



Appendix 6 Civil Engineering Plans

TABLE 1: McDONALD'S ALKIMOS	
PAD SITE AREA	2,581 m ²
BUILDING AREA	422 m ²
DINING ROOM AREA	122 m ²
STANDARD CAR BAYS	18
ACCESSIBLE CAR BAYS	1
DRIVE-THRU WAIT BAYS	2
DINING SEATING NUMBERS	80

Stormwater Calculations in accordance with City of Wanneroo Guidelines and Local Geotechnical Information

Site Area = 2,581m²
 Development Impervious Area = 2,234m²
 Equivalent Impervious Area (@ 0.95) = 2,122m²
 Assumed permeability rate = 5m/day
 Depth to groundwater 48m

Soakwell Capacity
 Volume of a dia 1800mm x 1800mm deep soakwell = 4.58m³

Infiltration of a dia 1800mm x 1800mm deep soakwell
 = $\pi r^2 \times 2\pi rh \times 25\%$
 = $\pi \times 0.9 \times 0.9 \times 2\pi \times 0.9 \times 1.8 \times 0.25$
 = 5.09m³ of permeability area

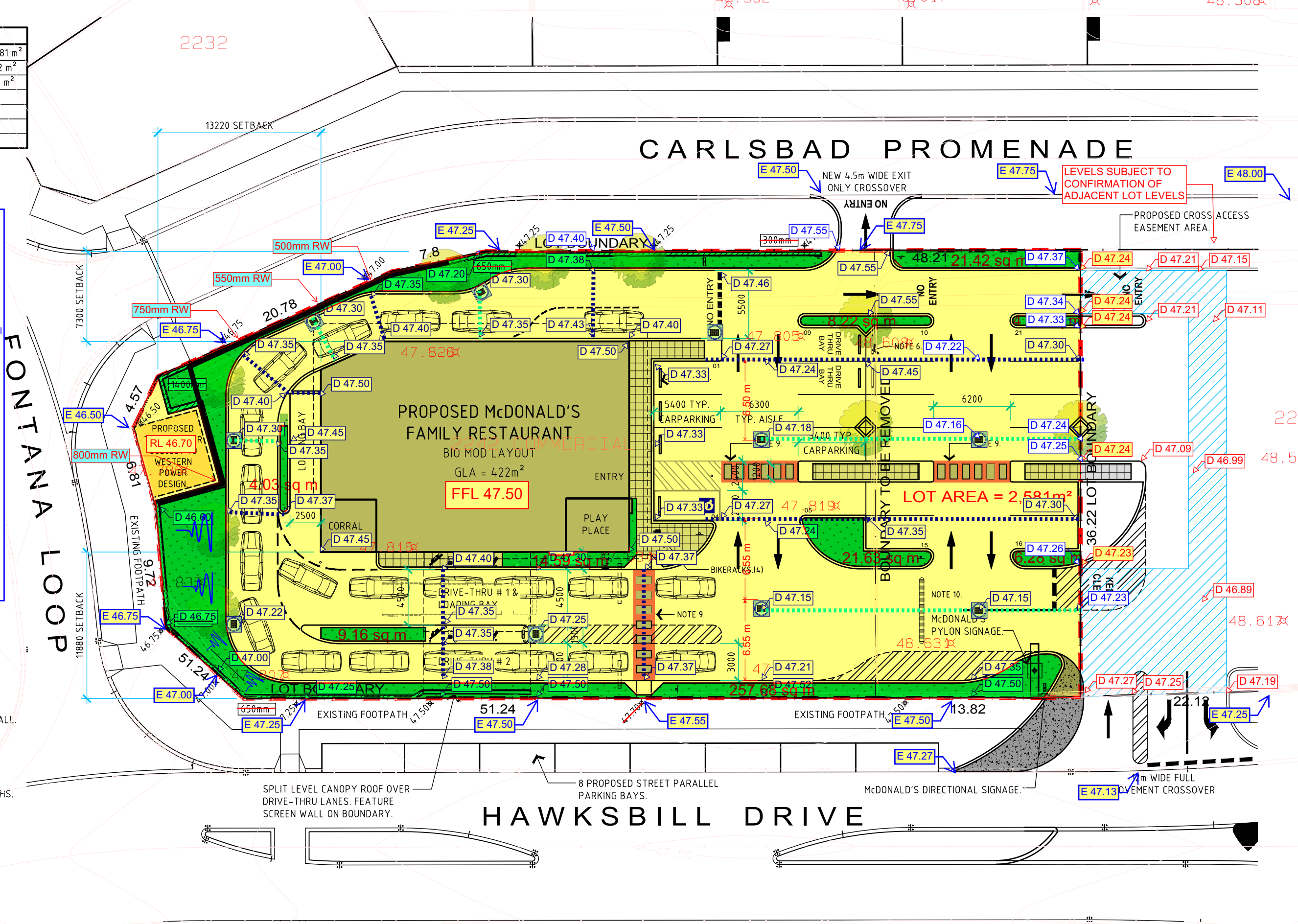
Infiltration achieved for one soakwell
 = 5.09m³ @ 5m/day
 = 25.45m³/day of infiltration

Soakwell capacity over 24 hours
 = volume + infiltration = 30.03m³ per day

Stormwater Volume Generated for 24-hr, 100-yr ARI Event
 = CIA/3600
 = $0.95 \times 5.90 \times 2,234 / 3600$
 = 3.48L/s
 = 300.5m³ over 24 hours

Soakwells Required
 300.5m³ / 30.03m³ = 10 soakwells required to service the site (minimum)

- LEGEND**
- B • BOLLARD.
 - █ BLOCKWORK RETAINING WALL.
 - █ SOFT LANDSCAPING BEDS.
 - █ TILED CONCRETE FOOTPATHS.
 - ↙ E 47.25 EXISTING SPOT LEVEL.
 - ↘ 750mm RW HEIGHT OF PROPOSED RETAINING WALL ABOUT FOOTPATH LEVEL.
 - ↙ D 47.25 PROPOSED SPOT LEVEL.
 - ↘ D 47.27 PROPOSED INTERFACE SPOT LEVEL WITH ADJACENT LOT.



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PRITCHARD FRANCIS MARKUP
 15/11/2021 - Rev-B

Unit
 sq m



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Project
PROPOSED McDONALD'S RESTAURANT ALKIMOS

Location
 LOT 2242 CNR MARMION AVENUE & HAWKSBILL DRIVE
 ALKIMOS, WA 6038

DEVELOPMENT APPLICATION

Scale
 1:300 @ A3

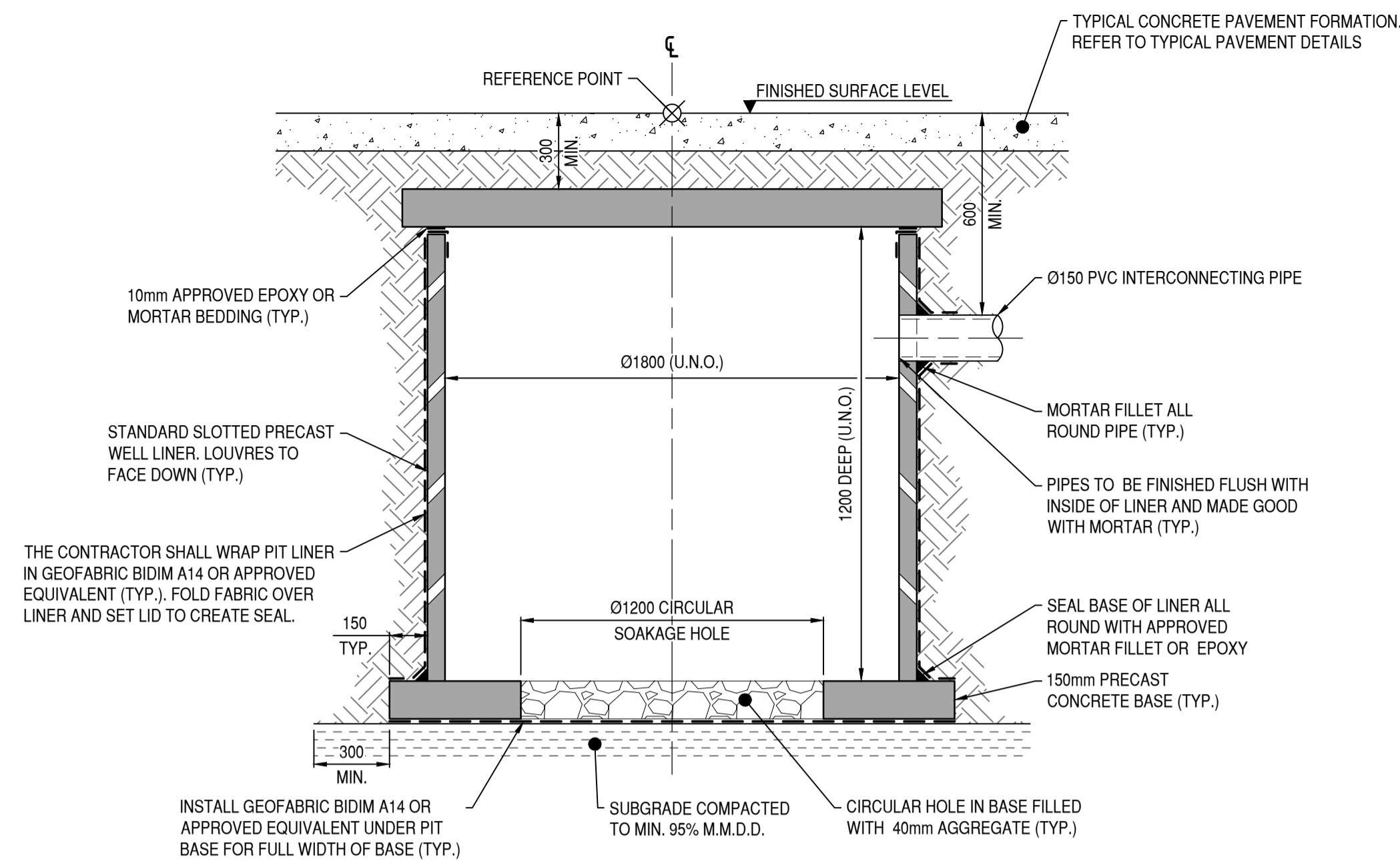
Series
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Drawing
PROPOSED SITE PLAN

