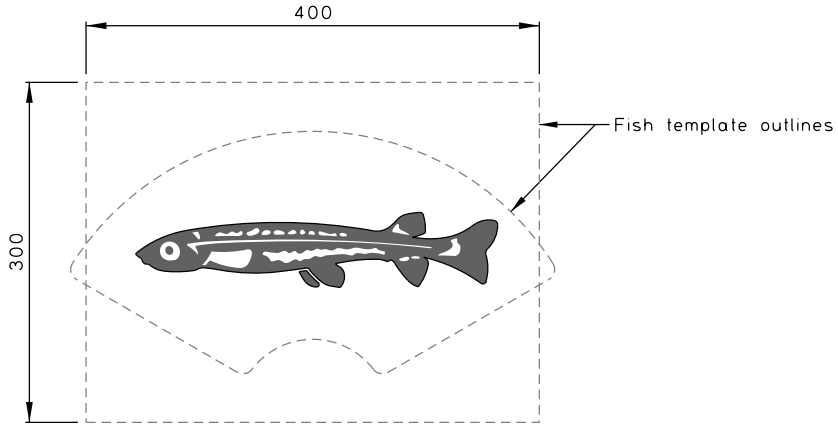
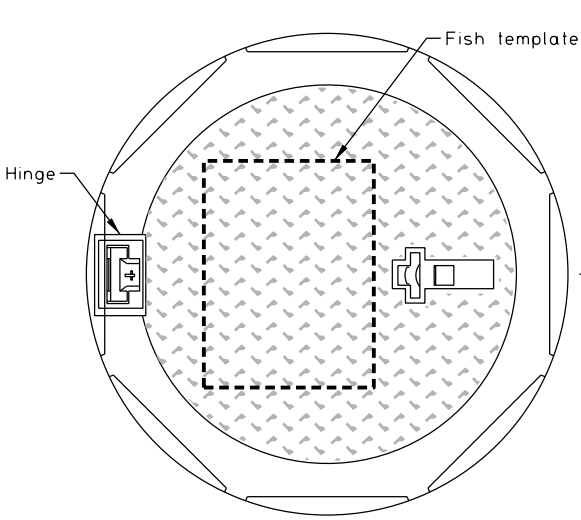
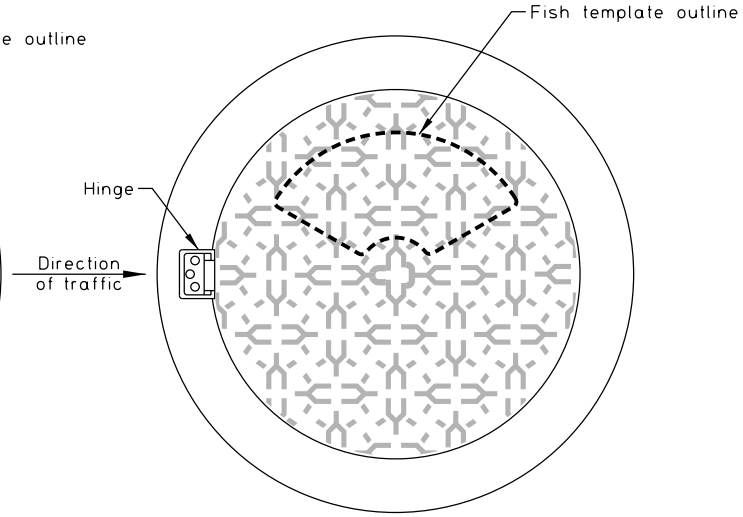
DS030101F



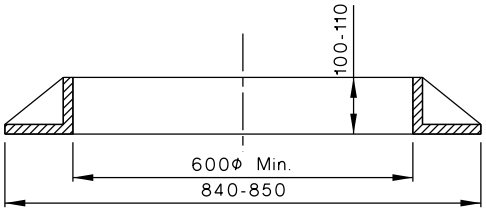
OPTIONAL
FISH TEMPLATE



FRAME PLAN



FRAME PLAN



TYPICAL SECTION

NOTES:

1. Manholes to comply with CCC approved materials list including lid markings (not shown).
2. Plan and section are diagrammatic.
3. Sump grates to be AS 3996 Class C.
4. Fish template dwg available from CCC on request.
5. Manhole hinge to be installed in direction of traffic.

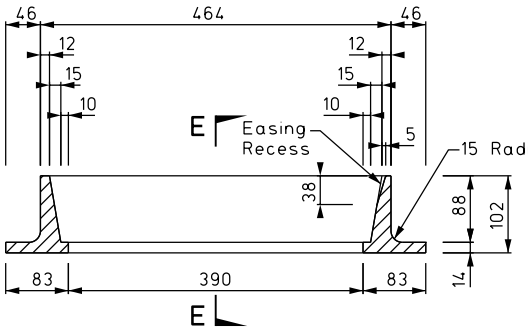
Christchurch City Council

CIRCULAR MANHOLE FRAMES & COVERS

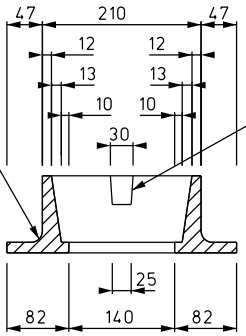
ISSUE DATE	NOV 2022

SD301

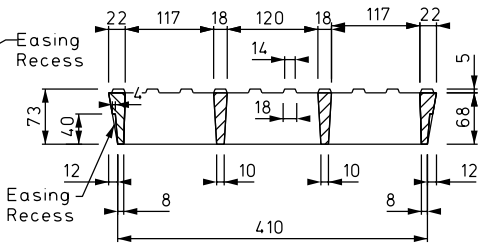
DS030102B



SECTION D-D



SECTION E-E



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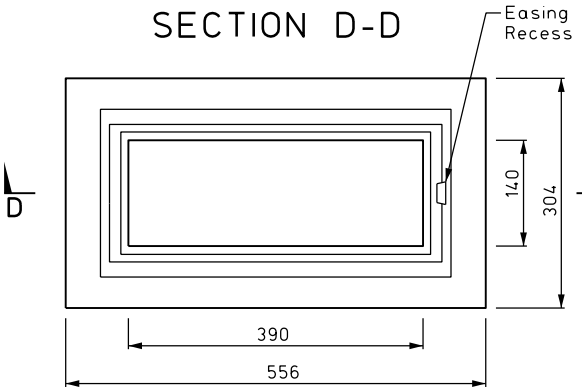
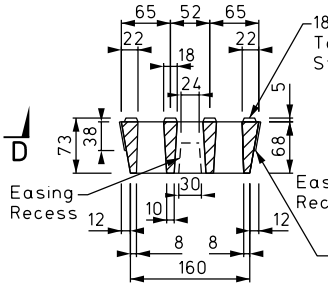
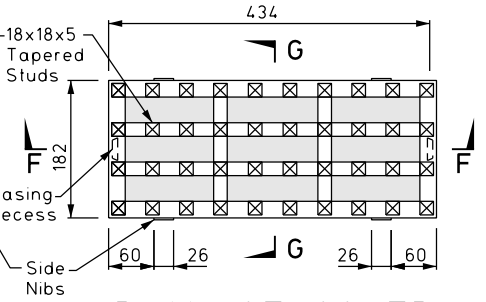


PLAN OF VENT FRAME

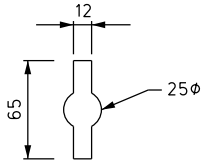


SECTION G-G

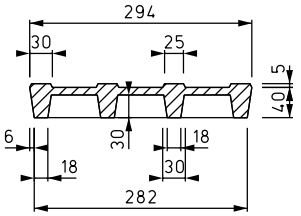


PLAN OF COVER

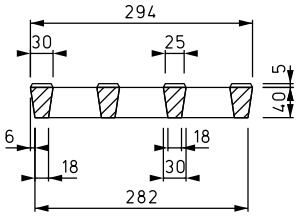
VENT FRAME AND COVER



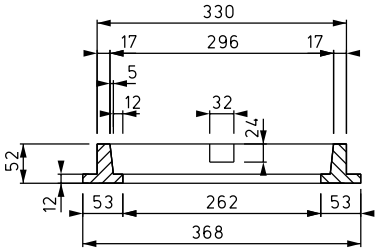
KEYWAY



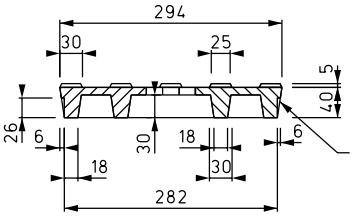
SECTION I-I



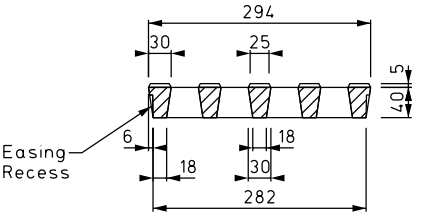
SECTION K-K



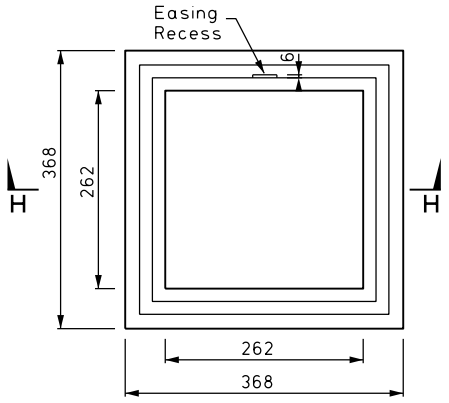
SECTION H-H



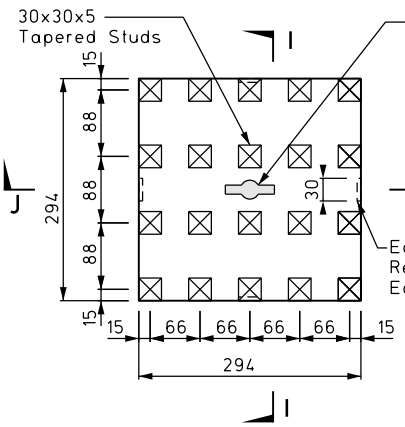
SECTION J-J



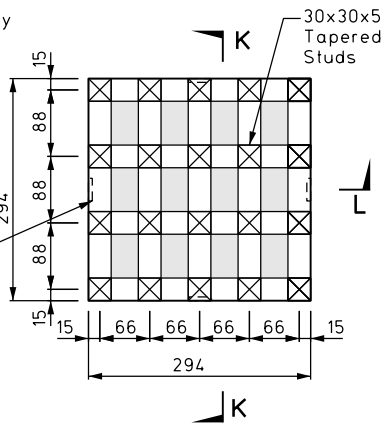
SECTION L-L



PLAN OF FRAME



PLAN OF COVER WITHOUT HOLES



PLAN OF COVER WITH HOLES

TRAFFICABLE HOUSE DRAIN SUMP FRAME AND COVERS

Christchurch City Council

MANHOLE VENT & TRAFFICABLE HOUSE DRAIN SUMP FRAMES & COVERS

ISSUE DATE: OCT 2016

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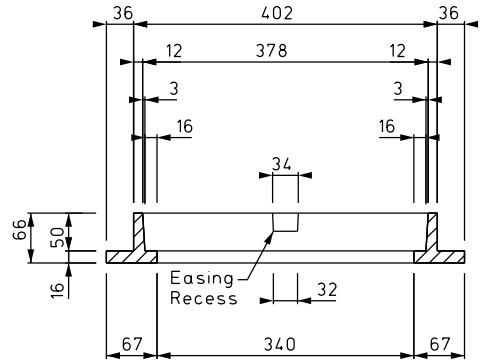
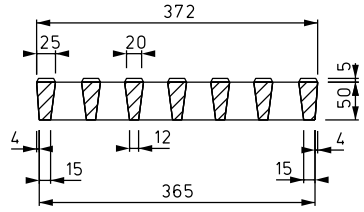
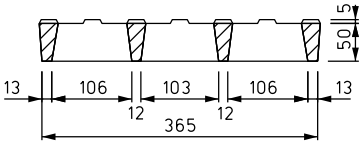
DS030103B



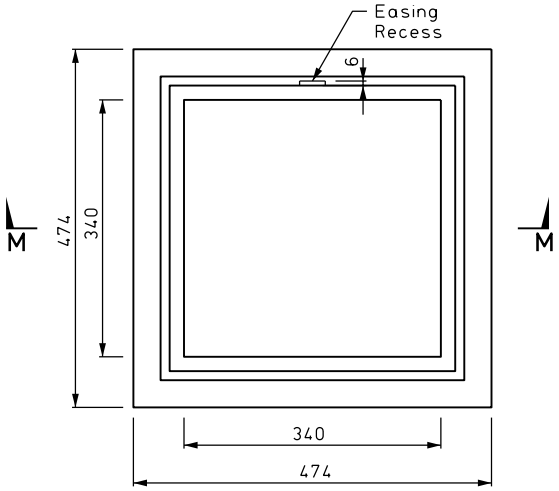
SECTION M-M



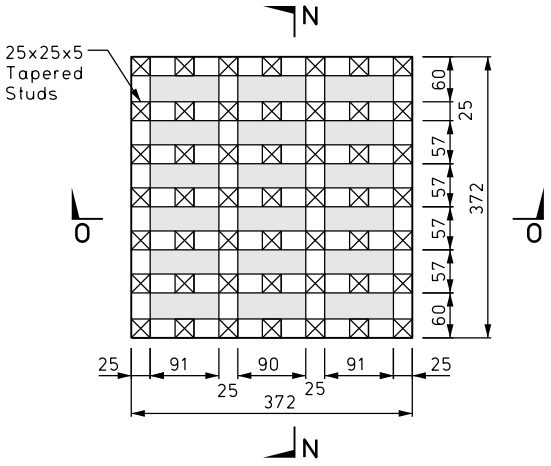
SECTION N-N



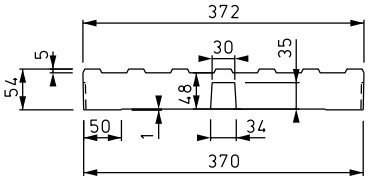
SECTION O-O



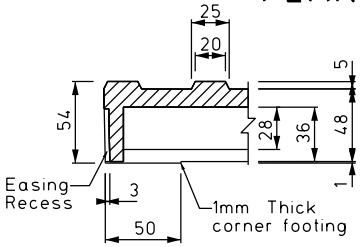
PLAN OF FRAME



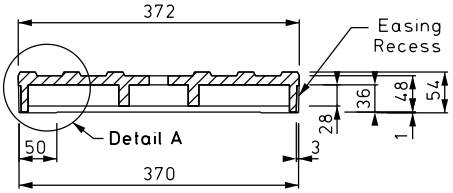
PLAN OF COVER WITH HOLES



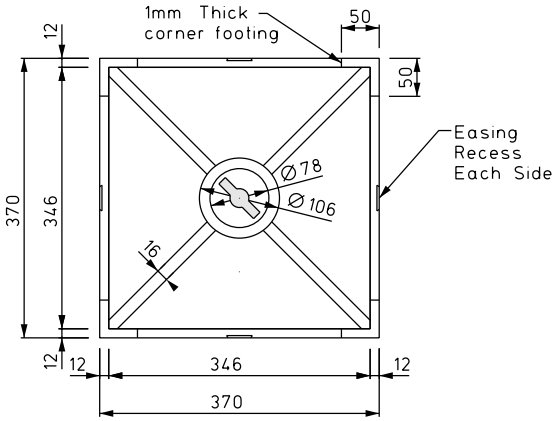
ELEVATION OF COVER



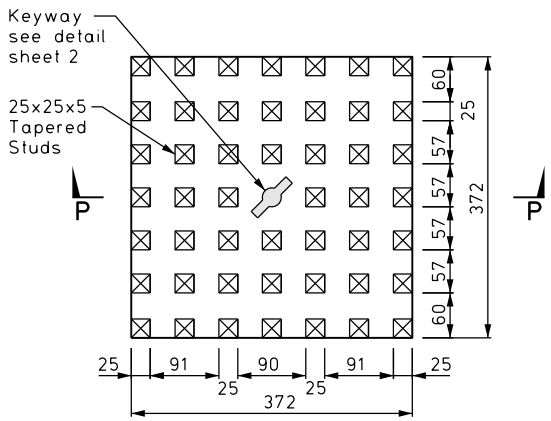
DETAIL A



SECTION P-P



PLAN OF UNDERSIDE OF COVER



PLAN OF COVER WITHOUT HOLES

Christchurch City Council

CORNER SUMP FRAME & COVERS

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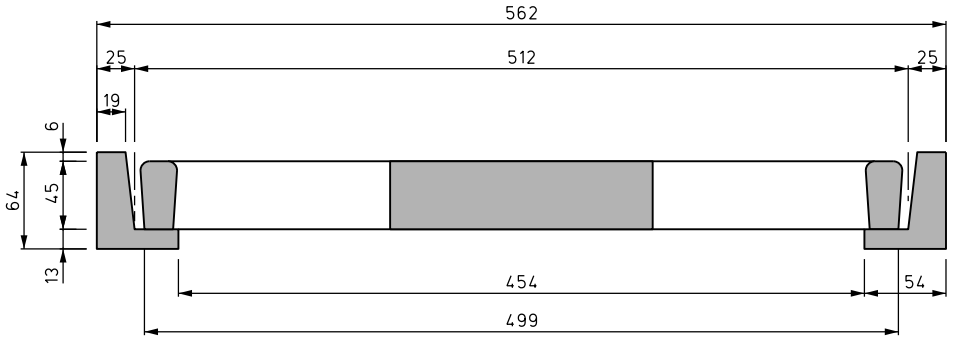
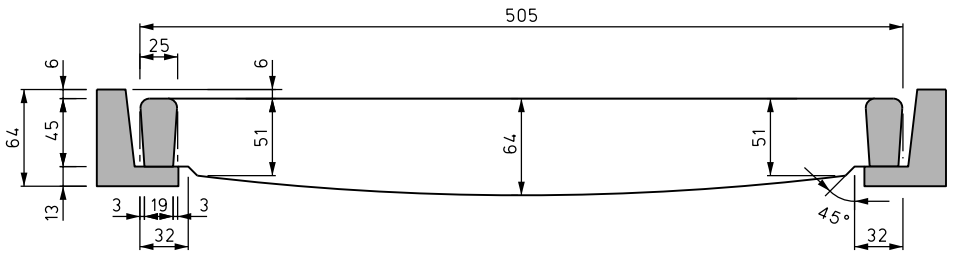
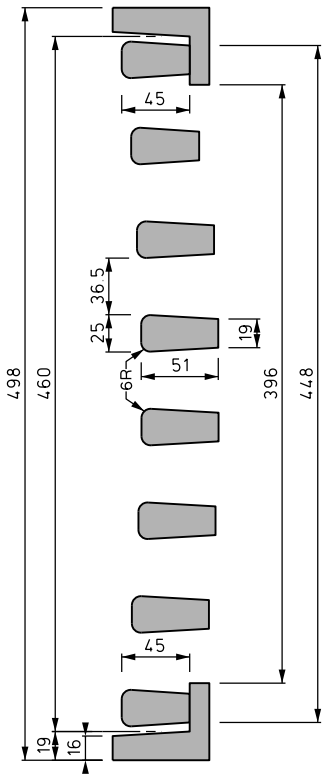
DS030105D



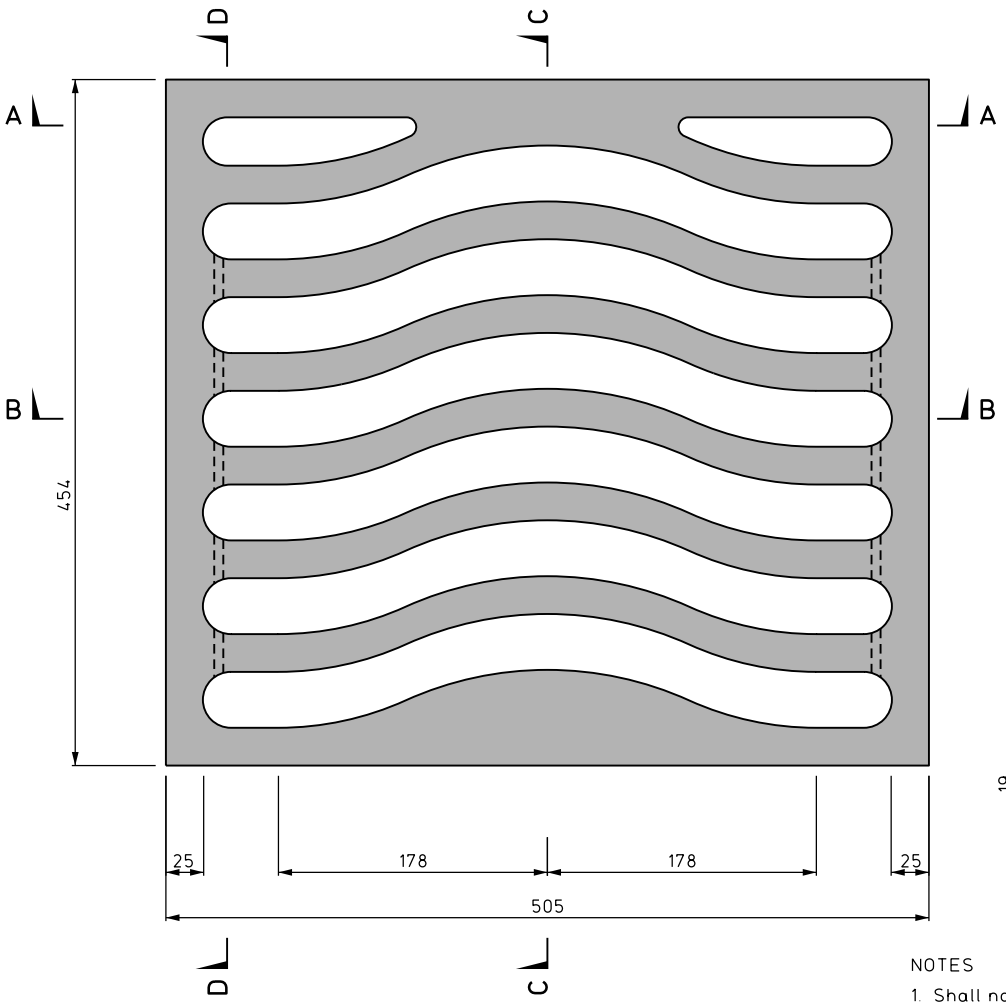
SECTION A-A



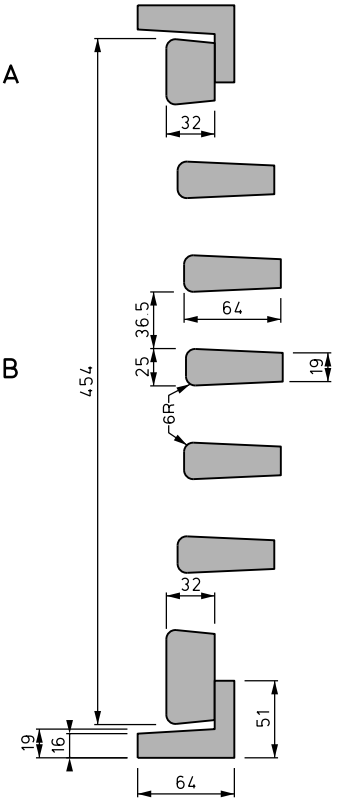
SECTION B-B



SECTION D-D



PLAN



SECTION C-C

NOTES

1. Shall not be installed in cycleways.
2. Sections A-A & B-B are parallel to kerb.
3. Grate pattern indicative.
   To comply with AS3996 clause 3.3.6

Christchurch City Council

STANDARD WAVY SUMP GRATE & FRAME

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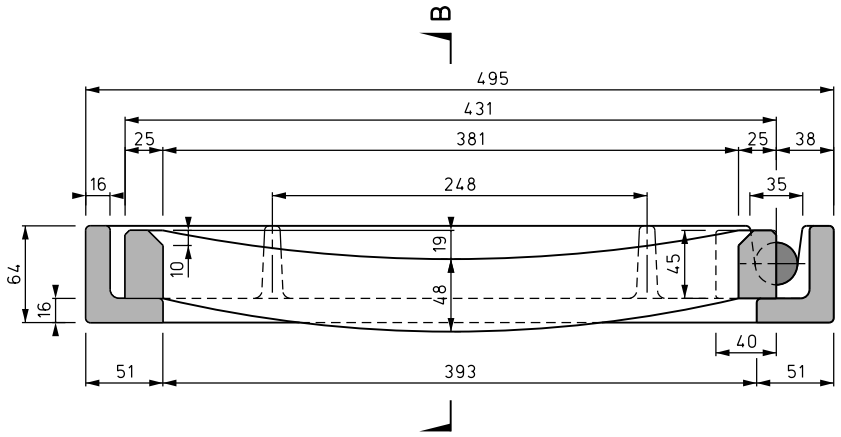
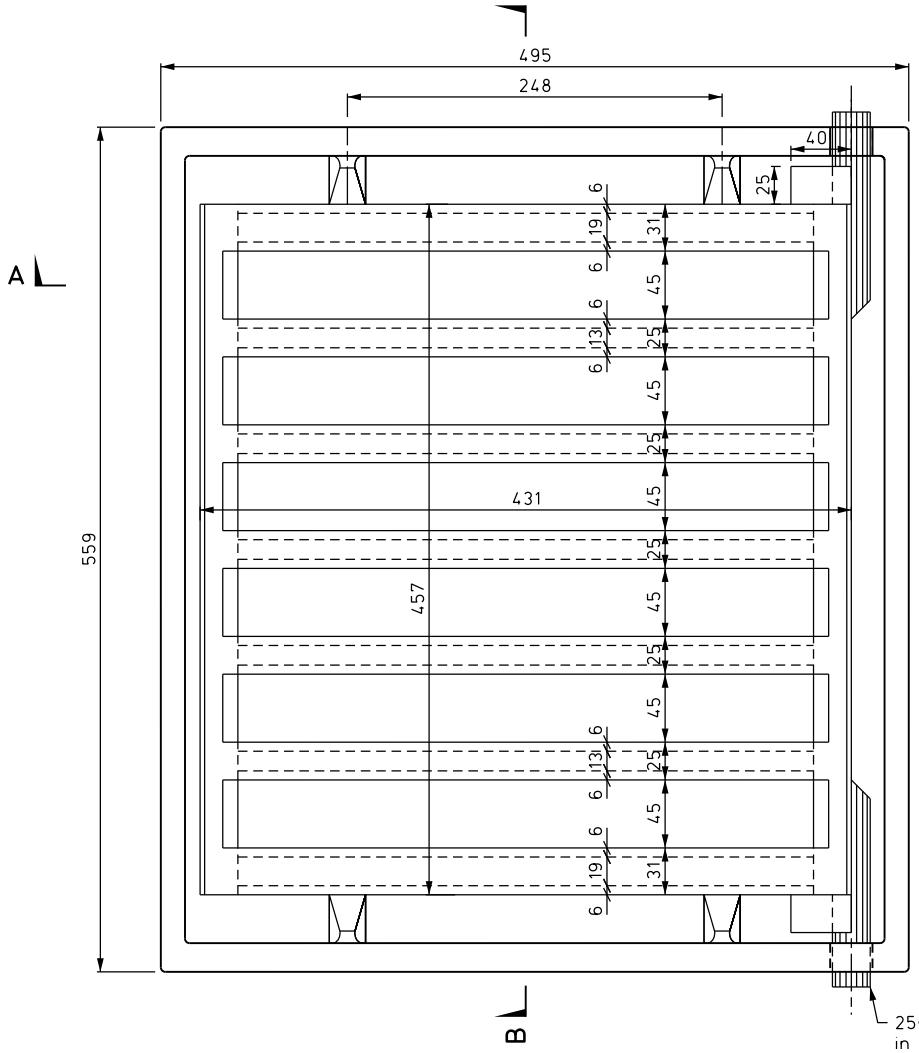
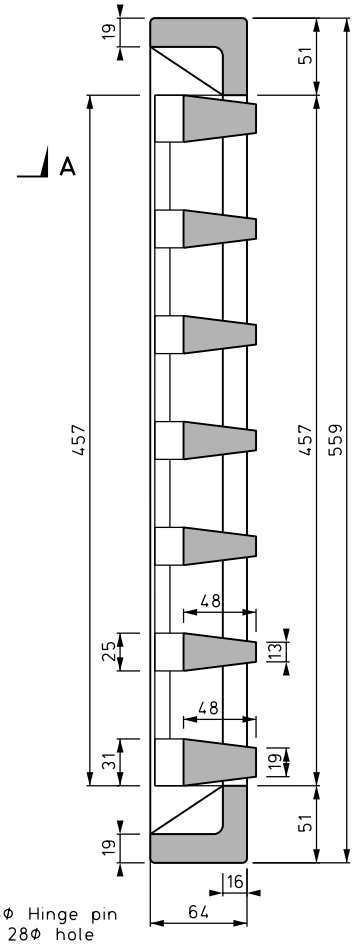
DS030106C



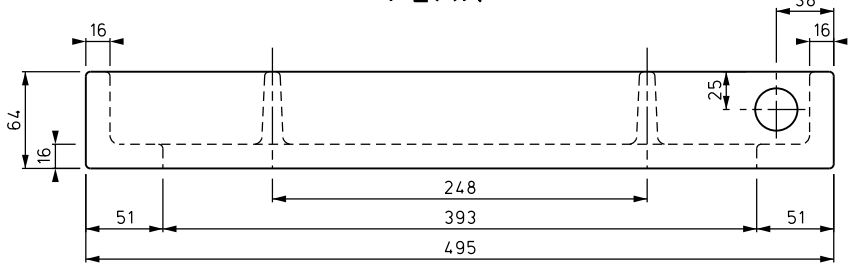
SECTION A-A



PLAN



SECTION B-B



FRAME ELEVATION

NOTES

1. Shall not be installed in cycleways or vehicle crossings.
2. Standard sumps require project specific approval and shall only be installed where approval in writing given by the Engineer.

Christchurch City Council

SINGLE SUMP GRATE & FRAME

ISSUE DATE	DEC 2019

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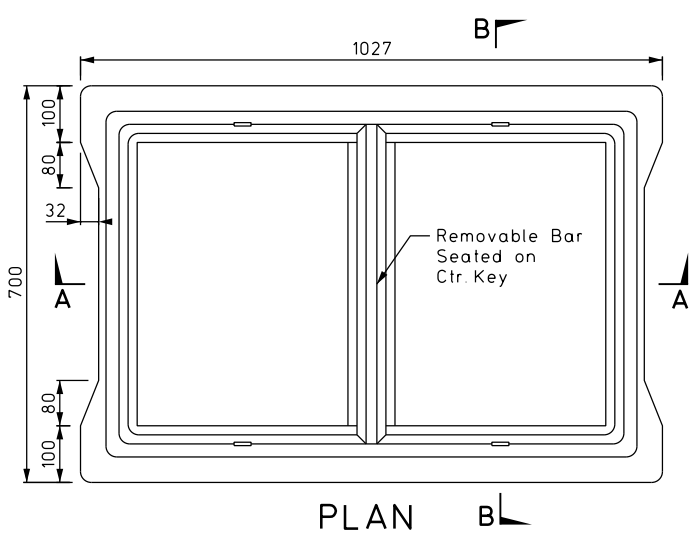
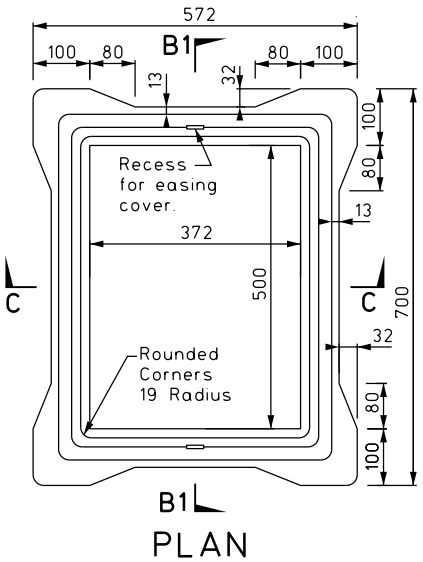
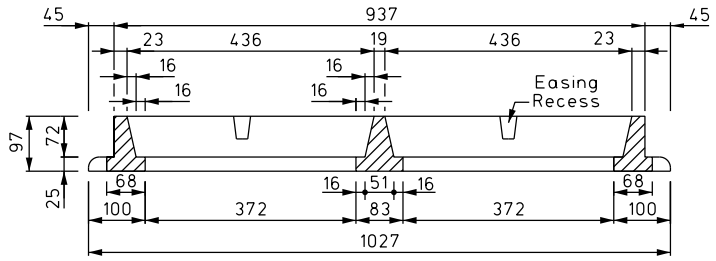
DS030107A



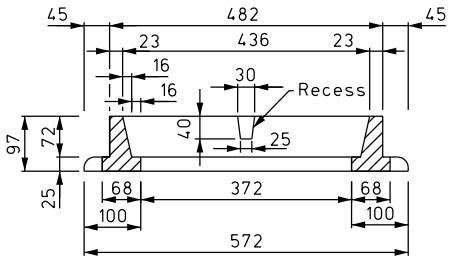
PLAN



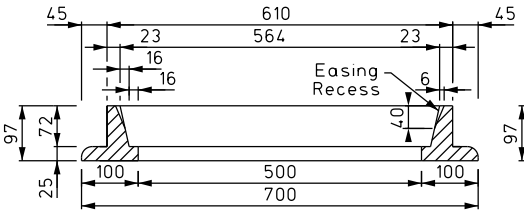
PLAN



SECTION A-A

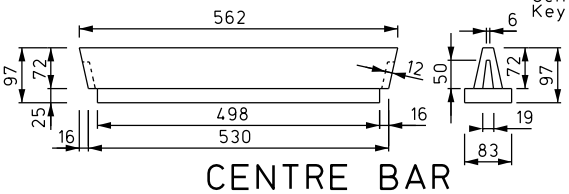


SECTION C-C

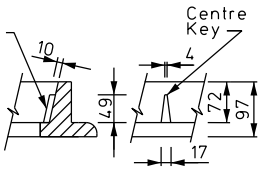


SECTION B-B

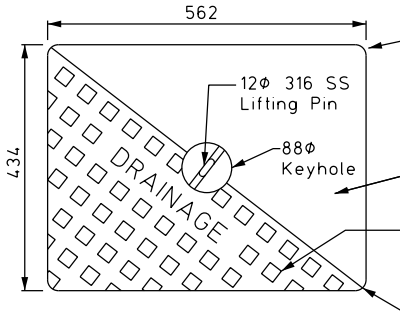
(B1-B1 similar)



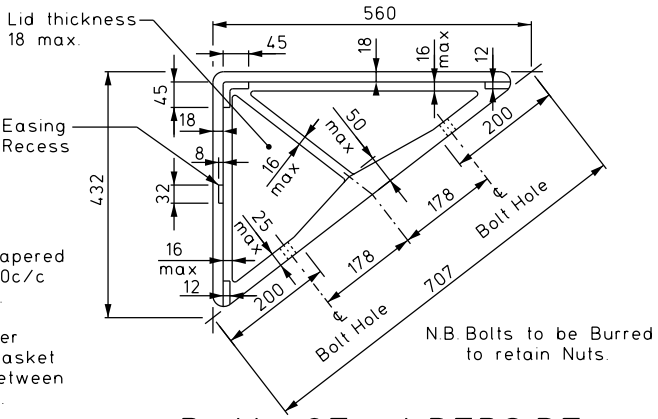
CENTRE BAR



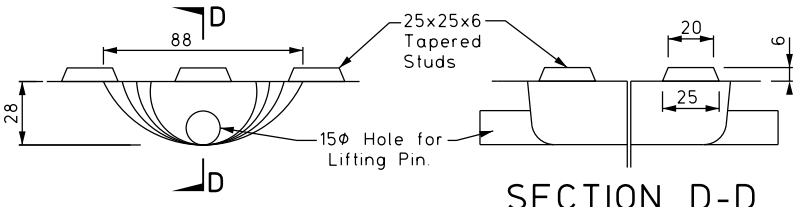
CENTRE KEY



PLAN OF COVER

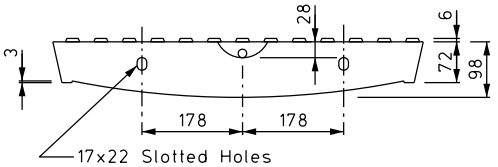


PLAN OF UNDERSIDE



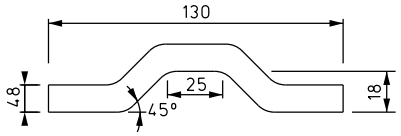
DETAIL OF KEYHOLE

SECTION D-D



17x22 Slotted Holes
for M16x80 Galv.
Hexagonal Nut & Bolt.

ELEVATION ON DIAGONAL



LIFTING PIN

NOTES:

1. Manufacture to be in accordance with the Material Approval.
2. Lid to show - Suppliers Name,
   - Load Test Standard BS EN124 Class D400.
3. Manufacture to AS 3996 Class D.

Christchurch City Council

RECTANGULAR & DOUBLE MANHOLE FRAMES & COVERS

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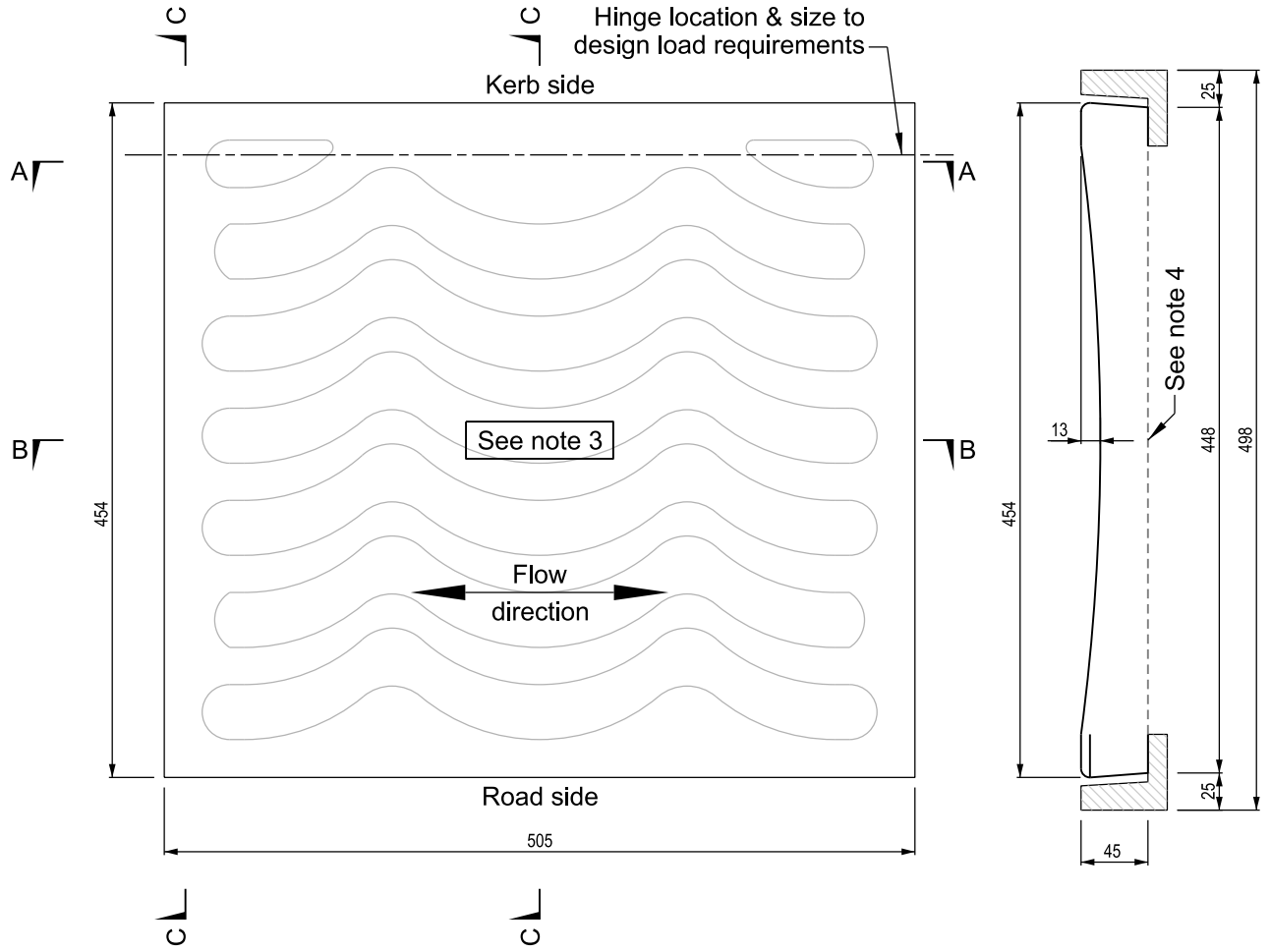
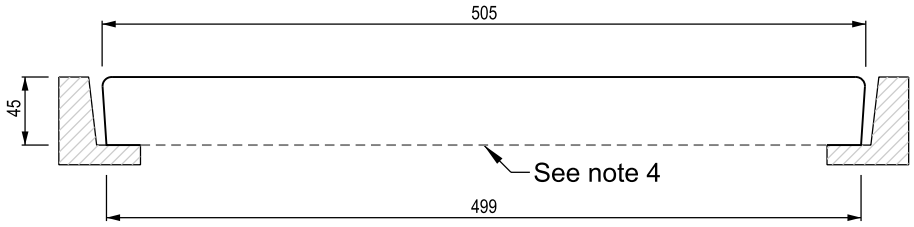
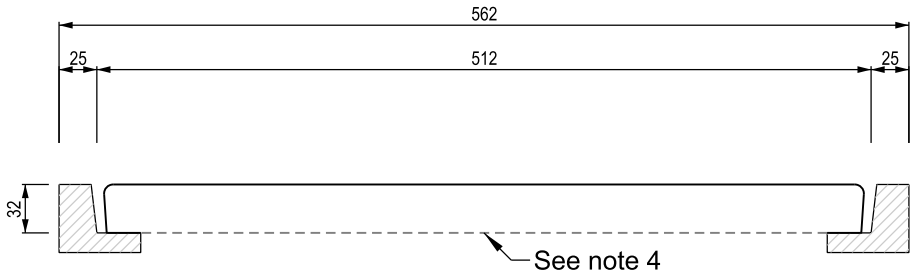
ds130108b.dgn



PLAN



SECTION A-A



SECTION B-B

NOTES:

1. Sumps in cycleways shall use this grate.
2. Sections A-A & B-B are parallel to kerb.
3. Sumps to comply with CCC approved materials list including lid markings (not shown).
4. Grate slot pattern layout is indicative.
   Grate pattern must comply with AS3996 clause 3.3.6 or 4.2.2.2 - 4.2.2.4
5. Grate hinge and bar dimensions to be determined by design load requirements.

Christchurch City Council

CYCLE SAFE SUMP GRATING & FRAME

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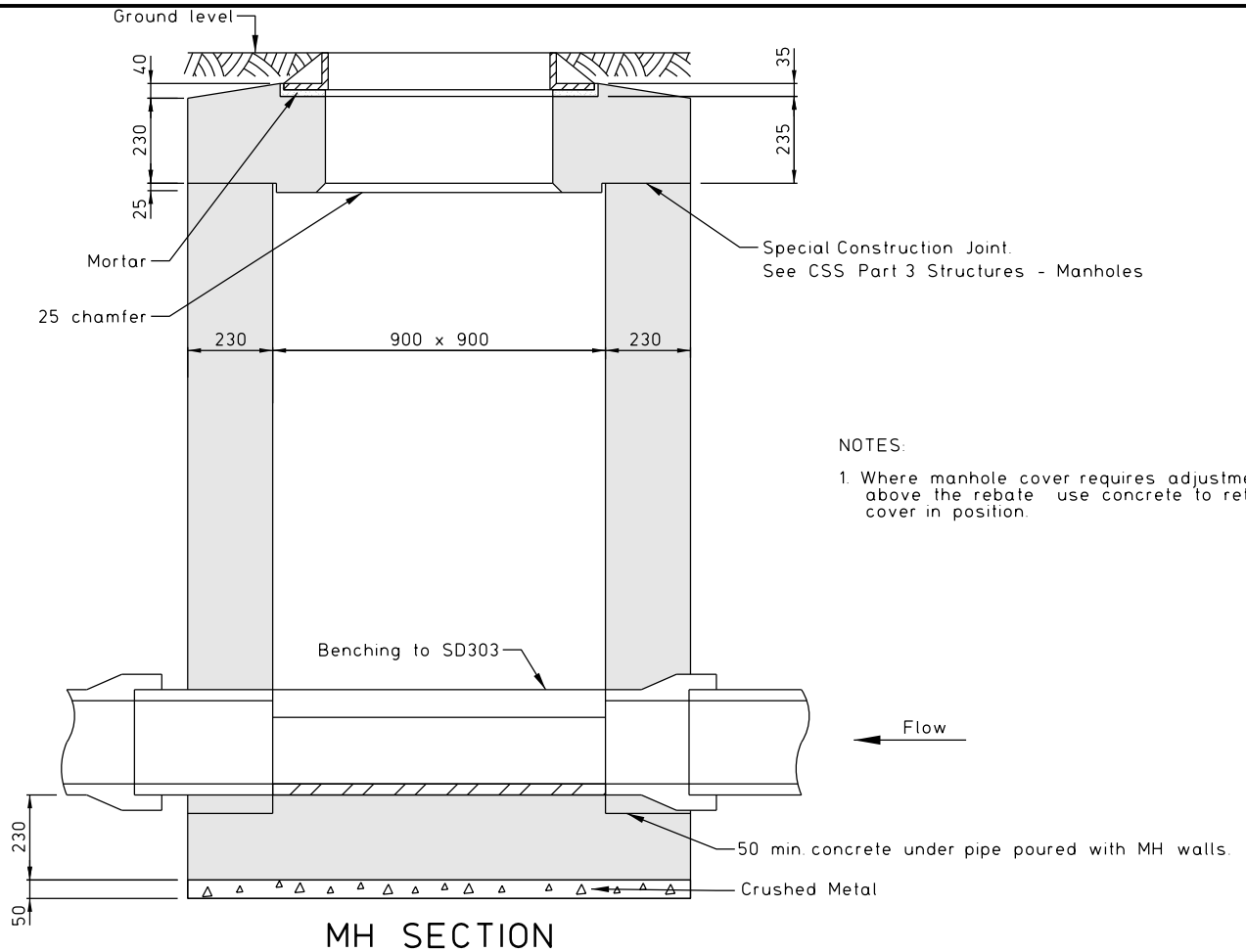
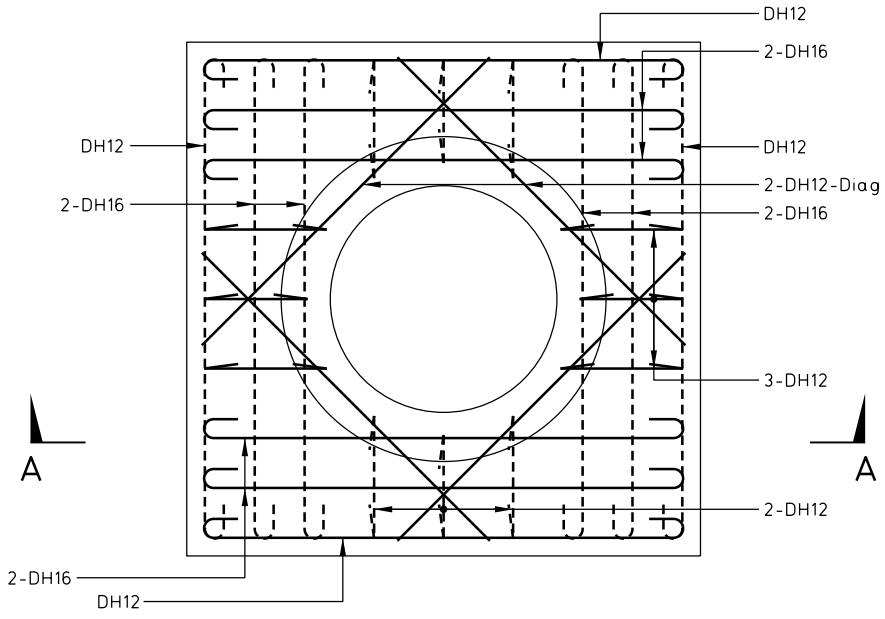
DS030201G



MH SECTION

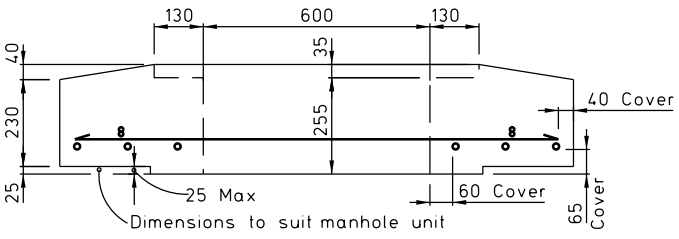
NOTES:

1. Where manhole cover requires adjustment above the rebate use concrete to retain cover in position.



Reinforcement symetrical about both centre lines

MH TOP PLAN



SECTION A-A

NOTES:

1. All concrete to be 40 MPa.
2. All manhole tops to be precast.
3. Design Loading: HN-HO-72

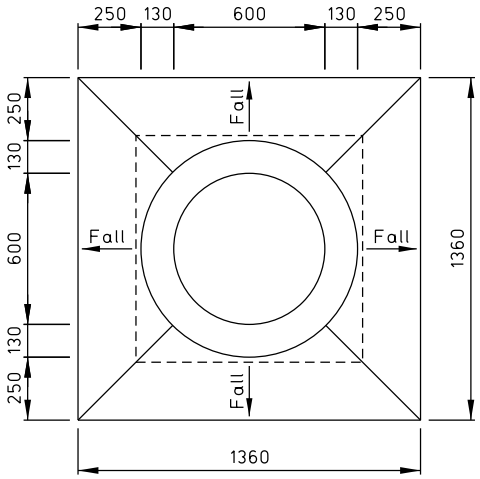
Christchurch City Council

SQUARE MANHOLES

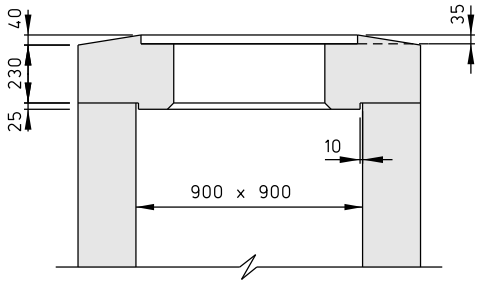
ISSUE DATE	DEC 2019

SD302

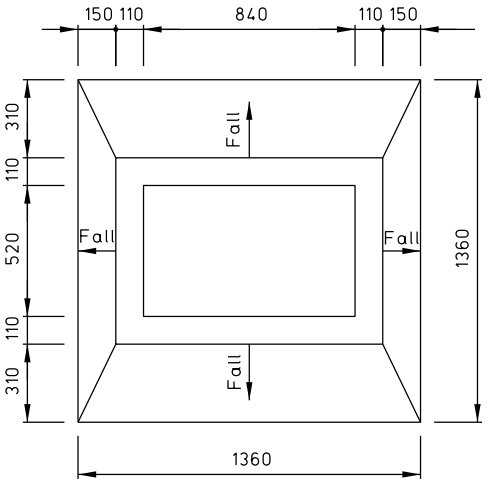
SHEET 1 of 2



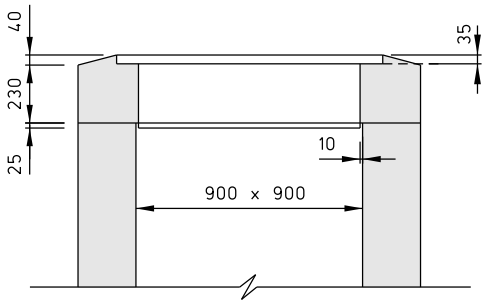
MH PLAN



PRECAST TOP MH



DOUBLE COVER MH PLAN



PRECAST TOP DOUBLE COVER MH

NOTES:

1. These tops are to fit cast in-situ square manholes only.
2. Precast tops to be seated on a cement sand mortar bed. Excess mortar on inside of MH to be struck clean.
3. Where manhole cover requires adjustment above the rebate use concrete to retain cover in position.
4. 2 M12 cast in fixings in precast tops for lifting.
5. See the notes on SD303/3.
6. See plan SD301/1, 2 & 7 for manhole frames & lids.
7. Concrete work to comply with NZS 3109.

