Appendix B - Standard Construction Drawings

QLDC Land Development and Subdivision Code of Practice - 2020

Normative

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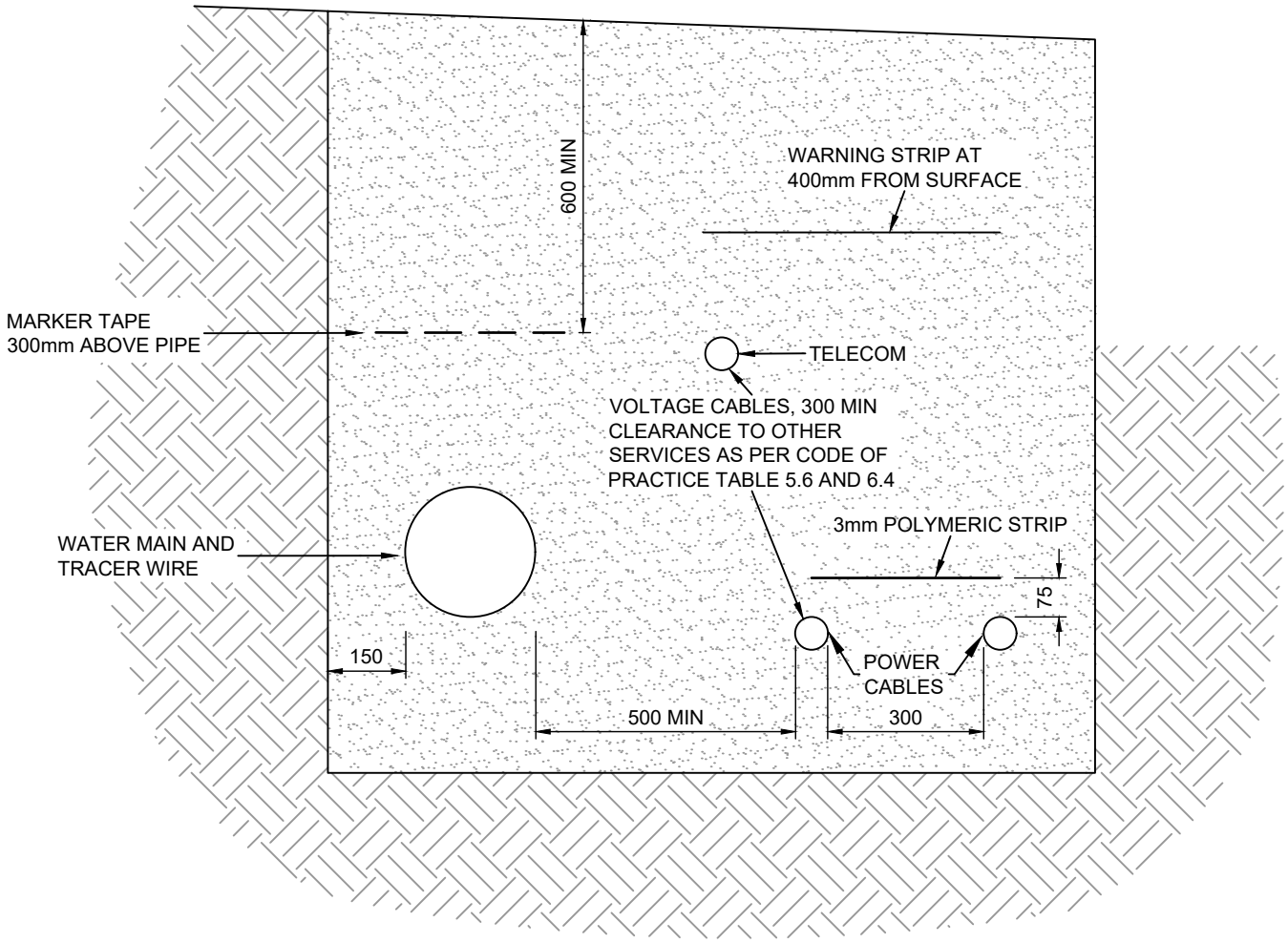
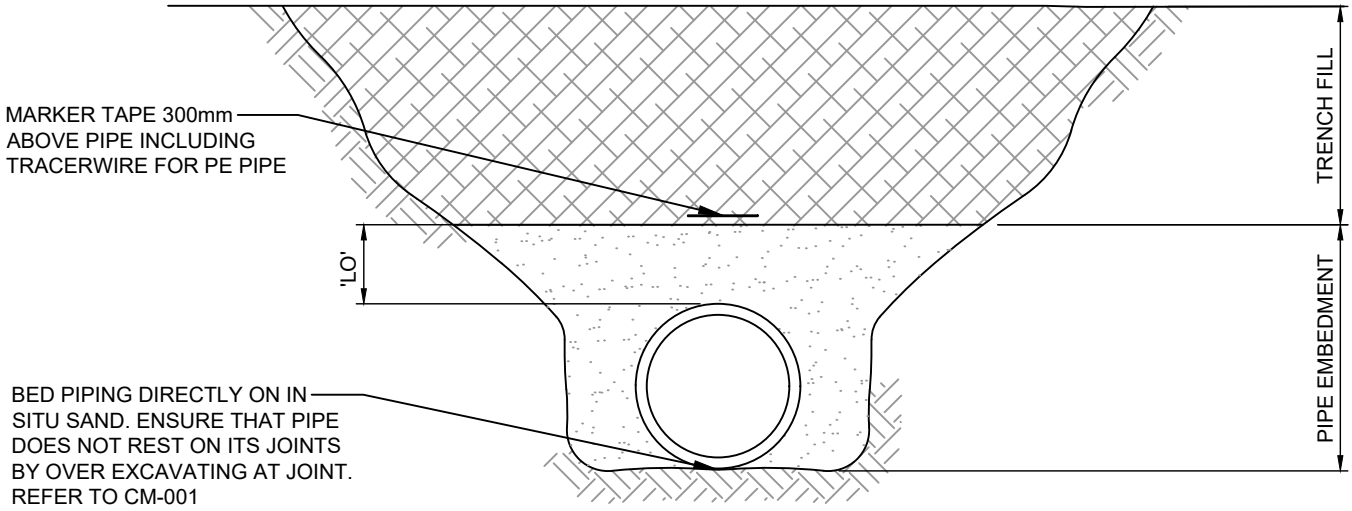


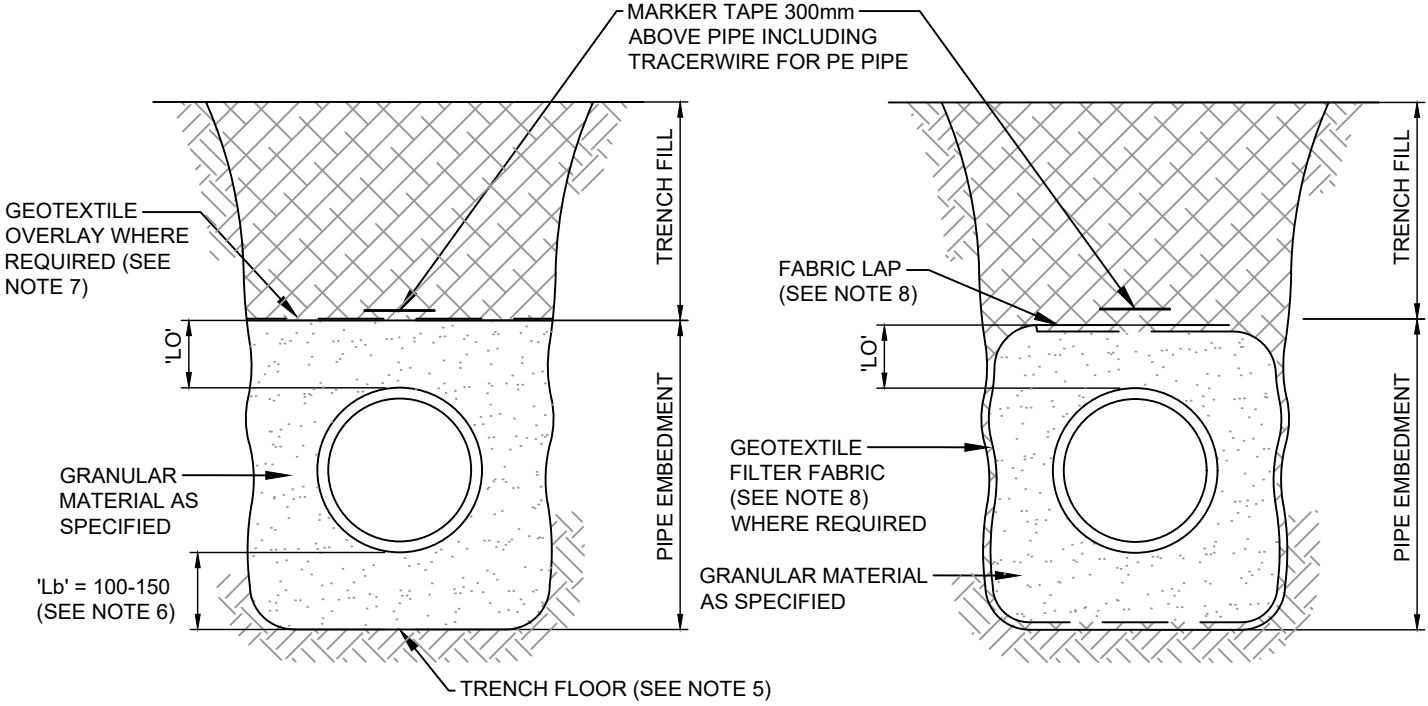
TRENCH DETAILS & UNDERGROUND UTILITIES IN VERGE

NOTE
SEPARATION FROM WATERMAIN DEFINED IN COP TABLE 6.4 (VARIES WITH PIPE SIZE)

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Combined Service Trench Detail	NOT TO SCALE Drawing No. B1-1



TRENCH IN SAND STRATA



TYPE 3 SUPPORT

FOR FLEXIBLE AND RIGID PIPES (SEE NOTE 3)

TYPE 4 SUPPORT

WITH GEOTEXTILE FOR FLEXIBLE AND RIGID PIPES (SEE NOTE 3)

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH CM-001
3. PIPE CLASSIFICATION

a. RIGID PIPES: VC, RC, STEEL AND CL

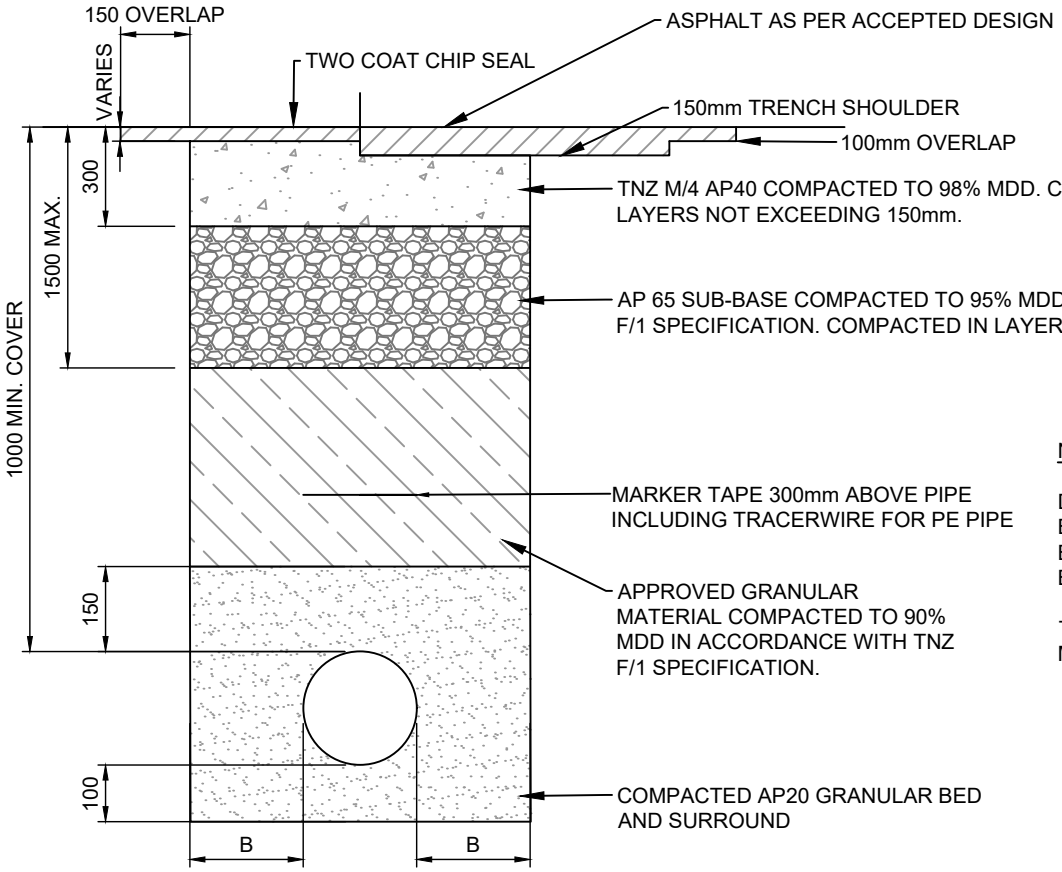
b. FLEXIBLE PIPES: PVC, GRP AND PE

4. PLACEMENT OF EMBEDMENT, TRENCH FILL AND COMPACTION TO MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATION.
5. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPE SETTLEMENT. WHEN EXCAVATED, REPLACE WITH GRANULAR MATERIAL AS SPECIFIED FOR BEDDING OR ADOPT TYPE 1,2,3 OR 4 SUPPORT AS REQUIRED.
6. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS AND FLANGES) DO NOT TOUCH TRENCH FLOOR - SEE CM-001
7. TYPE 4 SUPPORT TO BE USED WHERE MIGRATORY NATIVE SOILS (SANDS AND CLAYS) ARE ENCOUNTERED ADJACENT TO THE EMBEDMENT ZONE AND SINGLE SIZED AGGREGATE IS USED.
8. GEOTEXTILE OVERLAY IS REQUIRED FOR COARSE AGGREGATE EMBEDMENT >5mm. LAY GEOTEXTILE FILTER FABRIC AGAINST TRENCH FLOOR AND WALLS SUCH THAT IT FULLY ENCASES THE EMBEDMENT

- PRESS FILTER FABRIC INTO VOIDS BEFORE INSTALLING EMBEDMENT TO PREVENT FABRIC TEARING
- PROVIDE A MINIMUM OF 250 OVERLAP AT ALL FILTER FABRIC JOINTS

9. IN SOME AREAS LOCAL PRACTICE MAY ALLOW USE OF SELECTED EXCAVATED MATERIAL AS PIPE EMBEDMENT.
10. IN UNSUITABLE GROUND CONDITIONS SPECIFIC DESIGN IS REQUIRED REFER TO WSA 03 & WSA 04 DRAWINGS FOR GUIDANCE.
11. CONCRETE PIPES SHOULD BE BASED ON FIGURES 11 TO 13 IN ASNZS 3725.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Standard Pipe Embedment	NOT TO SCALE Drawing No. B1-2

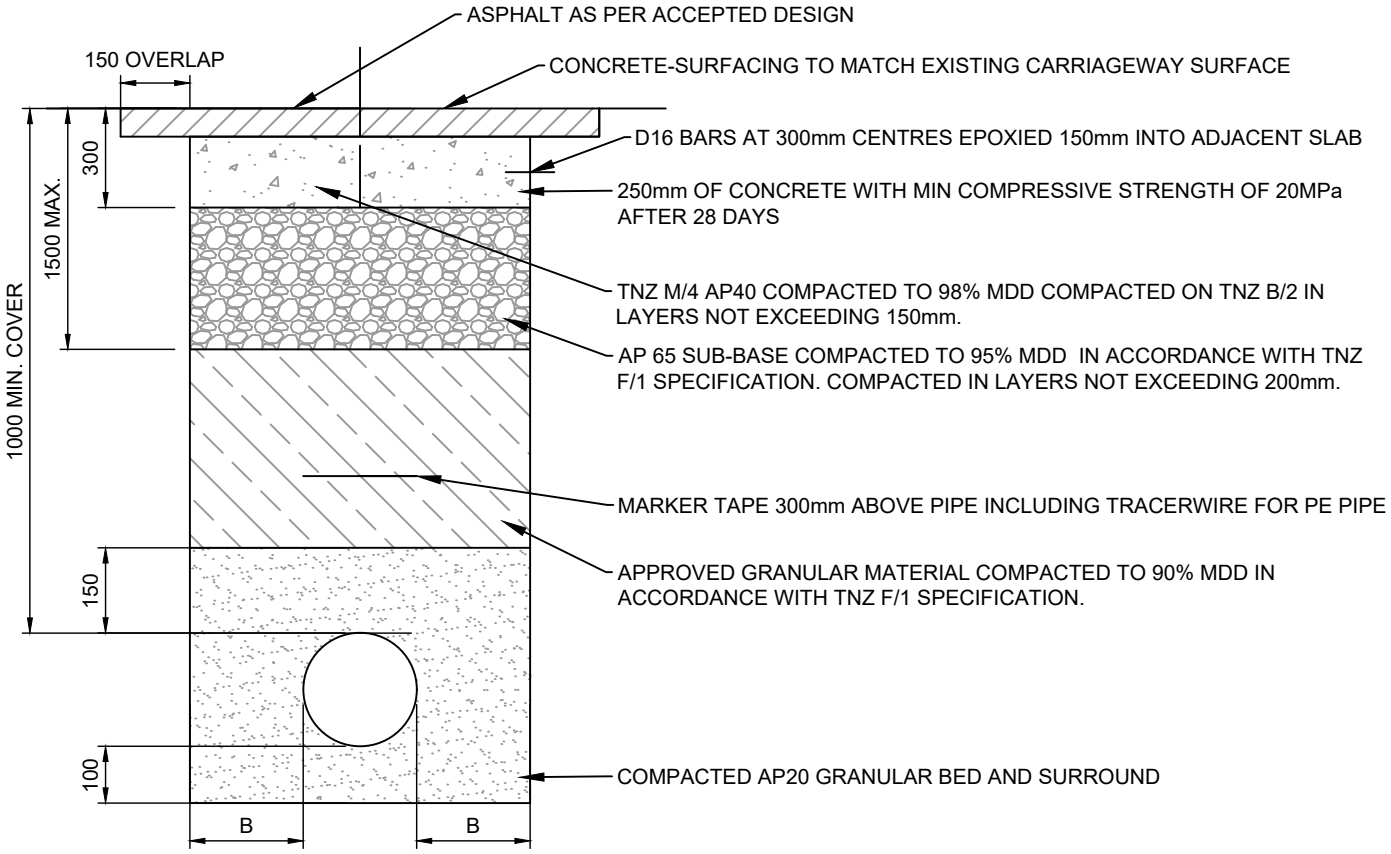


NOTES:

D = EXTERNAL DIAMETER OF PIPE
B = D/2 if < 300mm
B = 225 if D is 300 TO 685
B = 305 OTHERWISE

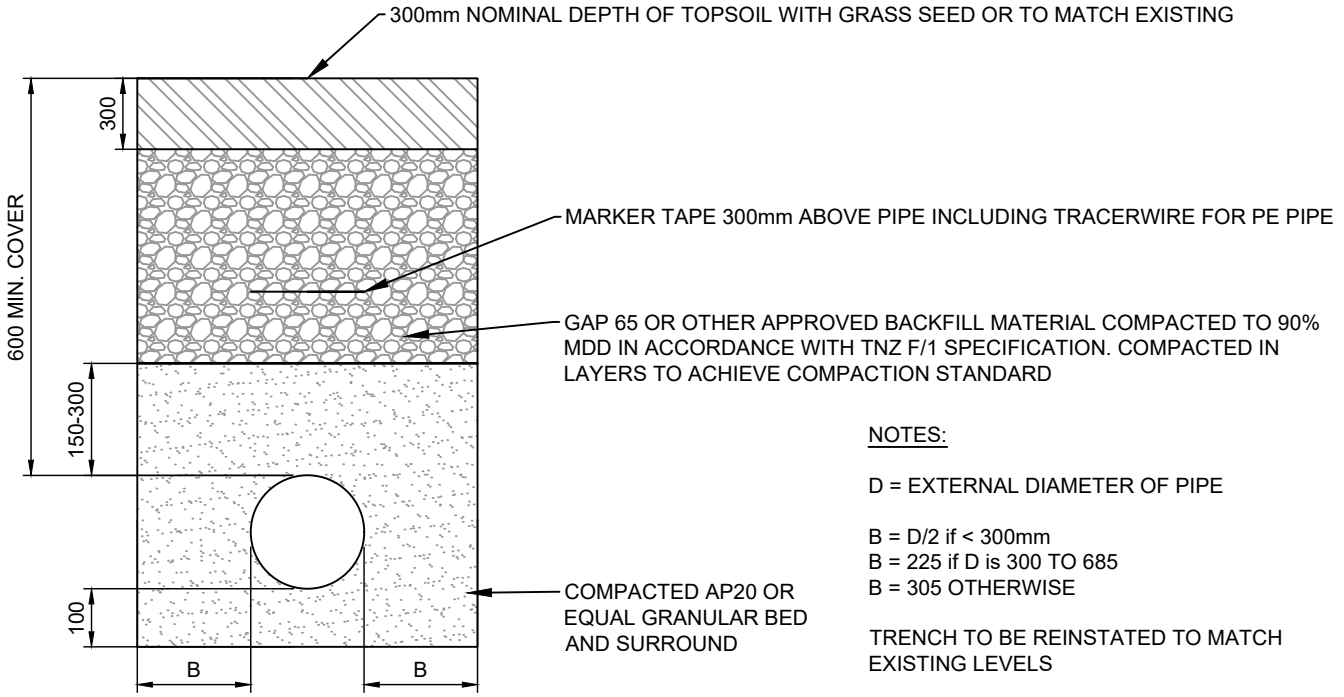
TRENCH TO BE REINSTATED TO MATCH EXISTING LEVELS

CHIPSEAL CARRIAGEWAY CROSS SECTION

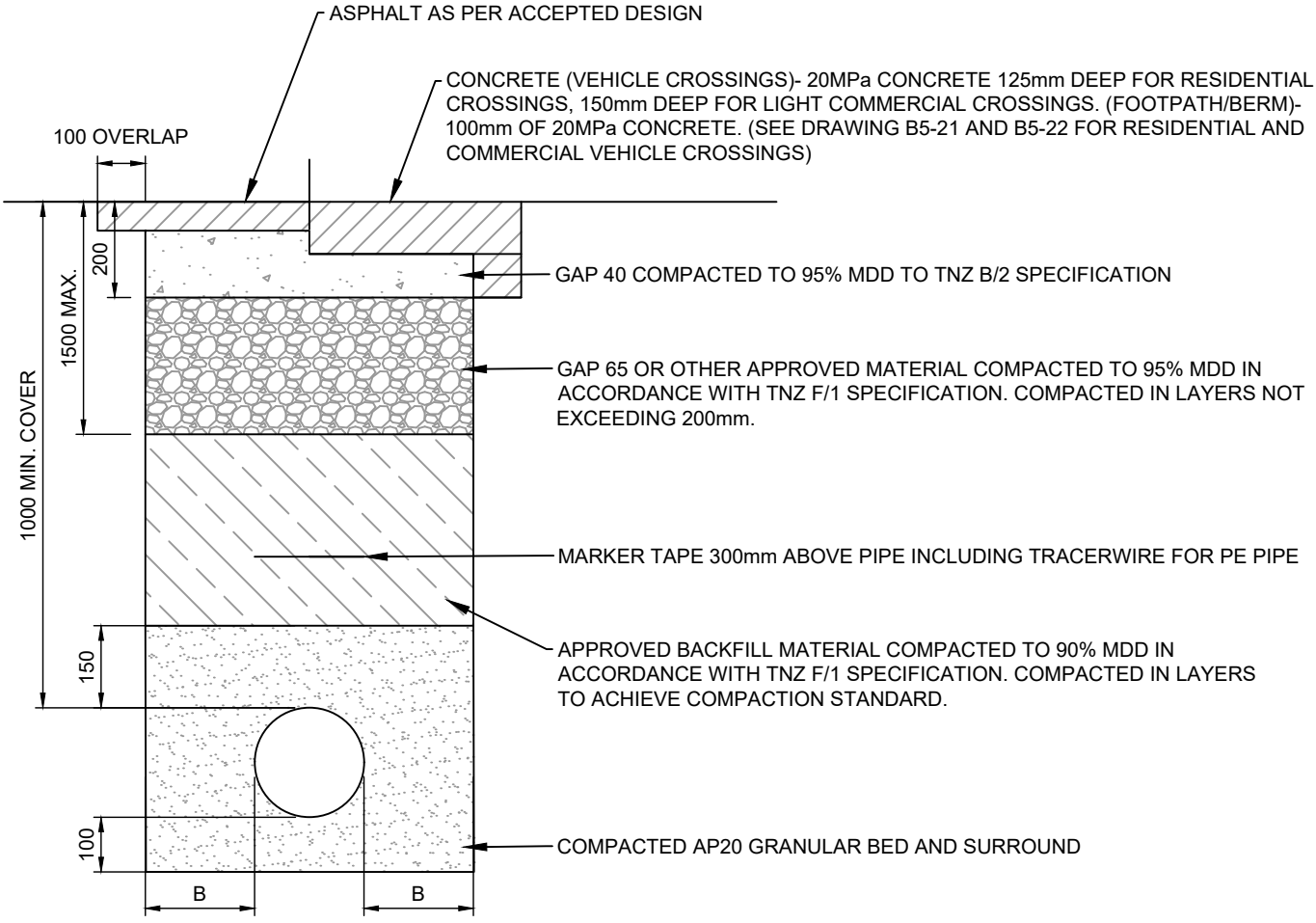


ASPHALT/CONCRETE CARRIAGEWAY CROSS SECTION

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Pipe Bedding & Backfill for Carriageways	NOT TO SCALE Drawing No. B1-3

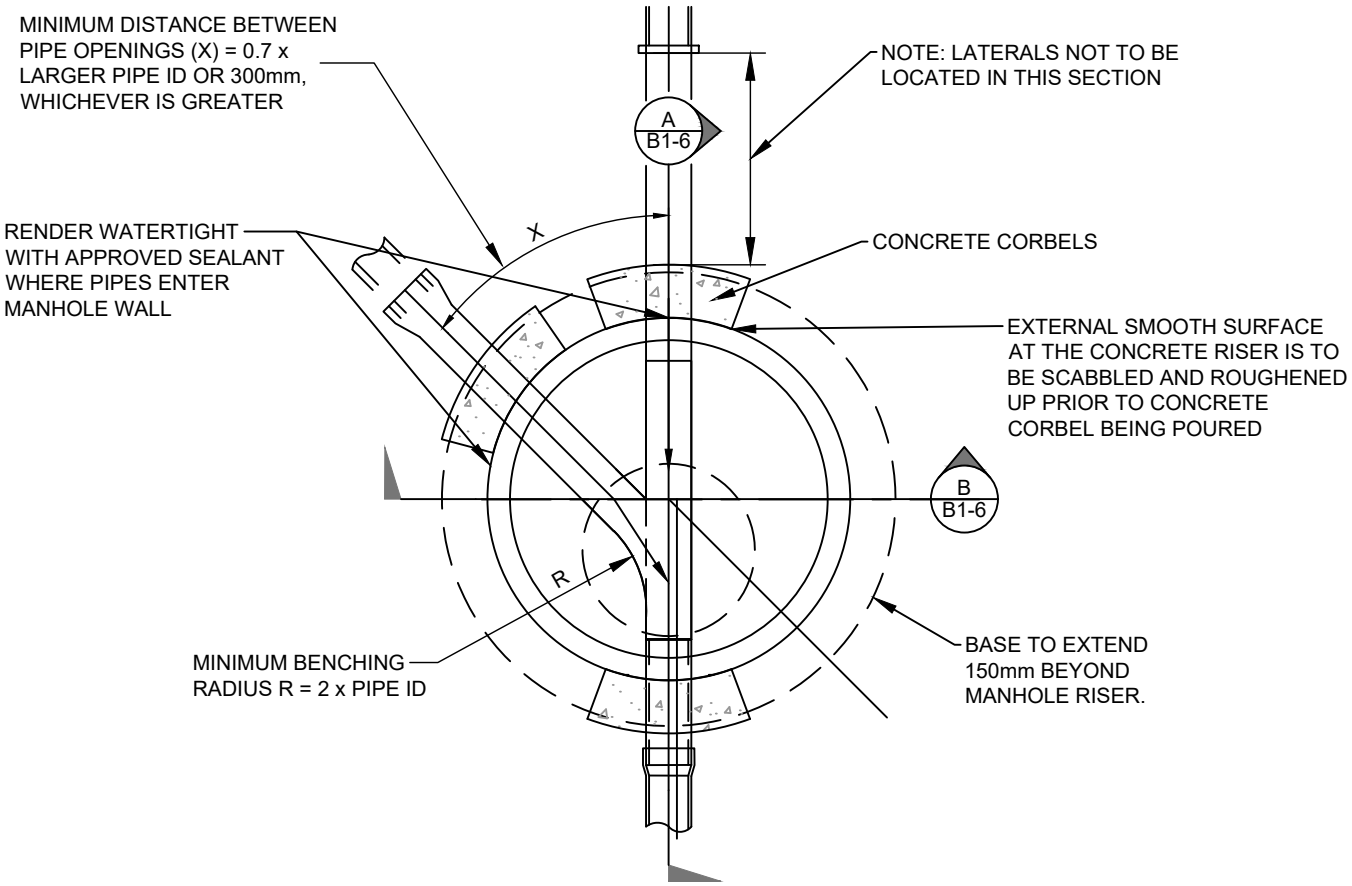


BERM/NON TRAFFICABLE CROSS SECTION



VEHICLE CROSSING CROSS SECTION

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Pipe Bedding & Backfill for Vehicle Crossings & Non Trafficable	NOT TO SCALE Drawing No. B1-4

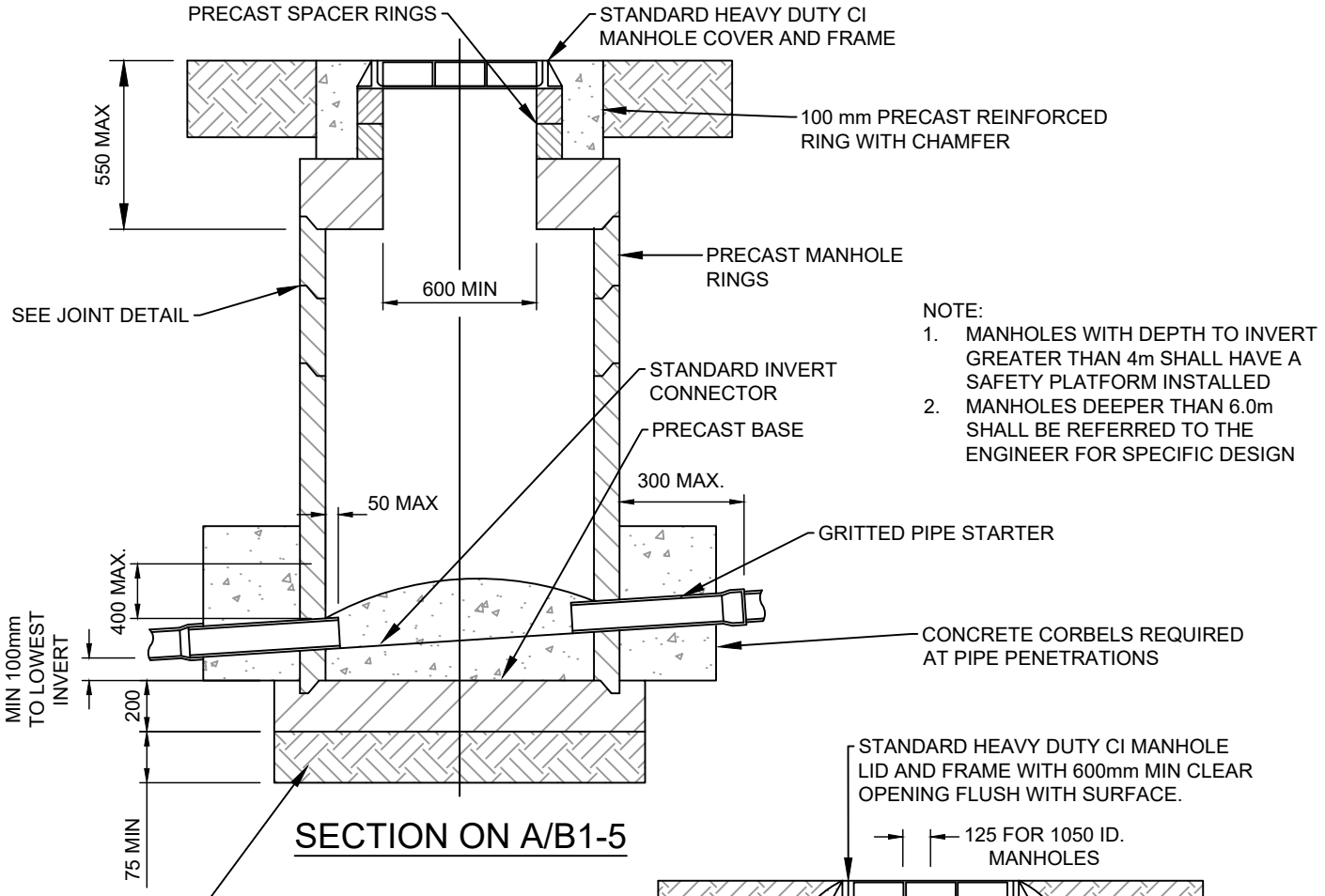


PLAN

NOTES

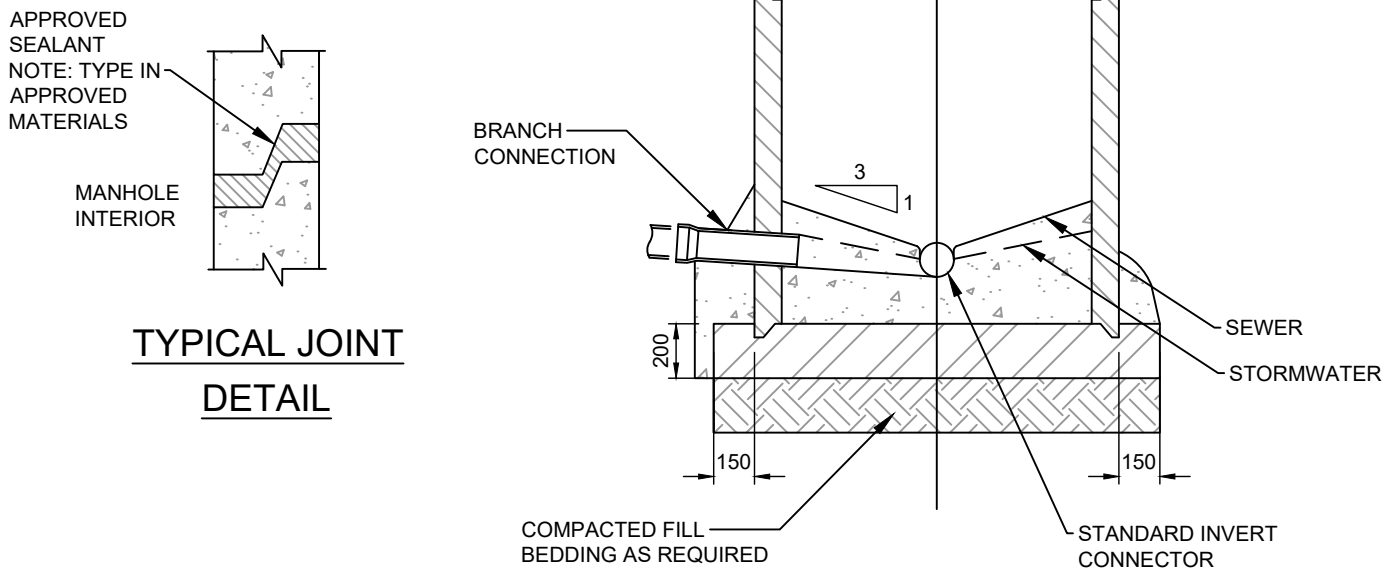
1. ALL IN SITU CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20MPa @ 28 DAYS.
2. ALL PRECAST MANHOLE UNITS (SHOWN SHADED IN DRAWING B1-6) TO BE STANDARD MANUFACTURED UNITS. (IE. HUMES OR SIMILAR APPROVED)
3. ALL BRANCHES SHALL BE CONSTRUCTED SUCH THAT THEY CAN BE READILY ACCESSED BY CCTV CAMERA. THE CORBALS DETAIL (IE. CROSS SECTION) SHALL NOT BE COMPROMISED. IF REQUIRED, THE "STRAIGHT THROUGH" CHANNEL SHALL BE OFFSET FROM THE MANHOLE CENTRELINE AND THE BRANCH CHANNELLING LEFT STRAIGHT FOR A SUFFICIENT LENGTH TO ACHIEVE THE DESIRED RESULT.
4. ACCESS OPENING TO BE LOCATED OVER THE DOWNSTREAM SIDE OF THE MANHOLE.
5. IF A DEVIATION IS SOUGHT FROM THE REQUIREMENTS IN THE DETAIL ABOVE, JUSTIFIABLE CALCULATIONS MUST BE GIVEN AND BE TO COUNCIL'S SATISFACTION.
6. >75° DEFLECTION SHALL REQUIRE SPECIFIC DESIGN FOR MANHOLE RISERS FOR ANY DIAMETER OF PIPE >375mm.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Manhole Detail A - Typical Plan View	NOT TO SCALE Drawing No. B1-5



SECTION ON A/B1-5

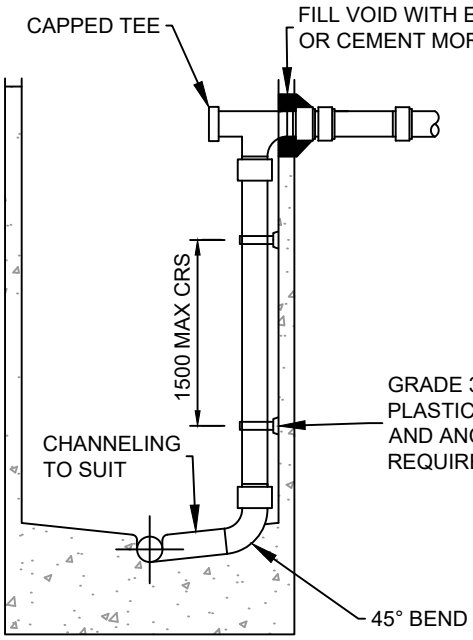
NOTE:
1. MANHOLES WITH DEPTH TO INVERT GREATER THAN 4m SHALL HAVE A SAFETY PLATFORM INSTALLED
2. MANHOLES DEEPER THAN 6.0m SHALL BE REFERRED TO THE ENGINEER FOR SPECIFIC DESIGN



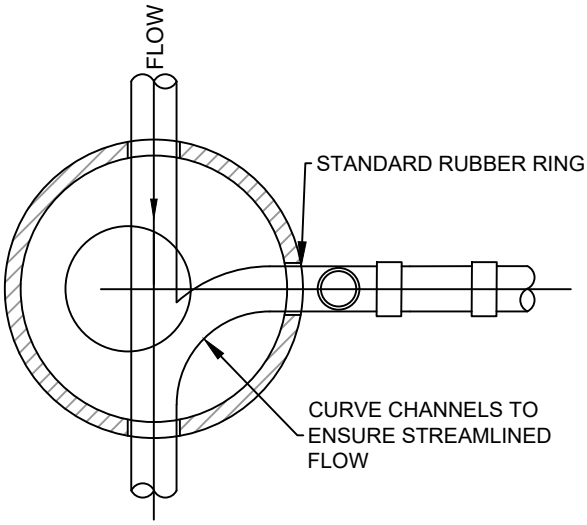
SECTION ON B/B1-5

TYPICAL JOINT DETAIL

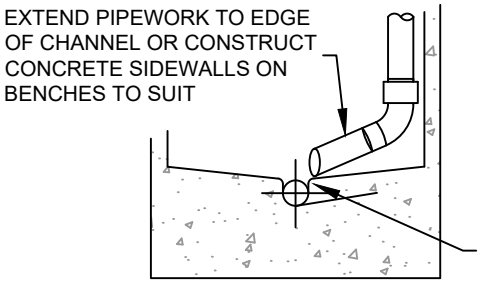
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Manhole Detail B - Typical Cross Section	NOT TO SCALE Drawing No. B1-6



SECTION - INTERNAL DROP MANHOLE

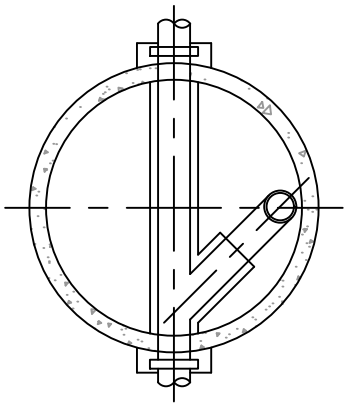


PLAN - EXTERNAL DROP MANHOLE



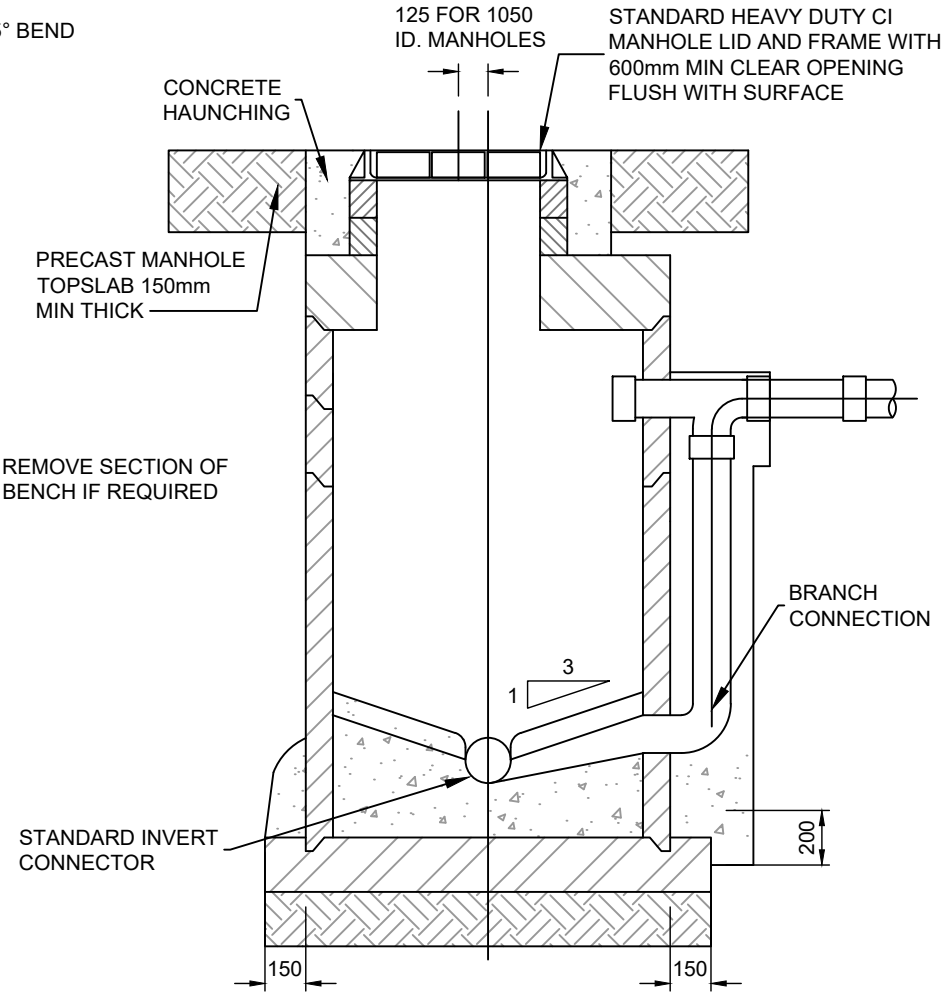
INTERNAL DROP POST CONSTRUCTION INSTALLATION DETAIL

(WHERE AUTHORISED BY TERRITORIAL AUTHORITY)



PLAN - TYPICAL INTERNAL DROP

SUITABLE FOR INSITU AND PRECAST MH (WHERE AUTHORISED BY TERRITORIAL AUTHORITY)

