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Standard Detail Drawings

General

G1	Private Right of Way
G2	Non-residential/Business Private Ways Construction

Roading

R1	Road Name Sign
R2	Services Layout Berm Cross Section (urban)
R3	Design Chart Flexible Pavements
R4	Vehicle Crossing (urban) Footpath Adjacent to Kerb
R5	Vehicle Crossing (urban) Footpath Away from Kerb
R6	Vehicle Crossing (urban) High Speed Turnoff
R7	Vehicle Crossing Commercial
R8	Vehicle Crossing (urban) Drainage via Grass Berm
R9	Vehicle Crossing (urban) Non-standard Berm Slope
R11	Intersection Sight Distance
R13	Cul-de-sac Head Dimensions
R14	Cul-de-sac Head Alternatives
R16	Typical Dimensions Kerb and Channel
R17	Typical Catchpit Details
R19	Recess Catchpit
R21	Wheelchair Ramp Kerb Crossing
R29	Standard Rural Property Entrance – Residential
R31	Private Heavy Vehicle Access
R32	Sand for Use in Replacement of Undercuts in Road Works

Stormwater

SW1	Stormwater Catchment Boundaries
SW2	Design Rainfall DDF Curves
SW3	Onehunga-Manukau Harbour Datums & Tides
SW4	Cast in Situ Reinforced Concrete Drainage Structures
SW5	Precast Manhole Flanged Base up to 4.5m Deep
SW6	Stormwater Manhole Details Cast In-Situ Base
SW7	Precast Manhole Cast In-Situ Base for Pipes >600mm
SW8	Manhole Throat Details
SW9	PE Pipe Manhole Connections
SW10	Stormwater Catchment Boundaries
SW11	Catchpit 1 of 2
SW11	Catchpit 2 of 2
SW13	RAMP Riser for Stormwater House Connections
SW14	Anchor Block Details
SW15	Pipe Bedding
SW16	Inlet and Outlet Structures
SW17	Build Over Influence Zone and Clearances to Manholes
SW18	Foundation/Pipe Clearances for Building Close to Public Drains
SW19	Minimum Freeboard Requirements for Building Adjacent to Floodplains
SW20	Groundwater Recharge Pit for Peat Areas Plan
SW21	Groundwater Recharge Pit for Peat Areas Cross Section
SW22	Recharge Pit Feature Dimensions V Impervious Area

Waste Water

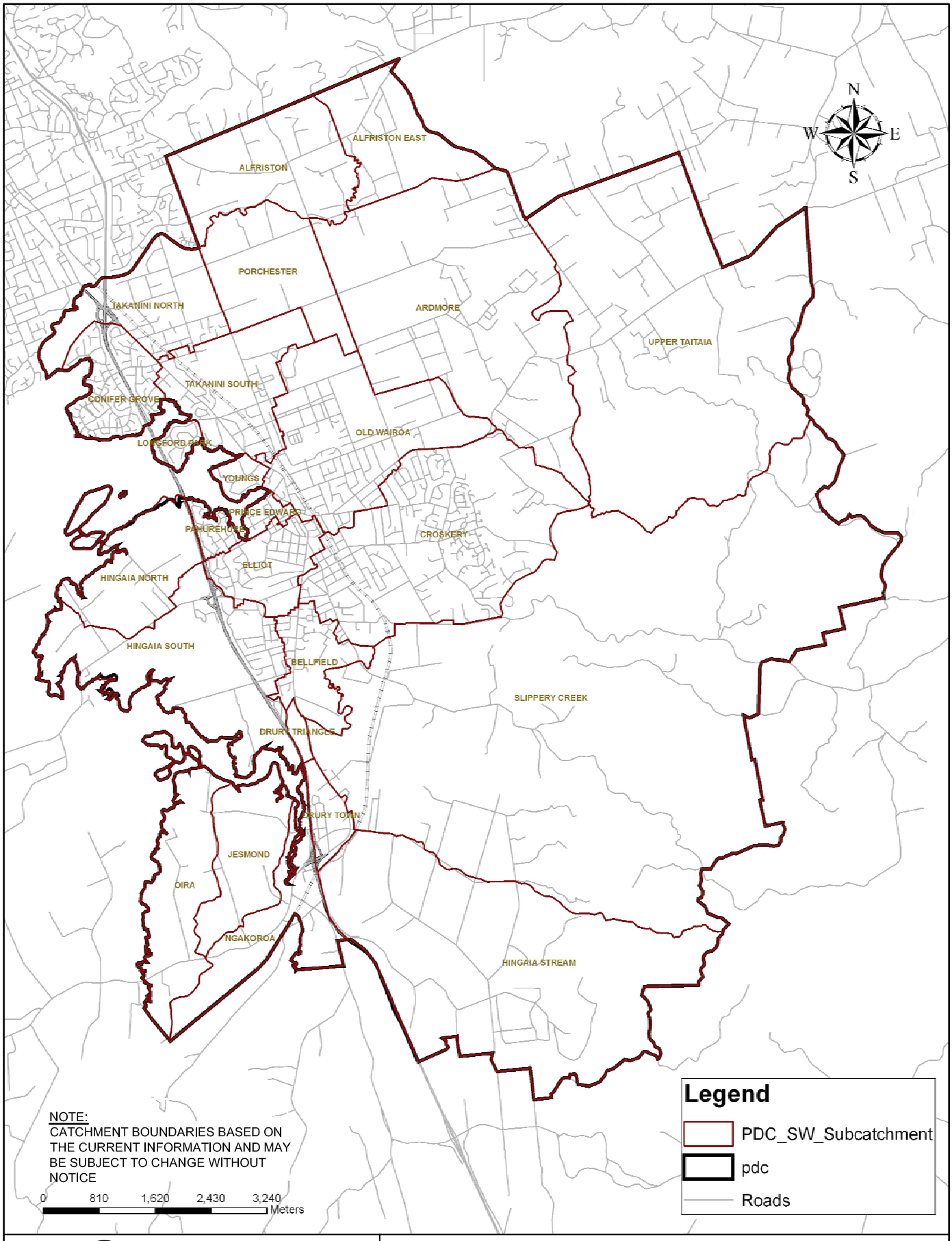
Contact United Water (U.W.I)

Water

Contact United Water (U.W.I.)

