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GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.

DRAWING INDEX	
DRAWING NUMBER	DRAWING TITLE
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SW02	PIPE EMBEDMENTS – STANDARD EMBEDMENT FOR FLEXIBLE PIPES
SW03	PIPE EMBEDMENTS – STANDARD EMBEDMENT FOR CONCRETE PIPES
SW04	STORMWATER SERVICE CONNECTIONS – PVC AND CONCRETE PIPE
SW05	STORMWATER MANHOLES – SUITABLE UP TO 4.0m DEPTH TO INVERT
SW06	STORMWATER MANHOLE NON-ACCESS CHAMBER – TYPICAL DETAIL (OUTLET INVERT DEPTH LESS THAN 1000mm)
SW07	STORMWATER MANHOLE WITH IN-SITU CONCRETE BASE – SUBJECT TO SPECIFIC DESIGN – SUITABLE FOR MANHOLES UP TO 5m DEEP
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SW21	DEBRIS CONTROL SCREEN FOR 1050 DIA RISER – SCRUFFY DOME TYPICAL DETAIL
SW22	STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS – MANHOLES NEAR BUILDINGS AND BUILDING CLOSE OR OVER PIPES
SW23	STORMWATER LINES – STEEP GRADIENTS AND ANCHOR BLOCKS
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STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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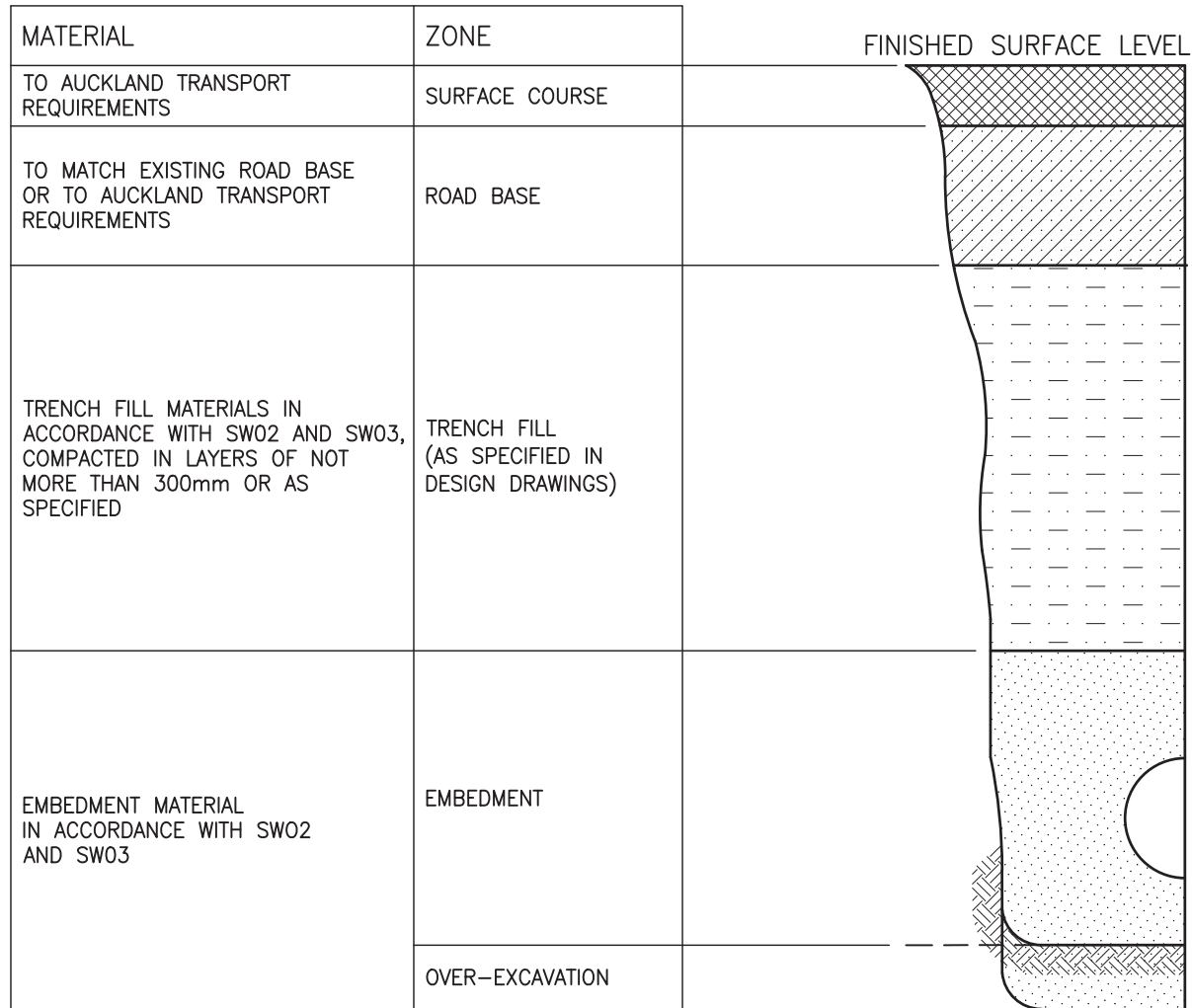
CODE OF PRACTICE DRAWINGS
COVER PAGE AND DRAWING INDEX

ENVIRONMENTAL-SW	ORIGINAL SCALE SCALE: N.T.S.	A3
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	SWCoP	1 OF 1
DRAWING No.	REV	
SW00	3	

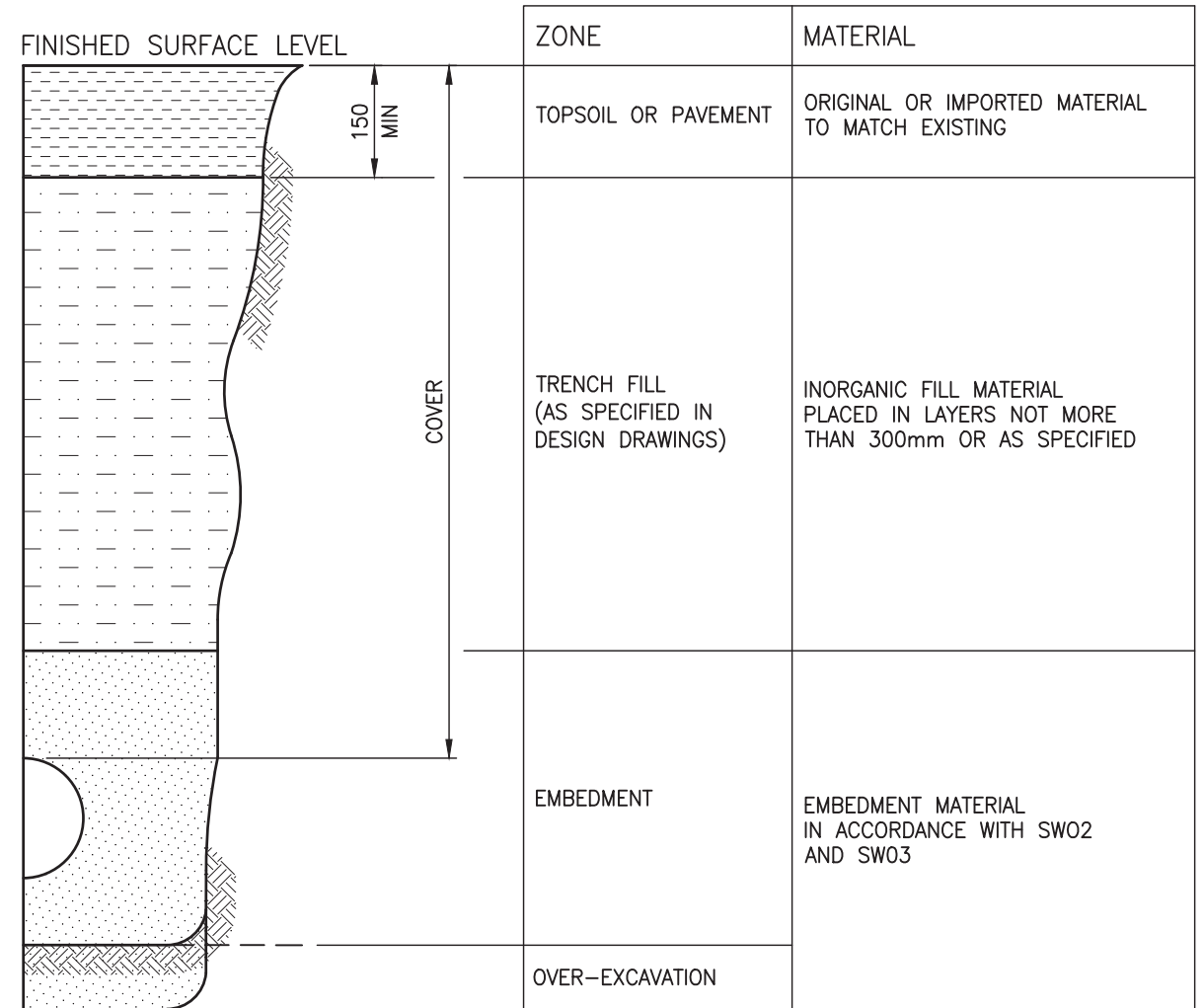
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. EMBEDMENT, TRENCH FILL AND COMPACTION SHALL MEET THE REQUIREMENT OF DESIGN DRAWINGS OR SPECIFICATIONS.
3. SIDES OF EXCAVATION SHALL BE KEPT VERTICAL TO AT LEAST 150mm ABOVE THE PIPE.



VEHICULAR LOADING (CARRIAGEWAY)



NO VEHICULAR LOADING (NON CARRIAGEWAY)

INCLUDES LOCATIONS WHERE OCCASIONAL VEHICLE LOADING OCCURS

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EMBEDMENT & TRENCHFILL

TYPICAL ARRANGEMENT

ENVIRONMENTAL-SW



ORIGINAL SCALE A3
SCALE: N.T.S.

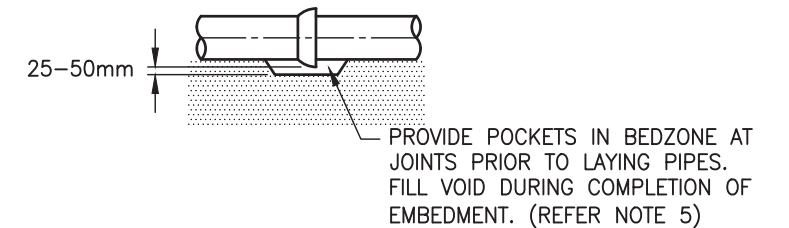
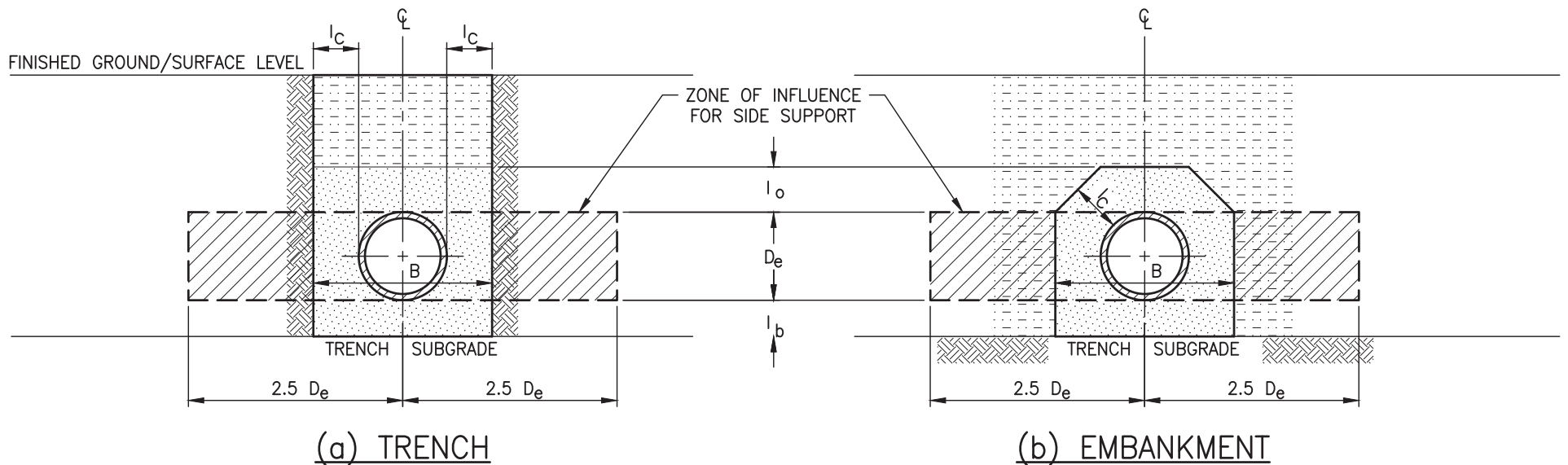
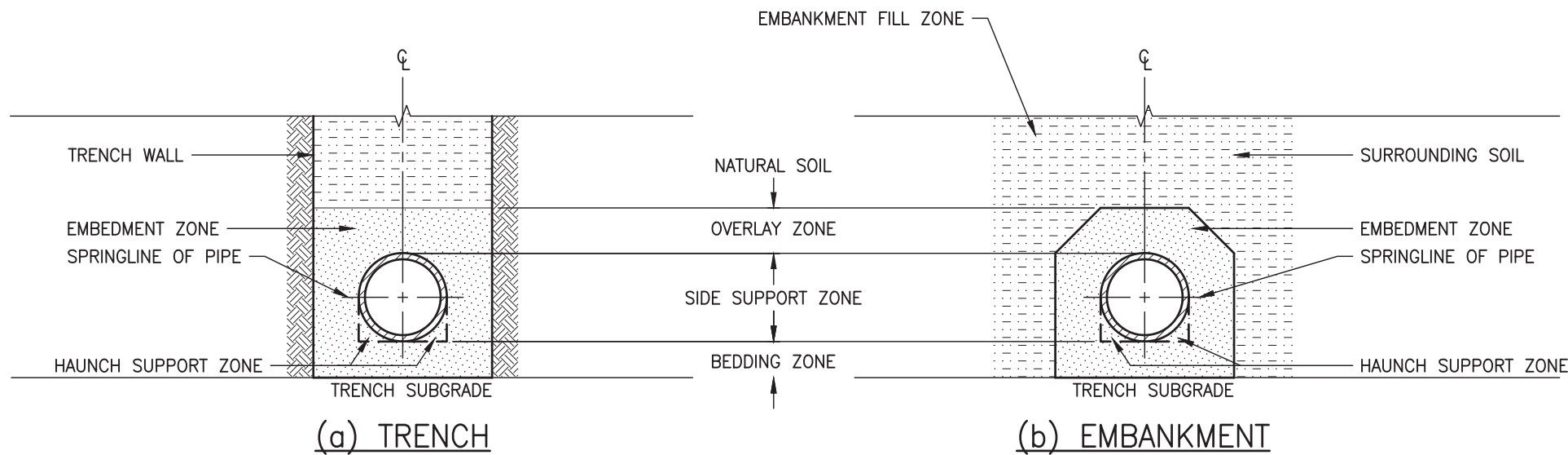
DRAWING SET SHEET

SWCoP 1 OF 1

DRAWING No. REV

SW01 3

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PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SW01.
2. FLEXIBLE PIPES INCLUDES PVC, GRP, PP AND PE.
3. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION SHALL MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. REPLACE EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL FOR BEDDING.
5. ENSURE THAT THE BEDDING IS DEEP ENOUGH SO THAT PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH THE TRENCH FLOOR (SEE DETAIL BELOW).
6. BEDDING MATERIALS SHALL BE GAP/SAP < 12.
7. THIS DRAWING IS BASED ON AS/NZS 2566 PART 2: 2002 "BURIED FLEXIBLE PIPELINES & INSTALLATION" AND REPRODUCED WITH THE PERMISSION OF STANDARDS NEW ZEALAND.

MINIMUM EMBEDMENT ZONE DIMENSIONS				
D _e (mm)	MINIMUM DIMENSION (mm)			
	l _b	l _c	l _o	B=D _e +2l _c
75 ≤ D _e ≤ 150	75	100	100	275 - 350
150 < D _e ≤ 300	100	150	150	450 - 600
300 < D _e ≤ 450	100	200	150	700 - 850
450 < D _e ≤ 900	150	300	150	1050 - 1500
900 < D _e ≤ 1500	150	350	200	1600 - 2200
1500 < D _e ≤ 4000	150	0.25D _e	300	2250 - 6000

DEFINITIONS OF SYMBOLS USED:

- B TRENCH WIDTH
- D_e EXTERNAL DIAMETER OF PIPELINE.
- l_b DEPTH OF BEDDING UNDER BARREL OF PIPELINE.
- l_c MINIMUM DISTANCE BETWEEN SPRINGLINE OF PIPE AND PERMANENT SIDE OF TRENCH.
- l_o MINIMUM DEPTH OF COVER OVER SOFFIT OF PIPELINE.

