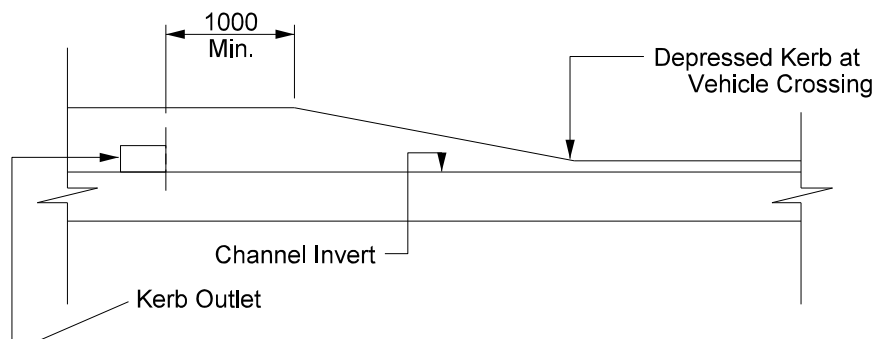
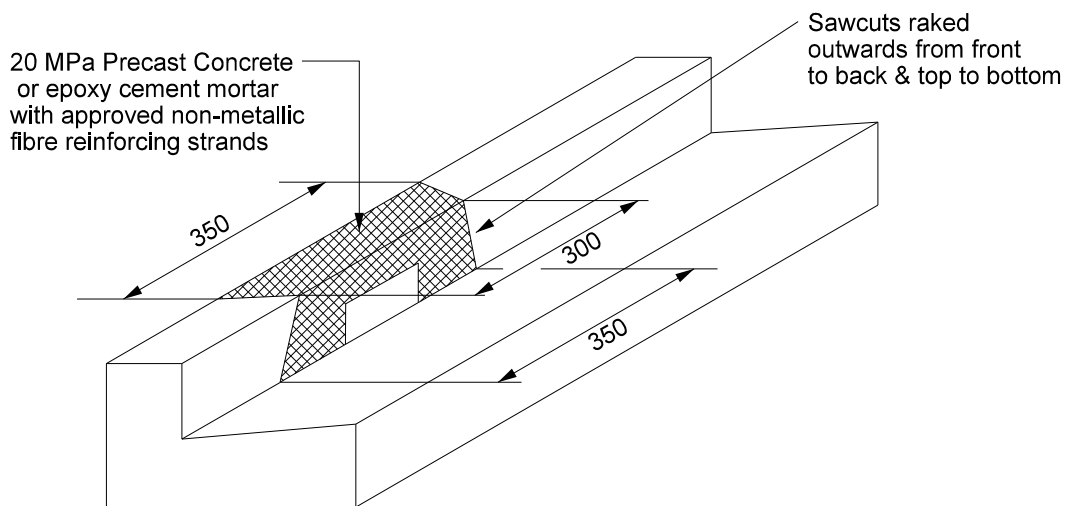


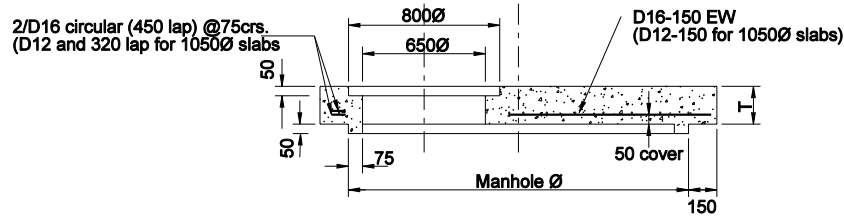
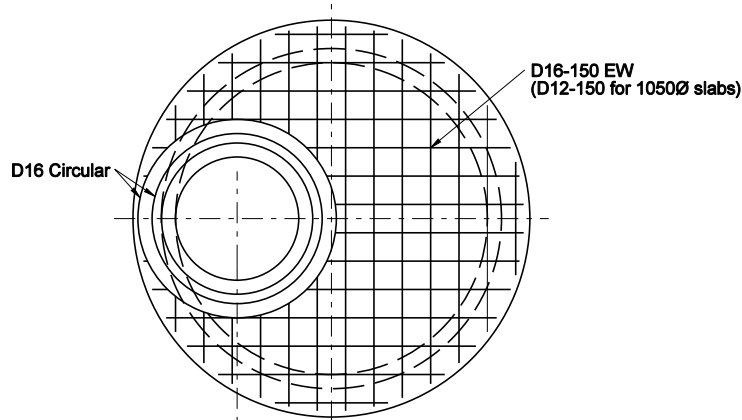
KERB ENTRY



VERTICAL KERB

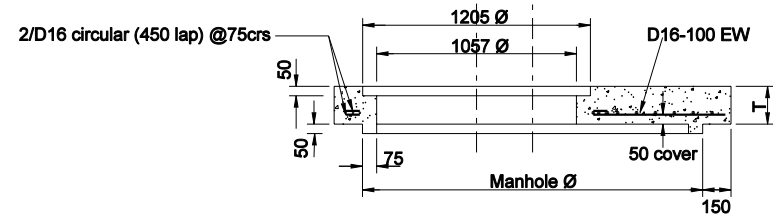
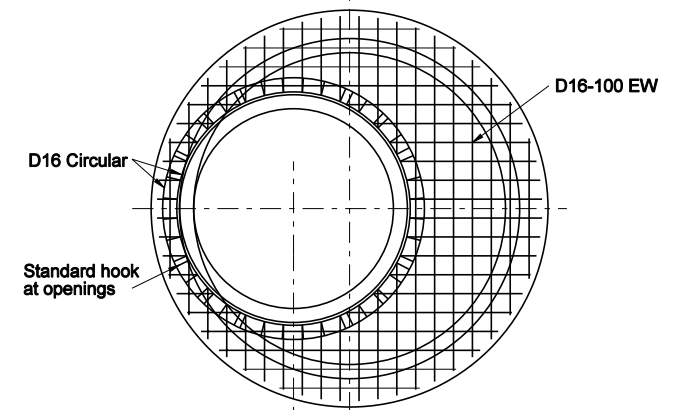
NOTES

1. Manhole chambers and chimneys flush joint Class 'S'
2. All flush joints to be sealed with expandite BM100 or approved equivalent.
3. Concrete in slabs and adjustment rings to be a minimum of 21MPa at 28 days. Mass concrete to be 21MPa at 28 days. Concrete to be of ordinary grade.
4. Refer TS 406 for adjustment ring details.
5. Diameters of precast manhole pipes are nominal only.