Project Number
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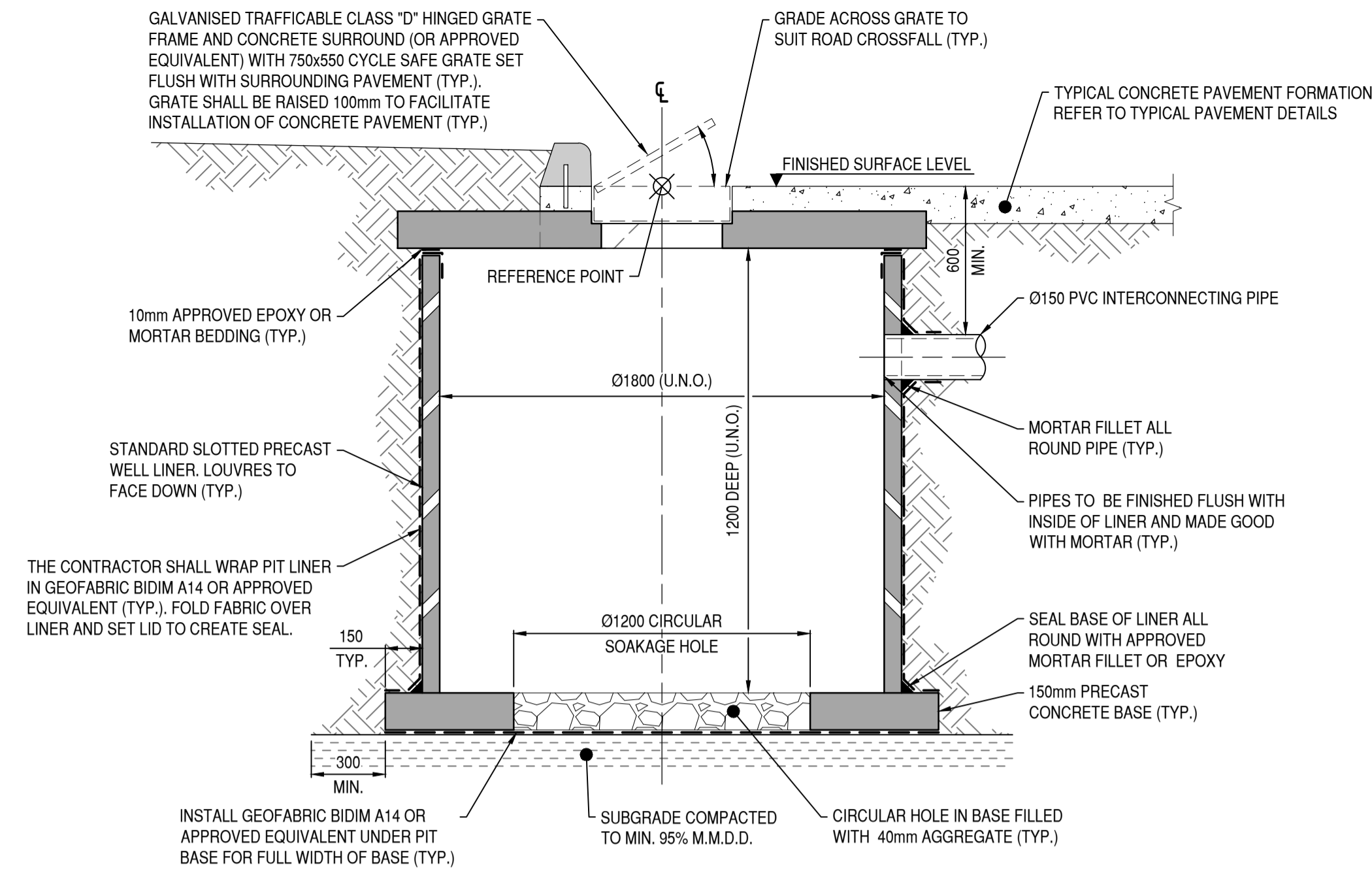
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Issue
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TYPICAL Ø1800 BURIED SOAKWELL DETAIL

SCALE 1:20 0m 400mm 800mm

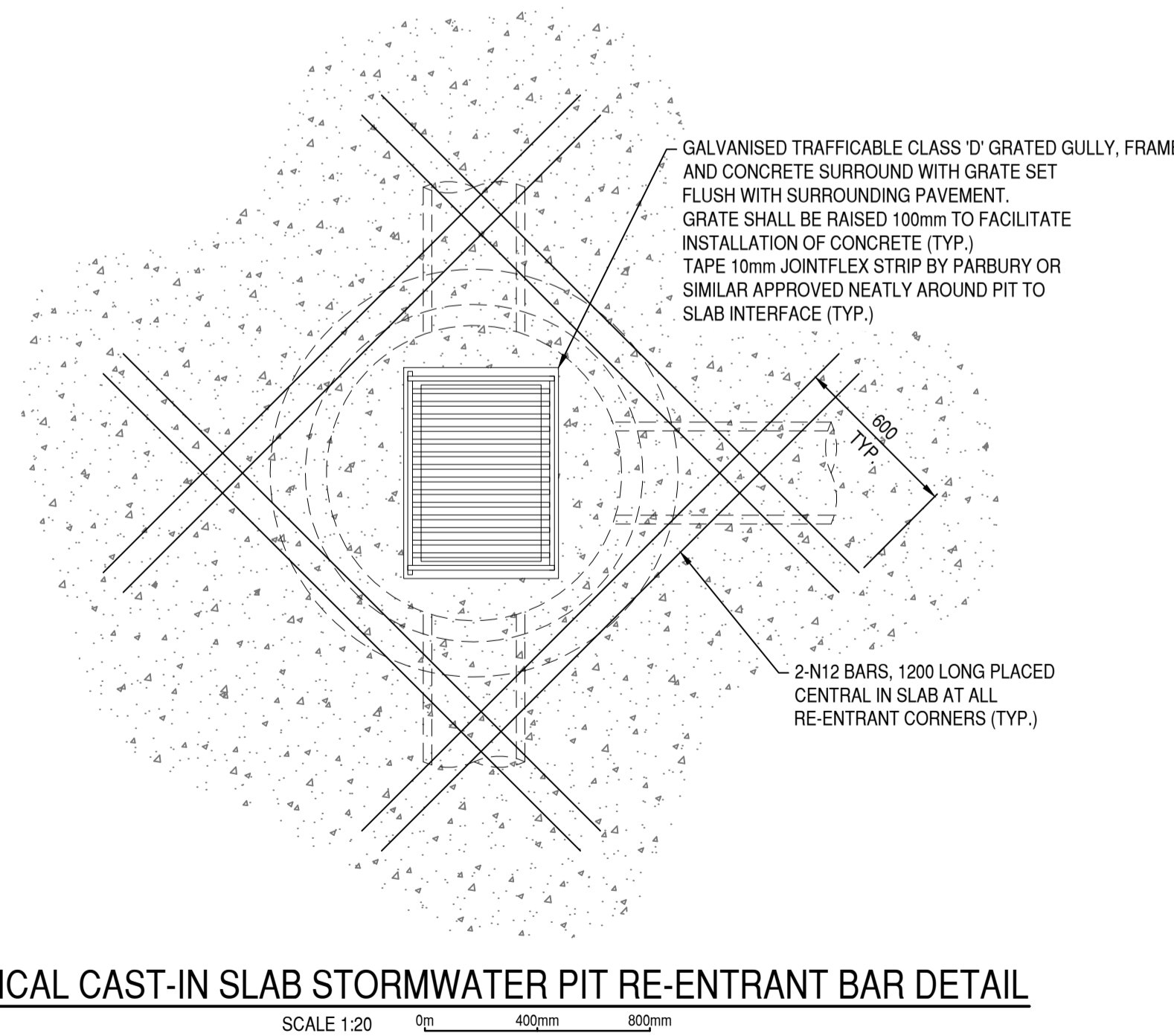
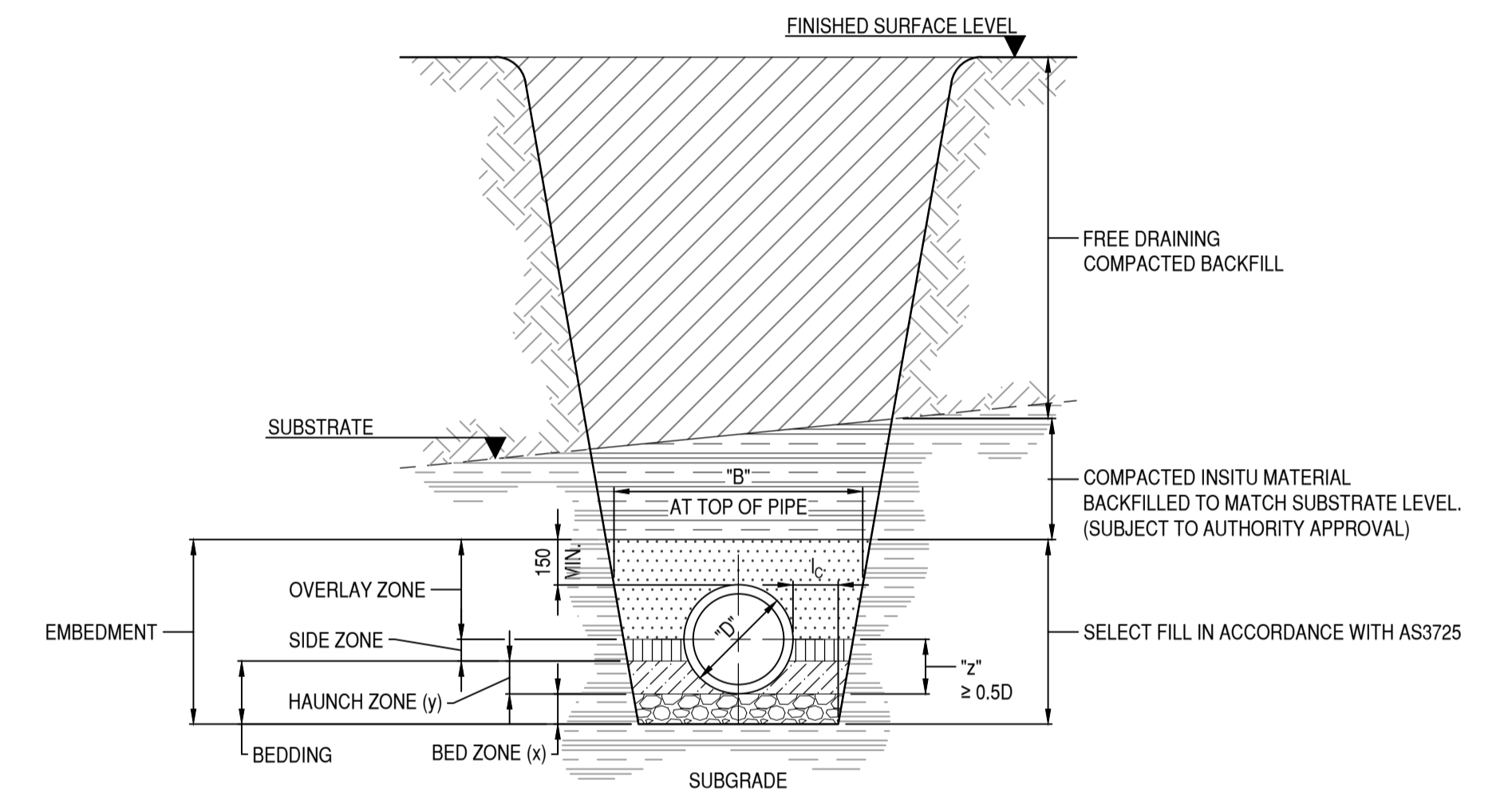