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PIPE EMBEDMENTS

STANDARD EMBEDMENT FOR FLEXIBLE PIPES

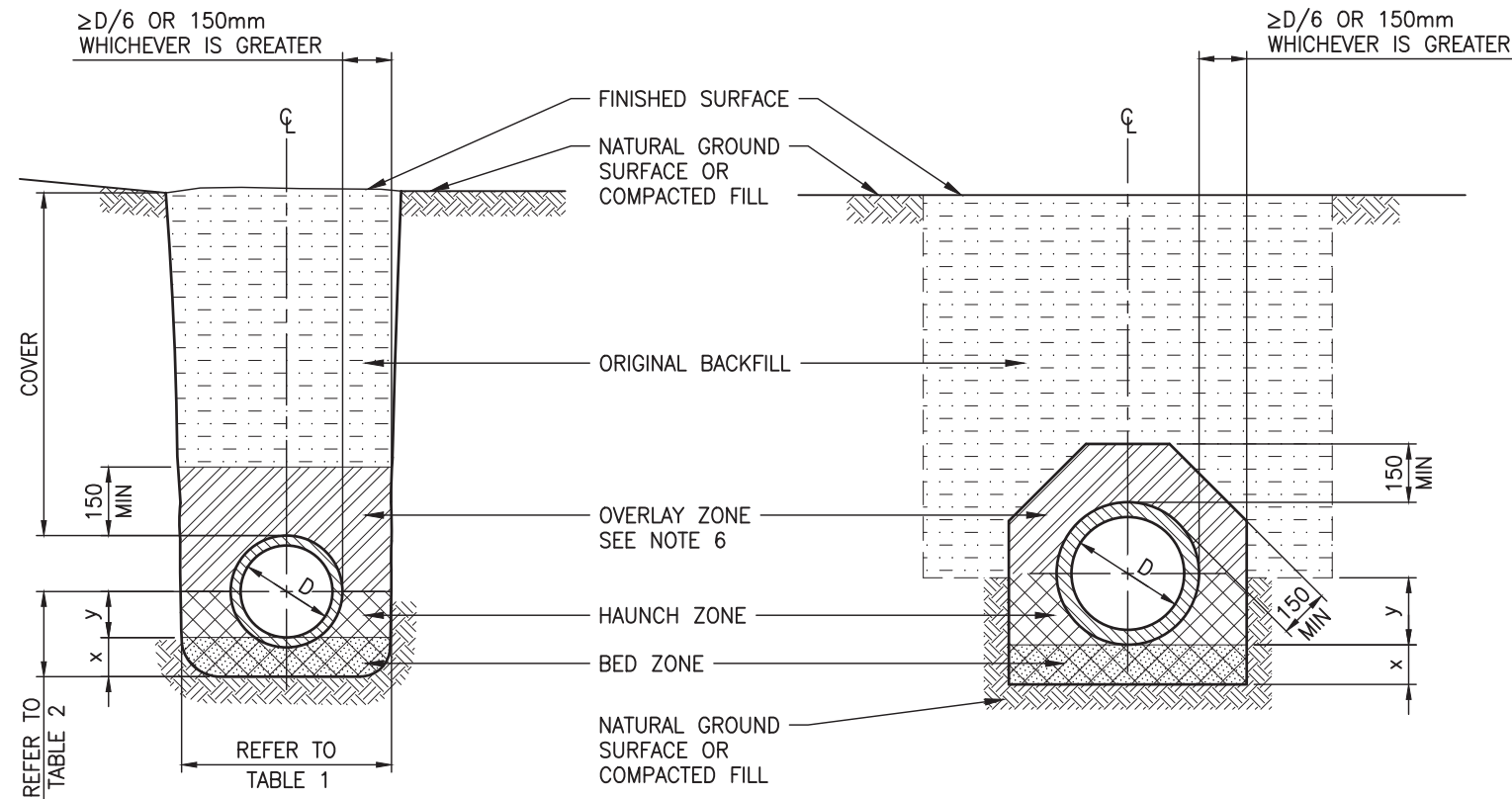
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ENVIRONMENTAL-SW ORIGINAL SCALE A3
SCALE: N.T.S.

	DRAWING SET	SHEET
	SWCoP	1 OF 1
DRAWING No.	REV	
SW02	3	

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TRENCH CONDITION

EMBANKMENT CONDITION

H2 TYPE BEDDING - CONCRETE PIPES

NOTES:

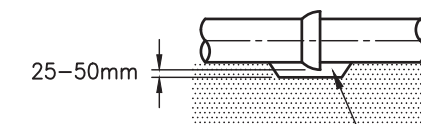
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SW01.
2. CONCRETE PIPE CLASS SHALL BE DESIGNED IN ACCORDANCE WITH AS/NZS 3725: 2007, USING H2 BEDDING, TO CONSTRUCTION OR FINAL CONDITION LOADINGS, WHICHEVER IS GREATER.
3. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION SHALL MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. REPLACE EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL FOR BEDDING.
5. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS) DO NOT TOUCH TRENCH FLOOR (SEE DETAIL BELOW).
6. OVERLAY ZONE TO BE GAP65. OTHER INORGANIC FILL MATERIAL MAY BE SPECIFIED FOR NON-CARRIAGEWAY AREAS.
7. MATERIAL SHALL BE COMPACTED AS NECESSARY TO PREVENT EXCESSIVE SETTLEMENT IN THE GROUND SURFACE LEVEL OVER THE INSTALLED PIPE.
8. WHERE REQUIRED BY SITE CONDITIONS SPECIFIC DESIGN OF PIPE EMBEDMENT MAY BE REQUIRED. THIS SHOULD BE UNDERTAKEN IN ACCORDANCE WITH AS/NZS 3725: 2007 TO THE APPROVAL OF AUCKLAND COUNCIL.
9. EMBEDMENT FOR 'RIGID PIPES' OTHER THAN CONCRETE IS SUBJECT TO SPECIFIC DESIGN AND APPROVAL.

TABLE 1

MAXIMUM PERMISSIBLE TRENCH WIDTHS (IF TRENCH WIDER, USE EMBANKMENT CONDITION)															
NORMAL INTERNAL PIPE DIAMETER (mm)	150	225	300	375	450	525	600	675	750	825	900	975	1050	1200	>1200
MAXIMUM TRENCH WIDTH (mm)	600	600	700	800	900	1000	1100	1200	1300	1400	1500	1500	1600	1800	OD+700

TABLE 2

H2 SUPPORT TYPE	MINIMUM DEPTH (mm)	
	x BED ZONE (mm)	y HAUNCH ZONE (mm)
	100 IF D ≤ 1500 150 IF D > 1500	0.3D



PROVIDE POCKETS IN BED ZONE AT JOINTS PRIOR TO LAYING PIPES. FILL VOID DURING COMPLETION OF EMBEDMENT. (REFER NOTE 5)

PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

AUCKLAND COUNCIL

PIPE EMBEDMENTS

STANDARD EMBEDMENT FOR CONCRETE PIPES

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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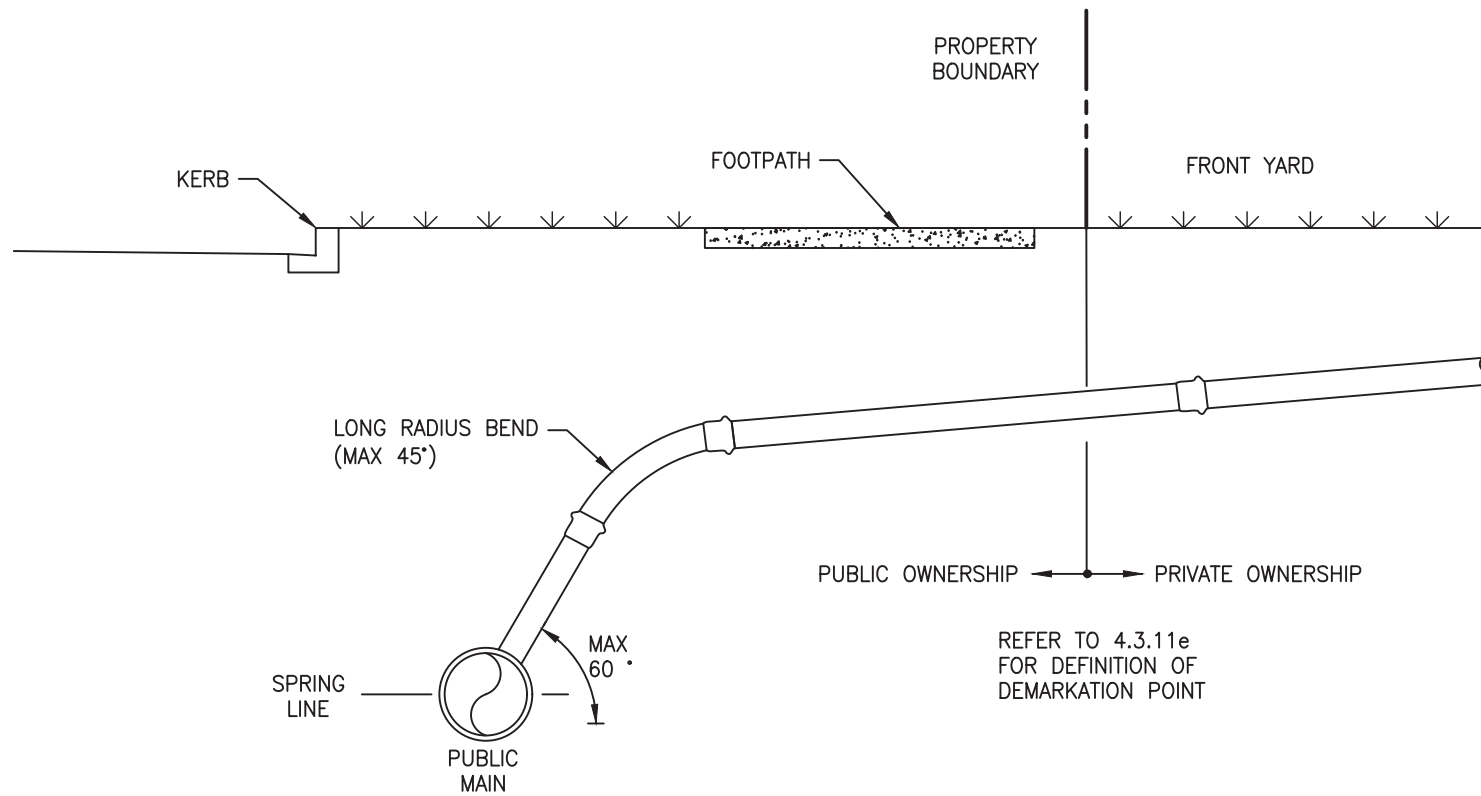
ENVIRONMENTAL-SW

ORIGINAL SCALE A3
SCALE: N.T.S.

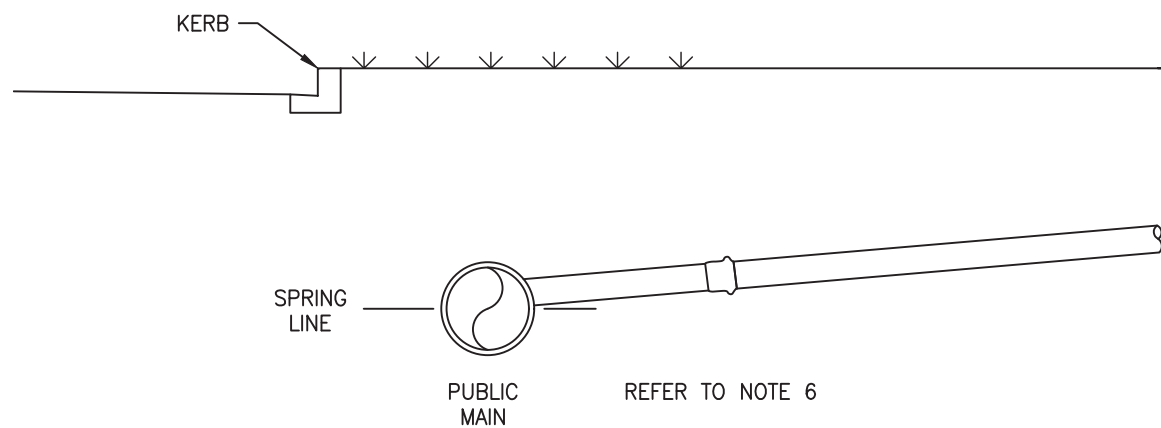


DRAWING SET	SHEET
SWCoP	1 OF 1
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SW03	3

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LATERAL CONNECTION – DEEP PUBLIC MAIN
(SINGLE LOT CONNECTION SHOWN)



LATERAL CONNECTION – SHALLOW PUBLIC MAIN

NOTES:

GENERAL NOTES:

1. REFER SWCoP SECTION 4.3.9.5 FOR MINIMUM PIPE DIAMETERS.
2. REFER SWCoP SECTION 4.3.11 FOR PUBLIC/PRIVATE DEMARKATION DEFINITIONS.
3. REFER SWCoP SECTION 4.3.12 FOR LATERAL CONNECTION REQUIREMENTS.
4. REFER SWCoP SECTION 4.3.13 FOR CATCHPIT CONNECTIONS DETAILS.
5. A RODDING POINT OR CHAMBER SHALL BE PROVIDED ON THE PUBLIC OR PRIVATE SECTION OF THE LATERAL TO ALLOW CCTV ACCESS. WHERE THIS CANNOT BE PROVIDED, THE CONNECTION SHALL BE MADE AT A MANHOLE.
6. THE CENTRELINE OF THE LATERAL SHALL BE ABOVE THE SPRING LINE OF THE PUBLIC MAIN IT CONNECTS TO.
7. THE LATERAL CONNECTION SHALL BE FULLY SUPPORTED WITH COMPACTED BEDDING MATERIAL, WHICH SHALL EXTEND FROM THE BEDDING OF THE PUBLIC MAIN TO AT LEAST THE SPRING LINE OF THE LATERAL CONNECTION PIPE THROUGH ITS LENGTH UNTIL BEYOND THE TRENCH WALL OF THE PUBLIC MAIN.

NOTES FOR CONNECTION TO A PVC PUBLIC MAIN:

1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A REINFORCED MOULDED PVC SWEPT TEE OR Y-JUNCTION FITTING WHERE SUCH FITTINGS ARE NORMALLY AVAILABLE WITHIN THE LOCAL MARKET. SADDLE CONNECTIONS ARE PERMITTED ONLY WHEN SWEPT TEE OR Y-JUNCTIONS ARE UNAVAILABLE.

NOTES FOR CONNECTION TO A REINFORCED CONCRETE PUBLIC MAIN:


1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A FLANGED VITREOUS CLAY SADDLE INSERT APPROPRIATELY SIZED TO MATCH THE PUBLIC MAIN.
2. THE HOLE INTO THE EXISTING PUBLIC MAIN SHALL BE DRILLED.
3. THE SADDLE INSERT SHALL BE SEALED VIA EPOXY MORTAR TO THE PUBLIC MAIN.
4. THERE SHALL BE NO PROTRUSION OF THE SADDLE INSERT INSIDE THE BORE OF THE PUBLIC MAIN.

NOTES FOR CONNECTION TO A PE PUBLIC MAIN:

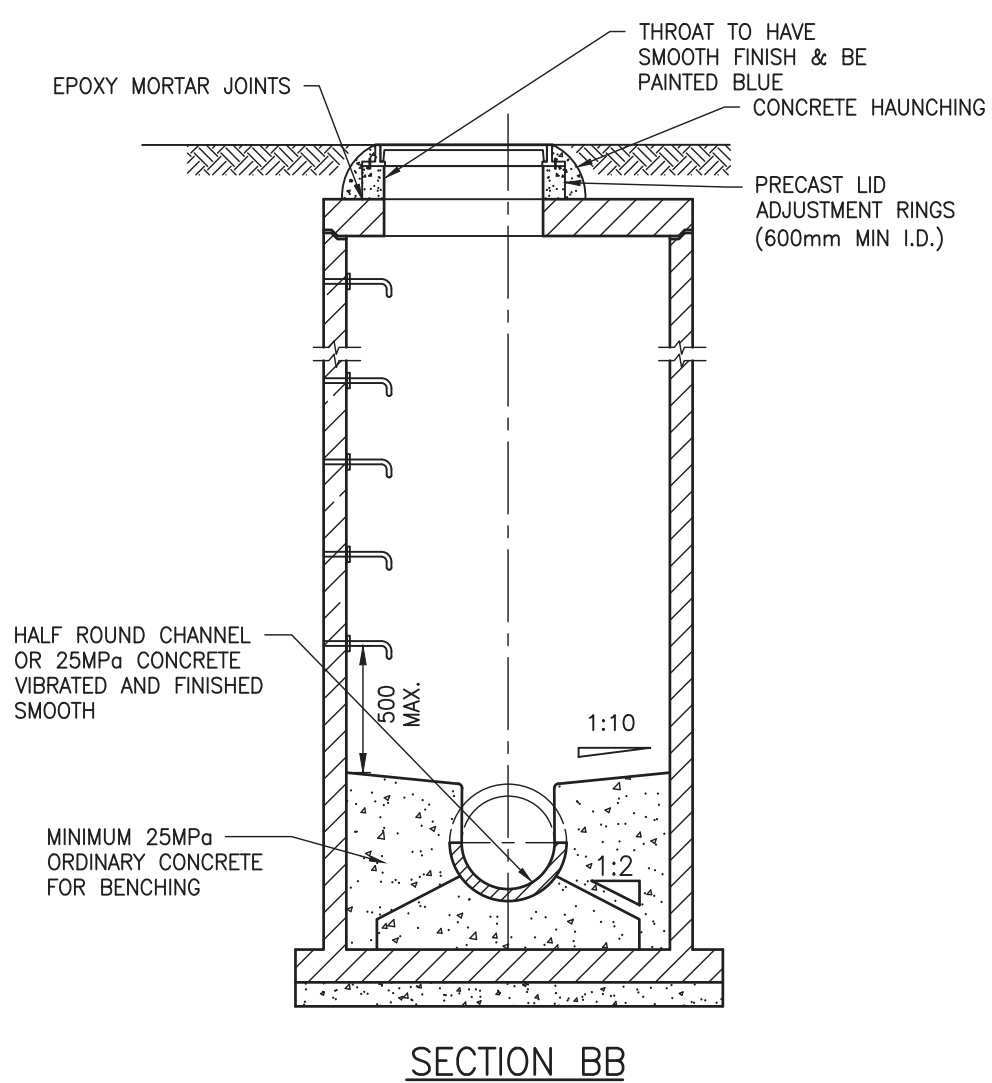
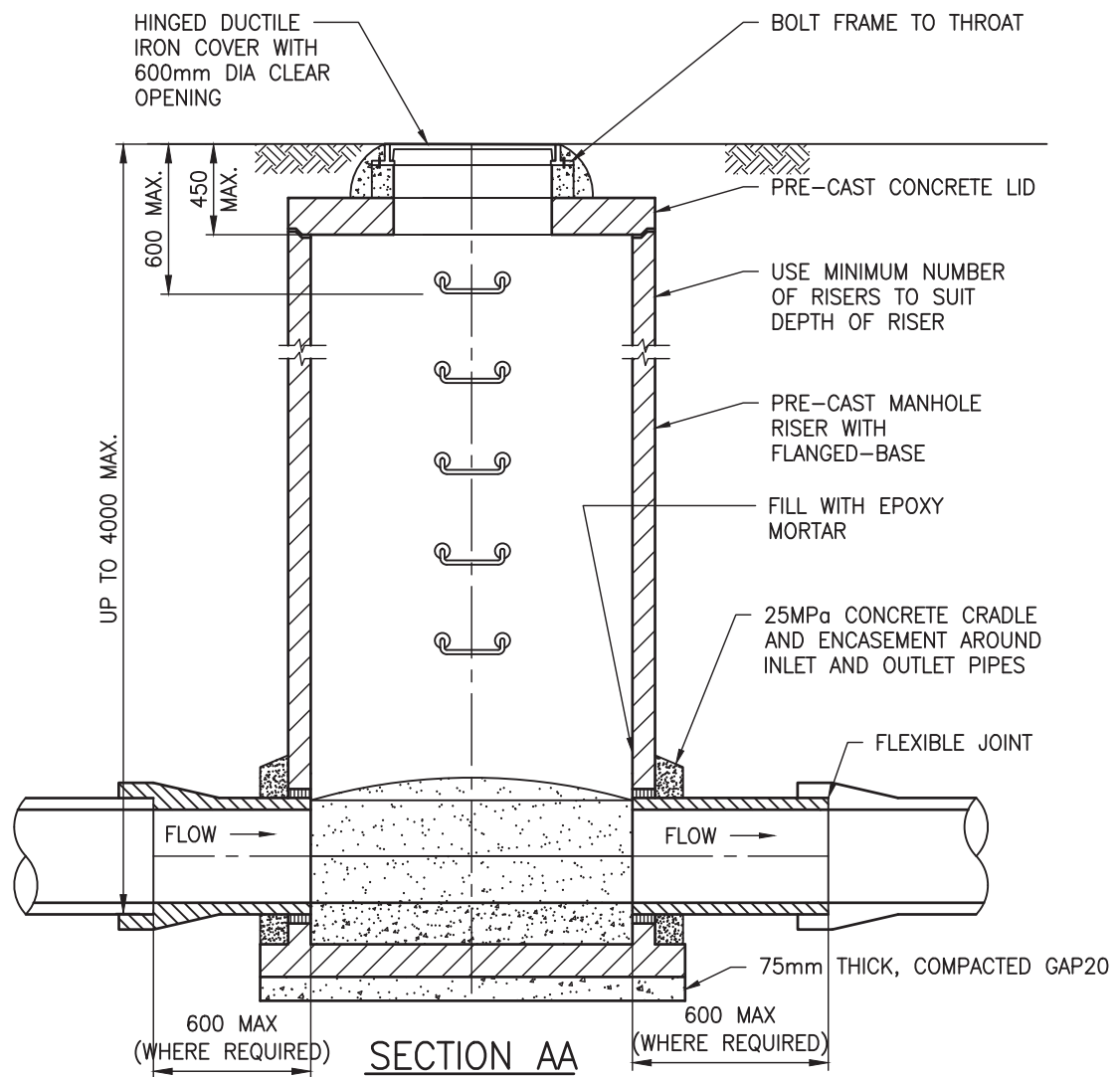
1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A JUNCTION CUT IN WITH ELECTROFUSION COUPLERS. ALTERNATIVELY A SADDLE MAY BE ELECTROFUSED ONTO THE PIPE. SPECIFIC APPROVAL FROM AUCKLAND COUNCIL IS REQUIRED TO SADDLE INTO A PE MAIN.
2. ELECTROFUSION FITTINGS SHALL BE SELECTED TO MATCH SDR AND RESIN OF HOST PIPE, AND SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION.

