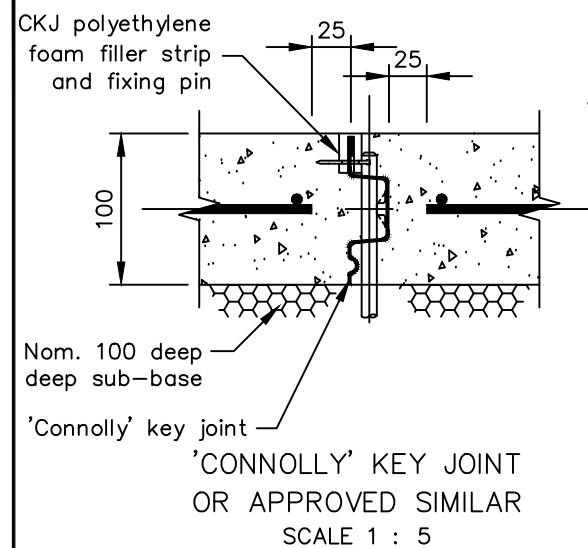
### URBAN ROADS DRIVEWAYS

### WATER SENSITIVE DESIGN

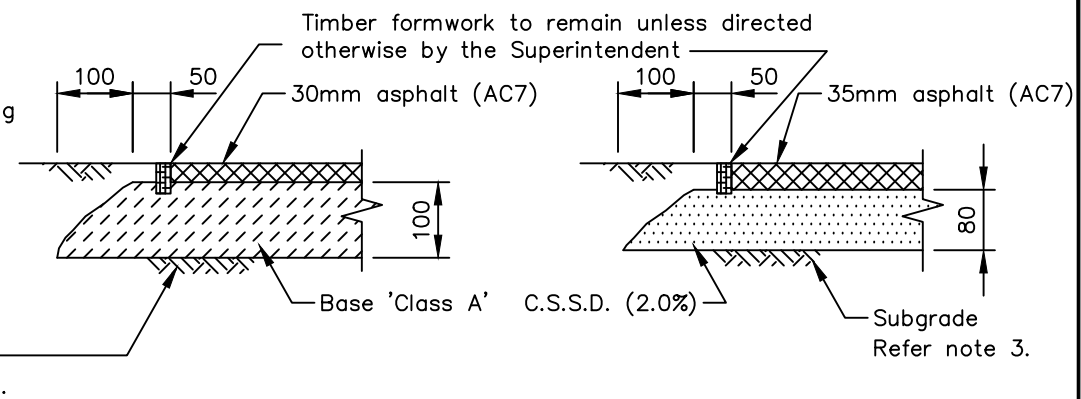
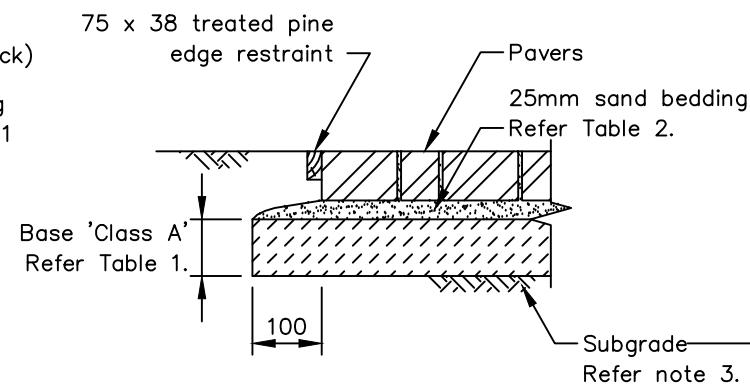
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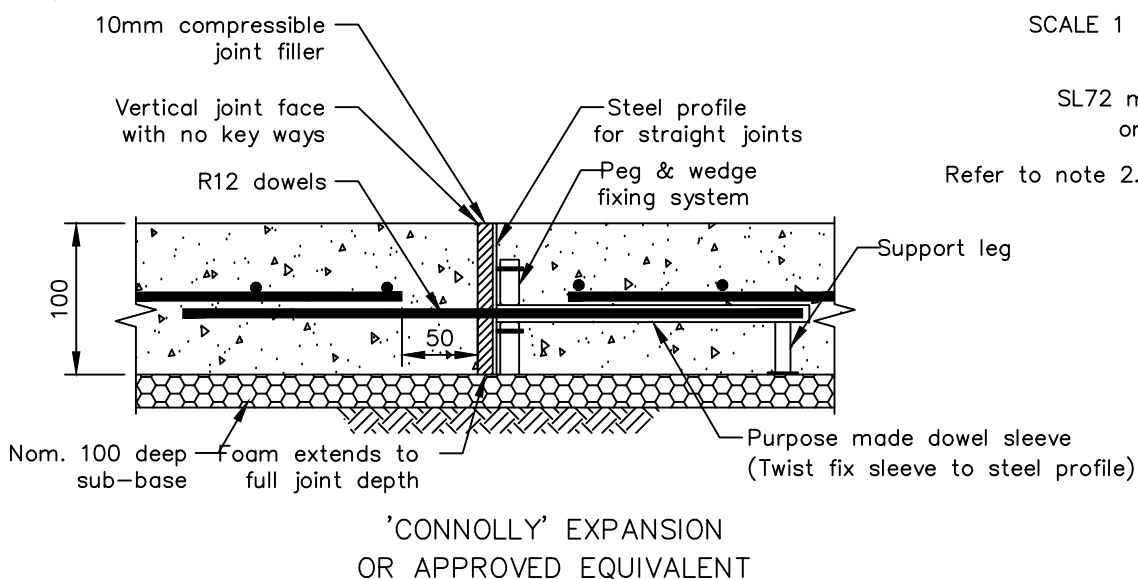
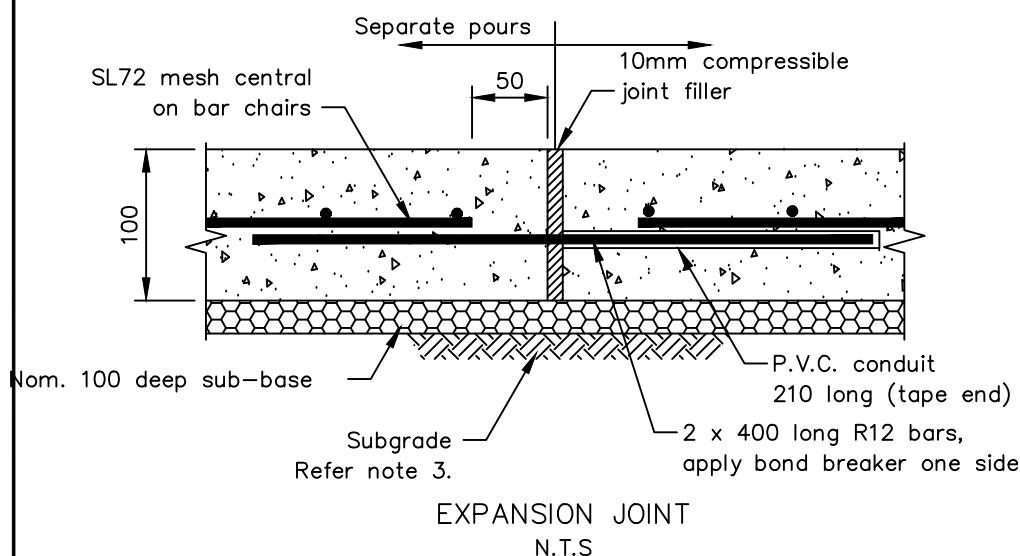
TSD-R10-v3



PAVEMENT DETAILS  
(For Sub-grade C.B.R.  $\geq$  4.0%)



ASPHALT  
PAVEMENT DETAILS  
SCALE 1 : 10



#### NOTES

- Concrete – N25, nominal 60 slump continuously broom finish surface.
- Generally 'W' = 1.5m when footpath is adjacent to kerb and channel and elsewhere.  
The General Manager's delegated officer may:
  - Approve reduced footpath width where pedestrian traffic is low or where physical constraints exist. Min width 1.2m.
  - Require increased footpath width where pedestrian traffic is high.
  - Require increased footpath width to 1.8m around head of culs-de-sac adjacent to kerb and channel.
- The General Manager's delegated officer may:
  - Approve crossfalls to a maximum of 4% where physical constraints exist.
  - Increase depth of base course(s) for sub-grade strength (C.B.R. < 4.0%)
- Treated pine to comply with 'AS.1604-1997' (Timber – Preservative Treated – Sawn and Round).
- Fibre reinforcement are permissible but must be approved by general manager's delegated officer of local council.

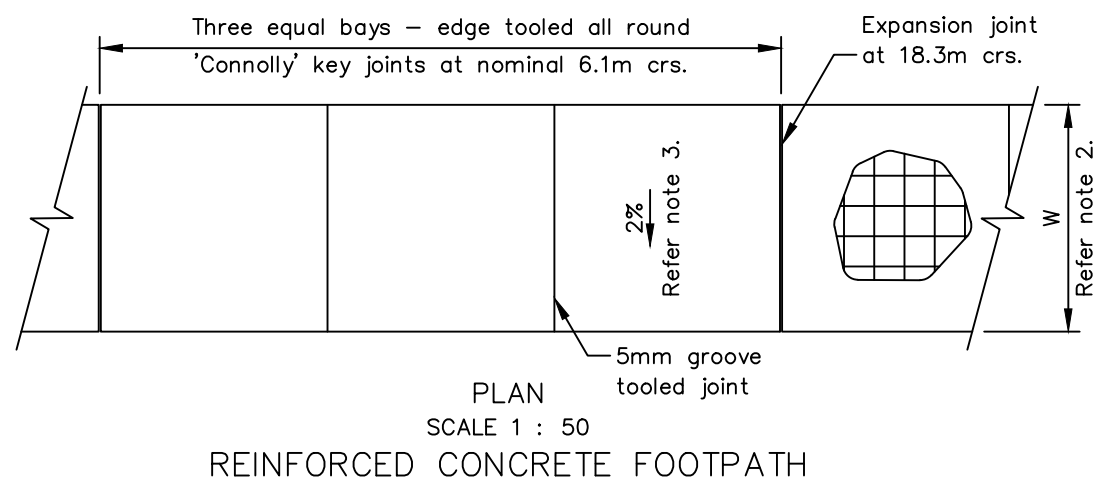
TABLE 1

PAVER TYPE	BASE 'CLASS A'
65mm Clay	75mm
40mm Concrete	100mm
60mm Concrete	80mm

TABLE 2 – SAND GRADINGS FOR PAVERS

AS. SIEVE SIZE (mm)	BEDDING SAND		JOINTING SAND	
	CONCRETE	CLAY	CONCRETE	CLAY
	% PASSING		% PASSING	
9.52	100	100		
4.75	95 – 100	90 – 100		
2.36	80 – 100	75 – 100	100	100
1.18	50 – 85	55 – 90	90 – 100	75 – 95
600 Microns	25 – 60	35 – 59	60 – 90	50 – 80
300 Microns	10 – 30	8 – 30	30 – 60	20 – 45
150 Microns	5 – 15	0 – 10	15 – 30	5 – 15
75 Microns	0 – 10	0 – 5	5 – 10	0 – 5

\* Refer 'Approved Products List' for jointing sand stabilisers and paving sealants.



SCALES: AS SHOWN  
(All scales are correct at A3)

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FOOTPATHS

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ISSUE DATE: 18-09-2020 DWG No.

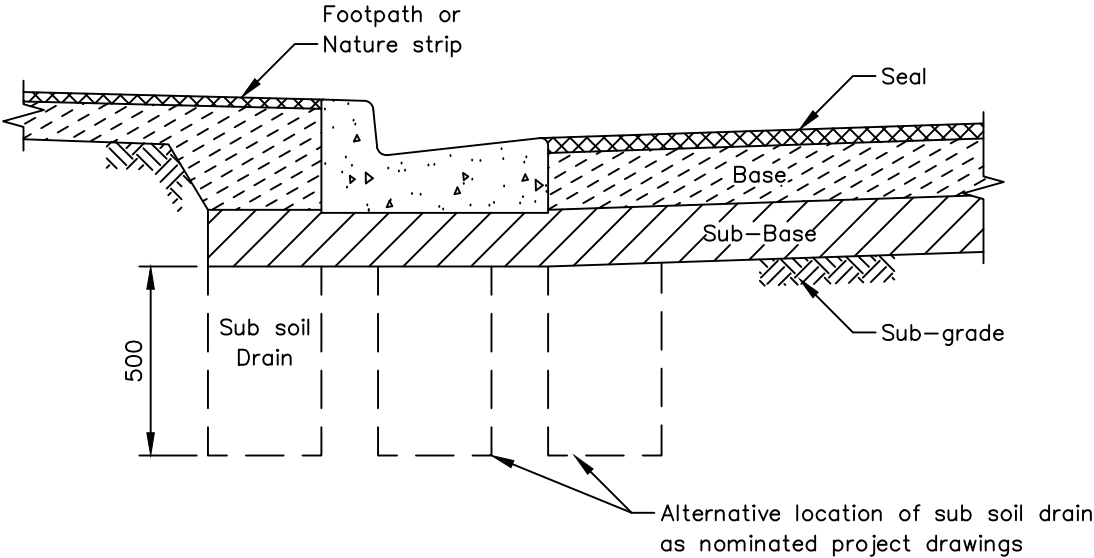
TSD-R11-v3

SUBGRADE CLASSIFICATION

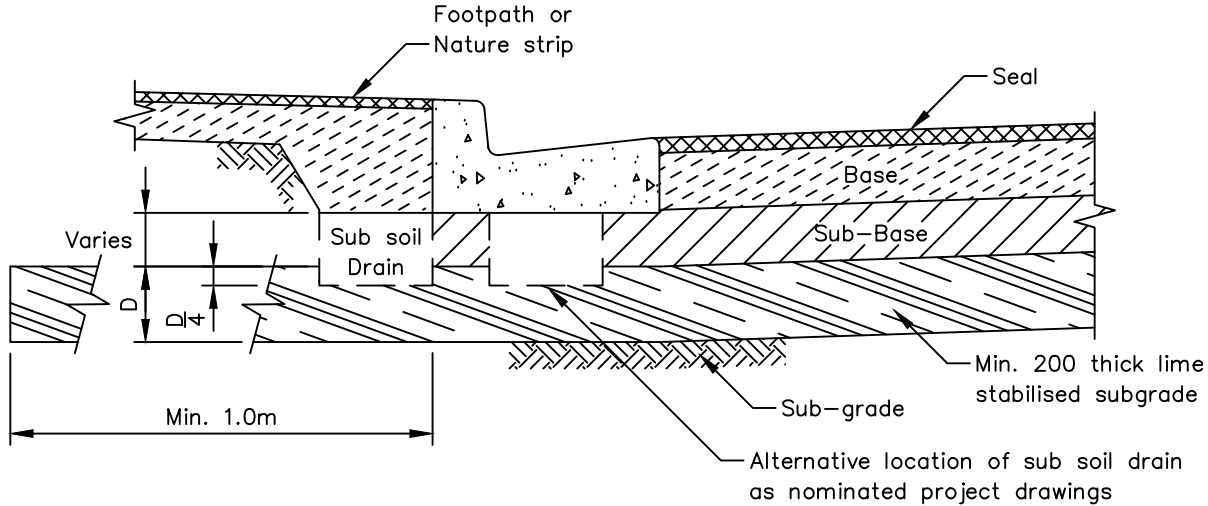
EXPANSIVE NATURE	LIQUID LIMIT (%)	PLASTICITY INDEX	P.I. x % < 0.425mm	POTENTIAL SWELL (%)
Very high	> 70	> 45	> 3200	> 5.0
High	> 70	> 45	2200 – 3200	2.5 – 5.0
Moderate	50 – 70	25 – 45	1200 – 2200	0.5 – 2.5
Low	< 50	< 25	< 1200	< 0.5

NOTES

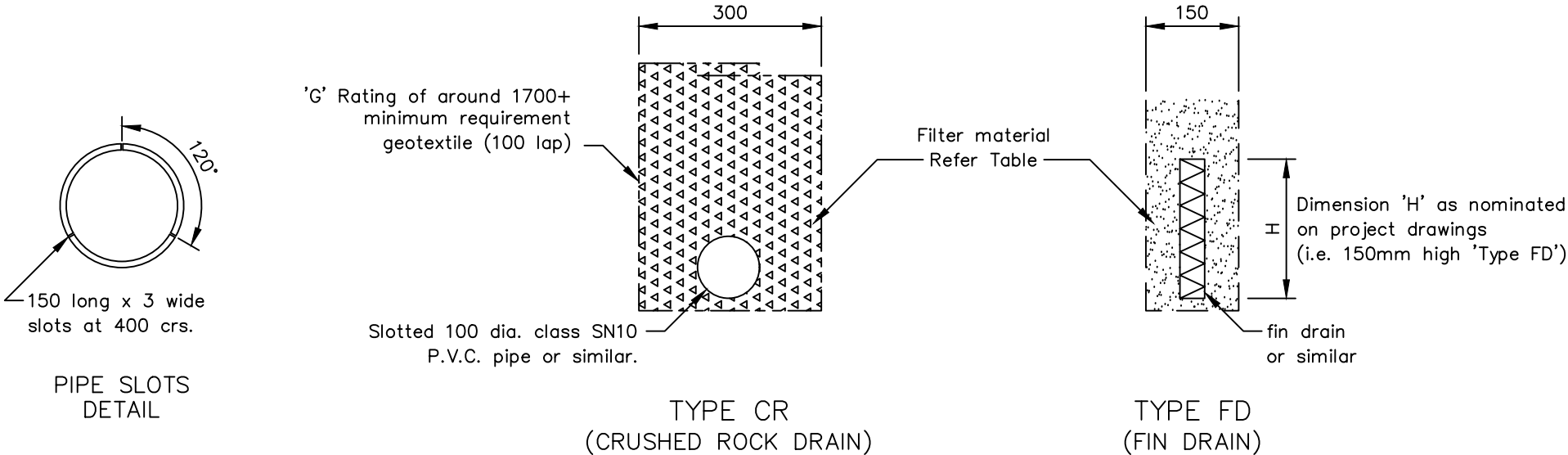
- Sub-base more permeable than base.
- Refer 'Vic Roads' Technical Bulletin 37 (September 1993) for additional information.



LOW EXPANSIVE CLAY SUBGRADES  
'TYPE CR' SHOWN



MEDIUM TO HIGH EXPANSIVE CLAY SUBGRADES  
'TYPE CR' SHOWN



FILTER MATERIAL

TYPE CR
Coarse gravel or crushed rock (no fines or organic matter) Partical size: <ul style="list-style-type: none"><li>• Maximum – 19mm</li><li>• &lt; 5% by mass passing 4.75mm sieve</li></ul>

TYPE FD	
AS. Sieve Size	% Material passing
4.75 mm	95 – 100
2.36 mm	65 – 95
600 um	15 – 65
300 um	5 – 15
150 um	0 – 5
75 um	0 – 5

NOTE

- 'Type CR' and 'Type FD' may be used for either situation.

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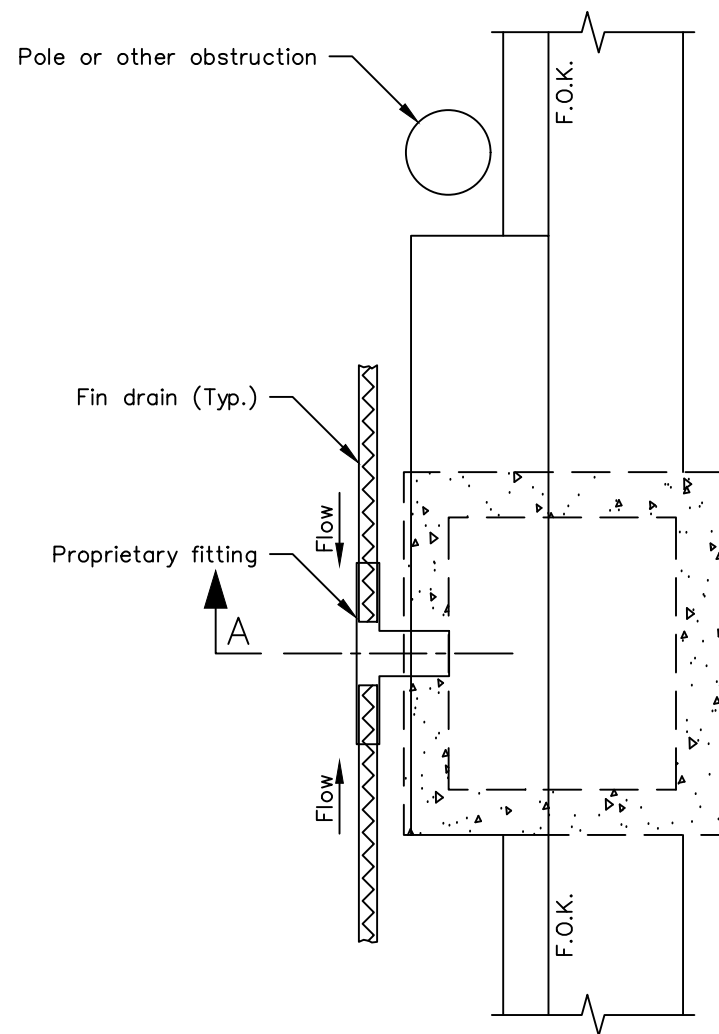
**STANDARD DRAWING**  
SUB SOIL DRAINS  
CONSTRUCTION DETAILS

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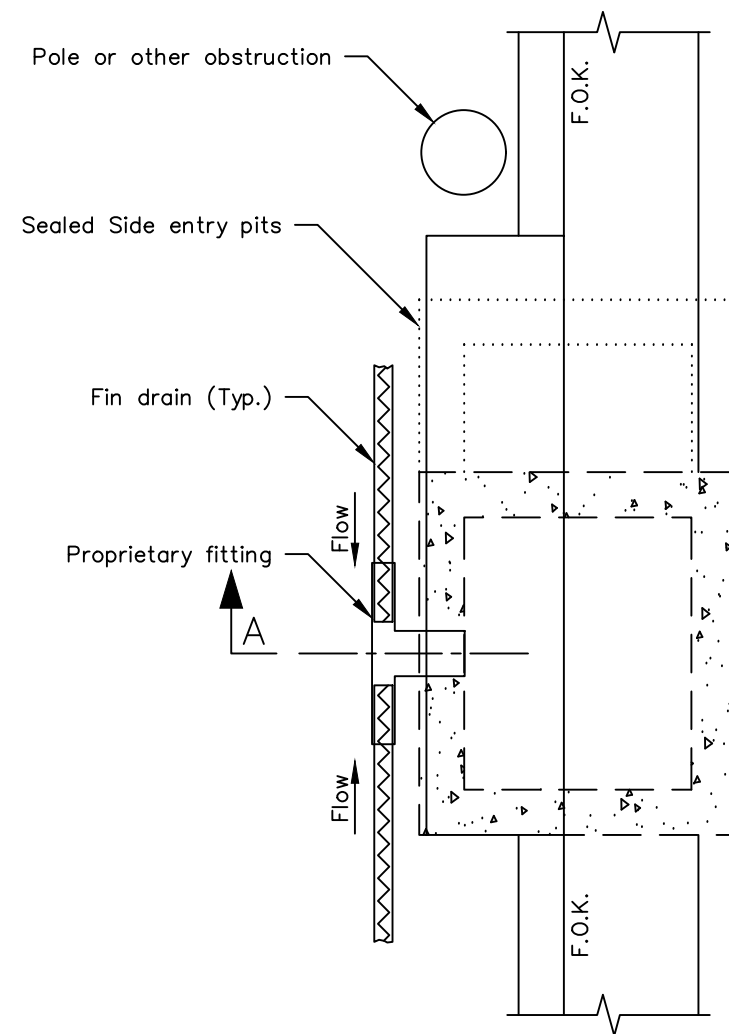
ISSUE DATE:  
18-09-2020

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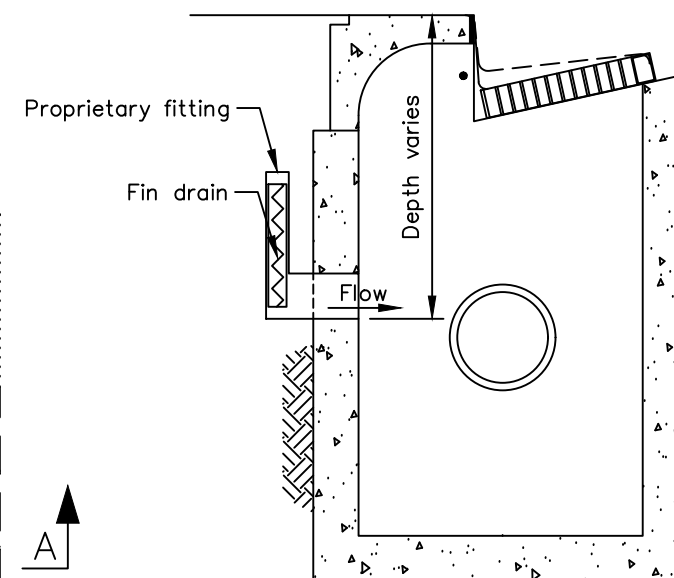
TSD-R12-v3



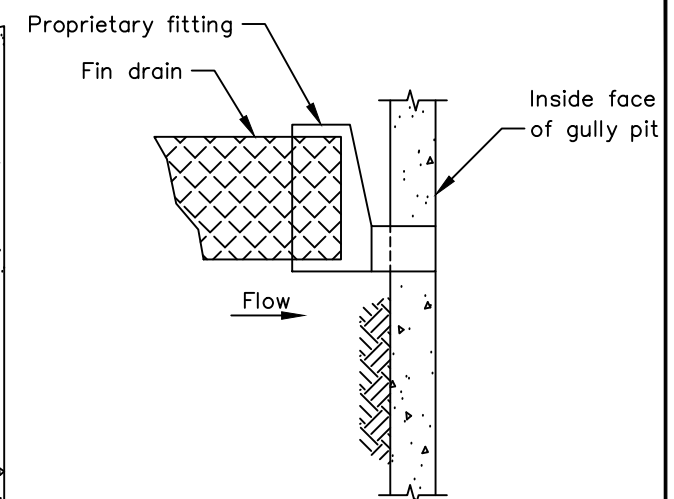
SIDE OUTLET



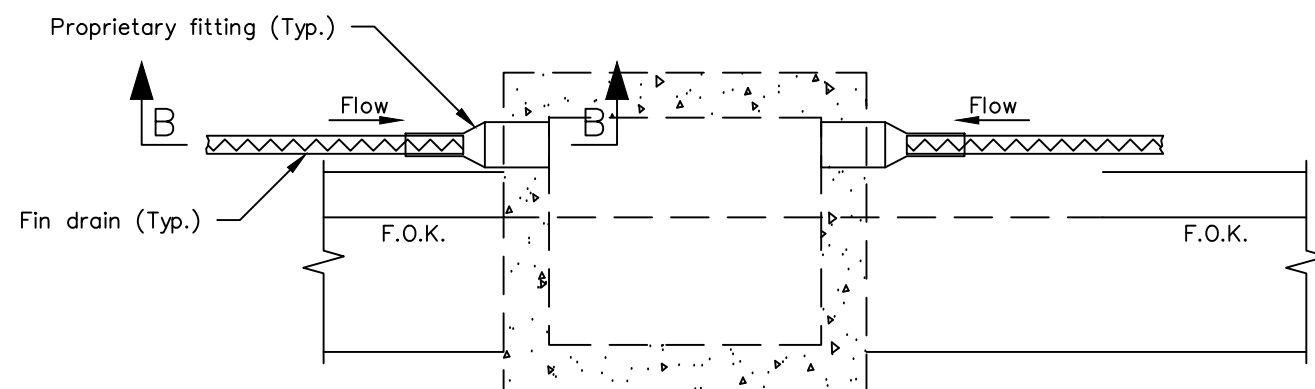
SIDE OUTLET



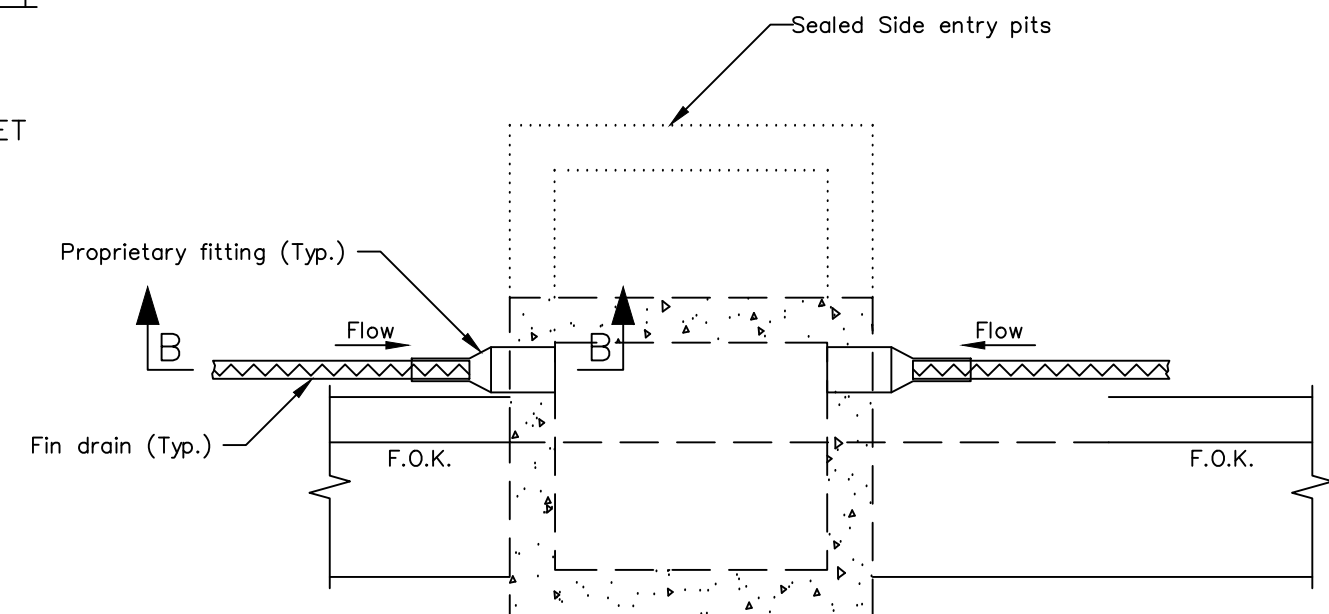
SECTION A-A



SECTION B-B



END OUTLET



END OUTLET

FIN DRAIN CONNECTION DETAILS  
(AT SIDE ENTRY PITS)

SCALES: AS SHOWN  
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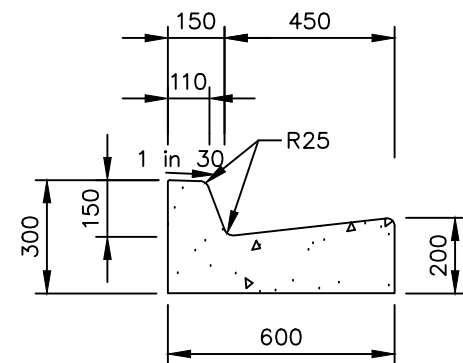
# **STANDARD DRAWING** SUB SOIL DRAINS PIT CONNECTION - TYPE FD

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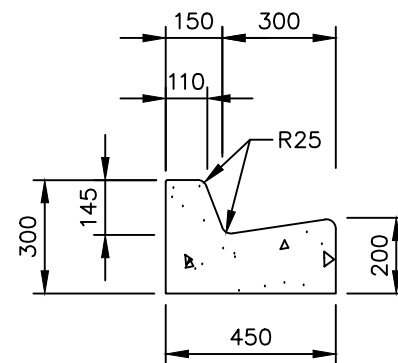
ISSUE DATE: 18-09-2020 DWG No.

TSD-R13-v3

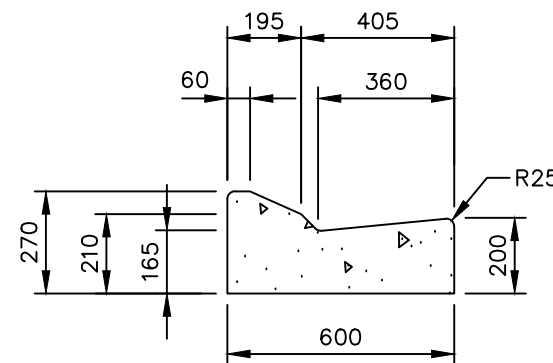




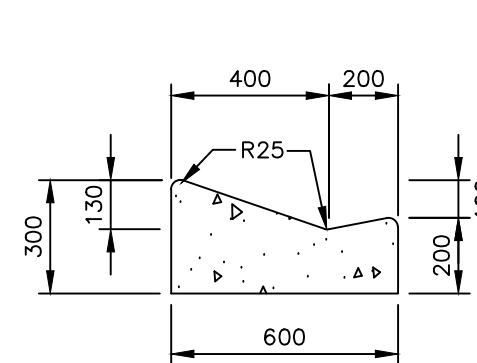
TYPE KC  
(KERB AND CHANNEL)  
SCALE 1 : 20



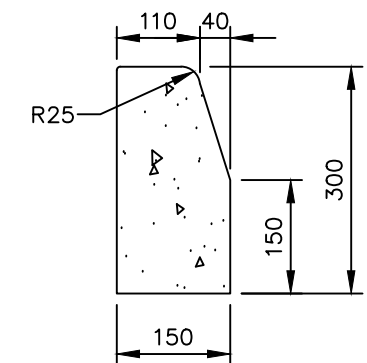
TYPE KCS  
(SMALL)  
SCALE 1 : 20



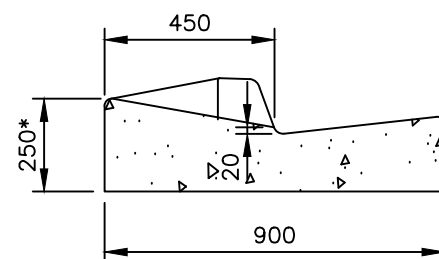
TYPE KCM  
(MOUNTABLE)  
SCALE 1 : 20



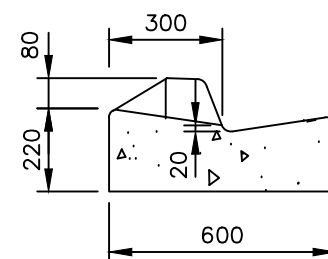
TYPE KCM2  
(MOUNTABLE)  
SCALE 1 : 20



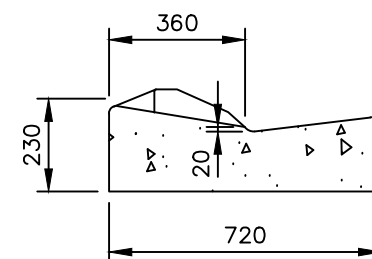
TYPE BK  
(BARRIER)  
SCALE 1 : 10



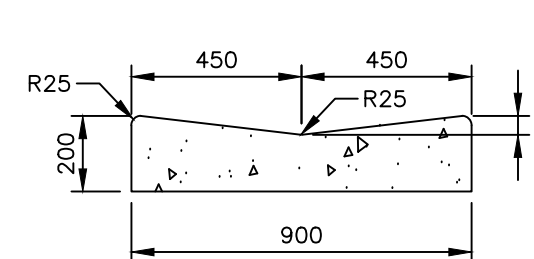
TYPE KC  
VEHICULAR CROSSING  
SCALE 1 : 20  
\* Refer note 2.



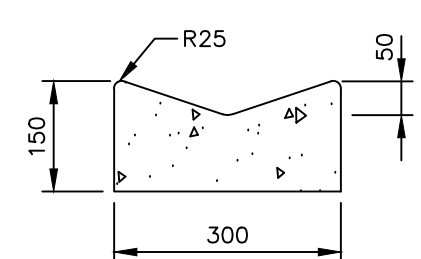
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VEHICULAR CROSSING  
SCALE 1 : 20



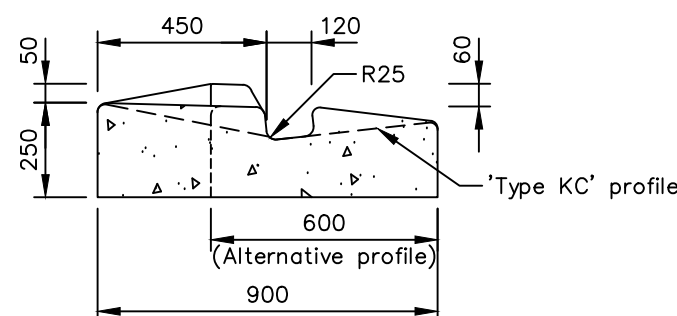
TYPE KCM  
VEHICULAR CROSSING  
SCALE 1 : 20



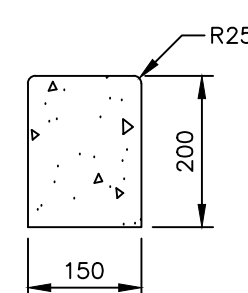
VEE CHANNEL  
VEHICULAR CROSSING  
SCALE 1 : 20



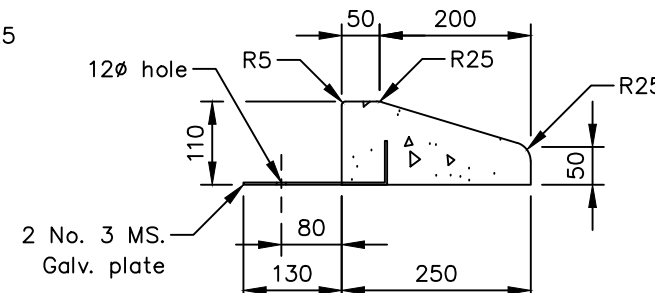
TYPE DD  
(DISH DRAIN)  
SCALE 1 : 10



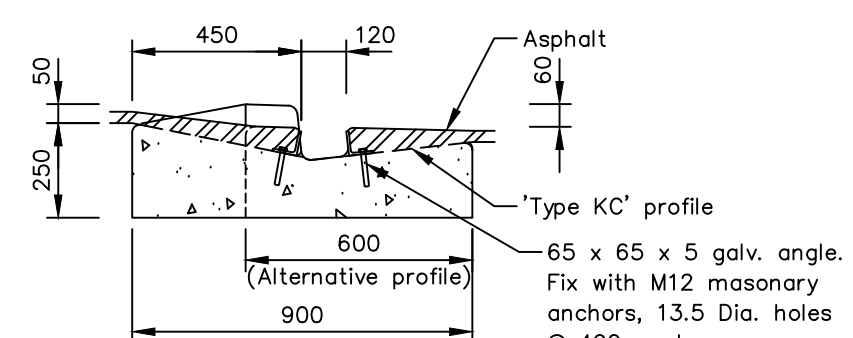
OPEN WEDGE  
VEHICULAR CROSSING  
SCALE 1 : 20



TYPE FK  
(FLUSH)  
SCALE 1 : 10



TYPE PCM  
(PRECAST MOUNTABLE or POURED ON SITE)  
SCALE 1 : 10



ASPHALT WEDGE  
VEHICULAR CROSSING  
SCALE 1 : 20

(Approval needed by General manager's delegated officer)

#### NOTES

- Radius (25mm) all exposed edges unless otherwise noted.
- The height of the 'Type KC' crossover may be reduced from 250mm, by up to 50mm to improve vehicle clearance, subject to the road drainage requirements being satisfied by either:
  - confirming, by calculation, the flow contained within the road reserve OR
  - Provision of additional drainage.
- All concrete kerb and channel shall be constructed in accordance with AS2878-2000
- Provide tooled contraction joints at 3m max centres.
- Joining Requirements – Typical for all, provide expansion joints at 21m centres and at structures such as access ramps, vehicular crossings, gully pits and tangent points at intersection kerb returns.

GRATED WEDGE  
VEHICULAR CROSSING  
SCALE 1 : 20

Refer Sheet TSD-R17 for grate details

M3 (State Growth)  
MOUNTABLE KERB  
SCALE 1 : 20

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-R14-v3.dwg

REFERENCES

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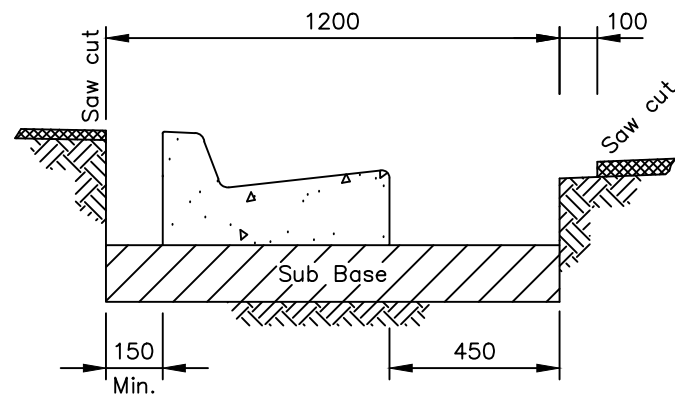
## STANDARD DRAWING

### APPROVED CONCRETE KERBS AND CHANNELS PROFILE DIMENSIONS

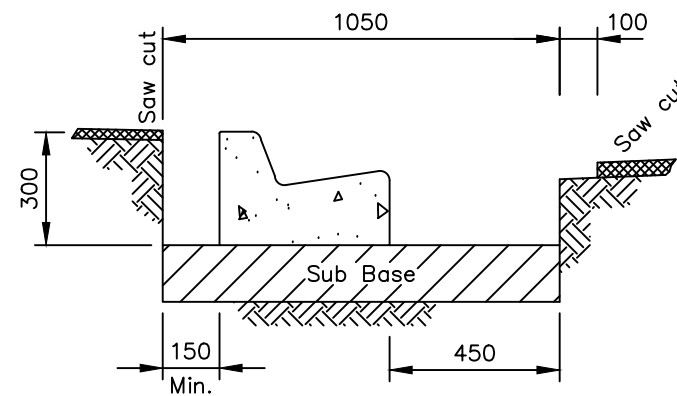
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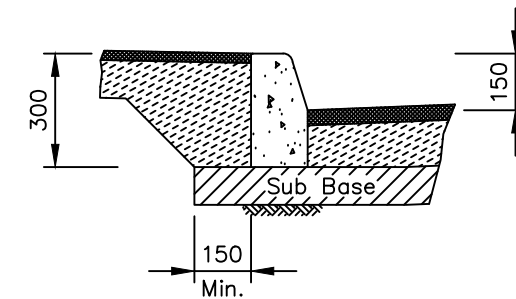
TSD-R14-v3



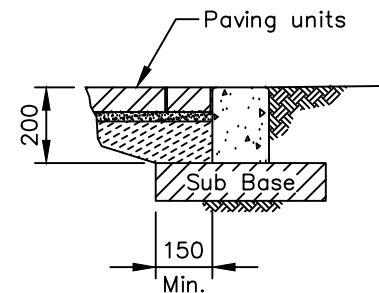
TYPE KC / KCM  
(CONSTRUCTION IN EXIST. PAVEMENT)  
SCALE 1 : 20



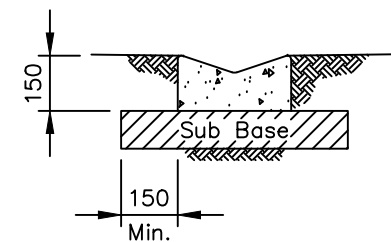
TYPE KCS  
(CONSTRUCTION IN EXIST. PAVEMENT)  
SCALE 1 : 20



TYPE BK  
(CONSTRUCTION IN NEW PAVEMENT)  
SCALE 1 : 20



TYPE FK  
(e.g. EDGE RESTRAINT FOR PAVING)  
SCALE 1 : 20



TYPE DD  
(GRASSED AREA)  
SCALE 1 : 20

## NOTES

- Sub-Base Depth
  - Sub-grade C.B.R.  $\geq 4\%$  - Depth = Min. 135mm.
  - Sub-grade C.B.R.  $< 4\%$  - 'Class B' geotextile, Min. 150
- Pavement Design
 

Design of pavements to consider project traffic loading, sub-grade strength and comply with the procedures in either:

  - A.R.R.B. special report No. 41 - 'A Structural Design Guide For Flexible Residential Street Pavements'.
  - AUSTROADS  
'A Guide To Pavement Technology Part 2: Pavement Structural Design'

- Jointing Requirements (Typical for all)
 

Provide contraction joints at 3.0m centres.  
Provide expansion joints at the following:

  - 21.0m centres (Max.)
  - Structures such as access ramps, vehicular crossings, gully pits and tangent points at intersection kerb returns.

SCALES: AS SHOWN  
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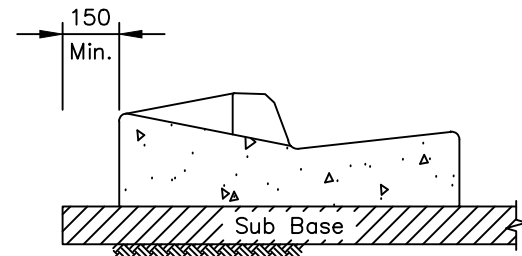


**STANDARD DRAWING**  
CONCRETE KERBS AND CHANNELS  
CONSTRUCTION DETAILS

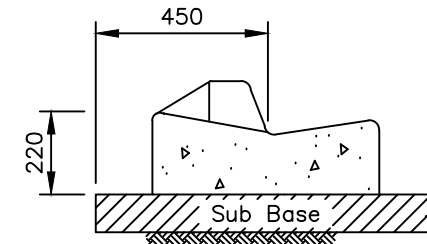
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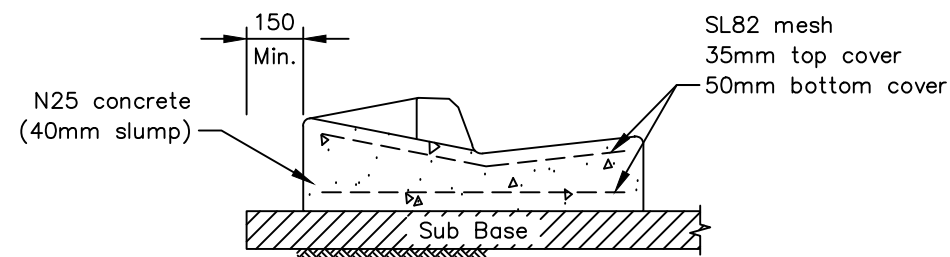
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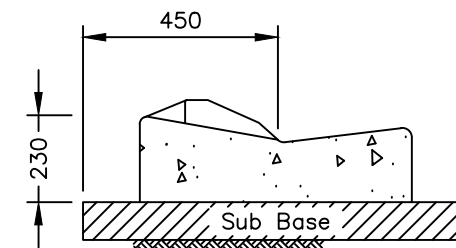
TYPE KC  
UNREINFORCED  
SCALE 1 : 20



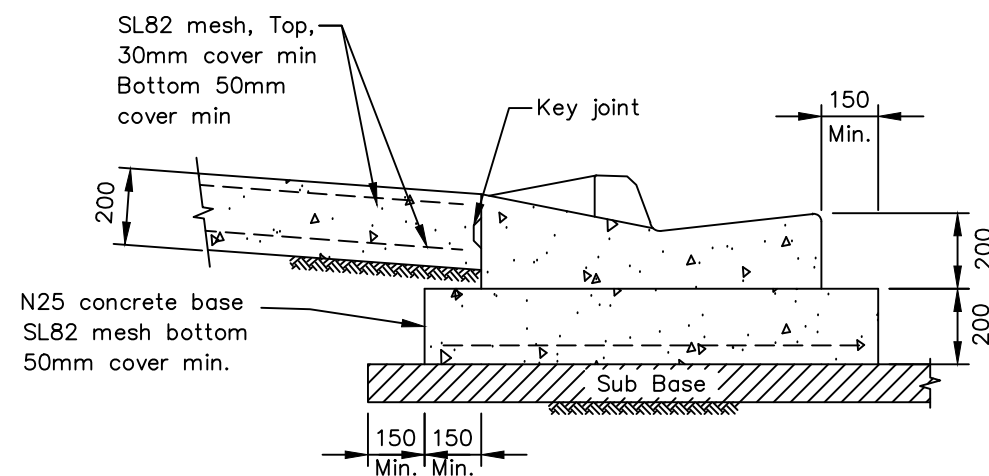
TYPE KCS  
UNREINFORCED  
SCALE 1 : 20



TYPE KCR & B1 (HEAVY VEHICLES)  
IN-SITU POURED REINFORCED  
SCALE 1 : 20  
(Types KCS and KCM similar)



TYPE KCM  
UNREINFORCED  
SCALE 1 : 20



TYPE KCRB & B1 (HEAVY VEHICLES)  
EXTRUDED ON REINFORCED BASE  
SCALE 1 : 20  
(Types KCS and KCM similar)

#### NOTES

- Sub-Base Depth
  - Sub-grade C.B.R.  $\geq 4\%$  – Depth = Min. 135mm.
  - Sub-grade C.B.R.  $< 4\%$  – Include 'Class B' geotextile.
- Refer Sheet TSD-R14 for additional dimensions.
- All works to be inspected prior to pouring concrete
- Any concrete oxide to be worked into the concrete surface during finishing.
- All dimensions in millimetres (mm)

SCALES: AS SHOWN  
(All scales are correct at A3)

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## STANDARD DRAWING

### CONCRETE KERBS AND CHANNELS

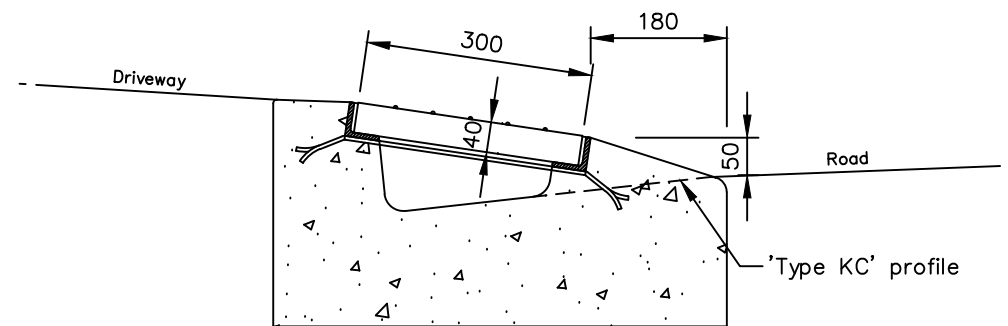
### VEHICULAR CROSSINGS

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

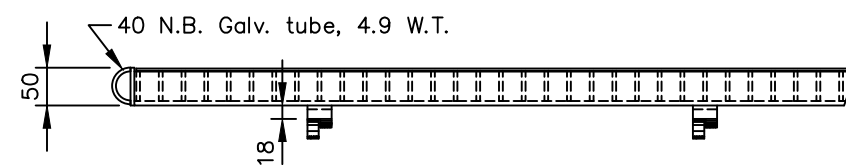
ISSUE DATE:  
18-09-2020

DWG No.

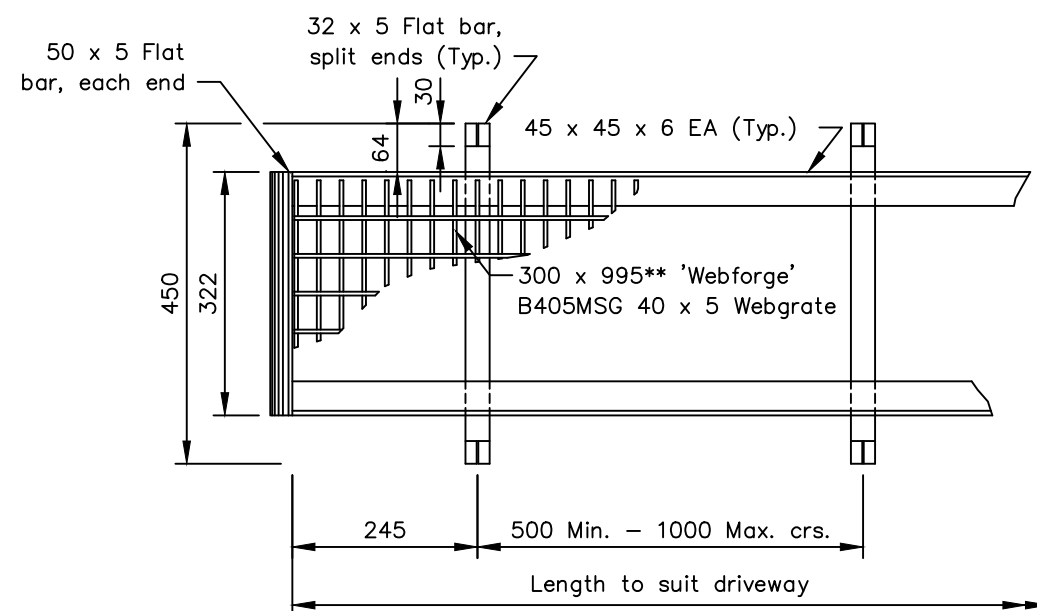
TSD-R16-v3



TYPICAL SECTION  
SCALE 1 : 10  
(Council Specific Approval only)



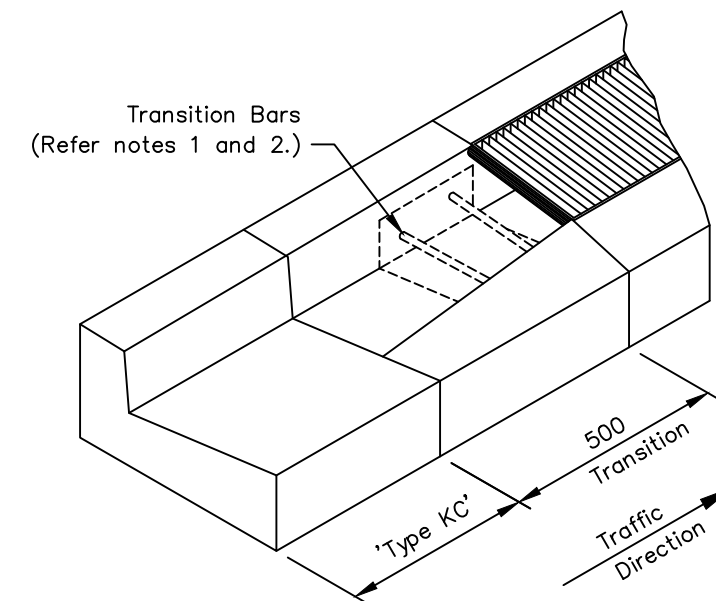
FRONT VIEW



PLAN VIEW

\*\* 485mm for half metre end sections

GRATE AND FRAME DETAIL  
SCALE 1 : 10  
(Council Specific Approval only)



END TRANSITION DETAIL  
N.T.S.

## NOTES

### TRANSITION BARS

#### 1. Objective

To minimise the risk of personal injury and vehicle damage for all road users (in particular 2 wheeled vehicles) resulting from impact with the exposed end of the wedge grate.