MANHOLE TOP SLAB

Manhole Ø	Slab Thickness (T)
1000 Ø - 1400 Ø	150mm
1450 Ø - 1800 Ø	200mm
Over 1800 Ø	250mm

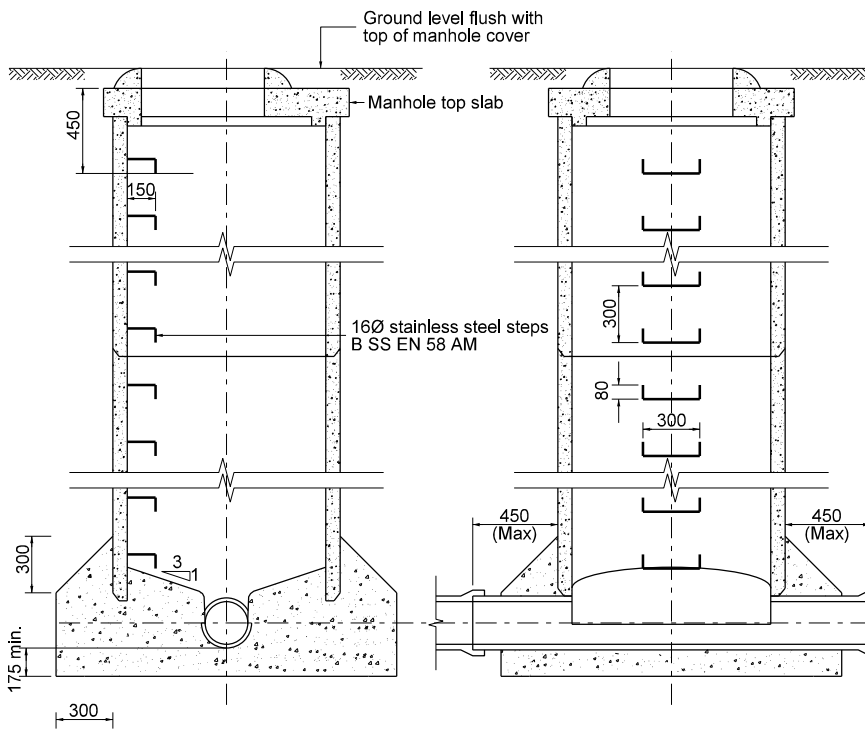


MANHOLE CHAMBER SLAB

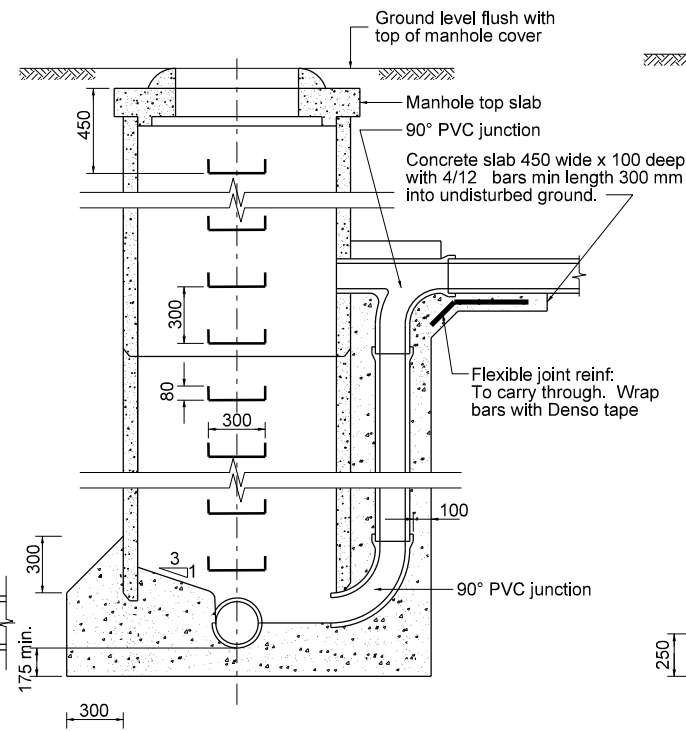
Manhole Ø	Slab Thickness (T)
1350 Ø - 1800 Ø	200mm
Over 1800 Ø	250mm

NOTES

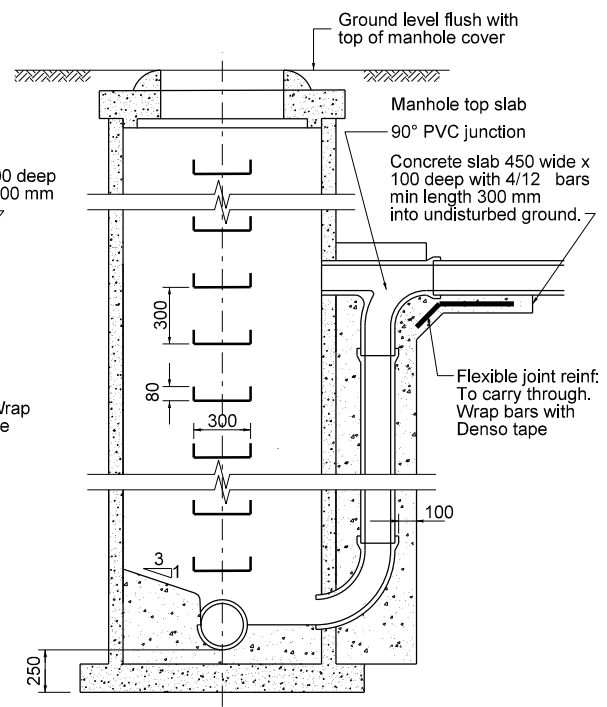
1. Manhole chambers and chimneys flush joint Class 'S'
2. All flush joints to be sealed with expandite BM100 or approved equivalent.
3. Concrete in slabs and adjustment rings to be a minimum of 21MPa at 28 days. Mass concrete to be 21MPa at 28 days. Concrete to be of ordinary grade.
4. Drop manholes are to be used on inlet lines with a max diameter of 225mm and where the difference between the soffit of outlet is greater than 600mm.
5. If further internal drop connections are expected, design manhole diameter may be increased (ie. 1050Ø → 1200Ø)
6. Refer TS 406 for adjustment ring details.
7. Diameters of precast manhole pipes are nominal only.