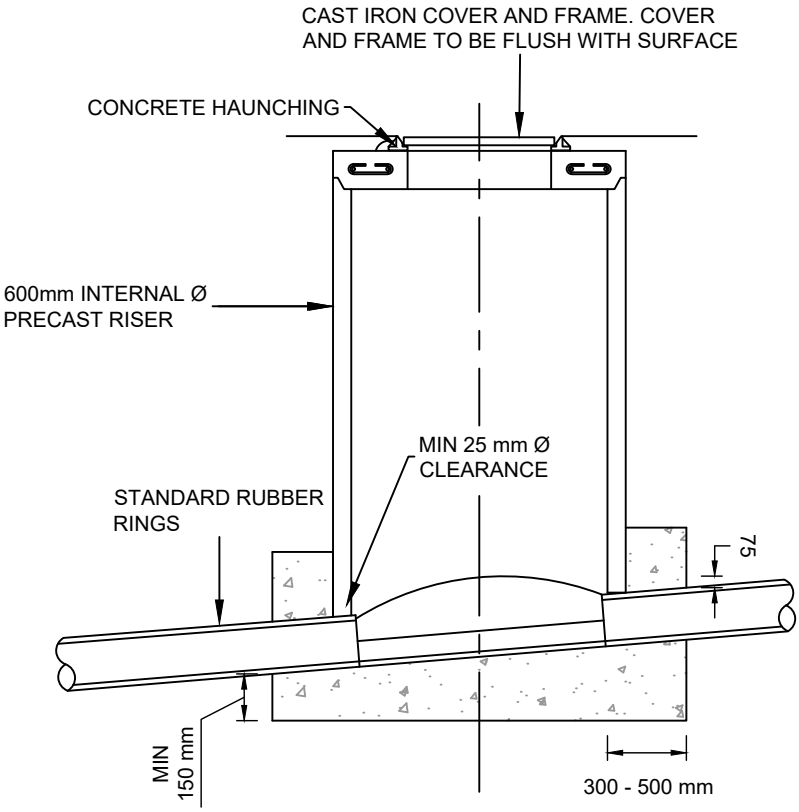


SECTION - EXTERNAL DROP MANHOLE

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. MANHOLES WITH DEPTH TO INVERT GREATER THAN 4m SHALL HAVE A SAFETY PLATFORM INSTALLED.
3. MANHOLES DEEPER THAN 6.0m SHALL BE REFERRED TO THE ENGINEER FOR SPECIFIC DESIGN.
4. MINIMUM DN 1200 MH TO BE USED WITH INTERNAL DROP STRUCTURES.
5. INTERNAL DROP NOT NORMALLY USED IN STORMWATER APPLICATIONS.
6. ALL CAST IN-SITU BENCHING AND HAUNCHING TO BE 30MPa CONCRETE UNLESS OTHERWISE SPECIFIED BY TA.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: External and Internal Drop Manhole	NOT TO SCALE Drawing No. B1-7

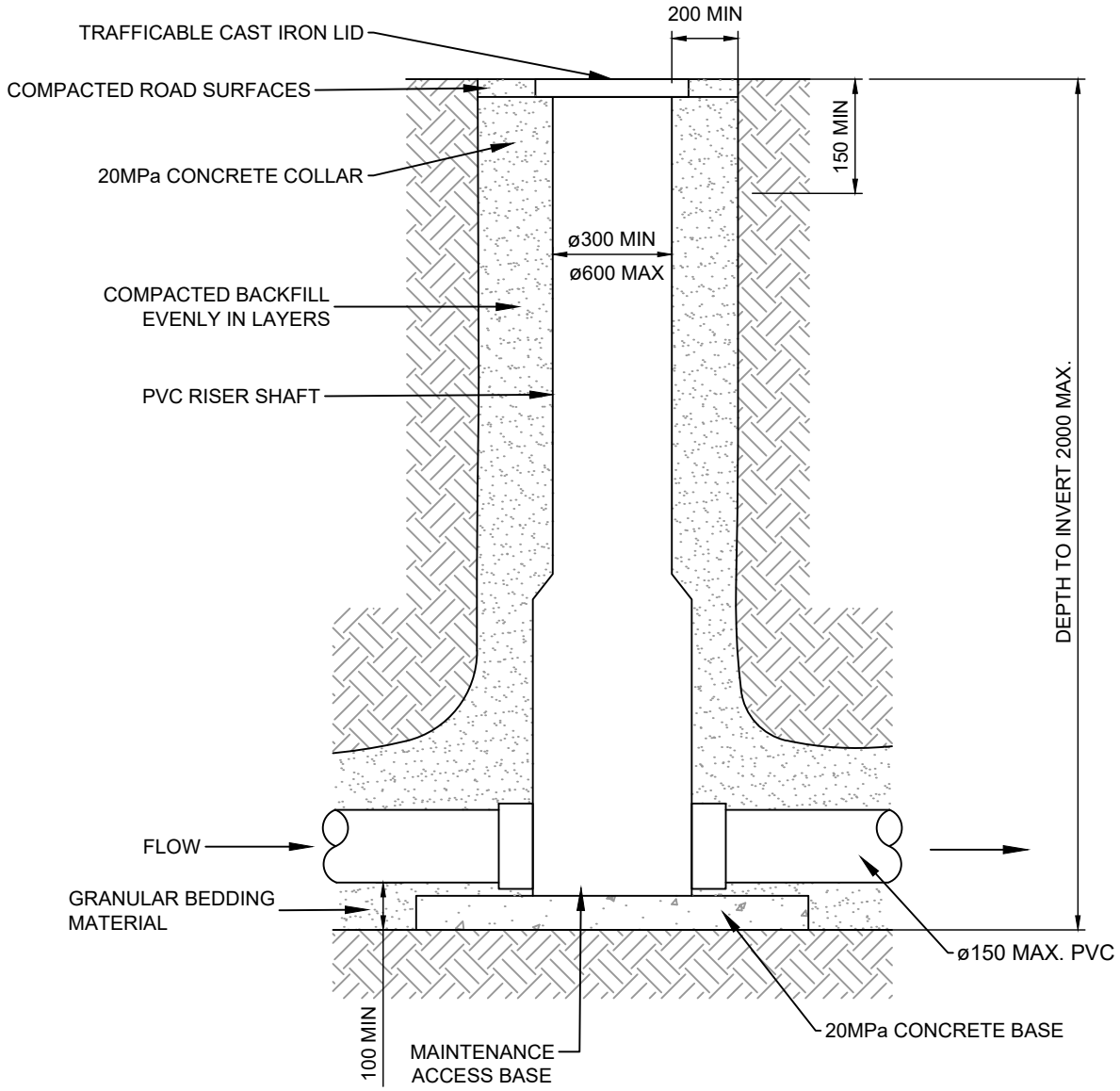


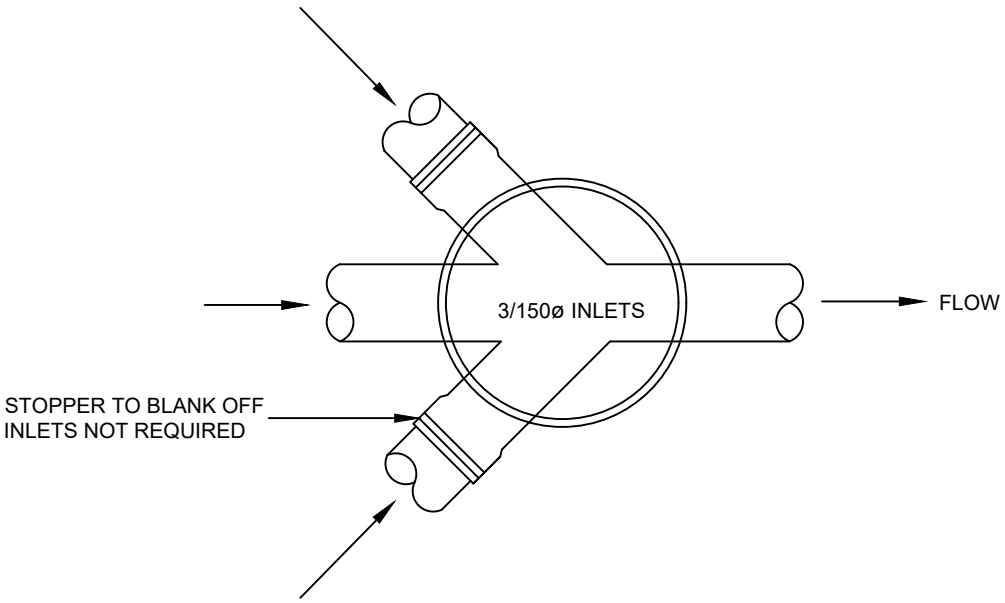
(DEPTH NOT TO EXCEED 1.2m)

MINI MANHOLE

NOTE:
1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL CAST IN-SITU BENCHING AND HAUNCHING TO BE 30MPa CONCRETE UNLESS OTHERWISE SPECIFIED BY TA.

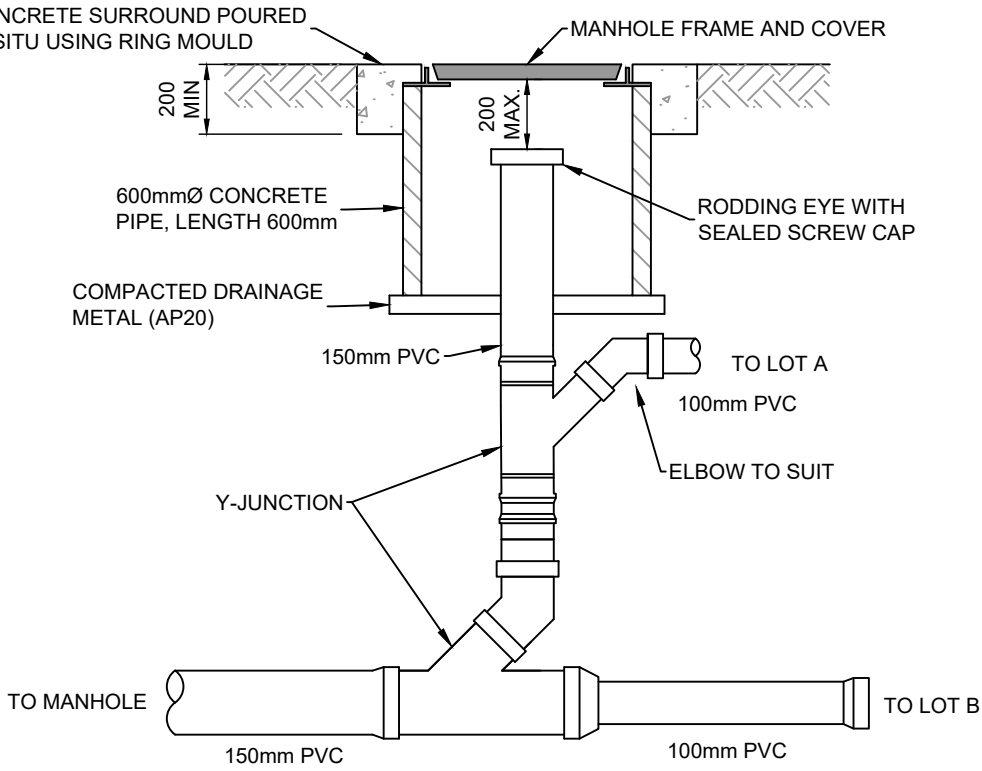
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Mini Manhole Detail	NOT TO SCALE Drawing No. B1-8



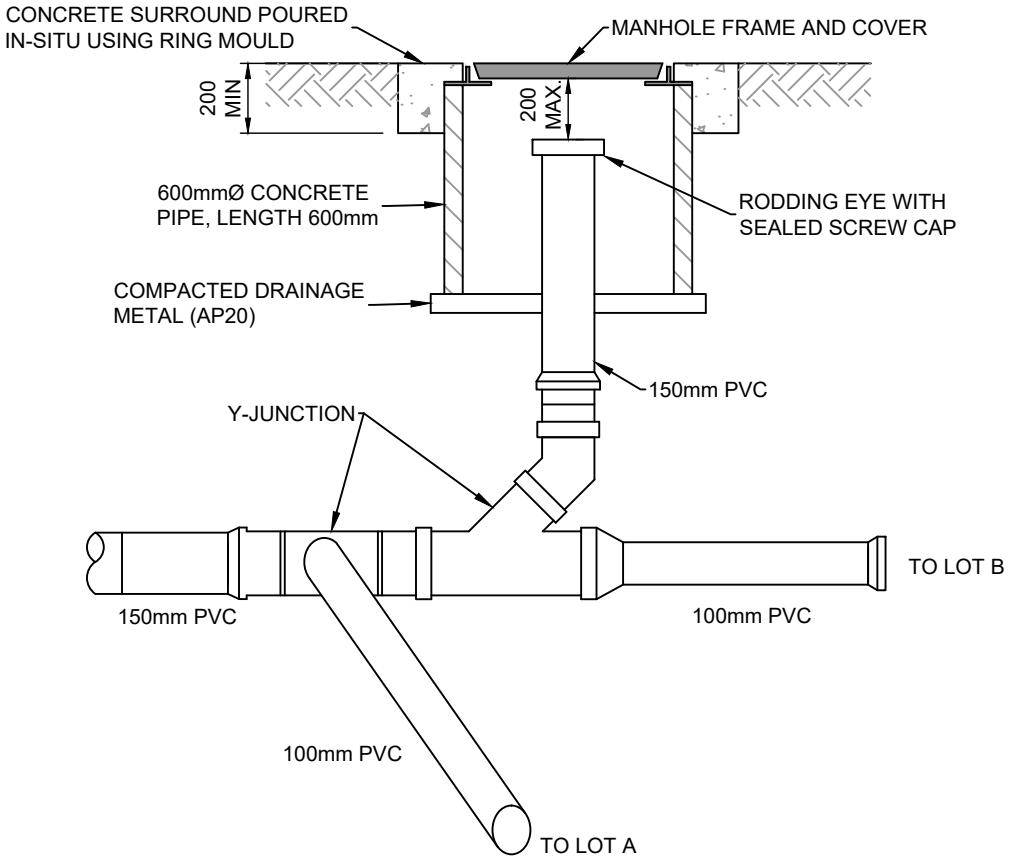


NOTE:
ONLY TO BE USED FOR THE TERMINATING MANHOLES IN COMMON EASEMENTS OR RIGHT OF WAY ACCESS FOR RESIDENTIAL SITES WITH A MAXIMUM OF THREE 100mmØ HOUSE CONNECTIONS, OR WHERE DIRECTED BY THE ENGINEER.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: PVC Inspection Chamber (Residential Only)	NOT TO SCALE Drawing No. B1-9

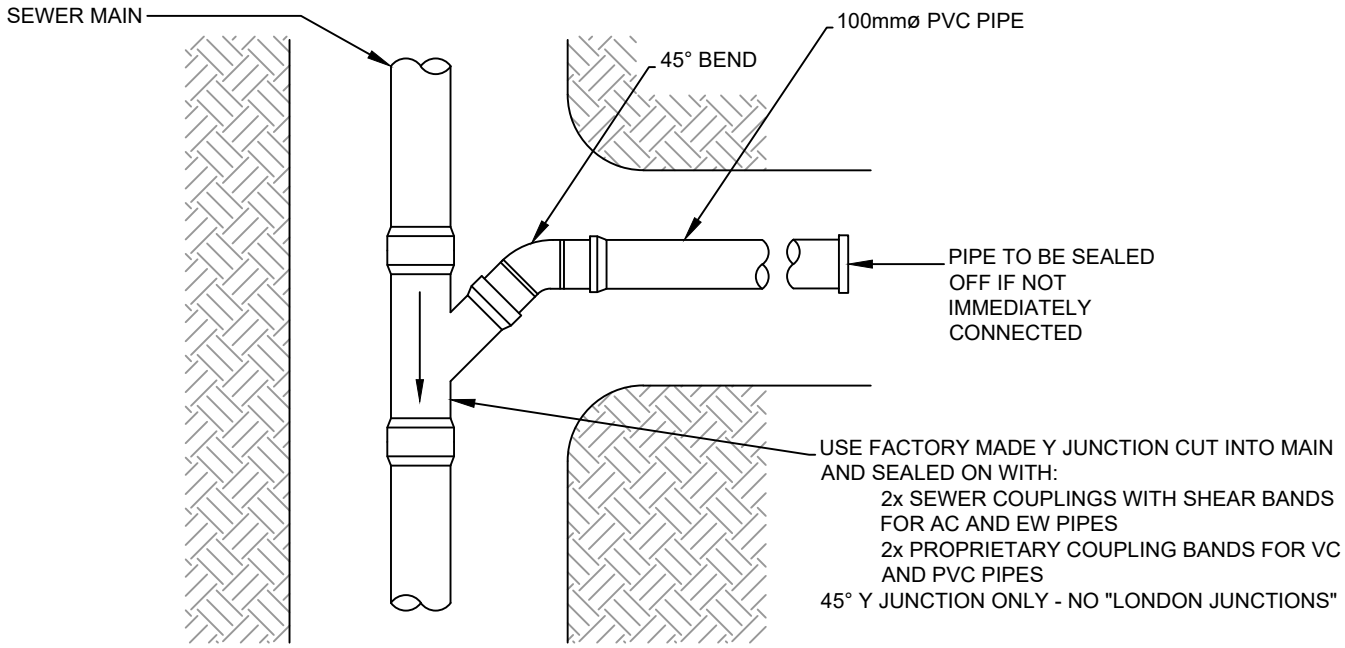


LATERAL OFF RODDING EYE STANDPIPE

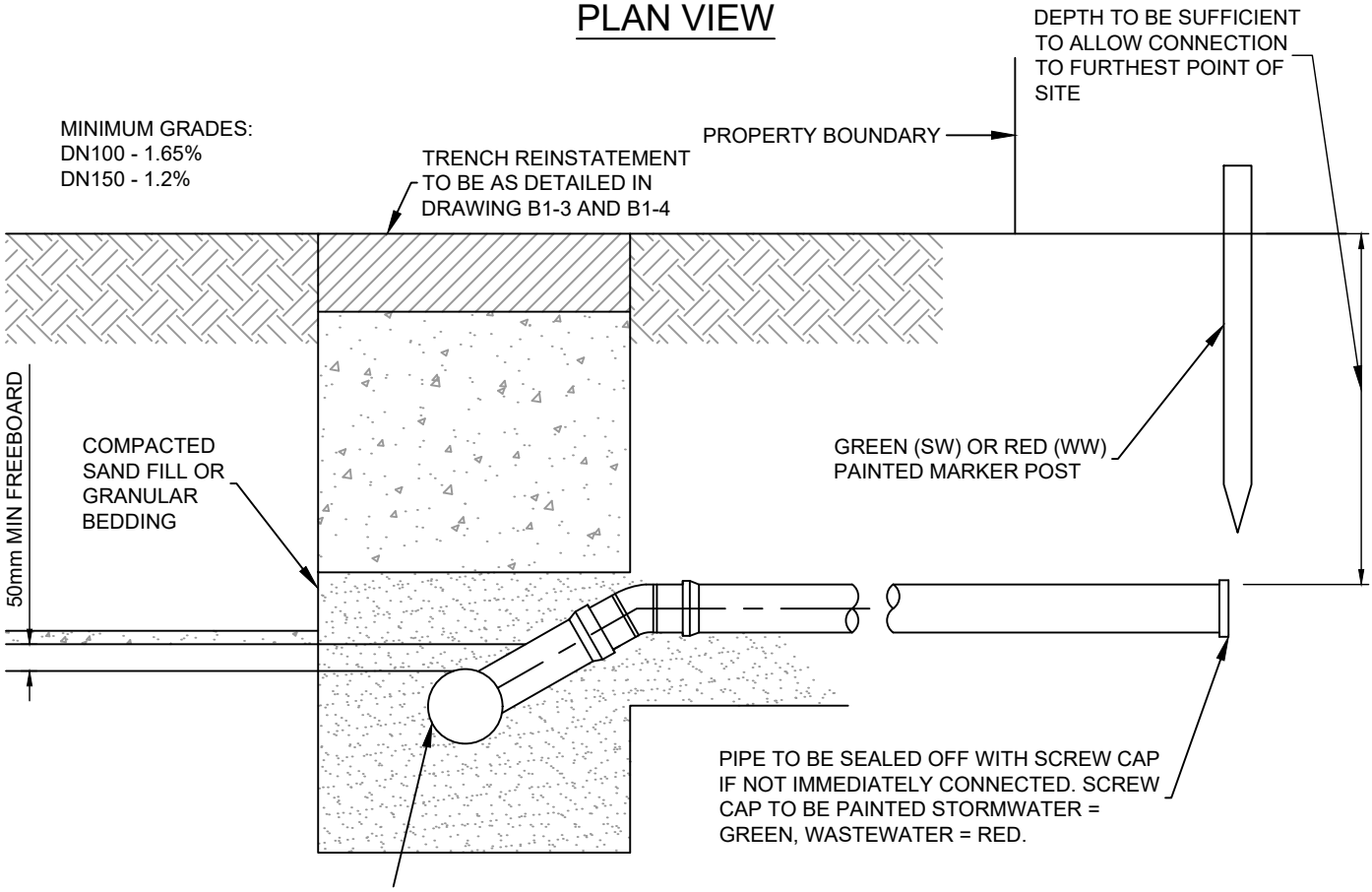


LATERAL OFF 150mm CONNECTION TO MANHOLE

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Lateral Connections For Two Properties	NOT TO SCALE Drawing No. B1-10



PLAN VIEW



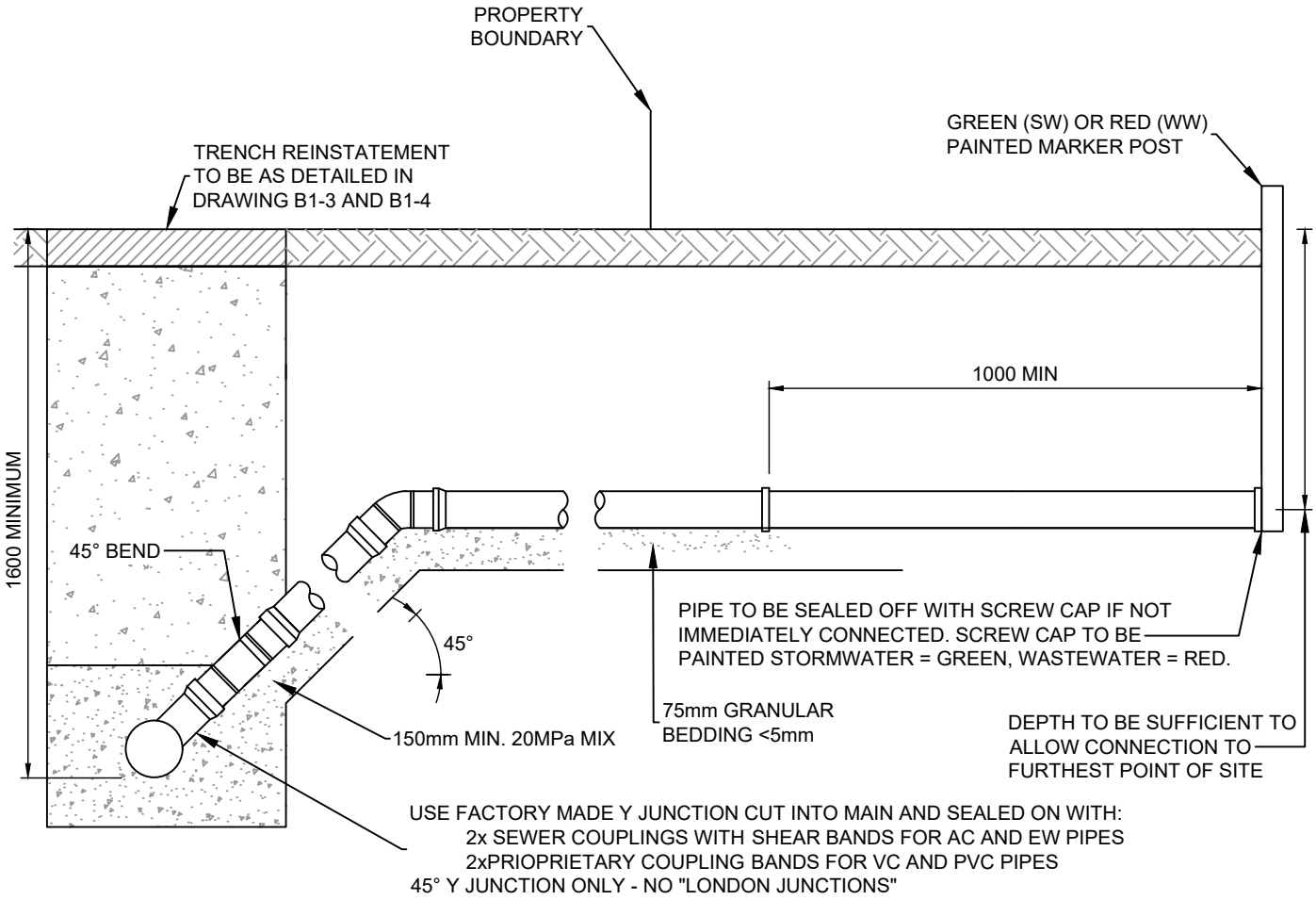
SHALLOW CONNECTION

DEPTH TO INVERT LESS THAN 1.2m

NOTES:

1. ALL CONNECTIONS SHALL HAVE NO ACCESS FITTINGS ON LINE, NO CHANGE OF DIRECTION, OR CHANGE OF GRADE WITHIN 3m OF MAIN CONNECTION.

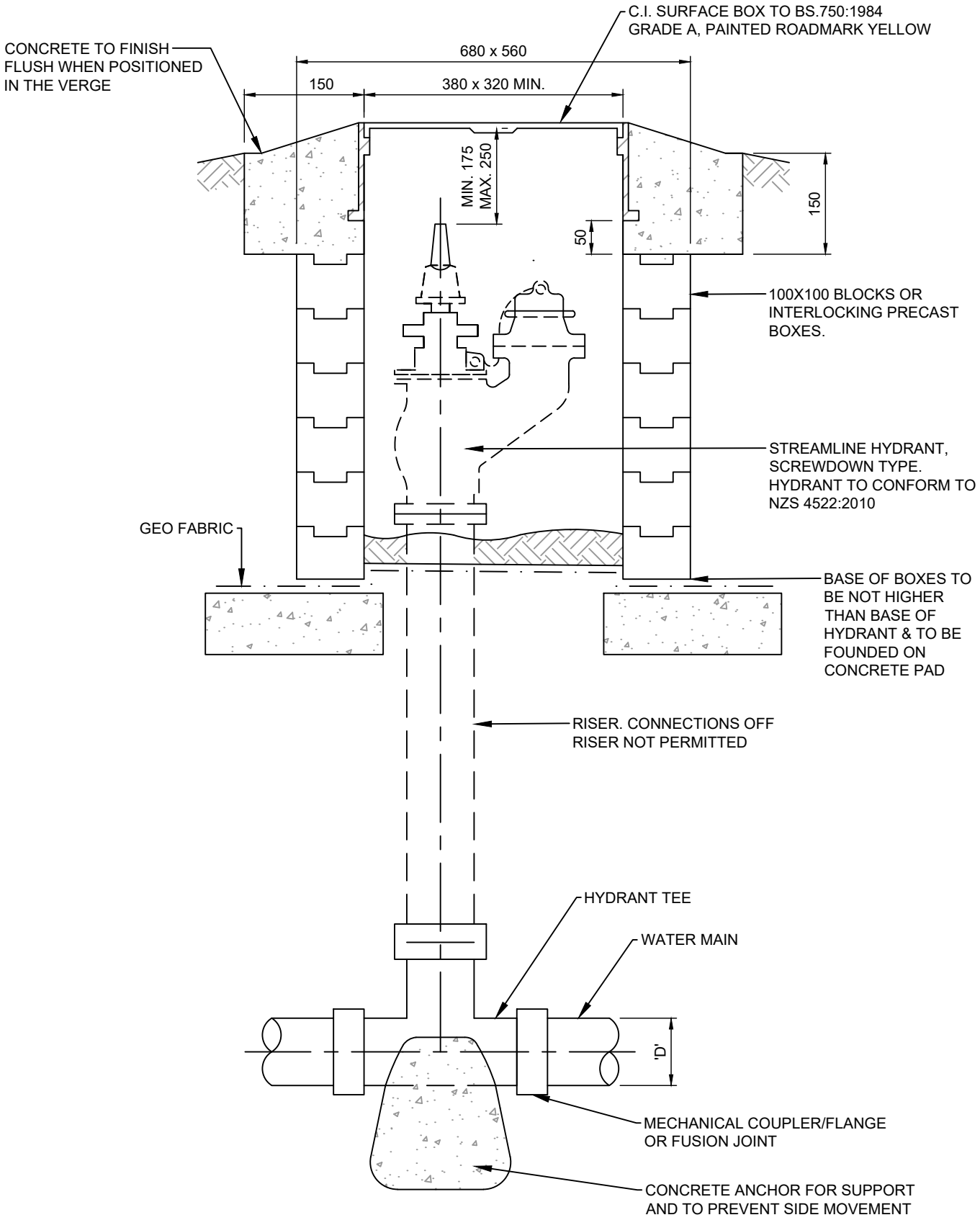
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Domestic Drainage (Shallow Connection) Detail	NOT TO SCALE Drawing No. B1-11



DEEP CONNECTION

DEPTH TO INVERT MORE THAN 1.2m

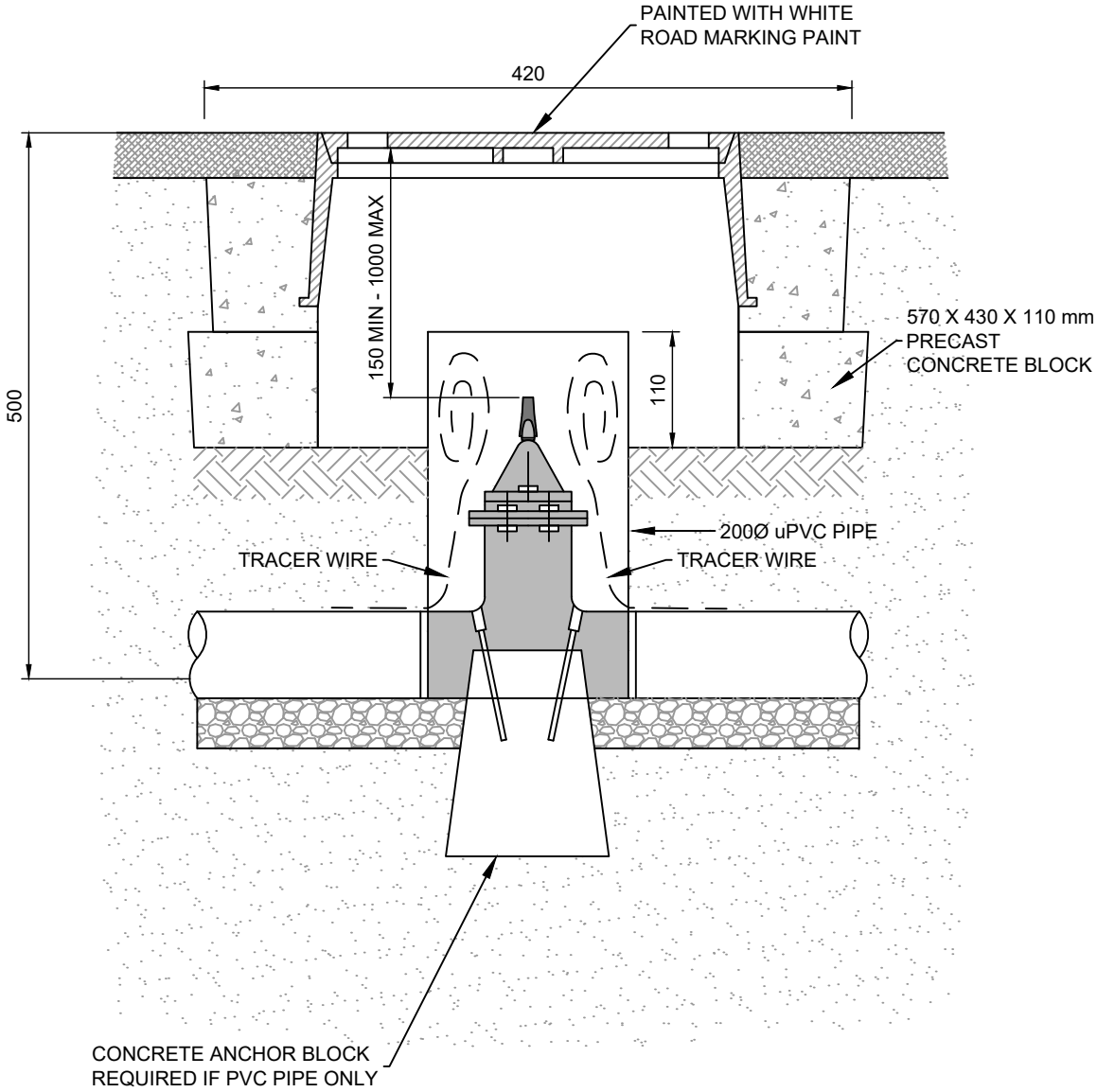
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Domestic Drainage (Deep Connection) Detail	NOT TO SCALE Drawing No. B1-12



NOTES:

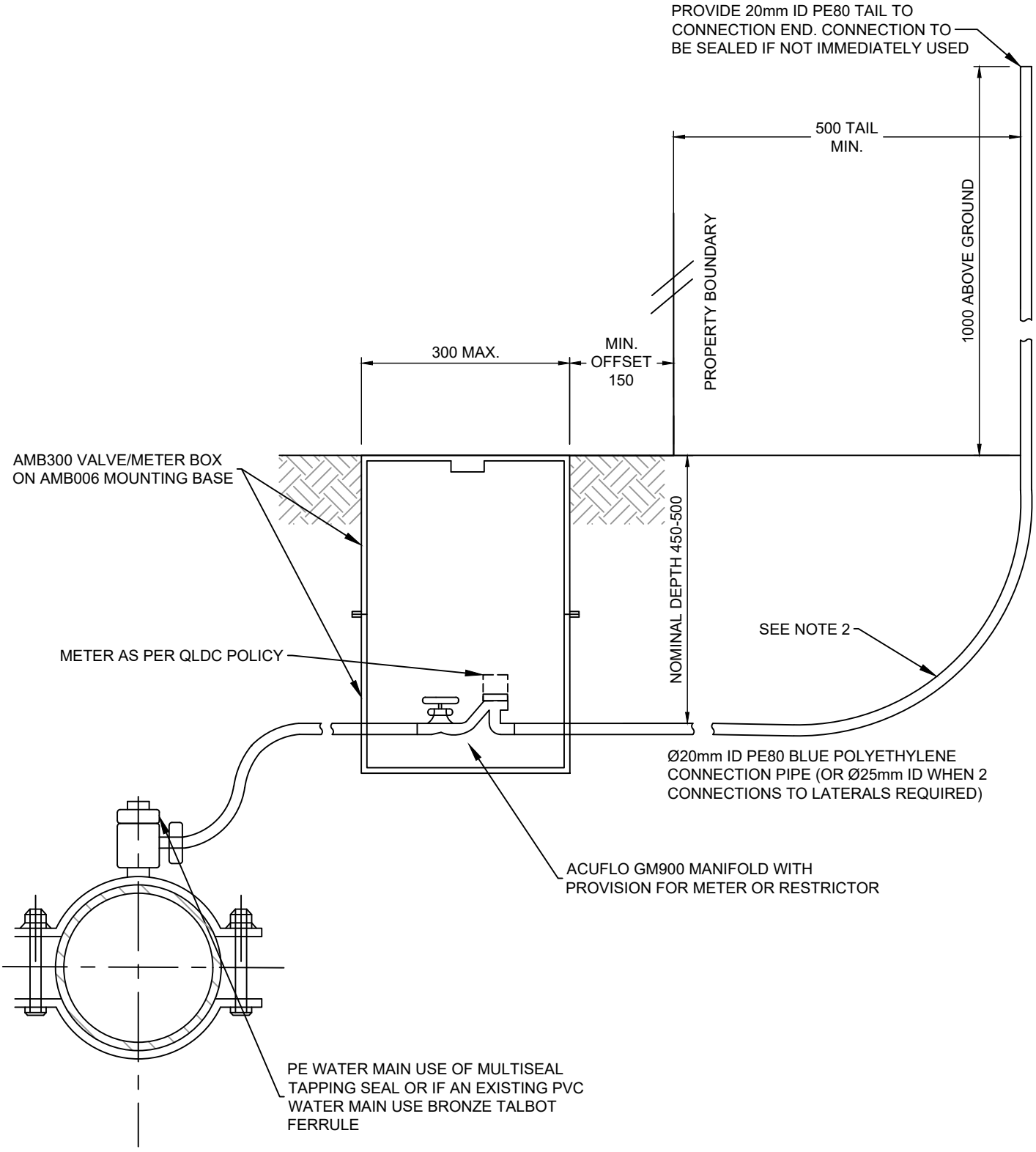
1. ALL DIMENSIONS IN MILLIMETRES.
2. WHERE MAINS ARE CONSTRUCTED IN PVC, USE STANDARD CAST IRON HYDRANT TEE AND STEP MECHANICAL COUPLER.
3. FROST PLUG TO BE INSTALLED.
4. ALL FIRE HYDRANTS SHALL BE INSTALLED ON SUPPLY PIPES THAT HAVE A MINIMUM COVER OF 1000mm TO ALLOW FOR SUITABLE CLEARANCES, IF REQUIRED LOCALISED LOWERING OF THE SUPPLY PIPES CAN BE ACHIEVED BY TAPERING DOWN FROM 5m EITHER SIDE OF THE FIRE HYDRANT.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Fire Hydrant	NOT TO SCALE Drawing No. B2-1



NOTES:
1. CONCRETE SURROUNDS 370x480x90H Ø200 HOLE FITS CAST IRON VALVE BOX 225x235
2. FIRE HYDRANT CONCRETE SURROUND 570x430x110H FITS 405x255 SV OR FH CAST IRON BOX

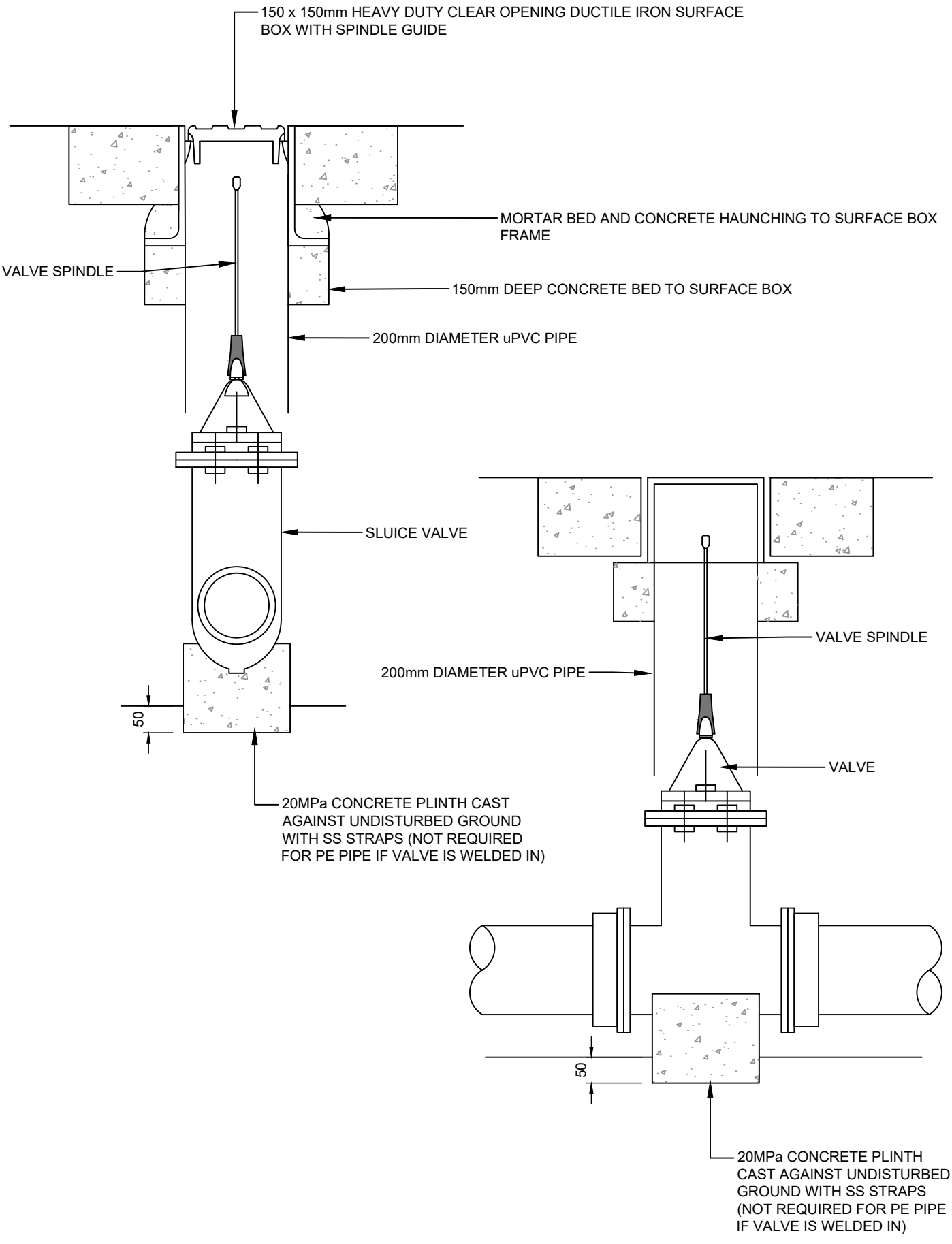
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Cast Iron Valve Box	NOT TO SCALE Drawing No. B2-2



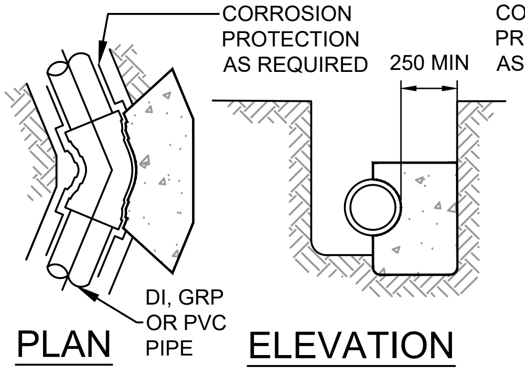
NOTES:

1. OPTION OF USING 50 mm BRASS TALBOT INSTEAD OF ELBOW OFF MAIN.
2. OPTION OF A CONTINUOUS PIPE LAID IN ACCORDANCE WITH MANUFACTURE MINIMUM BEND RADIUS, AND IF THIS CANNOT BE ACHIEVED THEN ELECTRO FUSION (EF) ELBOWS ARE TO BE USED.
3. WHEN THERE IS NO OPTION BUT TO INSTALL A TOBY BOX IN A TRAFFICABLE AREA THEN A TRAFFICABLE CAST BOX WITH CAST IRON LID IS REQUIRED.
4. 25mm ID CONNECTIONS REQUIRE 2 x ACUFLO BOXES OR 500mm JUMBO BOX WITH BASES.
5. AN ACUFLO GM900 MANIFOLD WITH BLANK CAP AND SCREW-IN DUAL CHECK VALVE SHALL BE INSTALLED ON EACH CONNECTION AND POSITIONED INSIDE AN AMB035 (LID-LESS BOX/BASE COMBINATION) WITH A AMB300 (300mm WITH LID) BOX POSITIONED ABOVE TO GIVE REQUIRED DEPTH (450mm) NEAR THE PROPERTY BOUNDARY AND ALSO BE CLEAR OF ANY VEHICULAR MOVEMENTS.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Service Connection	NOT TO SCALE Drawing No. B2-3

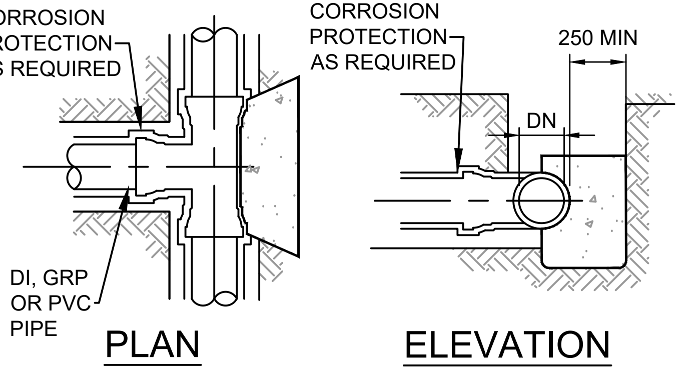


QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Sluice Valve Detail	NOT TO SCALE Drawing No. B2-4



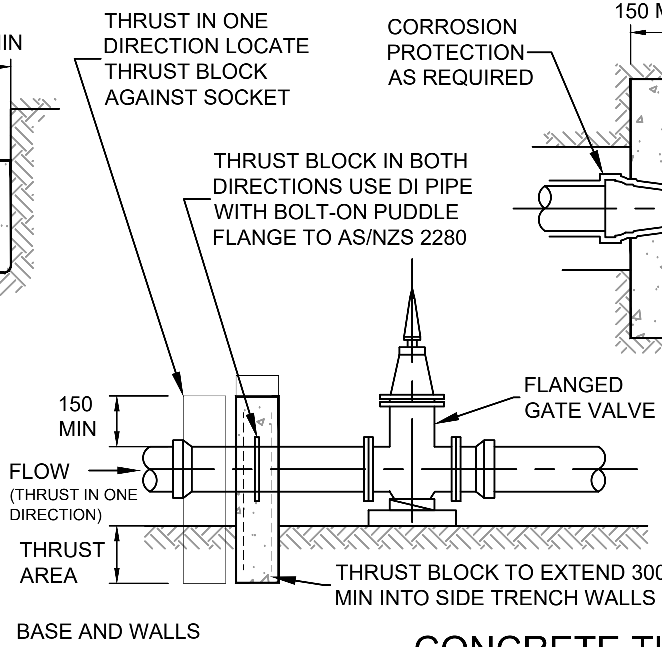
THRUST BLOCK FOR BENDS

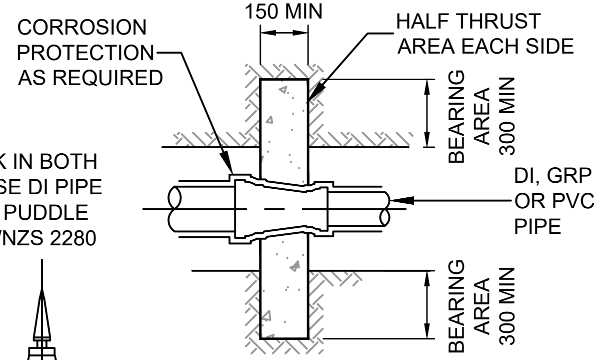
(FOR HORIZONTAL THRUST)



THRUST BLOCK FOR TEES

(FOR HORIZONTAL THRUST)





TAPER THRUST BLOCK

(FOR HORIZONTAL THRUST)