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STORMWATER LATERAL CONNECTIONS
DIRECT CONNECTIONS

ENVIRONMENTAL-SW	ORIGINAL SCALE SCALE: N.T.S.	A3
	DRAWING SET SWCoP	SHEET 1 OF 1
	DRAWING No. SW04	REV 4

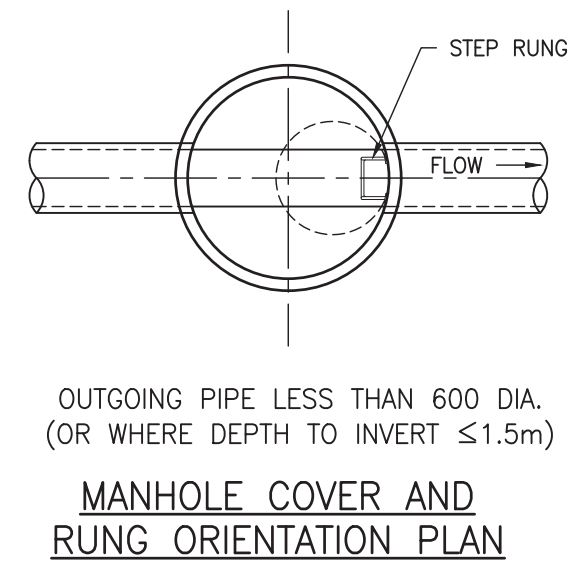
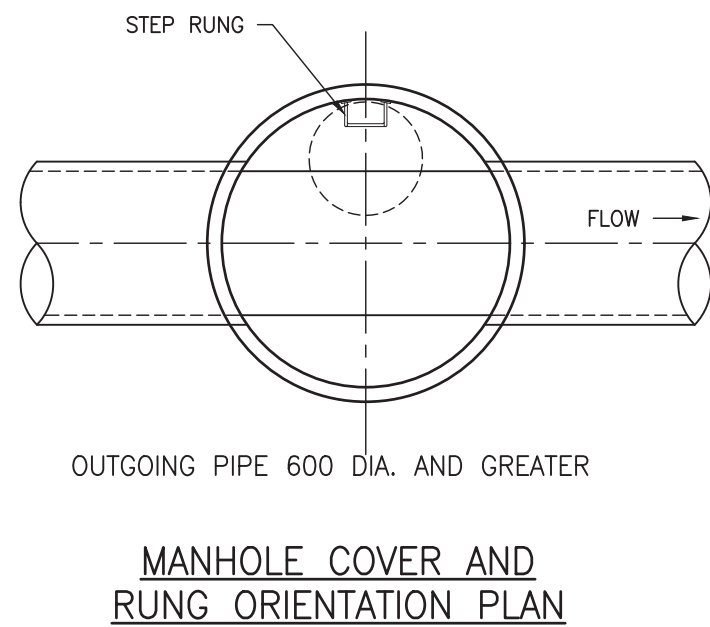
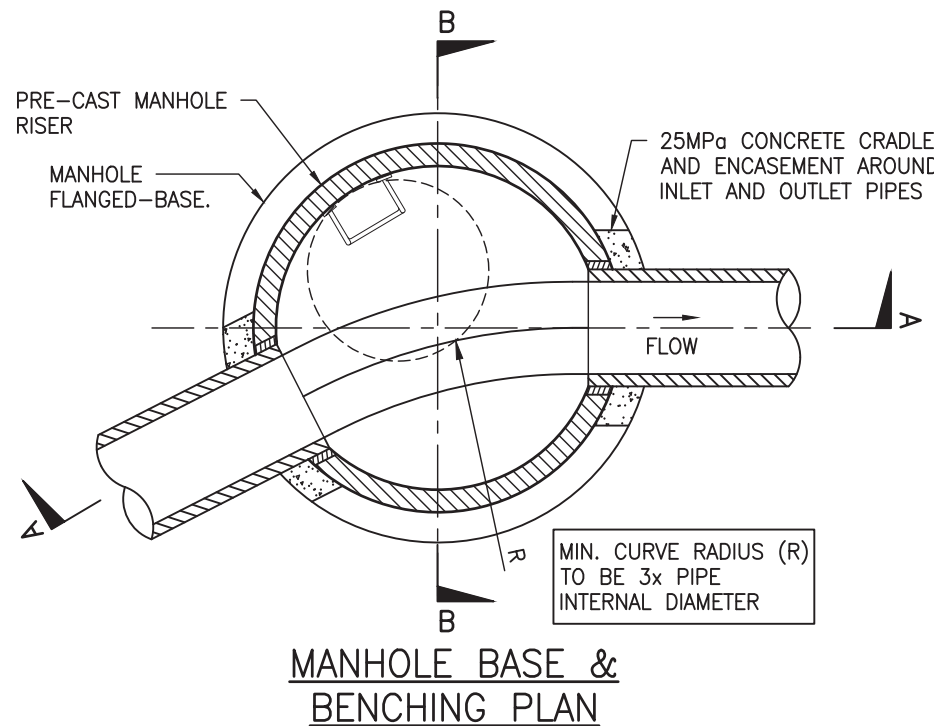
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NOTES:

1. MANHOLES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THIS DRAWING AND SECTION 4.3.10 OF THE SWCoP AND IN COMPLIANCE WITH MANUFACTURERS SPECIFICATION.
2. MANHOLE RISER DIAMETER IS TO ALLOW FOR A MINIMUM CURVE RADIUS BETWEEN THE INLET AND OUTLET PIPES OF THREE TIMES THE INTERNAL DIAMETER OF THE OUTLET PIPE.
3. PRECAST LID ADJUSTMENT RINGS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATION.
4. FOR FLEXIBLE PIPELINES, UP TO 300mm DIA, ON GRADIENTS OF 10% AND GREATER, REQUIRED BENCHING DEPTHS WITHIN THE DOWNSTREAM MANHOLE CAN BE REDUCED, BY THE REDUCTION OF THE GRADIENT IMMEDIATELY OUTSIDE THE MANHOLE. THIS MAY BE ACHIEVED BY INSTALLING A MANUFACTURED, PRE-FORMED BEND WITH VERTICAL RADIUS MIN. 8x INSIDE PIPE DIAMETER.


STANDARD MANHOLE UP TO 4.0m DEPTH TO INVERT – ELEVATION



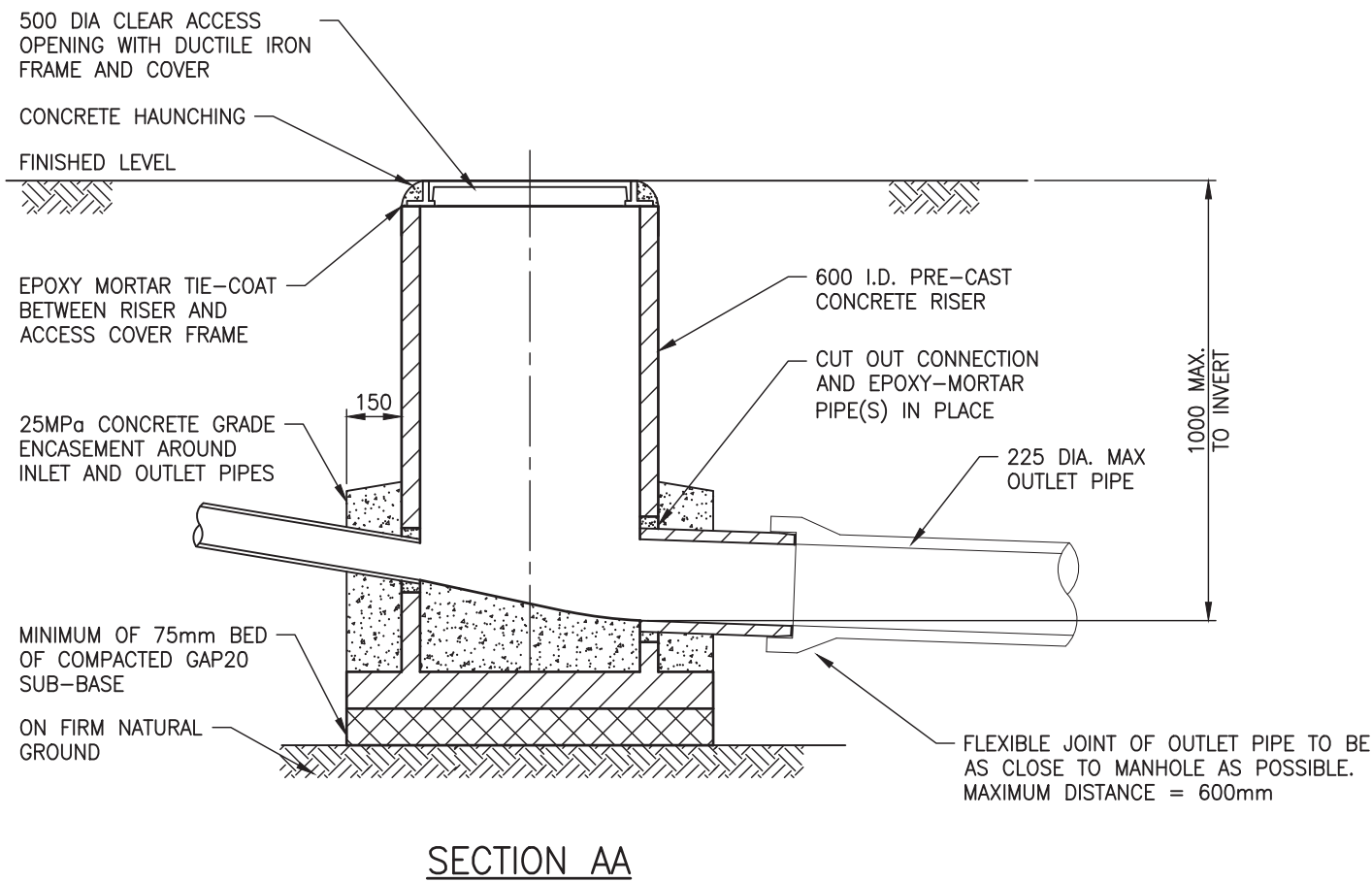
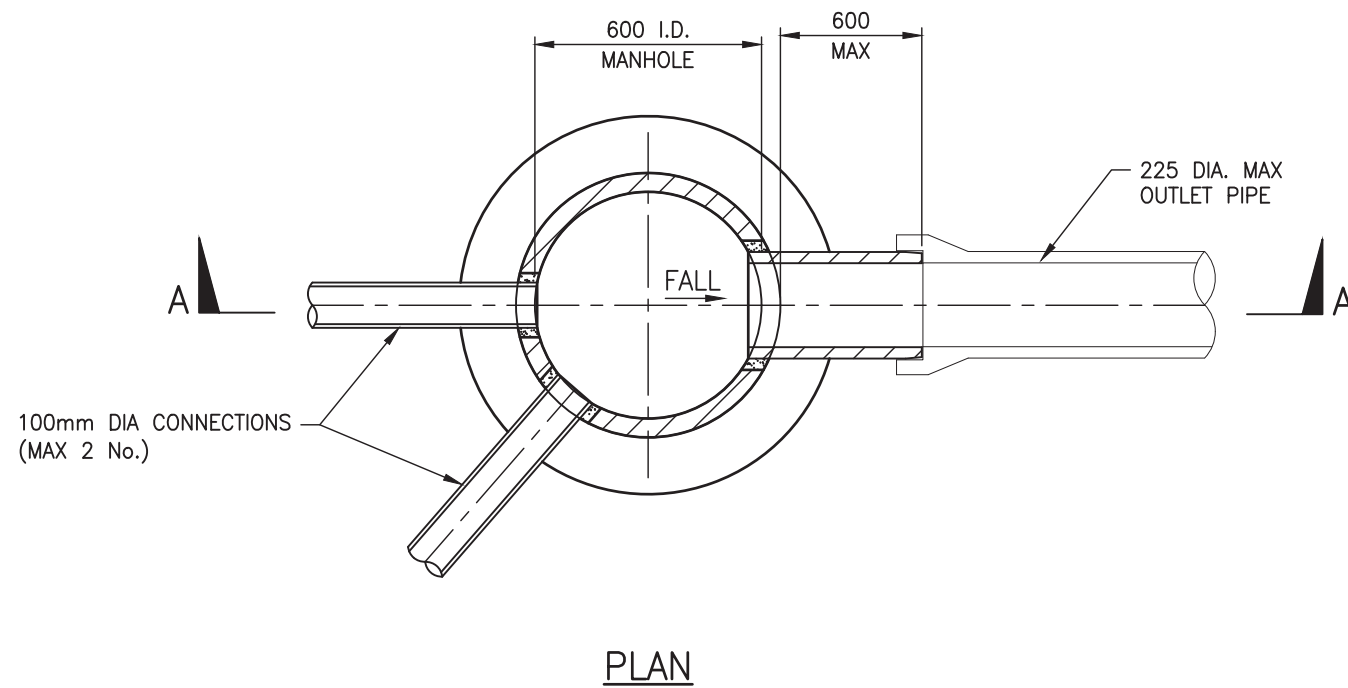
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STANDARD STORMWATER MANHOLE
SUITABLE FOR UP TO 4.0m DEPTH TO INVERT

STORMWATER CODE OF PRACTICE
STANDARD DETAILS
REVISION: 3
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ENVIRONMENTAL-SW	ORIGINAL SCALE SCALE: N.T.S.	A3
	DRAWING SET SWCoP	SHEET 1 OF 1
	DRAWING No. SW05	REV 3

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NOTES:

1. NON-ACCESS CHAMBER, SUITABLE FOR OUTLET INVERT DEPTH OF LESS THAN 1000mm.
2. MAXIMUM OUTLET PIPE DIAMETER SHALL BE 225mm.
3. MAXIMUM NUMBER OF CONNECTIONS SHALL BE TWO 100mm DIA INLET CONNECTIONS PER NON-ACCESS CHAMBER.
4. ADDITIONAL CONNECTIONS REQUIRE MANHOLE.
5. BENCHING ABOVE INVERT OF OUTLET PIPE WITHIN NON-ACCESS CHAMBERS IS NOT MANDATORY.