DETAILS 1050Ø & 1200Ø MANHOLES



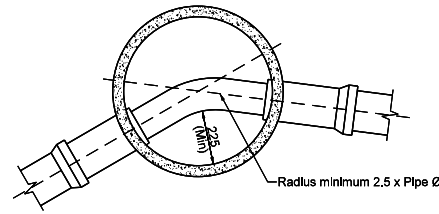
**DROP MANHOLES
(Sanitary Sewer Only)**



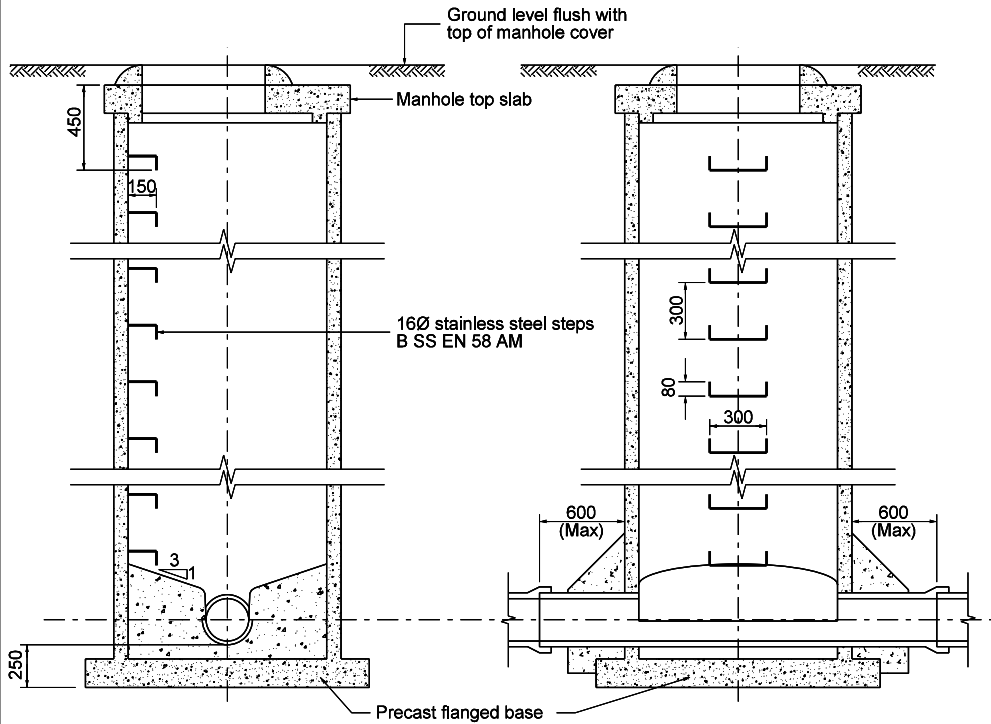
**DROP MANHOLES WITH EXTERNAL DROP
PRE-CAST BASE
(Sanitary Sewer Only)**

NOTES

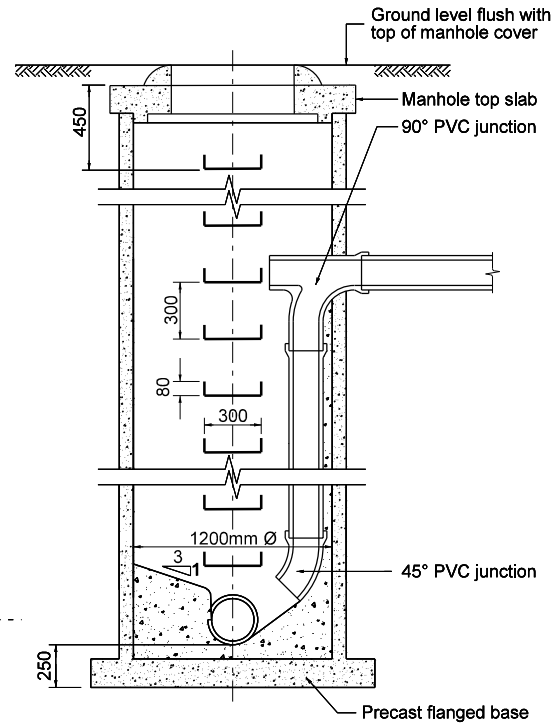
1. Manhole chambers and chimneys flush joint Class 'S'
2. All flush joints to be sealed with expandite BM100 or approved equivalent.
3. Concrete in slabs and adjustment rings to be a minimum of 21MPa at 28 days. Mass concrete to be 21MPa at 28 days. Concrete to be of ordinary grade.
4. Drop manholes are to be used on inlet lines with a max diameter of 225mm and where the difference between the soffit of outlet is greater than 600mm.
5. If further internal drop connections are expected, design manhole diameter shall be increased (ie. 1050Ø → 1200Ø)
6. Refer TS 406 for adjustment ring details.
7. Diameters of precast manhole pipes are nominal only.



