STD. DWG. NO.	DESCRIPTIONS
	PIPELINE LAYOUT
S-002	TYPICAL LOCALITY AND SITE PLAN
S-003	TYPICAL LONGITUDINAL SECTIONS
S-004	TYPICAL ARRANGEMENT
S-005	SEWER IN EASEMENTS AND INSIDE PROPERTY (PREFERRED)
S-006	SEWER IN ROAD RESERVE (NOT PREFERRED)
S-007	SEWERAGE REGIONAL PROPERTY CONNECTION (EXCLUDING DALBY)
S-008	SEWERAGE PROPERTY CONNECTION DALBY ONLY
S-009	SEWERAGE PROPERTY CONNECTION "Y" BRANCH AND AROUND OBSTRUCTIONS
	EMBEDMENT/TRENCHFILL AND SUPPORT SYSTEMS
S-010	ALLOWABLE BEARING PRESSURES FOR BULKHEADS AND SOIL CLASSIFICATION GUIDELINES
S-011	TYPICAL TRENCH DETAILS
	ACCESS STRUCTURES
S-012	MAINTENANCE HOLES SEWERS PRECAST TYPES P1 & P2
S-013	MAINTENANCE HOLES SEWERS CAST IN-SITU TYPES C1 & C2
S-014	MAINTENANCE HOLES PIPE CONNECTION DETAILS
S-015	MAINTENANCE HOLES SEWERS CHANGES IN LEVEL DETAILS
S-016	MAINTENANCE HOLES ALTERNATIVE DROP CONNECTIONS
S-017	MAINTENANCE HOLES TYPICAL CHANNEL ARRANGEMENTS
S-018	MAINTENANCE HOLES TYPICAL CHANNEL DETAILS
S-019	MAINTENANCE HOLES TYPICAL MANHOLE COVER ARRANGEMENTS
S-020	MAINTENANCE SHAFT TYPICAL MAINTENANCE SHAFT COVER ARRANGEMENTS
S-021	MAINTENANCE SHAFTS TMS AND CONNECTION DETAILS
S-022	MAINTENANCE HOLES PRESSURE MAIN ARRANGEMENTS
	STRUCTURES ARRANGEMENTS
S-023	VENTILATION SYSTEMS INDUCT VENTS
S-024	VENTILATION SYSTEMS EDUCT VENTS

STD. DWG. NO.	DESCRIPTIONS
	CONNECTIONS TO EXISTING SYSTEMS
S-025	CUT-IN METHODS
S-026	INSERTION OF JUNCTIONS PVC
S-027	INSERTION OF JUNCTIONS STAINLESS STEEL
S-028	CONNECTIONS TO MAINTENANCE STRUCTURES
	BUILDING CONSIDERATION
S-029	PIPEWORK EXPANSION CONTROL REQUIREMENTS

Revisions	Drn by	Date
A Original Issue		

Field Book No.
Level Book No.
Datum

DRAWN L. Porter
DESIGNED L. Cook
CHECKED P. Mauch
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 15/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

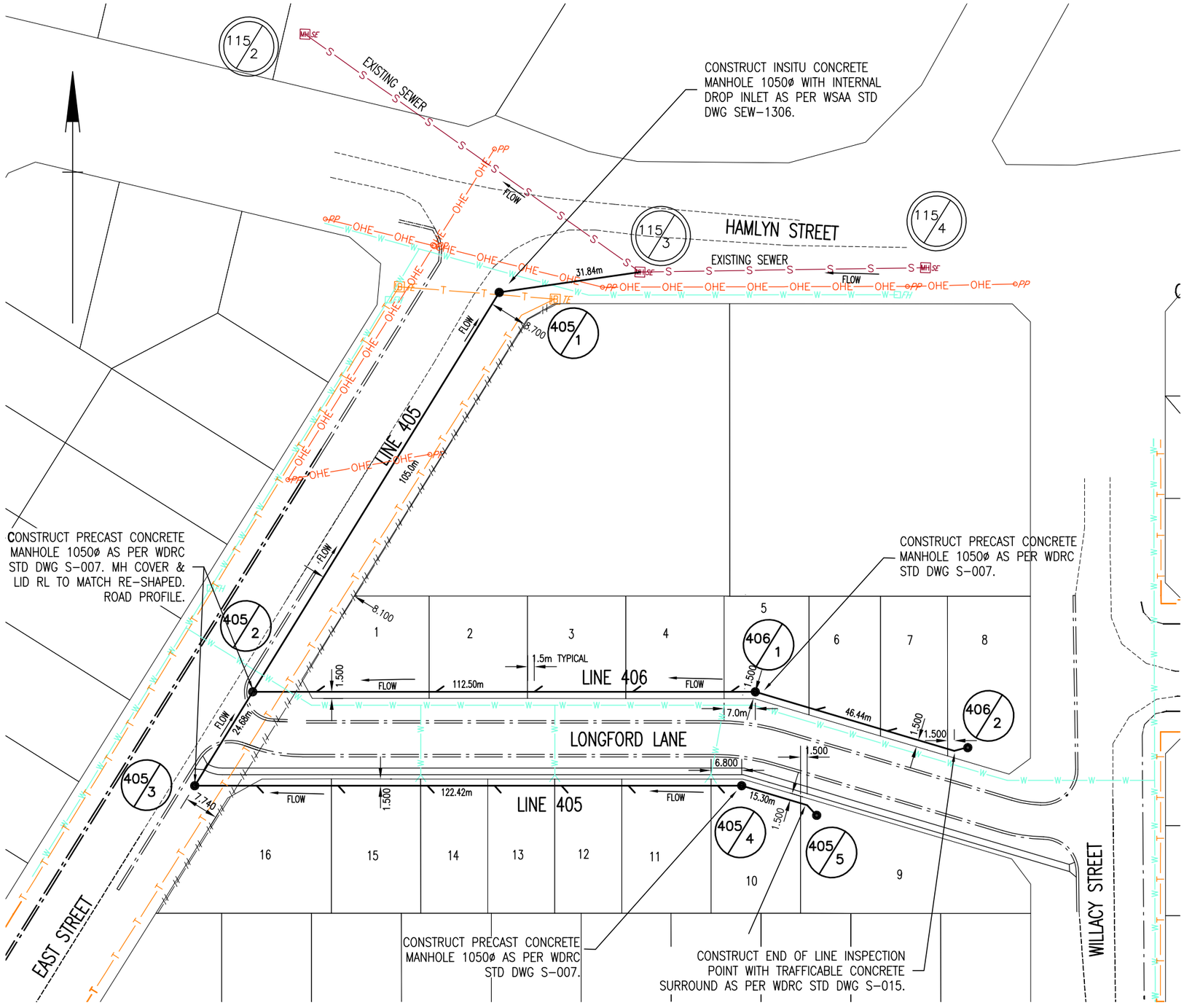
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

Auxiliary Plan No's.

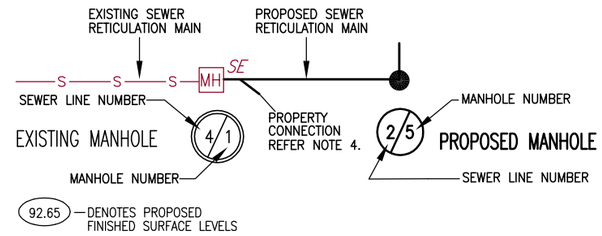
STANDARD DRAWING – SEWERAGE INDEX

Plan No. S-001 No. 1 of 29 Plans Rev. A

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-001 Sewerage Index.dwg



LEGEND



B	Design Manual	L.T.P.	15.10.14
A	Original Issue		
Revisions		**Drn by**	**Date**

Field Book No.
Level Book No.
Datum

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DESIGNED S. Forbes
CHECKED L. Cook
EXAMINED L. Cook
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TECHNICAL SERVICES MANAGER
DATE 15/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

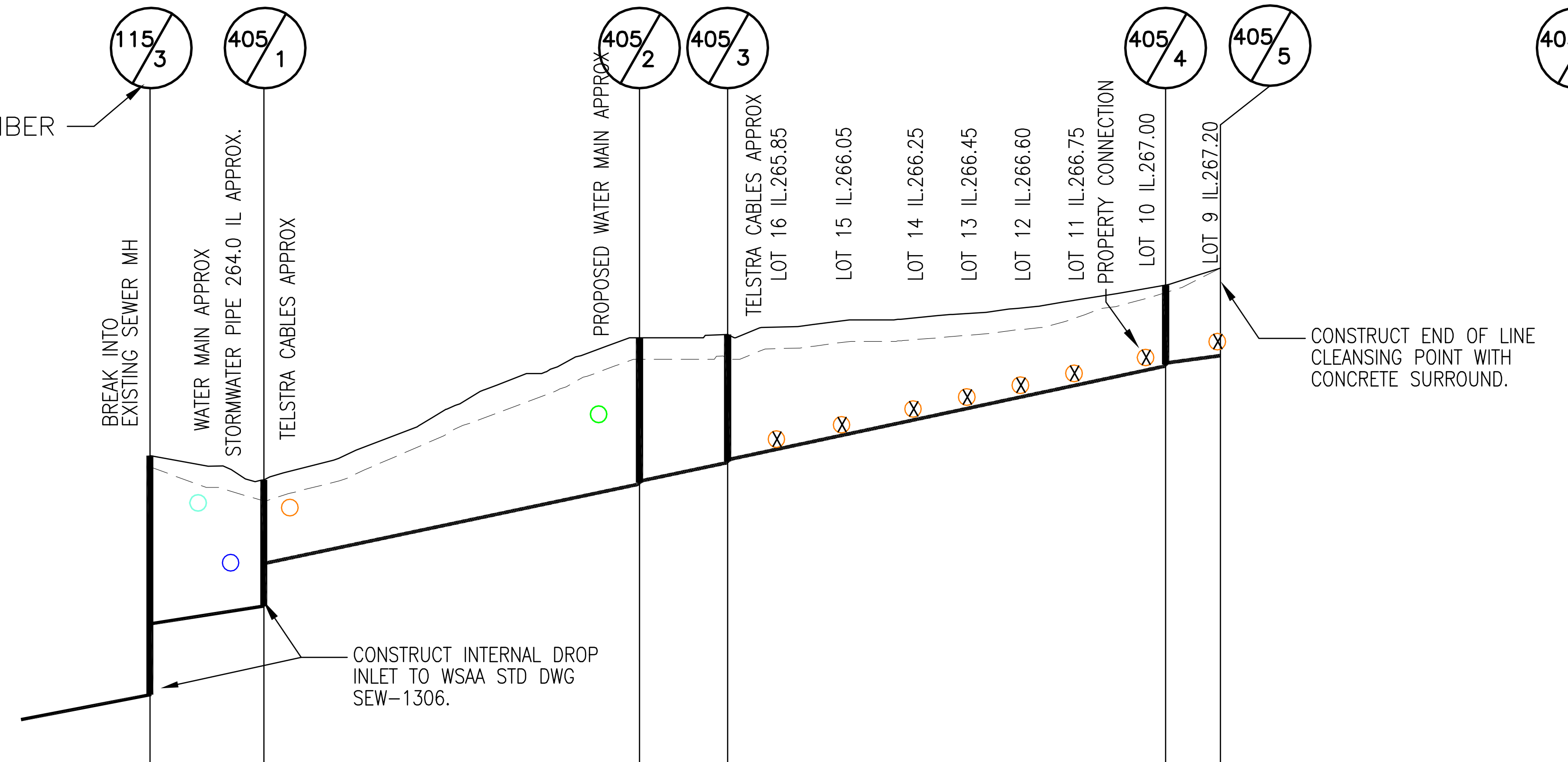
Scale 1:1000
0 10 20 30 40m

Auxiliary Plan No's.

STANDARD DRAWING – SEWERAGE
TYPICAL LOCALITY AND SITE PLAN

Plan No. S-002 No. 2 of 29 Plans Rev. B

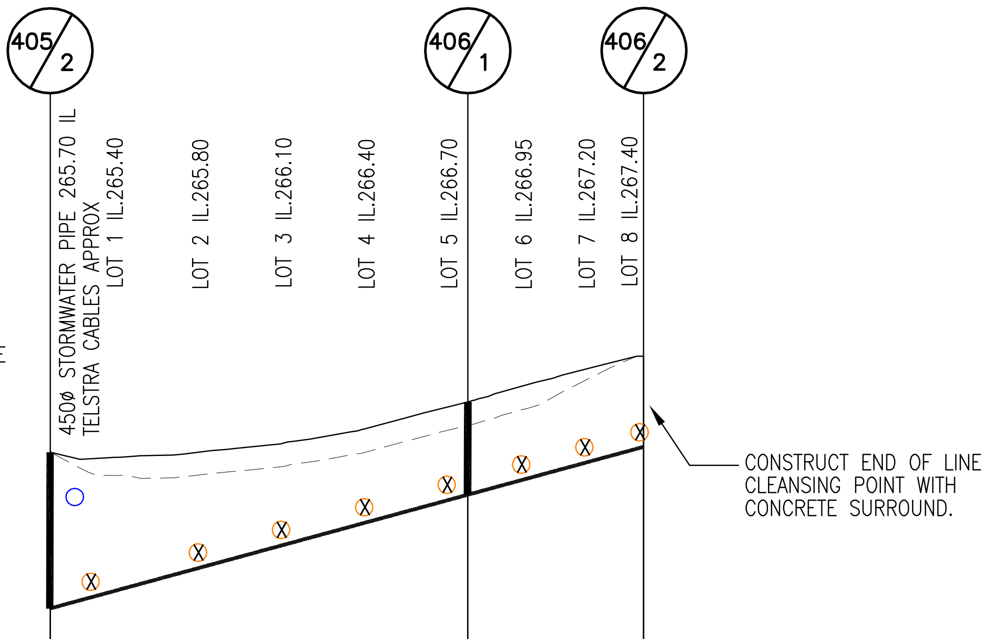
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-002 Typical Locality and Site Plan.dwg



DATUM RL 260.200

	115/3	405/1	405/2	405/3	405/4	405/5
DIAMETER/TYPE /CLASS	150mm uPVC CLASS SN8					
GRADE	0.79%	1.06%	1.06%	1.07%	0.68%	
LENGTH	31.84m	105.00m	24.68m	122.42m	15.3m	
DEPTH TO INVERT	-2.351	-1.164	-2.025	-1.772	-1.111	-1.225
INVERT LEVEL	262.260 / 263.250	263.500 / 264.100	265.200 / 265.250	265.500 / 265.550	266.850 / 266.900	267.000
FINISHED SURFACE LEVEL	265.601	265.264	267.160 APPROX	267.180 APPROX	267.986	268.225
EXISTING SURFACE LEVEL	265.446	264.964	266.950	266.950	267.882	268.225
SETOUT COORDINATE	E:5062.772 N:3071.279	E:5031.441 N:3065.605	E:4979.473 N:2974.367	E:4967.257 N:2952.920	E:5089.603 N:2957.267	E:5104.409 N:2953.448
CHAINAGE	0.000	31.840	136.841	161.522	283.945	299.236

LINE 405



DATUM RL 261.100

	405/2	406/1	406/2
DIAMETER/TYPE /CLASS	150mm uPVC CLASS SN8		
GRADE	1.31%	1.20%	
LENGTH	112.50m	46.44m	
DEPTH TO INVERT	-1.930	-1.193	-1.200
INVERT LEVEL	265.230	266.700 / 266.750	267.300
FINISHED SURFACE LEVEL	267.160	267.893	268.500
EXISTING SURFACE LEVEL	267.160	267.242	268.500
SETOUT COORDINATE	E:4979.473 N:2974.367	E:5091.900 N:2978.362	E:5136.868 N:2966.762
CHAINAGE	0.000	112.498	158.938

LINE 406

NOTES
1. The surface levels shown on the Longitudinal Sections are indicative only. The Contractor shall verify finished surface levels on site before construction of sewers and property connection branches.

Rev	Revisions	Drn by	Date
B	Design Manual	L.T.P.	15.10.14
A	Original Issue		

Field Book No.
Level Book No.
Datum

DRAWN S. Robertson
DESIGNED S. Forbes
CHECKED L. Cook
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 15/07/2010
Job No./s
Works Order No.
Auxiliary Plan No's.

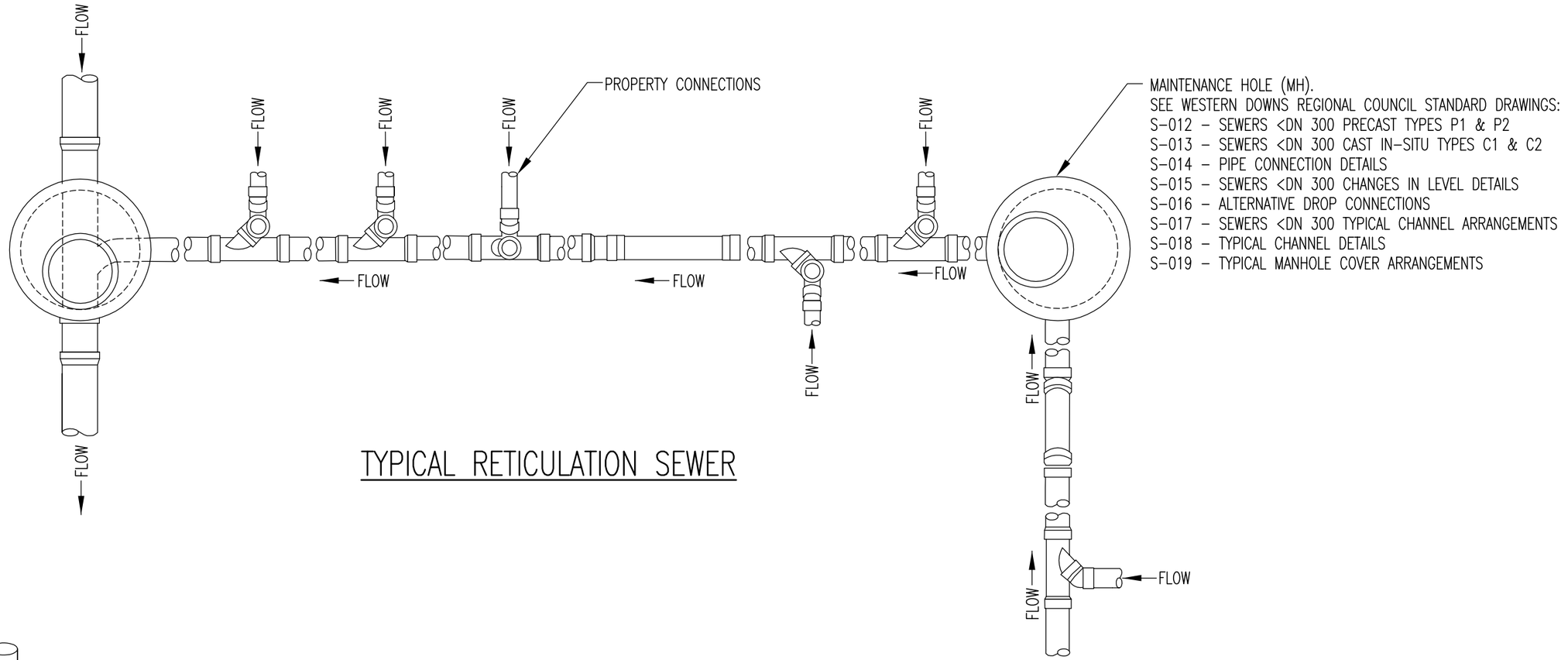
WESTERN DOWNS REGIONAL COUNCIL

Horiz. Section 1:2000 — 0 20 40 60 80m
Vert. Section 1:100 — 0 1 2 3 4m

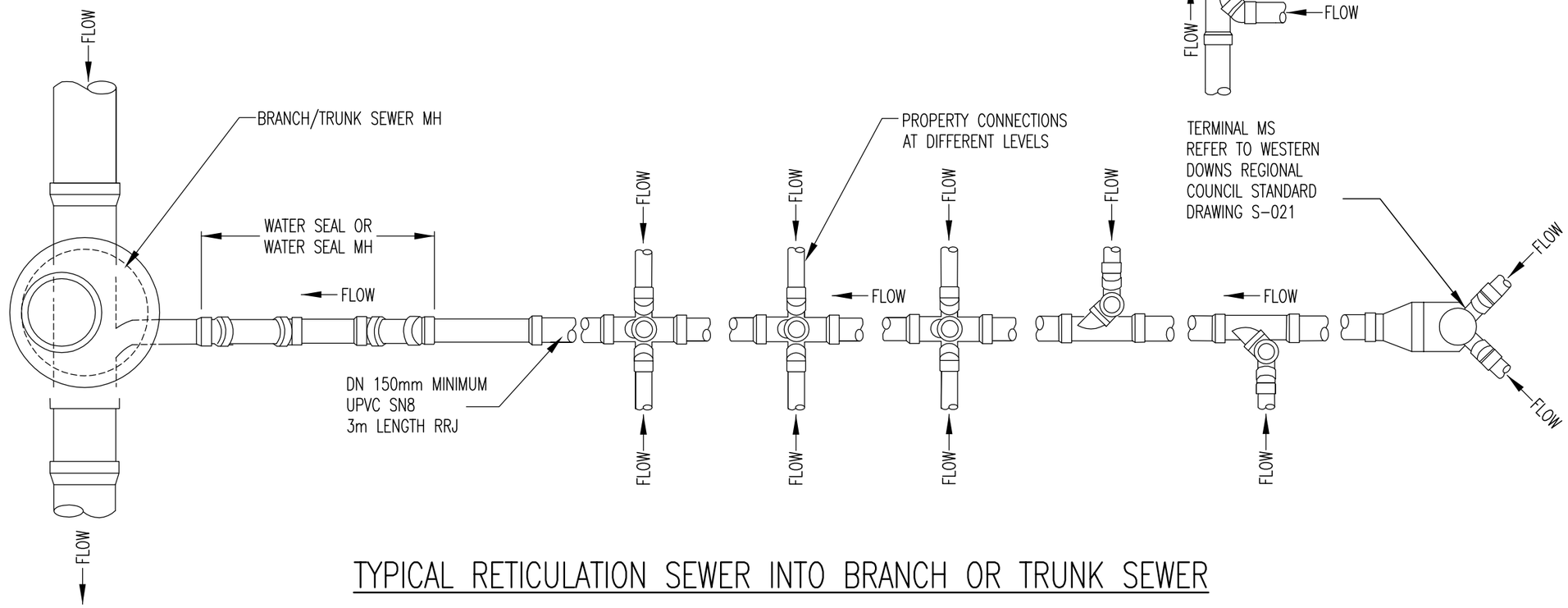
STANDARD DRAWING – SEWERAGE
TYPICAL LONG SECTION PLAN

Plan No. *S–003* No. 3 of 29 Plans Rev. *B*

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-003 Typical Long Section Plan.dwg



TYPICAL RETICULATION SEWER



TYPICAL RETICULATION SEWER INTO BRANCH OR TRUNK SEWER

Revisions		Drn by	Date
D	Design Manual	M.T.W	06/13
C	Maintenance shaft removed	A.R.D	28.09.12
B	Bend removed	L.T.P.	07/11
A	Original Issue		

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Level Book No.
Datum

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DESIGNED L. Cook
CHECKED P. Mauch
EXAMINED L. Cook
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TECHNICAL SERVICES MANAGER
DATE 16/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

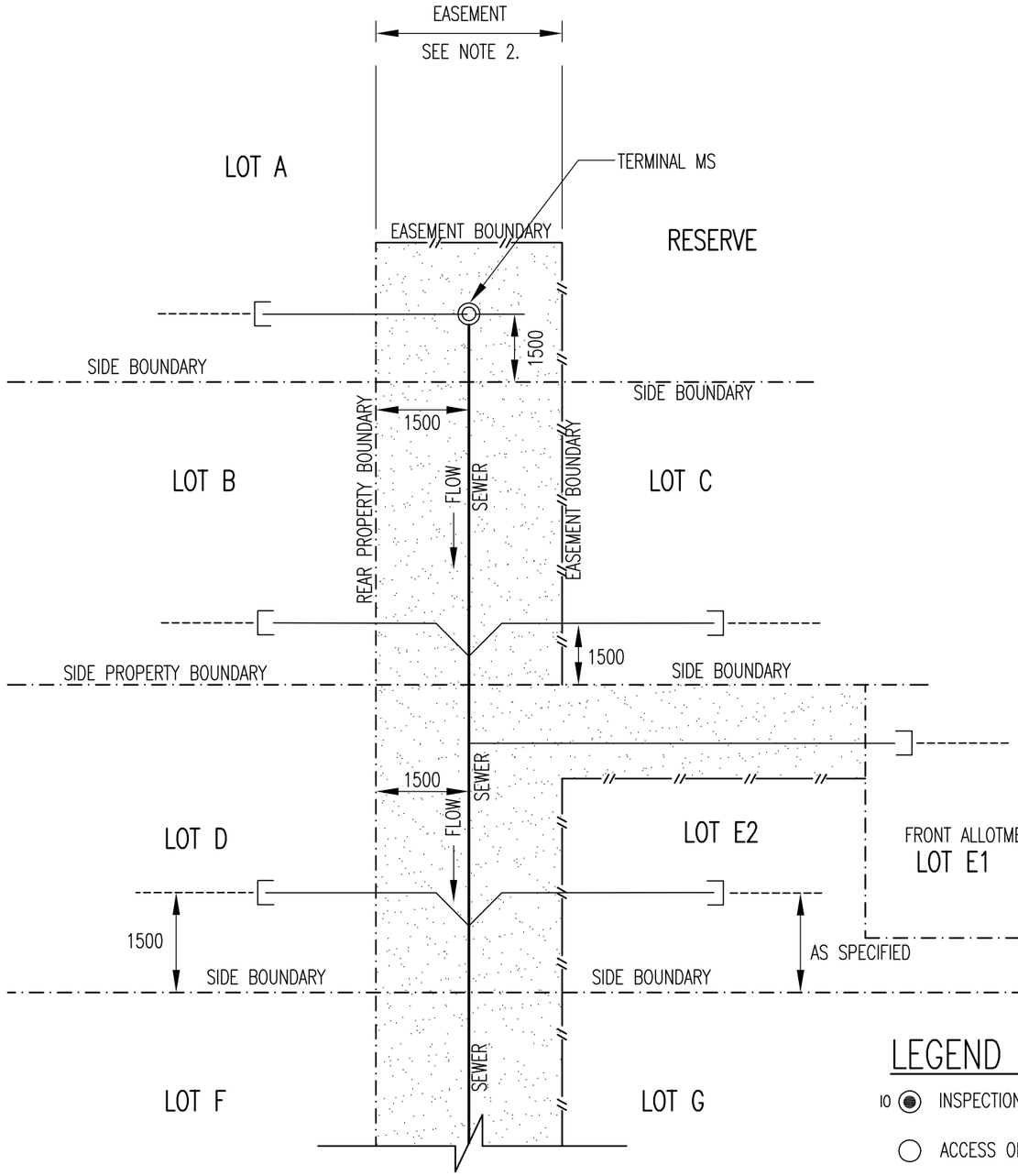
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

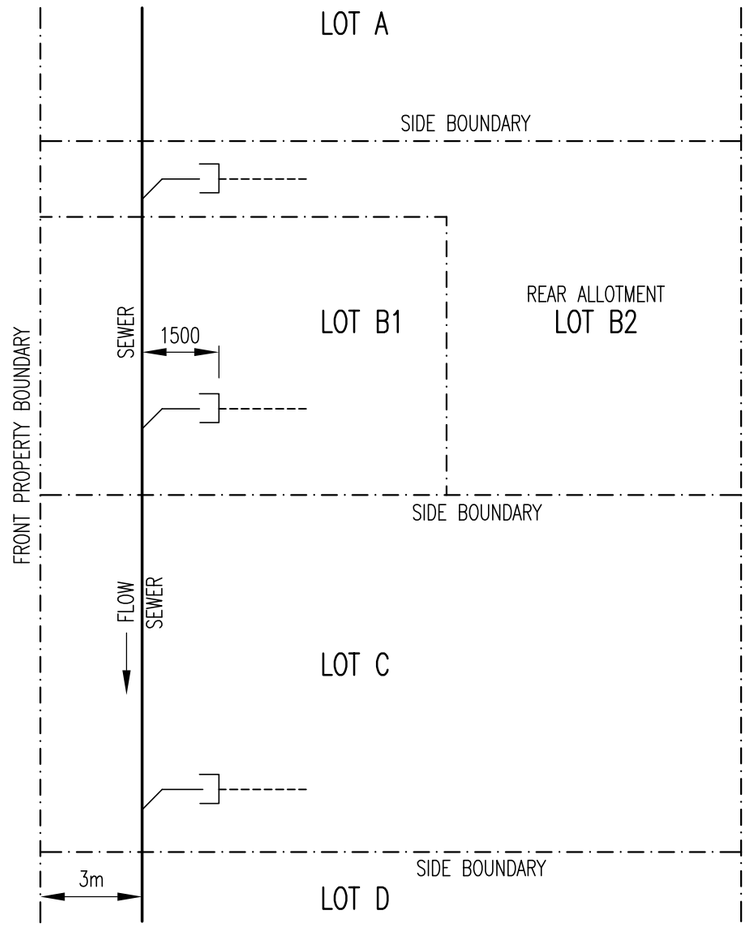
STANDARD DRAWING – SEWERAGE
PIPELINE LAYOUT
TYPICAL SEWER ARRANGEMENT

Plan No. *S-004* No. 4 of 29 Plans Rev. *D*

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-004 Typical Sewer Arrangement.dwg



TYPICAL CONNECTION METHODS FOR SEWERS IN EASEMENTS
(REAR OR SIDE BOUNDARIES)



TYPICAL CONNECTION METHODS FOR SEWERS
INSIDE FRONT PROPERTY BOUNDARY

LEGEND :

- IO ◉ INSPECTION OPENING (RAISED TO SURFACE)
- ◯ ACCESS OPENING/RISER/JUMP UP (NOT RAISED TO SURFACE)
- ——┐ SEALED BURIED CONNECTION POINT
- --------- FUTURE PROPERTY DRAIN
- ——//—— EASEMENT BOUNDARY
- —·—·— PROPERTY BOUNDARY

NOTES :

1. DIMENSIONS IN MILLIMETRES
2. ALIGNMENT IN ORDER OF PREFERENCE IS INSIDE FRONT PROPERTY BOUNDARY, REAR PROPERTY BOUNDARY AND ROAD RESERVE.
3. SEWER EASEMENTS ARE GENERALLY NOT REQUIRED UNLESS SPECIFIED BY WDRC.
4. EASEMENT TO BE A MINIMUM OF 1.5m EITHER SIDE OF MAIN & ZONE OF INFLUENCE ALLOWING PIPE WIDTH.
5. REFER TO WESTERN DOWNS REGIONAL COUNCIL STANDARD DRAWINGS S-007 AND S-008 FOR PROPERTY CONNECTION DETAIL.