#### 2. Install Transition Bars on traffic 'approach side' only, as specified.

- Typically installed where the:
- through lane is adjacent to kerb
  - bicycle traffic is significant
  - speed environment is higher

#### 3. Transition Bars – Supplied by Principal.

#### 4. Grate and Frame

- All welds – Nominal 5mm continuous fillet / butt.
- Clean up weld spatter and remove sharp edges prior to hot dip galvanising

SCALES: AS SHOWN  
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## STANDARD DRAWING CONCRETE KERBS AND CHANNELS GRATED WEDGE CROSSINGS

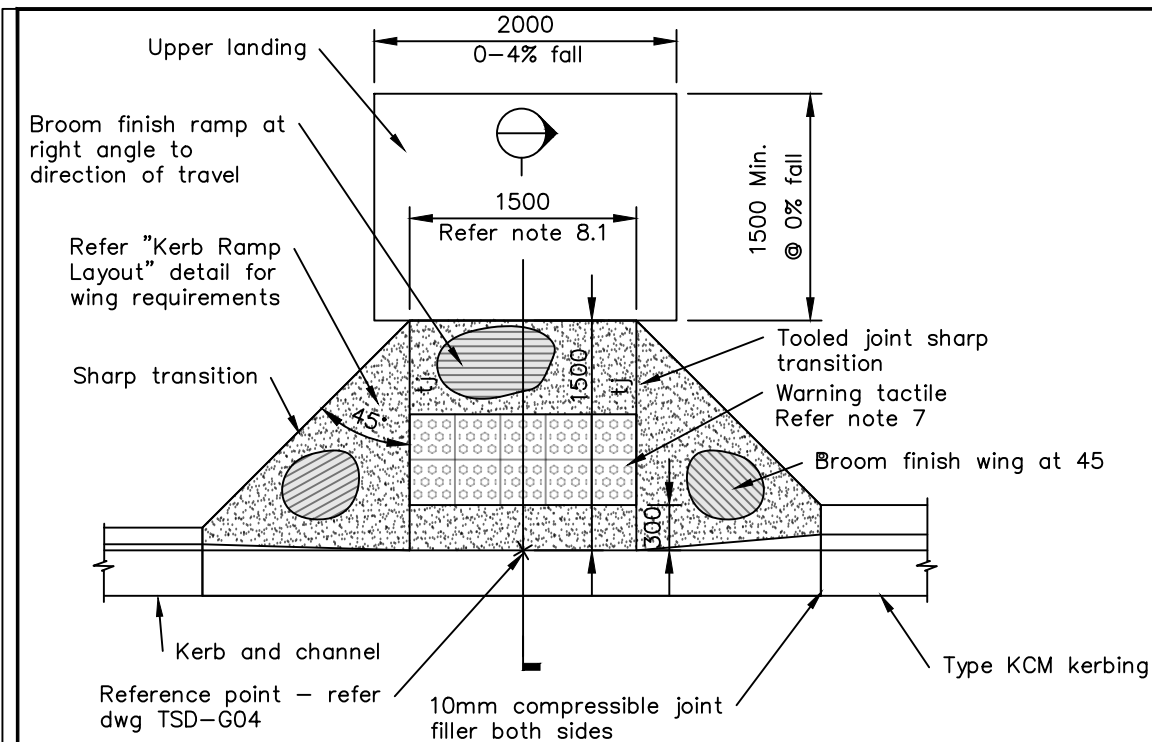
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ISSUE DATE:  
18-09-2020

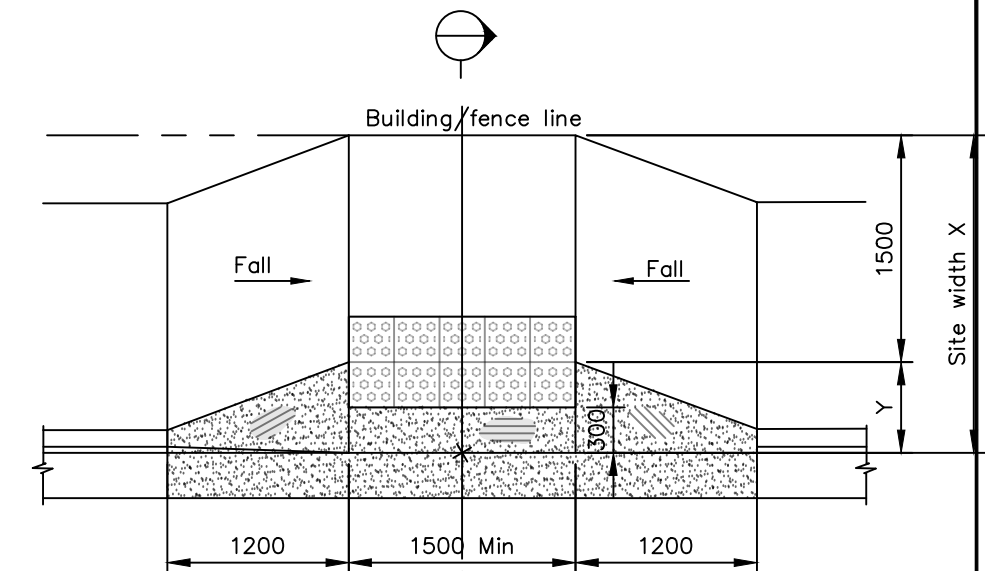
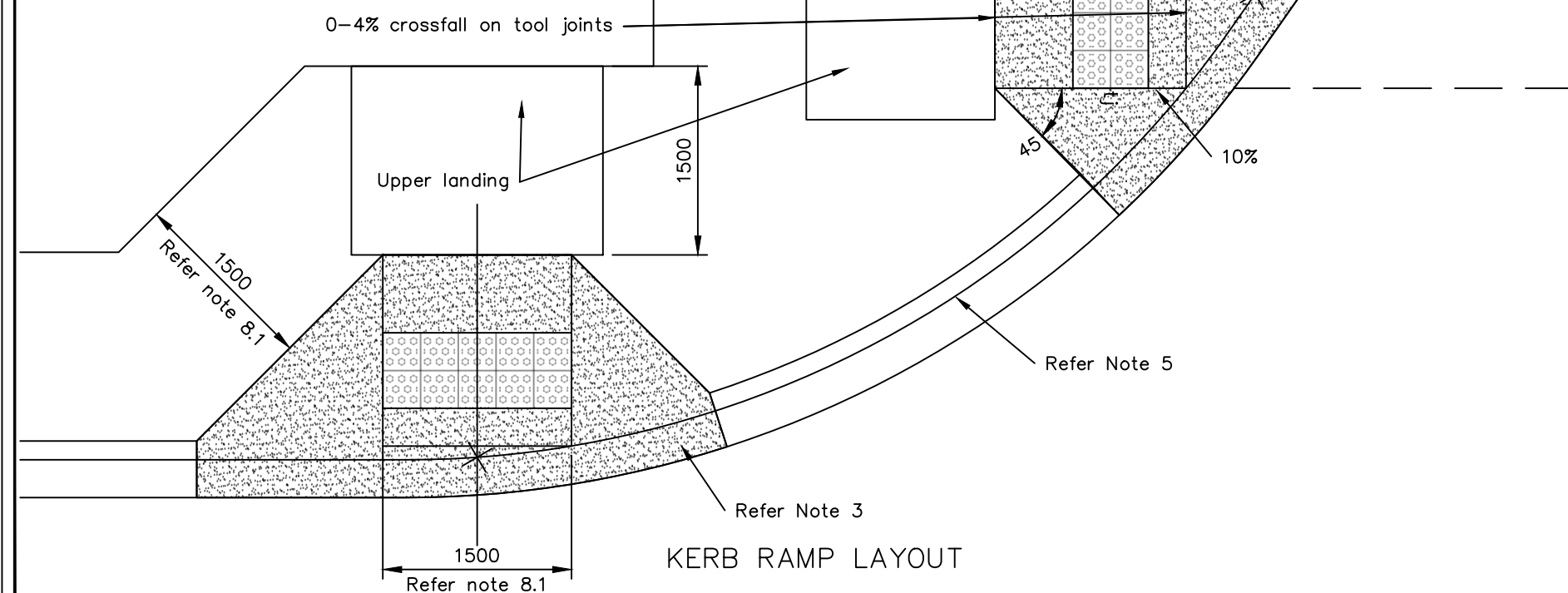
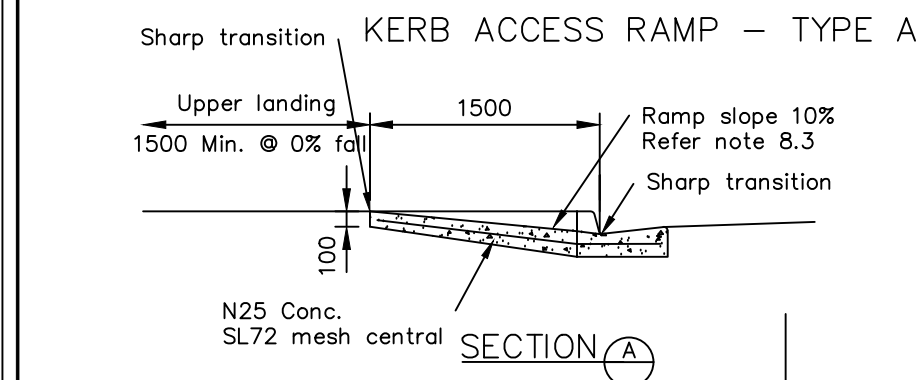
DWG No.

TSD-R17-v3

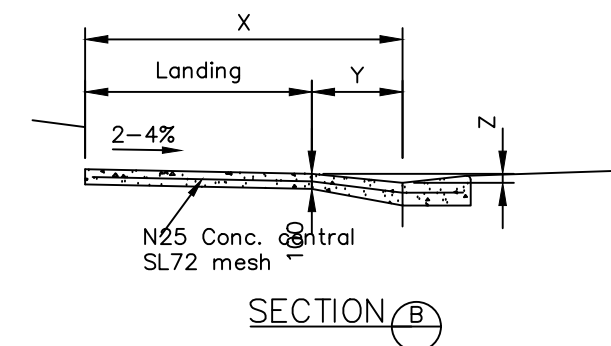




X	Y	Z
3000	1500	150
2900	1400	140
2800	1300	130
2700	1200	120
2600	1100	110
2500	1000	100
2400	900	90
2300	800	80
2200	700	70
2100	600	60

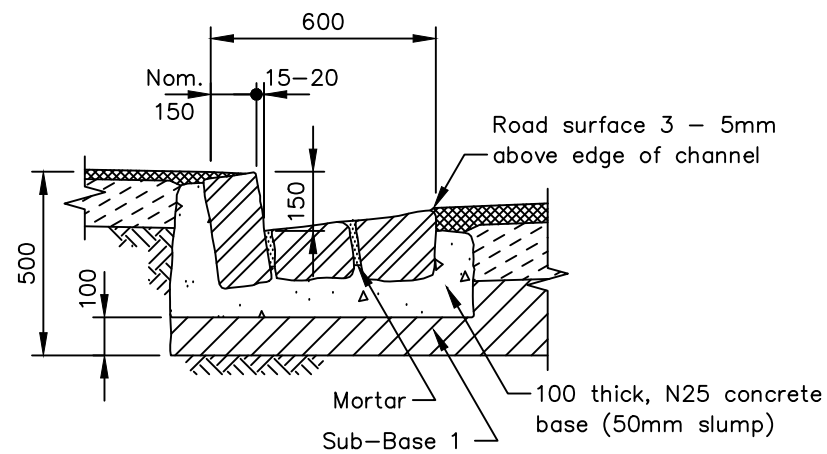


KERB ACCESS RAMP - TYPE B  
Refer note 1.

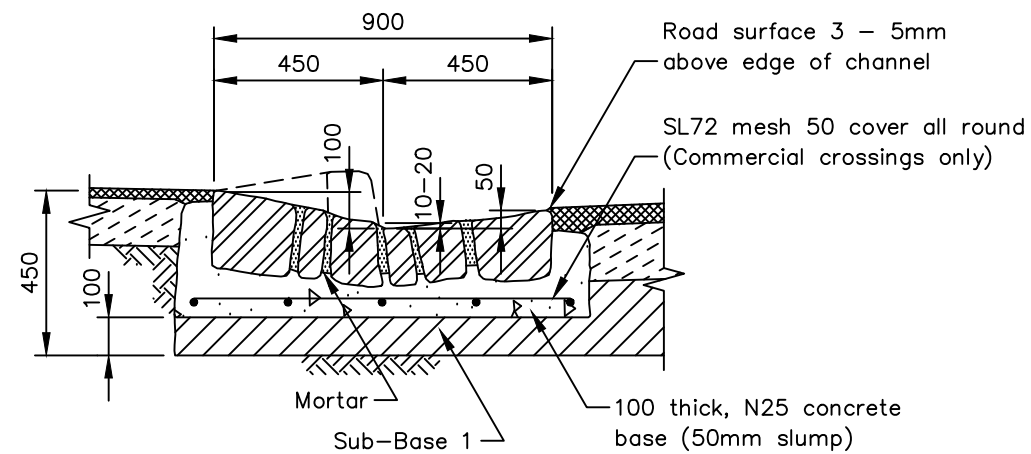


- 1 Type A ramp to be used unless the site width 'X' is less than 3.0m
- 2 Ramps shall be aligned with the pedestrian path of travel and with each other on both sides of a roadway
- 3 Ramp, sloping sides and channel are to contrast in colour with adjoining surfaces (road, adjacent path and landing).
- 4 Transition at the top and bottom of the ramp shall be sharp and perpendicular to the direction of travel.
- 5 Kerb upstand between adjacent ramps at intersections to be 0.6m (min)
- 6 Upper landing construction materials to comply with TSD-R11.
- 7 Tactiles shall be in accordance with the local authorities' requirement.
- 8 The General Manager's delegated officer may approve:
  - 8.1 Widths of path or ramp to be increased where pedestrian traffic is high or reduced where pedestrian traffic is low or where physical constraints exist (1.0m min)
  - 8.2 Wings to be angled less than 45 degrees where no pedestrian through traffic or to clear traffic signals posts, other wings or service pits. (0.6m min length and 25% max slope)
  - 8.3 Grades of ramp to be altered (12.5% max)
  - 8.4 Fibre reinforcement to be used instead of steel

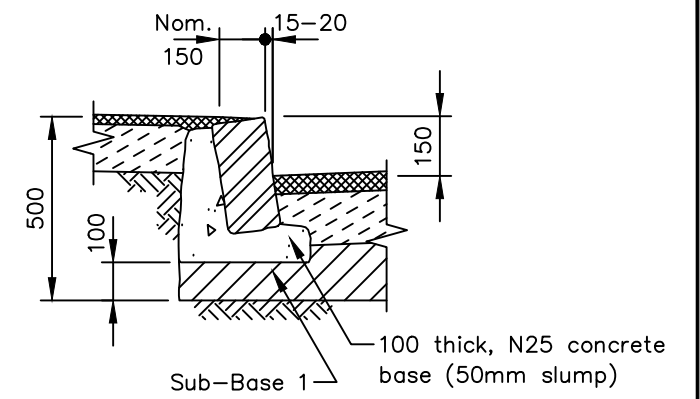
References: AS1428.1, AS1428.2, AS1428.4.1 Austroads GTRD Part 4 and 6A.



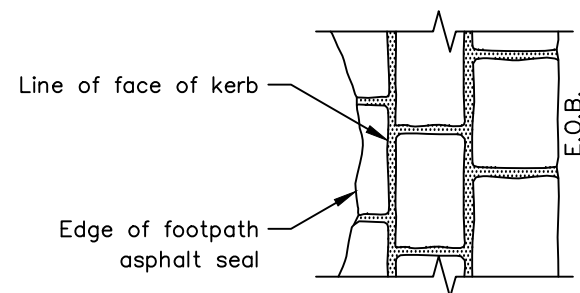
CROSS SECTION  
TYPES BS AND BSR  
N.T.S.



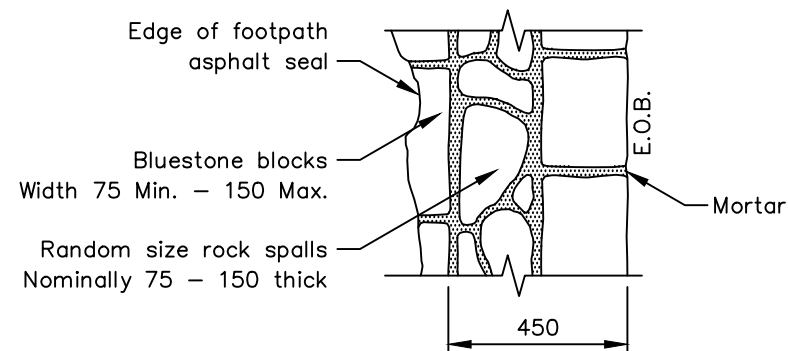
CROSS SECTION  
TYPE BSR – CROSSING  
N.T.S.



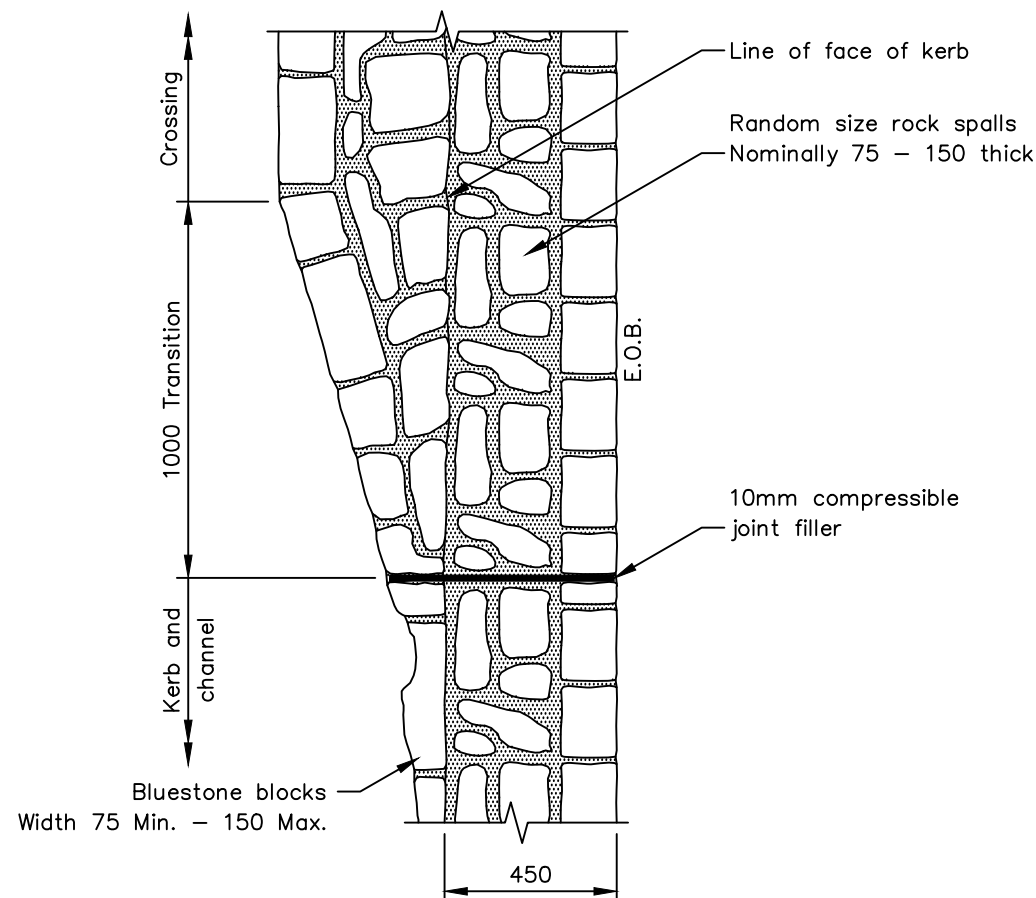
TYPE BSK  
BLUESTONE BARRIER KERB  
N.T.S.



TYPE BS  
KERB AND CHANNEL  
TYPICAL PLAN



TYPE BSR  
KERB AND CHANNEL  
TYPICAL PLAN



TYPE BSR  
VEHICULAR CROSSING  
TYPICAL PLAN

#### NOTES

- Mortar:
  - 1.5 parts putty sand
  - 1.0 part quartz sand
  - 1.0 part cement
  - Nominal joint width 20 – 50mm
  - Finish flush with stone faces.
- Re-use suitable existing bluestone.
- Construct concrete access ramps as required.

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-R19-v3.dwg

REFERENCES

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## STANDARD DRAWING BLUESTONE KERBS AND CHANNELS CONSTRUCTION DETAILS

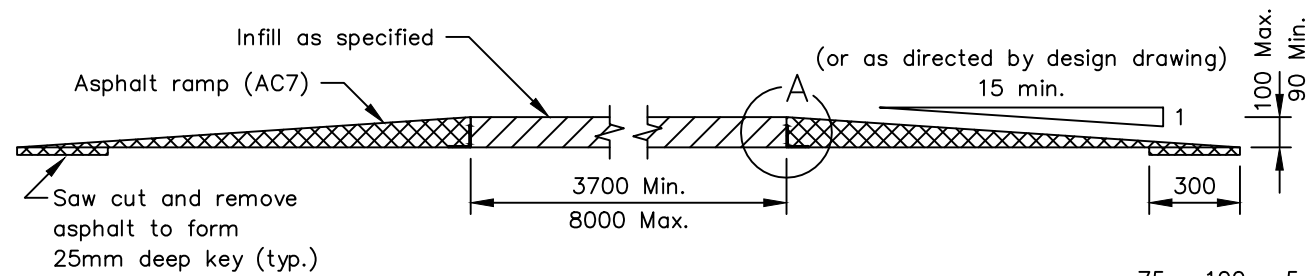
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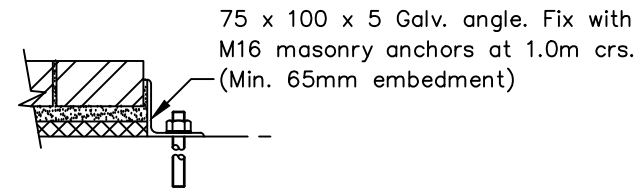
TSD-R19-v3



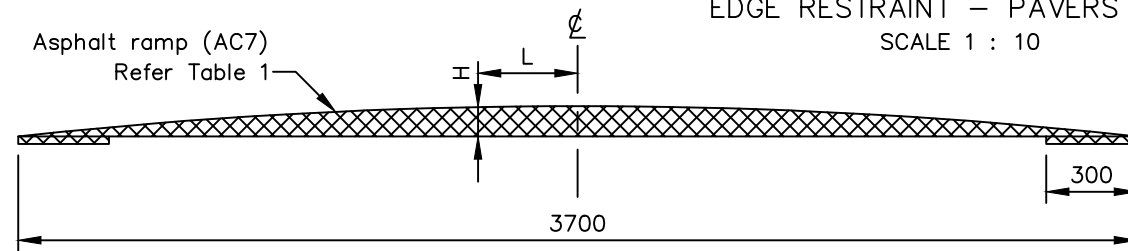




FLAT TOP HUMPS  
SECTION A – A  
SCALE 1 : 25



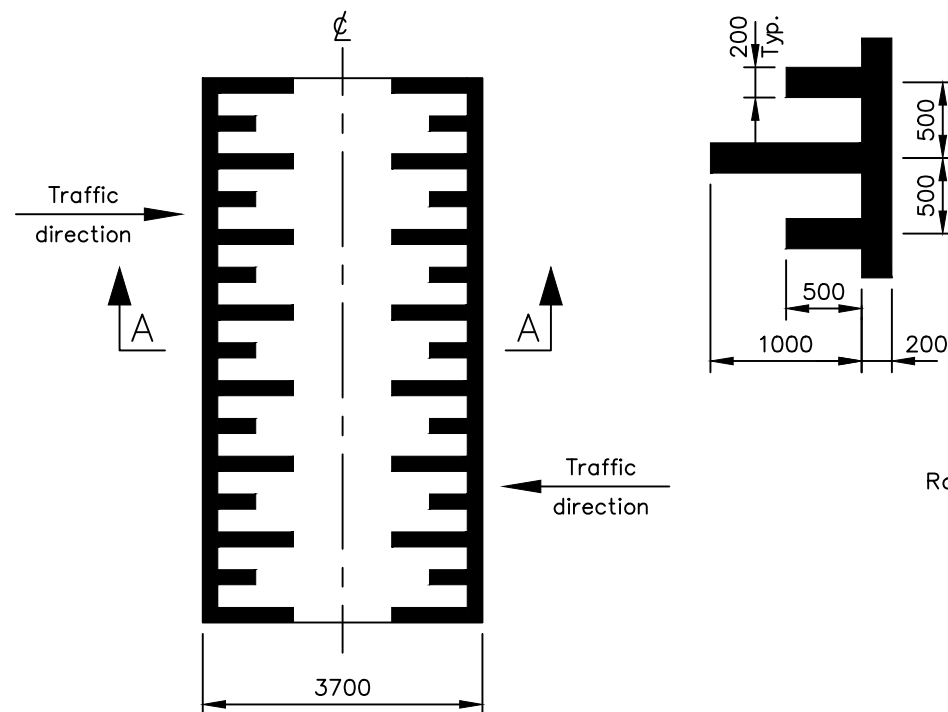
DETAIL A  
EDGE RESTRAINT – PAVERS ONLY  
SCALE 1 : 10



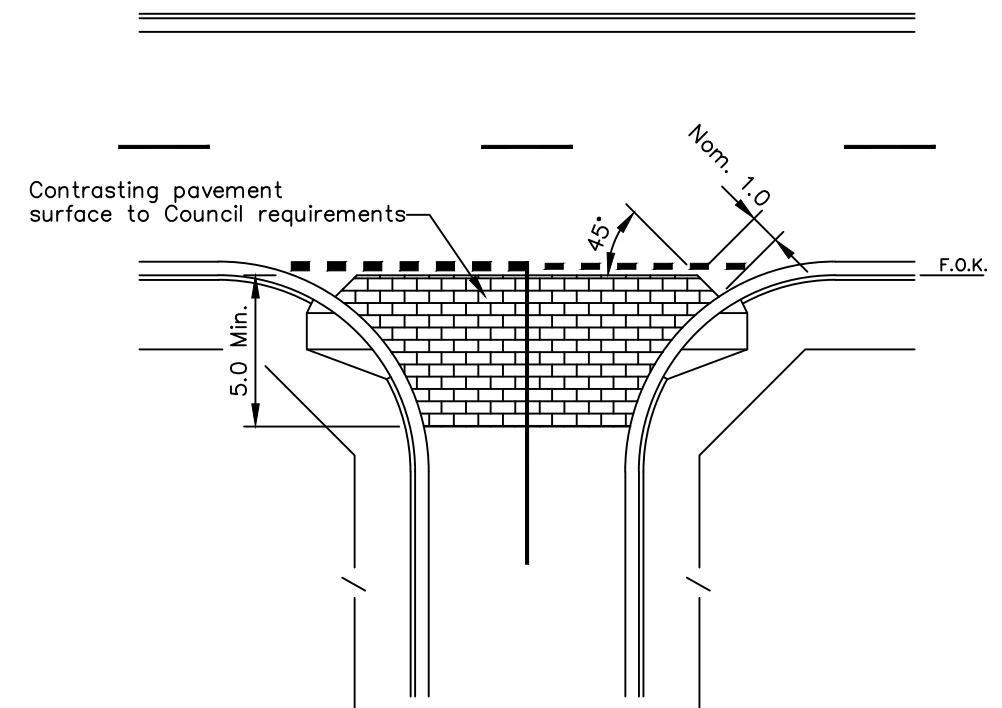
WATTS PROFILE HUMPS  
SECTION A – A  
SCALE 1 : 25

TABLE 1

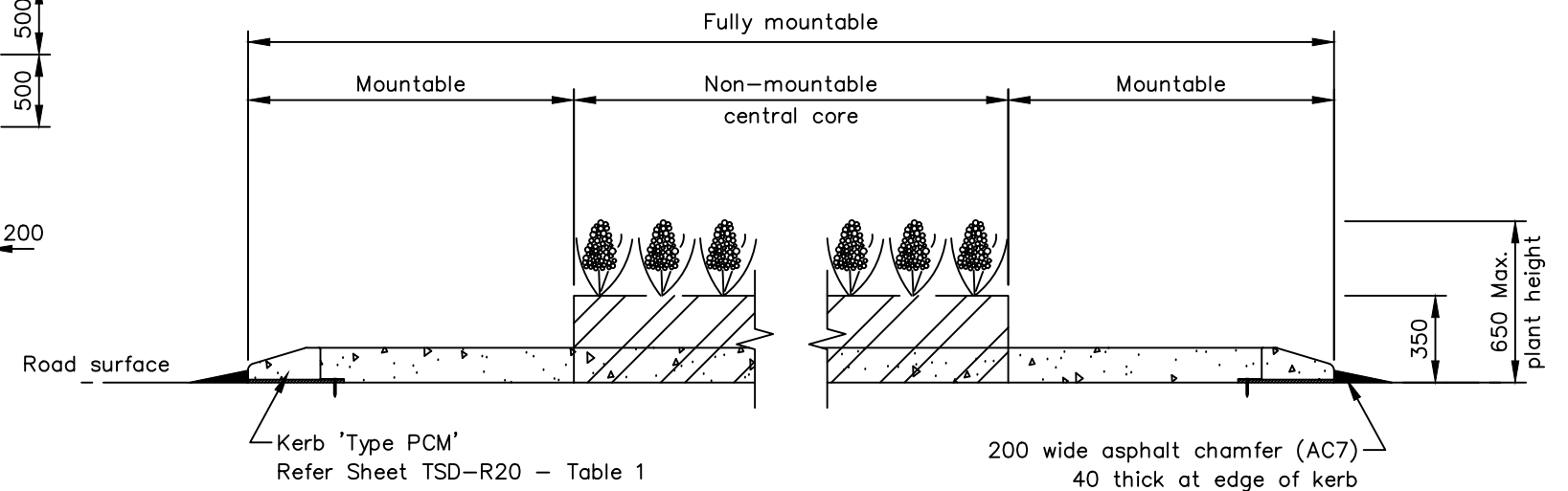
L (m)	H (mm)
0.0	100
0.1	100
0.2	99
0.3	97
0.4	95
0.5	93
0.6	90
0.7	86
0.8	81
0.9	76
1.0	71
1.1	65
1.2	58
1.3	51
1.4	43
1.5	34
1.6	25
1.7	16
1.8	5



WATTS PROFILE HUMPS  
PLAN – LINE MARKING  
SCALE 1 : 100



TYPICAL THRESHOLD TREATMENT  
N.T.S.



TYPICAL SECTION THROUGH ROUNDABOUT  
N.T.S.

#### NOTES

1. Refer 'AS.1742.13–2009' for line marking details.
2. Department of State Growth approval is required for all traffic management installations.

SCALES: AS SHOWN  
(All scales are correct at A3)

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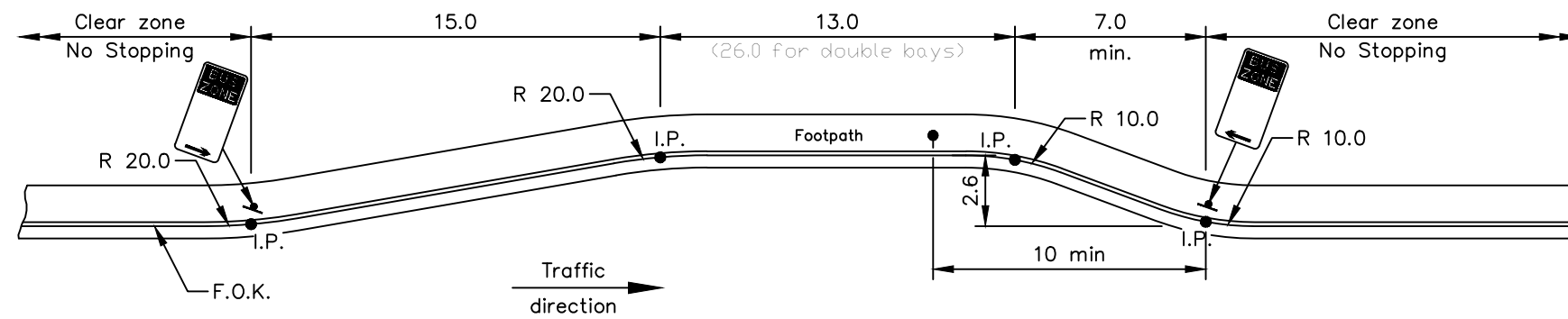
## STANDARD DRAWING ROAD HUMPS, THRESHOLDS AND ROUNDABOUTS

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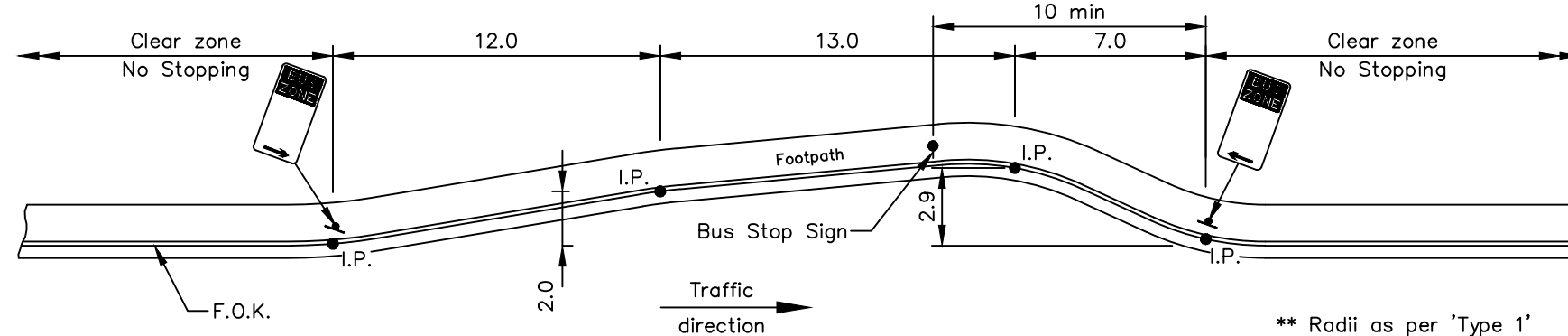
ISSUE DATE: 18-09-2020  
DWG No.

TSD-R21-v3



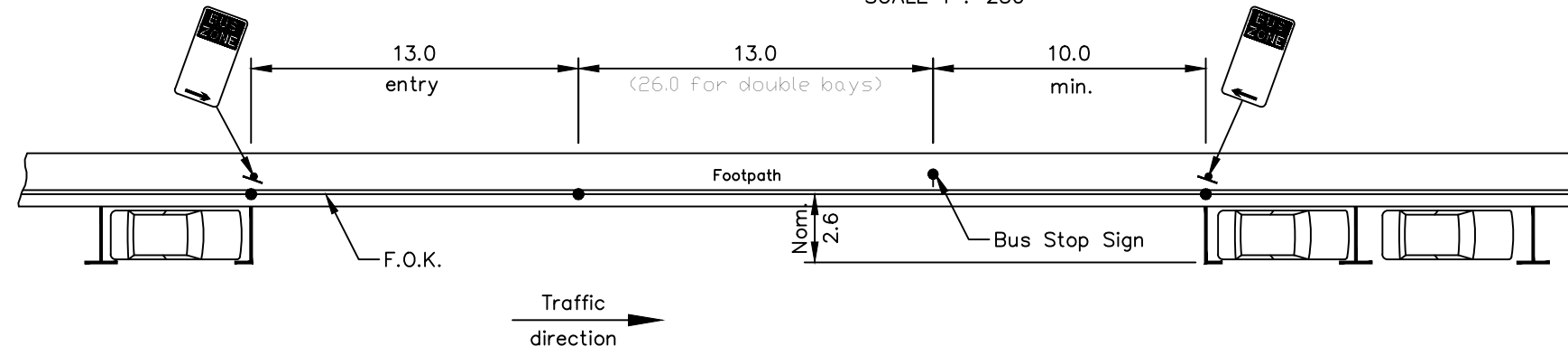


TYPE 1  
PARALLEL INDENTED  
SCALE 1 : 250

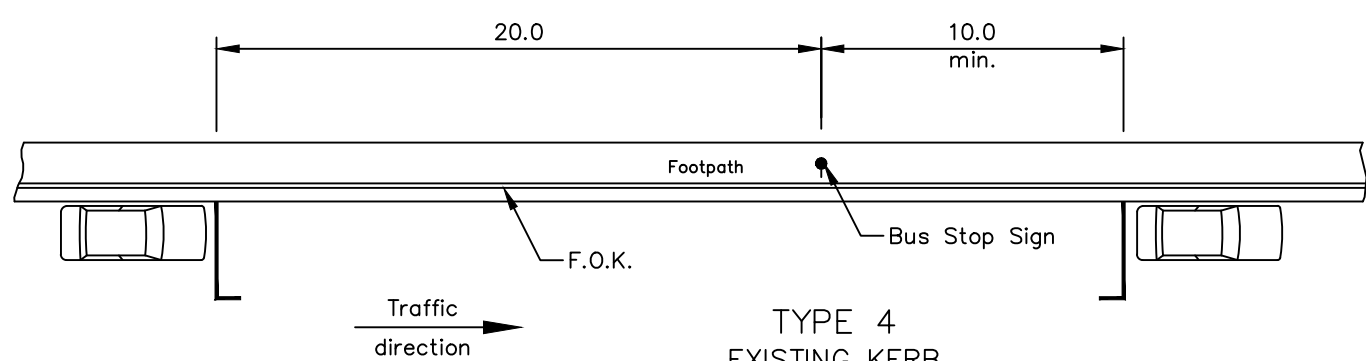


TYPE 2  
ANGLE INDENTED  
SCALE 1 : 250

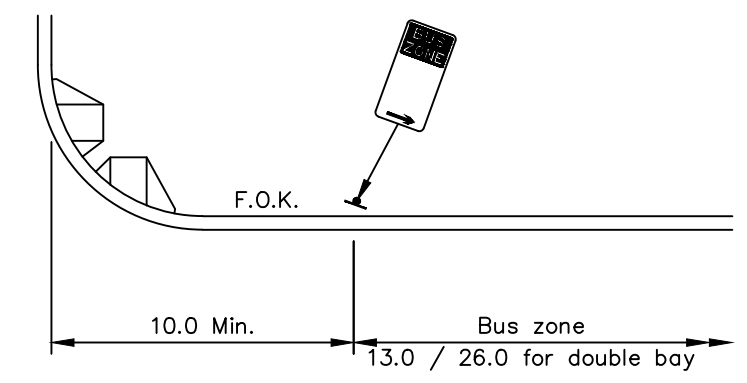
\*\* Radii as per 'Type 1'



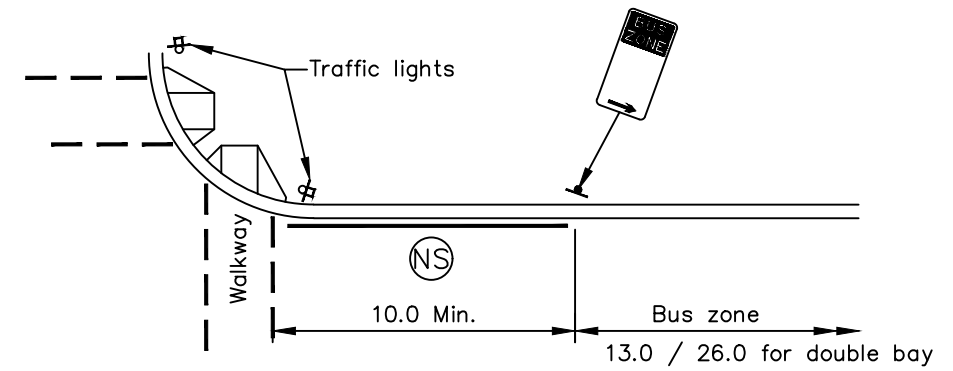
TYPE 3  
EXISTING KERB  
SCALE 1 : 250



TYPE 4  
EXISTING KERB  
SCALE 1 : 250



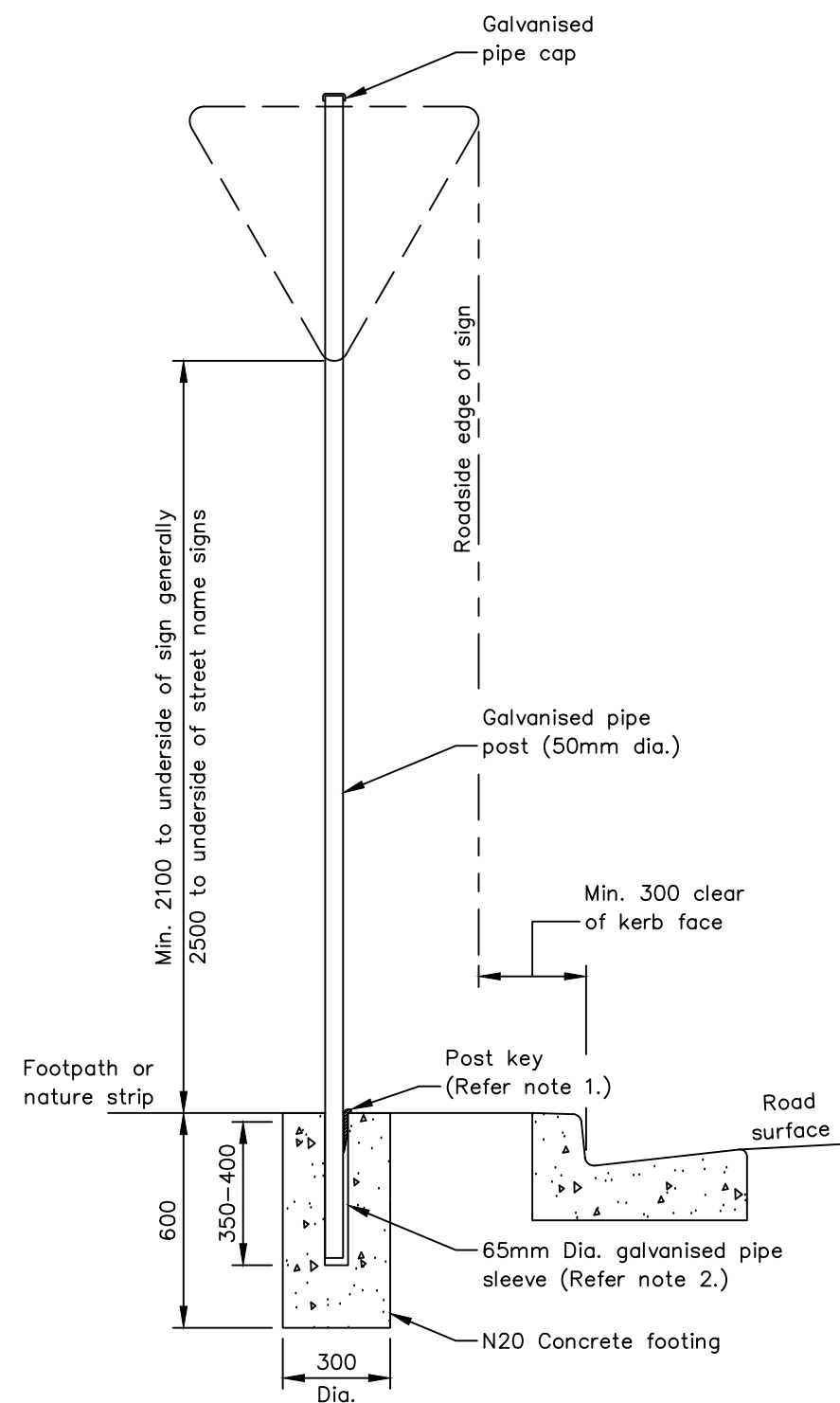
UNSIGNALISED  
INTERSECTION  
N.T.S.



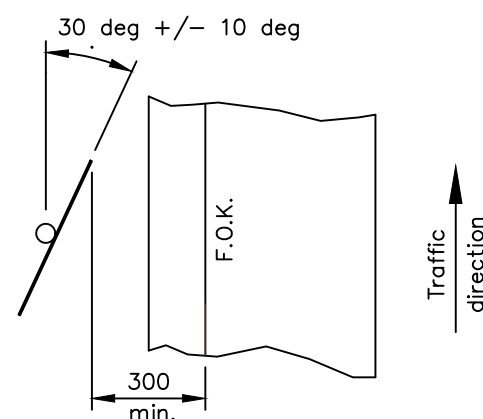
SIGNALISED  
INTERSECTION  
N.T.S.

NOTES

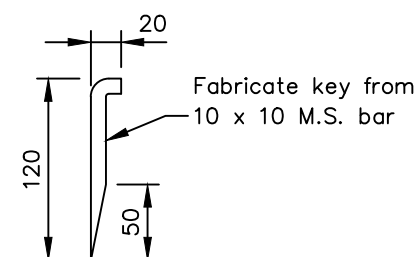
1. Refer Sheet TSD-R24 for bus bay signage requirements.
2. Dimensions of bays are designed to allow a 12.5 metre 'Metro' Accessible bus to stop parallel with the kerb.



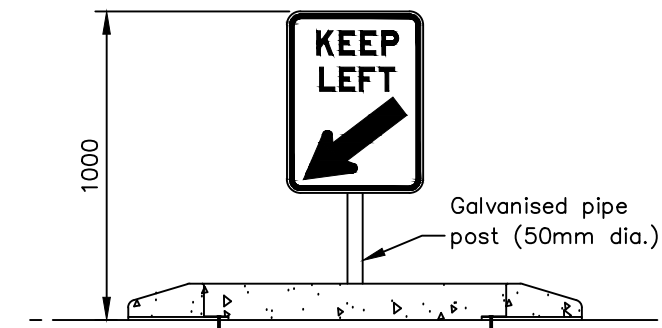
TRAFFIC / PARKING SIGNS  
SCALE 1 : 20



PLAN VIEW  
KERBSIDE PARKING SIGNS  
SCALE 1 : 20



POST KEY  
SCALE 1 : 5



TRAFFIC ISLANDS  
SCALE 1 : 20

Height and placement maybe dependant on vertical alignment of road.  
Approval of specific instances by State Growth and the General Manager's  
delegated officer.

## NOTES

1. Place key on the kerbside face of the post clear of pedestrian traffic.
2. Install post sleeves flush with the footpath / nature strip.

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-R23-v3.dwg

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**STANDARD DRAWING**  
SIGNS

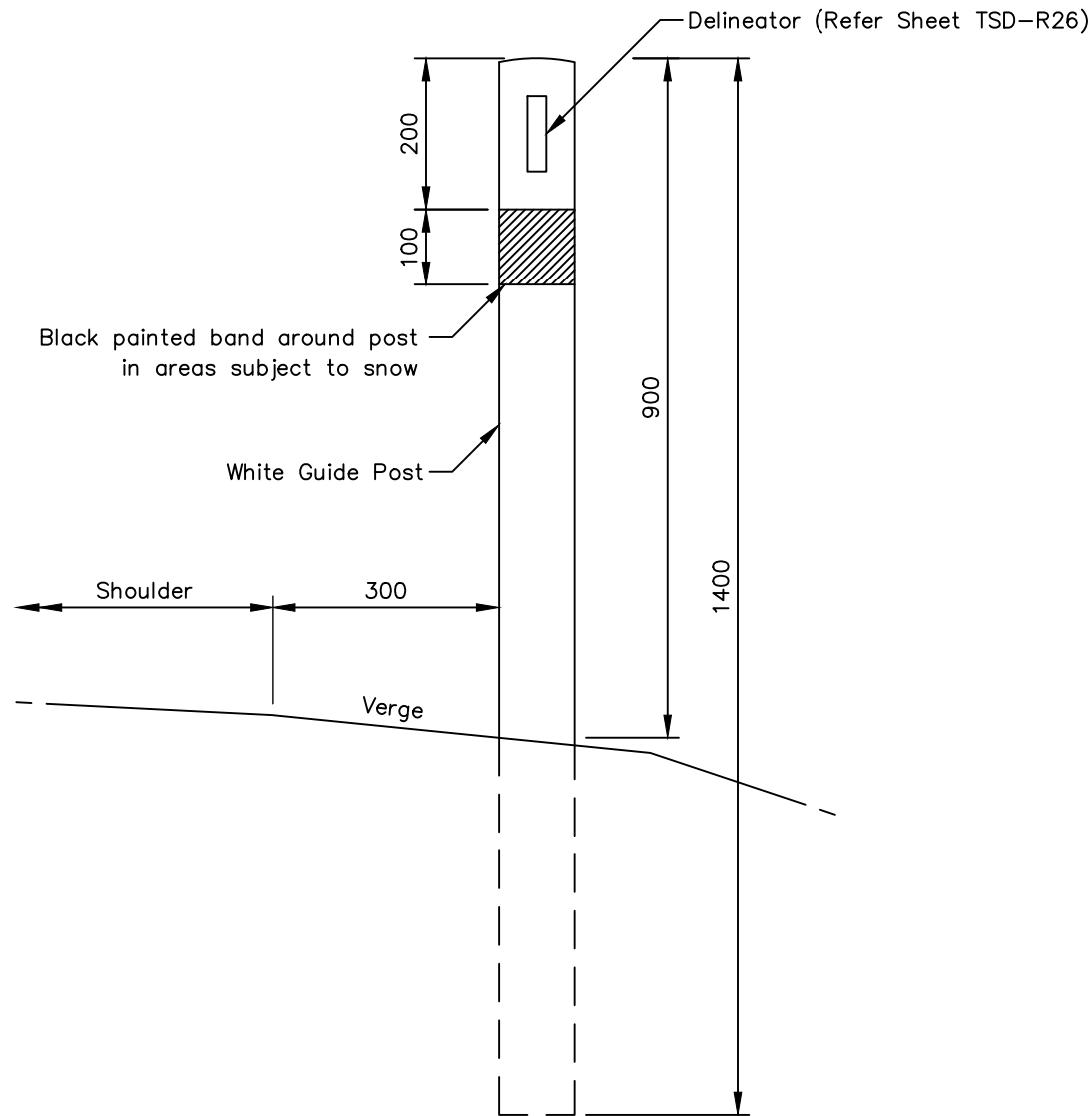
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GUIDE POST  
SCALE 1 : 10

#### NOTES

- Locations for straight sections
  - Spacing of guide posts shall generally be 150m with the posts in pairs (i.e. One each side of the road). Reduce the spacing to 60m in areas subject to frequent fog.
- Locations (Horizontal Curves)
  - Refer Table 1 for spacing of guide posts on curves.
  - Locate first post at the tangent point (T.P.) – Refer plan.
  - Posts on the inside of a curve shall be located opposite posts on the outside of the curve, wherever practicable, commencing at the tangent point.
- General
  - Refer to 'Part 8 Austroads–Traffic Management. (2008)' for further details as required.
- Guide posts to be erected at culverts endwalls.

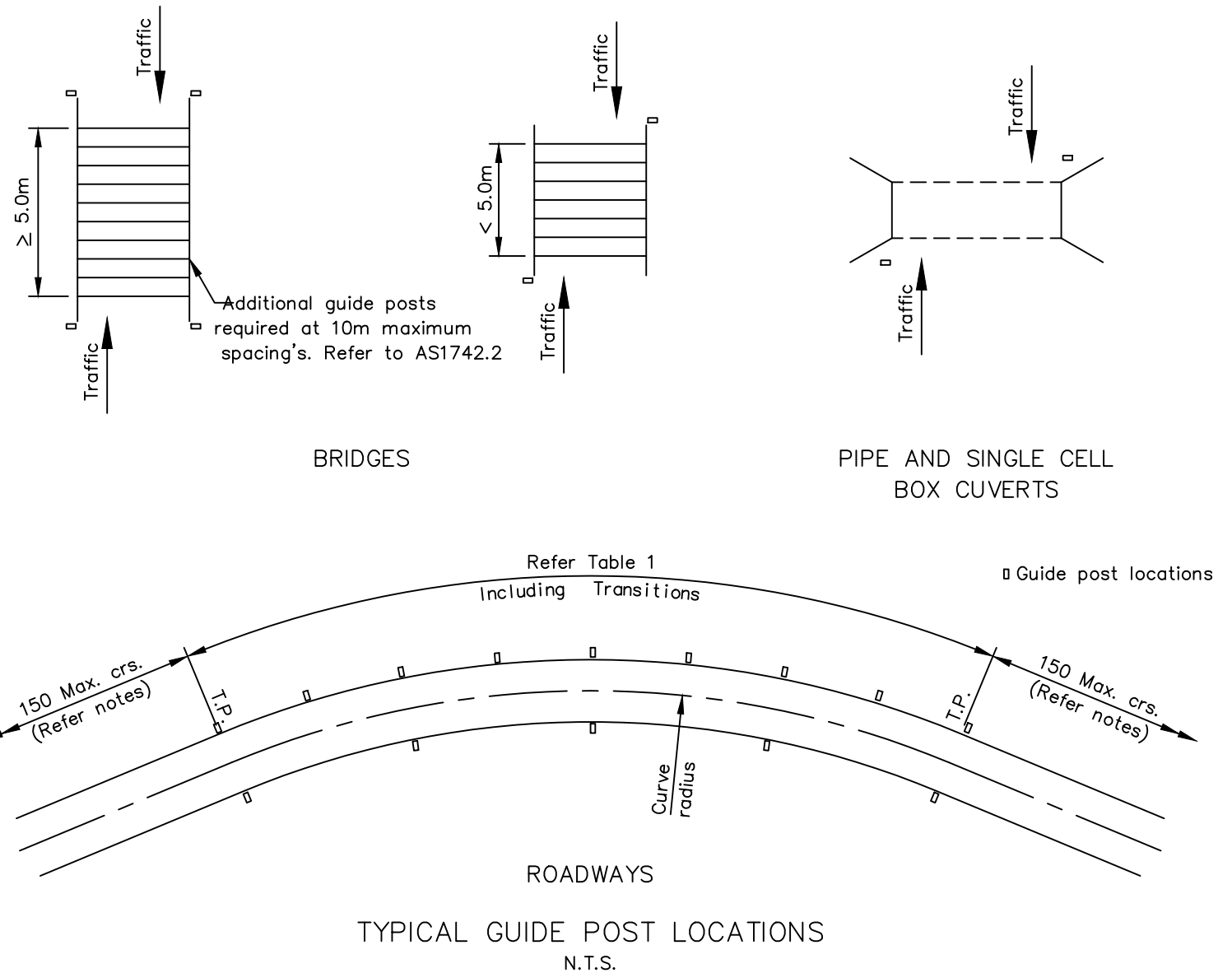


TABLE 1

CURVE RADIUS (m)	SPACING (m)	
	OUTSIDE OF CURVE	INSIDE OF CURVE
< 100	6	12
100 – 199	10	20
200 – 299	15	30
300 – 399	20	40
400 – 599	30	60
600 – 799	40	60
800 – 1199	60	60
1200 – 2000	90	90
> 2000 Incl. straights	150	150

SCALES: AS SHOWN  
(All scales are correct at A3)

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## STANDARD DRAWING GUIDE POSTS

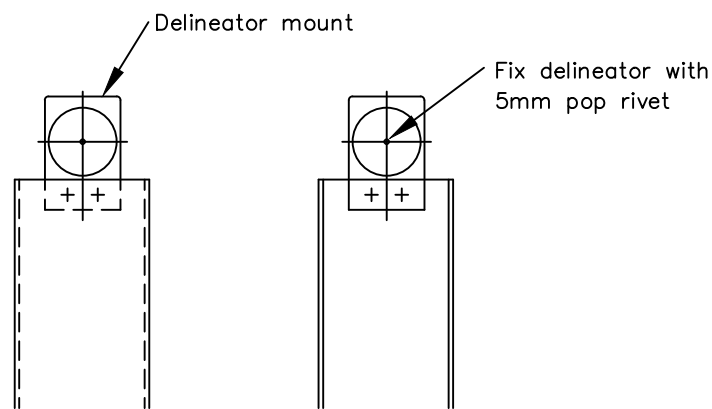
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TSD-R25-v3

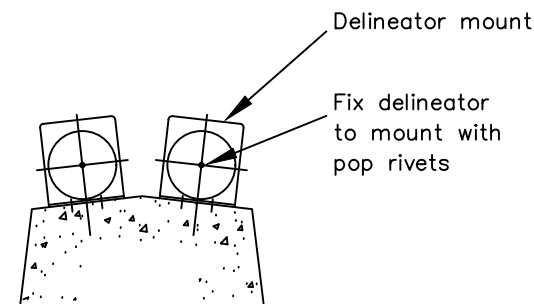




TYPE 2

### SAFETY BARRIER

(Only Type 2 delineators used on Safety Barrier)



### NEW JERSEY BARRIER

(Only Type 2 delineators used on New Jersey Barrier)

### INSTALLATION

ROAD TYPE	DELINEATOR TYPE	COLOUR	
		LEFT	RIGHT
one way	1	red	white
two way	1	red	white
one way	2	red	yellow
two way	2	red	white

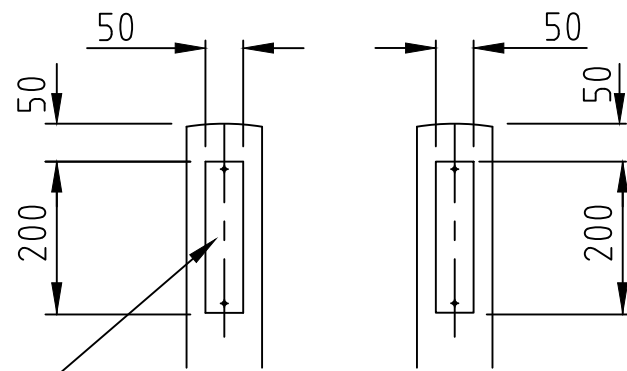
### SPACING

SAFETY BARRIER – Delineators required on tangent point post of flare, then in accordance with table:

ROAD CURVATURE	GUARD FENCE TYPE	
	STEEL BEAM	POST & CABLE
Straight or radius>300m	32m	33m
Radius from 150m–300m	20m	21m
Radius<150m	8m	7.5m or 9m

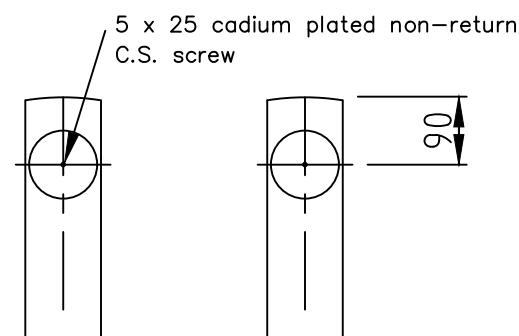
NOTE – Spacings to be halved for Type 1 delineators installed on curved surfaces.