Christchurch City Council

SQUARE AND DOUBLE MANHOLE TOPS

ISSUE DATE	OCT 2016

SD302

SHEET 2 of 2

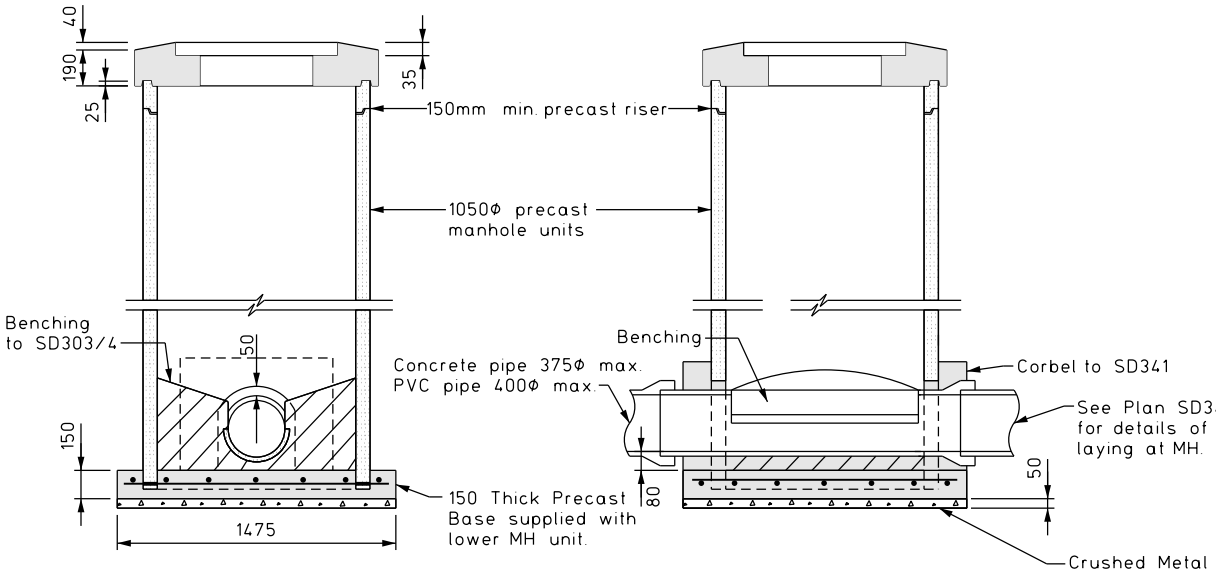
Christchurch City Council

CIRCULAR PRECAST MANHOLES FOR PIPES LESS THAN 450Φ OD

SD303

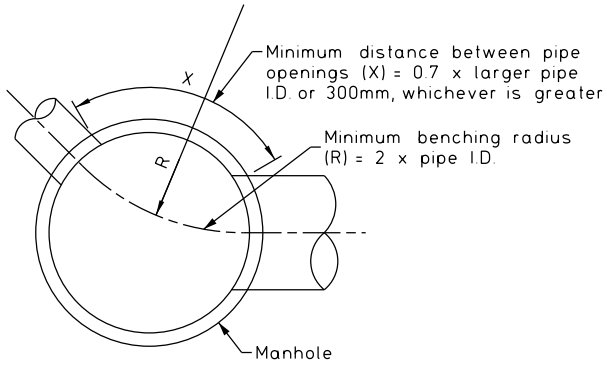
ISSUE DATE NOV 2022

SHEET 1 of 5

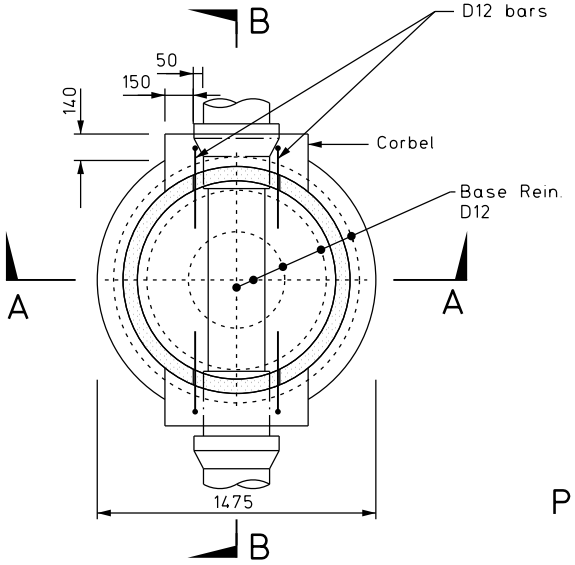


TYPE 1050
SECTION A-A

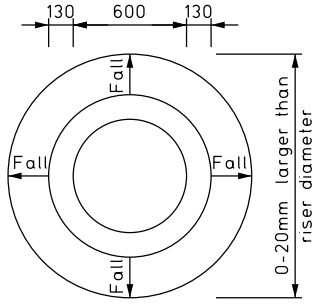
TYPE 1050
SECTION B-B



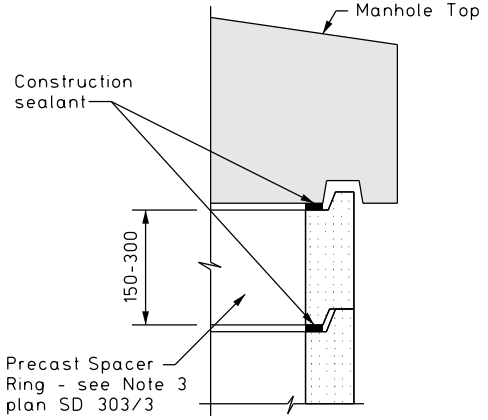
ALLOWABLE CUTOUTS



SECTIONAL PLAN OF M.H.



PLAN OF PRECAST
M.H. TOP



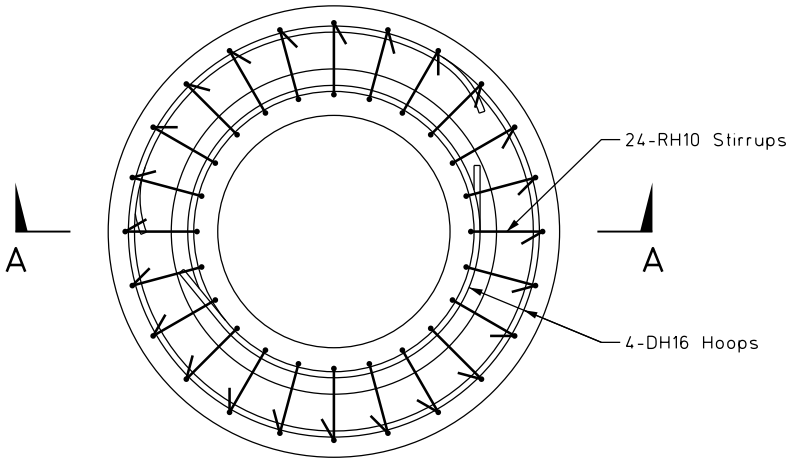
JOINTING DETAILS FOR
TOP, SPACER RINGS &
MANHOLE UNITS

NOTES:

1) Notes on SD303/3 apply.

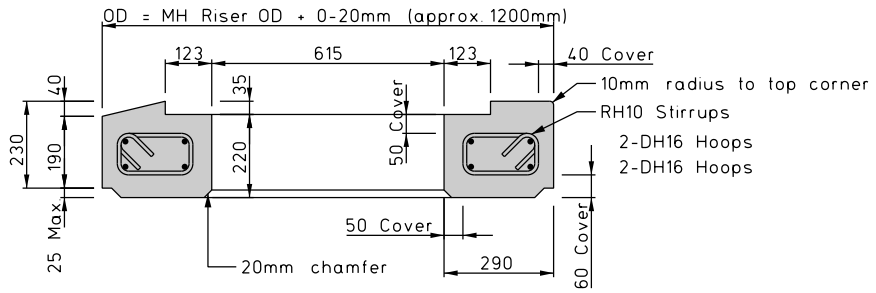
2) For manhole top slab reinforcing steel refer to SD303/2.

3) 100mm risers not allowed.



Reinforcement symetrical
about both centre lines

MH PLAN



SECTION A-A
SLOPED OR SQUARE TOP OPTIONS

NOTES:

1. All concrete to be 40 MPa.
2. All manhole tops to be precast.
3. Design Loading: HN-HO-72
4. Reinforcing shall be grade 500.
5. Design life 100 years.

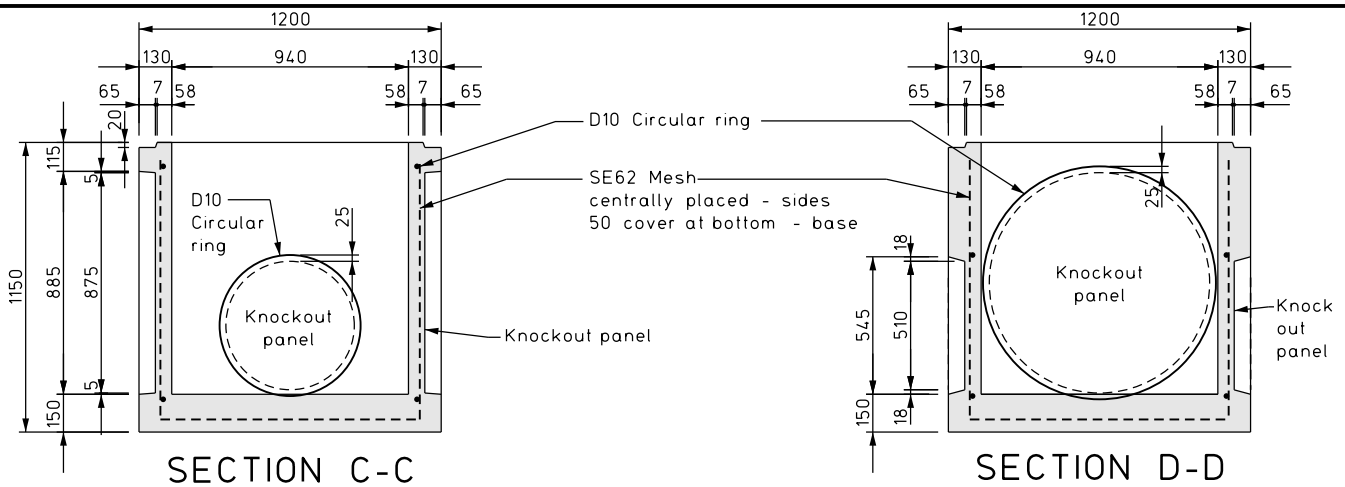
Christchurch City Council

CIRCULAR PRECAST MANHOLES TOP SLABS REINFORCEMENT

ISSUE DATE	OCT 2016

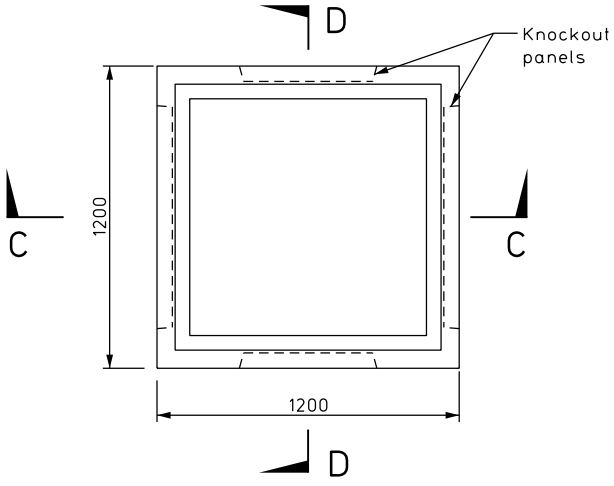
SD303

DS030303F

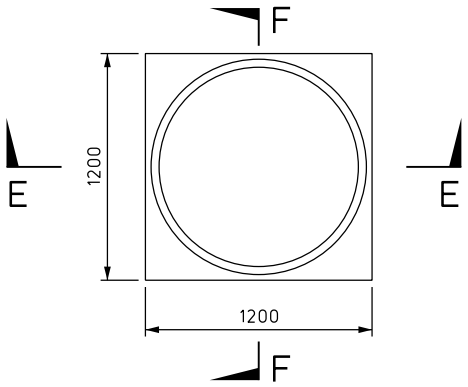


SECTION C-C

SECTION D-D



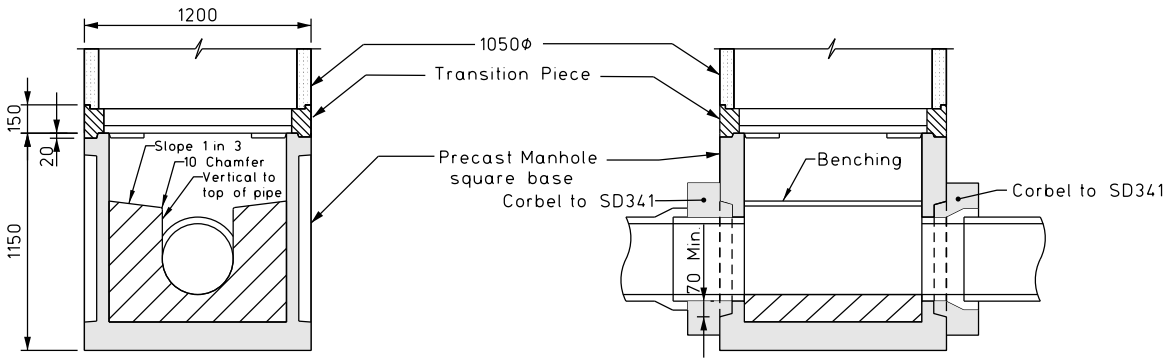
PLAN PRECAST MANHOLE



PLAN TRANSITION PIECE

NOTES:

1. Joints shall not exceed 5mm at any point.
2. All joints are to be positioned as high as possible.
3. A 300mm riser or shorter shall be placed immediately below the manhole top.
   Use the deepest risers possible to achieve the height, to minimise joints.
4. Construction sealant shall be used for sealing all joints.
   All joints shall be clean. Jointing work shall be protected from rain.
   All sealant joints shall be butted, with a short lapping piece on the outside.
5. Benching details shall be in accordance with SD303/1.
6. Circular base precast manholes shall be used for pipes up to 400mm OD,
   square base precast manholes for pipes up to 750Φ except where the pipe changes direction in the manhole where the maximum reduces to 675Φ.
7. Maximum Depth (G.L. to invert) for standard manholes shall be 5m.
8. Resistance to flotation is dependent on well compacted backfilling.
9. Unused Knockout panels to be filled to full wall width.



SECTION E-E

SECTION F-F

PRECAST MANHOLE AND TRANSITION PIECE

Christchurch City Council

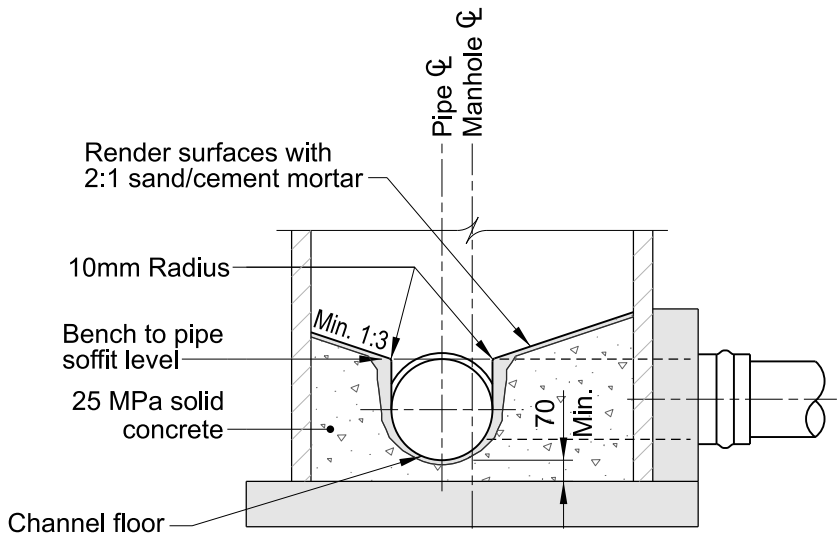
SQUARE BASE PRECAST MANHOLES FOR PIPES UP TO 750Φ

ISSUE DATE	DEC 2019

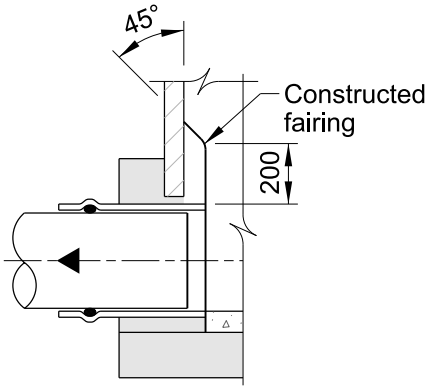
SD303

SHEET 3 of 5

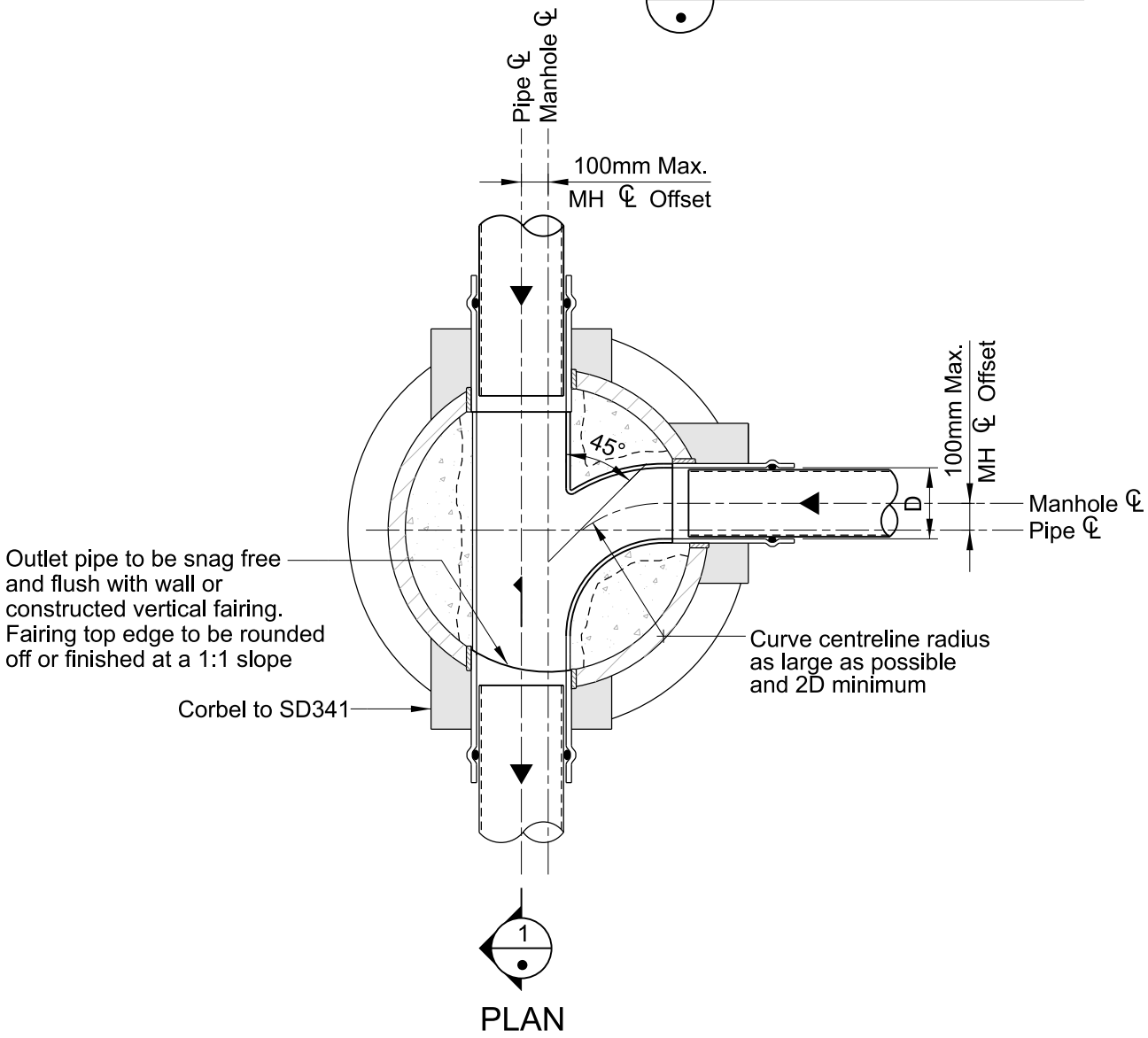
ds130304d.dgn



SECTION



1 FAIRING ALTERNATIVE



PLAN

1. Fall from 100Ø lateral invert to outlet invert of main line sewer shall be 50mm.
2. This requirement applies to manholes at the top end of a sewer line only.

Christchurch City Council

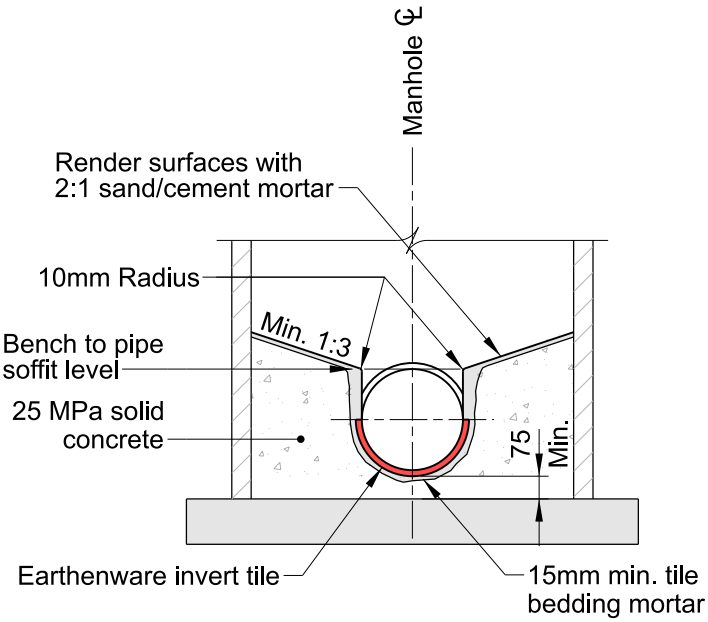
MANHOLE BENCHING - FREEHAND

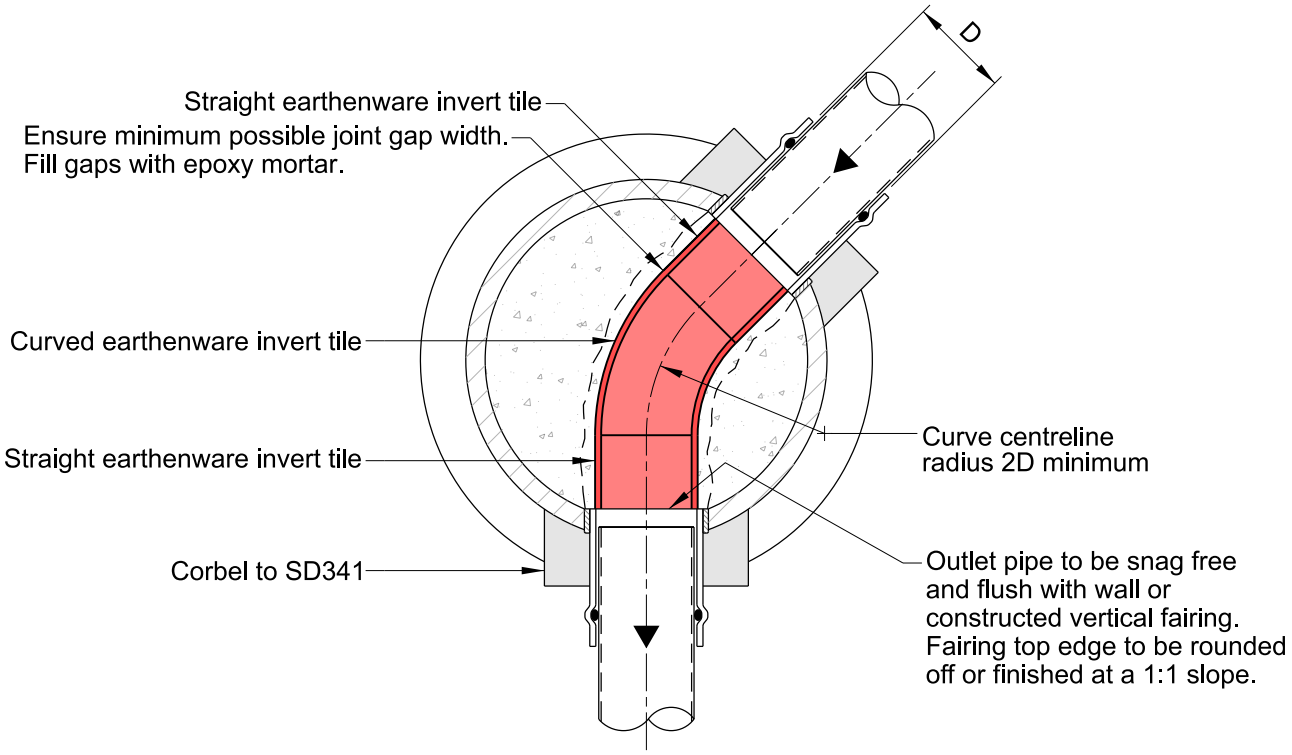
ISSUE DATE	DEC 2019

SD303

SHEET 4 OF 5

ds130305a.dgn





NOTES:

1. Fall from 100Ø lateral invert to outlet invert of main line sewer shall be 50mm.
2. This requirement applies to manholes at the top end of a sewer line only.
3. Tiled inverts may be installed only in manholes with no sideline junctions.
4. Only factory made invert tiles are to be used.

Christchurch City Council

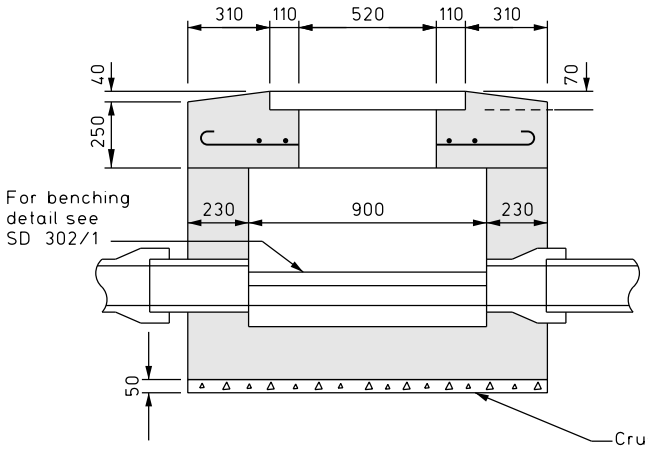
MANHOLE BENCHING - TILED INVERT

ISSUE DATE	OCT 2016

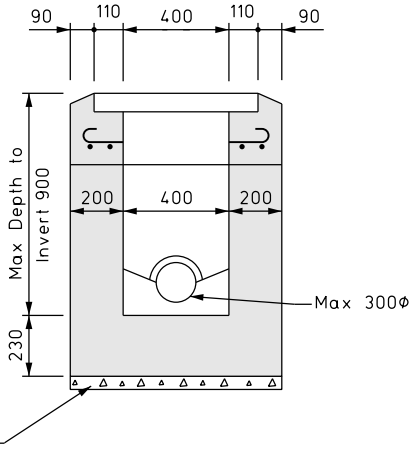
SD303

SHEET 5 OF 5

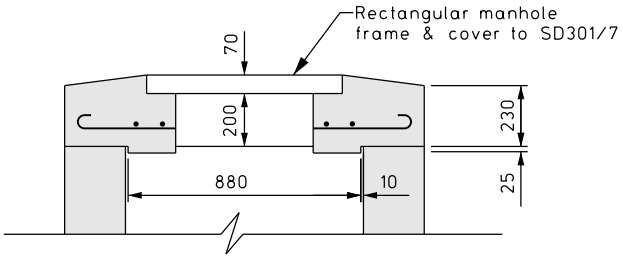
DS030401E



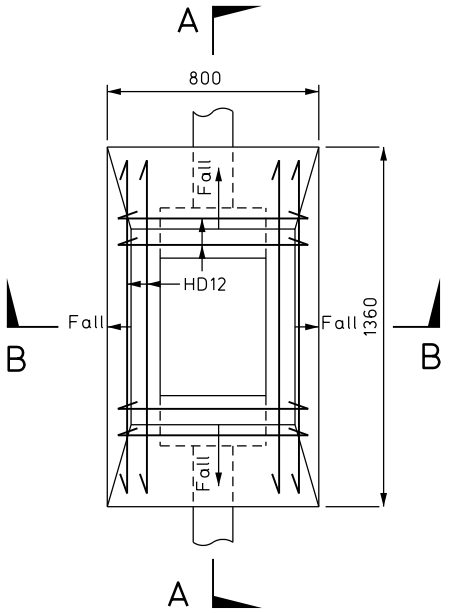
SECTION A-A



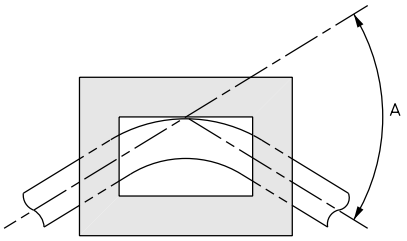
SECTION B-B



SECTION A-A
(FOR PRECAST TOP)



PLAN



		Nominal Pipe Diameter					
		100	150	200	225	250	300
Maximum angle of deviation for Narrow Manhole.	A	30°	26°	20°	20°	18°	15°

NOTES:

1. Notes on sheet SD302/2 apply.
2. For site constructed structures, minimum concrete cover to all reinforcement is 40mm.

Christchurch City Council

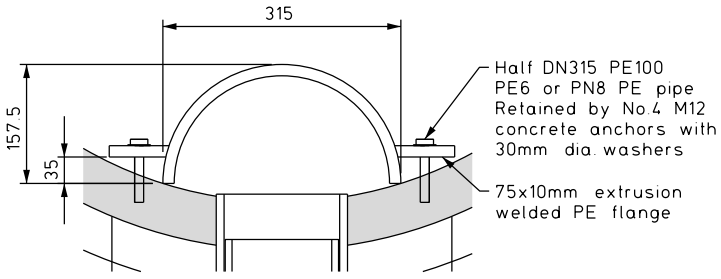
INACCESSIBLE MANHOLE

ISSUE DATE | OCT 2016

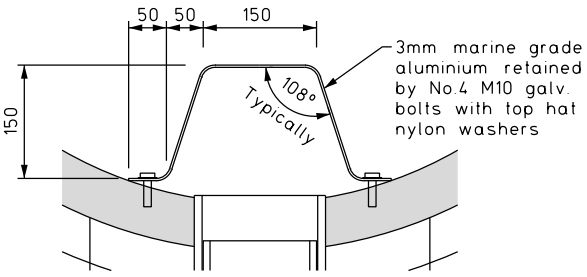
SD304

SHEET 1

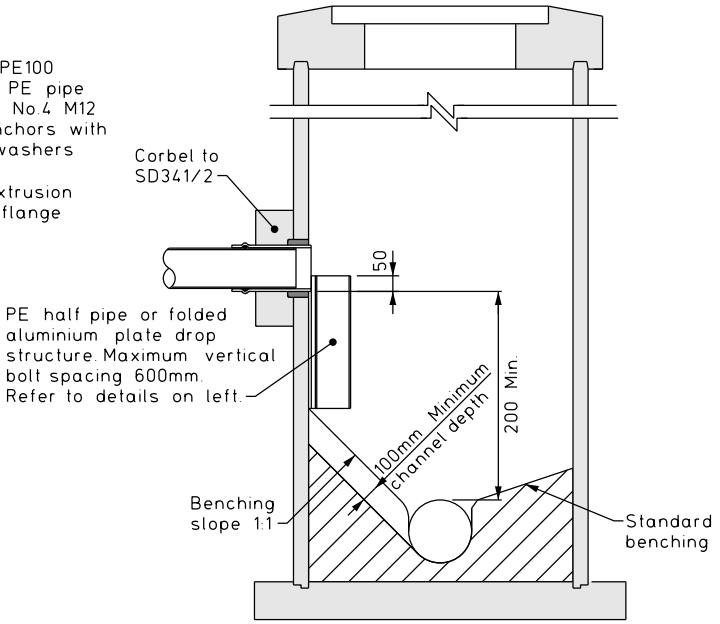
DS030501F



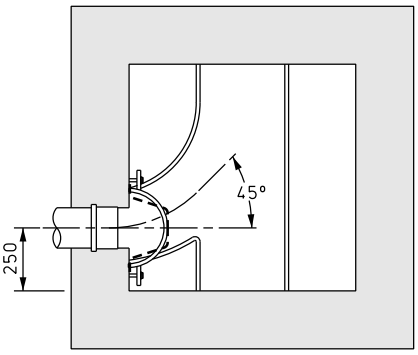
PE STRUCTURE



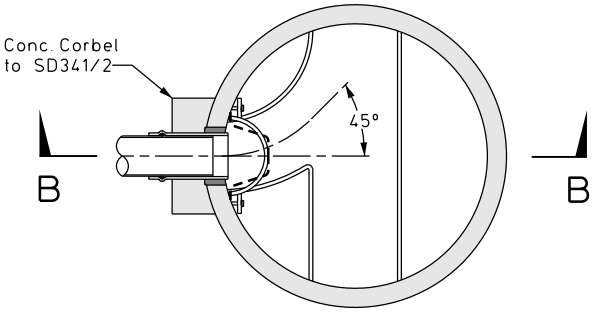
ALUMINIUM STRUCTURE



SECTION B-B
DROP INSTALLATION
CIRCULAR PRECAST MANHOLE



PLAN



PLAN

NOTES:

1. Drop structures over 225Φ require special design
2. Manholes to be constructed as detailed on plans SD 302 & 303. Pipelaying at manholes to be constructed as detailed on plan SD341.
3. Channelling in new manholes shall be vertical to top of main sewer and benching graded at 1 in 3 as applicable.
4. Benching and channelling in existing manholes shall be reformed in easy curves.
5. Opening for manhole starter and corbel shall be clear of any joint in precast manhole by at least 300mm.

Christchurch City Council

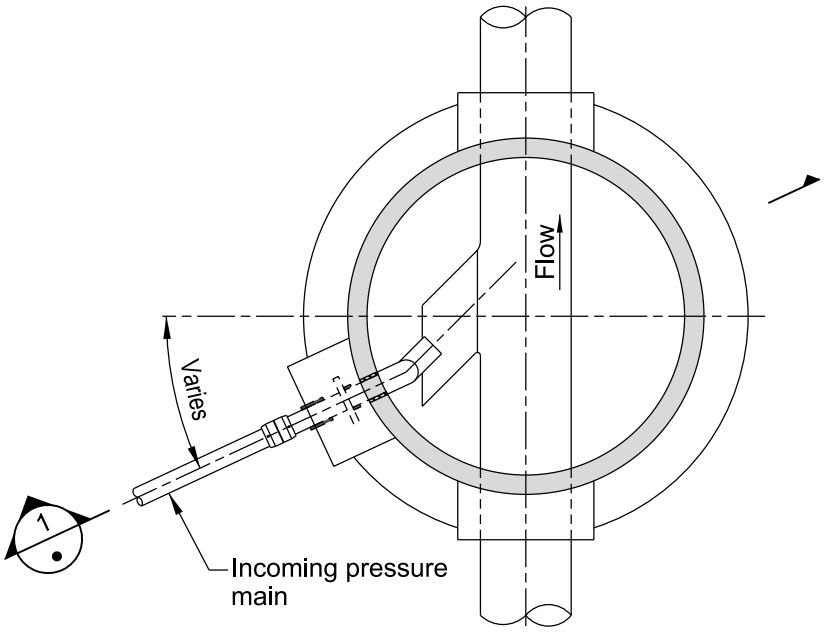
GRAVITY DROP STRUCTURE IN MANHOLE

ISSUE DATE	DEC 2019

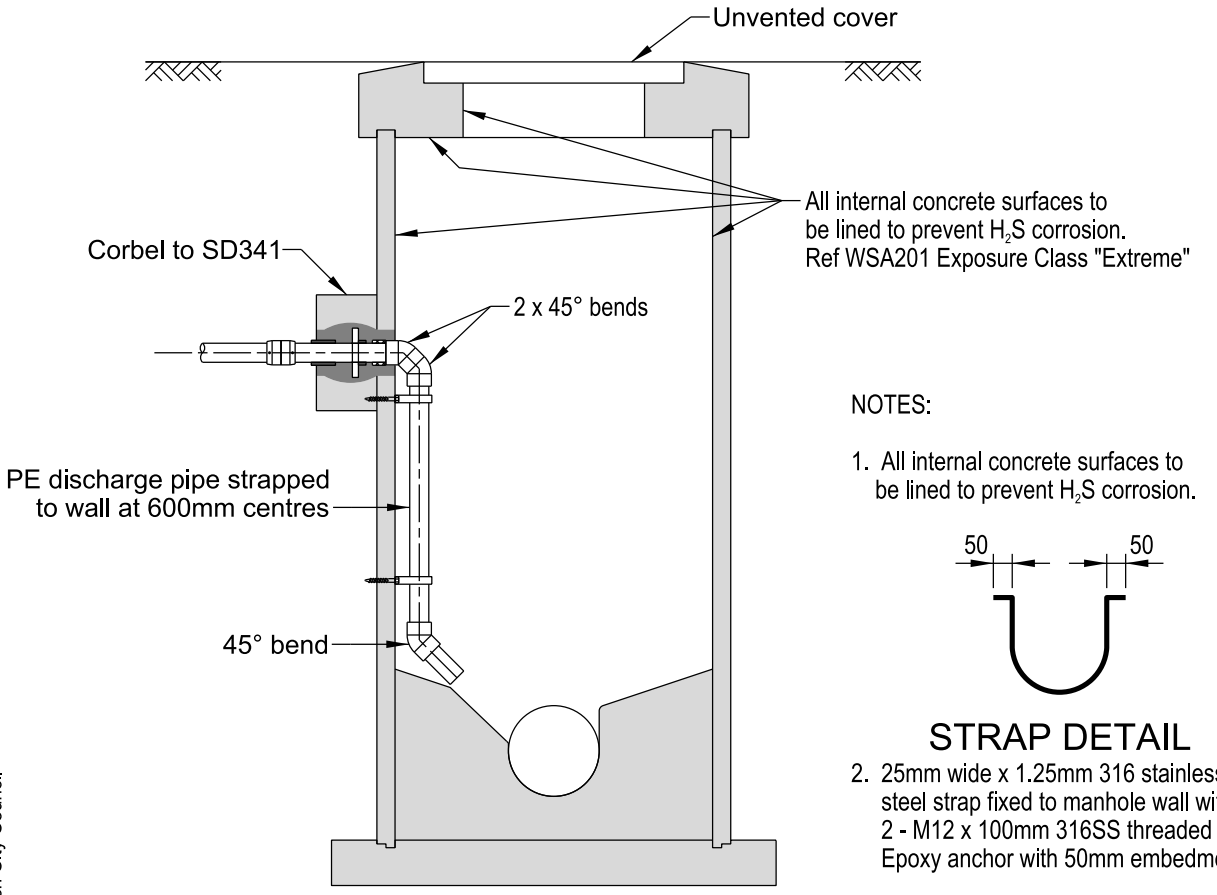
SD305

SHEET 1 of 3

ds130502b.dgn



PLAN



1 SECTION

NOTES:

1. All internal concrete surfaces to be lined to prevent H_2S corrosion.

STRAP DETAIL

2. 25mm wide x 1.25mm 316 stainless steel strap fixed to manhole wall with 2 - M12 x 100mm 316SS threaded studs. Epoxy anchor with 50mm embedment depth.

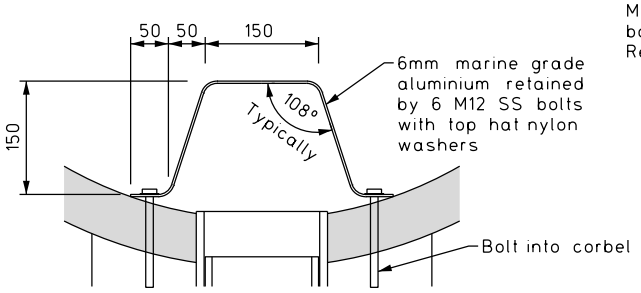
Christchurch City Council

PRESSURE SEWER DISCHARGE INTO MANHOLES
NON-TURBULENT DISCHARGE FOR DIAMETERS UP TO DN63

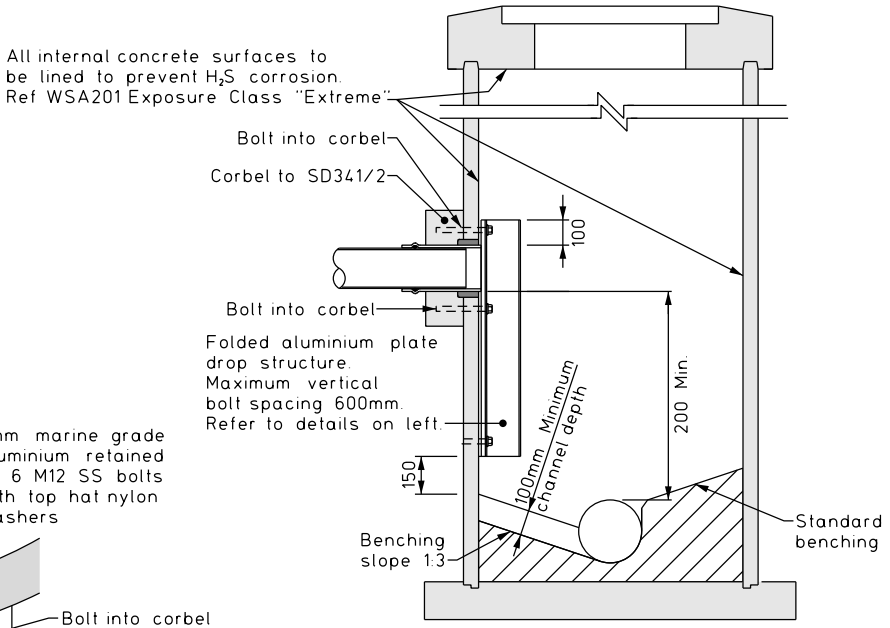
ISSUE DATE	DEC 2019

SD305

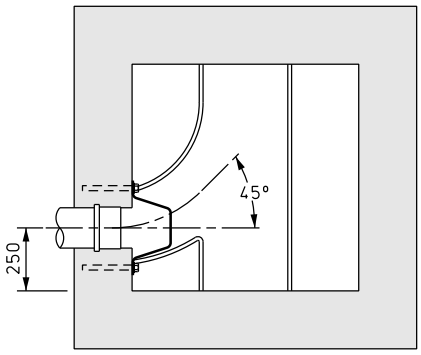
DS030503B



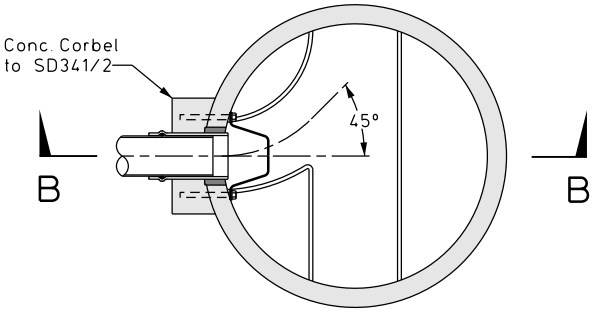
ALUMINIUM STRUCTURE



SECTION B-B
DROP INSTALLATION
CIRCULAR PRECAST MANHOLE



PLAN



PLAN

NOTES:

1. Drop structures over DN180 require special design
2. Manholes to be constructed as detailed on plans SD 302 & 303. Pipelaying at manholes to be constructed as detailed on plan SD341.
3. Channelling in new manholes shall be vertical to top of main sewer and benching graded at 1 in 3 as applicable.
4. Benching and channelling in existing manholes shall be reformed in easy curves.
5. Opening for manhole starter and corbel shall be clear of any joint in precast manhole by at least 300mm.
6. For PE pressure connections, use SD341 Sheet 5.