CONCRETE THRUST BLOCK FOR FLANGED VALVES

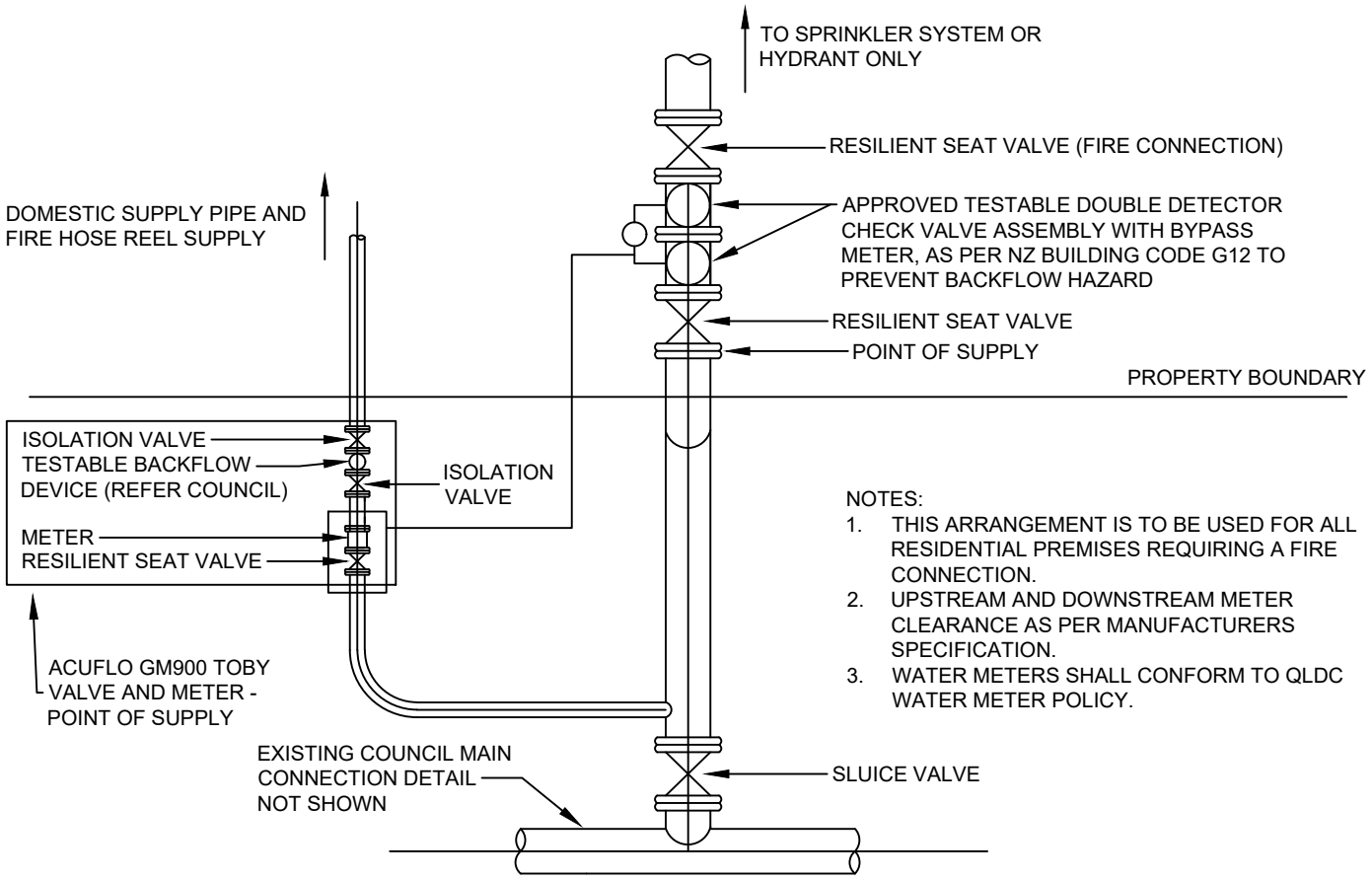
MINIMUM THRUST AREA FOR BLOCKS IN SQUARE METRES (m^2) DESIGN PRESSURE 1000 kPa (NOM. 100m HEAD)

SOIL CLASSIFICATION AND ALLOWABLE HORIZONTAL BEARING PRESSURE OF GROUND. (SEE NOTE 1) / FOR HORIZONTAL THRUST ON TRENCH WALLS WHERE THE COVER OVER PIPES IS 450 OR GREATER	90° & 60° HORIZONTAL BENDS			45° & 30° HORIZONTAL BENDS			22.5° HORIZONTAL BENDS			11.25° HORIZONTAL BENDS			TEES AND DEAD ENDS		
	STIFF CLAY MEDIUM DENSE CLEAN SAND	VERY STIFF CLAY DENSE SAND/GRAVEL DECOMPOSED ROCK	HARD CLAY SOUND ROCK	STIFF CLAY MEDIUM-DENSE CLEAN SAND	VERY STIFF CLAY DENSE SAND/GRAVEL DECOMPOSED ROCK	HARD CLAY SOUND ROCK	STIFF CLAY MEDIUM-DENSE CLEAN SAND	VERY STIFF CLAY DENSE SAND/GRAVEL DECOMPOSED ROCK	HARD CLAY SOUND ROCK	STIFF CLAY MEDIUM-DENSE CLEAN SAND	VERY STIFF CLAY DENSE SAND/GRAVEL DECOMPOSED ROCK	HARD CLAY SOUND ROCK	STIFF CLAY MEDIUM-DENSE CLEAN SAND	VERY STIFF CLAY DENSE SAND/GRAVEL DECOMPOSED ROCK	HARD CLAY SOUND ROCK
PBH kPa	50	100	200	50	100	200	50	100	200	50	100	200	50	100	200
NOMINAL DIAMETER OF FITTING (DN) 100	0.32	N	N	N	N	N	N	N	N	N	N	N	.023	N	N
150	0.68	0.34	N	0.37	N	N	0.19	N	N	N	N	N	0.48	0.24	N
200	1.07	0.54	0.27	0.58	0.29	N	0.30	N	N	N	N	N	0.76	0.38	0.19
225	1.46	0.73	0.37	0.79	0.40	0.20	0.40	0.20	N	0.20	N	N	1.03	0.52	0.26
250	1.64	0.82	0.41	0.88	0.44	0.22	0.45	0.23	N	0.23	N	N	1.16	0.58	0.29
300	2.59	1.30	0.65	1.40	0.70	0.35	0.72	0.36	N	0.36	N	N	1.83	0.92	0.46
375	3.95	1.98	0.99	2.14	1.07	0.53	1.09	0.55	0.27	0.55	0.27	N	2.79	1.40	0.70
450	5.60	2.80	1.40	3.03	1.51	0.76	1.54	0.77	0.39	0.78	0.39	0.19	3.96	1.98	0.99
500	6.16	3.08	1.54	3.34	1.67	0.83	1.70	0.85	0.43	0.85	0.43	0.21	4.36	2.18	1.09
600	9.69	4.84	2.42	5.24	2.62	1.31	2.67	1.34	0.67	1.34	0.67	0.34	6.85	3.43	1.71
750	14.40	7.20	3.60	7.79	3.90	1.95	3.97	1.99	0.99	2.00	1.00	0.50	10.18	5.09	2.54

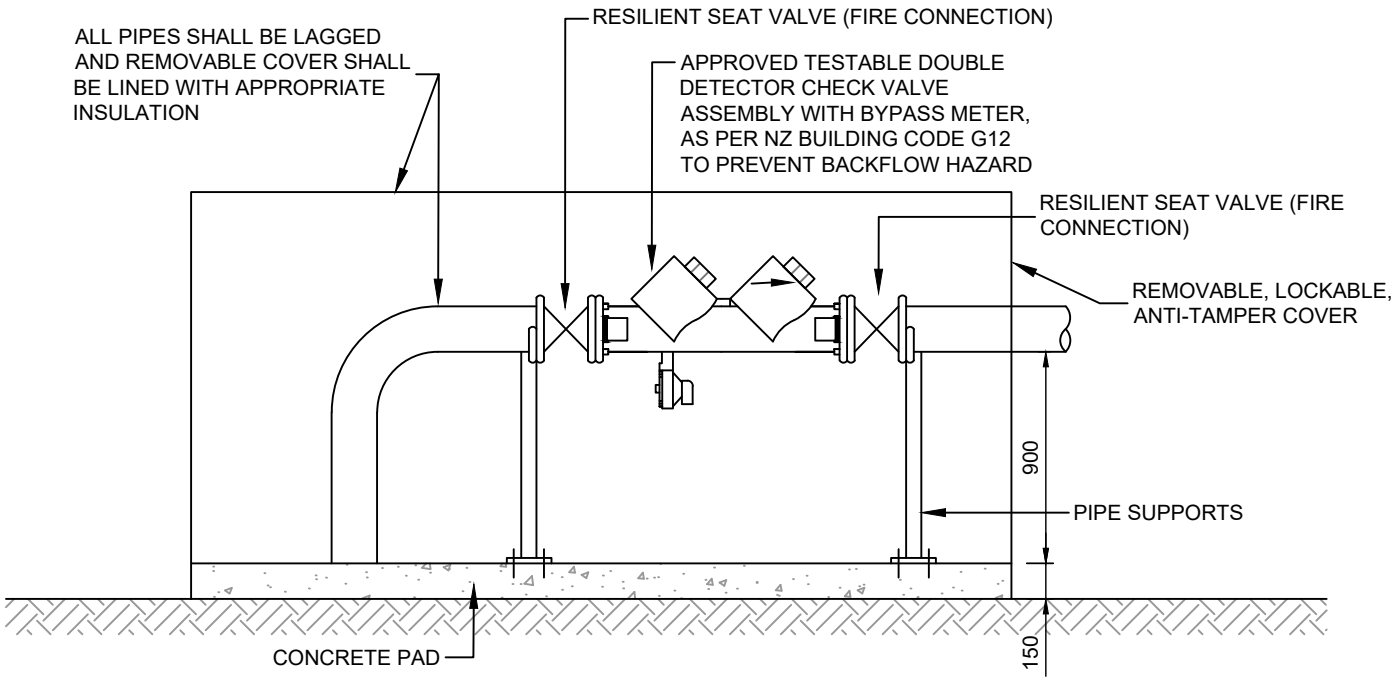
N' DENOTES NOMINAL THRUST AREA - (SEE NOTES 4 & 5)   PBH - ALLOWABLE HORIZONTAL BEARING PRESSURE

NOTES:

1. SOIL CLASSIFICATIONS USED IN THIS TABLE ARE EXPLAINED IN APPENDIX G OF WSA 03.
2. CAST THE THRUST AREA OF ALL THRUST BLOCKS AGAINST A CLEAN FACE OF UNDISTURBED NATURAL SOIL. THRUST BLOCKS NOT TO INTERFERE WITH OTHER SERVICES.
3. DO NOT USE STANDARD THRUST BLOCKS IN:
   - VERY SOFT, SOFT OR FIRM CLAY;
   - LOOSE CLEAN SAND;
   - UNCOMPACTED FILL OR REFUSE;
   A GEOTECHNICAL ASSESSMENT AND INDIVIDUAL DESIGN IS REQUIRED FOR THESE SOILS.
3. THE NOMINAL THRUST AREA 'N' TO BE ACHIEVED BY POURING CONCRETE THE FULL LENGTH OF THE FITTING AND EXTENDING FROM THE FLOOR OF THE TRENCH TO ABOVE THE FITTING (SEE NOTE 5).
4. FOR SYSTEM TEST PRESSURES OTHER THAN 1000 kPa REDUCE OR INCREASE THE MINIMUM THRUST AREA BY THE RATIO OF THE APPLICABLE PRESSURES EXCEPT WHERE:
   - THRUST AREA IS <0.18m^2, AND
   - 'N' APPEARS IN THE TABLE AND THE APPLICABLE PRESSURE IS ABOVE 1000 kPa CALCULATE THE AREA.
5. FINISH THRUST BLOCKS APPROXIMATELY 100 mm ABOVE THE TOP OF THE FITTING OR BEARING PAD AND EXTEND TO THE FLOOR OF THE TRENCH OR DEEPER IF NECESSARY TO ACHIEVE THE REQUIRED THRUST AREA. MAXIMUM ENCASEMENT TO BE 180°.
6. THE MINIMUM THRUST AREA FOR TAPER THRUST BLOCKS TO BE EQUAL TO THE DIFFERENCE BETWEEN THE THRUST AREAS FOR DEAD-ENDS OF EQUIVALENT DIAMETER TO THOSE EACH SIDE OF TAPER.
7. FOR DOWNWARD VERTICAL THRUST, THE ALLOWABLE BEARING PRESSURES FOR VARIOUS SOILS MAY BE TAKEN AS TWICE THAT FOR HORIZONTAL THRUST SHOWN.
8. WHEN POURING CONCRETE AGAINST FITTINGS PLACE A MEMBRANE OF POLYETHYLENE, PVC OR FELT BETWEEN THE FITTING AND CONCRETE TO PREVENT DAMAGE TO THE FITTING. JOINTS TO BE CLEAR OF CONCRETE.
9. CONCRETE TO BE KEPT CLEAR OF BOLTS & FLANGES OR GIBAULT JOINTS TO ALLOW FITTINGS TO BE REMOVED WITHOUT INTERFERING WITH ANCHOR BLOCK.
10. THE USE OF THRUST BLOCKS IS GENERALLY NOT REQUIRED FOR PE PIPE. THRUST BLOCKS MAY BE REQUIRED IN CASES WHERE SPECIAL GASKETED MECHANICAL FITTINGS ARE USED.

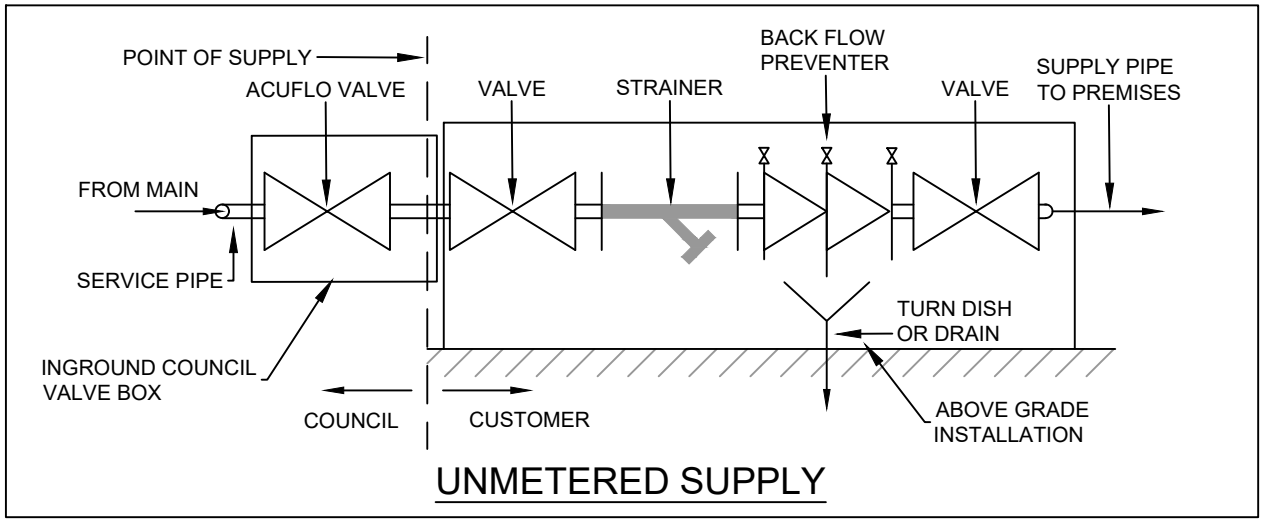


PLAN

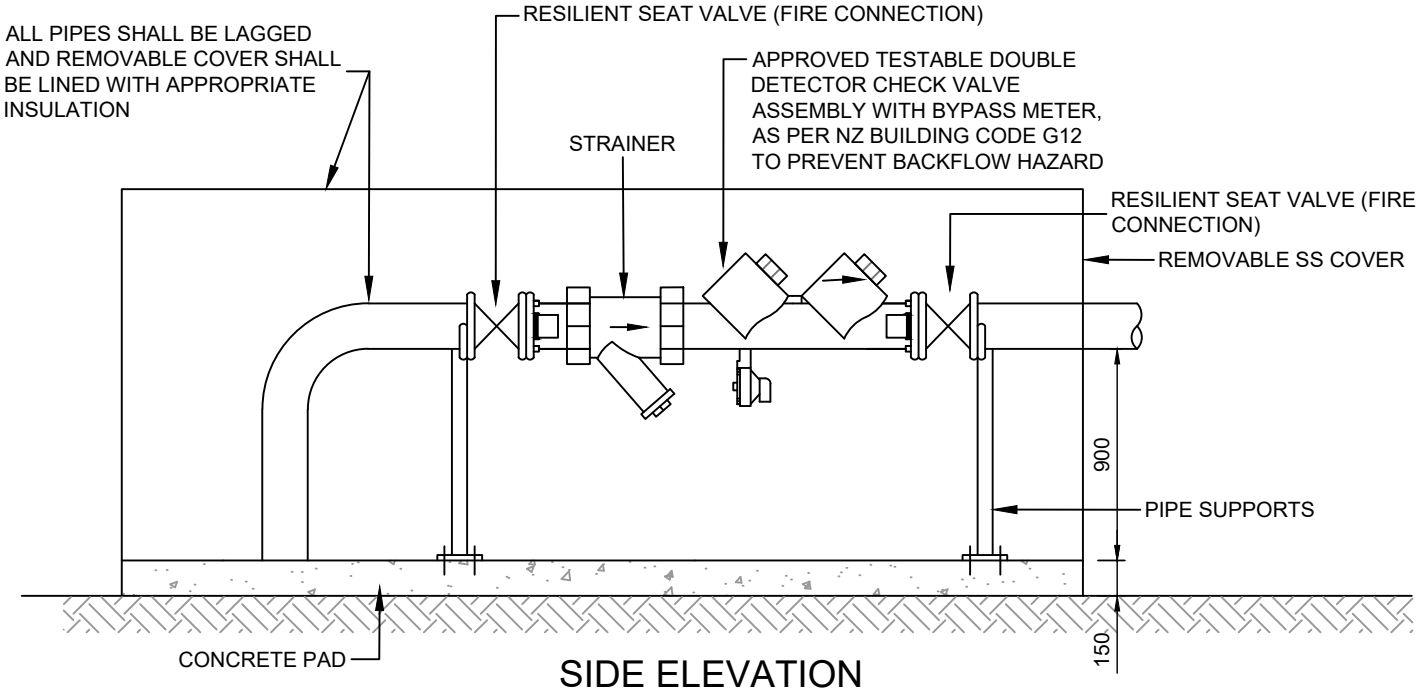


SIDE ELEVATION

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Residential Fire System Connection with Potable Supply	NOT TO SCALE Drawing No. B2-6



UNMETERED SUPPLY



SIDE ELEVATION

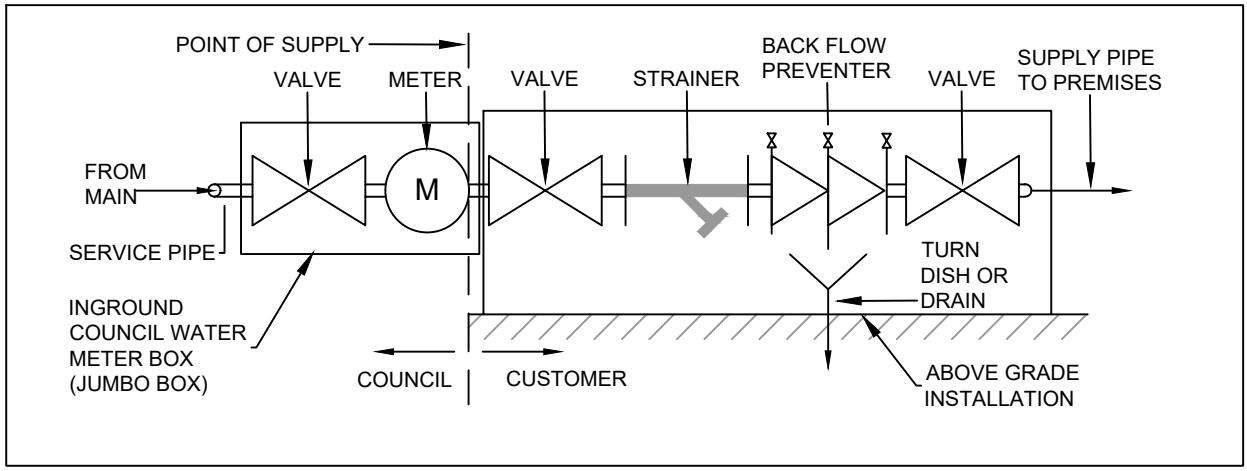
COMMERCIAL FIRE FIGHTING WATER CONNECTION

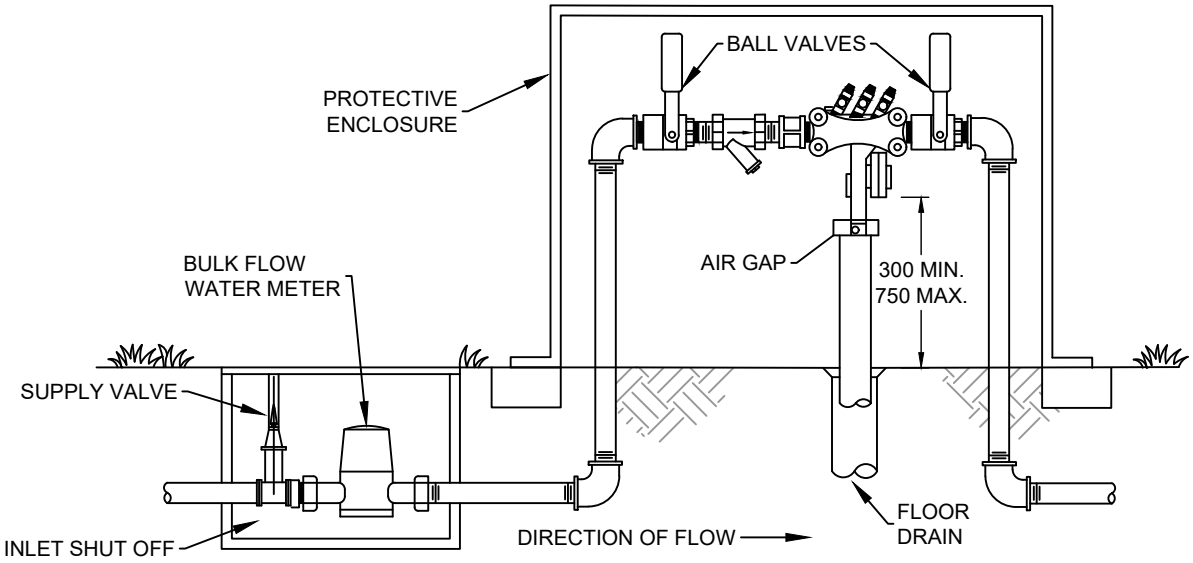
1. A STANDARD ACUFLO BOX AND MANIFOLD WILL NOT BE APPLICABLE TO THIS INSTALLATION. ACUFLO HARDWARE IS ONLY SUITABLE FOR UP TO 25mm PIPE CONNECTIONS. THIS INSTALLATION WILL NEED TO BE CONFIGURED SPECIFIC TO THE SITE. REFER TO ITEMS BELOW THAT ARE MANDATORY:
   - THE SERVICE PIPE SHALL HAVE A BLUE RESILIENT SEATED SERVICE VALVE IN ITS OWN VALVE BOX.
   - A REDUCED PRESSURE ZONE BFP SHALL BE INSTALLED INSIDE THE BOUNDARY OF THE PRIVATE PROPERTY. IF THE WATER SUPPLY IS PROPOSED TO BE DIVIDED INTO MULTIPLE LINES TO SERVICE DIFFERENT AREAS OF THE SITE, THE BFP SHALL BE LOCATED ON THE SINGLE INCOMING WATER SUPPLY LINE IN ADVANCE OF ANY SUCH DIVISION. A RPZ SHALL BE LOCATED ABOVE GROUND.
   - THIS BFP IS THE POS BFP DEVICE REQUIRED BY THE HEALTH AMENDMENT ACT 2007. THE DEVICE SHALL BE LOCATED IN AN ABOVE GROUND ENCLOSURE WHERE POSSIBLE.

LOCATING BACK FLOW PREVENTERS AND WATER METERS

2. BACK FLOW PREVENTERS SHALL BE LOCATED DIRECTLY WITHIN THE ROAD FRONTAGE BOUNDARY OF THE PROPERTY SERVED IN EVERY INSTANCE EXCEPT WHERE IN A CBD ENVIRONMENT WHERE THERE MAY BE NO SPACE WITHIN THE BUILDING FRONTAGE FOR AN ABOVE GROUND CABINET.
3. A BFP SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS, AND THE APPROPRIATE BFP USED SHOULD BE DETERMINED BASED ON THE HAZARD. IF USING A RPZ BFP, IT SHALL BE INSTALLED ABOVE GROUND. ALL OTHER BFP'S SHOULD BE ABOVE GROUND WHERE POSSIBLE. THE BFP SHALL ALLOW ANY WATER DISCHARGED TO DRAIN TO GROUND IN AN OBVIOUS MANNER.
4. THE FIRST ISOLATION VALVE IS THE SUPPLY POINT; THIS IS THE BOUNDARY BETWEEN COUNCIL RESPONSIBILITY AND PRIVATE OWNER'S RESPONSIBILITY FOR SERVICE AND WATER QUALITY.
5. THE ISOLATION VALVE SHALL BE LOCATED ON THE ROAD RESERVE IN ALL INSTANCES AND SHALL NOT BE LOCATED ON A ROW OR EASEMENT.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Commercial Fire System Connection with Potable Supply	NOT TO SCALE Drawing No. B2-7



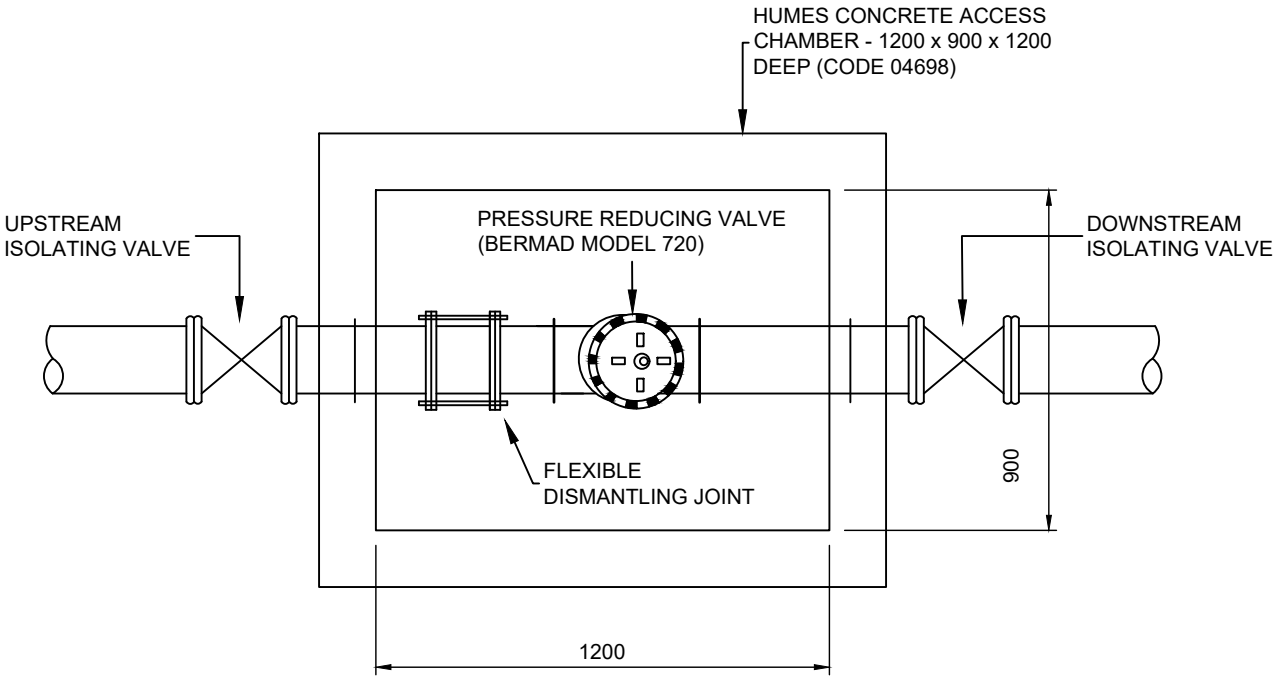


1. A STANDARD ACUFLO BOX AND MANIFOLD WILL NOT BE APPLICABLE TO THIS INSTALLATION. ACUFLO HARDWARE IS ONLY SUITABLE FOR UP TO 25mm PIPE CONNECTIONS. THIS INSTALLATION WILL NEED TO BE CONFIGURED SPECIFIC TO THE SITE. REFER TO ITEMS BELOW THAT ARE MANDATORY:
   - THE SERVICE PIPE SHALL HAVE A BLUE RESILIENT SEATED SERVICE VALVE IN ITS OWN VALVE BOX PRIOR TO A WATER METER BOX.
   - A WATER METER BOX SHALL BE LOCATED 300mm BEFORE THE PRIVATE PROPERTY BOUNDARY. THE BOX SHALL CONTAIN AN APPROVED WATER METER OF A SUITABLE SIZE. THE METER SHALL HAVE THREE REGISTERS OF THE SUB m^3 VALUES. THIS IS COUNCIL'S POINT OF SUPPLY BOUNDARY AND IS LOCATED IN THE STREET PRIOR TO THE REQUIRED BFP.
   - A BFP DEVICE OF EITHER RA TESTABLE DOUBLE CHECK VALVE ASSEMBLY OR REDUCED PRESSURE ZONE BFP SHALL BE INSTALLED INSIDE THE BOUNDARY OF THE PRIVATE PROPERTY. IF THE WATER SUPPLY IS PROPOSED TO BE DIVIDED INTO MULTIPLE LINES TO SERVICE DIFFERENT AREAS OF THE SITE, THE BFP SHALL BE LOCATED ON THE SINGLE INCOMING WATER SUPPLY LINE IN ADVANCE OF ANY SUCH DIVISION.
   - THIS BFP IS THE POS BFP DEVICE REQUIRED BY THE HEALTH AMENDMENT ACT 2007. IF THIS DEVICE IS ASSESSED TO BE A RPZ THEN IT SHOULD BE LOCATED IN AN ABOVE GROUND ENCLOSURE.
   - AN **ELSTER HELIX 4000 OR C4000 / 4200 OR SENSUS MEITWIN; MEISTREAM; WP** WATER METER SHALL BE INSTALLED ON TO THE MANIFOLD.

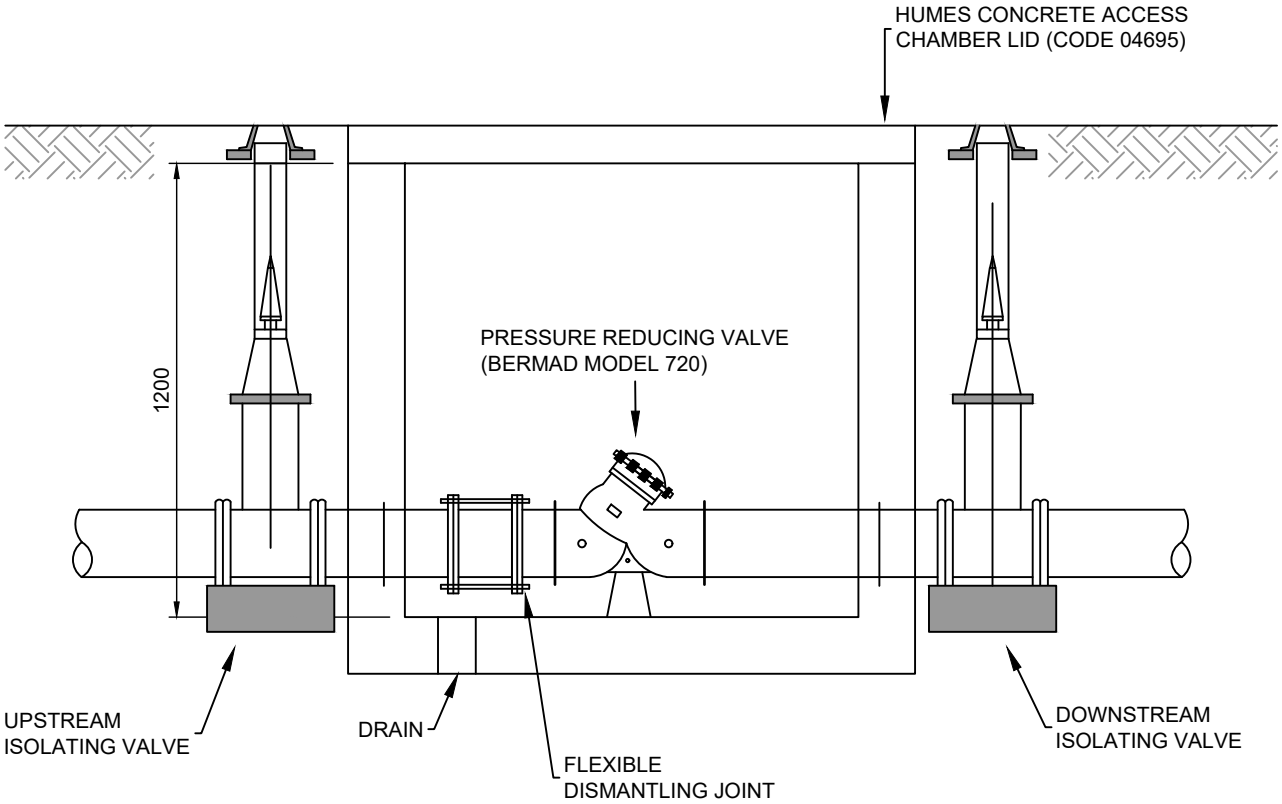
LOCATING BACK FLOW PREVENTERS AND WATER METERS

2. BACK FLOW PREVENTERS SHALL BE LOCATED DIRECTLY WITHIN THE ROAD FRONTAGE BOUNDARY OF THE PROPERTY SERVED IN EVERY INSTANCE EXCEPT WHERE IN A CBD ENVIRONMENT WHERE THERE MAY BE NO SPACE WITHIN THE BUILDING FRONTAGE FOR AN ABOVE GROUND CABINET.
3. THE BFP SHALL BE ABOVE GROUND AND ALLOW ANY WATER DISCHARGED TO DRAIN TO GROUND IN AN OBVIOUS MANNER. WHERE DOUBLE CHECK VALVE DEVICES ARE INSTALLED IN AN UNDERGROUND CHAMBER, THE DESIGN MUST ALLOW FOR SERVICING BY TOP ENTRY AND THE CHAMBER MUST BE WELL DRAINED. FOR LARGER SIZED DOUBLE CHECK VALVE DEVICES IT IS GOOD PRACTICE TO INSTALL THESE ABOVE GROUND, FOR EASE OF ACCESS AND POSSIBLE FUTURE UPGRADING TO REDUCED PRESSURE ZONE DEVICES.
4. THE WATER METER IS THE SUPPLY POINT; THIS IS THE BOUNDARY BETWEEN COUNCIL RESPONSIBILITY AND PRIVATE OWNER'S RESPONSIBILITY FOR SERVICE AND WATER QUALITY.
5. THE WATER METER SHALL BE LOCATED ON THE ROAD IN ALL INSTANCES AND SHALL NOT BE LOCATED ON A ROW OR EASEMENT.
6. WATER METERS OF SIZES LARGER THAN 25mm WILL REQUIRE A JUMBO METER BOX AND A SEPARATE INDIVIDUAL TOBY VALVE WITH VALVE CHAMBER PRIOR TO THE WATER METER BOX.
7. THE WATER METER BOX SHALL HAVE THE WORDS "METER" AND/OR "WATER METER" VISIBLE UPON THE COVER.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Water Supply with Bulk Flow Meter	NOT TO SCALE Drawing No. B2-8



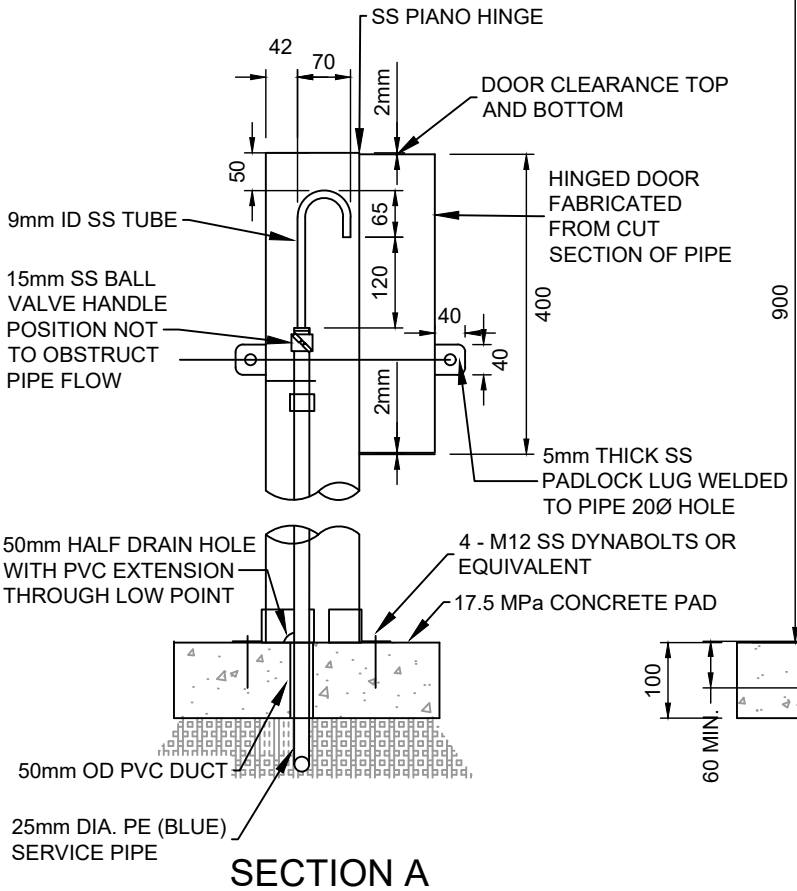
PLAN



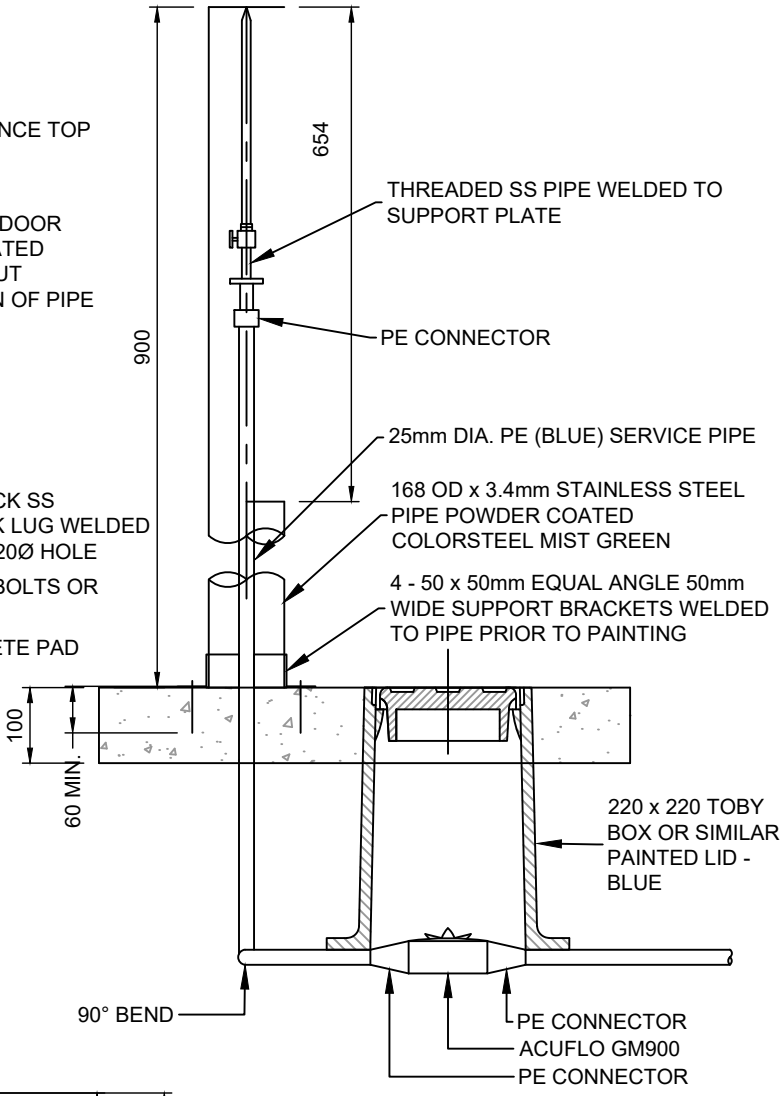
SECTION

NOTES:
1. CONSIDERATION NEEDS TO BE GIVEN FOR UPSTREAM FILTER AND PRESSURE RELIEF VALVE WHEN DESIGNING THE INSTALLATION OF THESE VALVES.
2. CONSIDERATION NEEDS TO BE GIVEN FOR DRAINAGE WITHIN THE VALVE CHAMBER.

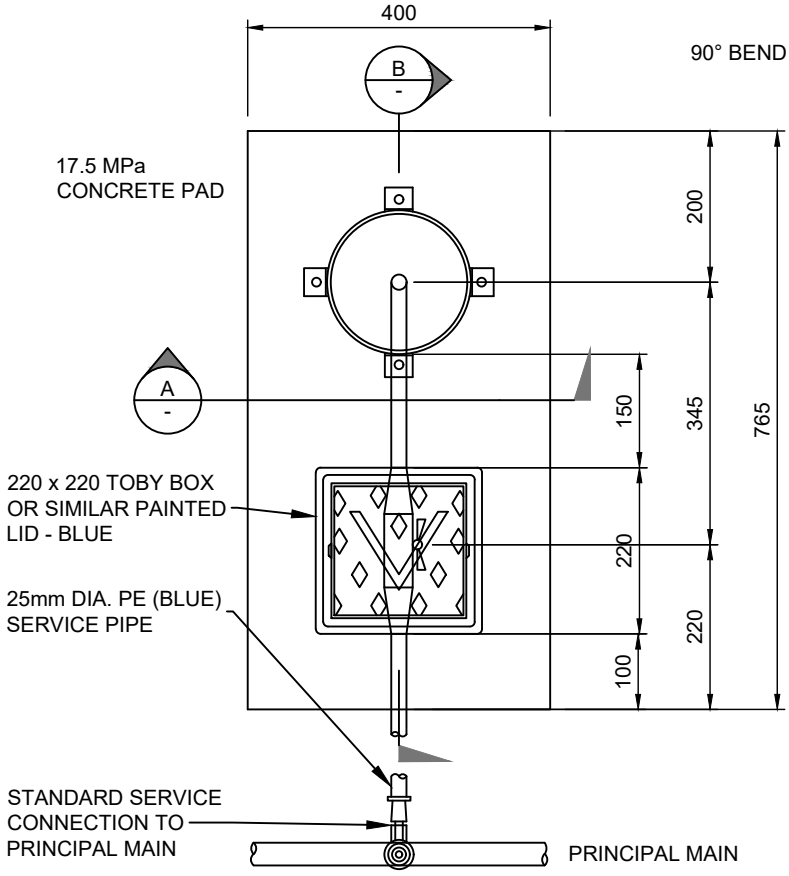
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: PRV Valve Chamber	NOT TO SCALE Drawing No. B2-9



SECTION A



SECTION B

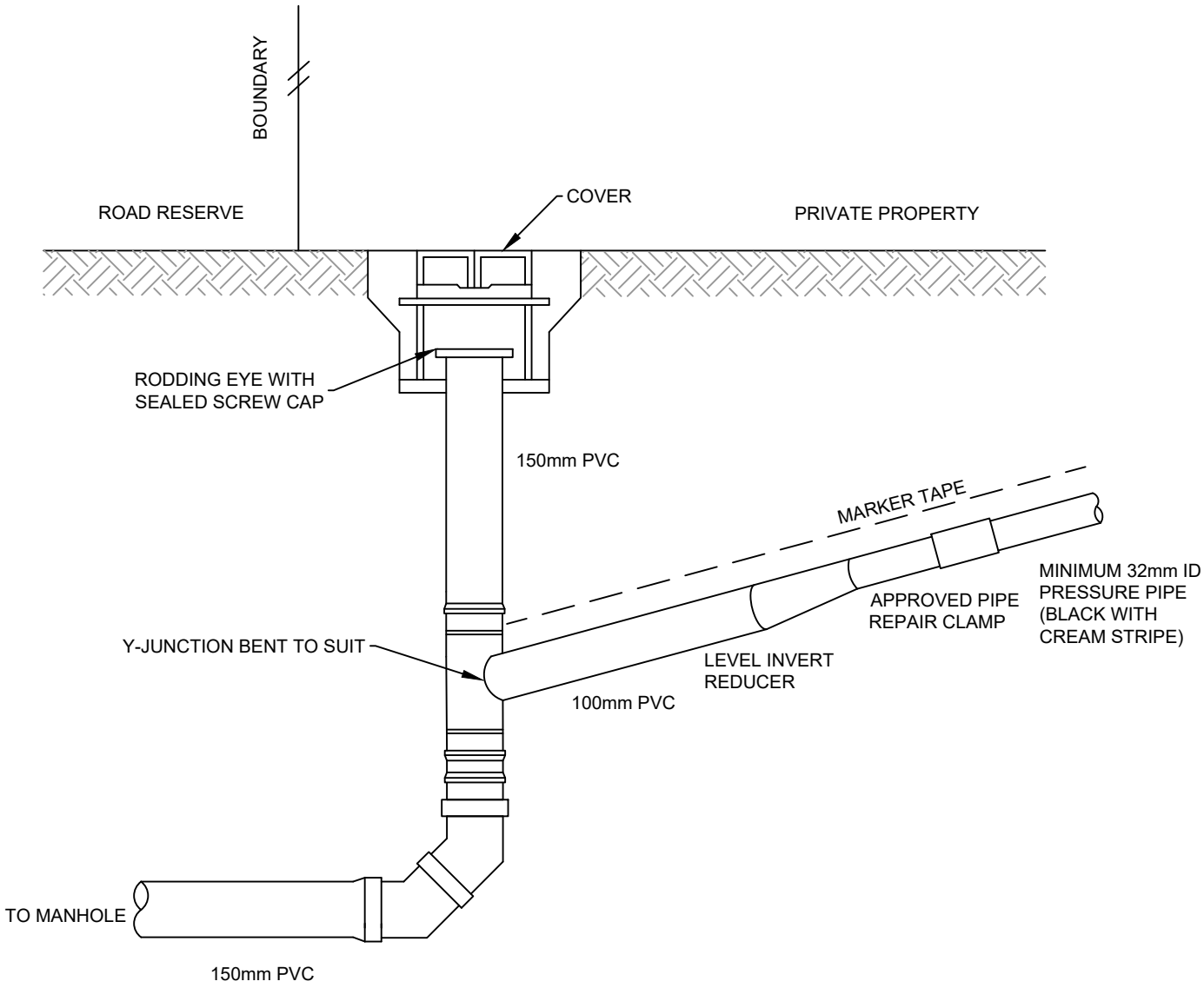


PLAN

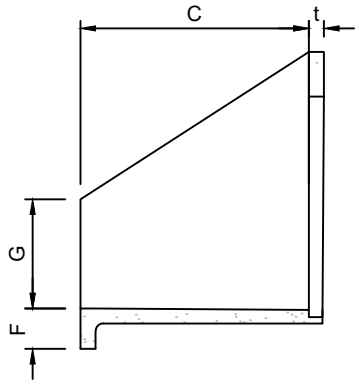
NOTES

1. THIS ARRANGEMENT IS TO BE USED FOR ALL SAMPLING POINTS IN THE DISTRIBUTION NETWORK.
2. ALL PE CONNECTORS TO BE EITHER PUSHLOK, PLASSON, PHILMAC OR SIMILAR APPROVED.
3. ON SLOPING GROUND INSTALL DOOR OPENING ON UPHILL SIDE.
4. ALL WELDS TO BE 4mm FILLET.