Revisions		Drn by	Date
E	Design Manual	M.T.W	06/14
D	IOs removed	L.T.P.	09.07.12
C	IOs moved outside easement	L.T.P.	14.02.12
B	Labels added/removed	L.T.P.	07/11
A	Original Issue		

Field Book No.
Level Book No.
Datum

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DESIGNED L. Cook
CHECKED P. Mauch
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 16/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

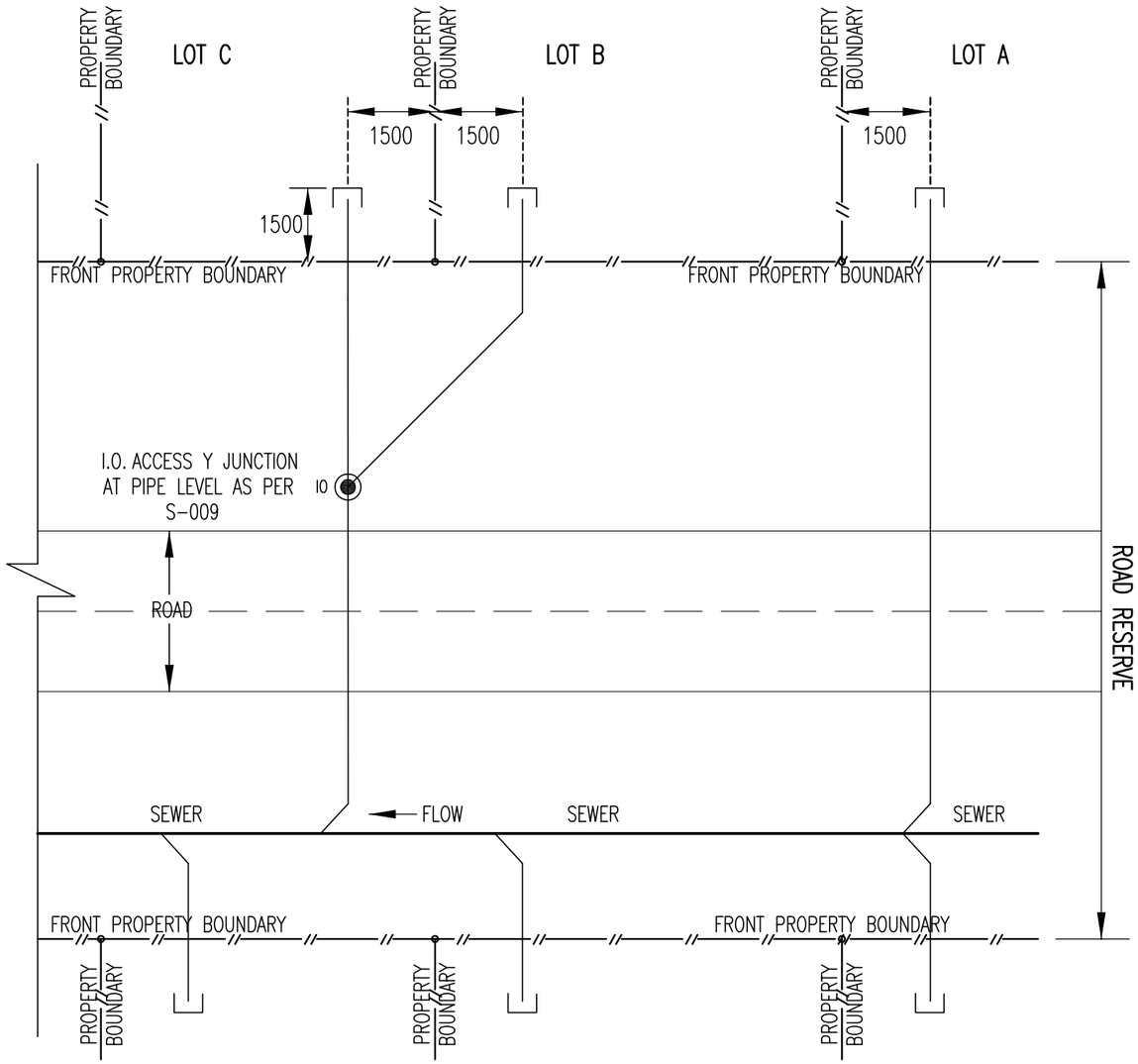
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE PIPELINE LAYOUT
SEWER IN EASEMENTS & INSIDE PROPERTY

Plan No. S-005 No. 5 of 29 Plans Rev. E

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-005 Sewer In Easements and Inside Property.dwg



INSPECTION OPENING (IO) INTERFACE METHOD

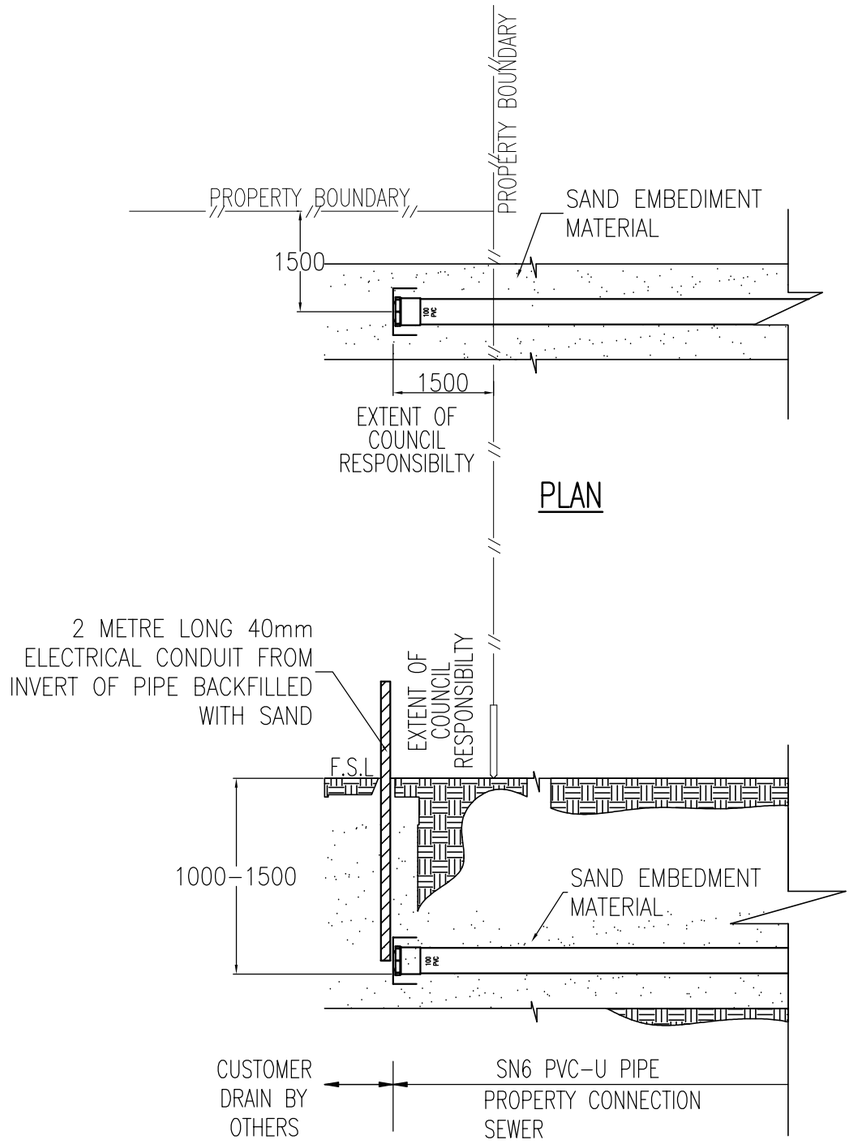
LEGEND :

- IO ◉ INSPECTION OPENING (RAISED TO SURFACE)
- ○ ACCESS OPENING/RISER/JUMP UP (NOT RAISED TO SURFACE)
- ——┐ SEALED BURIED CONNECTION POINT
- --------- FUTURE PROPERTY DRAIN
- ——//—— PROPERTY BOUNDARY

SEWER MAY BE IN ROAD OR FOOTWAY AS SPECIFIED BY WATER AGENCY

NOTES

1. DIMENSIONS IN MILLIMETRES.
2. PREFERRED SEWER MAIN ALIGNMENT IS AS PER S-005 UNLESS OTHERWISE APPROVED.
3. LOCATE SEWERS AND IO'S IN ACCORDANCE WITH STANDARD DRAWING S-007 & S-008.
4. CONNECTIONS MAY BE AT 45° OR 90° TO SEWER WHERE SPECIFIED.
5. IO'S ARE TO BE INSTALLED BY THE PROPERTY OWNER UPSTREAM OF THE CONNECTION POINT



PROPERTY BOUNDARY CONNECTION

Revisions		Drn by	Date
D	Design Manual	M.T.W	06/13
C	Detail added	L.T.P.	14.02.12
B	'Buried interface' removed	L.T.P.	07/11
A	Original Issue		

Field Book No.
Level Book No.
Datum

DRAWN L. Porter
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CHECKED P. Mauch
EXAMINED L. Cook
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Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

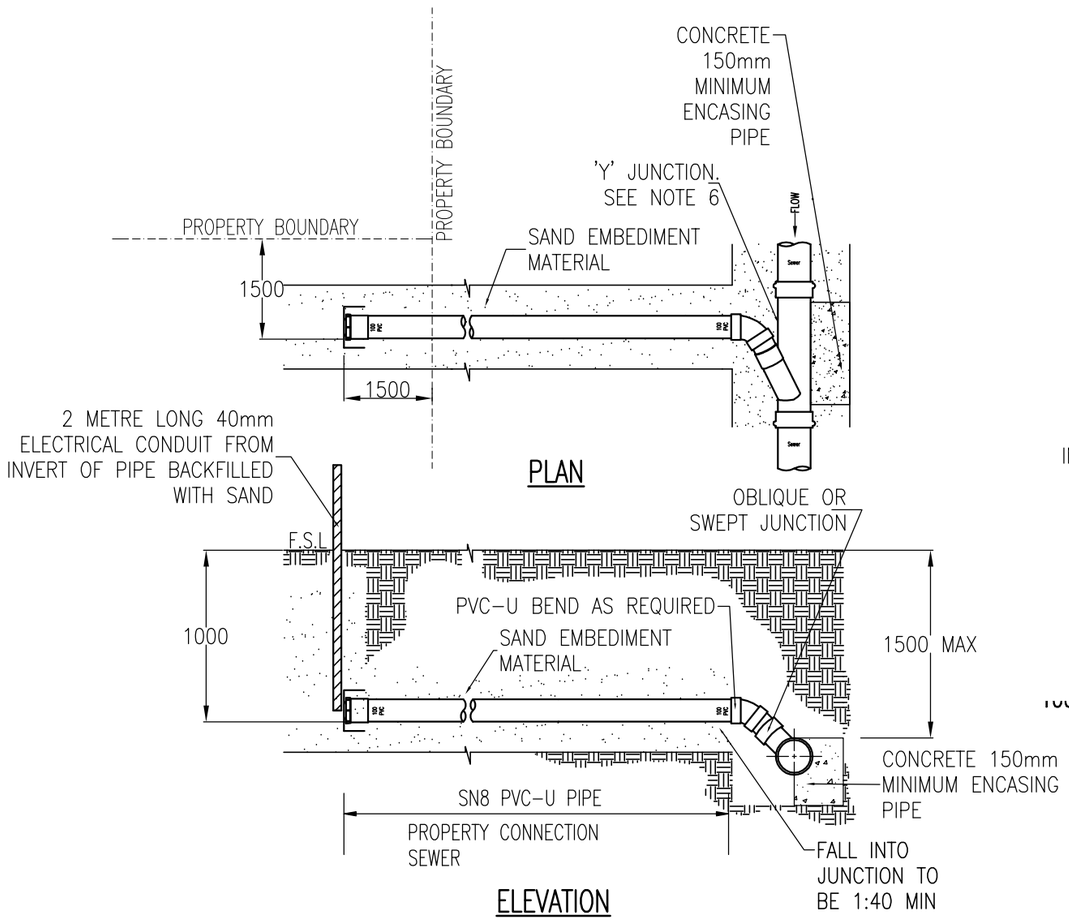
Auxiliary Plan No's.

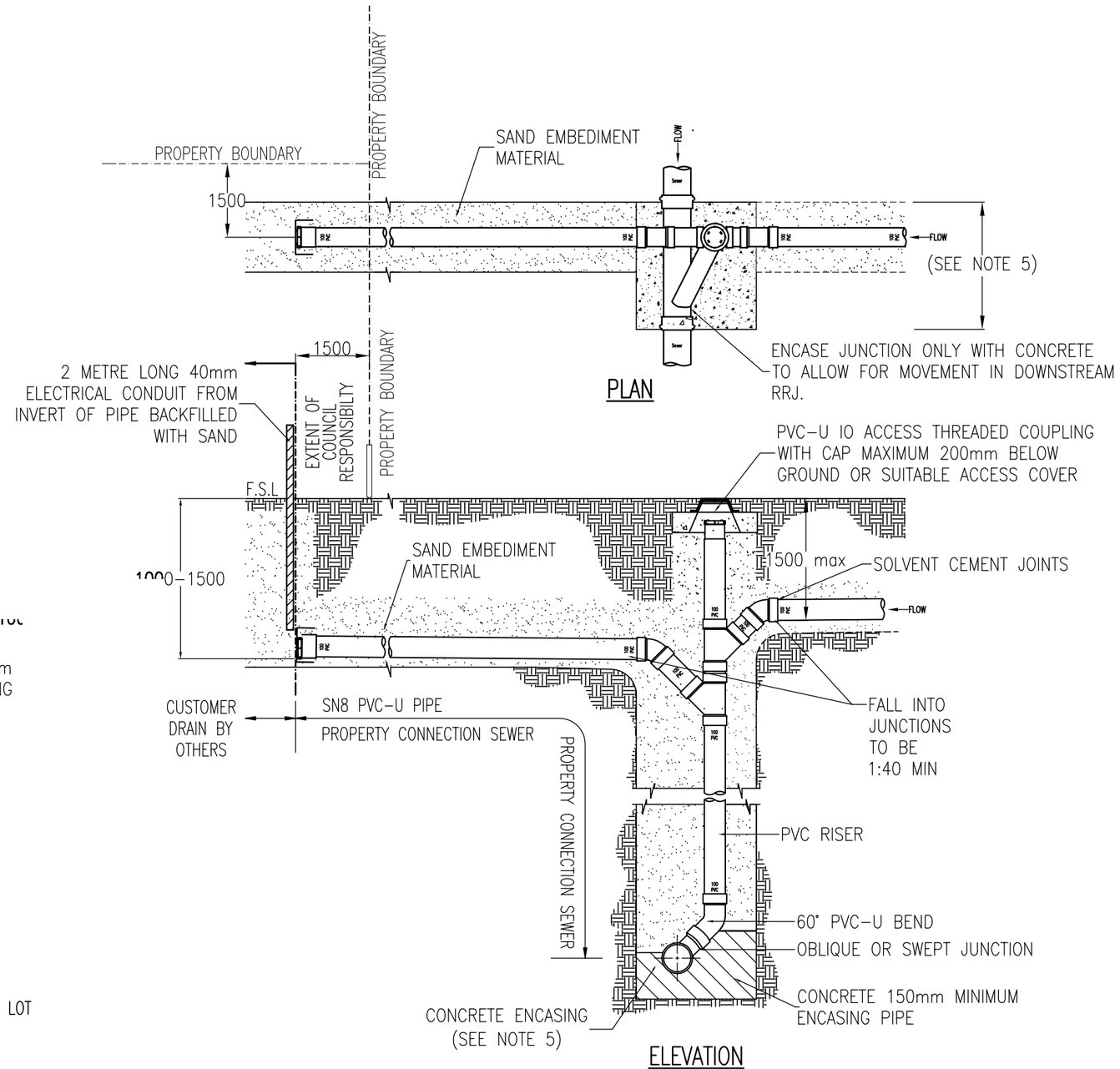
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE PIPELINE LAYOUT
SEWER IN ROAD RESERVE (NOT PREFERRED)

Plan No. S–006 No. 6 of 29 Plans Rev. D

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-002 - Sewer in road reserve.dwg





NOTES

1. ALL DIMENSIONS IN MILLIMETRES
2. CONNECTION POINT TO BE A MINIMUM OF 1000mm AND A MAXIMUM OF 1500mm BELOW SURFACE CONSIDERATE OF LOT SIZE AND GRADIENT REQUIREMENTS.
3. GRADE OF PROPERTY CONNECTION TO BE NOT LESS THAN 1:40 OR 2.5%
4. SLOPED CONNECTION MAY BE USED WHERE SEWER MAIN DEPTH IS LESS THAN 1500mm.
5. CONCRETE ENCASING TO BE A CONTINUOUS POUR 25MPA CONCRETE SURROUNDING THE JUNCTION, BEND AND EXISTING PIPE. CONCRETE SHOULD NOT ENVELOPE DOWNSTREAM RRJ TO ALLOW FOR MOVEMENT.
6. DWV-SEWER-'Y' JUNCTION RRJ JOINT 150x100x45°.
7. SEWER HEAVY DUTY 'Y' JUNCTION SN8 WITH FIBREGLASS RRJ 100x45°.
8. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH WDRC PART 4 SEWERAGE RETICULATION & CONSTRUCTION.
9. ALL MATERIALS & FITTINGS TO COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.

Revisions		Drn by	Date
E	Design Manual	M.T.W	06/13
D	Single/Double Conn. edited	L.T.P.	11.07.12
C	Riser changed to PVC	L.T.P.	14.02.12
B	Detail/Notations removed	L.T.P.	07/11
A	Original Issue		

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Level Book No.
Datum

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WESTERN DOWNS REGIONAL COUNCIL

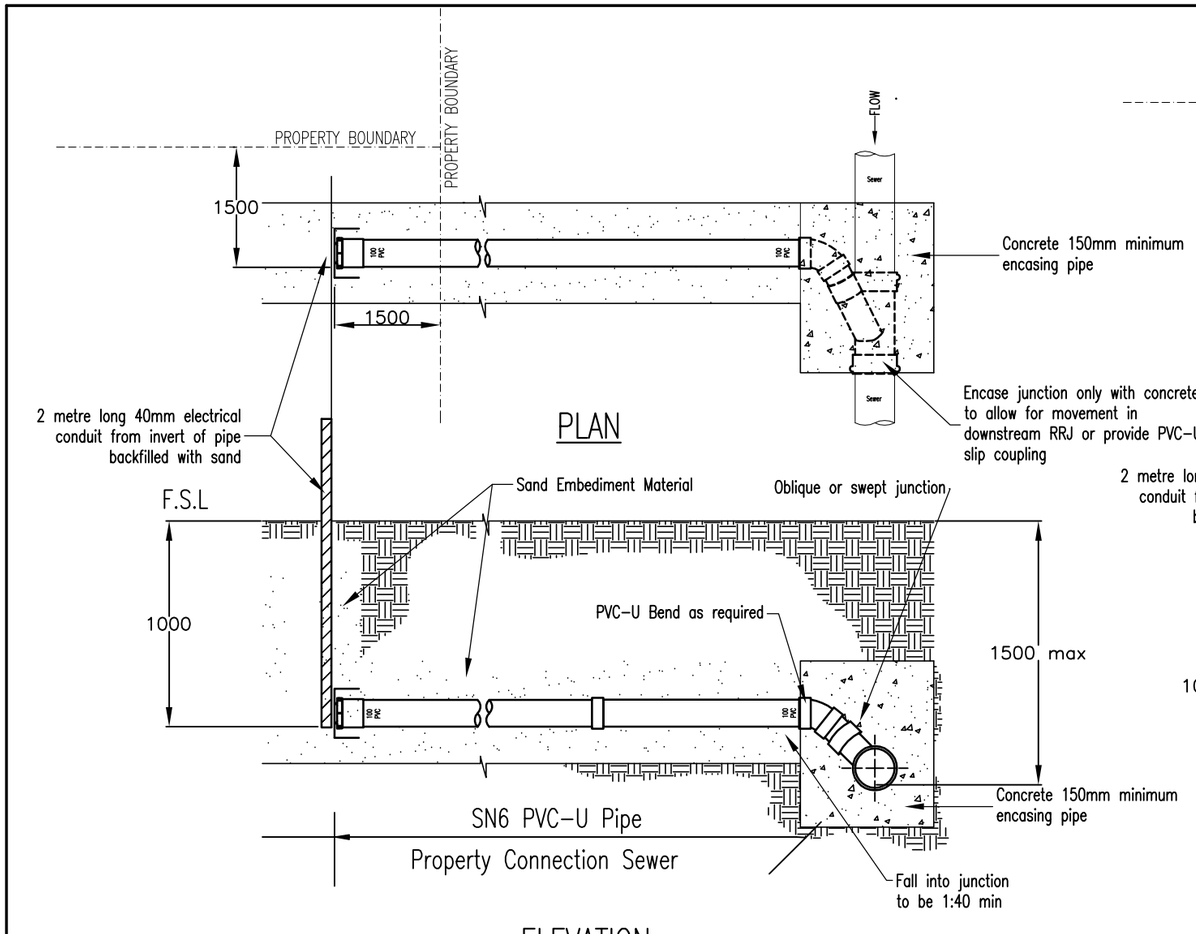
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE PIPELINE LAYOUT
SEWERAGE REGIONAL PROPERTY CONNECTION (EXCLUDING DALBY)

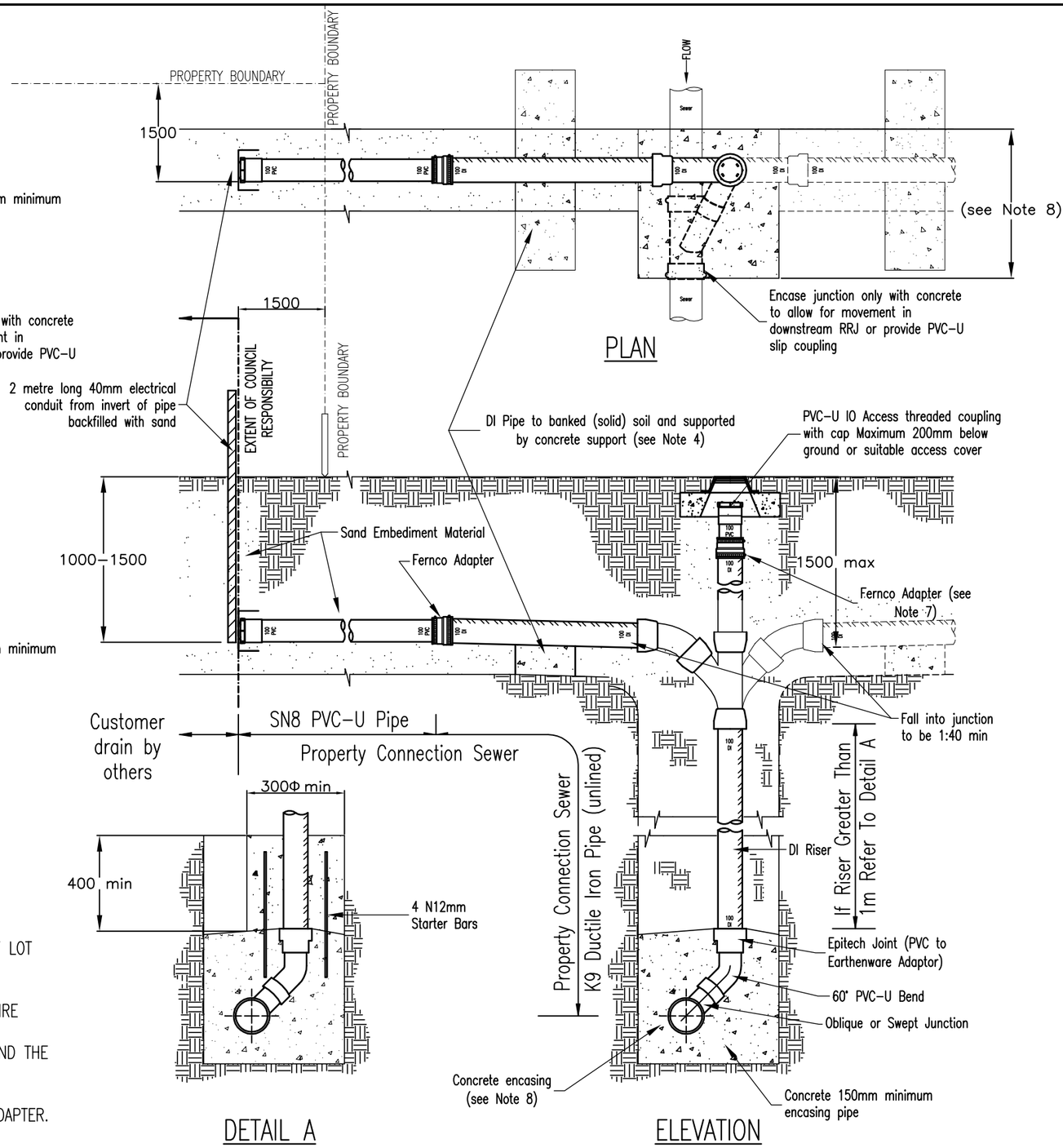
Plan No. S-007 No. 7 of 29 Plans Rev. E

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-007 Sewerage Property Connection (Excluding Dalby).dwg



ELEVATION

SLOPED CONNECTION



DETAIL A

ELEVATION

VERTICAL RISER WITH SINGLE OR DOUBLE CONNECTIONS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. CONNECTION POINT TO BE A MINIMUM OF 1000mm AND A MAXIMUM OF 1500mm BELOW SURFACE CONSIDERATE OF LOT SIZE AND GRADIENT REQUIREMENTS.
3. GRADE OF PROPERTY CONNECTION TO BE NOT LESS THAN 1:40 OR 2.5%.
4. DUCTILE IRON PIPE TO BE EXTENDED TO AND SUPPORTED BY BANKED SOIL CONDITION. COMPACTED FILL WILL REQUIRE ADDITIONAL SUPPORT IN THE FORM OF A CONCRETE BEAM A MINIMUM OF 300 X 150 X 1000mm AS INDICATED.
5. IF THE RISER LENGTH IS GREATER THAN 1000mm IN LENGTH, A CONCRETE SUPPORT MUST BE CONSTRUCTED AROUND THE JOIN, SEE DETAIL A.
6. SLOPED CONNECTION MAY BE USED WHERE SEWER MAIN DEPTH IS LESS THAN 1500mm.
7. DUCTILE IRON TO BE EXTENDED FROM TOP OF JUNCTION AND JOINED TO IO ACCESS PVC-U RISER WITH FERNCO ADAPTER. THE PVC-U RISER SECTION IS TO BE A MAXIMUM LENGTH OF 1500mm.
8. CONCRETE ENCASING TO BE A CONTINUOUS POUR 25MPA CONCRETE SURROUNDING THE JUNCTION, BEND, PVC TO EARTHENWARE ADAPTER AND EXISTING PIPE. CONCRETE SHOULD NOT ENVELOP DOWNSTREAM RRJ TO ALLOW FOR MOVEMENT OR ALTERNATIVELY PROVIDE A PVC-U SLIP COUPLING PRIOR TO CONCRETE ENCASING.
9. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH WDRC PART 4 SEWERAGE RETICULATION AND CONSTRUCTION.
10. ALL MATERIALS & FITTINGS TO COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.