GUIDE POSTS – Delineators required on all guide posts.



26g G.I. delineator backing plate fixed to posts.

TYPE 1



TYPE 2

### GUIDE POSTS

### DELINEATORS

TYPE 1 – Pressure sensitive retroreflective material in accordance with Class 1A, AS1906. 200x50 on reboundable guide posts.

TYPE 2 – Corner cube reflector Type A, AS1906.

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-R26-v3.dwg

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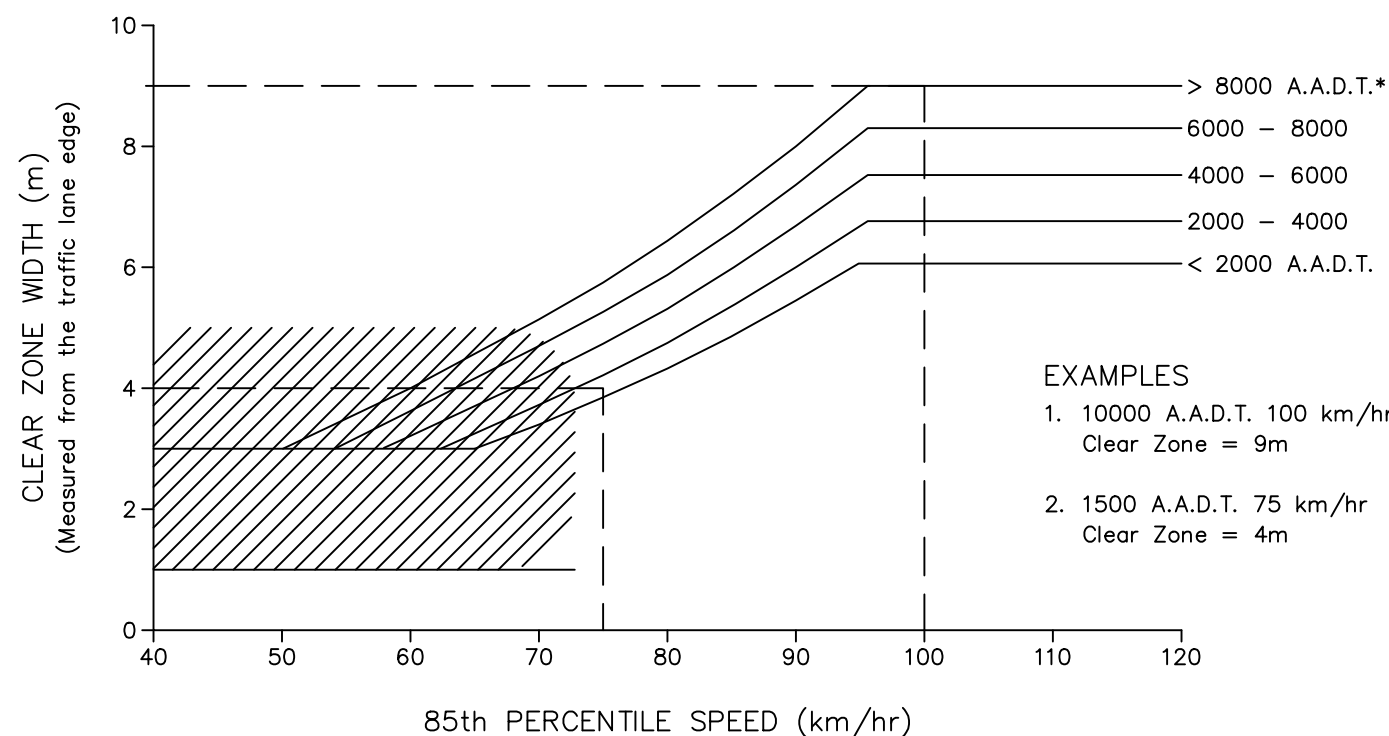
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## STANDARD DRAWING

### DELINEATORS

TSD-R26-v3



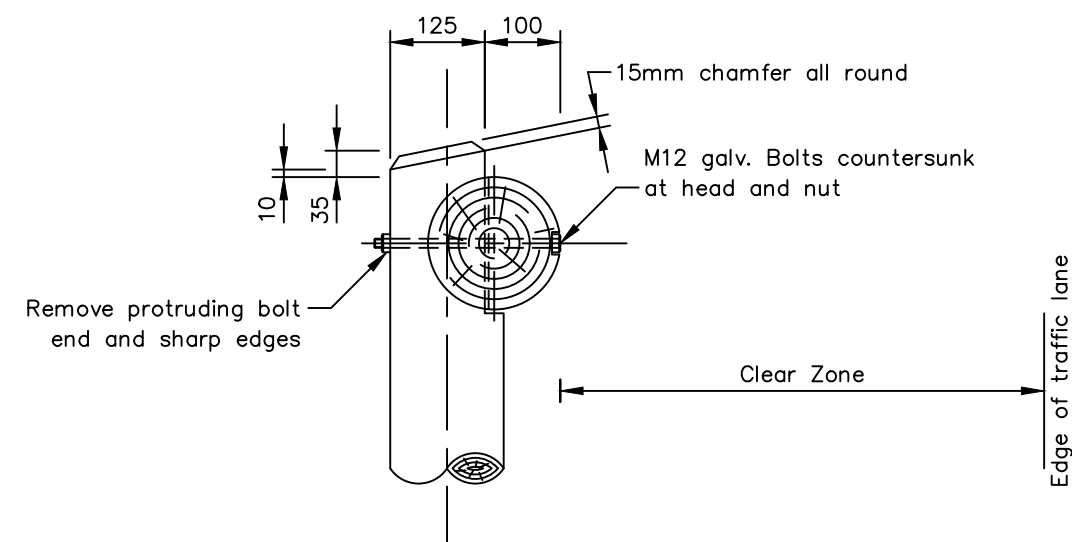
In low speed urban environments, a minimum clear zone 1.0m wide may be accepted to achieve an appropriate balance between traffic safety and other aesthetic considerations.

\* A.A.D.T. - Average Annual Daily Traffic (Two way)

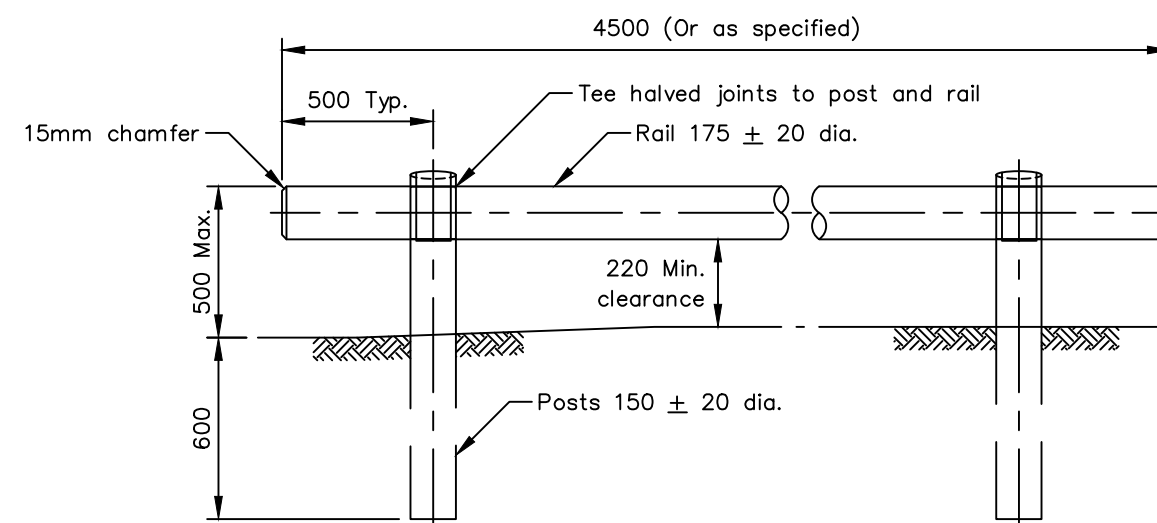
FIGURE 1

#### NOTES

- The clear zone is measured from the edge of the traffic lane. Shoulders and verge areas are included as part of the clear zone.
- The desirable clear zone widths should be doubled on the outside of curves with a radii of 600m or less, and when measuring clear zones the width of embankment slopes greater than 3 : 1 should not be included.



JOINT DETAIL  
N.T.S.



ELEVATION  
SCALE 1 : 25

#### NOTES

- Treated pine to comply with 'AS.1604-1997' (Timber - Preservative Treated - Sawn and Round)

SCALES: AS SHOWN  
(All scales are correct at A3)

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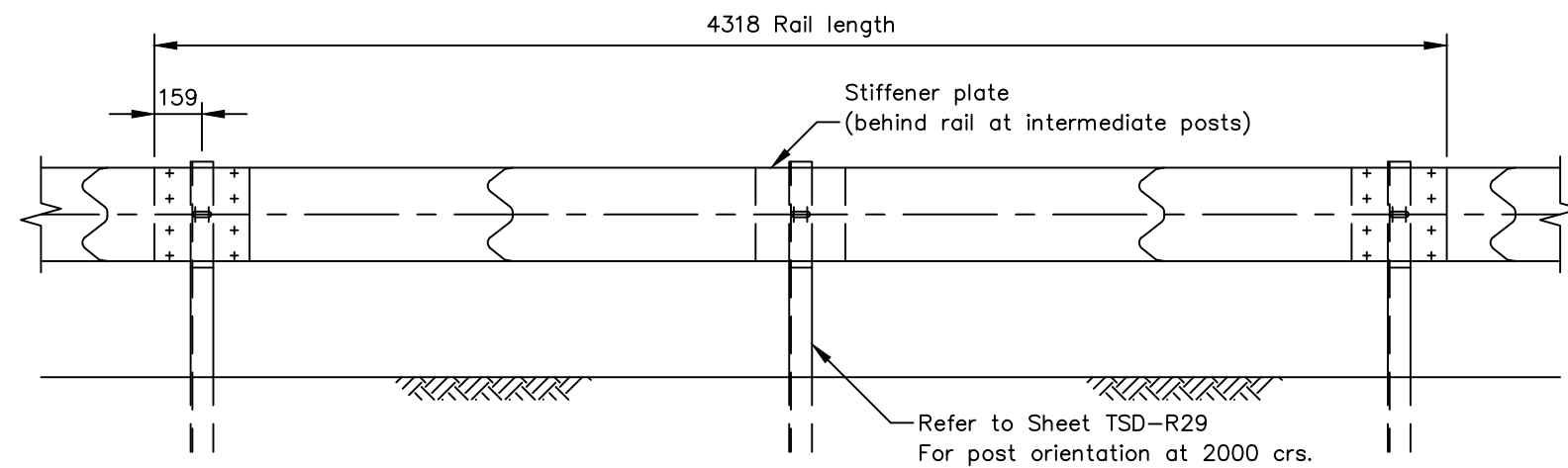
## STANDARD DRAWING

### CLEAR ZONE TREATED PINE FENCE

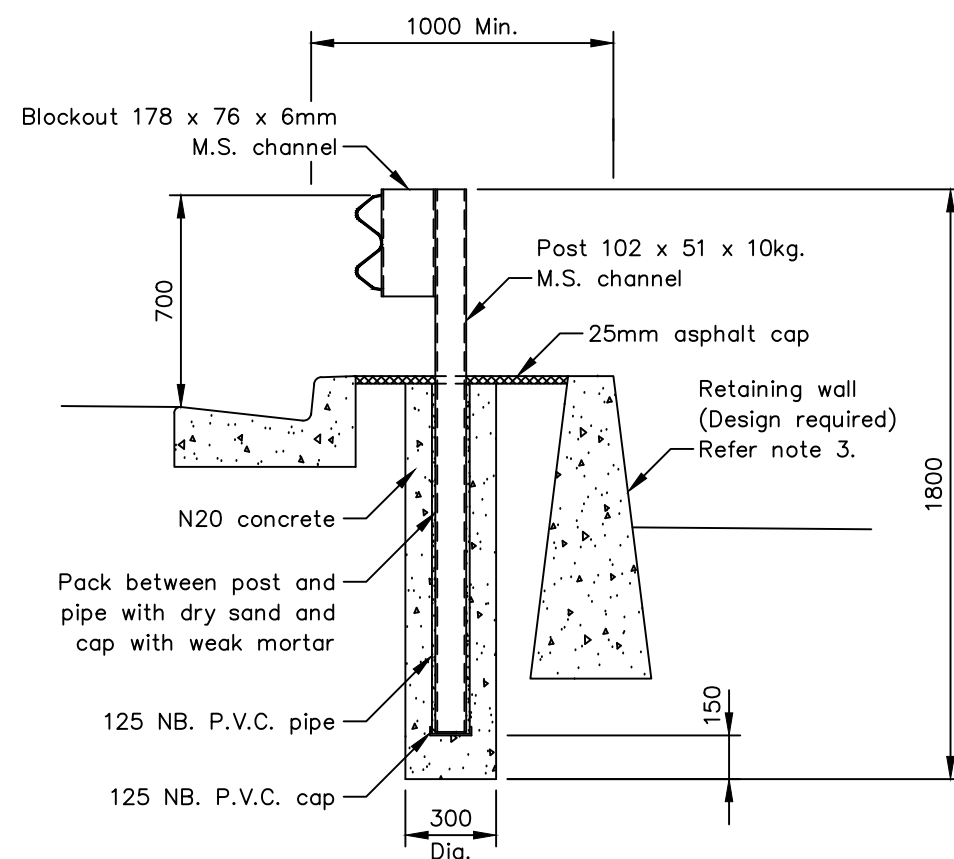
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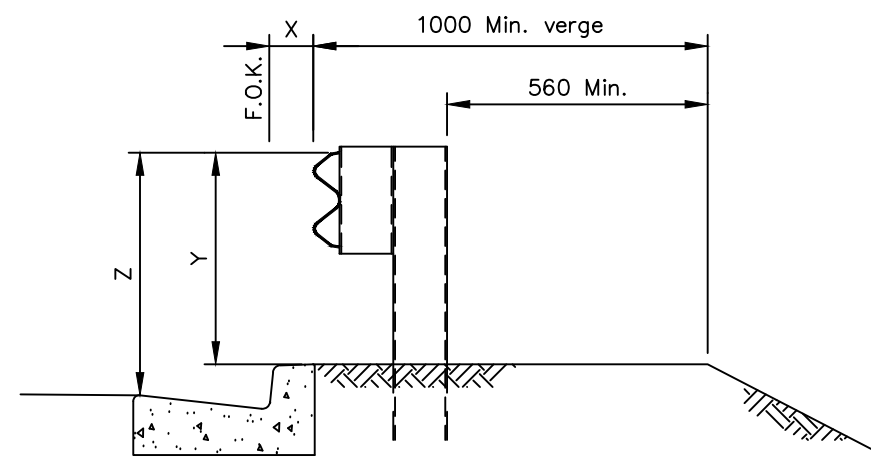
TSD-R27-v3



ELEVATION  
SCALE 1 : 25

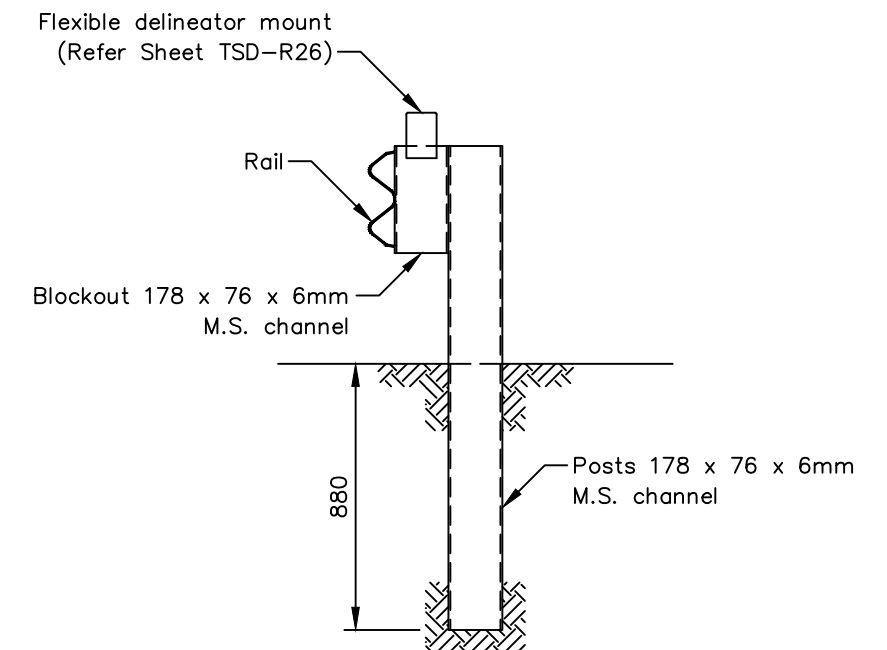


INSTALLATION  
(BETWEEN KERB AND RETAINING WALL)  
SCALE 1 : 25

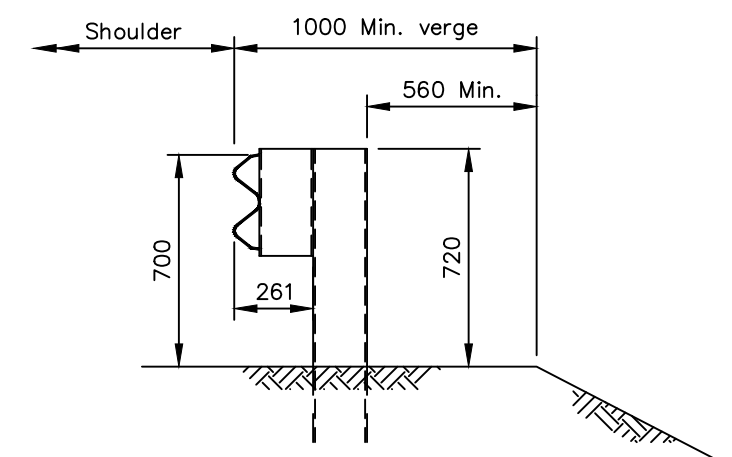


REFERENCE SURFACE			
		T.O.K.	Pavement Edge
	X	Y	Z
Type KC	≤ 150mm	–	700
Type KC	> 3.0m	700	–
Type KCM	2.5m	700	–

INSTALLATION  
(ADJACENT TO KERB)  
SCALE 1 : 25



TYPICAL SECTION  
SCALE 1 : 25



INSTALLATION  
(ADJACENT TO SHOULDER)  
SCALE 1 : 25

#### NOTES

1. Refer to Austroads AGRD–10 Part 6: Roadside Design, Safety and Barriers
2. Hot dip galvanise all components.
3. The design for the retaining wall shall make provision for the support requirements of the guard rail.

SCALES: AS SHOWN  
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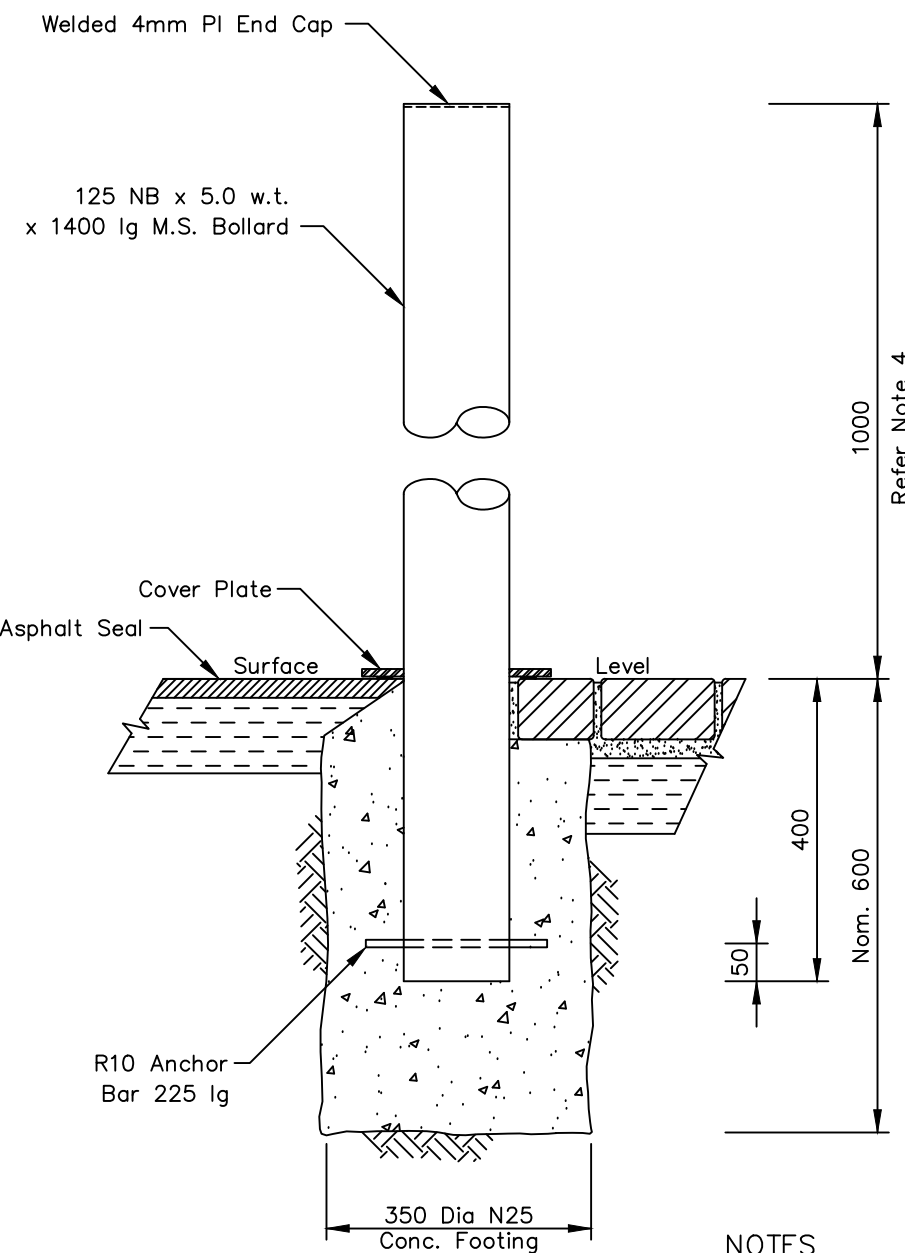
## STANDARD DRAWING

### W-BEAM INSTALLATION DETAILS

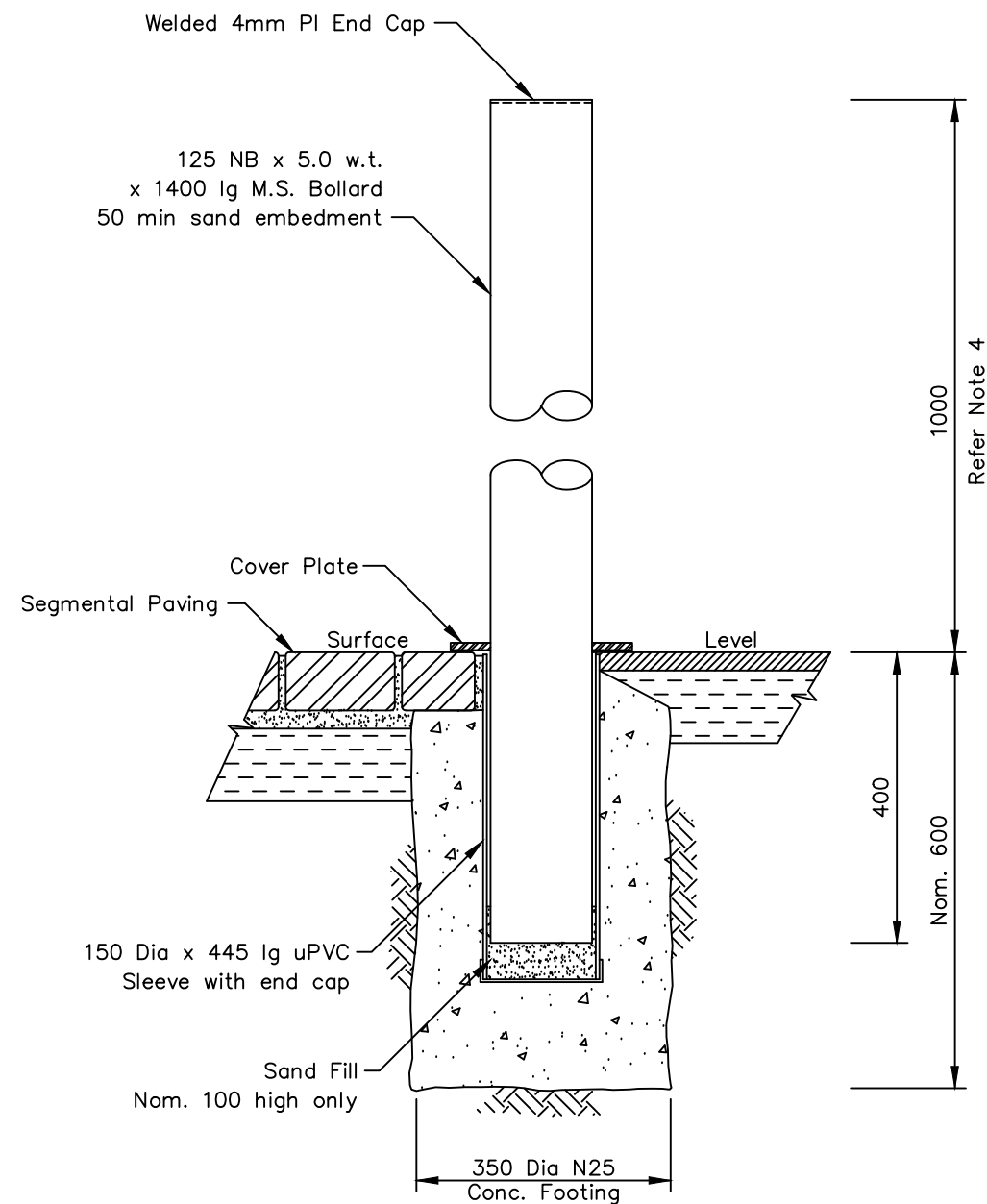
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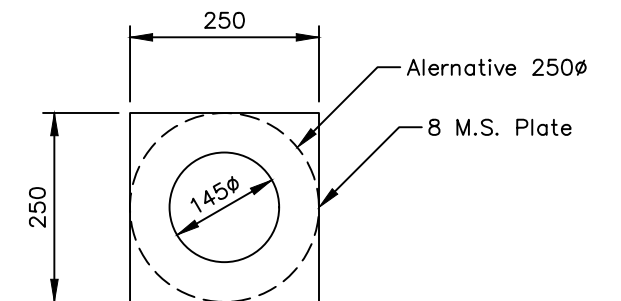
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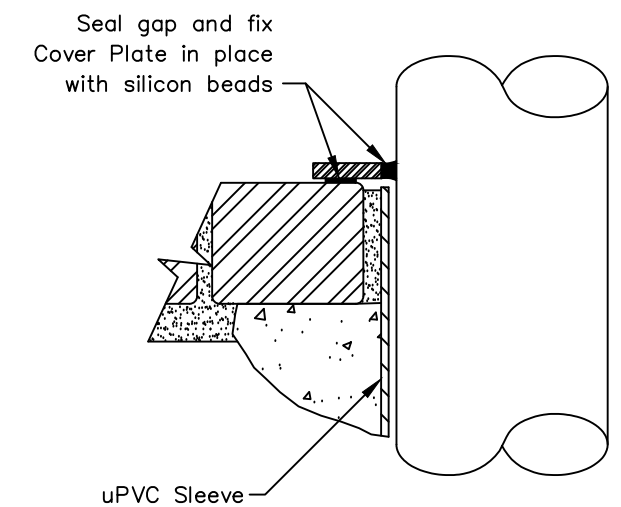
TYPE F  
(FIXED)  
1 : 10



TYPE R  
(REMOVEABLE)  
1 : 10



COVER PLATE  
1 : 10



COVER PLATE FIXING DETAIL  
(TYPE R SHOWN)  
1 : 5

#### NOTES

1. All bollards may be modified to utilise the various footing options.  
Only use the 'Base Plate' option on concrete paved areas.
2. Welds – 5mm continuous fillet, unless noted otherwise.
3. Bollard finishes
  - Surface preparation (typical)
  - Galvanised – Section (typical)
  - Powder Coating – Complying with AS.4506 / AS.3715.
  - Paint – 1 Coat zinc rich epoxy primer.
    - 1 Coat external epoxy (gloss) top coat.
    - Specify colour to AS.2700.
4. If a bollard is located at the end of a parking space it shall be at least 1300mm high

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-R31-v3.dwg

REFERENCES

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## STANDARD DRAWING

### BARRIERS / GUARD RAIL

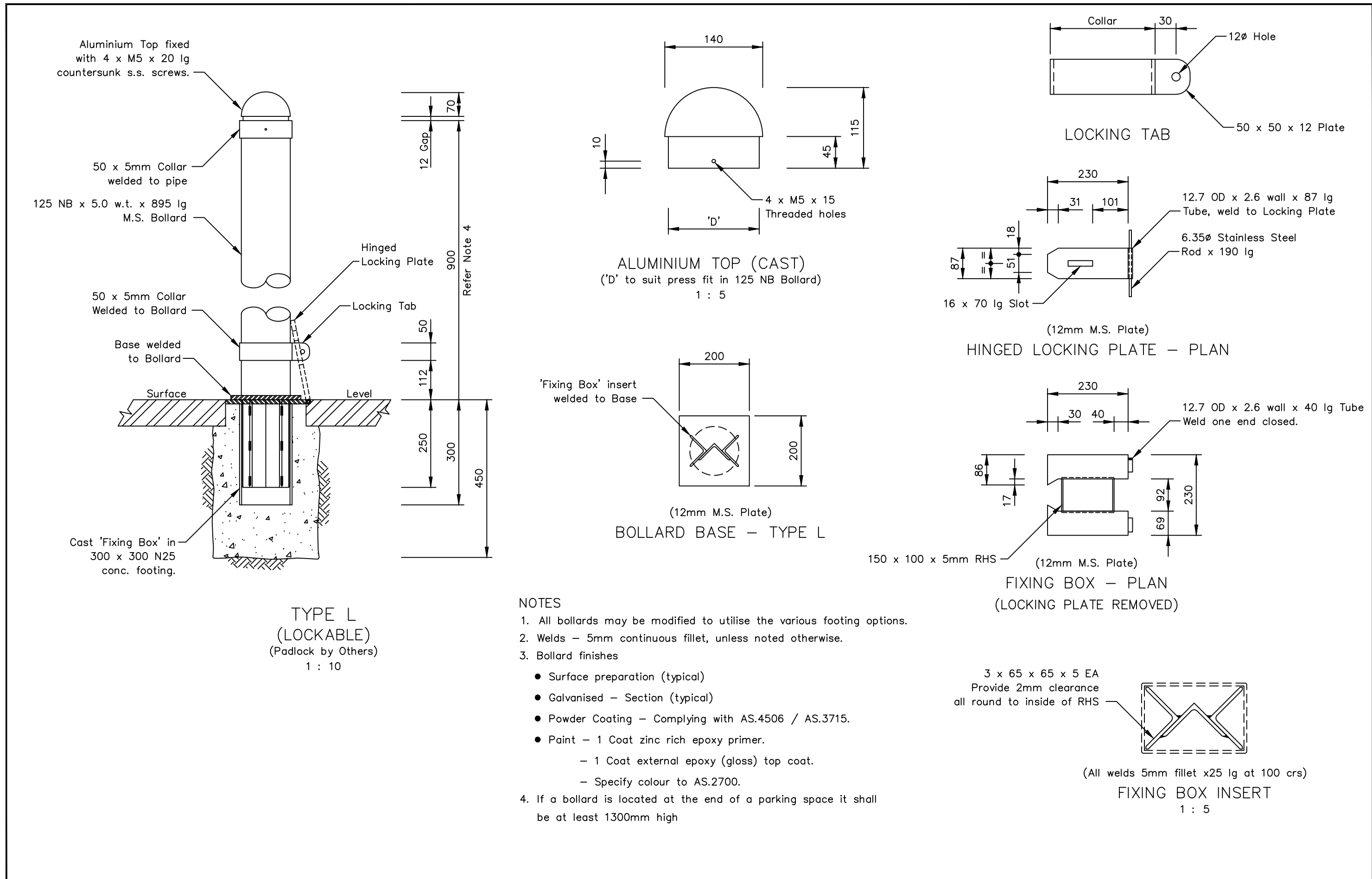
### RIGID BOLLARDS

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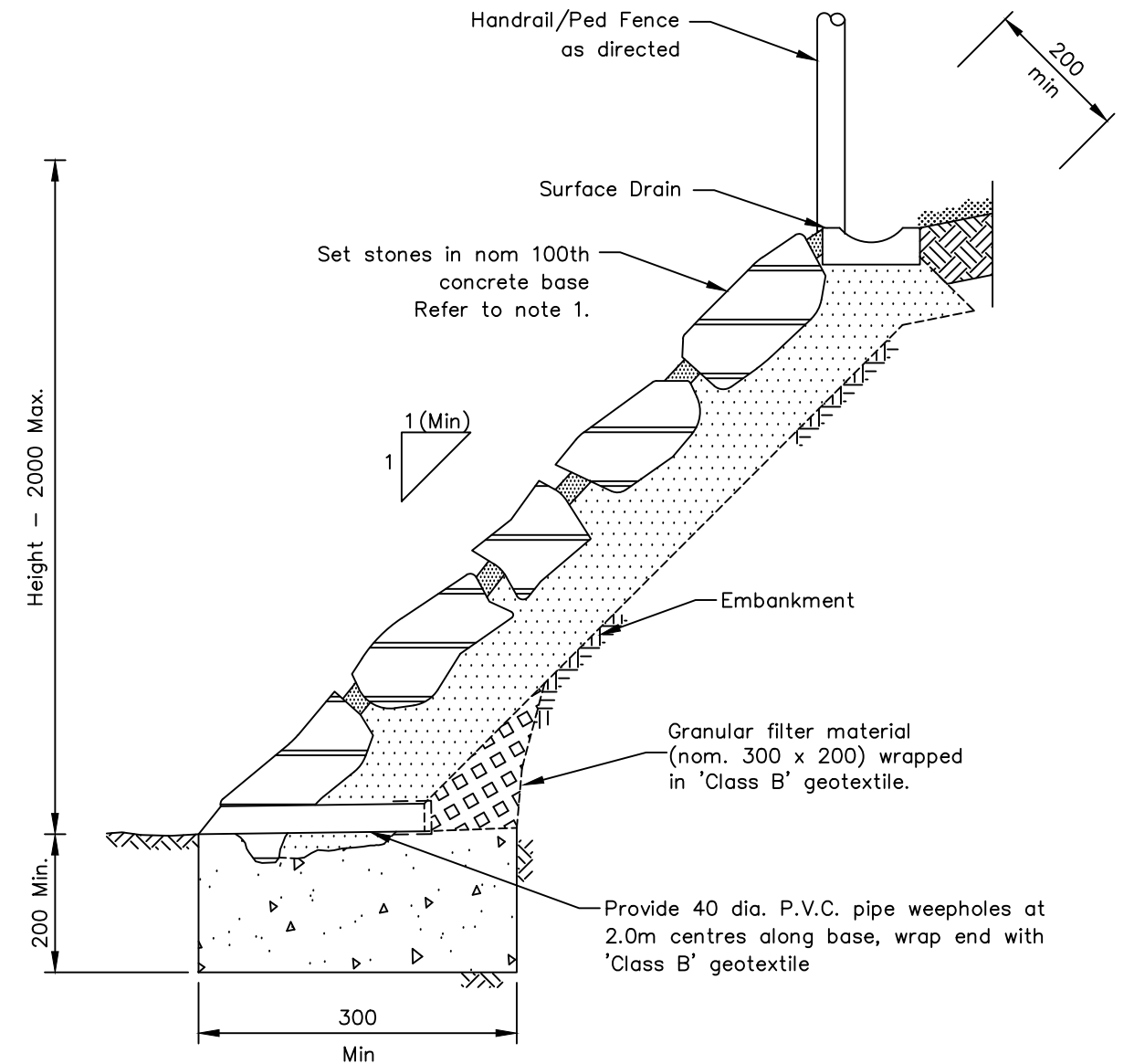
TSD-R31-v3



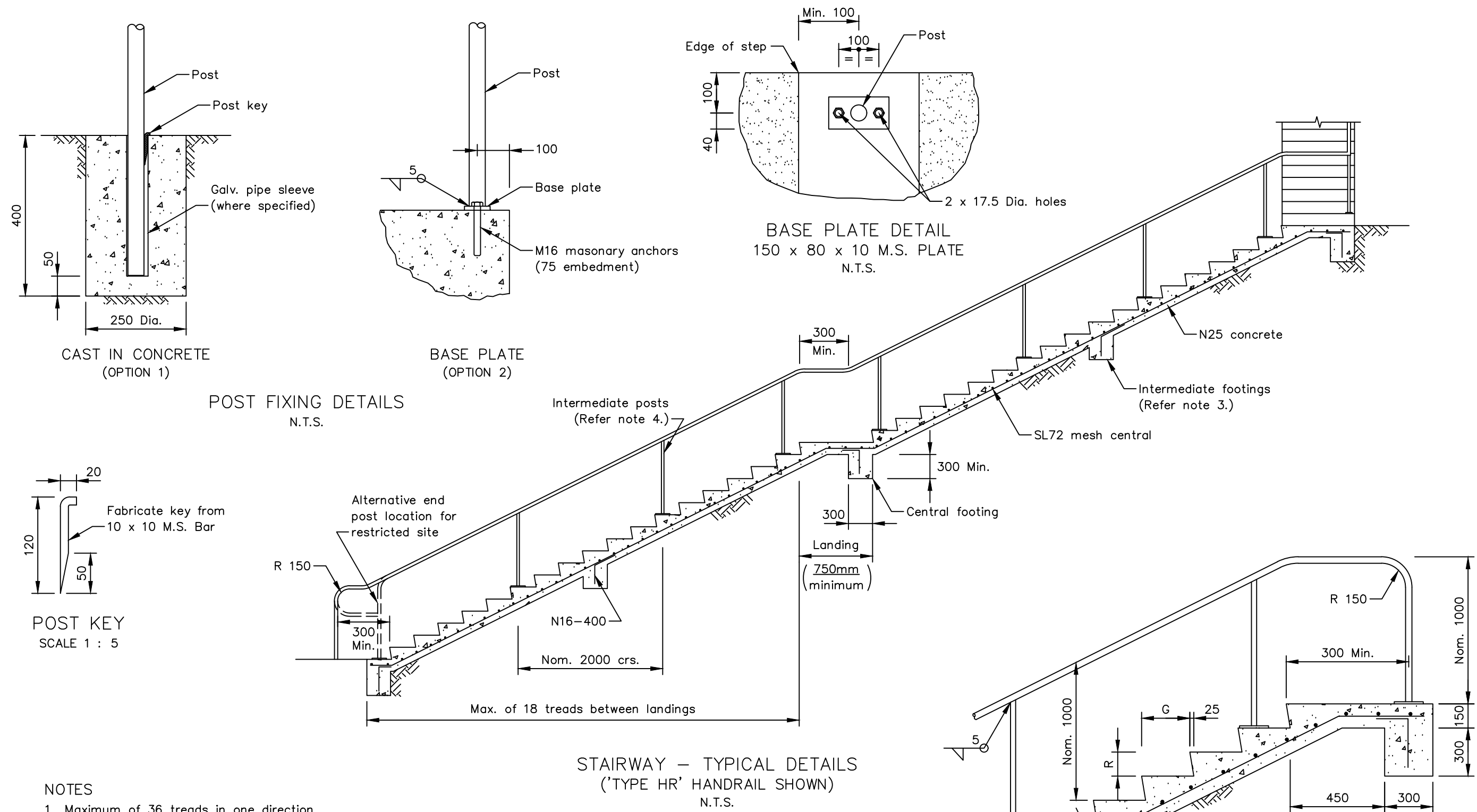




HEIGHT (mm)	BASE (mm)
0 – 500	350
500 – 1000	500



1. Stonework – Sound dolerite or basalt, uniform in appearance and composition  
Maximum size 200mm x 250mm (face)  
Minimum size 100mm x 50mm (face)
2. Concrete – N25
- 3 Mortar joint mix – 6 sand, 1 cement, 1 lime – Minimum width 10mm, Maximum width 50mm.  
Finish mortar joint 3–5mm below face of stones.
- 4 Remove concrete / mortar staining from stone surface.
- 5 Place stones randomly to give a uniform appearance.
- 6 Provide additional drainage for the stone pitched embankment where the water table is high and / or the embankment material is expansive clay, as directed.
7. Provide pipe alternative to drain 'granular filter' or 'free draining' backfill, as directed.

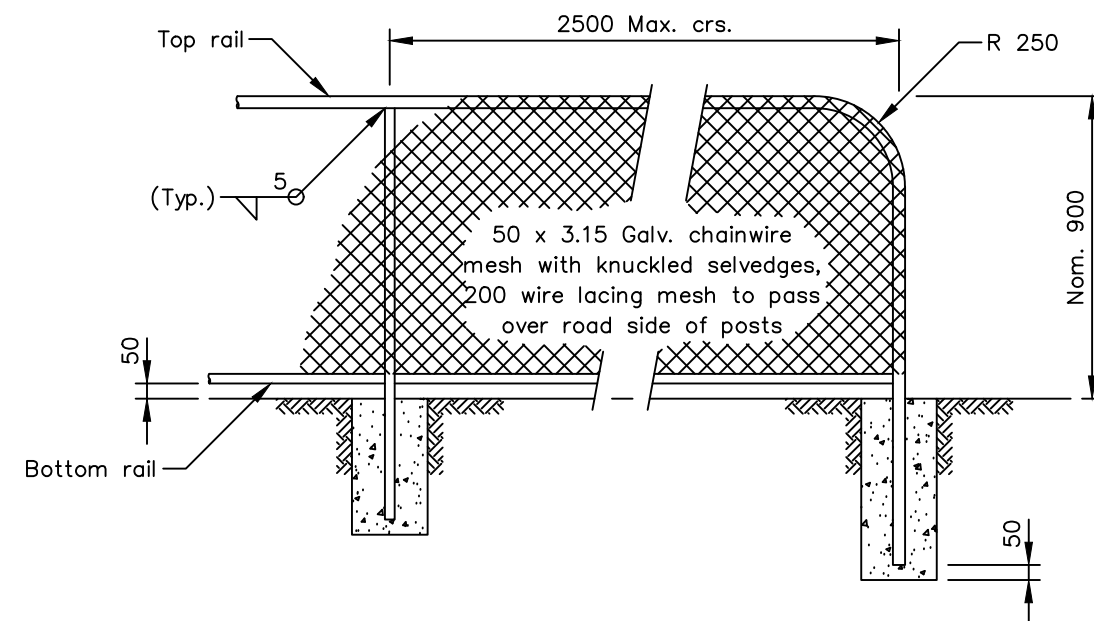


- NOTES**
- Maximum of 36 treads in one direction.
  - Minimum stairway width – 1.0m, (900 mm clearway).
  - Delete intermediate footings for less than ten treads between landings.
  - Handrails
    - Handrails required both sides for stairways > 2.0m wide.
    - Pipe bends – R 250 unless noted.
    - Top rail and posts – 40 NB. G.S.T. 2.3 W.T.
    - Intermediate rails – 32 NB. G.S.T. 2.0 W.T.
  - Clean up all welds and remove sharp edges prior to painting with two coats of zinc rich paint.
  - Design to comply with current BCA requirements.

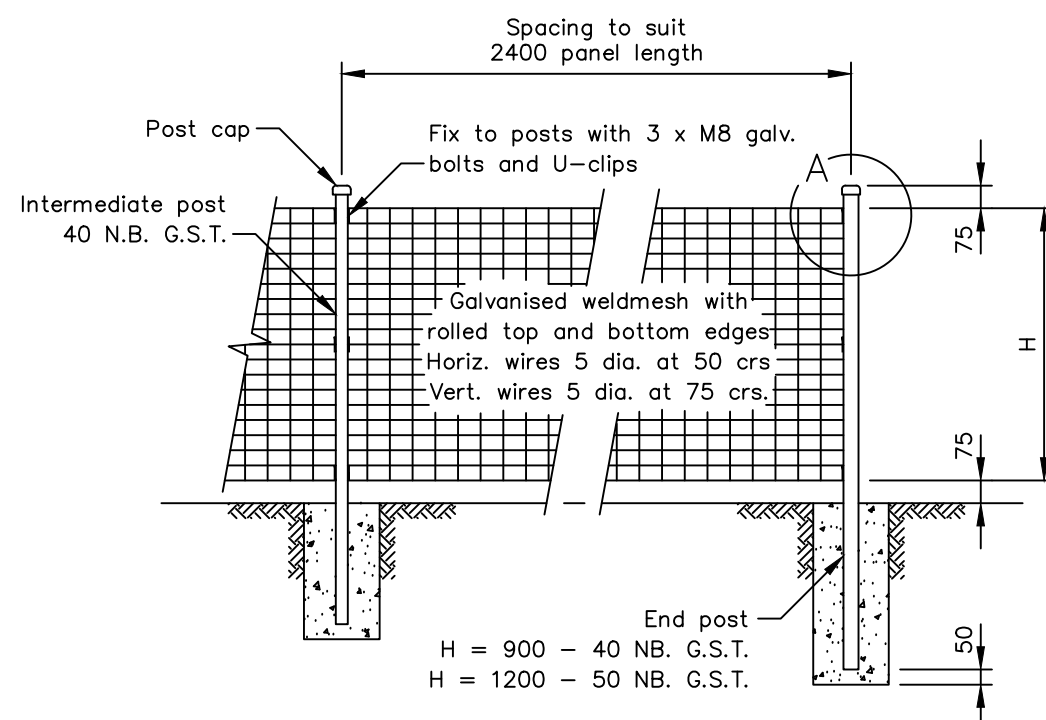
TABLE 1

DIMENSION	MINIMUM	MAXIMUM
G	250*	355
R	115	190
2R+G	550	700

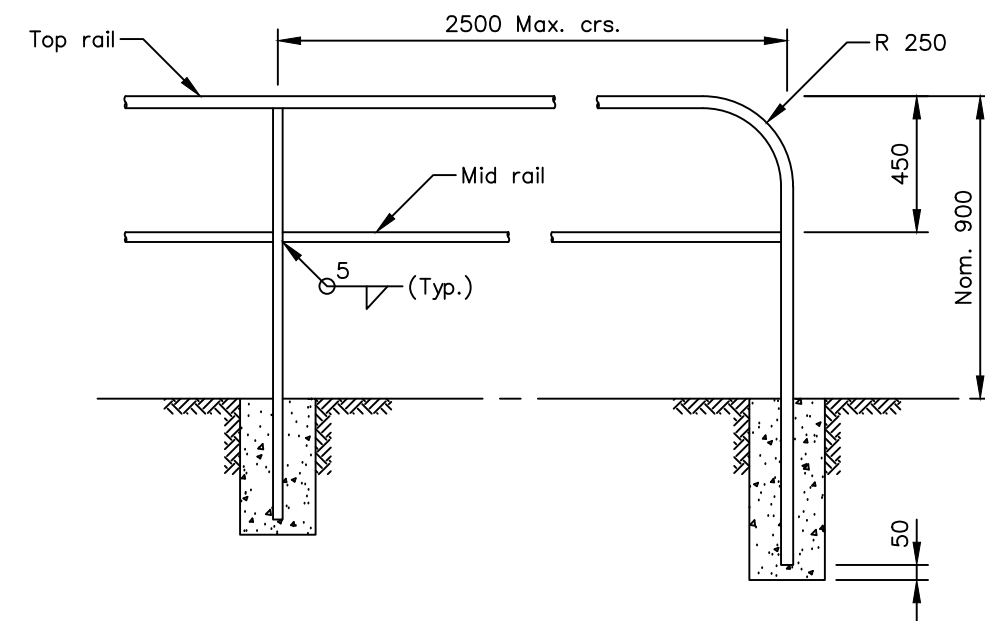
\* Desirable min. tread width – 300mm.



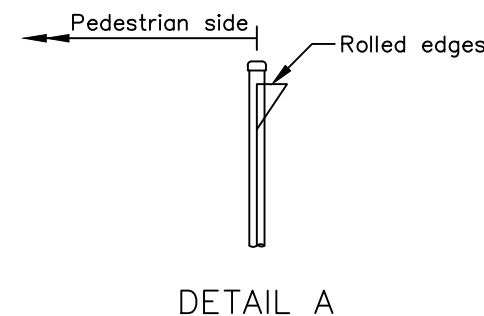
TYPE CM – PEDESTRIAN FENCE



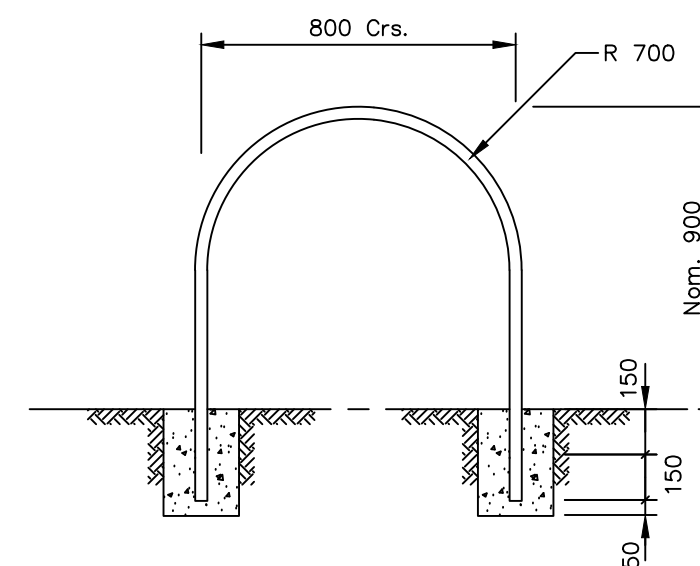
TYPE WRT – PEDESTRIAN FENCE  
DIMENSION 'H' – SPECIFIED IN PROJECT DRAWINGS (900 / 1200)



TYPE HRM – HAND RAIL  
(TYPE HR – WITHOUT MID RAIL)



DETAIL A



CYCLE REST RAIL

#### NOTES

1. Posts
  - Top / bottom rails and posts – 40 NB. G.S.T. 2.3 W.T. unless noted.
  - Mid rails and intermediate posts – 32 NB. G.S.T. 2.0 W.T. unless noted.
  - Clean up all welds and remove sharp edges prior to painting with two coats of zinc rich paint.
  - Do not use gavanised split fittings for hand railing in road reserves.
2. Footings
  - All footings – 250mm diameter N20 concrete.
  - End posts – 600mm deep.
  - Intermediate posts – 450mm deep.

SCALES: AS SHOWN  
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## STANDARD DRAWING

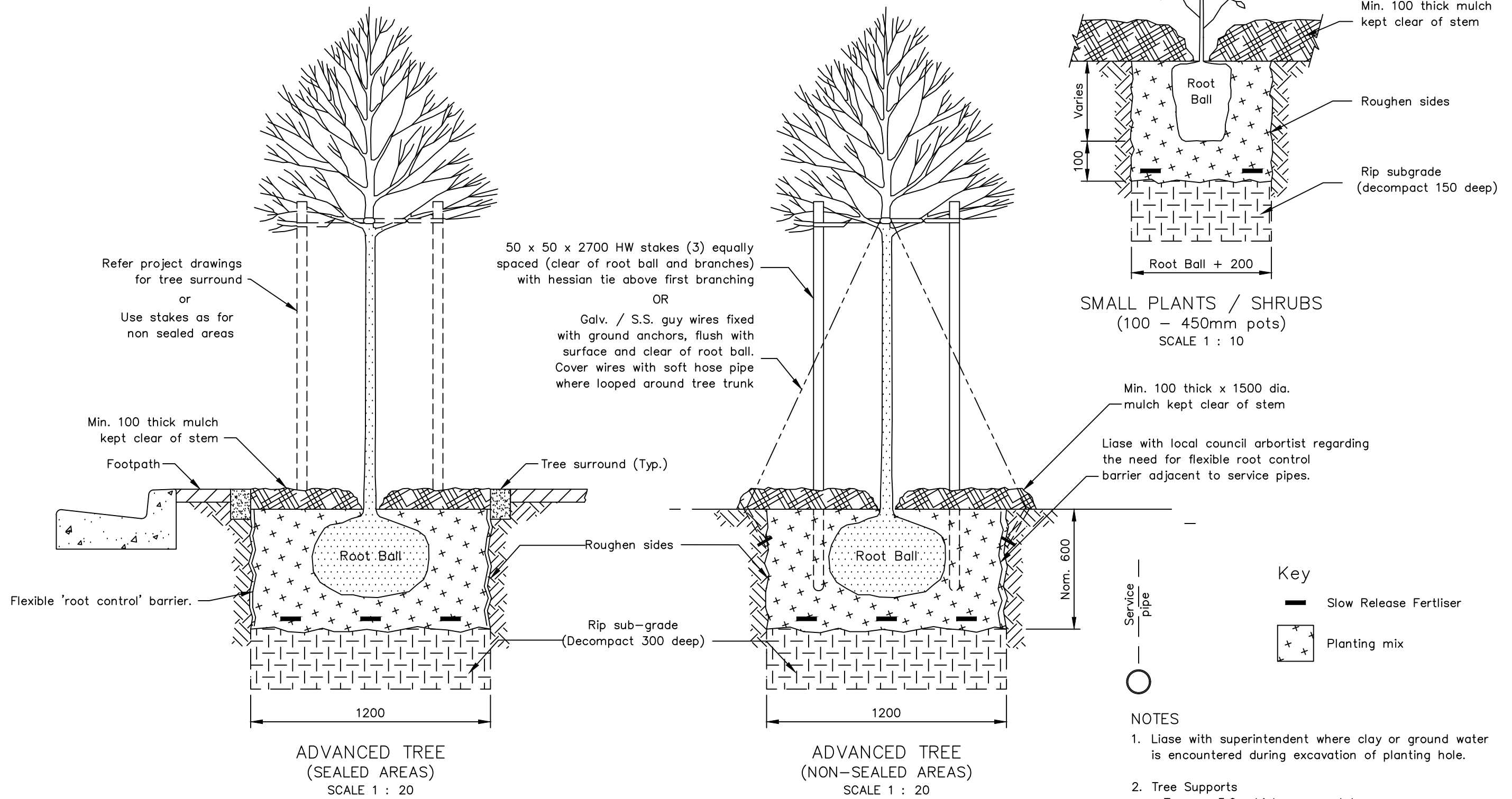
### PEDESTRIAN FENCES

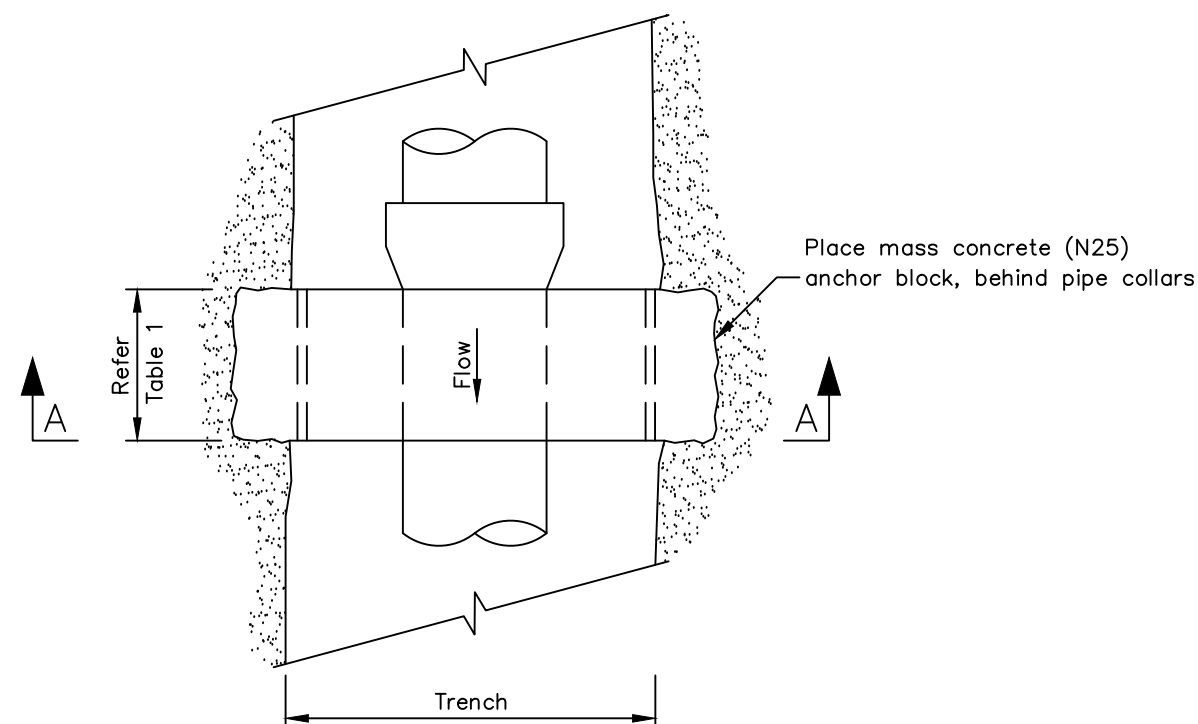
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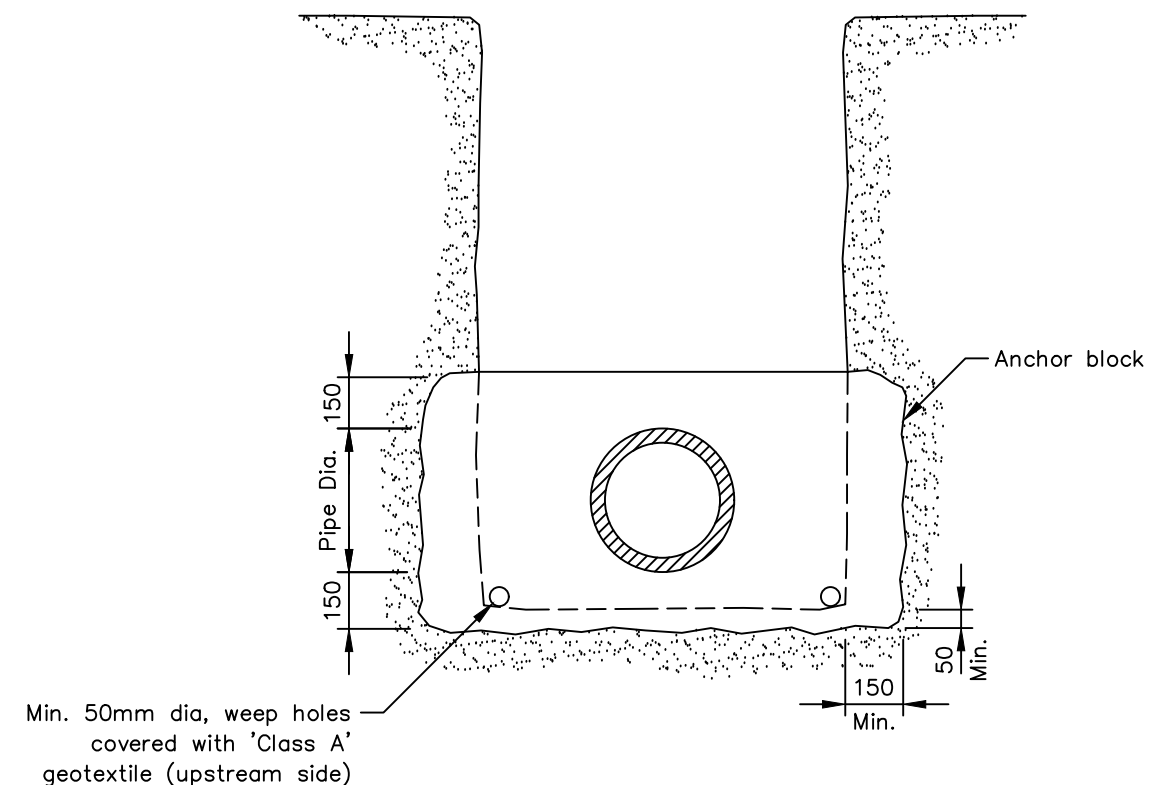




PLAN  
N.T.S.