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**STORMWATER MANHOLES – NON-ACCESS CHAMBER
TYPICAL DETAIL (OUTLET INVERT DEPTH LESS THAN 1000mm)**

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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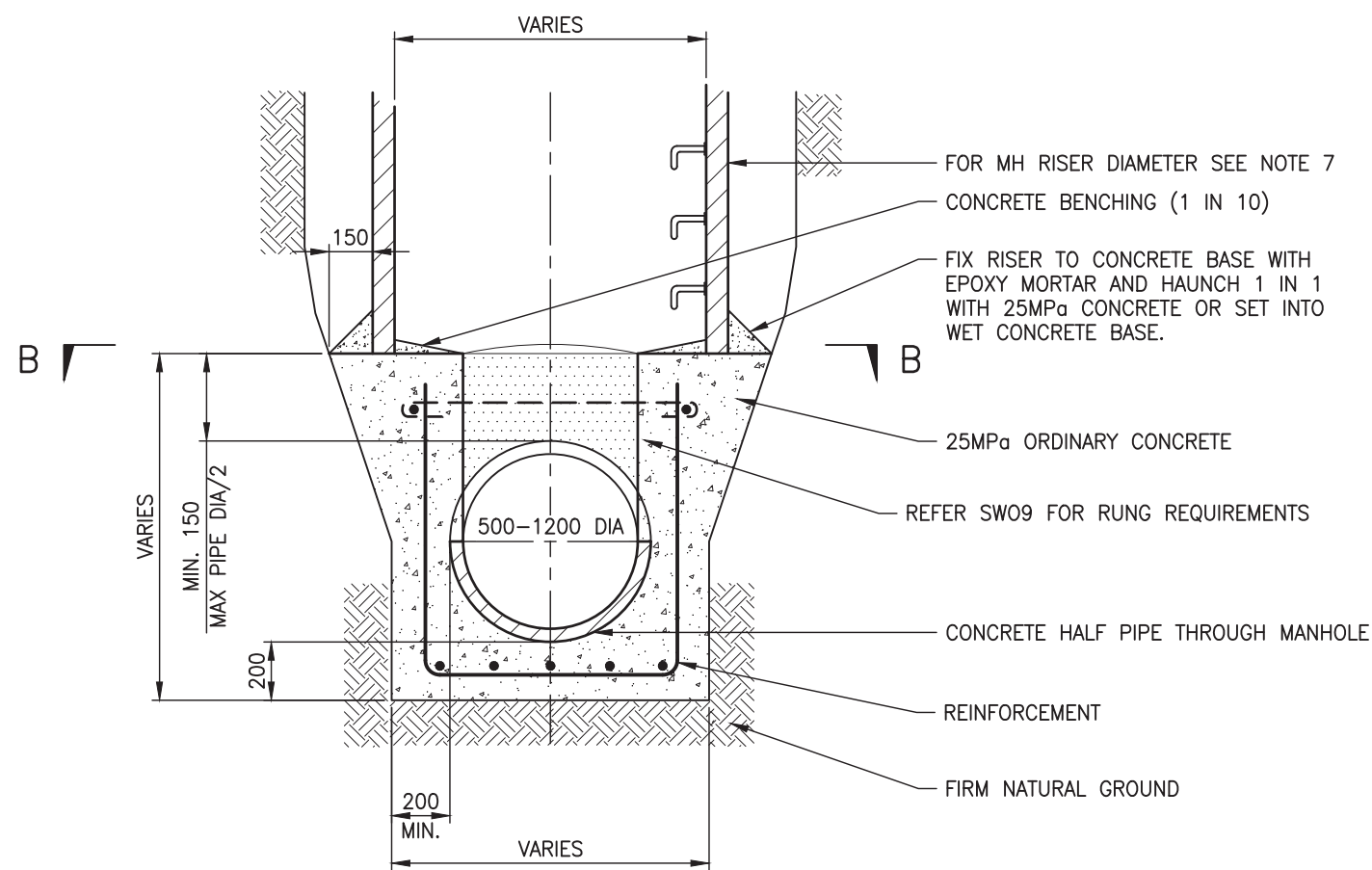
ENVIRONMENTAL-SW

ORIGINAL SCALE A3
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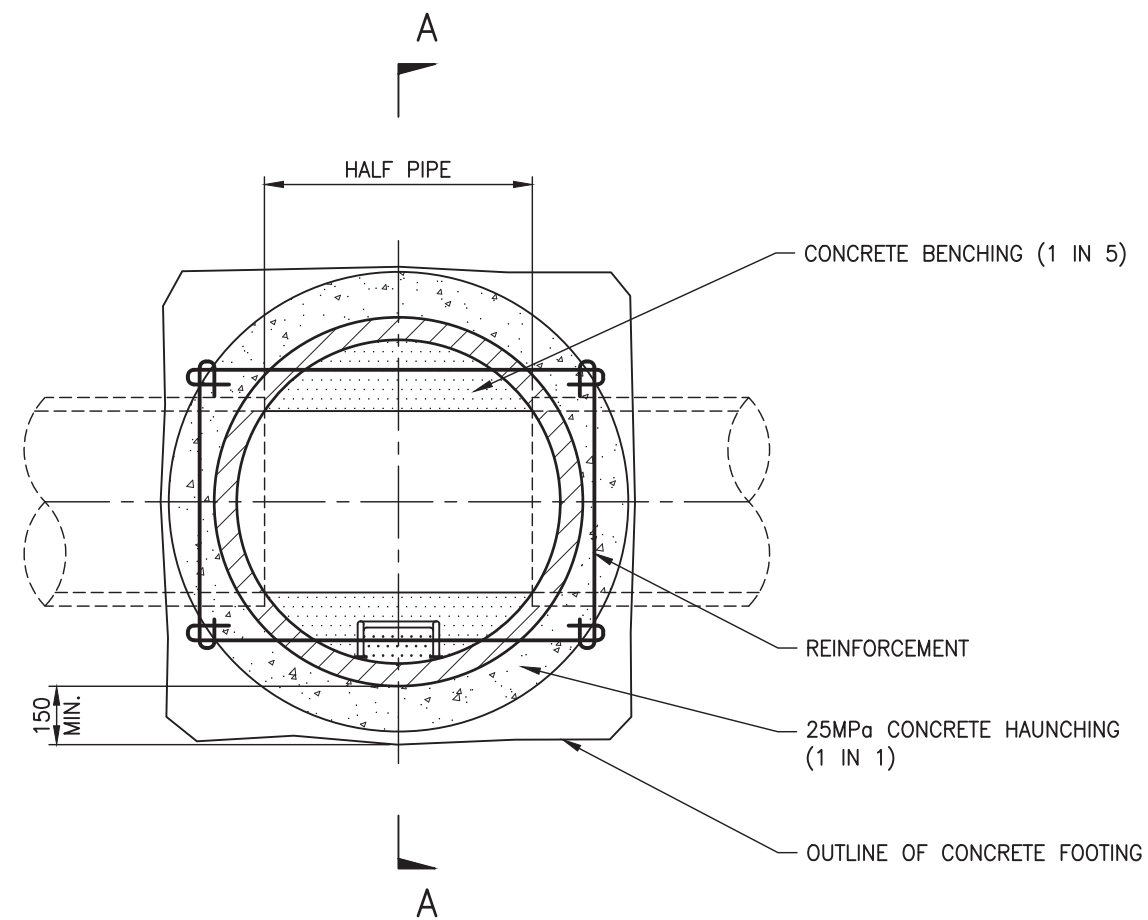


DRAWING SET	SHEET
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SW06	3

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SECTION AA



SECTION BB - PLAN


NOTES:

1. SPECIFIC DESIGN IS REQUIRED.
2. AUCKLAND COUNCIL APPROVAL REQUIRED FOR CAST IN-SITU MANHOLE BASES WHERE OUTLET PIPE DIAMETER IS LESS THAN 500mm
3. FOR PIPE DIAMETERS GREATER THAN 1200mm A FACTORY PRODUCED OFFTAKE MANHOLE WITH LOBSTER BACK BEND MAY BE AN ACCEPTABLE SOLUTION SUBJECT TO SPECIFIC DESIGN TO AUCKLAND COUNCIL APPROVAL.
4. FOR MANHOLE RISER DIAMETERS, SIZING SHALL BE IN ACCORDANCE WITH TABLE 1 OF DRAWING SW05 BASED ON DEFLECTION ANGLES.
5. REFER TO DRAWING SW09 IF 'RECESSED RUNGS' ARE REQUIRED IN THE CONCRETE BASE.
6. REINFORCEMENT IS SHOWN AS GENERAL ARRANGEMENT ONLY AND SHALL BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.
7. MANHOLE RISER DIAMETER IS TO ALLOW FOR A MINIMUM CURVE RADIUS BETWEEN THE INLET AND OUTLET PIPES OF THREE TIMES THE INTERNAL DIAMETER OF THE OUTLET PIPE. (REFER SW05)

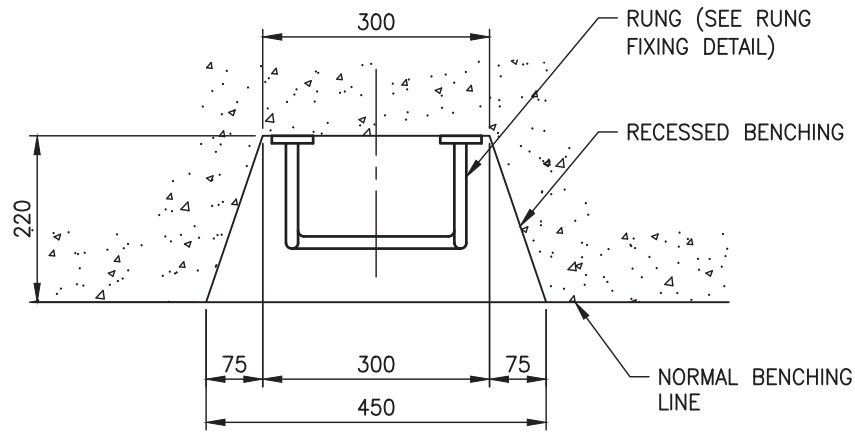
STORMWATER CODE OF PRACTICE
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CAD FILENAME: AC-STD-SW07.DWG

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STORMWATER MANHOLE WITH IN-SITU CONCRETE BASE - SUBJECT TO SPECIFIC DESIGN
SUITABLE FOR MANHOLES UP TO 5m DEEP

ENVIRONMENTAL-SW	ORIGINAL SCALE SCALE: N.T.S.	A3
	DRAWING SET SWCoP	SHEET 1 OF 1
	DRAWING No. SW07	REV 3

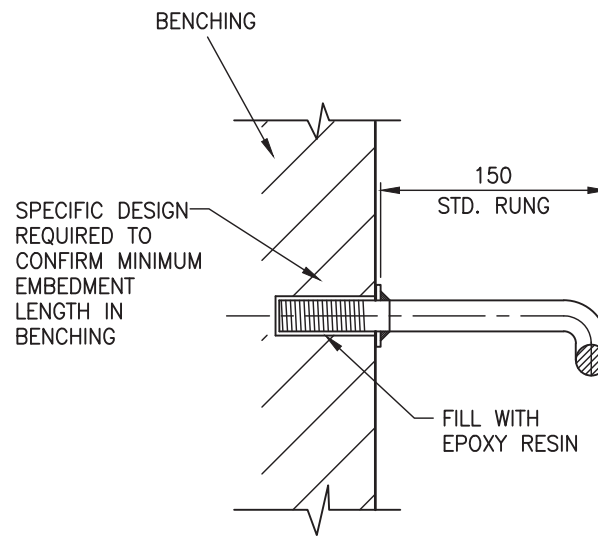
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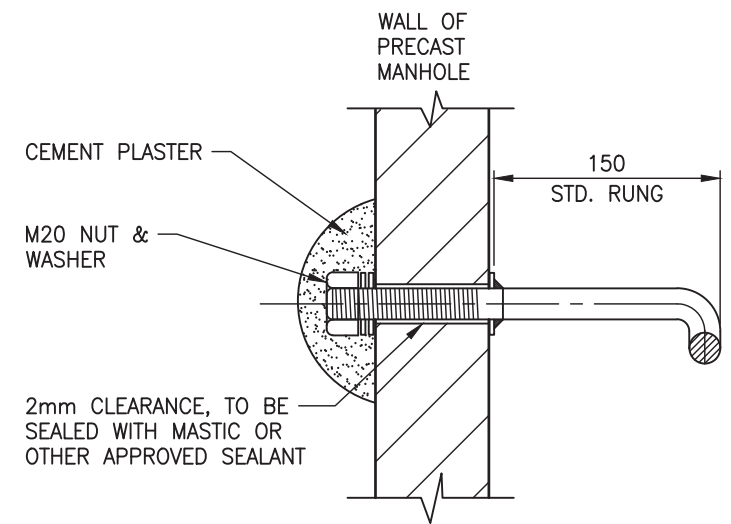
PLAN - RECESSED RUNG DETAIL

NOTES:

1. RECESSED RUNGS SHALL BE USED FOR PIPE DIAMETERS > 600mm.
2. RECESSED RUNGS SHALL BE LOCATED ON INSIDE CURVE OF BENCHING AND SHALL ALIGN WITH MANHOLE ACCESS RUNGS.
3. ALL STEELWORK SHALL BE 'HOT DIPPED GALVANISED' AFTER FABRICATION HAS BEEN COMPLETED, WITH A MINIMUM AVERAGE COATING WEIGHT OF ZINC=610g/sqm TO AS/NZS 4680-2006.
4. STEEL PARTS WITH THREADS THAT ARE CENTRIFUGED AFTER THE GALVANISATION TO MAINTAIN THE THREADING SHALL HAVE A MINIMUM AVERAGE COATING MASS FOR THOSE PARTS IS 390g/m².
5. BELOW RL 4.00m OR IN SEVERE EXPOSURE CONDITIONS, PE COATED HOT DIPPED GALVANISED STEEL OR PE COATED 316 STAINLESS STEEL RUNGS SHALL BE USED.
6. STAINLESS STEEL RUNGS MAY BE 16mm DIA SUBJECT TO AUCKLAND COUNCIL APPROVAL.
7. OTHER RUNG SYSTEMS MAY BE UTILISED SUBJECT TO AUCKLAND COUNCIL APPROVAL.
8. ALL MATERIALS TO BE USED AND INSTALLED AS PER MANUFACTURERS SPECIFICATIONS.

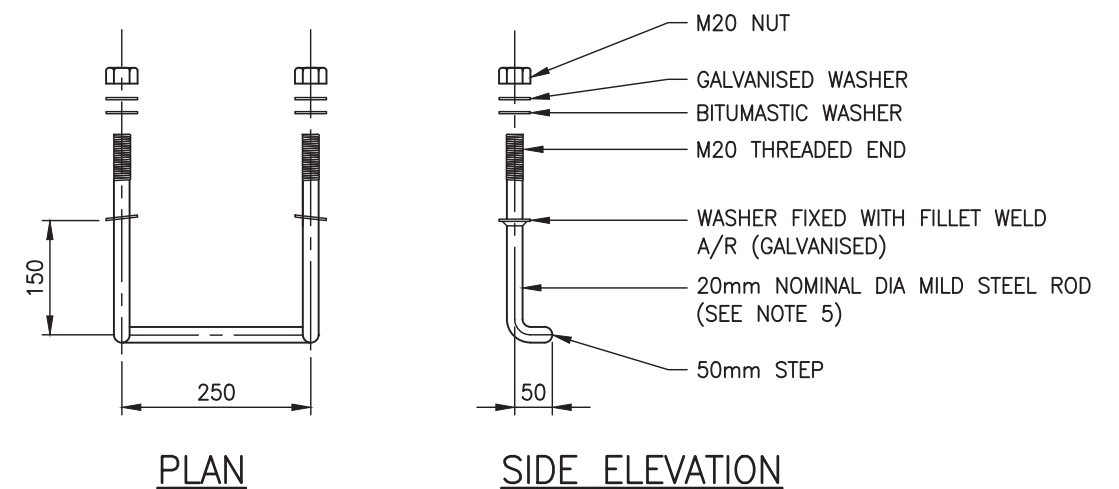


TYPICAL SECTION RUNG CONNECTION BY EPOXY RESIN
(FOR RECESSED STEPS AND RETRO ONLY)



TYPICAL SECTION RUNG CONNECTION BY NUT

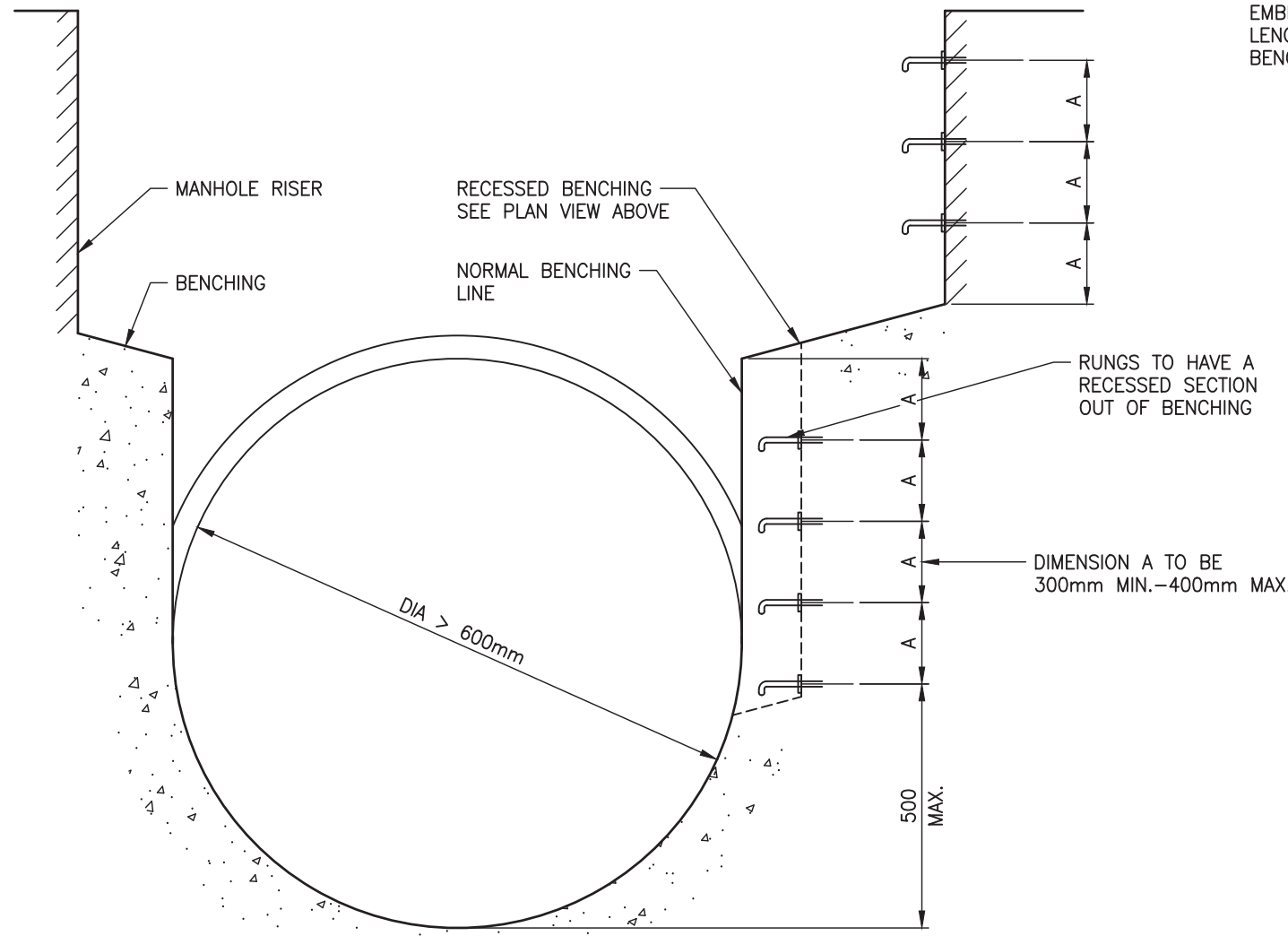
RUNG CONNECTIONS



PLAN

SIDE ELEVATION

TYPICAL RUNG ASSEMBLY



MANHOLE SECTION RECESSED RUNGS

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STORMWATER MANHOLE ACCESS
RECESSED RUNGS AND GENERAL ACCESS RUNGS DETAILS