Parks and Reserves

P1	Pedestrian Accessway Details
P3	Standard Park Barriers
P4	Berm Cross-Section for Tree Landscaping
P5	Street Tree Placement



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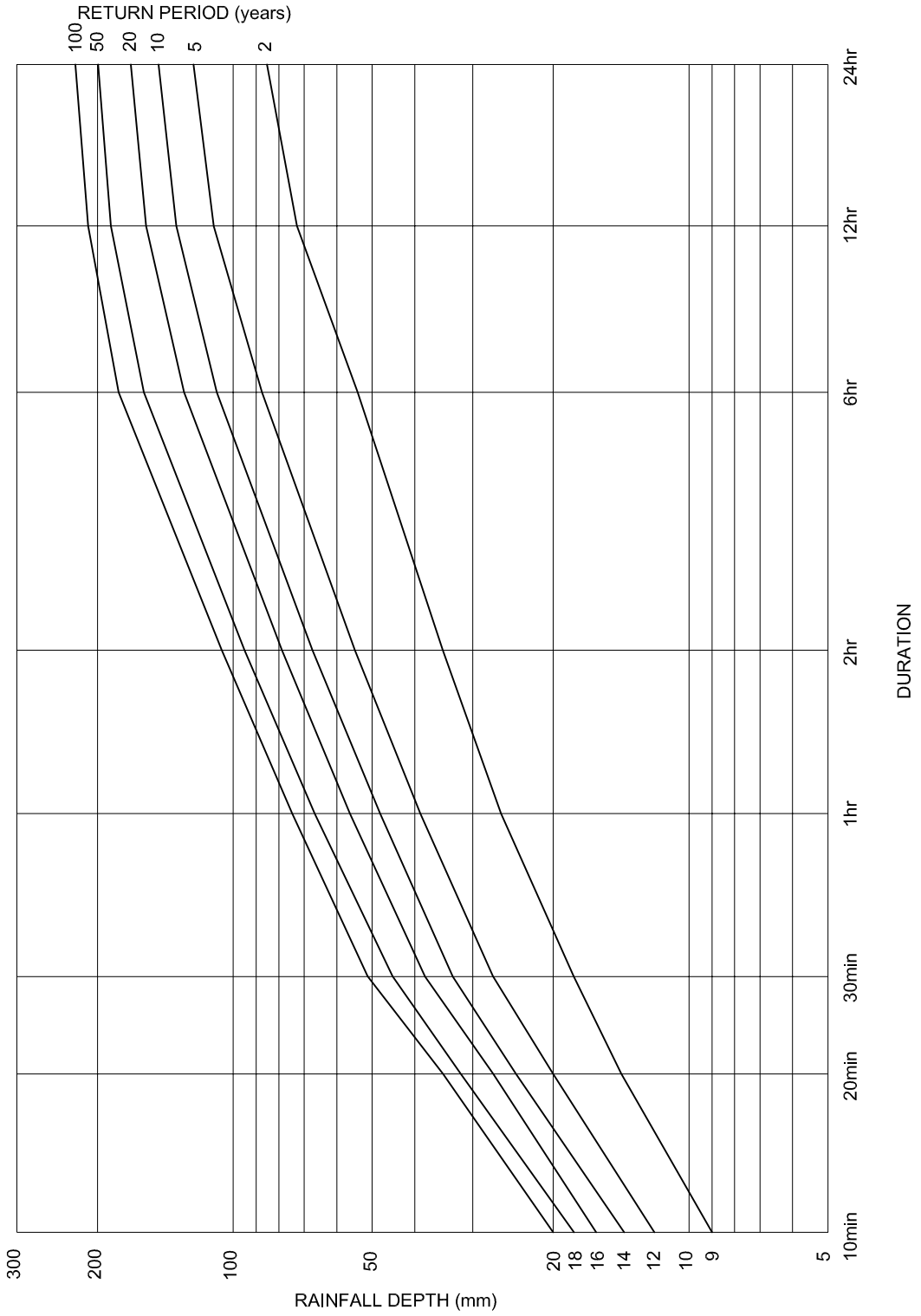
DWG NO: SW - 1

STORMWATER CATCHMENT BOUNDARIES



ANNUAL RAINFALL DEPTH-DURATION-FREQUENCY ANALYSIS
PAPAKURA FILTER STATION-SITE No. 750012
(Data between 1973 ~ 1990)

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DESIGN RAINFALL D.D.F. CURVES

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ONEHUNGA - MANUKAU HARBOUR

LEVELLING DATUMS	Metres	Metres	SOUNDING DATUMS
L&S B.M. C.C.65	3.392	5.593	L&S B.M. C.C. 65
	2.74	4.94	HIGHEST RECORDED TIDE 21-6-47
OLD AUCKLAND TRAMWAY DATUM	1.756		
	1.7	3.9	MEAN HIGH WATER SPRINGS
	1.49	3.7	MEAN HIGH WATER
OLD A.R.A. & A.C.C. DATUM	1.189		
	1.1	3.3	MEAN HIGH WATER NEAPS
	0.10	2.30	MEAN SEA LEVEL
L & S AUCKLAND DATUM 1946	0.00	2.201	
COMMON DATUM 1-1-1973			
	0.9	1.3	MEAN LOW WATER NEAPS
	1.5	0.7	MEAN LOW WATER
	1.6	0.6	MEAN LOW WATER SPRINGS
ZERO ON AUTOMATIC TIDE	2.201	0.000	A.H.B. SOUNDING
GAUGE 1 - 1 - 1973			DATUM NAVY DEPT. CHART DATUM
OLD ZERO ON AUTOMATIC TIDE	2.505	0.305	OLD A.H.B. SOUNDING DATUM
GAUGE L.W.S.T. - OBSOLETE			
	2.68	0.48	LOWEST RECORDED TIDE
AUCKLAND DOCK SILL	2.810	0.610	AUCKLAND DOCK SILL