Revisions		Drn by	Date
C	Design Manual	M.T.W	06/13
B	Pipe removed outside boundary	L.T.P.	11.07.12
A	Original Issue		

Field Book No.
Level Book No.
Datum

DRAWN L. Cook
DESIGNED L. Cook
CHECKED P. Mauch
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 15/04/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

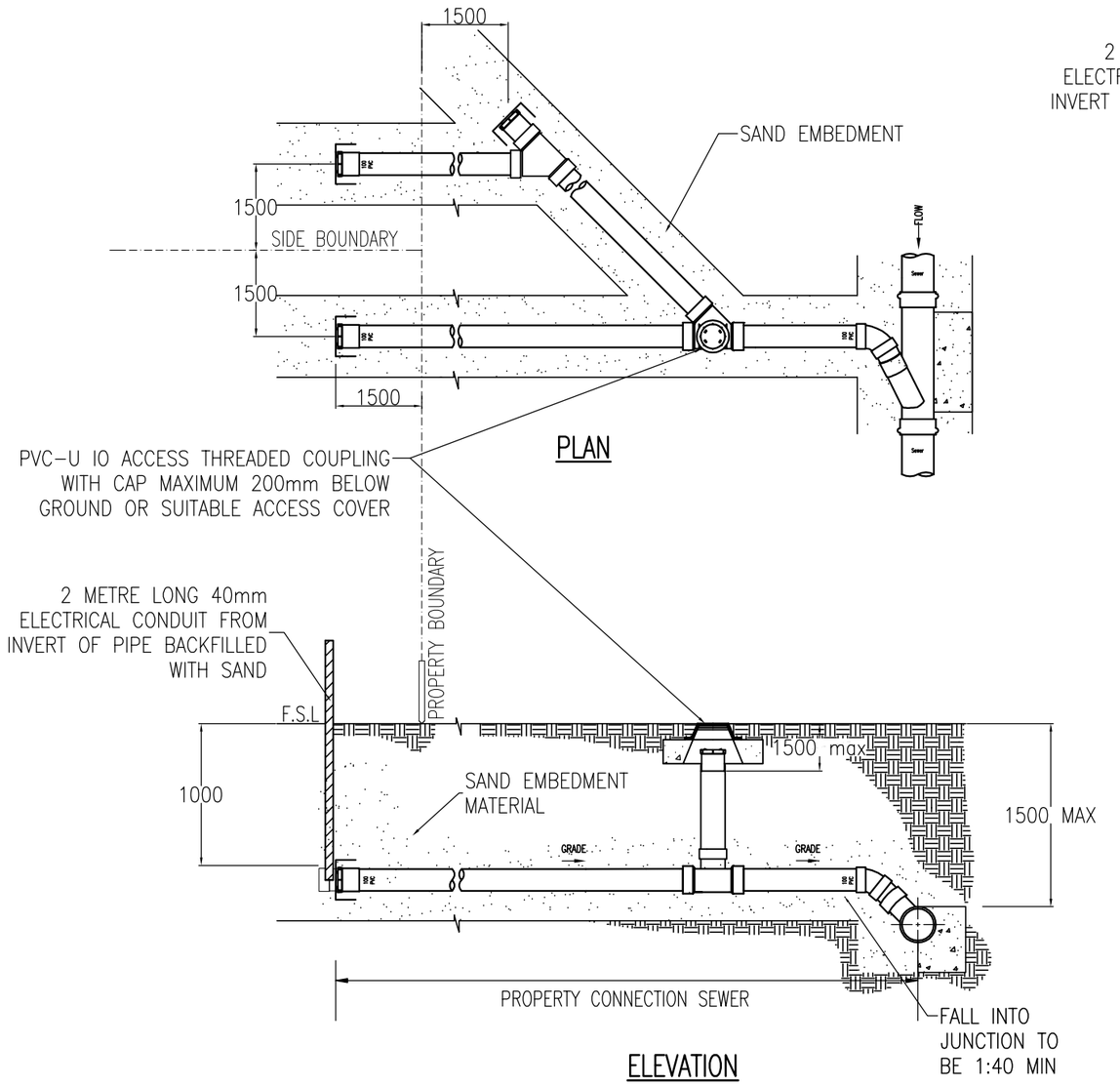
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

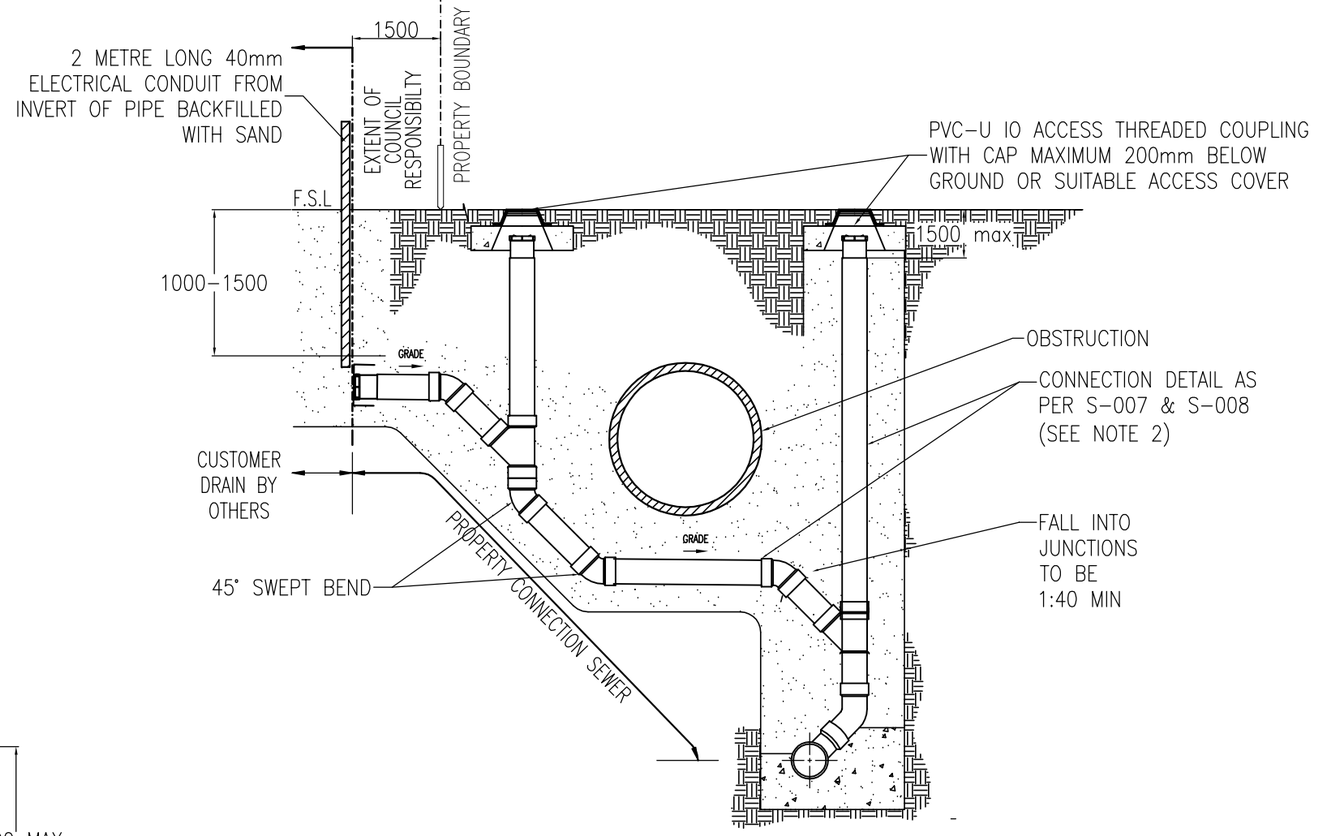
STANDARD DRAWING – SEWERAGE PIPELINE LAYOUT
SEWERAGE PROPERTY CONNECTION DALBY ONLY

Plan No. S–008 No. 8 of 29 Plans Rev. C

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-008 Sewerage Property Connection (Dalby Only).dwg



"Y" BRANCH PROPERTY CONNECTION SEWER



STANDARD BRANCH AROUND AN OBSTRUCTION

NOTES
1. ALL DIMENSIONS IN MILLIMETRES.
2. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS S–007 & S–008 AND WDRC DESIGN MANUAL PART 4 SEWERAGE RETICULATION & CONSTRUCTION.
2. GRADE OF PROPERTY CONNECTION TO BE NOT LESS THAN 1:40 OR 2.5%
3. ALL MATERIALS & FITTINGS TO COMPLY WITH RELEVANT AUSTRALIAN STANDARDS.

Revisions		Drn by	Date
B	Design Manual	L.C.	09/14
A	Original Issue		

Field Book No.
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EXAMINED L. Cook
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DATE 9/09/2014

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE PROPERTY CONNECTION DETAILS "Y" BRANCH & AROUND OBSTRUCTIONS

Plan No. S–009 No. 9 of 29 Plans Rev. B

Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–009 Y Branch & Around Obstructions.dwg

SOIL CLASSIFICATION		FIELD IDENTIFICATION TEST	AHBP kPa
CLAY SOILS	VERY SOFT	EASILY PENETRATED 40mm WITH FIST	<50 *
	SOFT	EASILY PENETRATED 40mm WITH THUMB	<50 *
	FIRM	MODERATE EFFORT NEEDED TO PENETRATE 30mm WITH THUMB	<50 *
	STIFF	READILY INTENDED WITH THUMB BUT PENETRATED ONLY WITH GREAT EFFORT	50
	VERY STIFF	READILY INDENTED WITH THUMBNAIL	100
	HARD	INDENTED WITH DIFFICULTY BY THUMBNAIL	200
SAND & GRAVEL	LOOSE CLEAN SAND	TAKES FOOTPRINT MORE THAN 10mm DEEP	<50 *
	MEDIUM–DENSE CLEAN SAND	TAKES FOOTPRINT 3mm TO 10mm DEEP	50
	DENSE CLEAN SAND OR GRAVEL	TAKES FOOTPRINT LESS THAN 3mm DEEP	100
ROCK	BROKEN OR DECOMPOSED ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAKS IN ROCK) SPACED AT LESS THAN 300mm APART	100
	SOUND ROCK	DIGGABLE. HAMMER BLOW "THUDS". JOINTS (BREAKS IN ROCK) SPACED AT MORE THAN 300mm APART	200
UNCOMPACTED FILL DOMESTIC REFUSE		OBSERVATION AND KNOWLEDGE OF THE SITE HISTORY	<50 *

PREPARING THE TEST AREA

CONDUCT ALL NATIVE SOIL IDENTIFICATION TESTS ON A FRESHLY EXPOSED, DAMP, HAND TRIMMED AREA OF THE TRENCH WALL IN THE PIPE ZONE. TAKE CARE THAT THE SOIL IN THE EXPOSED TEST AREA IS NOT COMPACTED OR LOOSENED DURING TRENCH EXCAVATION. IF THE SOIL IN THE TRENCH FLOOR AND WALL IS VERY DRY AT THE TIME THE TRENCH IS OPENED THEN FLOOD THE TEST AREA AND ALLOW TIME FOR THE WATER TO BE ABSORBED BY THE SOIL BEFORE IT IS TRIMMED AND TESTED.

IDENTIFYING CLAY SOILS

A LI,MP OF CLAY SOIL WILL BE DIFFICULT TO BREAK WHEN DRY. IT WILL BE STICKY AND NEED SOME EFFORT TO MOULD WITH THE FINGERS WHEN WET. CLAY WILL NOT WASH OFF EASILY. INDIVIDUAL CLAY PARTICLES ARE HARD TO SEE.

TESTING CLAY SOILS

CLAY SOILS ARE BEST TESTED IN THE WALL OF THE TRENCH. THE FIST, THE THUMB OR THE THUMBNAIL ARE USED TO DETERMINE THE CONSISTENCY (STRENGTH) OF THE CLAY (SEE TABLE.)

IDENTIFYING CLEAN SAND SOILS

THE INDIVIDUAL GRAINS OF SAND WILL BE VISIBLE TO THE EYE. A LUMP OF CLEAN SAND, IF IT CAN BE PICKED UP AT ALL, WILL CRUMBLE WITHE VERY LITTLE EFFORT. CLEAN SAND WASHES OFF EASILY.

TESTING CLEAN SAND SOILS

CLEAN SAND SOILS ARE BEST TESTED IN THE FLOOR OF THE TRENCH BY PUSHING WITH THE WHOLE BODY WEIGHT ON ONE FOOT. THE DEPTH OF THE DEPRESSION LEFT BY THE BOOT IS RELATED TO THE DENSITY OF THE SAND (SEE TABLE). TAKE CARE TO ENSURE THAT THE SAND IN THE TRENCH FLOOR WAS NOT COMPACTED OR LOOSENED DURING THE EXCAVATION OF THE TRENCH OR THE TRIMMING OF THE TEST AREA.

TESTING ROCK

THE RECOMMENDED FIELD IDENTIFICATION TESTS FOR ROCK RELY ON OBSERVING THE EASE WITH WHICH THE ROCK CAN BE DUG WITH A PICK, AND ESTIMATING THE SPACING OF THE JOINTS IN THE ROCK. (JOINTS ARE COMMONLY CALLED CRACKS OR BREAKS). THE SPACING BETWEEN THE JOINTS IS IMPORTANT BECAUSE THE ALLOWABLE BEARING PRESSURE ON ROCK IS USUALLY CONTROLLED BY THE JOINTS IN IT, RATHER THAN THE INHERENT STRENGTH OF THE BLOCK OF ROCK. JOINTS MAY BE TIGHTLY CLOSED (LIKE HAIRLINE CRACKS), BUT CAN ALSO BE OPEN (FILLED WITH AIR) OR FILLED WITH SOFT CLAY OR OTHER SOIL.

LEGEND

AHBP ALLOWABLE HORIZONTAL BEARING PRESSURE FOR:
- 10mm MOVEMENT.
- CENTRE OF THRUST 800mm BELOW THE NATURAL SURFACE LEVEL.
- HIGH WATER TABLE

* SPECIAL GEOTECHNICAL ASSESSMENT REQUIRED

Revisions		Drn by	Date
B	Design Manual	M.T.W	06/13
A	Original Issue		

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Level Book No.
Datum

DRAWN L. Porter
DESIGNED L. Cook
CHECKED P. Mauch
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 16/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

Auxiliary Plan No's.

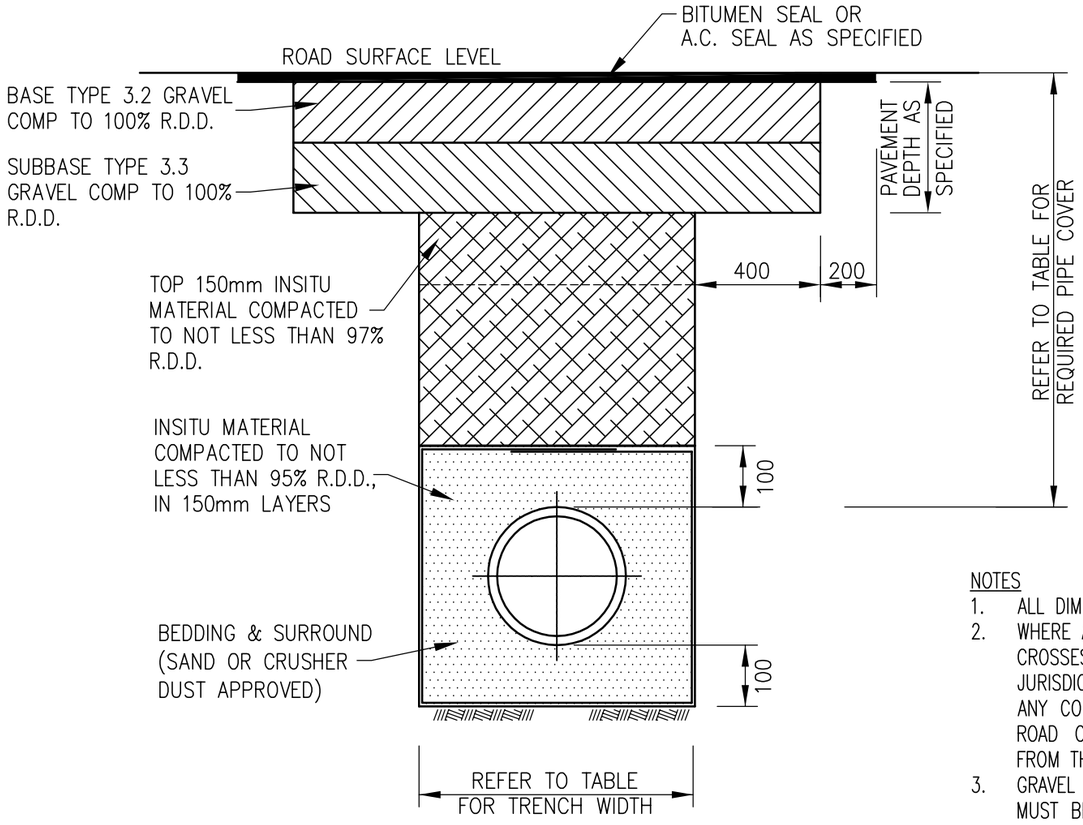
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE EMBEDMENT/TRENCHFILL SUPPORT SYSTEMS – ALLOWABLE BULKHEADS & SOIL CLASSIFICATION GUIDELINES

Plan No. S–010 No. 10 of 29 Plans Rev. B

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-010 Allowable Bearing Pressures For Bulkheads & Soil Classification Guidelines.dwg

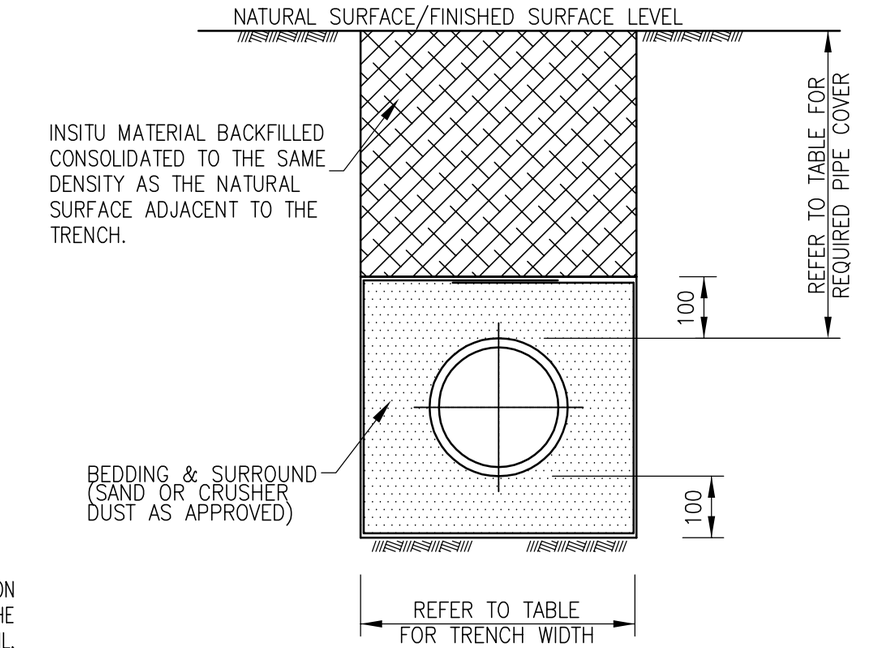
NOMINAL PIPE SIZE (mm)	100	125	150	200	225	250	300
MINIMUM TRENCH WIDTH	450	450	450	600	600	600	600
MIN PIPE COVER (PROPERTYS & FOOTPATHS)	600	600	600	900	900	900	900
MINIMUM PIPE COVER (ROADWAYS & DRIVEWAYS)	900	900	900	1200	1200	1200	1200



IN ROADWAY OR DRIVEWAY

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. WHERE A SEWER OR SEWERAGE PROPERTY CONNECTION CROSSES A DECLARED ROAD OR RAILWAY UNDER THE JURISDICTION OF MAIN ROADS OR QUEENSLAND RAIL, ANY CONDITIONS OR REQUIREMENTS RELEVANT TO THE ROAD CROSSING CONSTRUCTION SHALL BE OBTAINED FROM THE RELEVANT AUTHORITY.
3. GRAVEL TYPES AND COMPACTION TESTS AS SPECIFIED MUST BE PROVIDED UNLESS OTHERWISE APPROVED BY COUNCIL.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPE SETTLEMENT.
5. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROF



IN PRIVATE PROPERTY OR FOOTPATH

Revisions		Drn by	Date
D	Design Manual	L.C.	09/14
C	Amended Roadway	L.C.	11/13
B	Notes Amended	T.L.	02/10
A	Original Issue		

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WESTERN DOWNS REGIONAL COUNCIL

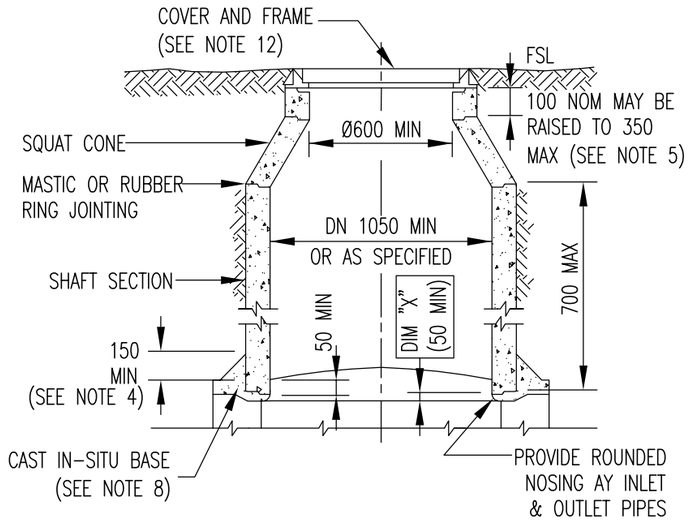
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

Auxiliary Plan No's.