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

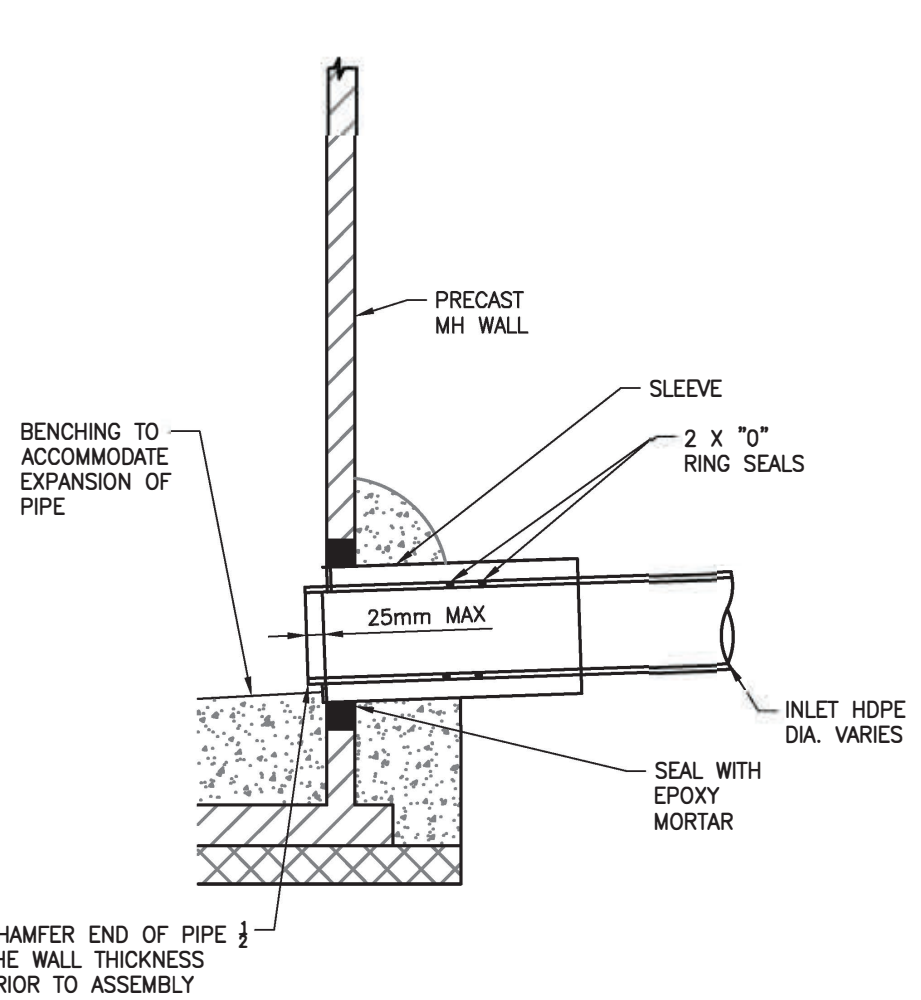
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ENVIRONMENTAL-SW

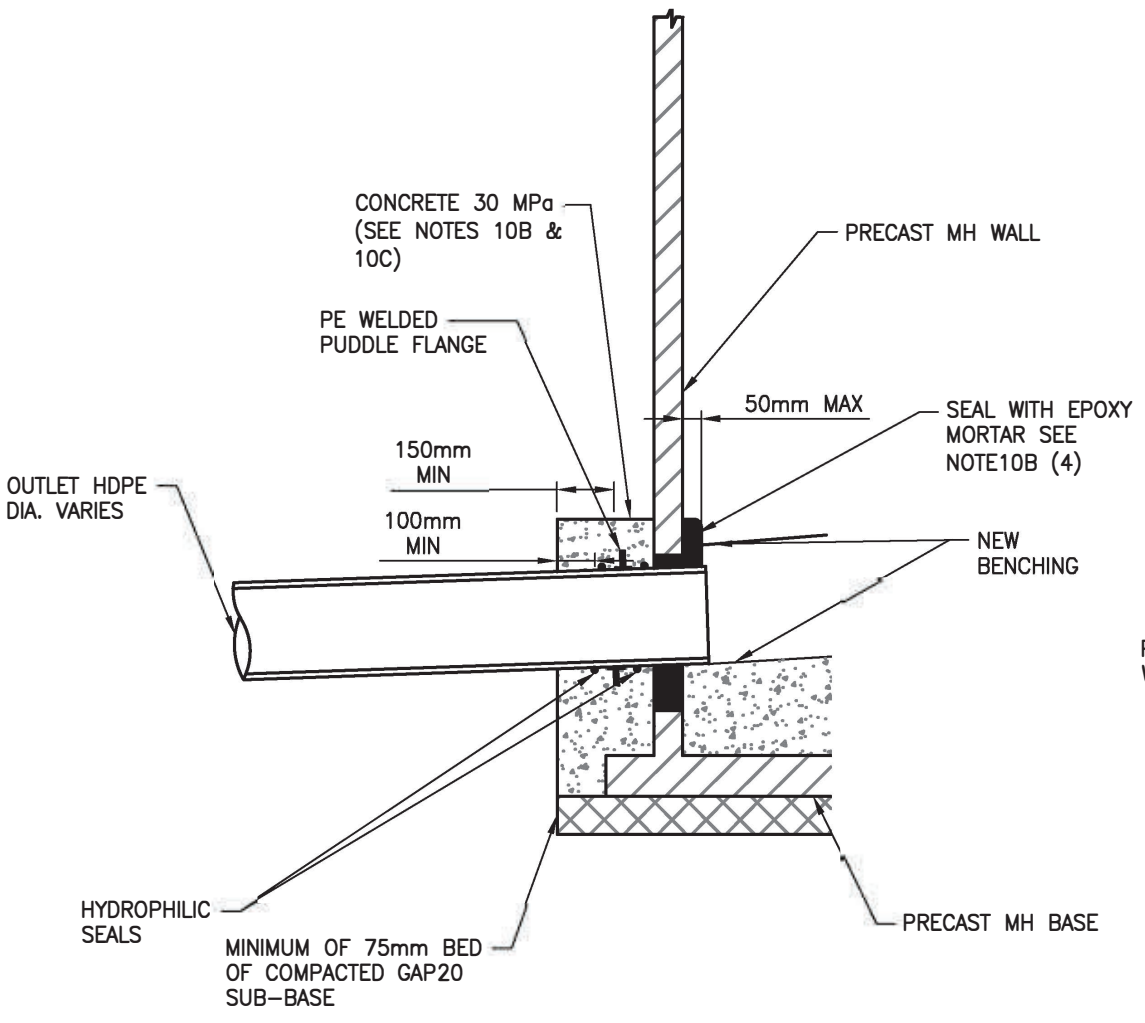


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SWCoP 1 OF 1
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SW09 3

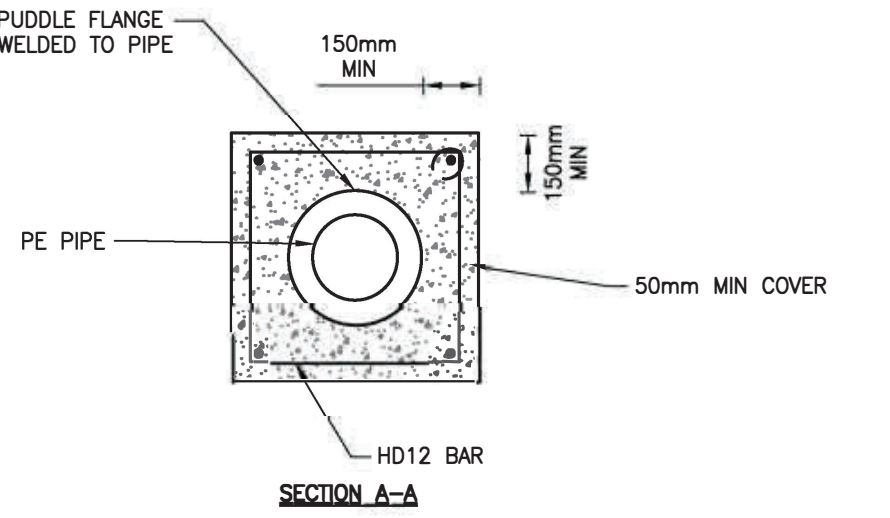
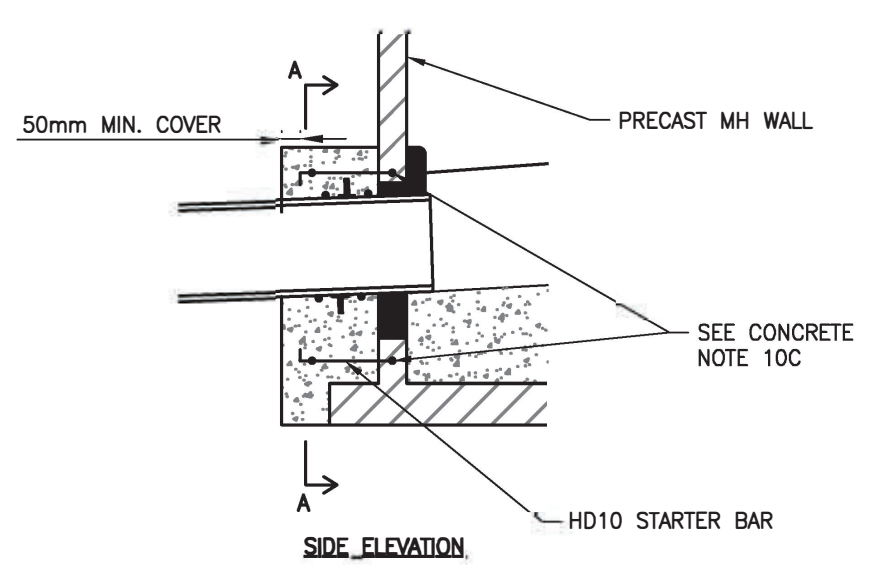
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HDPE SLIDING JOINT (DOWNSTREAM)



RESTRAINED JOINT (UPSTREAM)
 (REINFORCEMENT NOT SHOWN FOR CLARITY)



REINFORCEMENT DETAIL (FOR RESTRAINED JOINT)

10A: SLIDING JOINT NOTES

1. THE SLIDING SLEEVE IS TO BE MADE OF PVC, FRP OR VITRIFIED CLAY AND THE EXTERIOR SURFACE OF THE SLEEVE SHALL BE PRE-TREATED TO ALLOW CONCRETE TO BOND.
2. THE PE PIPE SHALL BE ALLOWED TO COOL DOWN FOR A PERIOD OF 24HRS PRIOR TO INSTALLATION OF THE SLIDING JOINT.
3. SPECIFIC DESIGN AND APPROVAL IS REQUIRED FOR PE PIPES GREATER THAN DN450.

10B: RESTRAINED JOINT NOTES

1. THE THICKNESS OF CONCRETE CAST AROUND THE PUDDLE FLANGE SHALL EXTEND BEYOND THE OUTSIDE WALL TO GIVE A TOTAL THICKNESS OF AT LEAST 250MM WITH AT LEAST 150MM BETWEEN THE OUTSIDE FACE OF THE PUDDLE FLANGE AND THE OUTSIDE OF THE CONCRETE BLOCK.
2. AN ELECTROFUSION COUPLER CAN BE USED INSTEAD OF THE PUDDLE FLANGE PROVIDED THAT THE 150MM MIN DISTANCE BETWEEN THE OUTSIDE END OF COUPLER AND THE OUTSIDE FACE OF CONCRETE IS MAINTAINED.
3. SPECIFIC DESIGN AND APPROVAL FOR PE PIPES GREATER THAN DN450.
4. THE GAP BETWEEN MH WALL AND PIPE SHALL BE A MIN. OF 30MM TO ALLOW FOR EPOXY MORTAR TO FILL THE VOID.

10C: CONCRETE NOTES.

1. THIS REINFORCEMENT DETAIL APPLIES FOR PIPE GRADES <7% ONLY. SPECIFIC DESIGN AND APPROVAL SHALL BE REQUIRED FOR PIPE GRADES >7%.
2. ALL CONCRETE TO HAVE A 28 DAYS STRENGTH OF 30MPa.
3. HD10 STARTER BARS AND HD12 BARS FOR ALL MHs.
4. PROVIDE 50 MM MIN. COVER TO ALL REINFORCEMENT.
5. STARTERS TO BE CHEMSET INTO MH WALL WHERE EMBEDMENT DEPTH TO MANHOLE WALL DOES NOT MEET MINIMUM MANUFACTURER REQUIREMENTS, EXTEND STARTER BAR THROUGH MANHOLE WALL AND SEAL WITH EPOXY MORTAR.
6. ALL REINFORCEMENT TO BE DEFORMED MILD STEEL.

STORMWATER CODE OF PRACTICE
 STANDARD DETAILS

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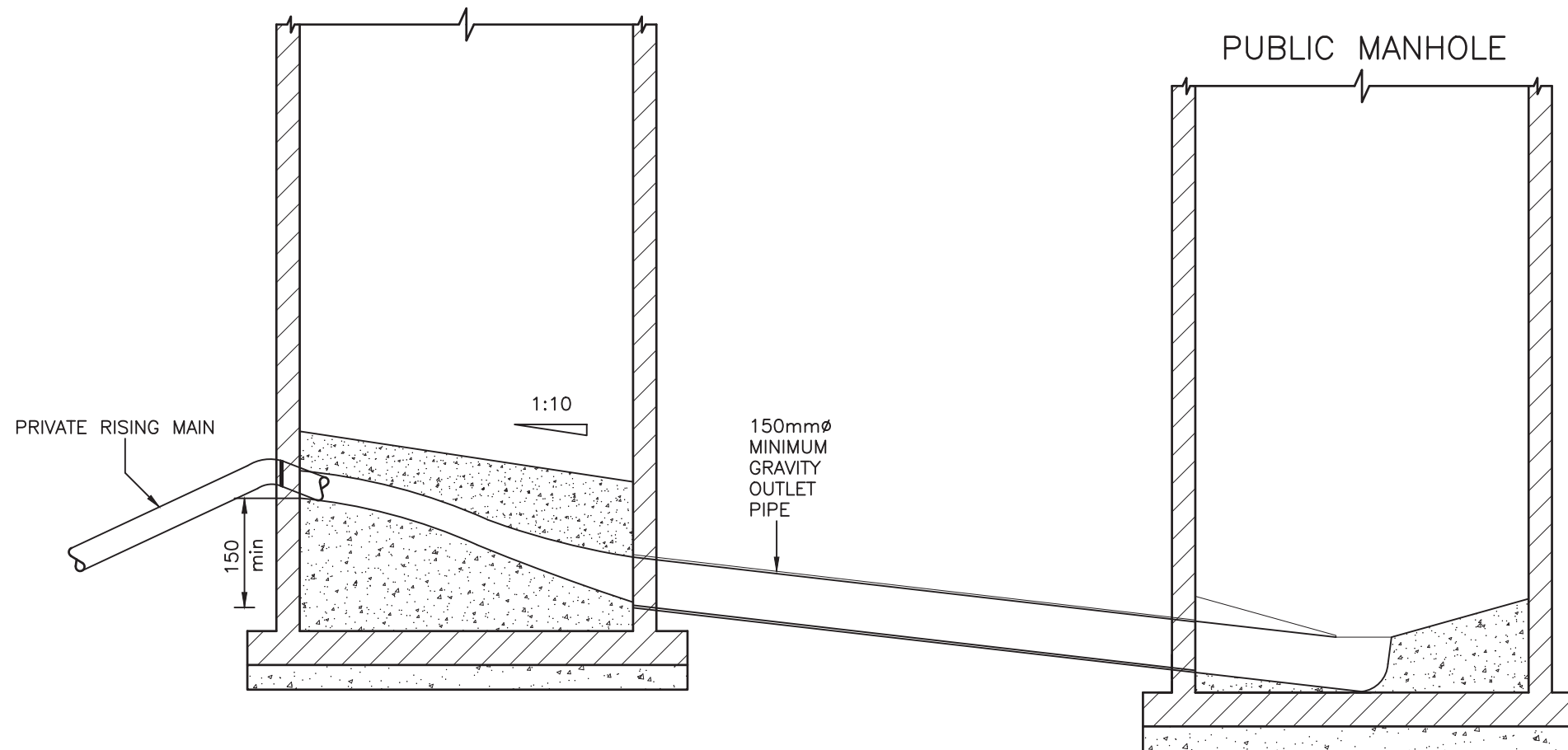
AUCKLAND COUNCIL
 STORMWATER MANHOLE-PE PIPE JOINT
 (FOR PE PIPES LESS THAN DN450)