TYPICAL Ø1800 GRATED SOAKWELL DETAIL ON KERB

SCALE 1:20 0m 400mm 800mm

STORMWATER DRAINAGE PIT NOTES

1. ALL INSITU CONCRETE SHALL BE CLASS N32 IN ACCORDANCE WITH A1379.
2. ALL INSITU CONCRETE CORNERS SHALL HAVE A 20 CHAMFER UNLESS OTHERWISE NOTED.
3. CEMENT MORTAR SHALL CONSIST OF ONE PART CEMENT AND THREE PARTS SAND.
4. SL81 REINFORCEMENT SHALL CONFORM WITH HARD DRAWN FABRIC TO AS4671.
5. MINIMUM CLEAR COVER TO REINFORCEMENT SHALL BE 50.
6. THE LINER SHALL BE REINFORCED CONCRETE MANUFACTURED TO AS4058.
7. THE MAXIMUM INLET/OUTLET PIPE OUTSIDE DIAMETER SHALL BE LESS THAN 60% OF THE LINER INTERNAL DIAMETER.
8. MINIMUM OF 40% OF LINER SHALL REMAIN IN ANY HORIZONTAL PLANE.
9. MINIMUM INTERNAL LINER SPACE OF 200mm BETWEEN PUNCHED/CUT HOLES.
10. HOLES TO BE CUT/PUNCHED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION.
11. THE LINER SHALL HAVE EQUIVALENT PROPERTIES AND REINFORCEMENT OF CLASS 2 R.C.P. EXCEPT THAT THE REINFORCEMENT SHALL BE CIRCULAR.
12. COVERS SHALL BE CLASS D TO AS3996.



TYPICAL CAST-IN SLAB STORMWATER PIT RE-ENTRANT BAR DETAIL

SCALE 1:20 0m 400mm 800mm

"H" AND "HS" PIPE TRENCH DETAILS									
PIPE I.D. (mm)	PIPE O.D. (mm) "D"	MINIMUM TRENCH WIDTH "B" (mm)	MINIMUM BED ZONE DEPTHS "x"			MINIMUM SIDE CLEARANCE "z"			
			SUPPORT TYPE	DEPTH (mm)	HAUNCH ZONE "y" = 0.1D	HAUNCH ZONE "y" = 0.3D	BEDDING "z" ≥ 0.5D	PIPE DIAMETER	
300	362	650	H / HS ≤ Ø1500	100	37	109	185	≤600	150
375	445	750			45	134	225		
450	534	850			54	161	270		
525	616	900			62	185	310		
600	698	1000			70	210	350		
750	864	1150	H / HS > Ø1500	150	87	260	435	>600 - ≤1200	200
900	1042	1400			105	313	525		
1050	1220	1650			122	366	610		
1200	1372	1850			138	412	690		

NOTE: THE MINIMUM VALUES SHALL ONLY BE USED WHERE NECESSARY COMPACTION VALUES CAN BE ASSURED.

TYPICAL CONCRETE PIPE TRENCH DETAILS (SUPPORT TYPE "H" AND "HS")

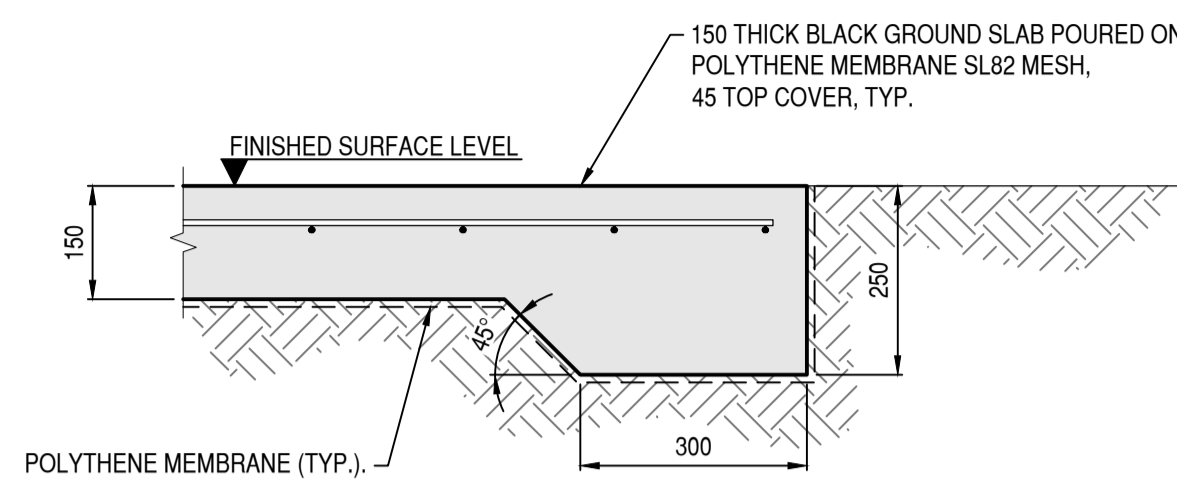
SCALE 1:20 0m 400mm 800mm

TRENCH DETAIL NOTES

1. ALL PIPE TRENCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AS3725 - DESIGN FOR INSTALLATION OF BURIED CONCRETE PIPES. SHOULD DISCREPANCIES EXIST, AS3725 TAKES PRECEDENCE.
2. BEDDING CONDITION SHALL BE CARRIED PAST ALL MANHOLES, GULLIES & OTHER DRAINAGE STRUCTURES DOWNSTREAM.
3. WHERE PIPES HAVE PROTRUDING SOCKETS, SUITABLE RECESSES SHALL BE PROVIDED IN THE SUPPORTING MATERIALS TO ENSURE THAT THE PIPES DO NOT BEAR ON THE SOCKETS (TYP.).