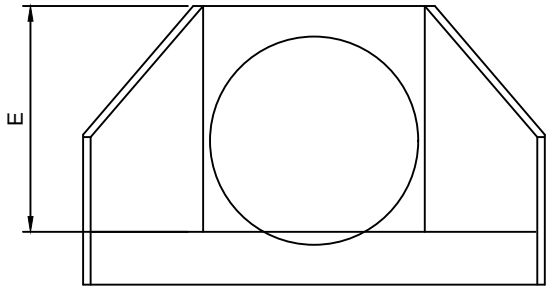
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Water Sampling Point	NOT TO SCALE Drawing No. B2-10



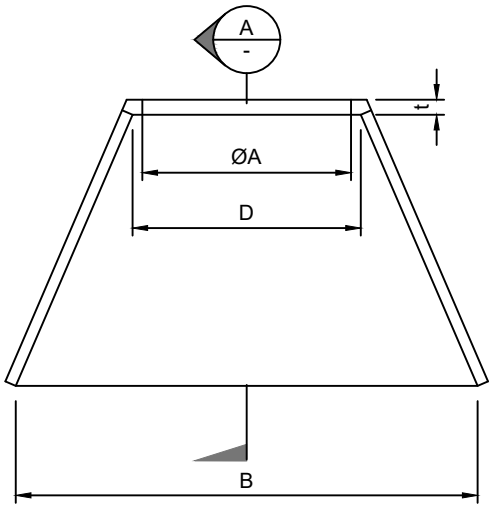
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Private Pressure Sewer Main Connection to Sewer Lateral	NOT TO SCALE Drawing No. B3-1



CROSS SECTION A



FRONT ELEVATION



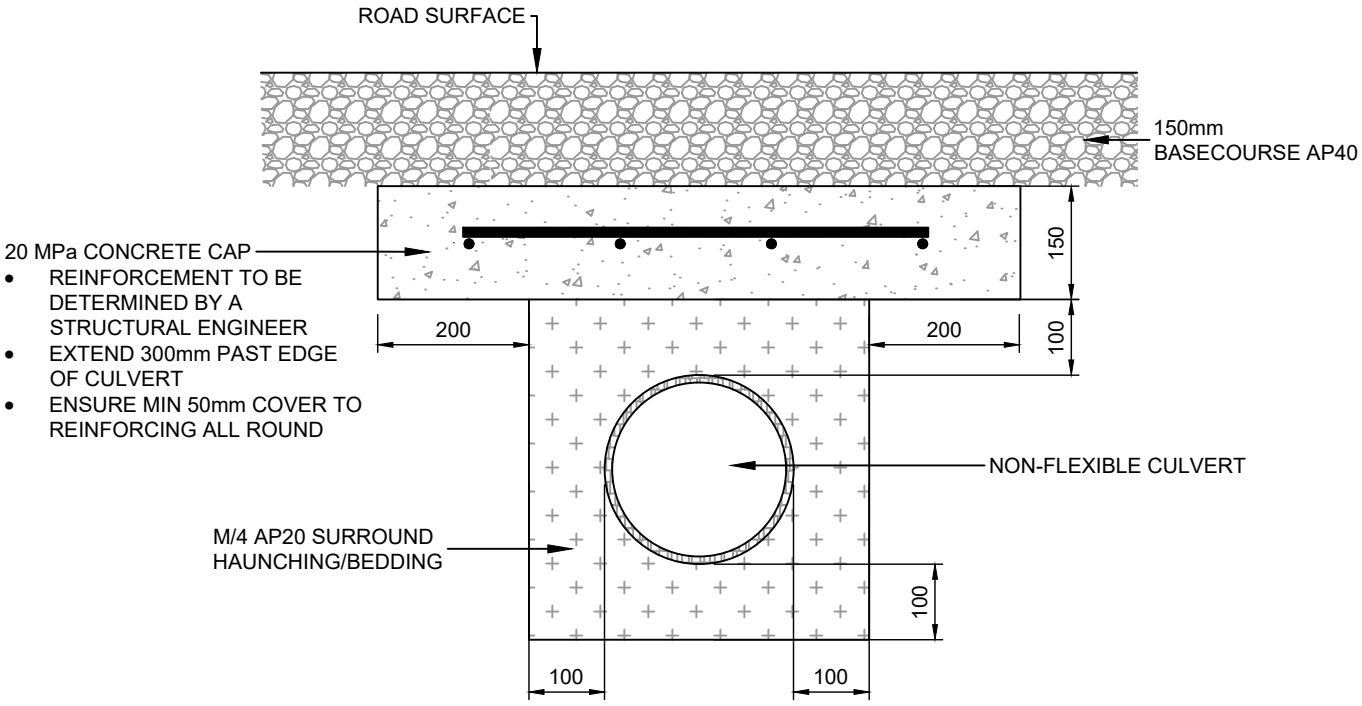
PLAN VIEW

TABLE 1

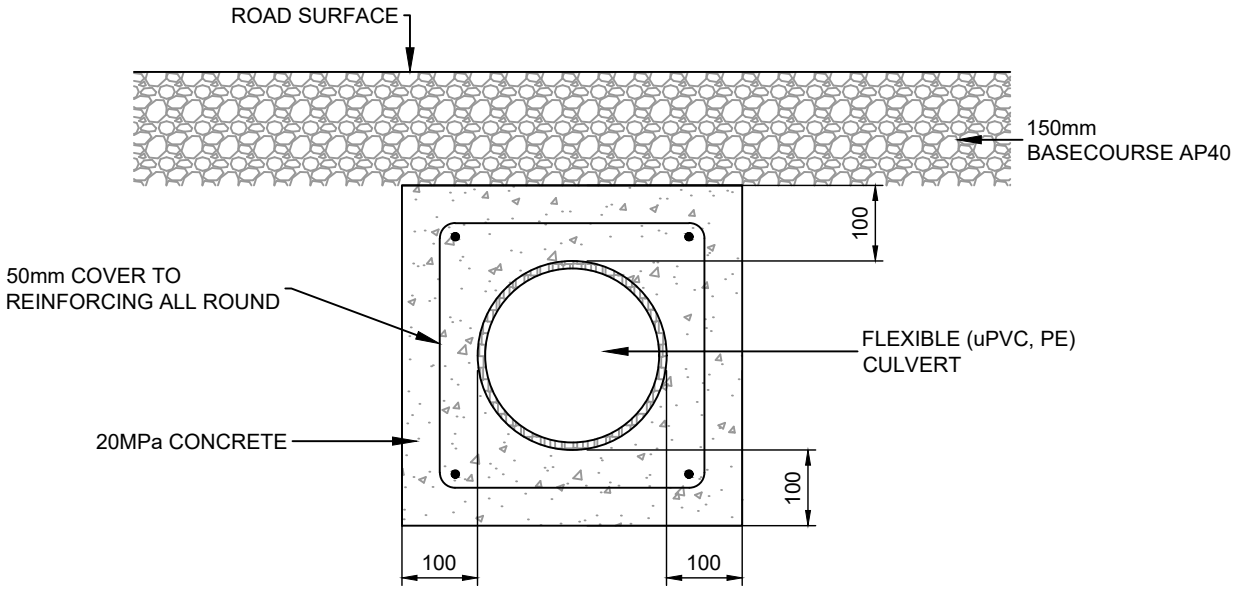
PIPE DIA.	PRINCIPAL DIMENSIONS (mm)							
	A	B	C	D	E	F	G	t
150-300	190-390	1000	600	460	520	200	160	50
300-600	370-700	1900	1100	750	900	280	500	80
600-1050	720-1225	3000	100	1270	1675	345	600	100
1200-1350	1380-1540	4100	2400	1600	1975	425	750	125
1600-1800	1727-2040	4900	2400	2150	2265	450	750	150

NOTES:

1. REINFORCED FLOOR AND WALLS WITH
   150 TO 375 - 665 MESH (668 OR SIMILAR)
   450 TO 600 - 663 MESH OR EQUIVALENT OR 10Ø RODS @ 250 CRS
   675 TO 900 - 12Ø RODS @ 250 CRS
   1050 TO 1350 - 12Ø RODS @ 150 CRS
2. ALL REINFORCEMENT SHALL BE PLACED CENTRAL IN WALLS & FLOOR AND SHALL BE CONTINUOUS BETWEEN WALL AND FLOOR.
3. LAPS IN STRUCTURAL GRADE BARS TO BE 300mm MINIMUM.
4. THERE SHALL BE AT LEAST TWO BARS WHETHER MESH OR MILD STEEL, OVER THE TOP OF THE PIPE.
5. CONCRETE COMPRESSIVE STRENGTH IS TO BE 20MPa @ 28 DAYS.
6. BAFFLES ARE TO BE CONSTRUCTED AS SHOWN WHEN OUTLET VELOCITIES AND SOIL CONDITIONS DICTATE. IN EXTREME CASES SPECIFIC DESIGN MAY BE REQUIRED.
7. INLETS EXCEEDING 450mmØ TO HAVE ANTI-VERMIN SCREENS FITTED, EXCEPT WHEN THE PIPE IS LESS THAN 20m LONG.
8. TABLE 1 IS FOR FORMING INLET AND OUTLET STRUCTURES OUTSIDE MANUFACTURERS SPECIFICATIONS.



CONCRETE CAPPING DETAIL

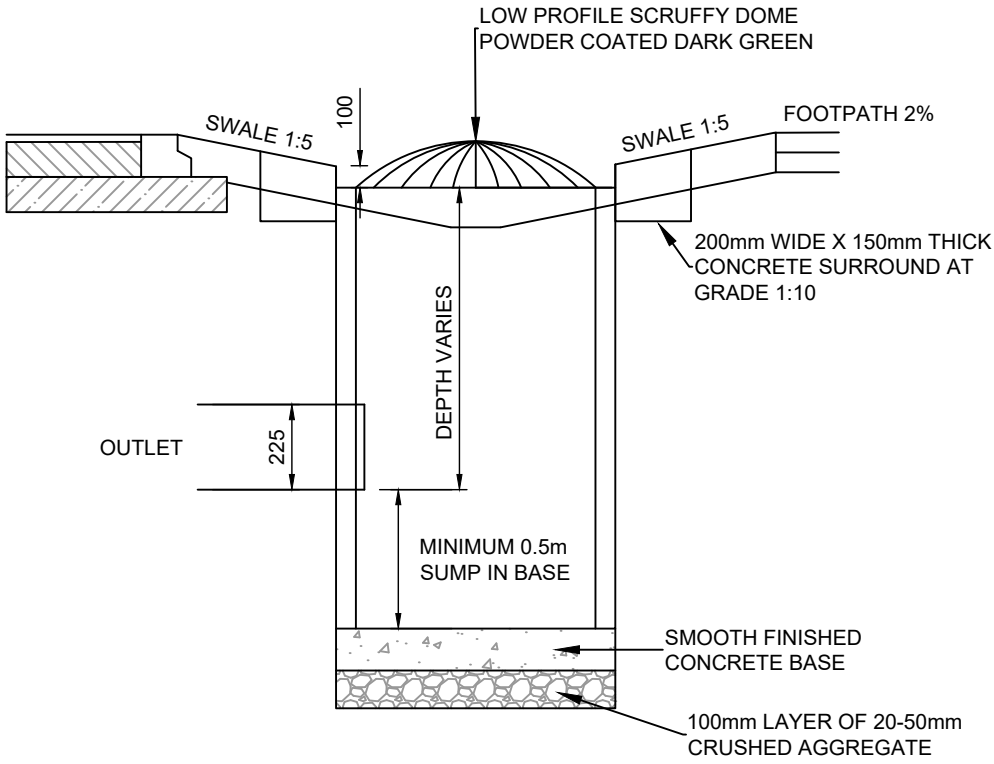


CONCRETE ENCASING DETAIL

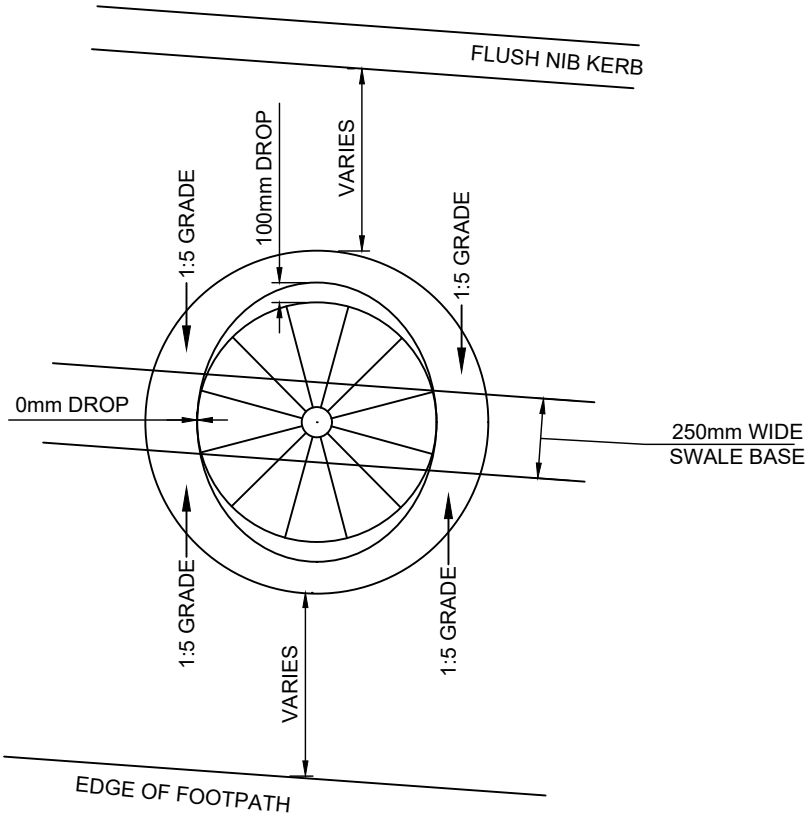
NOTES:

1. FOR NON-FLEXIBLE PIPE DIAMETERS GREATER THAN 450mm OR FLEXIBLE PIPE DIAMETERS GREATER THAN 300mm SPECIAL DESIGN APPLIES.
2. WITH FLEXIBLE PIPES PROTECTION TO BE USED UNLESS OTHERWISE SPECIFIED.
3. PIPES IN TRAFFICABLE AREAS WITH LESS THAN 1.0 m COVER SHALL BE CONCRETE CAPPED, AND PIPES WITH LESS 0.6 m COVER SHALL BE CONCRETE ENCASED. THE CONCRETE ENCASEMENT SHALL BE REINFORCED CONCRETE AND STRUCTURALLY DESIGNED FOR REQUIRED DESIGN LOAD BY A STRUCTURAL ENGINEER.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Concrete Capping Detail	NOT TO SCALE Drawing No. B4-2

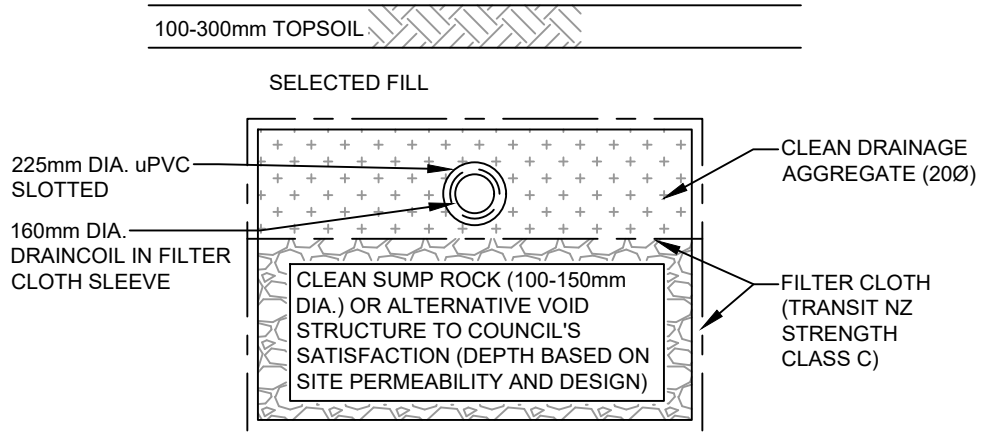


SIDE ELEVATION

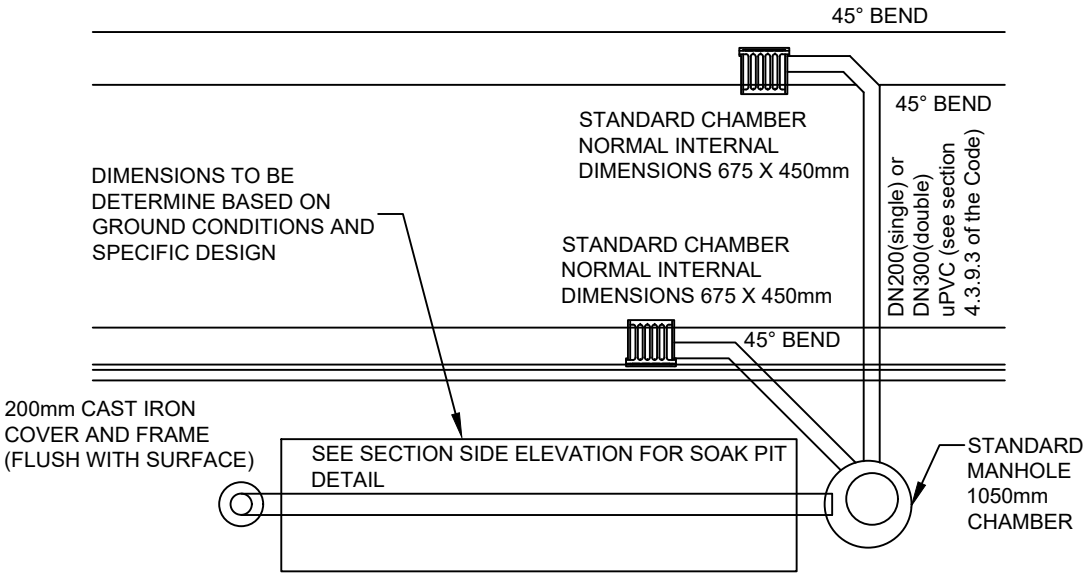


PLAN

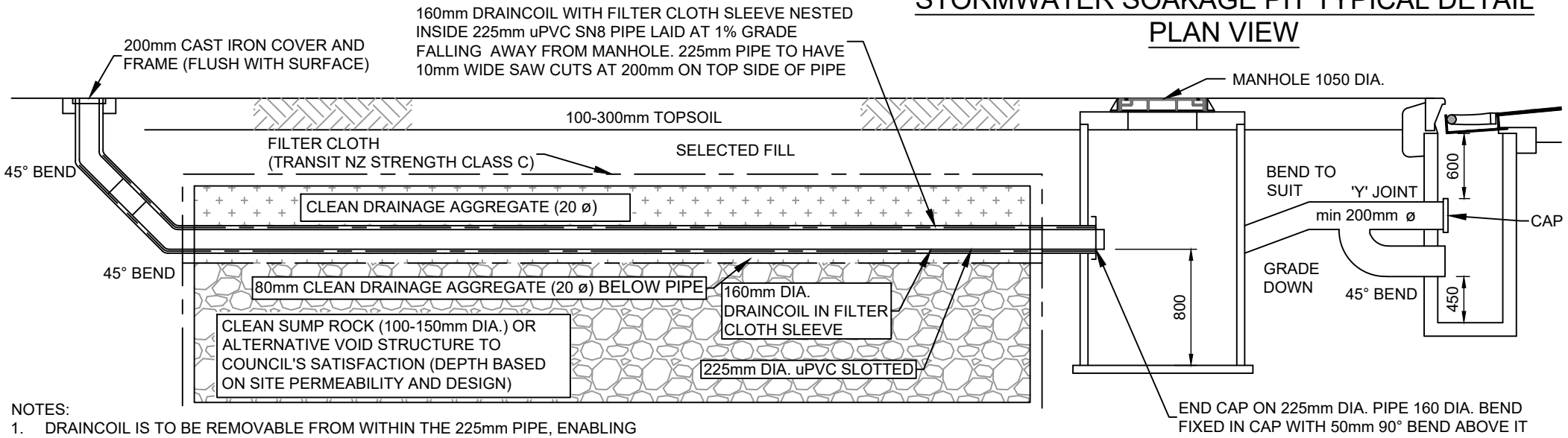
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Scruffy Dome Detail	NOT TO SCALE Drawing No. B4-3



STORMWATER SOAKAGE PIT TYPICAL SECTION END ELEVATION (ROAD CONNECTIONS)



STORMWATER SOAKAGE PIT TYPICAL DETAIL PLAN VIEW



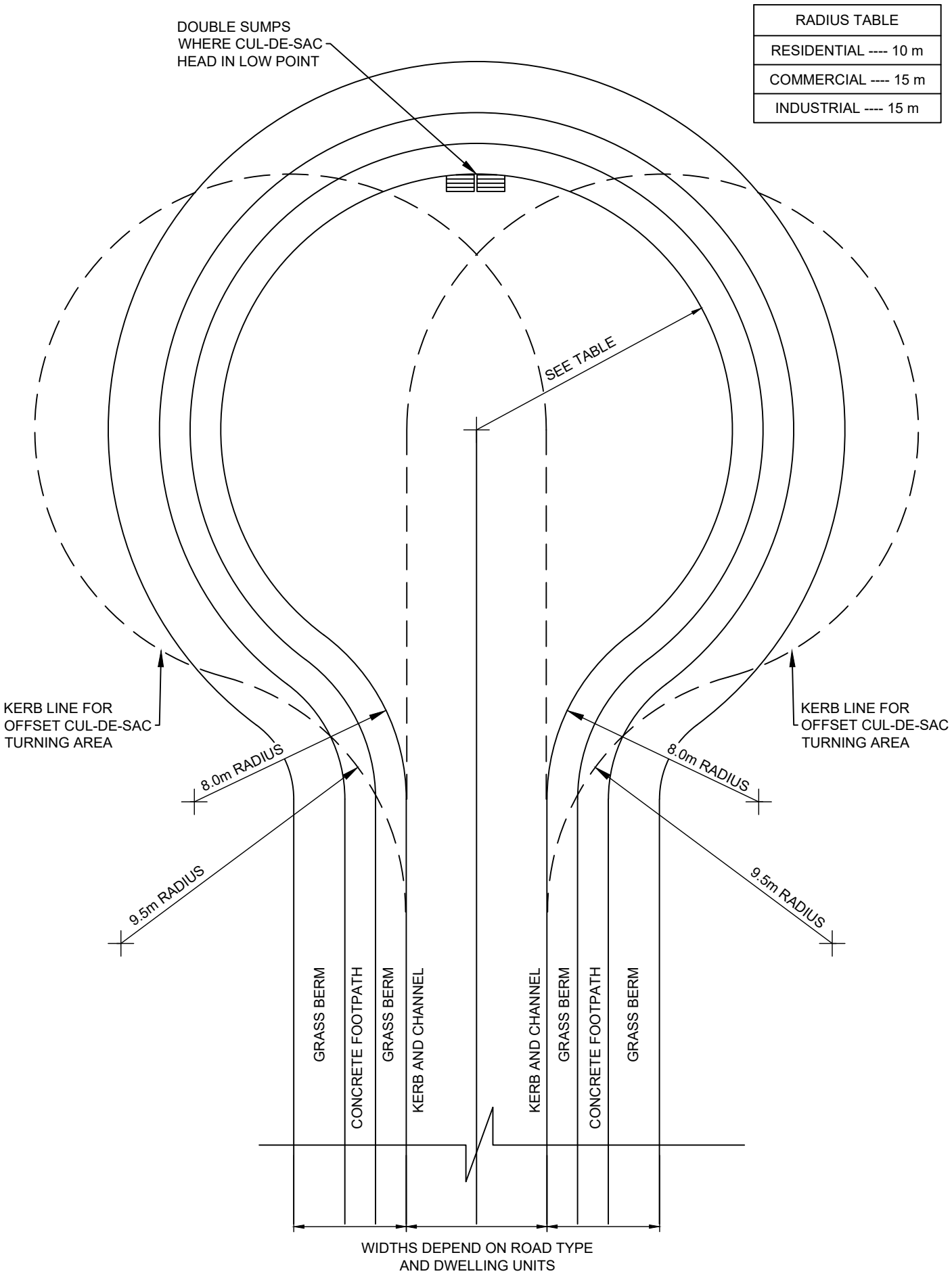
NOTES:

1. DRAINCOIL IS TO BE REMOVABLE FROM WITHIN THE 225mm PIPE, ENABLING CLEANING/REPLACEMENT OF THE PIPE AND FILTER SLEEVE AS REQUIRED. CLEANING EYE ALLOWS FOR FLUSHING FROM EITHER END OF THE SYSTEM.
2. SOAKPIT DIMENSIONS TO BE DETERMINED BASED ON GROUND CONDITIONS AND SPECIFIC DESIGN.

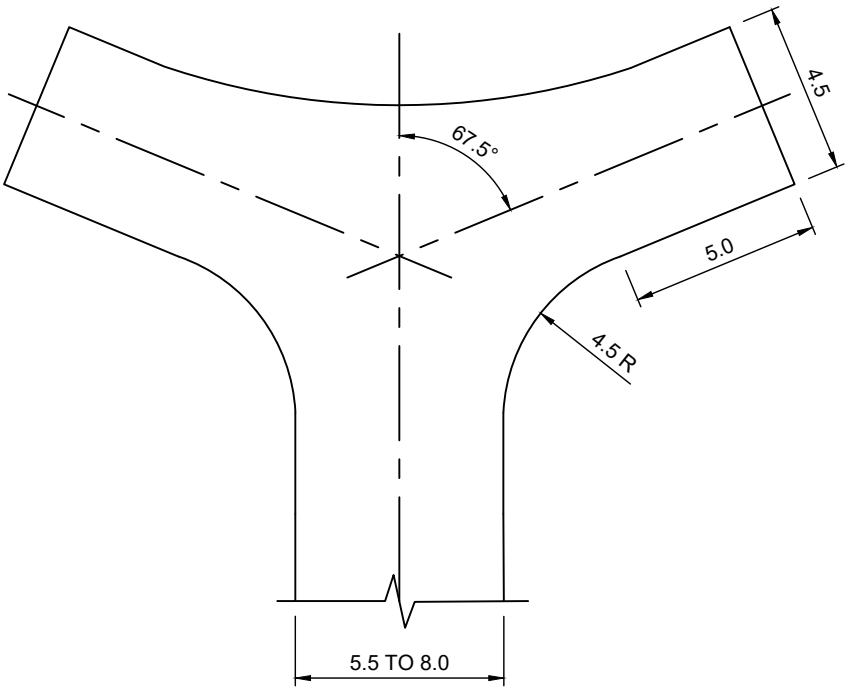
STORMWATER SOAKAGE PIT TYPICAL SECTION SIDE ELEVATION (ROAD CONNECTIONS)

QLDC LDSC 2020 Standard Details Revision: Rev Date:	Synergy12d\\123428_cab9a10a-0601-4c5f-b317-9d3d55824b7d	Drawing Title: Soak Pit	NOT TO SCALE Drawing No. B4-4

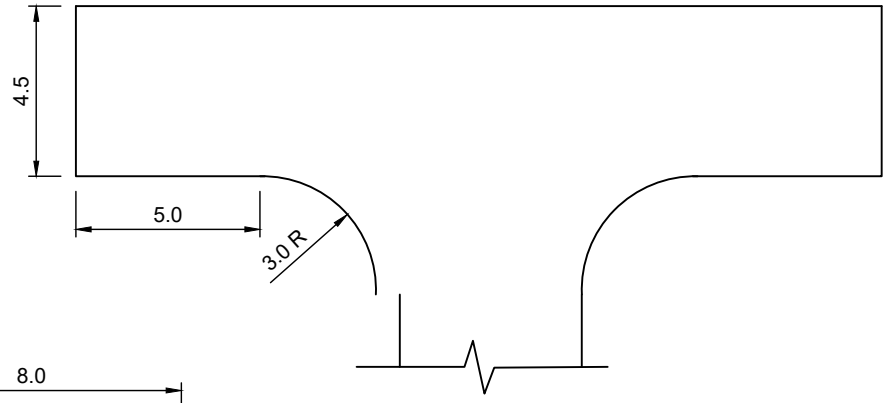
RADIUS TABLE
RESIDENTIAL ---- 10 m
COMMERCIAL ---- 15 m
INDUSTRIAL ---- 15 m



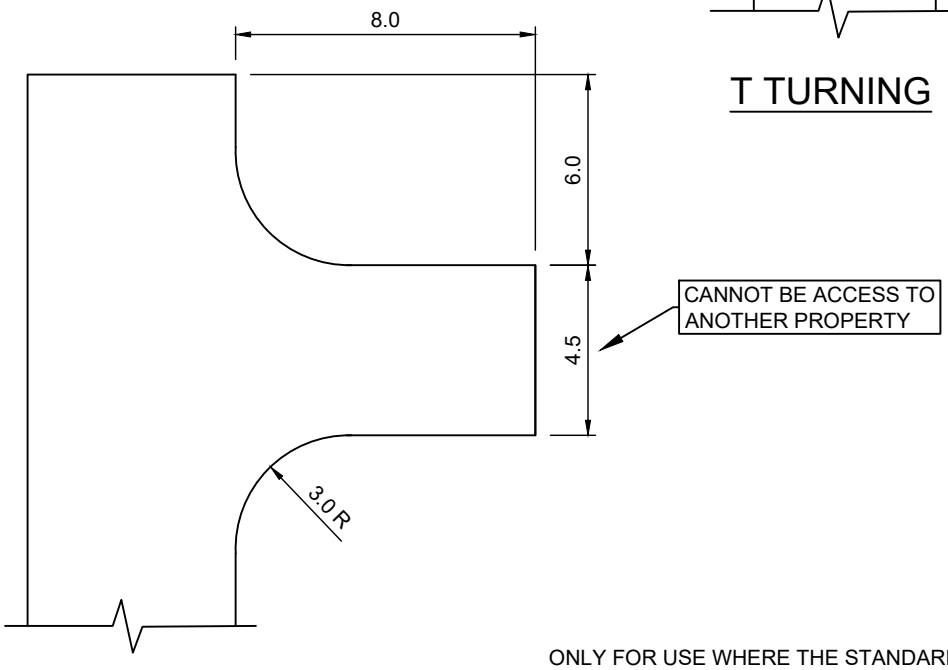
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Dimensions of No-Exit Road Turning Areas	NOT TO SCALE Drawing No. B5-1



Y TURNING



T TURNING

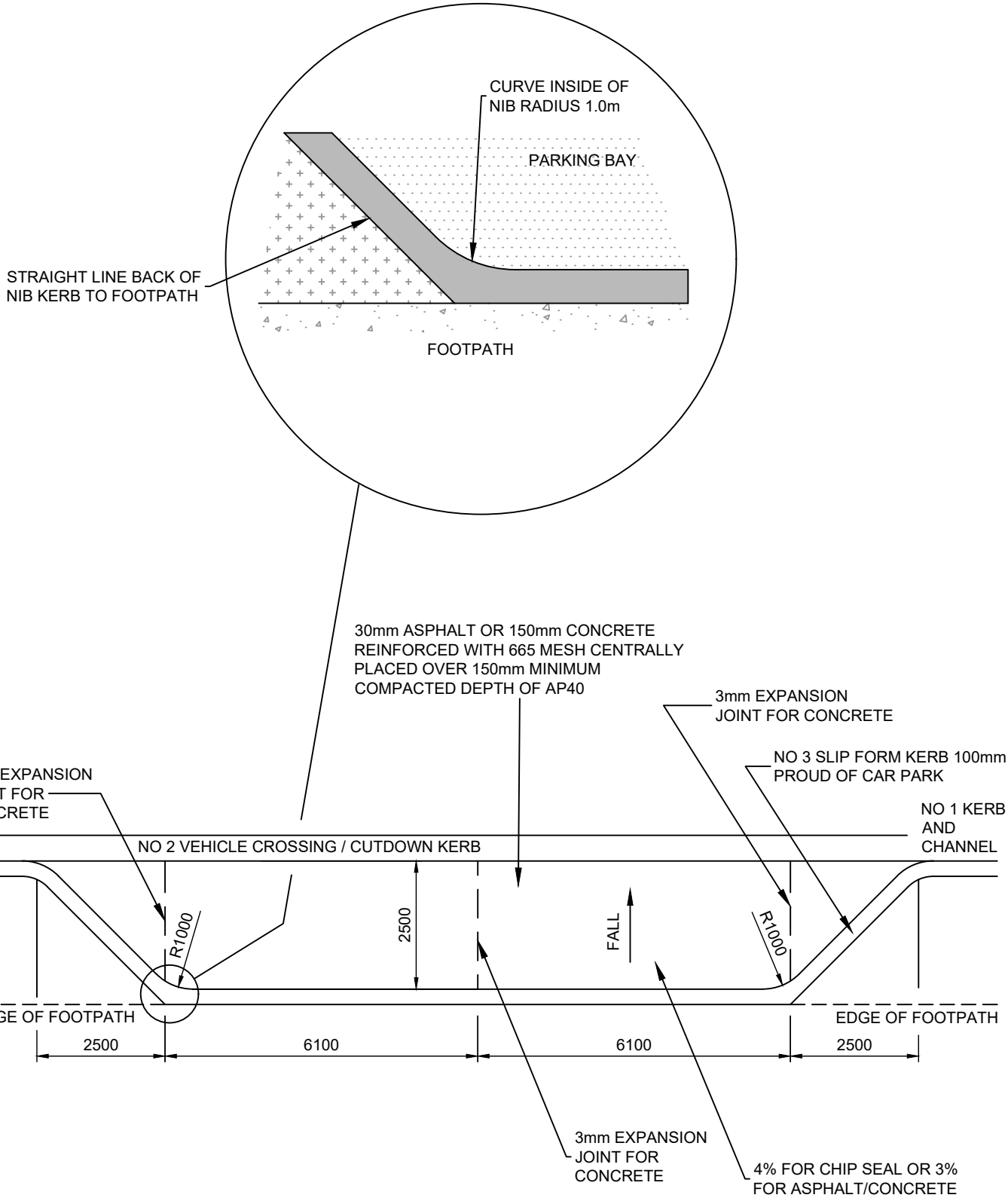


L TURNING

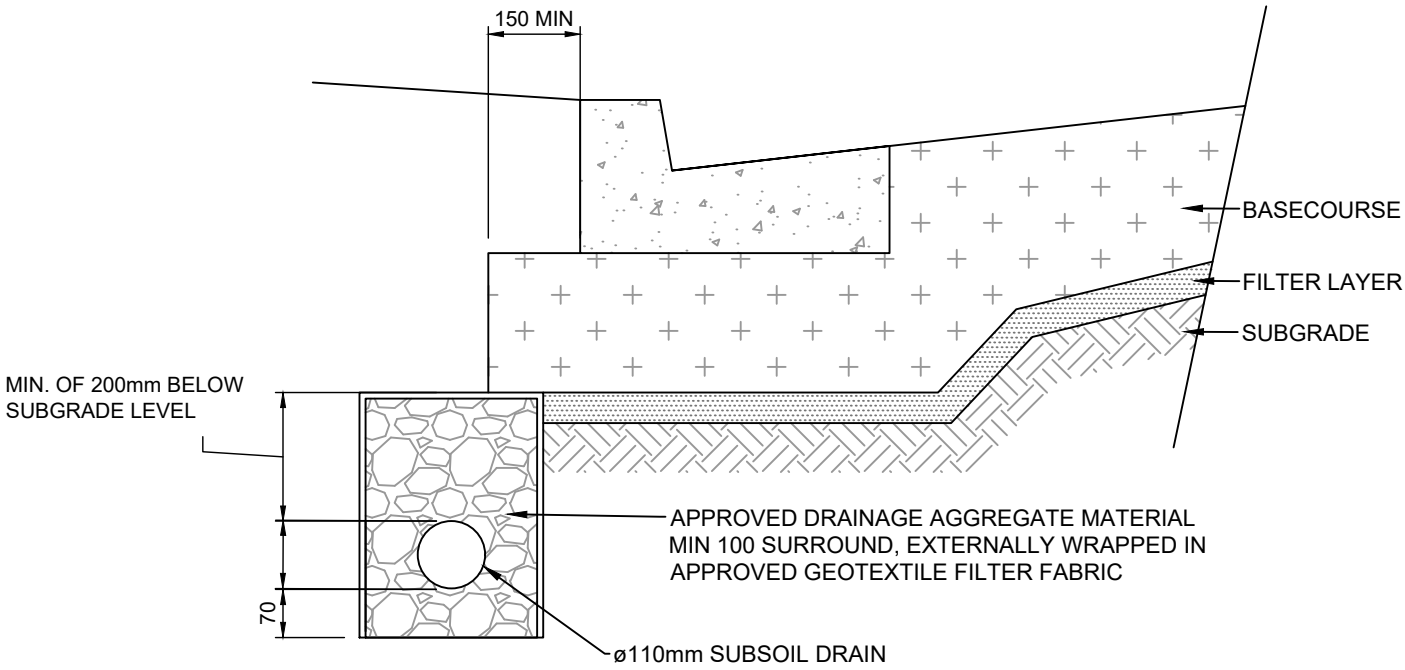
ONLY FOR USE WHERE THE STANDARD CIRCULAR HEAD IS UNSUITABLE OR WHERE APPROVED BY COUNCIL.

ALL DIMENSIONS ARE IN METRES.

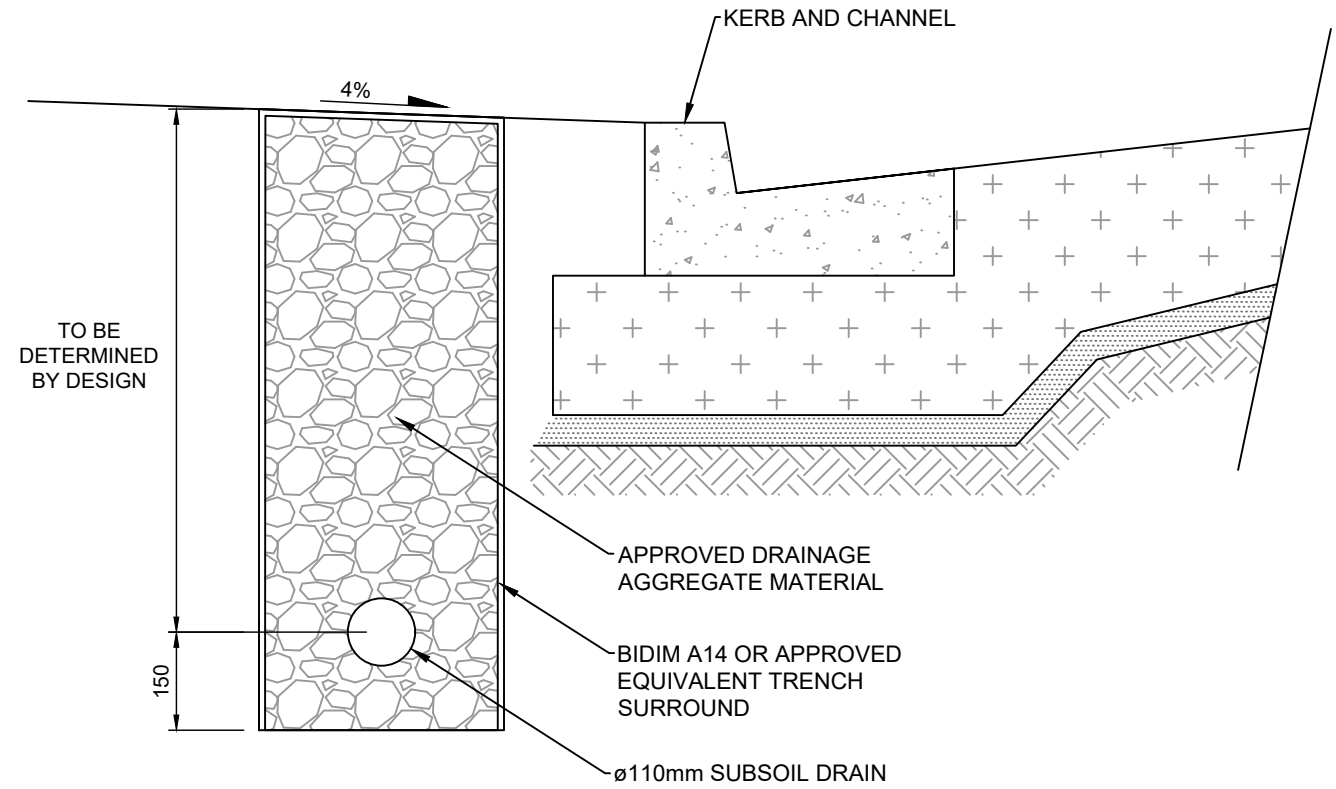
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Turning Areas for No-Exit Roads	NOT TO SCALE Drawing No. B5-2



QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Parking Bay	NOT TO SCALE Drawing No. B5-3



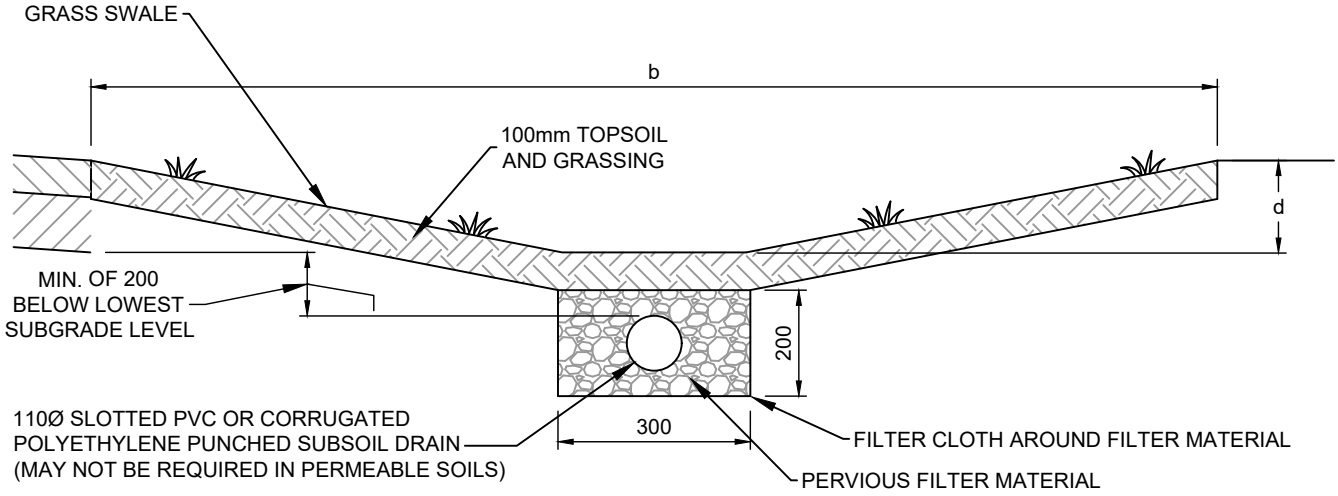
UNDER KERB DRAINAGE



SURFACE WATER CUT-OFF DRAIN

ALL DIMENSIONS ARE IN MILLIMETRES

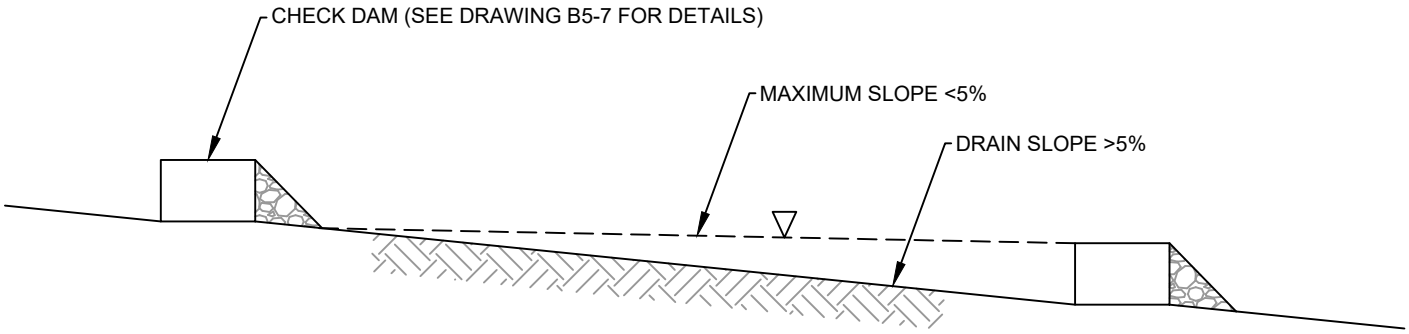
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Subsoil Drains - Roadside	NOT TO SCALE Drawing No. B5-4



SWALE CROSS SECTION

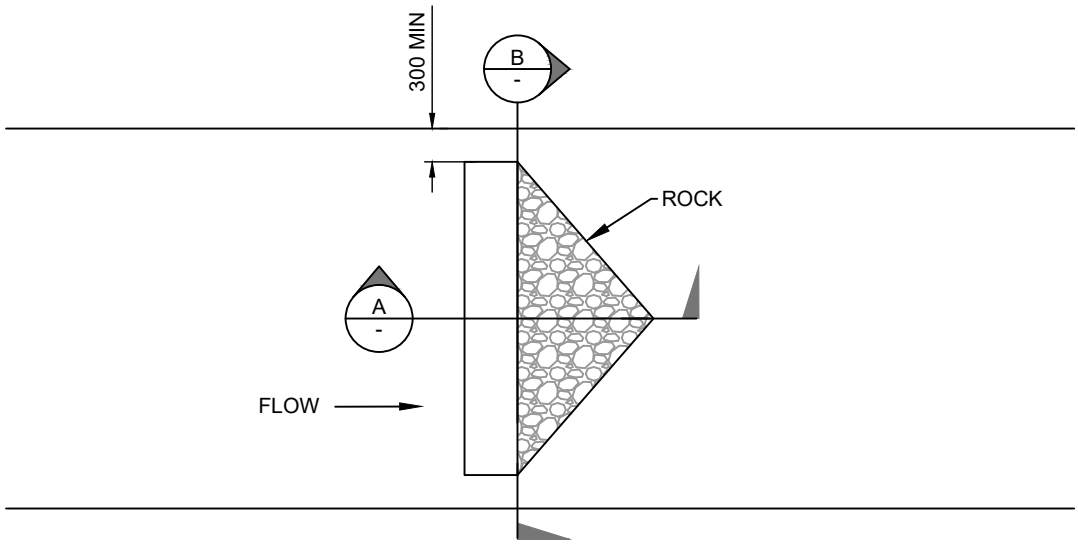
NOTES:

1. EFFECTIVE CATCHMENT AREA DRAINED = IMPERVIOUS AREA + 0.72 x PERVIOUS AREA.
2. MAXIMUM SWALE SLOPE UP TO 5%. STEEPER SWALES REQUIRE CHECK DAMS (SEE DRAWING B5-6 AND DRAWING B5-7).
3. DIMENSIONS 'b' AND 'd' TO BE SIZED FOR CONVEYANCE OF 5% AEP EVENT.
4. EXISTING GROUND IS REGRADED, COMPACTED, TOPSOILED (100mm DEPTH), AND GRASSED.
5. SIDE SLOPES NO STEEPER THAN 1v:4h IF PLANTED (NOT MOWN).
6. SIDE SLOPES NO STEEPER THAN 1v:5h IF GRASSED (MOWN).