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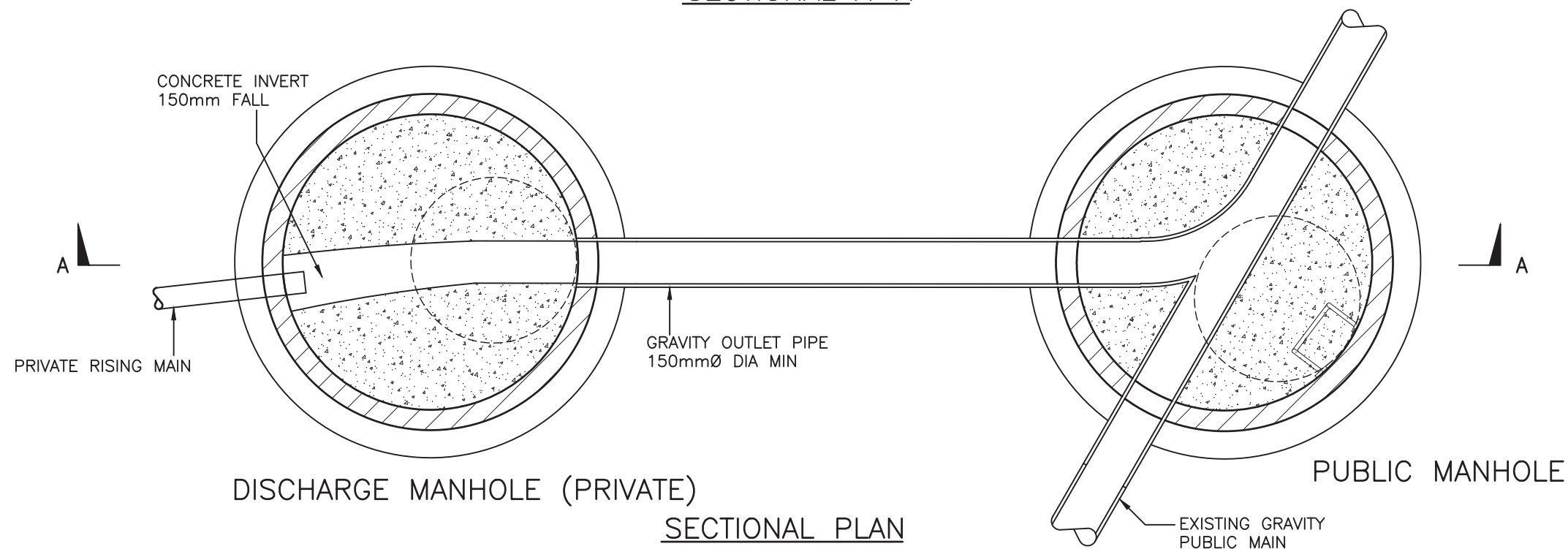
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DISCHARGE MANHOLE (PRIVATE)

PUBLIC MANHOLE



SECTIONAL A-A



SECTIONAL PLAN

NOTES:

1. ALL CONCRETE TO BE 25MPa.
2. A SINGLE PRIVATE CONNECTION TO A PUBLIC MAIN CAN BE MADE VIA A PRIVATE NON ACCESS CHAMBER WITH A 150mm MIN. GRAVITY PIPE FEED TO THE PUBLIC MAIN OR MANHOLE.
3. MANHOLE COVER AND STEP IRON LOCATION TO BE DETERMINED IN ACCORDANCE WITH SW05.
4. DISCHARGE MANHOLE SHALL ALWAYS REMAIN IN PRIVATE OWNERSHIP.
5. OWNERSHIP OF PIPELINE DOWNSTREAM OF DISCHARGE MANHOLE TO BE DETERMINED IN ACCORDANCE WITH SECTION 4.3.11 OF THE SWCoP.

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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AUCKLAND COUNCIL

RISING MAIN CONNECTION PRIVATE

ENVIRONMENTAL-SW



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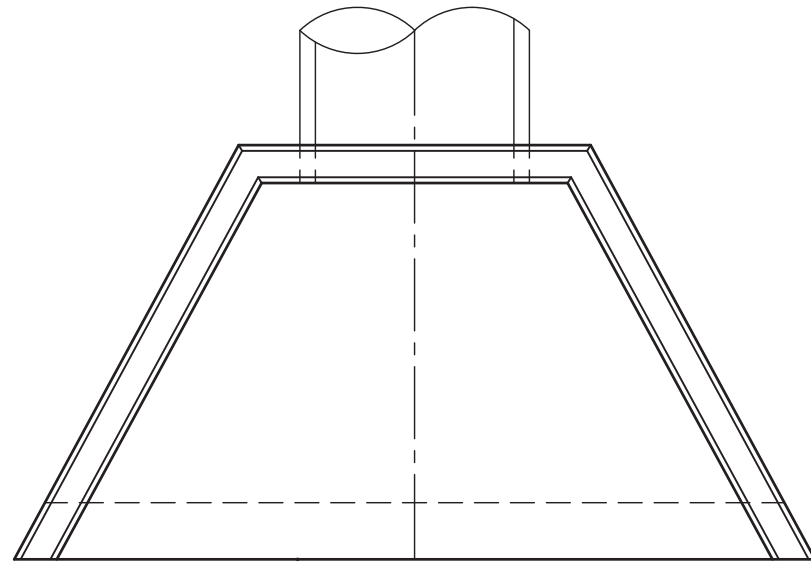
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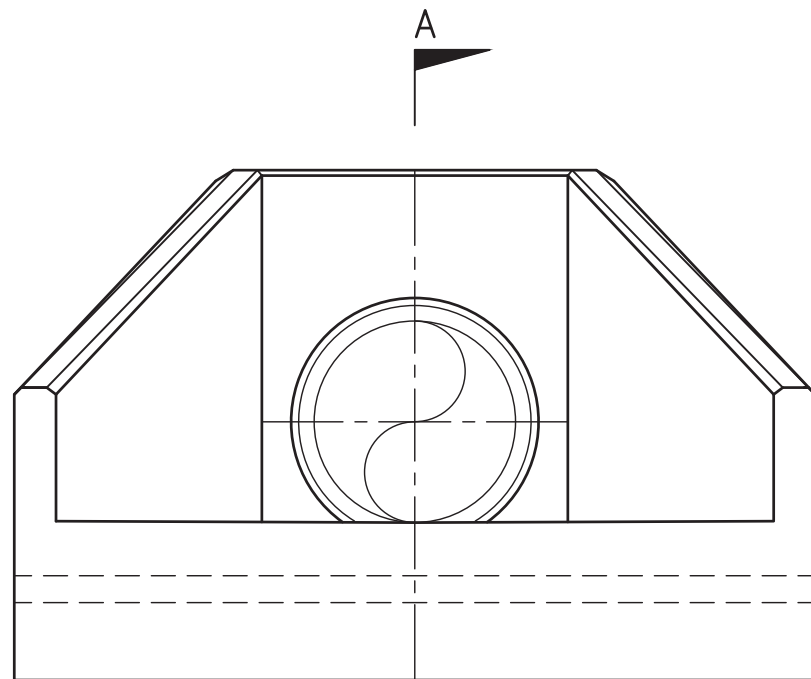
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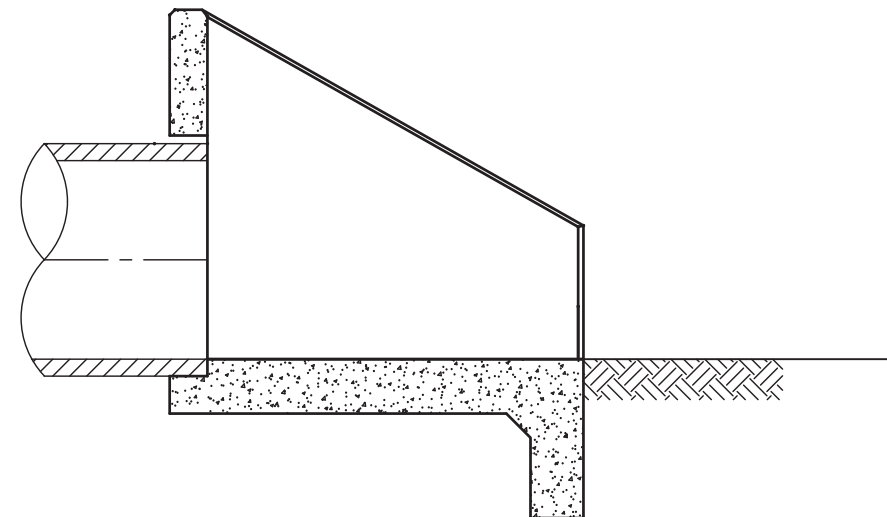
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PLAN



FRONT ELEVATION



SECTION AA

NOTES:

1. THIS DRAWING IS INTENDED TO PROVIDE AN OVERVIEW OF A TYPICAL CONFIGURATION FOR INLET/OUTLET STRUCTURES. WHERE STANDARD PRE-CAST PRODUCTS ARE NOT SUITABLE, SPECIFIC DESIGN IS REQUIRED.
2. DESIGN OF PRE-CAST INLET/OUTLET STRUCTURES SHALL INCLUDE ASSESSMENT OF THE STRUCTURE LOCATION AND THE VISIBILITY OF THE STRUCTURE. IT MAY BE NECESSARY TO SPECIFICALLY DESIGN THE STRUCTURE AND USE BASALT ROCKS EMBEDDED IN CONCRETE OR APPROVED ALTERNATIVE IN HIGH VISIBILITY AREAS.
3. FOR OUTLET STRUCTURES, SPECIFIC DESIGN OF SCOUR PREVENTION AND ENERGY DISSIPATION WILL BE REQUIRED IN ACCORDANCE WITH AUCKLAND COUNCIL TECHNICAL REPORT TR2013/018. ENERGY DISSIPATORS MAY INCLUDE BAFFLES, ROCK RIP-RAP OR RENO MATTRESSES (OR GABIONS).
4. FOR INLET STRUCTURES, SPECIFIC DESIGN OF SCOUR PREVENTION MEASURES SHALL BE REQUIRED IN ACCORDANCE WITH AUCKLAND COUNCIL TECHNICAL REPORT TR2013/018.
5. ALL CONCRETE SHALL BE ORDINARY GRADE 40MPa.
6. THERE SHALL BE AT LEAST TWO BARS OF REINFORCING (WHETHER MESH OR MILD STEEL BARS), OVER THE TOP OF THE PIPE.
7. ALL REINFORCING BARS SHALL BE "GRADE 500E" AND MESH SHALL BE "GRADE 500L".
8. THE ENGINEER SHALL ENSURE THE STRUCTURE IS PLACED ON ADEQUATE FOUNDATION MATERIAL.
9. FENCING AROUND INLET/OUTLET STRUCTURES IS REQUIRED UNLESS IT CAN BE DEMONSTRATED THAT HUMAN ACCESS TO THE INLET/OUTLET STRUCTURE IS UNLIKELY AND/OR THE HEIGHT OF THE STRUCTURE IS LESS THAN 1.0m. FENCING SHALL BE IN ACCORDANCE WITH DRAWING SW20.
10. INLETS TO THE STORMWATER NETWORK SHALL BE FITTED WITH A SAFETY GRILLE. THE GRILLE SHALL BE SPECIFICALLY DESIGNED AND REQUIRES AUCKLAND COUNCIL APPROVAL. FOR CULVERT INLETS, A RISK ASSESSMENT SHOULD BE COMPLETED TO DECIDE WHETHER A SAFETY GRILLE IS REQUIRED. SEE SECTION 4.3.9.9 FOR FURTHER DETAILS.

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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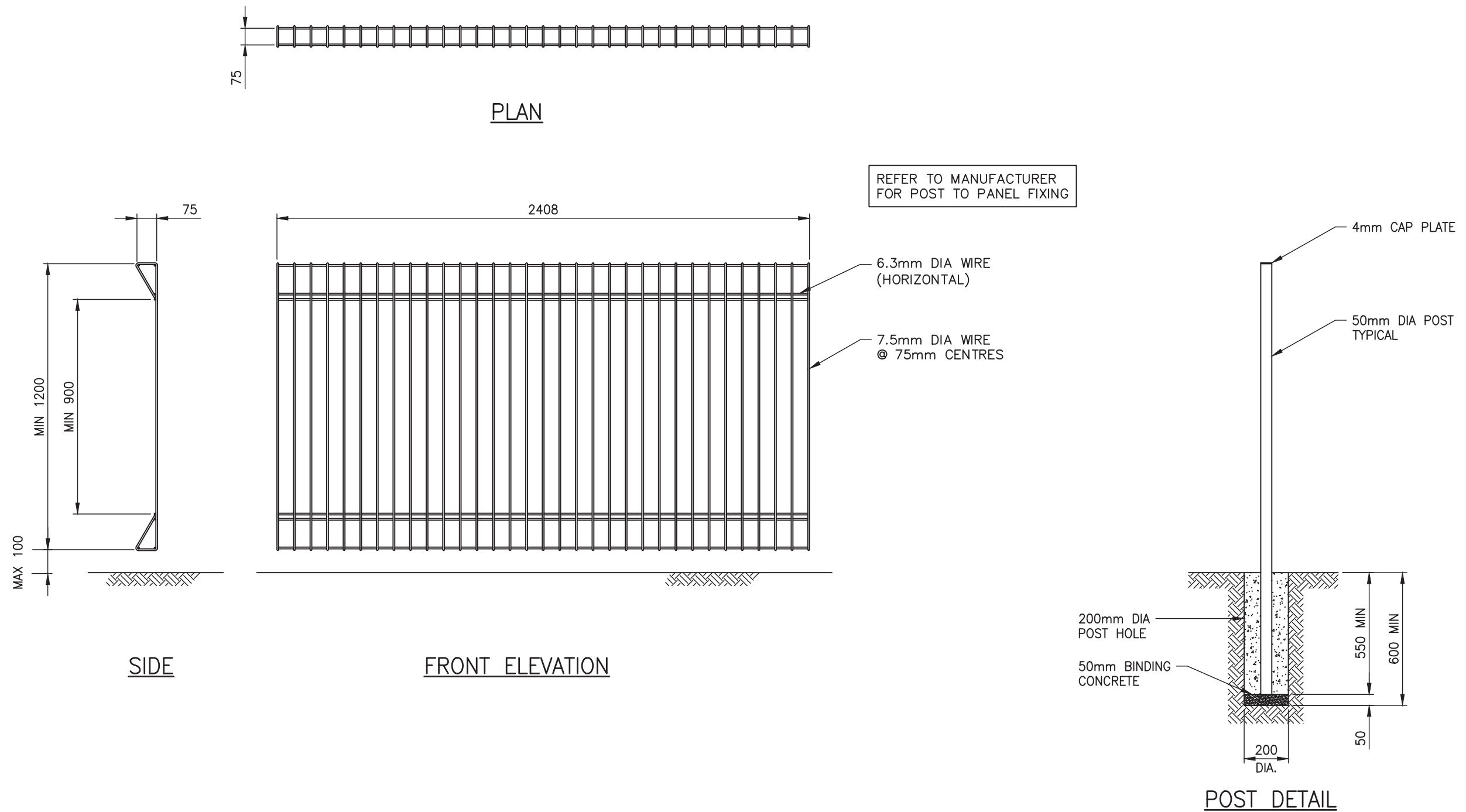
AUCKLAND COUNCIL
 STORMWATER INLET/OUTLET STRUCTURES
 TYPICAL CONFIGURATION

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NOTES:

1. FENCE PANELS SHALL BE HOT DIPPED GALVANISED AND POWDER COATED BLACK.
2. FENCE PANELS SHALL NOT HAVE MORE THAN 100mm GAP FROM GROUND LEVEL TO INSTALLED PANEL.
3. POSTS SHALL BE 50mm DIA HOT DIPPED GALVANISED PIPE AND POWDER COATED BLACK.
4. POSTS SHALL BE INSTALLED VERTICAL.