TABLE 1

PIPE DIAMETER	ANCHOR BLOCK WIDTH
≤ 450	Pipe diameter + 150 mm
> 450	Design required



SECTION A-A  
N.T.S.

#### NOTES

- Construct anchor blocks where pipe grades exceed  $\geq 10\%$  at
  - 9.6m centres for Concrete pipes
  - 12.0m centres for P.V.C. pipes
- Landslip areas – site specific design required to ensure land stability risk is not increased.
- Install bulkheads and trench stops in accordance with Table 5.7 of AS/NZS 2566.2:2002 and provide concrete encasement in accordance with Clause 5.8.3 of AS/NZS 2566.2:2002

SCALES: AS SHOWN  
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XRef File: TSD-SW01-v3.dwg

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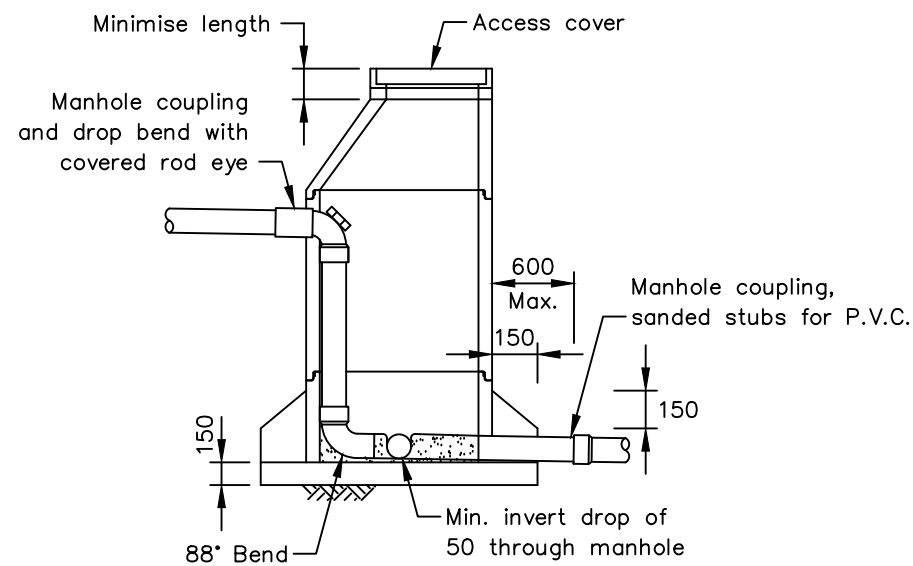
## STANDARD DRAWING

### PIPE INSTALLATION ANCHOR BLOCKS

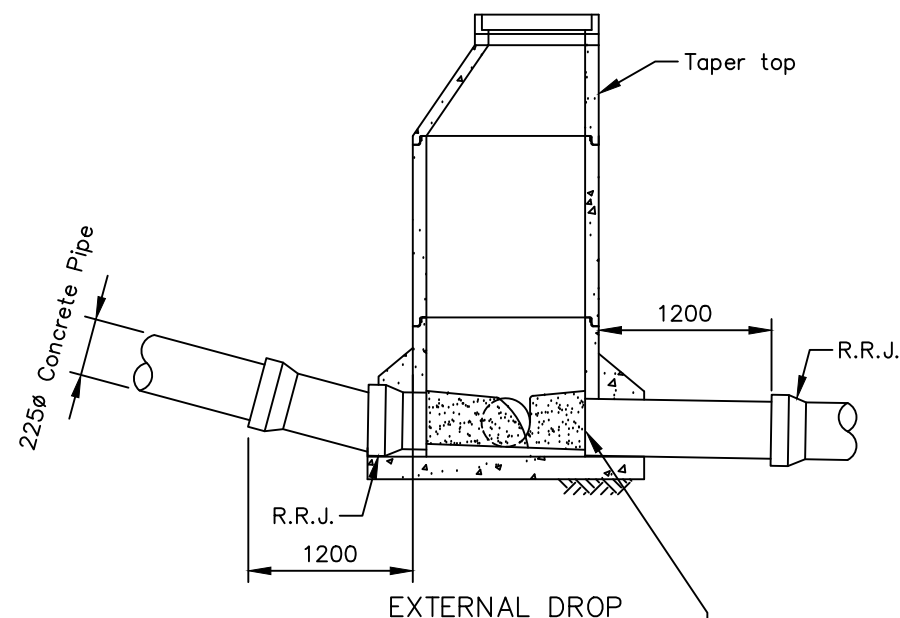
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ISSUE DATE: 18-09-2020 DWG No.

TSD-SW01-v3

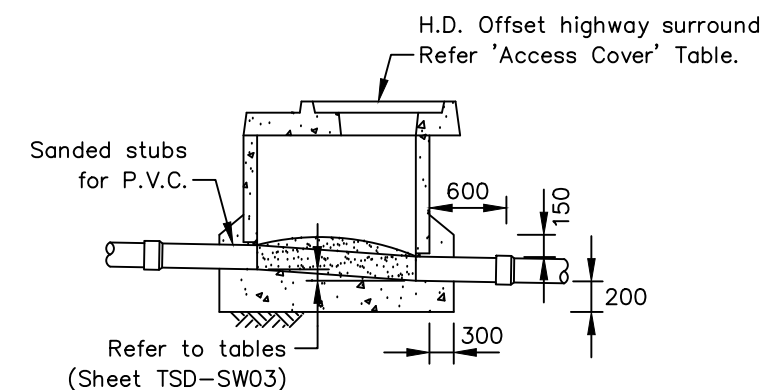


INTERNAL DROP



SECTION A-A

All penetrating pipes to be finished flush with inside face of manholes typ.



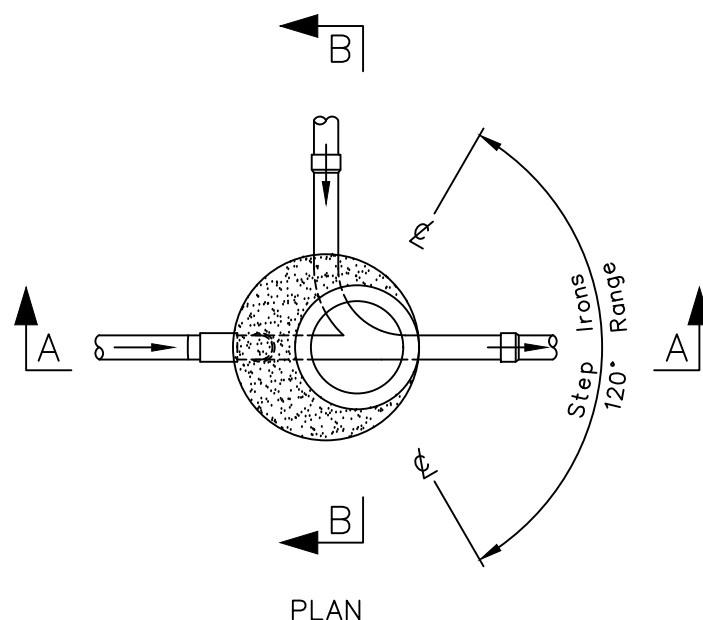
TYPE B - OFFSET SURROUND

MANHOLE SHAFT DIAMETER		
DIA.	DEPTH (m)*	COMMENT
1050	≤ 4.0	Minimum diameter
1200	> 4.0	Less confined
≥ 1200	ALL	To suit multiple pipe configuration

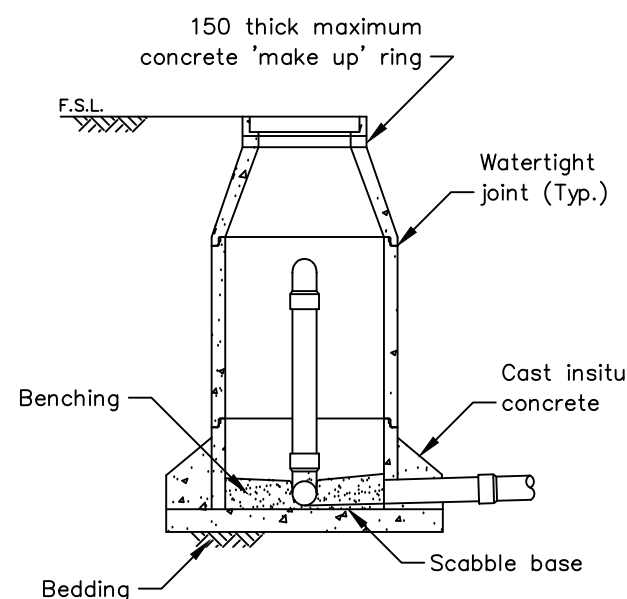
\* Depth - F.S.L. to invert

#### NOTES

- Insitu concrete - N25
- Drop Connections For Stormwater Manholes
  - Pipe dia. ≤ 150 - Internal, > 150 - External.
  - Internal drops not permitted for inlet grades > 10.0%
  - Drops > 2.0m - support pipes with 50 x 3 galv. M.S. brackets.
- Stormwater Manholes
  - Joints - apply epoxy / non-shrink grout to form water tight joint.
  - Internal surfaces - remove mortar or concrete splashes and fill all air pockets and cavities with grout.
  - Lid surround - fully ram with N20 grout.
- Access Covers
  - Position access cover on the downstream side of MH.
  - Lightly grease lid contact surface.
  - Refer 'AS.3996-1992' for additional requirements.
- Backfill around manholes - as specified for pipeline.



TYPE A - TAPER TOP  
INTERNAL DROP



SECTION B-B

ACCESS COVER - REFER 'AS.3996-1992'			
DRAIN TYPE	MARKING	LOCATION	
		Trafficable	Non Trafficable
Stormwater	SW	Class D (Sealed)	Class B (Unsealed)*

\* Use sealed lids in CBD and other shopping precincts

MANHOLES		
DEPTH	TOP TYPE	LOCATION
≤ 1200	H.D. Offset highway	Road pavement
		Other
1200 >	Taper top	Road pavement
	H.D. Offset highway	Other
	Taper top	

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## STANDARD DRAWING

### MANHOLES - 100 TO 600 DIA. PIPES

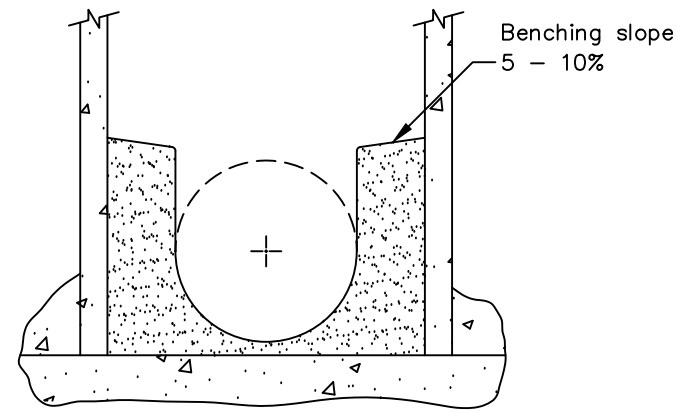
### GENERAL ARRANGEMENTS

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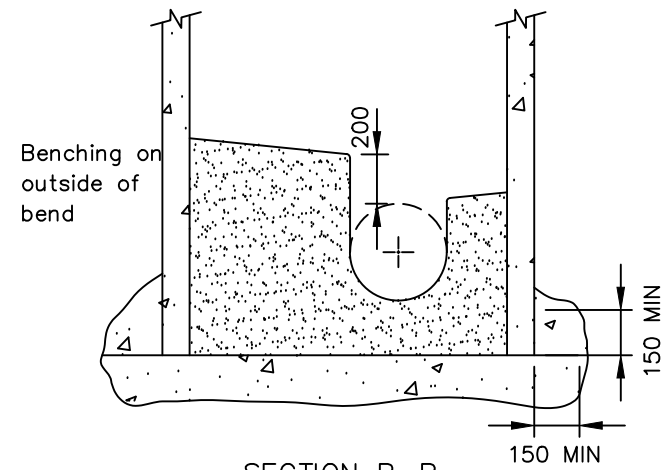
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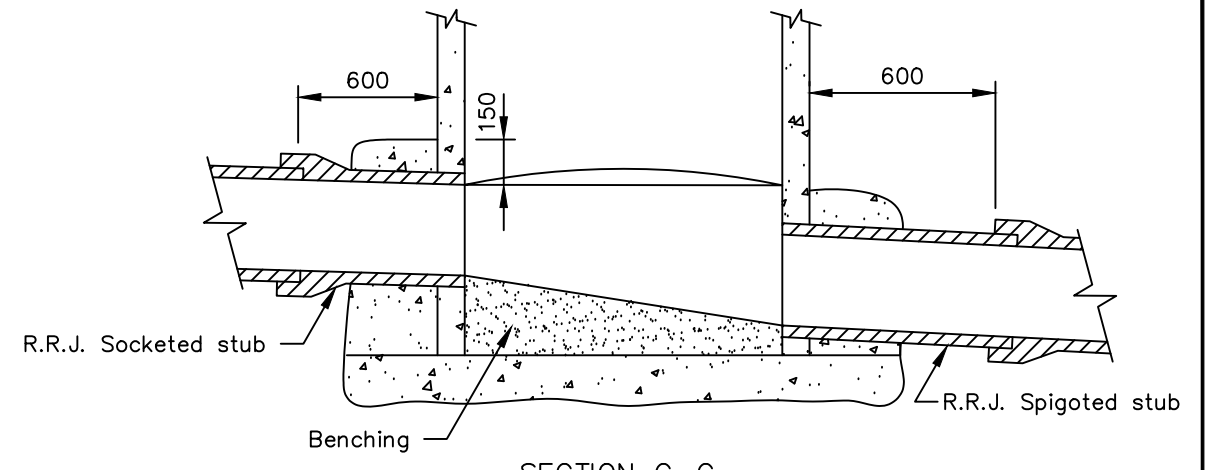
TSD-SW02-v3



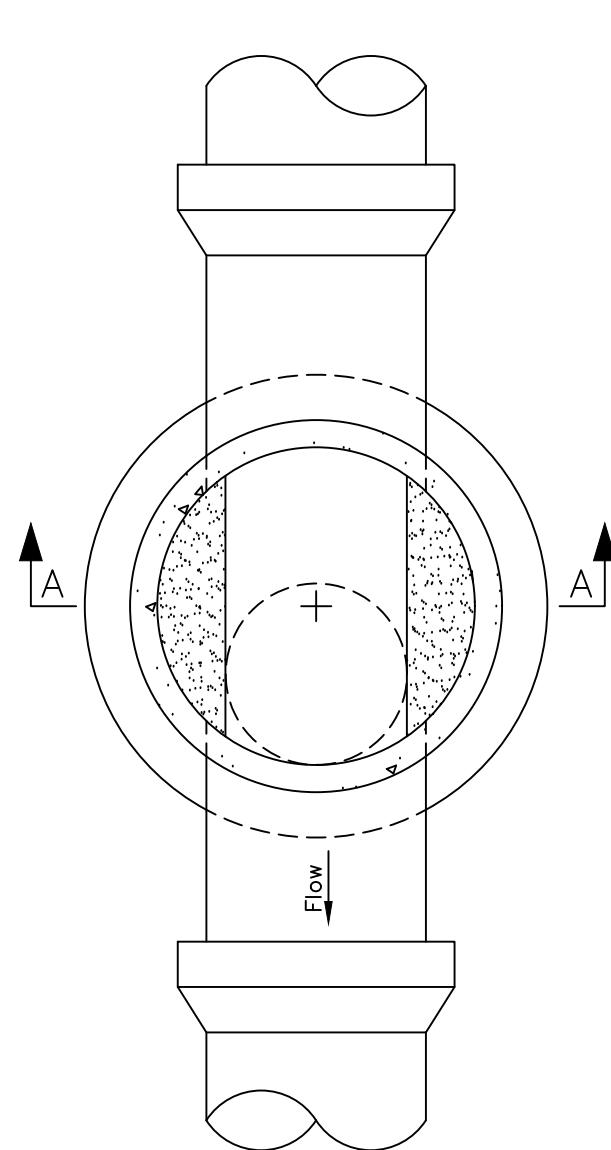
SECTION A-A



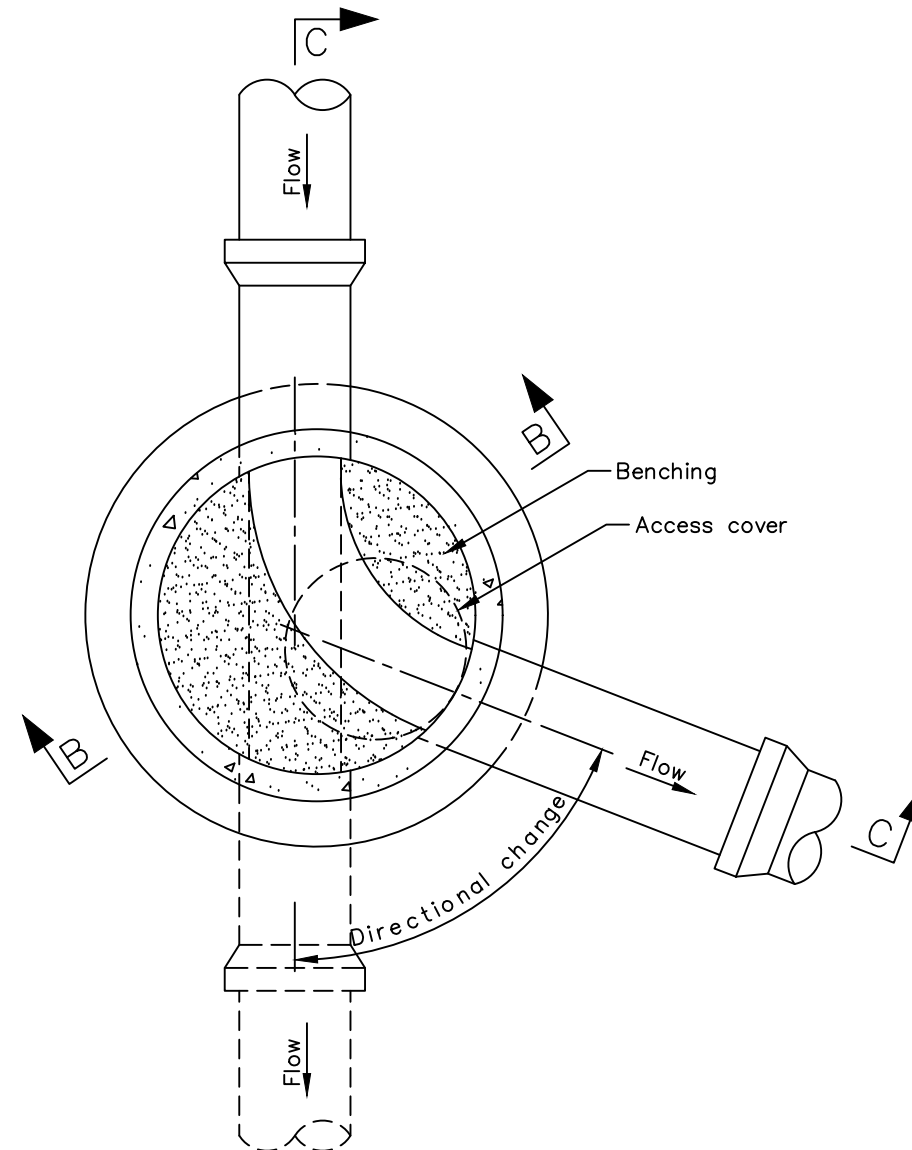
SECTION B-B



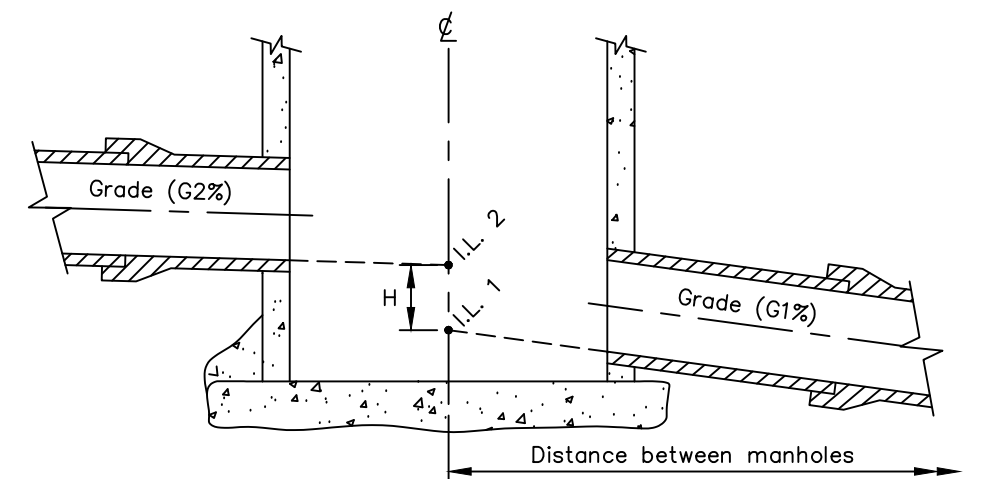
SECTION C-C



PLAN  
MANHOLE  
(STRAIGHT THROUGH)



PLAN  
MANHOLE  
(CHANGE IN DIRECTION)



SETOUT REFERENCES

MINIMUM FALL REQUIRED  
THROUGH SW MANHOLES

DIRECTIONAL CHANGE	H (mm)
0° - 25°	10
26° - 90°	40
91° - 120°	70

NOTE

1. Benching
  - Concrete grade - N25
  - Finish - Steel troweled

SCALES: AS SHOWN  
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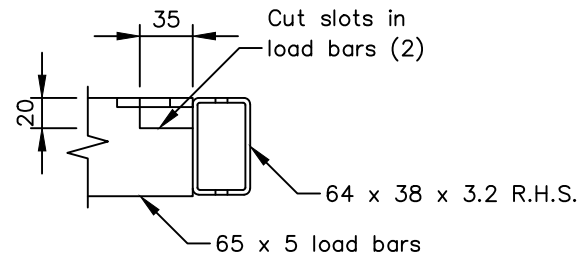
**STANDARD DRAWING**  
MANHOLES 100 - 600 DIA. PIPES  
BENCHING DETAILS

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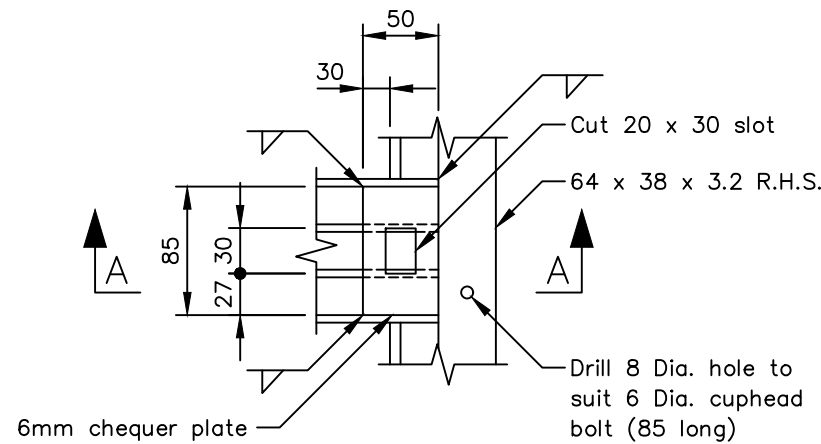
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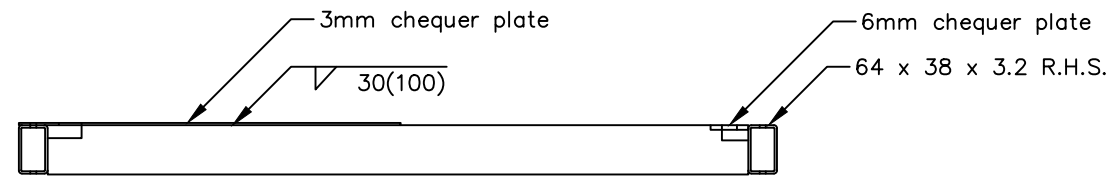




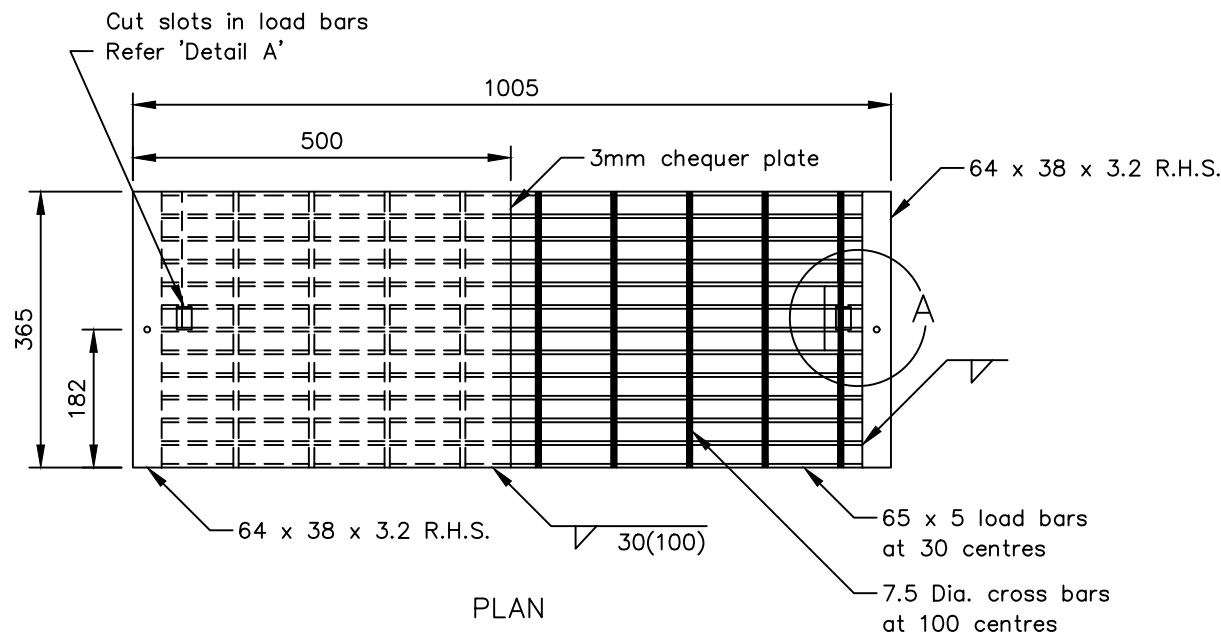
SECTION A-A



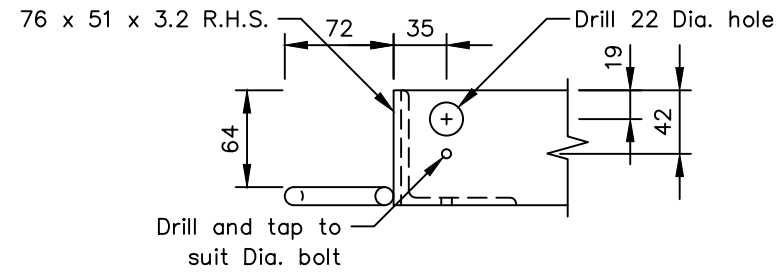
DETAIL A



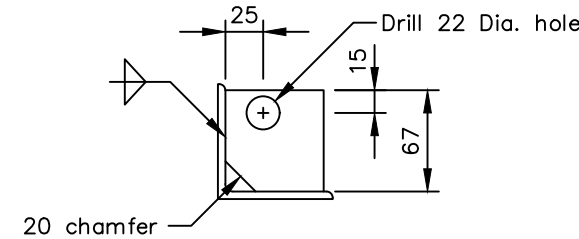
ELEVATION



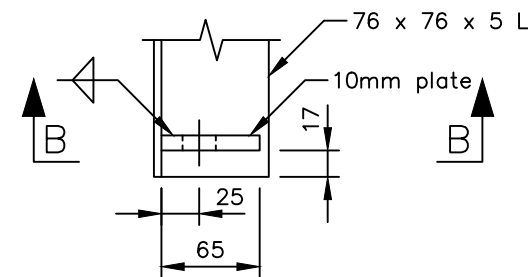
PLAN  
GRATE



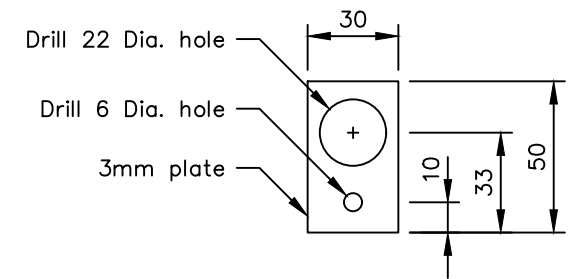
SECTION D-D



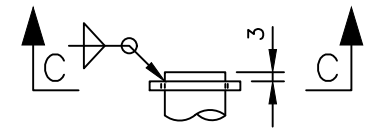
SECTION B-B



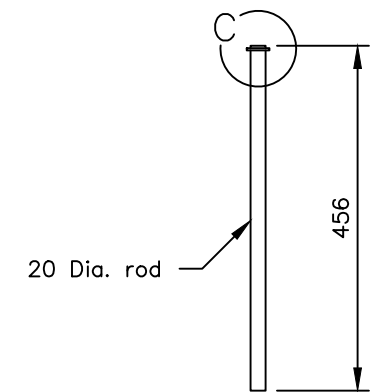
DETAIL B



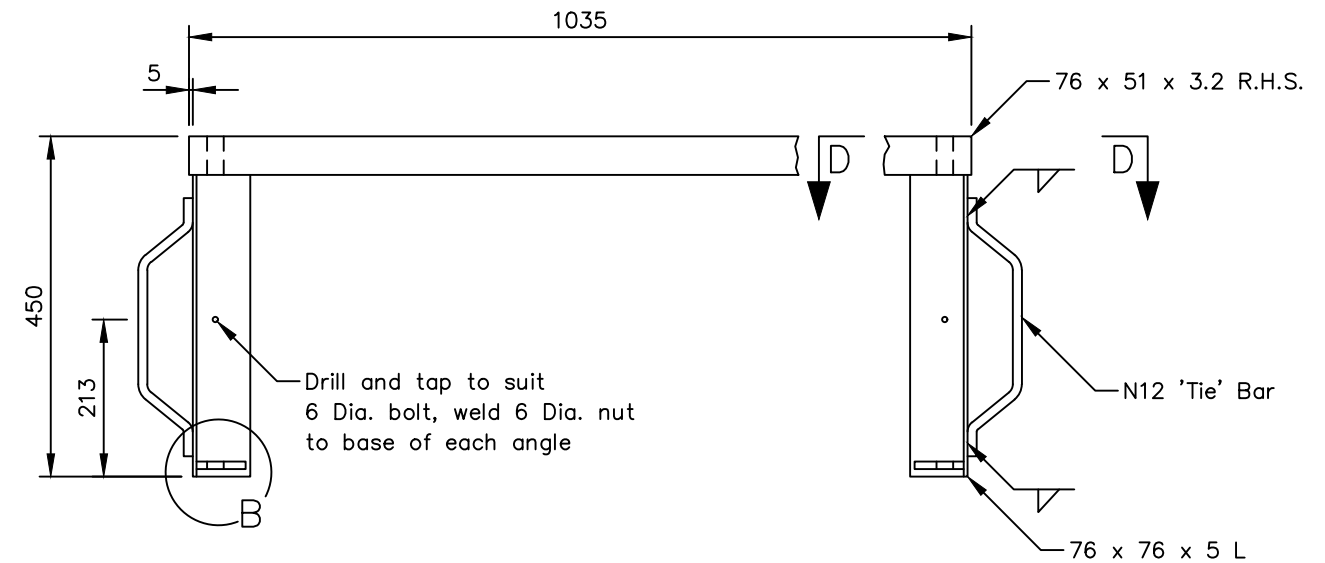
SECTION C-C



DETAIL C



HINGE PIN



PLAN  
FRAME  
(Hinge pin not shown)

NOTE

1. Hot dip galvanise after fabrication.

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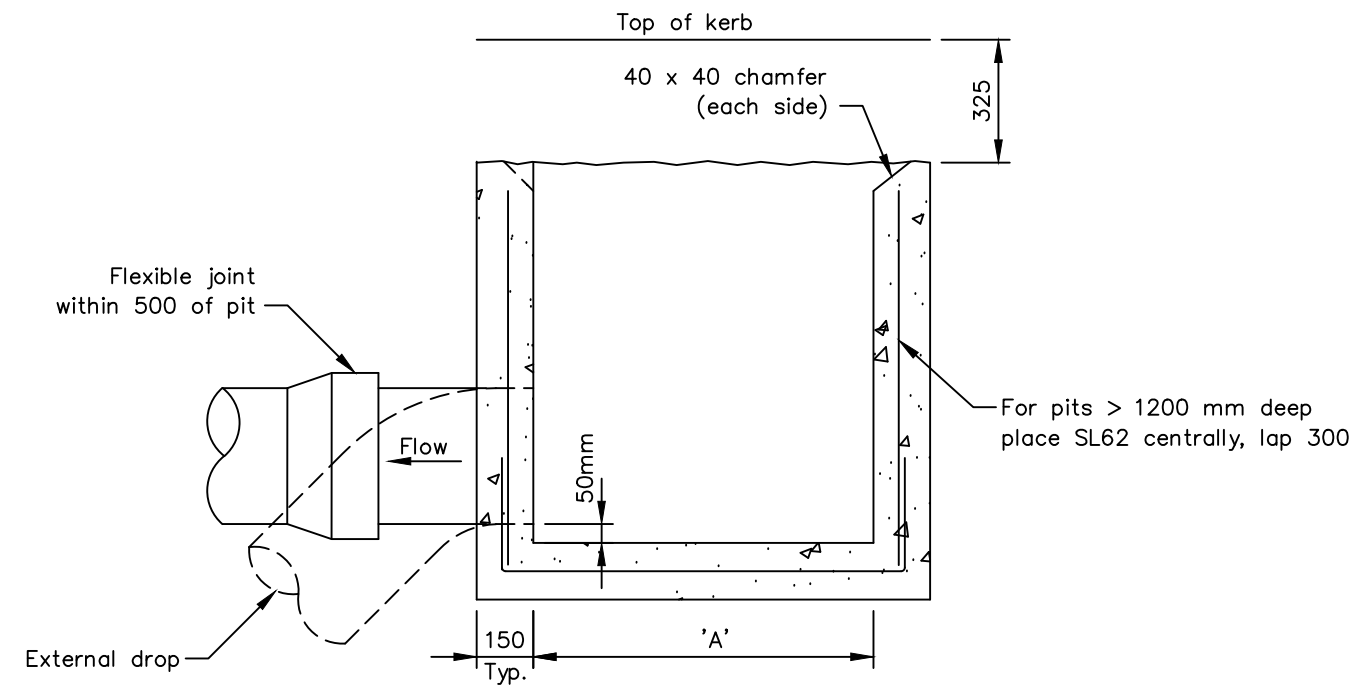


**STANDARD DRAWING**  
SIDE ENTRY PITS  
GRATE AND FRAME DETAILS

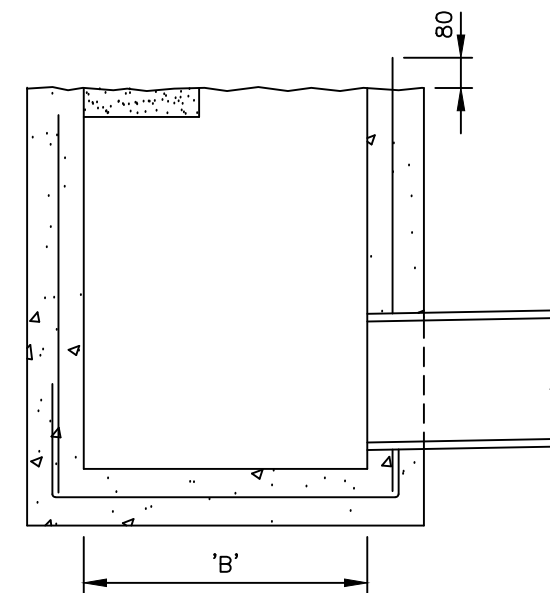
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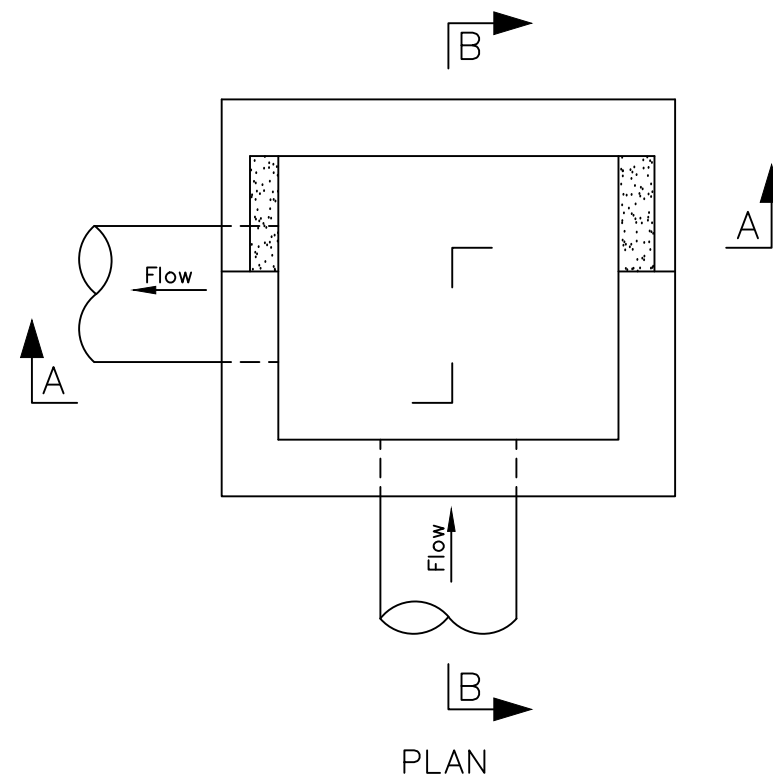
TSD-SW04-v3



SECTION A-A  
(OUTLET PIPE SHOWN IN FULL)



SECTION B-B



#### NOTES

- Concrete – N25 grade.
- Minimum grade for outlets 1 in 100.
- Refer Sheets:
  - Hydraulic capacity curves in reference area.
  - TSD-SW04 for grate details
  - TSD-SW07, TSD-SW08, TSD-SW09 and TSD-SW10 for lintel details.
- Equivalent pre-cast componentry may be substituted with the approval of the General Manager's delegated officer.

TABLE 1

Recommended Pit Sizes	
'A'	'B'
450	450
600	600
650	650
750	750
800	500
900	600
900	750
900	900
1200	1200
1225	450
1225	570
1260	450
1350	900
1550	900

Note: Internal dimensions.

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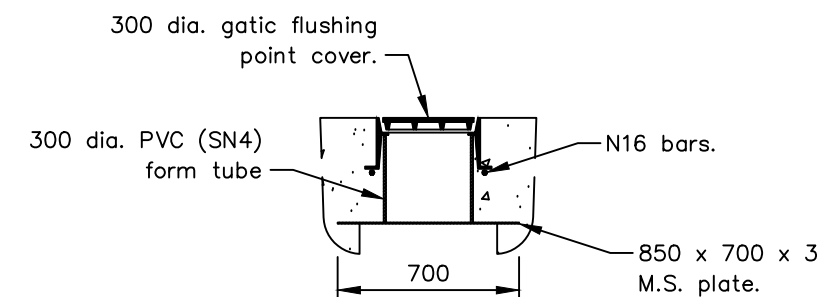
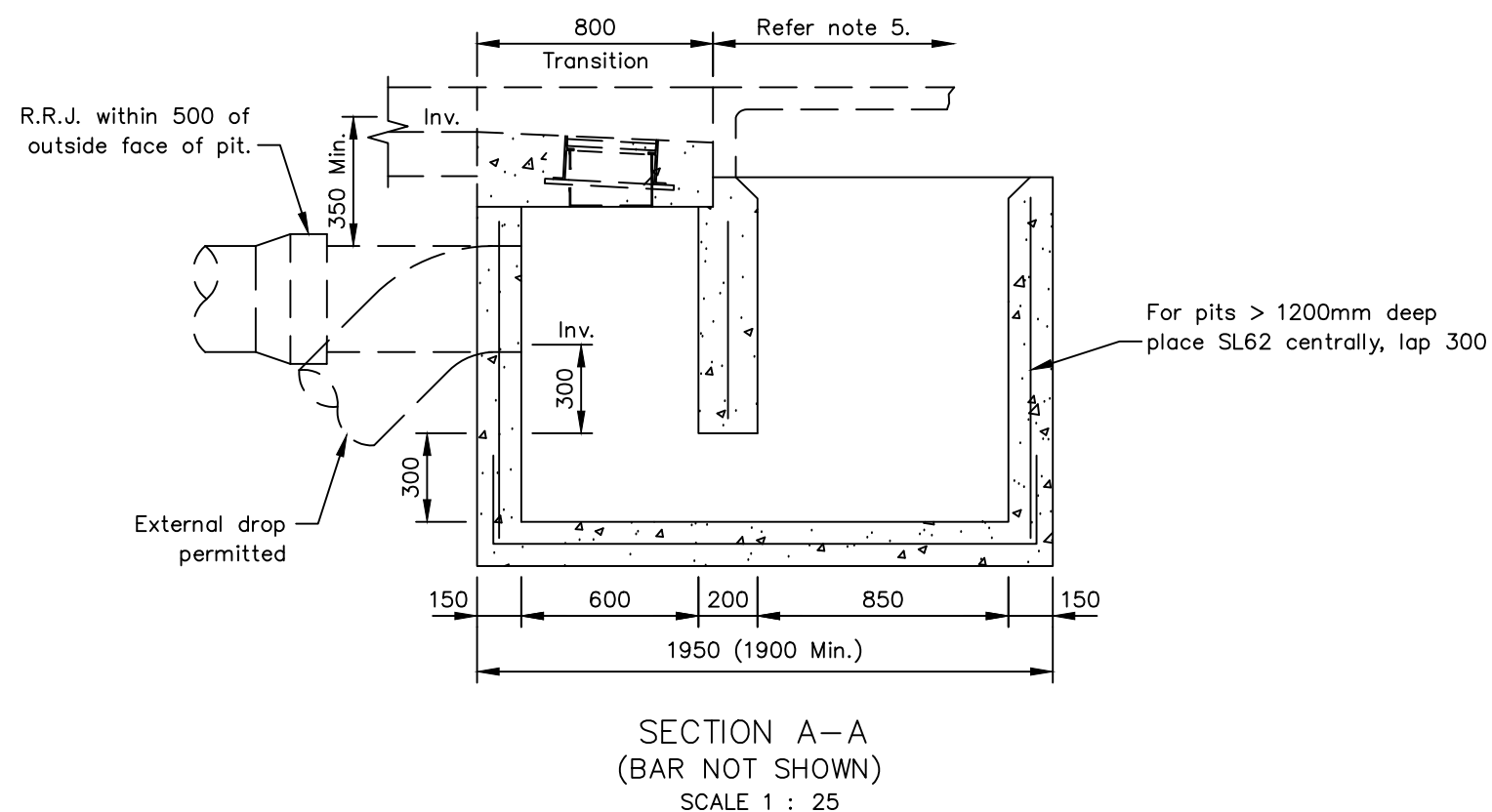
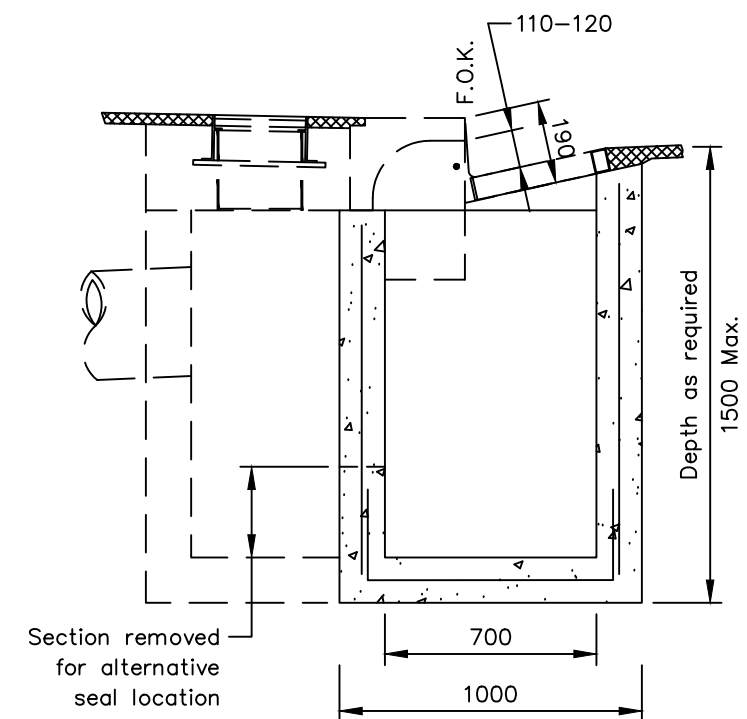
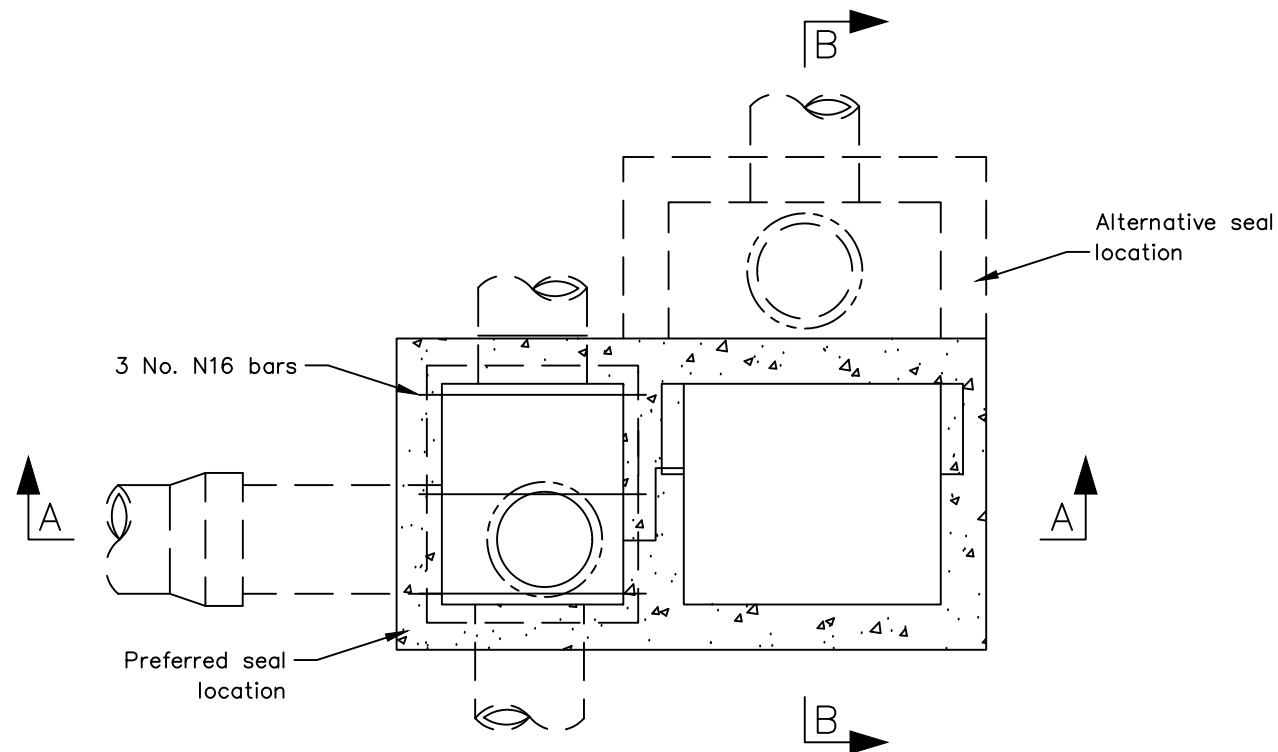
### SIDE ENTRY PITS - 'SEP'

### CONSTRUCTION (CAST IN SITU)

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ISSUE DATE:  
18-09-2020

DWG No.  
TSD-SW05-v3



#### NOTES

- Concrete – N25 grade.
- Minimum grade for outlets 1 in 100.
- Transition kerb depth from 140 – 190mm.
- Fit lintels with 20 dia. rod.
- Refer Sheets:
  - TSD-SW04 for grate details
  - TSD-SW07, TSD-SW08, TSD-SW09 and TSD-SW10 for lintel details
- Pre-cast manufacturer option available manufacturers specification to meet LGAT standards

SCALES: AS SHOWN  
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## STANDARD DRAWING

### SIDE ENTRY PITS - 'SEPS'

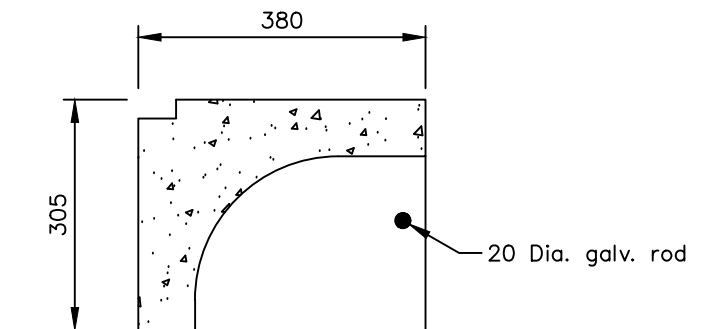
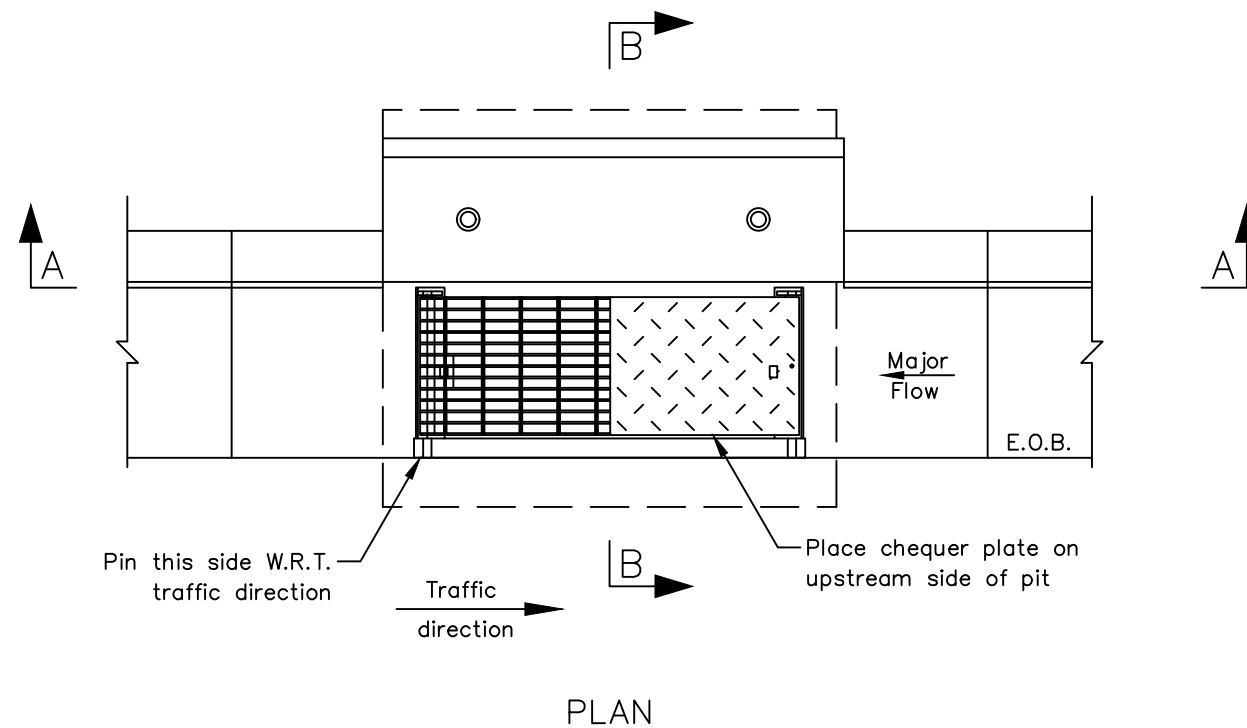
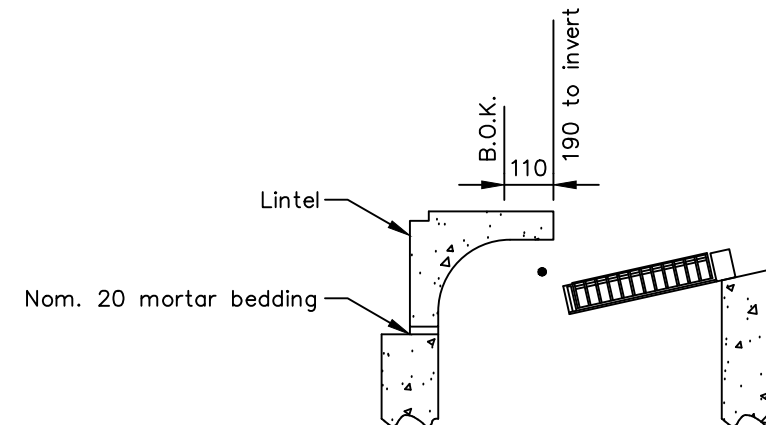
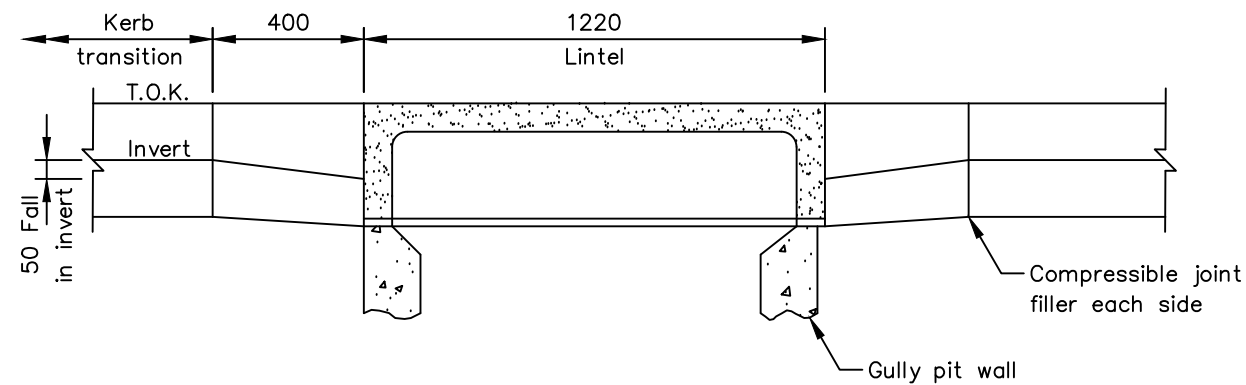
### CONSTRUCTION (COMBINE AREAS ONLY)

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ISSUE DATE:  
18-09-2020

DWG No.