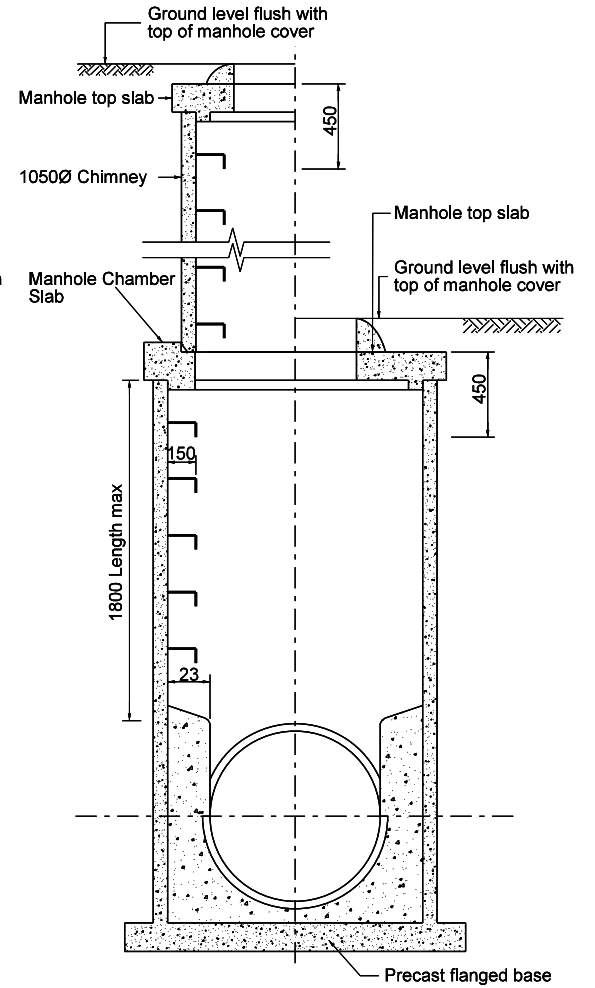
TYPICAL PLAN CURVE THROUGH MANHOLE



DETAILS 1050Ø & 1200Ø MANHOLES



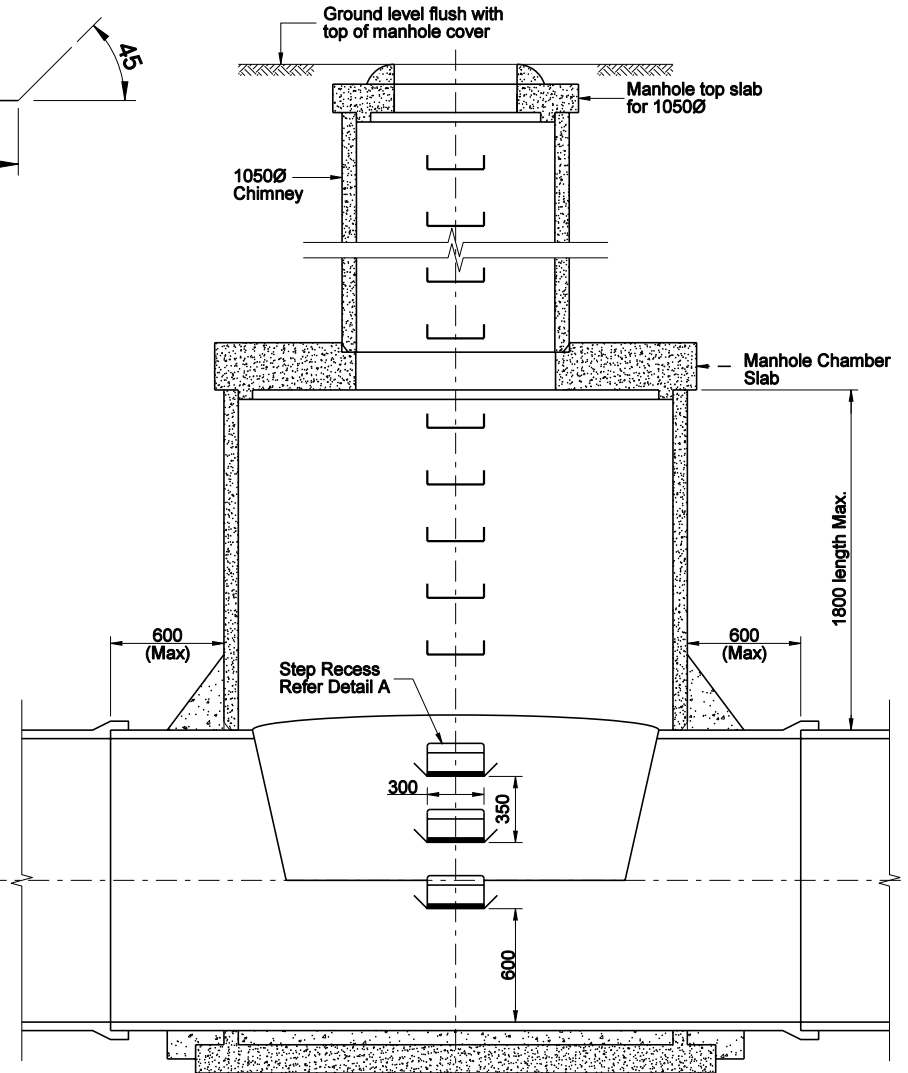
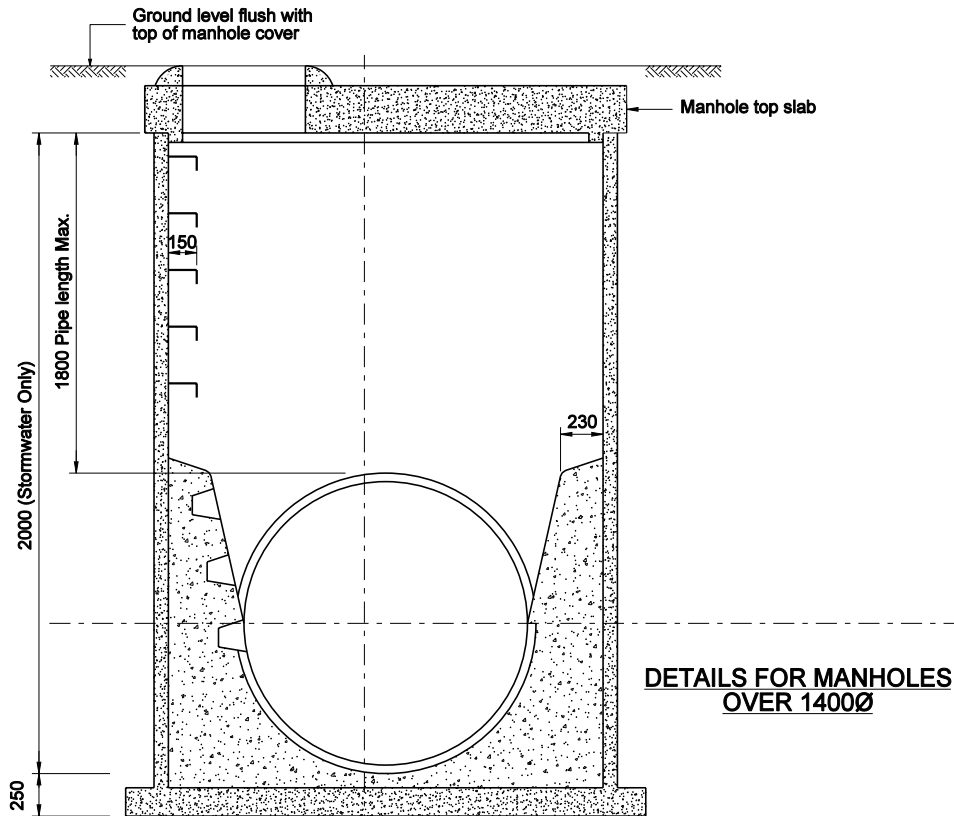
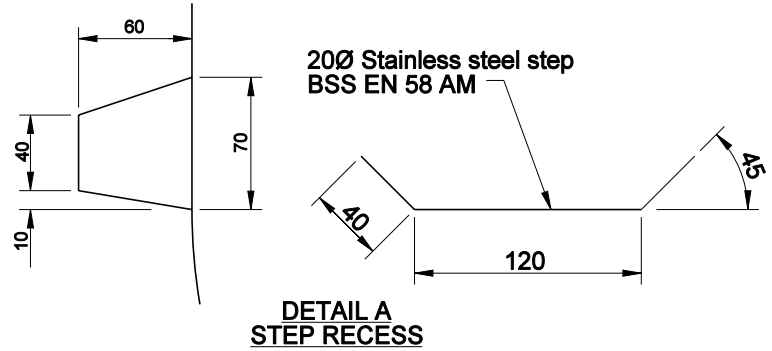
**Drop Manholes
(Sanitary Sewer Only)**



DETAILS 1350Ø & 1400Ø MANHOLES

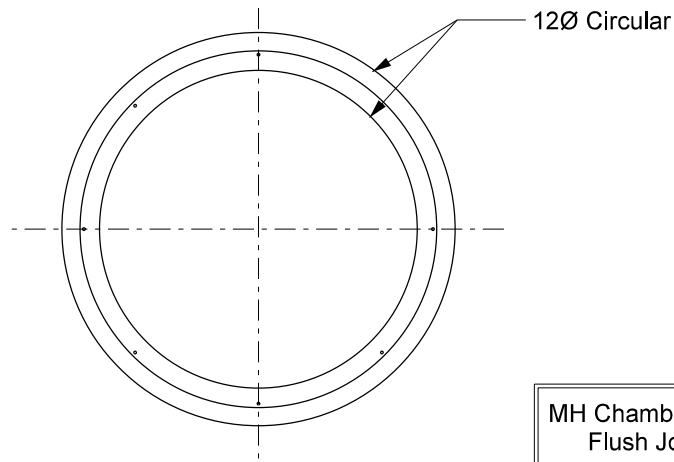
NOTES

1. Manhole chambers and chimneys flush joint Class 'S'
2. All flush joints to be sealed with expandite BM100 or approved equivalent.
3. Concrete in slabs and adjustment rings to be a minimum of 21MPa at 28 days. Mass concrete to be 21MPa at 28 days. Concrete to be of ordinary grade.
4. Refer TS 406 for adjustment ring details.
5. Diameters of precast manhole pipes are nominal only.