VALUES FROM N.Z.TIDE TABLES

FROM 1-1-73, THE A.H.B AND MOST AUCKLAND LOCAL BODIES HAVE ADOPTED the L&S AUCKLAND DATUM 1946 AS THEIR COMMON DATUM. THIS IS THE DATUM FOR L&S PRECISE LEVELLING USED ALSO BY THE MINISTRY OF WORKS AND THE RAILWAY DEPT (AT THAT TIME).

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ONEHUNGA - MANUKAU HARBOUR DATUMS AND TIDES LEVELLING DATA

(Based on Auckland Harbour Board Datums Dwg S.90/22 Feb. 1973)

GENERAL CONSTRUCTION NOTES

STANDARDS RELATING TO WORKS

ALL WORK IS TO BE CARRIED OUT TO THE REQUIREMENTS OF THE HEALTH AND SAFETY ACT 1992.

ALL WORK IS TO BE CARRIED OUT TO THE HIGHEST STANDARD APPLICABLE.

MANUFACTURERS SPECIFICATIONS

ALL MATERIALS AND PRODUCTS ARE TO BE USED AND INSTALLED AS PER MANUFACTURERS' SPECIFICATIONS.

CONCRETE

ALL ON-SITE CONCRETE TO BE 17.5 MPa UNLESS OTHERWISE STATED.

WELDING & FIXINGS

ALL STEELWORK TO BE WORKSHOP FABRICATED, NO ON-SITE WELDING.

ALL STEEL WORK TO BE HOT DIP GALVANISED TO AS/NZS 4680:1999.

ALL METAL NUTS, BOLTS AND WASHERS TO BE HOT DIP GALVANISED. UNLESS OTHERWISE STATED E.G. "STAINLESS".

REINFORCING STEEL

ALL STEEL TO BE "DEFORMED" MILD STEEL BARS GRADE 500E UNLESS OTHERWISE SPECIFIED.

ALL STEEL TO BE PLACED CENTRAL WITH 60mm MINIMUM COVER FOR PRINCIPAL STEEL AND 50mm ELSEWHERE.

ALL RADIUS REQUIRED TO BE COLD FORMED.

WORKS REQUIRING EPOXY

ANY STAINLESS STEEL FIXINGS THAT ARE EPOXIED IN PLACE ARE REQUIRED TO BE SUPPLIED FROM THE MANUFACTURER " NOT OILED".

ALL METAL FIXINGS AND OR STAINLESS STEEL TO BE EPOXIED WILL USE EPCON C6 EPOXY OR SIMILAR, TO ENGINEERS RECOMMENDATIONS.

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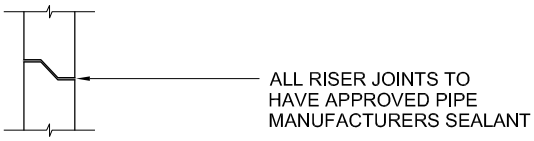
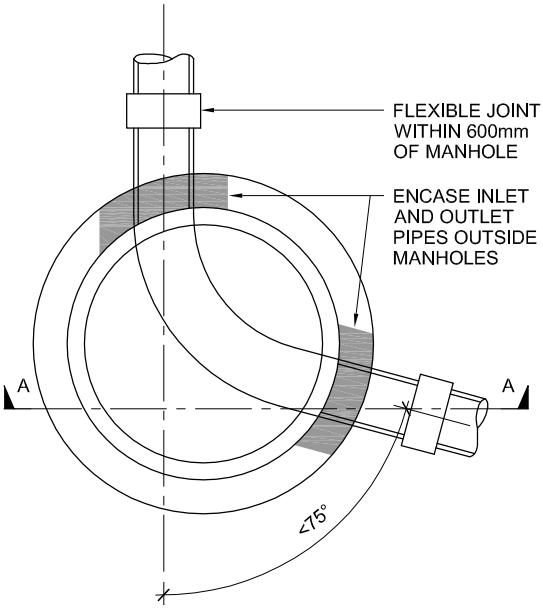
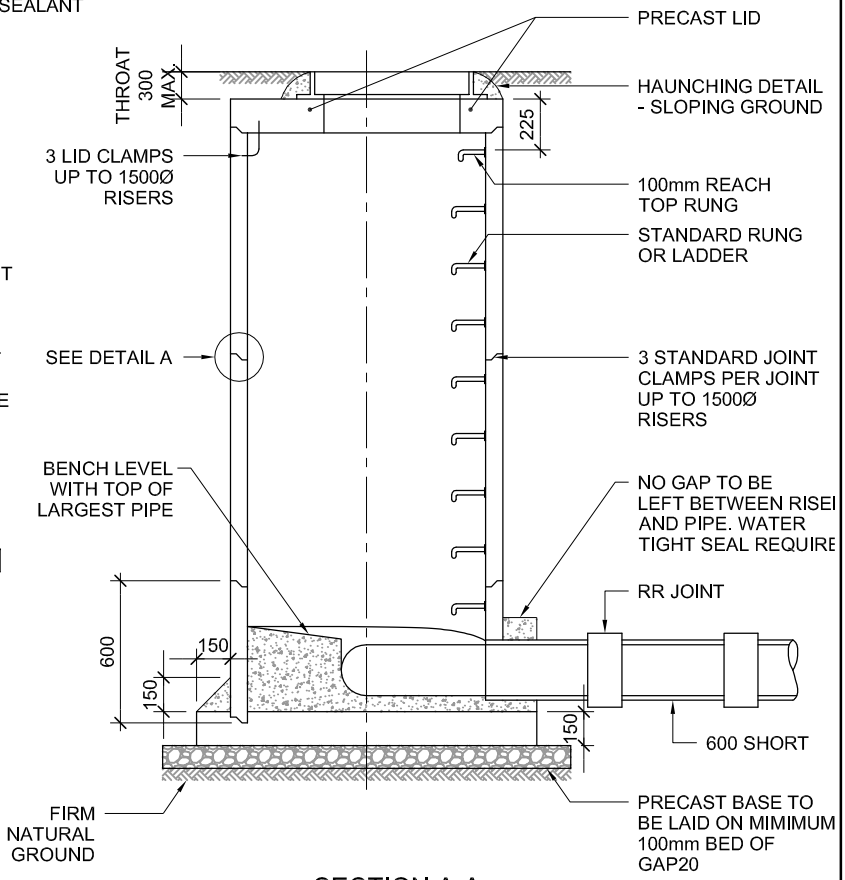
GENERAL CONSTRUCTION NOTES FOR CAST IN SITU REINFORCED CONCRETE DRAINAGE STRUCTURES