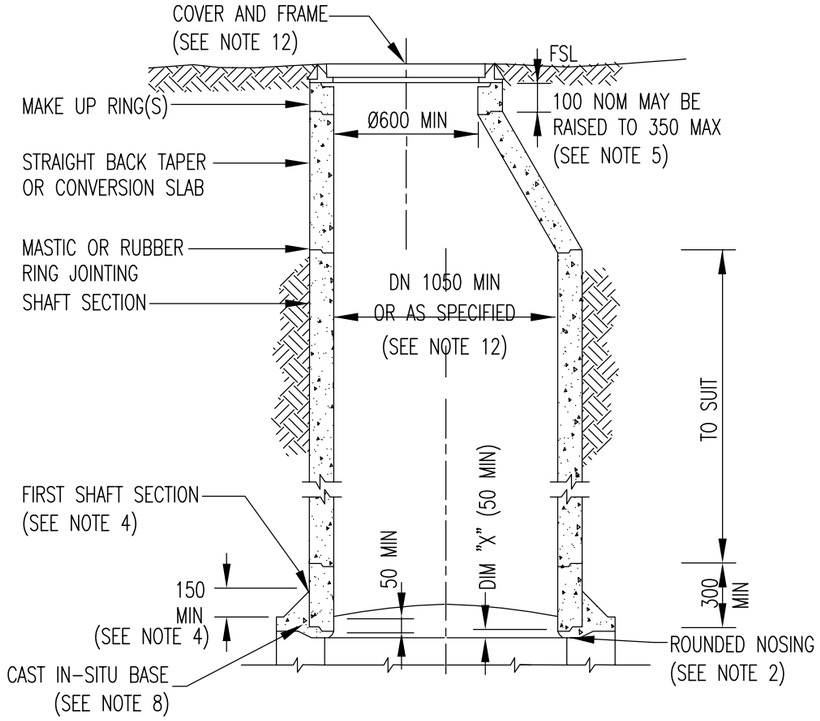
STANDARD DRAWING – SEWERAGE EMBEDMENT/TRENCHFILL SUPPORT SYSTEMS –TYPICAL TRENCH DETAILS

Plan No. S–011 No. 11 of 29 Plans Rev. D

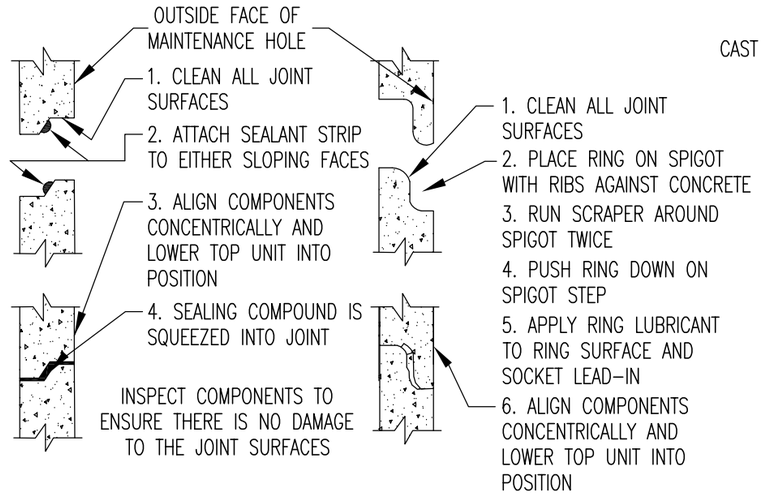
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-011 Typical Trench Details.dwg



MAINTENANCE HOLE TYPE P1
FOR COMPONENT DEPTH ⩽1200



MAINTENANCE HOLE TYPE P2
FOR COMPONENT DEPTH 1200 TO 6000

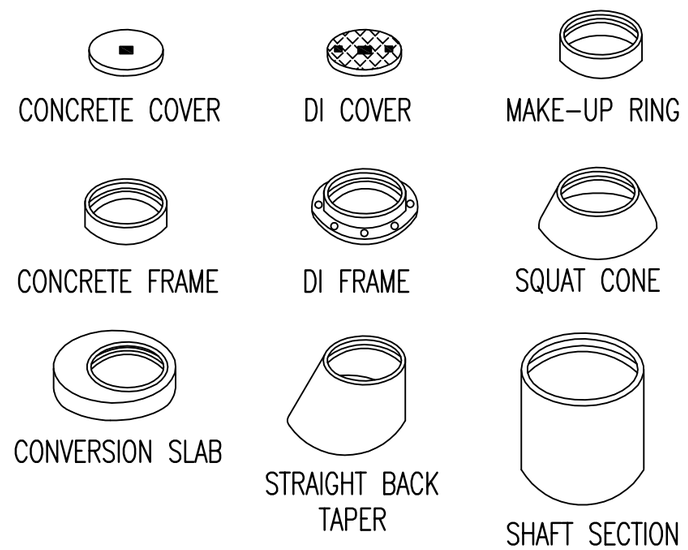


MASTIC JOINT DETAILS

RUBBER RING JOINT DETAILS

CALCULATING TOTAL PRECAST COMPONENT DEPTH
(REFER NOTE 4)

TOTAL DEPTH OF PRECAST COMPONENT = DEPTH TO INVERT OF HIGHEST NON-DROP INLET PIPE MINUS (ID OF INLET PIPE + PIPE WALL THICKNESS + DIM "X")



COMPONENT LEGEND

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PROVIDE ROUNDED NOSING ON INLET AND OUTLET PIPE TO PREVENT DAMAGE TO JETTING EQUIPMENT AND CCTV GUIDES AND CABLES.
3. CONSTRUCTION MAY BE A COMBINATION OF PRECAST AND IN-SITU TO SUIT APPLICATION (WDRC AUTHORISATION REQUIRED).
4. LOCATION OF FIRST SHAFT SECTION:
   a. FIRST SHAFT SECTION TO BE BETWEEN 300-600 LONG TO ALLOW FORMING OF CHANNEL AND BENCH.
   b. PRIME COMPONENT 200 FROM BOTTOM WITH CEMENT SLURRY. EMBED SHAFT SECTION 50 INTO WET CONCRETE BUILD UP OUTSIDE FILLET TO 150.
5. MAKE-UP RINGS:
   a. USE MINIMUM OF ONE MAKE-UP RING (PREFERABLY100 OR 150) PER MH DURING CONSTRUCTION TO ALLOW FOR FUTURE SURFACE ADJUSTMENT WITHOUT AFFECTING THE SHAFT SECTIONS.
   b. SEE STANDARD DRAWING S-019 REGARDING TYPICAL MH COVER ARRANGEMENTS FOR TAPERED MAKE UP RING ON SLOPING GROUND.
6. BACKFILL AROUND MH:
   a. THE METHOD OF BACKFILL AND COMPACTION AROUND MH TO BE GENERALLY AS FOR PIPE EMBEDMENT.
   b. TAKE CARE TO RAISE SELECT FILL EQUALLY ALL AROUND THE MH TO AVOID UNBALANCED LATERAL LOADING.
7. CONCRETE BASE TO BE SPECIAL CLASS.
8. IN WATER CHARGED GROUND OR WHERE THERE IS SIGNIFICANT RISK OF SURCHARGE USE ONLY CAST IN-SITU MH.
9. FOR PIPE CONNECTIONS TO MH SEE STANDARD DRAWING REGARDING 'PIPE CONNECTION DETAILS'.
10. WHERE THERE IS SIGNIFICANT RISK OF INFILTRATION OR TREE ROOT INTRUSION APPLY AN EXTERNAL BITUMASTIC SEAL TAPE 150 WIDE OVER A COAT OF MANUFACTURERS RECOMMENDED PRIME SEAL TO ALL JOINTS.
11. FOR MH COVER CLASS SELECTION AND FINISHED LEVELS SEE STANDARD DRAWING REGARDING TYPICAL MH COVER ARRANGEMENTS.
12. MINIMUM NOMINAL DIAMETERS ARE TYPICALLY 1050 FOR TYPICAL MANHOLES OR 1200 FOR PUMP STATION INLET AND DISCHARGE MANHOLES
13. MAXIMUM MANHOLE SPACING IS 90 METRES.

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EXAMINED L. Cook
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Auxiliary Plan No's.

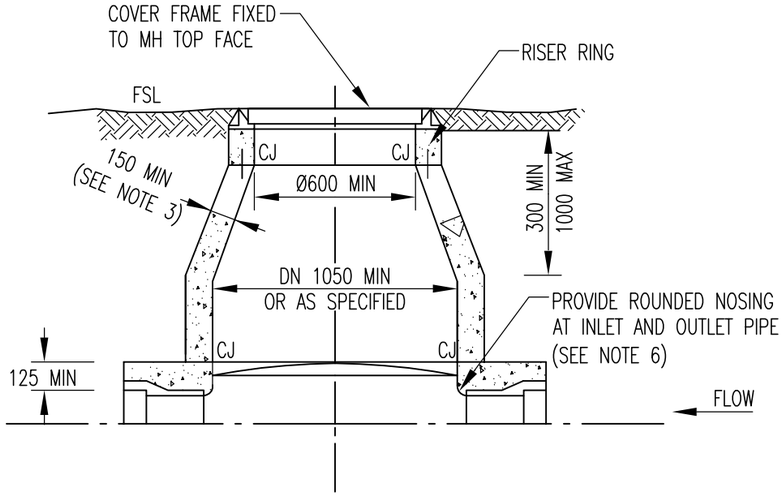
WESTERN DOWNS REGIONAL COUNCIL

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

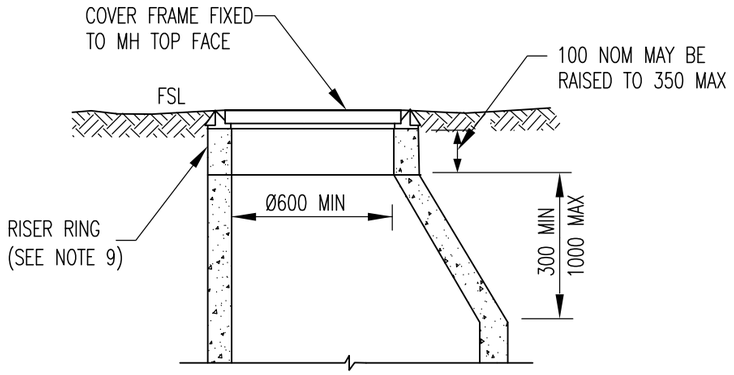
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES
SEWERS < DN 300 PRECAST MAINTENANCE HOLES TYPES P1 & P2

Plan No. S-012 No. 12 of 29 Plans Rev. C

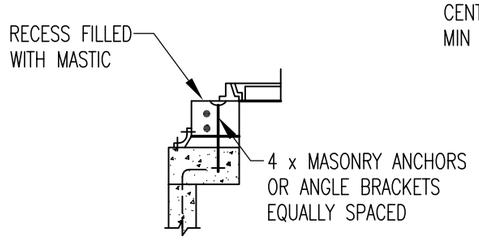
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-012 Maintenance Holes Types P1 & P2.dwg



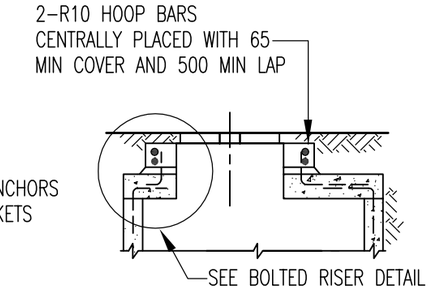
MAINTENANCE HOLE TYPE C1
FOR MH ⩽ 1200 DEEP



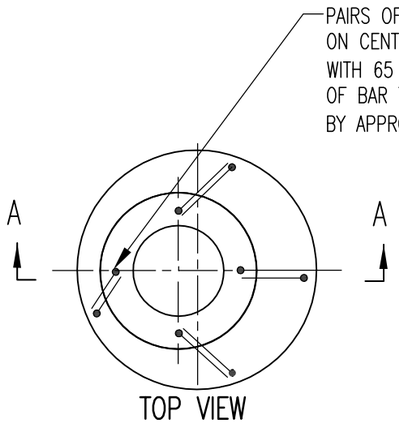
STRAIGHT BACK TAPER DETAILS



BOLTED RISER DETAIL



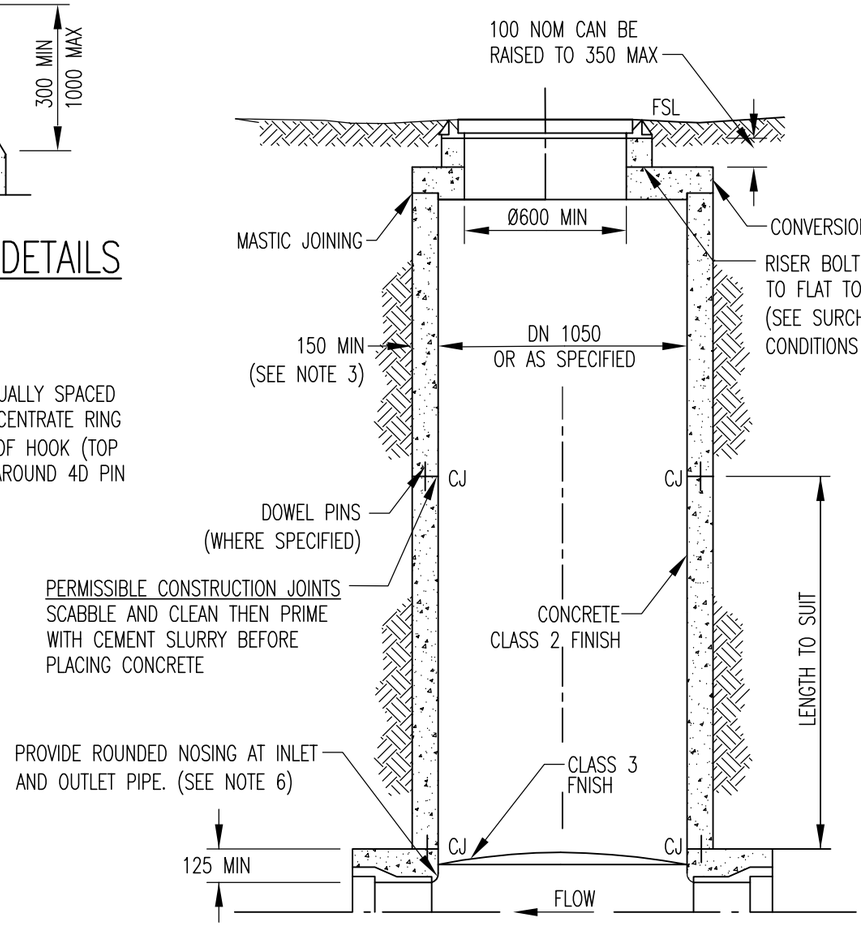
SECTION A–A



TOP VIEW

FIXING ARRANGEMENT FOR SURCHARGE CONDITIONS

NOTES
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE TO BE N40.
3. WALL THICKNESS TO BE 150 MIN OR 225 MIN IN AGGRESSIVE SOILS, HIGH WATER TABLE AND SALINE ENVIRONMENTS.
4. MH TYPE C1 MAY BE OF FULL OR PARTIAL CONICAL CONSTRUCTION IF ACCEPTABLE TO WATER AGENCY.
5. FOR PIPE CONNECTIONS INTO MH SEE STANDARD DRAWING REGARDING PIPE CONNECTION DETAILS.
6. FORM ROUNDED NOSING ON INLET AND OUTLET PIPE TO PREVENT DAMAGE TO JETTING EQUIPMENT, CCTV GUIDES AND CABLES.
7. FIX TOP SECTIONS OF MH, COVER SURROUND AND COVER TO PREVENT SEPARATION WHERE SEWER IS SUBJECT TO SURCHARGING.
8. BACKFILL AROUND MH:
   a. THE METHOD OF BACKFILL AND COMPACTION AROUND MH TO BE GENERALLY AS FOR PIPE EMBEDMENT.
   b. TAKE CARE TO RAISE SELECT FILL EQUALLY ALL AROUND THE MH TO AVOID UNBALANCED LATERAL LOADING.
9. MINIMUM NOMINAL DIAMETERS ARE TYPICALLY 1050 FOR TYPICAL MANHOLES OR 1200 FOR PUMP STATION INLET AND DISCHARGE MANHOLES
10. MAXIMUM MANHOLE SPACING IS 90 METRES.



MAINTENANCE HOLE TYPE C2
FOR MH > 1200 TO ⩽ 6000 DEPTH
(SECTION MAY BE AS SHOWN OR STRAIGHT TAPER)

Revisions		Drn by	Date
C	Design Manual	M.T.W	11/13
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WESTERN DOWNS REGIONAL COUNCIL

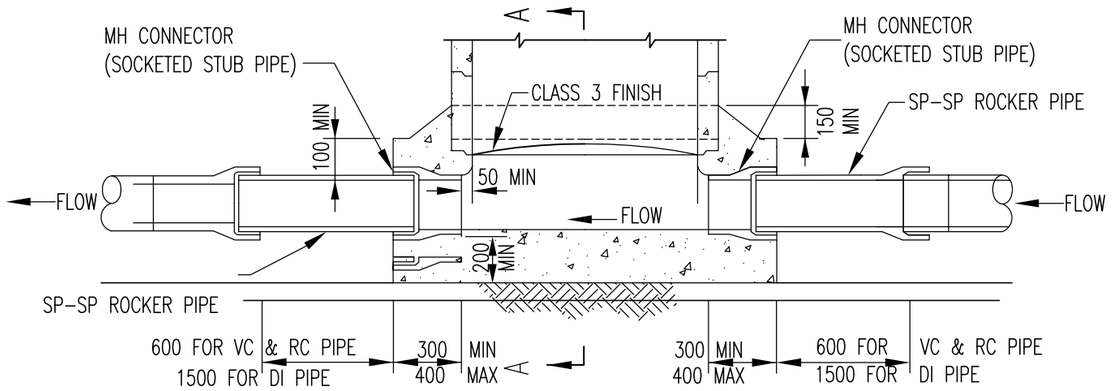
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

Auxiliary Plan No's.

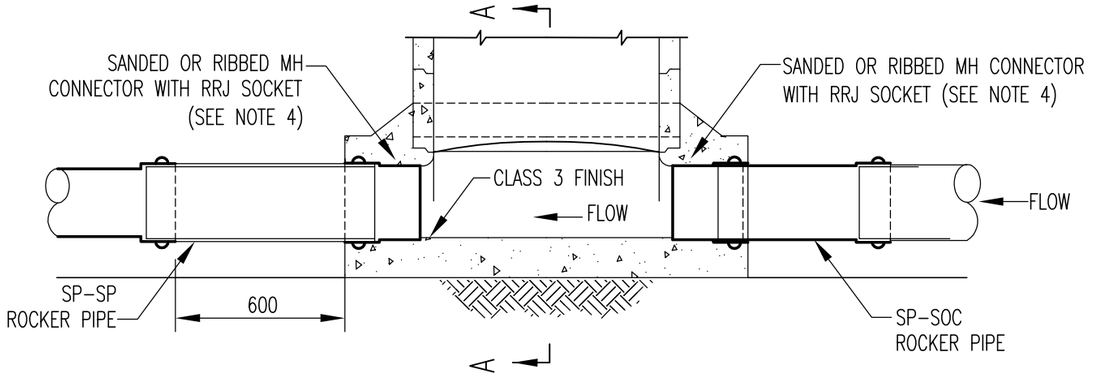
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES
SEWERS < DN 300 CAST INSITU
MAINTENANCE HOLES TYPES C1 & C2

Plan No. S–013 No. 13 of 29 Plans Rev. C

Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–013 Maintenance Holes Types C1 & C2.dwg

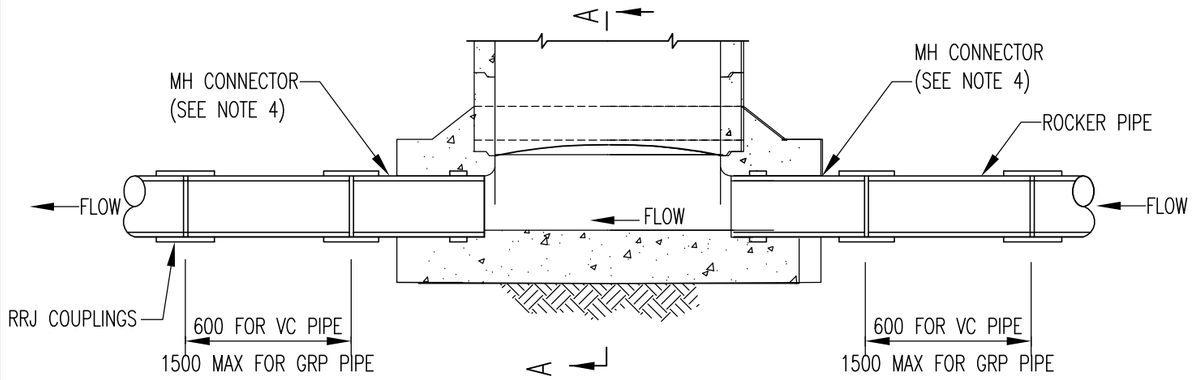


TYPICAL MAINTENANCE HOLE BASE FOR VC, RC, AND DI SEWERS



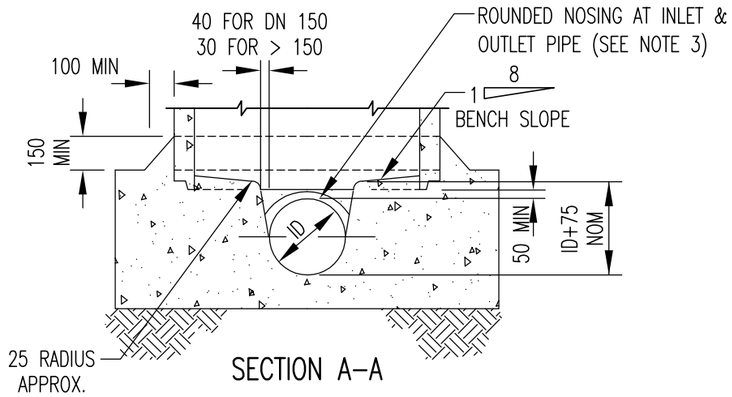
TYPICAL MAINTENANCE HOLE BASE FOR RUBBER RING JOINT PVC AND ABS SEWERS

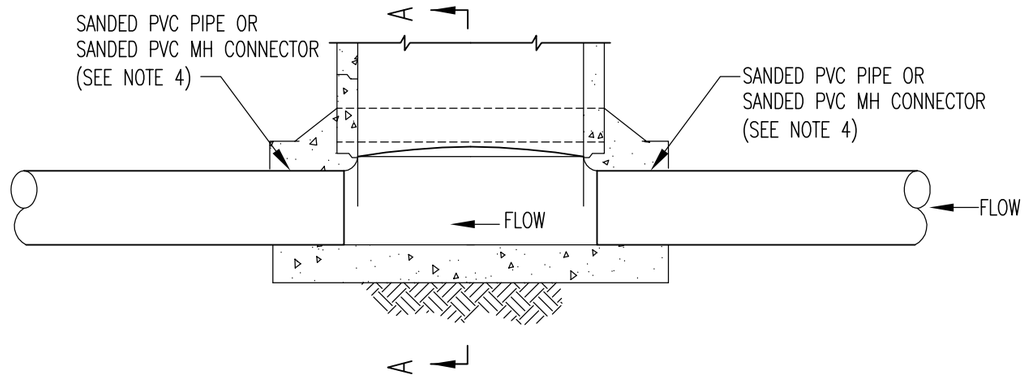
SEE VC, RC AND DI BASE DETAILS FOR OTHER DIMENSIONS AND DETAILS (SEE NOTE 6)



TYPICAL MAINTENANCE HOLE BASE FOR SOLVENT CEMENT JOINT PVC SEWERS

SEE VC, RC AND DI BASE DETAILS FOR OTHER DIMENSIONAL DETAILS





TYPICAL MAINTENANCE HOLE BASE FOR SOLVENT CEMENT JOINT PVC SEWERS

SEE VC, RC AND DI BASE DETAILS FOR OTHER DIMENSIONS AND DETAILS (SEE NOTE 7)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. PIPE CONNECTION DETAILS APPLY TO PRECAST AND CAST IN–SITU MH (SEE STANDARD DRAWINGS REGARDING 'SEWERS <DN 300 CAST IN SITU TYPES C1 & C2' AND 'SEWERS <DN 300 PRECAST TYPES P1 & P2'.
3. FORM ROUNDED NOSING ON INLET AND OUTLET PIPES TO PREVENT DAMAGE TO JETTING EQUIPMENT, CCTV GUIDES AND CABLES.
4. PVC, ABS AND GRP MH CONNECTORS > DN 300 TO HAVE WEEP RINGS AND TO BE SANDED.
5. WHERE SPECIFIED USE RRJ ROCKER PIPES AS SHOWN IN RRJ DETAIL WITH SOLVENT CEMENT JOINT PVC SEWERS.
6. NOT SUITABLE IF THE SOIL BEARING PRESSURE IS LESS THAN 100 kPa (SEE STANDARD DRAWING REGARDING ALLOWABLE BEARING PRESSURES FOR BULKHEADS).
7. THE USE OF PRECAST CONCRETE BASES INCLUDING CONNECTION DETAILS WILL BE IN ACCORDANCE WITH WDRC REQUIREMENTS.

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EXAMINED L. Cook
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WESTERN DOWNS REGIONAL COUNCIL

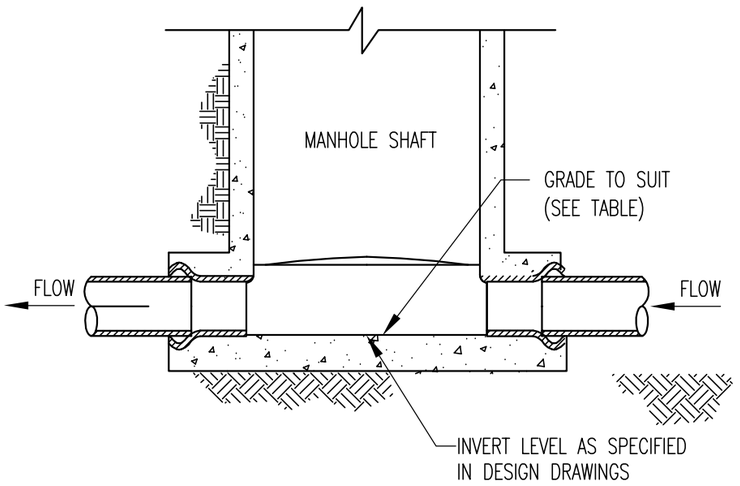
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

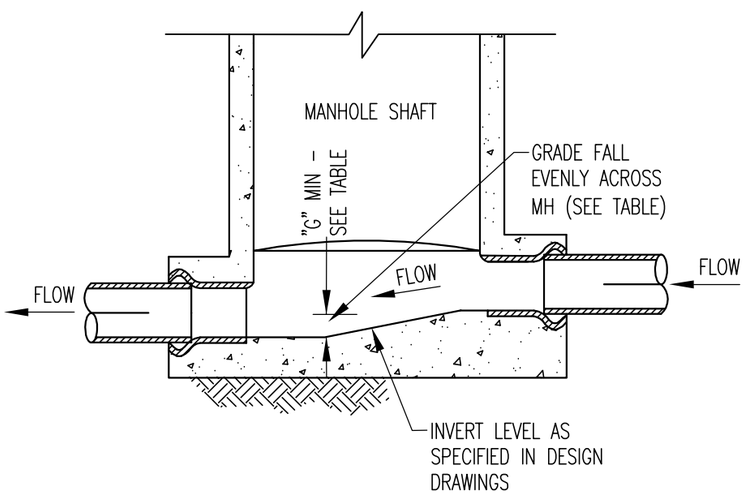
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES MAINTENANCE HOLES PIPE CONNECTION DETAILS

Plan No. *S–014* No. 14 of 29 Plans Rev. *B*

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-014 Maintenance Holes Pipe Connection Details.dwg



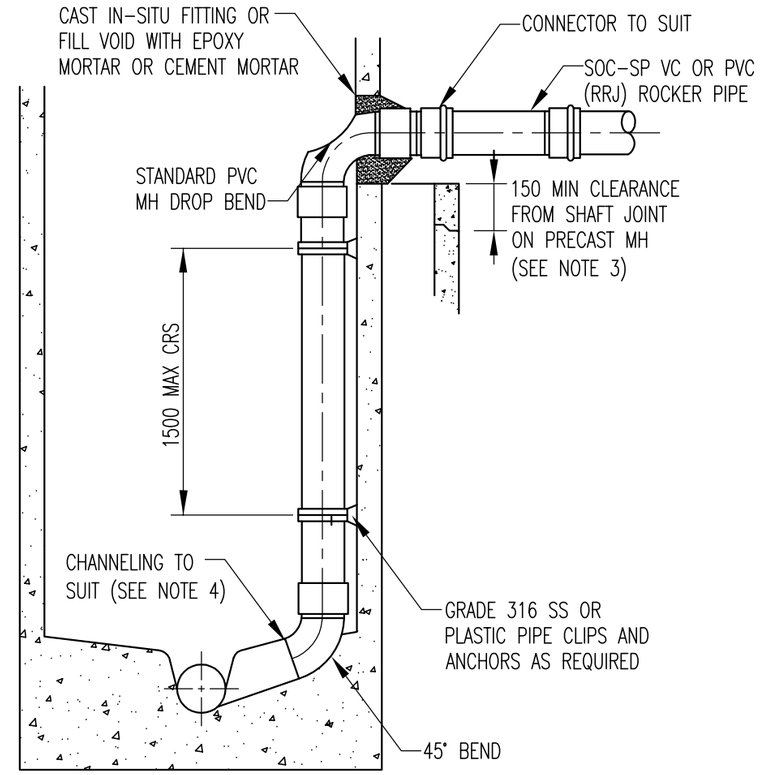
STRAIGHT THROUGH SEWER



CHANGE IN DIRECTION THROUGH MAINTENANCE HOLE

FALL ACROSS MH (INLET TO OUTLET INVERT)	
DEFLECTION ANGLE	"G" MIN
0° –30°	30mm
>30° –60°	50mm
>60°	80mm

VERTICAL DROP	
PIPE SIZE DN	MINIMUM
150	460mm
225	710mm
300	880mm



ELEVATION

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS REGARDING DN 300 PRECAST TYPES P1 & P2 AND DN 300 IN–SITU TYPES C1 & C2.
3. FOR EXISTING PRECAST MH APPLICATIONS CORED HOLE TO BE 150 MIN ABOVE OR BELOW SHAFT SECTION JOINT.
4. DISCHARGE PIPE AND CHANNEL PLACEMENT TO DIRECT SEWAGE IN DIRECTION OF MAIN FLOW. SEE STANDARD DRAWINGS S–012 & S–013.
5. DN 1200 MH TO BE USED WHERE DROP PIPE >DN 150 OR MORE THAN TWO DN 150 INTERNAL DROPS ARE USED.
6. ALL ENTRIES ARE TO BE CORED USING A DIAMOND HOLE SAW OF THE APPROPRIATE DIAMETER.
7. THIS DRAWING APPLICABLE TO PRECAST AND IN–SITU MH.
8. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO PVC RUBBER RING (RRJ) UNLESS OTHERWISE SPECIFIED.
9. TO ENSURE BONDING COAT PVC PIPES CAST INTO MH WALL AND BASE WITH RESIN/SOLVENT & SAND OR ABRADE FOR THE LENGTH OF WALL PENETRATION.
10. FILL JOINT AROUND INSERT PIPE WITH AUTHORISED EPOXY OR MASTIC SEALING MATERIAL.
11. FOR DETAILS OF PIPE CONNECTION TO MH SEE STANDARD DRAWING REGARDING 'PIPE CONNECTION DETAILS'.
12. ROCKER PIPE LENGTHS AND CONNECTION SYSTEMS TO BE AS SHOWN IN STANDARD DRAWING REGARDING 'PIPE CONNECTION DETAILS'.
13. MAXIMUM FALL ACROSS MH TO BE 150mm.