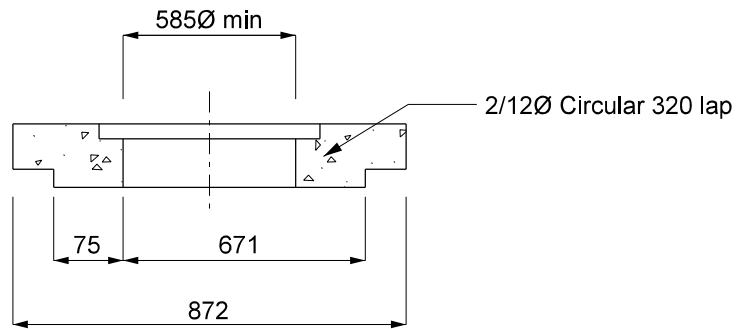


NOTE:

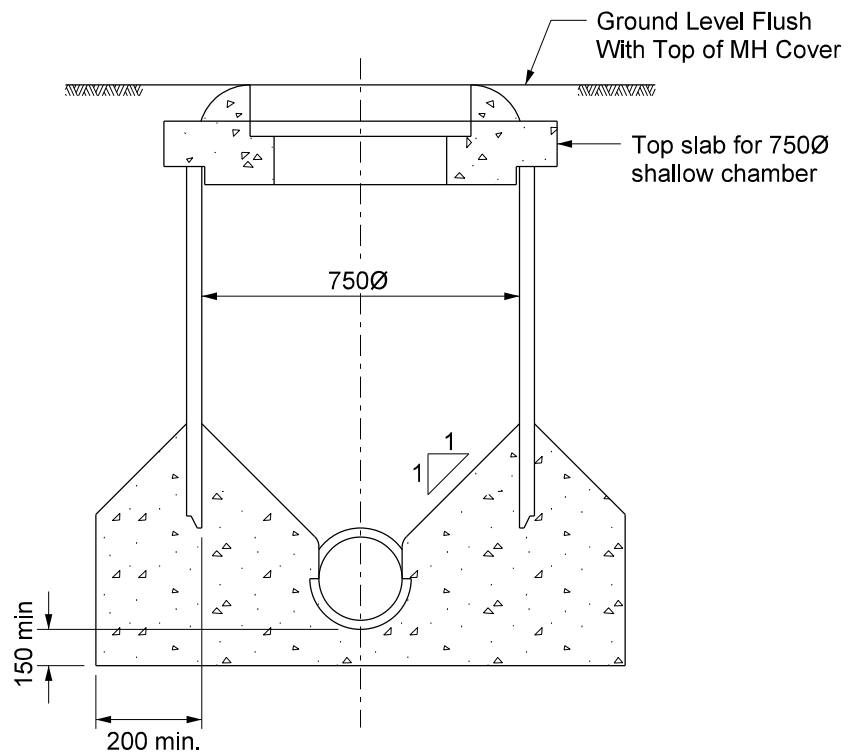
1. All flush joints to be sealed with expandite BM100 or approved equivalent.
2. Concrete in slabs and adjustment rings to be a minimum of 20MPa at 28 days. Mass concrete to be 17MPa at 28 days. Concrete to be of ordinary grade.
3. Refer TS 406 for adjustment ring details.



MH Chambers & Chimneys
Flush Joint Class 'S'