DETAIL A



PLAN



SECTION A-A
PRECAST MANHOLE

RISER DIAMETER						
PIPE	DEFLECTION					
DIA.	0°	15°	30°	45°	60°	75°
450	1050	1050	1200	1200	1500	1800
525	1200	1200	1200	1200	1500	1800
600	1200	1200	1500	1500	1800	1800
750	1500	1500	1800	1800	2100	2100
825	1800	1800	2100	2100	2400	2400
900	1800	1800	2100	2400	2400	SD
1050	2100	2100	2400	2400	SD	SD
1200	2100	2400	2400	SD	SD	SD

- SD=SPECIFIC DESIGN TO ACHIEVE 3XPIPE DIA. WATER FLOW RADIUS WITHIN MANHOLE OR IF THIS IS NOT POSSIBLE USE SEPARATE MANHOLE AND FABRICATED BEND FOR A PORTION OF THE BEND.
- SPECIFIC DESIGN REQUIRED FOR MANHOLE JOINING PIPES >375ø WITH DEFLECTION >75°.

NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. FIRST JOINTS OF INLET AND OUTLET PIPES TO BE NOT MORE THAN 600mm FROM MANHOLES.
3. WHERE DEPTH OF MANHOLE EXCEEDS 4.5m FROM GROUND LEVEL TO INVERT REFER DWG SS-3 FOR LANDING PLATFORM AND LADDER DETAILS.
4. ALL MANHOLE OPENING TO BE CUT WITH CONCRETE SAW (NOT SLEDGE HAMMER).
5. ALL MANHOLE PRECAST RISERS TO BE 1050ø MINIMUM STANDARD FOR PIPES FROM 225 UP TO 375ø IF ANGLE OF DEFLECTION IS NOT >90° IF THE ANGLE IS GREATER THAN 90° SPECIFIC DESIGN OF THE RISER IS REQUIRED.
6. SEE SW-8 FOR MANHOLE THROAT DETAIL

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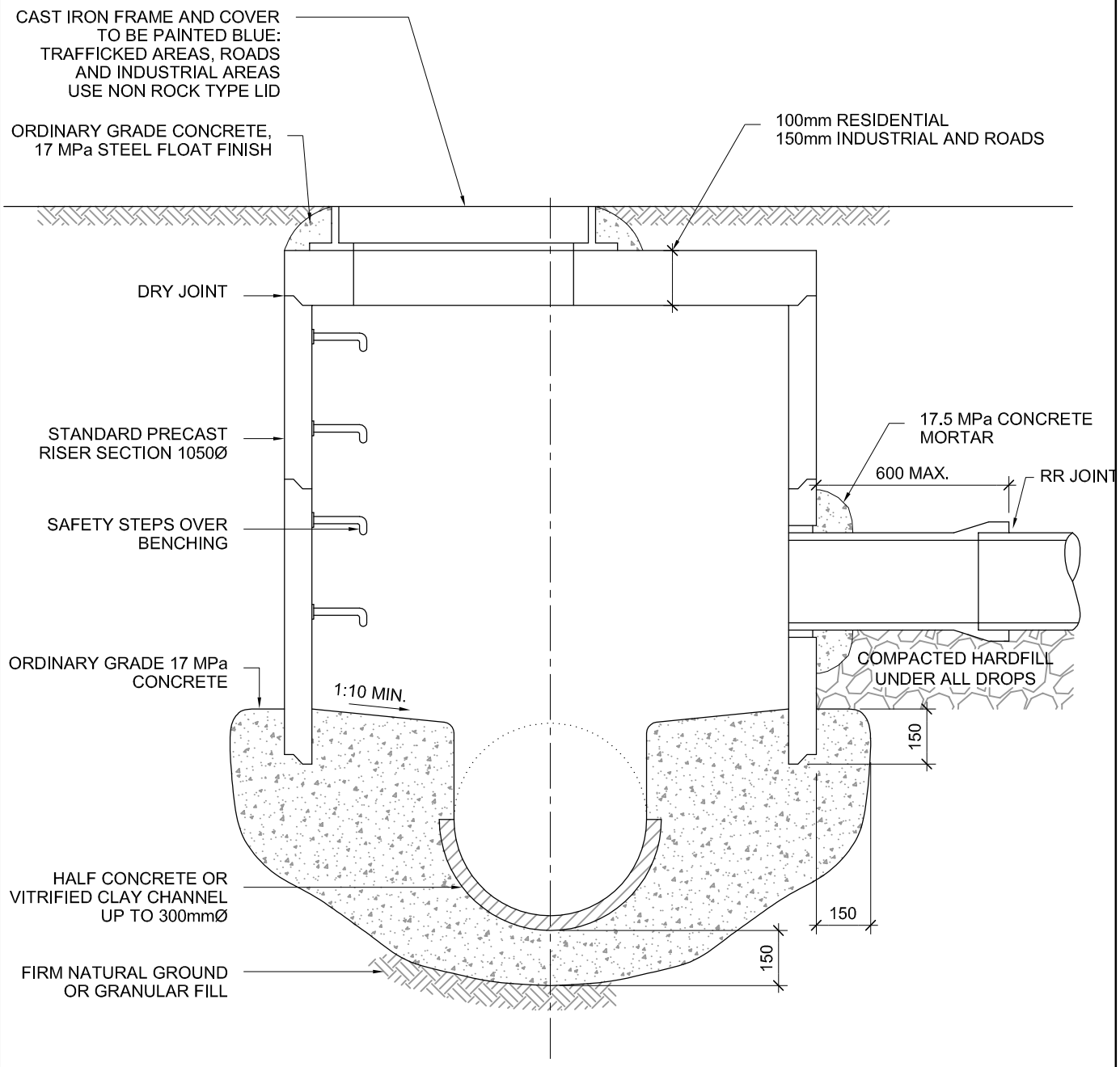
DWG NO: SW - 5