Christchurch City Council

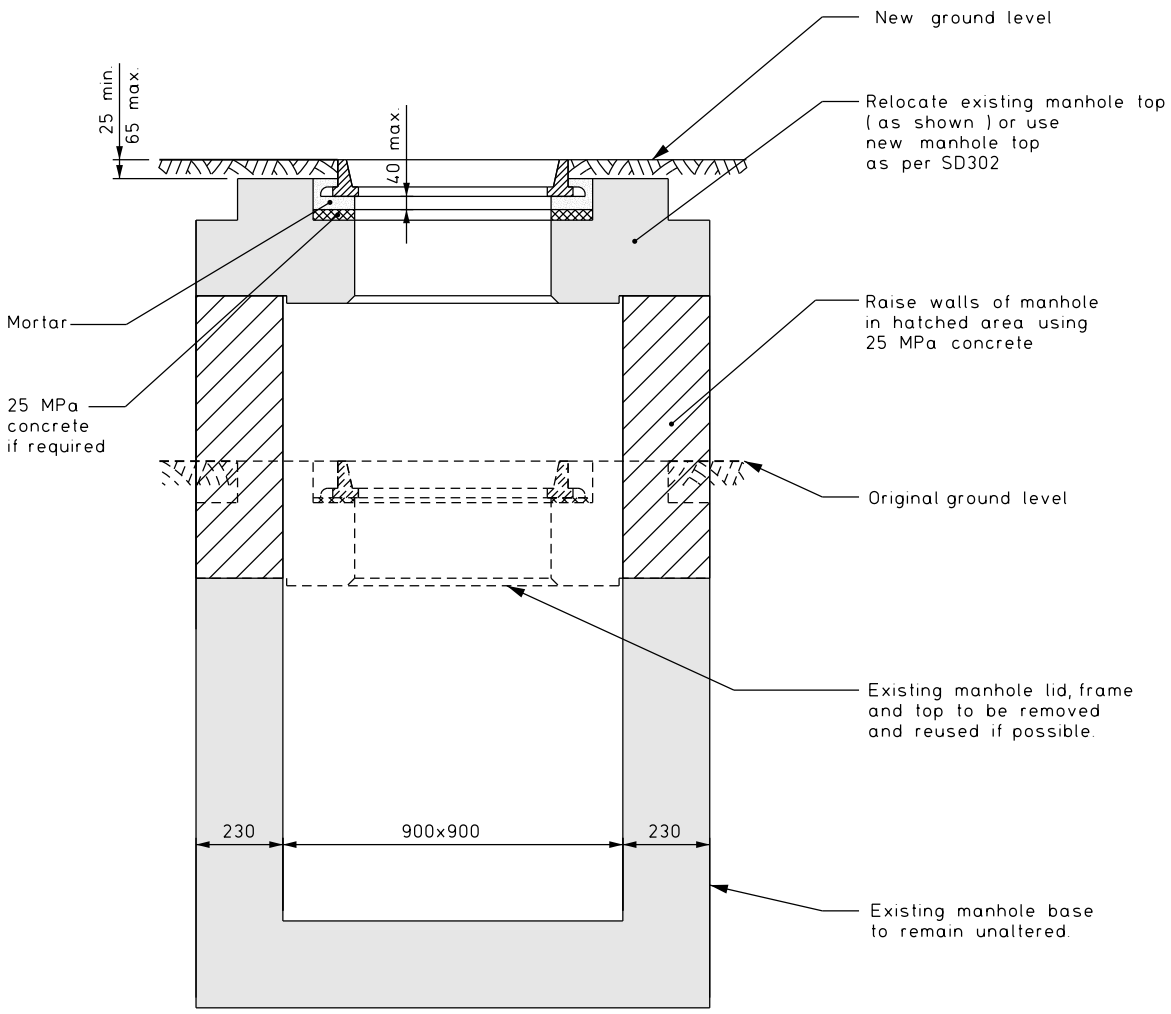
PRESSURE SEWER DISCHARGE INTO MANHOLES - TURBULENT DISCHARGE FOR DIAMETERS DN90 TO DN180

ISSUE DATE	NOV 2022

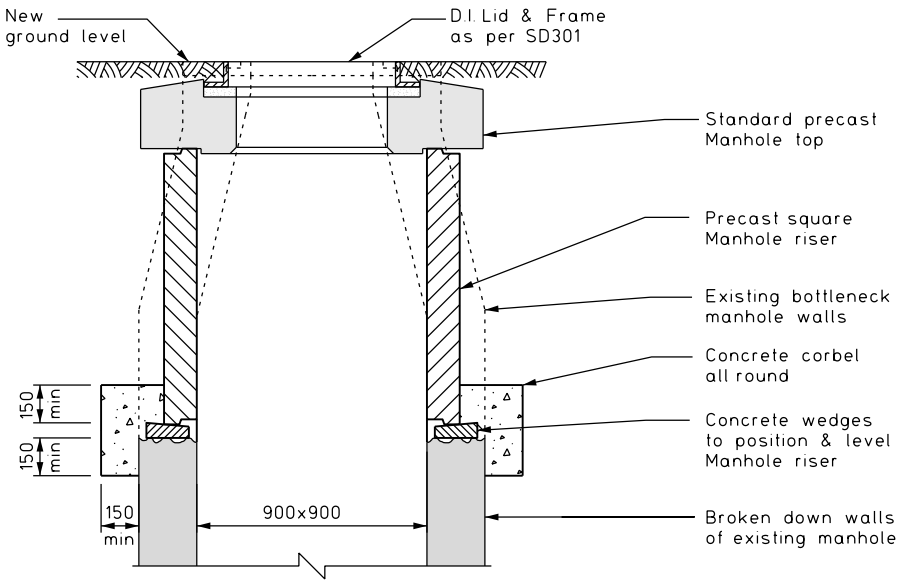
SD305

SHEET 3 of 3

DS030601D



SQUARE MANHOLE
LEVEL ADJUSTMENT



BOTTLENECK MANHOLE
LEVEL ADJUSTMENT

Christchurch City Council

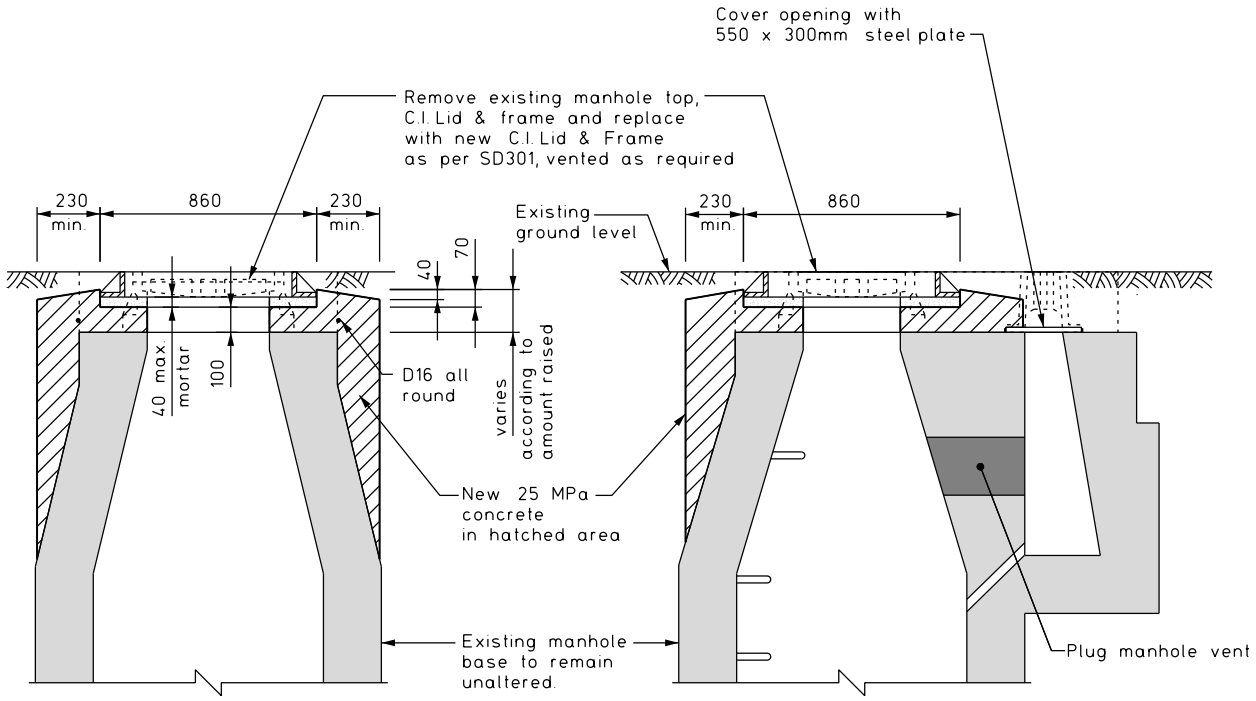
MANHOLE RAISING TOP ADJUSTMENT

ISSUE DATE	APR 2014

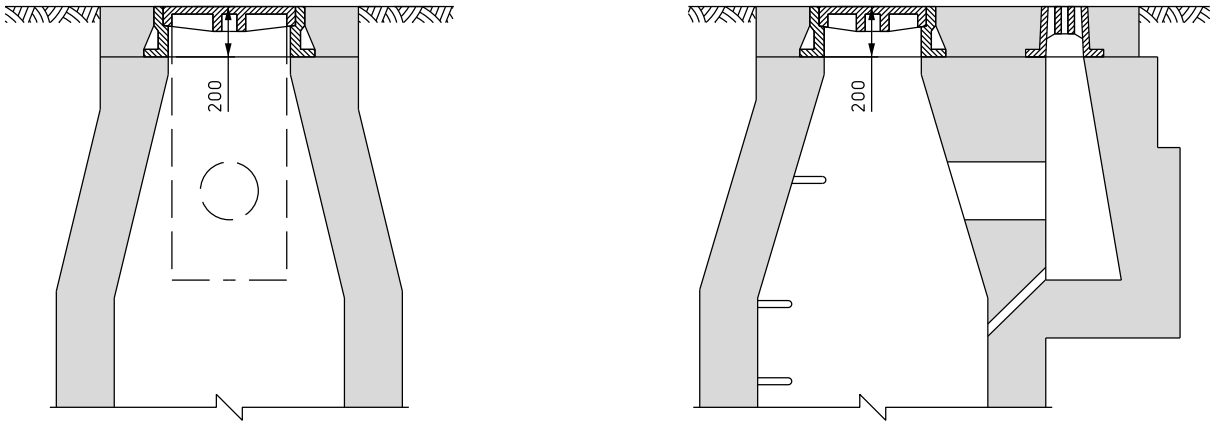
SD306

SHEET 1 of 2

DS030602C



DETAILS OF INSTALLATION OF
100mm FRAME TOP



TYPICAL BOTTLENECK MANHOLE SHOWING
200mm FRAME TOP

Christchurch City Council

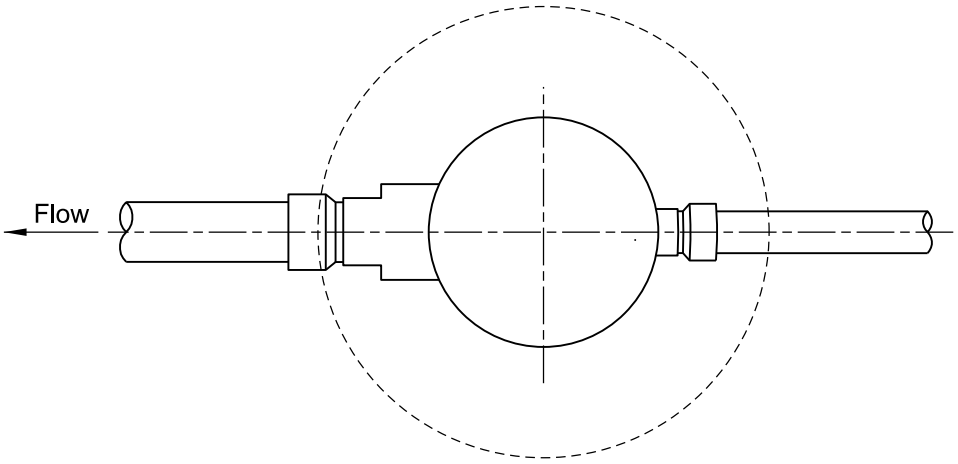
MANHOLE RAISING BOTTLENECK FRAME ADJUSTMENT

ISSUE DATE	APR 2014

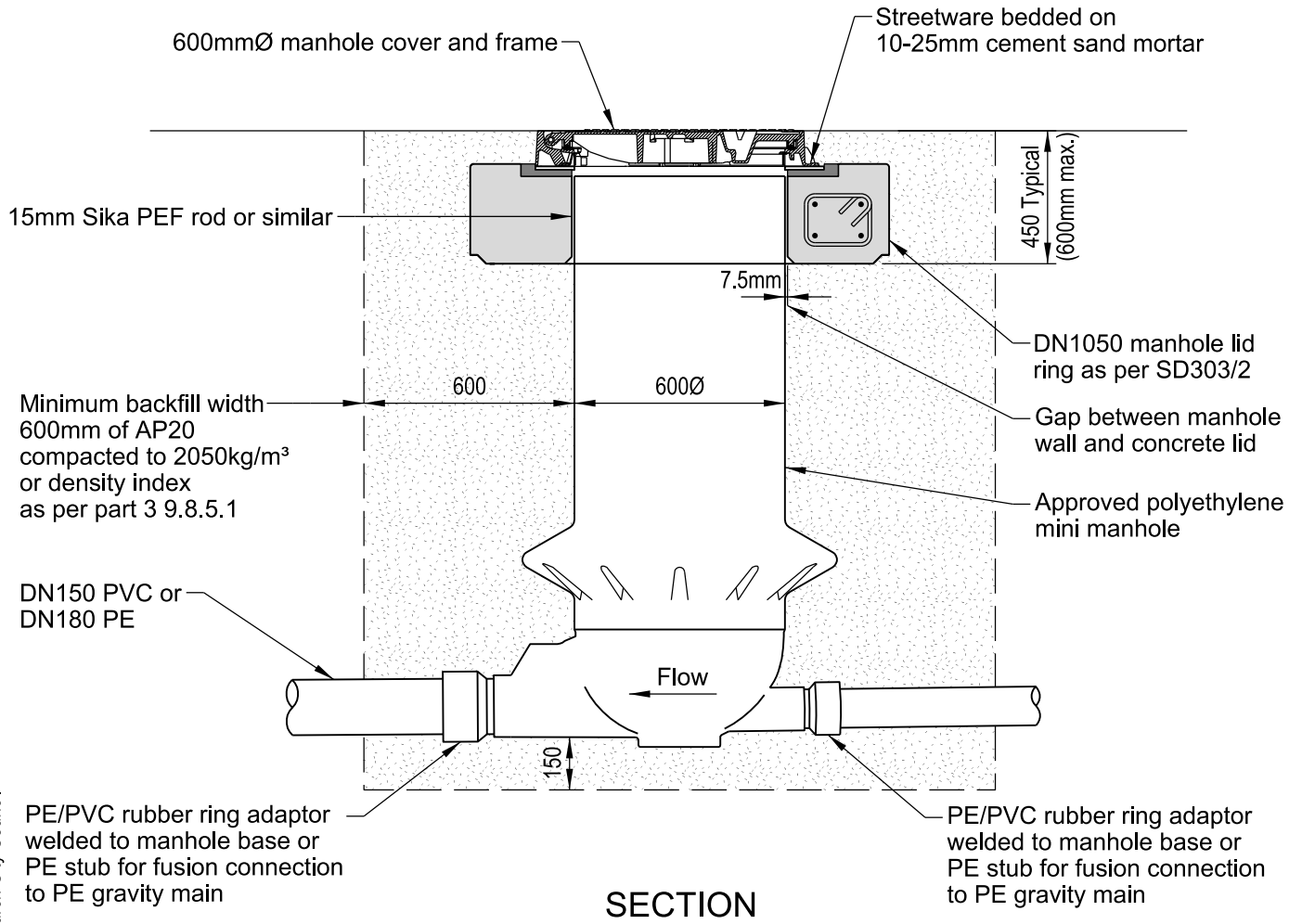
SD306

SHEET 2 of 2

ds130701a.dgn



PLAN



SECTION

NOTES:

1. Maximum depth 2.5m.
2. Load limit AS3996 Class C.

Christchurch City Council

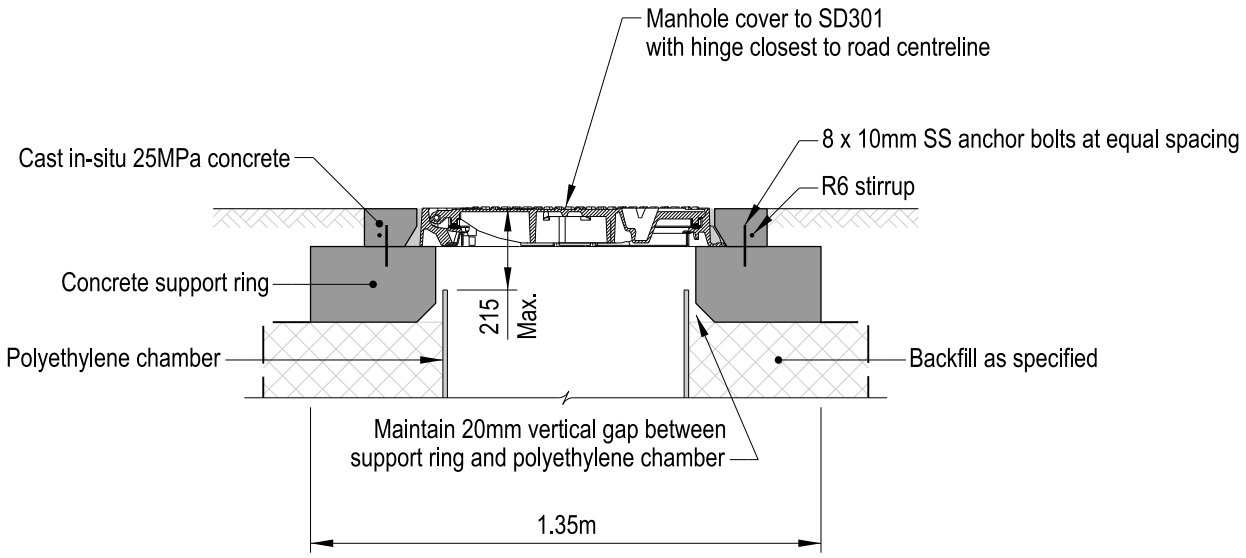
600mm MINI MANHOLE FOR PIPES UP TO DN180

ISSUE DATE	OCT 2016

SD307

SHEET 1 OF 1

ds130801b.dgn



NOTE:

1. Minimum concrete cover to all reinforcement is 45mm.

Christchurch City Council

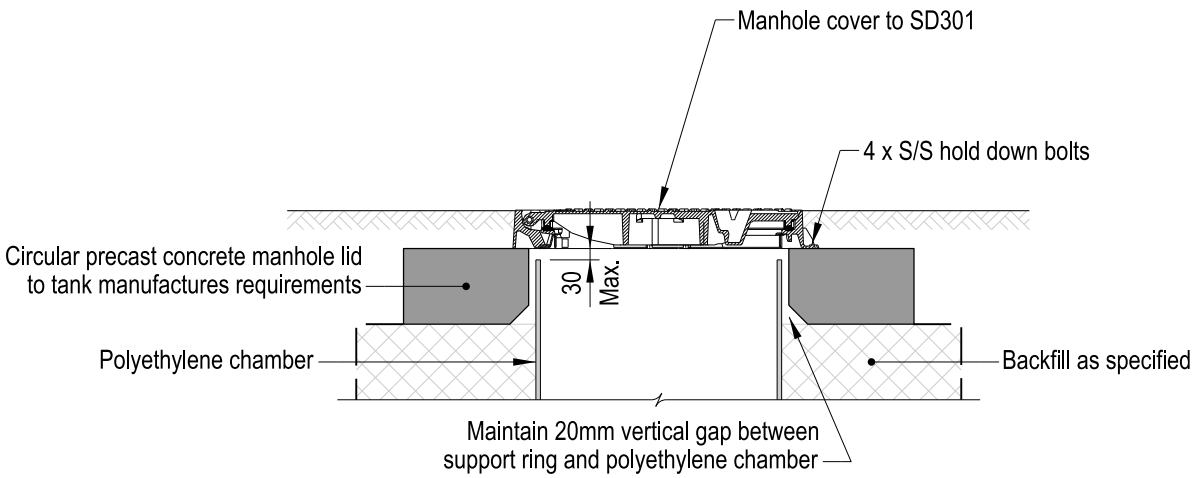
VACUUM PIT AND PE MANHOLE LID DETAIL

ISSUE DATE	NOV 2022

SD308

SHEET 1 OF 2

ds130802a.dgn



NOTE:

1. Minimum concrete cover to all reinforcement is 45mm.

Christchurch City Council

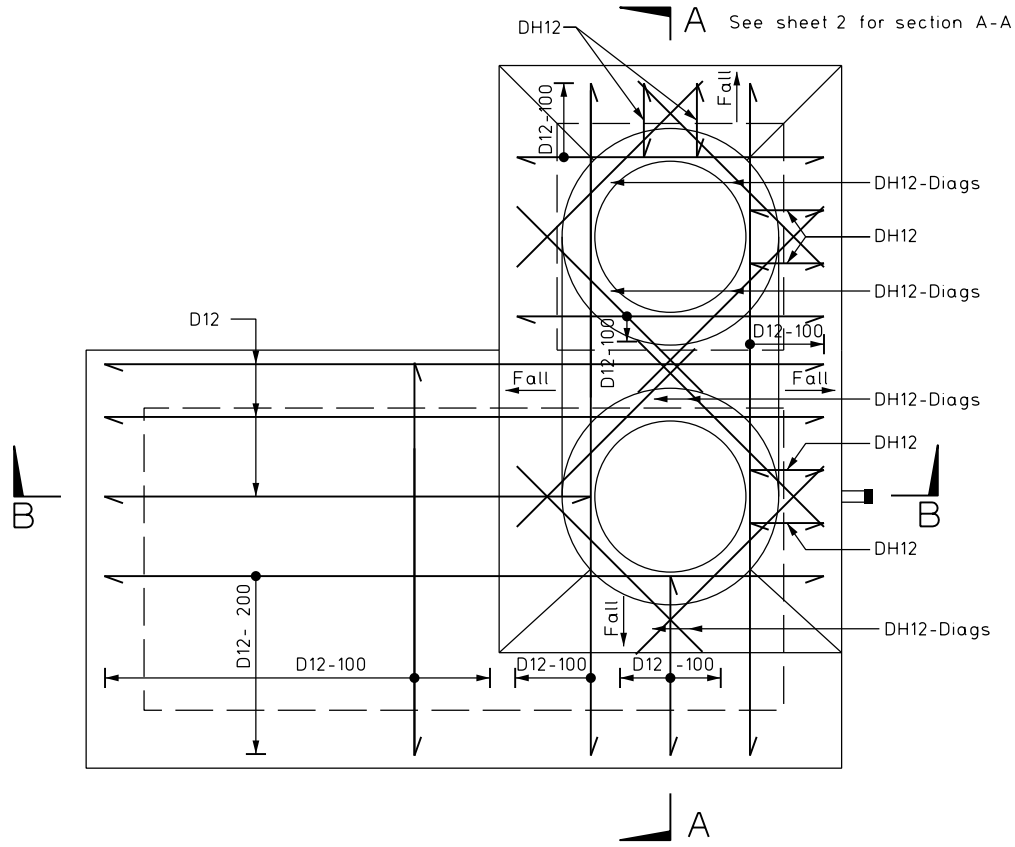
PRESSURE SEWER TANK TRAFFICABLE LID DETAIL

ISSUE DATE	NOV 2022

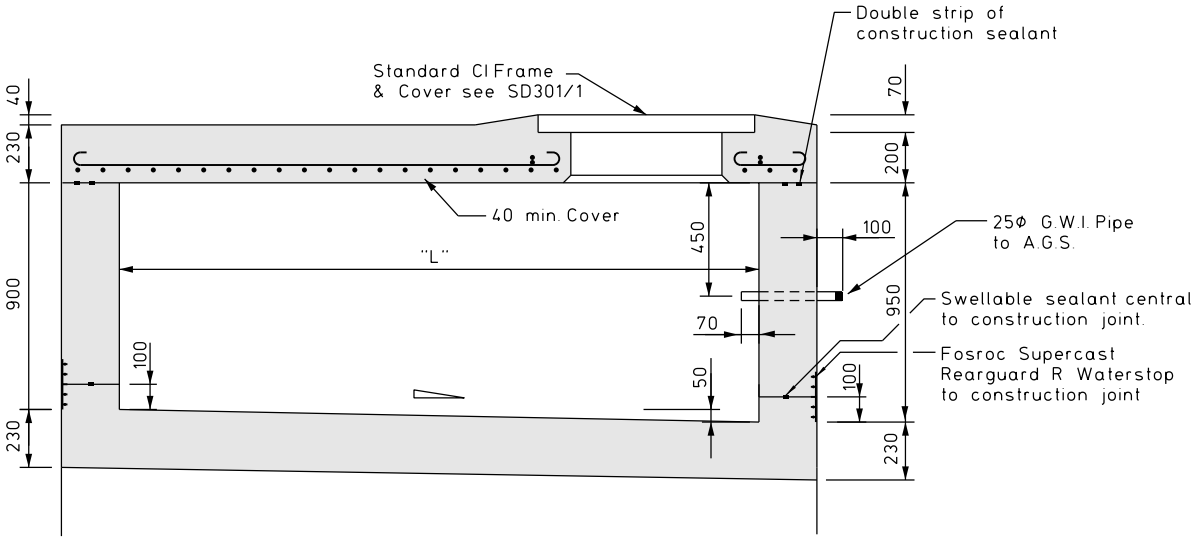
SD308

SHEET 2 OF 2

DS031101H



PLAN OF COMMON WALL FLUSH TANK & MANHOLE



SECTION B-B THROUGH STANDARD FLUSH TANK

NOTES:

1. The nominal capacity of the flush tank, (cubic metres) shall be as specified and shall equal the internal length "L" in metres.
2. Unless specified otherwise the length of the tank shall be parallel with the direction of the sewer.
3. For cast-iron frames and covers see SD301/1.
4. Where "L" exceeds 4m the floor slab and longitudinal wall shall be reinforced with AS/NZS 4671 SE62 mesh with 50mm internal cover.
5. Setting of flush tank top slab must allow for road crossfall.
6. See Plan SD313 for air gap separator.
7. All concrete to be 40 MPa.
8. Concrete work to comply with NZS 3109.

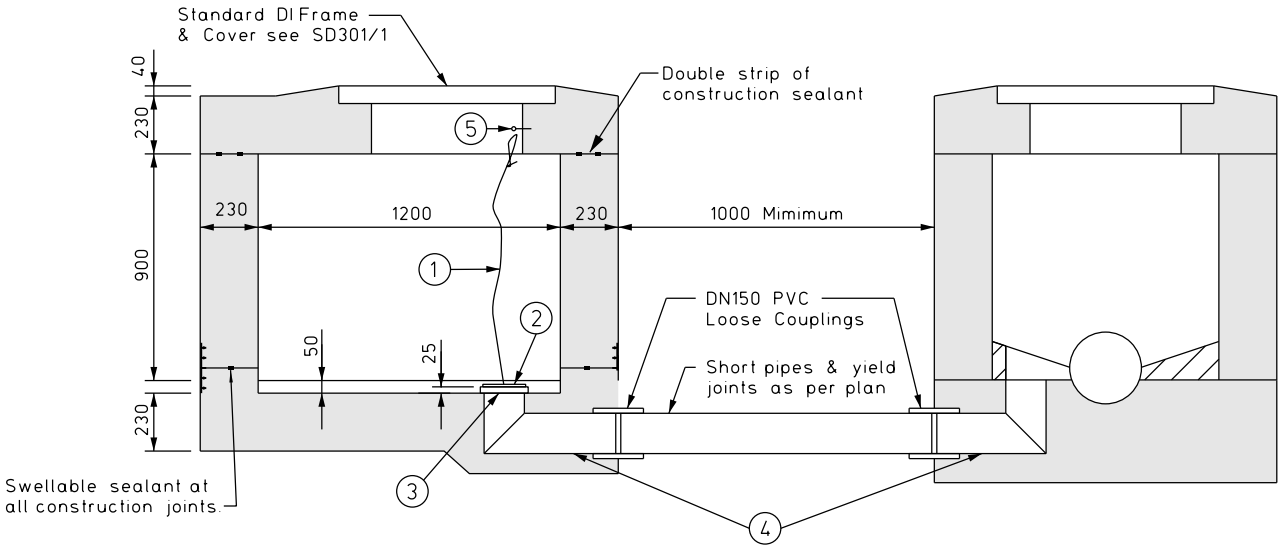
Christchurch City Council

FLUSH TANKS

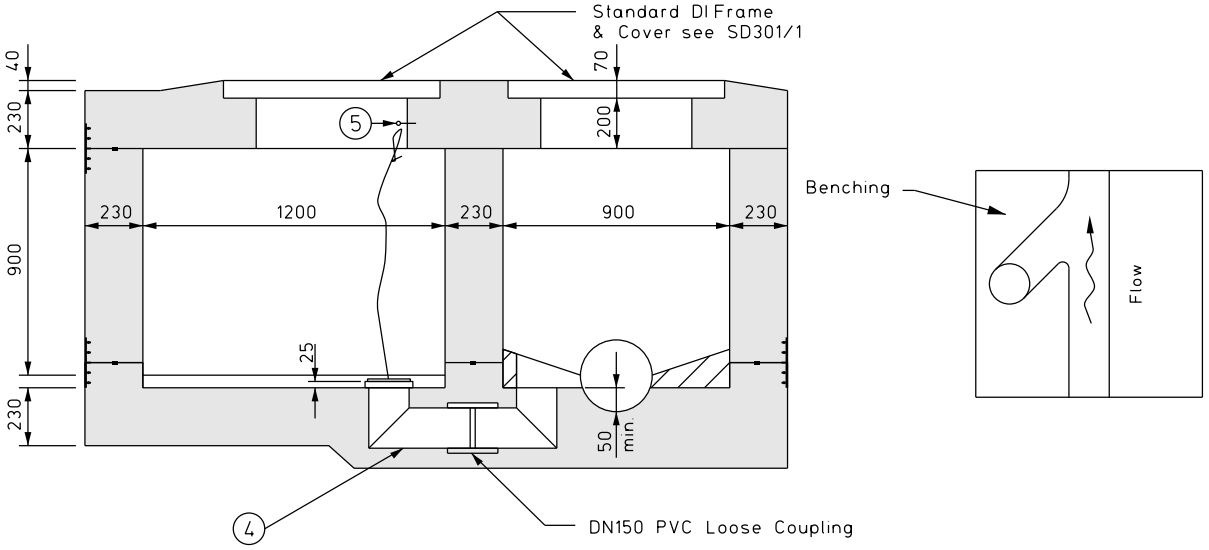
ISSUE DATE | DEC 2019

SD311

SHEET 1 of 2



SECTION THROUGH REMOTE FLUSHTANK & MANHOLE



SECTION A-A THROUGH COMMON WALL FLUSHTANK & MANHOLE

(FOR LOCATION SEE Sheet 1)

NOTES:

1. 8Φ Polypropylene Rope complete with hook.
2. Flushtank Plug.
3. PVC Insert.
4. 2 special PVC pipes.
5. 16mm eyelet.
6. All concrete to be 40 MPa.

Christchurch City Council

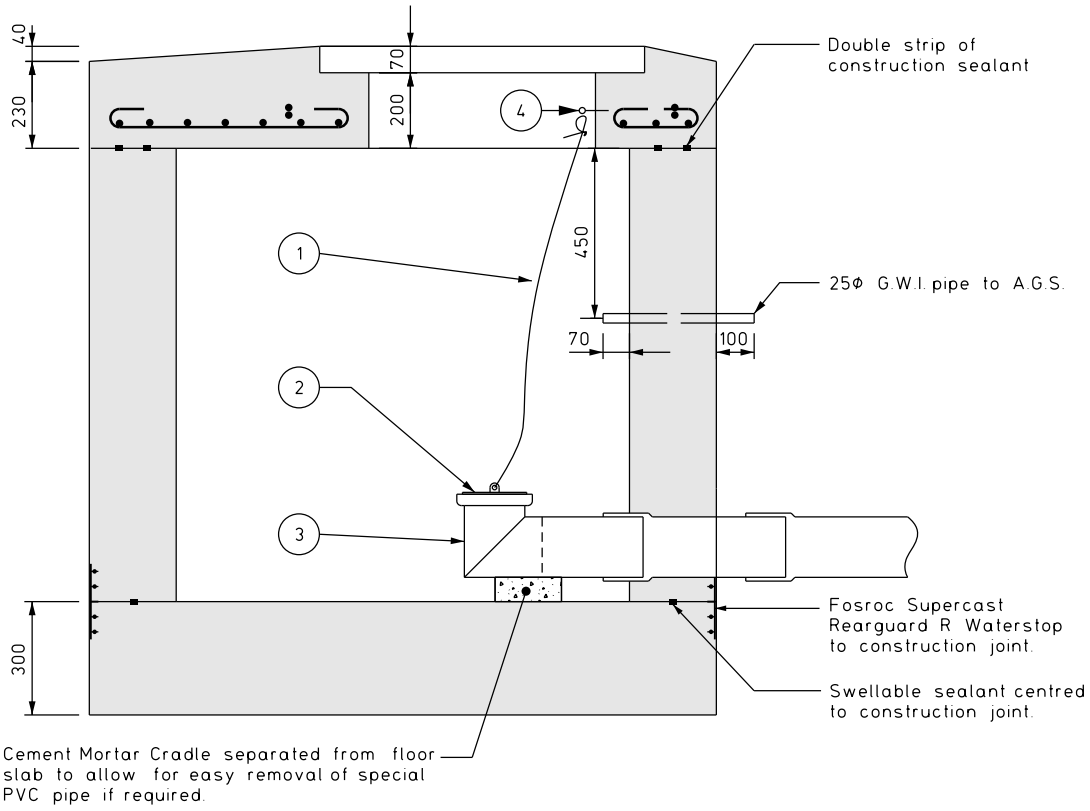
FLUSH TANKS

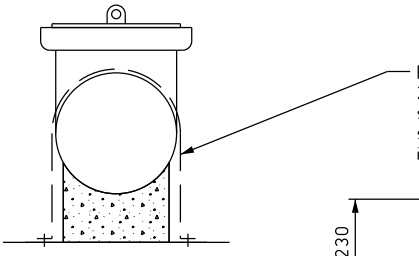
ISSUE DATE	APR 2014

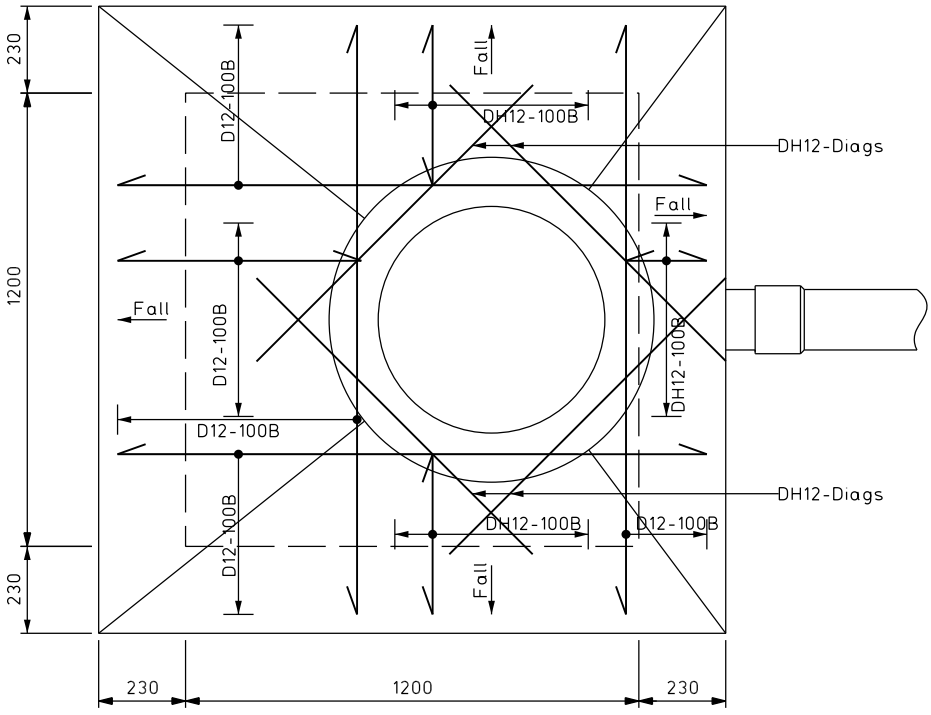
SD311

SHEET 2 of 2

DS031201G







(1) 8Φ Polypropylene rope complete with hook.

(2) Flush tank plug.

(3) Special PVC pipe.

(4) 16mm eyelet.

NOTES:

1. See SD302 for further construction details.
2. Minimum concrete cover to all reinforcement is 40mm.

Christchurch City Council

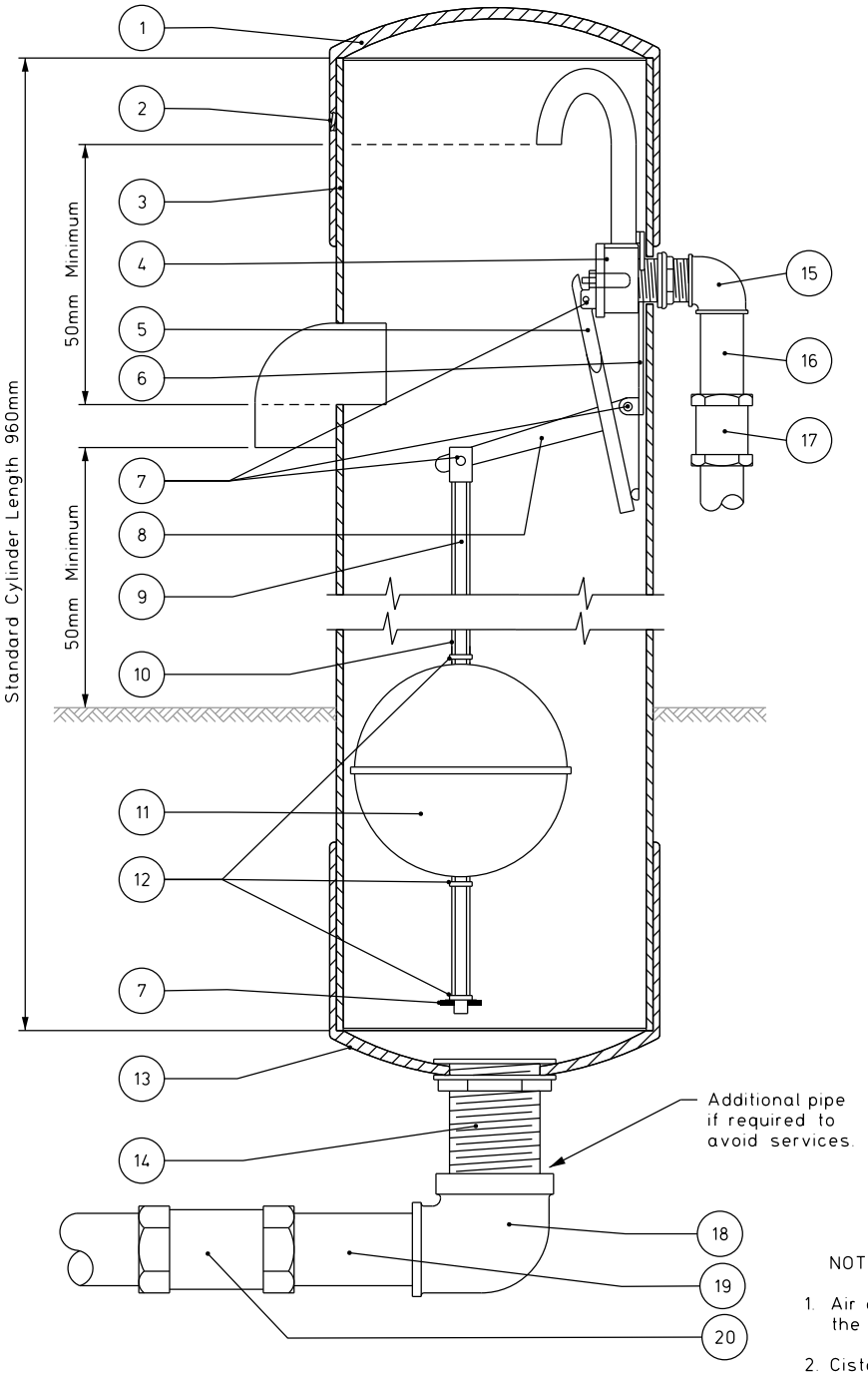
FLUSH MANHOLES

ISSUE DATE | OCT 2016

SD312

SHEET 1

DS031301C

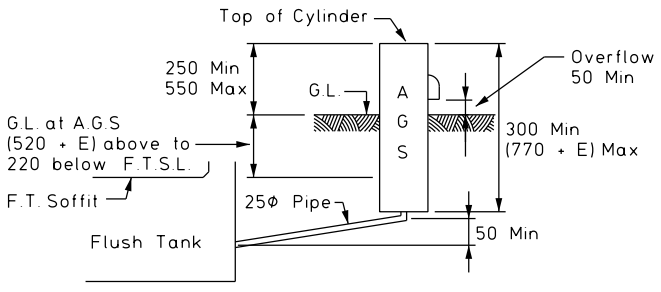


PARTS OBTAINABLE FROM THE COUNCILS PAGES ROAD STORE:

1. Top cap - PVC removable.
2. 10mm x 10mm hex socket head S.S. grubscrew.
3. Cylinder 150mmΦ PVC PN9 pipe with overflow.
4. "Secol" diaphragm valve, backnut and delivery tube.
5. Valve lever.
6. Valve assembly back plate.
7. Split pins.
8. Bell crank lever.
9. Float rod and clevis.
10. Plastic float adjustment tube.
11. PVC float.
12. Washers
13. Bottom cap - PVC cemented in place.
14. 38mmΦ shower waste sealed in bottom cap.

PARTS NOT SUPPLIED WITH UNIT:

15. 15mmΦ G.W.I. elbow.
16. 15mmΦ G.W.I. pipe.
17. 15mmΦ G.W.I. Johnson coupling.
18. 38 - 25mmΦ G.W.I. reducing elbow.
19. 25mmΦ G.W.I. pipe.
20. 25mmΦ G.W.I. Johnson coupling.



NOTES :

1. Air gap separators shall be located within the limits shown in the diagram above.
2. Cistern shall be placed in footpath as close as possible to the road/property boundary and to a common lot boundary.
3. High pressure water connection shall be made to water main wherever possible but where connection has to be made to a small service pipe a flexible loop of 15mm Φ polythene pipe shall be used between the water meter and the air gap separator cistern to reduce water hammer effects.
4. The float shall be adjusted by manipulating distance pieces to obtain water level 30 +/- 10mm above tank soffit, but enough adjustment will be left to allow W.L. to be set 30mm below tank soffit.
5. A special extended air gap separator will be required when ground level is too high, ie, standard barrel and float rod shall be extended by length E with maximum of 500mm. E = 0 mm for Standard air gap separator.
6. Low pressure 25mmΦ pipe to be laid on grade, as shown, to prevent air locks and debris accumulation.

Christchurch City Council

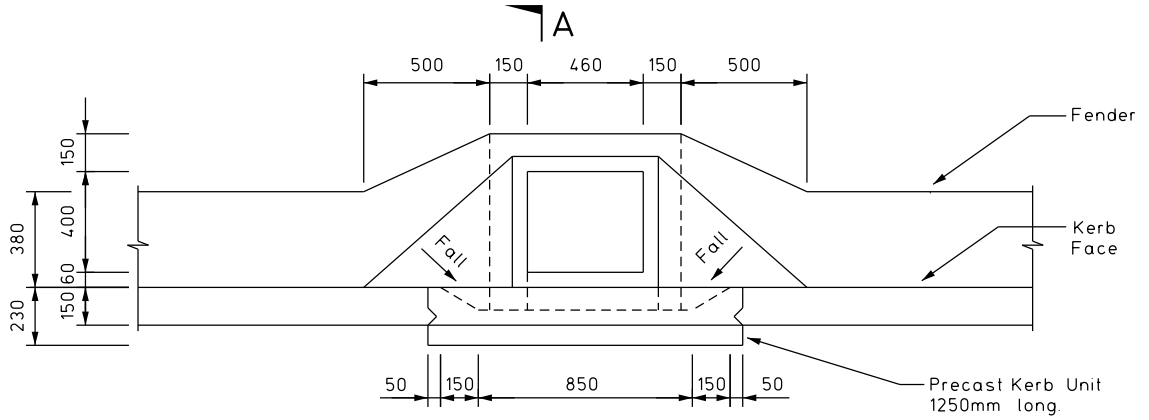
AIR GAP SEPARATOR

ISSUE DATE	DEC 2019

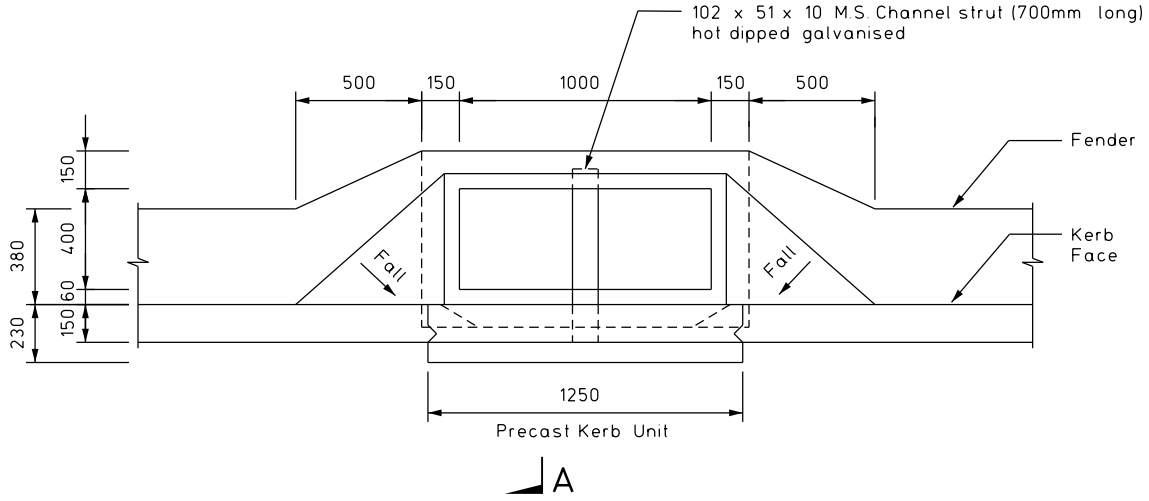
SD313

SHEET 1

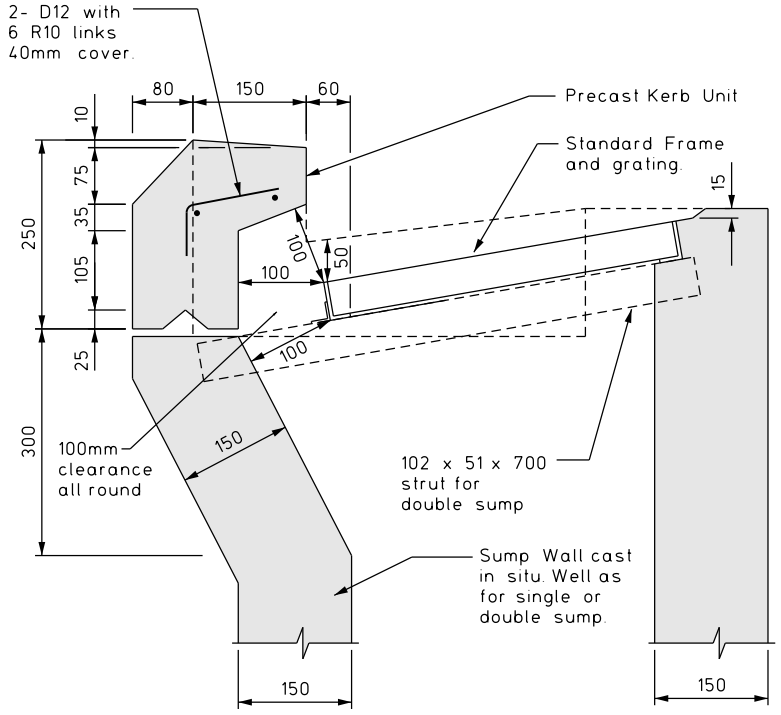
DS032101B



PLAN - SIDE ENTRY SINGLE SUMP



PLAN - SIDE ENTRY DOUBLE SUMP



NOTES:

1. Concrete work to comply with NZS 3109.
2. All concrete to be 40 MPa.
3. Coat end faces of precast units with an approved epoxy tiecoat before jointing.
4. Use 50 x 50 x 8 Angle 700mm long (hot dipped galvanised) to support end of frame at K & F.C./K & D.C. junction.

SECTION A-A

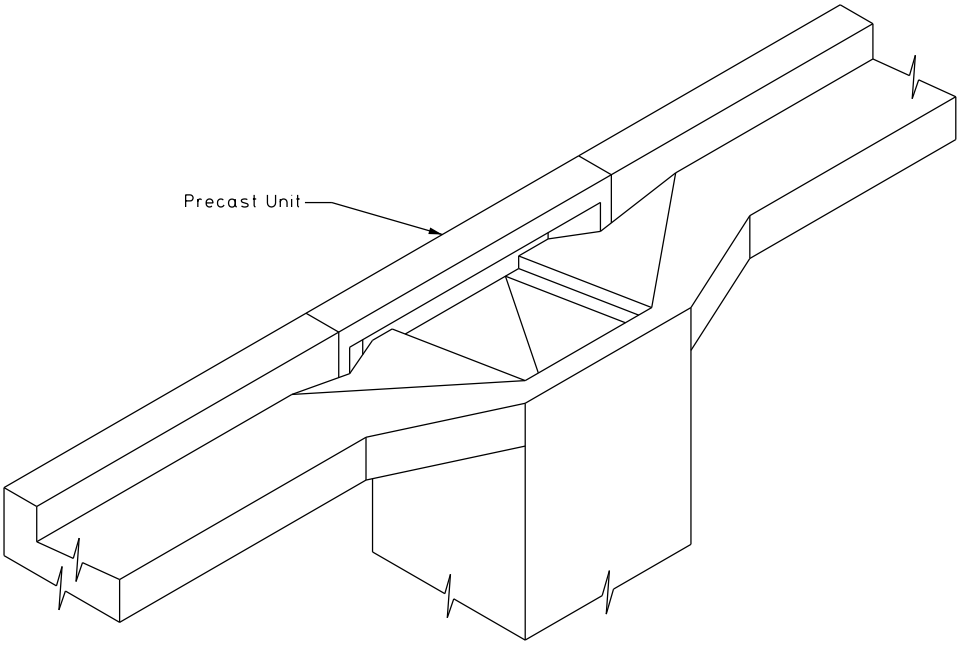
Christchurch City Council

SIDE ENTRY SUMPS PRECAST KERB UNIT

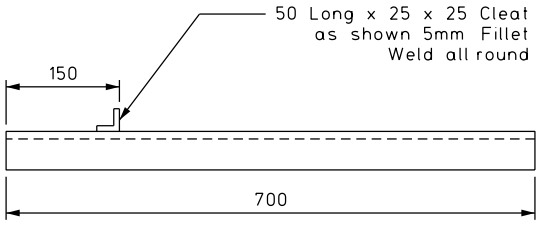
ISSUE DATE	DEC 2009

SD321

DS032102B

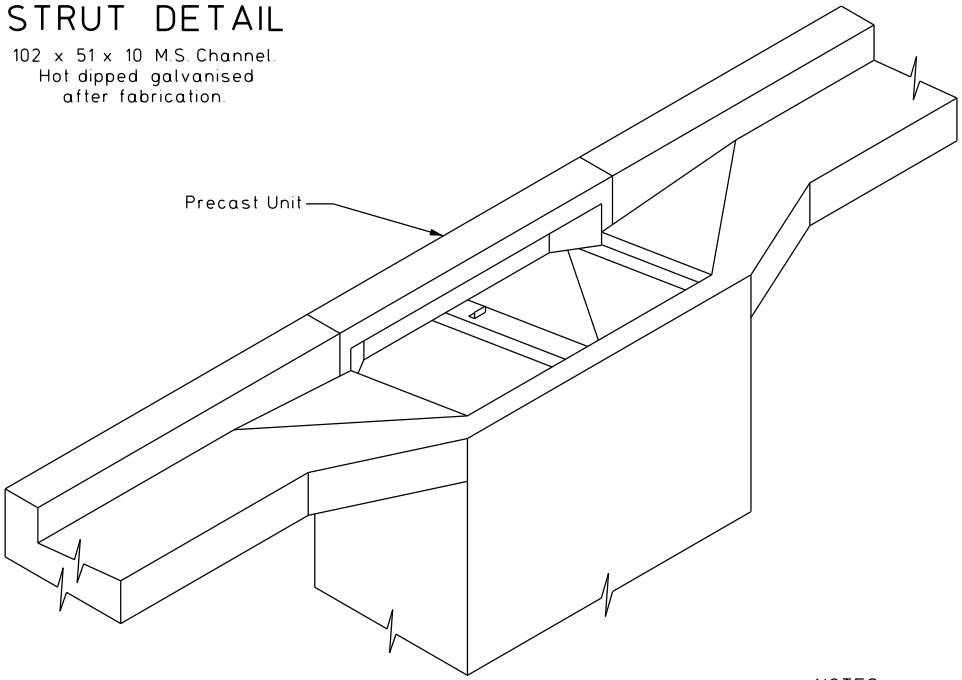


SINGLE SUMP



STRUT DETAIL

102 x 51 x 10 M.S. Channel.
Hot dipped galvanised
after fabrication.



DOUBLE SUMP

NOTES:

1. Risers 200mm minimum depth.

Christchurch City Council

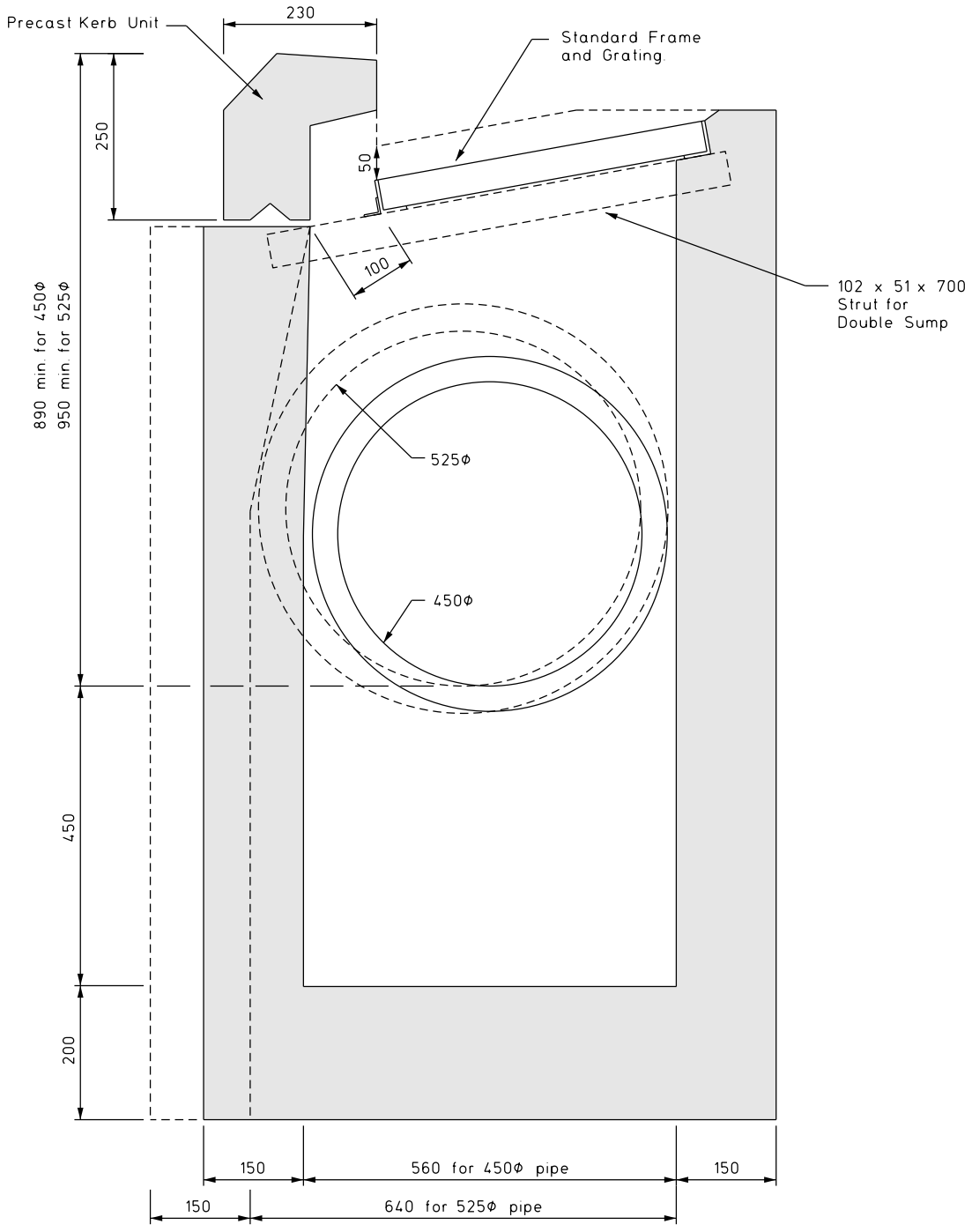
SIDE ENTRY SUMPS PRECAST KERB UNIT

ISSUE DATE	NOV 2022

SD321

SHEET 2 of 2

DS032201D



NOTES:

1. Notes on sheet SD321/1 apply.
2. Maximum cover to pipe to be:
   - 0.75m where a single sump is being installed.
   - 1.20m where a double sump is being installed.
3. Risers 200mm minimum depth.