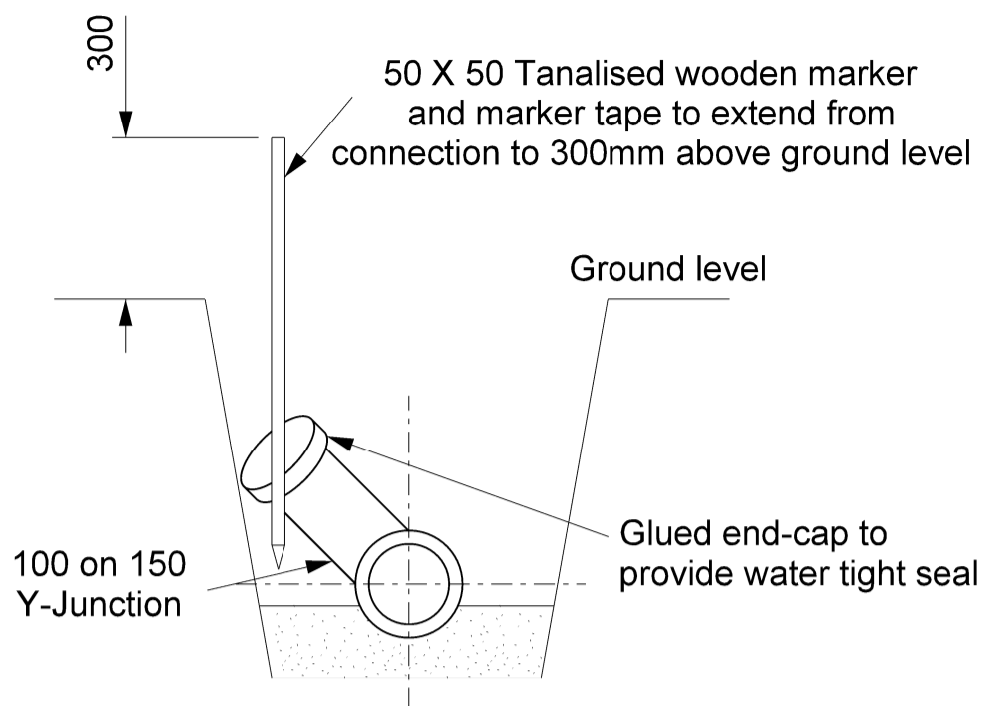


Top Slab for 750Ø Shallow Chamber

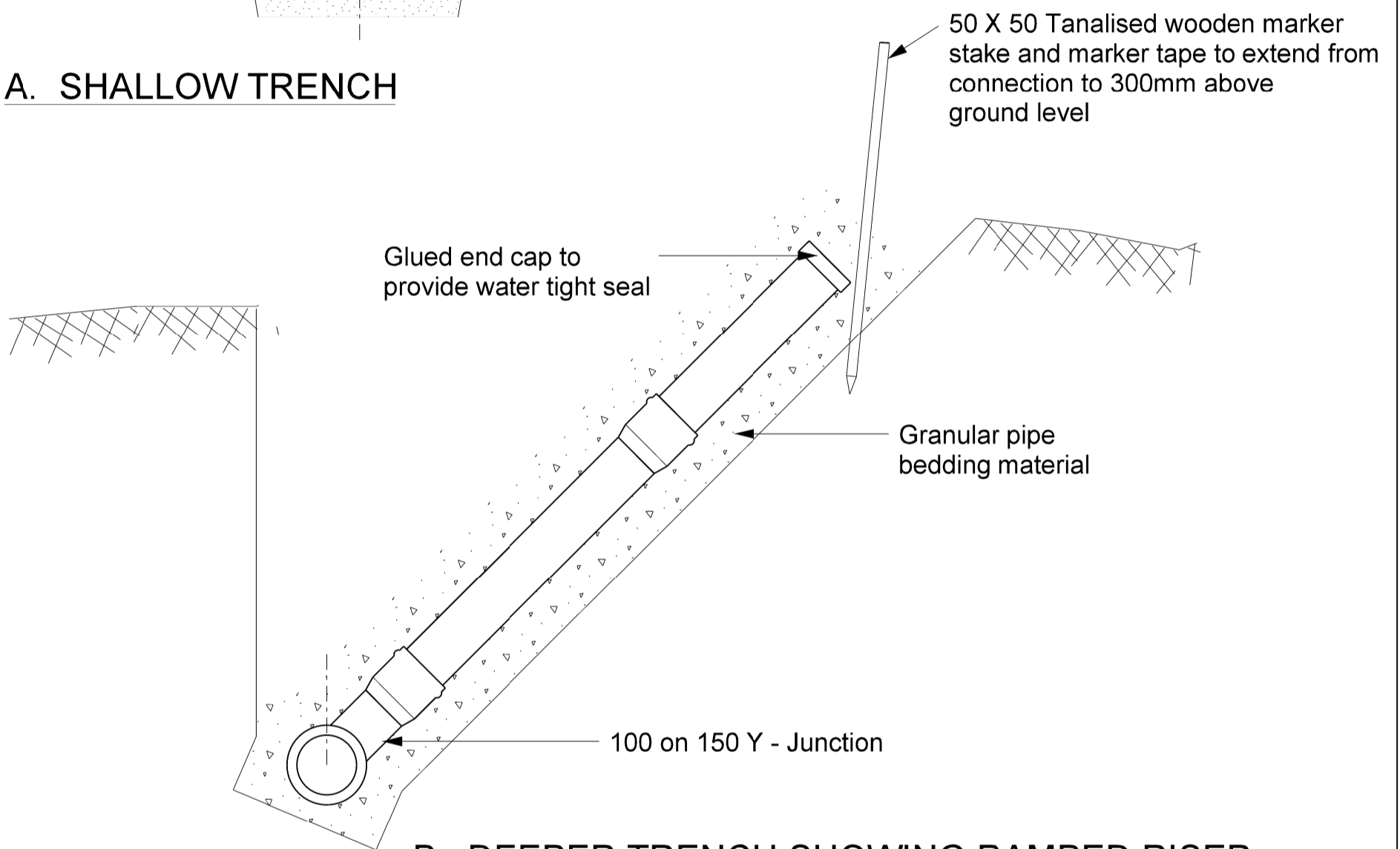


750Ø Internal Shallow Chamber

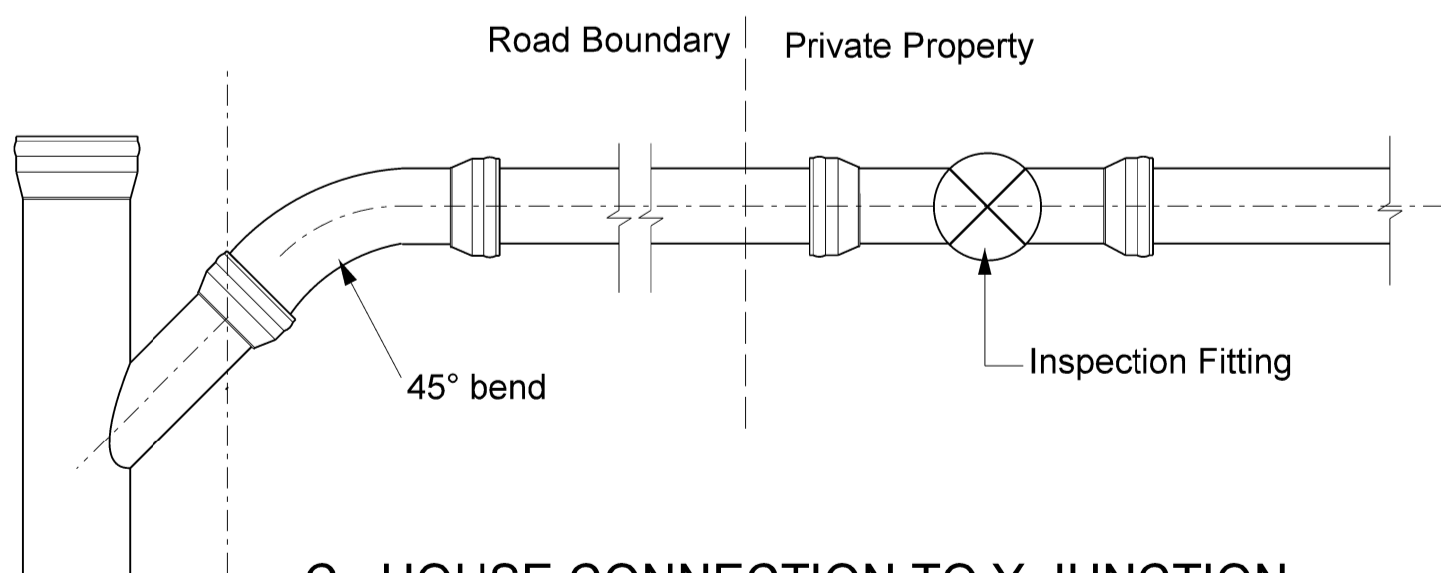
To be used only on pipes of 100mm to 450mm Ø and where depth of invert is less than 1000mm