TSD-SW06-v3



#### NOTES

- Concrete – N25 grade.
- Refer Sheets:
  - TSD-SW04 for grate details
  - TSD-SW05 for unsealed pit construction
  - TSD-SW06 for sealed pit construction
  - TSD-SW11 for kerb transitions
- Pre-cast manufacturer option available manufacturers specification to meet LGAT standards

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-SW07-v3.dwg

REFERENCES

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**STANDARD DRAWING**  
SIDE ENTRY PITS  
'TYPE 1'

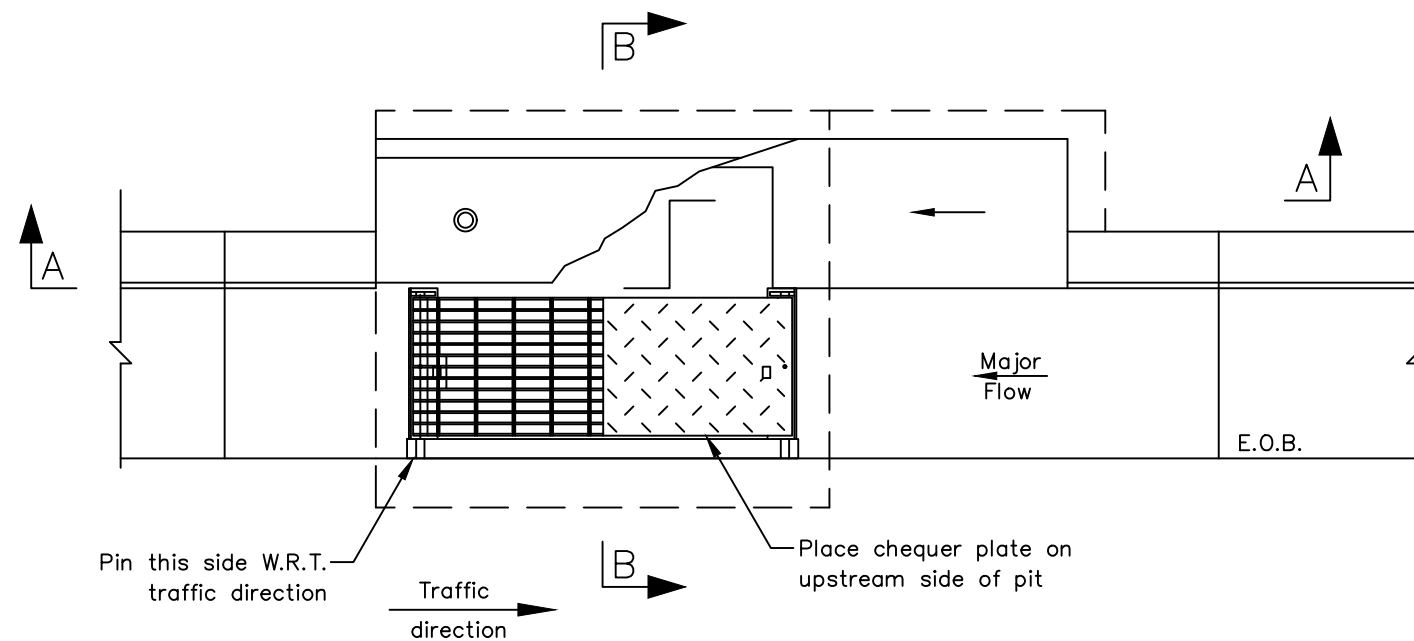
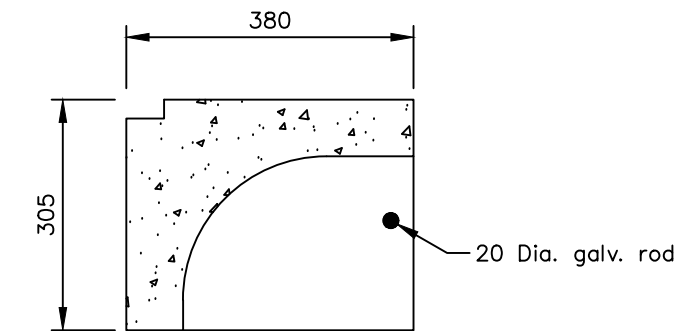
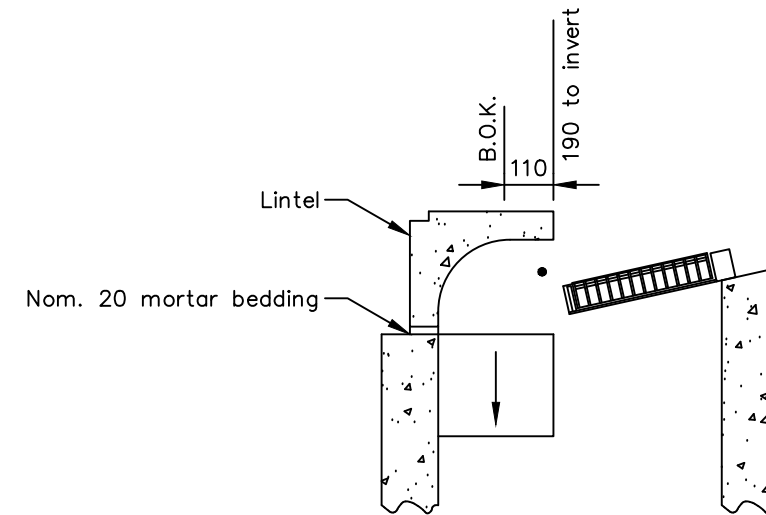
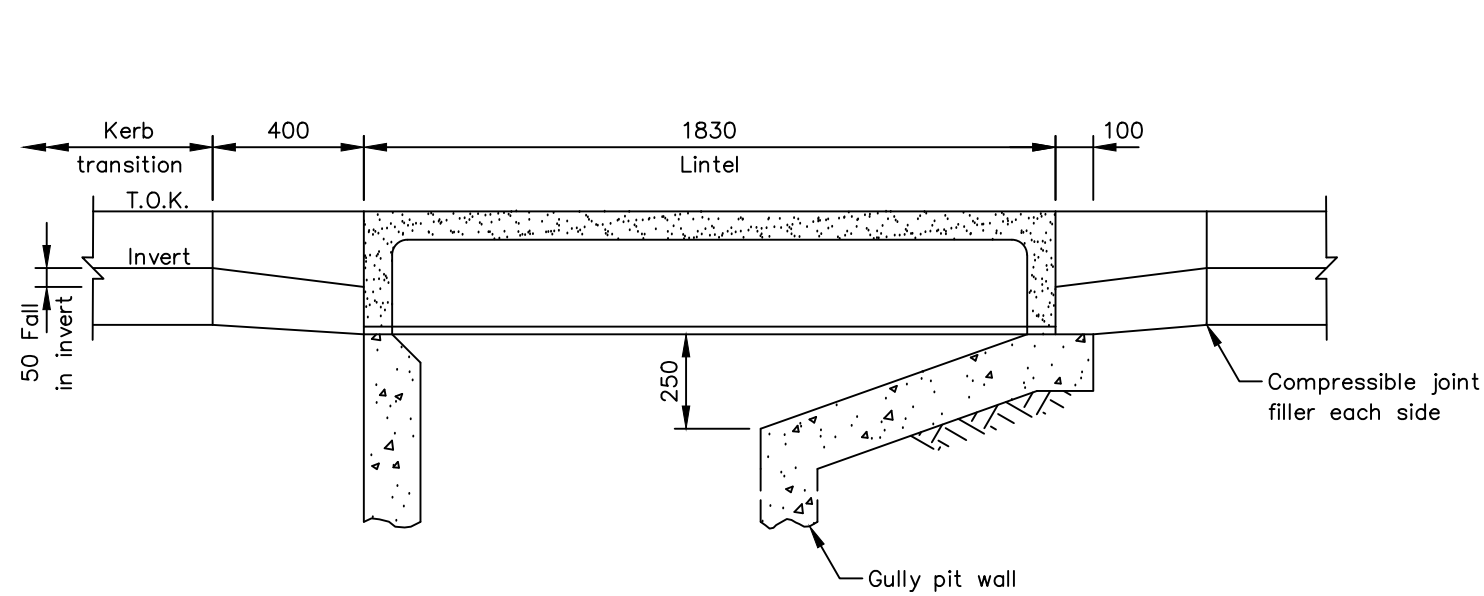
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ISSUE DATE:  
18-09-2020

DWG No.

TSD-SW07-v3





#### NOTES

- Concrete – N25 grade.
- Refer Sheets:
  - TSD-SW04 for grate details
  - TSD-SW05 for unsealed pit construction
  - TSD-SW06 for sealed pit construction
  - TSD-SW11 for kerb transitions
- Pre-cast manufacturer option available manufacturers specification to meet LGAT standards

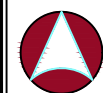
SCALES: AS SHOWN  
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XRef File: TSD-SW08-v3.dwg

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## STANDARD DRAWING

### SIDE ENTRY PITS

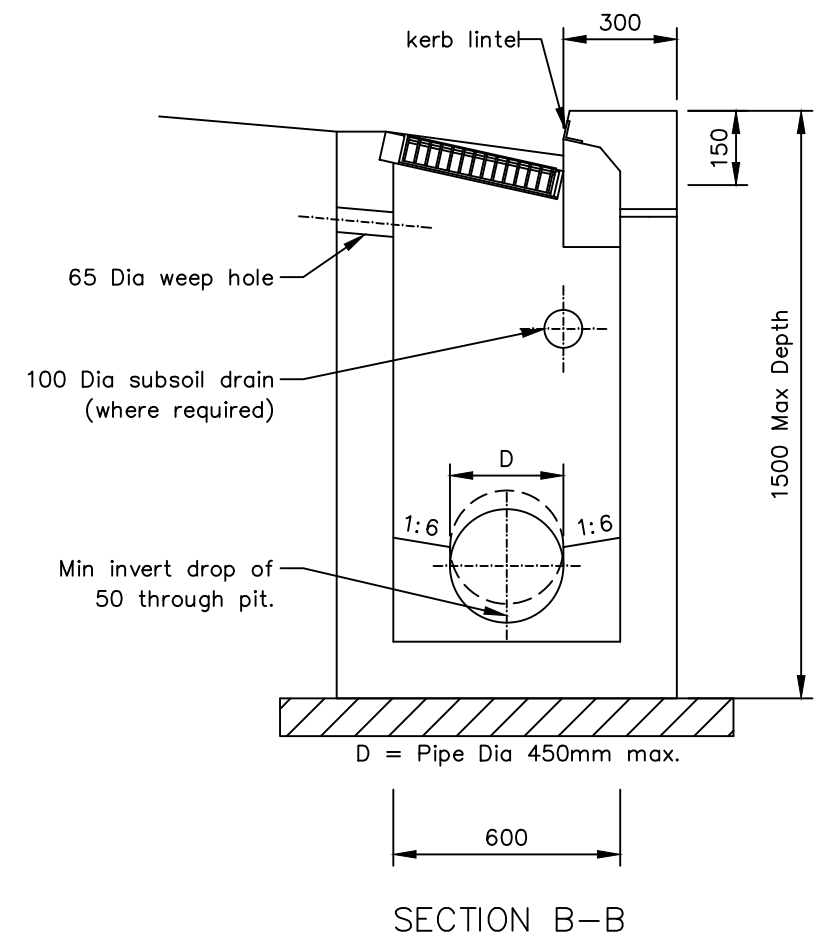
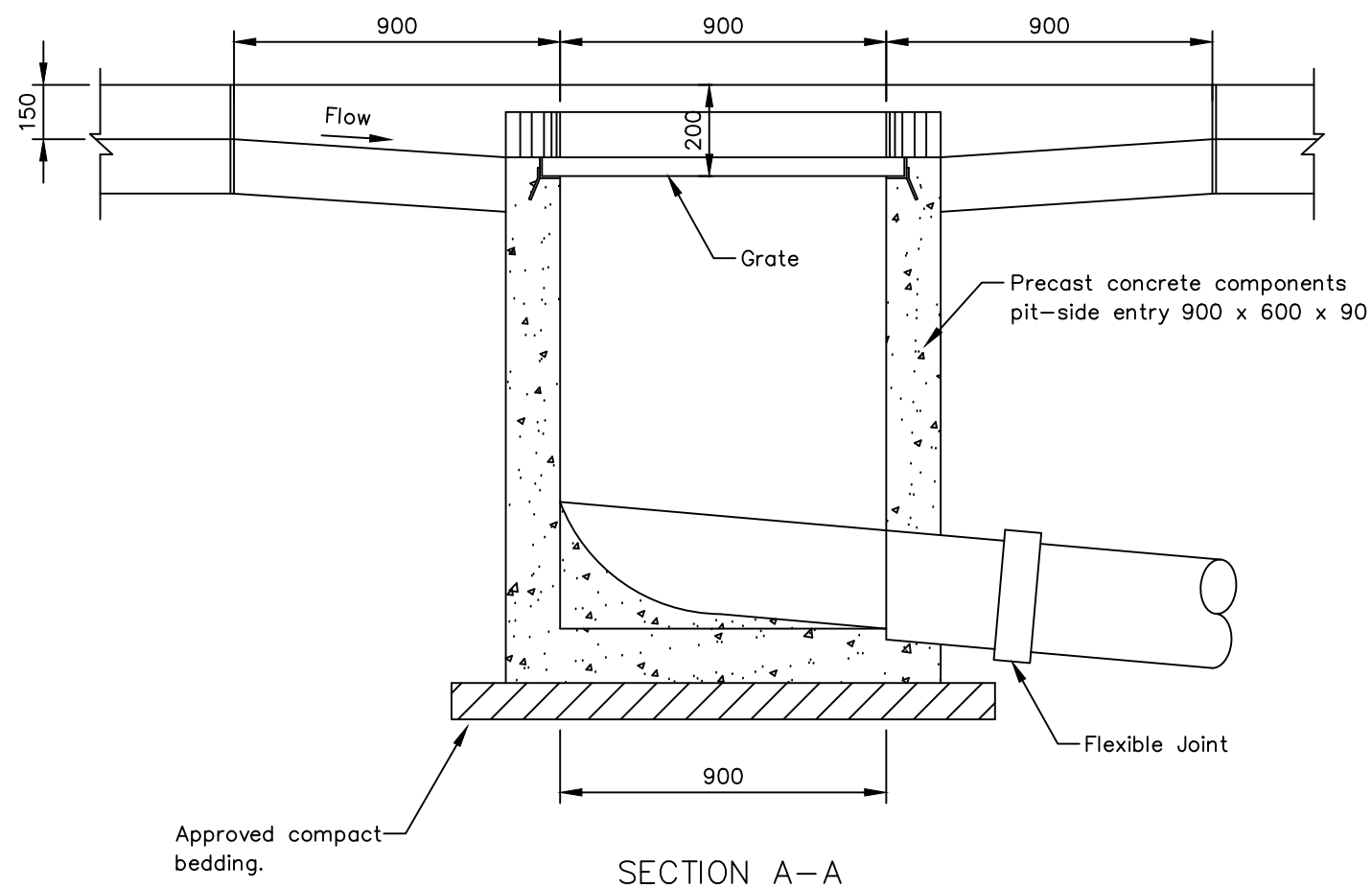
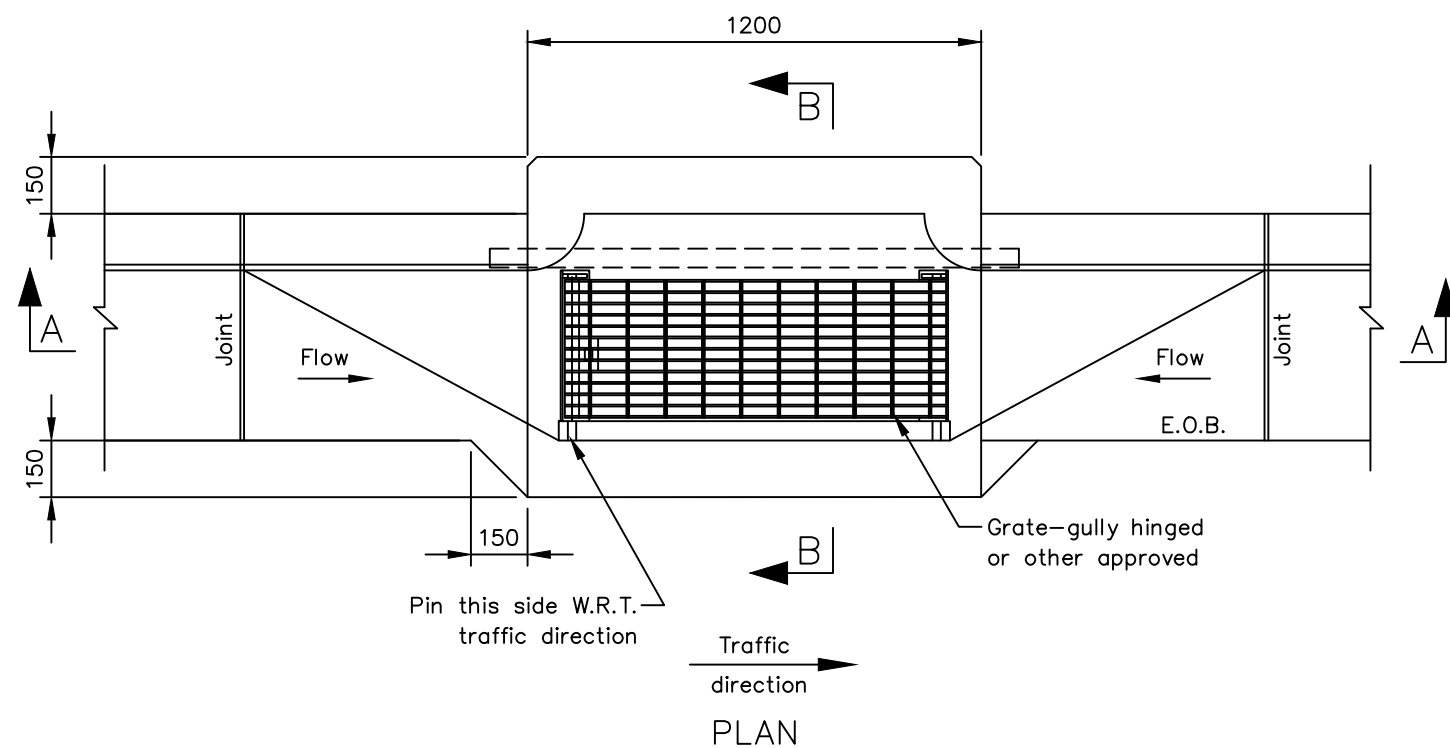
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ISSUE DATE:  
18-09-2020

DWG No.

TSD-SW08-v3



#### NOTES

1. All dimensions in millimetres (mm)
2. Precast components encouraged where available.
3. Angle lintel to be hot dipped galvanised mild steel.
4. Max. depth to be 1500mm – dictated by cover
5. Pits can be used for change of pipe grade or direction where suitable hydraulic conditions exist.
6. Pit to be constructed from N25 concrete.
7. Pre-cast manufacturer option available manufacturers specification to meet LGAT standards

SCALES: AS SHOWN  
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## STANDARD DRAWING

### SIDE ENTRY PITS

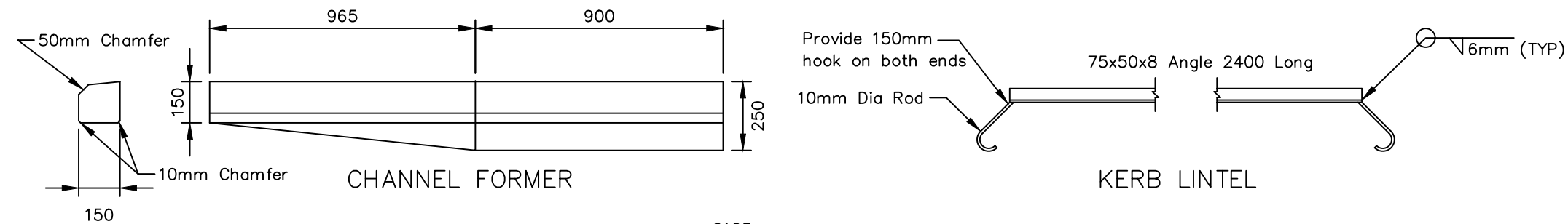
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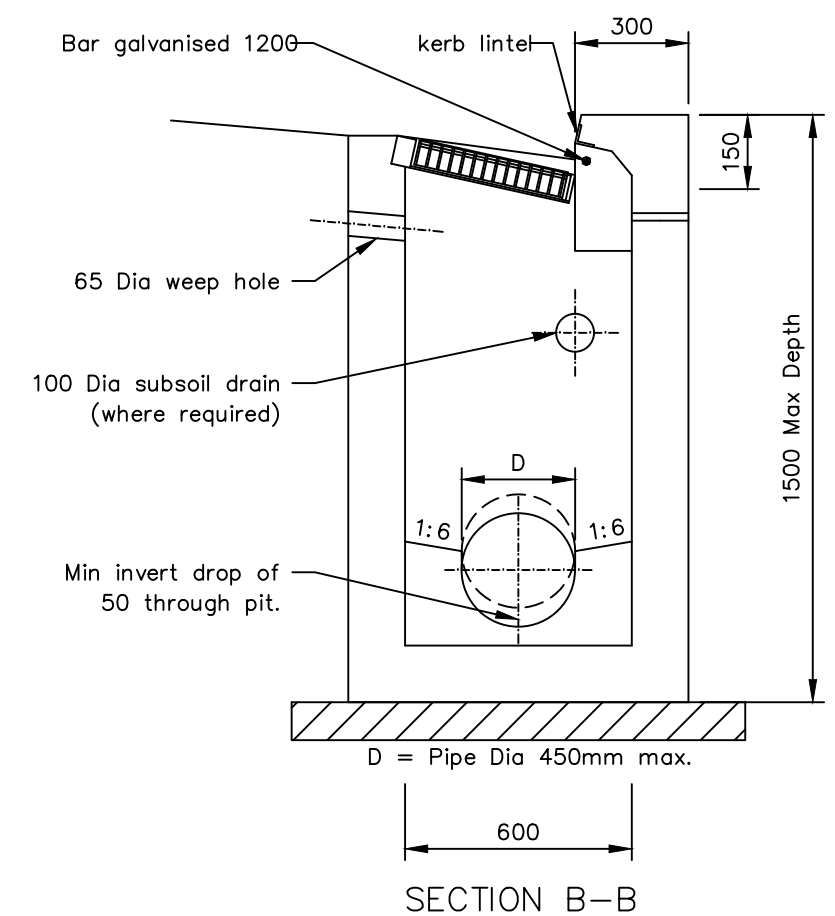
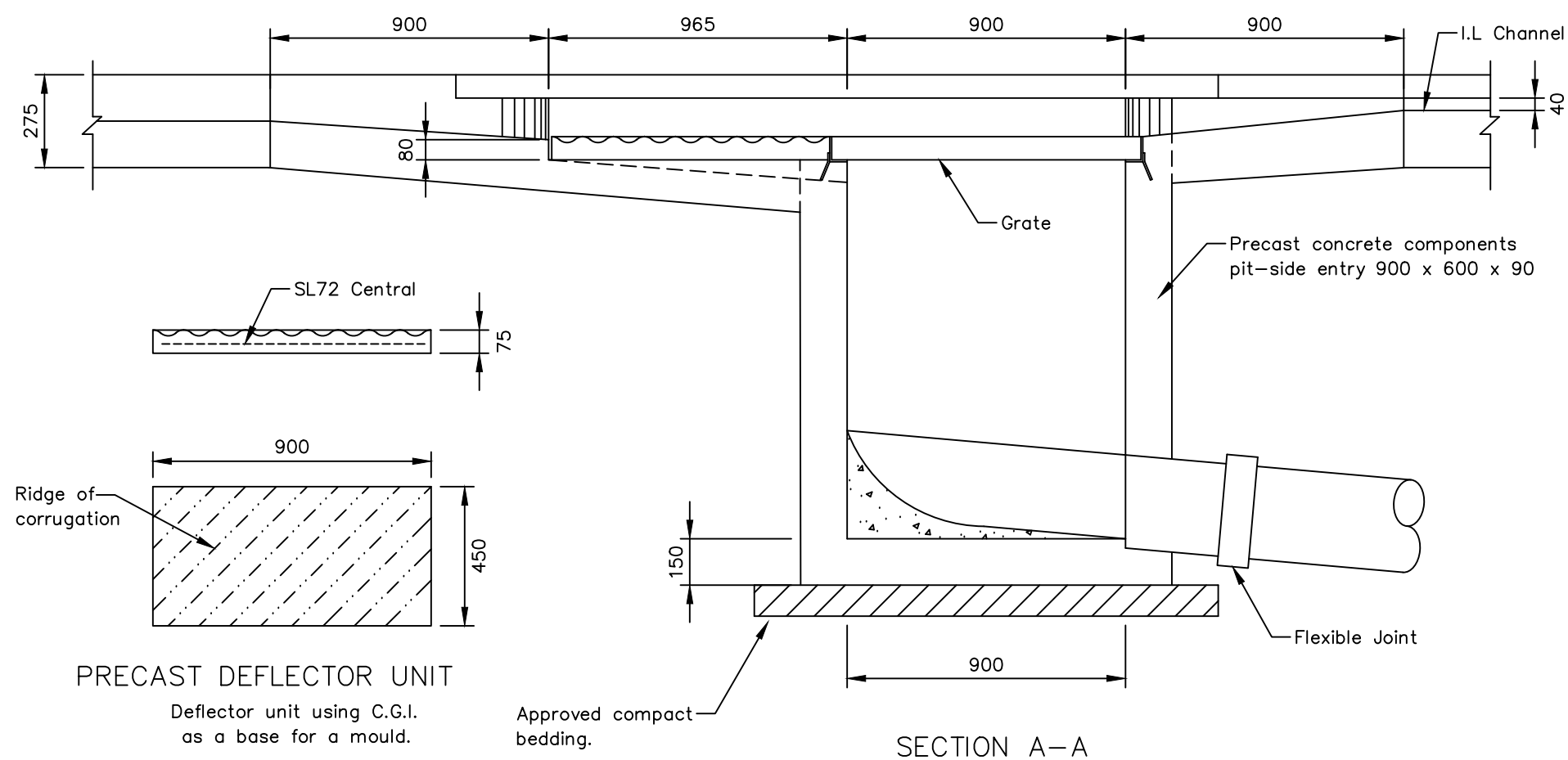
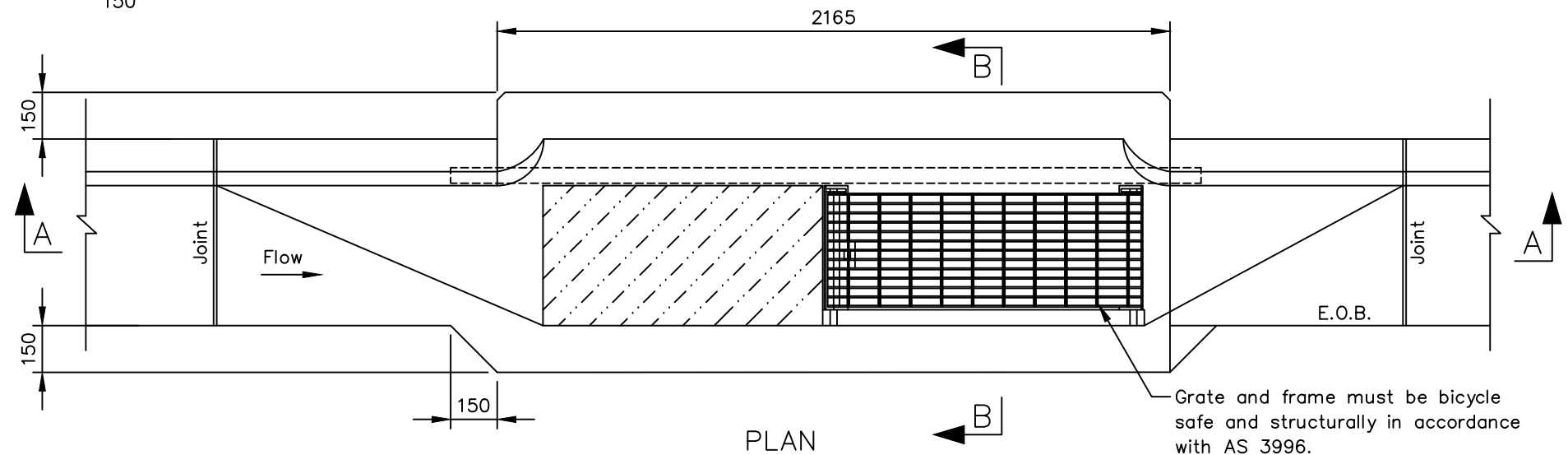
DWG No.

TSD-SW09-v3



#### NOTES

1. All dimensions in millimetres (mm)
2. Precast components encouraged where available.
3. Angle lintel to be hot dipped galvanised mild steel.
4. Max. depth to be 1500mm – dictated by cover
5. Pits can be used for change of pipe grade or direction where suitable hydraulic conditions exist.
6. Pit to be constructed from N25 concrete.
7. Equivalent pre-cast componentry may be substituted with the approval of the General Manager's delegated officer.



SCALES: AS SHOWN  
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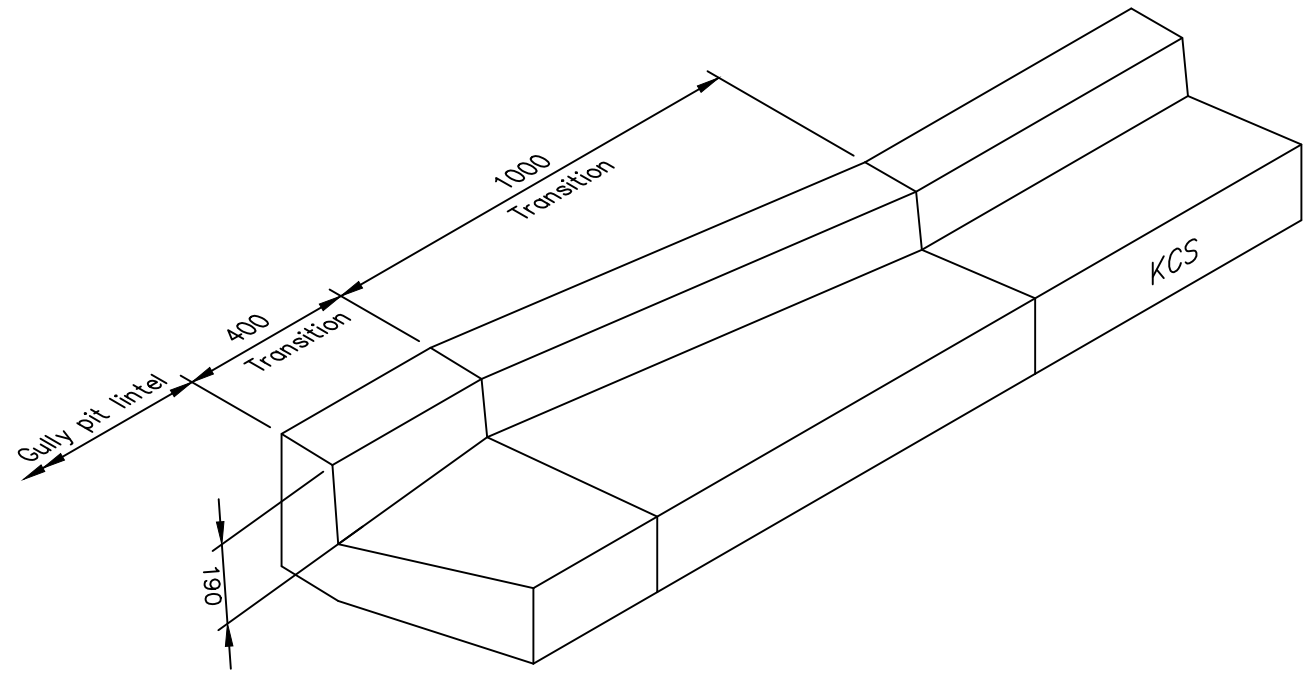
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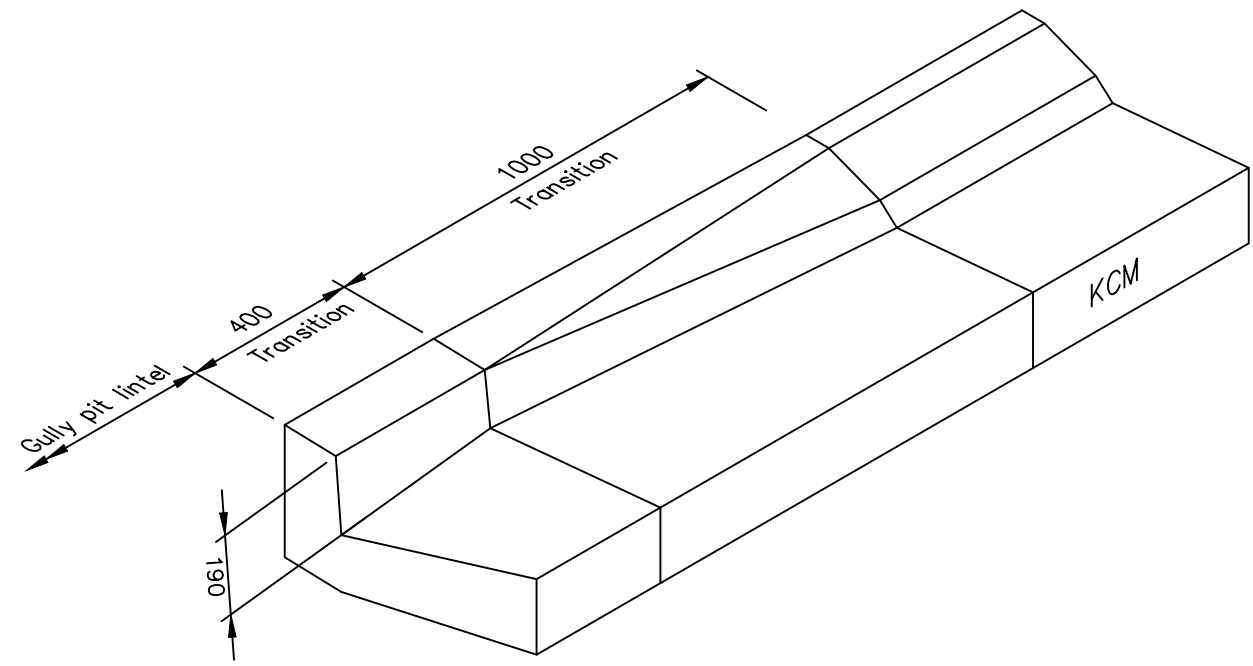
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ISSUE DATE: 18-09-2020 DWG No.

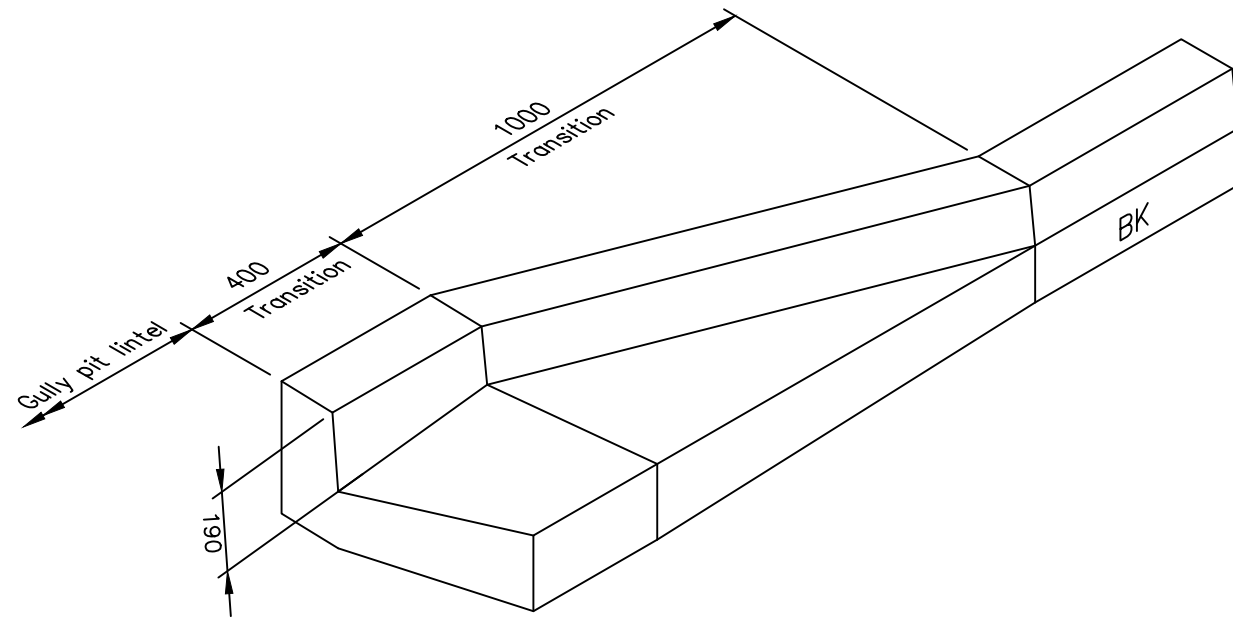
TSD-SW10-v3



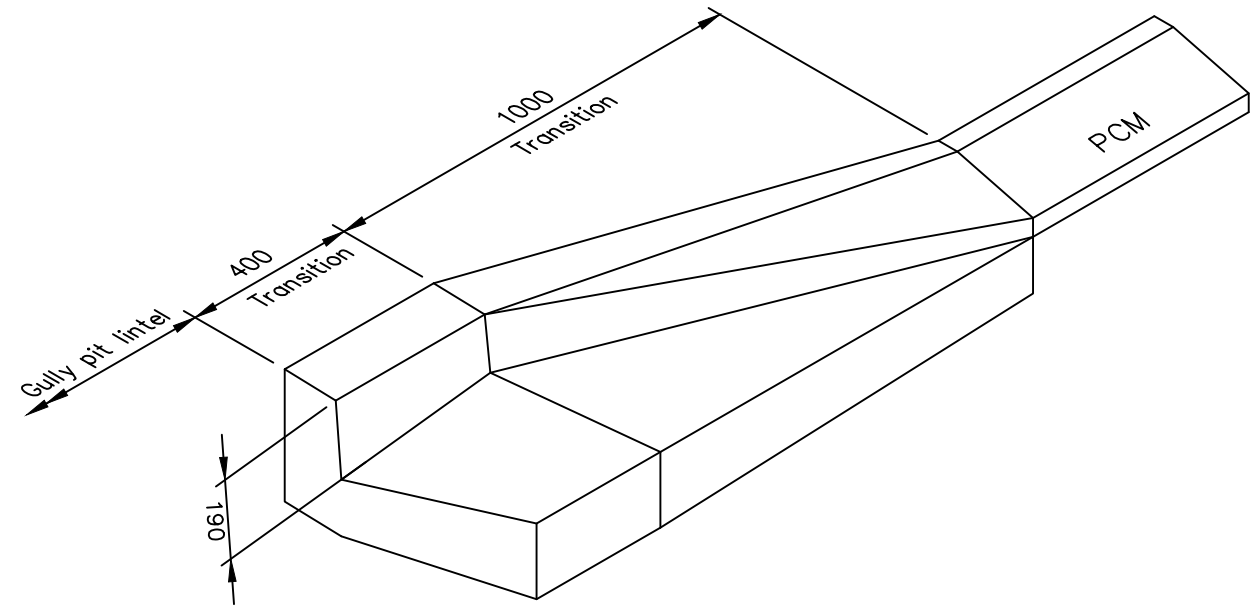
TYPE KCS



TYPE KCM



TYPE BK



TYPE PCM

NOTES

1. Line inverts up through plan transition.
2. Refer Sheets:
  - TSD-SW07, TSD-SW08, TSD-SW09
  - TSD-SW10 for lintel details

SCALES: AS SHOWN  
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XRef File: TSD-SW11-v3.dwg

REFERENCES

TSD-SW11-v3

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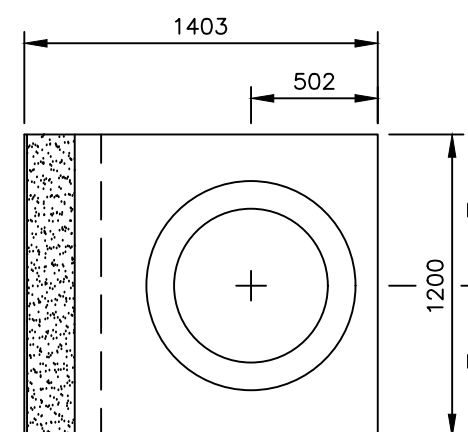
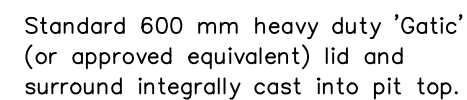
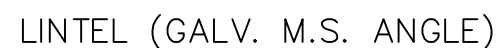
**STANDARD DRAWING**  
SIDE ENTRY PITS  
KERB TRANSITIONS

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18-09-2020

DWG No.

TSD-SW11-v3

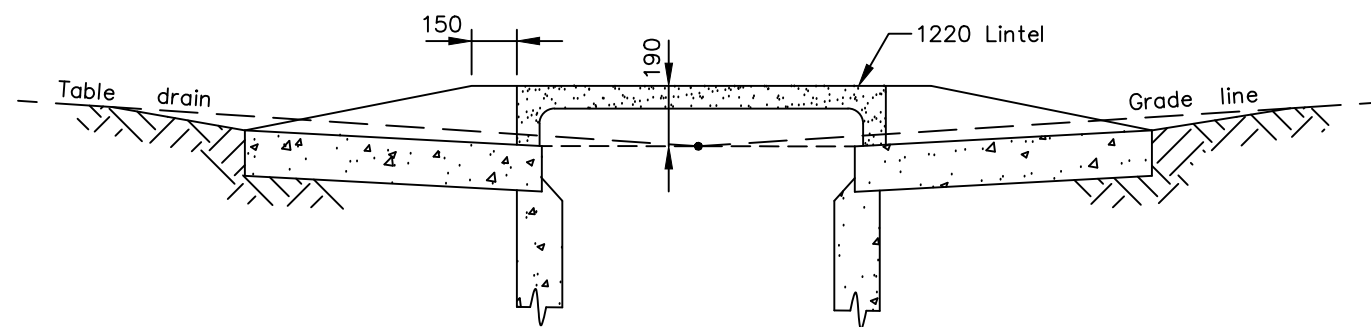


PRE-CAST PIT TOP

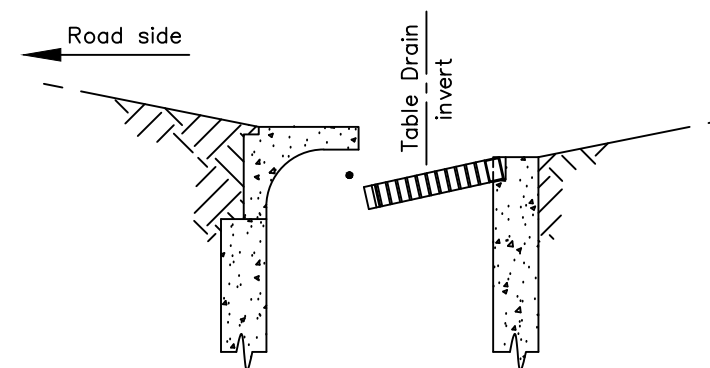
## NOTES

1. Lap (300) all reinforcing with min. 50mm cover. (U.N.O.)
2. Provide 20mm chamfer for all exposed edges.
3. Concrete strength N25, min. 150mm thick.
4. 'PCM' – Precast mountable kerb.
5. Refer Sheets:
  - TSD-S04 for grate details
  - TSD-S05 for unsealed pit construction
6. Equivalent pre-cast componentry may be substituted with the approval of the General Manager's delegated officer.

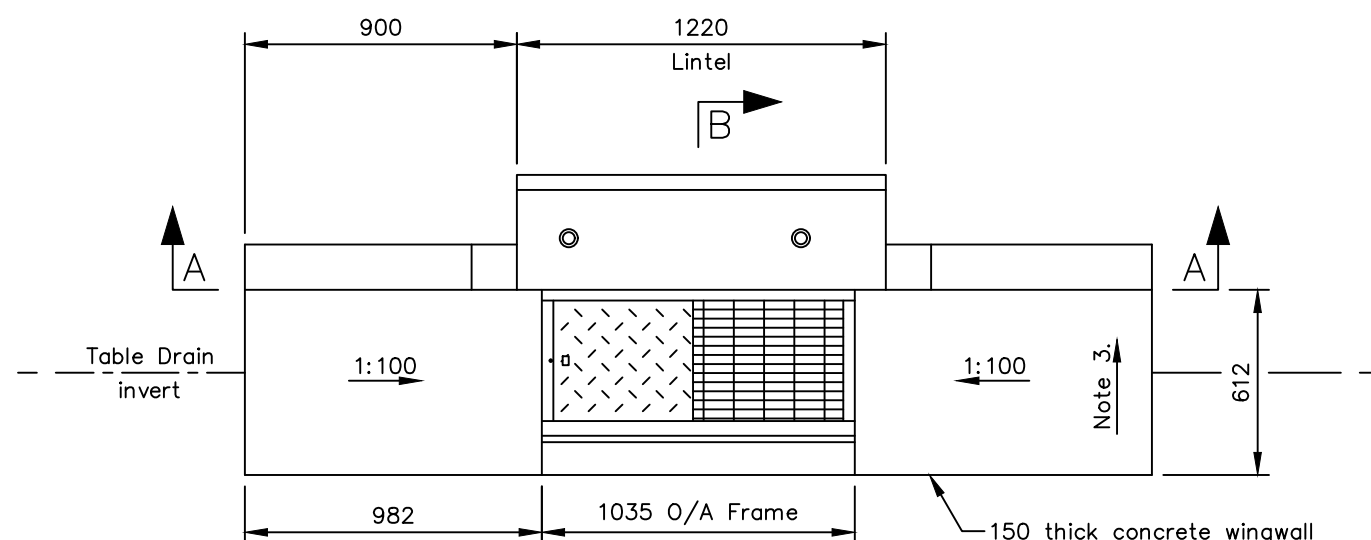




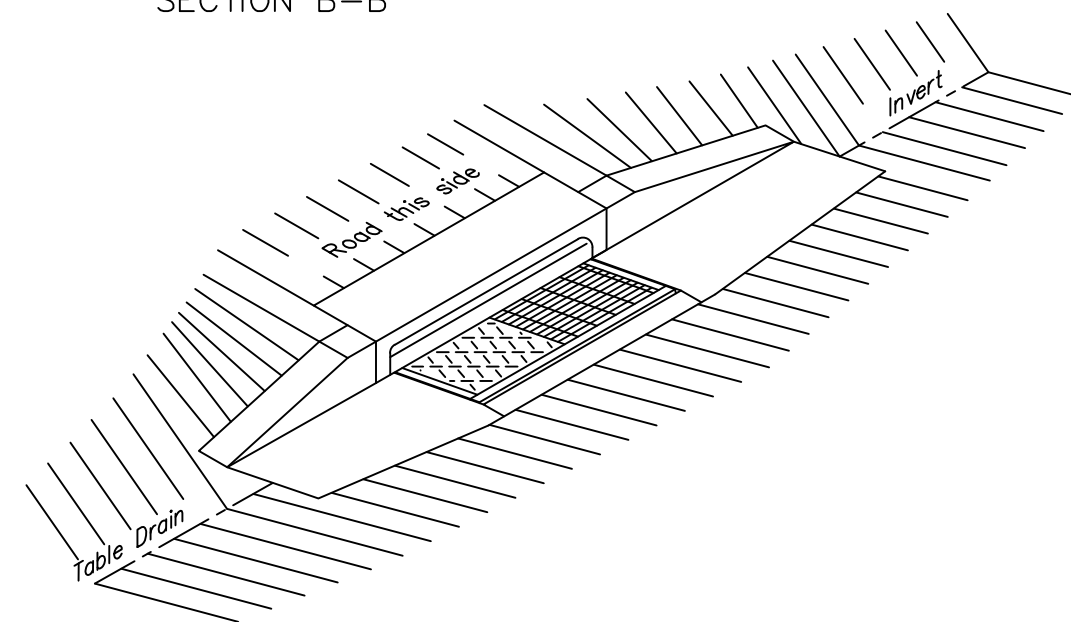
SECTION A-A  
(Bar removed for clarity)



SECTION B-B



PLAN



PICTORIAL VIEW

#### NOTES

1. Position chequer plate on side of maximum flow.
2. Provide 20 radius on all exposed edges of in-situ poured concrete.
3. Vary wingwall channel crossfall to suit table drain.
4. Concrete – N25 grade, 150 thick.
5. Fit lintels with 20 dia. galv. rod.
6. Refer Sheets:
  - TSD-SW04 for grate details
  - TSD-SW05 for unsealed pit construction

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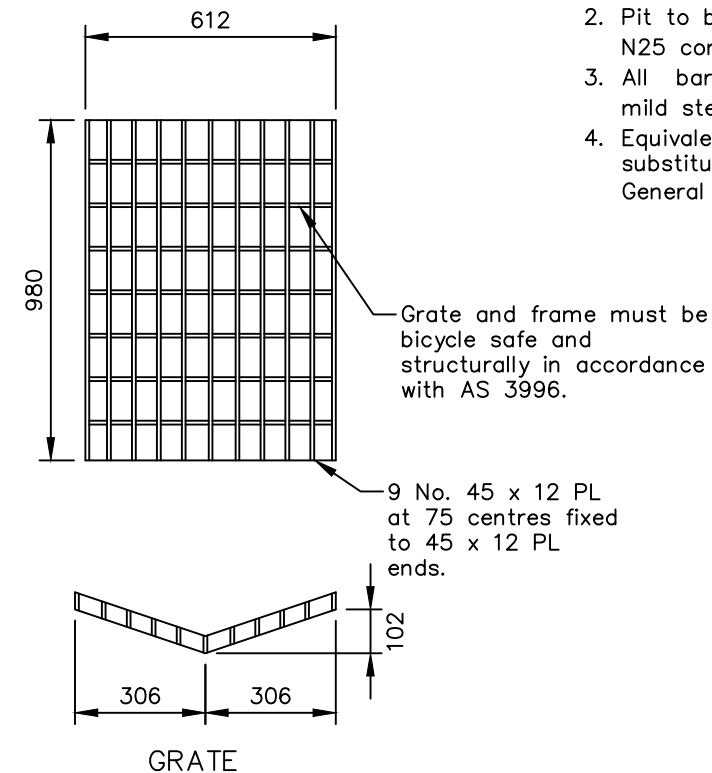
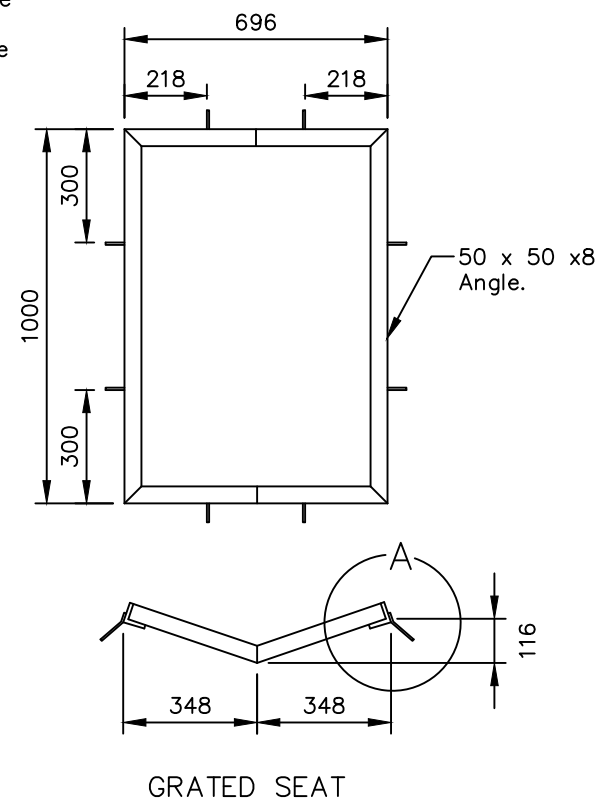
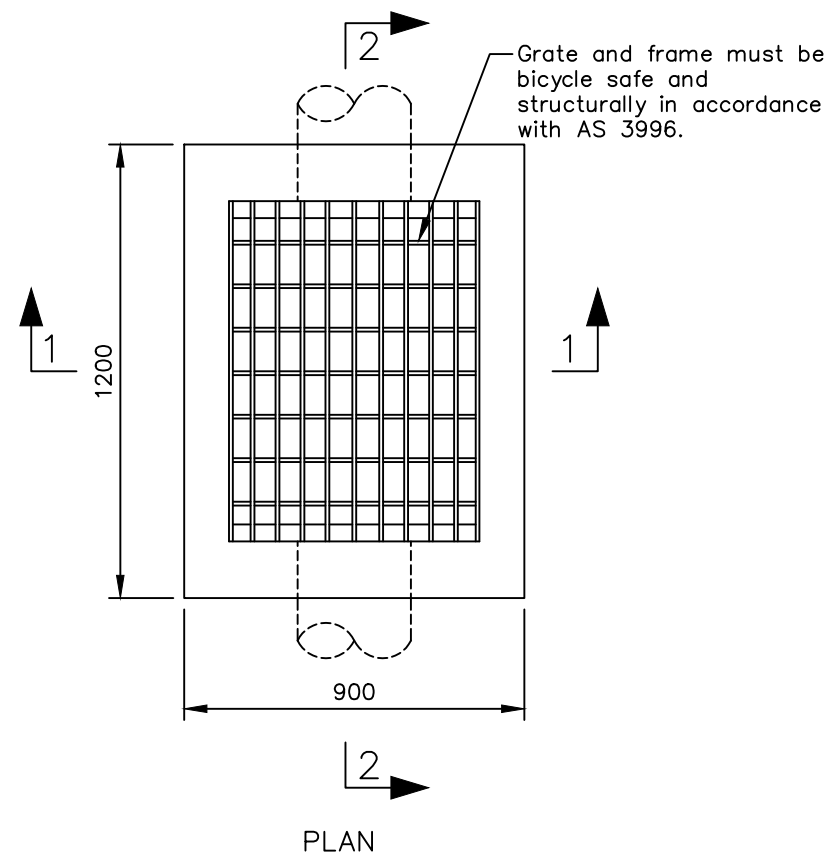
### SIDE ENTRY PITS

### TABLE DRAIN PIT CONSTRUCTION

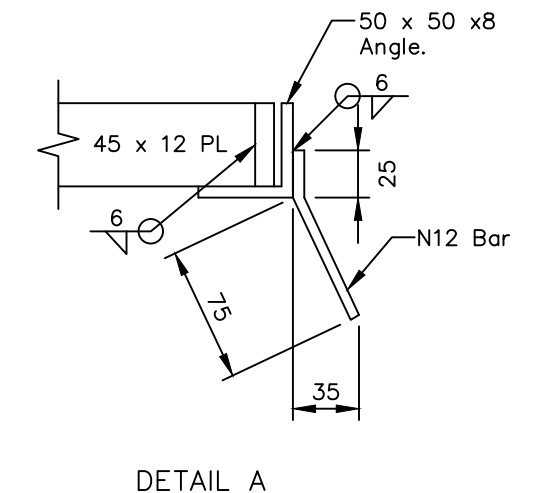
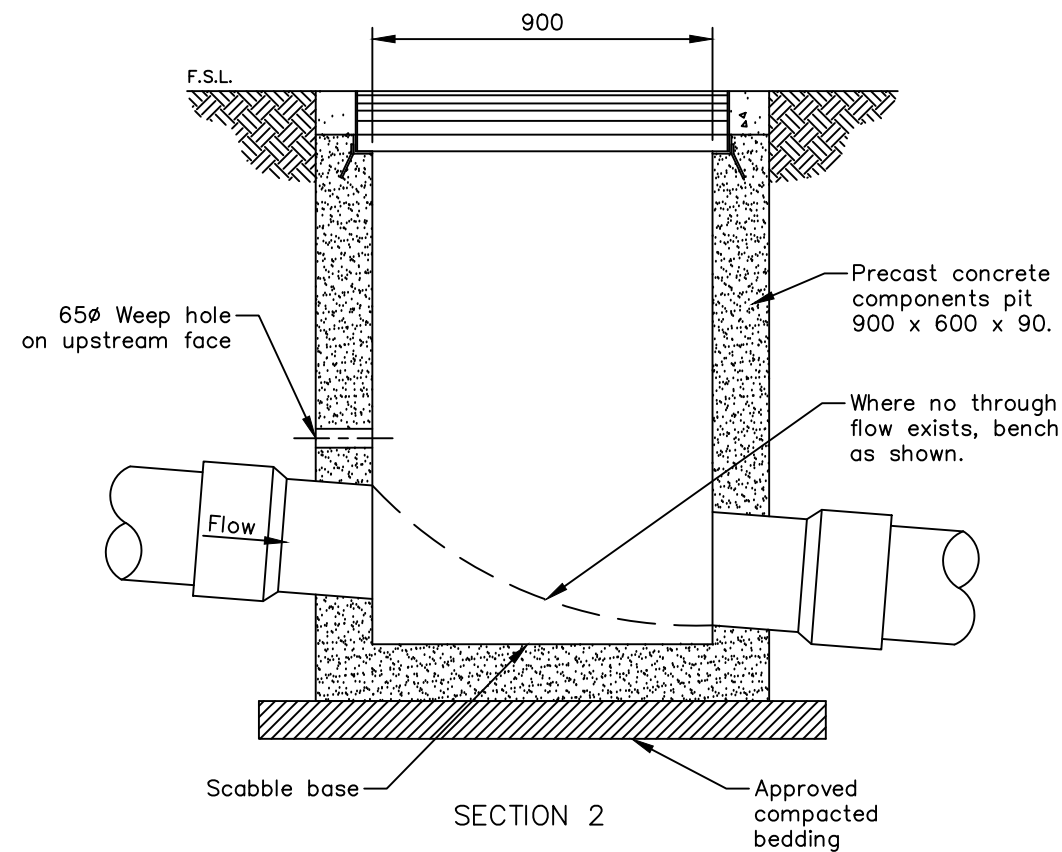
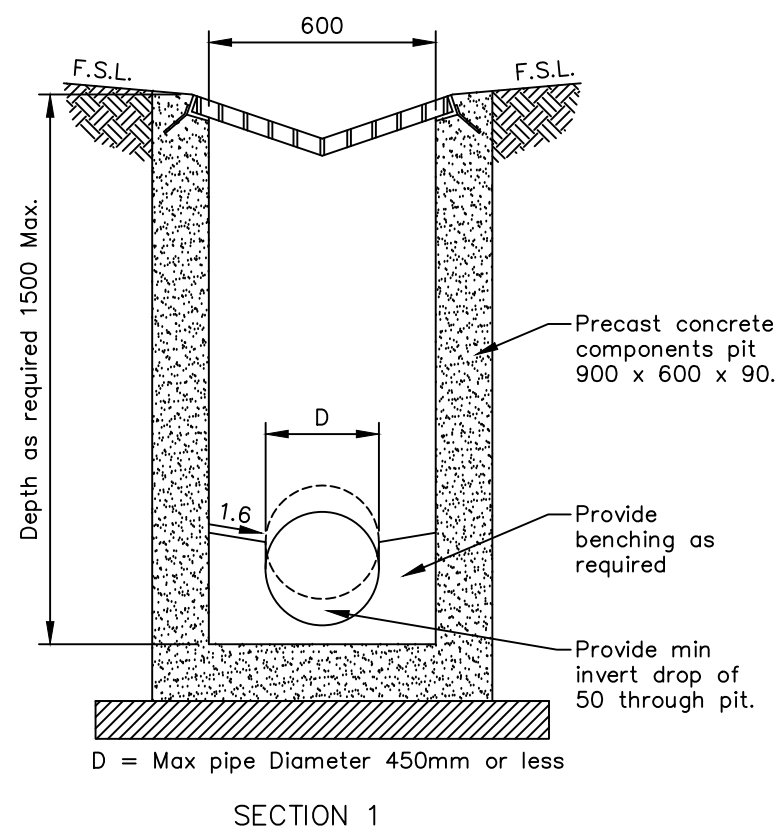
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18-09-2020

DWG No.  
TSD-SW13-v3



- NOTES**
1. All dimension in millimetres (mm)
  2. Pit to be constructed from grade N25 concrete.
  3. All bars and angles to be grade 250 mild steel.
  4. Equivalent pre-cast componentry may be substituted with the approval of the General Manager's delegated officer.