Christchurch City Council

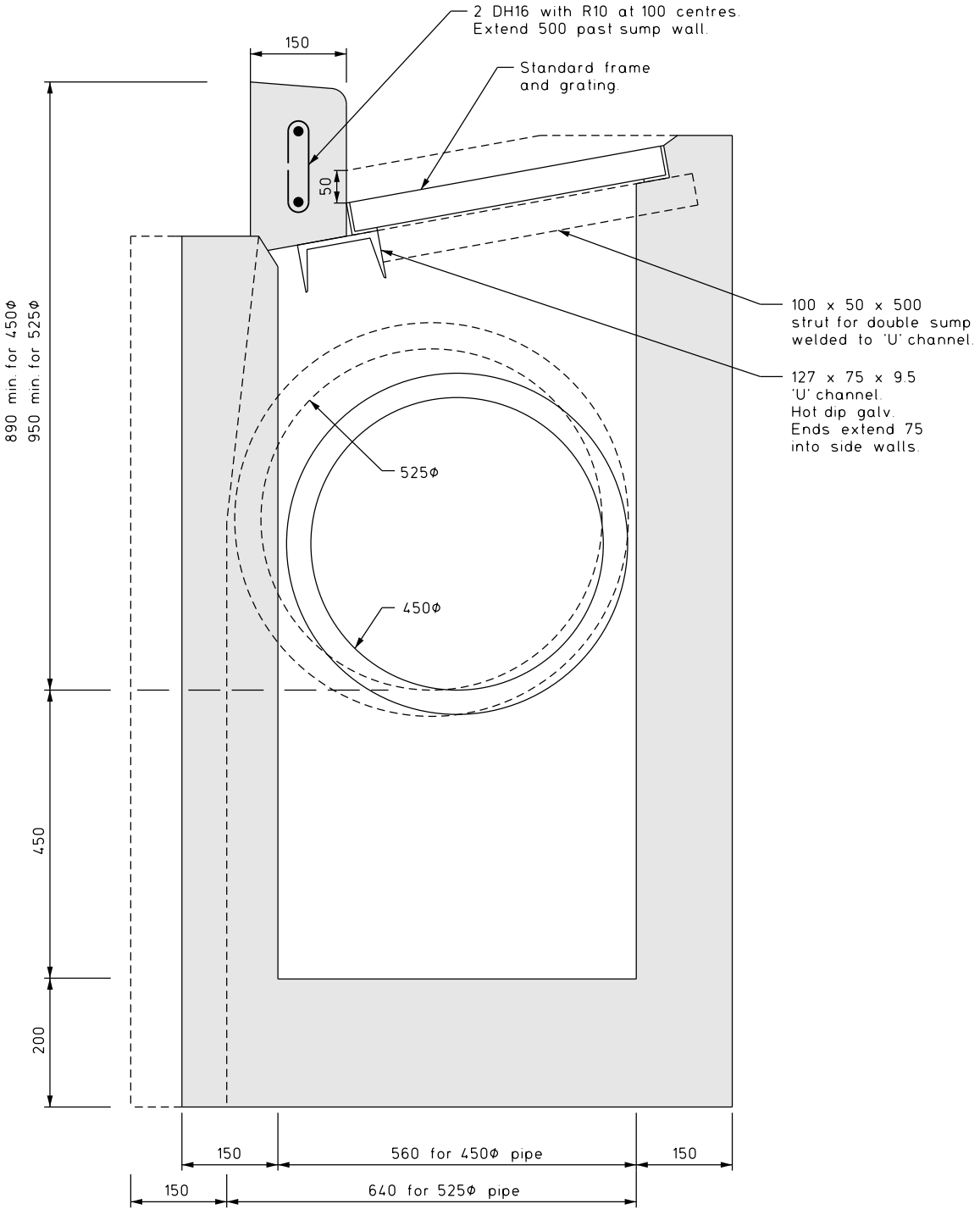
SIDE ENTRY ENLARGED SUMP

ISSUE DATE	NOV 2022

SD322

SHEET 1 of 2

DS032202C



NOTES:

1. Notes on sheet SD321/1 apply.
2. Maximum cover to pipe to be:
   - 0.75m where a single sump is being installed.
   - 1.20m where a double sump is being installed.
3. Risers 200mm minimum depth.

Christchurch City Council

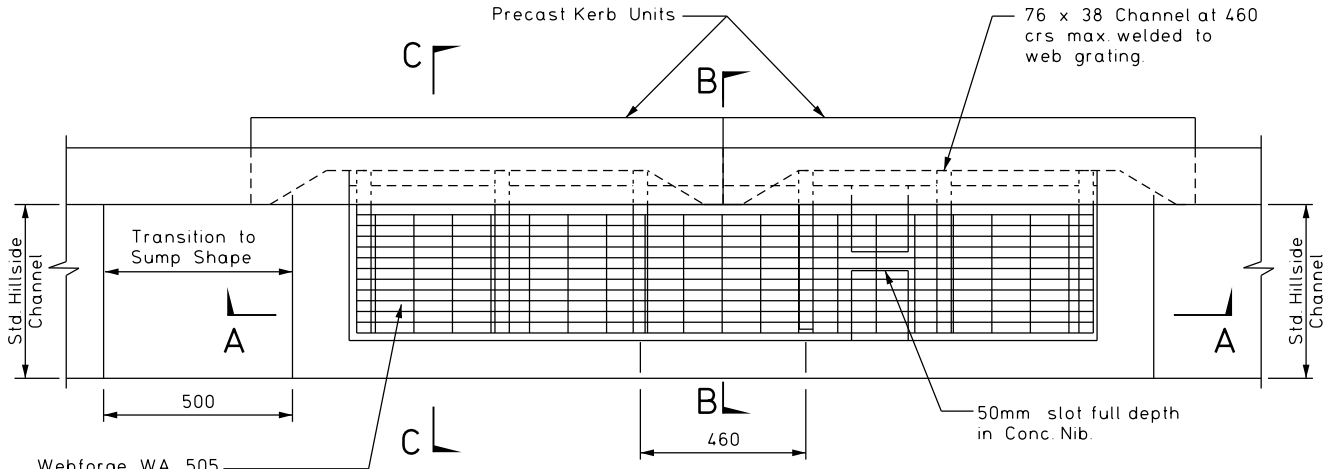
SINGLE ENLARGED SUMP

ISSUE DATE	NOV 2022

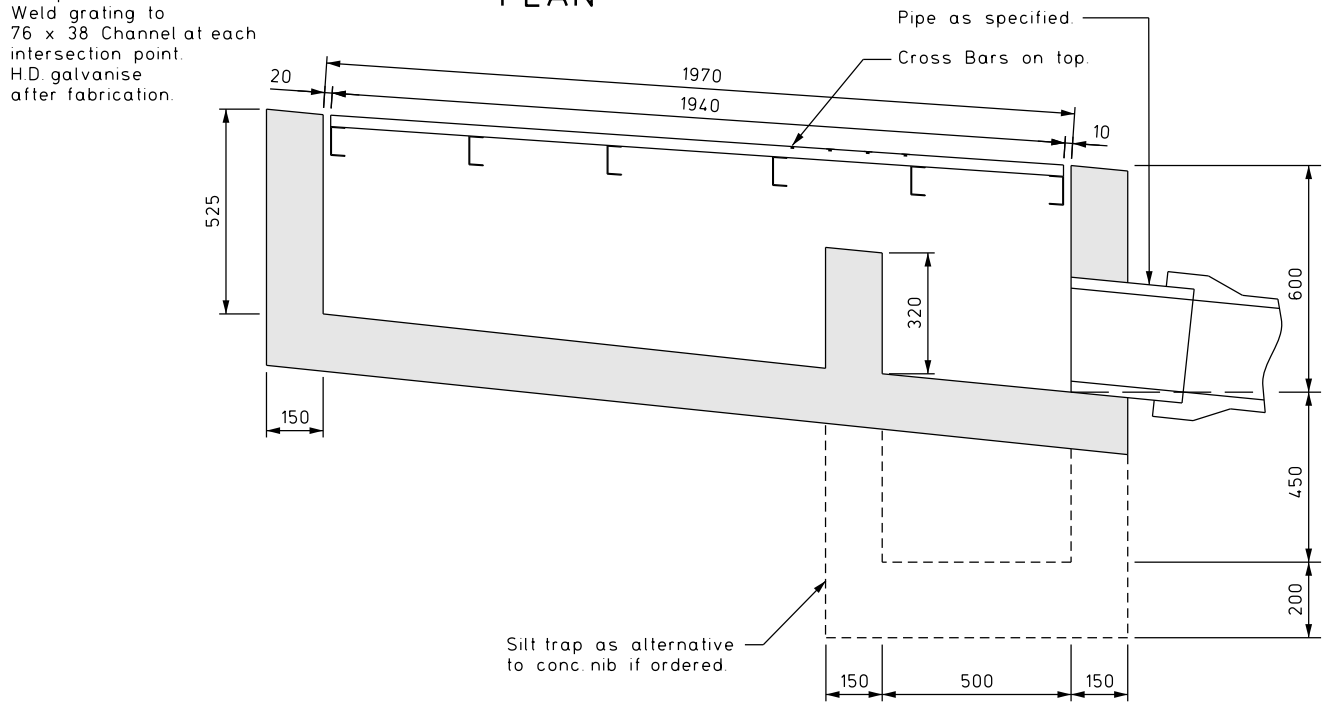
SD322

SHEET 2 of 2

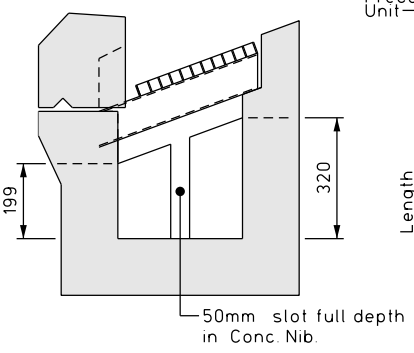
DS032401C



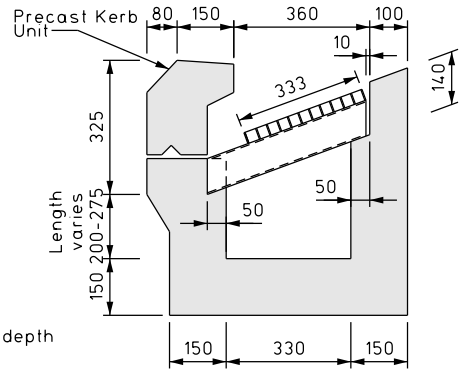
PLAN



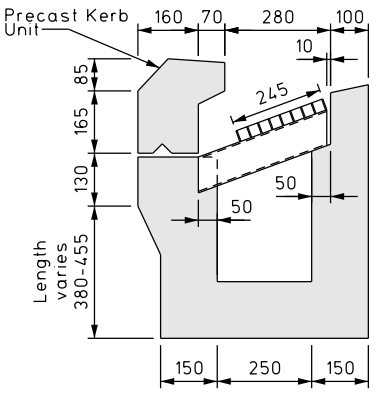
SECTION A-A



SECTION B-B



SECTION C-C
HILLSIDE CHANNEL



SECTION C-C
KERB & FLAT CHANNEL

NOTES:

1. Notes on sheet SD321/1 apply.

Christchurch City Council

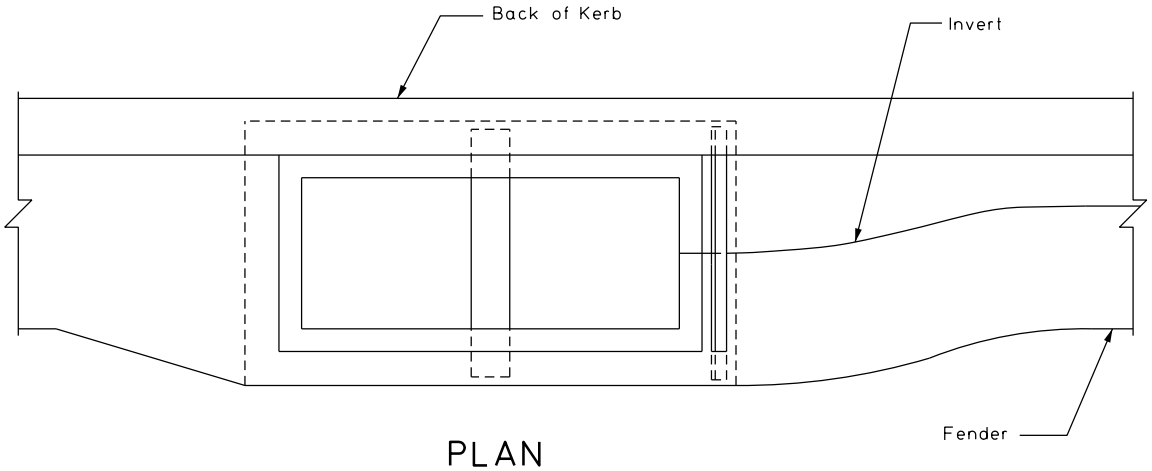
HILLSIDE SUMP

ISSUE DATE | MAR 2013

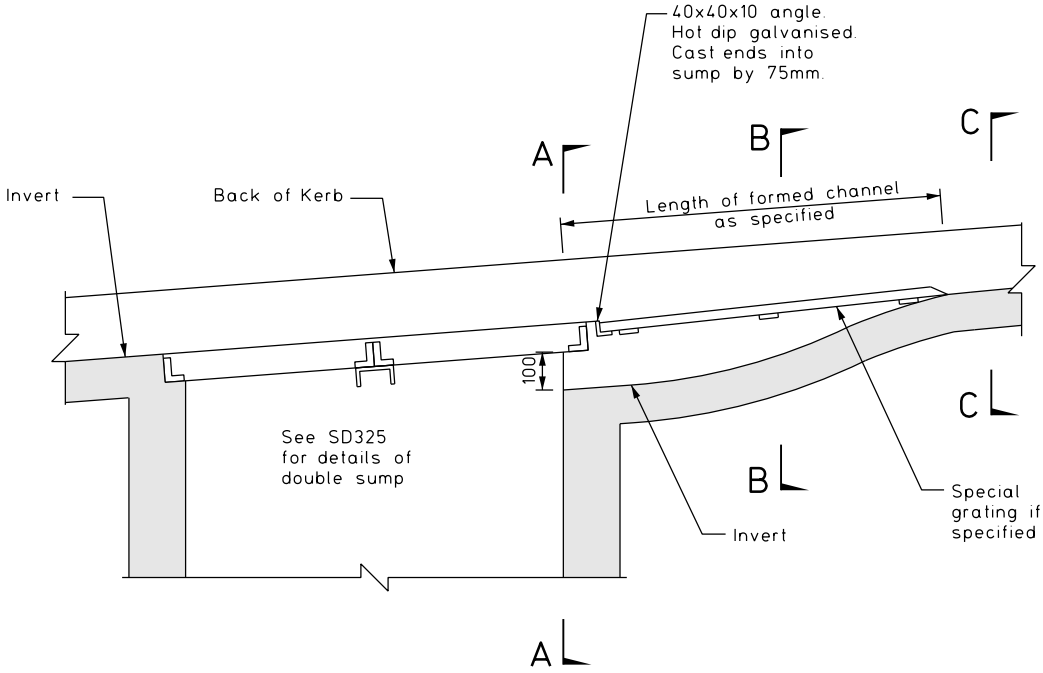
SD324

SHEET 1 of 2

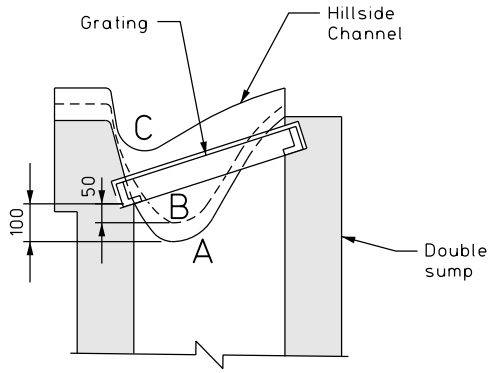
DS032402B



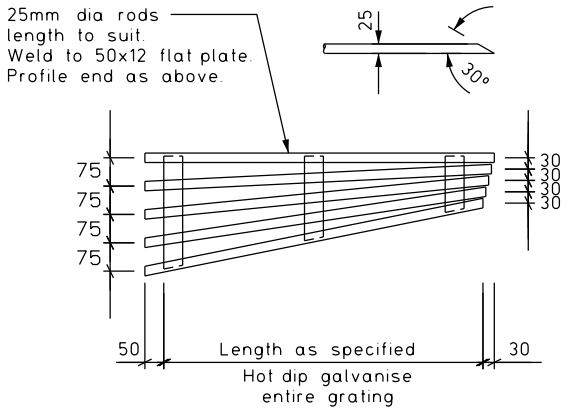
PLAN



LONGITUDINAL SECTION



SECTION A-A, B-B & C-C



SPECIAL GRATING

NOTES:

1. Notes on sheet SD321/1 apply.

Christchurch City Council

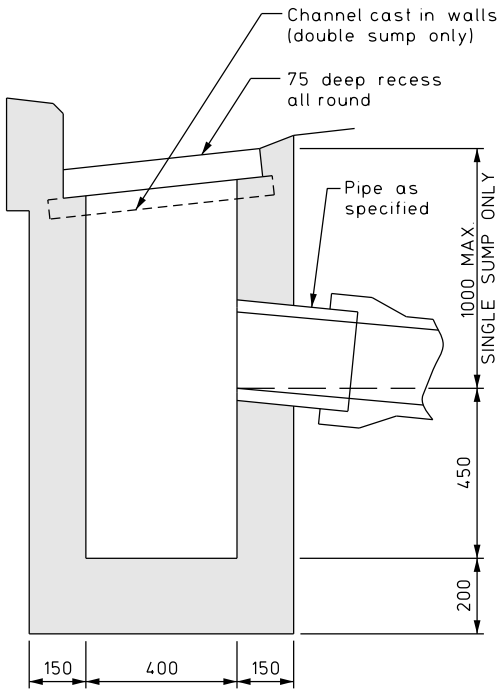
SPECIAL ENTRY TO DOUBLE SUMP IN HILLSIDE CHANNEL

ISSUE DATE	DEC 2009

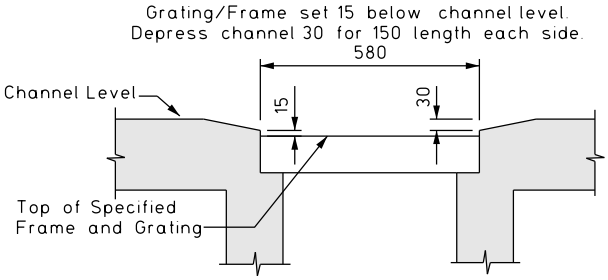
SD324

SHEET 2 of 2

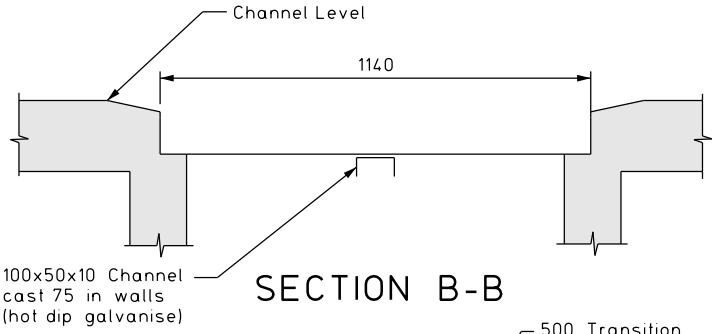
DS032501F



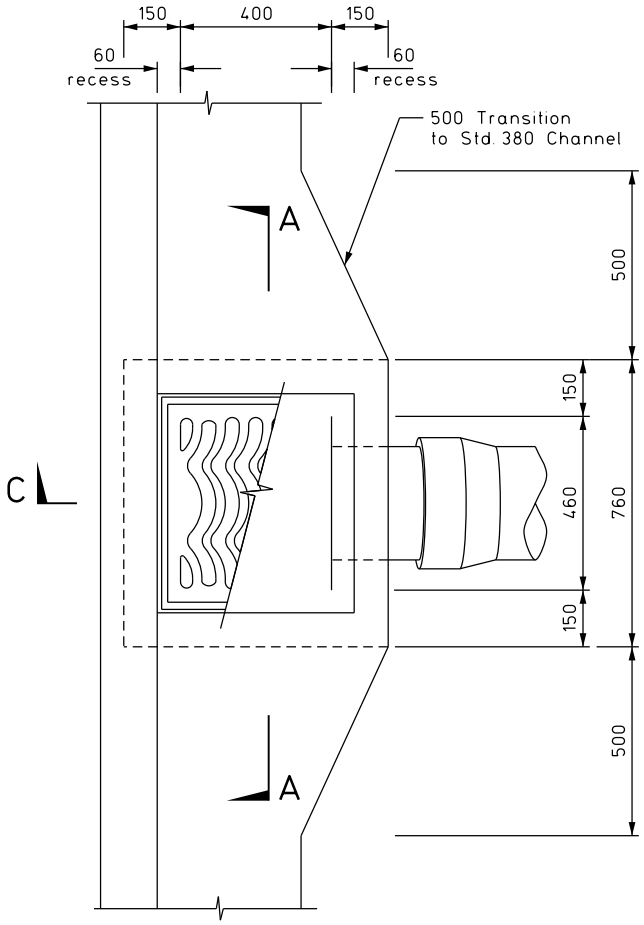
SECTION C-C



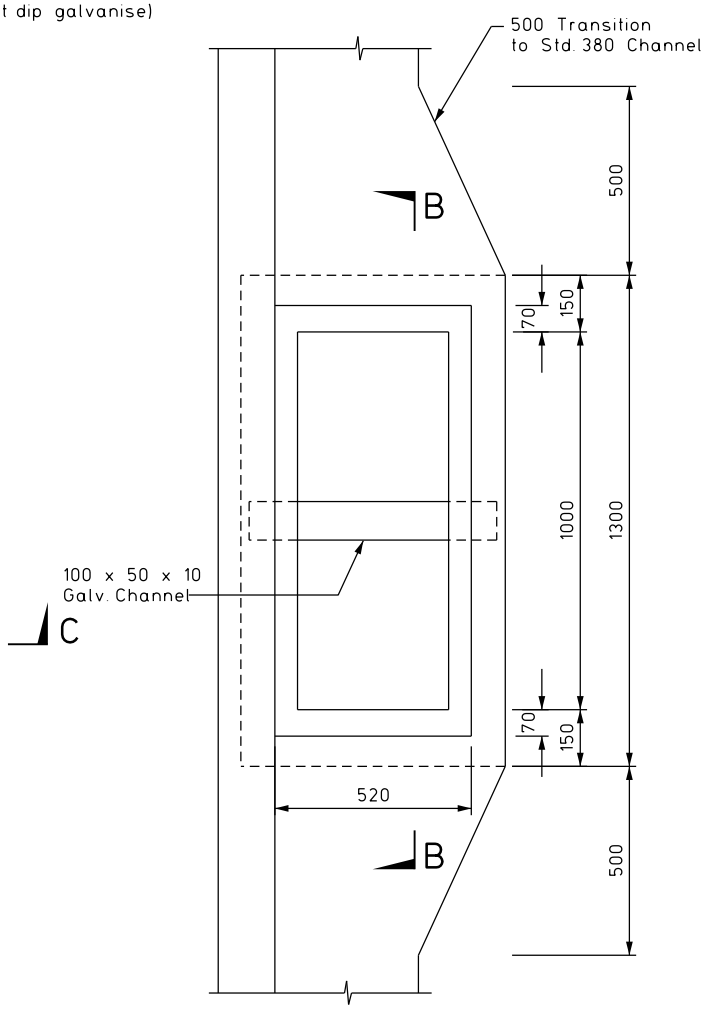
SECTION A-A



SECTION B-B



PLAN
SINGLE SUMP



PLAN
DOUBLE SUMP

NOTES:

1. Yield joints shall be provided in accordance with plan SD341 except that in all cases two yield joints and one short pipe shall be used.
2. General method of pipelaying, angle connections, corbels, etc. to be in accordance with plan SD341.
3. Concrete work to comply with NZS 3109.
4. All concrete to be 40MPa.
5. Flush sump installations have a 50% reduction in inlet design capacity.
6. Risers 200mm minimum depth.

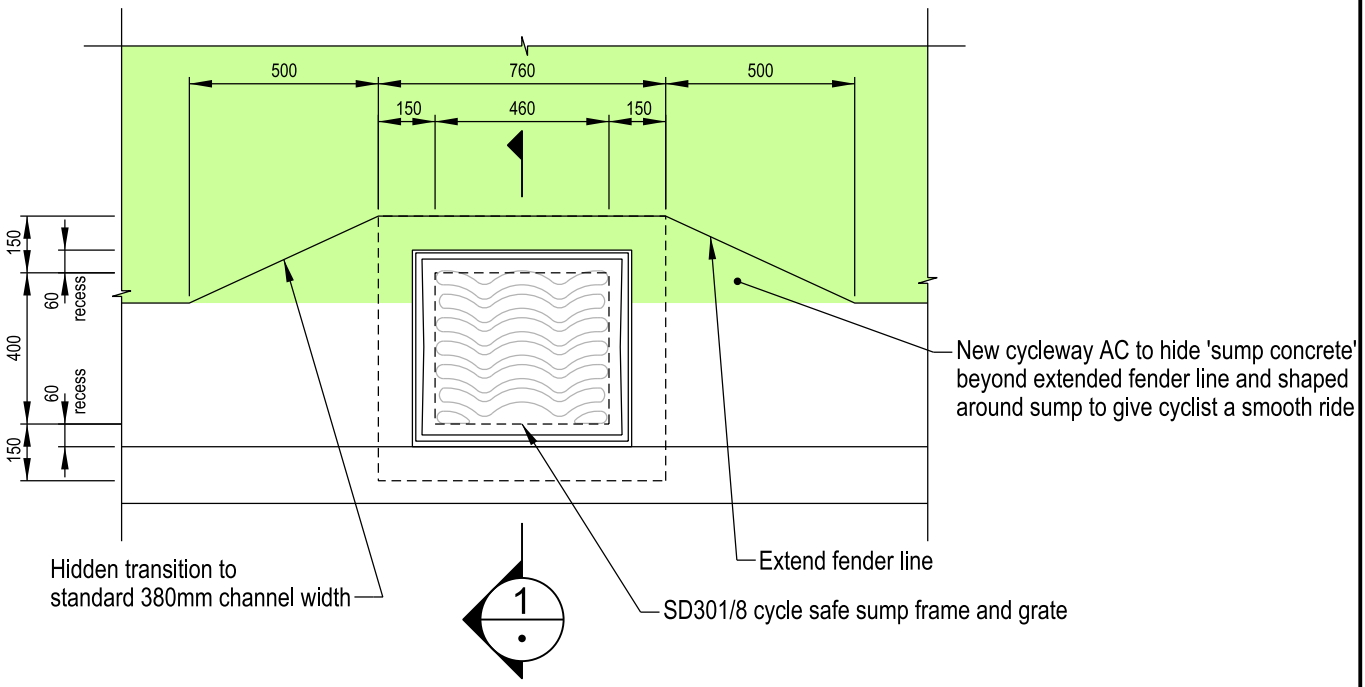
Christchurch City Council

SINGLE & DOUBLE SUMPS FLAT CHANNEL

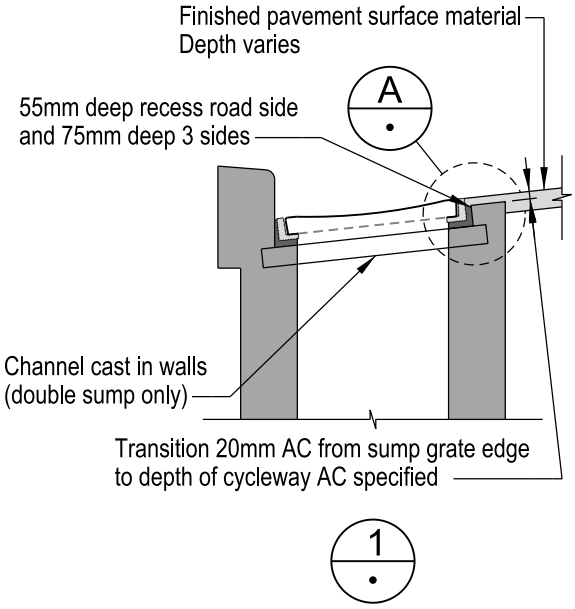
ISSUE DATE	NOV 2022

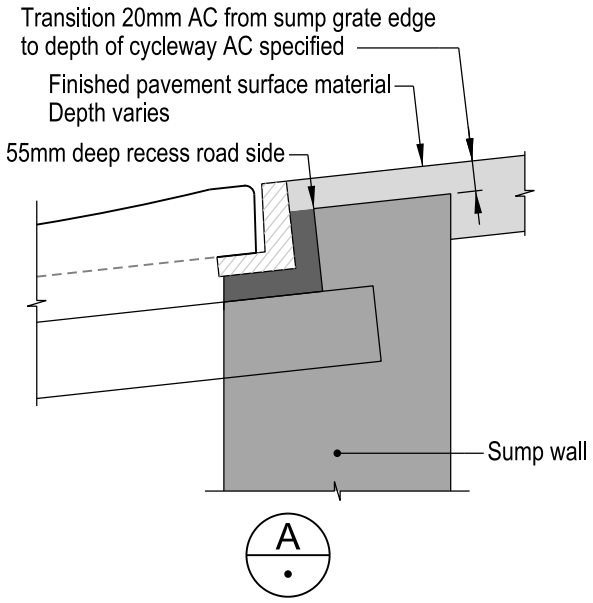
SD325

SHEET 1 2



PLAN
SINGLE SUMP IN CYCLEWAYS





RETROFIT A NEW CYCLE SAFE GRATE AND NEW CYCLE SAFE FRAME ONTO AN EXISTING SUMP

1. Remove non-cycle safe grate and frame.
2. From 'extended fender line', grind exposed concrete up to the frame edge 20mm below final surface levels.
3. Install new SD301/8 grate and frame.
4. Ensure sump frame secured into fender concrete with epoxy mortar.

NOTE TO DESIGNER:

1. Installing any new cycle grate generally flush with fender profile as opposed to the standard SD325 detail where grate depressed ~45mm into fender significantly reduces the sump grate potential collection capacity (by ~25-50%). This needs to be taken into account during stormwater design.

ds132502a.dgn

Christchurch City Council

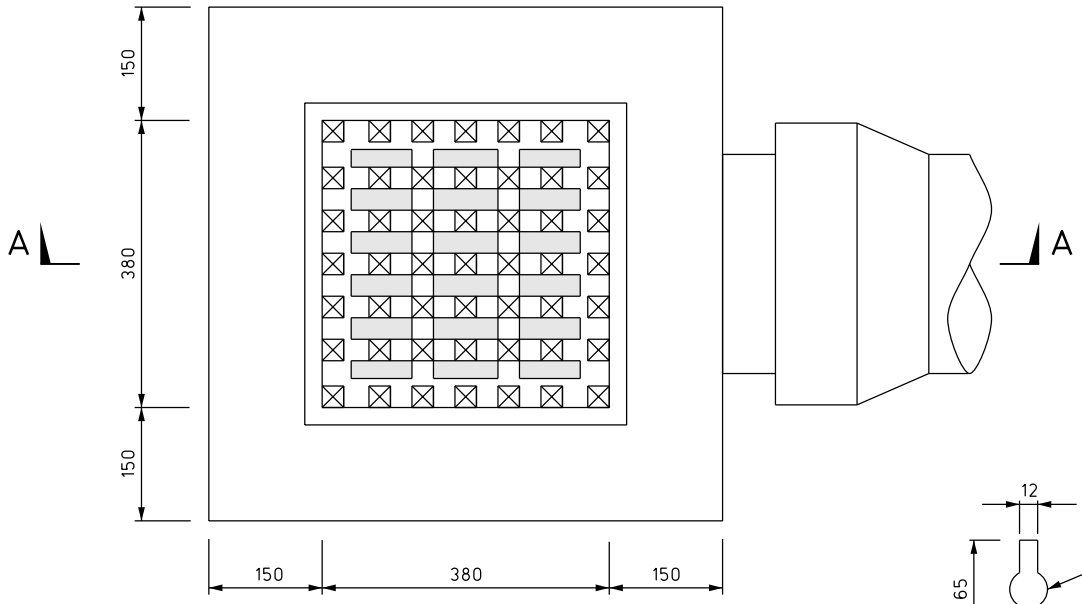
CYCLEWAY SUMP FLAT CHANNEL

ISSUE DATE	OCT 2016

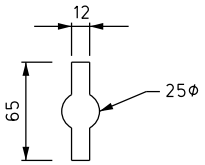
SD325

SHEET 2 OF 2

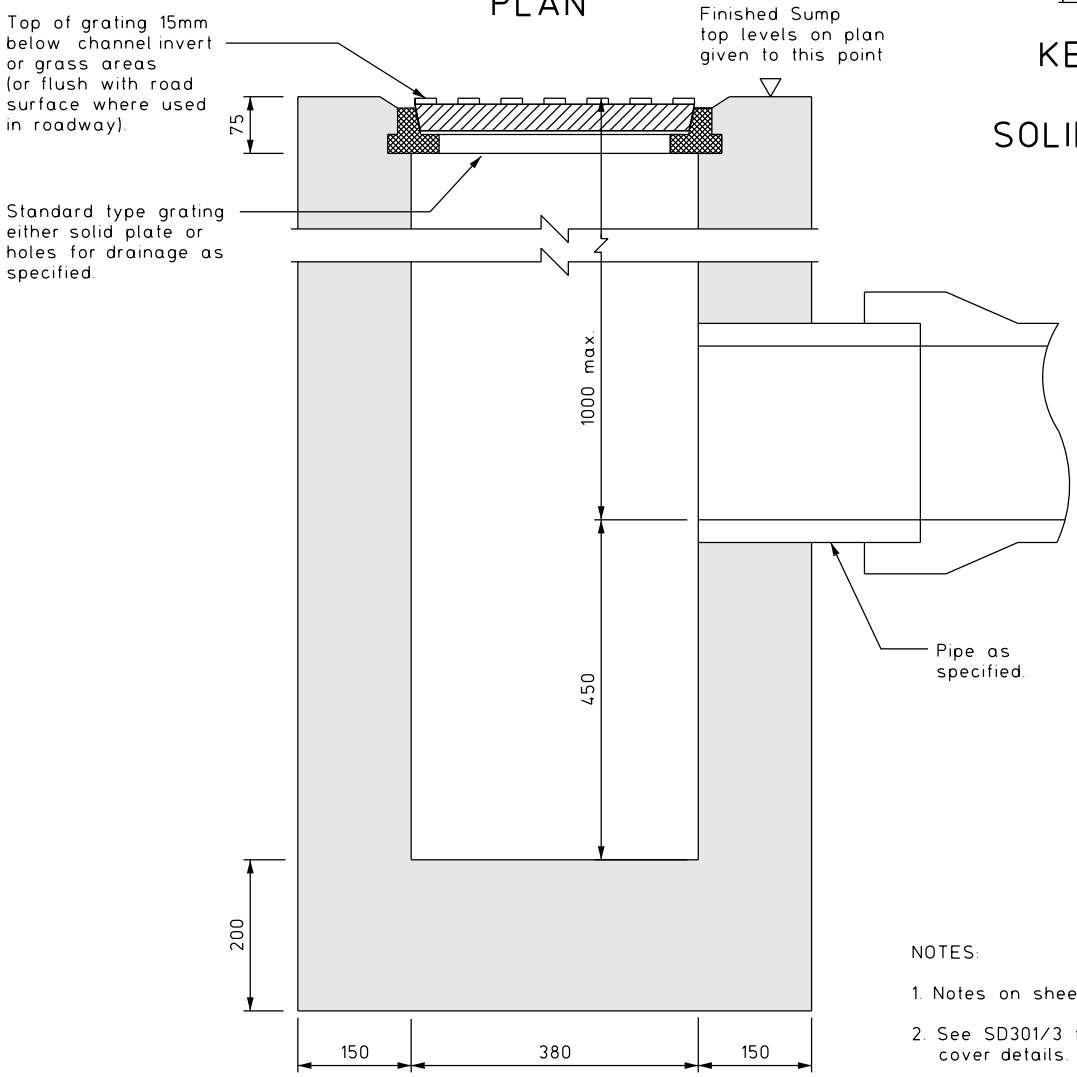
DS032701D



PLAN



KEYWAY FOR SOLID PLATE



SECTION A-A

NOTES:

1. Notes on sheet SD325 apply.
2. See SD301/3 for frame and cover details.
3. Risers 200mm minimum depth.

Christchurch City Council

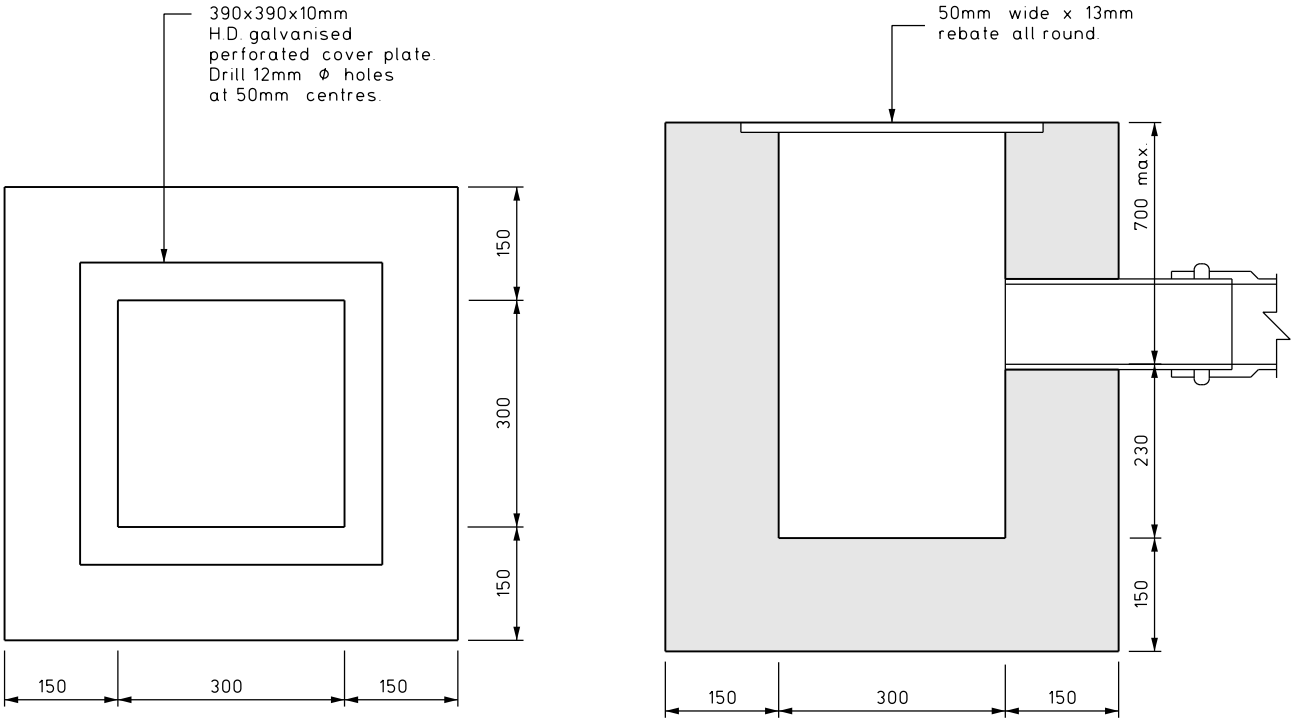
CORNER SUMP

ISSUE DATE | NOV 2022

SD327

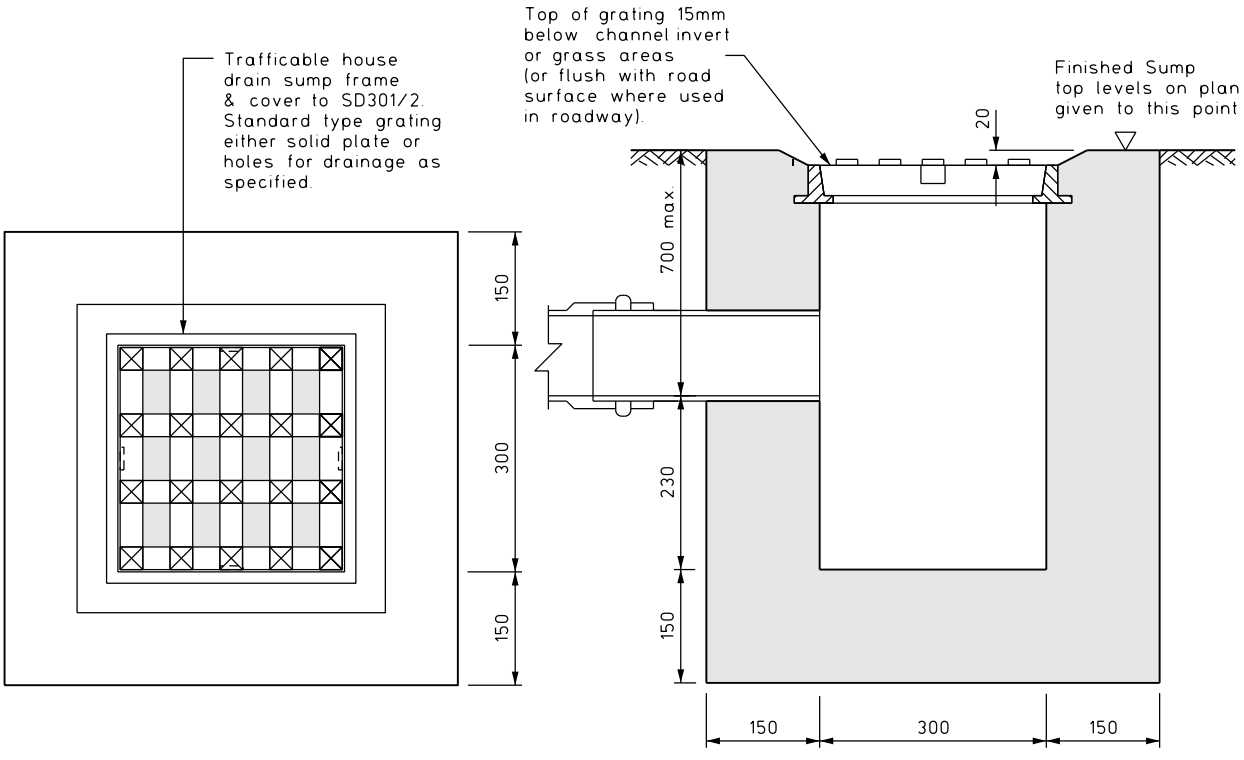
SHEET 1

DS032801B



PLAN CROSS SECTION

HOUSE DRAIN SUMP (PRIVATE PROPERTY ONLY UNLESS OTHERWISE SPECIFIED)



PLAN CROSS SECTION

SMALL TRAFFICABLE SUMP

Christchurch City Council

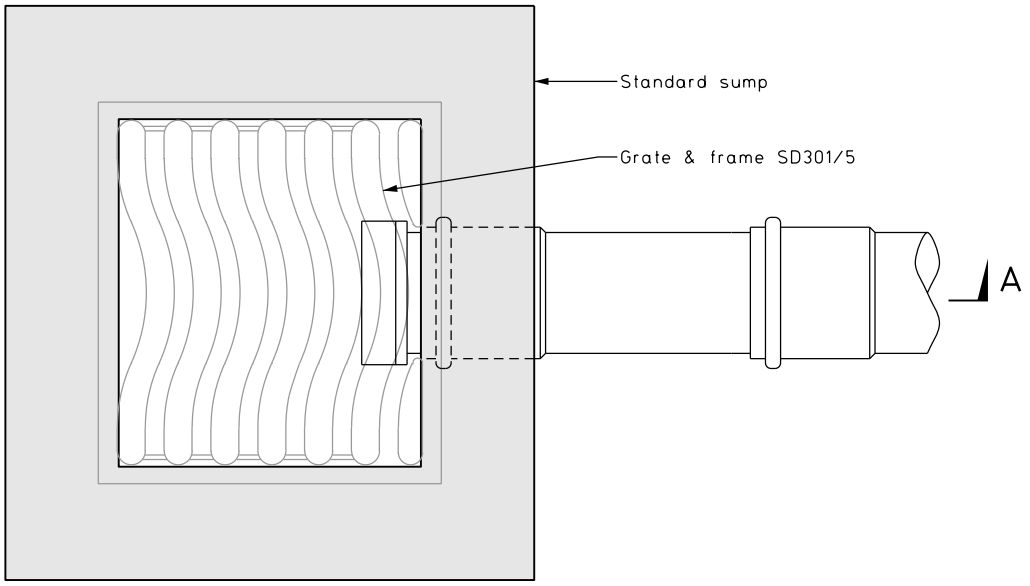
HOUSE DRAIN SUMP & SMALL TRAFFICABLE SUMP

ISSUE DATE | MAY 2004

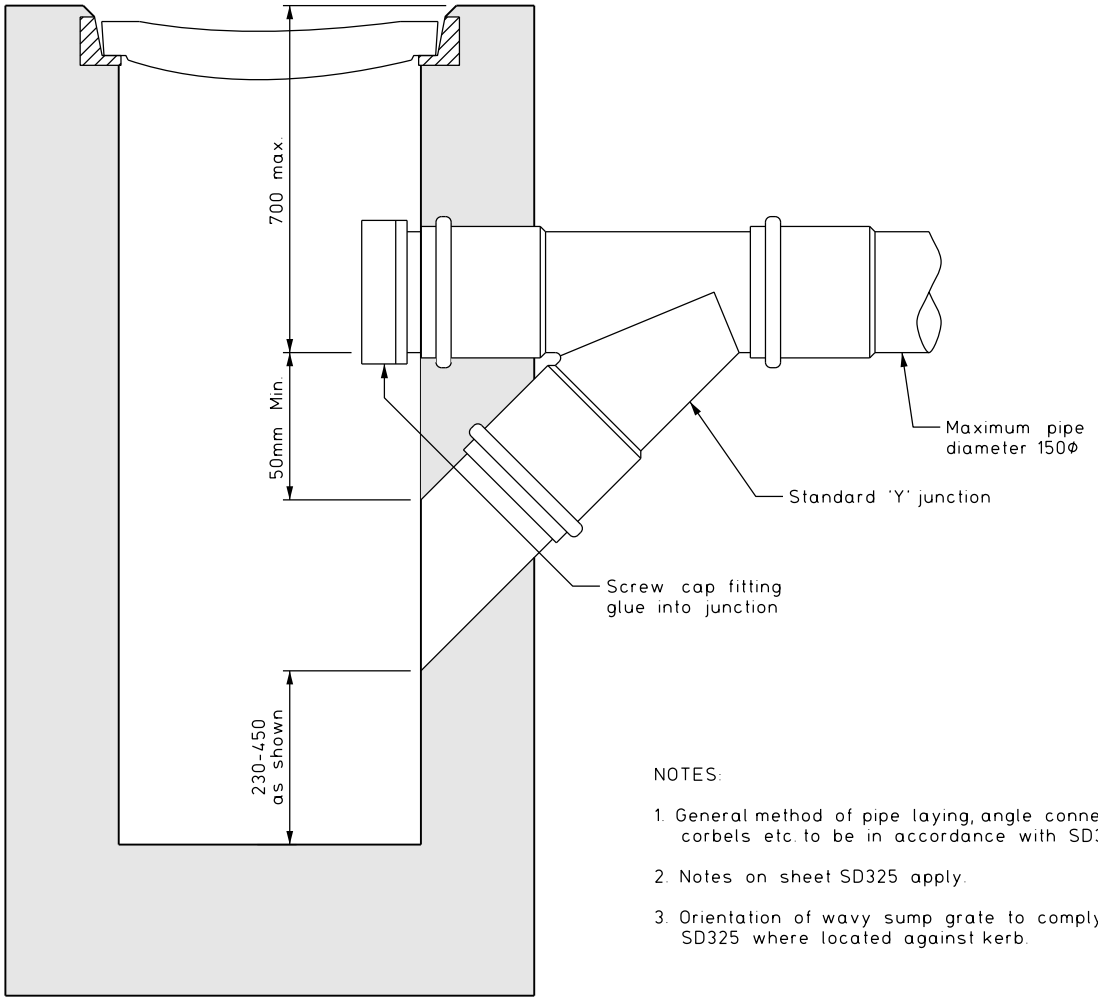
SD328

SHEET 1

DS032901C



PLAN



SECTION A-A

NOTES:

1. General method of pipe laying, angle connections, corbels etc. to be in accordance with SD341.
2. Notes on sheet SD325 apply.
3. Orientation of wavy sump grate to comply with SD325 where located against kerb.

Christchurch City Council

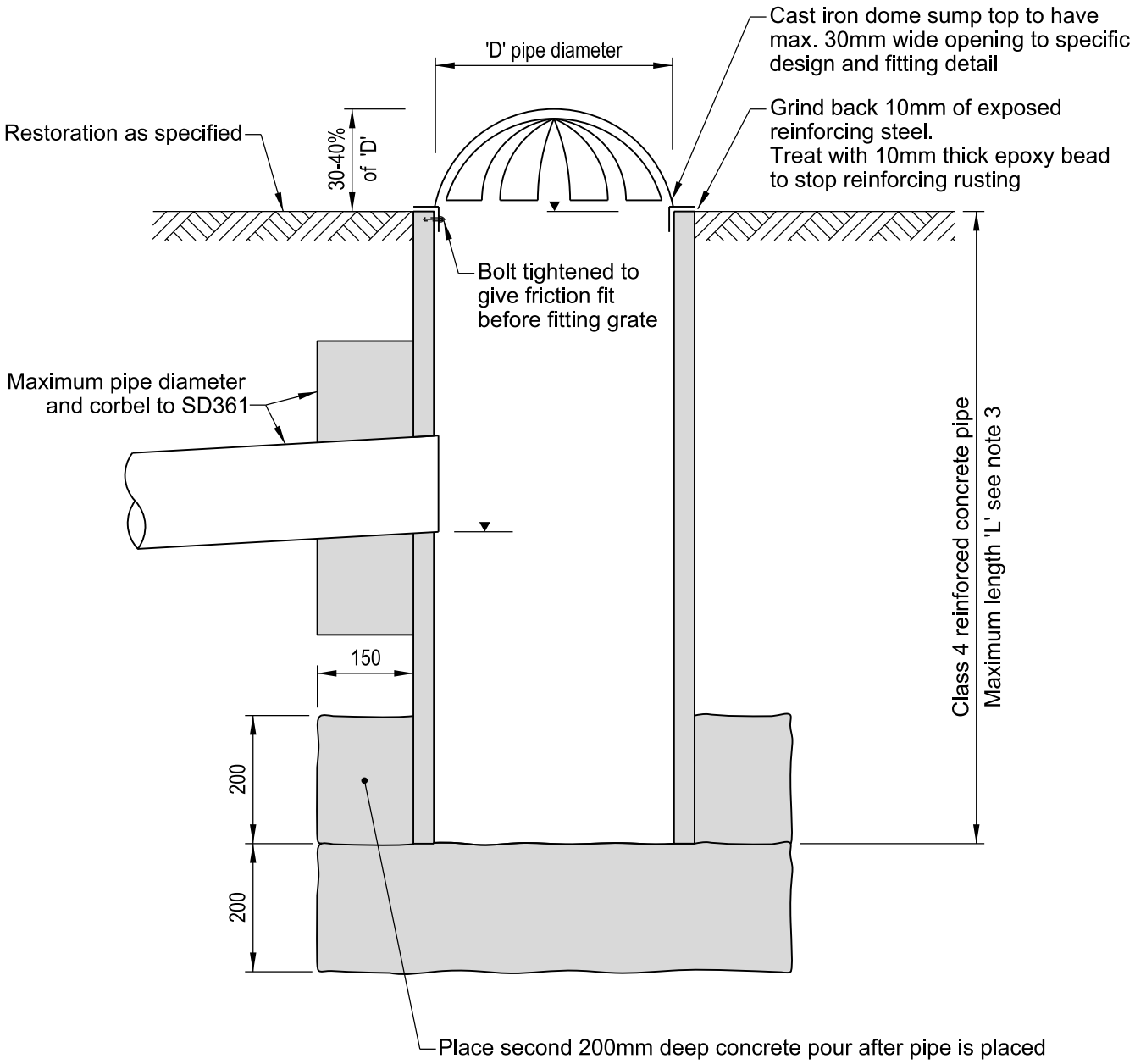
SUBMERGED OUTLET

ISSUE DATE	OCT 2016

SD329

SHEET 1

ds133001a.dgn



NOTES:

1. Where 100mm or 150mm outlet specified, submerge outlet to SD329.
2. Design sump cover to allow maintenance access.
3. 'L' = 1.0m for 375mm - 750mm diameter
   'L' = 4.0m for 900mm - 1050mm diameter

Christchurch City Council

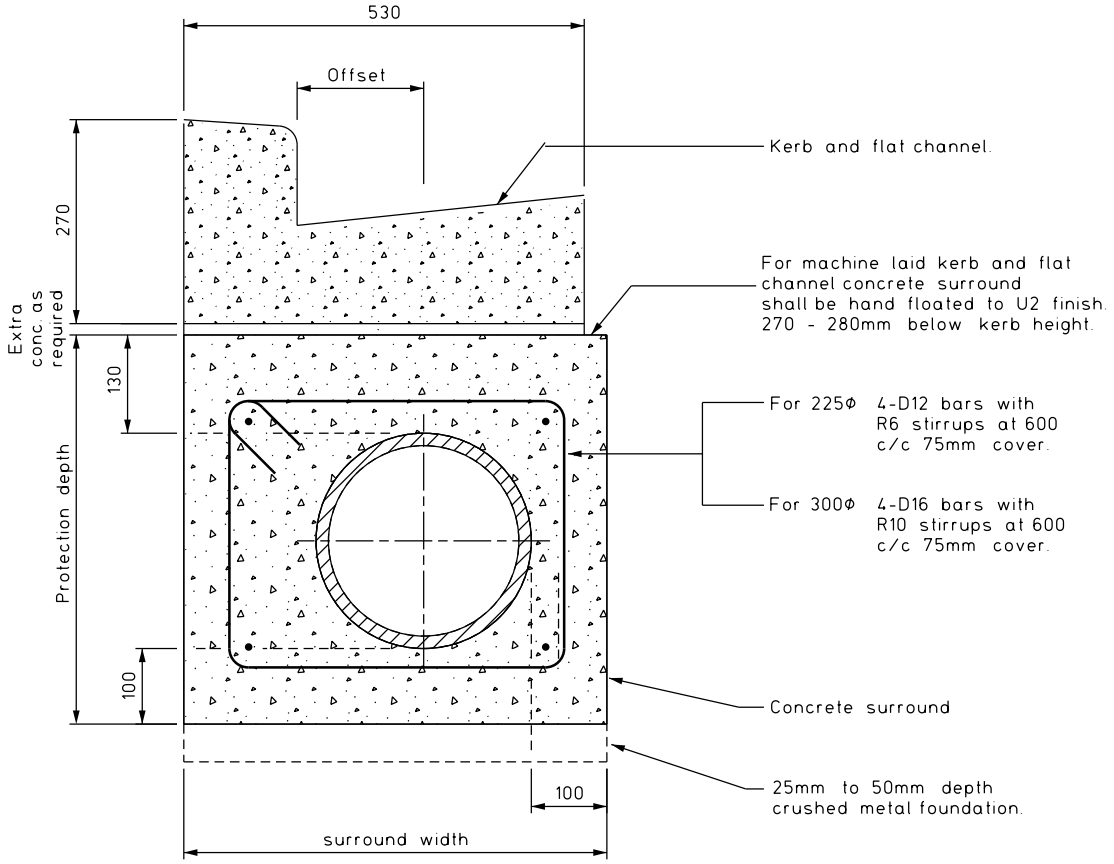
DOME SUMP

ISSUE DATE	OCT 2016

SD330

SHEET 1 OF 1

DS033101D



NOTES:

1. Concrete protection shall extend to a pipe joint.

2. Concrete surround, reinforced at commercial crossings only. Reinforcement to extend each side of a commercial crossing by 1.5m minimum to a pipe joint.