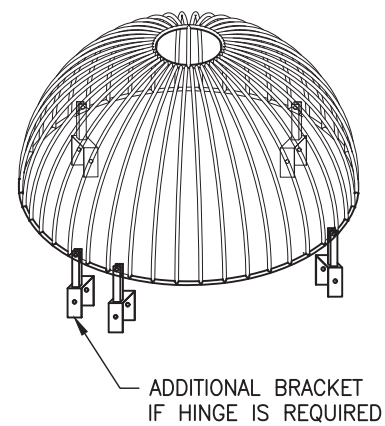
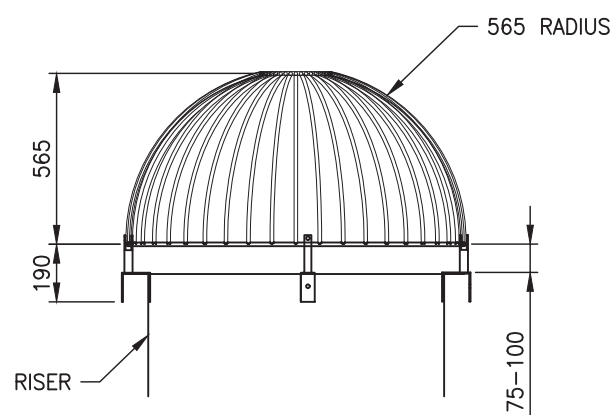
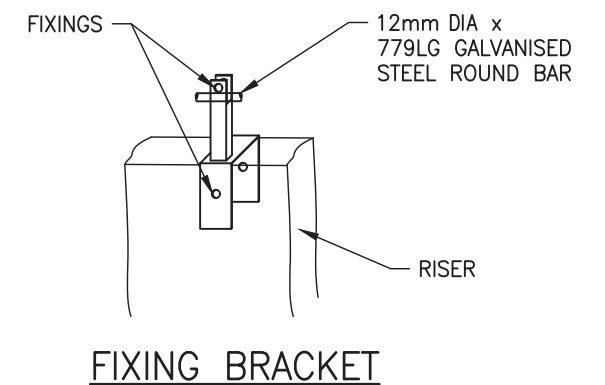
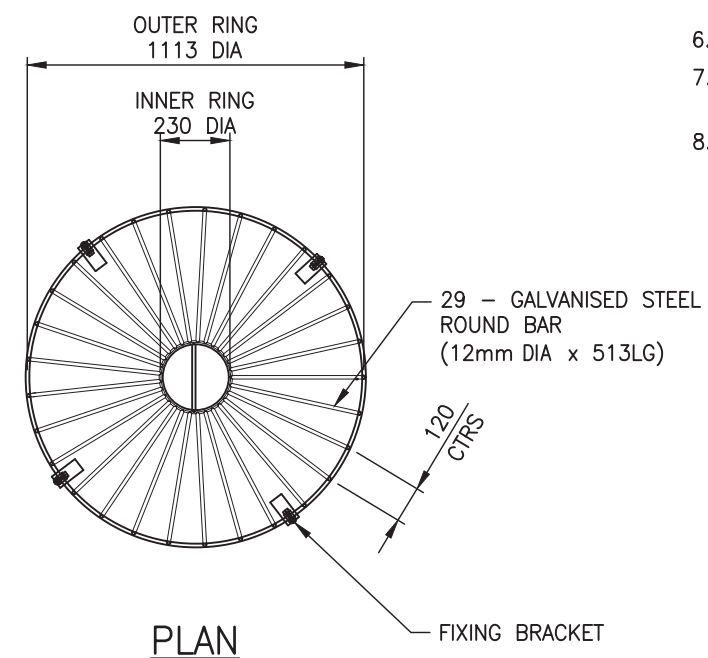
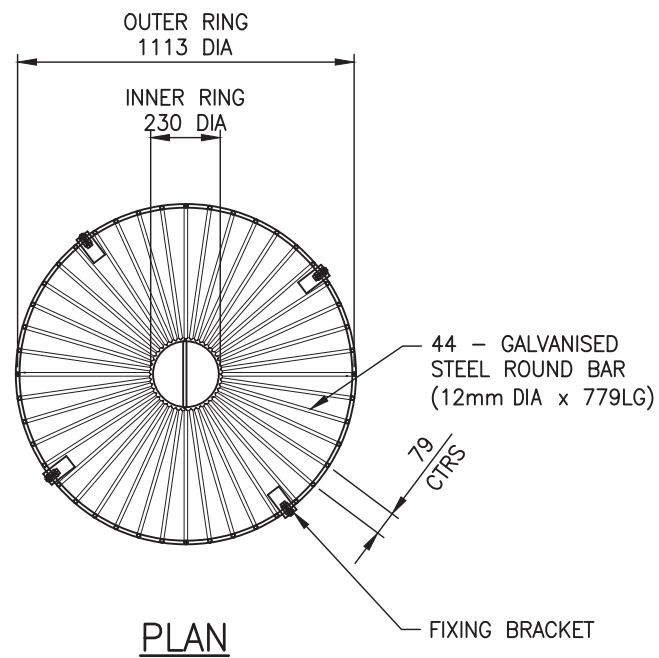


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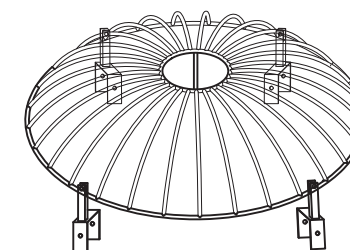
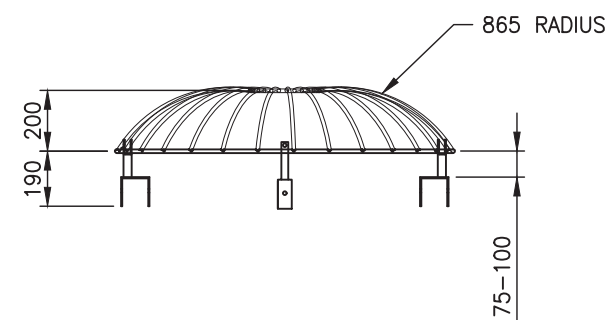
AUCKLAND COUNCIL
STORMWATER INLET/OUTLET STRUCTURES
STANDARD SAFETY FENCE DETAIL

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TYPE 1



TYPE 2

NOTES:

1. THE SCRUFFY DOME GRILLE PROVIDES A DEBRIS SCREEN. TYPICAL LOCATIONS FOR SCRUFFY DOMES INCLUDE PARKS, WETLANDS AND OVERLAND FLOW PATHS.
2. LOCKABLE HINGED VERSIONS ARE AVAILABLE AND MAY BE SPECIFIED WHERE NEEDED.
3. A MINIMUM OF 450mm SUMP DEPTH SHALL BE PROVIDED IN THE MANHOLE.
4. THERE SHALL BE NO SCRUFFY DOME GRILLES IN FOOTPATHS, DRIVEWAYS OR ROADWAYS.
5. SCRUFFY DOME BRACKETS SHALL BE BOLTED TO THE RISER WITH GALVANISED STEEL BOLTS (CLEAR OF RISER REINFORCING).
6. PAINTING MAY BE REQUIRED IN CERTAIN LOCATIONS.
7. FOR SCRUFFY DOMES ON RISERS GREATER THAN 1050mm DIA, SPECIFIC DESIGN IS REQUIRED.
8. SCRUFFY DOMES IN PONDS AND WETLANDS MUST BE HINGED AND LOCKABLE. OUTLET RISER MUST BE LOCATED SUCH AS TO FACILITATE EASY AND SAFE ACCESS FOR CLEARING AND MAINTENANCE DURING STORM EVENTS.

AUCKLAND COUNCIL

**DEBRIS CONTROL SCREEN FOR 1050 DIA RISER
SCRUFFY DOME TYPICAL DETAIL**

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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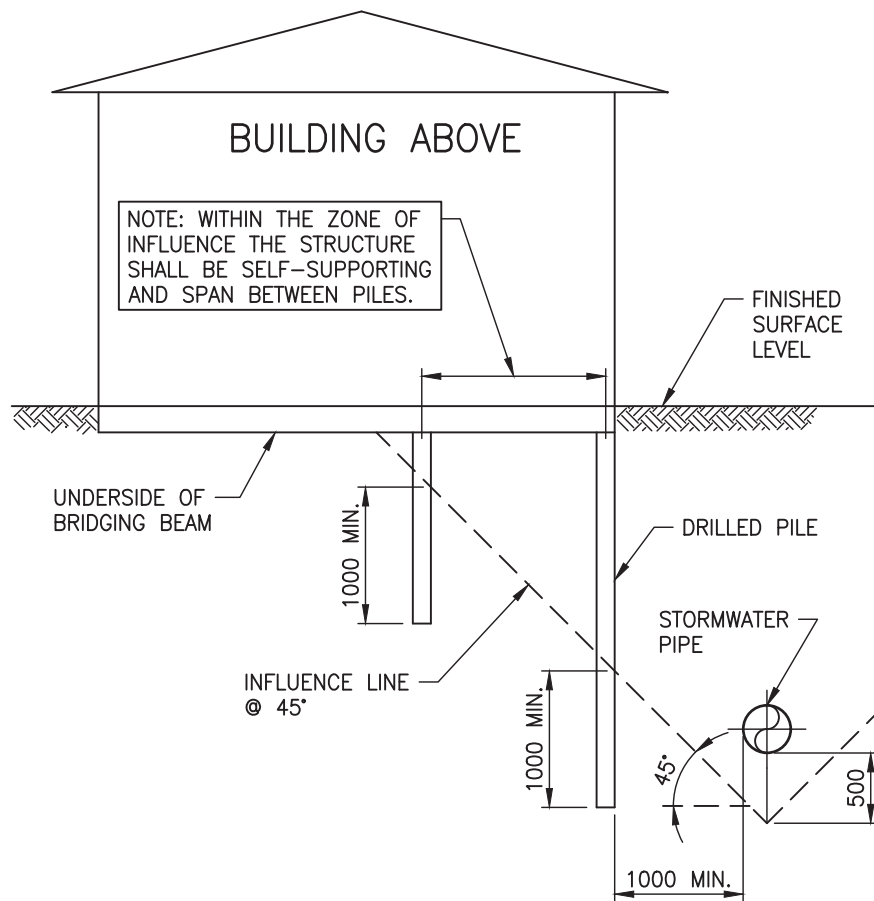
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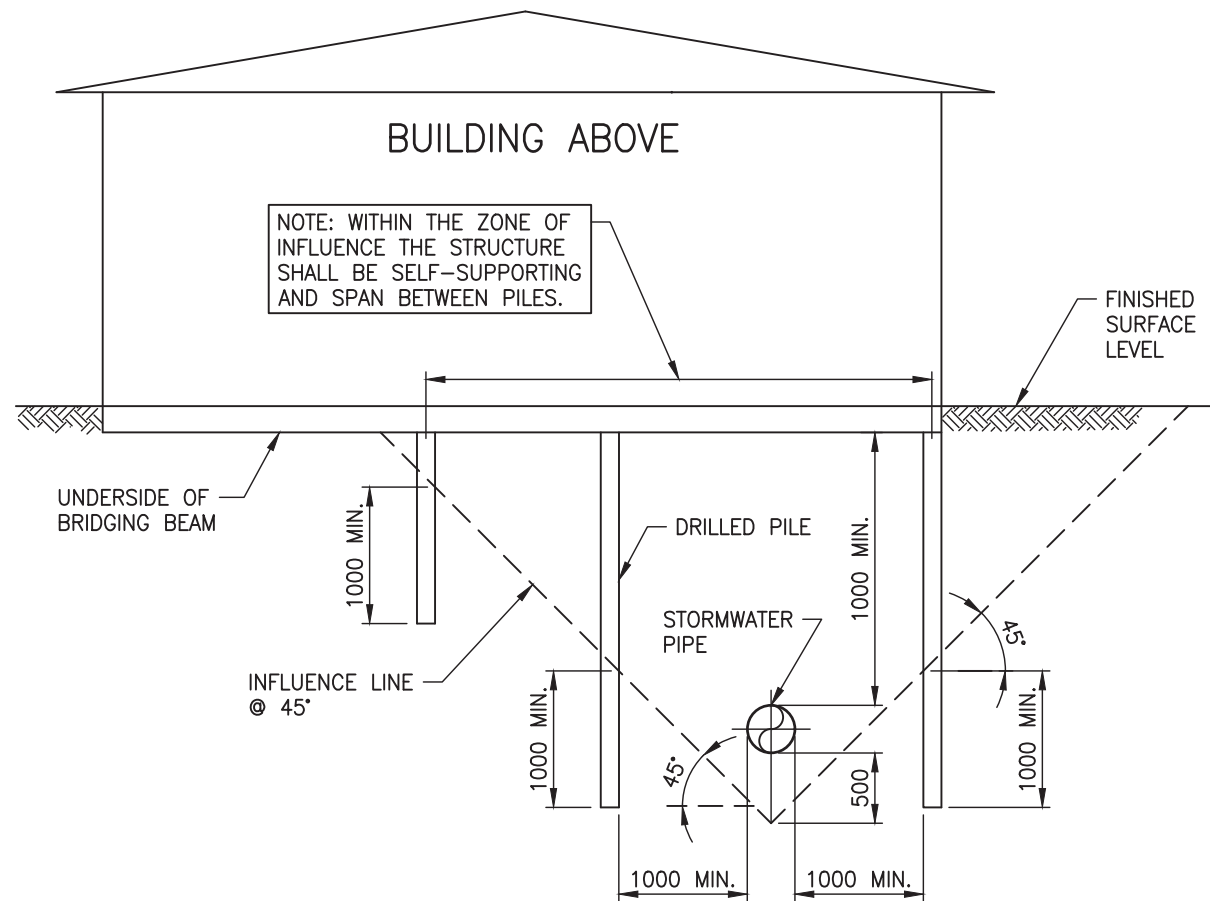


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BUILD CLOSE



BUILD OVER

GENERAL NOTES:

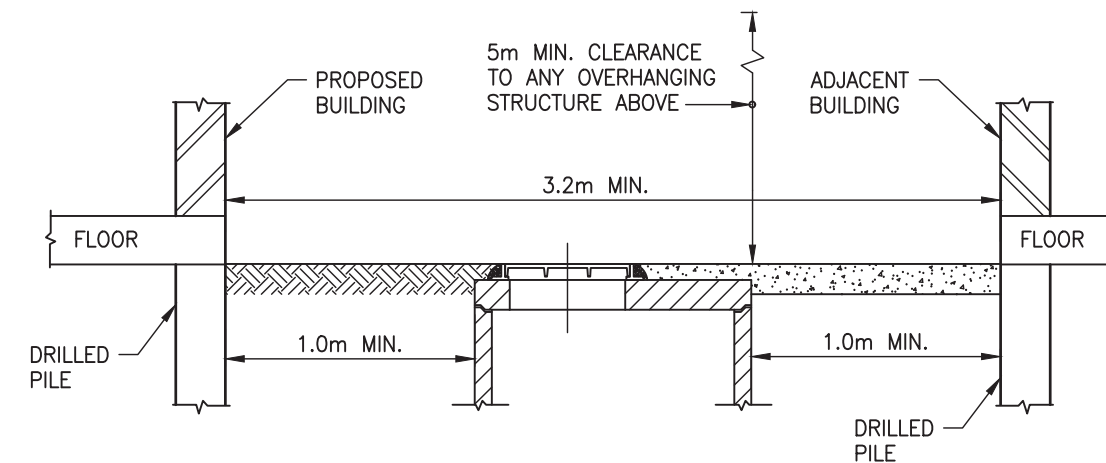
1. THE INFORMATION ON THIS PAGE IS INTENDED TO SHOW EXAMPLES OF TYPICAL SCENARIOS AND SHALL BE USED FOR GENERAL GUIDANCE PURPOSES ONLY. SIGNIFICANT VARIATIONS ON A SITE-BY-SITE BASIS ARE TO BE EXPECTED AND IT IS IN NO WAY IMPLIED THAT MEETING ANY OF THESE REQUIREMENTS WILL GUARANTEE APPROVAL.
2. WHERE CONSTRUCTION WORKS ARE PROPOSED IN THE VICINITY OF EXISTING PUBLIC STORMWATER ASSETS, ANY NECESSARY MEASURES TO PROTECT SUCH ASSETS SHALL BE IMPLEMENTED, IN ACCORDANCE WITH SECTION 4.3.23 OF THE SWCoP.
3. REQUIREMENTS FOR FOUNDATION DESIGN, ETC. APPLY TO BOTH SIDES OF THE PIPE.
4. NO DRIVEN PILES ARE PERMITTED WITHIN 10m OF BRICK STORMWATER STRUCTURES, OR WITHIN 5m OF ALL OTHER STORMWATER STRUCTURES.
5. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL FOR DRIVEN PILES IN PARTIALLY DRILLED HOLES, WITHIN THE 5m-10m ZONE.
6. PILES THAT MAY BE REQUIRED TO RESIST HORIZONTAL FORCES WILL REQUIRE SPECIFIC DESIGN.
7. PILE/FOOTING LOCATION POINT MUST BE BELOW 45° "ZONE OF INFLUENCE".
8. ALL MANHOLES SHALL HAVE 24 HOURS UNOBSTRUCTED ACCESS.
9. MANHOLES IN BASEMENTS, OR IN LOCATIONS WHERE SUFFICIENT CLEARANCE IS UNAVAILABLE, ARE NOT PERMITTED.
10. ALL PIPE 'WORK OVER' WILL REQUIRE SPECIFIC APPROVAL BY AUCKLAND COUNCIL.
11. REFER TO SECTION 4.3.23 OF THE SWCoP FOR PIPE 'WORK OVER' REQUIREMENTS.
12. FOR MANHOLES GREATER THAN 4m DEEP OR LARGER THAN 1200mm DIA. SPECIFIC DESIGN (INCLUDING CLEARANCE REQUIREMENTS) IS REQUIRED.
13. SPECIFIC APPROVAL FROM COUNCIL IS REQUIRED FOR WORKS WITHIN 10 METERS OF A RISING MAIN.
14. WORKS OVER RISING MAIN IS NOT ALLOWED.

'WORKS CLOSE' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL IF WORKS ARE ADJACENT TO PIPES LARGER THAN 375mm INTERNAL DIAMETER, OR GREATER THAN 2.0m DEEP.
3. BUILDING SHALL BE OUTSIDE ALL OVERLAND FLOW PATHS AND FLOODPLAINS. SEE SECTION 4.3.5.6 AND 4.3.5.7 OF THE SWCoP FOR FURTHER DETAILS.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.

'WORKS OVER' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. THE DETAIL APPLIES TO STORMWATER PIPES ≤ 375mm NOMINAL DIAMETER AND ≤ 2.0m DEPTH TO INVERT.
3. WORKS OVER PIPES LARGER THAN 375mm NOMINAL DIAMETER IS NOT ALLOWED.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.
5. BRIDGING IS NOT ALLOWED OVER PIPES WHERE CLEAR VERTICAL SEPARATION DISTANCE FROM TOP OF PIPE TO UNDERSIDE OF BRIDGING BEAM IS LESS THAN 1.0m.