SCALES: AS SHOWN  
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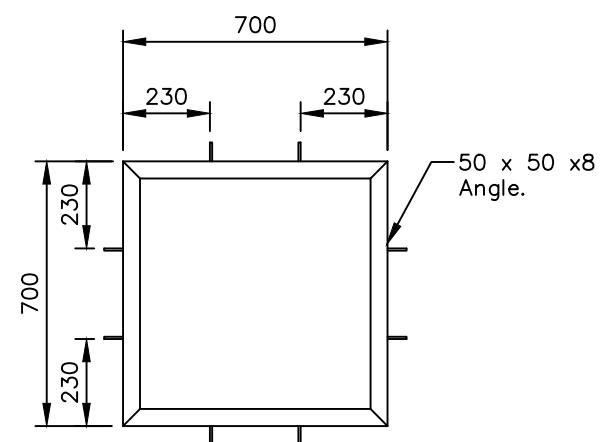
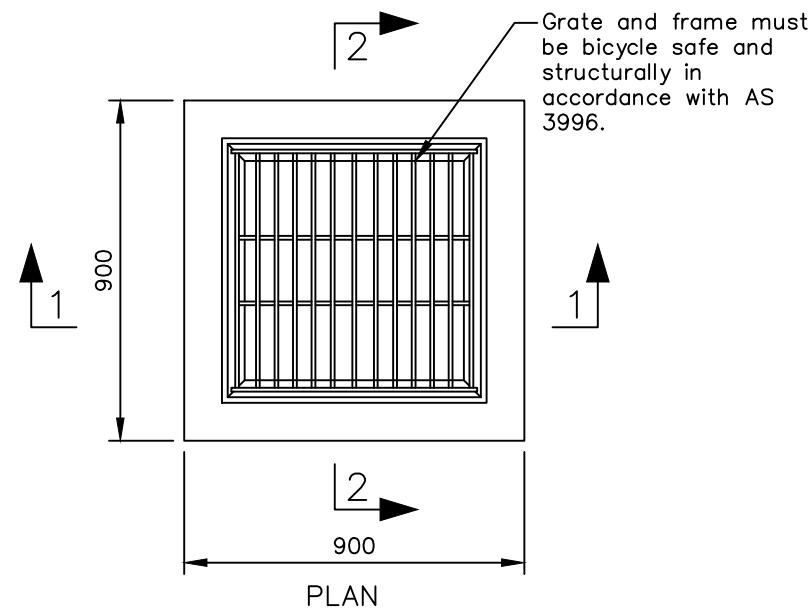


## STANDARD DRAWING STORMWATER - 'GVP'

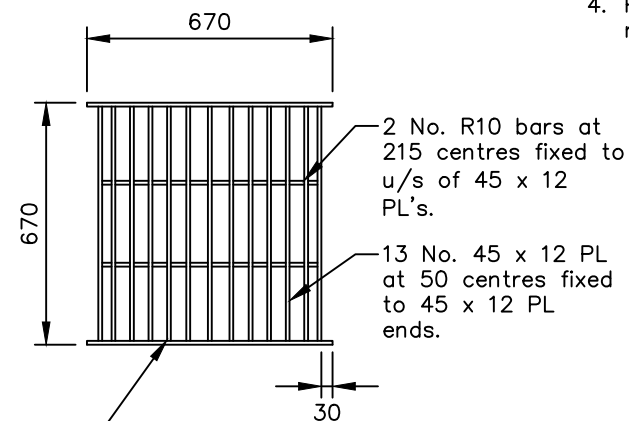
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ISSUE DATE:  
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DWG No.  
TSD-SW14-v3

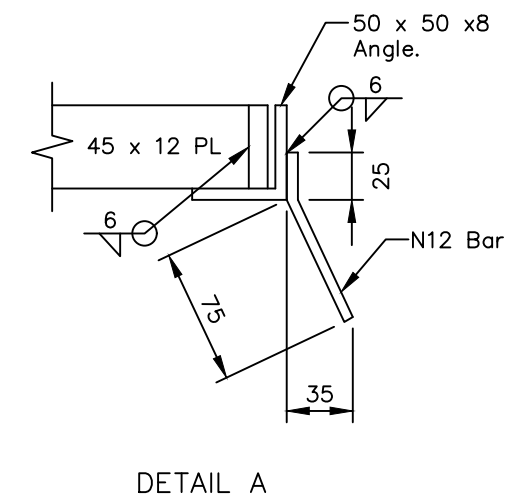
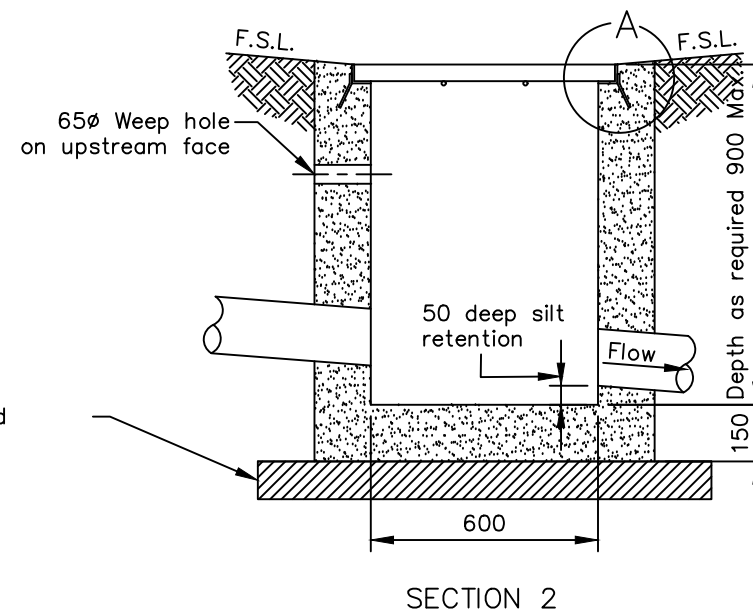
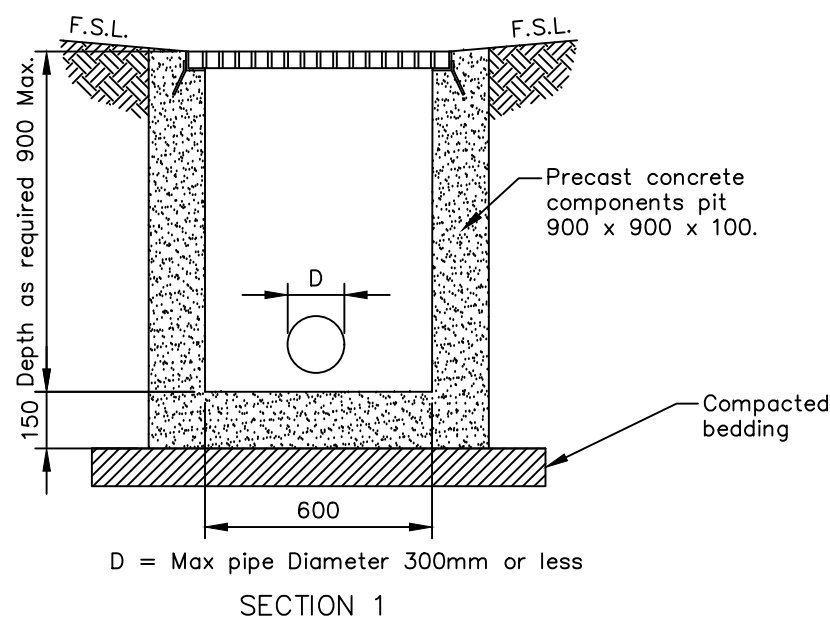


Grate and frame must be bicycle safe and structurally in accordance with AS 3996.



#### NOTES

1. All dimension in millimetres (mm)
2. Pit to be constructed from grade N25 concrete.
3. All bars and angles to be grade 250 mild steel.
4. Pre-cast manufacturer option available manufacturers specification.



SCALES: AS SHOWN  
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XRef File: TSD-SW15-v3.dwg

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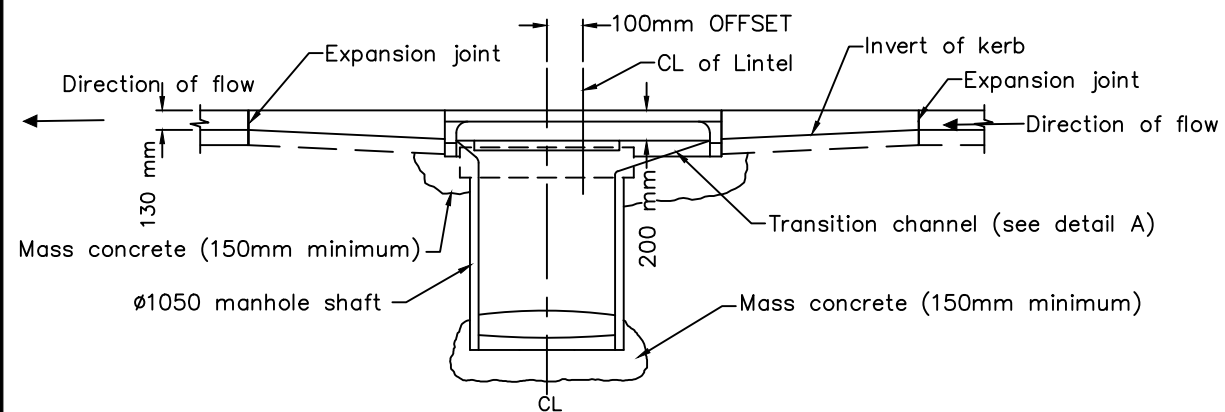


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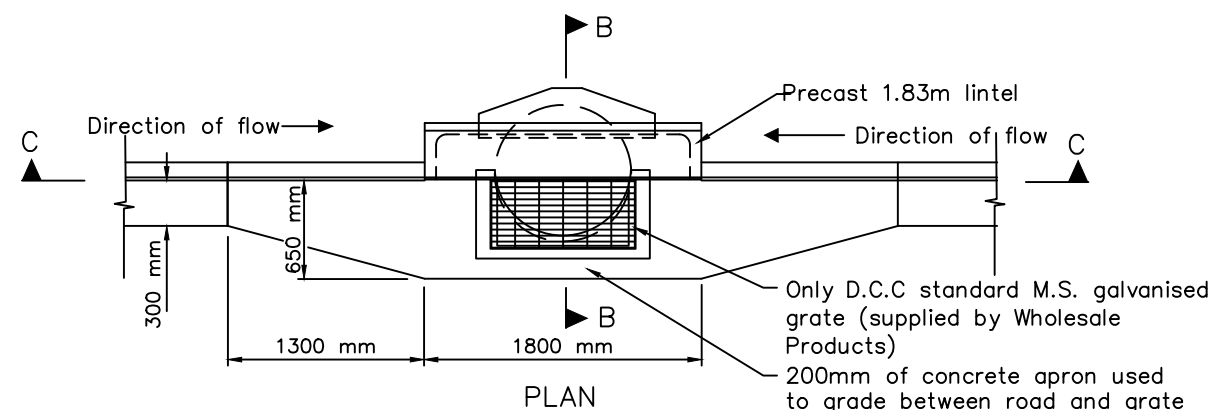
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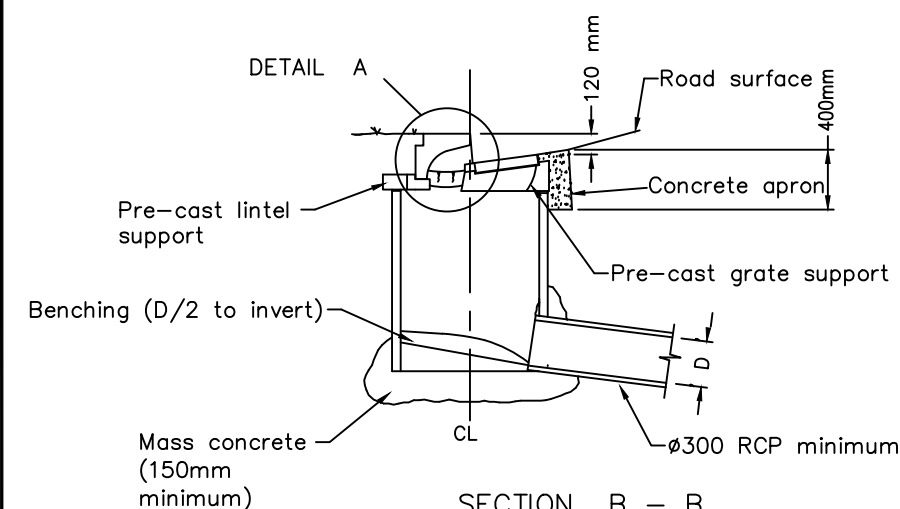
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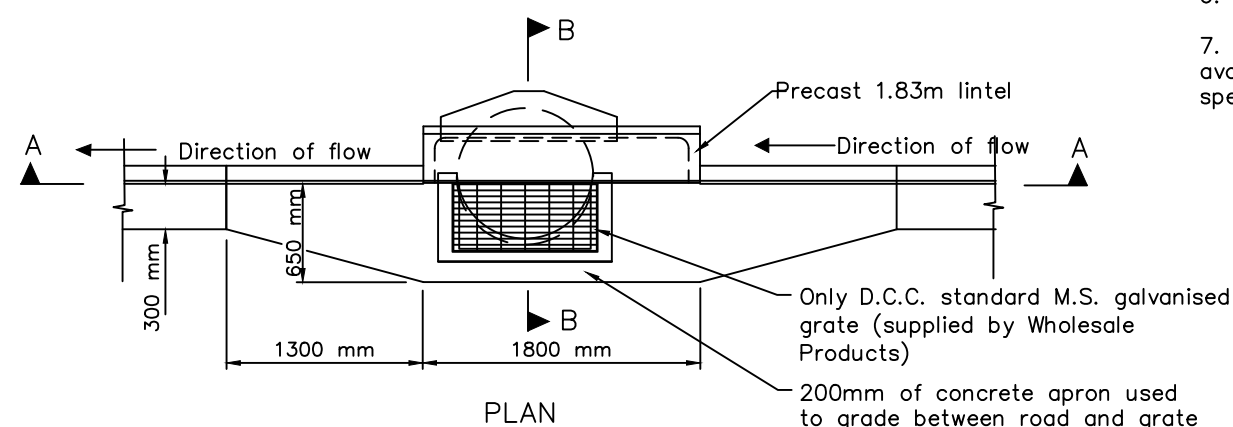
SECTION A-A



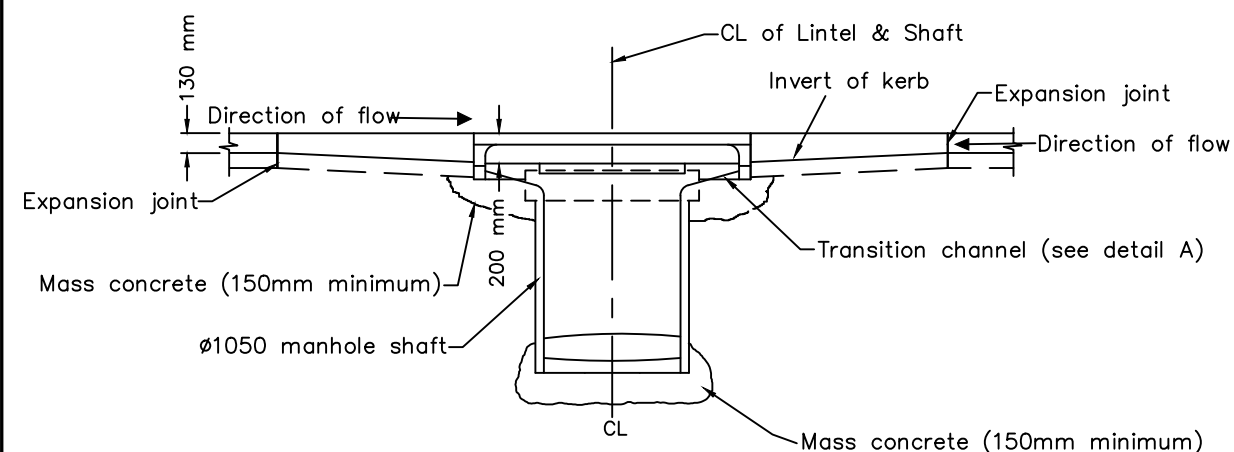
SAG PIT DETAILS



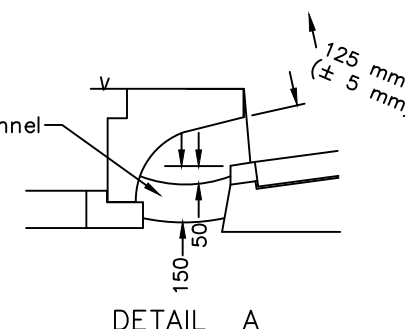
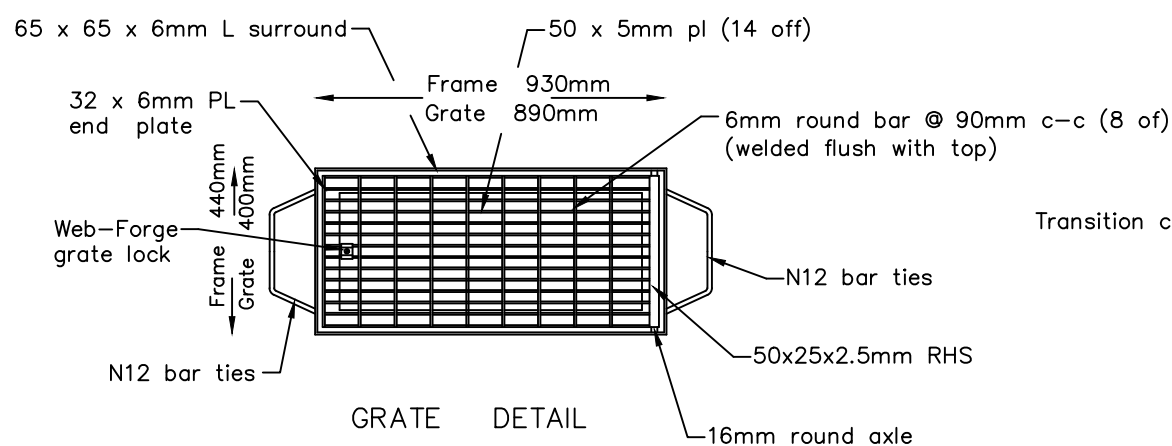
SECTION B - B



ON GRADE PIT DETAILS



SECTION C - C



DETAIL A

# NOTES

1. All concrete to have a minimum strength of N25.
2. Clean cement stabilised sand to be compacted under kerb transitions.
3. Mass concrete, 150mm minimum, to be placed under lintel.
4. Standard manhole shaft to be 1050 RCP
5. All grate and frame components to be hot dipped galvanised.
6. Refer TSD-SW04.
7. Pre-cast manufacturer option available manufacturers specification.

SCALES: AS SHOWN  
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XRef File: TSD-SW16-v3.dwg

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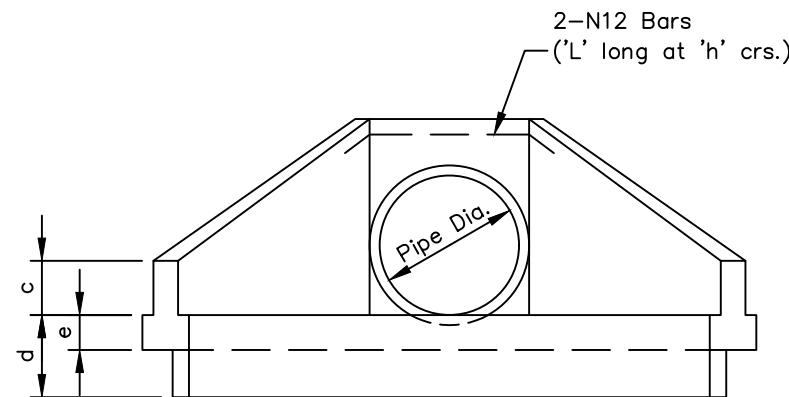
## **STANDARD DRAWING** SIDE ENTRY PITS 'TYPE 6'

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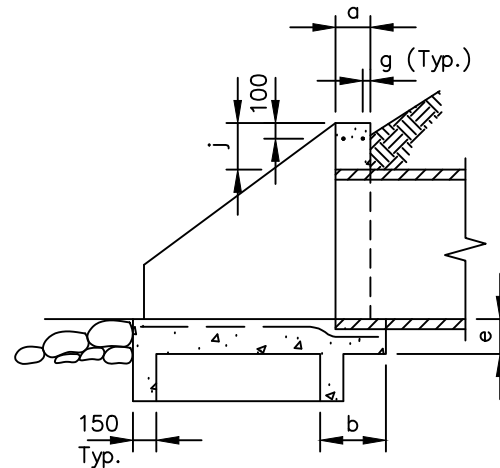
ISSUE DATE:  
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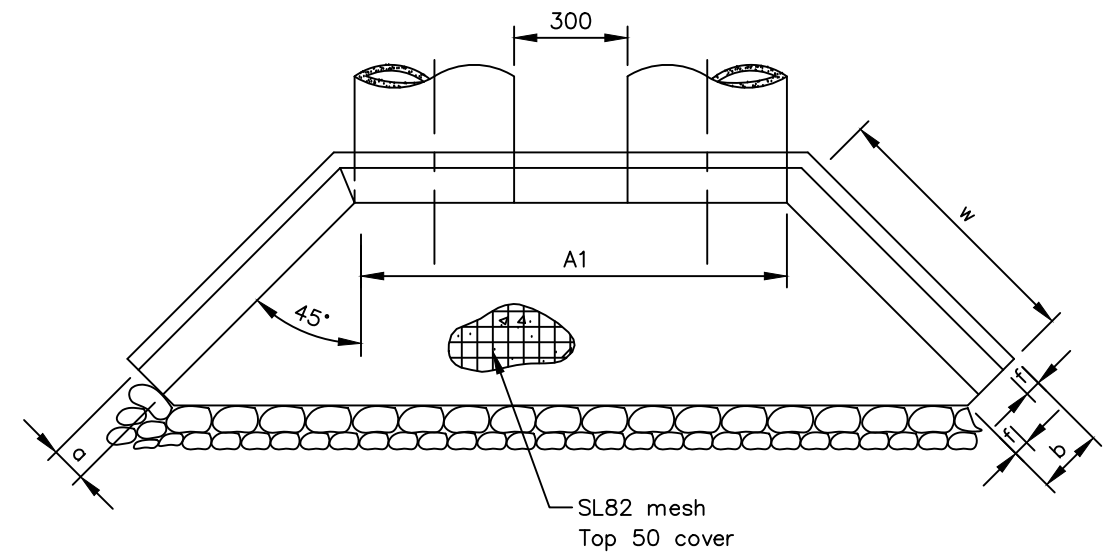
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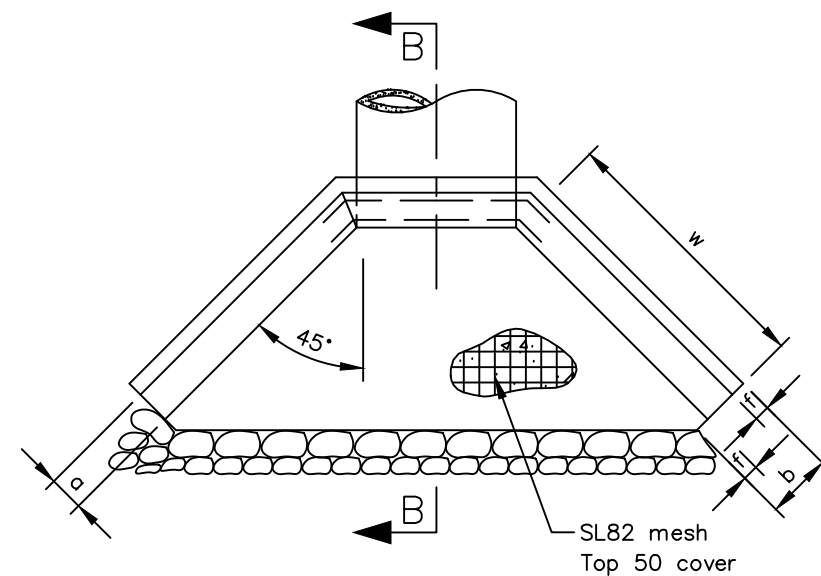
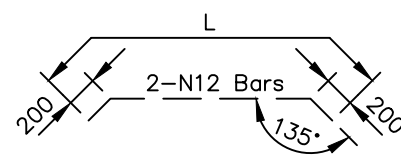
ELEVATION



SECTION B-B



PLAN DOUBLE ENDWALL



SECTION A-A

DIMENSION TABLE

PIPE DIAMETER	300	375	450	525	600	675	750	825	900
HEADWALL DIMENSIONS (mm)									
A1	1425	1600	1750	1950	—	—	—	—	—
a	150	150	150	150	175	175	200	200	225
b	300	300	300	300	375	375	400	400	425
c	300	300	300	300	350	350	350	350	350
d	375	375	375	375	530	530	530	530	530
e	150	150	150	150	175	175	200	200	225
f	75	75	75	75	100	100	100	100	100
g	40	40	40	40	50	50	50	50	50
h	70	70	70	70	75	75	100	100	125
j	200	200	200	200	300	300	300	300	300
w	700	700	850	1000	1100	1300	1450	1600	1750
Vol. of concrete (m <sup>3</sup> )	0.329	0.375	0.485	0.621	0.981	1.220	1.483	1.702	2.027
Reinforcing (all bars N12)									
L – (Rear)	845	921	1017	1099	1204	1287	1388	1470	1575
L – (Front)	803	880	975	1057	1140	1223	1305	1387	1471
Reo. Length (mm)	1648	1801	1992	2156	2344	2510	2693	2857	3046
Reo. Mass (kg) *	1420	1509	1687	1776	1954	2131	2220	2398	2486

\* Does not include SL82 mesh to slab

#### NOTES

- Quantities are for one headwall only.
- Provide 12mm chamfer for all exposed surfaces.
- Concrete grade – N25.
- Pre-cast manufacturer option available manufacturers specification.
- All dimensions in millimetres (mm)
- Provide rock pitching as directed by General Manager's delegated officer.

SCALES: AS SHOWN  
(All scales are correct at A3)

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REFERENCES

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## STANDARD DRAWING

### OUTLET HEADWALLS

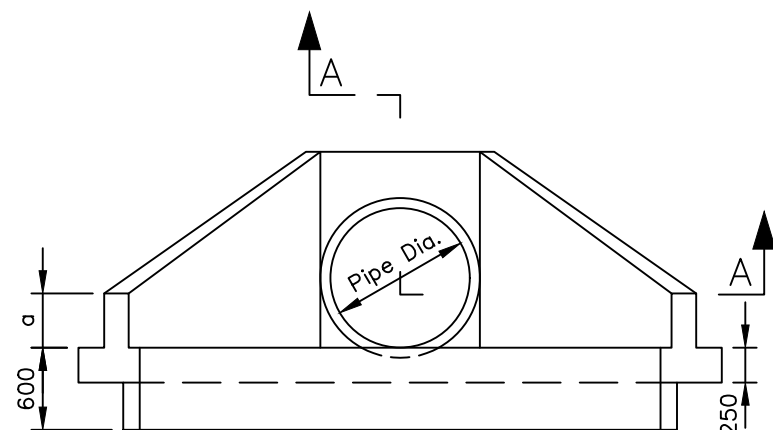
### 300 TO 900 DIA. PIPES

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

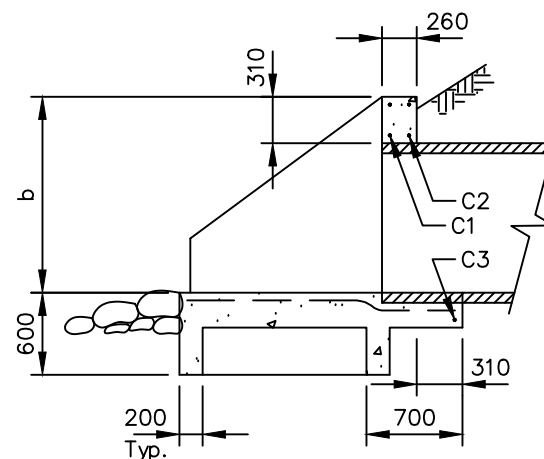
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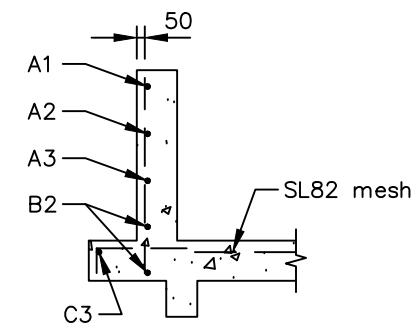




ELEVATION



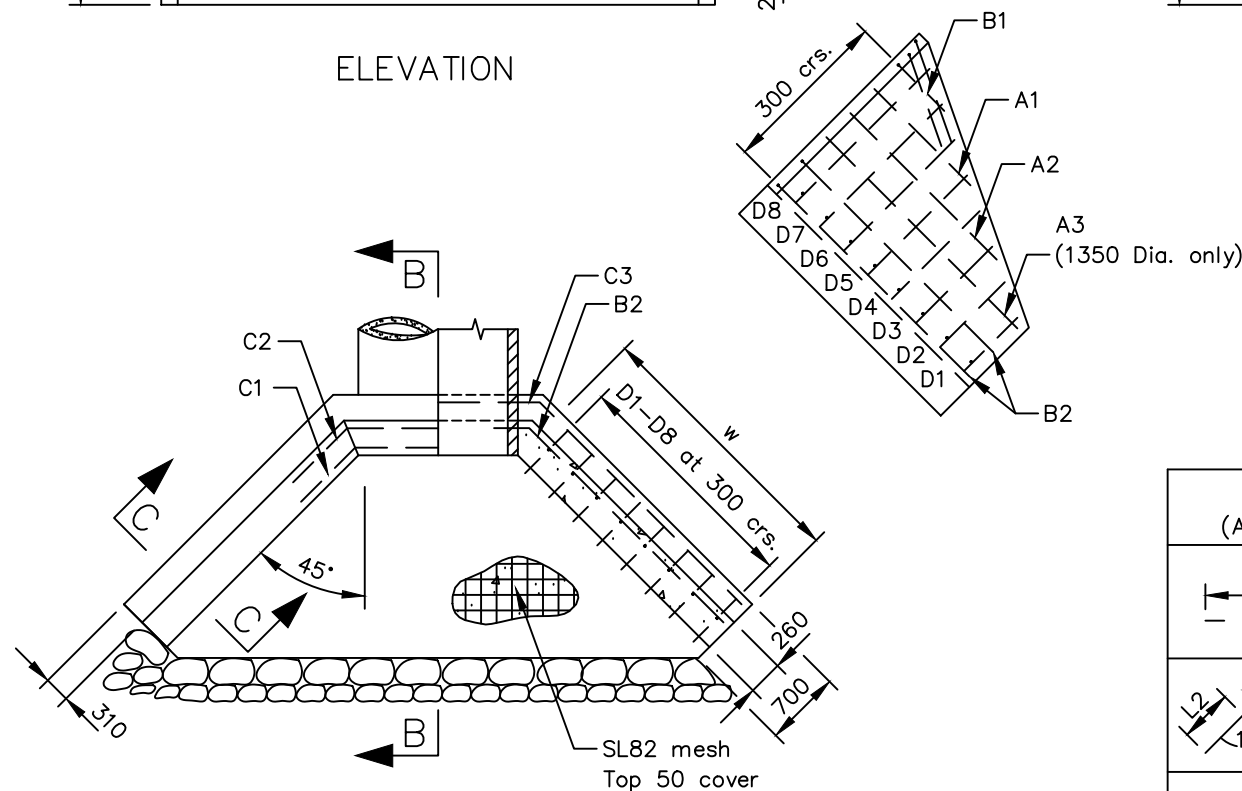
SECTION B-B



SECTION C-C

DIMENSION TABLE

PIPE DIAMETER	1050	1200	1350
HEADWALL DIMENSIONS (mm)			
a	450	450	530
b	1380	1550	1700
w	1930	2300	2500



SECTION A-A

# NOTES

- Quantities are for one headwall only.
- Chamfer (10 x 10) all exposed surfaces.
- Concrete grade – N25.
- Cover to all reinforcing 50mm unless noted.
- Pre-cast manufacturer option available manufacturers specification
- All dimensions in millimetres (mm)
- Provide rock pitching as directed by General Manager's delegated officer.

BAR SHAPE (ALL BARS N12)	MARK	1050 DIA. PIPE						1200 DIA. PIPE						1350 DIA. PIPE					
		L1 mm	L2 mm	L1+L2 mm	No. Req'd	Total Length		L1 mm	L2 mm	LG mm	No. Req'd	Total Length		L1 mm	L2 mm	LG mm	No. Req'd	Total Length	
	A1	1404	–	1404	2	2.81		1587	–	1587	2	3.17		1486	–	1486	2	2.97	
	A2	1967	–	1967	2	3.93		2340	–	2340	2	4.68		2127	–	2127	2	4.25	
	A3	–	–	–	–	–		–	–	–	–	–		2537	–	2537	2	5.07	
	B1	781	250	1031	2	2.06		765	250	1015	2	2.03		845	300	1145	2	2.29	
	B2	1967	250	2217	4	8.87		2340	250	2590	4	10.36		2537	300	2837	4	11.35	
	C1	1259	750	2759	2	5.52		1412	750	2912	2	5.82		1565	750	3065	2	6.13	
	C2	1392	750	2892	2	5.78		1545	750	3045	2	6.09		1698	750	3198	2	6.40	
	C3	1649	2095	5839	1	5.84		1802	2465	6732	1	6.73		1955	2665	7285	1	7.29	
	D1	629	–	1329	2	2.66		641	–	1341	2	2.68		790	–	1490	2	2.98	
	D2	–	–	–	–	–		751	–	1451	2	2.90		930	–	1630	2	3.26	
	D3	774	–	1474	2	2.95		860	–	1560	2	3.12		1071	–	1771	2	3.54	
	D4	918	–	1618	2	3.24		970	–	1670	2	3.34		1211	–	1911	2	3.82	
	D5	1062	–	1762	2	3.52		1080	–	1780	2	3.56		1351	–	2051	2	4.10	
	D6	1207	–	1907	2	3.81		1189	–	1889	2	3.78		1492	–	2192	2	4.38	
	D7	1352	–	2052	2	4.10		1299	–	1999	2	4.00		1632	–	2332	2	4.66	
	D8	1496	–	2196	2	4.39		1408	–	2108	2	4.22		1773	–	2473	2	4.95	

Reo. Mass = 52.81 kg *	Reo. Mass = 59.03 kg *	Reo. Mass = 68.77 kg *
Volume of concrete (2.794 m3)	Volume of concrete (3.499 m3)	Volume of concrete (3.987 m3)

\* Does not include SL82 mesh in apron.

SCALES: AS SHOWN  
(All scales are correct at A3)

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## **STANDARD DRAWING** OUTLET HEADWALLS 1050 TO 1350 DIA. PIPES

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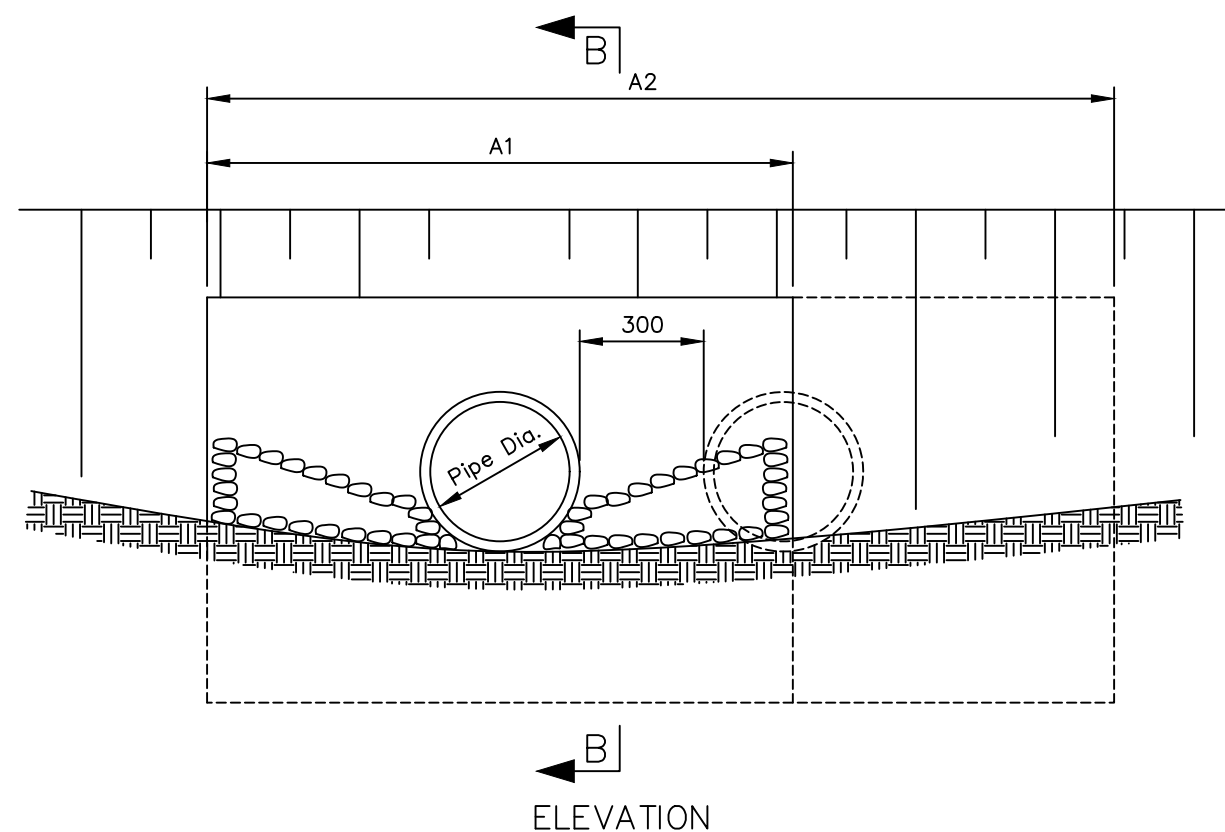
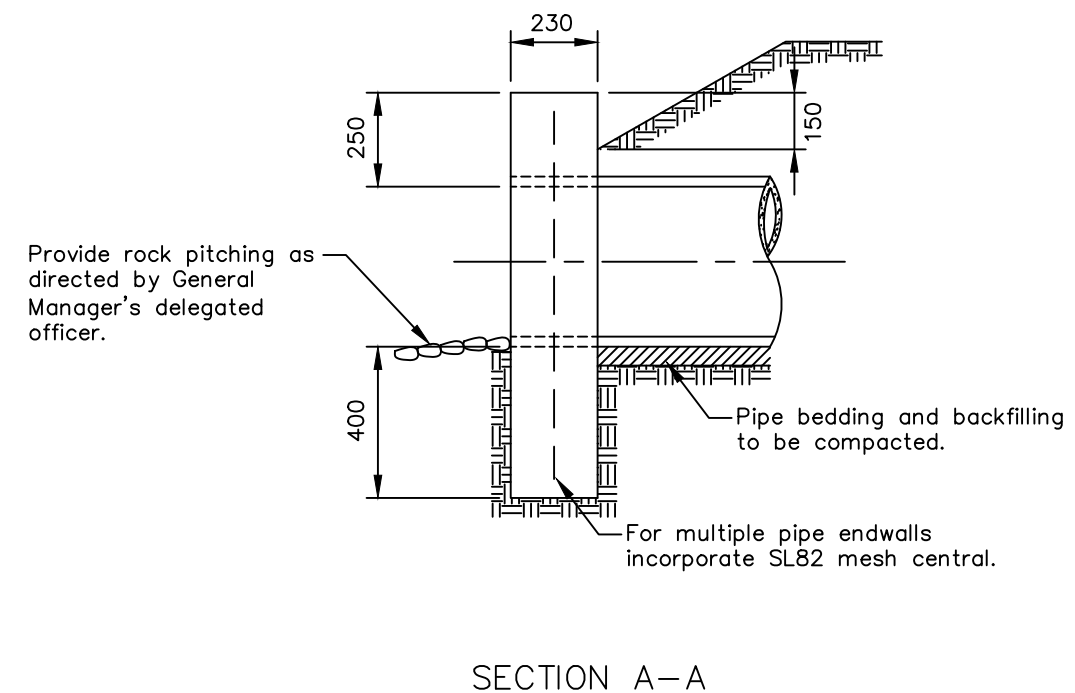
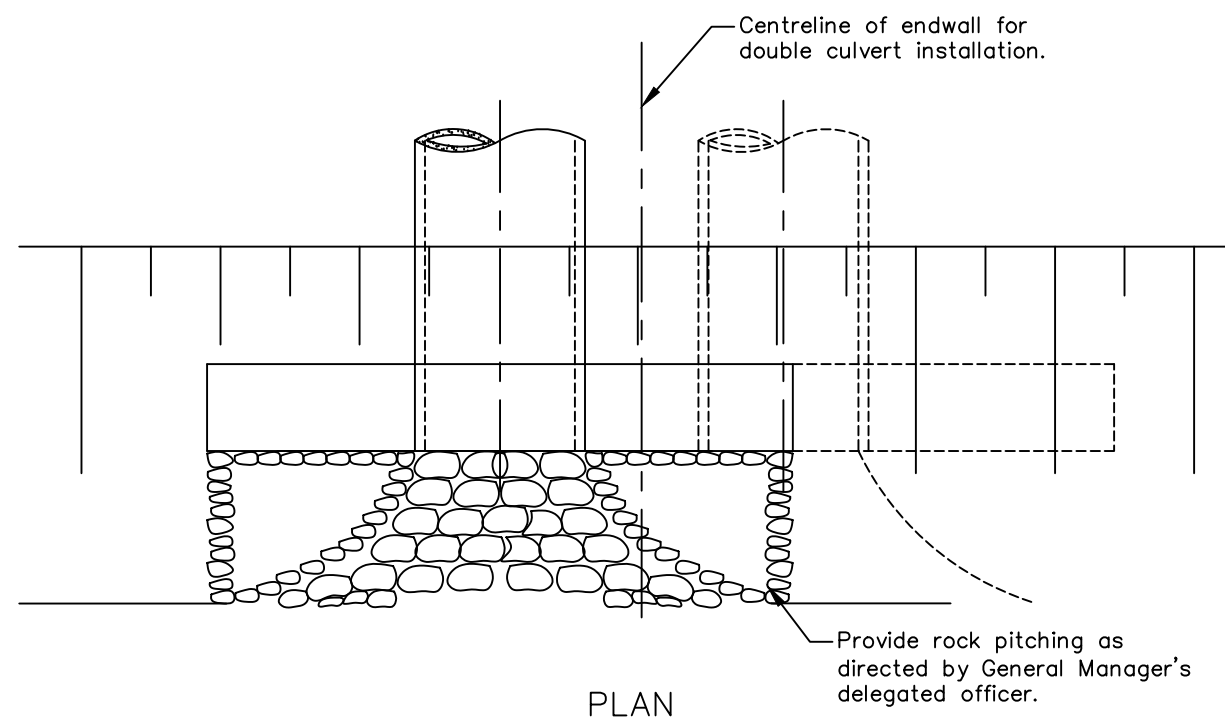


TABLE 1

NOMINAL PIPE DIAMETER	HEADWALL DIMENSIONS (mm)	
	A1	A2
300	1150	1850
375	1350	2100
450	1550	2400
525	1750	2650

NOTES

1. Quantities are for one headwall only.
2. Chamfer (10 x 10) all exposed surfaces.
3. Concrete grade – N25.
4. Cover to all reinforcing 50mm unless noted.
5. Equivalent pre-cast componentry may be substituted with the approval of the General Manager's delegated officer.
6. Lap reinforcement 300 min.
7. All dimensions in millimetres (mm)
8. Provide rock pitching as directed by General Manager's delegated officer.

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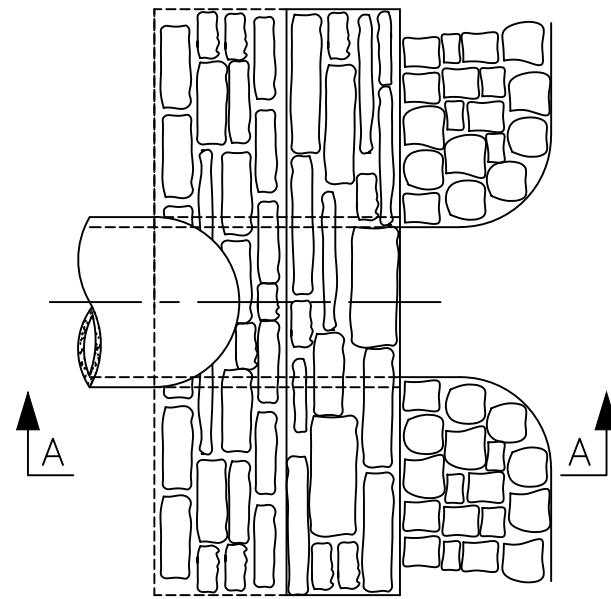
**STANDARD DRAWING**  
CONCRETE ENDWALL PLAIN  
(300 - 450 DIA)

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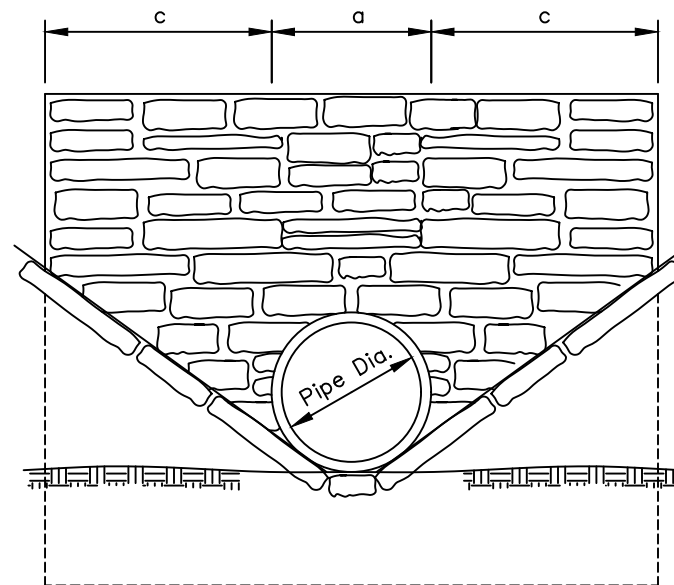
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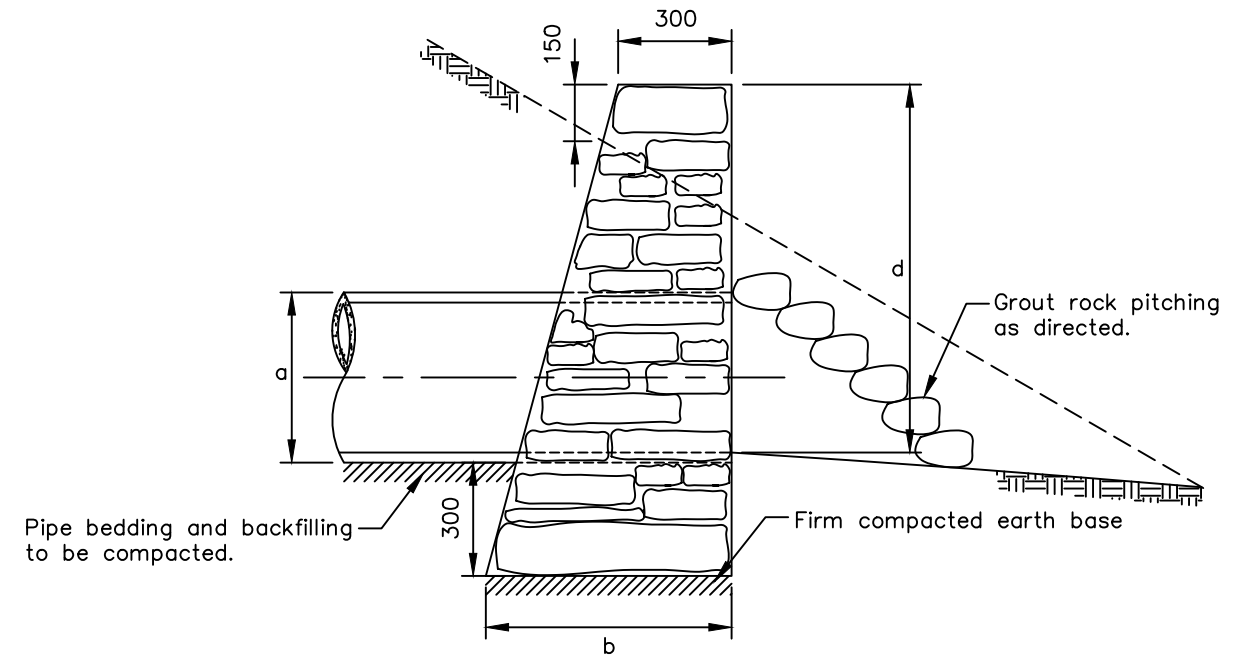
TSD-SW19-v3



PLAN



FRONT ELEVATION



SECTION A-A

TABLE 1

NOMINAL PIPE DIAMETER	HEADWALL DIMENSIONS (mm)			
	a	b	c	d
300	365	550	600	800
375	450	600	675	900
450	538	650	750	1000

# NOTES

1. All dimensions in millimetres (mm)
2. Stone headwall to be used only where the specific approval of the General Manager's delegated officer.
3. All stones to be set in mortar consisting of 1 part cement to 3 parts clean sand.
4. All stones to be clean, hand and durable and shall have weight of between 10 & 70kg.
5. All stones shall have a length of at least 1.5 times the width and shall be bedded to the course below on their broadest base.