TYPE A PRECAST MANHOLE FLANGED BASE UP TO 4.5m DEEP



NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. FOR PIPES 1200mm DIA & GREATER, MANHOLES TO BE FACTORY FABRICATED BENDS WITH RISER OFF-TAKER.

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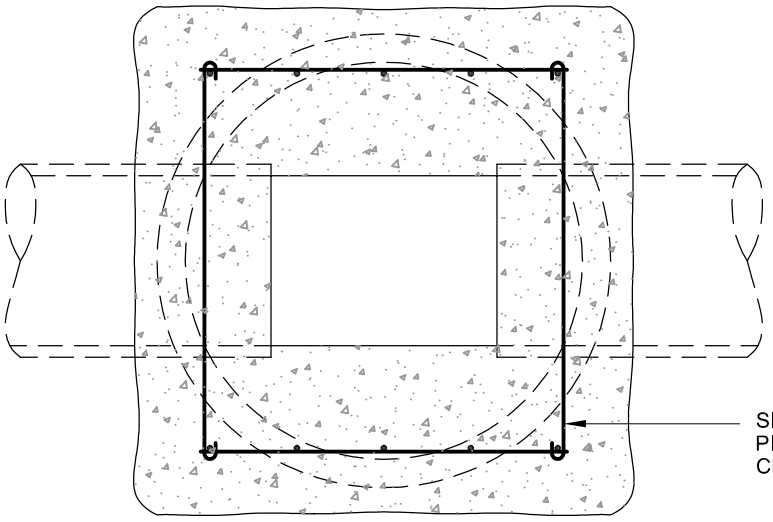
DATE ISSUED: JUNE 2009

DWG NO: SW - 6

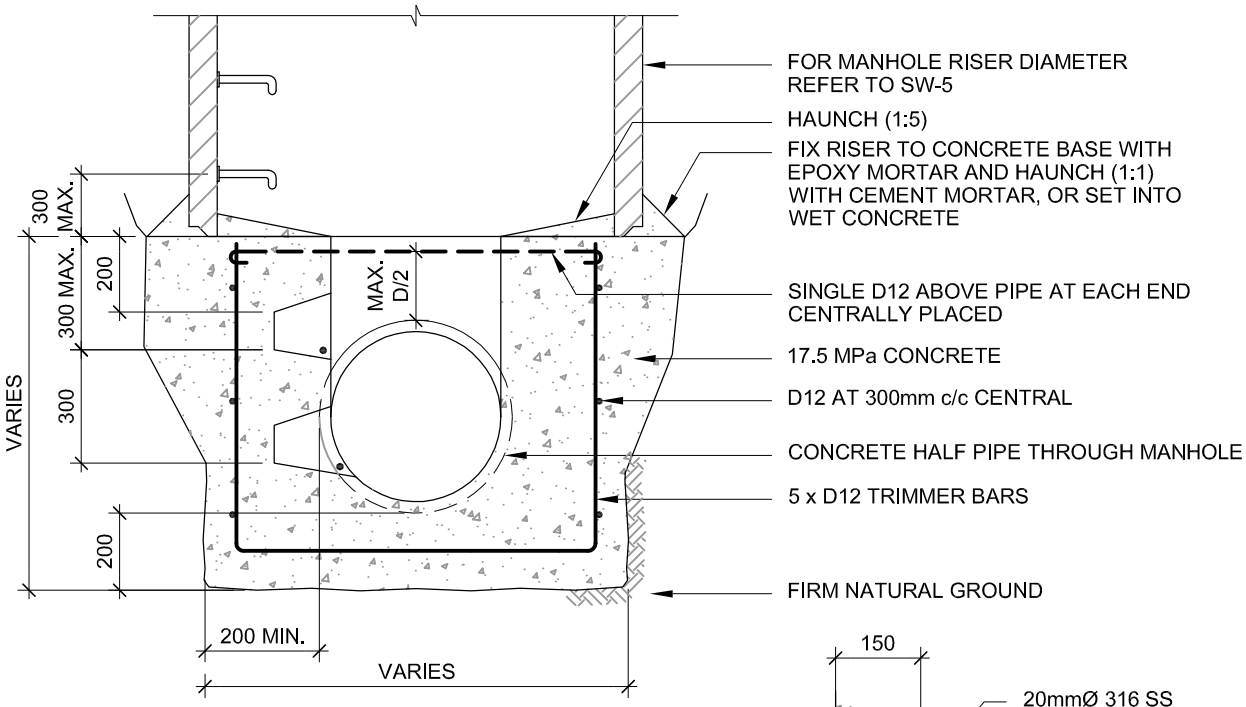
TYPE B
STORMWATER MANHOLE DETAILS
(CAST IN-SITU BASE)