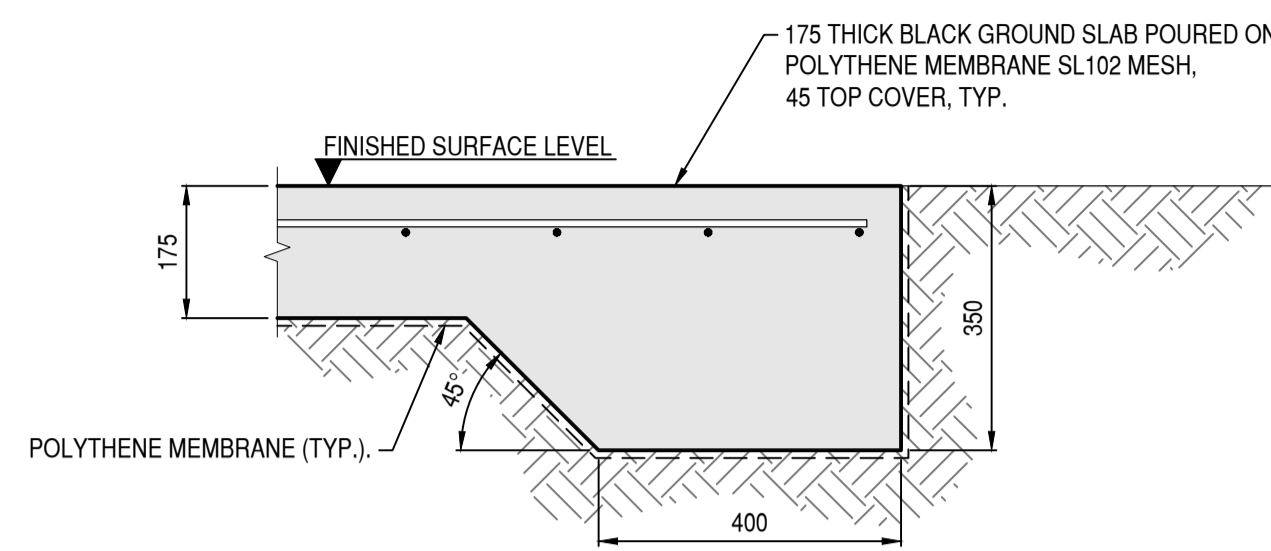


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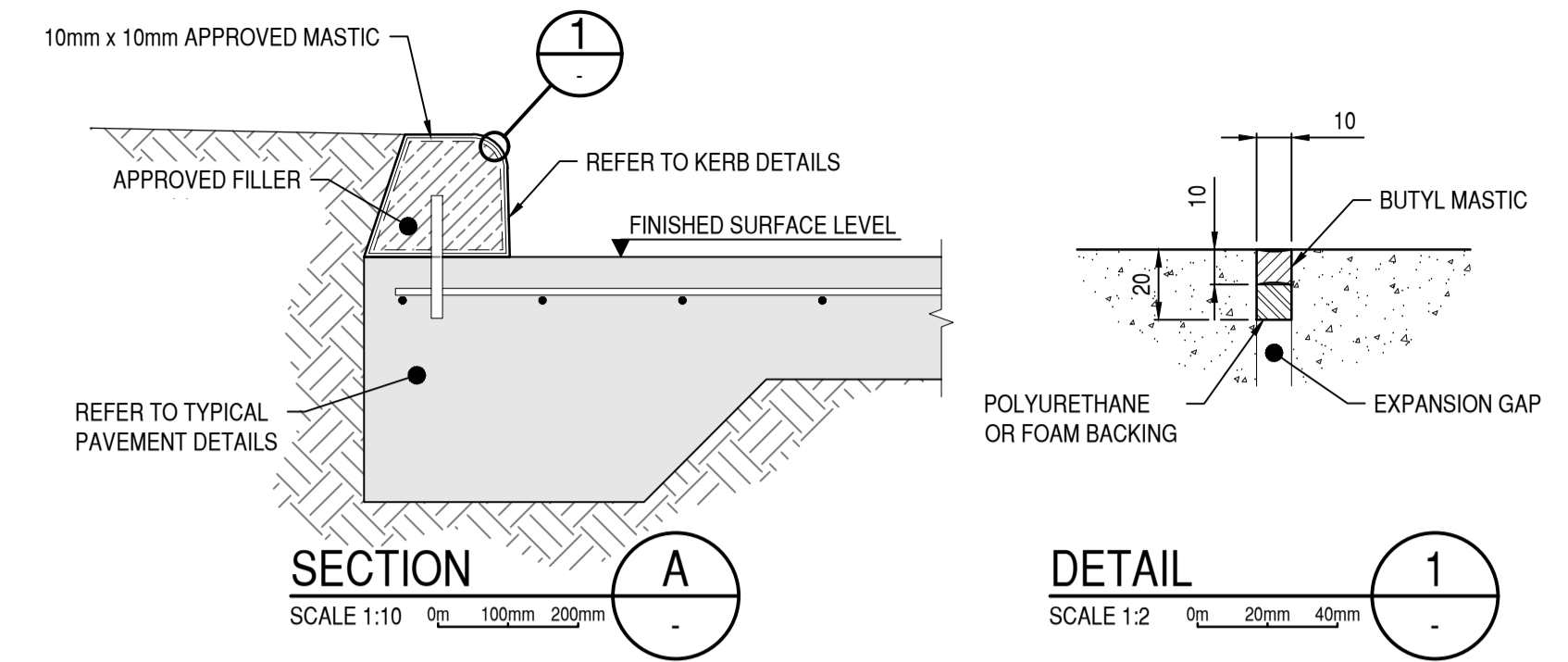
TYPICAL CONCRETE AND SLAB EDGE DETAIL

SCALE 1:10 0m 200mm 400mm



TYPICAL HEAVY DUTY CONCRETE AND SLAB EDGE DETAIL

SCALE 1:10 0m 200mm 400mm



KERB EXPANSION JOINT NOTES

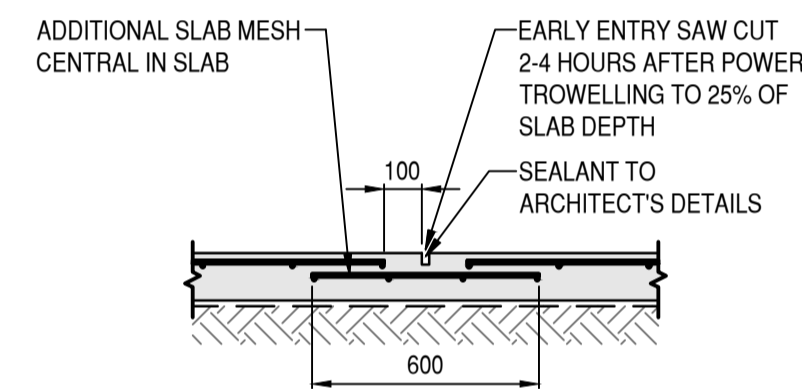
1. EXPANSION AND CONTRACTION JOINTS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.
2. KEYS SHALL BE INSTALLED FOR ALL RADII LESS THAN OR EQUAL TO 40m
3. KERBING ALONG WITH EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED PRIOR TO LAYING OF ANY BRICK PAVING.
4. BACKFILL BEHIND KERB SHALL BE COMPACTED TO 90% M.M.D.D. IN ACCORDANCE WITH THE SPECIFICATION
5. WHERE PATHS ARE CONSTRUCTED DIRECTLY BEHIND THE KERB, EXPANSION AND CONTRACTION JOINTS IN THE PATH AND KERB SHALL BE ALIGNED

- EXPANSION JOINTS 10mm WIDE, CUT THROUGH THE KERB AT:
- A) EVERY 5.0m AND,
 - B) TANGENT POINTS AND,
 - C) ROAD GULLIES 24 HOURS AFTER PLACEMENT

CONTRACTION JOINTS 5mm WIDE CONSTRUCTED EVERY 2.5m. CUT THROUGH THE KERB ABOVE THE ROAD SURFACE LEVEL WITH AN APPROVED TOOL IMMEDIATELY AFTER EXTRUSION.