SCALES: AS SHOWN  
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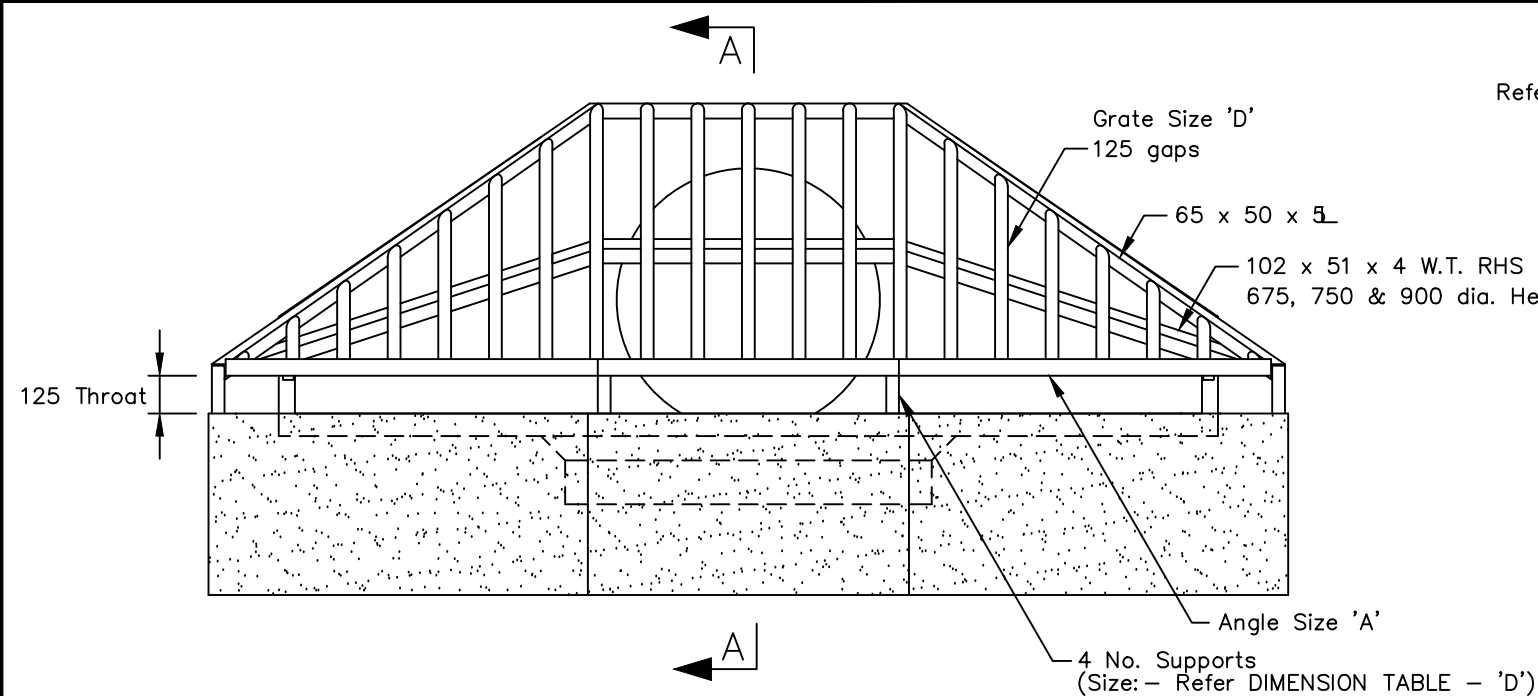
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## **STANDARD DRAWING** OUTLET HEADWALLS GROUTED STONE (300 - 450 DIA)

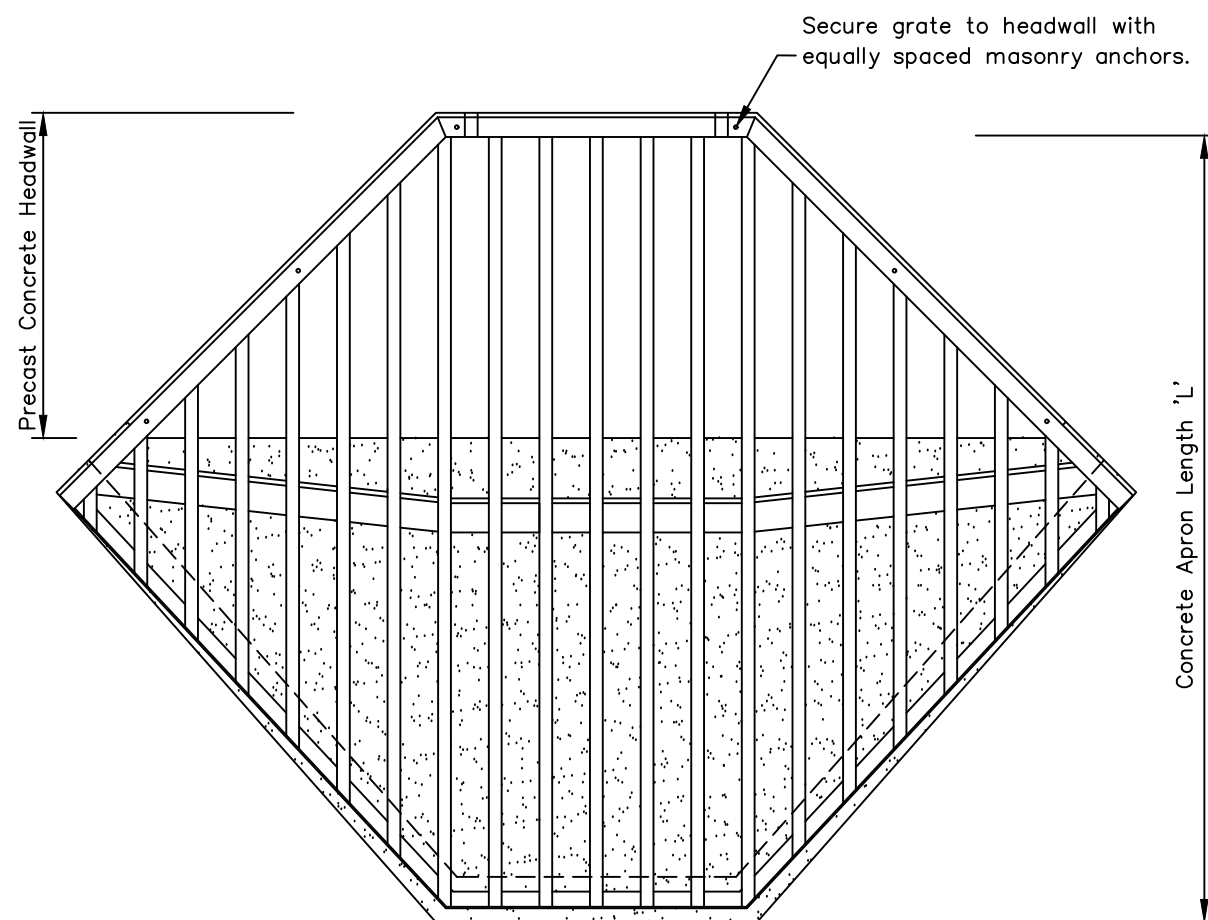
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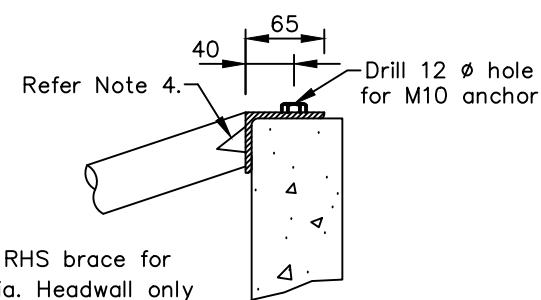
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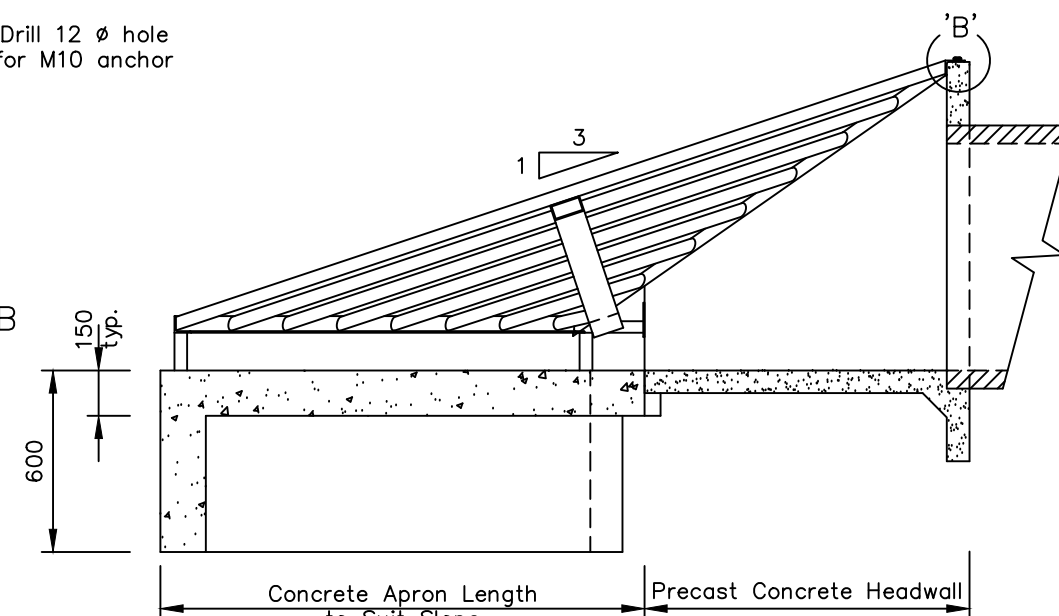
INLET GRATE  
FRONT ELEVATION



INLET GRATE  
PLAN  
(Headwall to suit 750 dia. pipe shown)



DETAIL B



SECTION A-A

DIMENSION TABLE

HEADWALL SIZE	DIAMETER			
	300, 375, 450	525, 600	675, 750	900
'L' (mm)	1600	2030	2600	3425
'D' (mm)	26.9 O.D. x 3.2 W.T.	33.7 O.D. x 4 W.T.	42.4 O.D. x 4 W.T.	48.3 O.D. x 4 W.T.
'A' (mm)	40 x 40 x 5	45 x 45 x 5	55 x 55 x 5	65 x 65 x 5

O.D. = Outside Diameter  
W.T. = Wall Thickness

FIXING DETAILS

Headwall Size	Galv. Masonry Anchors	No. required
300, 375, 450	M10 - 50mm embedment	4
525, 600	M10 - 50mm embedment	4
675, 750	M10 - 50mm embedment	6
900	M10 - 50mm embedment	8

## NOTES

1. This drawing is for new installations.  
Inlet grating gradient - 1 in 3.
2. All welds - 5mm fillet all round.
3. Clean up all welds and remove sharp edges prior to hot dip galvanising to 'AS.1650'.
4. Preparation for galvanising - Cut two V's measuring 20 wide x 25 long, out of opposite sides and each end of CHS and RHS sections to facilitate internal galvanising.
5. Headwall for single pipe entry shown. For multiple pipes refer to local council. General Manager's delegated officer. for design requirements.
6. Not all hidden detail shown, for clarity.
7. Concrete - N25.
8. Refer Standard drawing TSD-SW17 headwall dimensions.

SCALES: AS SHOWN  
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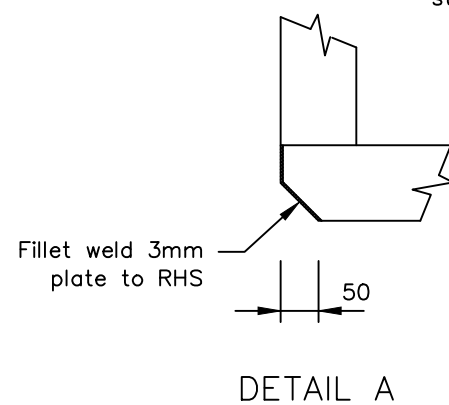
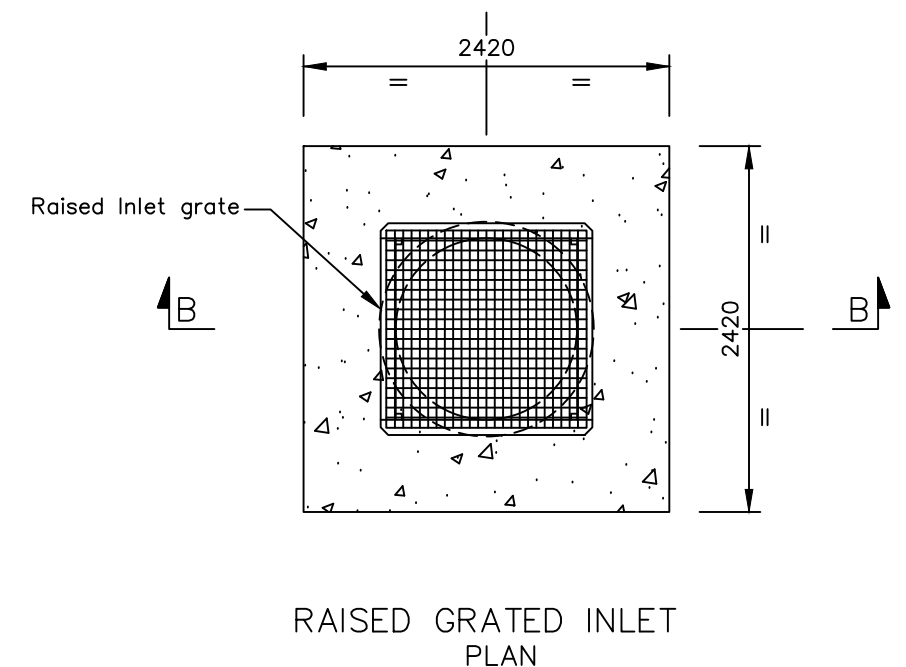
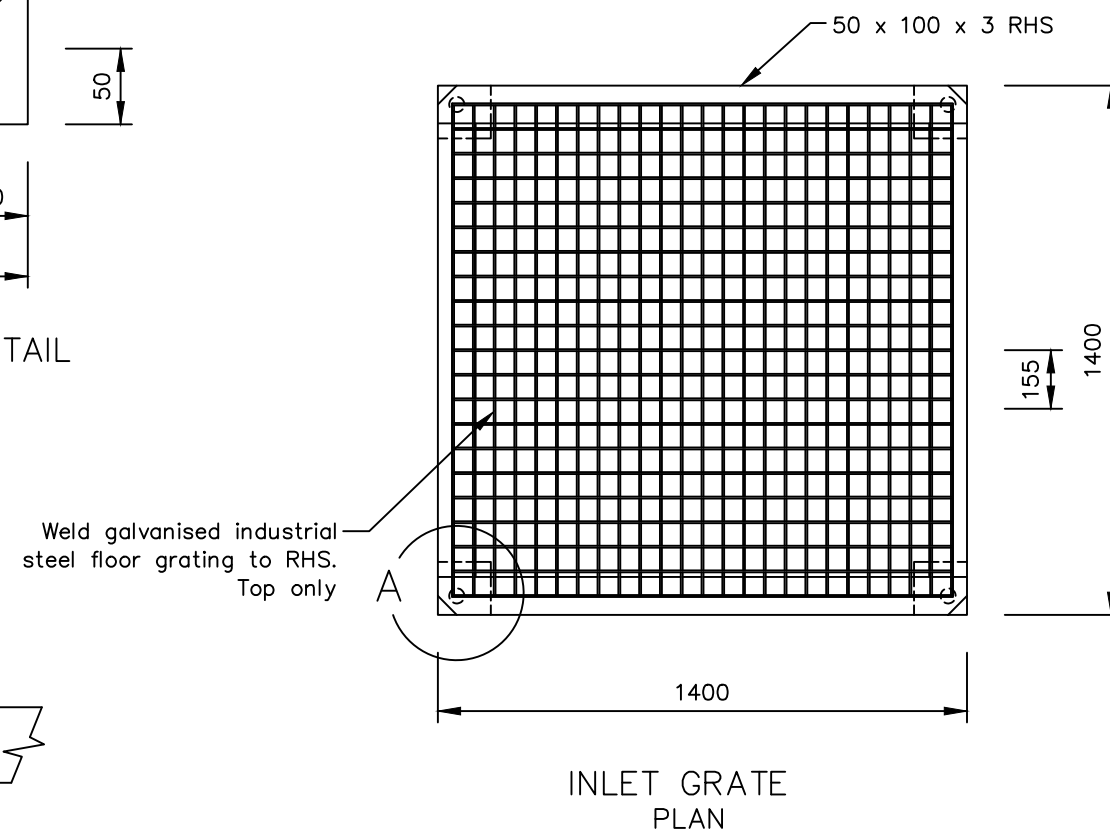
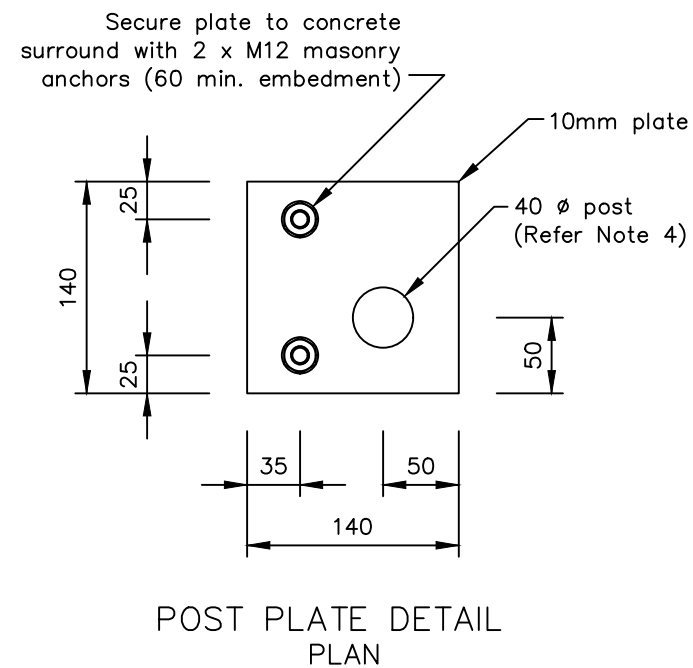
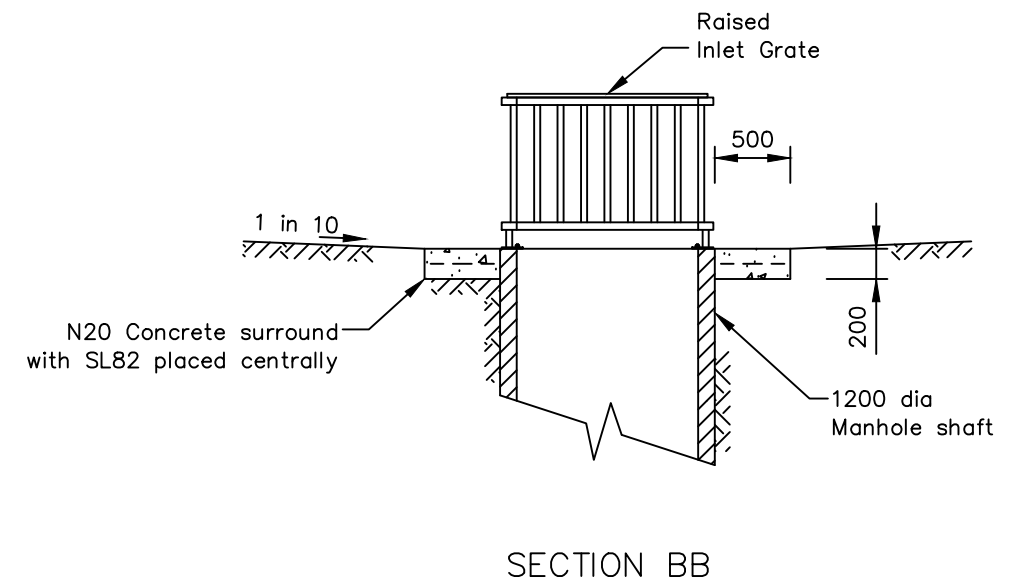
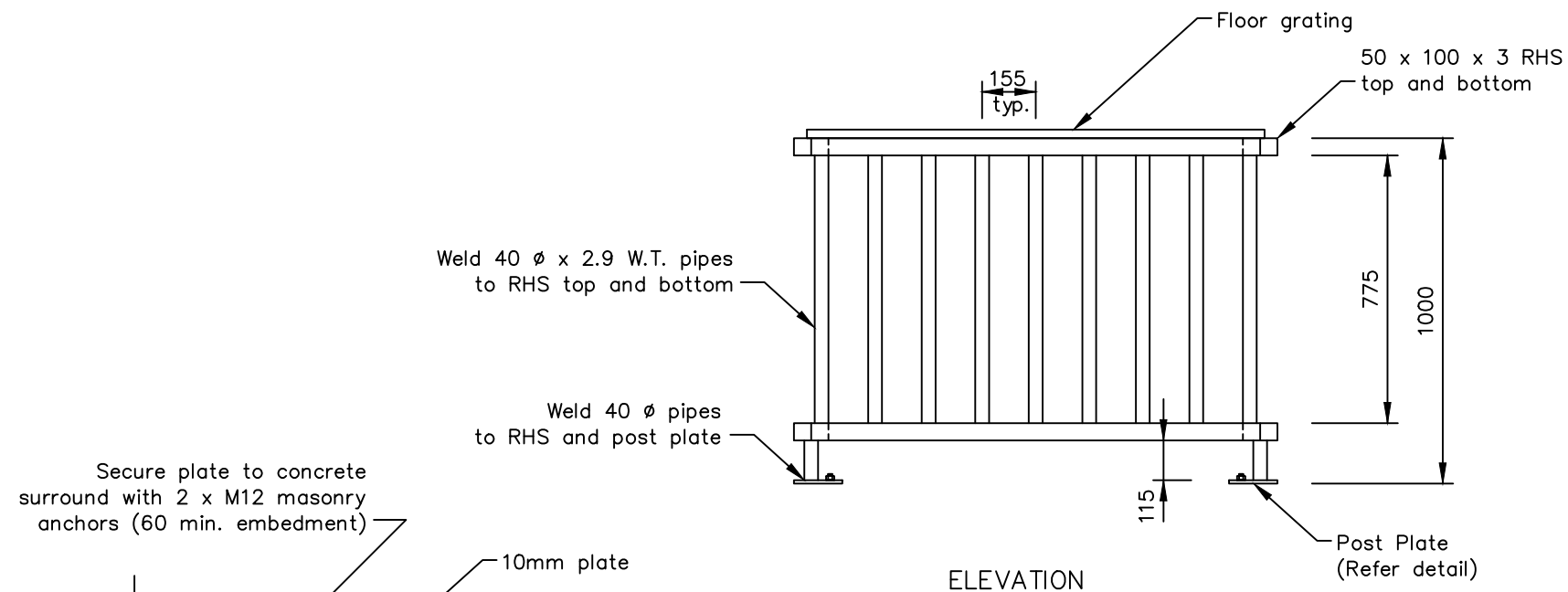
# STANDARD DRAWING INLET HEADWALLS GRATED INLET - 300 TO 900 DIA. PIPES

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ISSUE DATE:  
18-09-2020

DWG No.

TSD-SW21-v3



#### NOTES

1. Clean up all welds and remove sharp edges.
2. Hot dip galvanise grate after fabrication.
3. All welds 3.0 mm continuous fillet.
4. Preparation for galvanising – Cut two V's measuring 20 wide x 25 long, out of opposite sides and each end of CHS and RHS sections to facilitate internal galvanising and cut hole in Post Plate for CHS post.

SCALES: AS SHOWN  
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## STANDARD DRAWING

### INLET HEADWALLS (SQUARE)

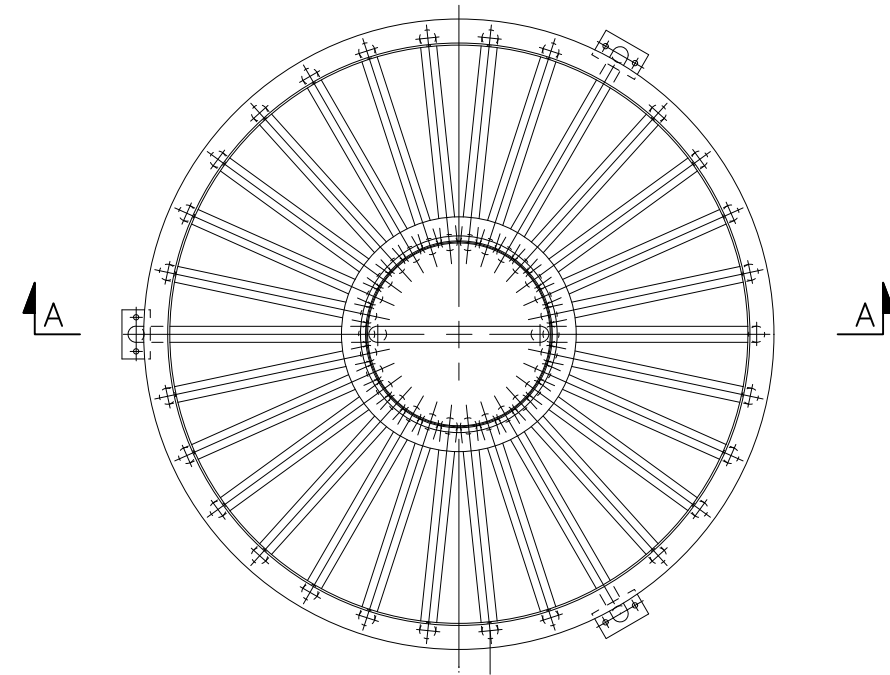
### RAISED GRATED INLET

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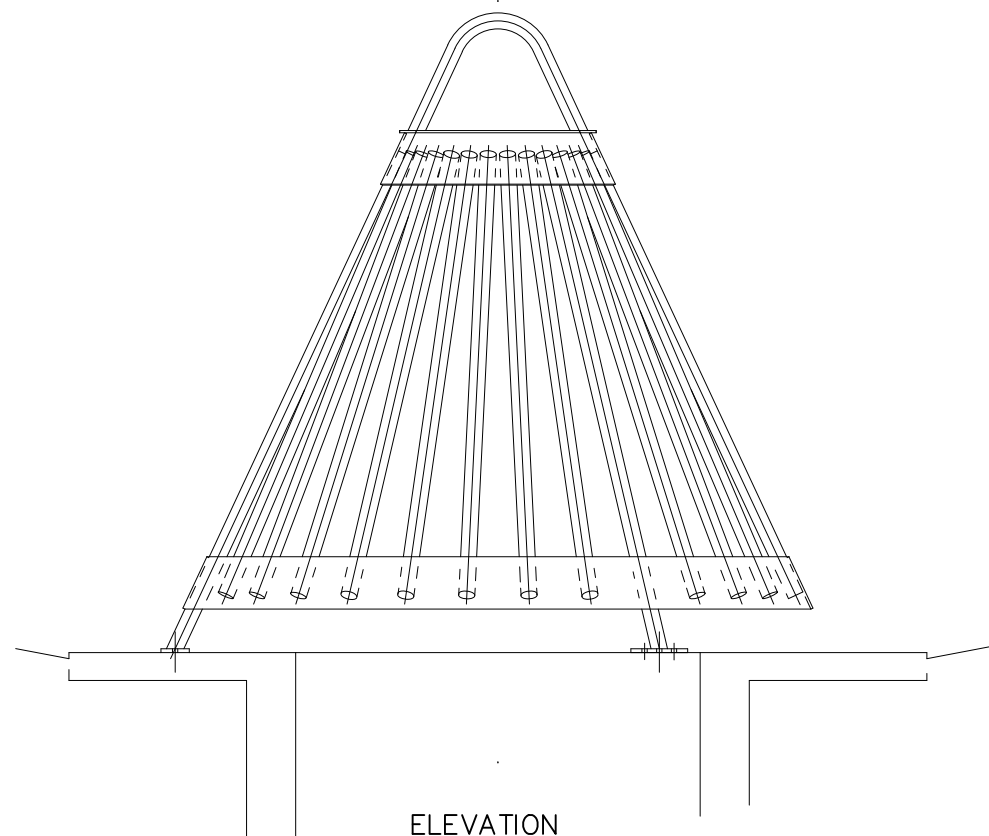
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TSD-SW22-v3



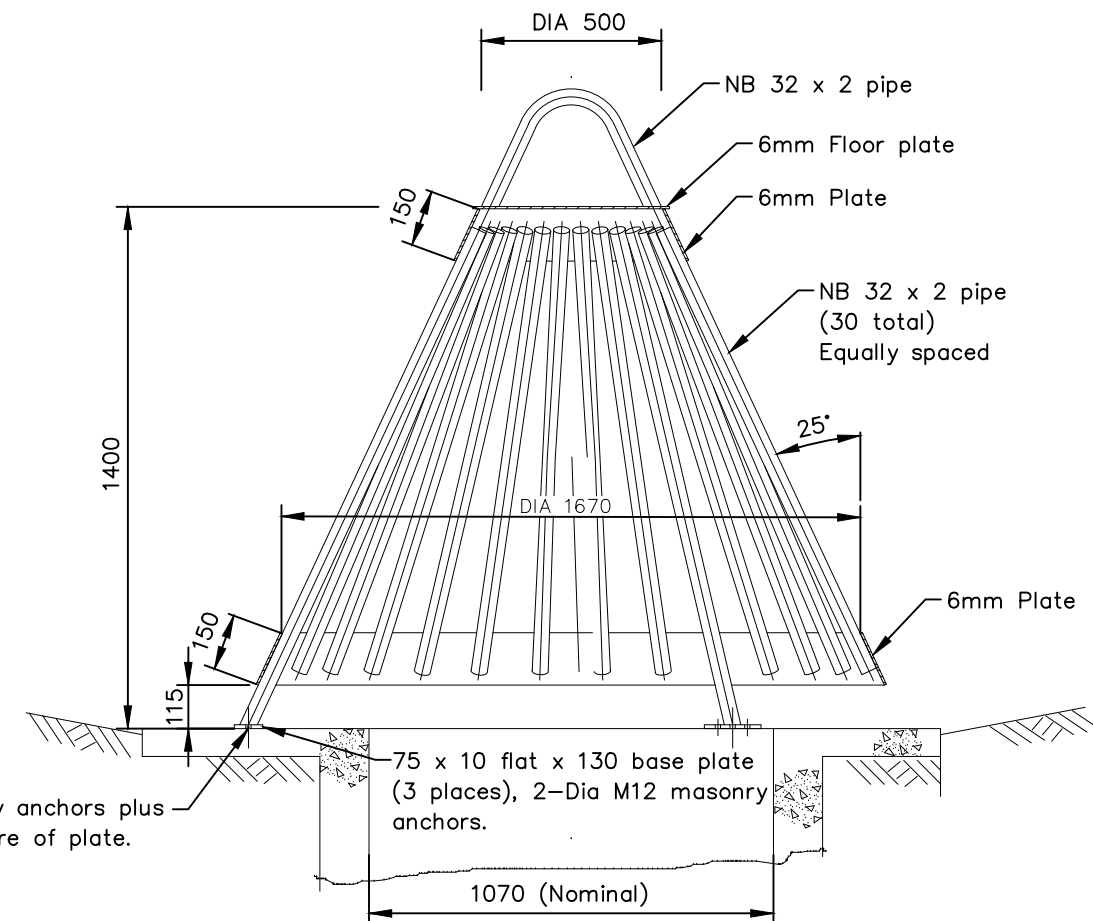


DOMED INLET GRATE  
PLAN



ELEVATION

2-Dia 14 holes for masonry anchors plus  
1-Dia 14 drain hole in centre of plate.



SECTION AA

## NOTES

1. Clean up all welds and remove sharp edges.
2. Hot dip galvanise grate after fabrication.
3. All welds 3.0 mm continuous fillet.
4. Preparation for galvanising – Cut two V's measuring 20 wide x 25 long, out of opposite sides and each end of CHS and RHS sections to facilitate internal galvanising and cut hole in Post Plate for CHS post.

SCALES: AS SHOWN  
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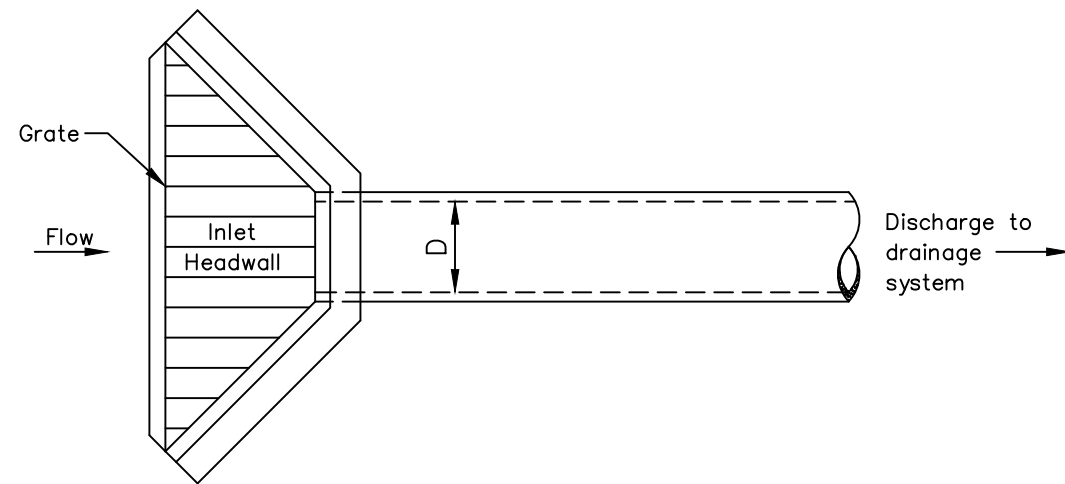


## STANDARD DRAWING INLET HEADWALLS (DOMED) RAISED GRATED INLET

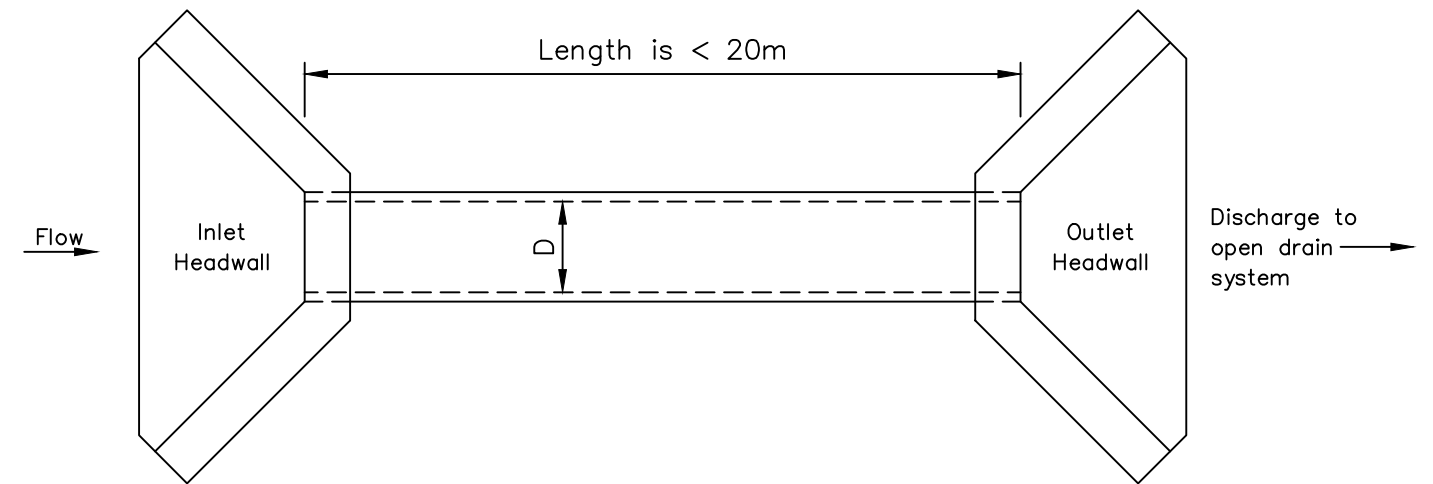
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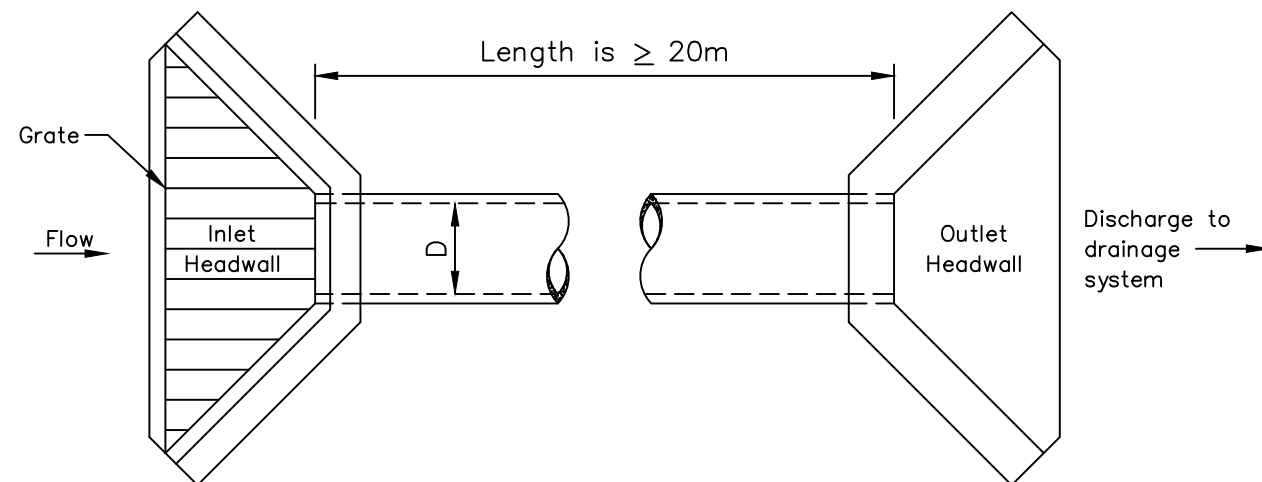
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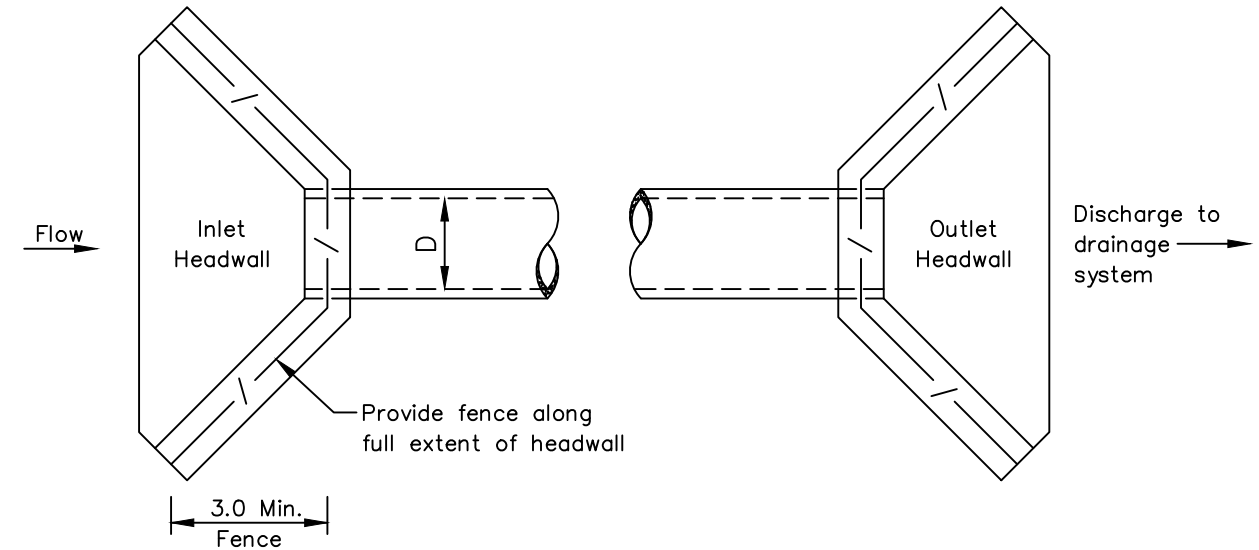
Where 'D' is  $\geq 300 \phi$  – Grate all Inlet Headwalls



Where 'D' is  $\geq 300 \phi$  and  $< 900 \phi$  – No Inlet Headwall Grate



Where 'D' is  $\geq 300 \phi$  and  $< 1200 \phi$  – Grate all Inlet Headwalls



Where 'D' is  $\geq 1200 \phi$  – Fence all Headwalls  
(Fence – 1200mm high Type 'CM')



Fix sign to outlet headwalls where  
'D' is  $> 900 \phi$  and pipe length is  $\geq 20\text{m}$ .

Stormwater Outlet Headwall

SCALES: AS SHOWN  
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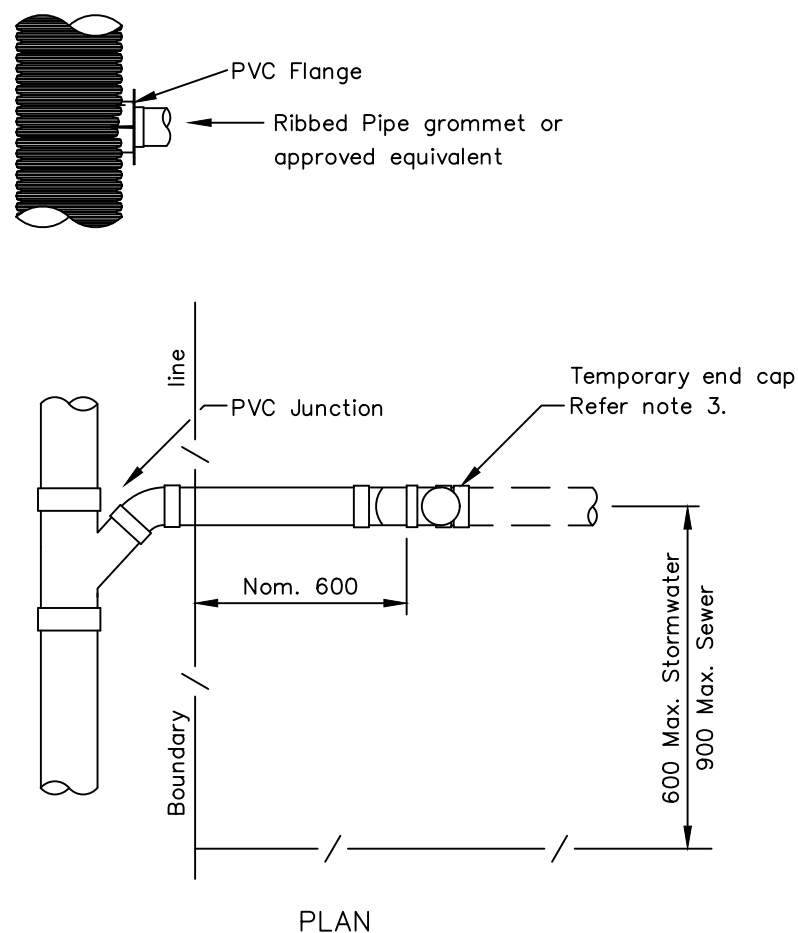
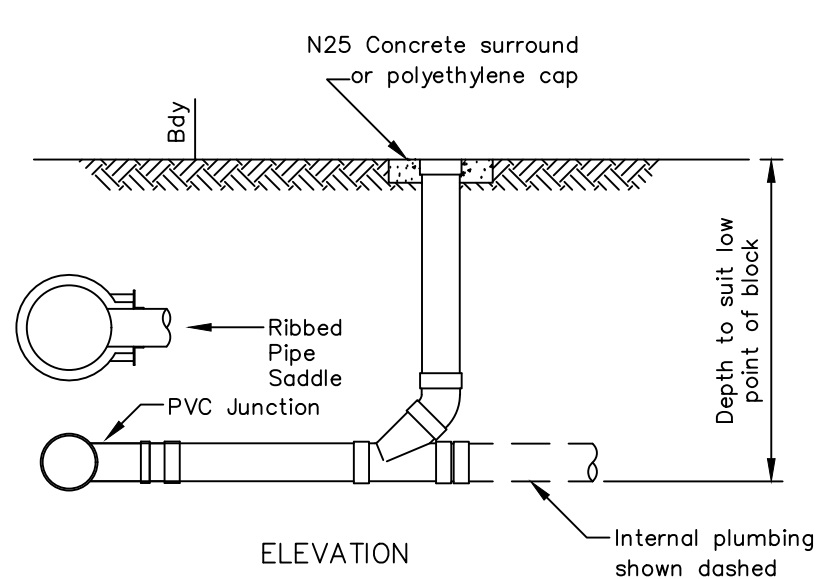


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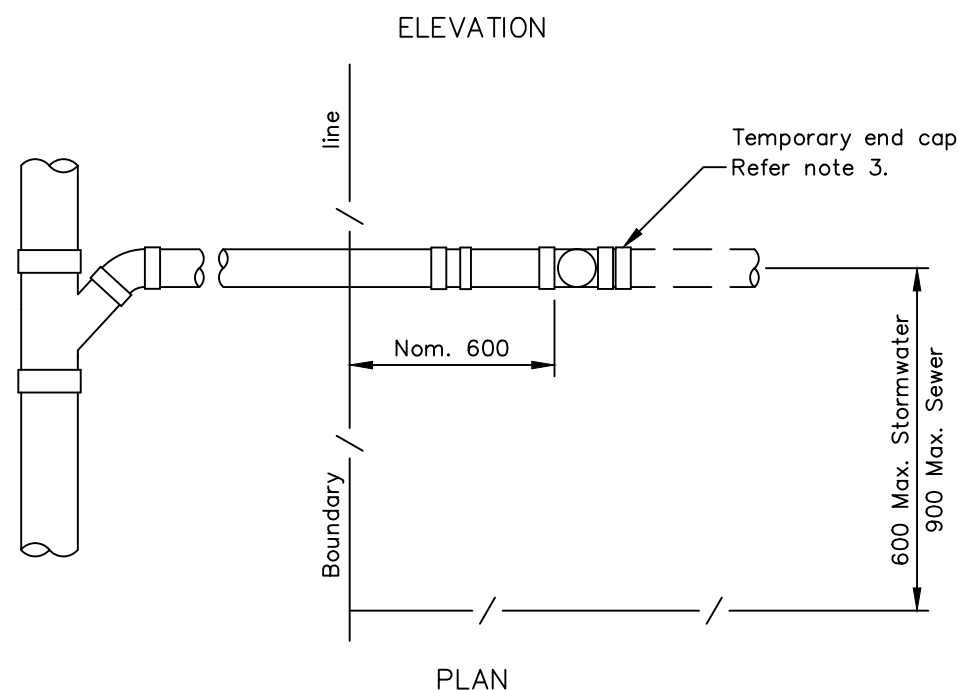
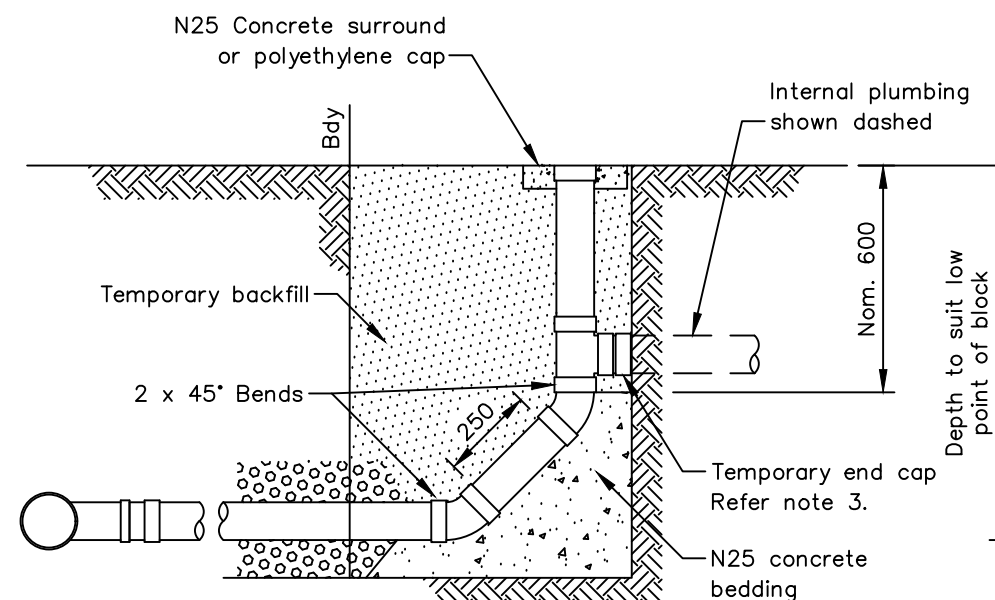
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DWG No. TSD-SW24-v3

**STANDARD DRAWING**  
HEADWALLS  
INLET GRATE AND FENCE REQUIREMENTS



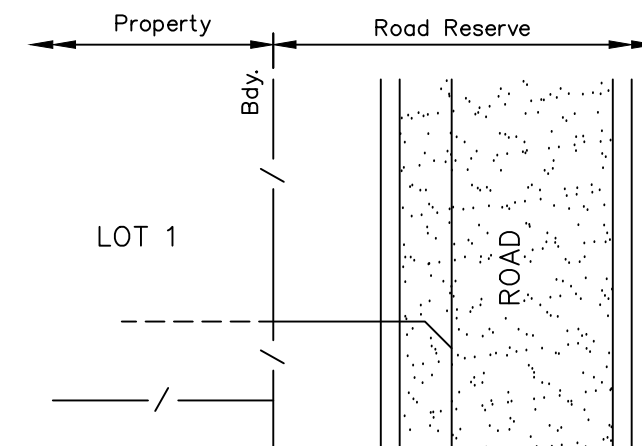
TYPICAL OBLIQUE BRANCH CONNECTION  
(MAIN LOCATED OUTSIDE BOUNDARY)



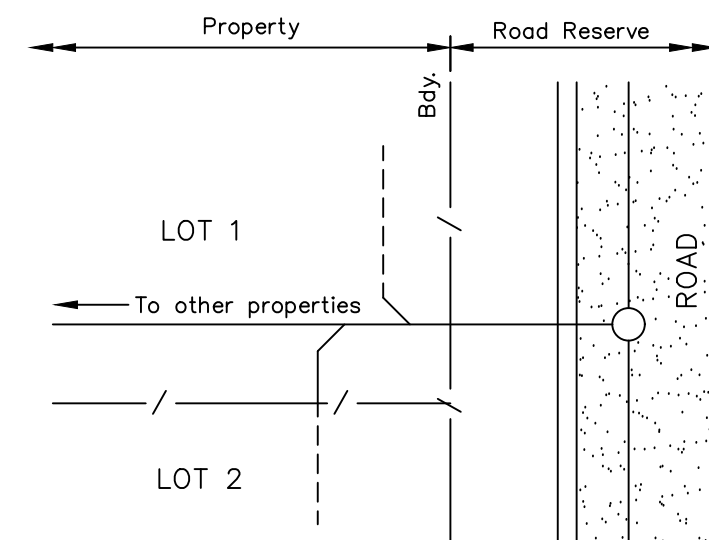
TYPICAL JUMP CONNECTION

#### NOTES

1. Pipe bedding and backfill in accordance with Standard Drawing TSD-G01
2. Jump up to be used on all stormwater connections deeper than 2.0m.
3. Survey completed main by CCTV and submit report by DVD. (All new sub-division installation)
4. Push caps to be used on all stormwater connections



MAIN IN ROAD RESERVE



MAIN IN PRIVATE PROPERTY

#### MAINTENANCE RESPONSIBILITY

- Local Council
- Property Owner

SCALES: AS SHOWN  
(All scales are correct at A3)

XRef File: TSD-SW25-v3.dwg

REFERENCES

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## STANDARD DRAWING

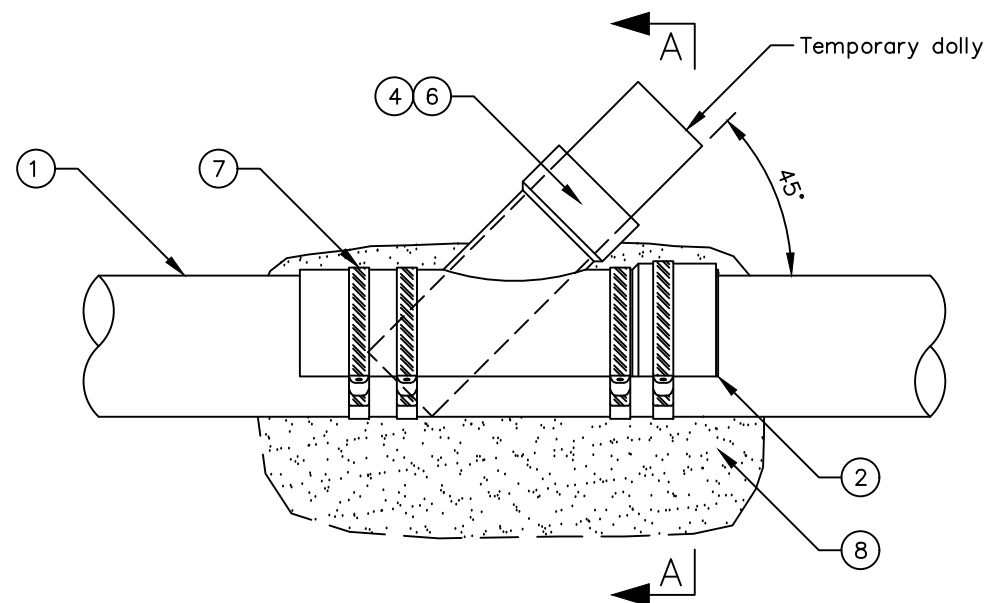
### STORMWATER PROPERTY CONNECTIONS TO MAINS

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

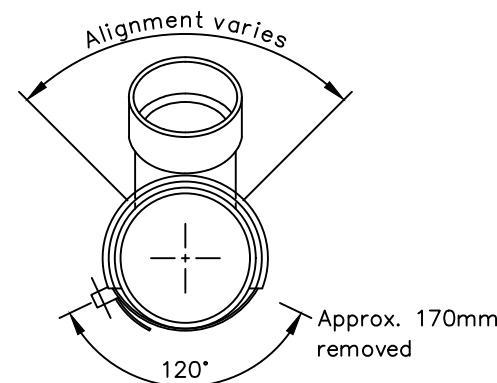
ISSUE DATE:  
18-09-2020

DWG No.

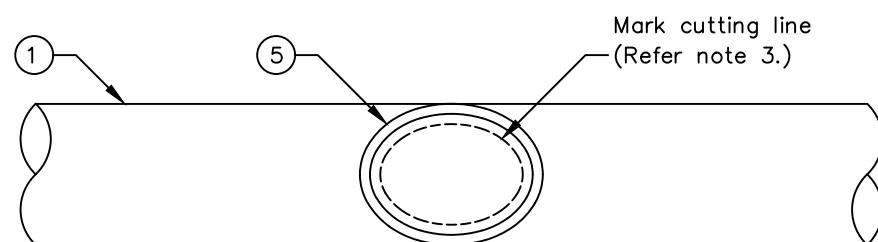
TSD-SW25-v3



ELEVATION



SECTION A-A  
(C.S.S.D. AND DOLLY NOT SHOWN)



PLAN

## NOTES

### CASE 1 – P.V.C. SADDLE TO 160 O.D. POLY MAIN.

- ① 160 O.D. Poly main.
- ② Glue 75mm long piece of 150 dia. P.V.C. pipe into female socket. Cut down 45° 150 x 100 P.V.C. reducing junction.
- ③ Use inside of reducer as a template to mark poly main. Cut and remove sharp edges.
- ④ Check 102mm O.D. M.S. exhaust tubing dolly can be inserted approximately 280mm through 45° junction into main. Clean both mating surfaces.
- ⑤ Apply minimum 2 x 4mm continuous bead of Selleys 'Wet Seal' (Silicon) or similar 10mm from edge and 10mm apart.
- ⑥ Insert dolly into main, slide junction down onto silicon beads.
- ⑦ Clamp with 2 x 13mm stainless steel worm drive hose clamps both ends. Fully wrap clamps both ends with denso tape. Remove dolly.
- ⑧ Support/encase connections with cement stabilised stone dust (3% cement) minimum 500mm long 300mm wide x 300 deep.