A. SHALLOW TRENCH

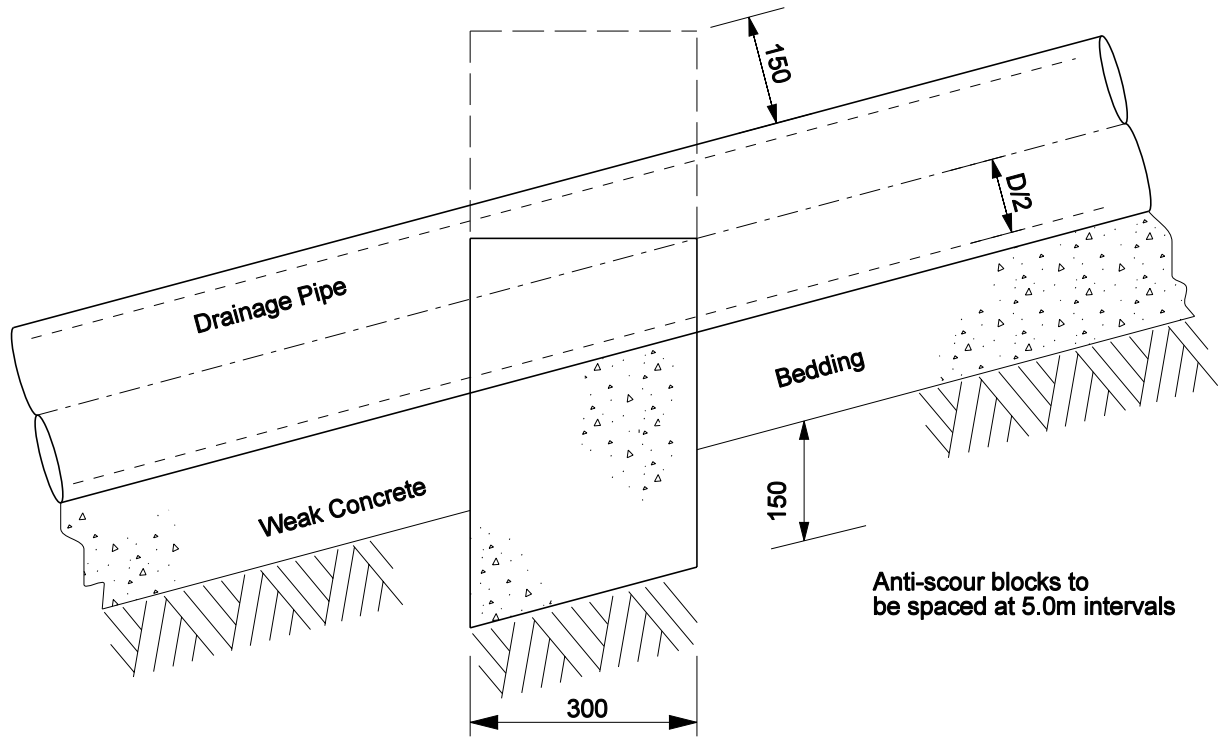


B. DEEPER TRENCH SHOWING RAMPED RISER

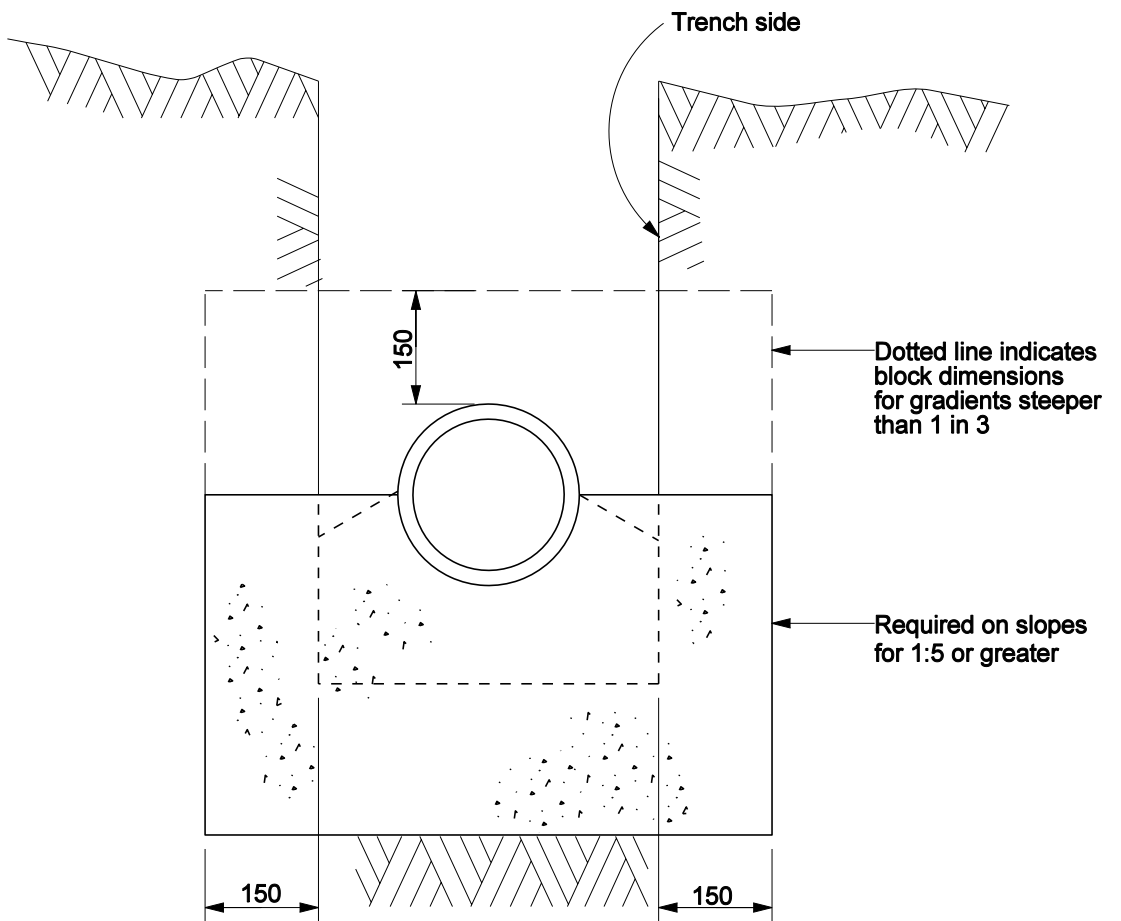


C. HOUSE CONNECTION TO Y-JUNCTION

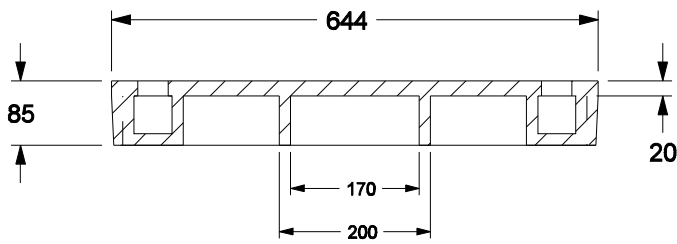
DIMENSIONS IN MILLIMETRES



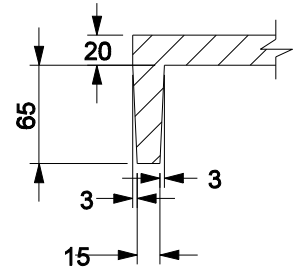
LONG SECTION



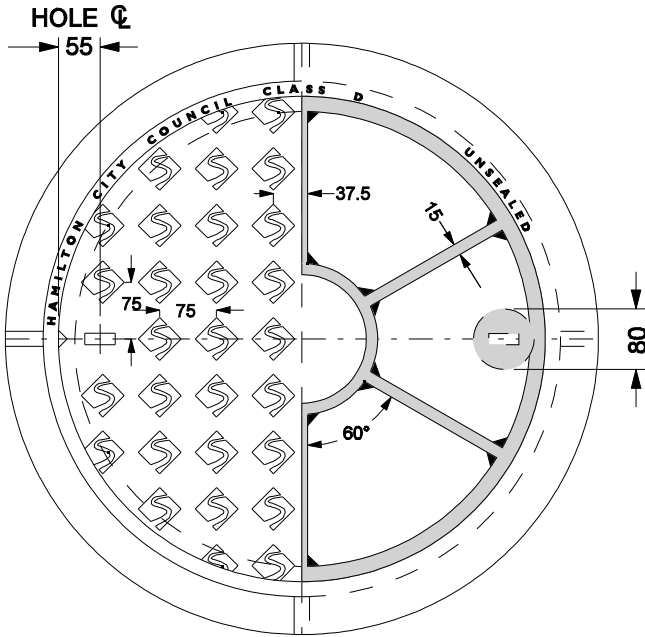
CROSS SECTION



SECTION THROUGH COVER