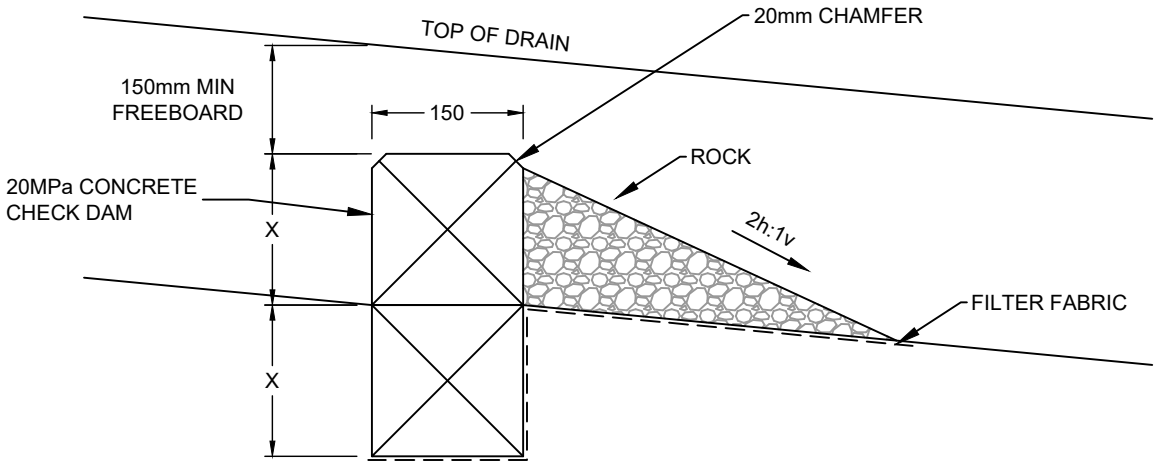


LOCATION OF CHECK DAMS IN SWALES

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Swale Detail (When Check Dams Required)	NOT TO SCALE Drawing No. B5-6

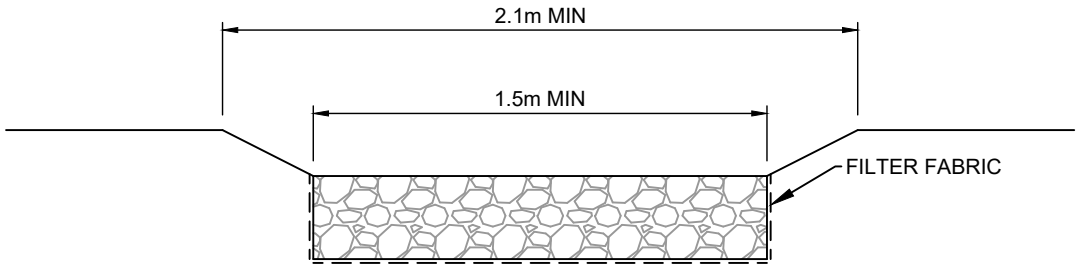


TYPICAL PLAN



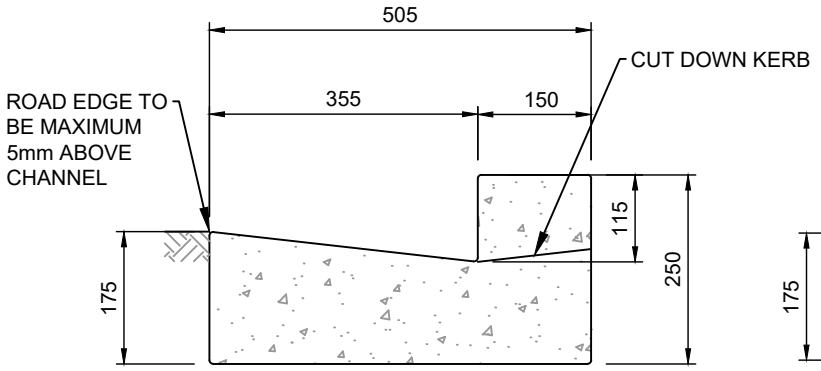
ELEVATION A

ROCK TO BE SCORIA GRADED CLEAN (SGC) 75-70 OR EQUIVALENT.
FILTER FABRIC TO BE BIDIM A14 OR EQUIVALENT.

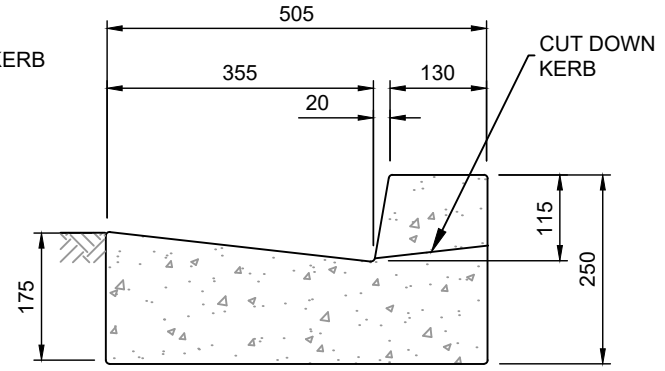


ELEVATION B

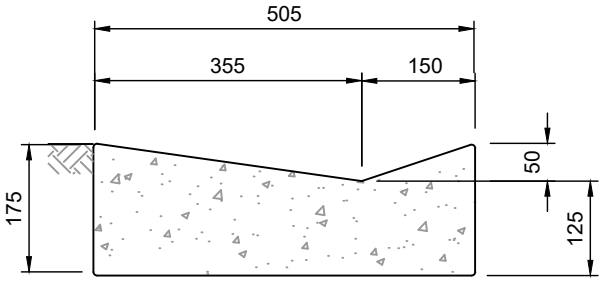
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Check Dam Detail	NOT TO SCALE Drawing No. B5-7



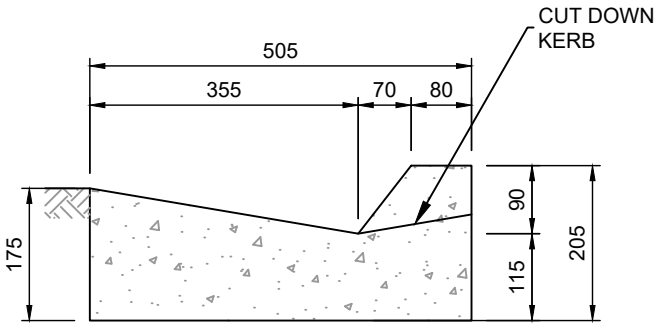
No. 1 KERB & CHANNEL



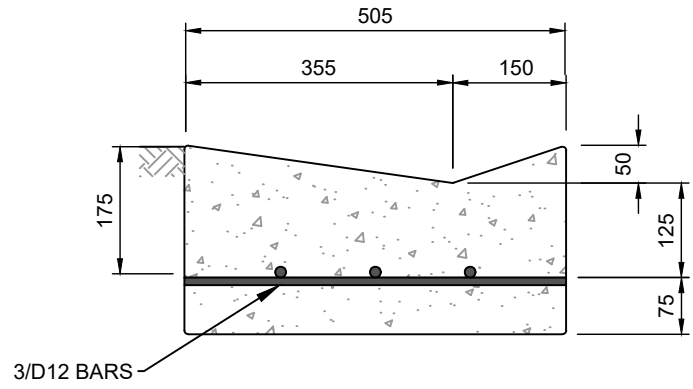
No. 1a KERB & CHANNEL



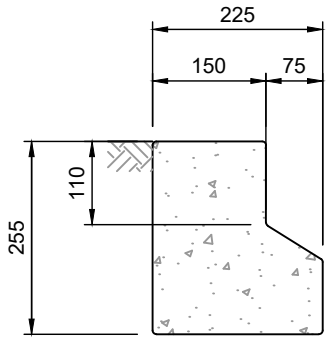
No. 2 VEHICLE CROSSING



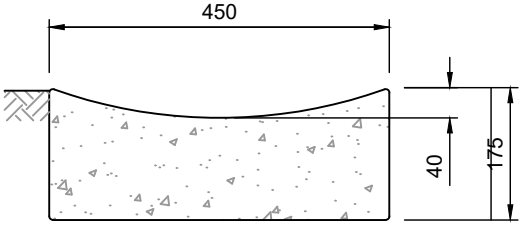
No. 8 MOUNTABLE KERB & CHANNEL



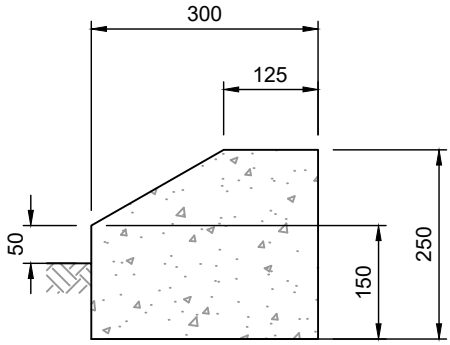
No. 2a COMMERCIAL VEHICLE CROSSING



No. 3 SLIP FORM KERB



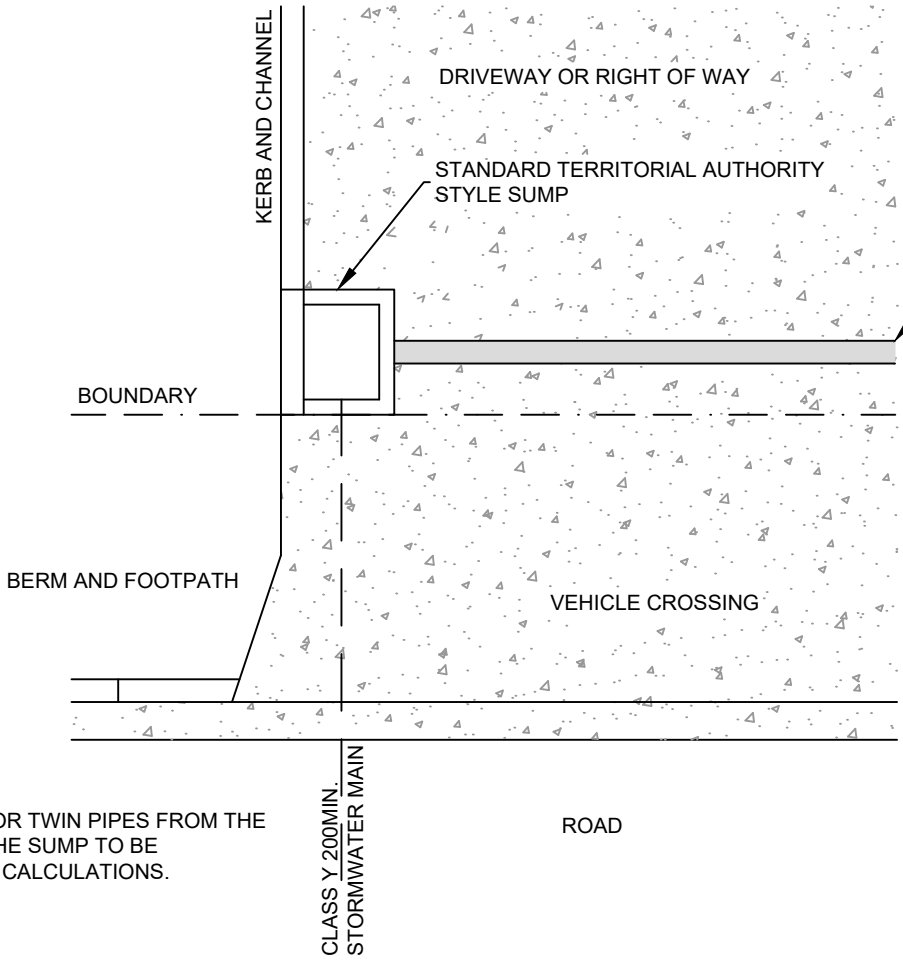
No. 16 DISH CHANNEL



No. 5 MOUNTABLE KERB

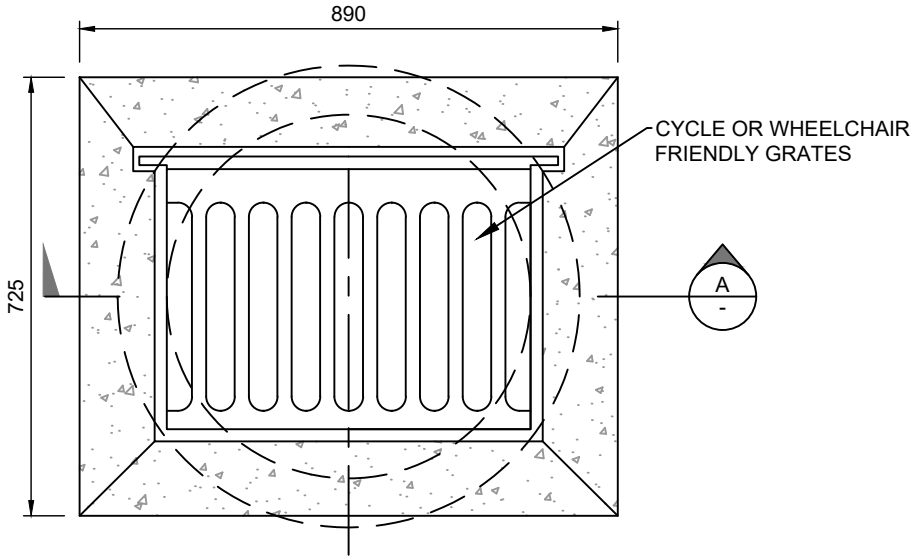
NOTE: KERB AND CHANNELS TO HAVE 200mm MIN. DEPTH OF COMPACTED AP40 BASECOURSE OR GAP65 SUBBASE UNDER THEM

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Kerbs and Dished Channels	NOT TO SCALE Drawing No. B5-8

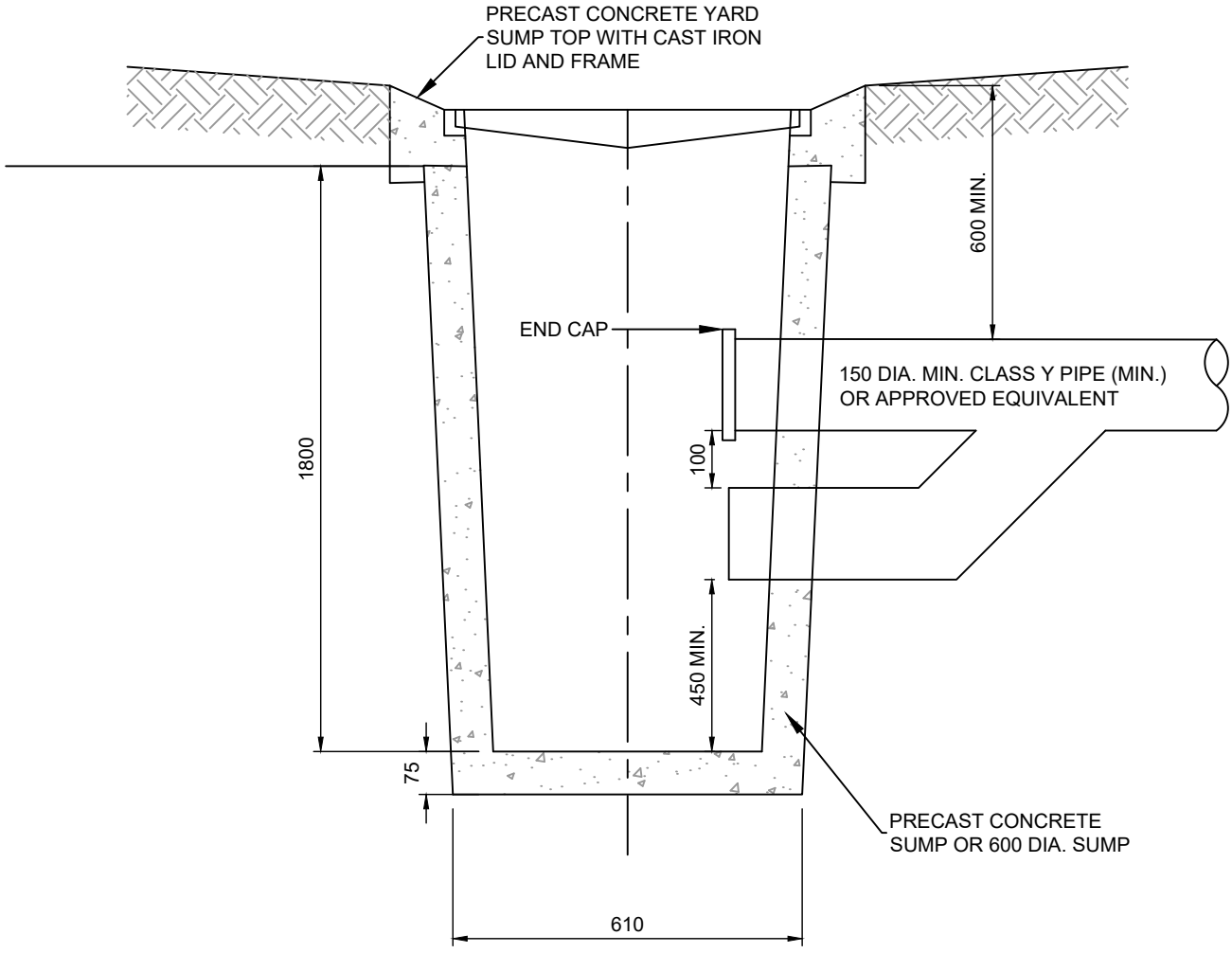


NOTES:
1. USE OF SINGLE OR TWIN PIPES FROM THE PROPERTY TO THE SUMP TO BE DETERMINED BY CALCULATIONS.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Typical Sump to Driveway or Right of Way	NOT TO SCALE Drawing No. B5-9



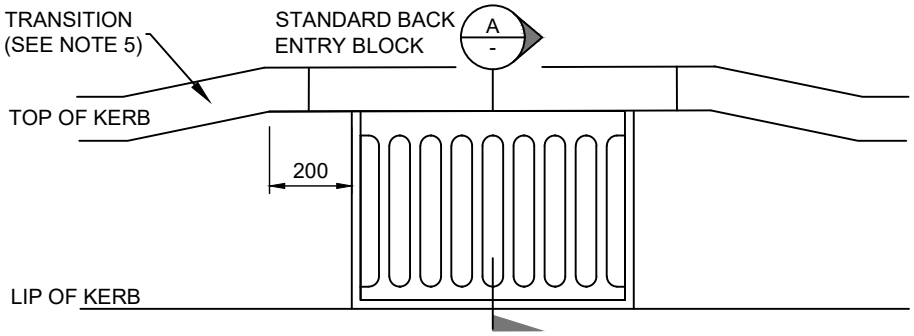
PLAN



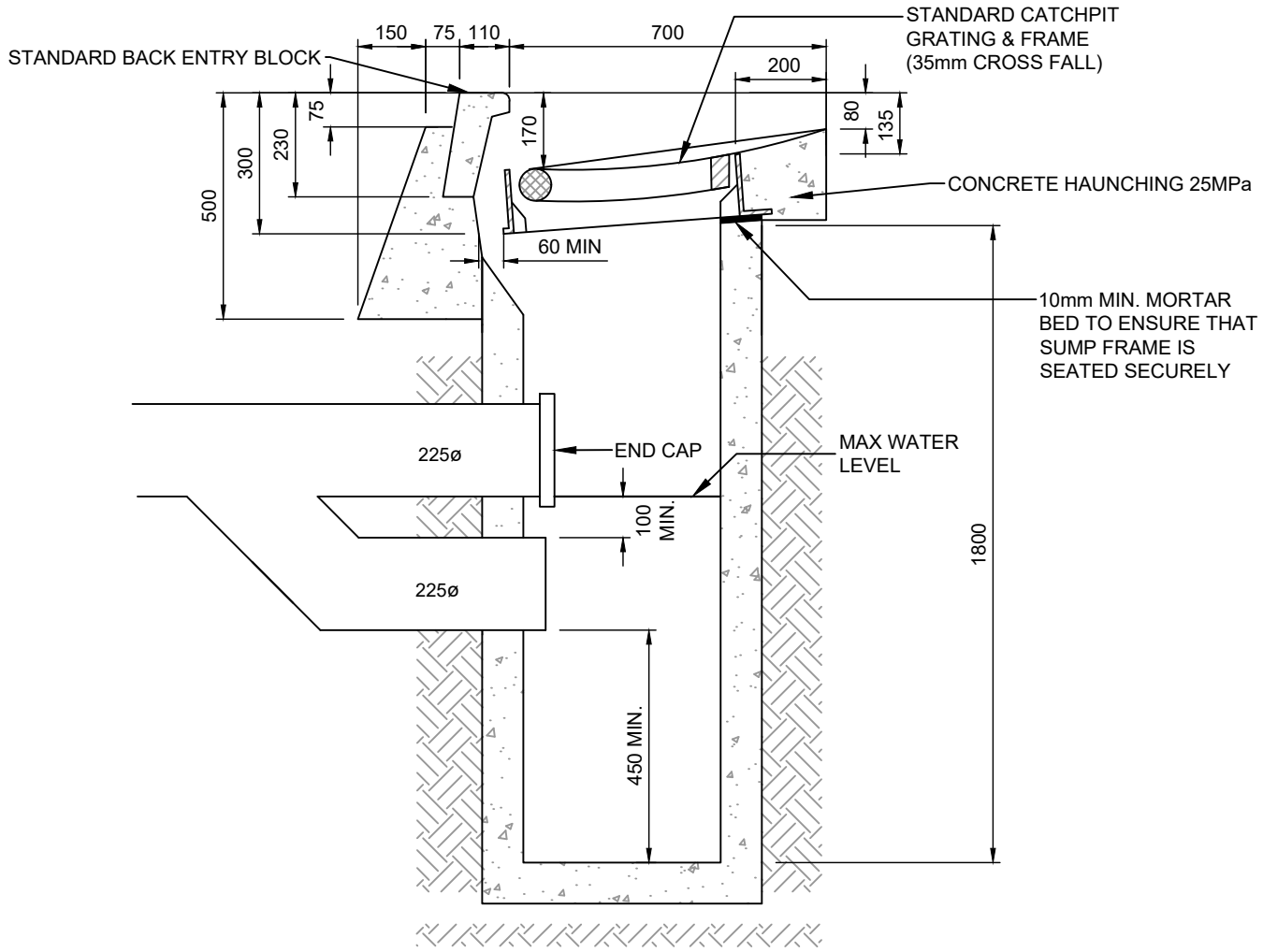
SECTION A

NOTE:
1. SUMP OUTLET MAY BE 150 DIA. IN PRIVATE PROPERTY
2. ALL DIMENSIONS ARE IN MILLIMETRES

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Flat Channel or Yard Sump - Private Only	NOT TO SCALE Drawing No. B5-10



STANDARD SUMP IN CHANNEL

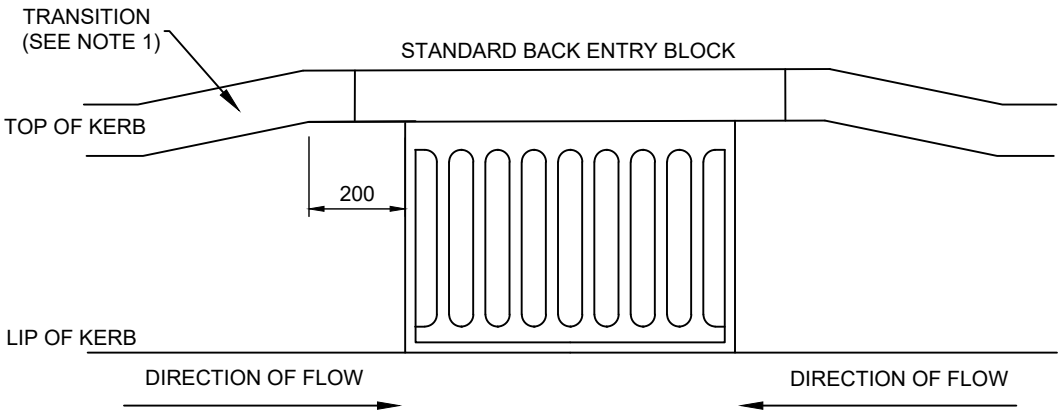


SECTION A

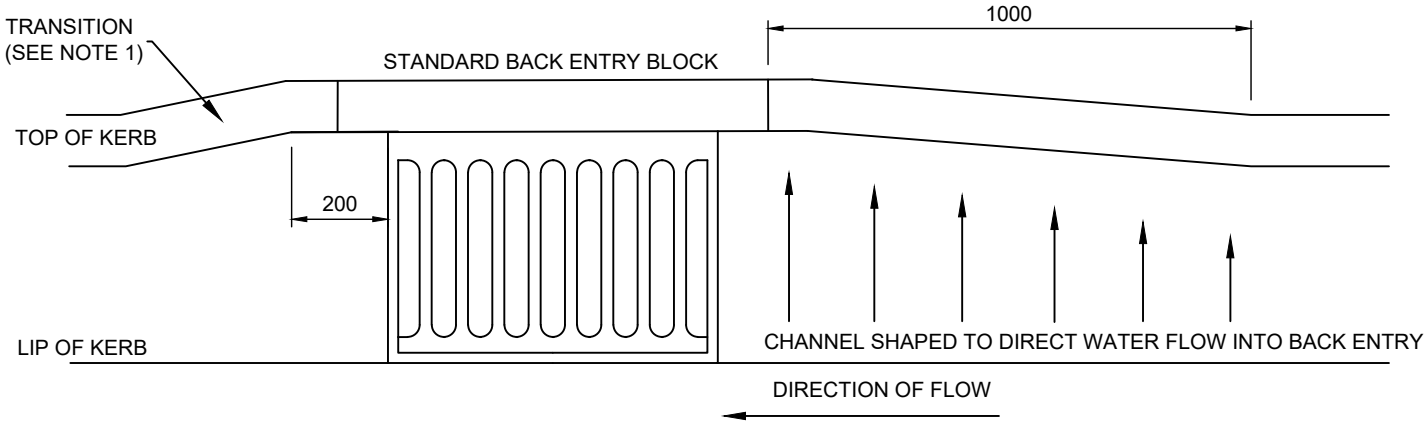
NOTE:

1. ROAD SUMPS TO BE PLACED AT 90m (MAX.) INTERVALS.
2. DOUBLE SUMPS TO BE INSTALLED IN PLACE OF SINGLE SUMPS:
   A. UNDER VERTICAL CURVES IN ROADS
   B. ON ALL ROADS WITH VERTICAL GRADIENTS EXCEEDING 10%.
   SPECIFIC DESIGN REQUIRED WHERE GRADIENT EXCEEDS 12%.
3. SUMP LEADS TO INTERSECT SIDE OR BACKWALL OF SUMP BOX AT 90°.
4. SITE-SPECIFIC DESIGN REQUIRED TO REDUCE SYPHON FROM 225ø DOWN TO 150ø.
5. WHERE GRADIENTS EXCEED 10%, CHANNEL TRANSITION INTO DOUBLE MUDTANK TO BE 800mm AND CHANNEL TO BE FORMED DIRECTLY INTO BACK ENTRY.
6. TO BE USED WHERE BACK OF KERB IS NOT DIRECTLY ADJACENT TO THE FOOTPATH.
7. ALL SUMPS SHOULD BE 1800mm DEPTH.
8. A MINIMUM SEDIMENT STORAGE DEPTH OF 450mm IS TO BE PROVIDED (TO INVERT OF PIPE).
9. REDUCED COVER WHERE THE LEADS LEAVE THE MUD SUMP IS ACCEPTABLE. THIS SHOULD NOT REDUCE BELOW A MINIMUM OF 600mm COVER TO PIPE.
10. THE LENGTH OF PIPE WITH REDUCED COVER SHOULD BE MINIMISED AND AVOID EXTENDING INTO THE WHEEL TRACKS AS FAR AS POSSIBLE.

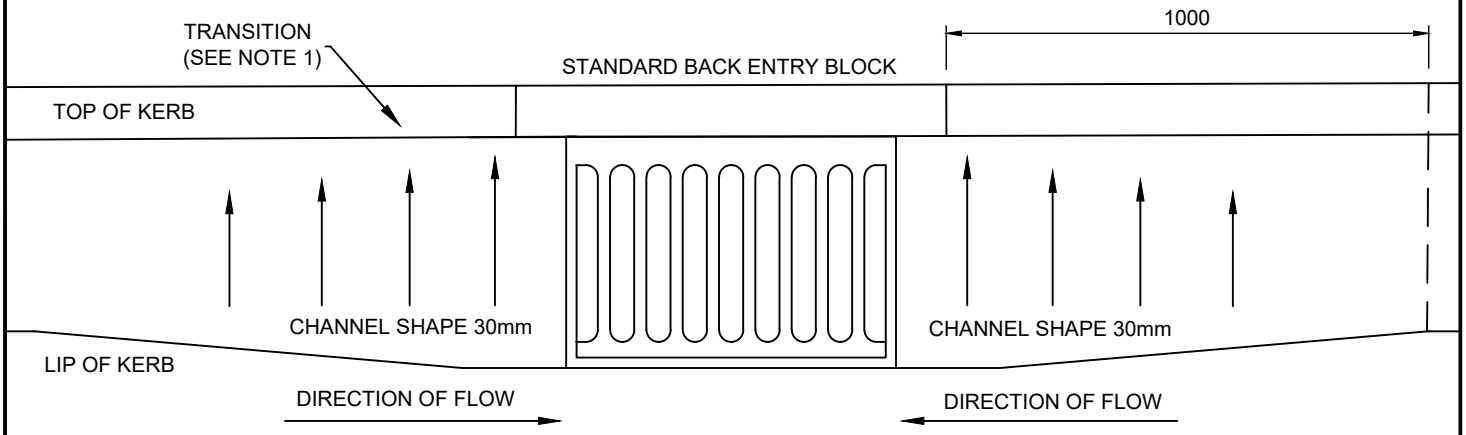
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Road Sump Detail	NOT TO SCALE Drawing No. B5-11



STANDARD ROAD SUMP



ROAD SUMP IN HILLSIDE CHANNEL



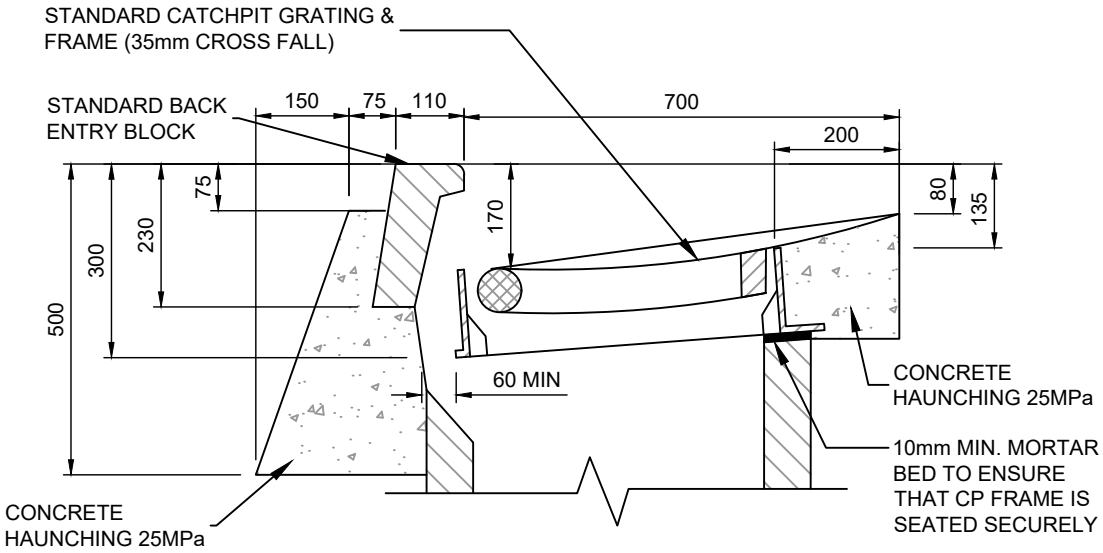
ROAD SUMP DETAIL WHERE NO VERGE

(BACK OF KERB AGAINST FOOTPATH)

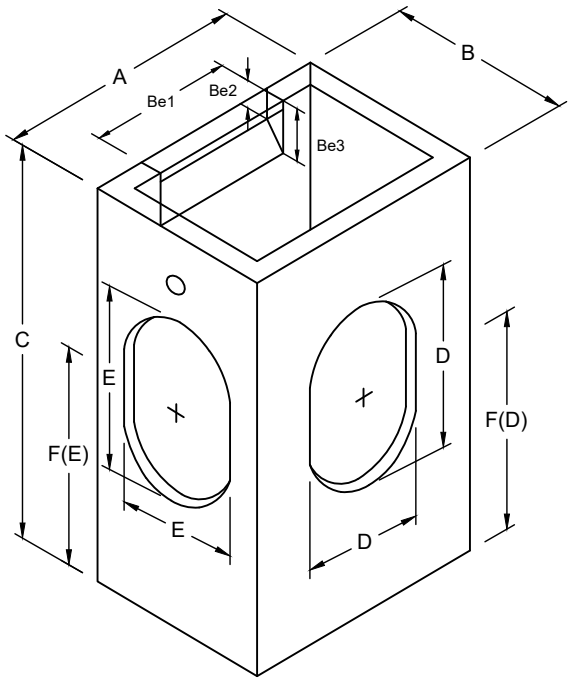
NOTE:

1. WHERE GRADIENTS EXCEED 10%, CHANNEL TRANSITION INTO DOUBLE MUDTANK TO BE 800MM AND CHANNEL TO BE FORMED DIRECTLY INTO BACK ENTRY.

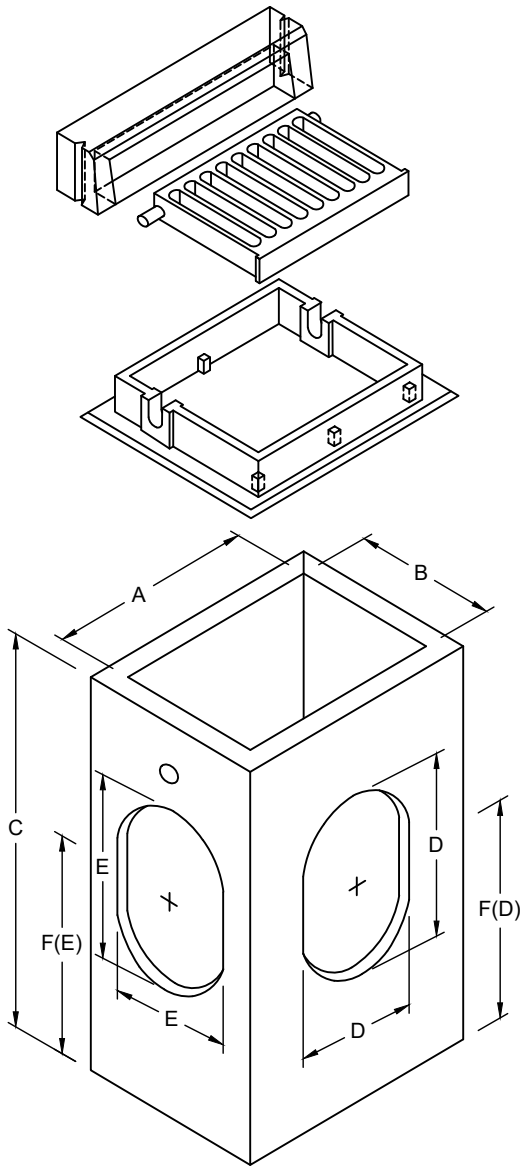
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Different Grate Layouts	NOT TO SCALE Drawing No. B5-12



SECTION THROUGH GRATE



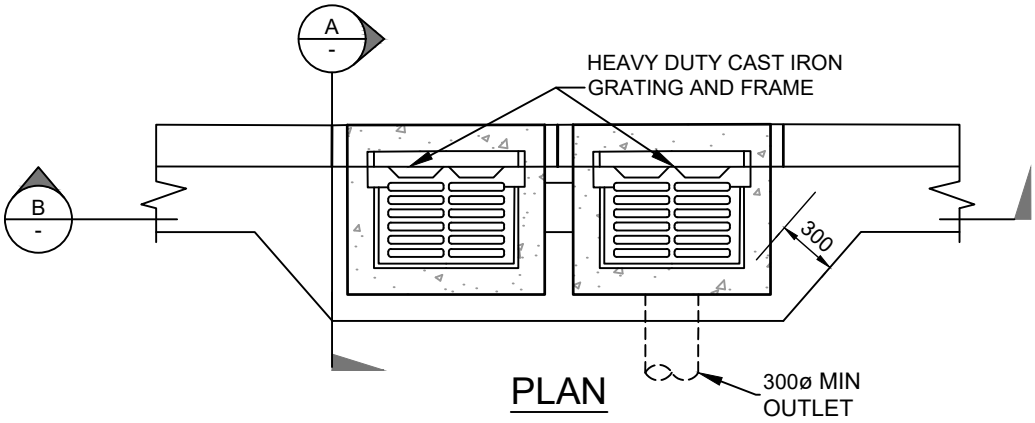
BACK ENTRY SUMP ISOMETRIC VIEW



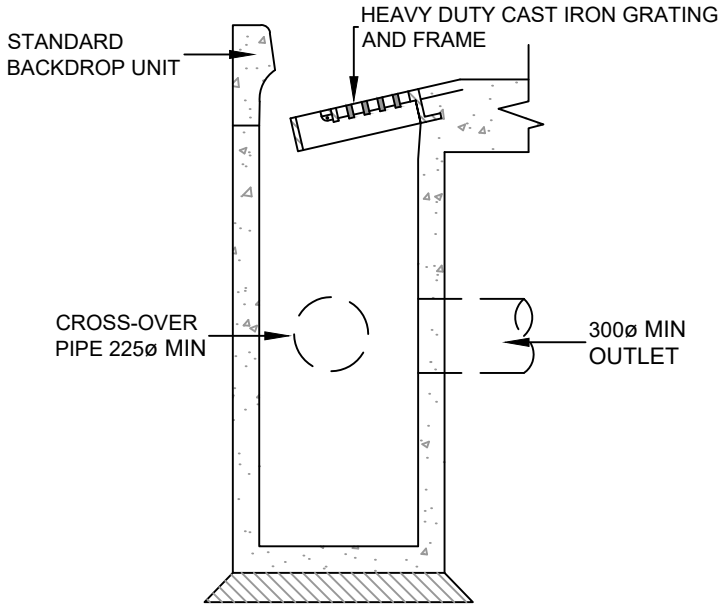
FLAT TOP SUMP ISOMETRIC VIEW

NOTES:
1. DIMENSIONS PER MANUFACTURER'S SPECIFICATIONS.
2. ALL SUMPS SHALL BE A MINIMUM OF 1800 DEPTH.