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WESTERN DOWNS REGIONAL COUNCIL

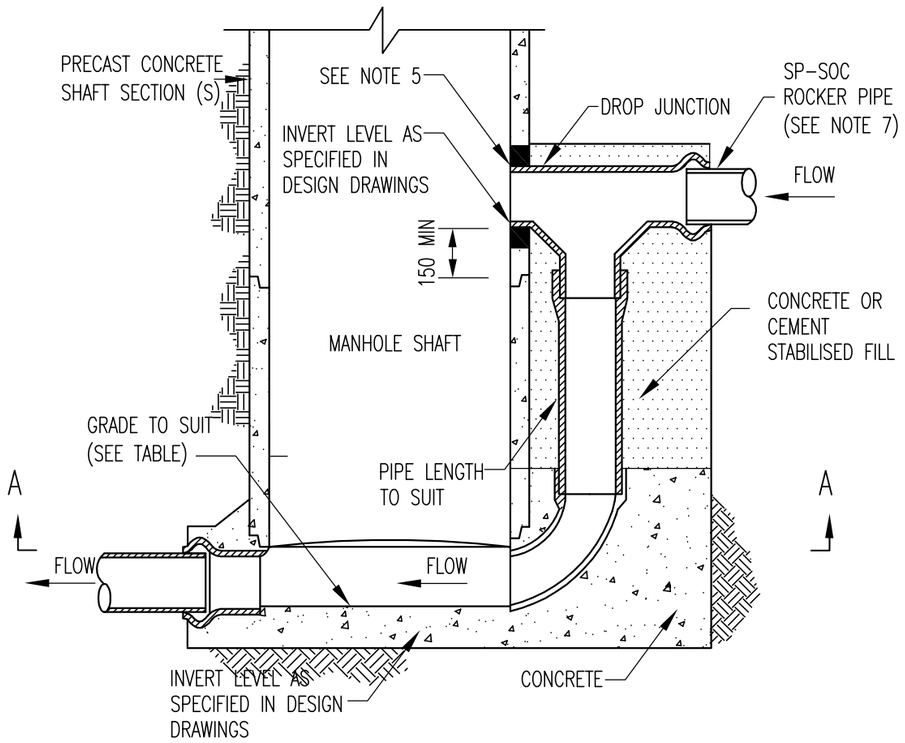
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

Auxiliary Plan No's.

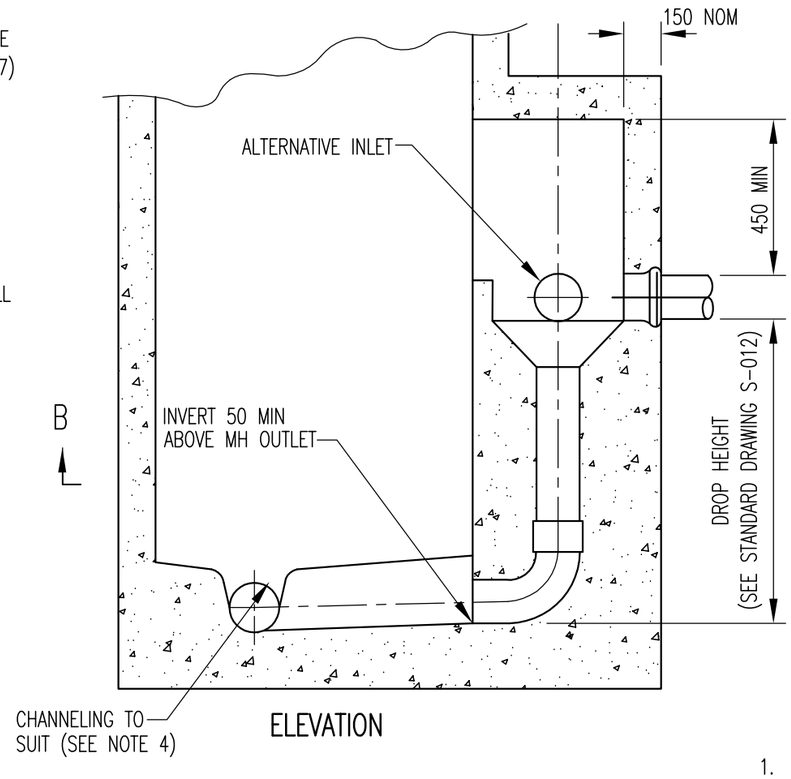
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – SEWERS < DN 300 MAINTENANCE HOLES CHANGES IN LEVEL DETAILS

Plan No. S–015 No. 15 of 29 Plans Rev. C

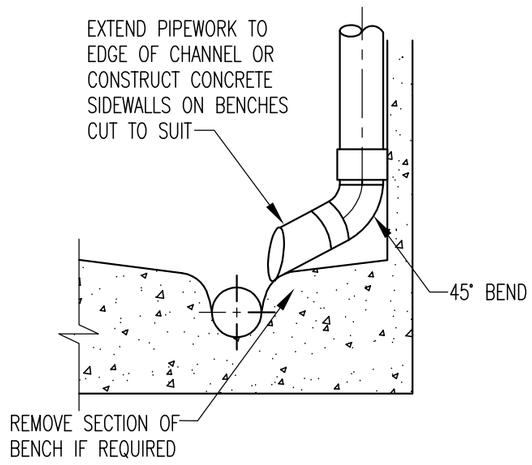
Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–015 Maintenance Holes Changes In Level Details.dwg



PRECAST MH EXTERNAL DROP JUNCTION

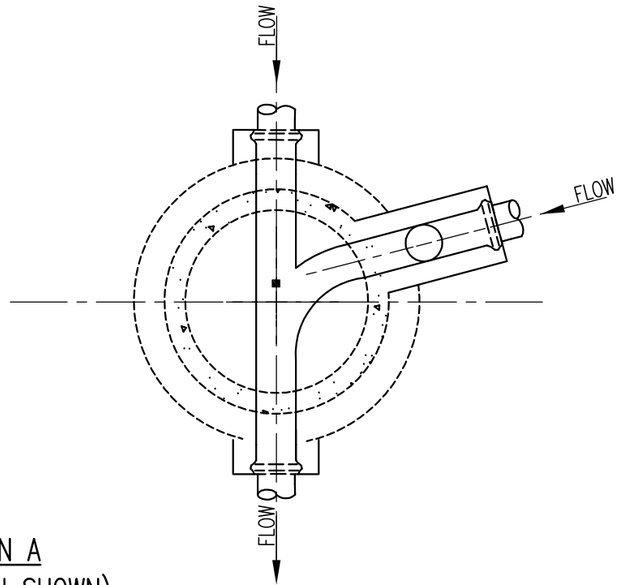


ELEVATION

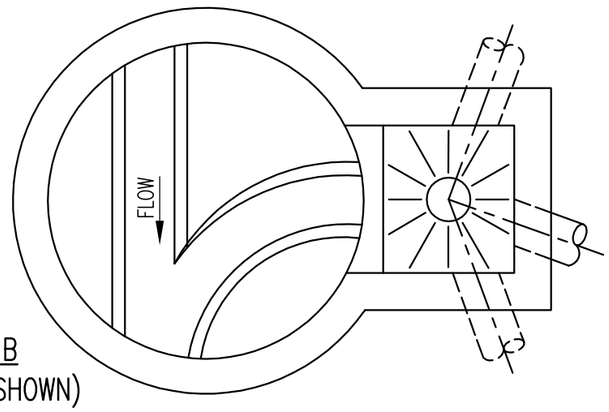


POST CONSTRUCTION INSTALLATION DETAIL

(WHERE AUTHORISED BY WDRC)



SECTION A
(PRECAST MH SHOWN)



SECTION B
(IN-SITU MH SHOWN)

TYPICAL DROP CHAMBER

TYPICAL EXTERNAL DROP

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH STANDARD DRAWINGS REGARDING DN 300 PRECAST TYPES P1 & P2 AND DN 300 IN-SITU TYPES C1 & C2.
3. FOR EXISTING PRECAST MH APPLICATIONS CORED HOLE TO BE 150 MIN ABOVE OR BELOW SHAFT SECTION JOINT.
4. DISCHARGE PIPE AND CHANNEL PLACEMENT TO DIRECT SEWAGE IN DIRECTION OF MAIN FLOW. SEE STANDARD DRAWINGS S-017 & S-018.
5. DN 1200 MH TO BE USED WHERE DROP PIPE >DN 150 OR MORE THAN TWO DN 150 INTERNAL DROPS ARE USED.
6. ALL ENTRIES ARE TO BE CORED USING A DIAMOND HOLE SAW OF THE APPROPRIATE DIAMETER.
7. THIS DRAWING APPLICABLE TO PRECAST AND IN-SITU MH.
8. ALL CONNECTION TYPES SHOWN IN THIS DRAWING ARE APPLICABLE TO PVC RUBBER RING (RRJ) UNLESS OTHERWISE SPECIFIED.
9. TO ENSURE BONDING COAT PVC PIPES CAST INTO MH WALL AND BASE WITH RESIN/SOLVENT & SAND OR ABRADE FOR THE LENGTH OF WALL PENETRATION.
10. FILL JOINT AROUND INSERT PIPE WITH AUTHORISED EPOXY OR MASTIC SEALING MATERIAL.
11. FOR DETAILS OF PIPE CONNECTION TO MH SEE STANDARD DRAWING REGARDING 'PIPE CONNECTION DETAILS'.
12. ROCKER PIPE LENGTHS AND CONNECTION SYSTEMS TO BE AS SHOWN IN STANDARD DRAWING REGARDING 'PIPE CONNECTION DETAILS'.
13. MAXIMUM FALL ACROSS MH TO BE 150mm.

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CHECKED P. Mauch
EXAMINED L. Cook
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WESTERN DOWNS REGIONAL COUNCIL

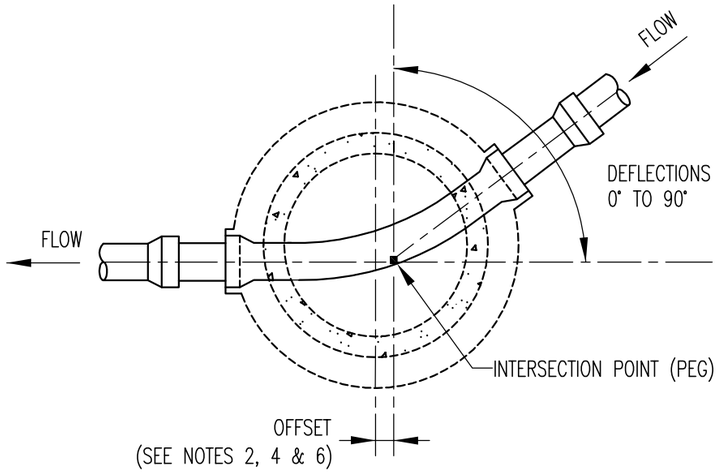
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

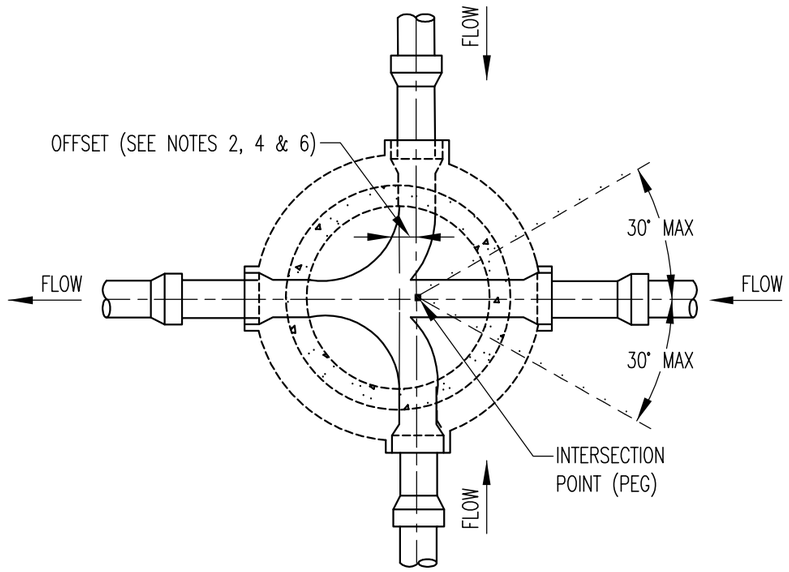
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – SEWERS < DN 300 MAINTENANCE HOLES ALTERNATIVE DROP CONNECTIONS

Plan No. S-016 No. 16 of 29 Plans Rev. B

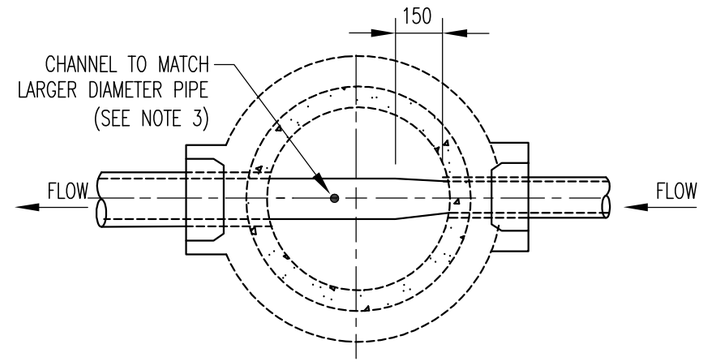
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-016 Maintenance Holes Alternative Drop Connections.dwg



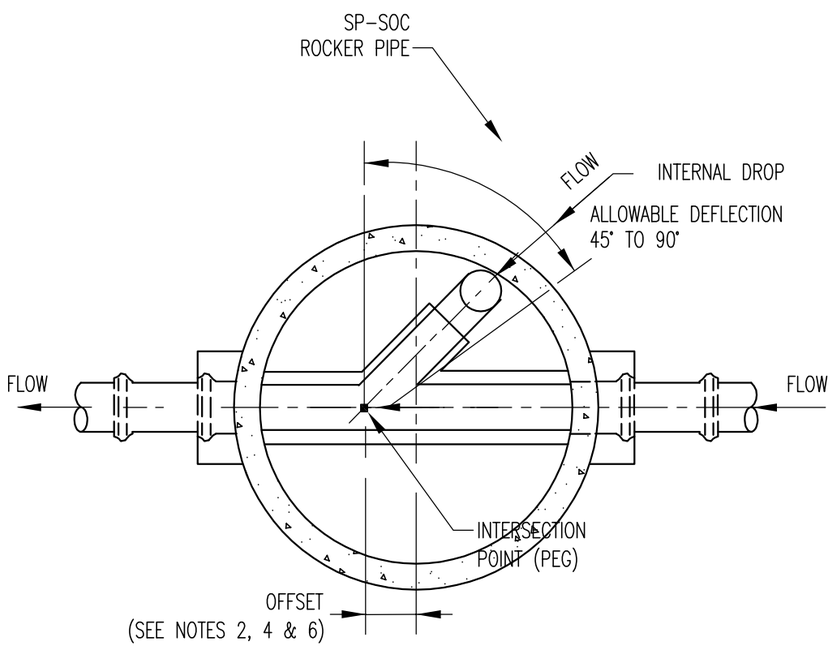
CHANGE IN DIRECTION OF SEWER

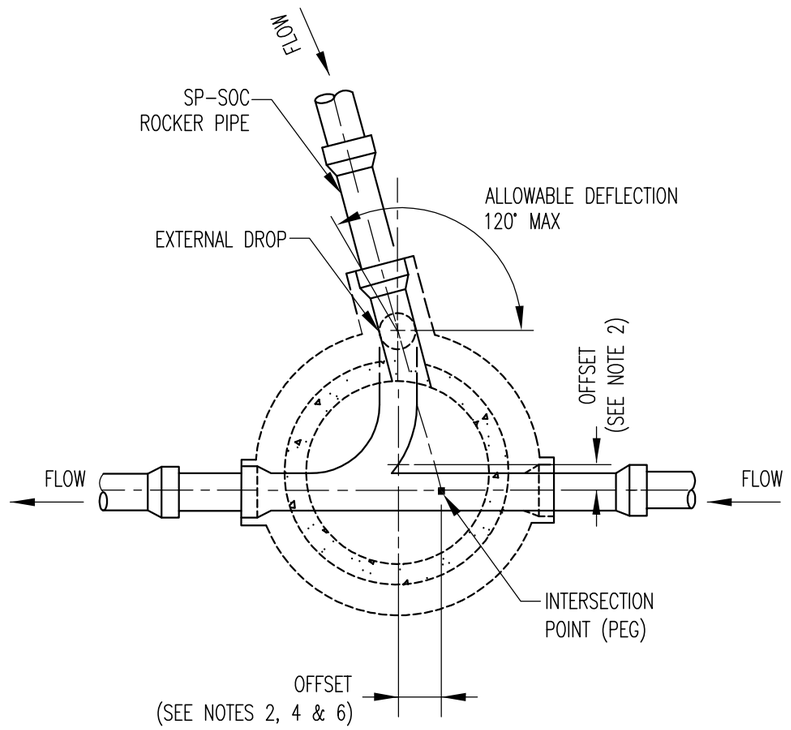


MULTIPLE INCOMING SEWERS



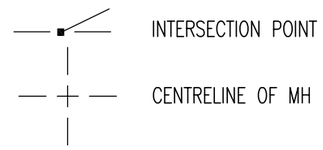
CHANGE IN DIAMETER OF SEWER





INCOMING SEWERS HAVING INTERNAL/EXTERNAL DROP

LEGEND:



NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. WHERE NECESSARY PULL MH OFF CENTRELINE OF SEWER (MAX 200) TO IMPROVE FLOW AND ACCESSIBILITY PROVIDED THE FOLLOWING CONDITIONS ARE MET:
   - ALL TANGENT POINTS TO BE CONTAINED WITHIN MH.
   - SUFFICIENT WORK AREA AVAILABLE.
   - MAINTENANCE EQUIPMENT CAN BE USED IN ALL MAINS.
   - OFFSET AS SPECIFIED
3. INVERT LEVELS TO BE AS SHOWN IN DESIGN DRAWINGS.
4. FOR CHANNEL INTERSECTION AND OFFSET DETAILS SEE STANDARD DRAWING REGARDING TYPICAL CHANNEL DETAILS.
5. FOR INLET – OUTLET ARRANGEMENTS SEE STANDARD DRAWING REGARDING TYPICAL CHANNEL DETAILS.
6. FOR SEWERS ON STEEP GRADES OR WHERE THE INTERSECTION ANGLE IS <45° USE DROP JUNCTION AS SHOWN ON STANDARD DRAWING REGARDING ALTERNATIVE DROP CONNECTIONS.

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EXAMINED L. Cook
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WESTERN DOWNS REGIONAL COUNCIL

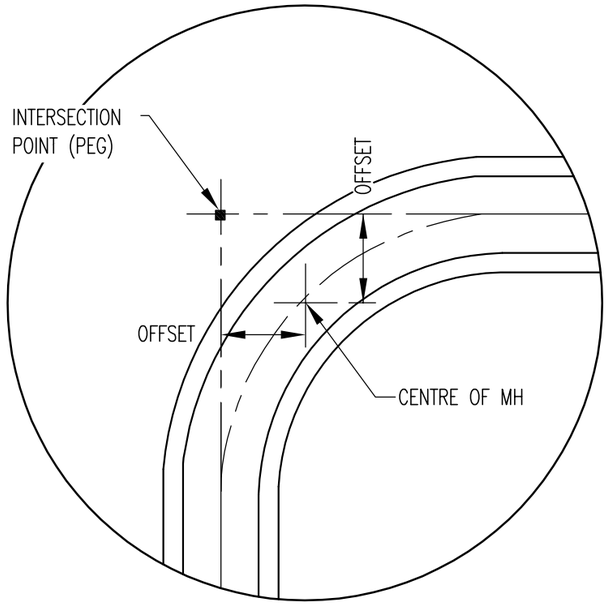
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

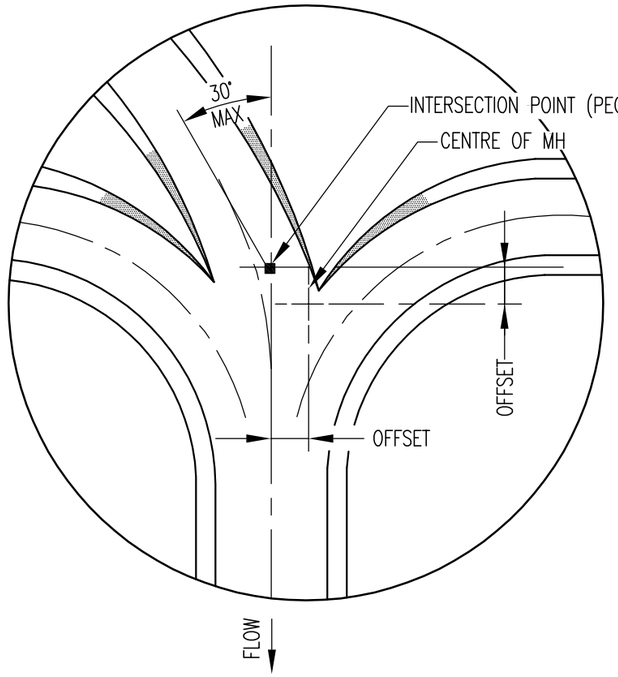
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – SEWERS < DN 300 MAINTENANCE HOLES TYPICAL CHANNEL ARRANGEMENTS

Plan No. S–017 No. 17 of 29 Plans Rev. B

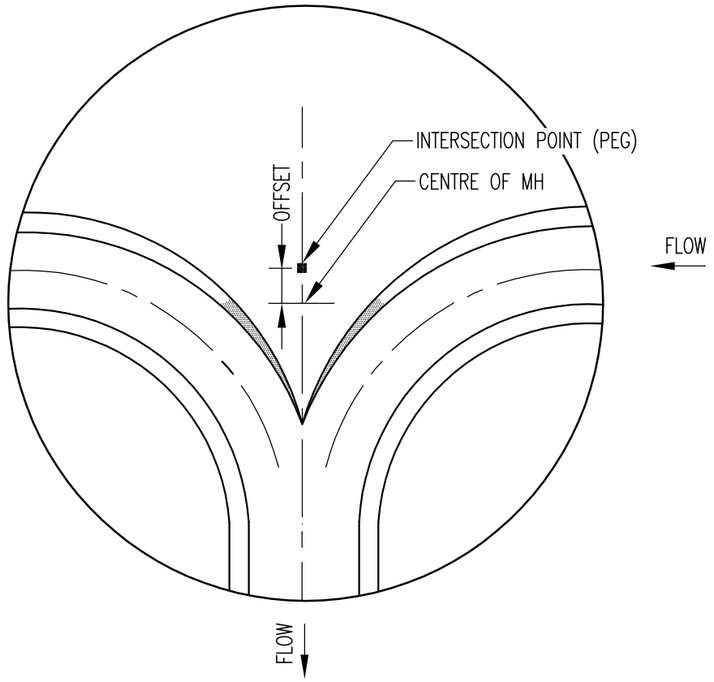
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-017 Maintenance Holes Typical Channel Arrangements.dwg



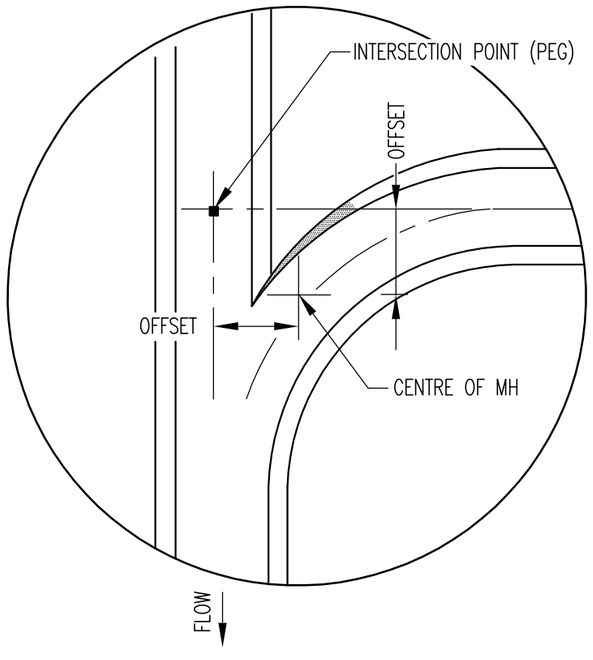
90° BEND



LARGER MAIN LINE IWTH BEND &
2 x SMALLER 90° OPPOSING INLETS



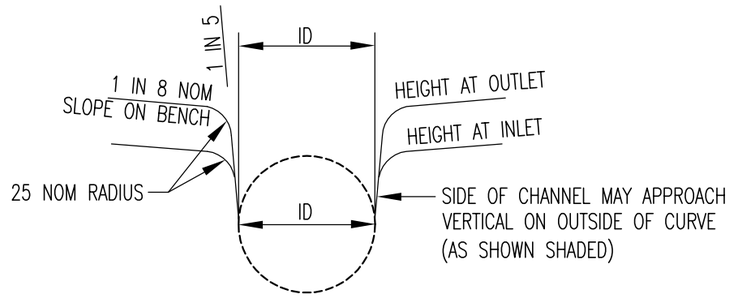
OPPOSING INLETS
90° OUTLET



STRAIGHT THROUGH & 90° INLET

LEGEND

R RADIUS
TP TANGENT POINT



TYPICAL CHANNEL DETAILS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. AREAS SHOWN ▒ INDICATE WHERE THE SIDE OF THE CHANNEL APPROACHES VERTICAL ON OUTSIDE OF CURVE.
3. CHANNELS SHOWN ARE FOR DN 150 & DN 225 PIPES IN STANDARD DN 1050 MH.
4. SHAPES ARE OPTIMUM HYDRAULICALLY, BUT MAY NOT ALLOW SOME MAINTENANCE EQUIPMENT ENTRY.
5. ACUTE ANGLE ENTRY MAY BE APPROVED BY WATER AGENCY FOR LOW FLOWS OR MAY BE ACCOMPANIED BY EXTERNAL DROP JUNCTION OR DROP CHAMBER. SEE STANDARD DRAWINGS REGARDING MAINTENANCE HOLES TYPICAL CHANNEL ARRANGEMENTS AND ALTERNATIVE DROP CONNECTIONS.

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WESTERN DOWNS REGIONAL COUNCIL

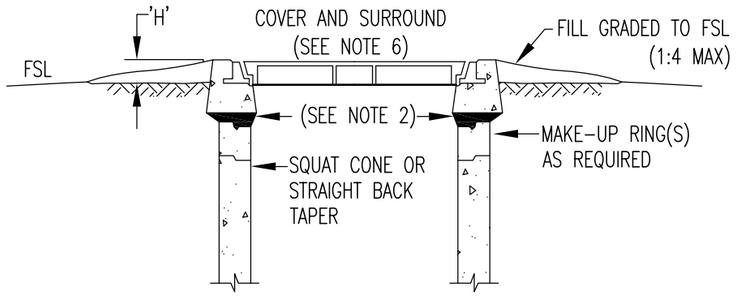
Auxiliary Plan No's.