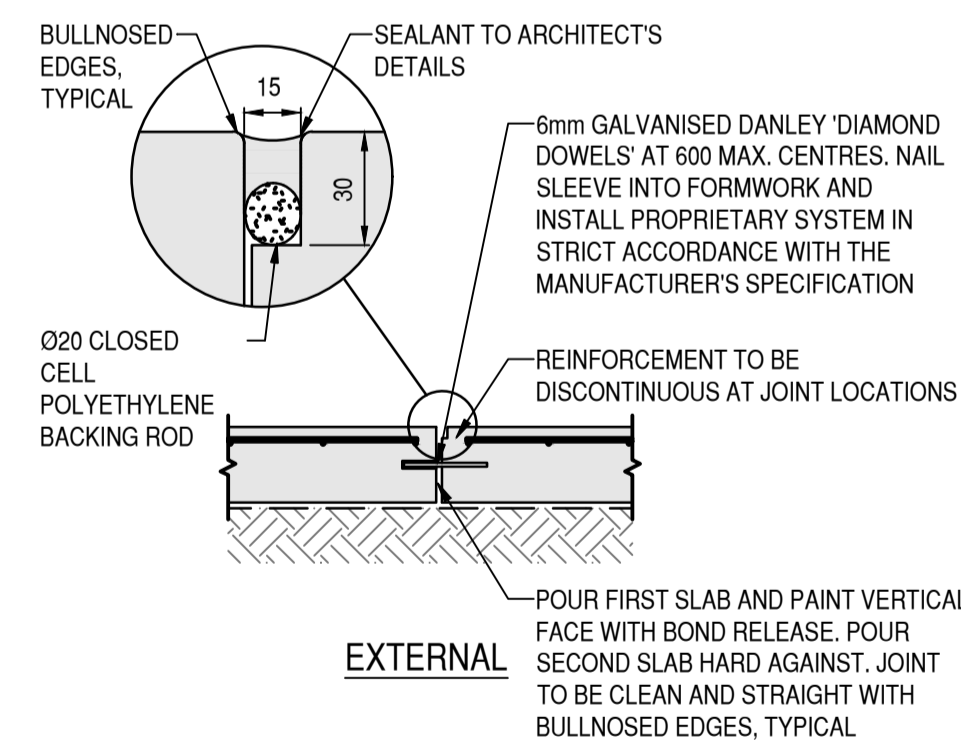
KERB EXPANSION JOINT AND CRACK CONTROL DETAILS

SCALE 1:200 0m 4m 8m



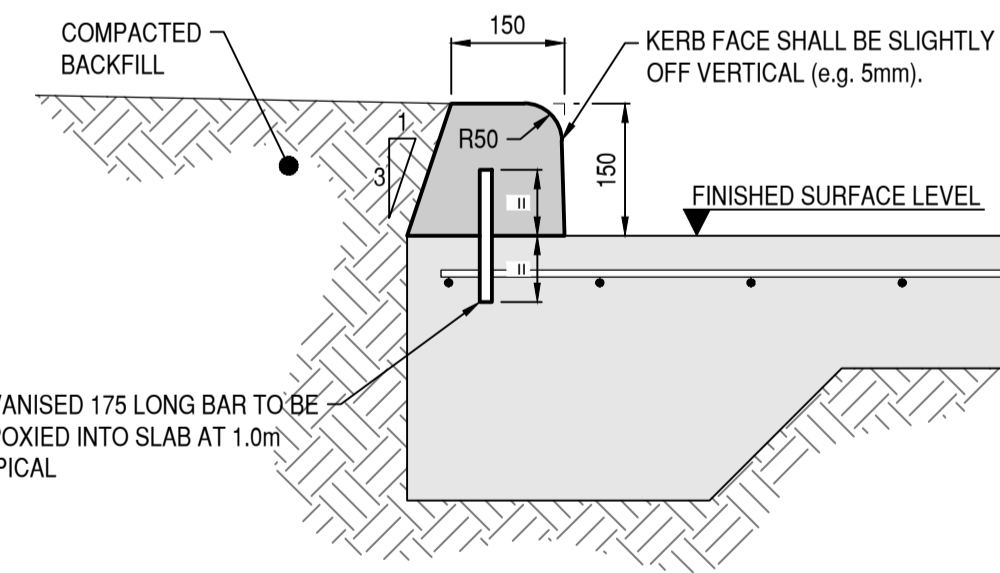
TYPICAL EXTERNAL SAW CUT JOINT DETAIL (S.J.)

SCALE 1:20 0m 400mm 800mm



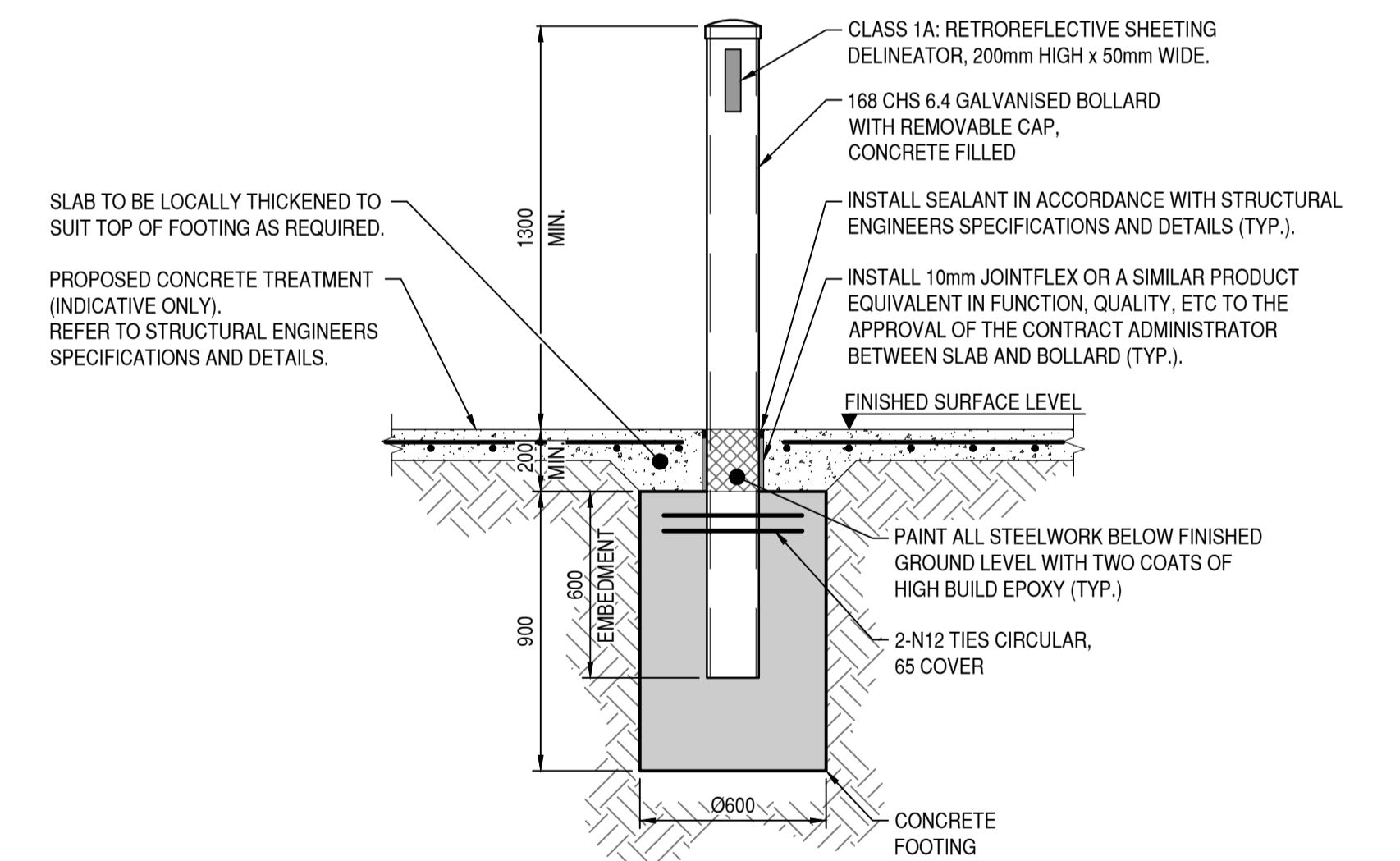
TYPICAL DOWEL CONTROL JOINT DETAIL (C.J.)