3. Concrete surround shall be a minimum of 20 MPa 100mm slump with a tolerance of +0,-20mm.

4. Yield joints shall be formed at pipe joints by interrupting concrete with 12mm Softboard or equivalent and applying pipe clay or similar to the pipe joint to prevent entry of concrete. Any reinforcing steel shall be stopped unhooked 50mm from joint.

5.

Pipe dia.	Min depth kerb to invert	Conc. surround width	Protection depth	Pipe offset from kerb face
225	660	570	520	180
300	740	640	600	210

6. Yield joints are not required at structures provided reinforced concrete surround is rebated 50mm into structure walls (to prevent shear failure).

7. Concrete pipe to Class 2 unless otherwise specified.

Christchurch City Council

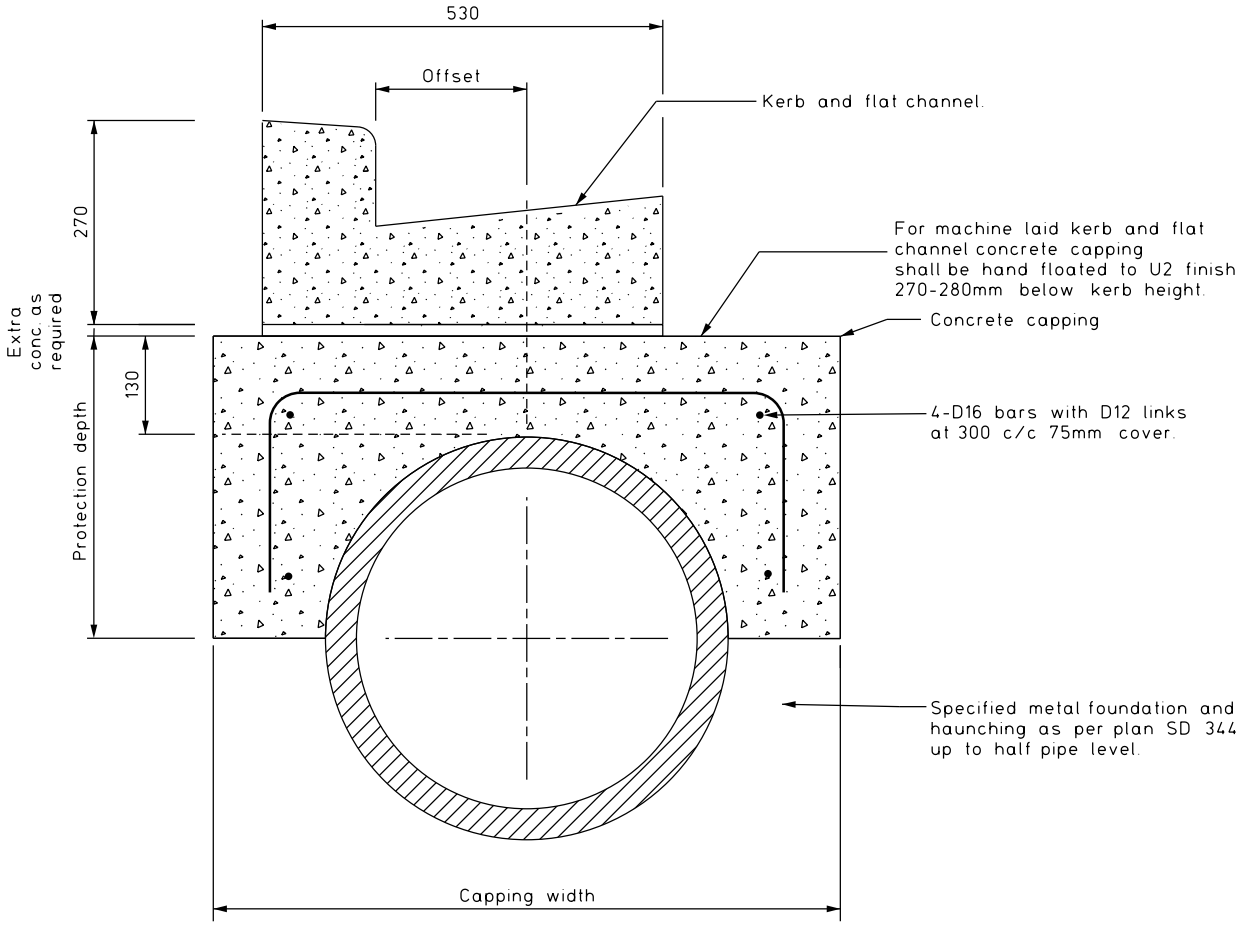
CONCRETE SURROUND FOR UNDER CHANNEL PIPING 225Φ - 300Φ

ISSUE DATE	DEC 2009

SD331

SHEET 1

DS033201D



NOTES:

1. Concrete protection shall extend to a pipe joint.
2. Concrete strength to be 20 MPa 100mm slump, with a tolerance of +0,-20mm.
3. Pipes shall be Class 4 unless otherwise specified.
4. Concrete capping reinforced at commercial crossings only. Reinforcement to extend each side of a commercial crossing by 1.5m minimum to a pipe joint.
5. Contraction joints shall be formed at pipe joints by interrupting concrete with Softboard or equivalent, sealed to prevent grout entry with approved sealant. Any reinforcing steel shall be stopped unhooked 50mm from joint.
6.

Pipe Dia.	Min depth kerb to invert	Capping width	Protection depth	Pipe offset from kerb face
375	810	770	350	250
450	890	830	400	200
525	950	910	440	160

7. Yield joints shall be constructed at sumps with one short pipe and two yield joints.

Christchurch City Council

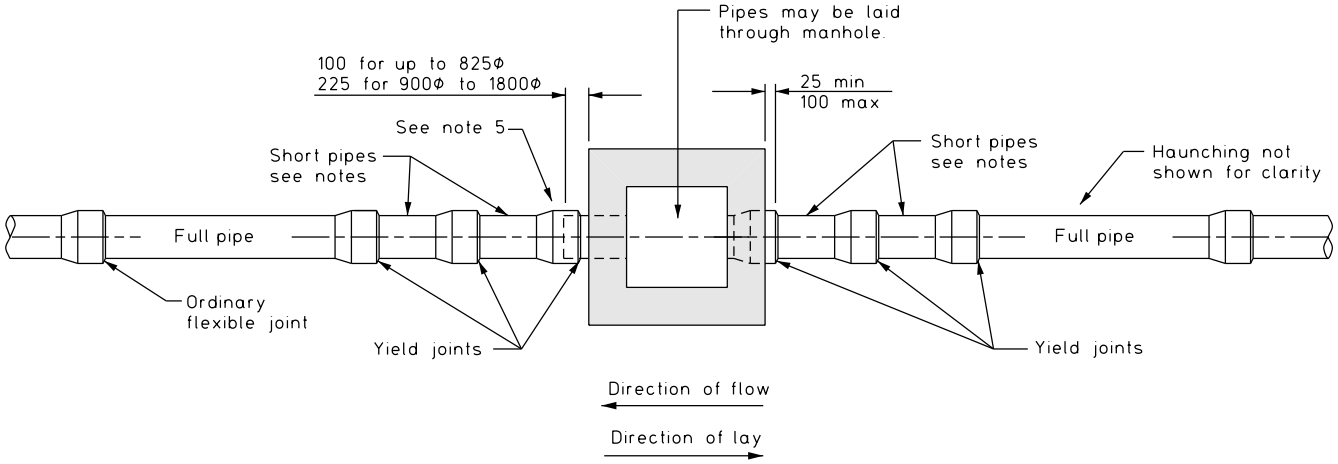
CONCRETE CAPPING FOR UNDER CHANNEL PIPING 375Φ-525Φ

ISSUE DATE | DEC 2009

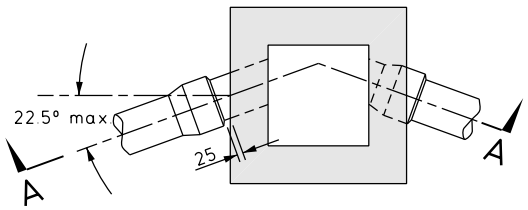
SD332

SHEET 1

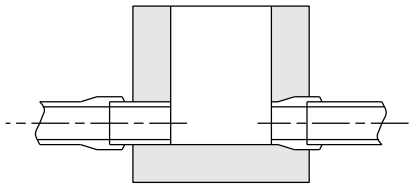
DS034101F



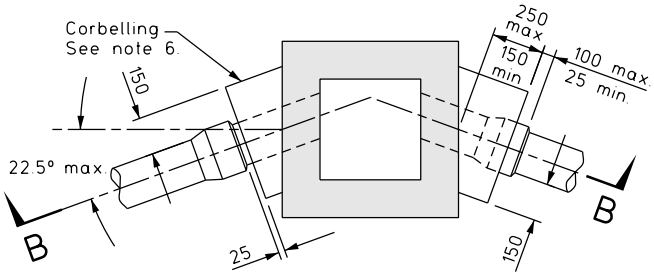
GENERAL METHOD OF PIPELAYING AT MANHOLES AND SUMPS



ANGLE CONNECTIONS

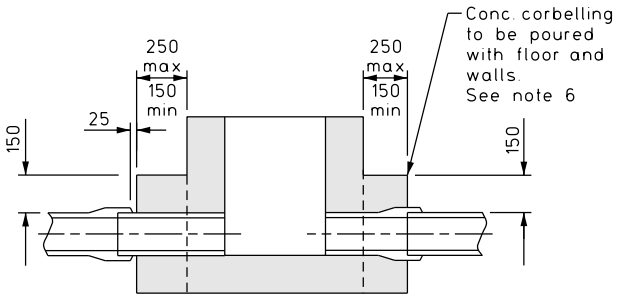


SECTION A-A



CORBEL DETAILS

Applies to straight & angle connections. Angle connections will be permitted for 100Φ to 300Φ pipelines. Special design required for pipes greater than 300Φ.



SECTION B-B

NOTES:

1. Pipelines that are concrete haunched or concrete surrounded shall have the concrete interrupted at each yield joint with softboard or equivalent.

2. Vertically cast short pipes shall be minimum of 500mm & maximum of 800mm long.

3. For reinforced concrete short pipes the following table shall appy.

PIPE DIAMETER	MIN	MAX
225	600	800
300	750	1000
375	900	1200
450	1100	1450
525	1300	1700
600	1500	1900
675	1700	2100

4. At each pipeline connecting to a manhole or sump, the No. of short pipes and yield joints shall comply with the following table:

PIPE DIAMETER	SHORT PIPES	YIELD JOINTS
100 to 525	2	3
600 to 675	1	2
750 to 2100	0	1
Sump	1	2

5. This pipe may be double spigot pipe with a socket finisher in the manhole wall with Engineer's approval. Maximum length pipe 1300mm, minimum length 450mm.

6. Corbelling where suitable pipe lengths are not available shall only be used with the Engineer's approval. For corbelling on precast manholes see SD341/2 and SD341/4.

7. Gibault joints shall not be used as yield joints unless approved by the Engineer.

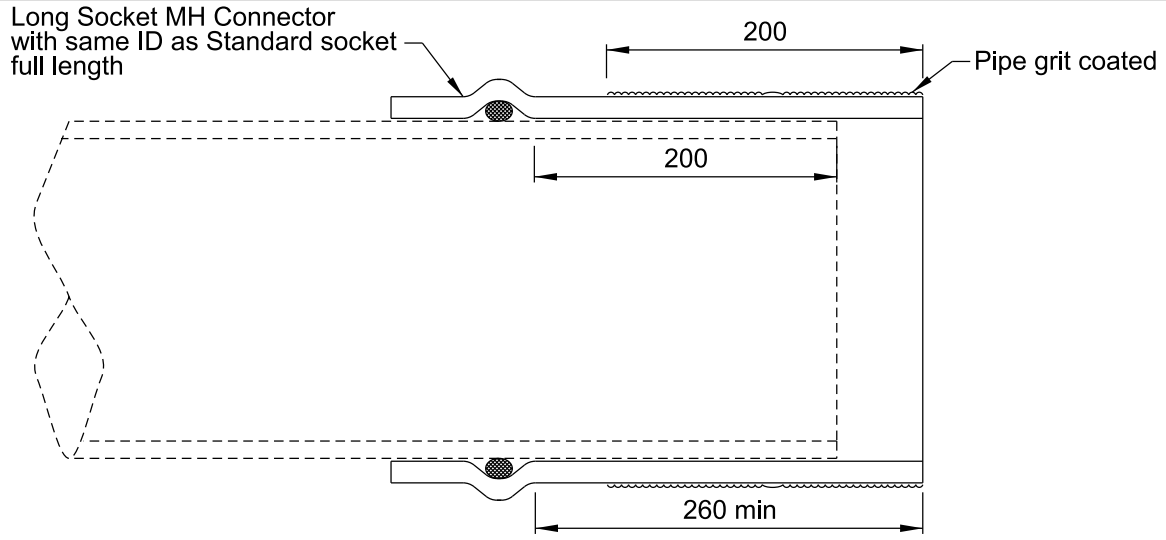
Christchurch City Council

PIPELAYING AT MANHOLES & SUMPS CONCRETE PIPES

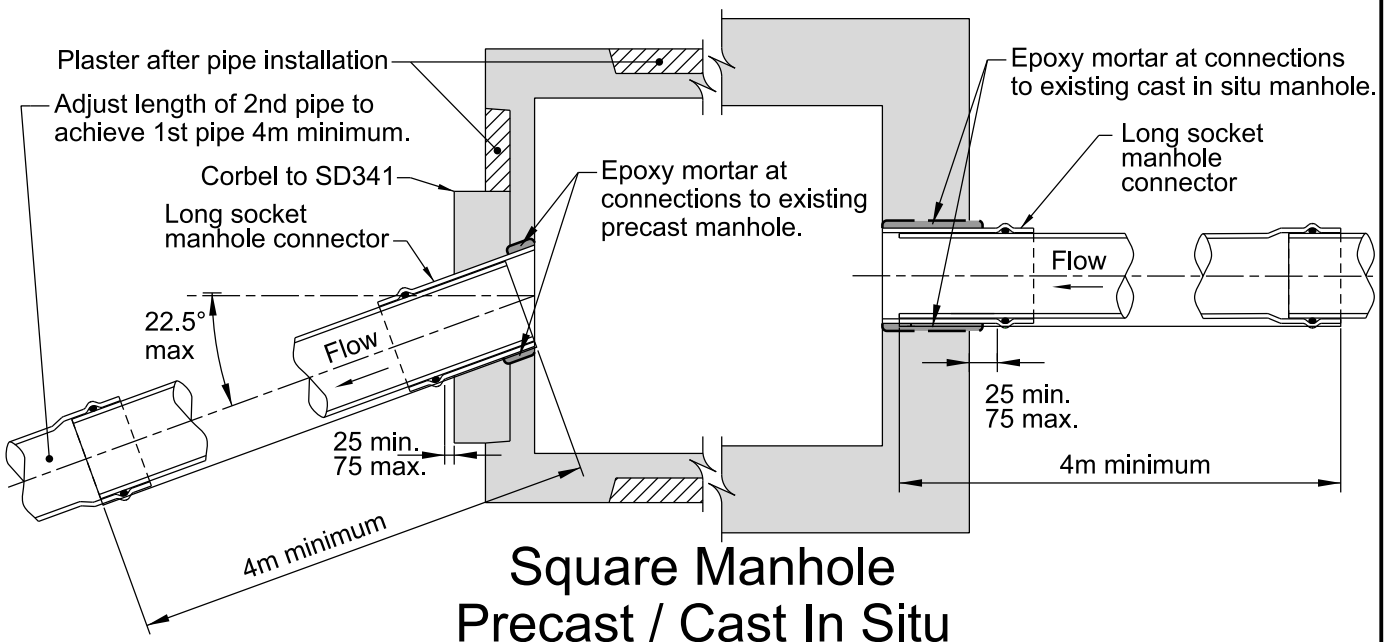
ISSUE DATE | NOV 2022

SD341

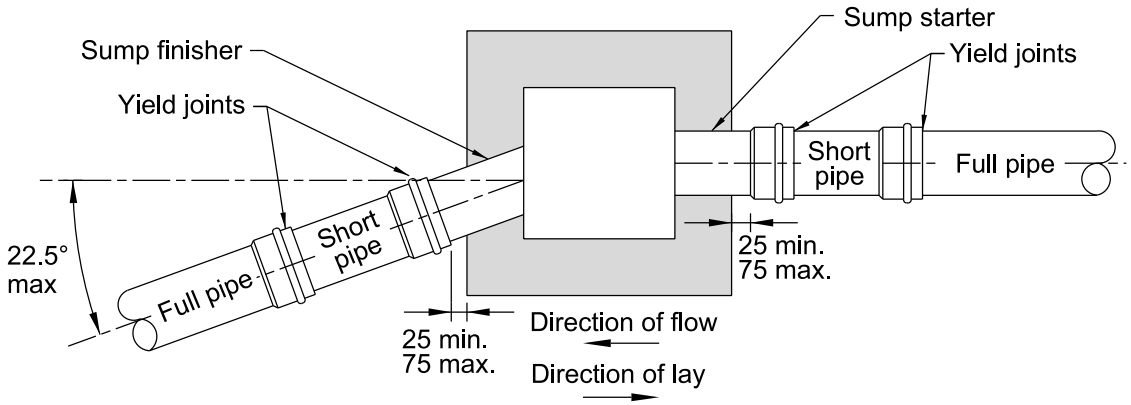
DS134102B



PVC Long Socket Manhole Connector



Square Manhole
Precast / Cast In Situ



Sump

NOTES:

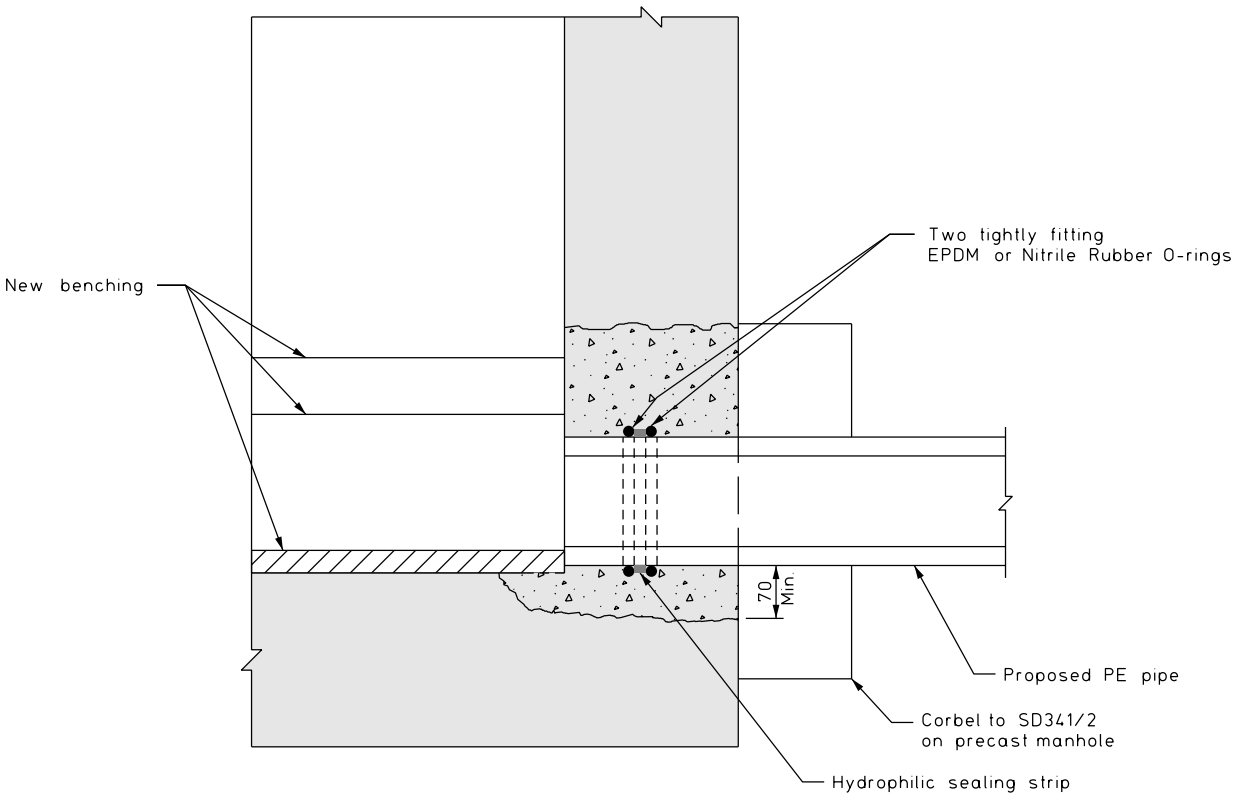
1. Sump starters and finishers to plan SD343.
2. Sump short pipes shall have a minimum length of 700mm & a maximum of 1000mm.
3. On each pipeline connecting to a sump there shall be one short pipe and two yield joints.
4. Pipes may be laid straight through manhole but must be gritted.

Christchurch City Council

PIPELAYING AT MANHOLES AND SUMPS FOR PVC PIPES

ISSUE DATE	OCT 2016

SD341



NOTES
1. Nitrile rubber O-Rings shall be used in contaminated soil.

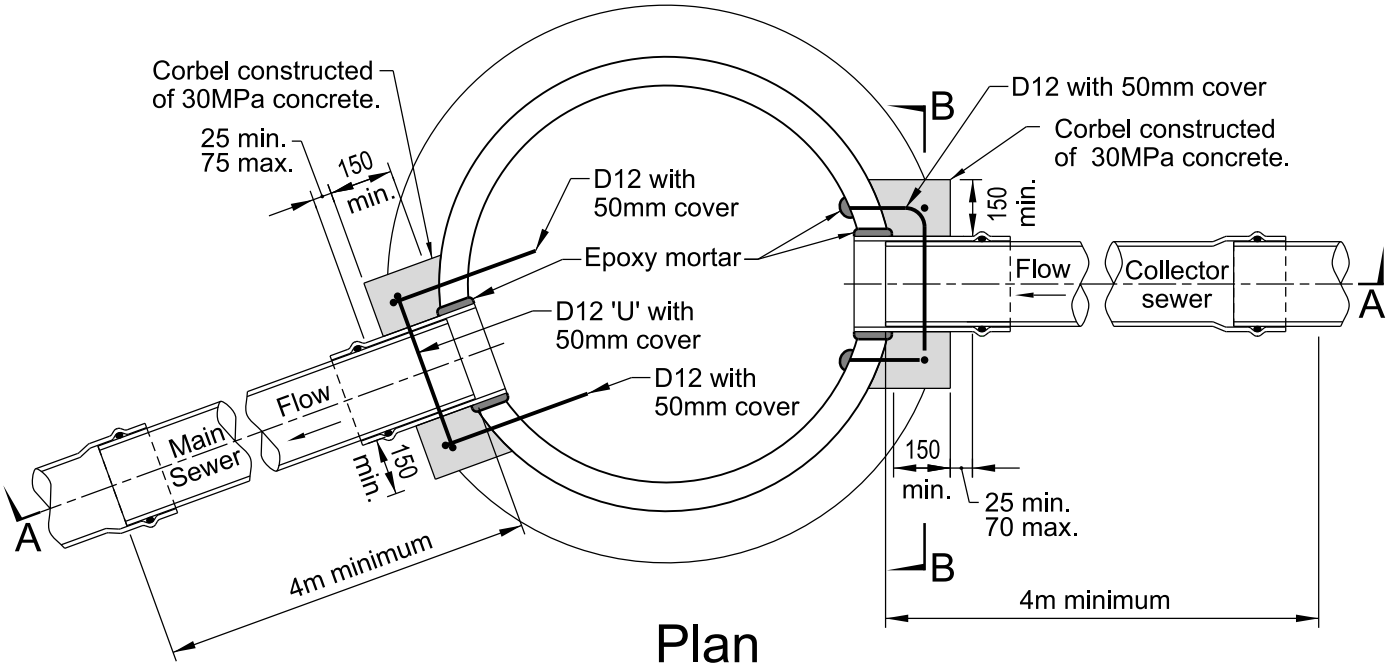
Christchurch City Council

PIPELAYING AT MANHOLES FOR GRAVITY PE PIPES

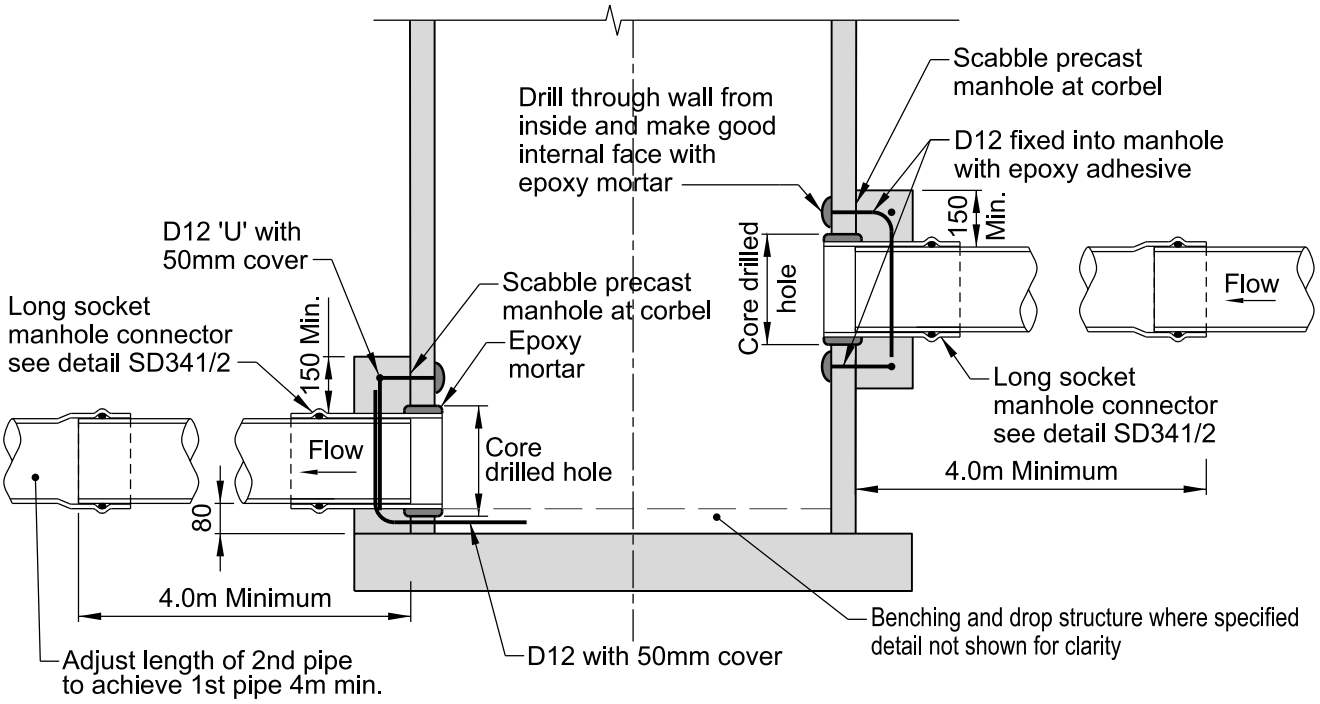
ISSUE DATE	DEC 2019

SD341

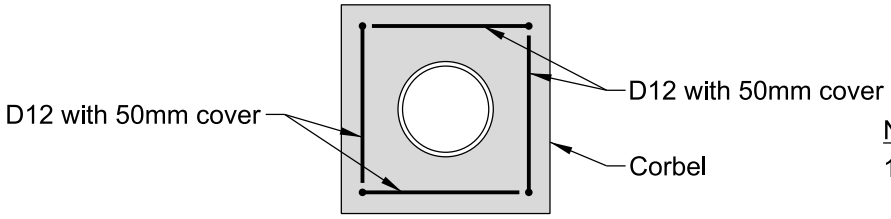
ds1341104c.dgn



Plan



Collector to Main Section A-A



Corbel Section B-B

NOTE:

1. Pipe opening and corbels shall be at least 300mm clear of any joint in precast manhole.
2. Corbel to have at least 70mm concrete below starter / finisher

Christchurch City Council

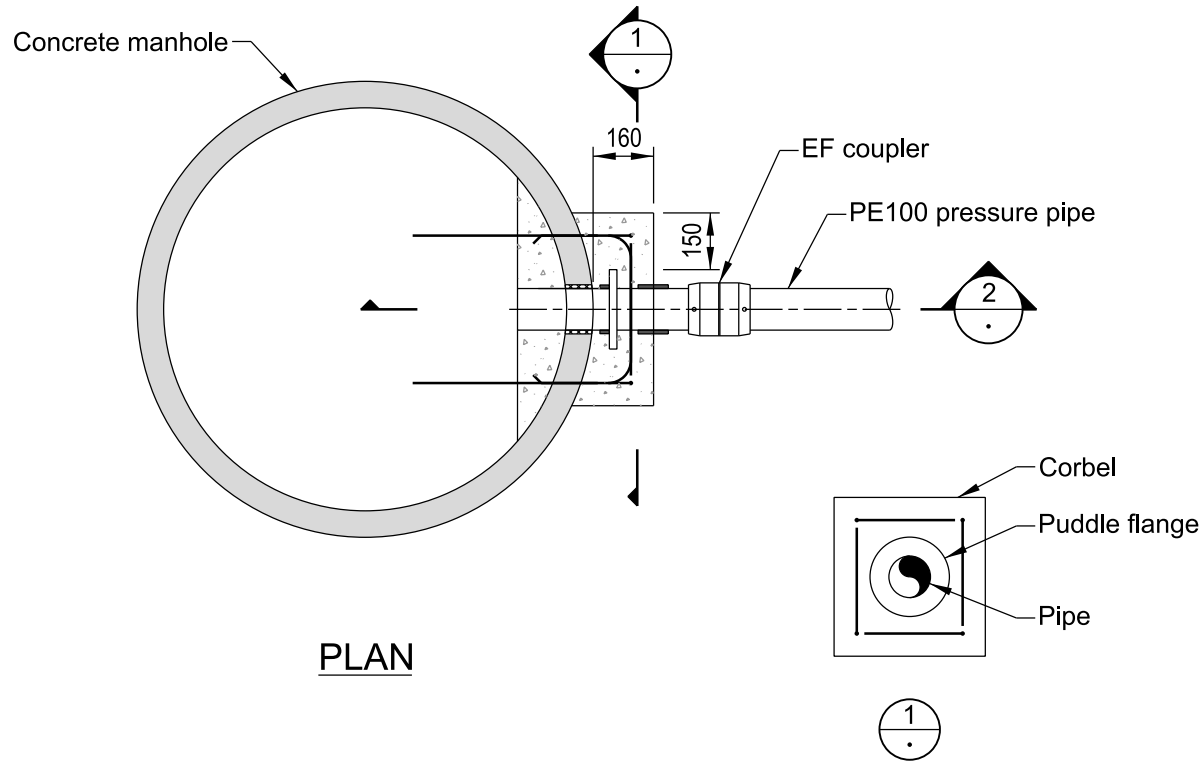
CORBEL DETAILS FOR PVC-U PIPES UP TO DN400

ISSUE DATE: DEC 2019

SD341

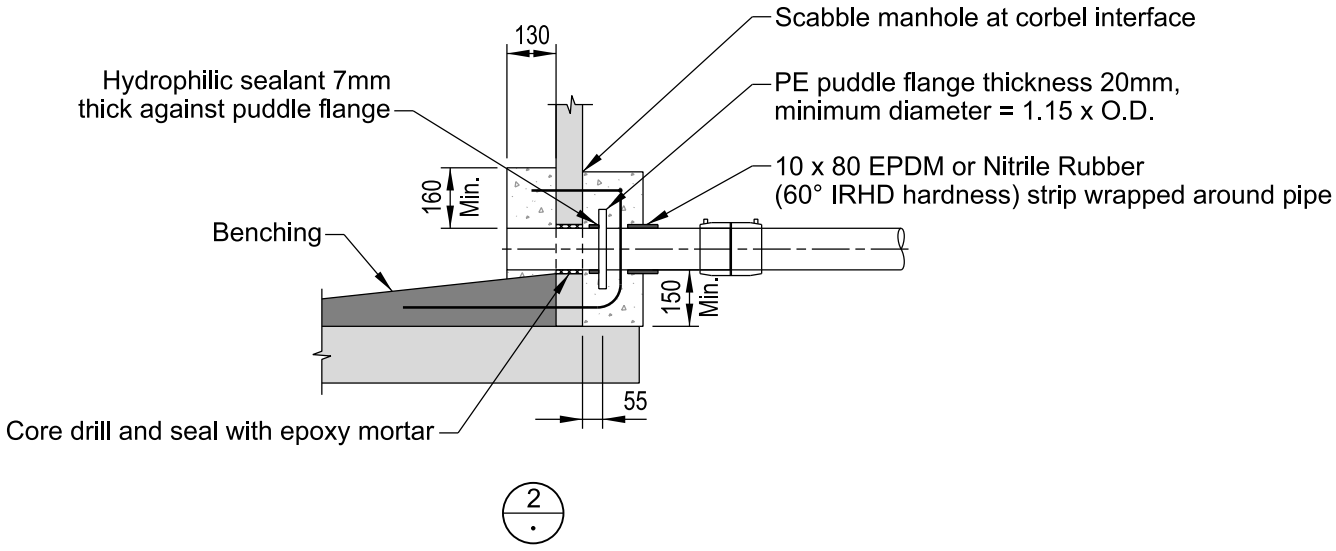
SHEET 4 OF 5

DS134105B



PLAN

1



2

NOTES:

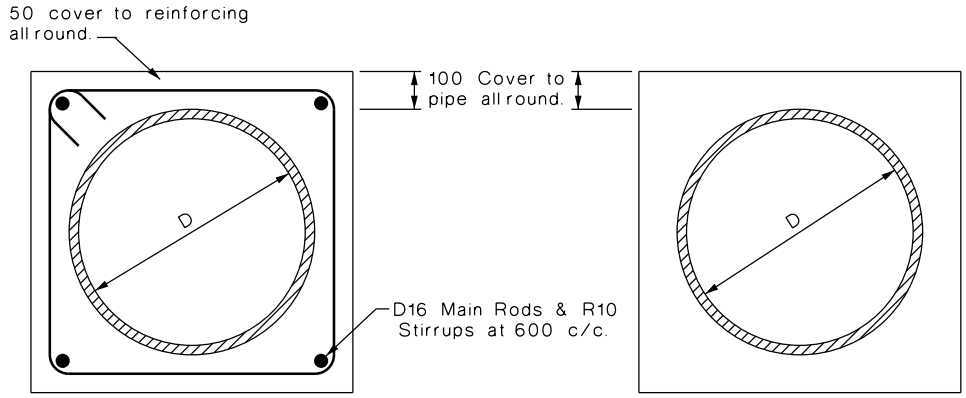
1. Prefabricated PE pipe and puddle flange unit to be same nominal diameter and SDR as pressure pipe.
2. Nitrile rubber shall be used in contaminated soil.
3. 10 x 80 is a minimum, wider strips shall be used where specified by the Engineer.

Christchurch City Council

Pressure Pipelaying at Manholes For Polyethylene Pipes

ISSUE DATE	DEC 2019

SD341



REINFORCED CONCRETE SURROUND

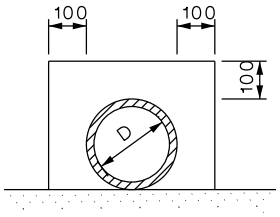
D=150Φ to 450Φ

TYPE A

PLAIN CONCRETE SURROUND

D=150Φ to 450Φ

TYPE B



CONCRETE COVER

D=100Φ

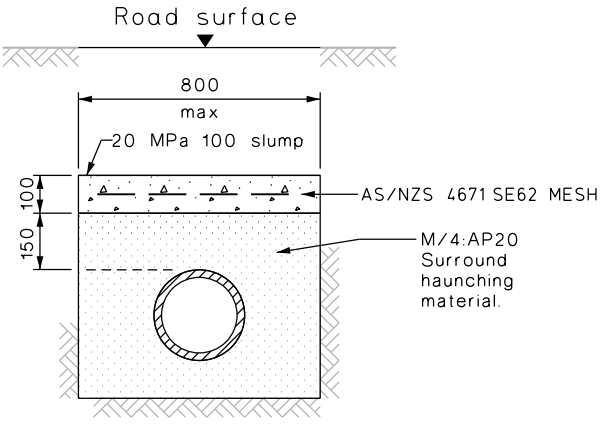
TYPE D

NOTES:

1. For concrete pipe diameters greater than 450mm or flexible pipe diameters greater than 300mm special design applies.
2. Concrete shall be 20 MPa 100 slump with a tolerance of +0,-20mm.
3. Type of surround shall be specified.
4. Concrete surround shall terminate at a pipe joint.
5. Contraction joints shall be formed at pipe joints by interrupting concrete with 12mm Softboard or equivalent and applying approved sealant to the pipe joint to prevent entry of concrete. Any reinforcing steel shall be stopped unhooked 50mm from joint.
6. Contraction joint spacing - maximum:

	R.C.R.R.	Ceramic Pipes or vertically cast
Type A	10m	3.2m
Type B	5m	1.6m
Type C	Engineer to	3.2m
Type D	specify	1.6m

7. With flexible pipe Type E protection to be used unless otherwise specified.



CONCRETE PROTECTION SLAB

MAXIMUM PIPE SIZE 300Φ

TYPE E

NOTE: Suitable for soils with an allowable bearing pressure over 50KPa

Christchurch City Council

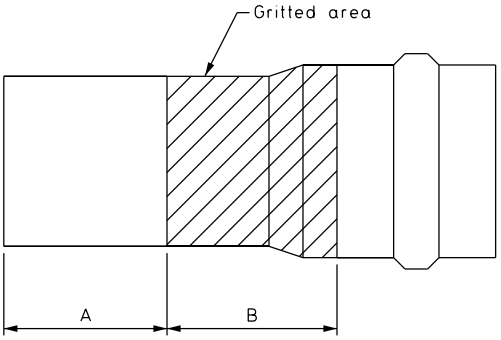
PIPE PROTECTION

ISSUE DATE	DEC 2019

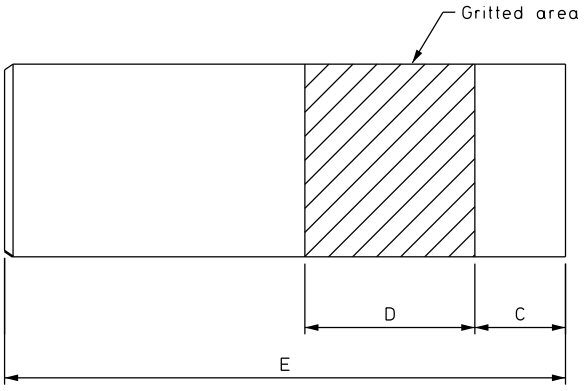
SD342

SHEET 1

DS034301B



Pipe DN	A Max.	B Min.
100	144	150
150	129	150
175	113	150
225	95	150
300	82	150



Pipe DN	C Max.	D Min.	E
100	80	150	500
150	80	150	500
175	80	150	500
225	80	150	500
300	80	150	520

NOTES:

1. For use at sumps and headwalls only.
2. SN of fitting to match SN of adjacent pipe.

Christchurch City Council

PVC STARTERS AND FINISHERS

ISSUE DATE | OCT 2016

SD343

SHEET 1

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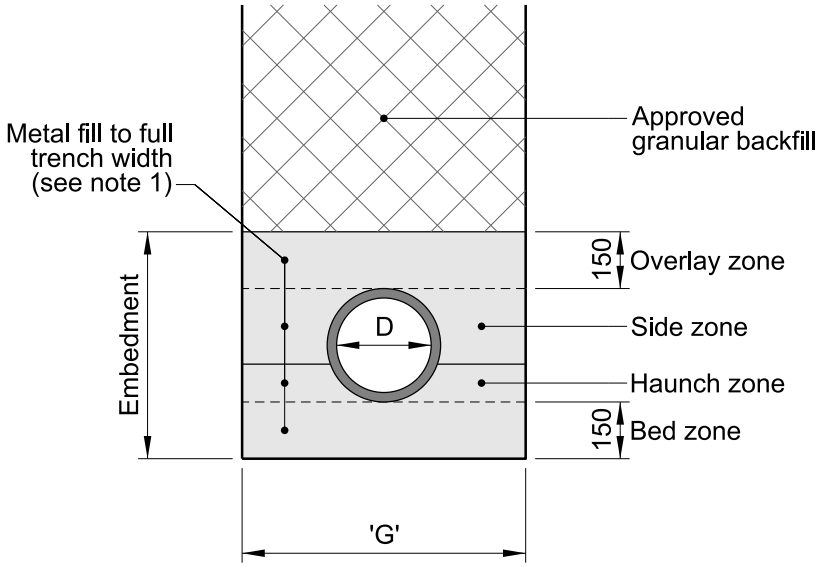
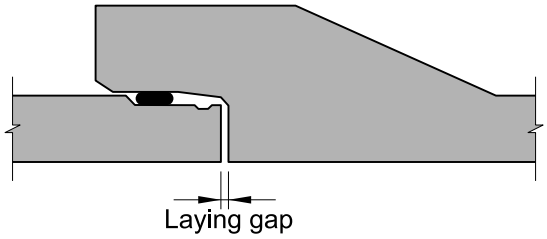




CCC Concrete Pipe Target and Maximum Joint Laying Gaps		
Nominal Pipe Diameter (mm)	Target Laying Gap (mm)	Max Laying Gap (mm)
225	5	10
300	5	10
375	5	10
450	5	10
525	5	10
600	5	10
675	5	10
750	8	16
825	8	16
900	8	16
975	10	20
1050	10	20
1200	10	20
1350	10	20
1600	12	20
1800	12	20

Note: The average joint gap should not exceed 1.5x the 'Target Laying Gap'

Nominal Pipe Diameter (mm)	'G'
225	700
250	800
300	800
375	900
450	1000
525	1100
600	1200
675	1300
750	1300
825	1400
900	1500
975	1600
1050	1700
1200	1900
See note 1	
1350	2100
1600	2400
1800	2600
2100	2900

NOTES:

1. Use CCC Embedment AP20 for diameters up to 1200mm. Use Drainage AP40 for diameters 1350mm and above.

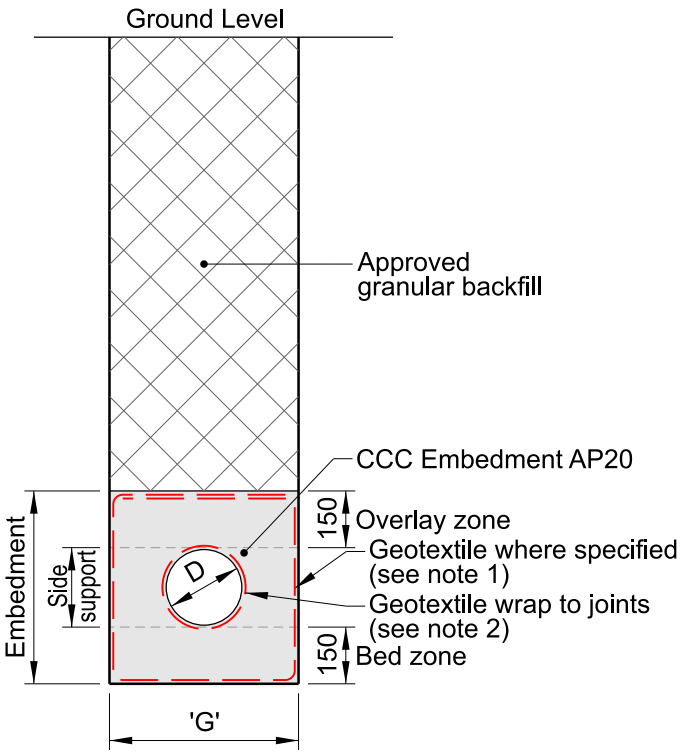
2. On hillsides or where in-trench scour is a potential issue use Lime Stabilised 'Firm Mix'.

Christchurch City Council

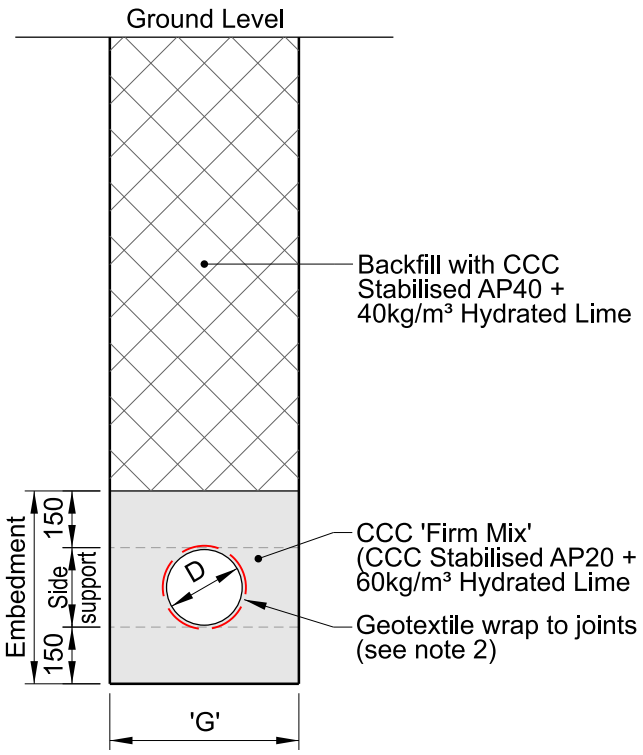
CONCRETE PIPE JOINT GAP AND EMBEDMENT DETAILS

ISSUE DATE NOV 2022

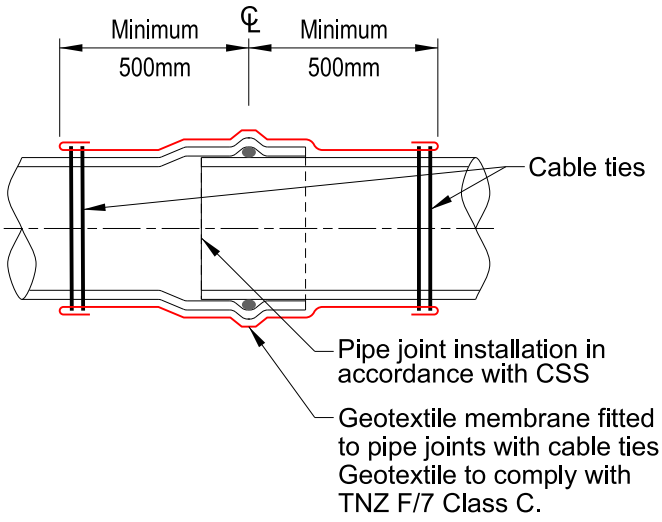
SD344



TYPE P



TYPE PH



GEOTEXTILE JOINT WRAPPING DETAIL

N.T.S.

TYPE P (Standard) & TYPE PH (Hillside)

Nominal Pipe Diameter DN (mm)	Trench Width *'G'
100	460
150	500
175	550
200 (pressure)	575
225	600
300	700
375	800
475	1100

* 'G' may be increased in very soft ground.

NOTES:

1. Where specified as per IDS Part 6 Clause 6.14, embedment shall be fully wrapped in geotextile in accordance with TNZ F/7.

2. Where specified as per IDS Part 6 Clause 6.14 including flexible pipes, wrap joints to minimum 500mm each side of all joints including laterals with specified geotextile.
Secure the geotextile snugly to the pipe using cable ties or similar.
Refer to the "Geotextile joint wrapping detail" above.