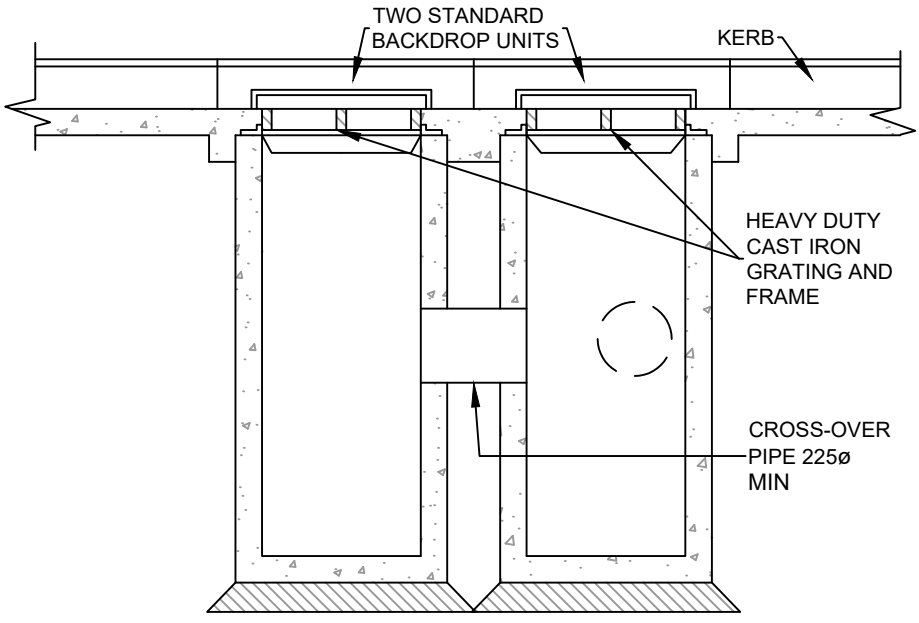
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Standard Flat Top and Back Entry Sump	NOT TO SCALE Drawing No. B5-13



PLAN

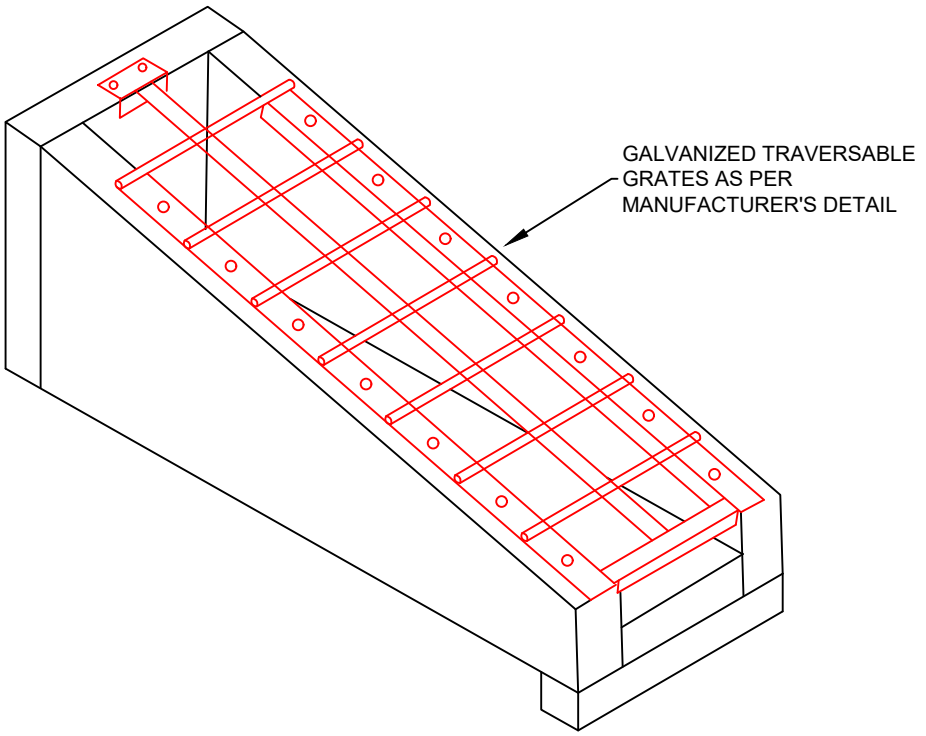


SECTION A



SECTION B

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Double Back-Entry Sump for Road Low Points and Alternative	NOT TO SCALE Drawing No. B5-14

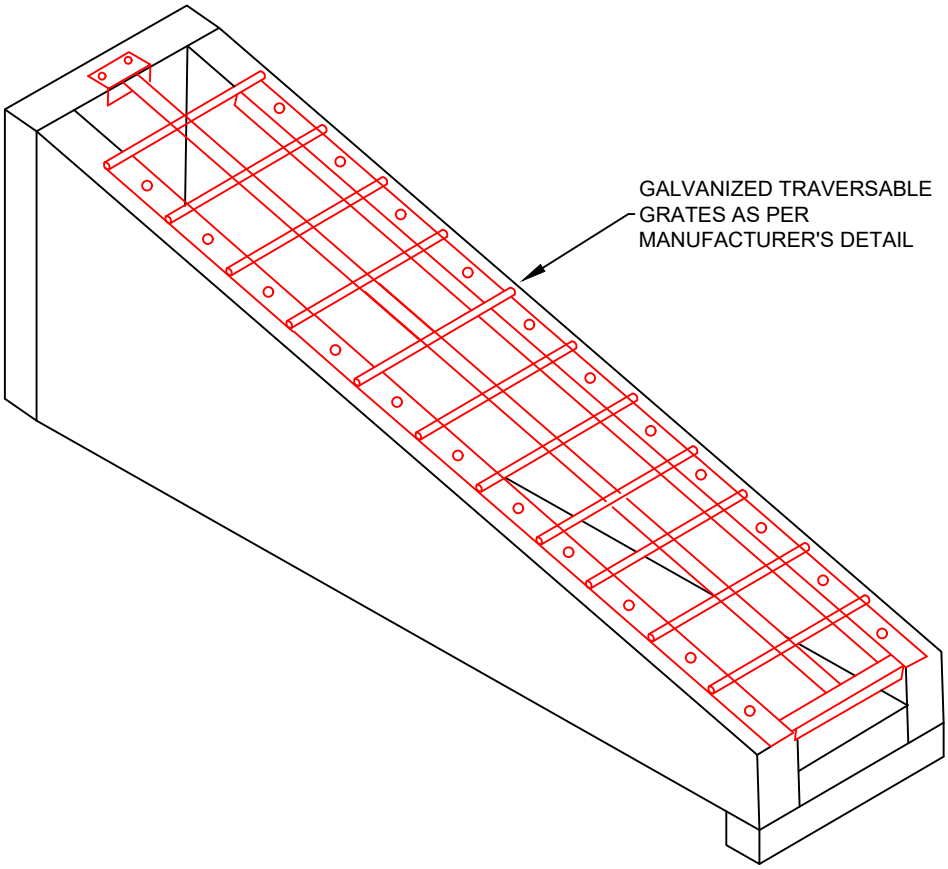


ISOMETRIC VIEW

NOTES:

1. IT IS RECOMMENDED THAT THE GRATES ARE SOURCED FROM THE MANUFACTURER OF THE PRECAST CULVERT HEADWALL TO ENSURE THE GRATE AND HEADWALL ARE COMPATIBLE. OTHERWISE GUIDANCE SHOULD BE SOUGHT FROM THE MANUFACTURER OF THE PRECAST CULVERT HEADWALL ON THE REQUIRED DIMENSIONS FOR ANY GRATES NOT SUPPLIED BY THEM.
2. THE CLEAR WIDTH BETWEEN SIDE WALLS OF PRECAST CULVERT HEADWALLS SHALL NOT EXCEED 600mm WHEN USING THIS GRATE.
3. MATERIAL SPECIFICATIONS FOR THE FOLLOWING ITEMS:
   STEEL GALVANIZED ANGLES - AS/NZS 3679.1:1996 HOT ROLLED BARS AND SECTIONS REINFORCING BARS - AS/NZS 4671:2001 STEEL REINFORCING MATERIALS GALVANIZING - AS/NZS 4680:2006 HOT DIP GALVANIZING (ZINC) COATINGS ON FABRICATED FERROUS ARTICLES

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Traversable Grates for Precast Headwalls 300mm to 450mm Culverts	NOT TO SCALE Drawing No. B5-15

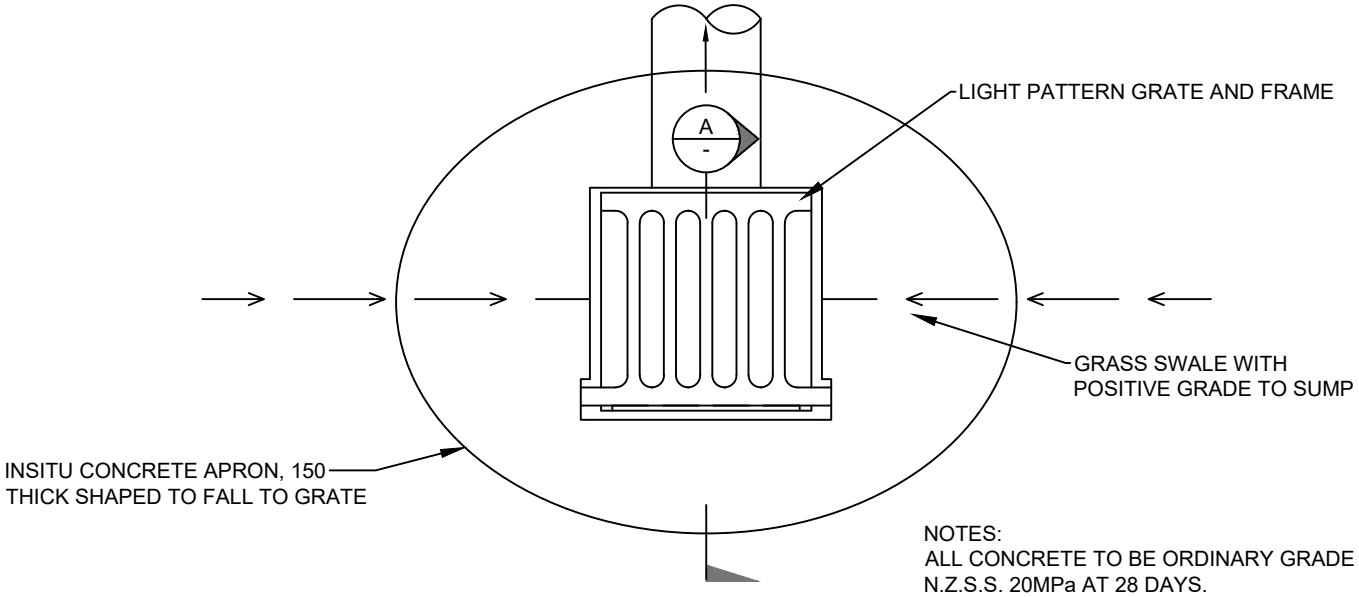


ISOMETRIC VIEW

NOTES:

1. IT IS RECOMMENDED THAT THE GRATES ARE SOURCED FROM THE MANUFACTURER OF THE PRECAST CULVERT HEADWALL TO ENSURE THE GRATE AND HEADWALL ARE COMPATIBLE. OTHERWISE GUIDANCE SHOULD BE SOUGHT FROM THE MANUFACTURER OF THE PRECAST CULVERT HEADWALL ON THE REQUIRED DIMENSIONS FOR ANY GRATES NOT SUPPLIED BY THEM.
2. THE CLEAR WIDTH BETWEEN SIDE WALLS OF PRECAST CULVERT HEADWALLS SHALL NOT EXCEED 600mm WHEN USING THIS GRATE.
3. MATERIAL SPECIFICATIONS FOR THE FOLLOWING ITEMS:
   STEEL GALVANIZING ANGLES - AS/NZS 3679.1:1996 HOT ROLLED BARS AND SECTIONS REINFORCING BARS - AS/NZS 4671:2001 STEEL REINFORCING MATERIALS GALVANIZING - AS/NZS 4680:2006 HOT DIP GALVANIZING (ZINC) COATINGS ON FABRICATED FERROUS ARTICLES.

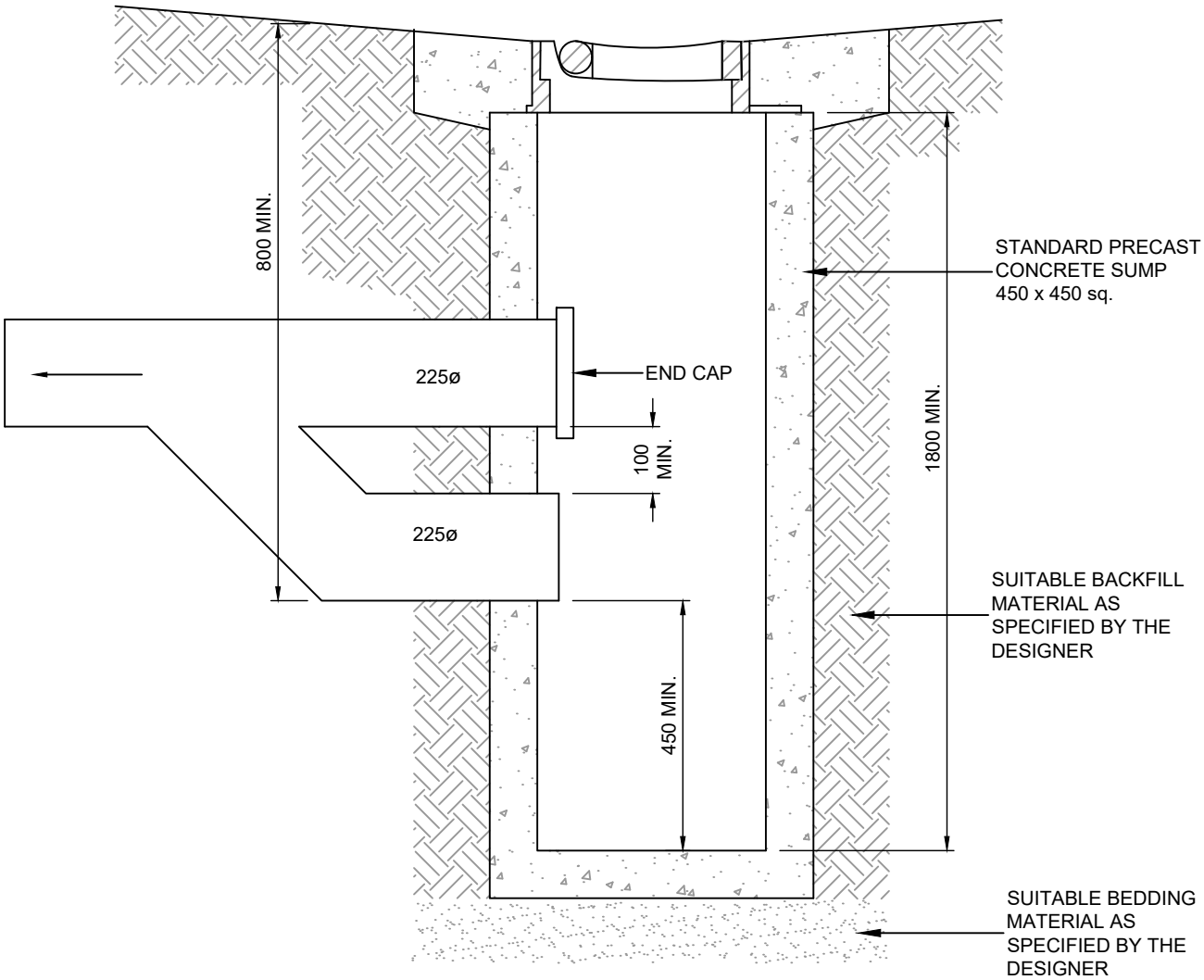
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Mountable Grates for Precast Headwalls 300mm to 450mm Culverts	NOT TO SCALE Drawing No. B5-16



PLAN

NOTES:
ALL CONCRETE TO BE ORDINARY GRADE N.Z.S.S. 20MPa AT 28 DAYS.

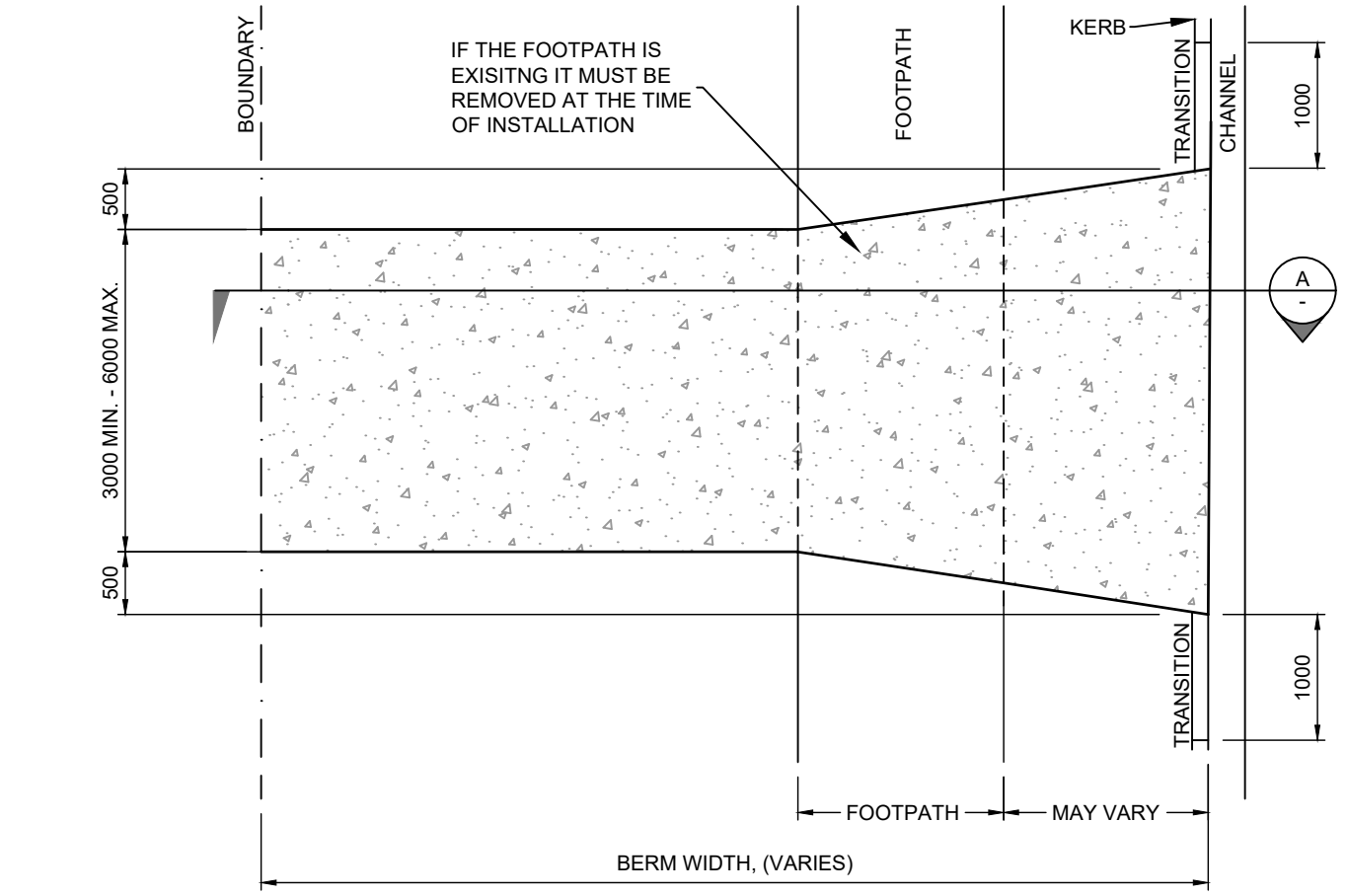
ALL PIPES TO BE FINISHED FLUSH WITH INSIDE WALL OF SUMP.



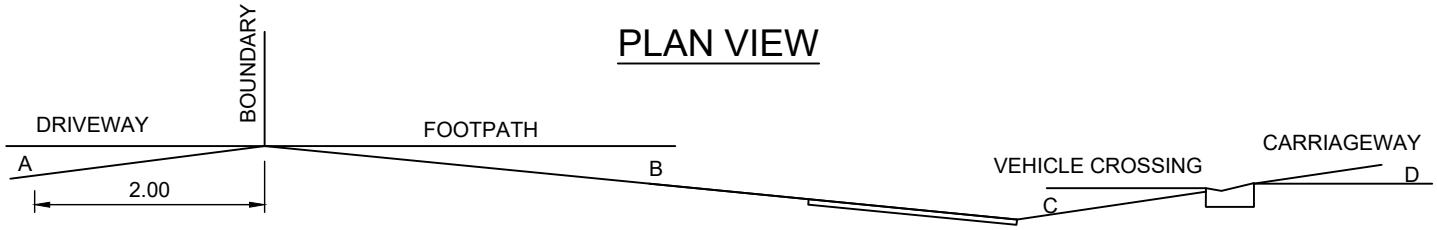
SECTION A

NOTES:
1. ALL SUMPS SHOULD BE 1800mm DEPTH.
2. A MINIMUM SEDIMENT STORAGE DEPTH OF 450mm IS TO BE PROVIDED (TO INVERT OF PIPE).

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Berm Sump Detail	NOT TO SCALE Drawing No. B5-17

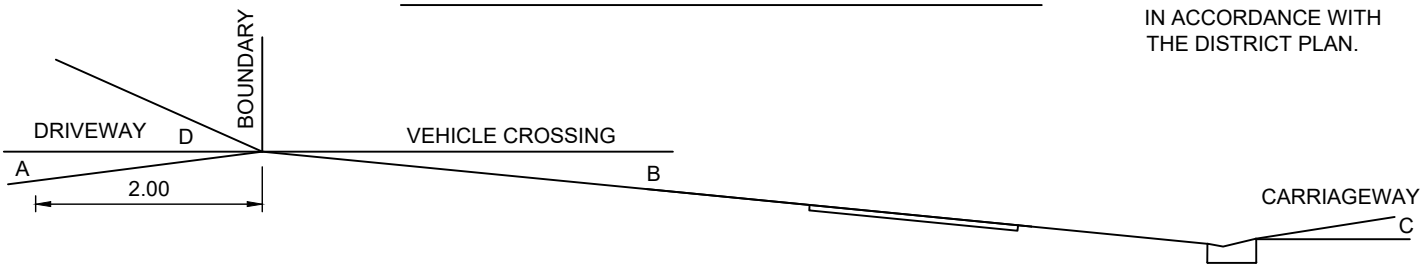


PLAN VIEW



SECTION A: LOW LEVEL FOOTPATH

MAX. CHANGE OF GRADE IN ACCORDANCE WITH THE DISTRICT PLAN.

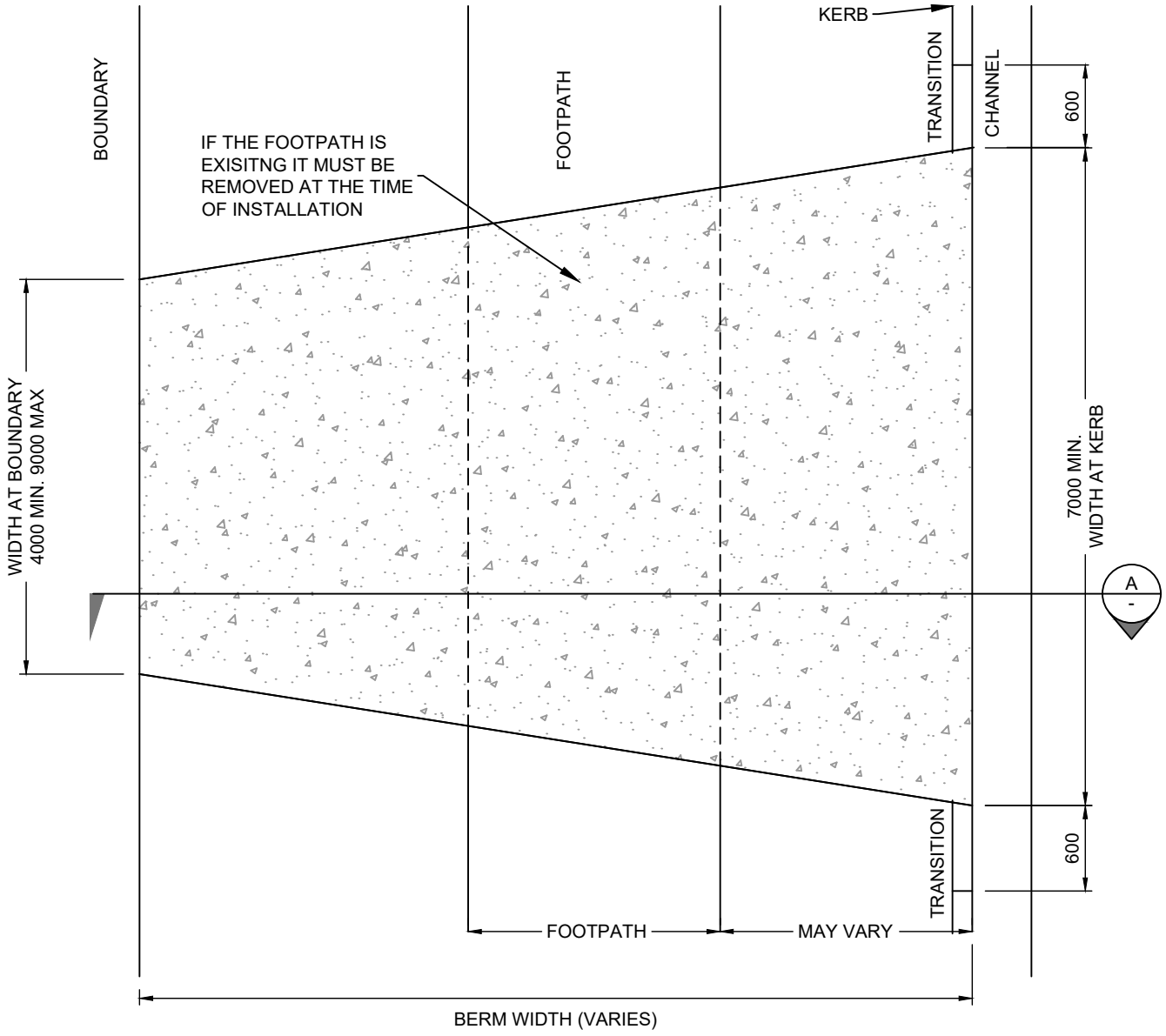


SECTION A: STANDARD FOOTPATH

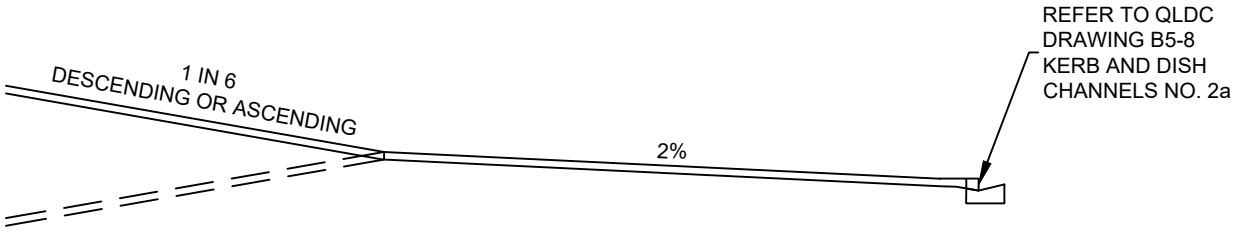
NOTES:

1. DESIGN OF ALL RESIDENTIAL CROSSINGS TO COMPLY WITH DISTRICT PLAN REQUIREMENTS.
2. CROSSING CONCRETE TO BE 125mm THICK REINFORCED WITH STRUCTURAL MESH, CENTRALLY PLACED.
3. SURFACING TO BE CONCRETE WITH A MINIMUM CRUSHING STRENGTH OF 20MPa AT 28 DAYS, OR 30mm DG7 ASPHALT (NZTA M10 Notes TABLE N3.3), OR 2 COAT SEAL.
4. BASECOURSE TO BE A MINIMUM 150mm COMPACTED DEPTH OF M4 AP40 CRUSHED GRAVEL, OR 150mm M4 AP40 FOR 2 COAT SEAL.
5. SUBGRADE TO BE TRIMMED AND COMPACTED TO ACHIEVE A MINIMUM CBR VALUE = 7.
6. MAXIMUM LONGITUDINAL GRADIENTS SHALL BE IN ACCORDANCE WITH THE DISTRICT PLAN.
7. A, B, C AND D REFER TO THE GRADIENTS EXPRESSED EITHER AS A PERCENTAGE OR IN DEGREES.
8. LOW SLUNG CARS WITH GROUND EFFECT FEATURES MAY NOT MEET THE CRITERIA ASSUMED IN THIS DESIGN GUIDE.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Vehicle Crossing - Residential	NOT TO SCALE Drawing No. B5-18



PLAN

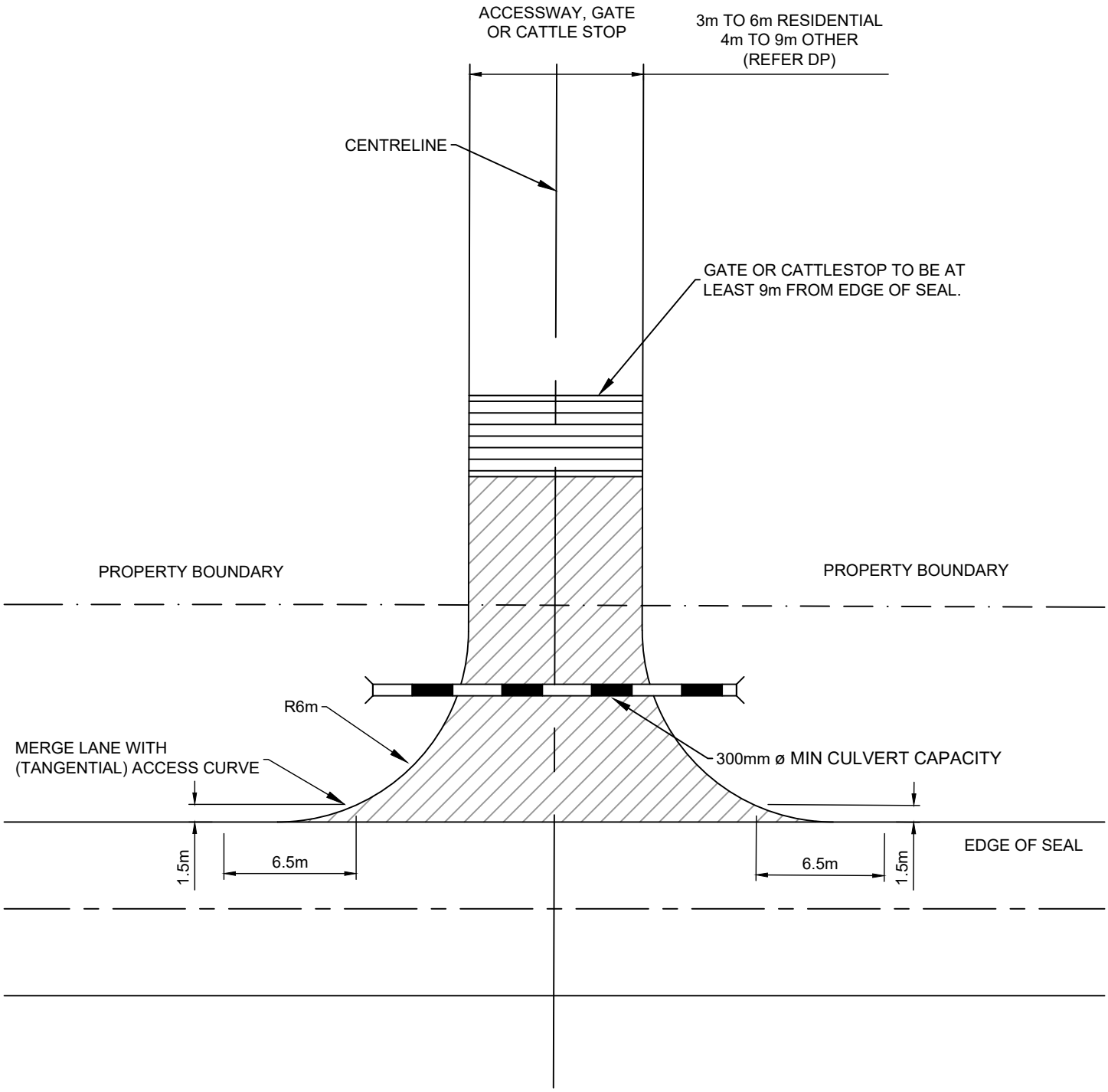


SECTION A

NOTES:

1. THE CONCRETE SHALL BE 150mm THICK AND REINFORCED WITH STRUCTURAL MESH, CENTRALLY PLACED.
2. THE CONCRETE SHALL HAVE A MINIMUM CRUSHING STRENGTH OF 20 MPa AT 28 DAYS AND SHALL COMPLY WITH NZS 3124.
3. CHANNEL CROSSING TO BE HEAVY DUTY, REINFORCED WITH 3 D12 BARS.
4. SUB-GRADE TO BE TRIMMED AND COMPACTED TO ACHIEVE A MIN. CBR VALUE OF > 7.
5. DESIGN OF ALL COMMERCIAL CROSSINGS TO COMPLY WITH THE DISTRICT PLAN.
6. MAXIMUM LONGITUDINAL GRADIENTS SHALL BE IN ACCORDANCE WITH THE DISTRICT PLAN.
7. ONLY CONCRETE IS PERMITTED (ASPHALT NOT PERMITTED).

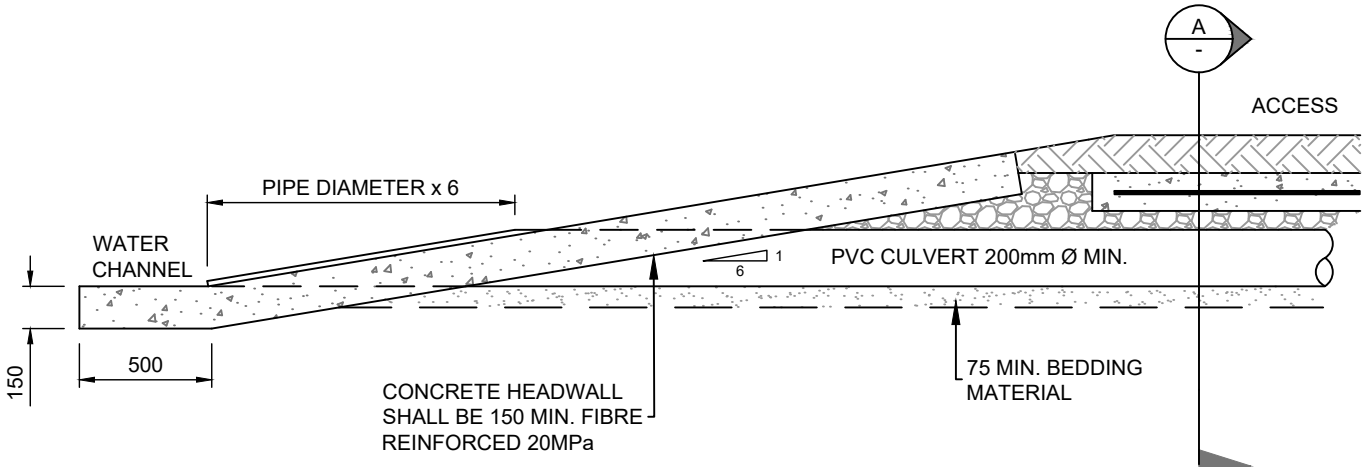
QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Vehicle Crossing - Commercial / Industrial	NOT TO SCALE Drawing No. B5-19



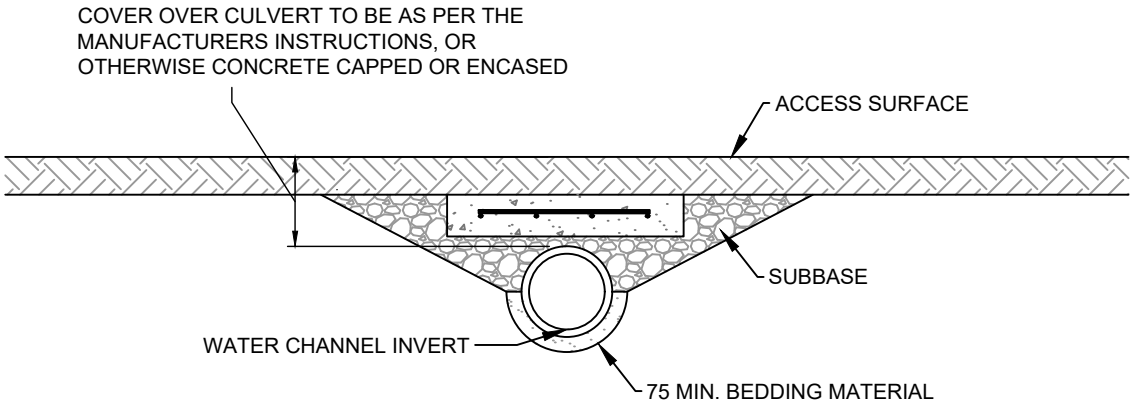
NOTES:

1. CROSSING TO BE MINIMUM 4.5m WIDE AT ENTRANCEWAY & INCORPORATE MIN. 6m RADIUS.
2. PAVEMENT CONSTRUCTION TO BE 150mm COMPACTED DEPTH M/4 AP40 BASECOURSE ON 200mm COMPACTED DEPTH OF AP65 SUBBASE ON COMPACTED SUB-GRADE WITH CBR > 7 (FOR ACCESSWAY INTERNAL TO SITE AS WELL AS LINKING SITE AND LEGAL ROAD).
3. WHERE THE CROSSING INTERCEPTS EXISTING SIDE DRAINAGE, A MIN. 300mm ø CULVERT IS TO BE INSTALLED.
4. IF THE APPLIED SURFACE IS CHIP SEAL A SECOND COAT SEAL IS REQUIRED TO BE PROGRAMMED AND CONSTRUCTED WITHIN 12 MONTHS FROM CONSTRUCTION OF THE FIRST COAT OR IN THE NEXT SUMMER SEASON, WHICHEVER COMES FIRST.
5. CULVERT TO BE FINISHED WITH CONCRETE HEADWALLS AS PER DRAWING B5-24: NON-PRECAST HEADWALL DETAIL OR DRAWING B5-16: TRAVERSABLE GRATES FOR PRECAST HEADWALLS 250mm TO 450mm CULVERTS.
6. MINIMUM DEPTH OF 450mm TO TOP OF CULVERT IS REQUIRED OR CONCRETE CAPPED/ENCASED IF THE ROAD DEPTH CANNOT BE ACHIEVED OR AS AGREED WITH THE T.A.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Private Rural Access	NOT TO SCALE Drawing No. B5-20



LONGITUDINAL ELEVATION: HEADWALL

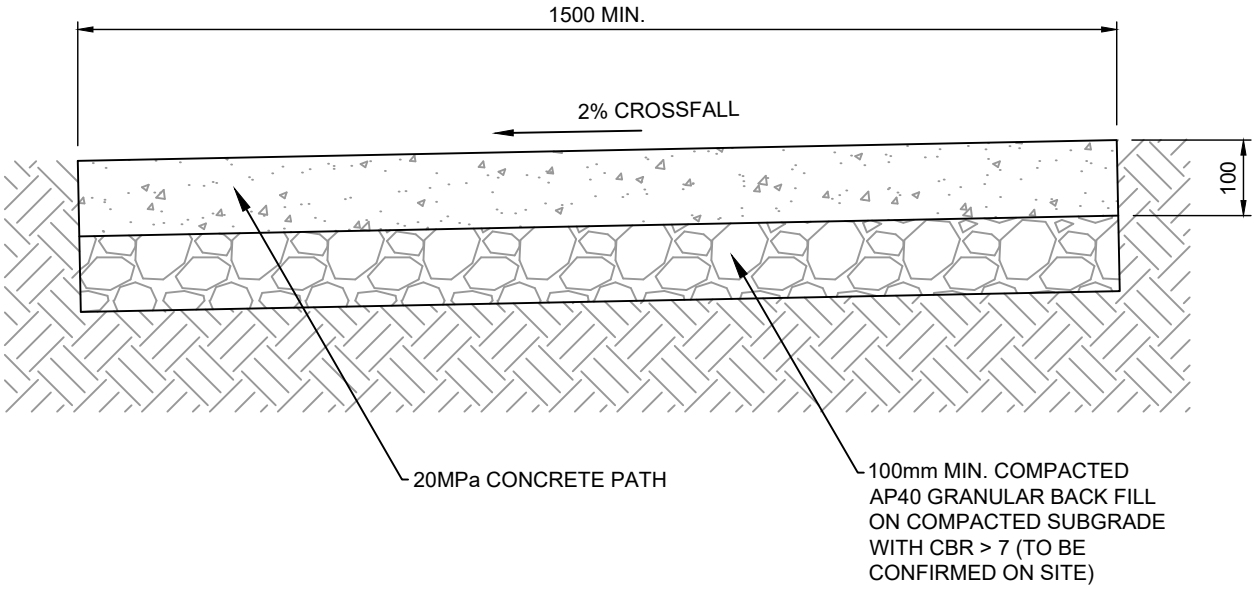


SECTION A: ACCESS PIPE BEDDING

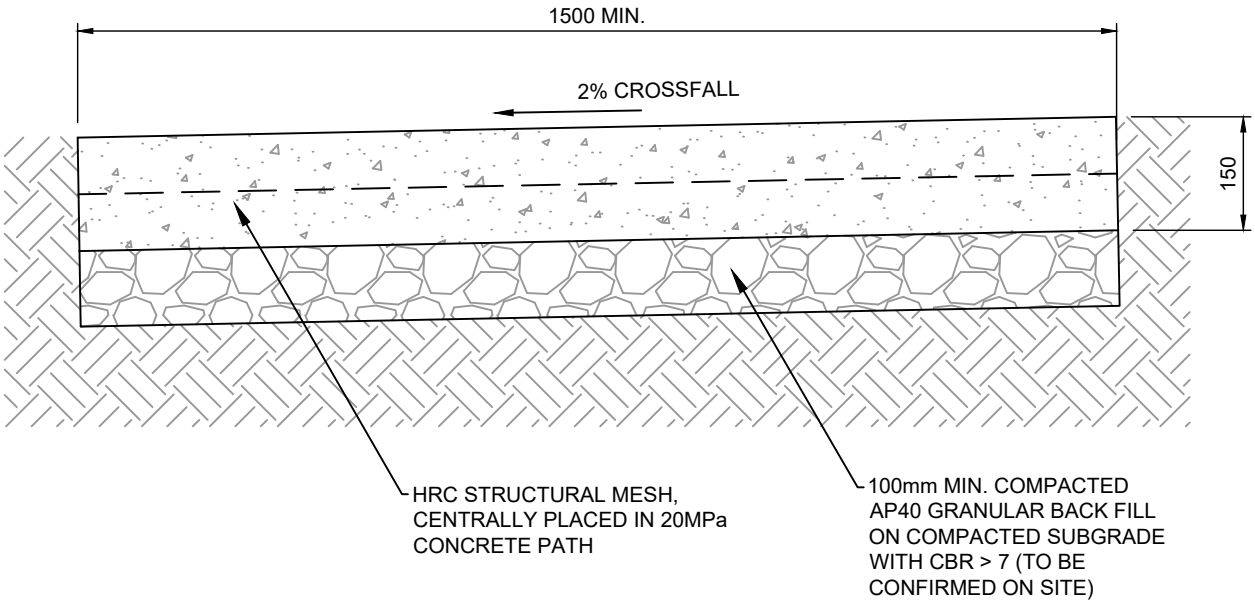
NOTES:

1. WHERE THE ACCESS INTERCEPTS EXISTING SIDE DRAINAGE / WATER TABLE, A 200mm MIN. DIAMETER (OR MIN. DIAMETER OF UPSTREM CULVERT, WHICHEVER IS THE GREATER) CULVERT IS TO BE INSTALLED.
2. PIPE TO SN8 PVC OR CONCRETE WITH APPROPRIATE BEDDING.
3. COVER OVER CULVERT TO BE AS PER THE MANUFACTURERS INSTRUCTIONS, OR OTHERWISE CONCRETE CAPPED OR ENCASED IF AN APPROPRIATE DEPTH CANNOT BE ACHIEVED.
4. CULVERT ENDS TO BE MITRED TO A GRADIENT OF 1V:6H.
5. CONSTRUCT CONCRETE HEADWALL AND APRON AROUND PIPE ENDS AND CHANNEL INVERT.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Non-Precast Headwall Detail for Culvert Under Access	NOT TO SCALE Drawing No. B5-21

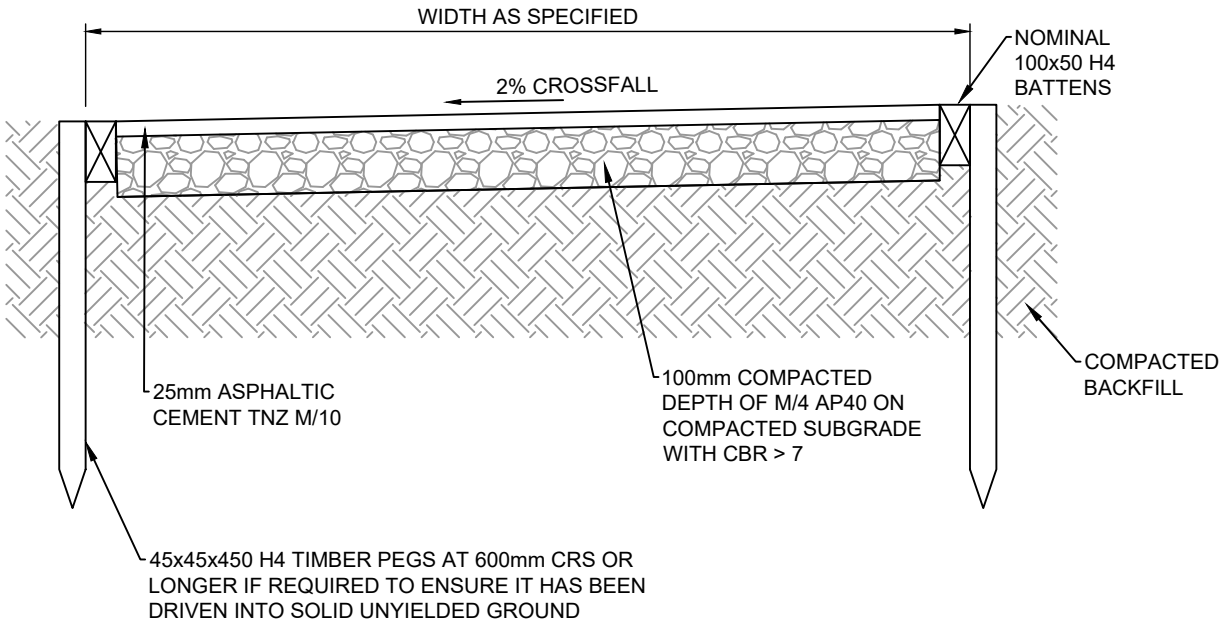


CONCRETE FOOTPATH

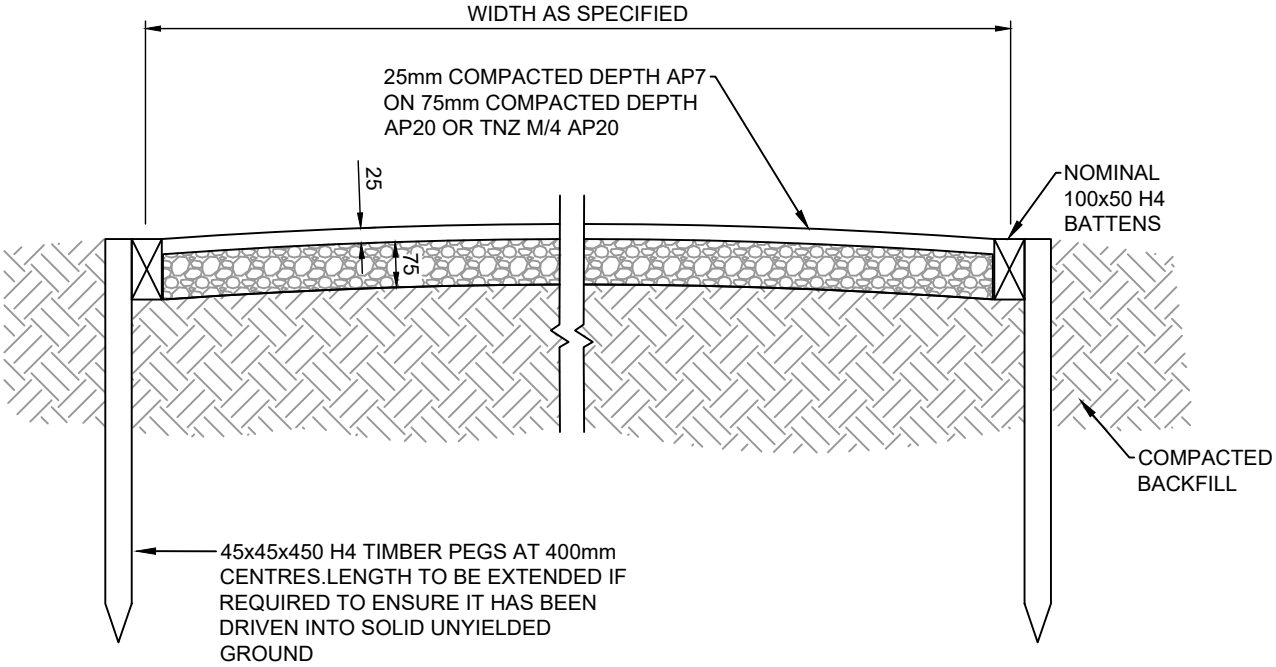


HEAVY DUTY CONCRETE FOOTPATH

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Heavy Duty Footpath	NOT TO SCALE Drawing No. B5-22