NOTES

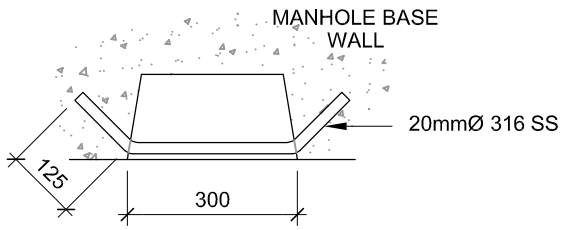
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. REFER TO PLANS OF RISER DETAILS, LADDER, STEP AND SAFETY CHAIN AND LANDINGS.
3. IF MANHOLE LOCATED AT BEND STEPS TO BE ON INSIDE OF RADIUS.
4. FOR PIPES >1200ø SPECIFIC DESIGN REQUIRED.



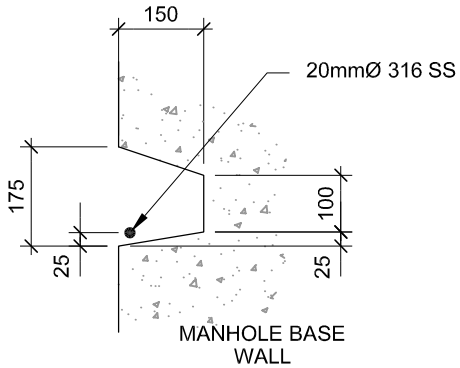
PLAN



SECTION
PIPES 600mm-1200mmØ



RECESSED STEP



SECTION
RECESSED STEP

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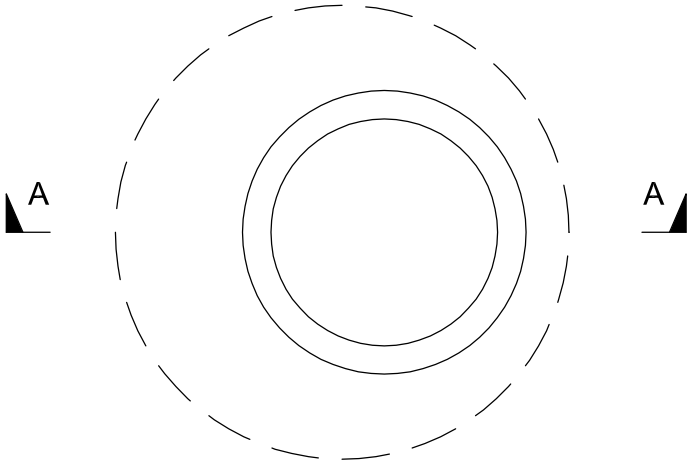
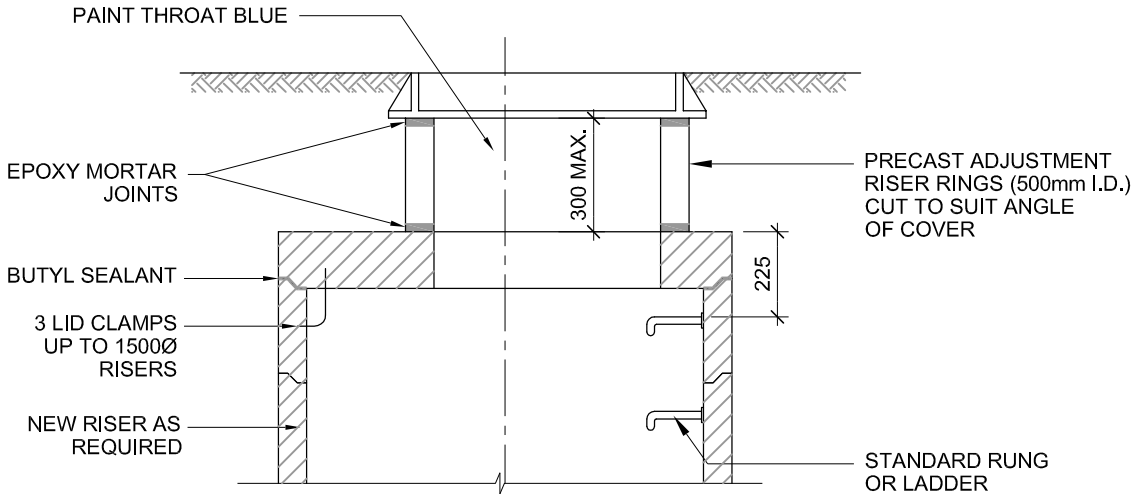
DATE ISSUED: JUNE 2009

DWG NO: SW - 7

PRECAST MANHOLE
CAST IN-SITU BASE FOR PIPES >600mm



PLAN



TYPICAL SECTION A-A THROUGH MANHOLE

NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. WHEN THE HEIGHT BETWEEN THE TOP OF THE EXISTING PRECAST CONCRETE MANHOLE LID AND THE CAST IRON FRAME IS GREATER THAN 300mm, A NEW MANHOLE RISER IS REQUIRED WITH A NEW ADJUSTMENT RING.