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Christchurch City Council

FLEXIBLE PIPE EMBEDMENT AND JOINT DETAILS

ISSUE DATE NOV 2022

SD344

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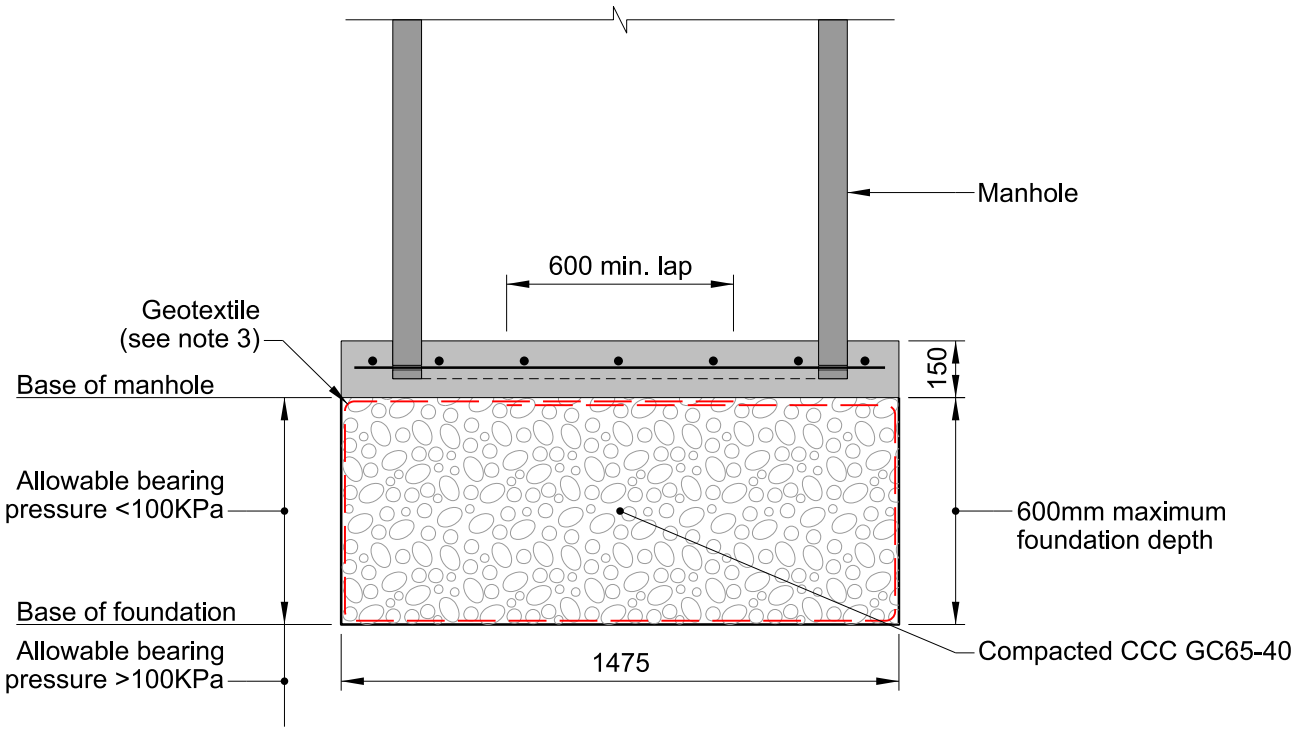
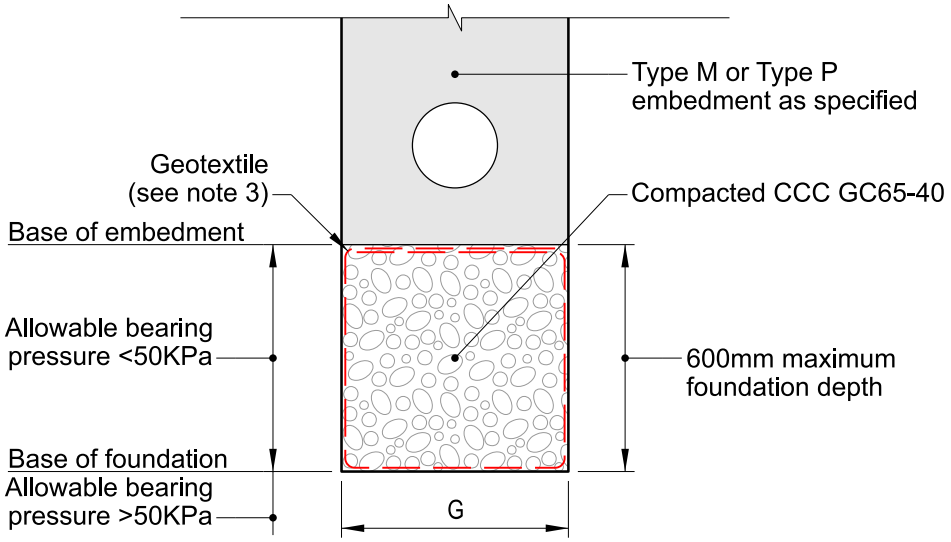


MANHOLE SOFT GROUND FOUNDATION



PIPE SOFT GROUND FOUNDATION

NOTES:

1. If the pipe soft ground foundation allowable soil bearing pressure is less than 50kPa below 600mm of the base of the embedment, site specific design is required.
   If the manhole soft ground foundation allowable soil bearing pressure is less than 100kPa below 600mm of the base of the manhole, site specific design is required.

2. Where the depth to the base of the foundation exceeds 3.0m from the finished ground level, site specific design is required.

3. Geotextile installation shall be in accordance with TNZ F/7.

Christchurch City Council

PIPE AND MANHOLE SOFT GROUND FOUNDATION

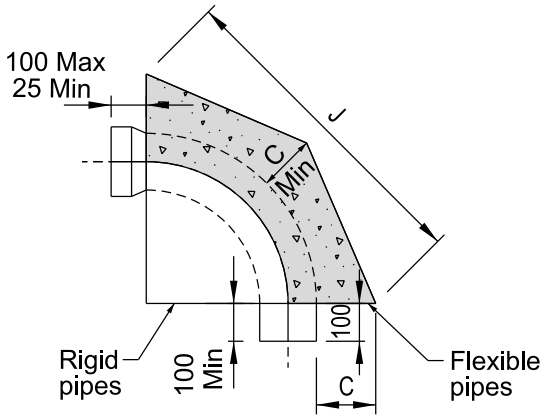
ISSUE DATE	NOV 2022

SD344

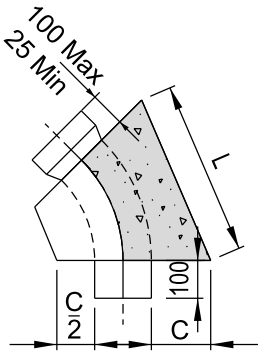
SHEET 3 OF 3

ds134601d.dgn

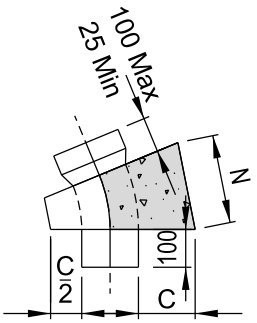
NOTE : Faces J, L & N to be poured against natural ground
See specification.



90° BEND



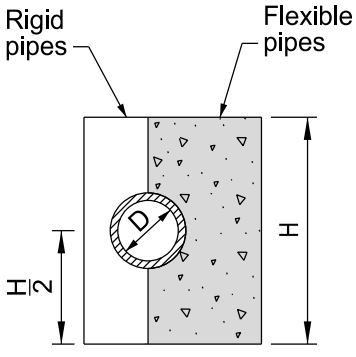
45° BEND



22½° & 11¼° BEND

Diameter NB (mm)	Height H (m)	Cover C (m)	90° Bend J (m)	45° Bend L (m)	22.5° & 11.25° Bend N (m)
100	300	200	300	250	150
125	375	200	350	300	150
150	450	200	450	350	175
175	525	230	500	400	200
200	600	230	600	450	225
225	675	230	650	500	250
250	750	230	750	550	300
300	900	300	900	700	350

HORIZONTAL BENDS ONLY



TYPICAL SECTION
THROUGH THRUST BLOCK

NOTES:

1. Thrust block designed for an allowable bearing load of 50 kPa at pipeline pressure 390 kPa.
2. Thrust blocks in unsuitable soils require special design.
3. Concrete to be 17.5 MPa 150 slump unreinforced.
4. Do not use for upward thrust (special design only).
5. PVC pipes adjacent to concrete shall be wrapped with 6mm Denso tape or 250 microns Polyethylene film or equivalent.

Christchurch City Council

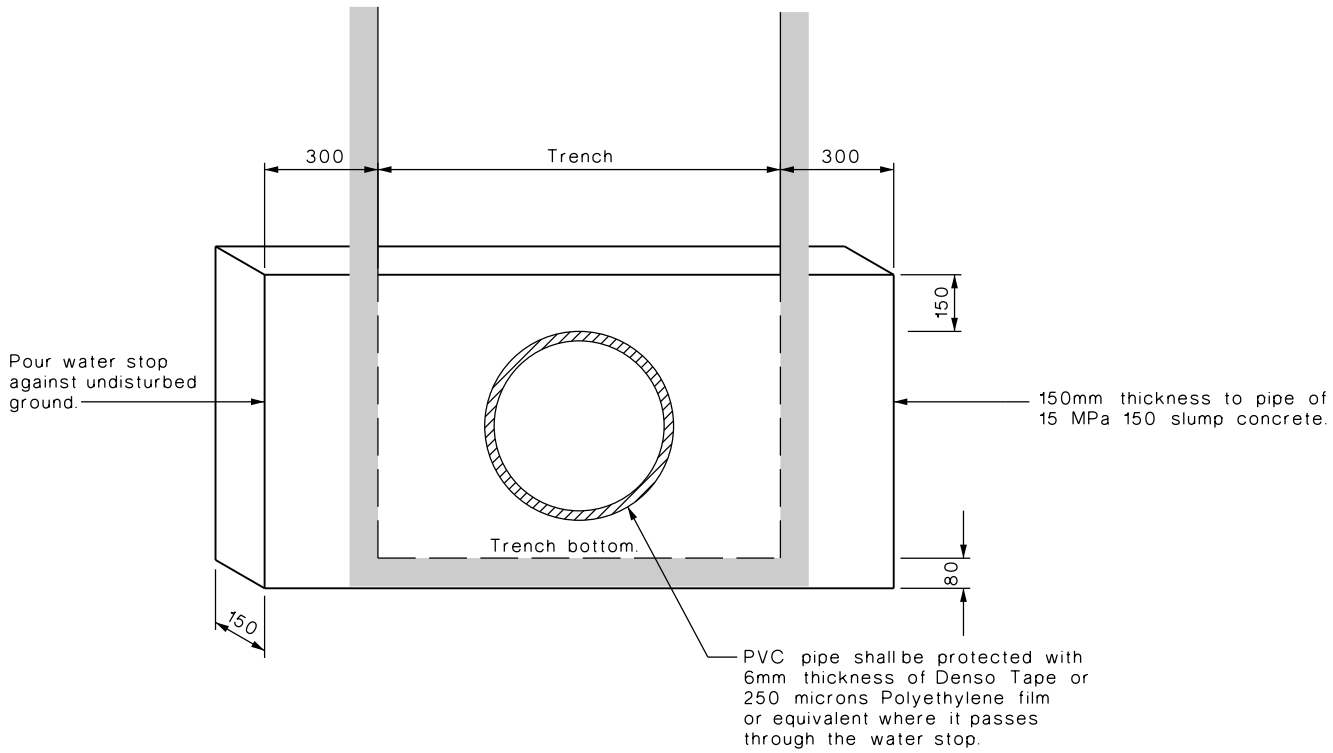
PRESSURE PIPELINES THRUST BLOCKS

ISSUE DATE	18/10/2011

SD346

SHEET 1 OF 1

DS034701C



NOTES:

1. Water stop spacing is as specified.

Christchurch City Council

WATER STOPS

ISSUE DATE	OCT 2016

SD347

SHEET 1

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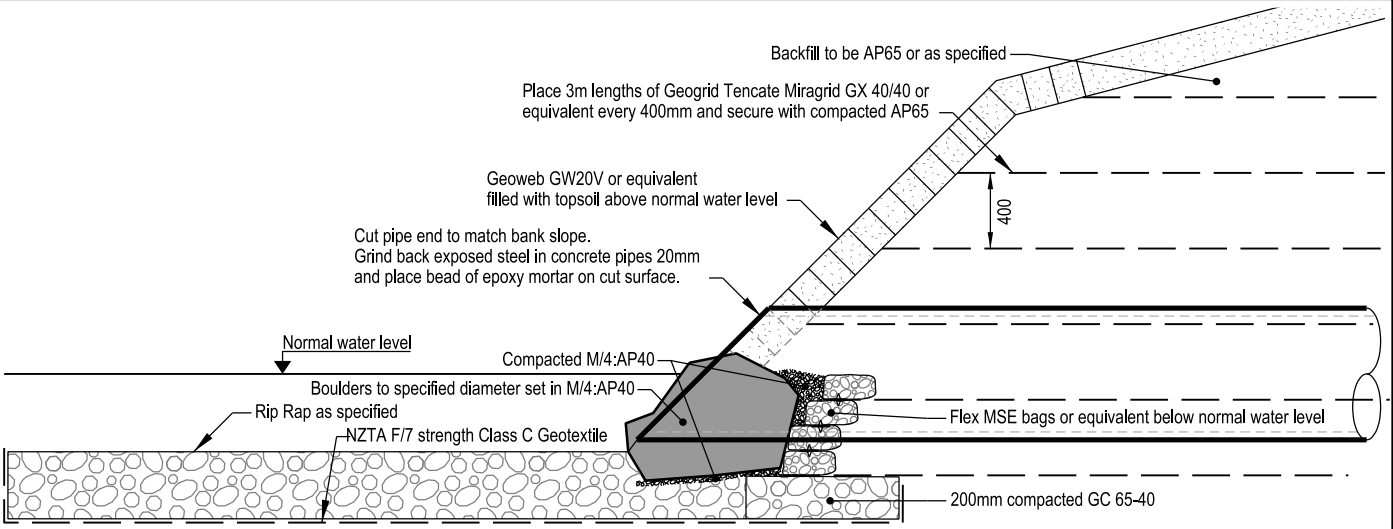
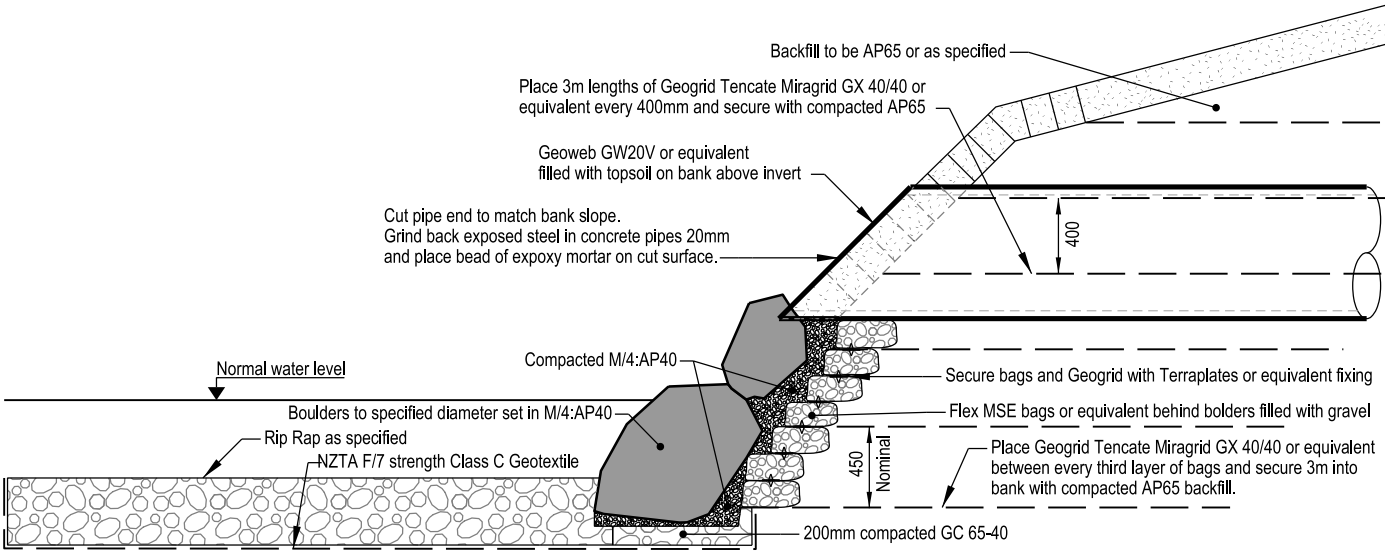
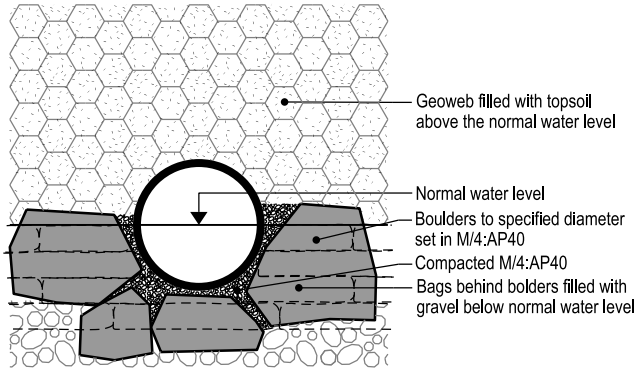


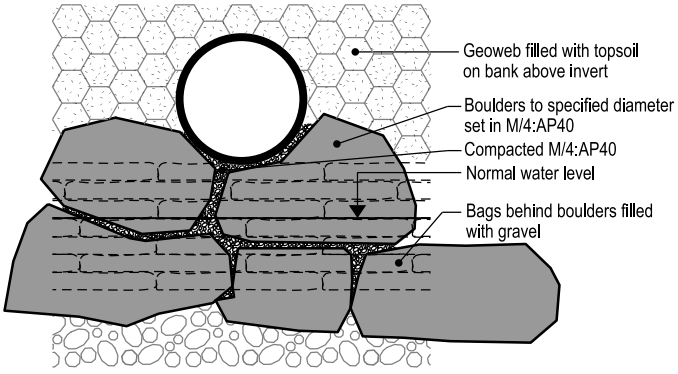
SUBMERGED / LOW BANK INVERT



DRY / HIGH BANK OUTLET



END ELEVATION - SUBMERGED / LOW BANK



END ELEVATION - DRY / HIGH BANK

NOTES:

1. In tidal areas use the high tide level as the normal water level.
2. Topsoil to be 200mm min. thickness for grass or 400mm min. thickness for planting. Max. 200mm in Geoweb.
3. If bank vertical height is less than 1.5m, consider reducing length of Geogrid to 2m.
4. For grassed areas hydroseed.
5. Bank stabilisation to be implemented to the full extent of modified/excavated ground.
6. If bearing capacity under outfall pipeline is less than 50kPa refer to detail SD352.
7. Flex MSE, Geogrid and Geoweb are for representation purposes only.
8. Boulder diameter as specified by designer. (Minimum diameter 300mm. Maximum diameter 2/3rd Pipe dia. for pipes larger than 600mm dia.)

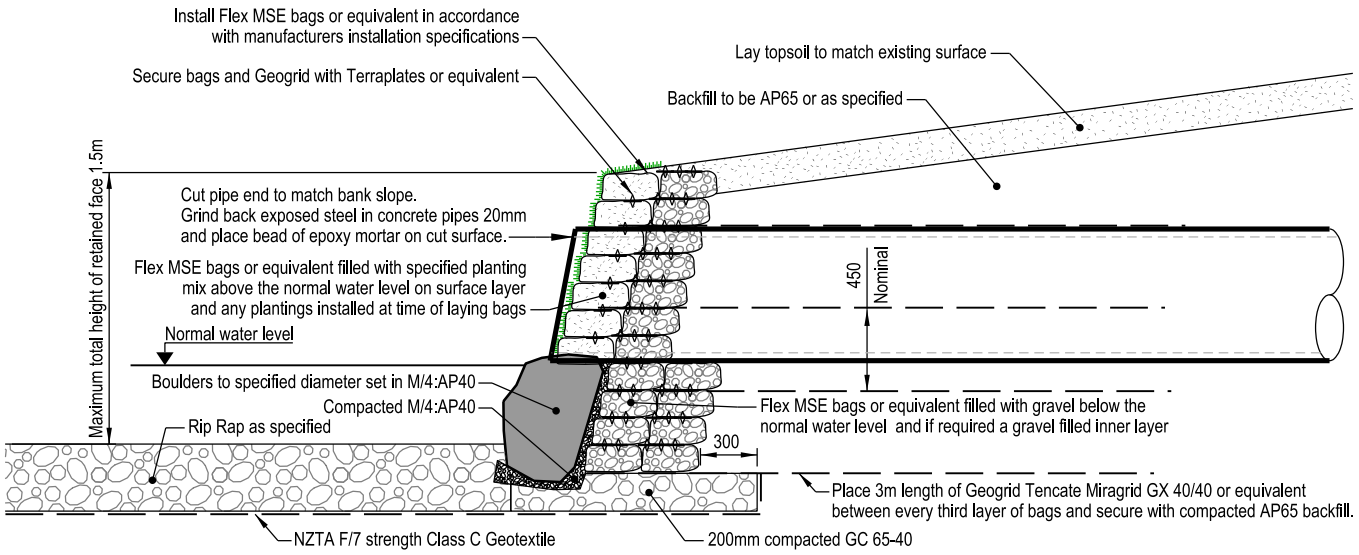
Christchurch City Council

BANK REINSTATEMENT TO OUTFALL FOR SLOPES 35-50 DEG

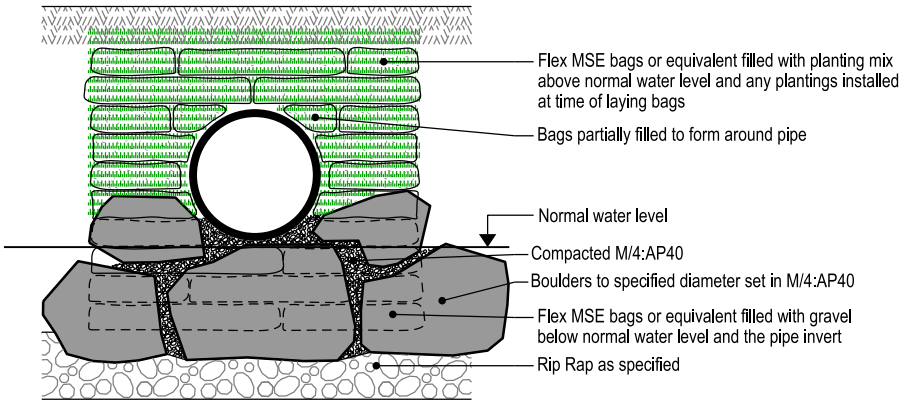
ISSUE DATE	DEC 2019

SD350

ds135002b.dgn



SECTION



END ELEVATION

NOTES:

1. SEE NOTES ON SHEET 1

2. MSE bags must be protected from UV with vegetation. Planned vegetation must have a commitment from the asset owner to be regularly maintained. Vegetation cover is an essential part of the design, construction procedure, durability and longevity of the headwall. If planting proposed, the roots must be installed between the uncut bags at the same time as FlexMSE wall construction. If grasses are proposed they must be hydroseeded using an appropriate polymer adhesive additive.

Christchurch City Council

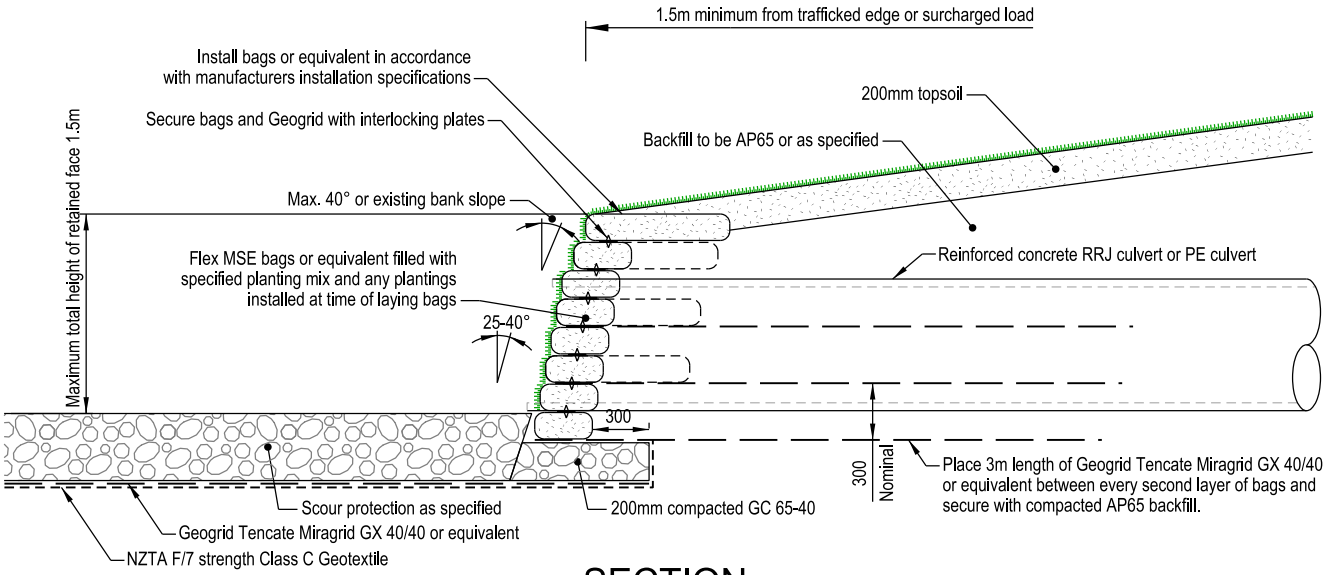
BANK REINSTATEMENT TO OUTFALL FOR SLOPES > 50 DEG

ISSUE DATE	DEC 2019

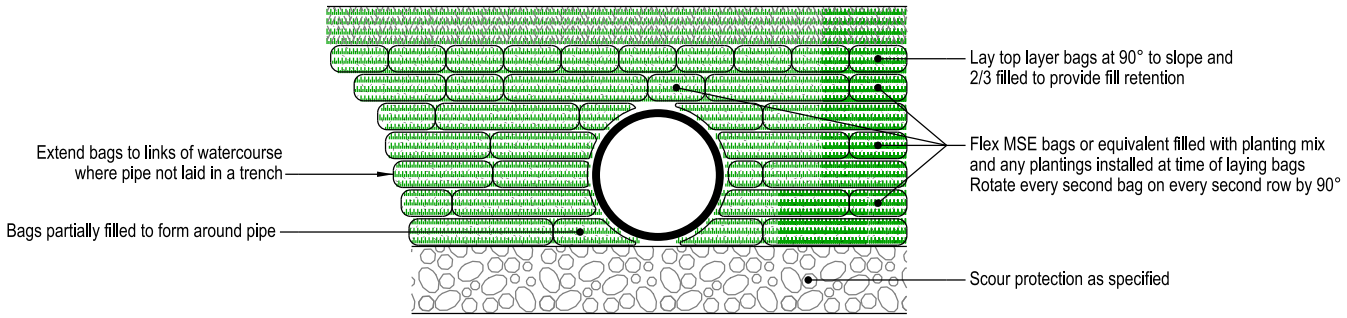
SD350

SHEET 2 OF 2

ds135101b.dgn



SECTION



END ELEVATION

NOTES:

1. Where headwall is generally wet, scour and inlet shaping requires specific design.
2. MSE bags must be protected from UV with vegetation. Planned vegetation must have a commitment from the asset owner to be regularly maintained. Vegetation cover is an essential part of the design, construction procedure, durability and longevity of the headwall. If planting proposed, the roots must be installed between the uncut bags at the same time as FlexMSE wall construction. If grasses are proposed they must be hydroseeded using an appropriate polymer adhesive additive.
3. This detail is not suitable for use where the vertical bank height exceeds 1.5m
4. Flex MSE bags are for representation purposes only. Bag system to provide 80 year service life.
5. Retaining wall to be installed in accordance with the manufacturers installation specification. Note vegetation cover requirment.
6. If bearing capacity under pipeline is less than 50kPa refer to detail SD352.
7. The trench backfill shall be lime stabilised on hillsides.
8. SD351 is a suitable detail for ephemeral waterways or swale outlets only.
9. Lateral spread risk needs to be assessed on a case by case basis.

Christchurch City Council

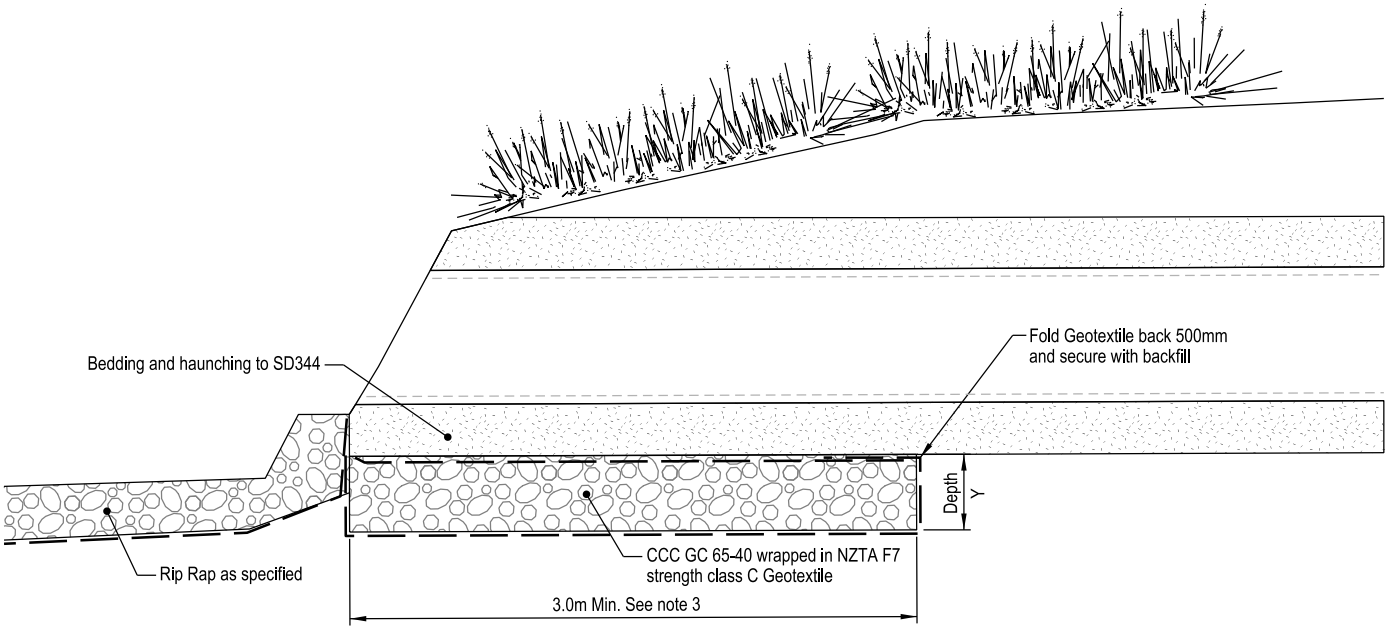
RURAL HEADWALL

ISSUE DATE	DEC 2019

SD351

SHEET 1 OF 1

ds135201a.dgn



SECTION

RAFT DEPTH	
PIPE DIAMETER	DEPTH (Y)
< 300 Ø	300mm
300 - 600 Ø	400mm
> 600 Ø	500mm

NOTES:

1. Suitable for soils with an allowable bearing pressure over 50kPa.
2. Width of raft to match trench width.
3. Extend raft foundation 0.5m minimum past rubber ring joint where within 3.0m of outlet.

Christchurch City Council

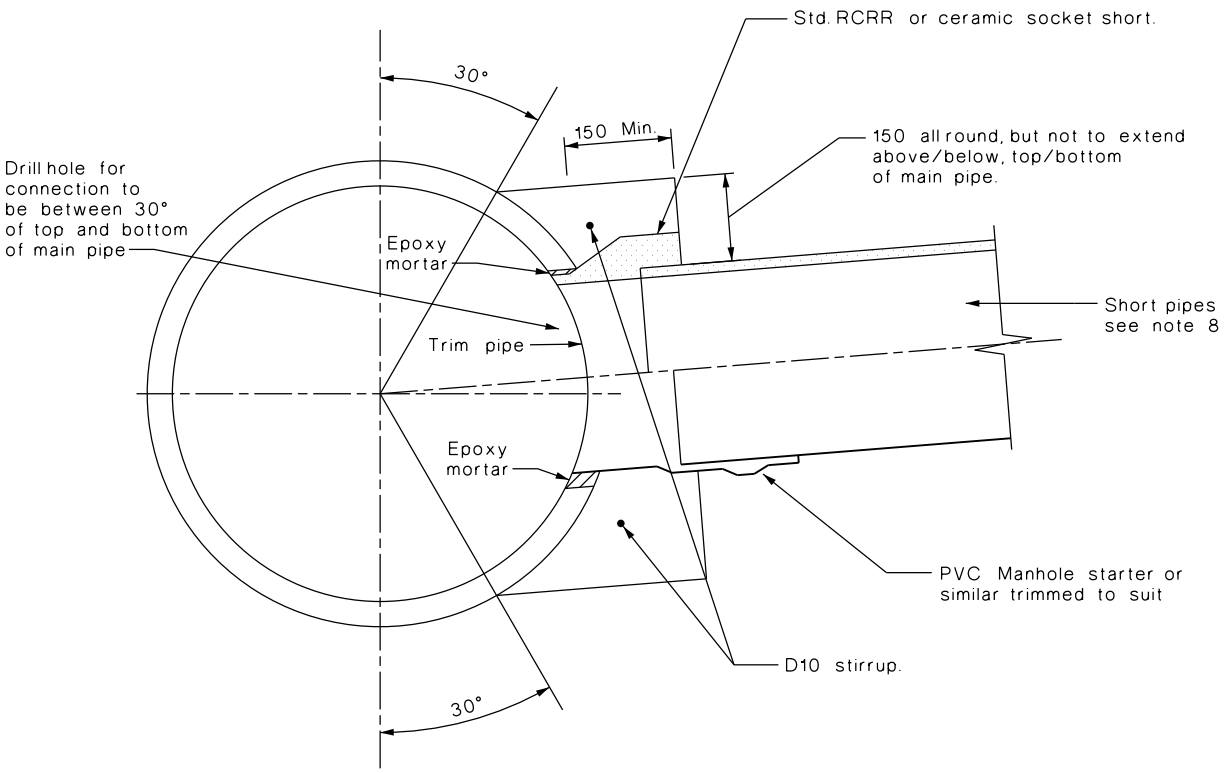
STABILISATION RAFT TO OUTFALL IN SOFT GROUND

ISSUE DATE	OCT 2016

SD352

SHEET 1 OF 1

DS036101C



NOTES:

1. Special design required for : main pipes other than reinforced concrete; more than one connection per main pipe.
2. Direct connections of this type are not permitted on plastic mains.
3. Outside edge of main pipe cut-in hole shall be not less than 300mm from collar or end of pipe.
4. Maximum diameter of cut-in hole shall be less than two thirds of the internal diameter of main pipe.
5. Epoxy mortar shall be applied strictly according to the manufacturer's recommendations, and shall be fully cured before the corbel is poured and the sideline laid.
6. Main pipe backfill under sideline shall be thoroughly compacted AP40 metal.
7. Main pipe surface shall be roughened and grout coated before concrete corbel is poured.
8. Sidelines shall have yield joints in accordance with standard detail plan SD341.
9. Sidelines shall be tested.
10. Direct connections must be approved by the Engineer, and normally shall only be used where the sideline is less than 10m long, and access for cleaning the sideline is easily obtainable at the upstream end. That is the sideline shall terminate with a manhole or shallow sump, but not a deep sump.
11. Diameter of sideline pipe shall be less than half the internal diameter of main pipe.

SQUARE RADIAL DIRECT CONNECTIONS:

Nominal Sideline Diameter	Minimum Main Pipe Diameter
100	225
150	375
200	450
225/250	525
300	675
375	825
450	975
525	1050
600/675	1350
750	1600
825/900	1800
975	1950
1050	2100

Christchurch City Council

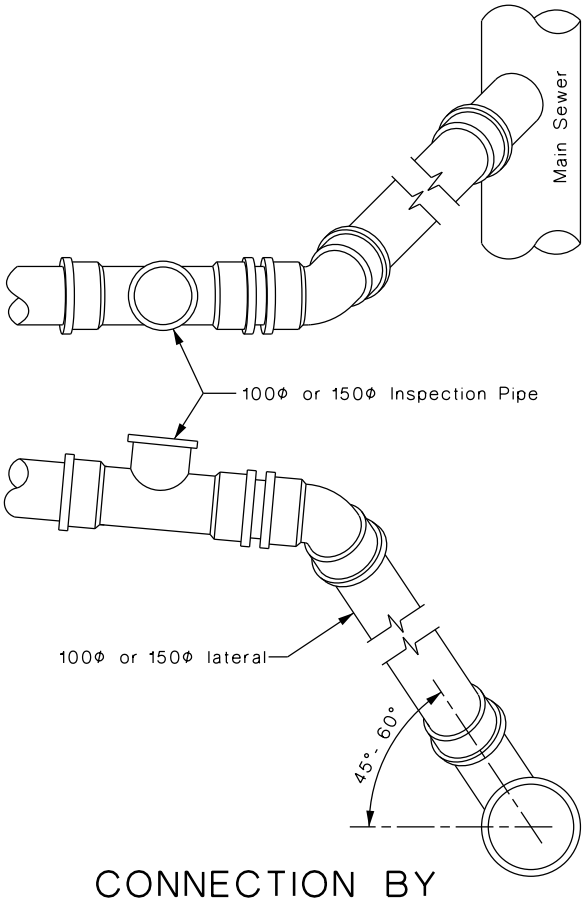
DIRECT CONNECTIONS TO STORMWATER PIPES

ISSUE DATE | MAR 2013

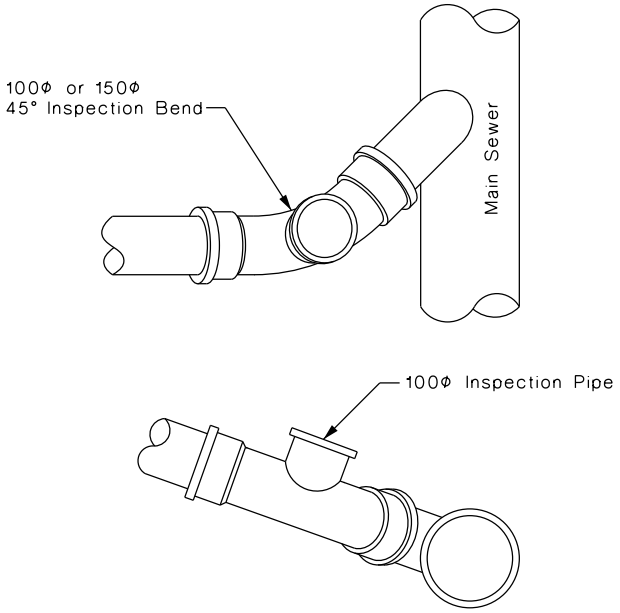
SD361

SHEET 1

DS036301D



CONNECTION BY RAMPED RISER



CONNECTION TO 45° SIDE JUNCTION

NOTES:

1. PVC pipes adjacent to concrete shall be wrapped with 6mm Denso tape or 250 microns Polyethylene film or equivalent.
2. Bottom of trench to be a stable and approved foundation.
3. Inspection points may be installed to allow pressure testing of the main.
4. Not to be used on main to main connections.

Christchurch City Council

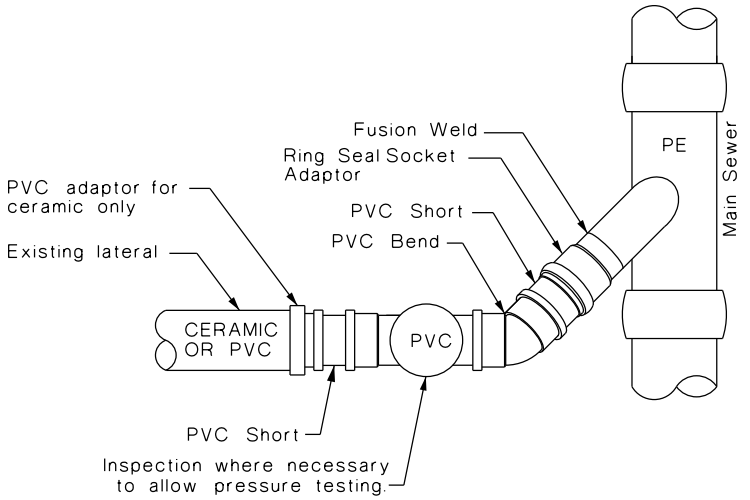
PIPELAYING JUNCTIONS OFF FACTORY MOULDED RISER

ISSUE DATE	OCT 2016

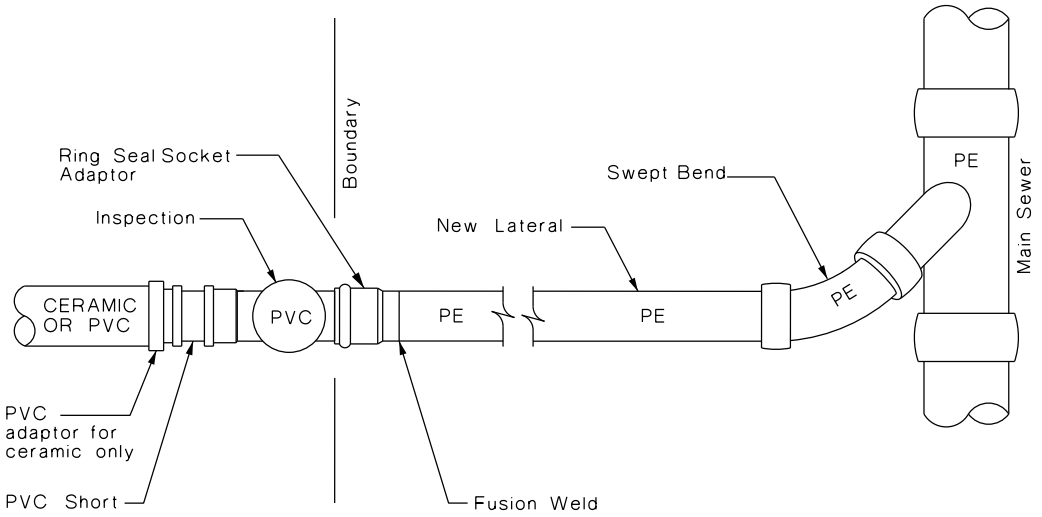
SD363

SHEET 1

DS036401C



TYPE 1



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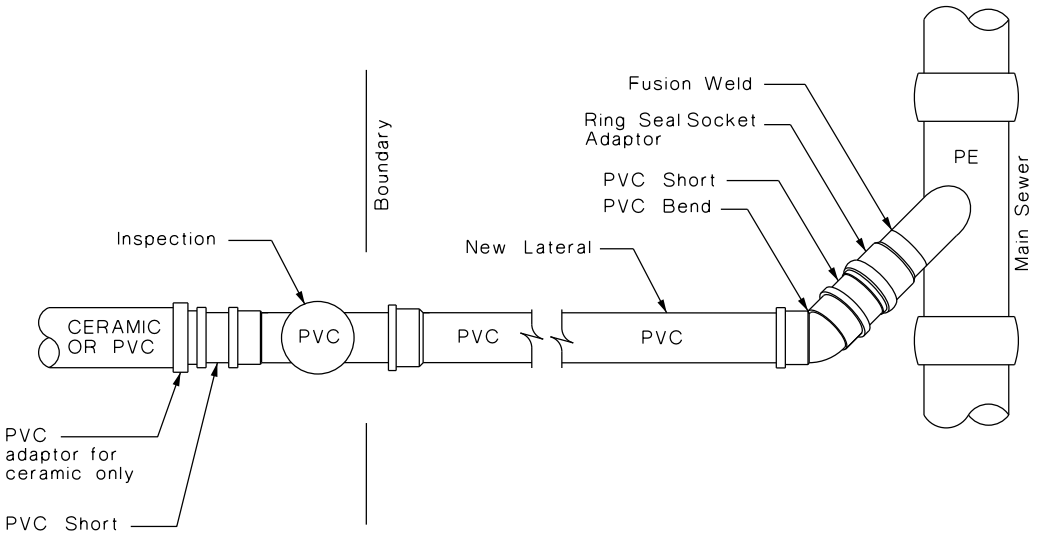


TYPE 3

Christchurch City Council

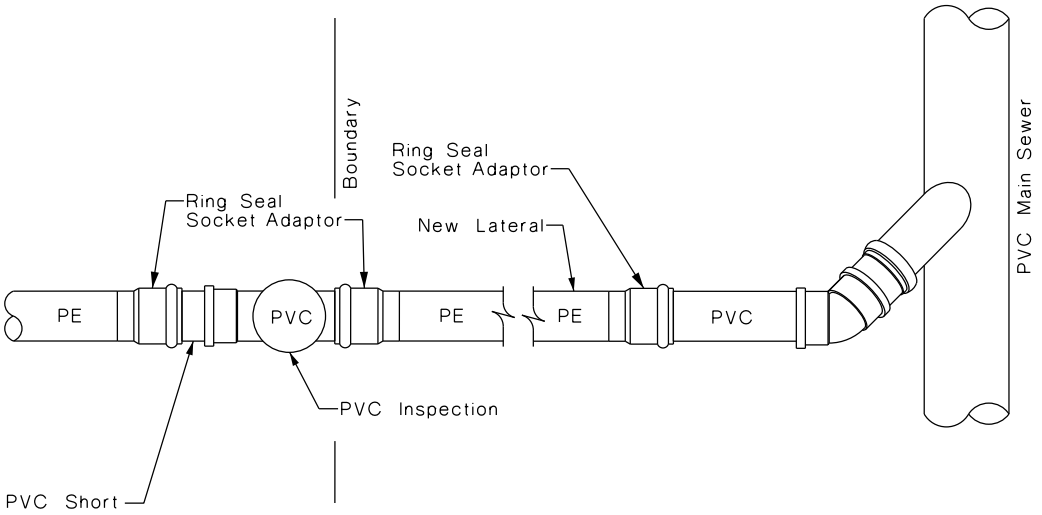
PE JUNCTIONS, SWEPT BENDS INSPECTIONS & ADAPTORS

ISSUE DATE	APR 2014

SD364

SHEET 1 of 2

DS036402B



TYPE 4

NOTE:

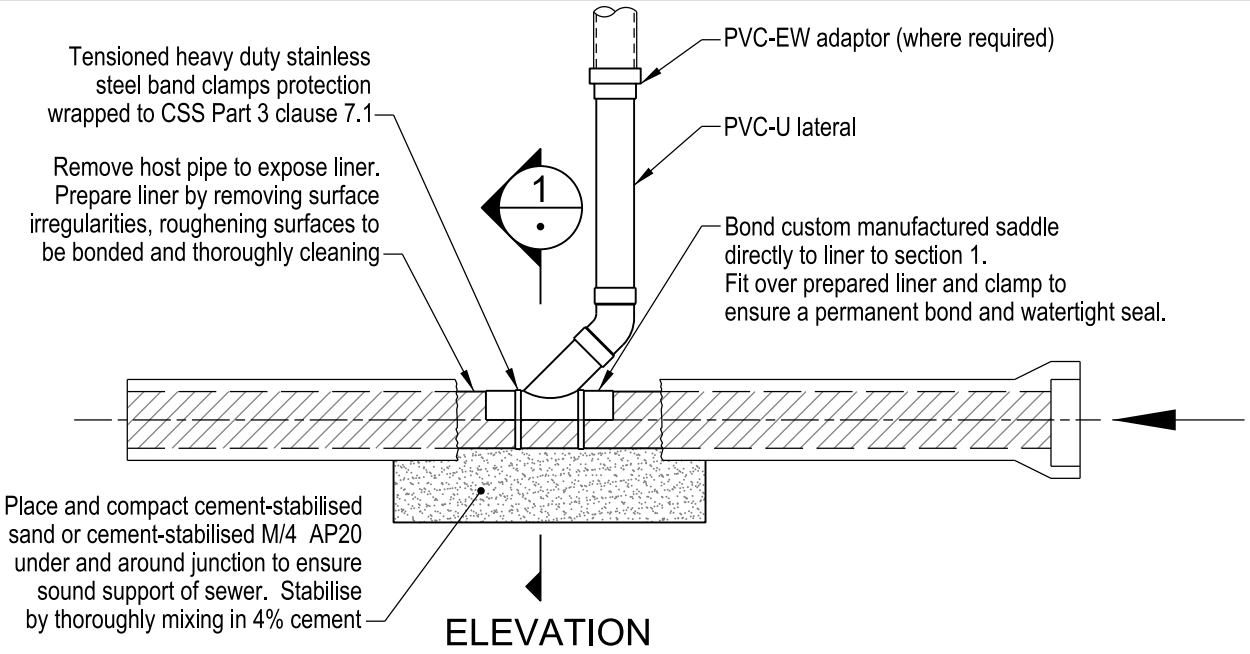
1. Inspection points may be installed adjacent to the main to allow pressure testing.

Christchurch City Council

PE LATERAL TO PVC MAIN CONNECTOR

ISSUE DATE	APR 2014
SD364	
SHEET 2	2

ds136601a.dgn



ELEVATION

SADDLE DETAIL

NOTES:

1. Ensure outside edge of main pipe cut-in hole is greater than 300mm from collar or end of host pipe.

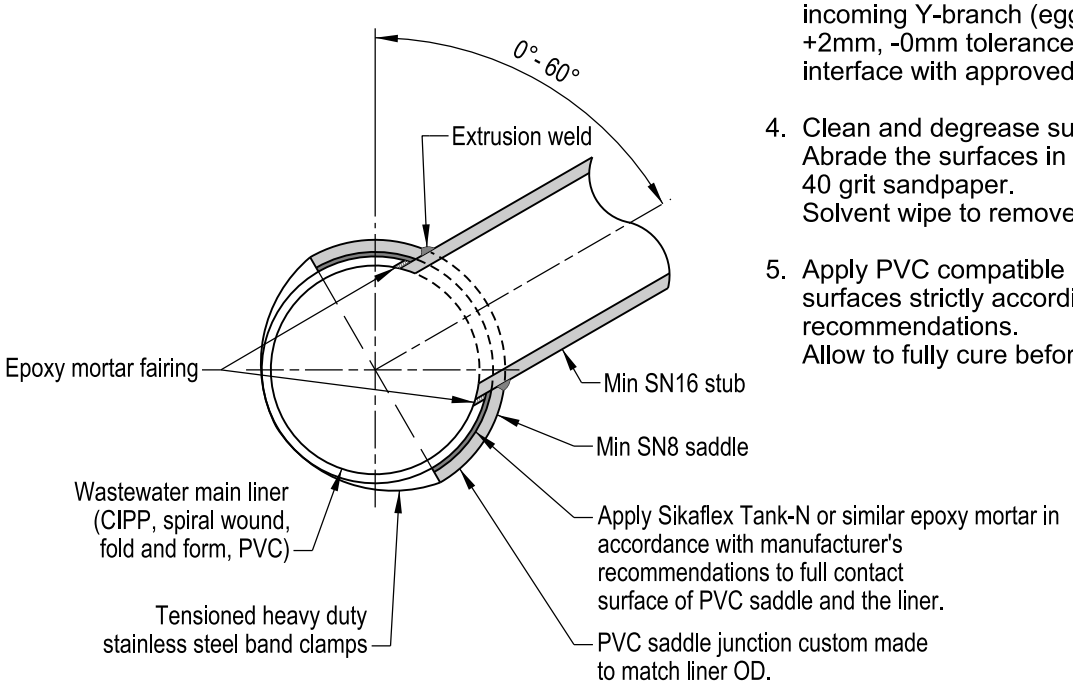
2. Maximum diameter of cut-in hole shall be less than two thirds of the internal diameter of main pipe as per table below.

Y-Junction saddle direct connections	
Main pipe dia.	Max. nominal sideline dia.
150	100
225	150
300	175
375	225

3. Cut in hole must be shaped to match incoming Y-branch (egg shaped) to within +2mm, -0mm tolerance. Smooth junction interface with approved epoxy mortar.

4. Clean and degrease surfaces to be bonded. Abrade the surfaces in two directions with 40 grit sandpaper. Solvent wipe to remove dust.

5. Apply PVC compatible epoxy mortar to both surfaces strictly according to the manufacturer's recommendations. Allow to fully cure before the lateral is laid.