ASPHALT FOOTPATH

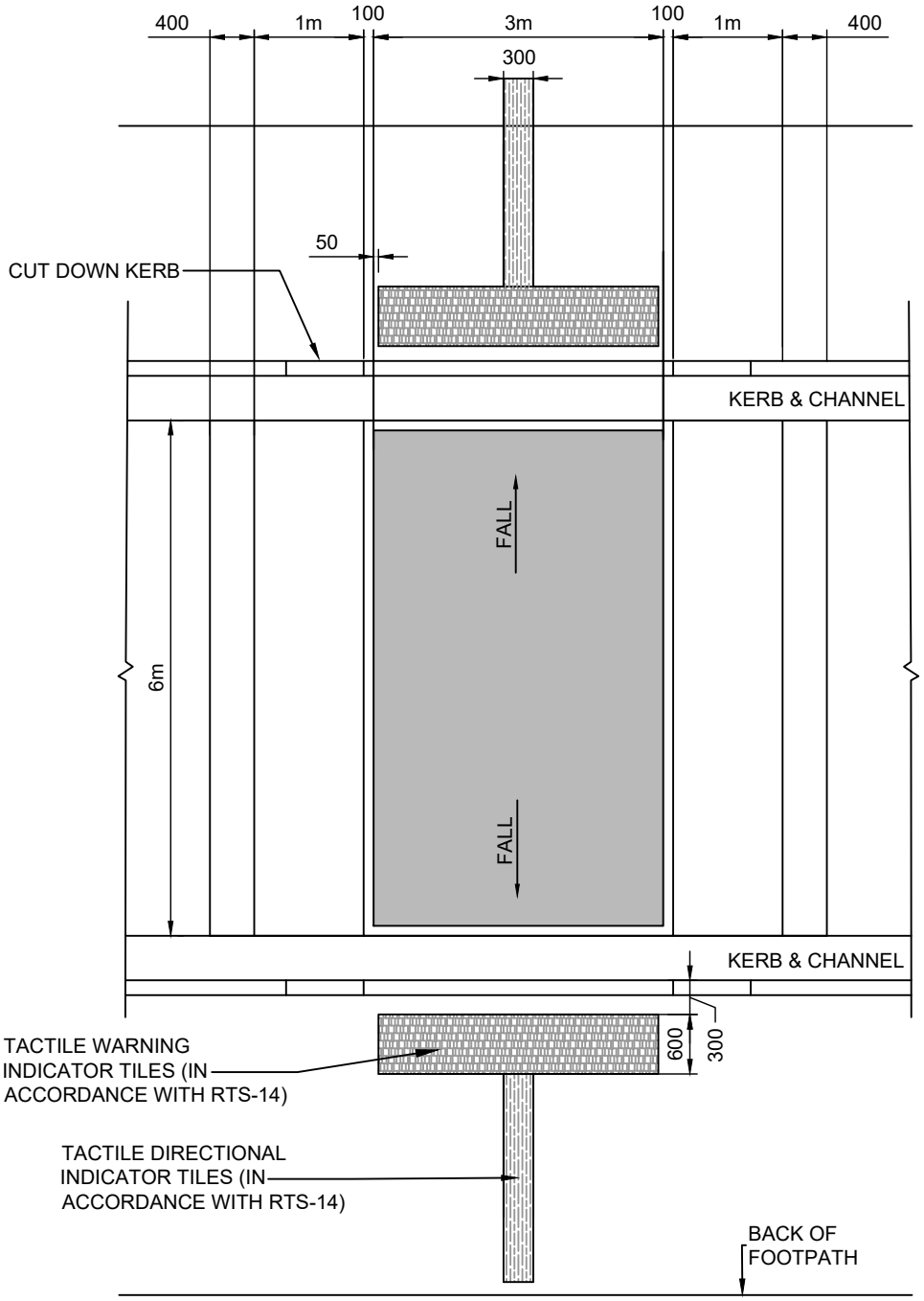


GRITTED FOOTPATH

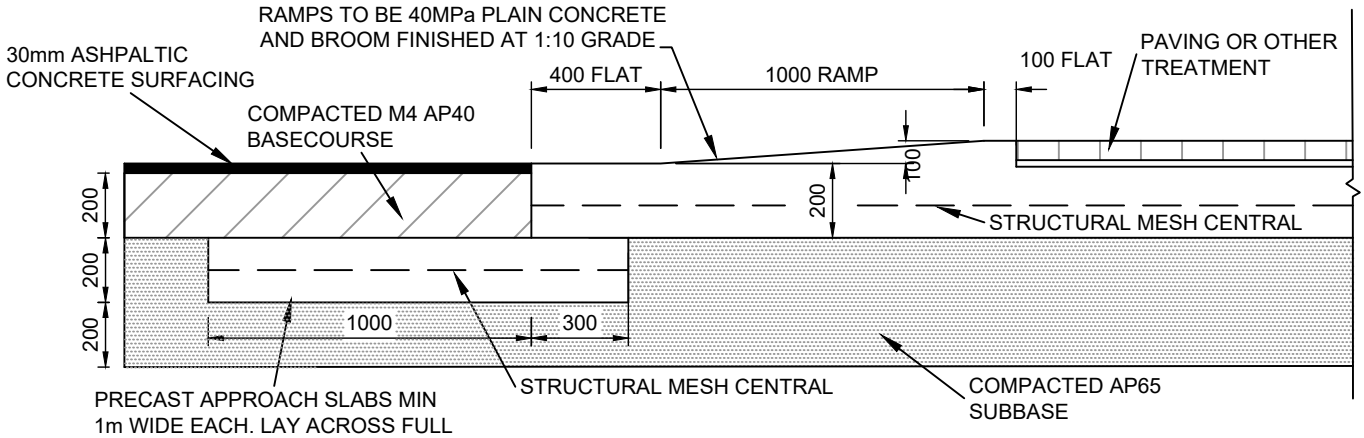
NOTES:

1. RE. MIN. CBR OF 7 REQUIRED AND SUBBASE OF 75mm.
2. CROSSFALLS TO BE NOMINALLY 3% (CROWNED OR CONTINUOUS CROSSFALLS AS SPECIFIED).
3. SUBGRADE & METALCOURSE TO BE TREATED WITH APPROVED SOIL STERILANT.
4. PEGS CAN BE CUT OFF AT AN ANGLE, FLUSH WITH BOXING ON SIDE AND MINIMUM 5mm DOWN ON THE OTHER.
5. TRACKS AND TRAILS TO BE DESIGNED AND BUILT AS PER THE QLDC TRACKS AND TRAILS DESIGN GUIDE.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Footpath - Asphalt & Gritted Detail	NOT TO SCALE Drawing No. B5-23

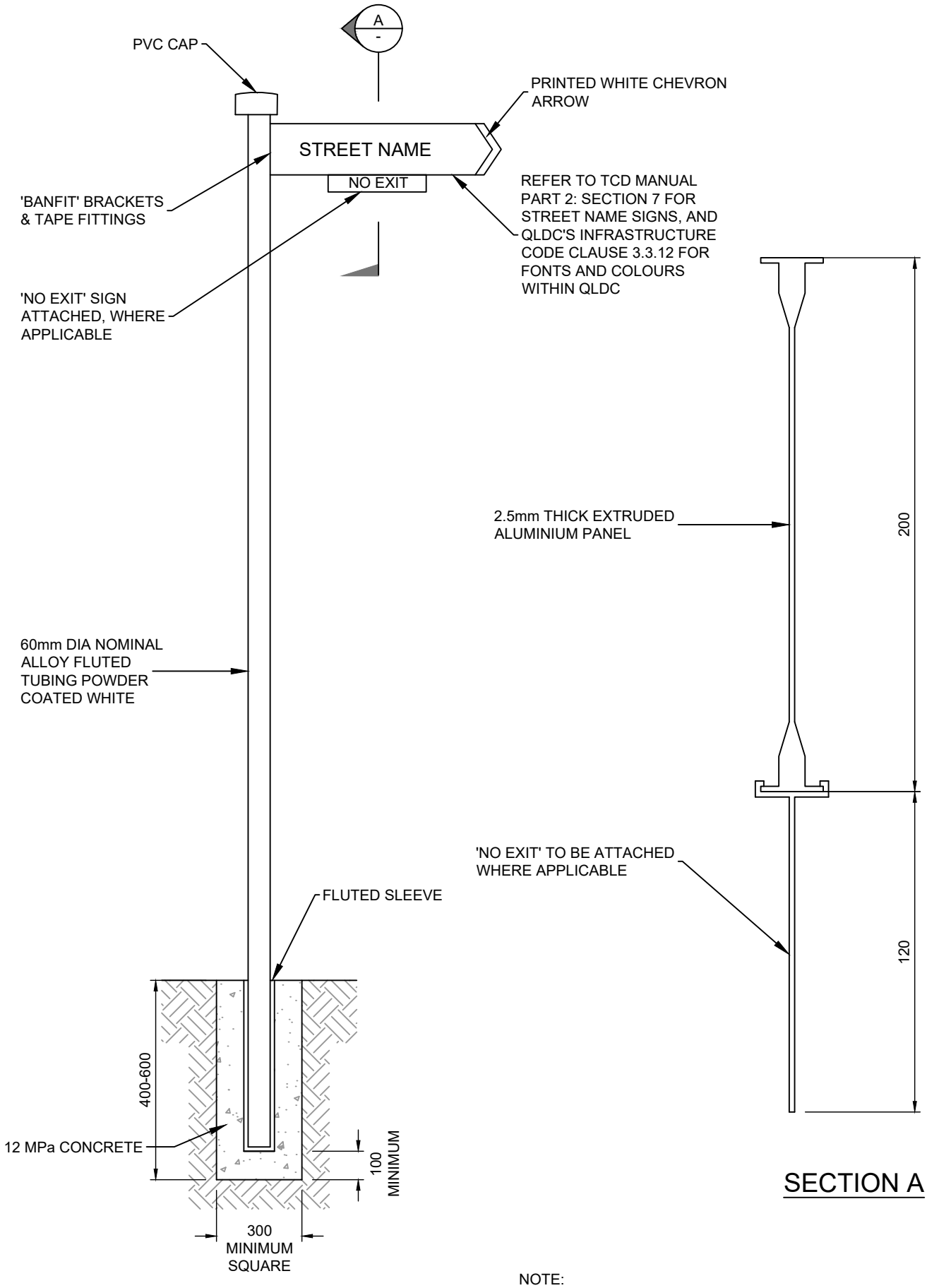


PLAN



TYPICAL CROSS SECTION

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Pedestrian Crossing Detail	NOT TO SCALE Drawing No. B5-24



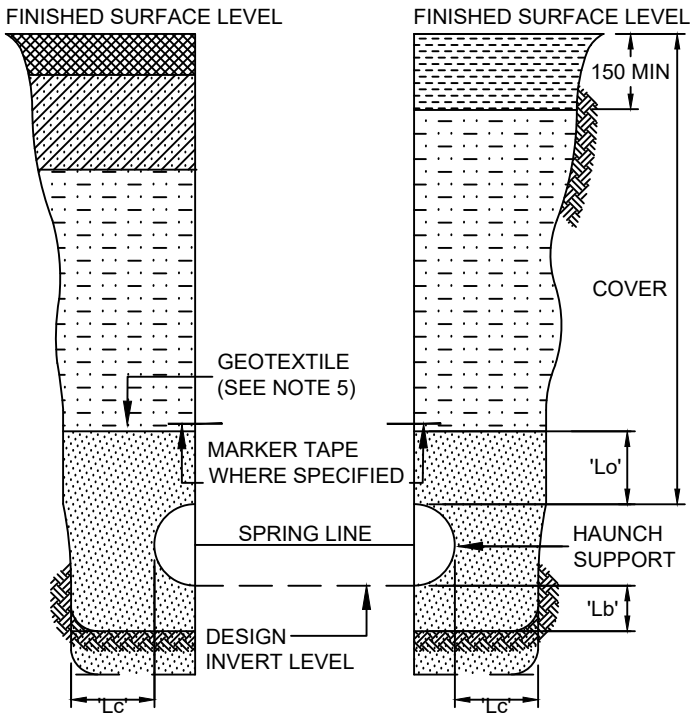
STREET NAME AND POST

SECTION A

NOTE:
WHERE POLES ARE SUPPORTING MORE THAN 3 SIGNS, SPECIFIC APPROVAL OF BASE UNIT DESIGN IS REQUIRED.

QLDC LDSC 2020 Standard Details Revision: Rev Date:	QUEENSTOWN LAKES DISTRICT COUNCIL	Drawing Title: Street Sign: Pole Mount	NOT TO SCALE Drawing No. B6-1

MATERIAL		ZONE	
ROAD SURFACE	NON ROAD SURFACES		
ROAD SURFACE LAYER	TO MATCH EXISTING	SURFACE COURSE	
TO MATCH EXISTING ROAD BASE OR TO TERRITORIAL AUTHORITY REQUIREMENTS	TRENCH FILL MATERIALS TO BE SIMILAR WITH SNZ HB 2002 APPENDIX L OR TO TERRITORIAL AUTHORITY REQUIREMENTS OR INORGANIC FILL MATERIAL WITH 75 MAXIMUM STONE SIZE	ROAD BASE	
TRENCH FILL MATERIALS TO BE SIMILAR WITH SNZ HB 2002 APPENDIX L OR TO TERRITORIAL AUTHORITY REQUIREMENTS OR INORGANIC FILL MATERIAL WITH 75 MAXIMUM STONE SIZE		TRENCH FILL (AS SPECIFIED IN DESIGN DRAWINGS)	
EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND TERRITORIAL AUTHORITY (SEE NOTE 4) BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND OR GRAVEL OF SUITABLE GRADING		OVERLAY	EMBEDMENT
		SIDE SUPPORT	
		BEDDING	
		OVER-EXCAVATION	



ZONE		MATERIAL
TOPSOIL OR PAVEMENT		ORIGINAL OR IMPORTED MATERIAL TO MATCH EXISTING
TRENCH FILL (AS SPECIFIED IN DESIGN DRAWINGS)		INORGANIC FILL MATERIAL WITH 75 MAXIMUM STONE SIZE
EMBEDMENT	OVERLAY	EMBEDMENT MATERIAL IN ACCORDANCE WITH DESIGN DRAWINGS AND TERRITORIAL AUTHORITY (SEE NOTE 4) BEDDING MAY BE OMITTED IF TRENCH BASE IS GRANULAR SAND OR GRAVEL OF SUITABLE GRADING
	SIDE SUPPORT	
	BEDDING	
OVER-EXCAVATION		

VEHICULAR LOADING

'Lo' - 100 mm MIN. NON TRAFFICABLE
'Lb' - 300 mm MIN. TRAFFICABLE
- REFER TO CM - 002

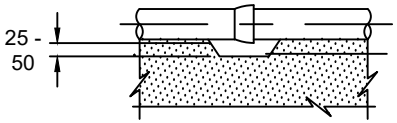
NO VEHICULAR LOADING

INCLUDES LOCATIONS WHERE OCCASIONAL VEHICLE LOADING OCCURS SUCH AS RESERVES AND FOOTWAYS

SPRING LINE TRENCH CLEARANCE

NOMINAL DIAMETER DN	MINIMUM CLEARANCE 'Lc'
≤150	100
>150 - ≤300	150
>300 - ≤450	200
>450 - ≤900	300
>900 - ≤1500	350

TRENCH WIDTH TO BE SUFFICIENT TO SAFELY LAY PIPE AND COMPACT THE SIDE SUPPORT ZONE



PROVIDE POCKETS IN BEDDING AT JOINTS PRIOR TO LAYING PIPES. FILL VOID DURING COMPLETION OF EMBEDMENT

PIPE JOINT BEDDING POCKETS

FOR JOINT PROJECTIONS (SOCKETS, FLANGES, AND SO ON)

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES.
2. SPECIFY SPECIAL BEDDING TO SUIT THE CONDITIONS IF THE TRENCH FLOOR HAS:
   - IRREGULAR OUTCROPS OF ROCK OR
   - BEEN DISTURBED BY UNCONTROLLED GROUND WATER.
3. COMPACT AND EVENLY GRADE FINISHED TRENCH FLOOR.
4. EMBEDMENT, TRENCH FILL AND COMPACTION TO MEET THE REQUIREMENT OF DESIGN DRAWINGS OR SPECIFICATIONS.
5. USE GEOTEXTILE FILTER FABRIC WHERE SPECIFIED.
6. SIDES OF EXCAVATION TO BE KEPT VERTICAL TO AT LEAST 150 ABOVE THE PIPE.

STANDARDS NEW ZEALAND
PAEREWA ADTERDA
ORIGINAL SOURCE DRAWINGS: WATER SERVICES ASSOCIATION OF AUSTRALIA

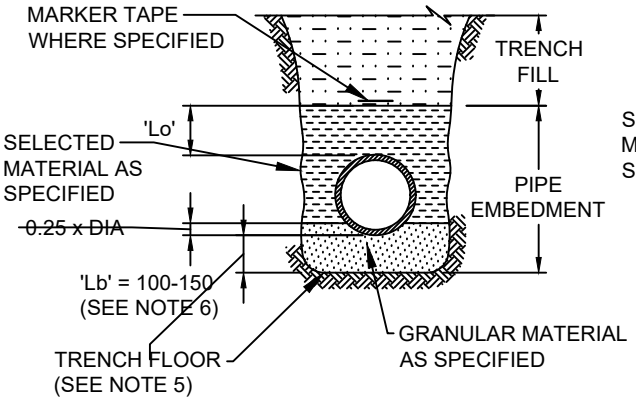
NZS 4404:2010
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT

NOT TO SCALE

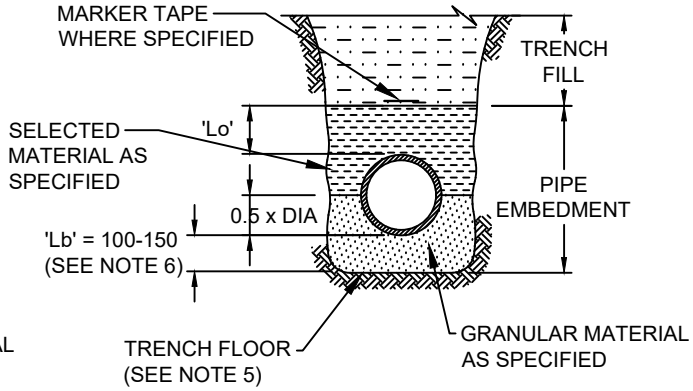
CM - 001

B7-1



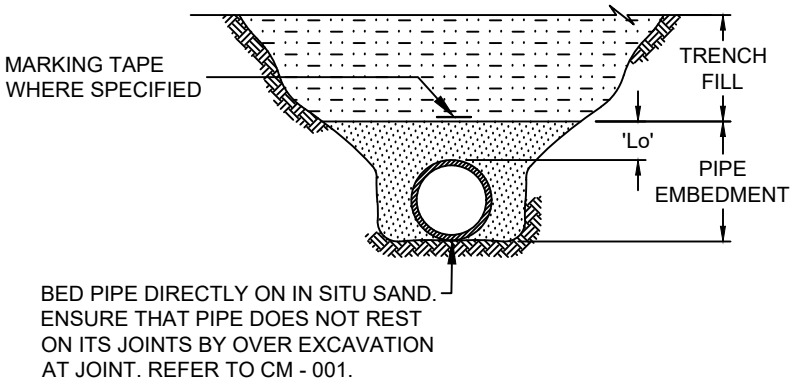
TYPE 1 SUPPORT

(SEE NOTE 9)

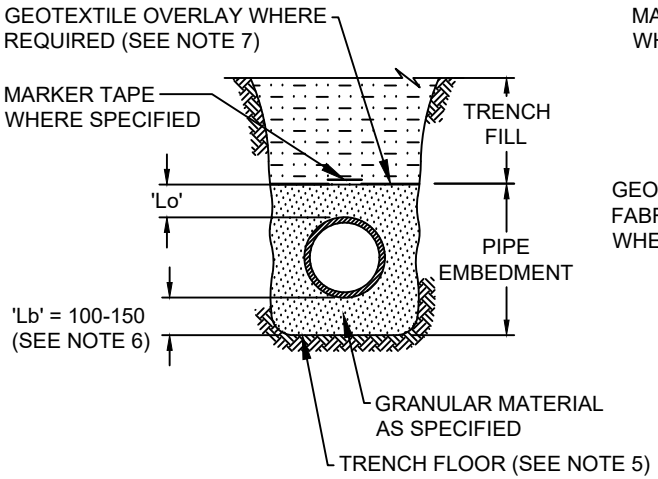


TYPE 2 SUPPORT

FOR RIGID PIPES ONLY (SEE NOTE 3)
(SEE NOTE 9)

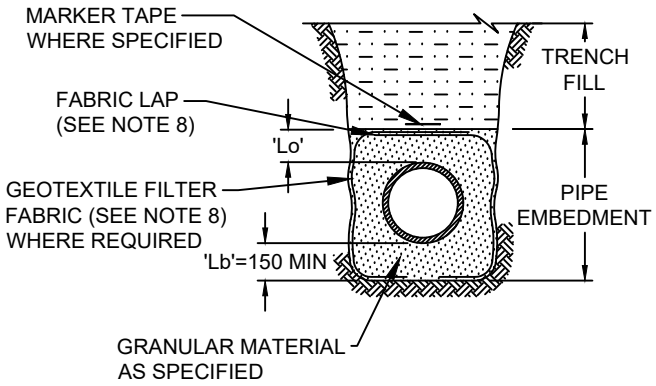


TRENCH IN SAND STRATA



TYPE 3 SUPPORT

FOR FLEXIBLE AND RIGID PIPES (SEE NOTE 3)



TYPE 4 SUPPORT

WITH GEOTEXTILE FOR FLEXIBLE
AND RIGID PIPES (SEE NOTE 3)

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH CM - 001.
3. PIPE CLASSIFICATION:
   (a) RIGID PIPES: VC, RC, STEEL AND DI
   (b) FLEXIBLE PIPES: PVC, GRP, AND PE.
4. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION TO MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
5. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. WHEN EXCAVATED, REPLACE WITH GRANULAR MATERIAL AS SPECIFIED FOR BEDDING OR ADOPT TYPE 1, 2, 3, OR 4 SUPPORT AS REQUIRED.
6. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH TRENCH FLOOR -SEE CM-001.
7. TYPE 4 SUPPORT TO BE USED WHERE MIGRATORY NATIVE SOILS (SANDS & CLAYS) ARE ENCOUNTERED ADJACENT TO THE EMBEDMENT ZONE AND SINGLE SIZE AGGREGATE IS USED.
8. GEOTEXTILE OVERLAY IS REQUIRED FOR COARSE AGGREGATE EMBEDMENT > 5mm. LAY GEOTEXTILE FILTER FABRIC AGAINST TRENCH FLOOR AND WALLS SUCH THAT IT FULLY ENCASES THE EMBEDMENT.
   - PRESS FILTER FABRIC INTO THE VOIDS BEFORE INSTALLING EMBEDMENT TO PREVENT FABRIC TEARING.
   - PROVIDE A MINIMUM OF 250 OVERLAP AT ALL FILTER FABRIC JOINTS.
9. IN SOME AREAS LOCAL PRACTICE MAY ALLOW USE OF SELECTED EXCAVATED MATERIAL AS PIPE EMBEDMENT.
10. IN UNSUITABLE GROUND CONDITIONS SPECIFIC DESIGN IS REQUIRED. SEE WSA 03 & WSA 04 DRAWINGS FOR GUIDANCE.
11. CONCRETE PIPES SHOULD BE BASED ON FIGURES 11 - 13 IN AS/NZS 3725.

EMBEDMENT TYPES TO BE SPECIFIED IN DESIGN DRAWINGS

STANDARDS NEW ZEALAND
PAEREWA ADTERDA
ORIGINAL SOURCE DRAWINGS: WATER SERVICES ASSOCIATION OF AUSTRALIA

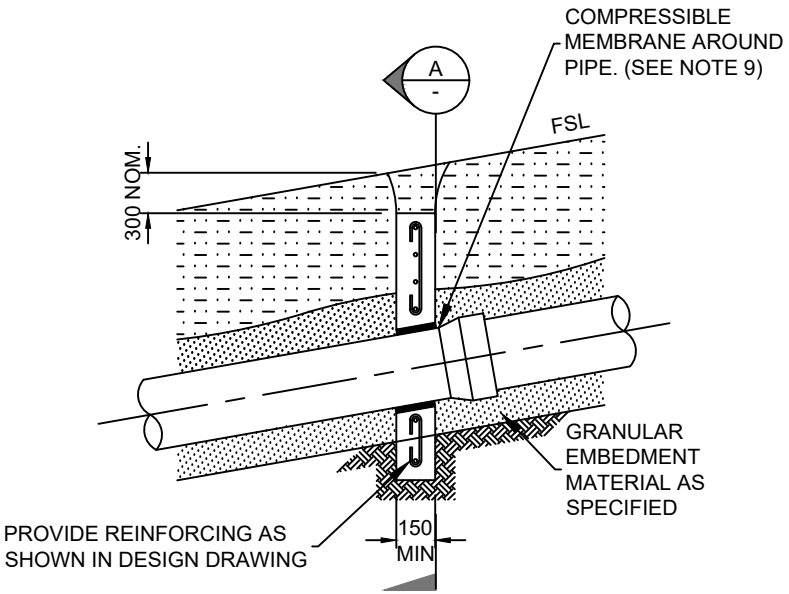
NZS 4404:2010
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

NOT TO SCALE

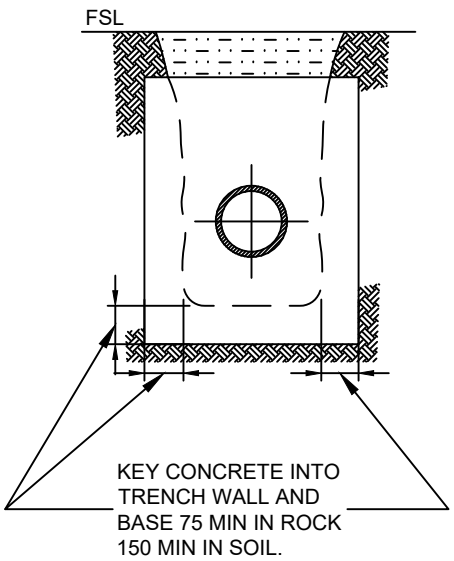
EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT

CM - 002

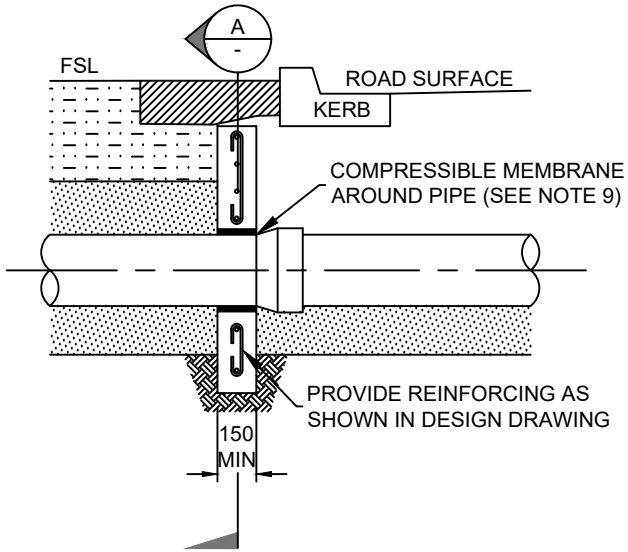
B7-2



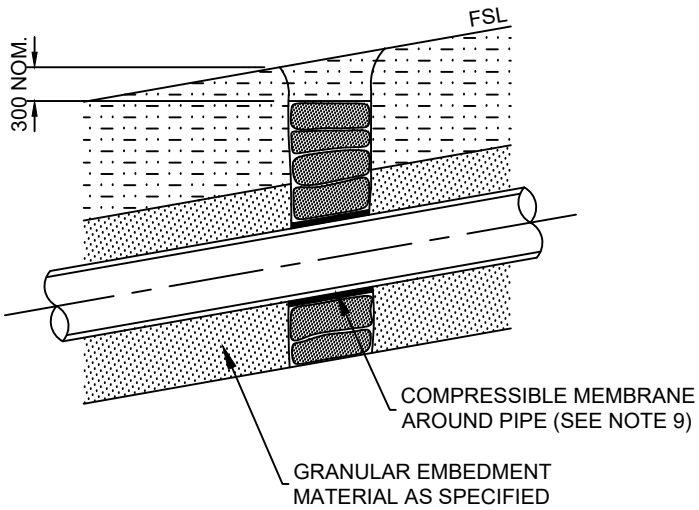
CONCRETE BULKHEAD DETAIL



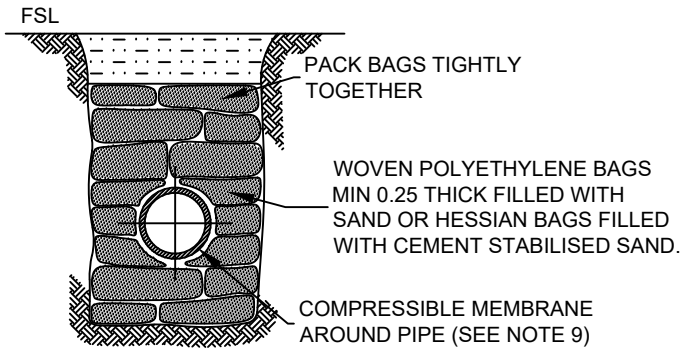
SECTION A



TYPICAL ROAD CROSSING BULKHEAD



TRENCH STOP DETAIL



SECTION B

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONSTRUCT CONCRETE BULKHEADS AND TRENCH STOPS AT LOCATIONS SPECIFIED IN DESIGN DRAWINGS.
3. CONSTRUCT BULKHEAD ADJACENT TO KERB AND GUTTER SHOULDER OF SEALED ROADS.
4. BULKHEAD AT A RETAINING WALL TO BE UNDER THE WALL.
5. KEY CONCRETE BULKHEADS INTO SIDES AND BOTTOM OF TRENCH AGAINST A BEARING SURFACE OF UNDISTURBED SOIL.
6. CONCRETE TO BE 17.5 MPA.
7. DO NOT DEFORM PIPES DURING PLACEMENT OF CONCRETE OR BAGS.
8. SEAL BAGS TO PREVENT LEAKAGE OF CONTAINED MATERIAL.
9. COMPRESSIBLE MEMBRANE AROUND PIPE TO BE 10 THICK POLYSTYRENE FOR BULKHEADS ADJACENT TO KERBS AND 3 THICK RUBBER FOR BULKHEADS AND TRENCHSTOPS ON SLOPES.
10. FOR SLOPES >35% REFER TO TERRITORIAL AUTHORITY FOR REQUIREMENTS.

STANDARDS NEW ZEALAND
PAEREWA ARTERDA

ORIGINAL SOURCE DRAWINGS: WATER SERVICES ASSOCIATION OF AUSTRALIA

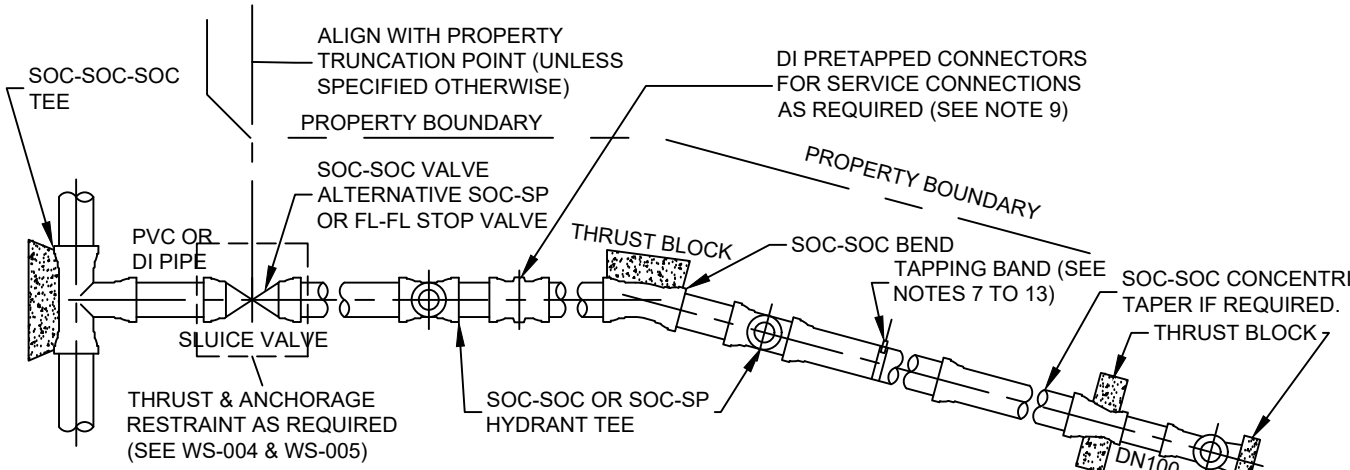
NZS 4404:2010
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

NOT TO SCALE

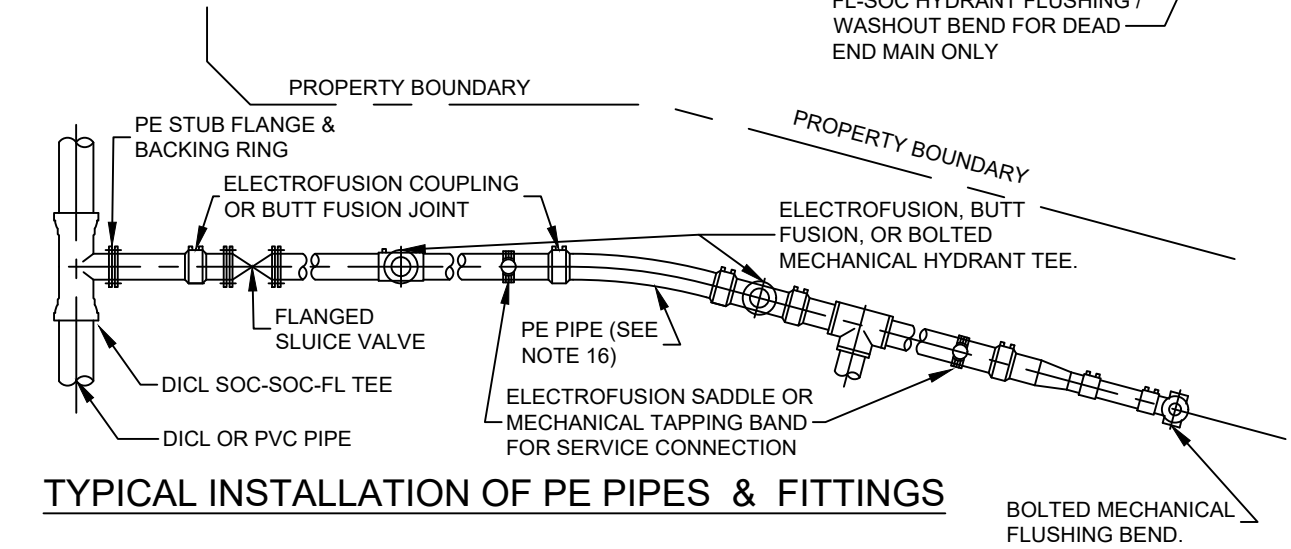
BULKHEADS & TRENCH STOP STANDARD DETAILS

CM - 003

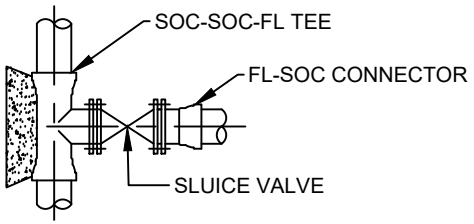
B7-3



TYPICAL INSTALLATION OF PVC & DI PIPES & FITTINGS



TYPICAL INSTALLATION OF PE PIPES & FITTINGS



TYPICAL VALVE CONNECTION DIRECT TO NEW MAIN

NOTE-

1. ALL DIMENSIONS IN MILLIMETRES.
2. INSTALL PIPEWORK PARALLEL TO PROPERTY BOUNDARIES.
3. STAINLESS STEEL AND NYLON COATED (TO AS/NZS 4158)TAPPING BANDS DO NOT REQUIRE ADDITIONAL CORROSION PROTECTION.
4. WRAP BOLTED CONNECTIONS USING OTHER THAN NYLON COATED FITTINGS AND STAINLESS STEEL BOLTS WITH A PETROLATUM TAPE SYSTEM.
5. WHERE MAINS ARE 300 OR LARGER BYPASSES SHOULD BE INSTALLED FOR ALL MANUAL SLUICE VALVES.
6. ALL VALVES AND FITTINGS SHALL BE COATED WITH A THERMAL BONDED POLYMERIC COATING APPLIED IN ACCORDANCE WITH AS/NZS 4158.

DI & PVC PIPE

7. DUCTILE IRON FITTINGS MAY BE USED WITH DI & PVC PIPE.
8. FITTINGS SHALL BE NYLON COATED AND LINED OR CEMENT LINED WITH A BITUMINOUS EXTERNAL COATING. DO NOT USE PVC FITTINGS WITH DI PIPE.
9. USE PRE TAPPED CONNECTORS ON DN 100 & DN 150 NEW MAIN INSTALLATIONS (UNLESS SPECIFIED OTHERWISE BY THE TERRITORIAL AUTHORITY.
10. USE TAPPING BANDS FOR CONNECTIONS TO EXISTING MAINS AND NEW MAINS >DN 150.
11. ELECTRICALLY ISOLATE COPPER SERVICES FROM DICL PIPE.

PVC PIPE

12. TAPPING BANDS ON PVC PIPE TO BE FULL CIRCLE CLAMPING.
13. WHERE PVC FITTINGS ARE USED, A PROTECTIVE MEMBRANE IS REQUIRED BETWEEN FITTING AND THRUST BLOCK. PVC FITTINGS TO BE USED ONLY ON PVC PIPE. DI SPIGOTS NOT TO BE INSERTED INTO PVC SOCKETS.
14. MAXIMUM SIZE OF DRILLED HOLES FOR SERVICE CONNECTIONS IN PVC PIPE TO BE 30% DN OR 50 (LOWER VALUE TO BE USED) LARGER HOLES CAN BE USED FOR UNDER PRESSURE TAPPING.

DI PIPE

15. DIRECT TAPPING OF >DN 200 DICL MAY BE AUTHORISED BY TERRITORIAL AUTHORITY.

PE PIPE

16. PE PIPE MAY BE COLD BENT TO MINIMUM RADIUS OF 25 X (OD)STAKES OR OTHER SOURCES OF POINT LOADS SHALL NOT BE USED TO ASSIST IN BENDING THE PIPE.
17. MAKE ALLOWANCE DURING CONSTRUCTION FOR EXPANSION AND CONTRACTION OF PE PIPE DUE TO TEMPERATURE CHANGES.
18. BUTT WELDING IN ACCORDANCE WITH WSA-01 (POLYETHYLENE CODE) BUTT WELDING IN TRENCHES IS NOT PERMITTED.
19. ALL MECHANICAL COUPLINGS TO BE SELF-RESTRAINING.

STANDARDS NEW ZEALAND
ORIGINAL SOURCE DRAWINGS: WATER SERVICES ASSOCIATION OF AUSTRALIA

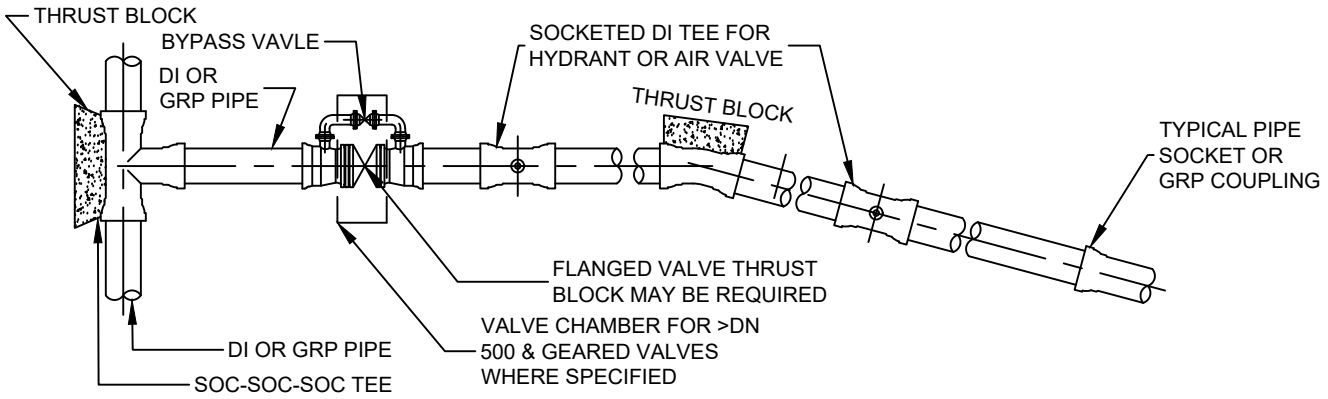
NZS 4404:2010
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

NOT TO SCALE

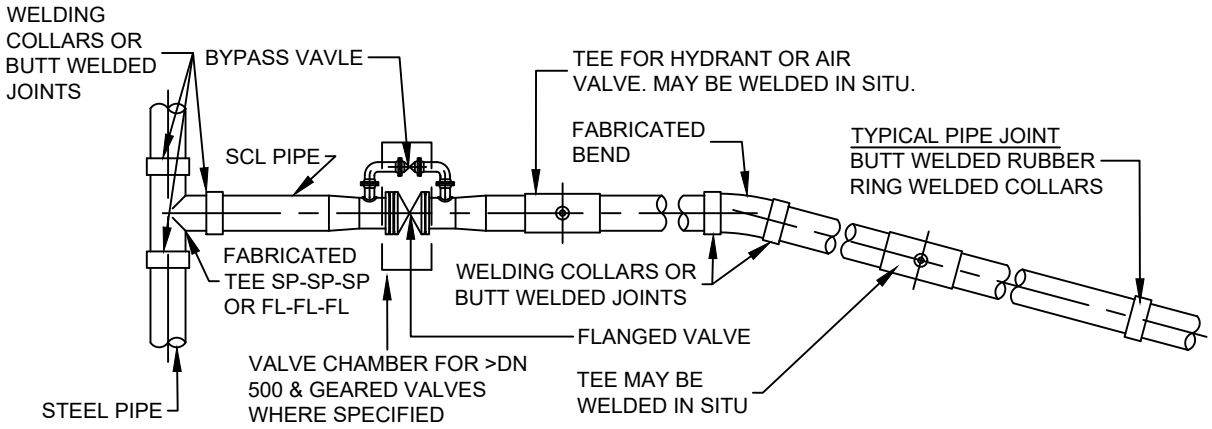
TYPICAL MAINS CONSTRUCTION - RETICULATION MAIN ARRANGEMENTS

WS-001

B7-4

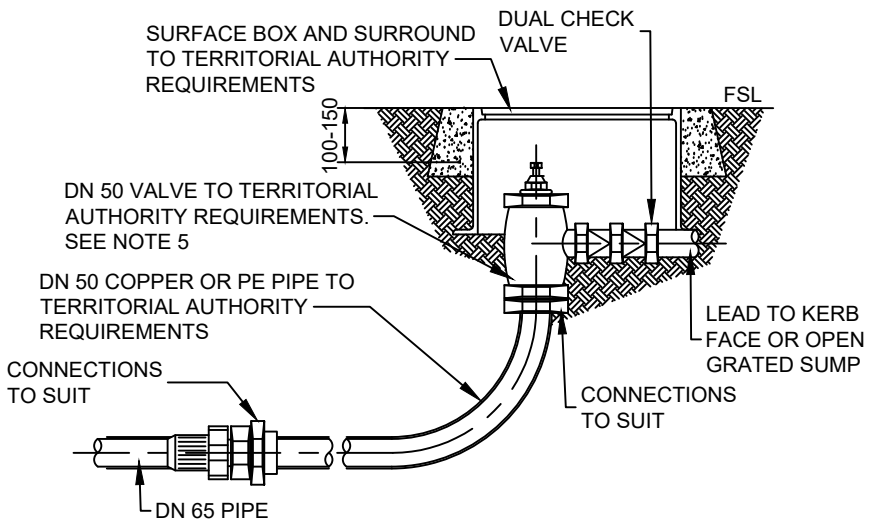


TYPICAL INSTALLATION OF DI AND GRP MAINS



TYPICAL INSTALLATION OF STEEL MAINS

THRUST BLOCKS REQUIRED WHERE NON-RESTRAINING RUBBER RING JOINTS USED



FLUSHING POINT

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. WHERE POSSIBLE USE A SINGLE LENGTH OF PE PIPE.
3. THRUST BLOCKS TO BE IN ACCORDANCE WITH TERRITORIAL AUTHORITY REQUIREMENTS.
4. PVC PIPE MAY BE USED AS SHROUD PIPE, CUT AS REQUIRED TO CLEAR HYDRANT FLANGE.
5. FIT THE FLUSHING POINT VALVE IN SUCH A WAY AS TO PREVENT MOVEMENT OR ROTATION OF THE VALVE BODY. PROVIDE A SUITABLE PLUG OR CAP TO KEEP OUT DIRT AND GRAVEL.
6. PROVIDE CORROSION PROTECTION FOR ALL NON COATED METALLIC SURFACES IN ACCORDANCE WITH TERRITORIAL AUTHORITY REQUIREMENTS.
7. SERVICE CONNECTIONS NOT PERMITTED ON DISTRIBUTION MAINS WITHOUT TERRITORIAL AUTHORITY APPROVAL.