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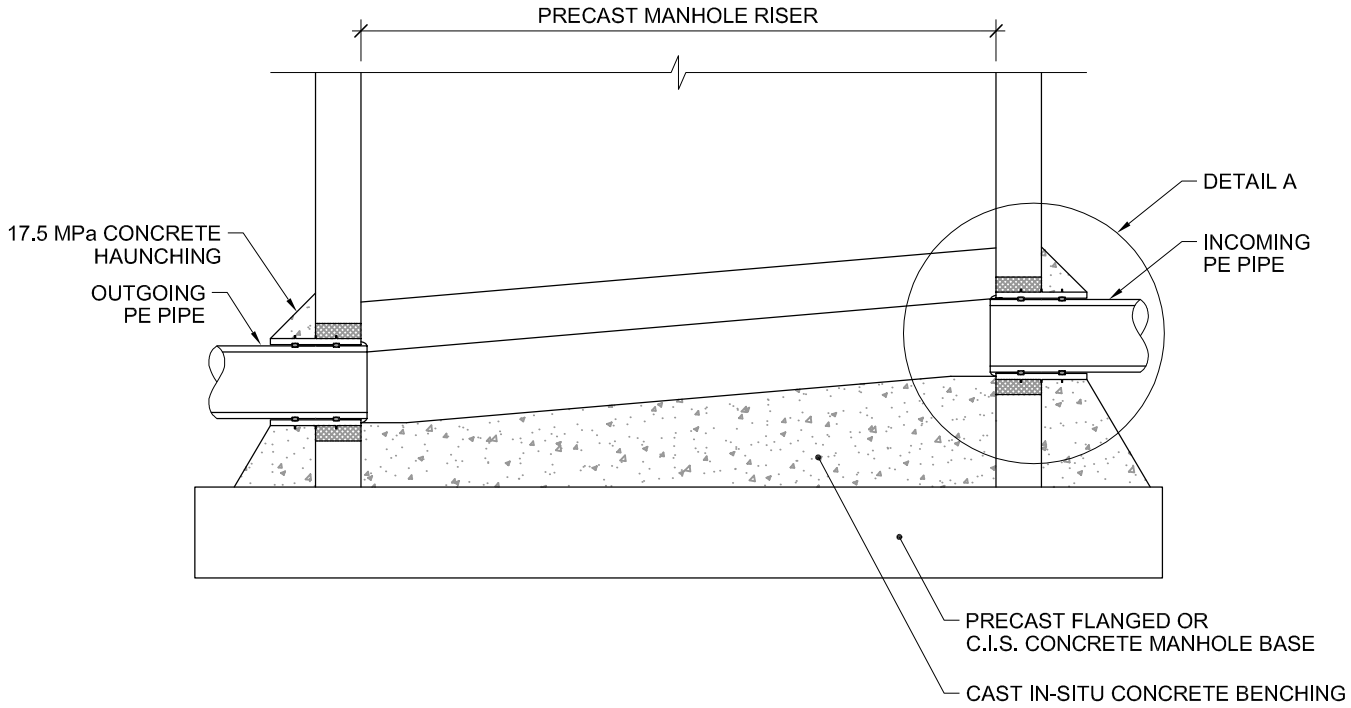
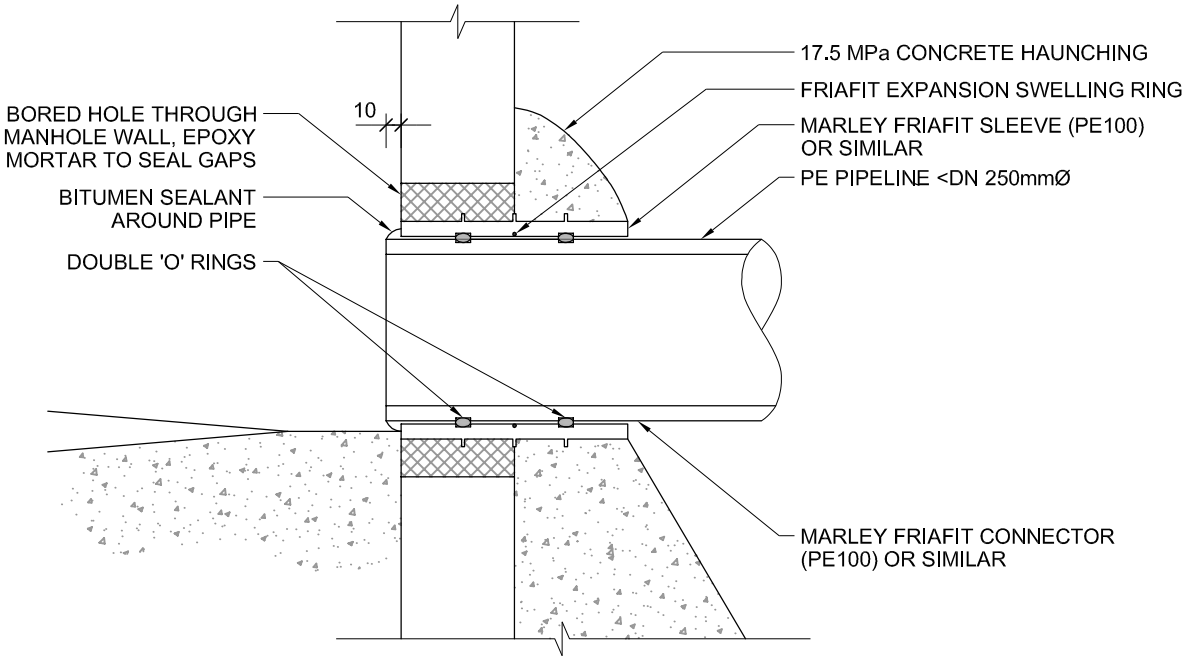
MANHOLE THROAT DETAILS

DATE ISSUED: JUNE 2009

DWG NO: SW - 8



PE PIPE MANHOLE CONNECTION
(SLIDING JOINTS)



DETAIL A

NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.