SCALE 1:20 0m 400mm 800mm



TYPICAL BARRIER KERB ON CONCRETE DETAIL

SCALE 1:10 0m 200mm 400mm



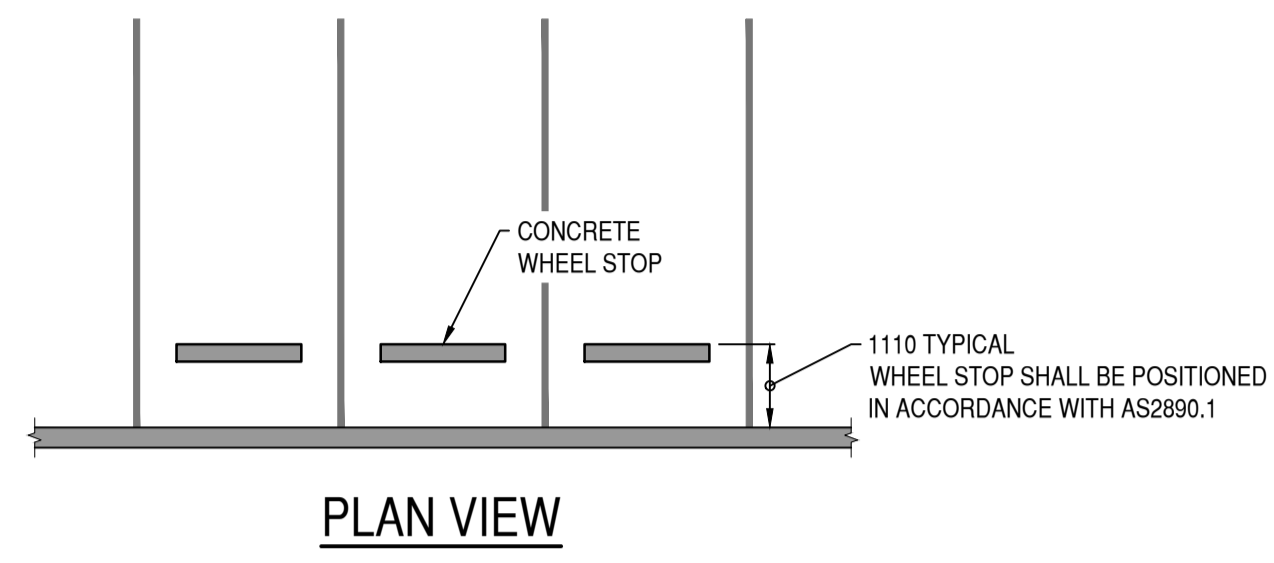
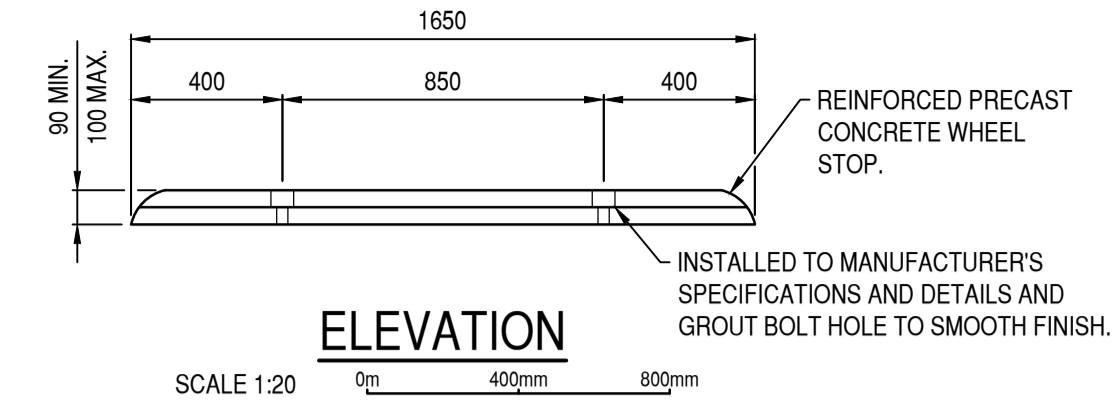
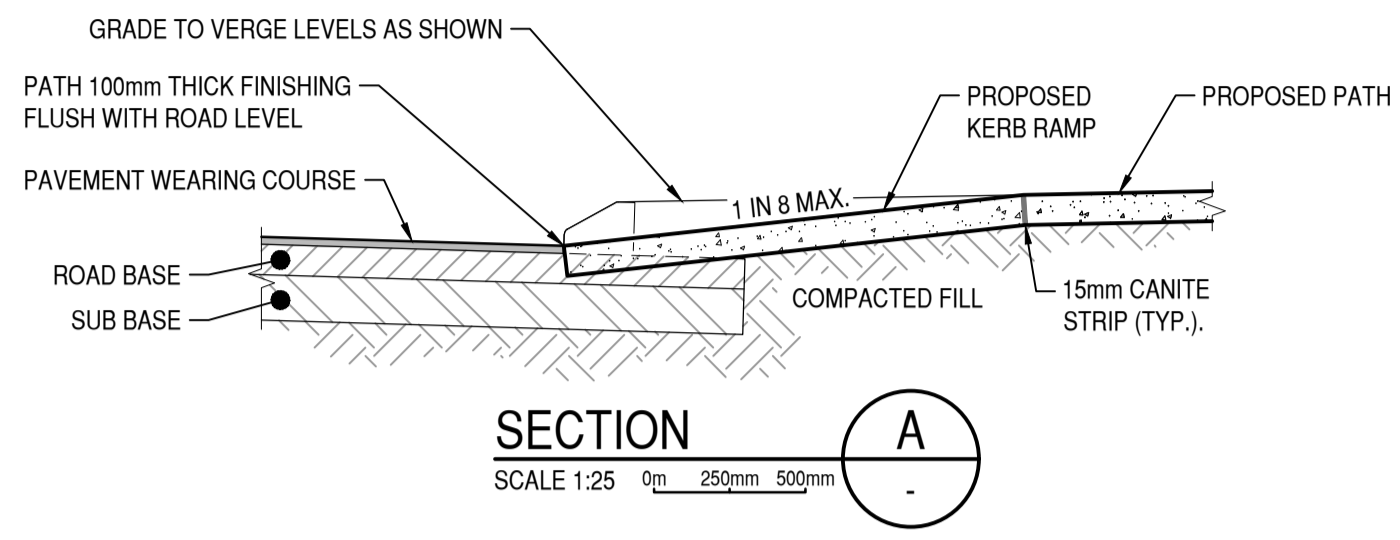
TYPICAL BOLLARD IN CONCRETE PAVEMENT DETAIL

SCALE 1:20 0m 400mm 800mm

- NOTES**
1. THE BOLLARD SHALL COMPLY WITH AS3845.
 2. BOLLARD DESIGNED FOR 10kN INCIDENTAL LOAD ONLY. NOT DESIGNED TO AS1170.1 BARRIER LOADS.
 3. REFER TO THE ARCHITECTS DOCUMENTATION FOR LOCATIONS AND HEIGHTS.

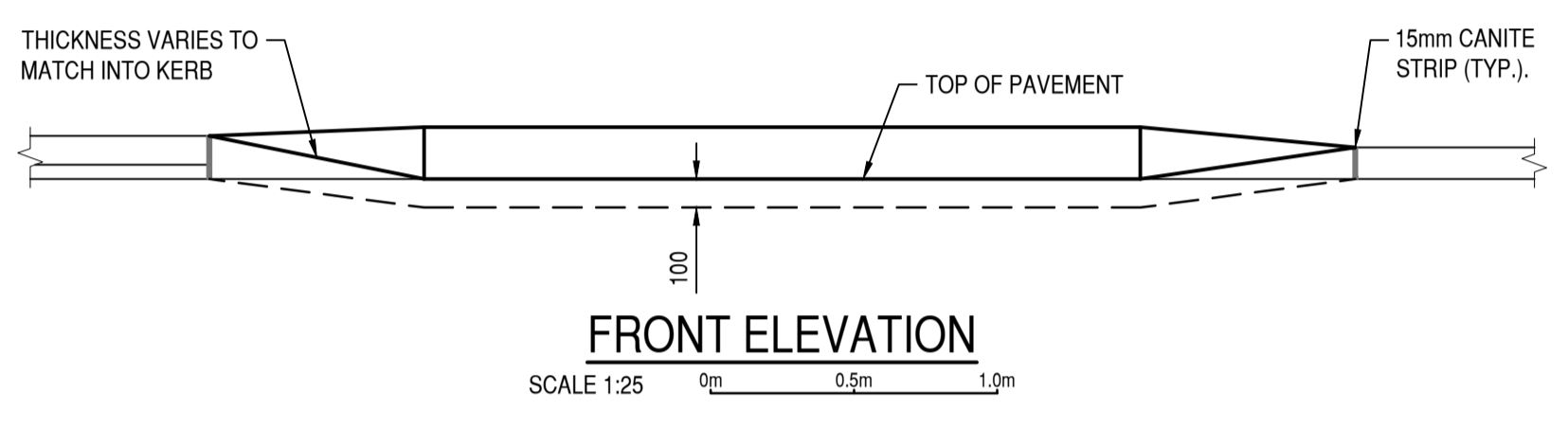
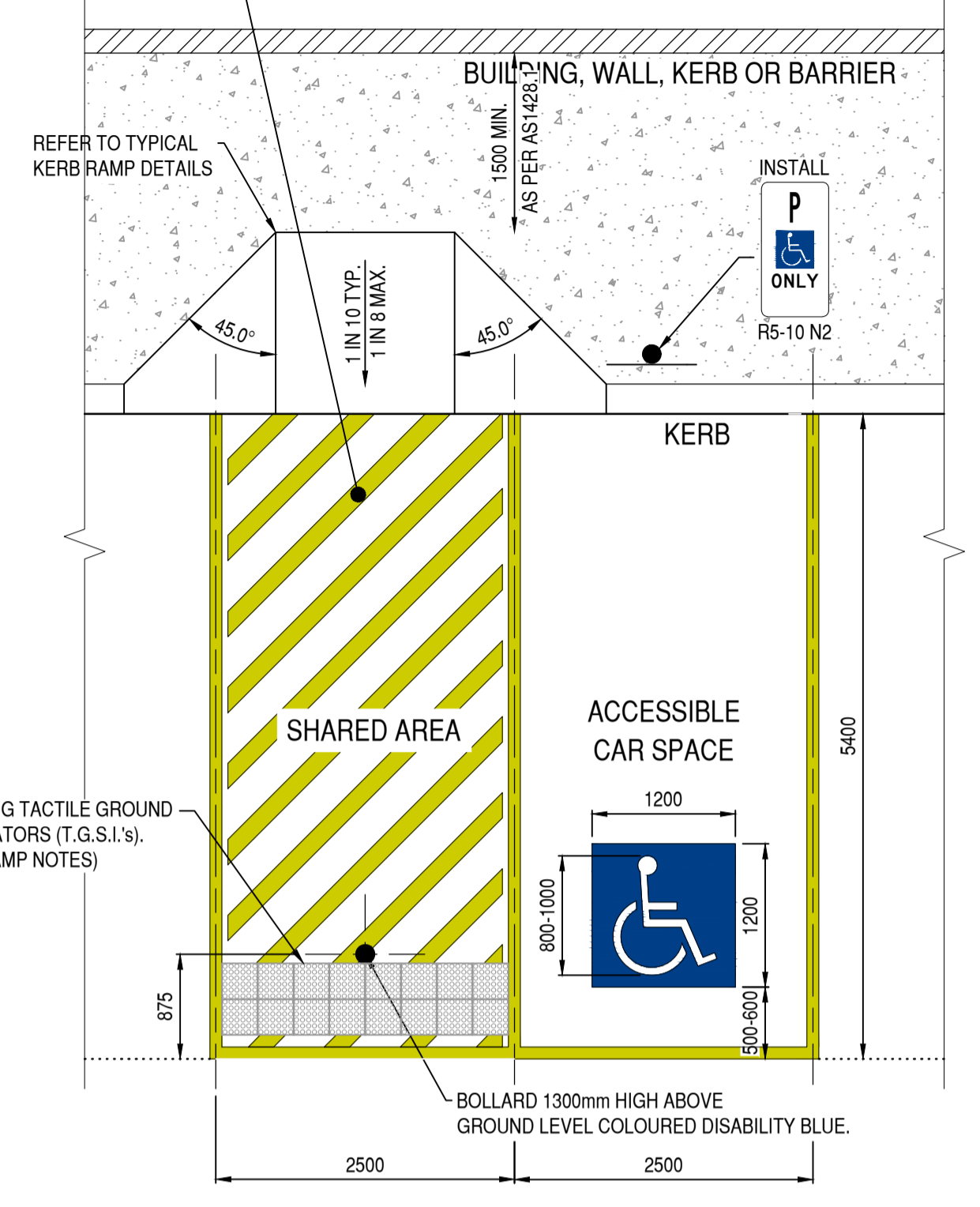