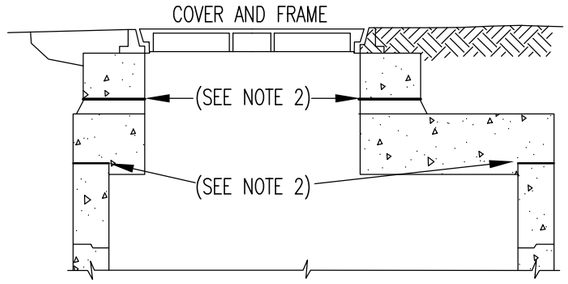
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – MAINTENANCE HOLES – TYPICAL CHANNEL DETAILS

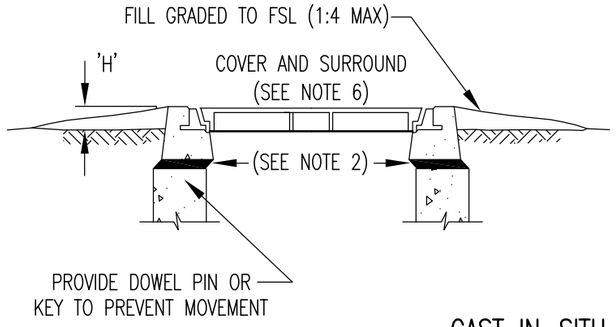
Plan No. S–018 No. 18 of 29 Plans Rev. C

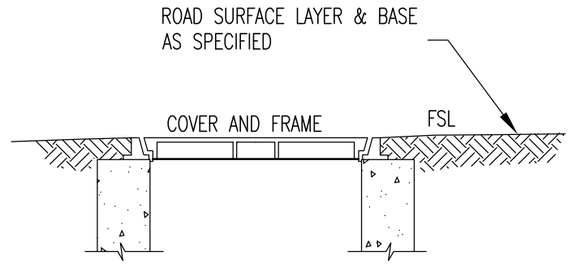
Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–018 Maintenance Holes Typical Channel Details.dwg



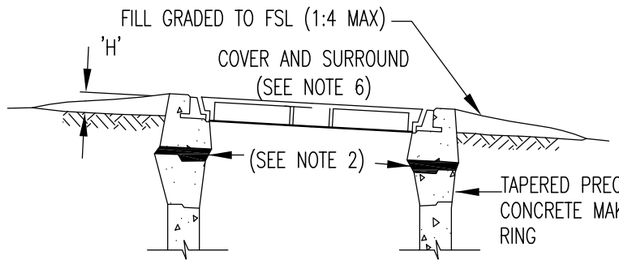


PRECAST MAINTENANCE HOLES





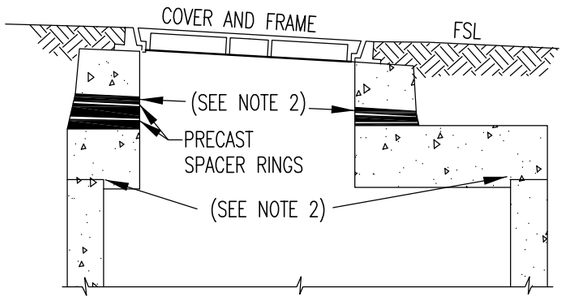
CAST IN-SITU MAINTENANCE HOLES



SLOPING GROUND
(SEE NOTE 5)

NON TRAFFICABLE AREAS

FINISHED LEVELS OF MH COVERS	
LOCATION	H
UNDEVELOPED AREAS	100
NEW SUBDIVISIONS	75
ROADS, LANE WAYS, FOOTPATHS & DRIVEWAYS	FLUSH
EXISTING BUILT UP AREAS	25
OTHER AS SPECIFIED (EG. ABOVE FLOOD LEVEL)	



TRAFFICABLE AREAS

SELECTION OF MH COVERS	
ALL COVERS TO BE WATER TIGHT (SEE NOTE 7)	
LOCATION	CLASS
RESERVES	D – TRAFFICABLE
ROADWAYS	D – TRAFFICABLE
LOCATIONS SUBJECT TO FLOODING ETC.	D – TRAFFICABLE WITH BOLT-DOWN (SEE NOTE 3)

NOTES
1. ALL DIMENSIONS IN MILLIMETRES.
2. SEALING METHODS
   a. MAKE JOINTS BETWEEN SHAFT TOP/MAKE-UP RING AND COVER SUPPORT RING USING
      – BUTYL-MASTIC, OR
      – MORTAR MADE FROM 3 PARTS SAND TO 1 PART CEMENT
   b. APPLY BUTYL-MASTIC IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION.
   c. THICKNESS OF CEMENT MORTAR AT ANY JOINT TO BE NO GREATER THAN 50.
   d. SCABBLE AND CLEAN JOINT SURFACES SO THAT ALL LOOSE OR SOFT MATERIAL IS REMOVED.
   e. JOINT SURFACES TO BE BRUSHED CLEAN, SPONGED WET AND PRIMED WITH A CEMENT/WATER SLURRY PRIOR TO PLACING THE CEMENT MORTAR.
3. IN AREAS SUBJECT TO SURCHARGE, USE CAST IN-SITU MH DOWEL OR BOLT COVER SLABS, DI COVER AND FRAME TO THE SHAFT SECTION IN SUCH A MANNER THAT SEPARATION DURING THE SURCHARGE IS PREVENTED. SEE STANDARD DRAWING REGARDING SEWERS < DN 300 PRECAST TYPES P1 & P2.
4. WHERE SPECIFIED JOIN METAL FRAME TO CAST IN-SITU MH RISER AS FOLLOWS:
   a. MAKE JOINTS BETWEEN SHAFT TOP AND METAL FRAME USING BUTYL-MASTIC AND LOCKING DOWN BOLTS, EQUALLY PLACED AROUND THE CIRCUMFERENCE.
   b. USE 12 DIAMETER GALVANISED OR STAINLESS STEEL BOLTS EXTENDING 75 MIN INTO CONCRETE
   c. USE A MINIMUM OF FOUR BOLTS.
5. MAXIMUM PERMISSIBLE SLOPE OF COVERS:
   NON TRAFFICABLE AREAS : 1 IN 4
   TRAFFICABLE AREAS : 1 IN 10
6. CLASS "D" COVERS ARE REQUIRED.
7. WHERE SPECIFIED USE GAS TIGHT COVERS.

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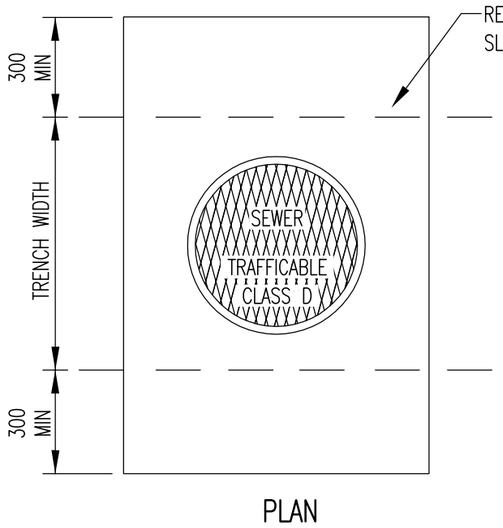
Vert. Section Scale: NTS on A3

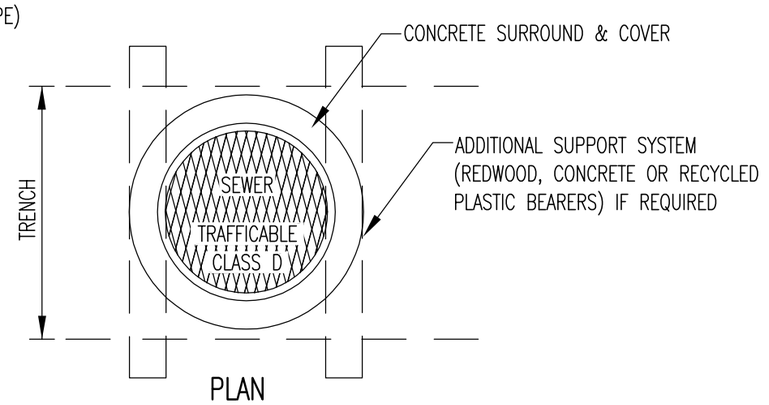
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – MAINTENANCE HOLES – TYPICAL MANHOLE COVER ARRANGEMENTS

Plan No. S–019 No. 19 of 29 Plans Rev. C

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-019 Maintenance Holes Typical Manhole Cover Arrangements.dwg

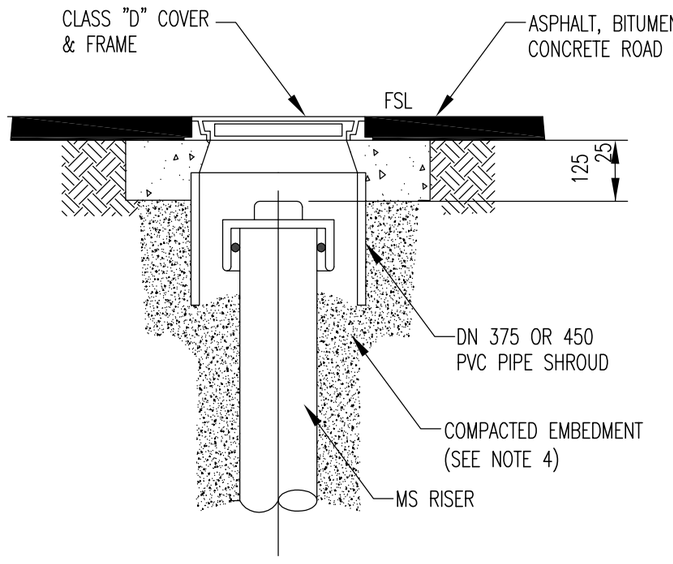


PLAN



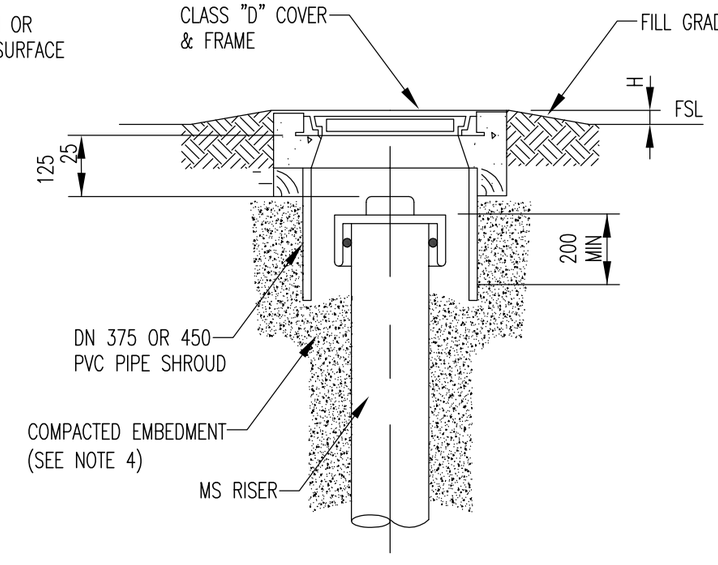
PLAN

FINISHED LEVELS OF MH COVERS	
LOCATION	H
UNDEVELOPED AREAS	100
NEW SUBDIVISIONS	75
ROADS, LANE WAYS, FOOTPATHS & DRIVEWAYS	FLUSH
EXISTING BUILT UP AREAS	25



ELEVATION

TRAFFICABLE AREAS
(CLASS D)



ELEVATION

NON TRAFFICABLE AREAS
(CLASS D)

NOTES
1. ALL DIMENSIONS IN MILLIMETRES.
2. COVER PLACEMENT:
   - CLASS "D" COVERS FOR ALL AREAS.
3. COVERS AND MEANS OF SUPPORT TO BE AS AUTHORISED BY THE WATER AGENCY.
4. COMPACT BACKFILL UNDER ACCESS COVER CONCRETE SUPPORT SLABS AND SURROUNDS IN ACCORDANCE WITH DESIGN DRAWINGS.

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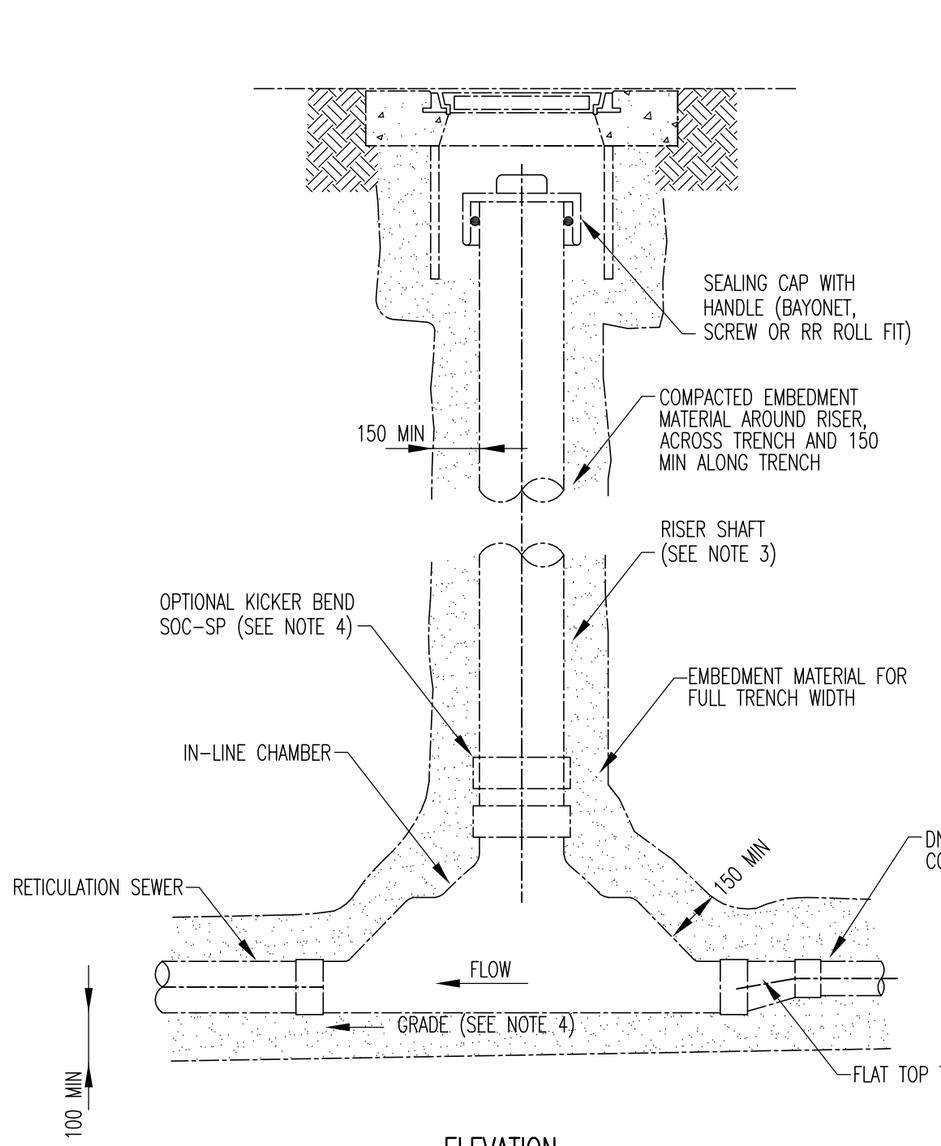
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – MAINTENANCE SHAFT – TYPICAL COVER ARRANGEMENTS

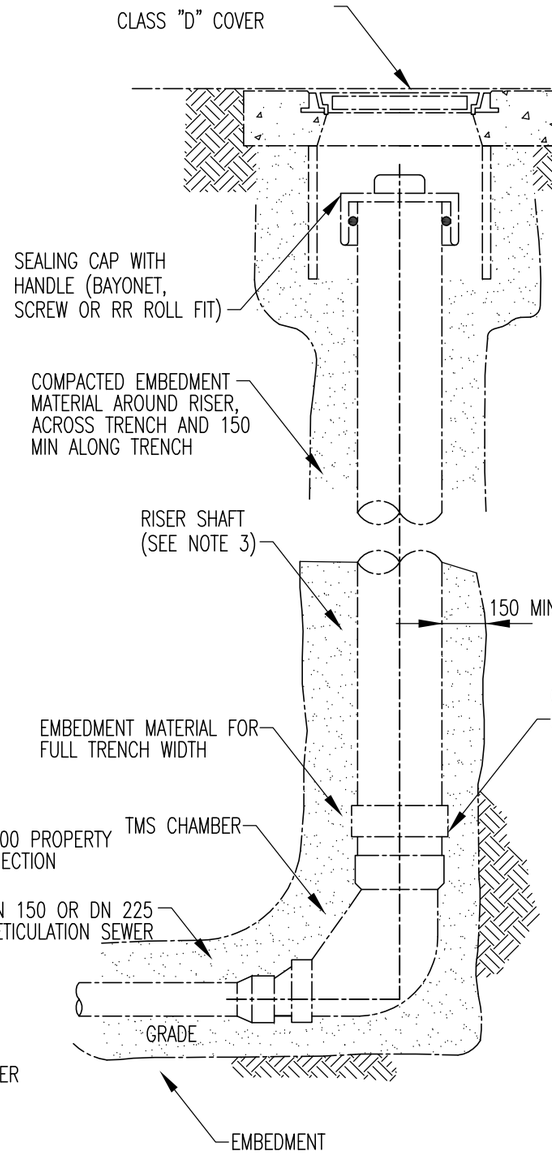
Plan No. S–020 No. 20 of 29 Plans Rev. B

Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–020 Maintenance Shaft Typical Cover Arrangements.dwg



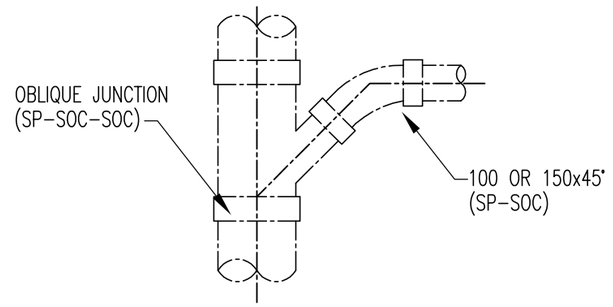
ELEVATION

TERMINAL MAINTENANCE SHAFT WITH PROPERTY CONNECTION AHEAD

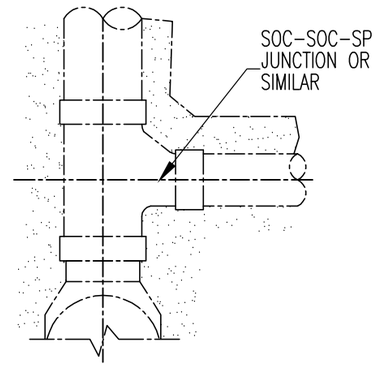


ELEVATION

TERMINAL MAINTENANCE SHAFT



TYPICAL PROPERTY CONNECTIONS
(POSITION IN RISER AS SPECIFED)



DN150 RETICULATION INLETS
(POSITION IN RISER AS SPECIFED)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. ALL CONNECTION TYPES SHOWN ARE APPLICABLE TO VC, PVC (SOLVENT WELD) AND PVC (RUBBER RING) PIPES UNLESS OTHERWISE SHOWN.
3. INSTALL BRANCH CONNECTIONS AND PROPERTY CONNECTIONS (AS SHOWN ABOVE) IN RISER SHAFT (DROP JUNCTIONS) WHERE SHOWN IN DESIGN DRAWINGS. MAXIMUM OF 1 RETICULATION INLET OR 2 PROPERTY CONNECTIONS.
4. ADJUST MS TO PIPE GRADE BY TILTING CHAMBER MAX DEVIATION FROM VERTICAL OF THE RISER TO BE 1:10 OR A MAXIMUM OF 300 AT SURFACE. USE KICKER BEND IF REQUIRED TO ADJUST RISER TO VERTICAL.
5. BEDDING AND SIDE SUPPORT TO BE SAND SURROUND OR APPROVED MATERIAL 0-5mm WITH 95% STANDARD COMPACTION.

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WESTERN DOWNS REGIONAL COUNCIL

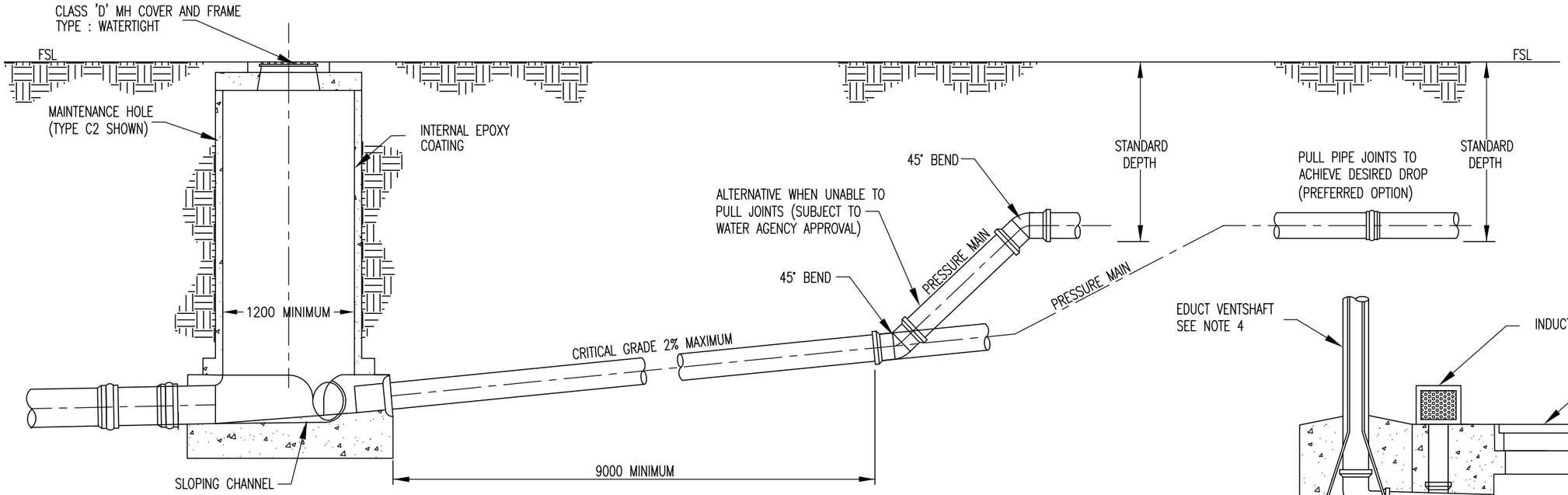
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

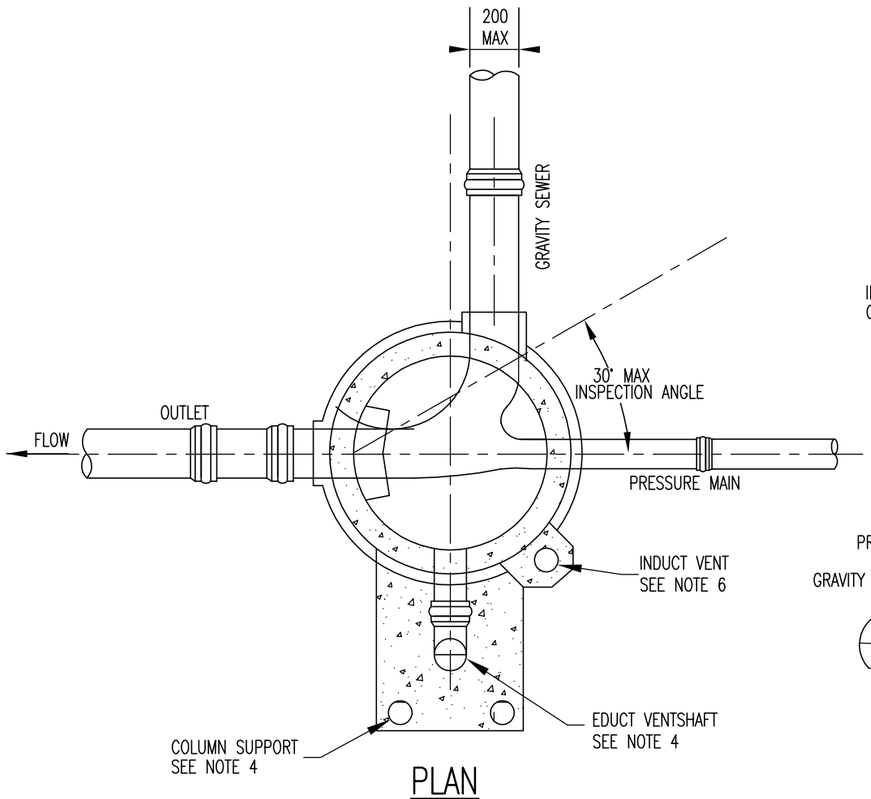
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES MAINTENANCE SHAFTS – TMS AND CONNECTION DETAILS

Plan No. S–021 | No. 21 of 29 Plans | Rev. C

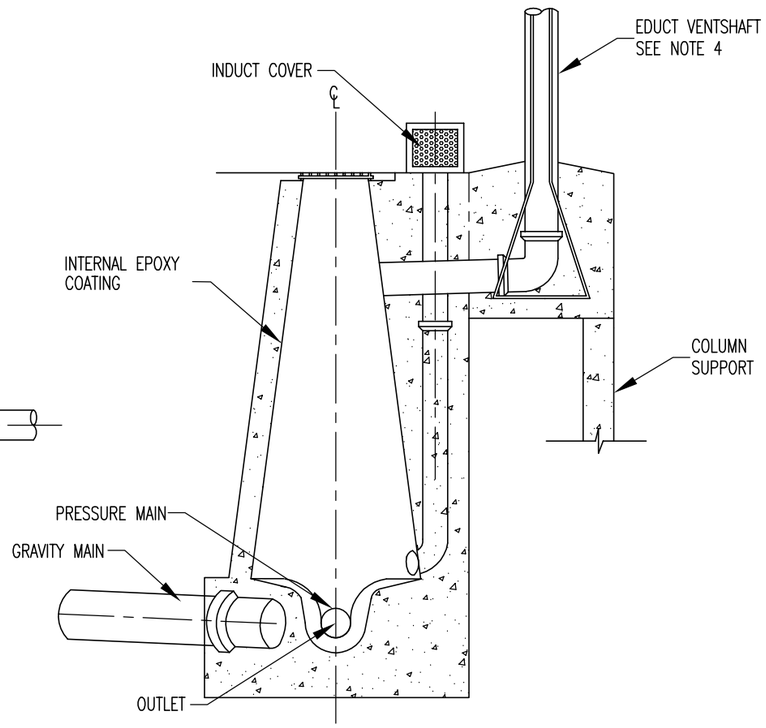
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-021 Maintenance Shaft Terminal Maintenance Shaft.dwg



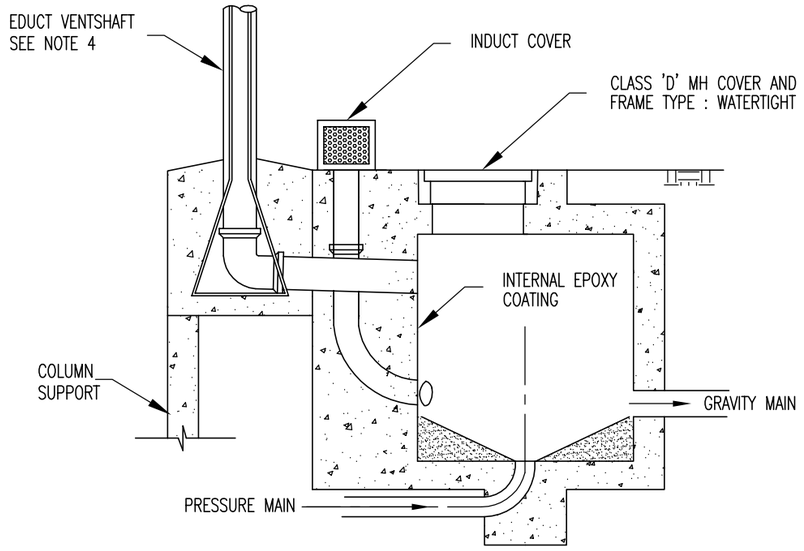
TYPICAL DETAIL OF PRESSURE MAIN CONNECTION INTO MAINTENANCE HOLE



PLAN



END ELEVATION



ALTERNATIVE MAINTENANCE HOLE ARRANGEMENT FOR NON – TURBULENT CONDITIONS

(SEE NOTE 7)