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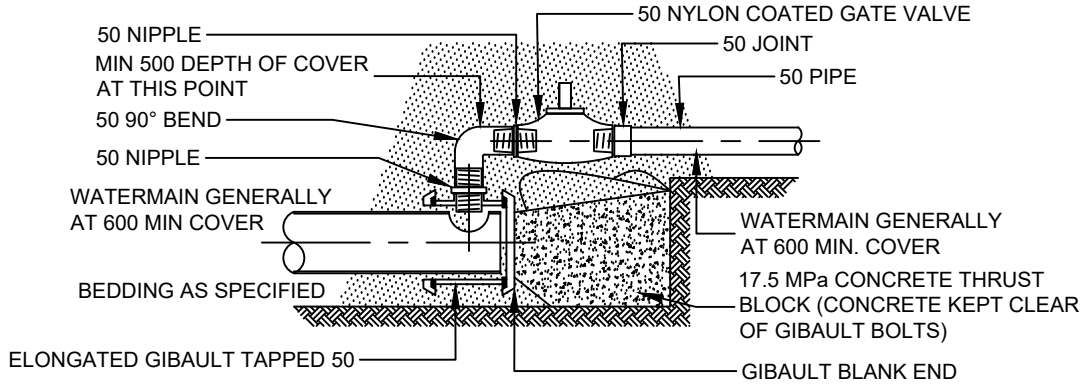
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

TYPICAL MAINS CONSTRUCTION - DISTRIBUTION AND TRANSFER MAINS

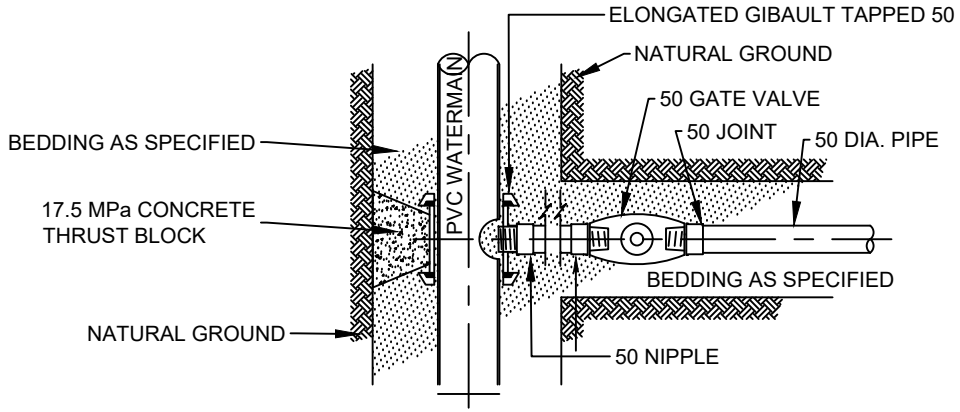
NOT TO SCALE

WS-002

B7-5



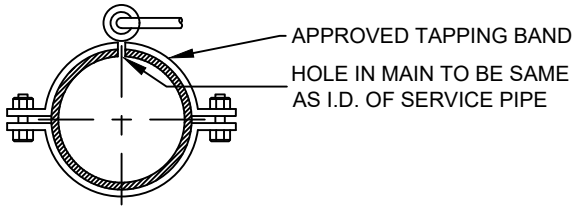
STRAIGHT LINE CONNECTION - METHOD 1 - ELEVATION



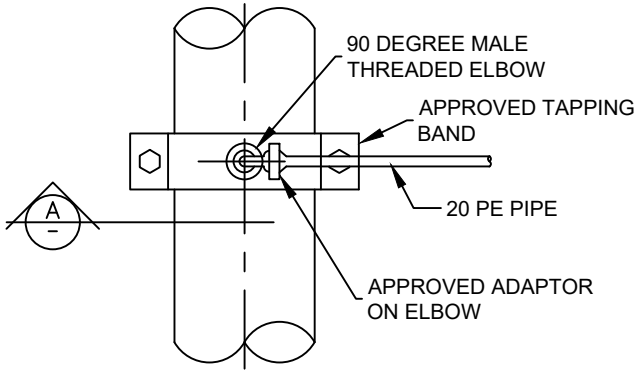
90° CONNECTION - PLAN
RIDER MAIN CONNECTIONS

NOTE:

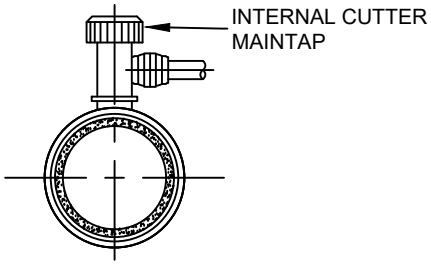
1. ALL DIMENSIONS IN MILLIMETRES.
2. USE METAL GATE VALVE ON 20 CONNECTIONS WHERE REQUIRED BY T.A. OR WHERE SHUTTING DOWN MAIN TO REPAIR SERVICE WOULD CAUSE SIGNIFICANT INTERRUPTION TO SUPPLY.
3. USE PROPRIETARY IN LINE METAL VALVES APPROVED BY T.A. WHEN MAIN IS TAPPED UNDER PRESSURE.
4. WHERE POSSIBLE, LAY SERVICE CONNECTIONS AND RIDER CONNECTIONS TO PRINCIPAL MAIN. WHERE NOT POSSIBLE INSTALL METALLIC TAPE ON TOP OF CONNECTION.
5. RIDER MAINS AND SERVICE CONNECTIONS TO PRINCIPAL MAIN USE ELONGATED GIBAULT, PROPRIETARY TEE (RIDER MAIN ONLY) OR APPROVED PROPRIETARY TAPPING BANDS.



SECTION A



PLAN
STANDARD TAPPING METHODS



ELECTROFUSION TAPPING SADDLE
PE PIPE

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NOT TO SCALE

PROPERTY SERVICES - CONNECTION TO AN EXISTING PVC MAIN

WS-003

B7-6

MINIMUM BLOCK VOLUME FOR ANCHORAGE

VERTICAL BENDS

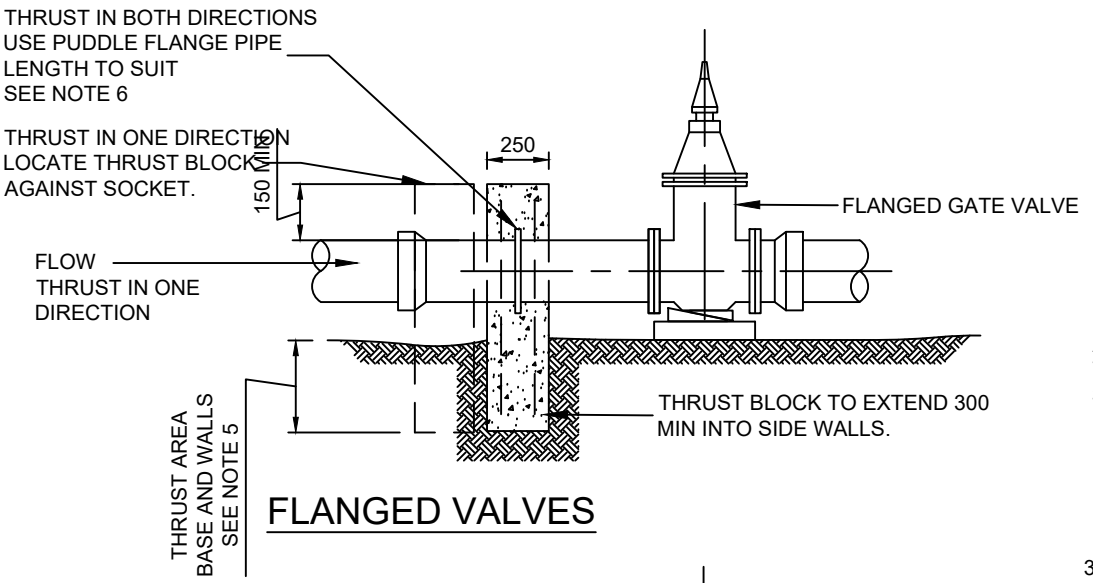
FOR TEST PRESSURE OF 1000kPa (SEE NOTE 2)

PIPE DN	CONCRETE VOLUME M^3		
	11.25° BEND	22.25° BEND	45° BEND
100	N	N	0.3
150	N	0.3	0.6
200	0.2	0.5	1.1
225	0.3	0.6	1.4
250	0.3	0.7	2.5
300	0.4	1.1	3.8
375	0.7	1.8	5.8
450	DETAILED DESIGN REQUIRED (ALTERNATIVE METHODS TO BE CONSIDERED)		
500			
600			
750			

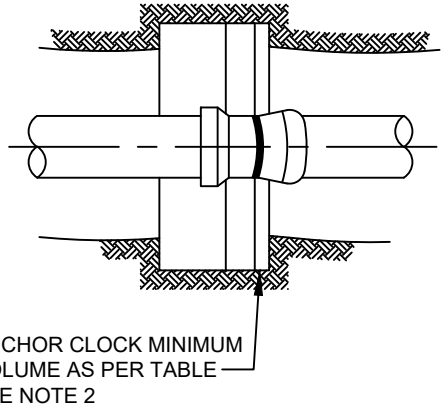
'N' - NO ADDITIONAL RESTRAINT REQUIRED (COMPACTED TRENCHFILL SUFFICIENT)

ANCHOR BLOCK CONSTRUCTION NOTES:

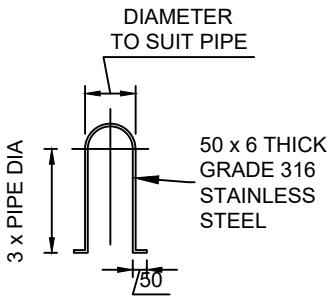
- LOCATE ANCHOR BLOCK CENTRALLY AROUND BEND.
- KEY ANCHOR BLOCK INTO BASE OF TRENCH A MINIMUM DEPTH OF 250.
- POUR CONCRETE AGAINST A SOLID EXCAVATION FACE.
- USE GRADE 17.5 MPa CONCRETE.
- KEEP CONCRETE CLEAR OF ALL BOLTS, NUTS, AND PIPE JOINTS.



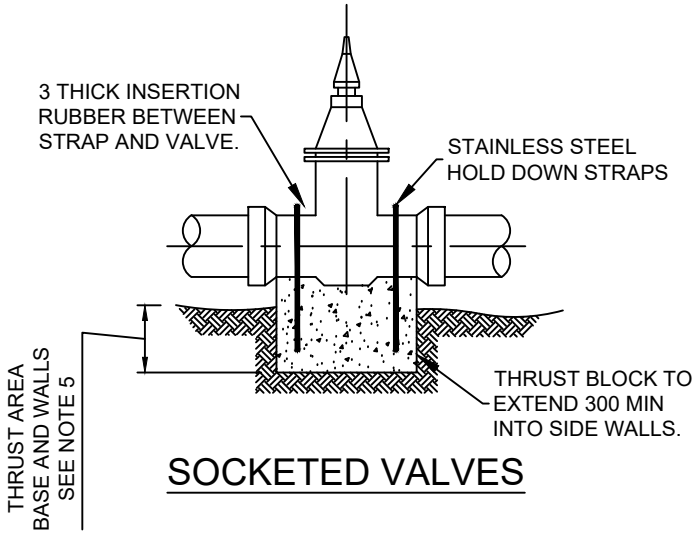
FLANGED VALVES



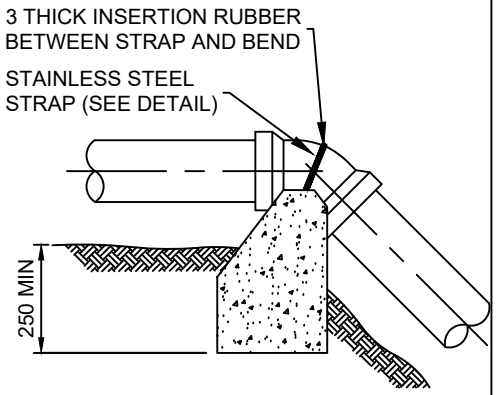
PLAN



TYPICAL SS STRAP



SOCKETED VALVES



ELEVATION VERTICAL BENDS

NOTE:

1. ALL DIMENSIONS IN MILLIMETRES, UNLESS SHOWN OTHERWISE.
2. ANCHOR BLOCKS IN THE TABLE ARE DESIGNED FOR A TEST PRESSURE OF 1000 kPa (100 m HEAD)ADJUST CONCRETE VOLUME TO SUIT ACTUAL TEST PRESSURE.
3. WHERE DI PIPES AND FITTINGS WITH RESTRAINED JOINTS ARE USED THRUST BLOCKS ARE NOT REQUIRED.
4. THRUST BLOCK REINFORCEMENT AS SPECIFIED IN DESIGN DRAWINGS.
5. WHERE SPECIFIED PROVIDE CONCRETE THRUST BLOCKS FOR SOC-SOC VALVES. THRUST AREA TO BE AS FOR DEAD ENDS AS SHOWN IN WS-004.
6. INSTALL PUDDLE FLANGES ON CLASS K12 DICL PIPE.

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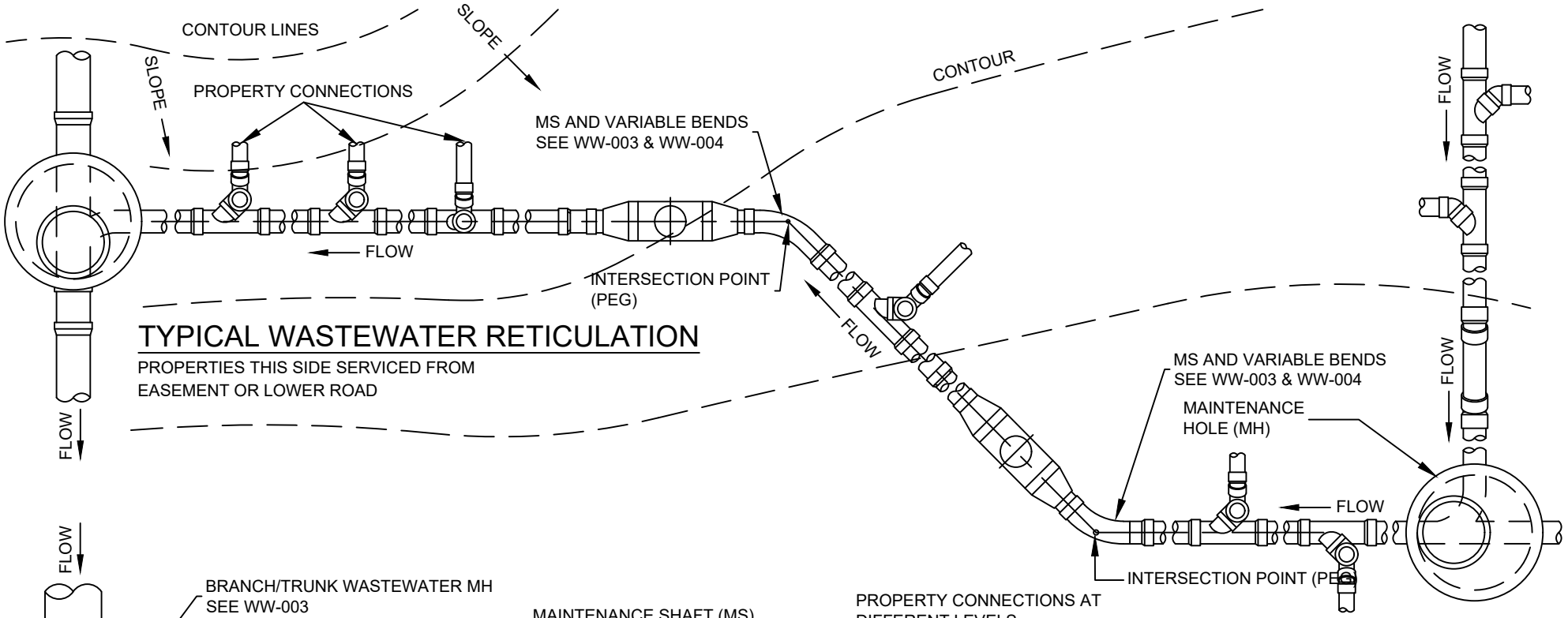
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

THRUST AND ANCHOR BLOCKS - GATE VALVES AND VERTICAL BENDS IF REQUIRED

NOT TO SCALE

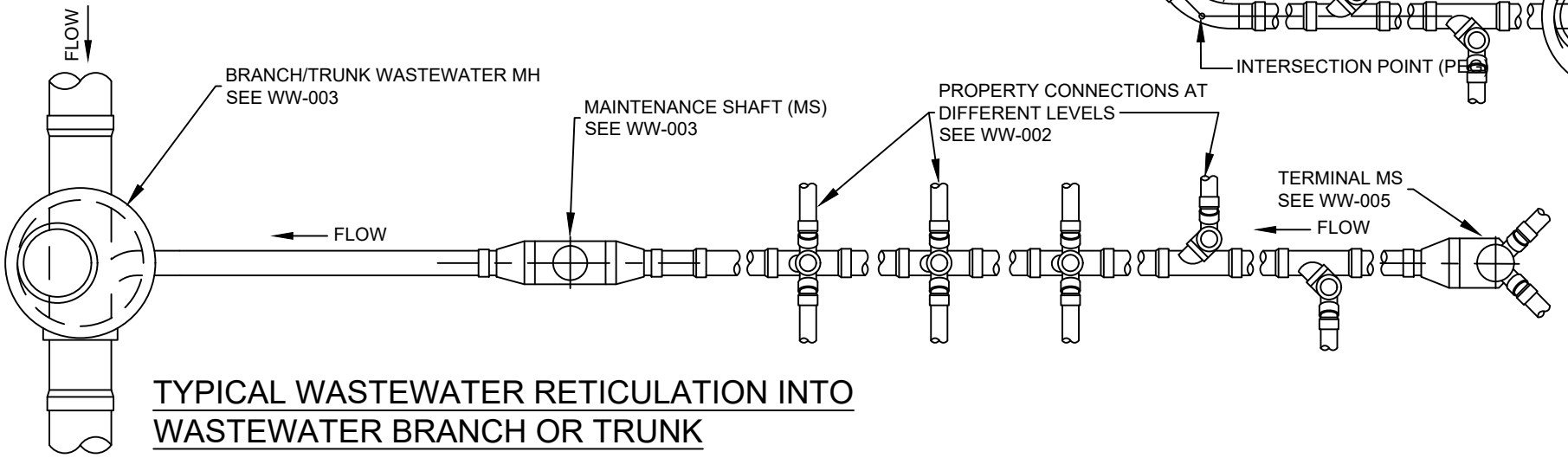
WS-005

B7-7



TYPICAL WASTEWATER RETICULATION

PROPERTIES THIS SIDE SERVICED FROM
EASEMENT OR LOWER ROAD



TYPICAL WASTEWATER RETICULATION INTO WASTEWATER BRANCH OR TRUNK

NOTE:
1. GRADE WASTEWATER EVENLY BETWEEN MH/MS TO LEVELS SHOWN IN DESIGN DRAWINGS.
2. LAY PIPES AND FITTINGS WITH SOCKETS UPSTREAM WHEREVER PRACTICABLE.

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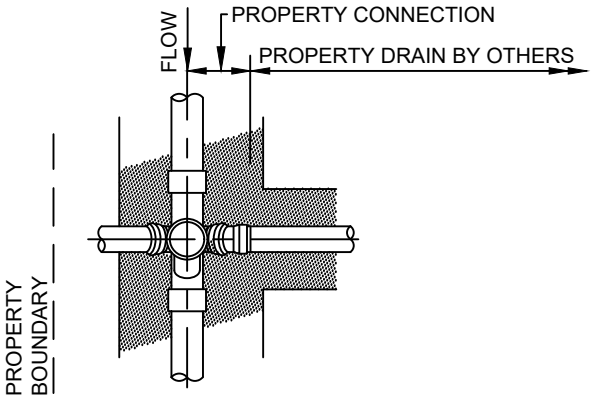
NOT TO SCALE

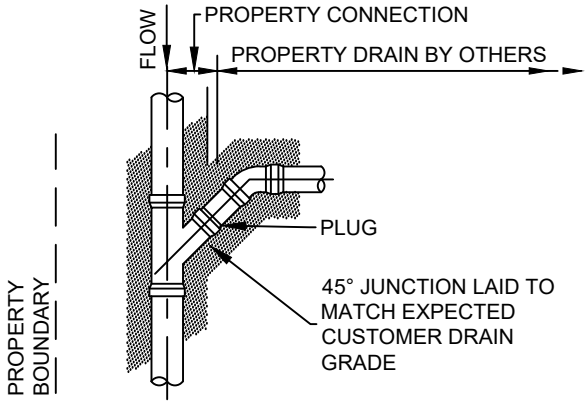
PIPELAYING - TYPICAL ARRANGEMENTS

WW-001

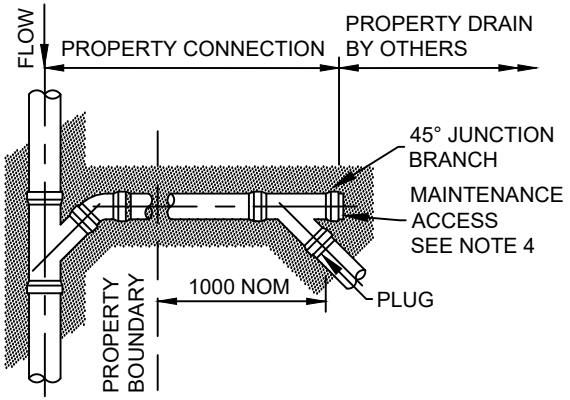
B7-8



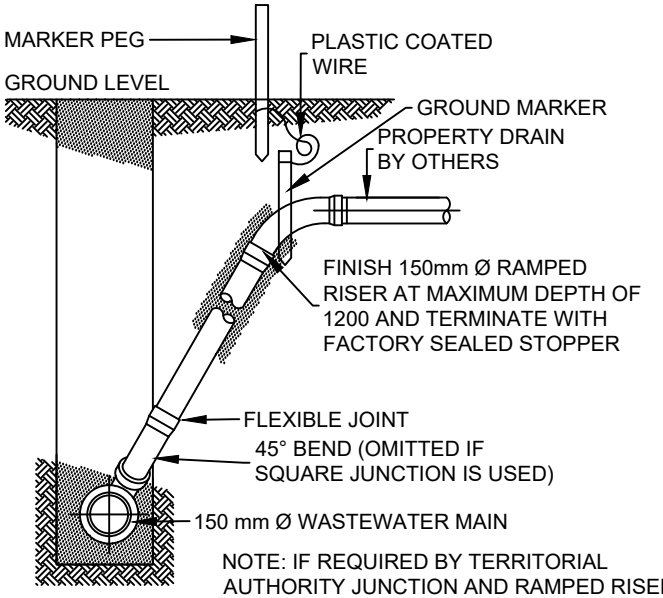
PLAN
WASTEWATER WITHIN PROPERTY



PLAN
WASTEWATER WITHIN PROPERTY

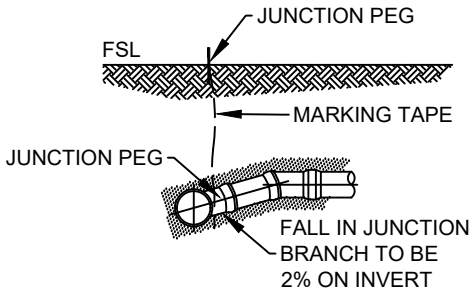


PLAN
WASTEWATER WITHIN PROPERTY

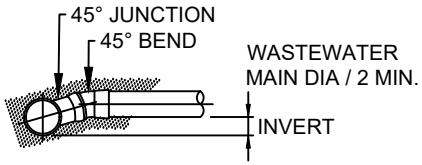


NOTE: IF REQUIRED BY TERRITORIAL AUTHORITY JUNCTION AND RAMPED RISER TO BE SURROUNDED BY MIN 150 mm THICKNESS OF 17.5 MPa CONCRETE DISCONTINUOUS AT PIPE JOINTS.

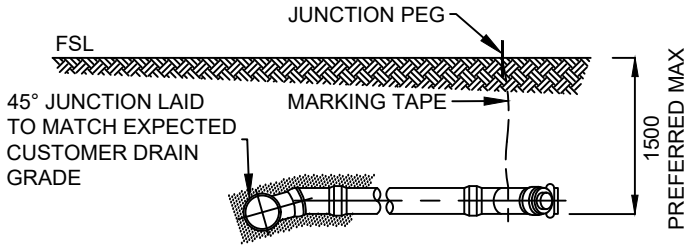
ELEVATION
Y JUNCTION RAMPED RISERS



ELEVATION
STANDARD CONNECTION



MINIMUM LEVEL
STANDARD CONNECTION



ELEVATION
EXTENDED CONNECTION
MAY ALSO BE INSTALLED AS A SLOPED CONNECTION

NOTE:
1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO VC, PVC.
3. LAY PROPERTY DRAIN CONNECTION AT DEPTH AS SHOWN IN DESIGN DRAWINGS.
4. PROVIDE RODDING POINTS WHERE REQUIRED BY TERRITORIAL AUTHORITY.
5. GRADE OF PROPERTY CONNECTION WASTEWATER PIPE TO BE NOT LESS THAN: DN 100 1.65%
   DN 150 1.2%

STANDARDS NEW ZEALAND
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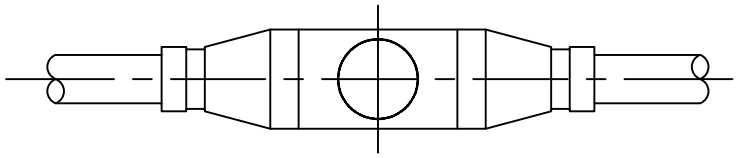
NZS 4404:2010
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

PROPERTY CONNECTION - BURIED INTERFACE METHOD

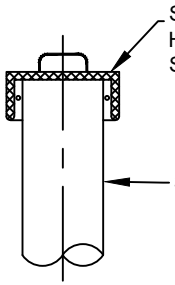
NOT TO SCALE

WW-002

B7-9

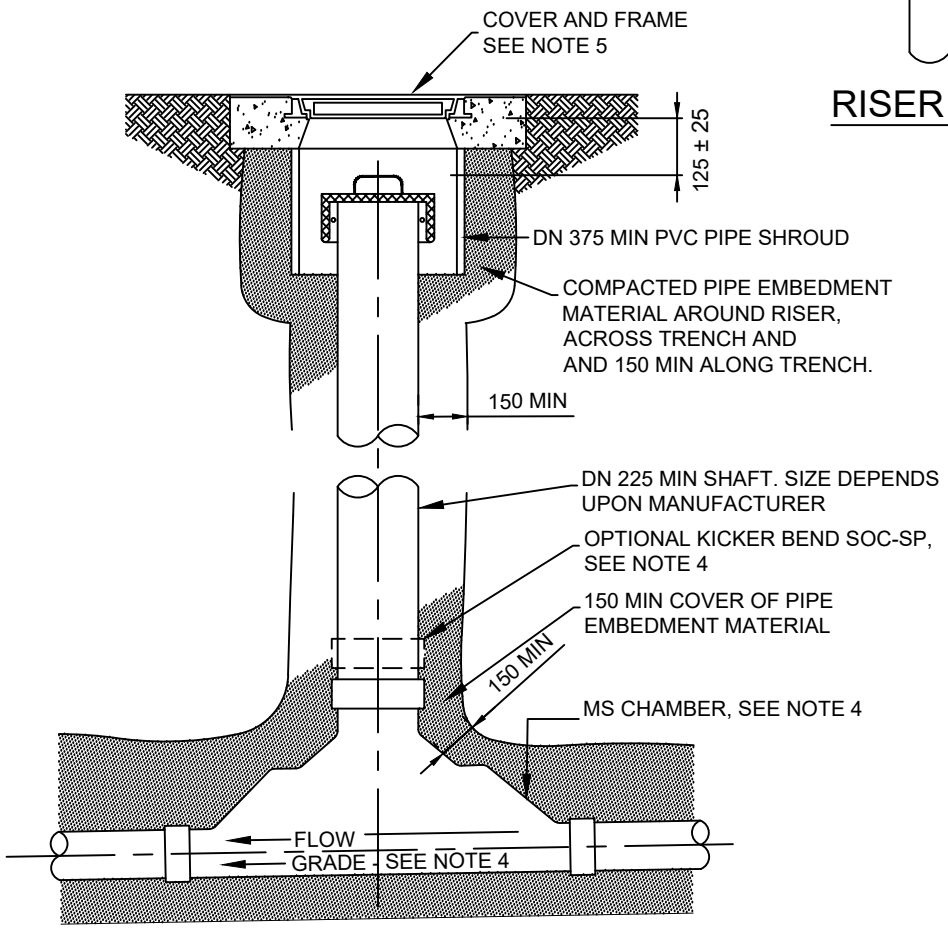


PLAN

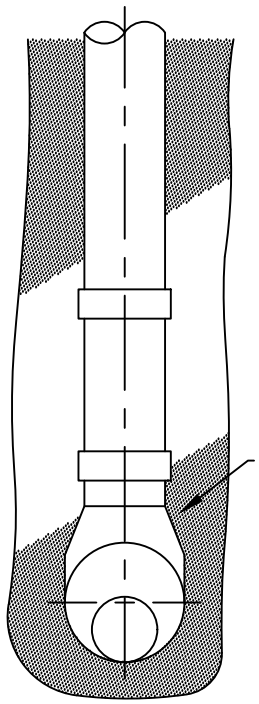


RISER SHAFT CAP

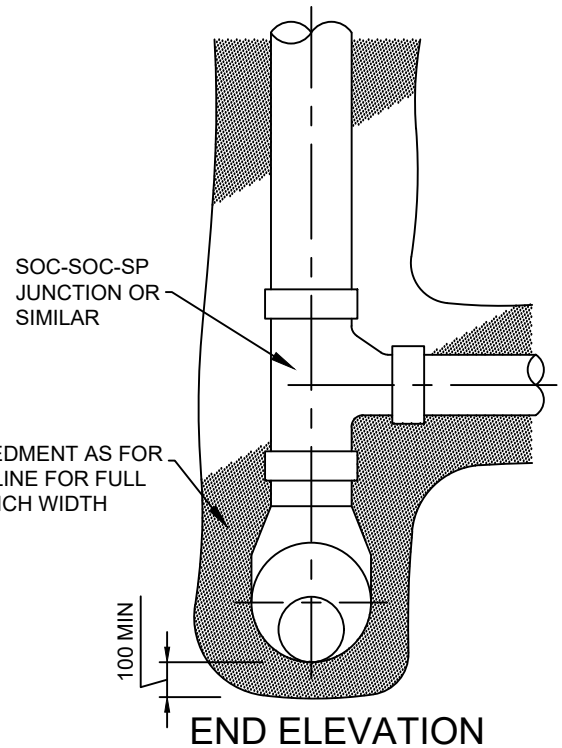
NOTE:
1. ALL DIMENSIONS IN MILLIMETRES.
2. MS MAY BE MANUFACTURED USING VARIOUS MATERIALS AND JOINTING SYSTEMS AS AUTHORISED BY TERRITORIAL AUTHORITY.
3. MAXIMUM DEPTH TO INVERT 3000.
4. ADJUST MS TO PIPE GRADE BY TILTING MS CHAMBER. MAX DEVIATION FROM VERTICAL OF THE RISER TO BE 1:10 OR A MAXIMUM OF 300 AT SURFACE. USE KICKER BEND IF REQUIRED TO ADJUST RISER TO VERTICAL.
5. ACCESS COVER, FRAME, AND SUPPORT SLAB TO BE AS AUTHORISED BY TERRITORIAL AUTHORITY.



END ELEVATION
MAINTENANCE SHAFT

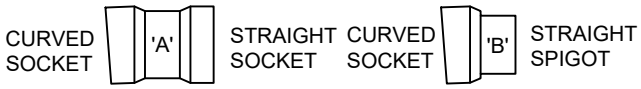


END ELEVATION
PLAIN RISER SHAFT

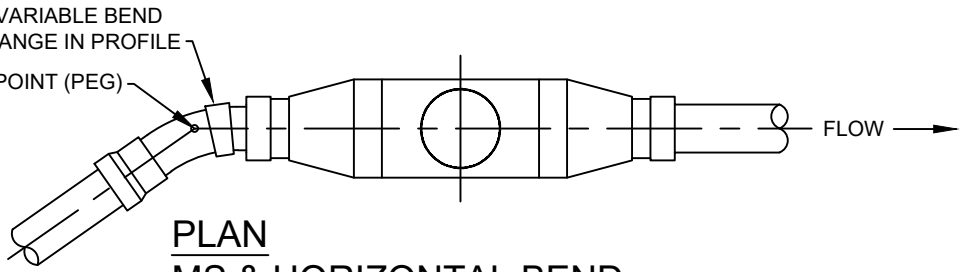


END ELEVATION
DROP JUNCTION

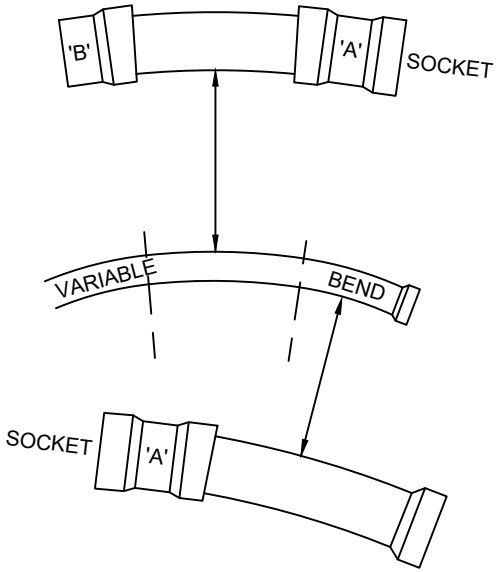
STANDARDS NEW ZEALAND PAEREWA AOTEROA ORIGINAL SOURCE DRAWINGS: WATER SERVICES ASSOCIATION OF AUSTRALIA	NZS 4404:2010 LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE	NOT TO SCALE
	MAINTENANCE SHAFTS - TYPICAL INSTALLATION	WW-003 B7-10



LEGEND

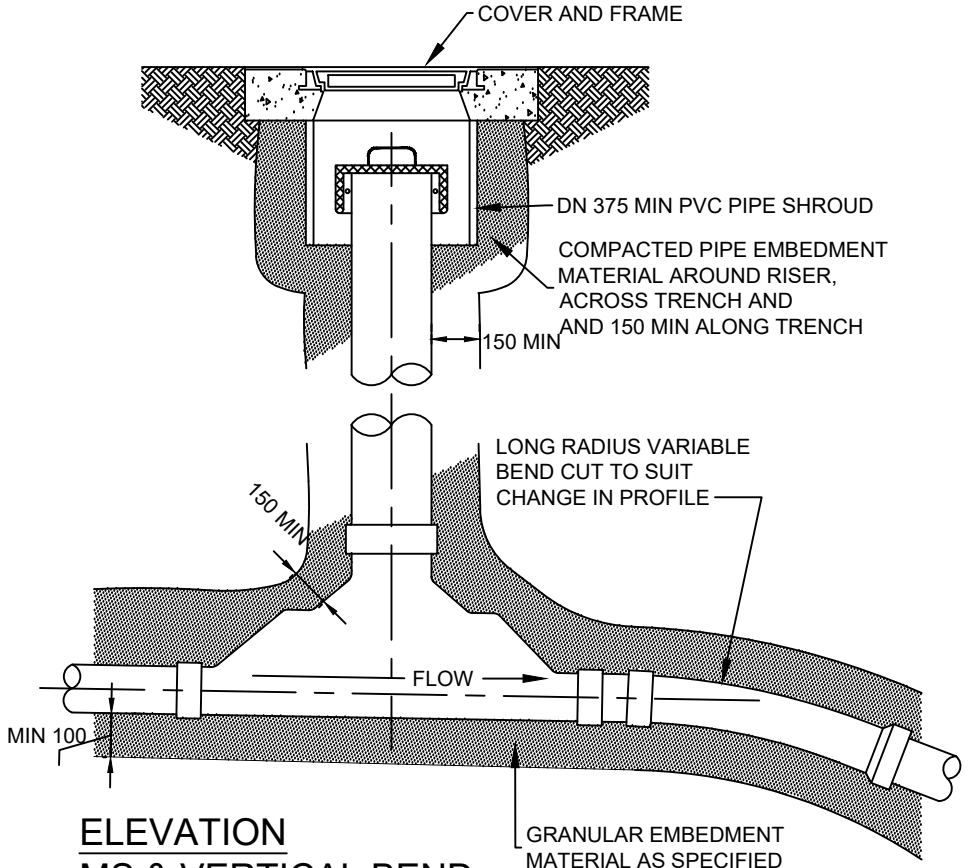


PLAN
MS & HORIZONTAL BEND



TYPICAL VARIABLE BENDS

ALL COMBINATIONS OF ENDS ACCEPTED



ELEVATION
MS & VERTICAL BEND

NOTE:
1. ALL DIMENSIONS IN MILLIMETRES.
2. VARIABLE BEND CUT TO LENGTH TO ACHIEVE REQUIRED DEFLECTION.
3. RECORD DETAILS OF BEND LOCATIONS AND ANGLES ON WORK AS CONSTRUCTED DRAWINGS.

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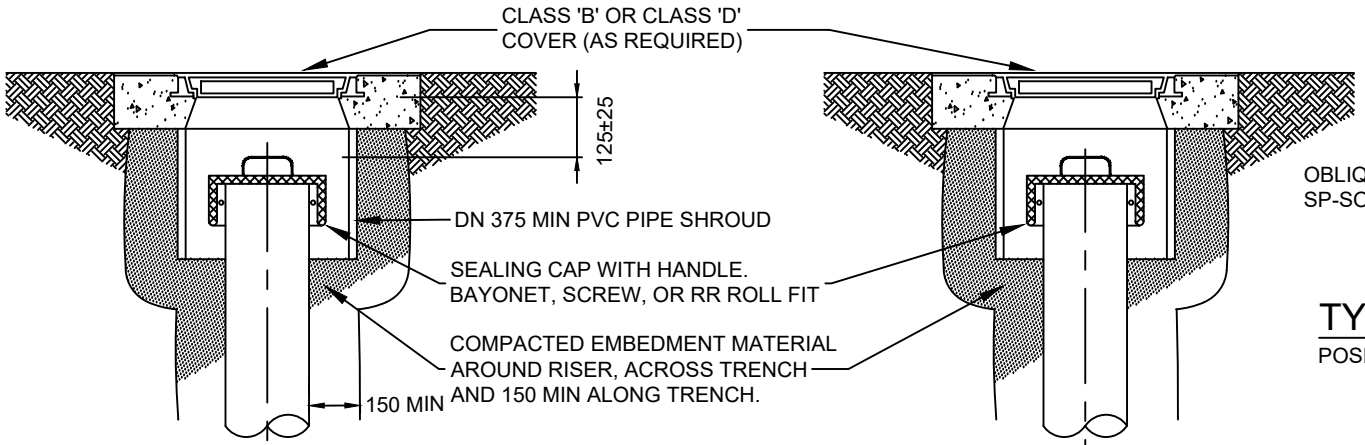
LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

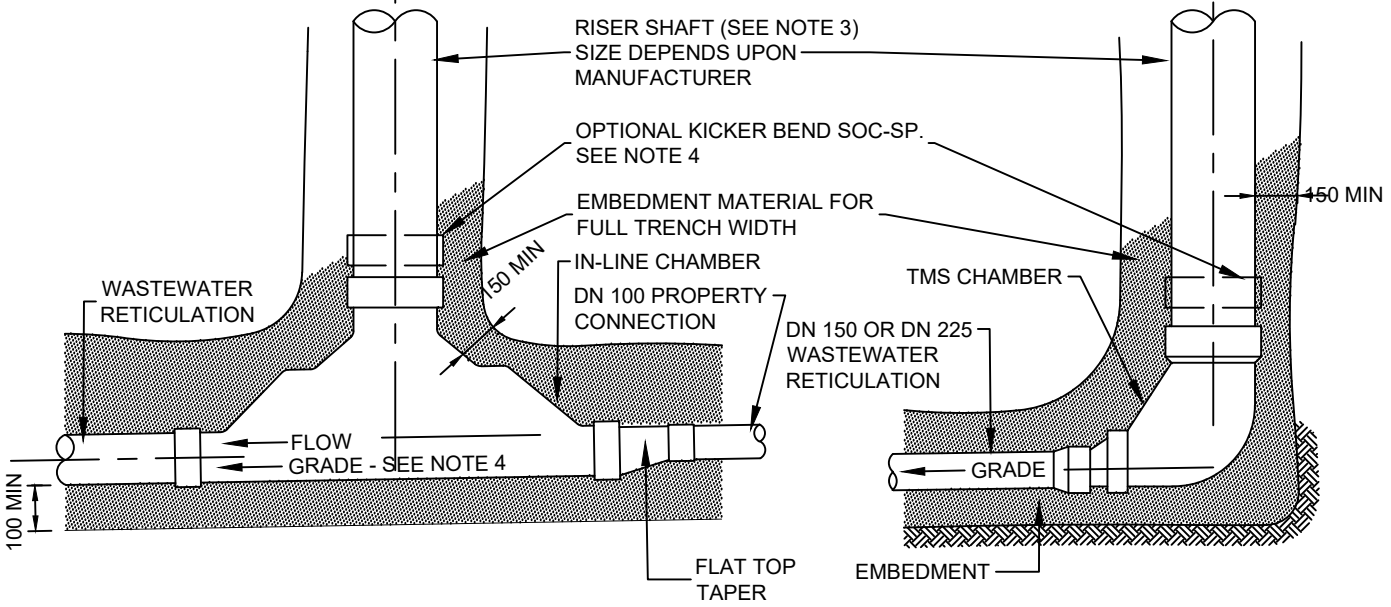
NOT TO SCALE

MAINTENANCE SHAFTS - MS AND VARIABLE BEND INSTALLATIONS

WW-004

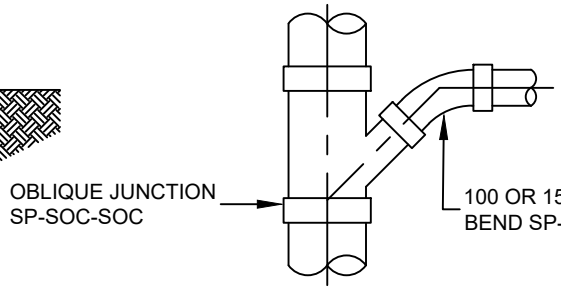
B7-11



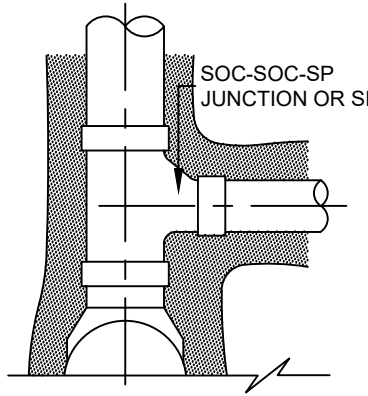


ELEVATION
TERMINAL MAINTENANCE SHAFT WITH PROPERTY CONNECTION AHEAD

ELEVATION
TERMINAL MAINTENANCE SHAFT



TYPICAL PROPERTY CONNECTIONS
POSITIONED IN RISER AS SPECIFIED



DN 150 RETICULATION INLETS
POSITIONED IN RISER AS SPECIFIED

NOTE:
1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL CONNECTION TYPES SHOWN ARE APPLICABLE TO VC, PVC (SOLVENT WELD) AND PVC (RUBBER RING) PIPES UNLESS OTHERWISE SHOWN.
3. INSTALL BRANCH CONNECTIONS AND PROPERTY CONNECTIONS (AS SHOWN ABOVE) IN RISER SHAFT (DROP JUNCTIONS) WHERE SHOWN IN DESIGN DRAWINGS. MAXIMUM OF 1 RETICULATION INLET OR 2 PROPERTY CONNECTIONS.
4. ADJUST MS TO PIPE GRADE BY TILTING CHAMBER. MAX DEVIATION FROM VERTICAL OF THE RISER TO BE 1:10 OR A MAXIMUM OF 300 AT SURFACE. USE KICKER BEND IF REQUIRED TO ADJUST RISER TO VERTICAL.

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LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE

MAINTENANCE SHAFTS - TMS AND CONNECTION INSTALLATION

NOT TO SCALE

WW-005

B7-12