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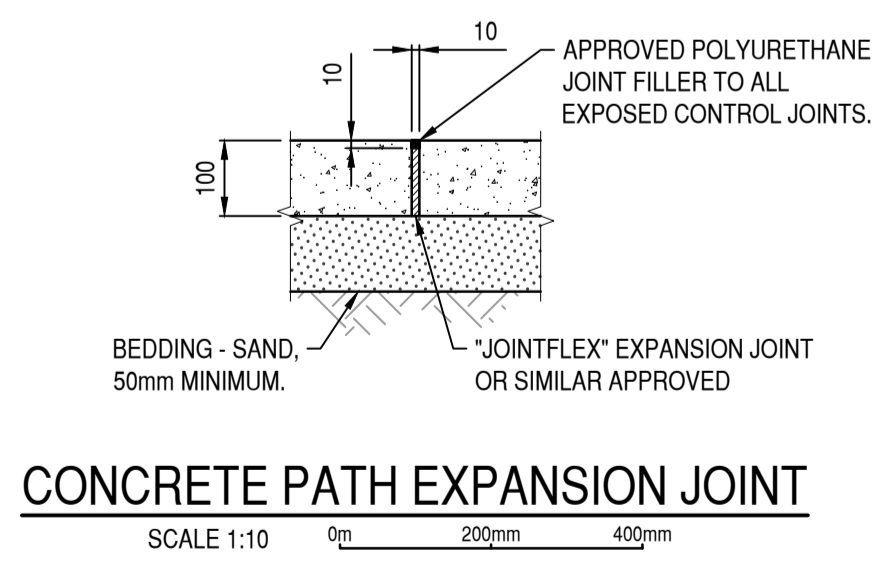
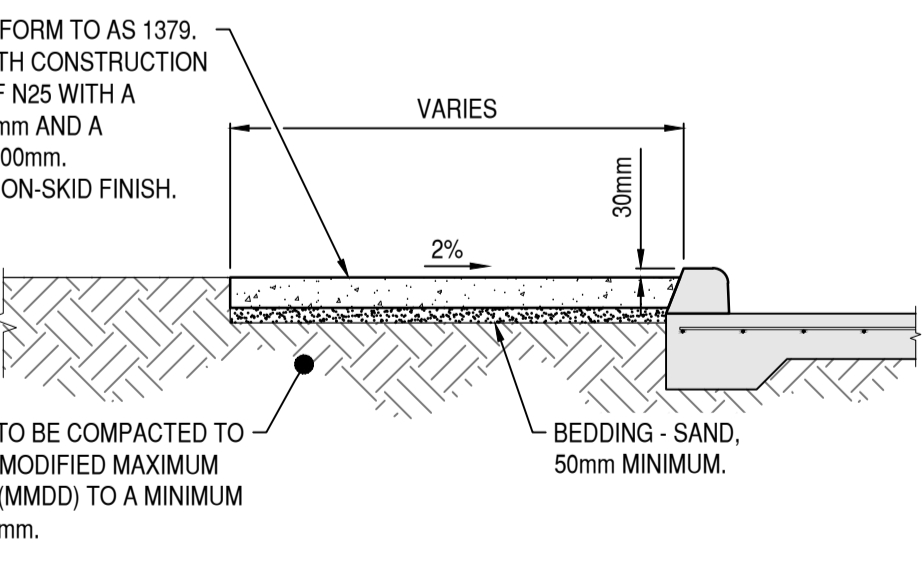
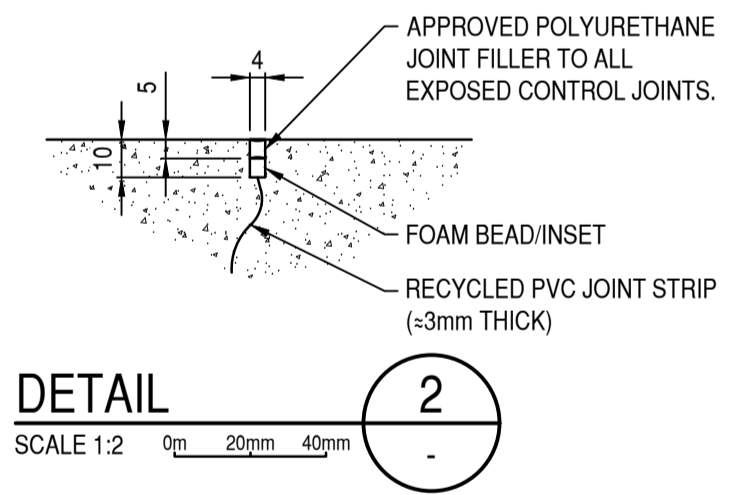
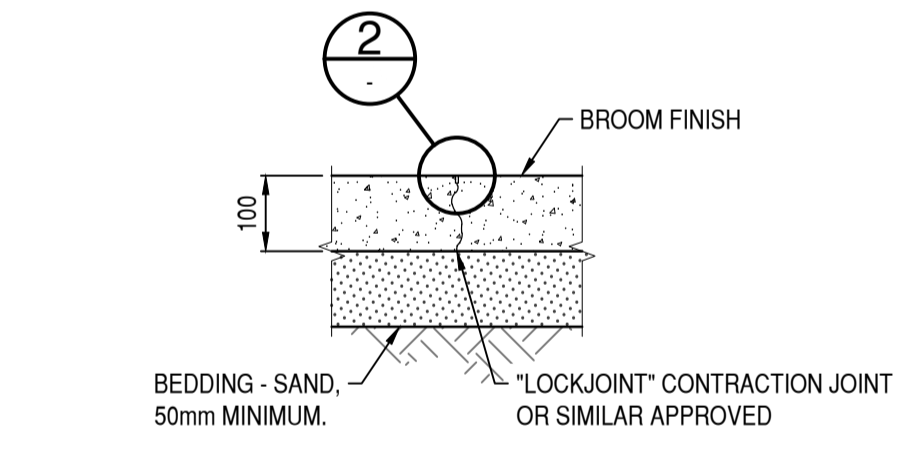
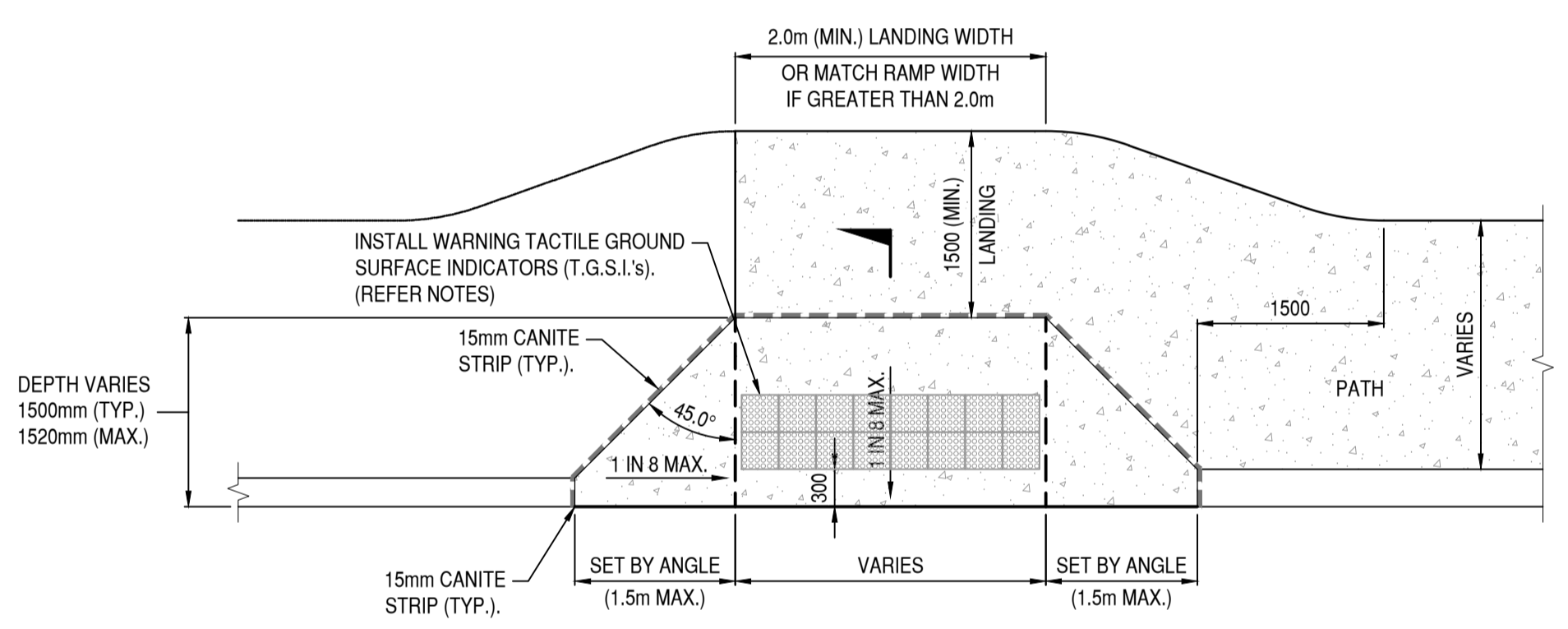
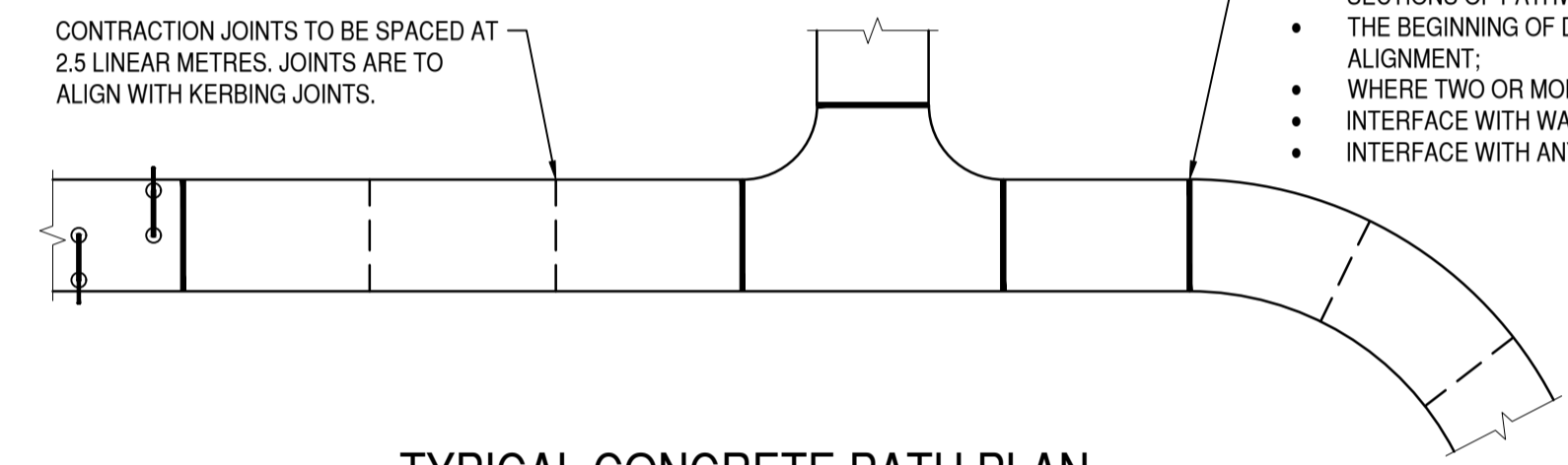