SECTION 1

Christchurch City Council

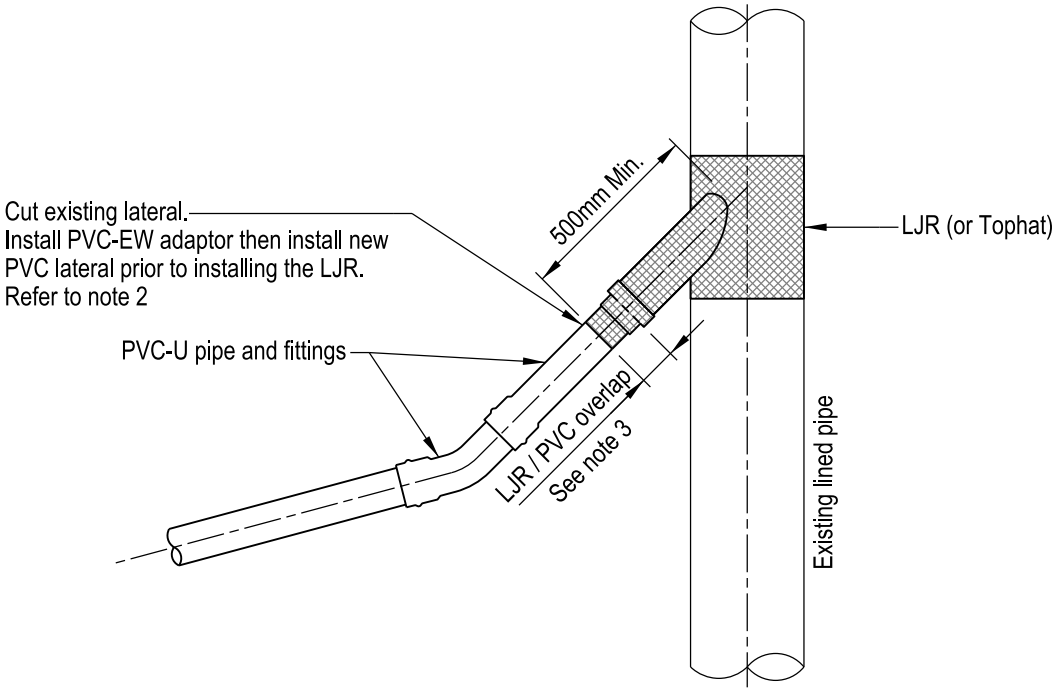
CIPP LINED MAIN TO LATERAL CONNECTION

ISSUE DATE	OCT 2016

SD366

SHEET 1 OF 3

ds136602a.dgn



LATERAL JUNCTION REPAIR (LJR)
TRANSITION TO PVC LATERAL

NOTES:

1. Cut earthenware lateral within 500mm of main pipe.
2. Ensure PVC-EW adaptor rubber ring is snug fitting.
   Pack void with epoxy mortar all around to form a secure seal and bond.
   Roughen inside of PVC-EW adaptor prior to epoxy application.
3. Install the LJR with an overlap into the PVC pipe of at least 200mm.

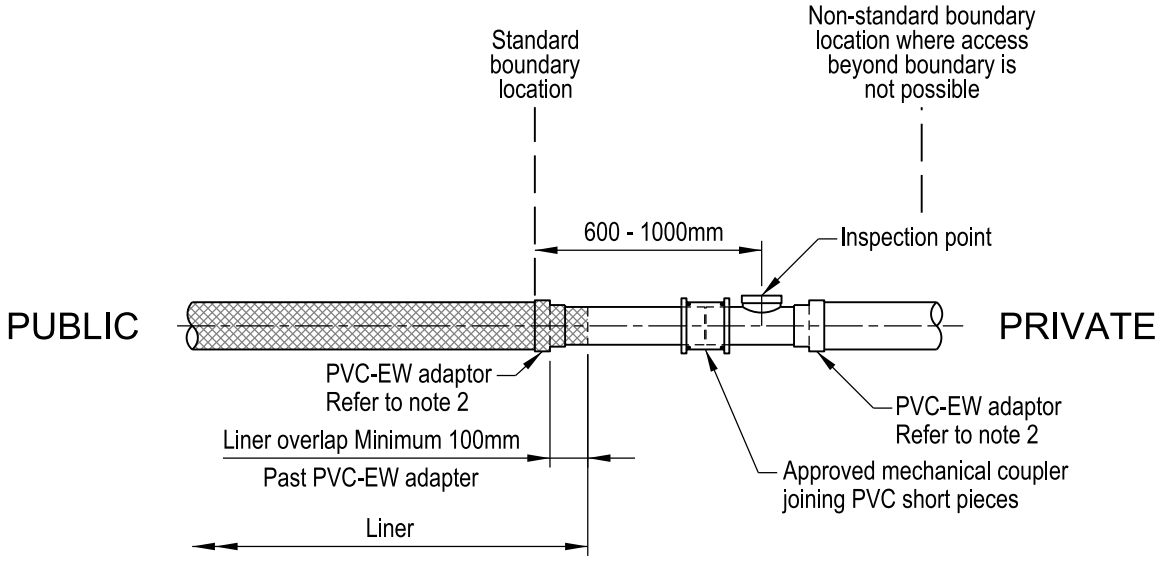
Christchurch City Council

LARGE Ø LINED PIPE LATERAL CONNECTION

ISSUE DATE	OCT 2016

SD366

ds136603a.dgn



NOTES:

1. Where access beyond the property boundary is not possible, install the PVC inspection point as close to the property boundary as possible.

2. Ensure PVC-EW adaptor rubber ring is snug fitting.
   Pack void with epoxy mortar all around to form a secure seal and bond.
   Roughen inside of PVC adaptor prior to epoxy application.

Christchurch City Council

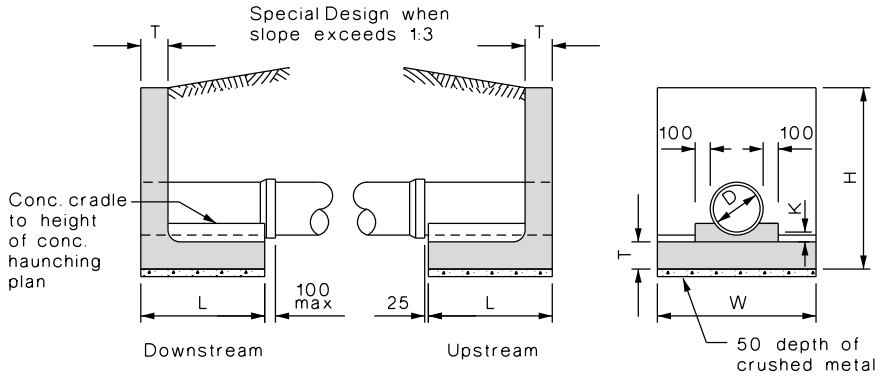
LINED PVC-EW LATERAL CONNECTION

ISSUE DATE	OCT 2016

SD366

SHEET 3 OF 3

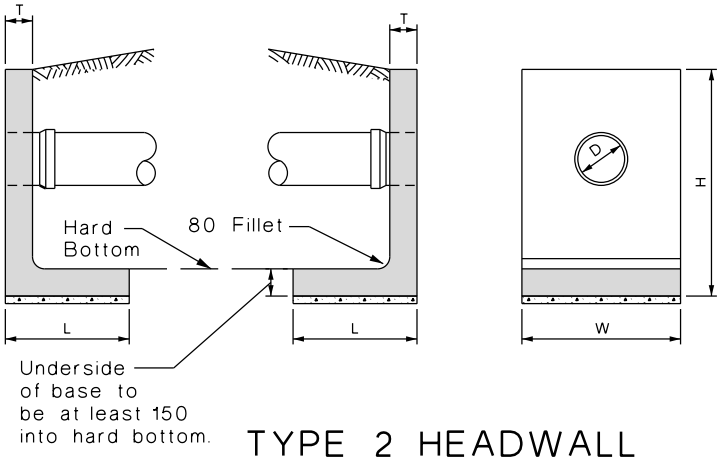
DS037101B



TYPE 1 HEADWALL

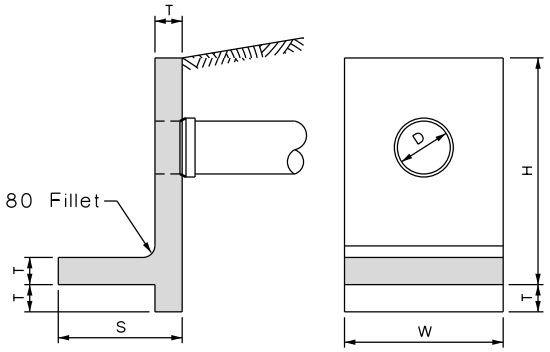
NOTES:

1. Type 1 headwall required if "K" is 200 or less otherwise type 2 is satisfactory.
2. Concrete shall be 25 MPa 75mm slump.
3. If "W" exceeds the minimum, reinforcing shall correspond to actual width.
4. One yield joint (see SD341) shall be adjacent to the headwall and for pipes 900Φ or less, a second yield joint shall be within 1.3m.
5. For pipes with diameter greater than 1200mm special design shall apply.
6. Pipe ends shall be plain unless otherwise specified.



TYPE 2 HEADWALL

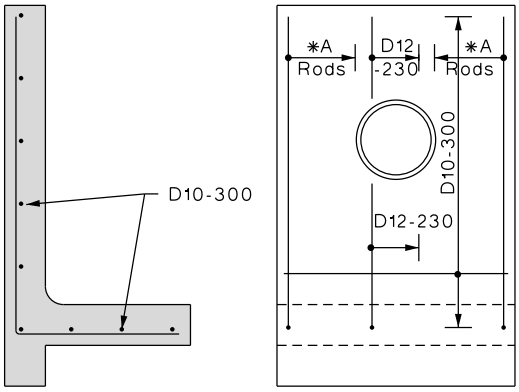
TABLE 1				
H up to	L min	T	S	A, B & C Rods Φ
900	500	180	750	10
1200	680	180	1050	10
1500	820	180	1300	12
1800	900	180	1600	16
2100	1050	200	1800	20
2400	1200	230	2000	20



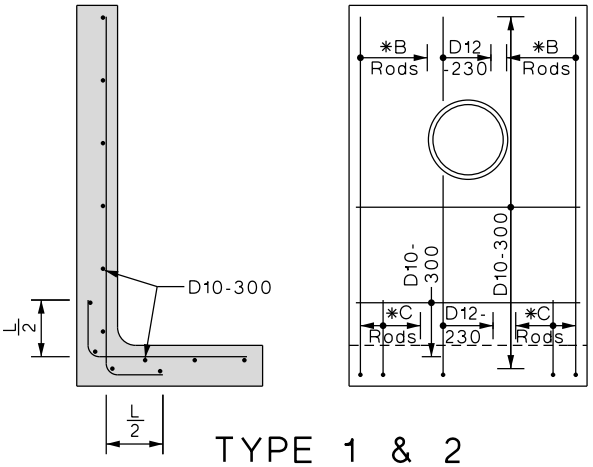
TYPE 3 HEADWALL

Minimum Width of Headwalls "W"	
"D"	"W"
Up to 900Φ	3 x "D"
Greater than 900Φ	"D" + 1800

TABLE 2	
No. of A, B & C Rods	
"W" up to (mm)	min No.
1000	4
1400	6
1800	8
2500	10
2900	12
3200	14



TYPE 3



TYPE 1 & 2

REINFORCING DETAILS

* Rods in accordance with Table 1 & 2

Christchurch City Council

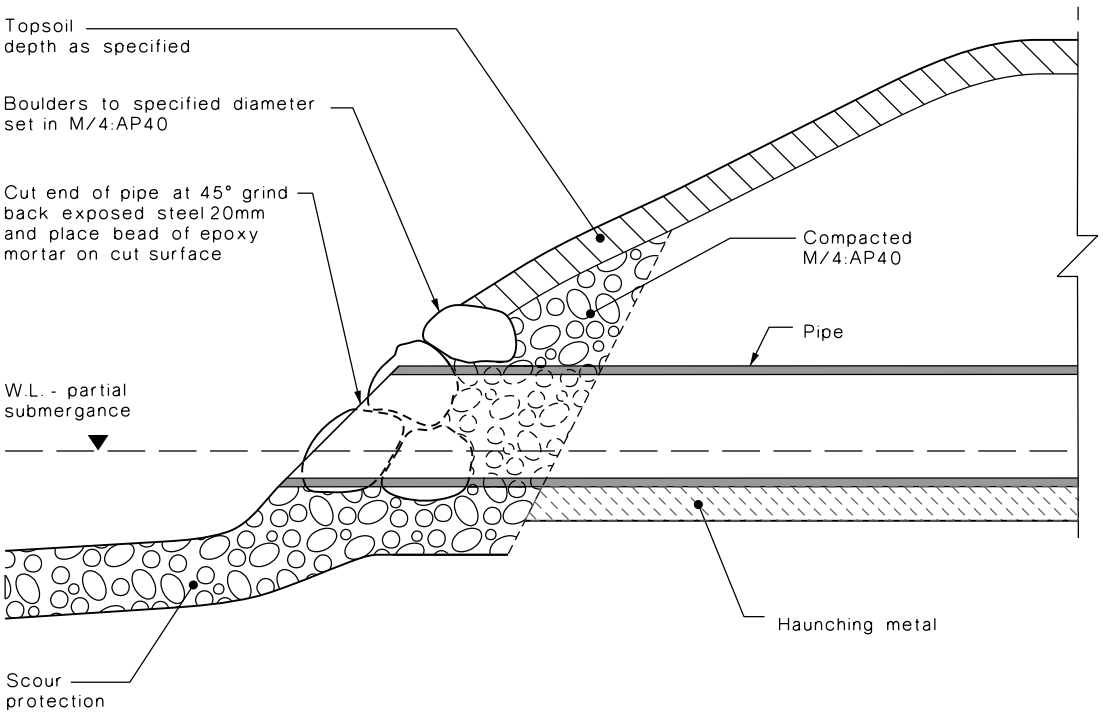
CONCRETE HEADWALLS (NON-TRAFFICABLE)

ISSUE DATE: OCT 2016

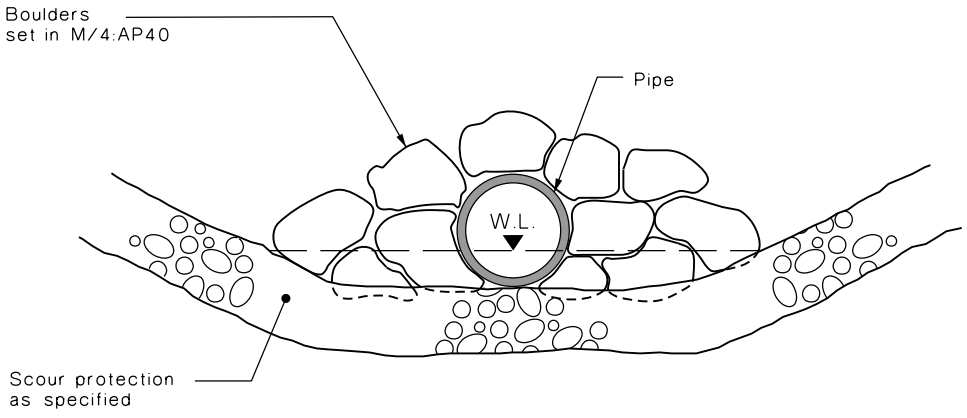
SD371

SHEET 1 of 2

DS037102A



OUTFALL DETAILS



END VIEW

Christchurch City Council

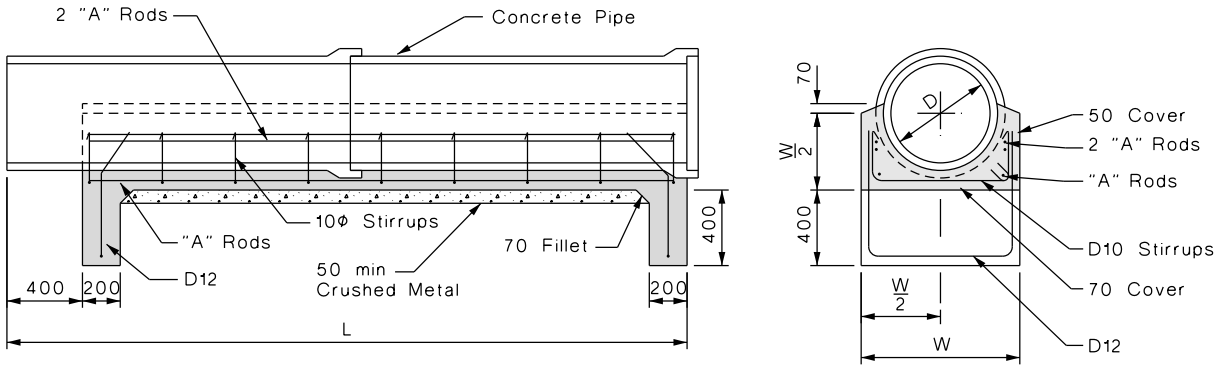
CUT PIPE ROCKWALL

ISSUE DATE	FEB 2002

SD371

SHEET 2 of 2

DS037201B



150Φ TO 750Φ PIPES

Table of Dimensions and Reinforcing			
Nominal Pipe Diameter "D"	"W"	"A" Rods Diameter	Spacing of 10Φ Stirrups
150	500	12	300
200	580	12	300
225	580	12	400
250	600	12	450
300	660	12	450
375	740	16	450
450	860	20	300
525	940	20	400
600	1020	24	450
675	1100	24	450
750	1200	24	450

Beam Lengths		
No. of Pipes	Pipe Length	Beam Length "L"
3 RCRR	2.44	6.92
3 RCRR	1.83	5.09
2 RCRR	2.44	4.48
2 RCRR	1.83	3.26

NOTES:

1. Concrete to be 25 MPa 75 slump.
2. Steel to be deformed rods to AS/NZS 4671.
3. Beam length shall be specified.
4. For pipes larger than 750mmΦ special design required.
5. First yield joint shall be adjacent to upstream end of beam and second yield joint shall be not more than 1.3m away.

Christchurch City Council

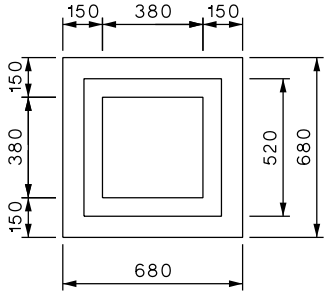
STANDARD REINFORCED CONCRETE BEAM

ISSUE DATE | JUNE 2005

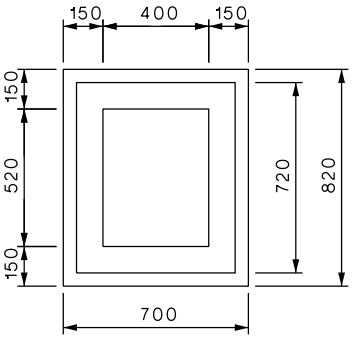
SD372

SHEET 1

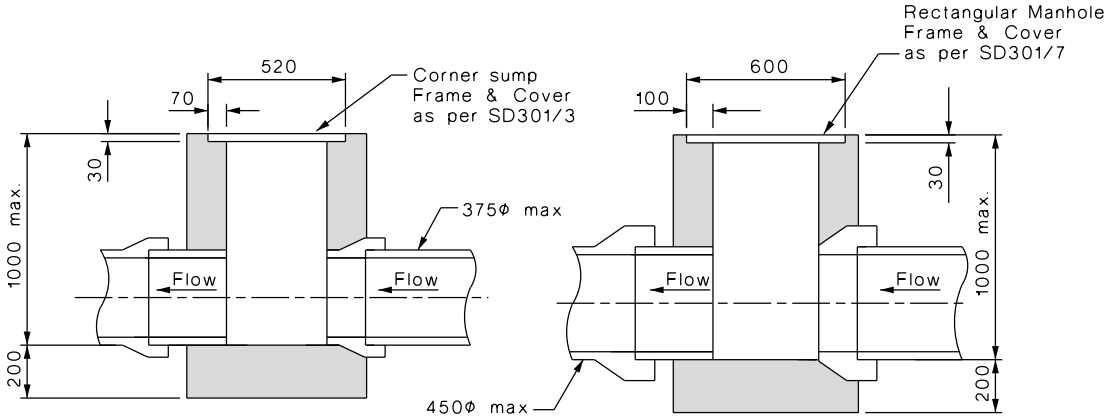
DS037501D



TYPE B



TYPE C



SECTION TYPE B

SECTION TYPE C

NOTES:

1. Cast iron frames to be seated on cement sand mortar, and set in with plant mix asphalt or mortar as required.
2. Yield joints shall be provided in accordance with plan SD341 except that in all cases two yield joints and one short pipe shall be used.
3. General method of pipelaying, angle connections, corbels, etc. to be in accordance with plan SD341.
4. Concrete work to comply with NZS 3109.
5. All concrete to be 40MPa.

Christchurch City Council

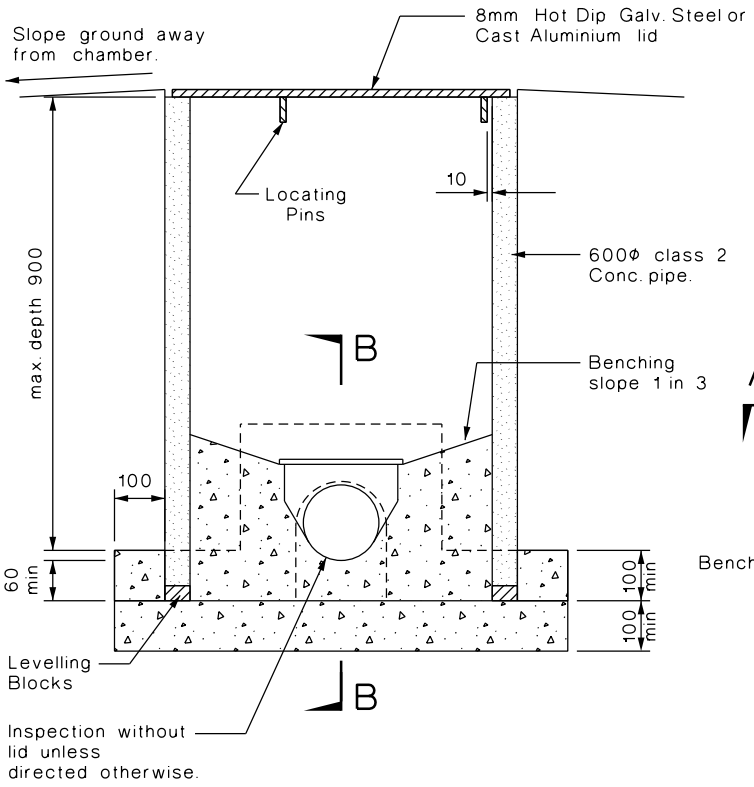
INSPECTION CHAMBERS

ISSUE DATE	DEC 2019

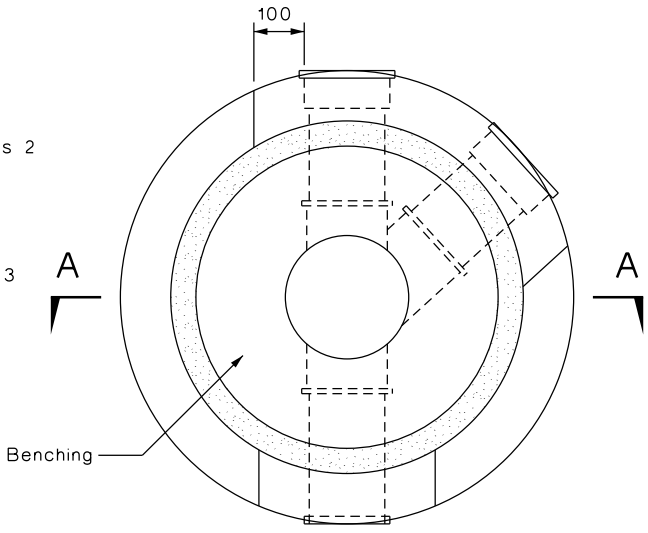
SD375

SHEET 1

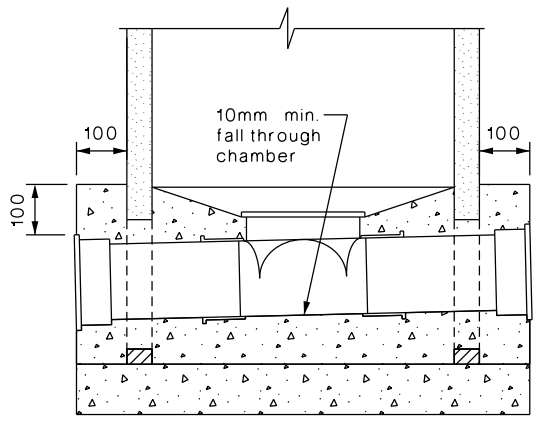
DS037601B



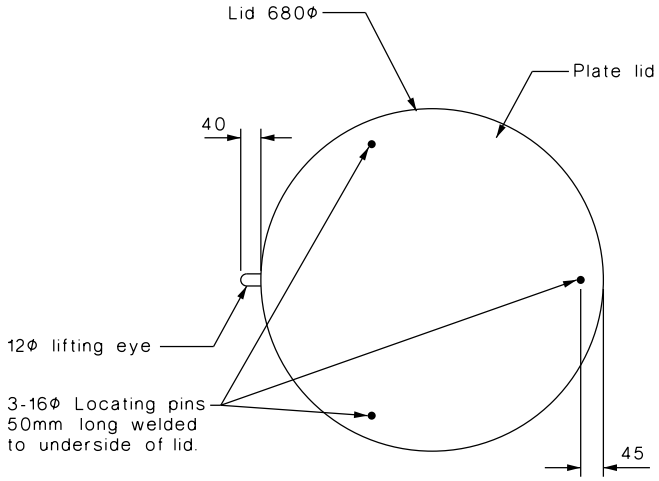
SECTION A-A



PLAN



SECTION B-B



LID DETAIL

NOTES :

1. Inspection chamber lid as detailed shall not be subject to traffic loading.
2. A standard manhole shall be used when the depth exceeds 900mm.
3. Inspection chambers on drains connected to sanitary sewer shall be positioned so as to avoid the entry of surface water and grit.
4. Bends adjacent to the inspection chamber shall not be greater than 45°.
5. Steel lids shall be hot dip galvanised after fabrication. Lids shall be a good fit to avoid rocking or jamming.
6. Notes on sheet SD375 apply.

Christchurch City Council

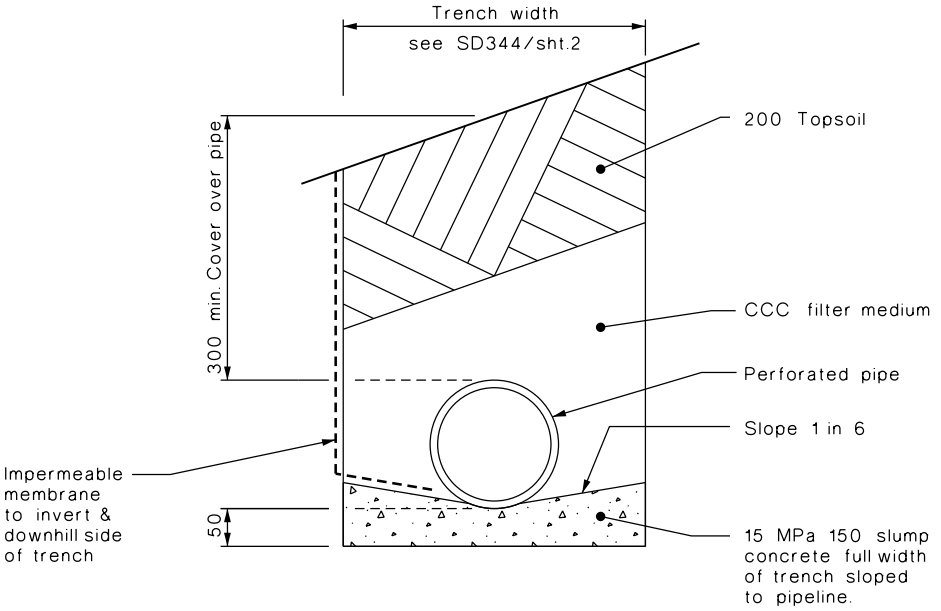
STANDARD CIRCULAR INSPECTION CHAMBER

ISSUE DATE	DEC 2009

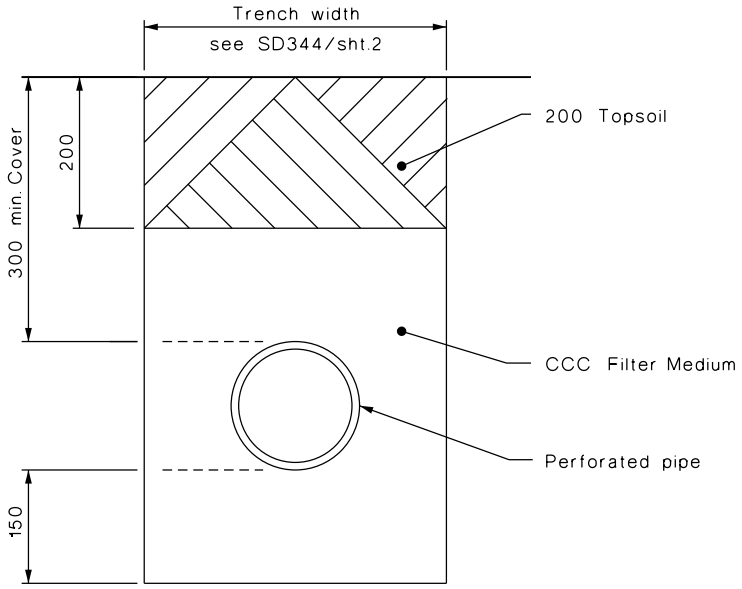
SD376

SHEET 1

DS037701B



HILLSIDE INTERCEPTOR DRAIN



INTERCEPTOR DRAIN

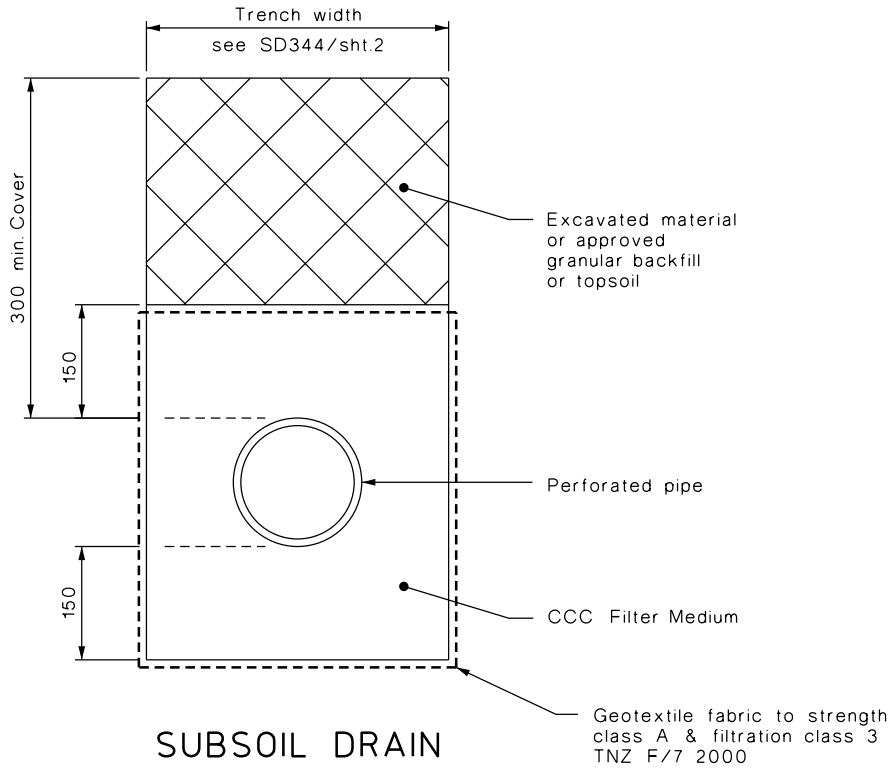
Christchurch City Council

SUBSOIL DRAINS

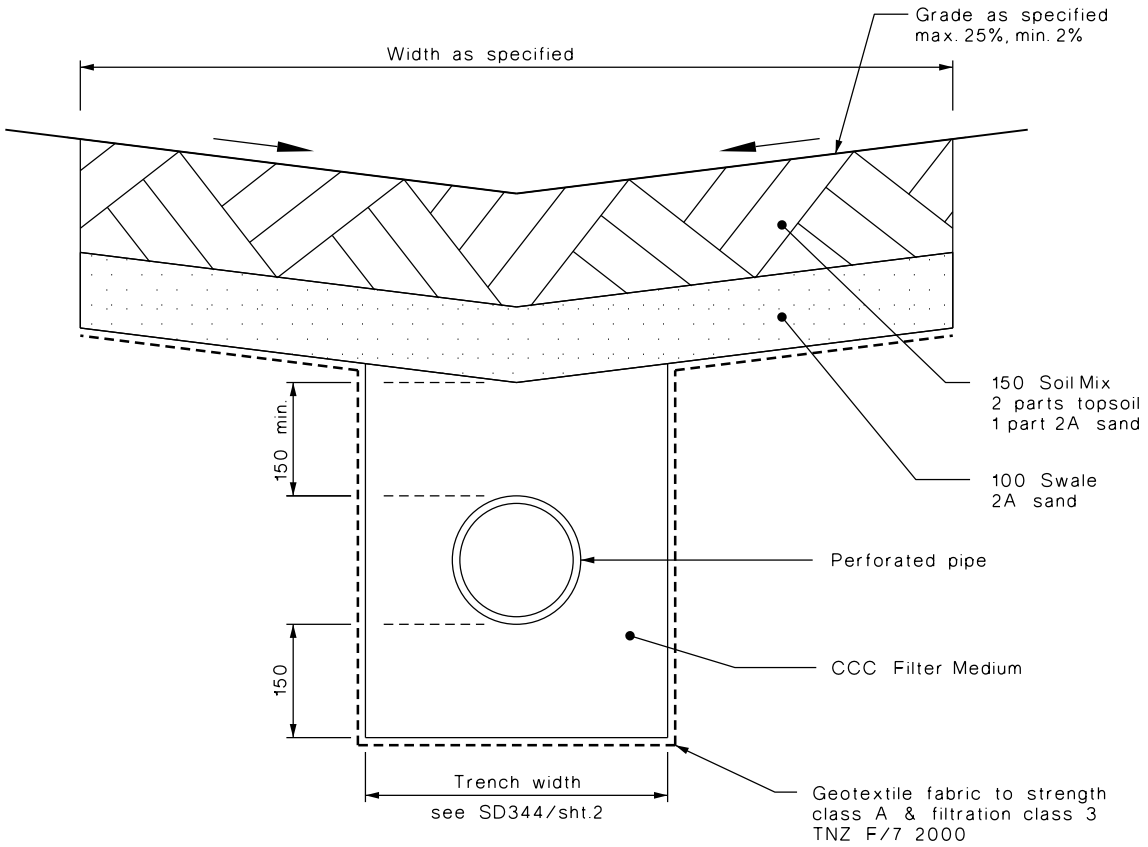
ISSUE DATE | JUNE 2005

SD377

DS037702B



SUBSOIL DRAIN



SWALE SUBSOIL DRAIN

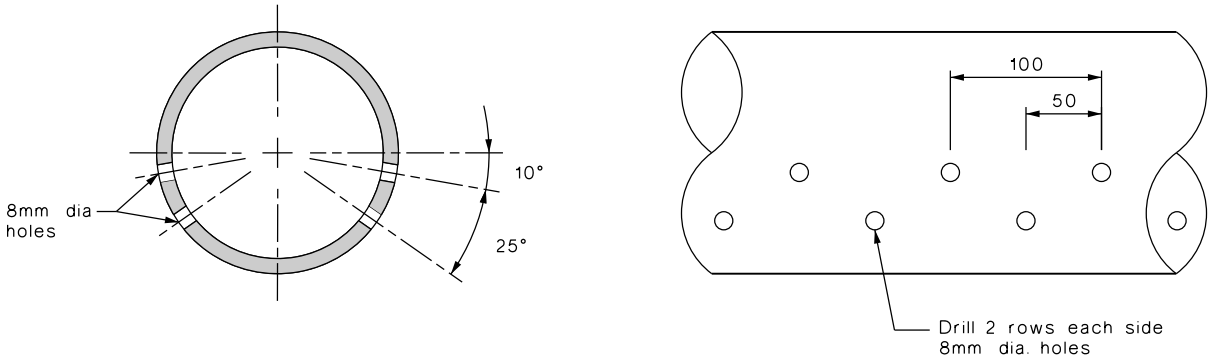
Christchurch City Council

SUBSOIL DRAINS

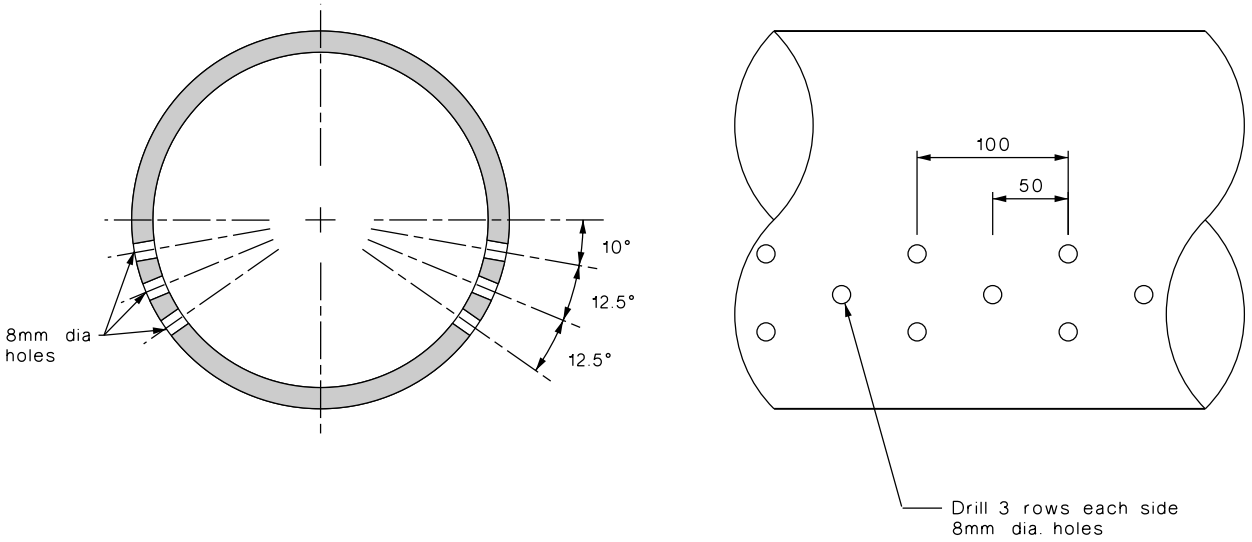
ISSUE DATE	AUG 2003

SD377

DS037703A



DN100 and DN150



DN200, DN225 and DN300

Christchurch City Council

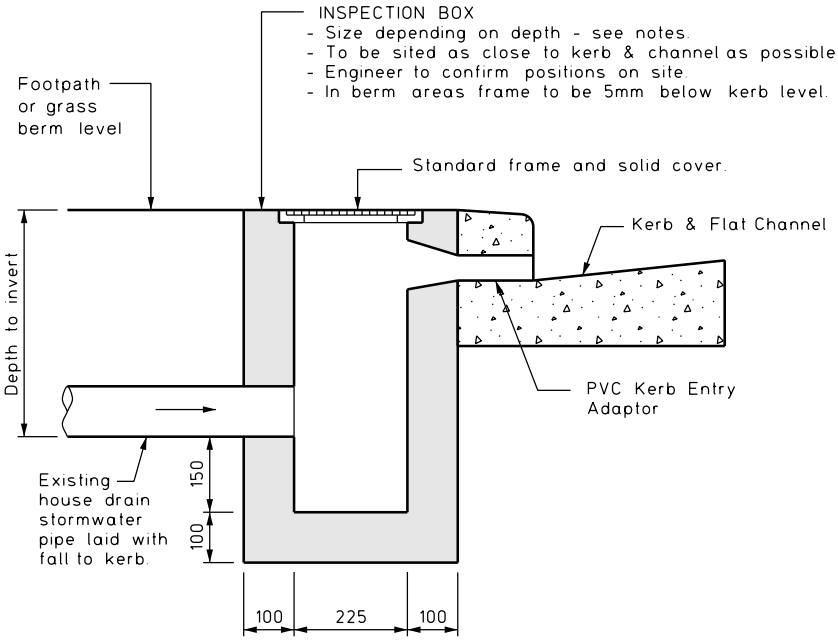
SUBSOIL DRAIN PIPES

ISSUE DATE	FEB 2002

SD377

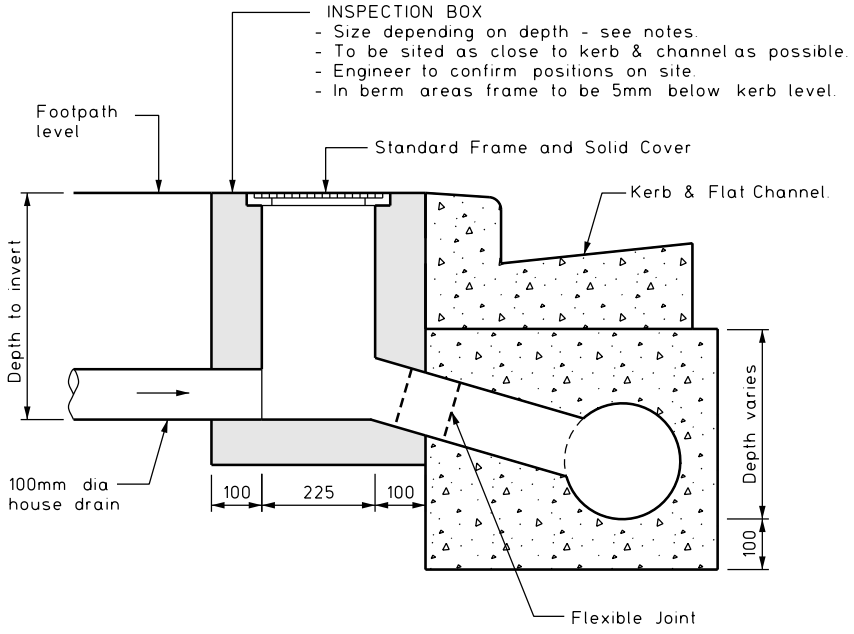
SHEET 3 of 3

DS037801B



TYPE A

- All concrete to be 20MPa at 28 days
- All stormwater piping to comply with CSS Part 3



TYPE B

NOTES:

1. Use 225 x 125 Inspection box up to 350 depth to invert (lowest pipe),
   Use 300 x 175 Inspection box over 350 depth to invert (lowest pipe) & up to 500 depth,
   Use House drain sump over 500 depth to invert.

2. Polyethylene inspection boxes are acceptable. See Approved Materials List.

Christchurch City Council

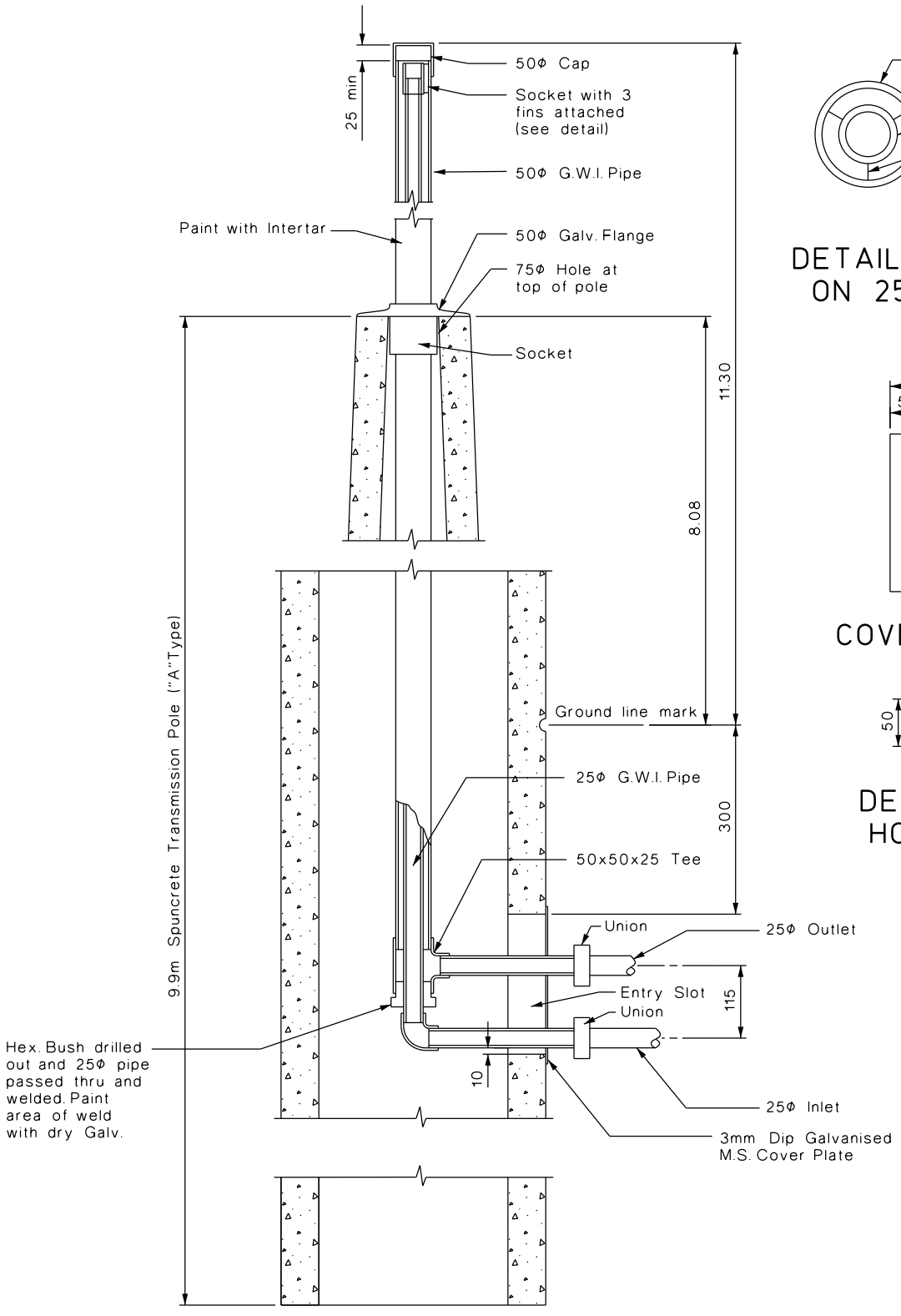
HOUSE DRAIN INSPECTION BOX

ISSUE DATE	OCT 2016

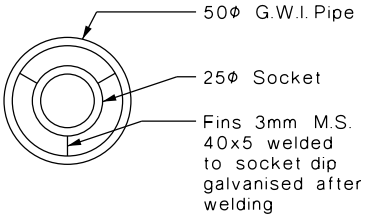
SD378

SHEET 1

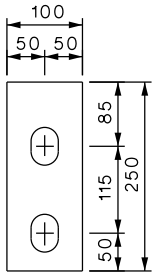
DS038101A



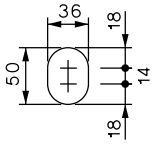
SECTION ON CENTRE LINE



DETAIL OF SOCKETS ON 25Φ G.W.I. PIPE



COVER PLATE



DETAIL FOR HOLE SIZE

Christchurch City Council

VACUUM COLUMN BACKFLOW PREVENTER

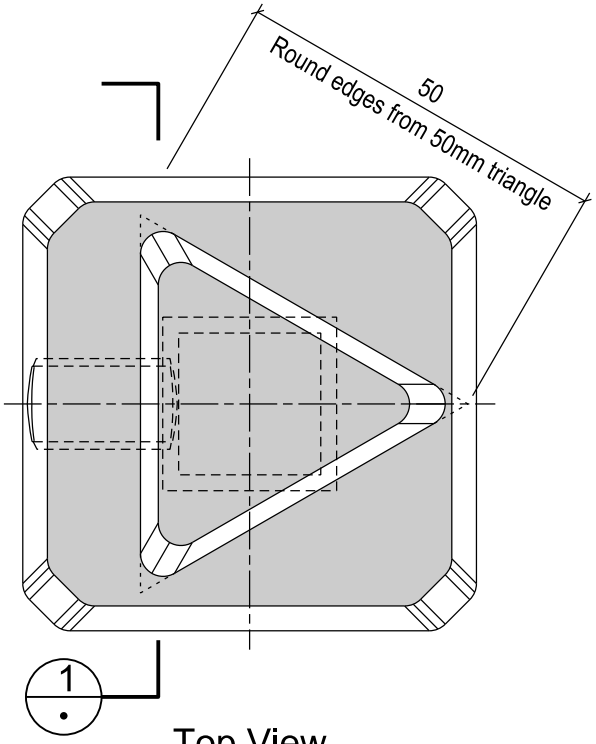
ISSUE DATE	FEB 2002

SD381

SHEET 1

DS138201A

DS138201A



Top View

NOTES:

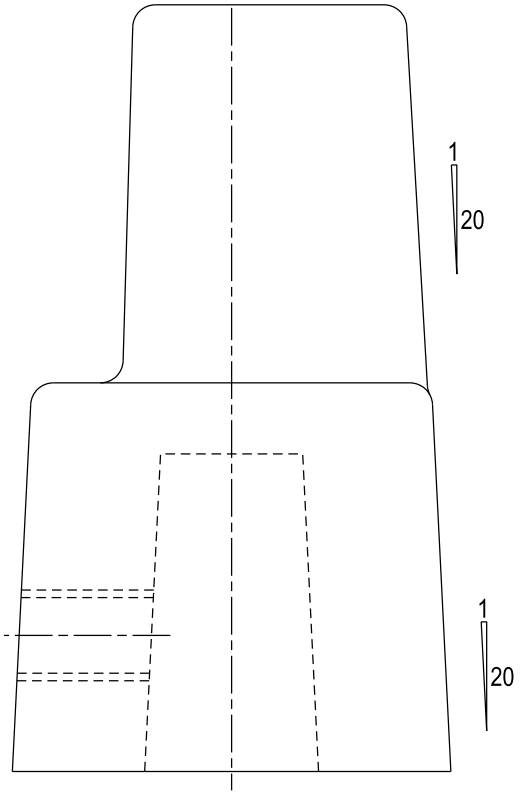
1) Spindle cap to be made from Cast Iron to AS 1830.

2) Spindle cap to be polymeric coated to AS/NZS 4158.

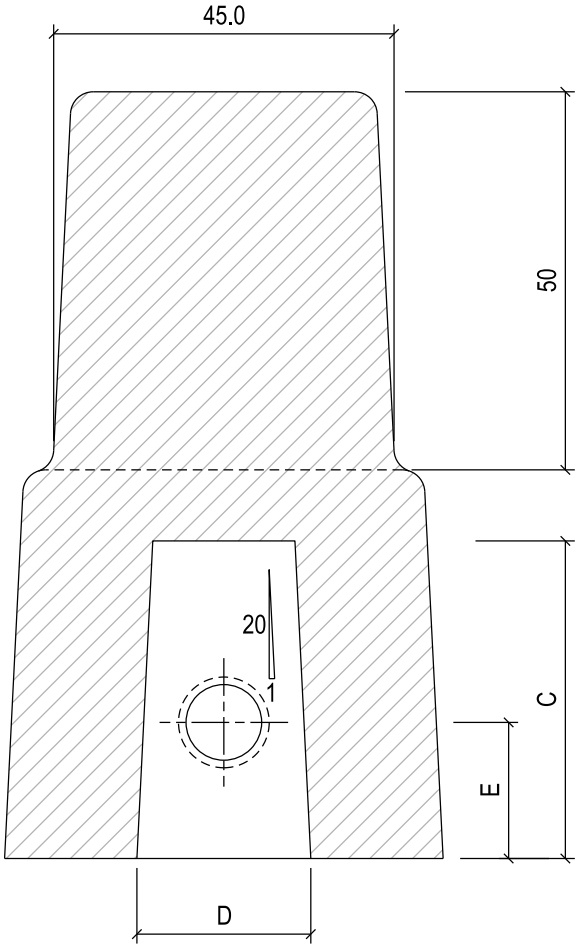
3) Fix to valve shaft with M12 stainless steel set screw.