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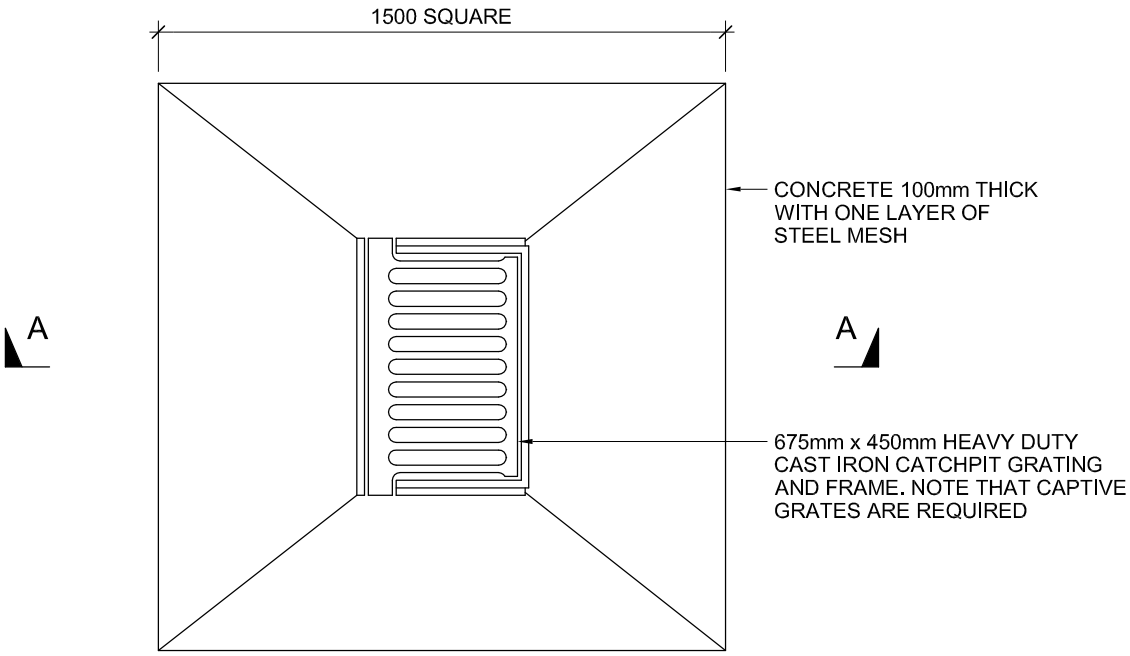
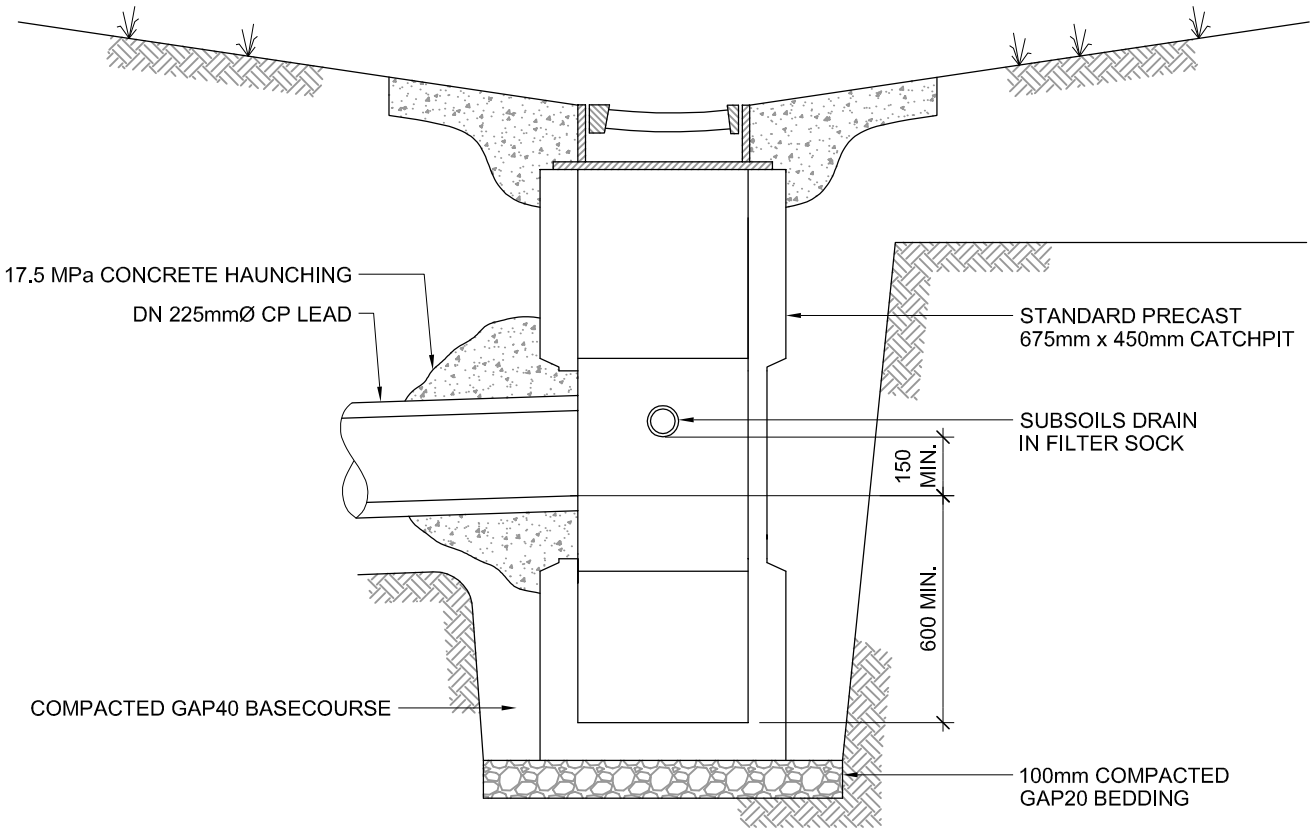
DATE ISSUED: JUNE 2009

DWG NO: SW - 9

PE PIPE MANHOLE CONNECTIONS



PLAN



SECTION A-A

NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. ALL CONCRETE TO BE ORDINARY GRADE, 17.5MPa AT 28 DAYS.
3. ALL PIPES TO BE FINISHED FLUSHED WITH INSIDE WALL OF CATCHPIT

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DWG NO: SW - 10

STORMWATER FIELD CATCHPIT