TYPICAL CONCRETE WHEEL STOP DETAIL
SCALE 1:100

SHARED AREA DIAGONAL LINE MARKING TO BE IMPLEMENTED IF SHOWN ON ROADWORK DRAWINGS. CONTRACTOR SHALL NOT APPLY DIAGONAL LINE MARKING WHEN SHARED AREA IS UTILISED AS A PEDESTRIAN FOOTPATH.



- EXPANSION JOINTS TO BE LOCATED AT THE FOLLOWING LOCATIONS:
- KERB EDGE;
 - BEFORE HANDRAILS;
 - EVERY 7.5 LINEAR METRES ON STRAIGHT SECTIONS OF PATHWAY;
 - THE BEGINNING OF DEVIATIONS IN ALIGNMENT;
 - WHERE TWO OR MORE PATHS JOIN;
 - INTERFACE WITH WALLS AND;
 - INTERFACE WITH ANY OTHER RIGID ELEMENT



- NOTES**
1. ALL CONCRETE TO BE A MINIMUM OF 25MPa, 20mm AGGREGATE AND A MAXIMUM SLUMP OF 80mm, FROM AN APPROVED PRE-MIX BATCH PLANT
 2. MINIMUM THICKNESS - 100mm.
 3. BEDDING - SAND, 50mm MINIMUM.
 4. FINISH - BROOMED TO NON-SKID FINISH PARALLEL TO LINE OF KERB WITH TOOLED EDGES
 5. EXPANSION JOINTS - APPROVED MATERIAL SHALL BE EXPANDITE-FLEXICELL
 6. TACTILE GROUND SURFACE INDICATORS (T.G.S.I.'s) SHALL BE IN ACCORDANCE WITH AS1428.1 AND AS1428.4.
 7. CONTRACTOR TO INSTALL STAINLESS STEEL WARNING T.G.S.I.'s FOR FULL WIDTH OF CONCRETE KERB RAMP. REFER TO ARCHITECTURAL FINISHES SCHEDULE FOR DETAILS.
 8. WARNING T.G.S.I.'s ARE NOT TO BE CUT. CONTRACTOR SHALL SELECT SUITABLE SIZE TO EXTEND ACROSS FULL WIDTH OF KERB RAMP (EXCLUDING SPLAYS).
 9. WHERE THE KERB RAMP IS CONSTRUCTED USING BLOCK PAVERS, THE CONTRACTOR SHALL INSTALL T.G.S.I. PAVERS IN A CONTRASTING COLOUR CONFORMING WITH AS1428.4 LUMINANCE REQUIREMENTS.

ACCESSIBLE PARKING SPACE NOTES

SPACE IDENTIFICATION
EACH DEDICATED SPACE SHALL BE IDENTIFIED BY MEANS OF A WHITE SYMBOL OF ACCESS IN ACCORDANCE WITH AS1428.1 BETWEEN 800mm AND 1000mm HIGH PLACED ON A BLUE RECTANGLE WITH NO SIDE MORE THAN 1200mm. PLACED AS A PAVEMENT MARKING IN THE CENTRE OF THE SPACE BETWEEN 500mm AND 600mm FROM ITS ENTRY POINT AS ILLUSTRATED.

SPACE DELINEATION
PAVEMENT MARKINGS SPECIFIED IN ITEMS (A) AND (B) OF THIS CLAUSE SHALL BE YELLOW AND SHALL HAVE A SLIP RESISTANT SURFACE. RAISED PAVEMENT MARKERS SHALL NOT BE USED FOR SPACE DELINEATION.

- PAVEMENT MARKINGS SHALL BE PROVIDED AS FOLLOWS:**
1. LINEMARKINGS:
 - 1.1. DEDICATED PARKING SPACES SHALL BE OUTLINED WITH UNBROKEN LINES 80 TO 100mm WIDE ON ALL SIDES EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL.
 2. SHARED AREAS SHALL BE MARKED AS FOLLOWS:
 - 2.1. WALKWAYS WITHIN OR PARTLY WITHIN A SHARED AREA SHALL BE MARKED WITH UNBROKEN LONGITUDINAL LINES ON BOTH SIDES OF THE WALKWAY EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL.
 - 2.2. OTHER VACANT NON-TRAFFICKED AREAS, WHICH MAY BE INTENTIONALLY OR UNINTENTIONALLY OBSTRUCTED (E.G. BY UNINTENDED PARKING), SHALL BE OUTLINED WITH UNBROKEN LINES 80mm TO 100mm WIDE ON ALL SIDES EXCEPTING ANY SIDE DELINEATED BY A KERB, BARRIER OR WALL, AND MARKED WITH DIAGONAL STRIPES 150mm WIDE WITH SPACES 300mm BETWEEN STRIPES. THE STRIPES SHALL BE AT AN ANGLE OF 45° TO THE SIDE OF THE SPACE. NO SHARED AREA MARKINGS SHALL BE PLACED IN TRAFFICKED AREAS.
 - 2.3. ALL LINEMARKING MUST BE NON SLIP.
 3. BOLLARDS:
 - 3.1. MINIMUM HEIGHT 1300mm.
 - 3.2. RECOMMENDED COLOUR BLUE TO CONTRAST AGAINST YELLOW LINE MARKING.



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