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH OTHER WDRC STANDARD DRAWINGS.
3. THIS DRAWING SHOWS TYPICAL ARRANGEMENT ONLY OF MAINTENANCE HOLES WITH RISING MAINS. REFER TO DESIGN PLANS FOR SURVEY DETAILS.
4. EDUCT VENTSHAFT. LOCATION, HEIGHT, DIMENSIONS AND STRUCTURAL SUPPORT OF BASE BLOCK SHALL BE AS SPECIFIED ON THE DESIGN PLANS.
5. MAINTENANCE HOLE BASE SHALL BE CONSTRUCTED TO MINIMISE TURBULANCE CREATED BY A RAPID FLOW OF SEWAGE. SLOPING FLOW CHANNEL IS A MINIMUM REQUIREMENT.
6. INDUCT VENT. DETAILS OF CONCRETE SURROUND SHALL BE AS SPECIFIED ON THE DESIGN PLANS. INDUCT VENT SHALL BE FIXED TO REDUCING BUSH WITH ADHESIVE SEALANT.
7. NON–TURBULENT MAINTENANCE HOLE ARRANGEMENTS ARE TO BE USED AS DIRECTED BY WDRC

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CHECKED P. Mauch
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WESTERN DOWNS REGIONAL COUNCIL

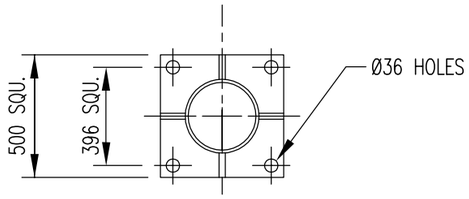
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

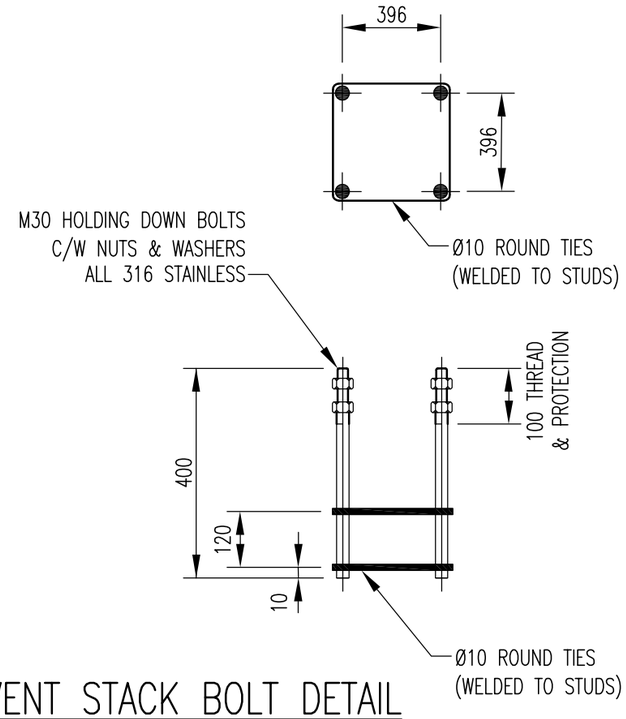
STANDARD DRAWING – SEWERAGE ACCESS STRUCTURES – MAINTENANCE HOLES – PRESSURE MAIN ARRANGEMENTS

Plan No. S–022 | No. 22 of 29 Plans | Rev. B

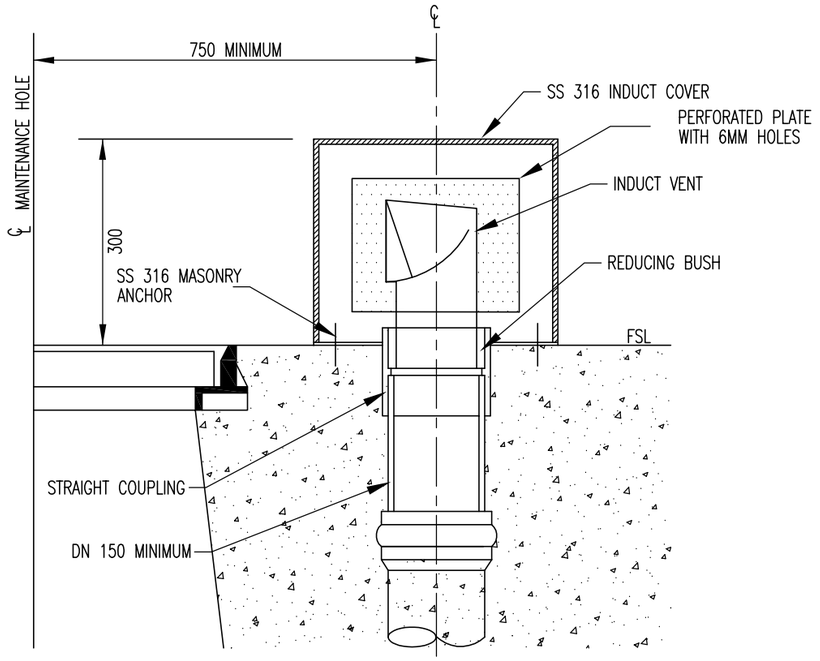
Computer Location S:\Engineering Services\Design\Standard Drawings\S–Sewerage\S–022 Maintenance Holes Pressure Main Arrongements.dwg



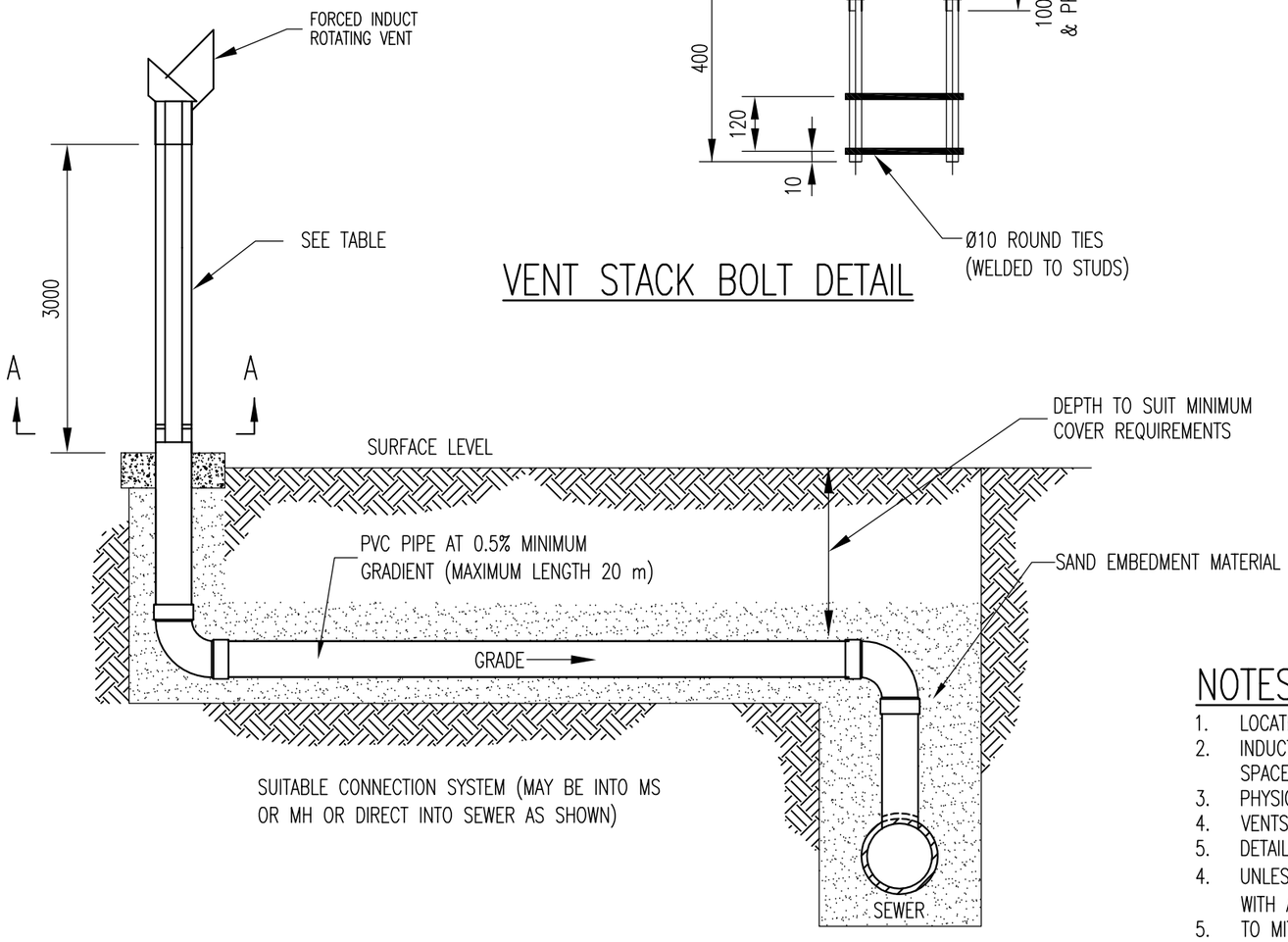
SECTION A



VENT STACK BOLT DETAIL



GROUND LEVEL INDUCT VENT



ELEVATED INDUCT VENT

HEIGHT 'H' (m)	TOP Ø 'A'	BOTTOM Ø 'B'	WALL THICKNESS	GUSSETS		
				'W'	'Y'	'X'
3–6	150	225	4	NOT REQ'D.		
	225	300				
	300	375				

NOTES :

1. LOCATE INDUCT AND EDUCT VENTS AS SPECIFIED IN DESIGN DRAWINGS.
2. INDUCT VENTS SHOULD GENERALLY BE LOCATED ON DISCHARGE MANHOLES AND ON >300MM GRAVITY MAINS UNEVENLY SPACED BETWEEN 300M – 600M FROM UPSTREAM EDUCTS AND 600M – 1200M FROM DOWNSTREAM EDUCTS
3. PHYSICAL POSITION AND SIZE TO BE IN ACCORDANCE WITH WDRC REQUIREMENTS.
4. VENTS TO BE SUITABLE FOR INSTALLED LOCATION.
5. DETAILS OF CONCRETE SURROUND SHALL BE SPECIFIED ON THE DESIGN PLANS.
4. UNLESS SPECIFIED OTHERWISE DESIGN VENT STACKS FOR WIND LOADING TO AS 1170.2 FOR REGION 'A' CATEGORY 1 WITH A TOPOGRAPHICAL MULTIPLIER (M) OF 1.0.
5. TO MITIGATE CORROSION OF METAL VENT STACKS, AN INTERNAL LINING OF PVC VENT PIPE TO EXTEND UP THROUGH THE VENT STACK TO THE TOP OF THE VENT STACK AND SHOULD PROTRUDE 50 ABOVE TOP OF STACK. FILL ANNULUS AT TOP OF STACK WITH AN ALL WEATHER SEALANT AND PROVIDE A DRAINAGE POINT AT THE BASE.
6. GROUND LEVEL INDUCT VENT SHALL BE FIXED TO REDUCING BUSH WITH ADHESIVE SEALANT.
7. ELEVATED INDUCT VENT OPENING IS TO BE A MINIMUM 1 METRE BELOW EDUCT VENT

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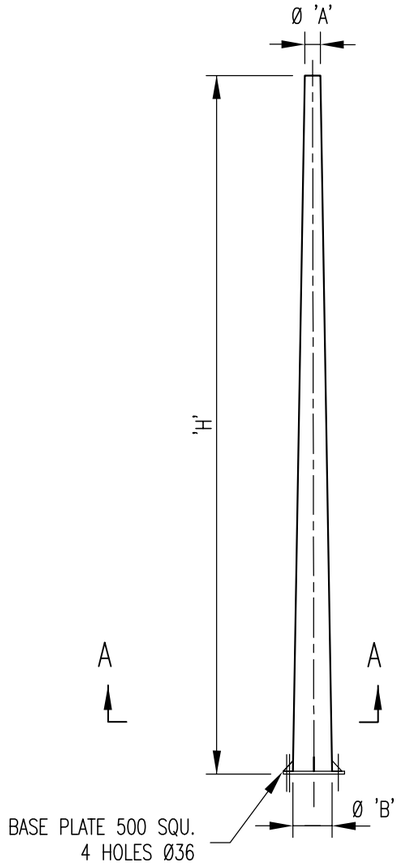
WESTERN DOWNS REGIONAL COUNCIL

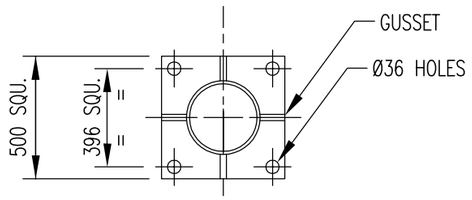
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE STRUCTURES ARRANGEMENTS – VENTILATION SYSTEMS – INDUCT VENTS

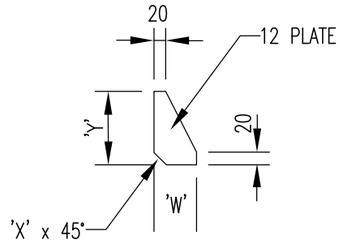
Plan No. S–023 | No. 23 of 29 Plans | Rev. D

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-023 Ventilation Systems Induct Vents.dwg

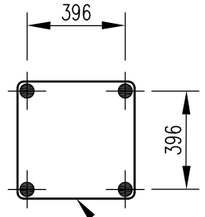


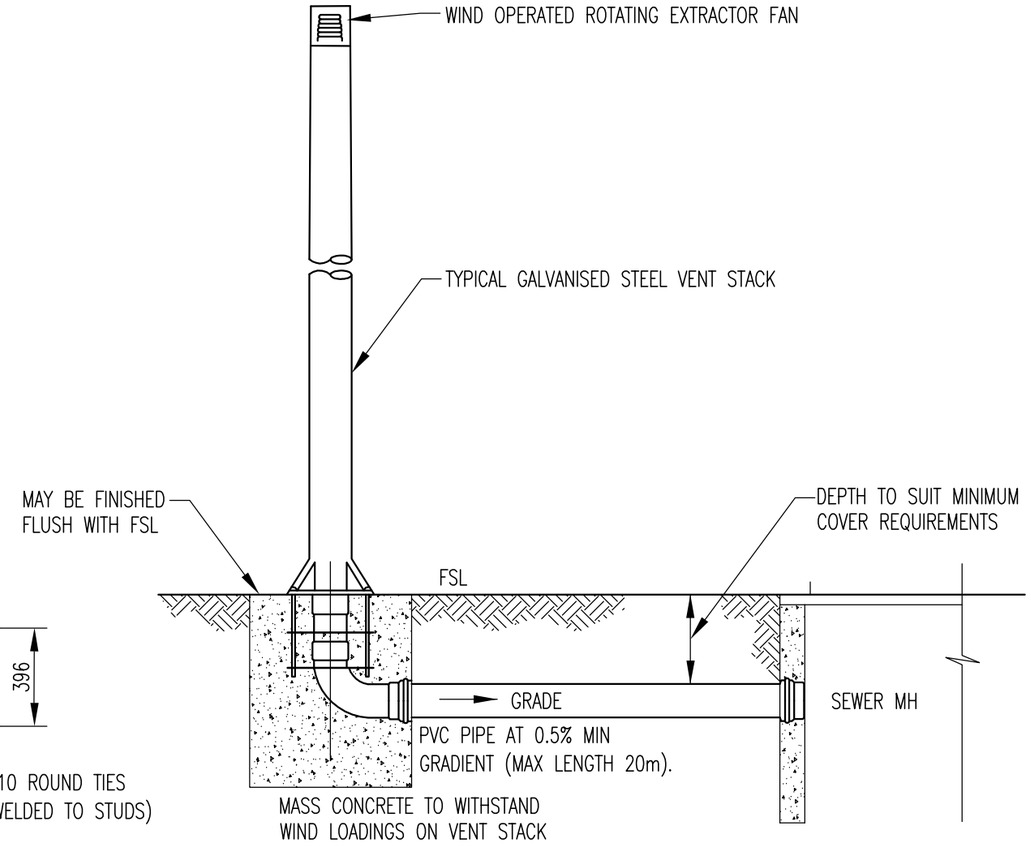


SECTION A



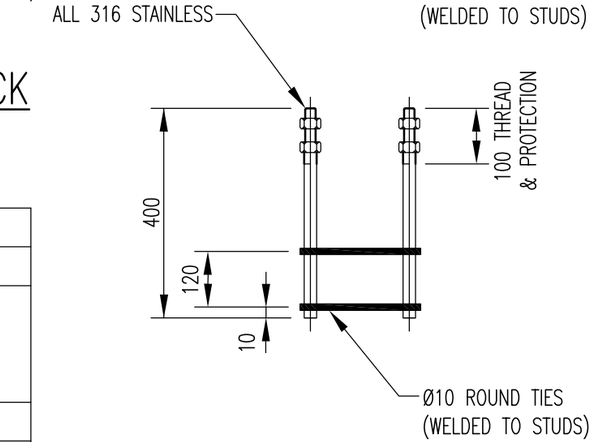
GUSSET DETAIL





TYPICAL GALVANISED STEEL VENT STACK
ELEVATION

HEIGHT 'H' (m)	TOP Ø 'A'	BOTTOM Ø 'B'	WALL THICKNESS	GUSSETS		
				'W'	'Y'	'X'
6	150	225	4	NOT REQ'D.		
	225	300				
	300	375				
9	150	262	6	110	175	20
	225	337	5	70	120	20
	300	412	4	35	120	10
11.85	150	298	9	90	120	20
	225	373	7	55	120	20
	300	412	7	35	120	10



VENT STACK BOLT DETAIL

TYPICAL EDUCT VENT ARRANGEMENTS

NOTES :

1. ALL DIMENSIONS IN MILLIMETRES.
2. EDUCT VENTS SHOULD GENERALLY BE LOCATED ON PUMP STATIONS, DISCHARGE MANHOLES AND ON >300MM GRAVITY MAINS UNEVENLY SPACED BETWEEN 600M – 1200M FROM UPSTREAM INDUCTS AND 300M – 600M FROM DOWNSTREAM INDUCTS
3. SPECIFY LOCATIONS OF EDUCT VENTS IN DESIGN DRAWINGS.
4. PHYSICAL POSITION AND SIZE TO BE IN ACCORDANCE WITH WATER AGENCY REQUIREMENTS.
5. UNLESS SPECIFIED OTHERWISE DESIGN VENT STACKS FOR WIND LOADING TO AS 1170.2 FOR REGION 'A' CATEGORY 1 WITH A TOPOGRAPHICAL MULTIPLIER (M) OF 1.0.
6. TO MITIGATE CORROSION OF METAL VENT STACKS, AN INTERNAL LINING OF PVC VENT PIPE TO EXTEND UP THROUGH THE VENT STACK TO THE TOP OF THE VENT STACK AND SHOULD PROTRUDE 50 ABOVE TOP OF STACK. FILL ANNULUS AT TOP OF STACK WITH AN ALL WEATHER SEALANT AND PROVIDE A DRAINAGE POINT AT THE BASE.
7. VENT STACK IS TO BE FITTED WITH A WIND OPERATED ROTATING EXTRACTOR FAN.

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WESTERN DOWNS REGIONAL COUNCIL

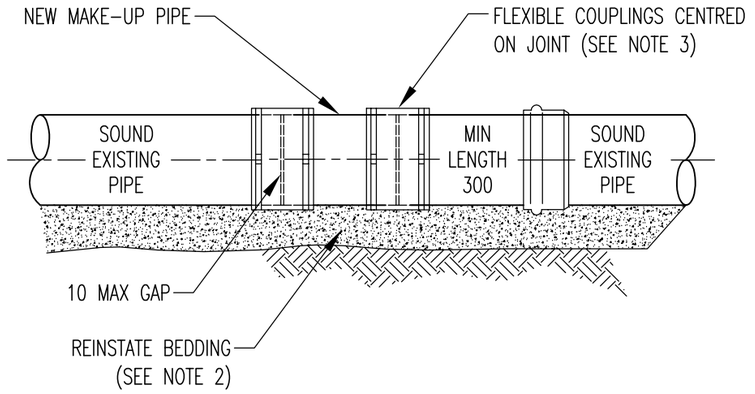
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

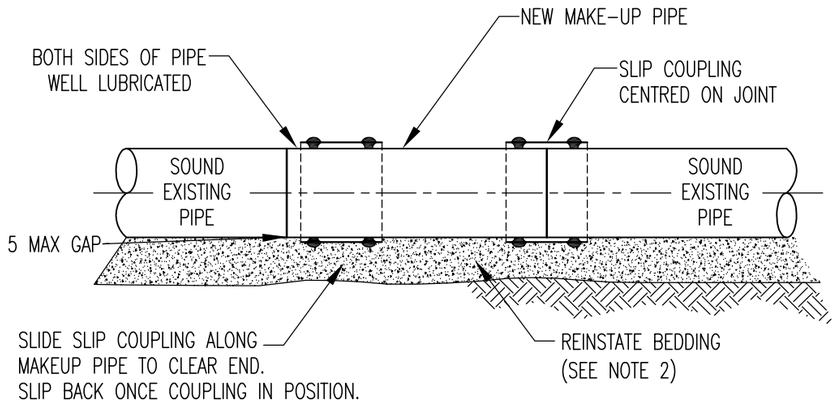
STANDARD DRAWING – SEWERAGE STRUCTURE ARRANGEMENTS – VENTILATION SYSTEMS – EDUCT VENTS

Plan No. S–024 | No. 24 of 29 Plans | Rev. C

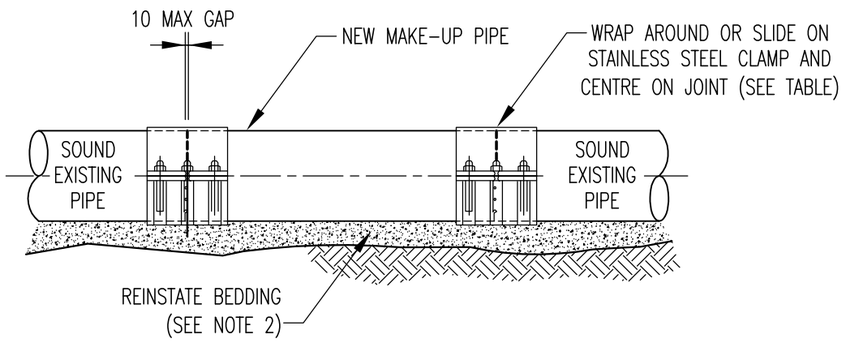
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-024 Ventilation Systems Educt Vents.dwg



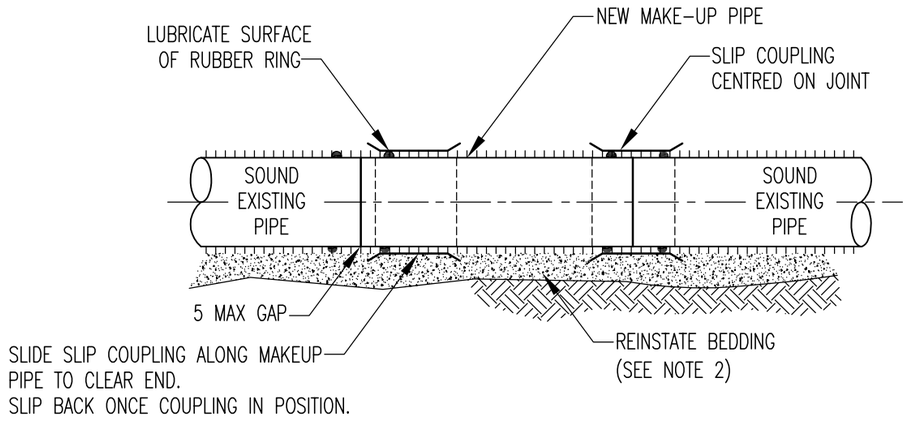
FLEXIBLE COUPLING METHOD
(SEE NOTE 6)



SLIP COUPLING METHOD PLAIN PIPE



STAINLESS STEEL REPAIR CLAMP METHOD
(SEE NOTE 6)



SLIP COUPLING METHOD RIBBED PIPE

NOTES
1. ALL DIMENSIONS IN MILLIMETRES.
2. PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED PIPE SECTIONS AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
3. FLEXIBLE COUPLINGS TO HAVE GRADE 316 SS CLAMPS & SHEAR BANDS AND BE IN ACCORDANCE WITH AS 4327.
4. SLIPS COUPLINGS TO BE AS SPECIFIED BY PIPE MANUFACTURER OR WDRC.
5. A SINGLE REPAIR CLAMP MAY BE USED FOR REPAIR WHERE APPROVED BY THE WDRC, MINIMUM CLAMP LENGTH EITHER SIDE OF THE DAMAGE TO BE SHOWN ON THE TABLE.
6. FLEXIBLE COUPLINGS AND STAILESS REPAIR CLAMPS ARE NOT APPLICABLE TO RIBBED PIPE.
7. THOROUGHLY CLEAN SURFACE OR EXISTING PIPE BEFORE INSTALLING CLAMPS OR COUPLINGS.

SS WRAP AROUND CLAMPS	
DN	MIN CLAMP LENGTH EITHER SIDE OF PIPE CUT OR DAMAGE
100 – <200	75
>200 – <300	100
>300 – 600	150

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WESTERN DOWNS REGIONAL COUNCIL

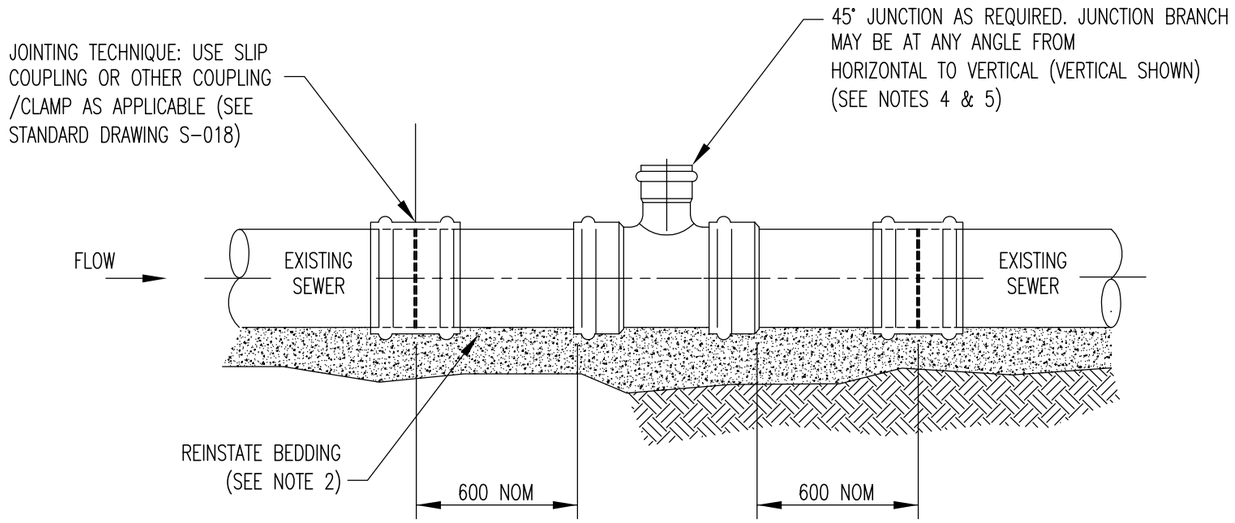
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

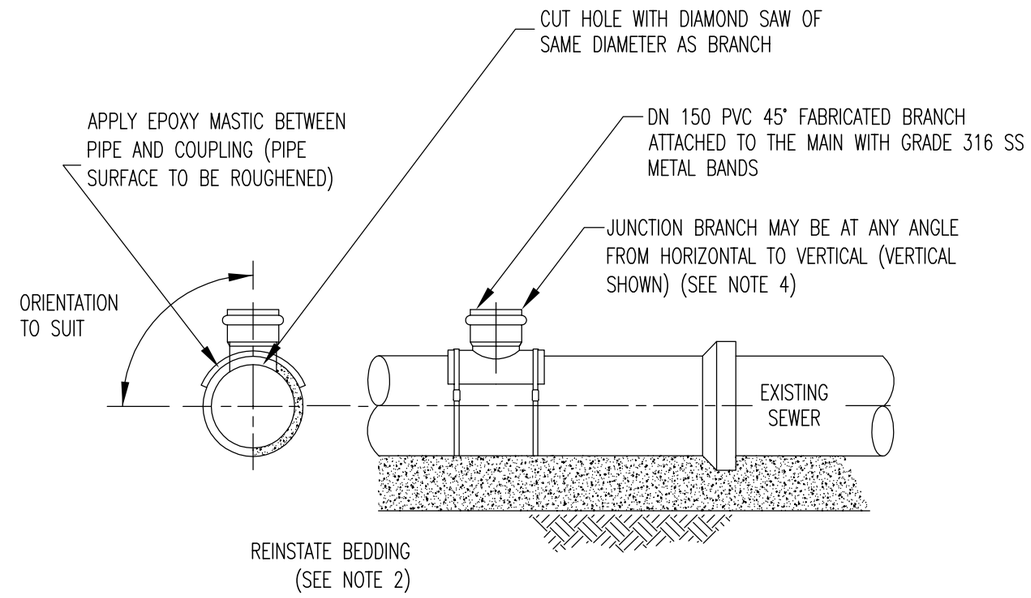
STANDARD DRAWING – SEWERAGE CONNECTIONS TO EXISTING SYSTEMS CUT–IN METHODS

Plan No. S–025 No. 25 of 29 Plans Rev. B

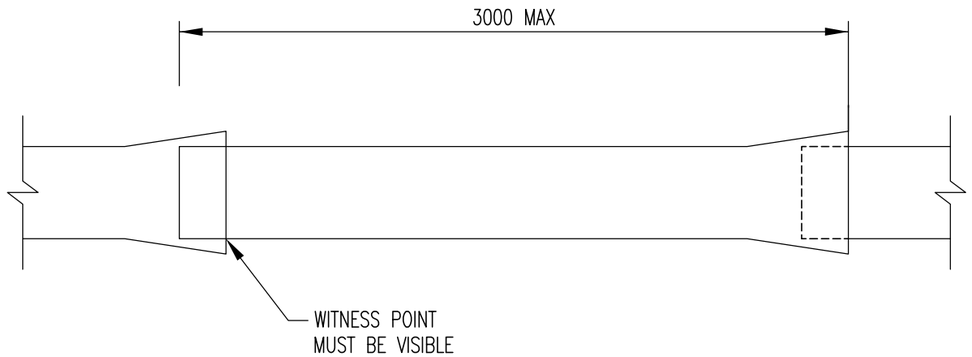
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-025 Connections to Existing Cut In Methods.dwg



INSERTION OF JUNCTION INTO EXISTING SEWER



CONNECTION OF PVC SADDLE TO EXISTING SEWER
(SEE NOTE 6)



TYPICAL PVC-RRJ JOINT

CLAMP-ON BRANCH INSTALLATION PROCEDURE

A. PLACE CLAMP-ON BRANCH ON PIPE AND MARK THE INSIDE SHAPE OF THE JUNCTION BRANCH ON MAIN PIPE.
A. REMOVE CLAMP AND CUT HOLE USING APPROPRIATE TYPE OF SAW.
C. ALIGN JUNCTION BRANCH WITH CUT HOLE.
POSITION CLAMPS AND TIGHTEN TO REQUIRED TORQUE.