### CASE 2 – P.V.C. SADDLE TO P.V.C. MAIN.

- ① Existing 150 dia. P.V.C. main.
- ② Glue 75mm long piece of 150 dia. P.V.C. pipe into female socket. Cut down 45° 150 x 100 P.V.C. reducing junction.
- ③ Use inside of reducer as a template to mark P.V.C. main. Cut and remove sharp edges.
- ④ Check 102mm O.D. M.S. exhaust tubing dolly can be inserted approximately 280mm through 45° junction into main. Clean both mating surfaces.
- ⑤ Apply solvent cement to mating surfaces.
- ⑥ Insert dolly into main, slide junction down onto solvent cement.
- ⑦ Clamp with 2 x 13mm stainless steel worm drive hose clamps both ends. Fully wrap clamps both ends with denso tape. Remove dolly.
- ⑧ Support/encase connections with cement stabilised stone dust (3% cement) minimum 500mm long 300mm wide x 300 deep.

SCALES: AS SHOWN  
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## STANDARD DRAWING

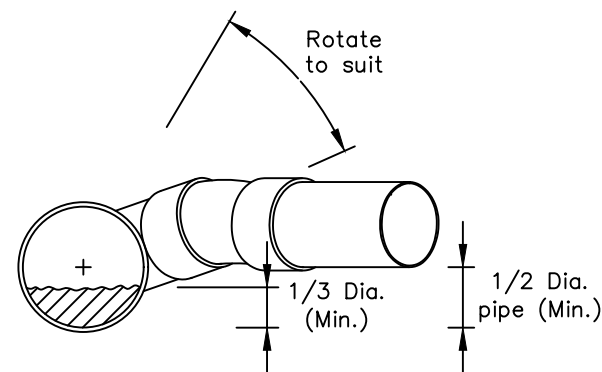
### SADDLE CONNECTION TO STORMWATER DRAIN

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

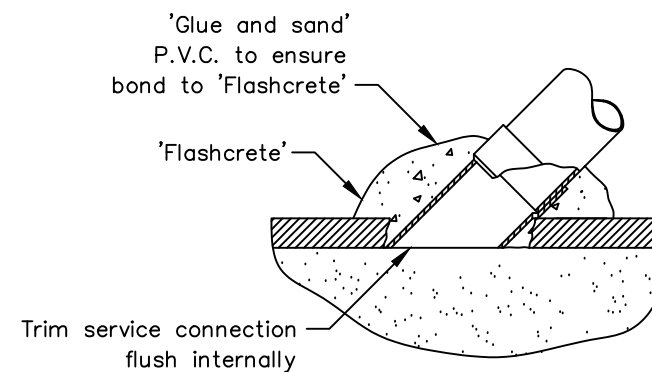
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18-09-2020

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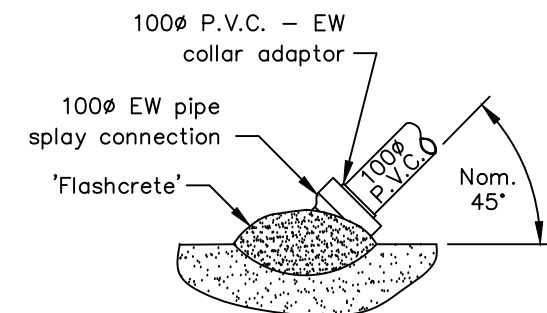
TYPICAL JUNCTION BRANCH  
ENTRY ALIGNMENT



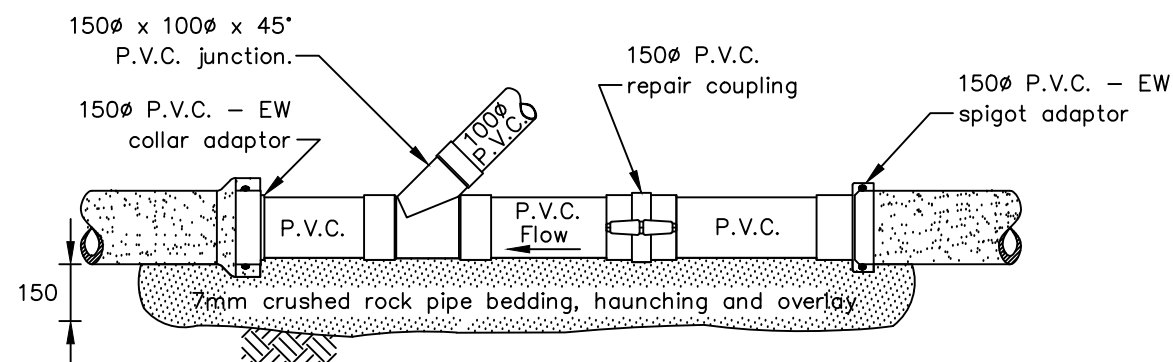
ENLARGED CUT-AWAY VIEW

# NOTES

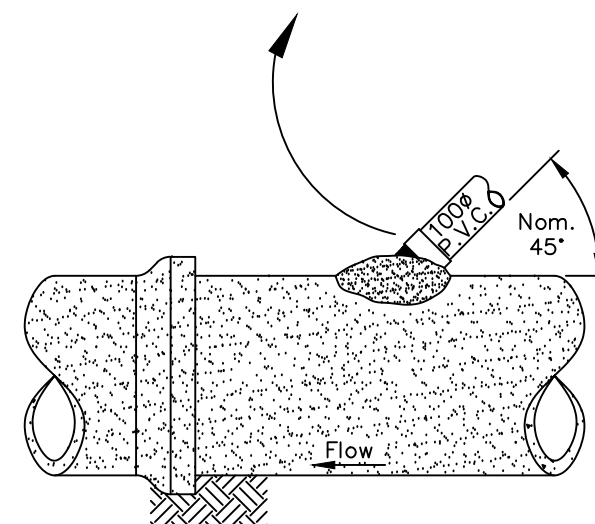
1. New service connections may be installed by Council or by Contractor supervised by Council.
2. 'Flashcrete' – quick setting cementitious mortar or similar.
3. Refer Sheet TSD-G01 for additional trench backfill detail.



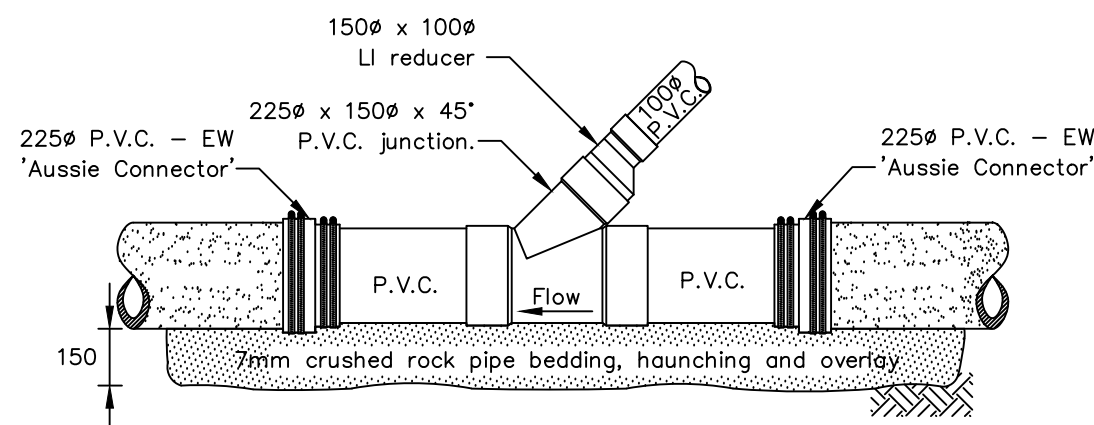
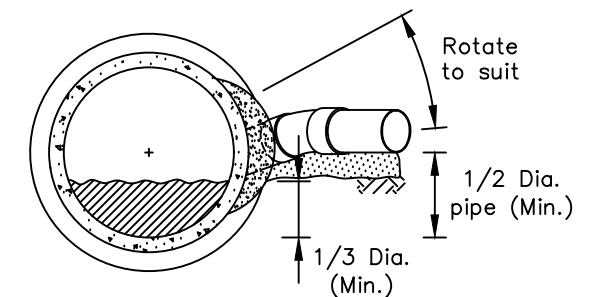
TYPICAL JUNCTION BRANCH  
ENTRY ALIGNMENT



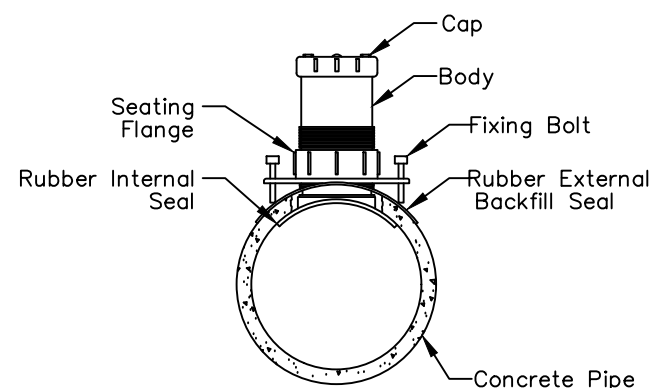
ELEVATION  
150 DIA. EW CONC.



ELEVATION  
≥ 300 DIA. EW / CONC



ELEVATION  
225 & 300 DIA. EW CONC.



FLOW CONNECTION JUNCTION BRANCH

SCALES: AS SHOWN  
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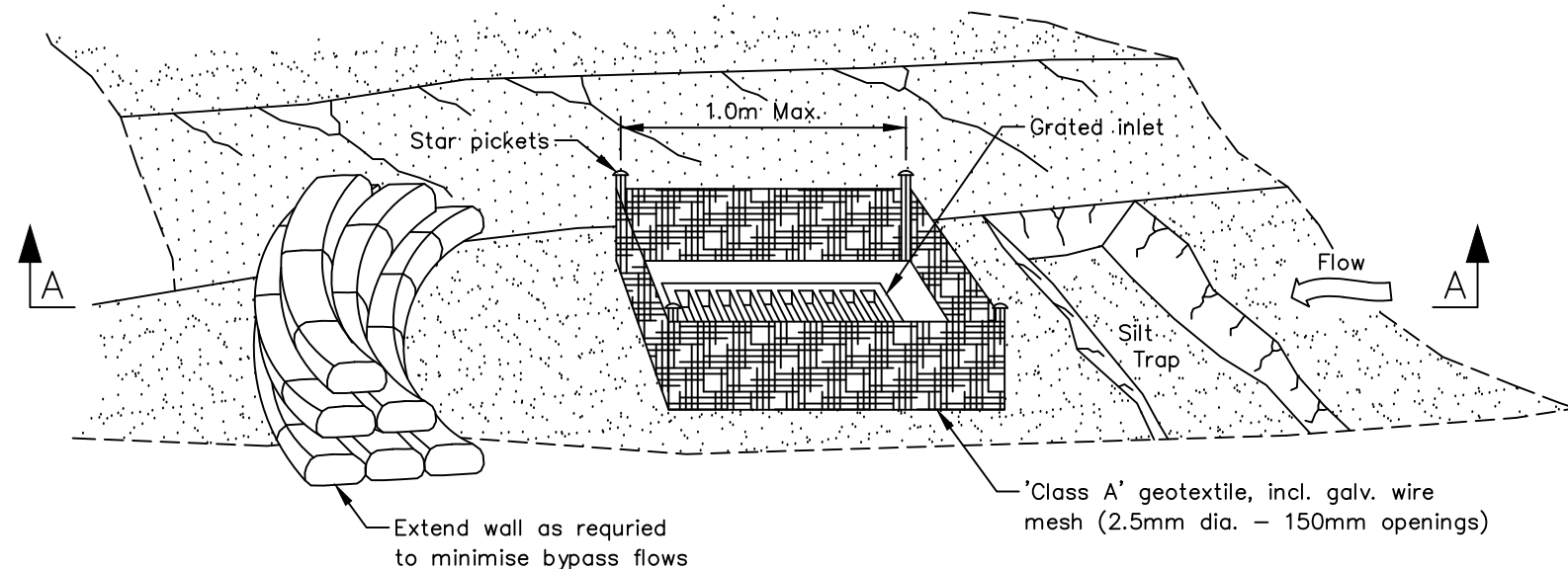
**STANDARD DRAWING**  
REPAIRS/NEW CONNECTION  
TO STORMWATER DRAIN

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

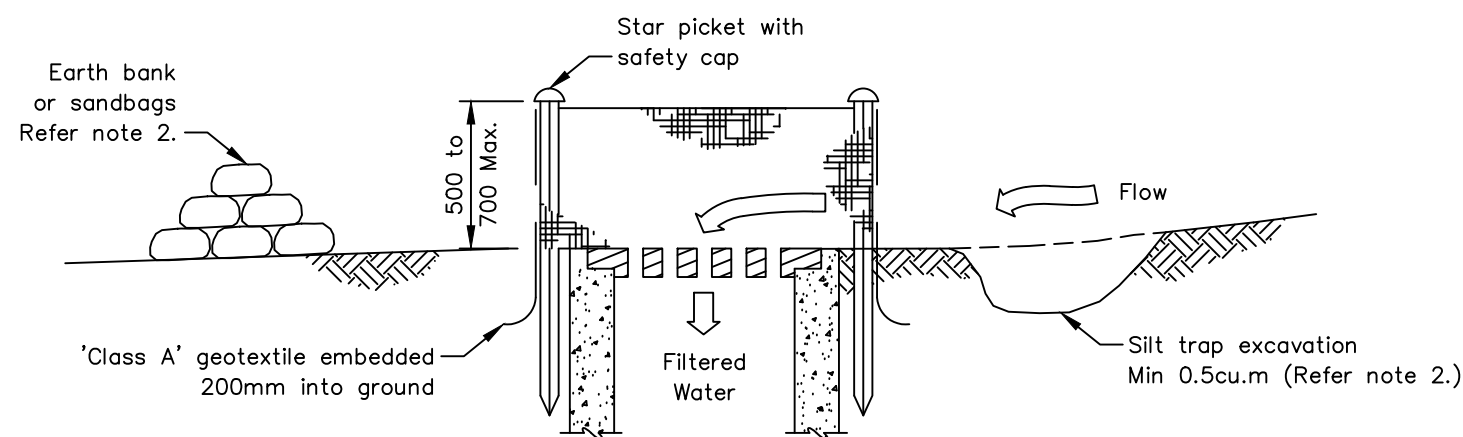
ISSUE DATE: 18-09-2020

DWG No. TSD-SW27-v3

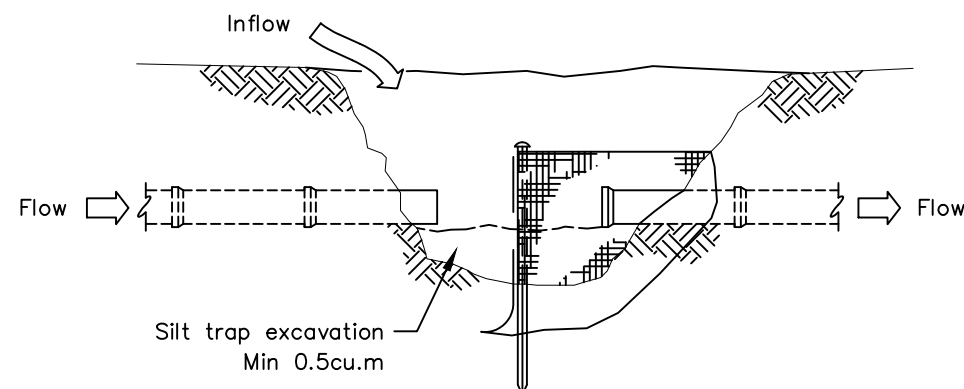




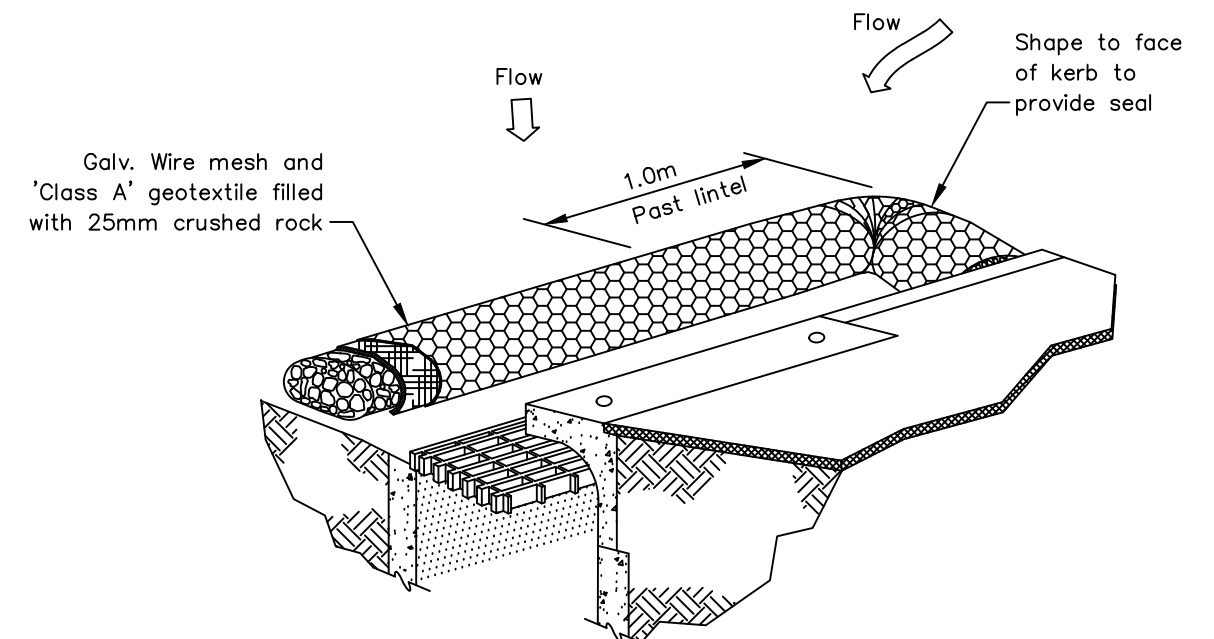
PICTORIAL VIEW



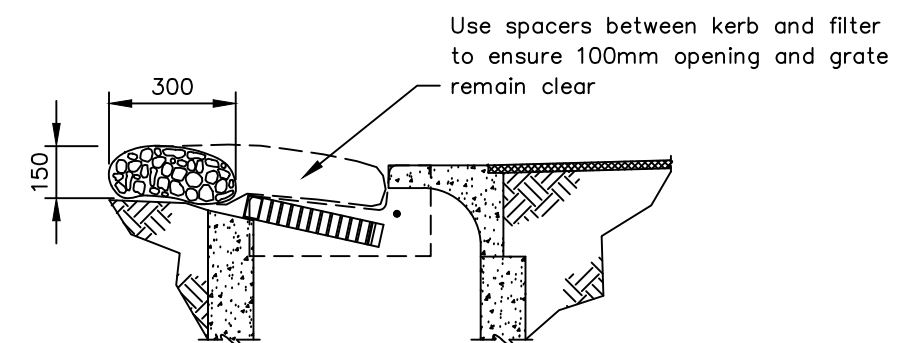
SECTION A-A  
TYPE SC1  
SILT FENCE AT GRATED PIT



TYPE SC2  
SILT FENCE FOR PIPELINE CONSTRUCTION



PICTORIAL VIEW



SECTIONAL VIEW  
TYPE SC3  
SILT FILTER AT GULLY PIT

#### NOTES

##### SILT FENCE - 'TYPES SC1 AND SC2'

1. Construct as detailed and install 'Class A' geotextile or use proprietary silt fence.
2. Omit sandbag wall and silt trap when pit is in a low point.

##### GULLY PIT FILTER - 'TYPE SC3'

3. Galv. wire mesh 2mm dia. x 12mm opening.

#### GENERAL

4. Clear sediment after each storm.
5. 'Type SC2' can also be used for maintenance or connection of services to existing pipelines.

SCALES: AS SHOWN  
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## STANDARD DRAWING

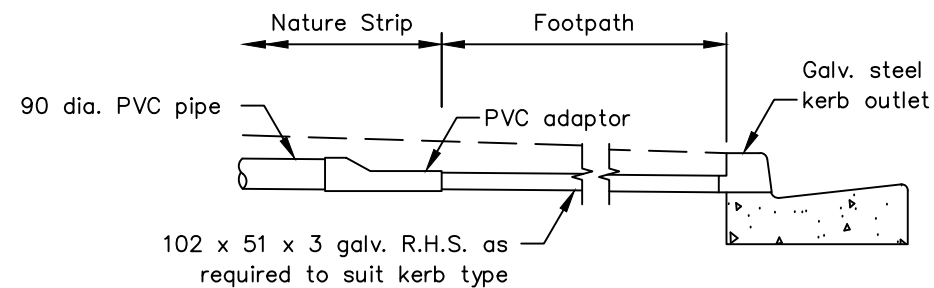
### GUIDELINES FOR SEDIMENT CONTROL

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T: 03 6233 5966 F: 03 6233 5986 Email: [admin@lgat.tas.gov.au](mailto:admin@lgat.tas.gov.au)

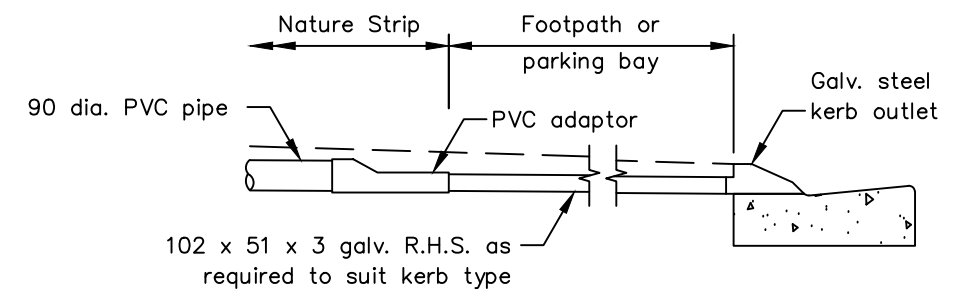
ISSUE DATE:  
18-09-2020

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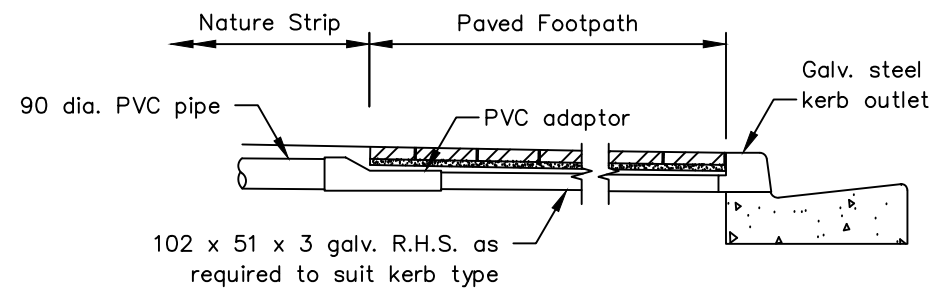
TSD-SW28-v3



ASPHALT FOOTPATH / NATURE STRIP  
(TYPES BK, KC AND KCS)  
SCALE 1 : 25



TYPE KCM  
SCALE 1 : 25



PAVED FOOTPATH  
(TYPES KC AND KCS)  
SCALE 1 : 25

\* Refer to TSD-R11 for paving details.

## STORMWATER KERB OUTLETS

SCALES: AS SHOWN  
(All scales are correct at A3)

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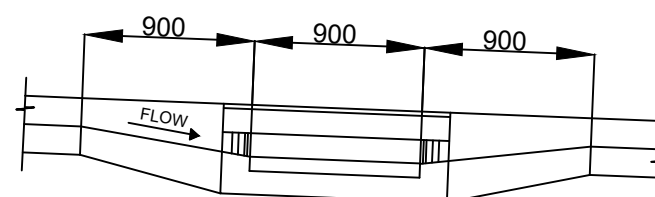
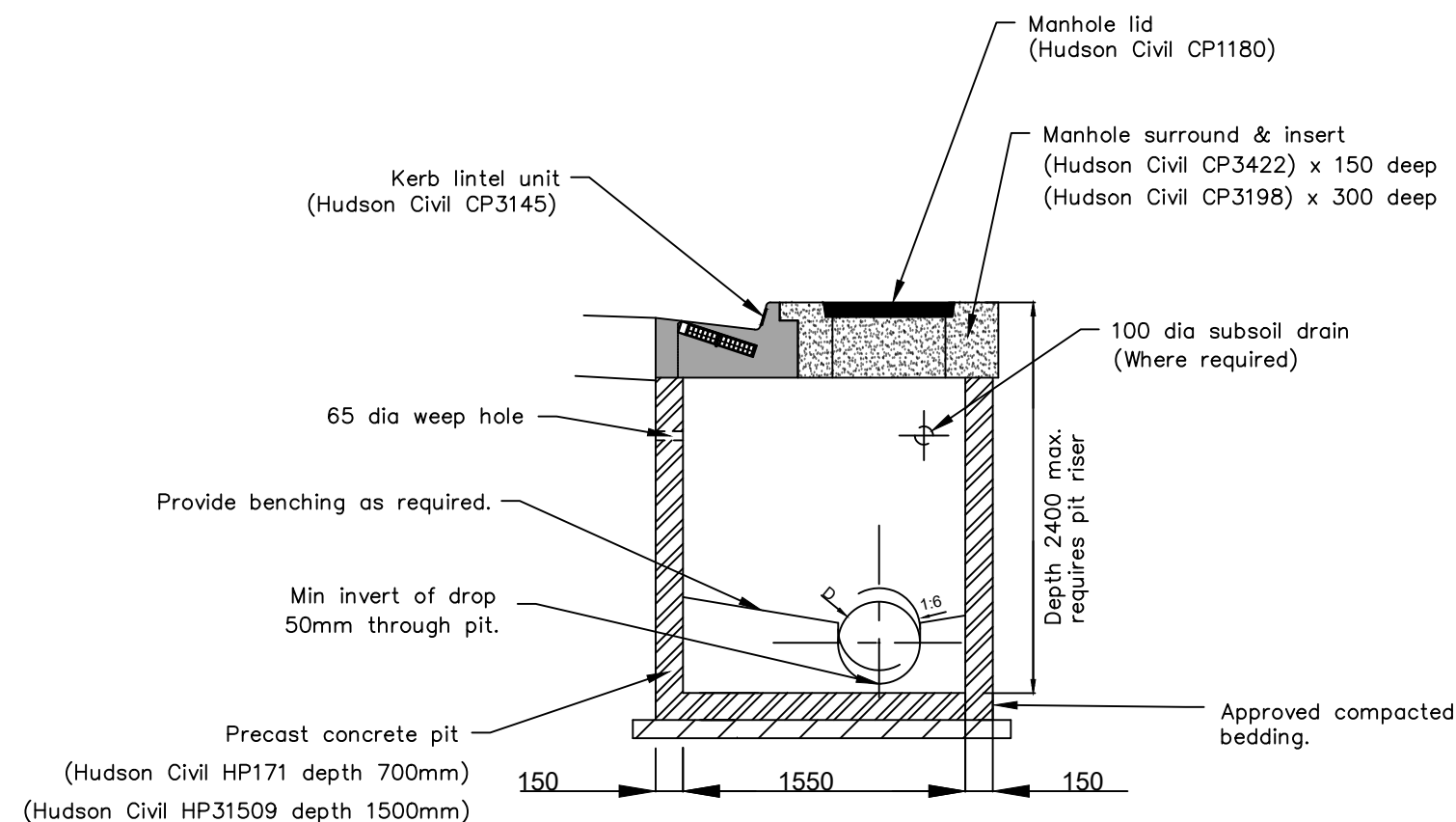
## STANDARD DRAWING

### KERB CONNECTION

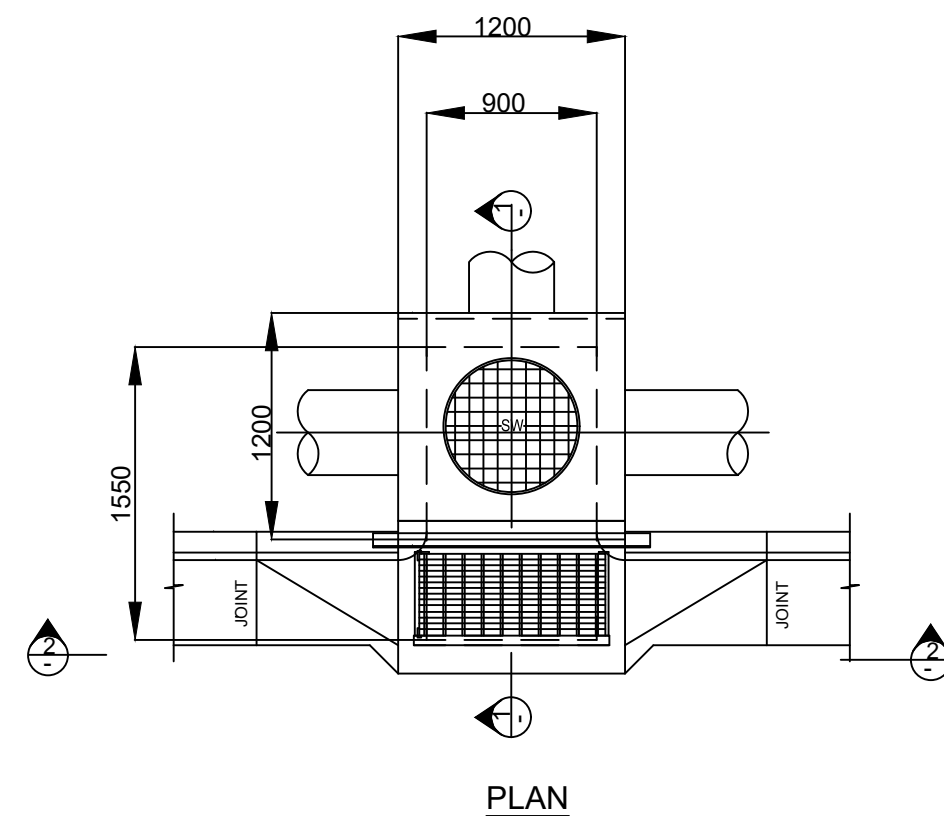
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18-09-2020

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TSD-SW29-v3



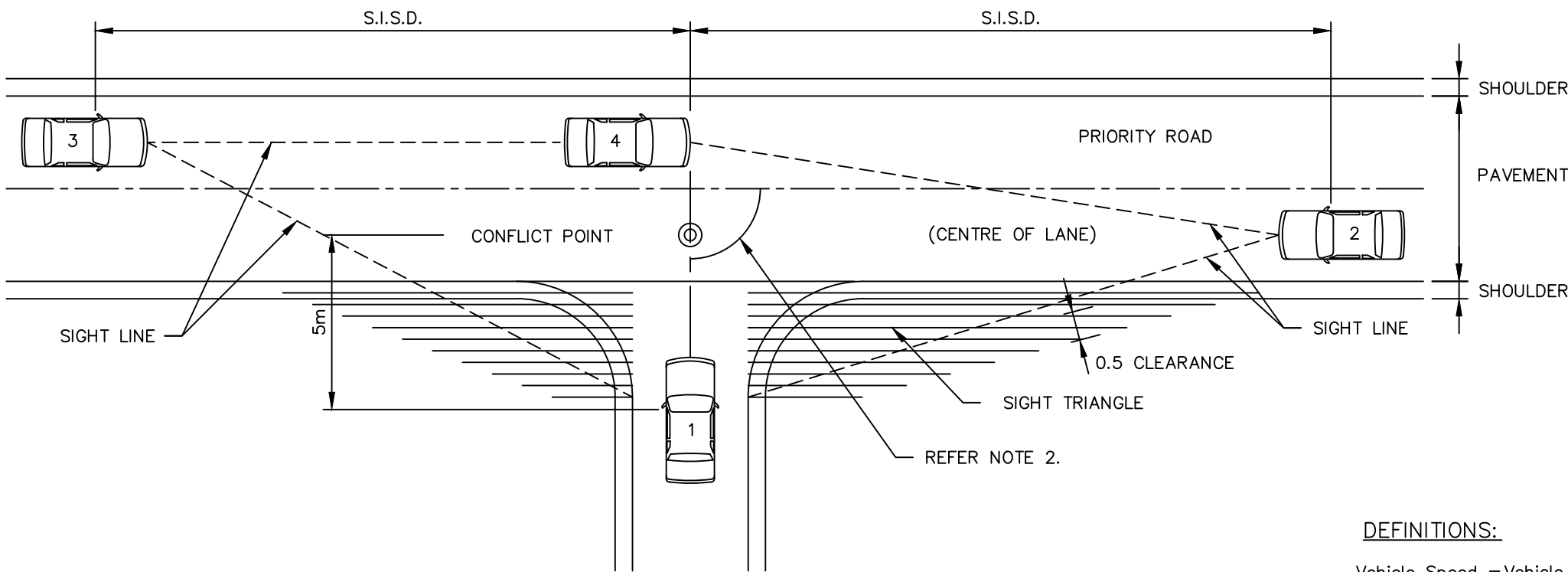
SECTION 2



## NOTES

1. All dimensions in millimetres (mm).
2. Pit to be constructed from grade N20 concrete
3. All manhole covers to have the letter "SW" cast in to indicate stormwater.

SIGHT DISTANCES  
(2 LANE ROAD ONLY)



PLAN

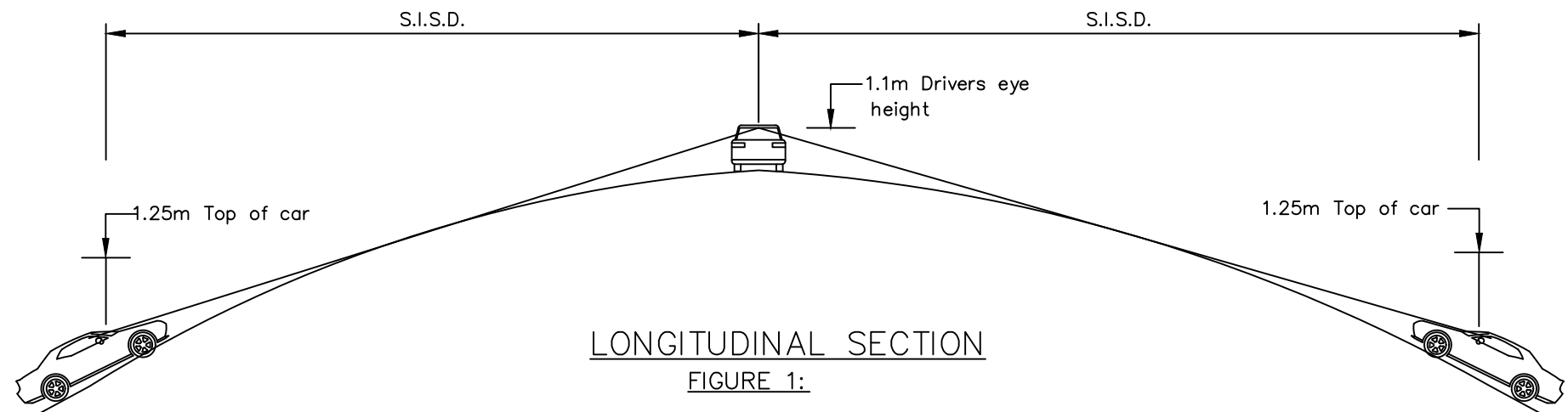


FIGURE 1:

VEHICLE SPEED	SAFE INTERSECTION SIGHT DISTANCE METRES, FOR SPEED LIMITS OF:	
(km/h)	60 km/h or less	Greater than 60 km/h
50	80	90
60	105	115
70	130	140
80	165	175
90		210
100		250
110		290

NOTES:

- For maximum driveway access slopes refer TSD-R04
- The angle of intersection should be between 70° and 90° to the major road.
- Shall be the posted speed limit for assessment of access driveways.
- Refer to AGRD04A – Part 4A Unsignalised and Signalised Intersection.

DEFINITIONS:

Vehicle Speed = Vehicle speed is the actual or recorded speed of traffic passing along the road and is the speed at or below which 85% of passing vehicles travel.

S.I.S.D = Safe Intersection Sight Distance.

- Provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a driveway approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point.
- Is viewed between two points to provide inter-visibility between drivers and vehicles on the major road and minor road approaches. It is measured from a driver eye height of 1.1m above the road to points 1.25m above the road which represents drivers seeing the upper part of cars as illustrated on Figure 1.
- Assumes that the driver on the minor road is situated at a distance of 5m (minimum of 3m) from the lip of the channel or edge line projection of the major road. S.I.S.D allows for a 3s observation time for a driver on the priority legs of the intersection to detect the problem ahead, (e.g. car from driveway stalling on through lane) plus the SSD.
- Provides sufficient distance for a vehicle to cross the non-terminating movement on two-lane two way roads, or undertake two-stage crossing of dual carriageways, including those with vehicle speeds of 80 km/h or more.
- Should also be provided for drivers stored in the centre of the road when undertaking a crossing or right-turning movement.
- Enables approaching drivers to see an articulated vehicle, which has properly commenced a manoeuvre from a leg without priority, but its length creates an obstruction.
- Is measured along the carriageway from the approaching vehicle to the conflict point, the line of sight having to be clear to a point 5m (3m minimum) back from the holding line or stop line on the side road.

SCALES: AS SHOWN  
(All scales are correct at A3)

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**STANDARD DRAWING**  
GUIDE TO INTERSECTION AND DOMESTIC ACCESS  
SIGHT DISTANCE REQUIREMENTS

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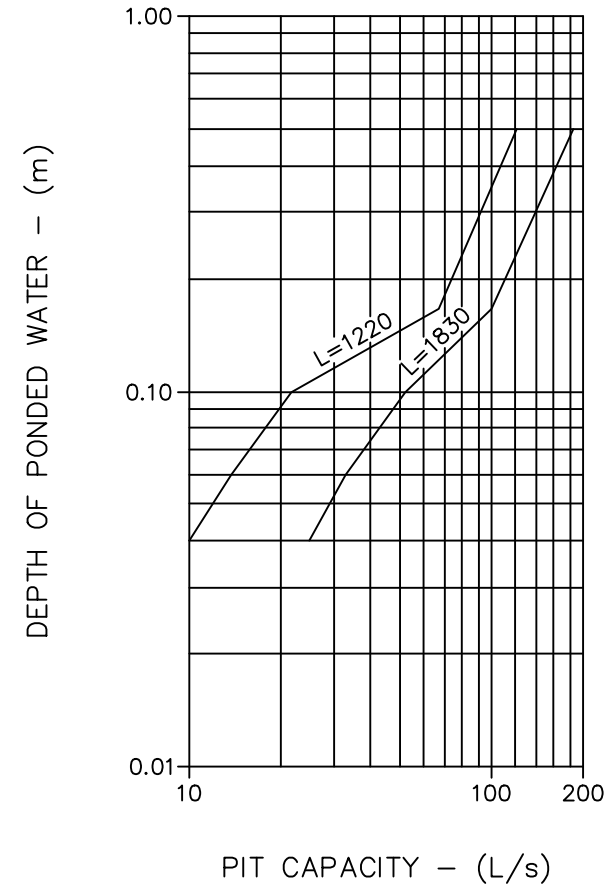
18-09-2020

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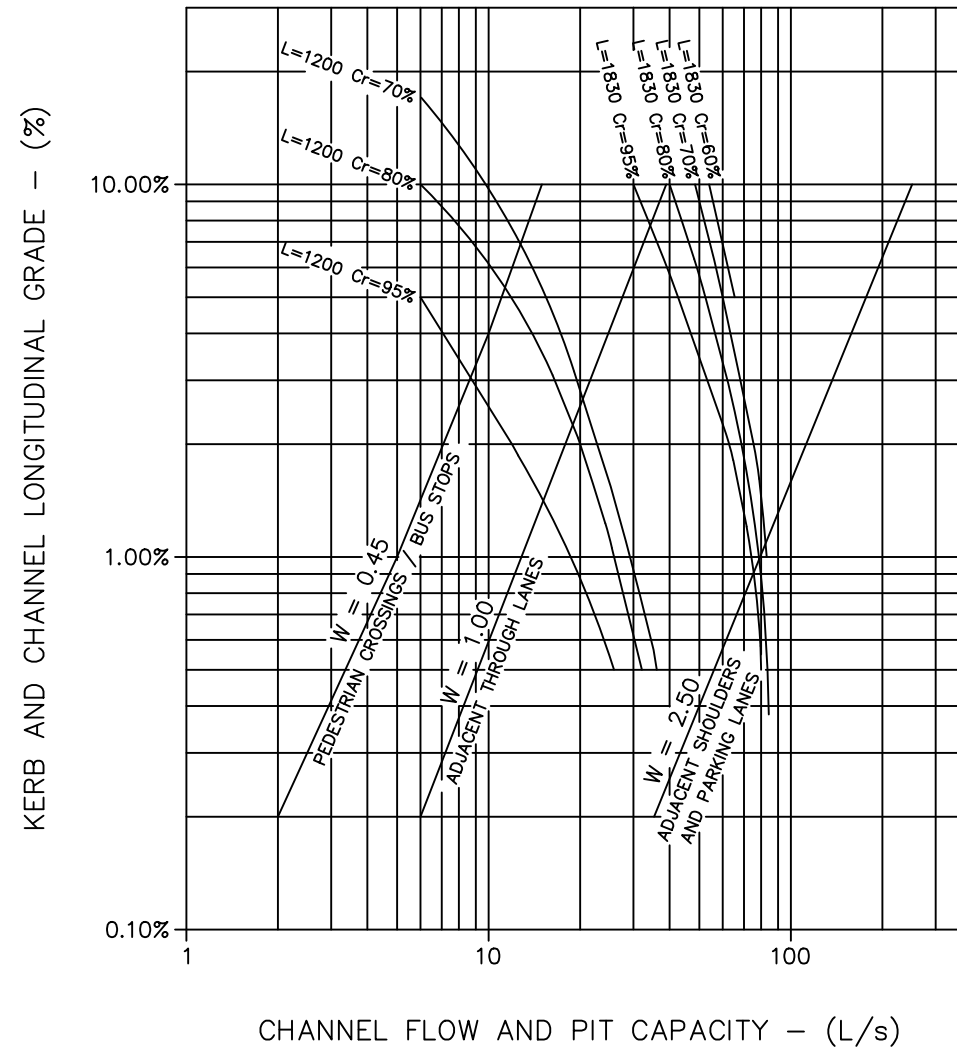






HYDRAULIC CAPACITY IN SAG  
(1220mm AND 1830mm LINTELS)

Curves based on theoretical calculations.  
Use of 1220mm lintels not favoured in sag conditions.



HYDRAULIC CAPACITY ON GRADE  
(1220mm AND 1830mm LINTELS AT 3% CROSSFALL)

On grade inlet capture rates based on model studies.  
(Refer TSD design file No. JF.95.077)

#### NOTES

- Maximum flow widths:
  - 0.45m adjacent to pedestrian crossing points and bus stops.
  - 1.00m adjacent to traffic through lanes and in acceleration, deceleration and left turn lanes.
  - 2.50m adjacent to road shoulders and parking lanes.
- Inlet capture rates (Cr) ignores interception by grate (assumed to be blocked by leaves). Assumes 50mm depression, 600mm long transition, 125mm deep throat and trough below the lintel.
- For crossfalls greater than 3% use 3% curves. For 2% crossfalls, reduce capacity by:
  - 25% for 1220 lintel
  - 50% for 1830 lintel
- Refer to 'The University Of New South Wales Water Research Laboratory – Physical Modelling Of Stormwater Side Entry Pits (628.2420994 COX)' for sealed side entry pits.

L = Lintel  
Cr = Capture rate  
W = Flow width adjacent to kerb

SCALES: AS SHOWN  
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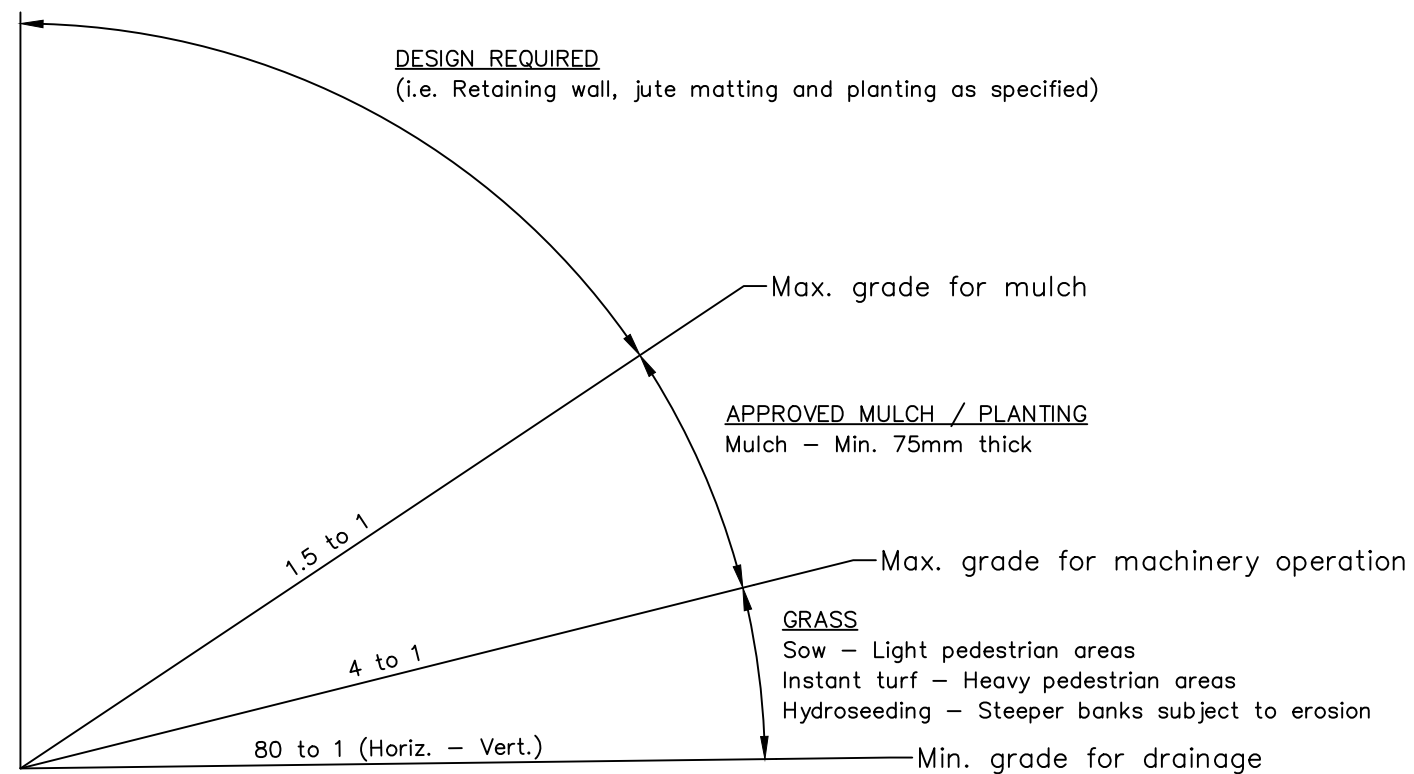
### SIDE ENTRY PITS HYDRAULIC CAPACITY CURVES

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ISSUE DATE:  
18-09-2020

DWG No.

TSD-RF03-v3



#### NOTES

##### Soil Type

- Sandy loam (free of weeds and stones).
- Topsoil – Min. 100mm thick

##### Preparation Before Sowing

- Light roll prior to sowing and lightly raked after sowing.

##### Seed Mix

- 70% – blend of two varieties
- 30% – blend of two varieties
- Application rate – 1.0 kg per 30 square metres.

##### Initial Fertilizing

- A complete fertilizer (8 : 4 : 10 – N : P : K) ratio or similar (e.g. 'Lawn Starter') should be used.
- N : P : K – Nitrogen : Phosphorous : Potassium
- Application rate – 1.0 kg per 33 square metres.

SCALES: AS SHOWN  
(All scales are correct at A3)

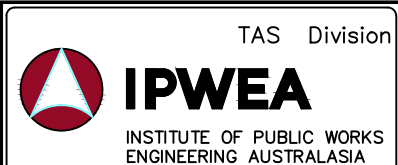
XRef File: TSD-RF04-v3.dwg

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**STANDARD DRAWING**

**NATURE STRIP DETAILS**

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ISSUE DATE: 18-09-2020

DWG No. TSD-RF04-v3

<u>BREAK O'DAY COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>	<u>DEVONPORT CITY COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R02: Table 2 is to be replaced by 'refer to Devonport City Council, Road Network Strategy, Tables 2 &amp; 4'.</li><li>TSD–R06: Table 1 is to be replaced by 'refer to Devonport City Council, Road Network Strategy, Tables 1 &amp; 3'.</li></ul>	<u>HOBART CITY COUNCIL</u> <a href="http://www.hobartcity.com.au/Development/Planning/Engineering-standards-and-guidelines/Standard-drawings">www.hobartcity.com.au/Development/Planning/Engineering-standards-and-guidelines/Standard-drawings</a>
<u>BRIGHTON COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>		
<u>BURNIE CITY COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R01: Rural Road unsealed</li><li>TSD–R02: Rural Road sealed</li><li>TSD–R06: Urban Roads Typical Section and Pavement Widths</li><li>TSD–R07: Urban Roads – Cul–de–sac Turning Heads.</li><li>Road Reservation Width (R) to be approved by the General Managers Delegated Officer.</li><li>TSD–R08: Typical Cul–de–sac details Urban and Rural.</li><li>Road Width (W) face of Kerb to Face of Kerb to be approved by the General Managers Delegated Officer.</li></ul>	<u>DORSET COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>	<u>HUON VALLEY COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>
	<u>FLINDERS COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>	<u>KENTISH COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>
	<u>GEORGE TOWN COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>	<u>KINGBOROUGH COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R14: Wedge profiles are not permitted in Kingborough Council.</li><li>TSD–R19: Blue stone kerb and channel not permitted in Kingborough Council.</li><li>TSD–SW07: Not permitted in Kingborough Council.</li><li>TSD–SW08: Not permitted in Kingborough Council.</li><li>TSD–SW13: Not permitted in Kingborough Council.</li></ul>
	<u>GLAMORGAN SPRING BAY COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>	
<u>CENTRAL COAST COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R14: Variation to Standard Kerb Profiles</li><li>TSD–R15: Variation to Stormwater Kerb Outlets.</li></ul>	<u>GLENORCHY CITY COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R06:Please refer to the preferred footpath materials, target widths and locations to GCC Footpaths Policy.</li><li>TSD–R09:Please refer to the preferred footpath materials, target widths and locations to GCC Footpaths Policy.</li><li>TSD–R011:Please refer to the preferred footpath materials, target widths and locations to GCC Footpaths Policy.</li><li>TSD–R15: Concrete Kerbs and Channels construction details: Use current Glenorchy City Council practice.</li><li>TSD–R18: Access Ramps: Using current AS1428–2009</li><li>TSD–R21: Please refer 'Typical Section Through Roundabout' to GCC typical section</li><li>TSD–SW25:For stormwater property connections, minimum 150mm diameter is required.</li><li>TSD–SW29: Please refer kerb outlet arrangements to GCC typical section and guidlines.</li></ul>	
<u>CENTRAL HIGHLANDS COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>		
<u>CIRCULAR HEAD COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>		
<u>CLARENCE CITY COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R07: Urban Roads: Cul–de–sac turning heads to effect that Clarence City Council will only accept circular or offset circular turning heads.</li></ul>		
<u>DERWENT VALLEY COUNCIL</u> <ul style="list-style-type: none"><li>No Departures or Exclusions</li></ul>		
SCALES: AS SHOWN (All scales are correct at A3)	REFERENCES	<div>© 2020 This drawing and the information it contains is, and remains the property of the Local Government Association of Tasmania, and may only be used for the purpose of which it was intended. Reproduction of this drawing or its content in any format other than printed hard copies or PDF is strictly prohibited. It is the users responsibility to ensure this drawing is the current version. The current version can be downloaded from:<a href="http://www.lgat.tas.gov.au">www.lgat.tas.gov.au</a></div>
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<div><b>STANDARD DRAWING</b> COUNCIL EXCLUSION SHEET</div>		
<div>GPO Box 1521, Hobart Tasmania 7001   326 Macquarie Street, Hobart Tasmania 7000 T: 03 6233 5966 F: 03 6233 5986 Email: <a href="mailto:admin@lgat.tas.gov.au">admin@lgat.tas.gov.au</a></div>		<div>ISSUE DATE: 18-09-2020 DWG No. TSD-E01-v1</div>

<u>KING ISLAND COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>	<u>TASMAN COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>	
<u>LATROBE COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>	<u>WARATAH–WYNYARD COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>	
<u>LAUNCESTON CITY COUNCIL</u> <ul style="list-style-type: none"><li>Roads: Council wishes to retain the discretion to vary the road standards described in TSD–R01, TSD–R02 &amp; TSD–R06 to allow the pavement width and surface type to be specified by the Planning Permit conditions.</li></ul>	<u>WEST COAST COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>	
	<u>WEST TAMAR COUNCIL</u> <ul style="list-style-type: none"><li>TSD–RF01: Lesser sight distances than detailed may be appropriate for access driveways, but shall be assessed by a suitably qualified practitioner having regard to the requirements of AS2890.1</li><li>Council wished to retain the discretion to vary the road standards in TSD–R01, TSD–R02 and TSD–R06 to allow the pavement width and road reserve width to be specified by Planning Permit conditions.</li><li>Council wishes to retain the discretion to vary the road standards in TSD–R01, TSD–R02 and TSD–R06 to allow the pavement width and road reserve width to be specified by Planning Permit conditions.</li><li>TSD–R23: sign post is to located clear of a footpath with 2.5 m vertical clearance to underside of signs where practicable</li><li>TSD–R20: Council may require kerb units to be tied to mesh with 10mm dowls</li><li>TSD–SW02: Council may require access cover lids located in a road reserve to be bolted down.</li></ul>	
<u>MEANDER VALLEY COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R02: Table 2 needs to align with MVC’s road hierarchy</li><li>TSD–R06: Tables 1 and 2 need to align with MVC’s road hierarchy</li><li>TSD–R18: access ramp Type B: ‘footpath’ dimension needs an additional 150mm, i.e. the BK kerb should not be included in the overall width of the footpath.</li><li>TSD–R34: Exclude option 2: MVC will allow posts to be welded directly to cast in situ plates. Detail of plates to be determined by municipal engineer.</li></ul>		
<u>NORTHERN MIDLANDS COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R11: Minimum footpath width 1800mm.</li><li>TSD–R14: The kerb profiles shown on drawing TSD–R14 will not be used in Northern Midlands Council. Contact Council for details of kerb profiles.</li><li>TSD–R15: All kerb and channel in new or existing pavement to be constructed on a sub–base with minimum depth of 150mm in accordance with note 1.</li></ul>		
<u>SORELL COUNCIL</u> <ul style="list-style-type: none"><li>TSD–R17: Concrete Kerbs And Channels Grated Wedge Crossings</li><li>TSD–R19: Bluestone Kerbs And Channels Construction Details</li><li>TSD–SW13: Side Entry Pits Table Drain Pit Construction</li><li>TSD–SW22: Inlet Headwalls (Square) Raised Grated Inlet</li><li>TSD–SW23: Inlet Headwalls (Domed) Raised Grated Inlet</li></ul>		
<u>SOUTHERN MIDLANDS COUNCIL</u> <ul style="list-style-type: none"><li>No departures or exclusions</li></ul>		