MANHOLE CONSTRUCTION CLEARANCE

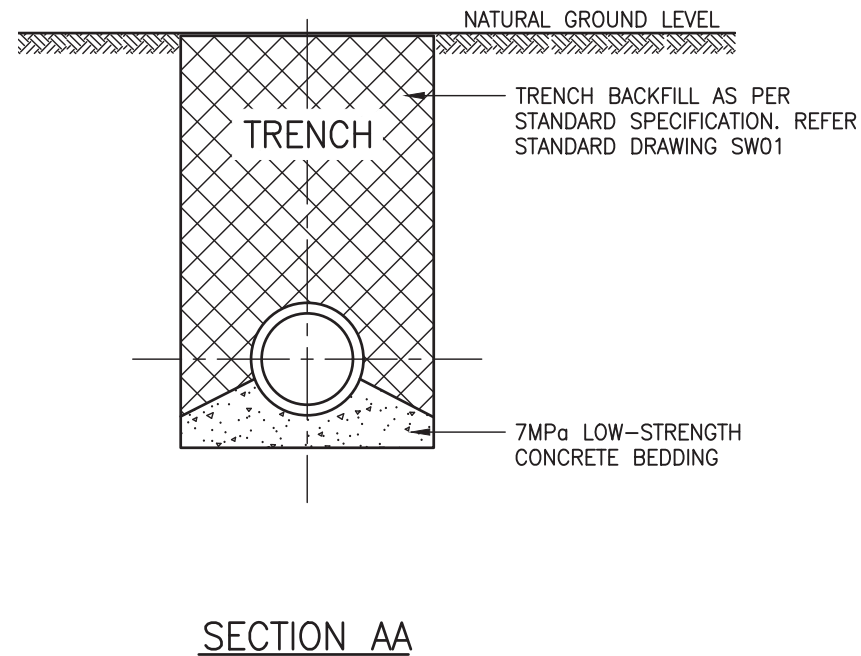
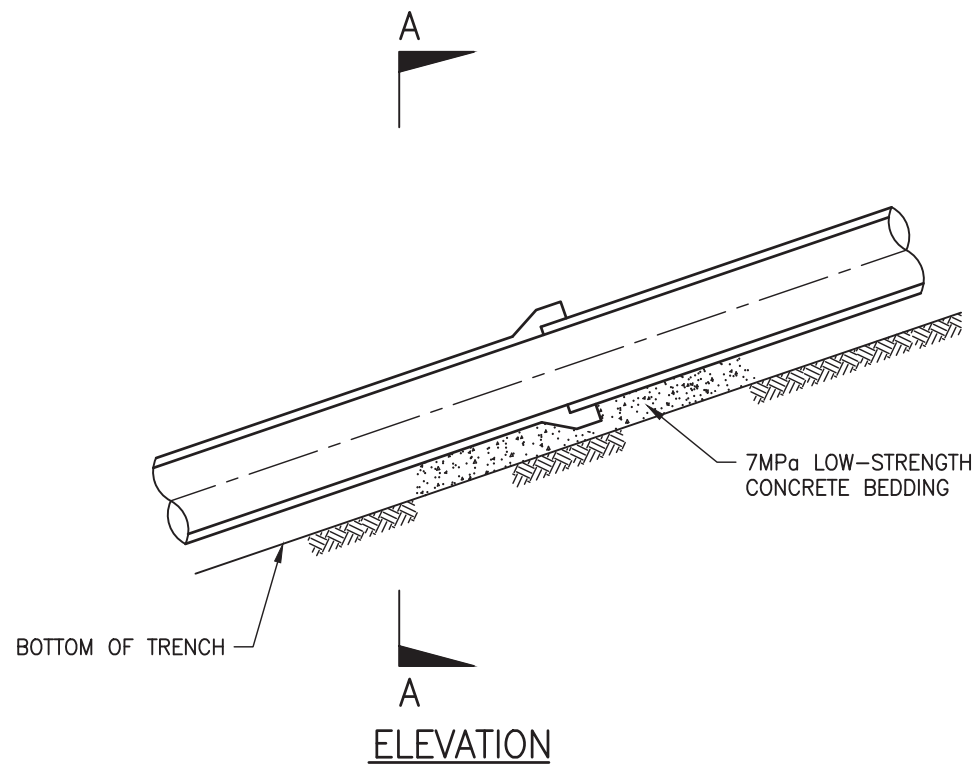
AUCKLAND COUNCIL

STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS
MANHOLES NEAR WORKS AND WORKS CLOSE TO, OR OVER, PIPES

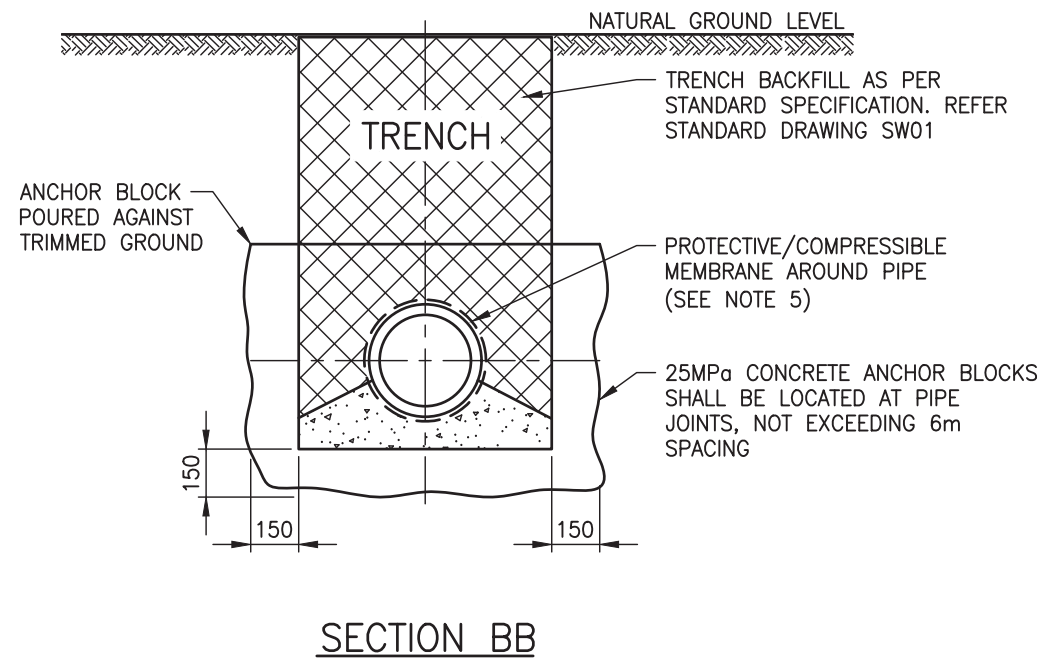
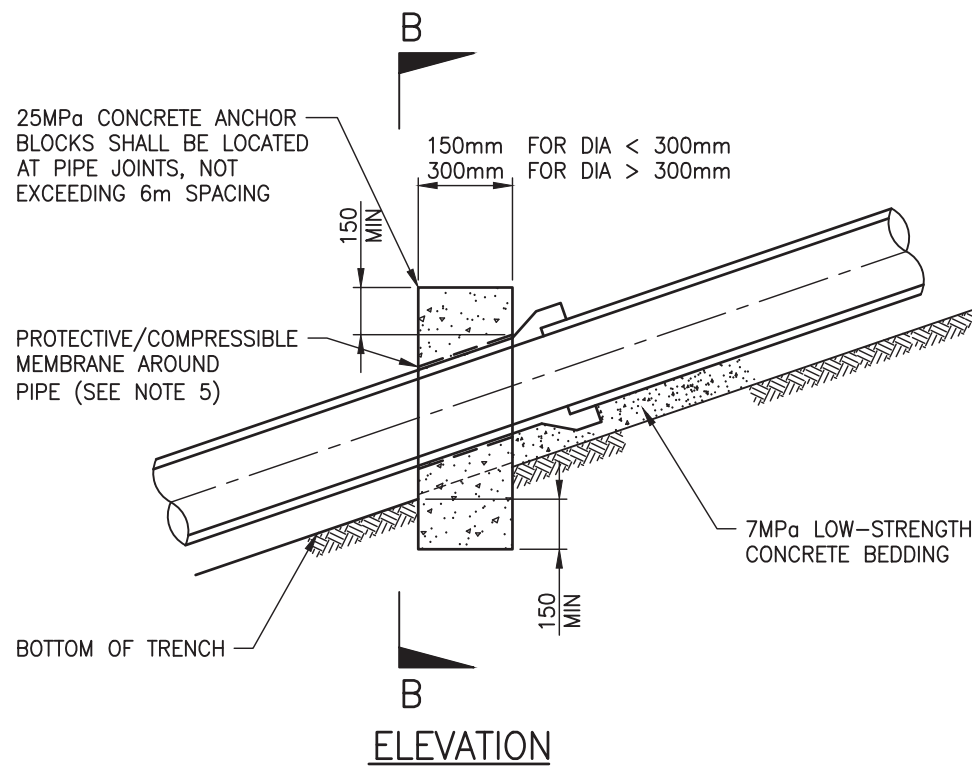
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BEDDING FOR PIPES ON GRADIENTS BETWEEN 10% AND 20%



ANCHOR BLOCKS FOR PIPES ON GRADIENT > 20%

NOTES:

1. USE LOW-STRENGTH CONCRETE (7MPa) BEDDING FOR PIPES ON GRADIENTS BETWEEN 10% AND 20%.
2. USE ANCHOR BLOCKS FOR PIPES ON GRADIENTS STEEPER THAN 20% (1 IN 5).
3. SPECIFIC DESIGN AND SPACING MAY BE NEEDED FOR PIPES ON GRADIENTS >30% OR WHERE GROUNDWATER IS CONSIDERED SIGNIFICANT.
4. ANCHOR BLOCK TO BE CONSTRUCTED ON LOWER SIDE OF JOINT.
5. PIPE SHALL BE WRAPPED FOR LENGTH OF THE ANCHOR BLOCK AT THE CONCRETE INTERFACE. WRAPPING SHALL BE COMPRESSIBLE MATERIAL, (e.g. DENSO TAPE OR POLYETHYLENE FILM).
6. WHERE PIPES ARE EMBEDDED IN LOW-STRENGTH CONCRETE, A TRANSVERSE EXPANSION JOINT SHALL BE PROVIDED AT EACH JOINT.
7. FOR FLEXIBLE PIPELINES, UP TO 300mm DIA, ON GRADIENTS OF 10% AND GREATER, REQUIRED BENCHING DEPTHS WITHIN THE DOWNSTREAM MANHOLE CAN BE REDUCED, BY THE REDUCTION OF THE GRADIENT IMMEDIATELY OUTSIDE THE MANHOLE. THIS MAY BE ACHIEVED BY INSTALLING A MANUFACTURED, PRE-FORMED BEND WITH VERTICAL RADIUS MIN. 8x INSIDE PIPE DIAMETER.

AUCKLAND COUNCIL

**STORMWATER LINES
STEEP GRADIENTS AND ANCHOR BLOCKS**

STORMWATER CODE OF PRACTICE
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CAD FILENAME: AC-STD-SW23.DWG

ENVIRONMENTAL-SW



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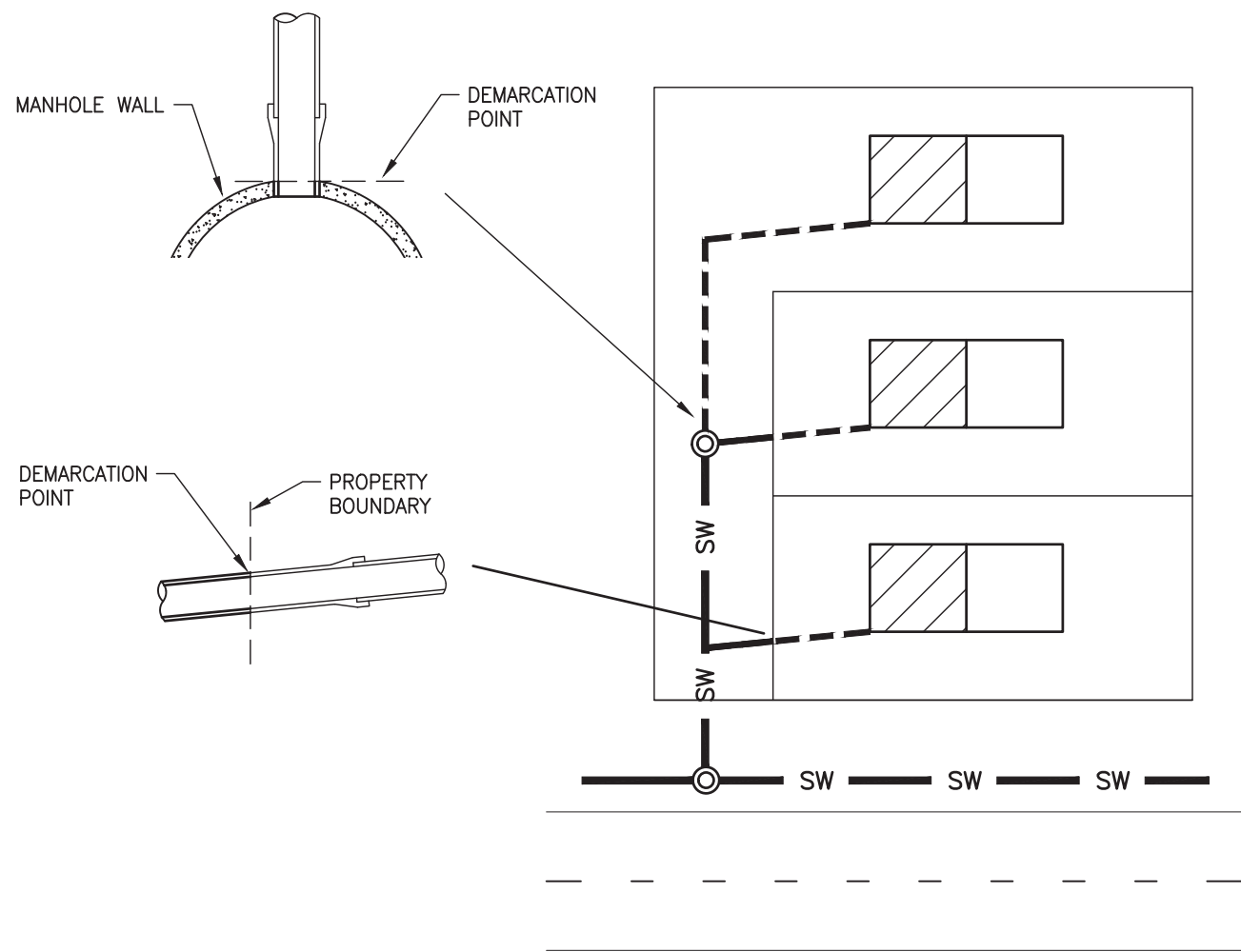
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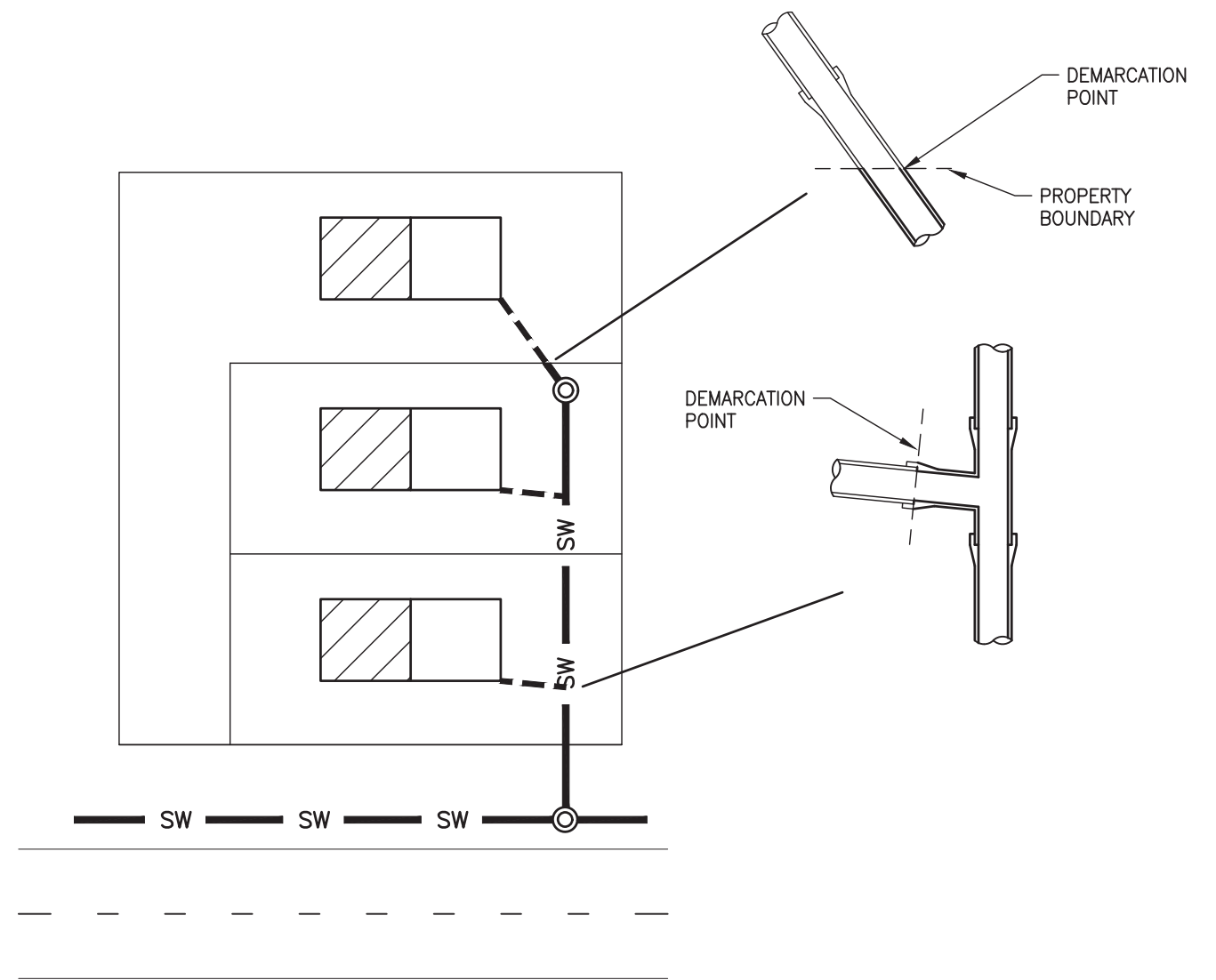
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PREFERRED CONNECTION SCENARIO

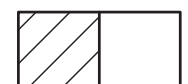





ALTERNATIVE CONNECTION SCENARIO
(REFER NOTE 4)

NOTES:

1. MINIMUM PIPELINE DIAMETER ARE SUBJECT TO 4.3.9.5
2. MINIMUM CONNECTION TO PUBLIC MAINS REQUIREMENTS ARE SUBJECT TO 4.3.11 & 4.3.12
3. MINIMUM REQUIREMENTS FOR MANHOLE AND NON-ACCESS CHAMBERS ARE SUBJECT TO 4.3.10
4. ALTERNATIVE CONNECTION SCENARIO TO BE USED ONLY WHEN NOT PRACTICABLE TO INSTALL PIPELINE IN SHARED ACCESS WAY AREA AND IS SUBJECT TO APPROVAL BY AUCKLAND COUNCIL.

LEGEND:

-  DWELLING
-  PUBLIC MAIN
-  CHAMBER
-  PRIVATE CONNECTION

AUCKLAND COUNCIL

STORMWATER BOUNDARIES – CONNECTIONS IN RESERVE LAND

STORMWATER CODE OF PRACTICE
STANDARD DETAILS

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ENVIRONMENTAL-SW

ORIGINAL SCALE A3
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DRAWING SET SHEET

SWCoP 2 OF 2

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