4) Dimple valve shaft at set screw location to aid fixing.

5) The spindle cap external shape can be circular.



Side View



Section

SPINDLE CAP DIMENSIONS			
TYPE	C	D	E
Valve / 50, 80 & 100mm	42	23	18
Valve / 150, 200, 250 & 300mm	49	32.75	21

Christchurch City Council

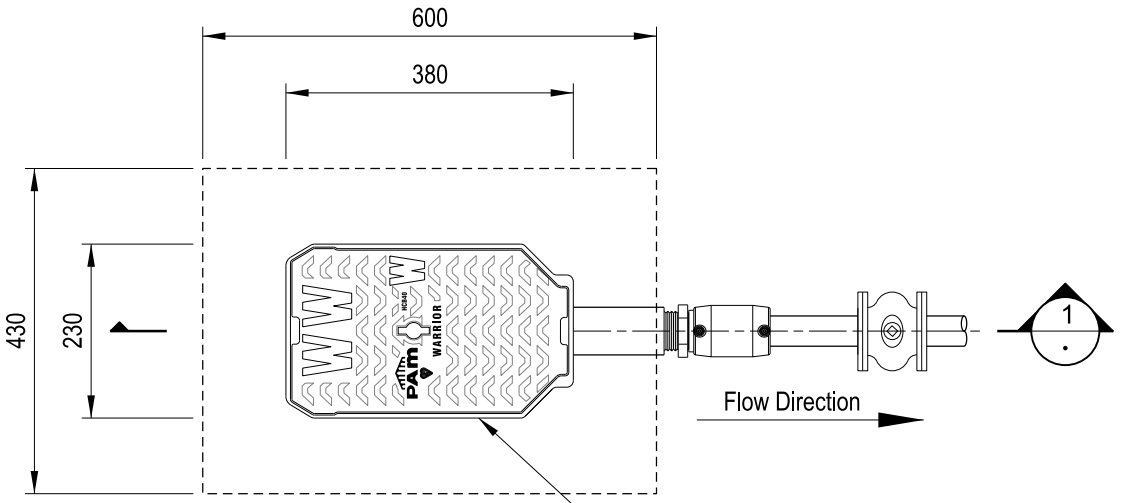
WASTEWATER SPINDLE CAP

ISSUE DATE MAR 2013

SD382

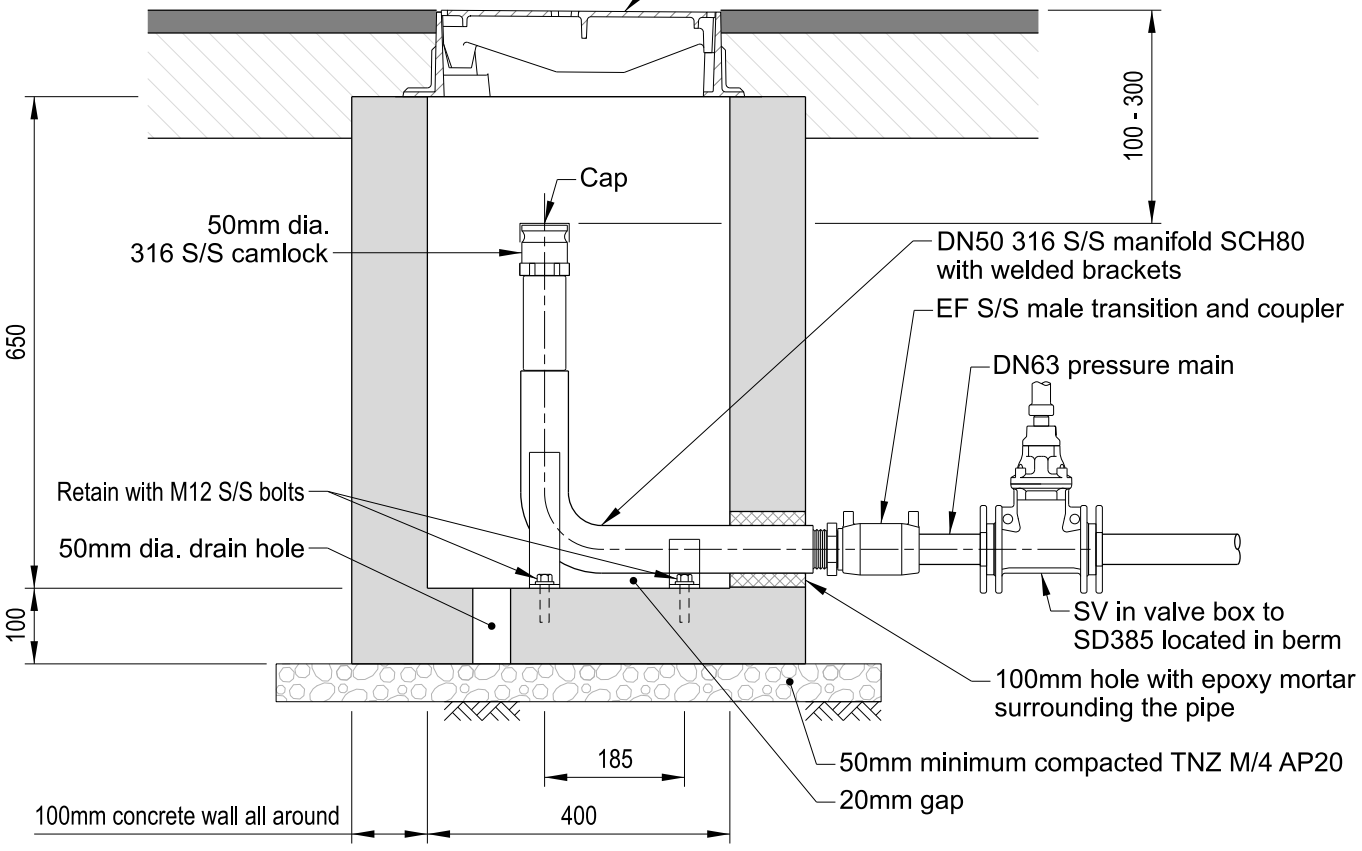
SHEET 1 OF 1

ds138301c.dgn



PLAN

Trafficable wastewater PSS box and lid in berm.



1

NOTES:

1. Concrete work to comply with NZS 3109.
2. All concrete to be 40MPa.
3. DN160 mains and above require 75Ø flushing point off DN90 lateral.

Christchurch City Council

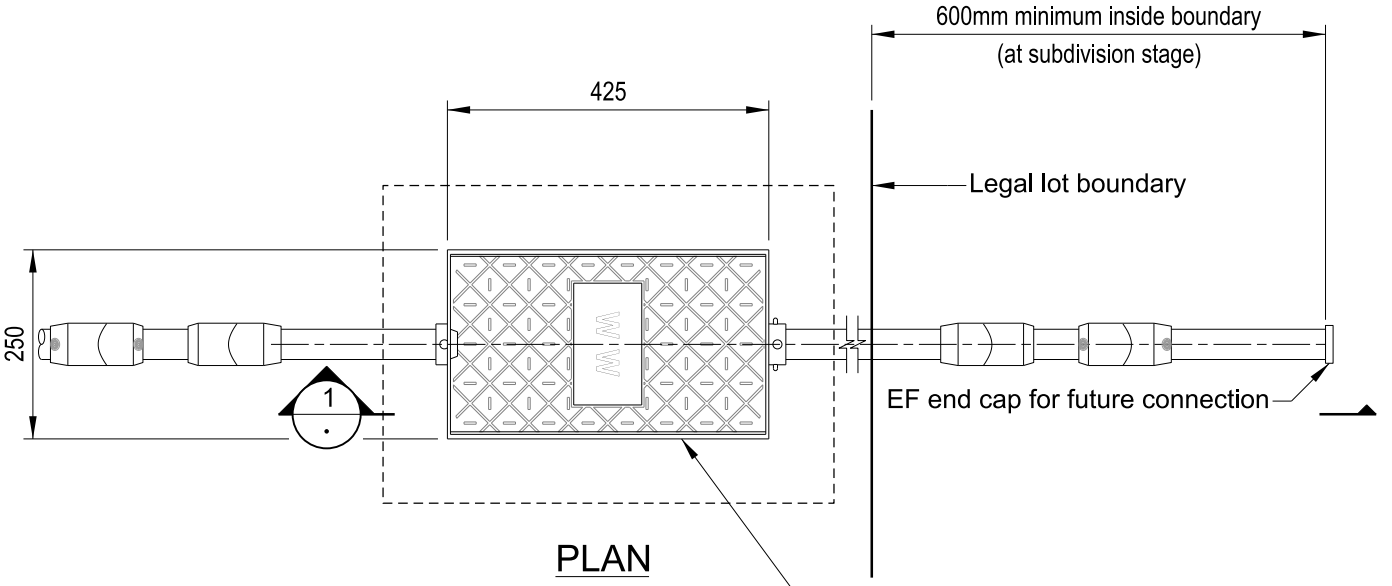
PRESSURE SEWER FLUSHING POINT

ISSUE DATE	NOV 2022

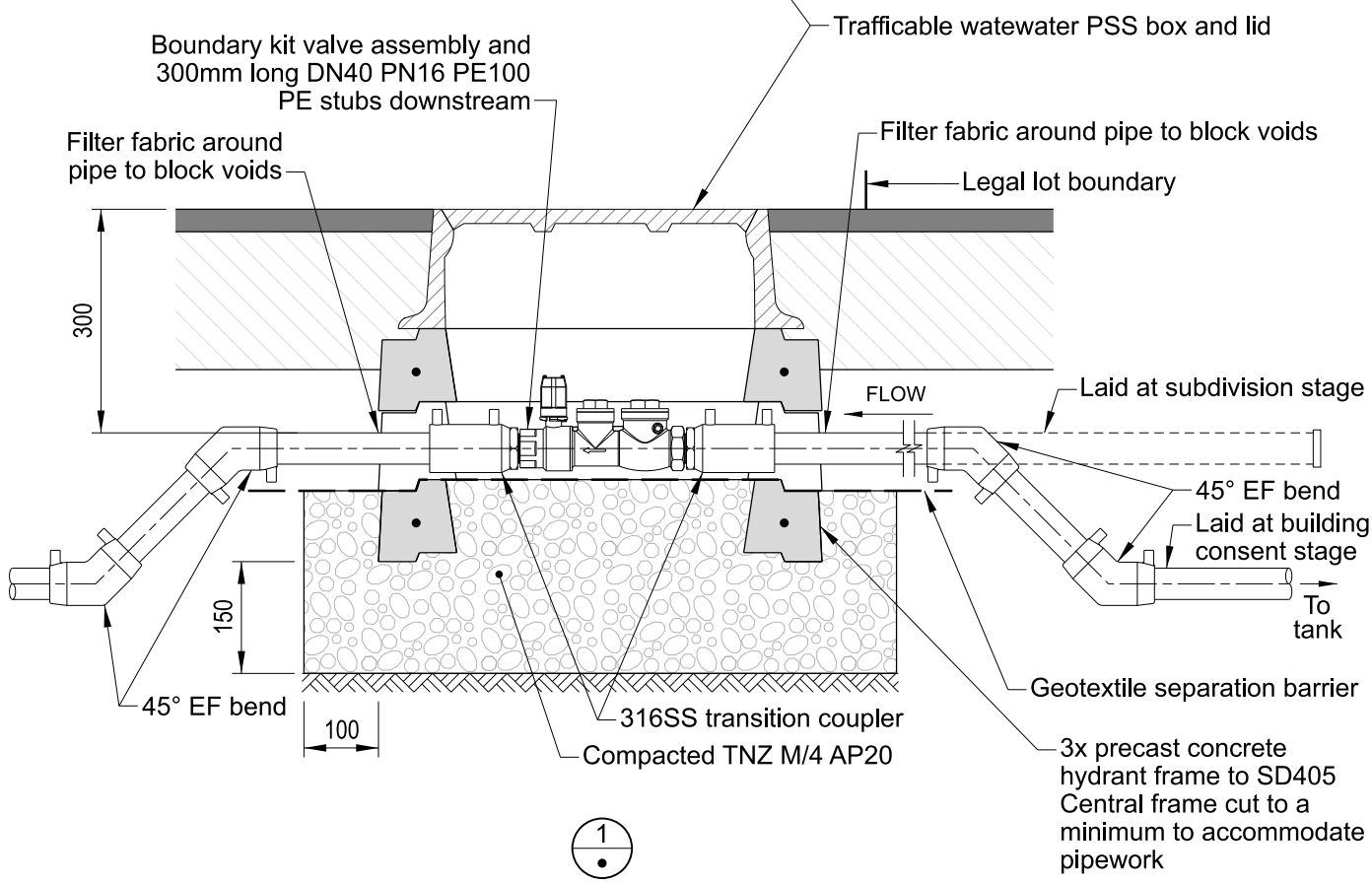
SD383

SHEET 1 OF 1

ds138401c.dgn



PLAN



NOTES:

1. Valve kit to be centre of valve box.
2. Geotextile around entry and exit to prevent aggregate entering.
3. Lid orientation must be consistent along ROW or road.

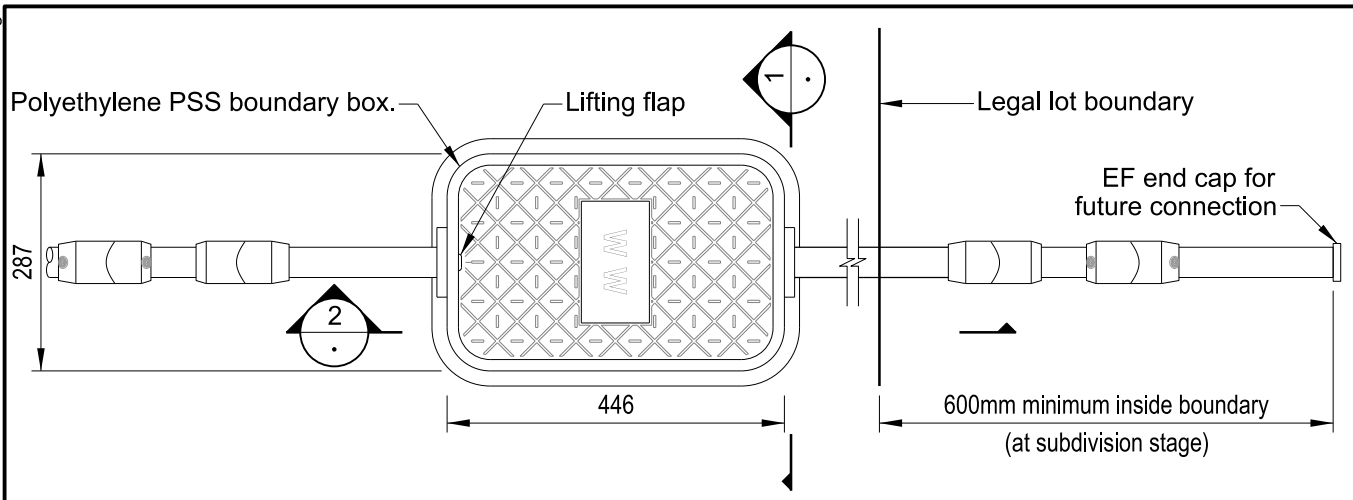
Christchurch City Council

PRESSURE SEWER TRAFFICABLE PROPERTY BOUNDARY KIT

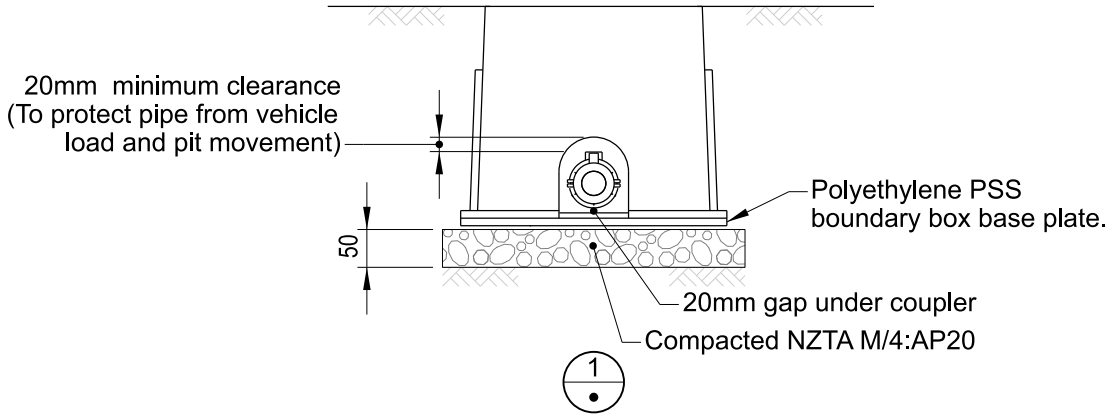
ISSUE DATE	NOV 2022

SD384

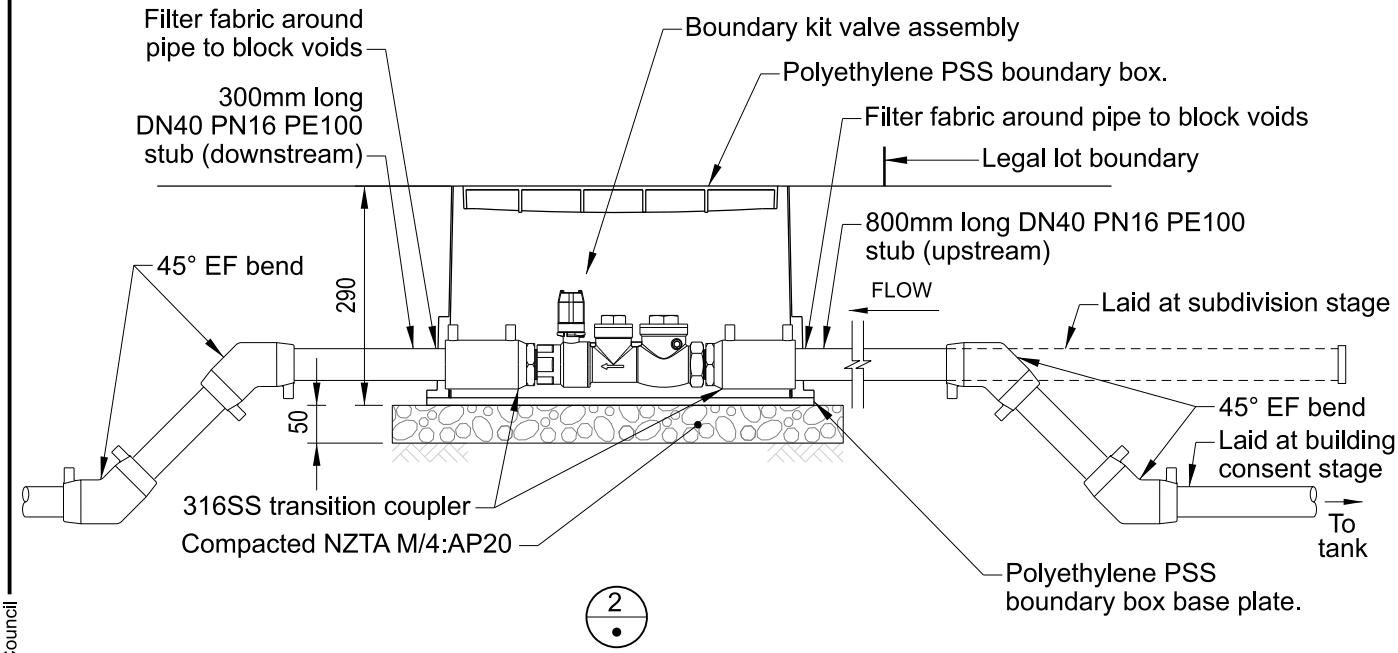
ds138402d.dgn



PLAN



1



2

NOTES:

1. Valve kit to be centre of valve box.
2. Geotextile around entry and exit to prevent aggregate entering.
3. Lid orientation must be consistent along ROW or road.

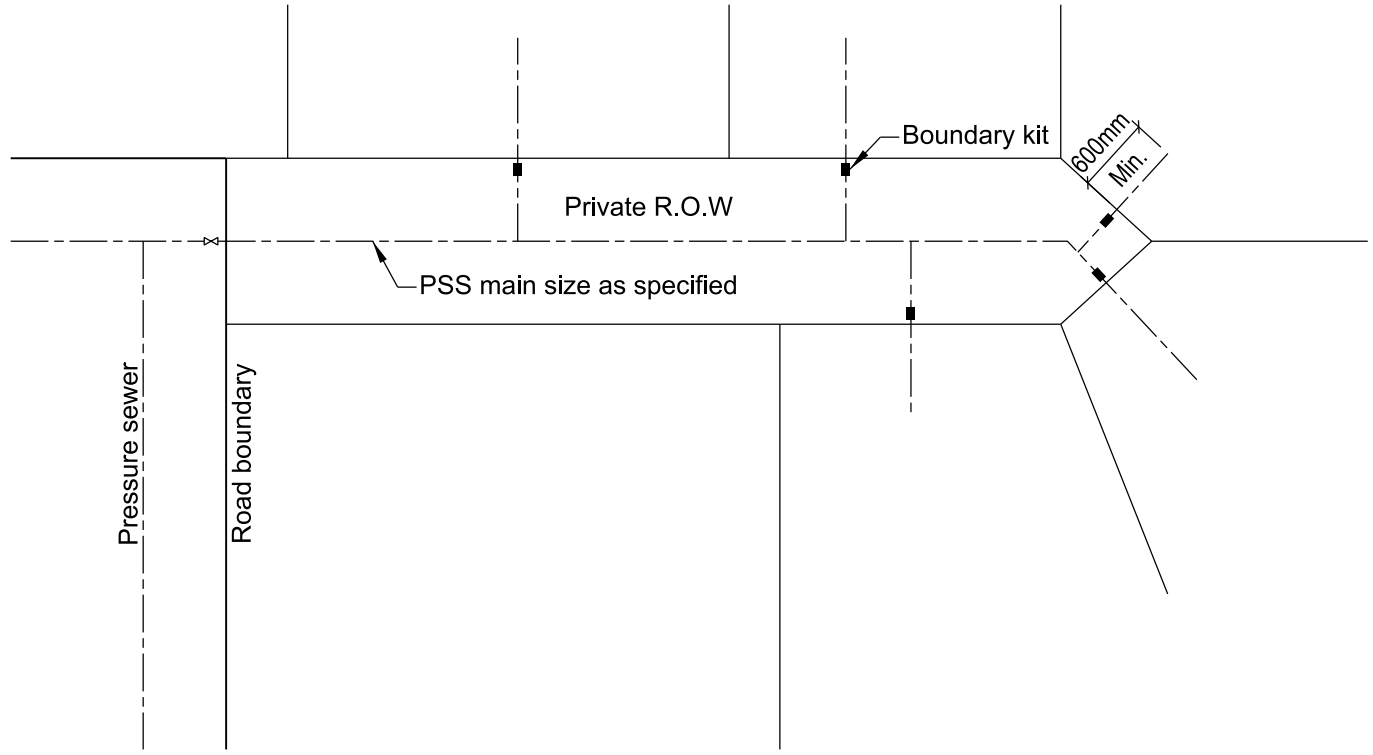
Christchurch City Council

PRESSURE SEWER NON-TRAFFICABLE PROPERTY BOUNDARY KIT

ISSUE DATE	NOV 2022

SD384

ds138403b.dgn



COMMON LAND CONNECTION POSITION

Not to Scale

NOTE:

1. Where there is only 1 connection laid in the right of way the boundary kit is to be installed within the legal road at the road boundary.

2. Laterals to extend a minimum of 600mm into the lot with an EF End Cap.

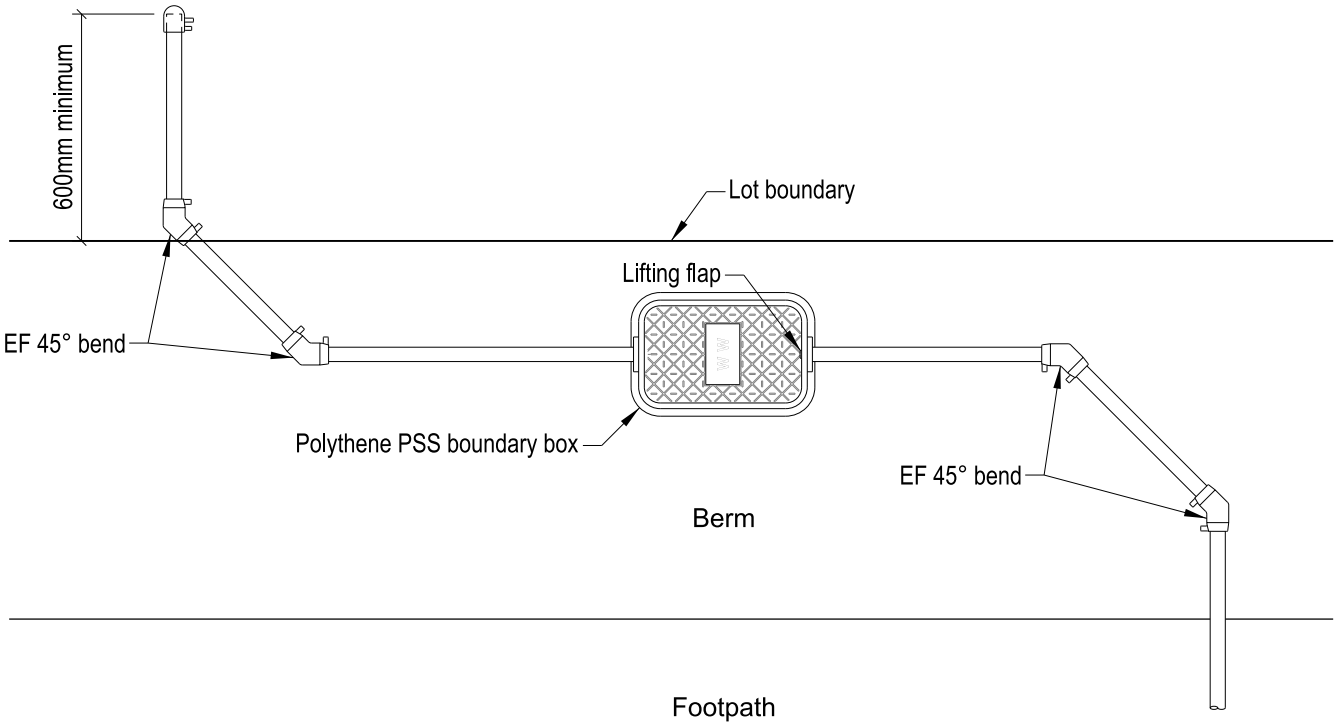
Christchurch City Council

PRESSURE SEWER BOUNDARY KIT LAYOUT

ISSUE DATE	DEC 2019

SD384

ds138404a.dgn



PLAN

NOTES:

1. Lid orientation must be consistent along ROW or road.

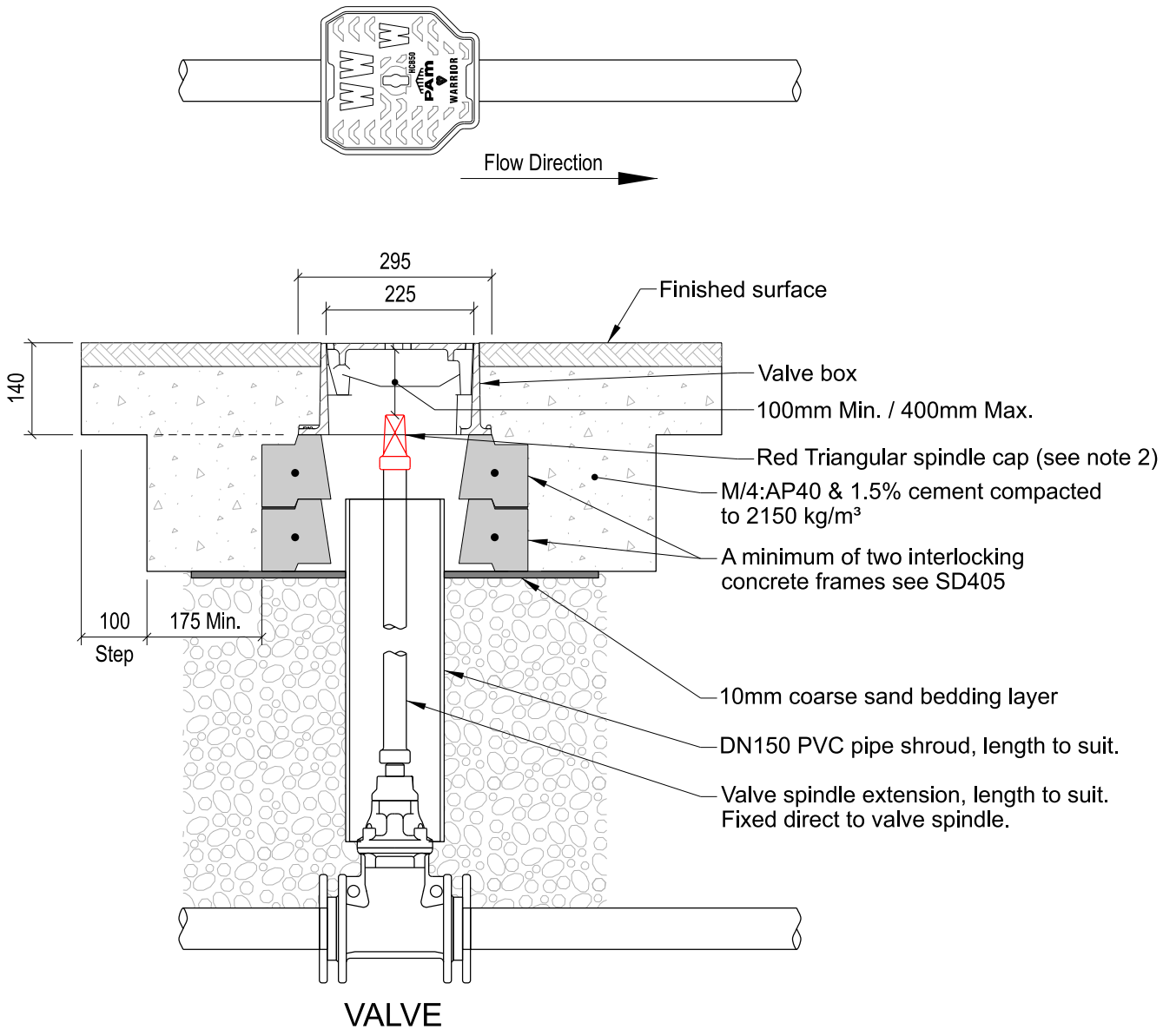
Christchurch City Council

PRESSURE SEWER BOUNDARY KIT ALTERNATIVE SPACE CONSTRAINED LAYOUT

ISSUE DATE	DEC 2019

SD384

ds138501c.dgn



VALVE

NOTE:

1) All backfill in accordance with CSS Part 1.

2. Fit triangular spindle cap and extension to triangular spindle.

Christchurch City Council

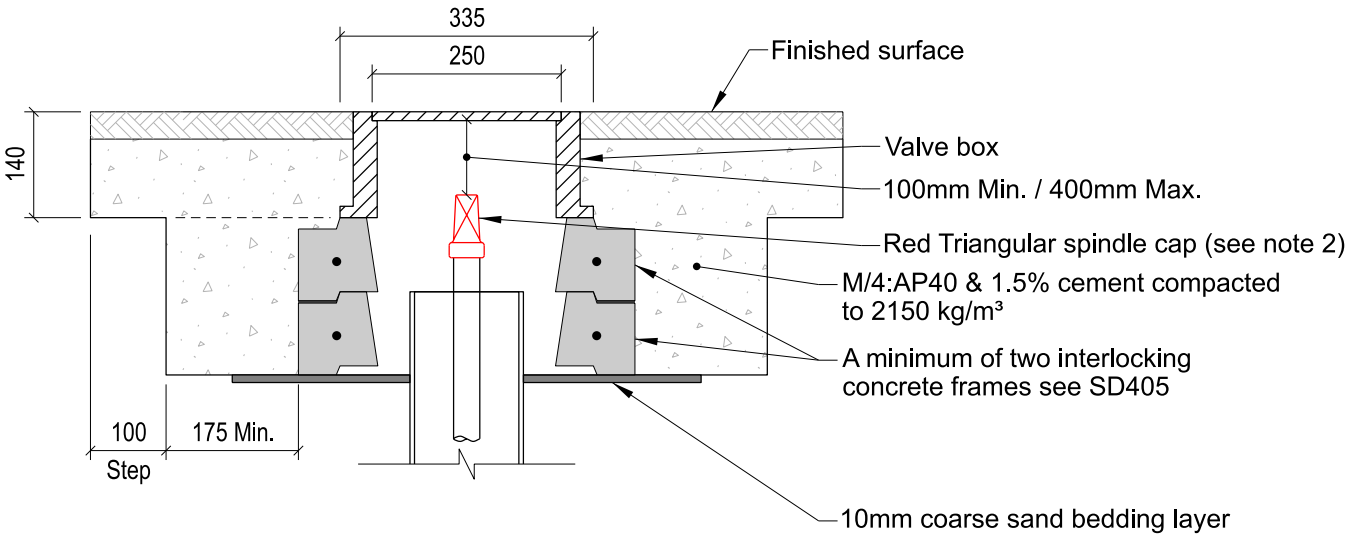
PRESSURE SEWER VALVE COVER

ISSUE DATE	NOV 2022

SD385

SHEET 1 OF 2

ds138502b.dgn



SERVICE COVER

NOTE:

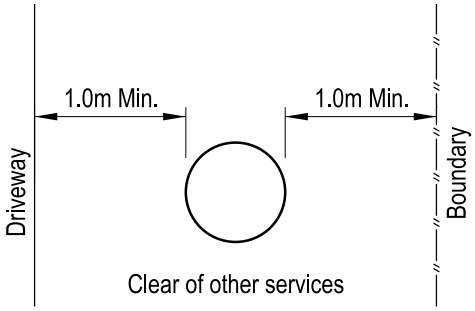
1) Service cover to include "WW".

Christchurch City Council

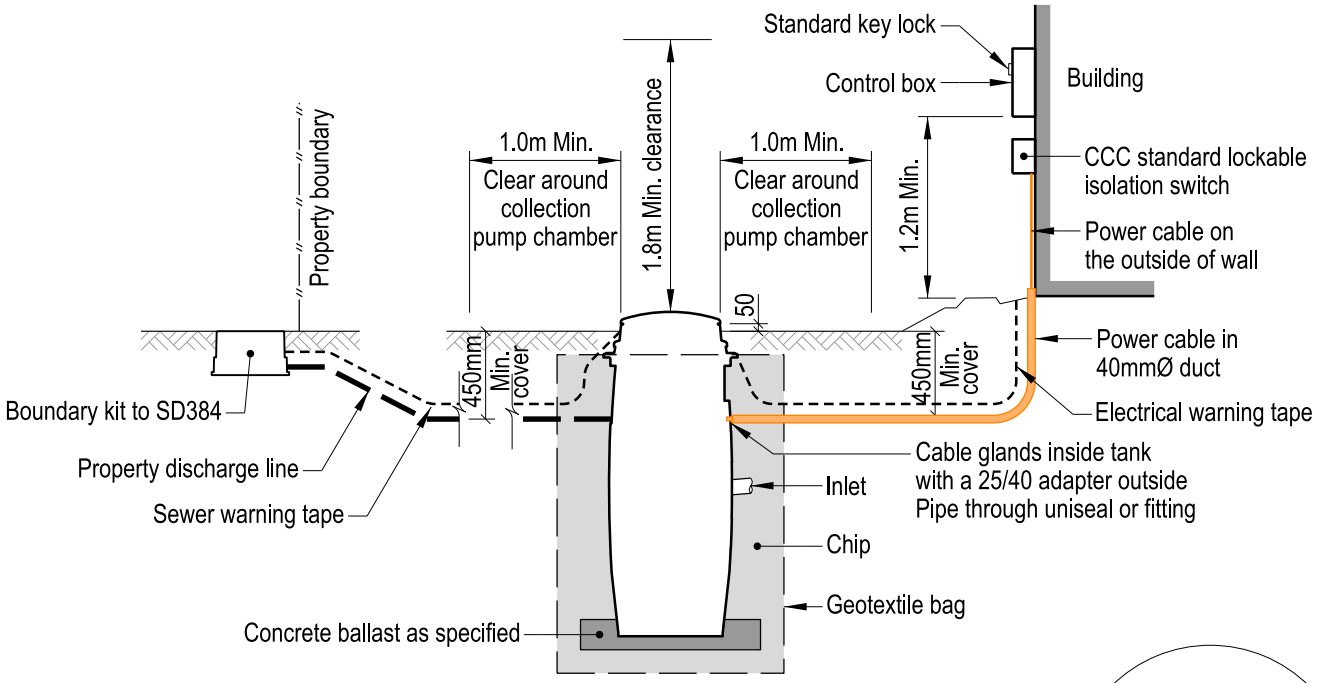
SERVICE COVER REINSTATEMENT

ISSUE DATE	NOV 2022

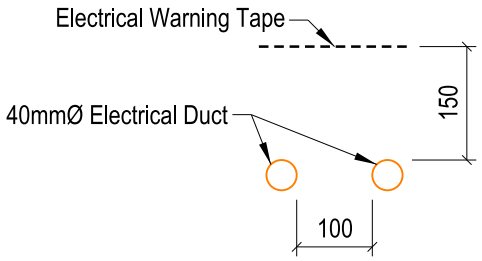
SD385



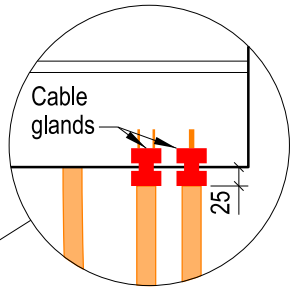
Layout



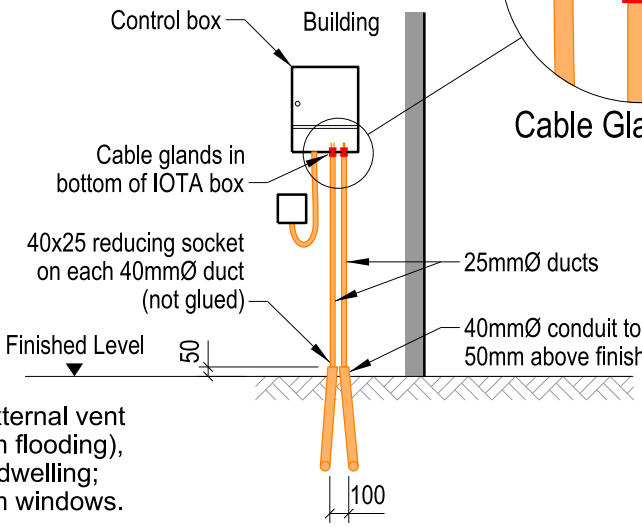
Section



Electrical Conduit Section



Cable Gland Detail



Elevation

NOTE:

1. Where the pump chamber lid requires an external vent (Trafficable or susceptible to inundation from flooding), it shall be 50mm diameter; mounted on the dwelling; extending above the roofline, and away from windows.
2. All electrical work shall comply with the latest standards and requirements.
3. All bends must be long radius.
4. All installations must be as per the Three Waters stamped plan.

Christchurch City Council

PRESSURE SEWER SYSTEM CHAMBER TYPICAL LOCATION

ISSUE DATE	NOV 2022

SD386

SHEET 1 OF 2

ds138601e.dgn

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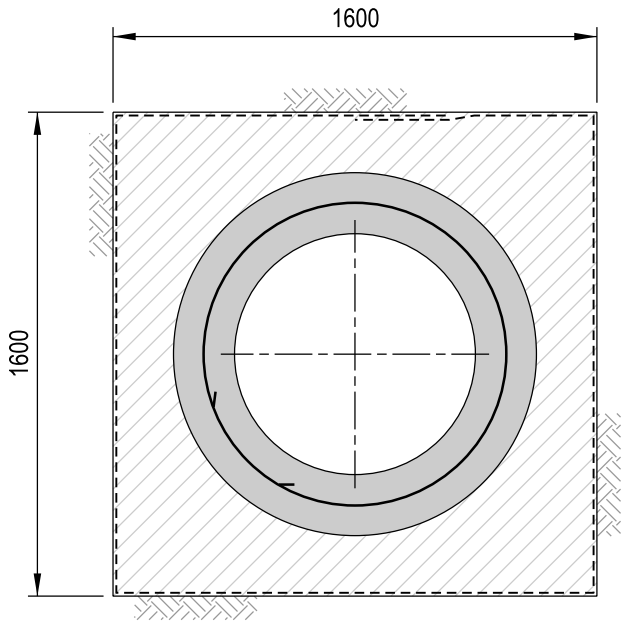
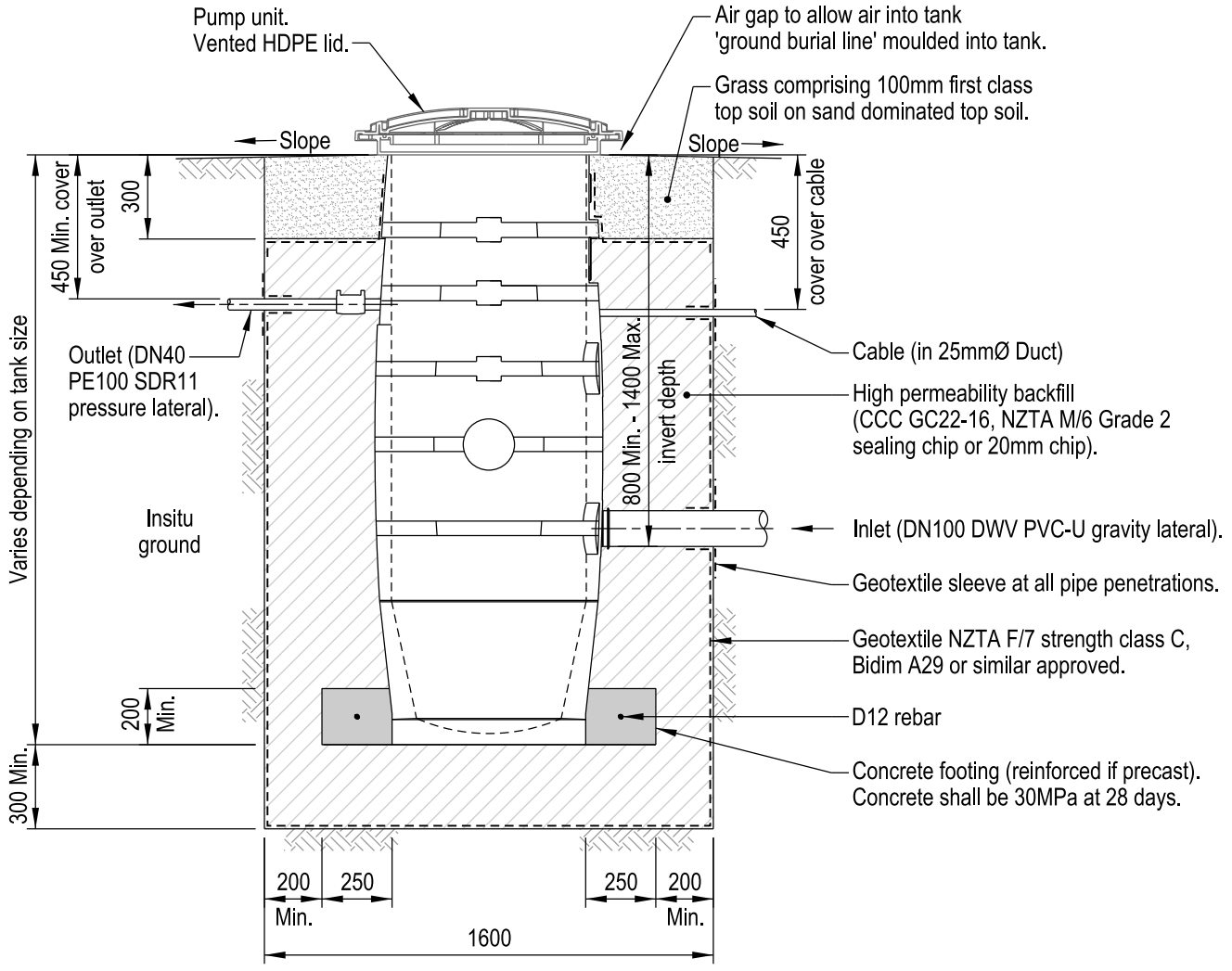


PLAN AT FOOTING LEVEL



SECTION

NOTES:

1) Make all connections through the tank wall in accordance with manufacturers installation instructions.

Christchurch City Council

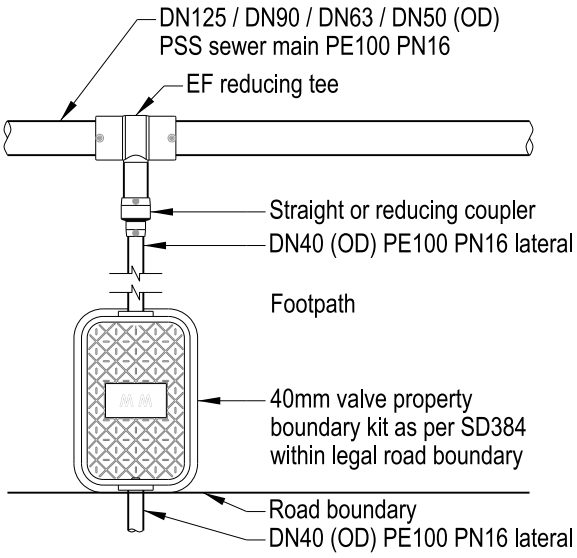
PRESSURE SEWER SYSTEM TANK (NON-TRAFFICABLE)

ISSUE DATE	DEC 2019

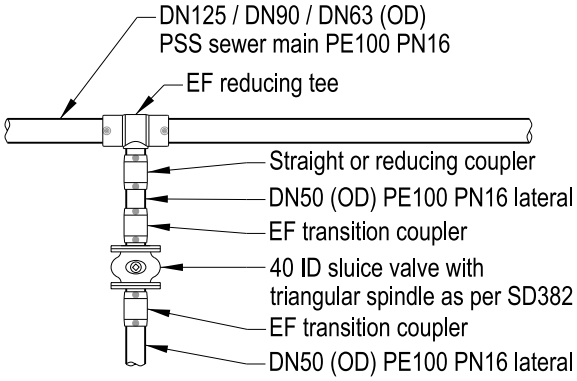
SD386

SHEET 2 OF 2

ds138701b.dgn



A MAIN / DN40 (OD) PSS DWELLING CONNECTION DETAILS



B MAIN / DN50 (OD) PSS SUBMAIN CONNECTION DETAILS

PE Tee and Reducer Summary			
DN40 PSS Dwelling Connections			
Main	*Tee*	*Reducer*	*Reducer*
DN125	125/90	+ 90/50	+ 50/40
DN90	90/50	+ 50/40	
DN63	63/50	+ 50/40	
DN50 PSS Submain Connections			
Main	*Tee*	*Reducer*	*Valve*
DN125	125/90	+ 90/50	+ 40 ID Sluice valve
DN90	90/50	- - -	+ 40 ID Sluice valve
DN63	63/50	- - -	+ 40 ID Sluice valve

NOTES:

1. Saddles or self tapping joints may be used on pipes with an outside diameter (OD) of 90mm or greater.
2. Self-Tapping joints on branch pipes shall be at a depth of not less than 600mm.
3. For pipes less than DN90 (OD), only Electrofusion Tee joints shall be used.
4. Saddle joints **shall not** be used on pipes that are supplied in coils.
5. No brass fittings are to be used in any part of a pressure sewer system.
6. Mechanical couplers shall only be used on polyethylene pressure pipe DN90 (OD) or less for emergency repairs.
   And then only as a temporary measure.

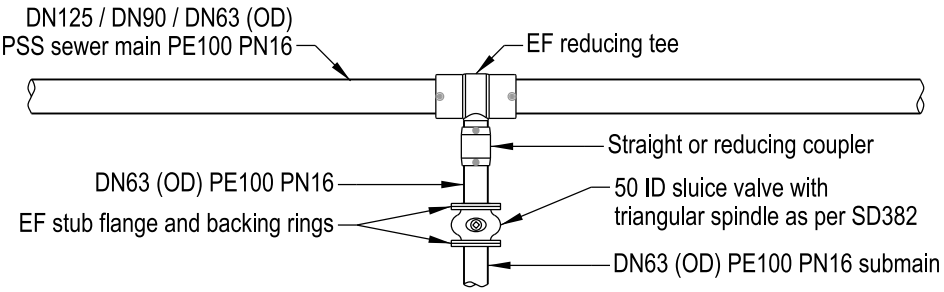
Christchurch City Council

PRESSURE SEWER RETICULATION DETAILS

ISSUE DATE	NOV 2022

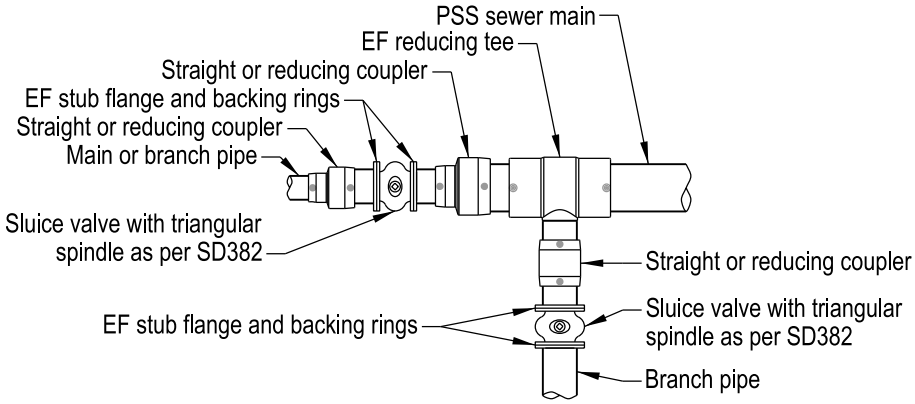
SD387

ds138702a.dgn



C MAIN / DN63 (OD) PSS SUBMAIN CONNECTION DETAILS

PE Tee and Reducer Summary			
DN63 PSS Submain Connections			
Main	*Tee*	*Reducer*	*Valve*
DN125	125/90	+ 90/63	+ 50 ID Sluice valve
DN90	90/63	- - -	+ 50 ID Sluice valve
DN63	63/63	- - -	+ 50 ID Sluice valve



D ISOLATION VALVE CONNECTION DETAILS

PE Pipe / Sluice Valve Sizing	
PE Pipe	*Valve Size*
DN125	100 ID
DN90	75 ID
DN63	50 ID
DN50	40 ID

NOTES:

1. Saddles or self tapping joints may be used on pipes with an outside diameter (OD) of 90mm or greater.
2. Self-Tapping joints on branch pipes shall be at a depth of not less than 600mm.
3. For pipes less than DN90 (OD), only Electrofusion Tee joints shall be used.
4. Saddle joints **shall not** be used on pipes that are supplied in coils.
5. No brass fittings are to be used in any part of a pressure sewer system.
6. Mechanical couplers shall only be used on polyethylene pressure pipe DN90 (OD) or less for approved emergency repairs.

Christchurch City Council

PRESSURE SEWER RETICULATION DETAILS

ISSUE DATE DEC 2019

SD387