NOTES
1. ALL DIMENSIONS IN MILLIMETRES.
2. PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED PIPE SECTIONS AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
3. ENSURE MINIMUM GRADE REQUIREMENTS ARE MET WHEN BRANCH LAID HORIZONTAL.
4. WHERE AVAILABLE A SP-SP JUNCTION MAY BE INSERTED DIRECTLY INTO EXISTING SEWER AND COUPLED USING ANY OF THE CUT-IN METHODS SHOWN IN STANDARD DRAWING S-019.
5. USE OF PVC SADDLE REQUIRES WATER AGENCY APPROVAL.
6. THOROUGHLY CLEAN SURFACES OF EXISTING PIPES BEFORE CONNECTING CLAMPS OR COUPLINGS.

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WESTERN DOWNS REGIONAL COUNCIL

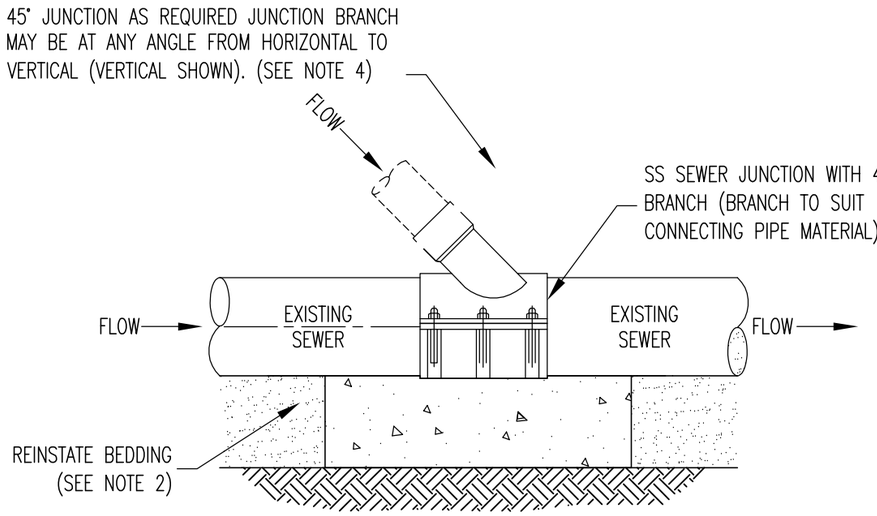
Auxiliary Plan No's.

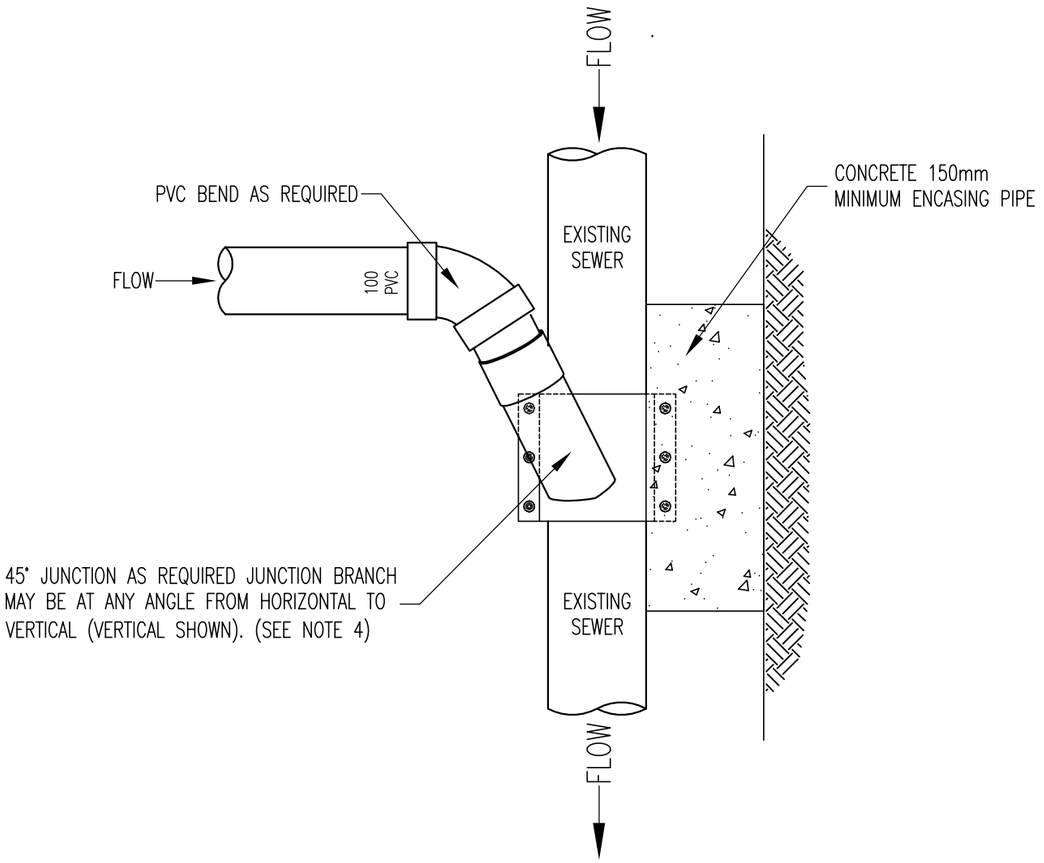
Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE CONNECTIONS TO EXISTING SYSTEMS INSERTION OF JUNCTIONS PVC

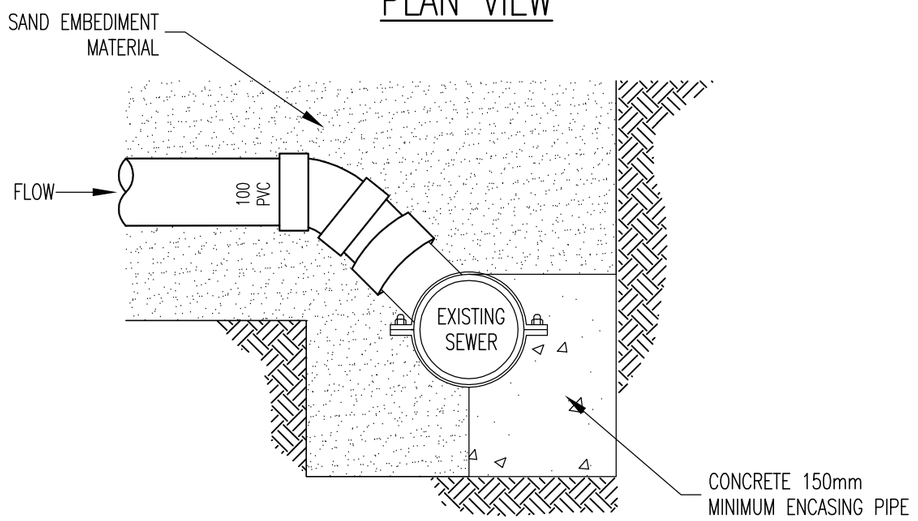
Plan No. S-026 | No. 26 of 29 Plans | Rev. B

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-026 Connections to Existing Insertion of Junctions PVC.dwg





PLAN VIEW



END VIEW

NOTES :

1. ALL DIMENSIONS IN MILLIMETRES.
2. PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED PIPE SECTIONS AND SPACERS AND COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
3. ENSURE MINIMUM GRADE REQUIREMENTS ARE MET WHEN BRANCH LAID HORIZONTAL.
4. WHERE AVAILABLE A SP–SP JUNCTION MAY BE INSERTED DIRECTLY INTO EXISTING SEWER AND COUPLED USING ANY OF THE CUT–IN METHODS SHOWN IN STANDARD DRAWING REGARDING CUT–IN METHODS.
5. USE OF PVC SADDLE REQUIRES WATER AGENCY APPROVAL.
6. THOROUGHLY CLEAN SURFACES OF EXISTING PIPES BEFORE CONNECTING CLAMPS OR COUPLINGS.

CONNECTION OF STAINLESS STEEL SEWER JUNCTION TO EXISTING SEWER PLAINWALL

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WESTERN DOWNS REGIONAL COUNCIL

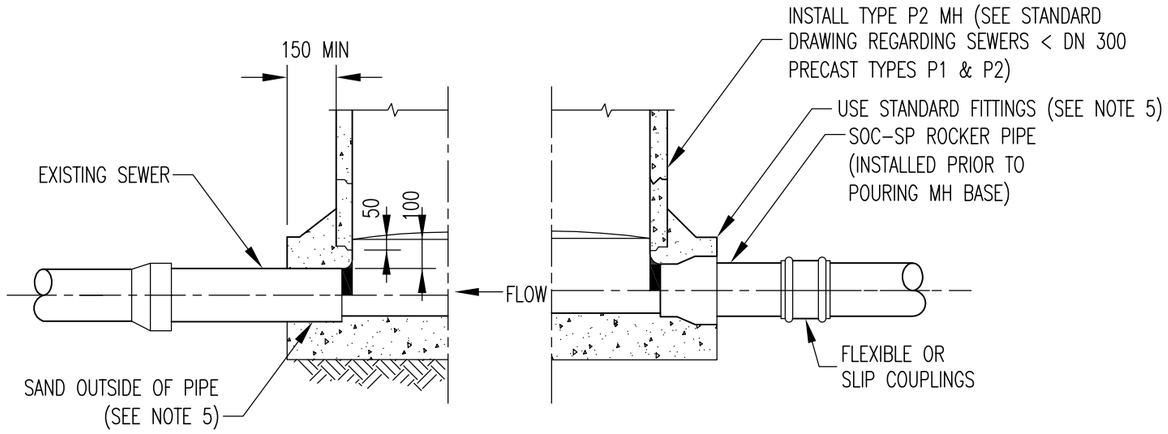
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

STANDARD DRAWING – SEWERAGE
CONNECTIONS TO EXISTING SYSTEMS
INSERTION OF JUNCTIONS
STAINLESS STEEL

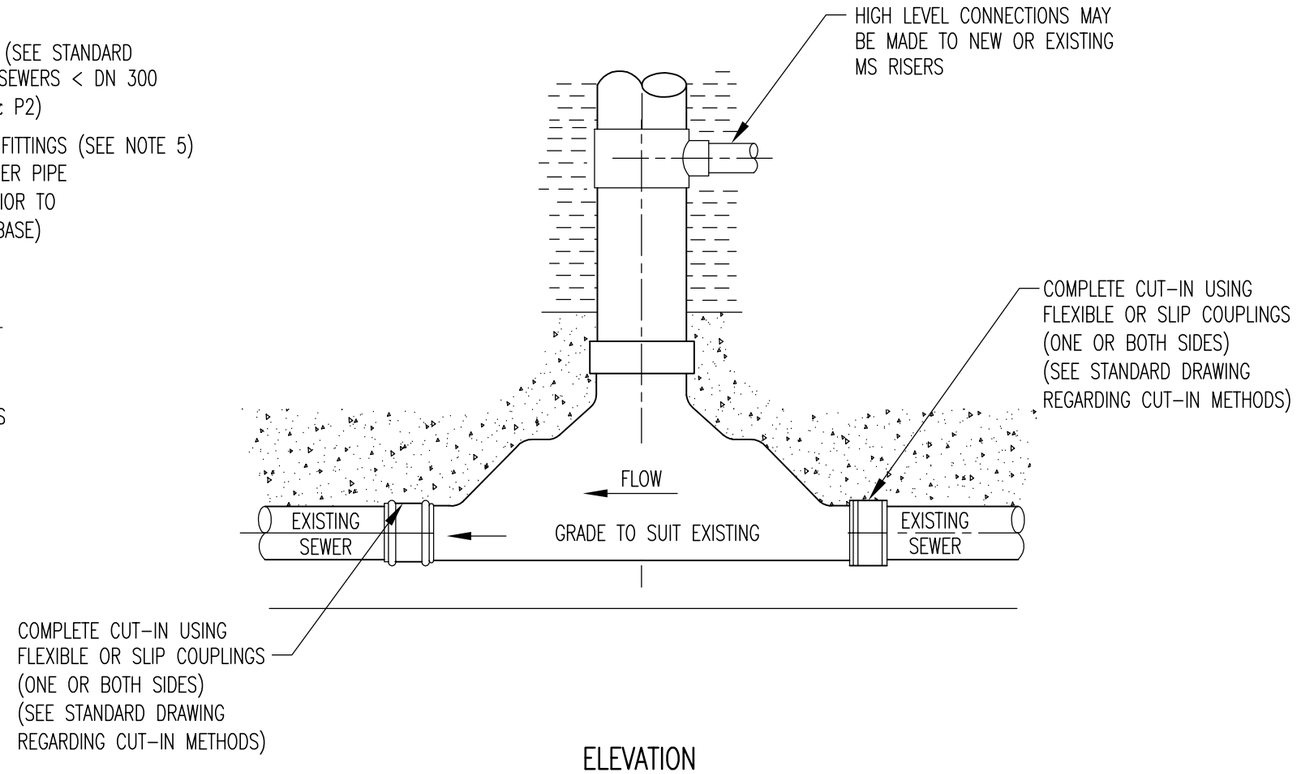
Plan No. S–027 No. 27 of 29 Plans Rev. C

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-027 Connections to Existing Insertion of Junctions SS.dwg



STABLE BASE REACTIVE BASE

CONSTRUCTION OF MAINTENANCE HOLE OVER EXISTING SEWER



ELEVATION

INSERTING MAINTENANCE SHAFTS INTO EXISTING SEWERS

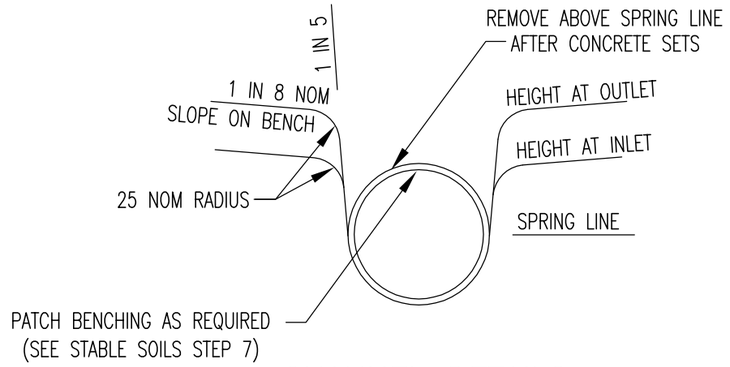
INSTALLATION PROCEDURE FOR MH

IN STABLE SOILS

1. WHERE NECESSARY ESTABLISH A TEMPORARY BY-PASS SYSTEM.
2. DIG 200 DEEP UNDER AND AROUND EXISTING SEWER TO PROVIDE A BASE APPROX 1 700 IN DIAMETER.
3. FOR PVC OR GRP PIPE CLEAN AND ABRADE EXTERNAL PIPE SURFACE AND COAT WITH RESIN/SOLVET AND SAND.
4. POUR CONCRETE TO 150 ABOVE TOP OF PIPE.
5. INSTALL FIRST SECTION OF PRE-CAST SHAFT SECTIONS.
6. FORM GULLET TO SPRING LINE OF PIPE AND FULL LENGTH OF INSIDE MH.
7. WHEN CONCRETE IS SET, CUT OR BREAK OUT THE TOP HALF OF THE EXISTING SEWER FOR THE FULL LENGTH INSIDE THE MH.
8. PATCH BENCHING/PIPE SECTIONS TO REMOVE SHARP OBSTRUCTIONS, GAPS ETC USING 2:1 SAND: CEMENT MORTAR.
9. COMPLETE THE REMAINDER OF MH IN ACCORDANCE WITH STANDARD DRAWING S-008.

IN REACTIVE SOILS (SOIL BEARING PRESSURE <100 kPa)

1. WHERE NECESSARY ESTABLISH A TEMPORARY BY-PASS SYSTEM.
2. USING THE SYSTEMS SHOWN ON STANDARD DRAWINGS (REGARDING CUT IN METHODS AND INSERTION OF JUNCTIONS) INSERT PIPE SECTIONS AND SET UP RRJ SOCKET STUB PIPES AND ROCKER PIPES EACH END OF THE PROPOSED MH LOCATION SO THAT THE SOCKET ENDS ARE LOCATED ADJACENT TO OUTSIDE FACE OF CONCRETE SEE STANDARD DRAWING REGARDING PIPE CONNECTION DETAILS.
3. COMPLETE INSTALLATION OF MH IN ACCORDANCE WITH STEPS 2 TO 9 ABOVE.



CHANNEL DETAILS

NOTES

1. ALL DIMENSIONS IN MILLIMETRES.
2. CARRY OUT INSTALLATION OF MAINTENANCE STRUCTURES ONLY AT PERIODS OF LOW SEWAGE FLOW OR WHEN BYPASSING SEWAGE FLOWS.
3. FOR MH IN SEWERS INSTALLED ON SLOPES >16% LAY TWIN DRAINAGE PIPES THROUGH THE CONCRETE BASE.
4. PLACE EMBEDMENT UNDER AND AROUND ALL INSTALLED MS, SURROUNDING PIPES AND COUPLINGS. COMPACT TO MAINTAIN GRADE AND MINIMISE SETTLEMENT.
5. FOR PVC OR GRP PIPE OF FITTINGS TO BE CAST INTO BASE, COAT WITH RESIN/SOLVENT & SAND OR ABRADED TO ENSURE BONDING.
6. FOR INTERNAL DROP SYSTEM SEE STANDARD DRAWING REGARDING ALTERNATIVE DROP CONNECTIONS.

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EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 14/07/2010

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

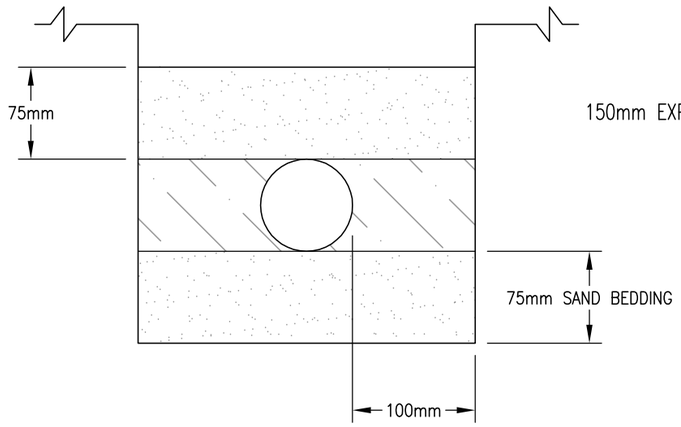
Auxiliary Plan No's.

Horiz. Section Scale: NTS on A3
Vert. Section Scale: NTS on A3

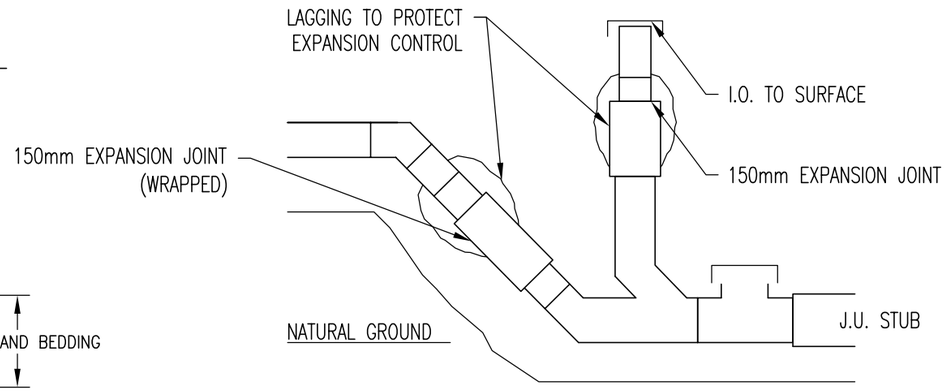
STANDARD DRAWING – SEWERAGE CONNECTIONS TO EXISTING SYSTEMS MAINTENANCE STRUCTURES

Plan No. S-028 No. 28 of 29 Plans Rev. B

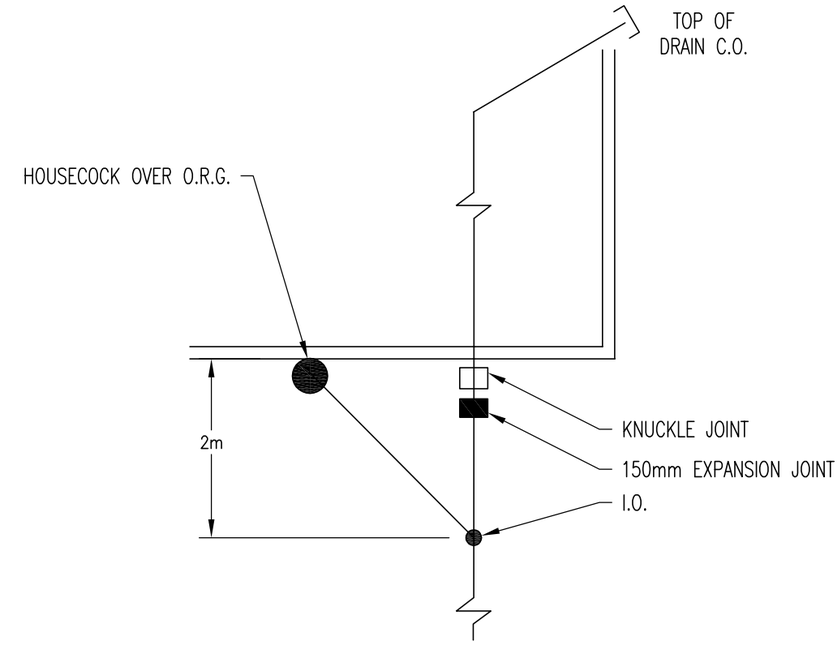
Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-028 Connections to Existing Maintenance Structures.dwg



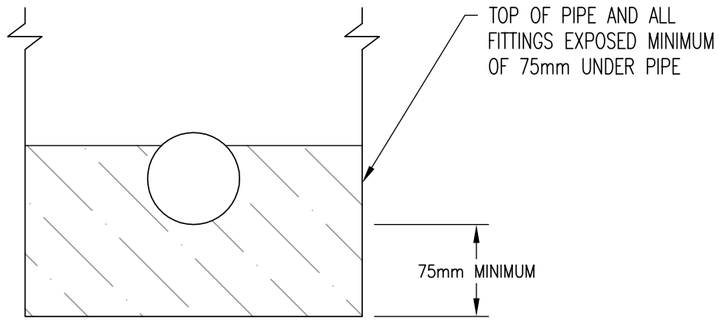
TYPICAL DRAINAGE BEDDING
HOUSE & SUBDRAIN
INSPECTION



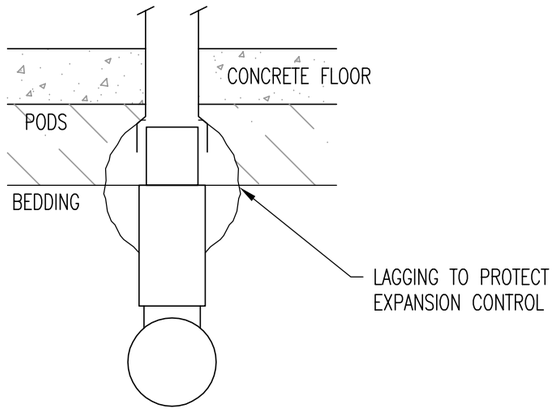
RISING HOUSE DRAIN



PREFERRED DESIGN FOR 'E' TYPE
SOIL CONDITIONS FOR SLAB HOUSE



TESTING



EXPANSION CONTROL

CODES
I.O. – INSPECTION OPENING
J.U. – JUMP UP
D.T. – DISCONNECTOR TRAP
F.W. – FLOOR WASTE
I.O.S. – INSPECTION OPENING TO SURFACE
O.R.G. – OVERFLOW RELIEF GULLY
A.C. – ACCESS CHAMBER
S.T. – SEPTIC TANK
R.P. – RODDING POINT
G.I.T. – GREASE INTERCEPTOR TRAP
C.O. – CLEAR OUT
V – VENT

B	Design Manual	L.C.	10/14
A	Original Issue		
Revisions		Drn by	Date

Field Book No.
Level Book No.
Datum

DRAWN L. Porter
DESIGNED K. Taylor
CHECKED G. Irwin
EXAMINED L. Cook
RECOMMENDED S. Hegedus RPEQ. 5234
TECHNICAL SERVICES MANAGER
DATE 01/02/2013

Job No./s | Works Order No.

WESTERN DOWNS REGIONAL COUNCIL

Auxiliary Plan No's.

Horiz. Section
NOT TO SCALE

Vert. Section
NOT TO SCALE

STANDARD DRAWINGS – SEWERAGE
BUILDING CONSIDERATION
MINIMUM REQUIREMENTS FOR
EXPANSION CONTROL

Plan No. S–029 No. 29 of 29 Plans Rev. B

Computer Location S:\Engineering Services\Design\Standard Drawings\S-Sewerage\S-029 Building Consideration Expansion Control.dwg