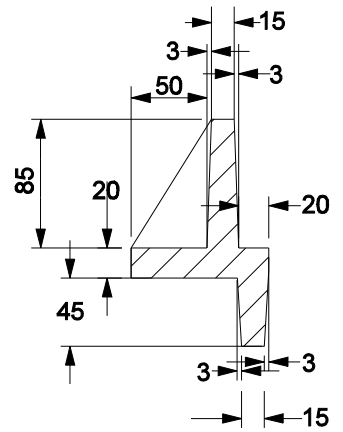
COVER EDGE



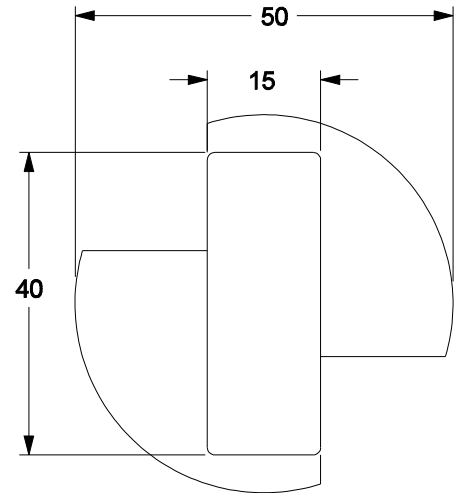
PLAN

NOTES:

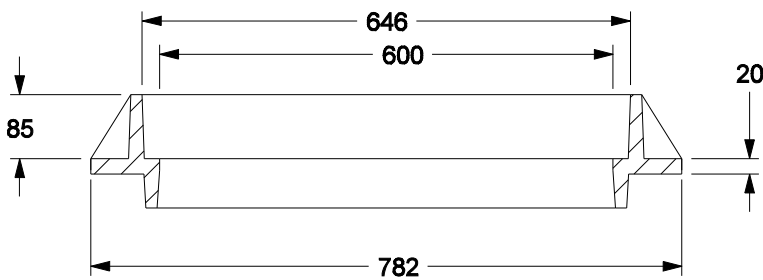
1. Diamond pattern to be 40mm square
2. Letters and pattern to be raised 3mm
3. 20 x 20 fillets where webs meet inner and outer rings



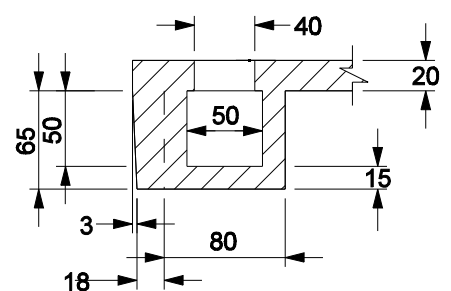
FRAME EDGE



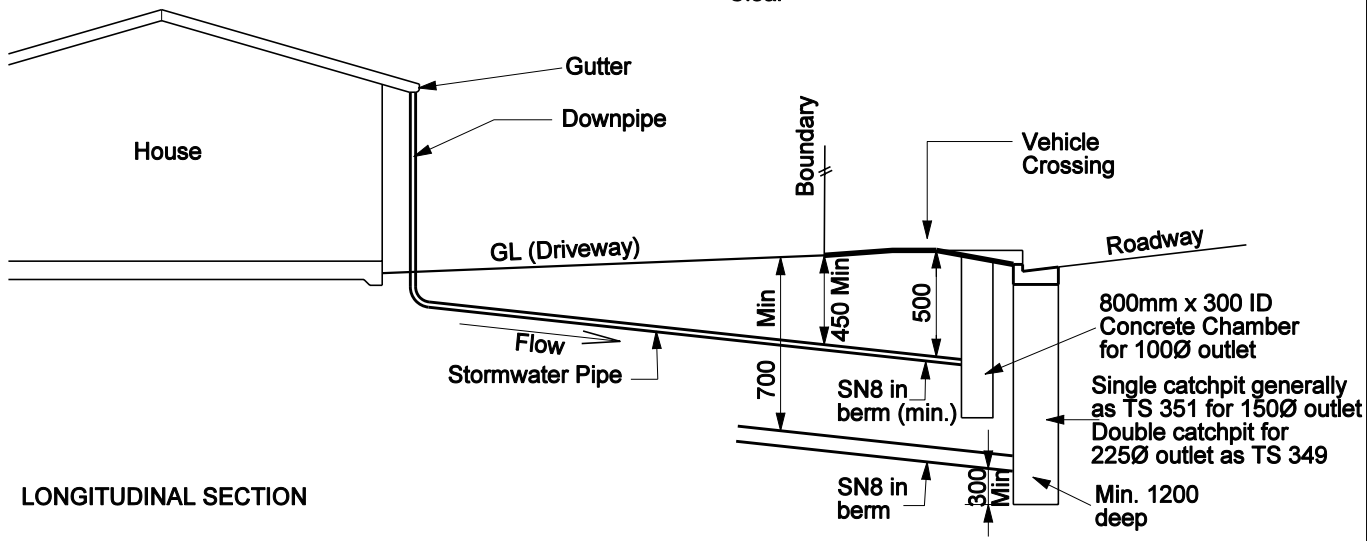
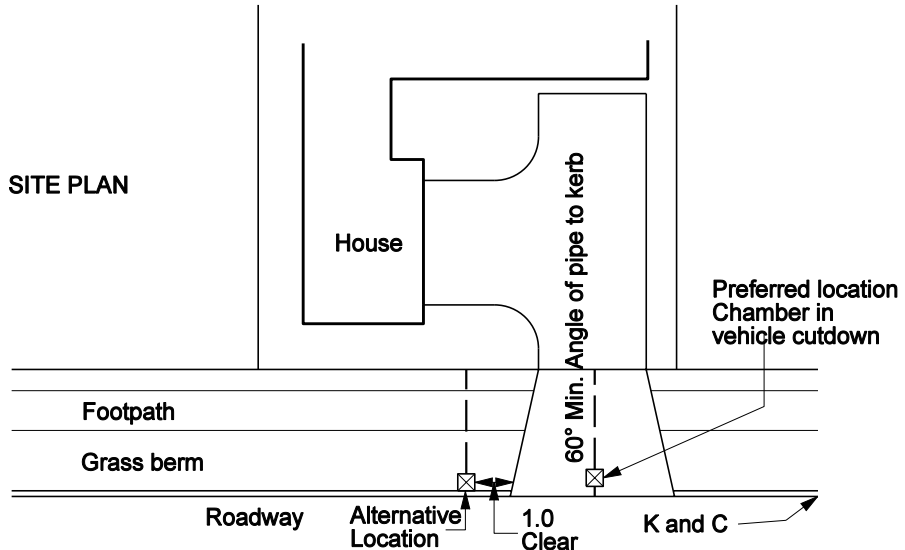
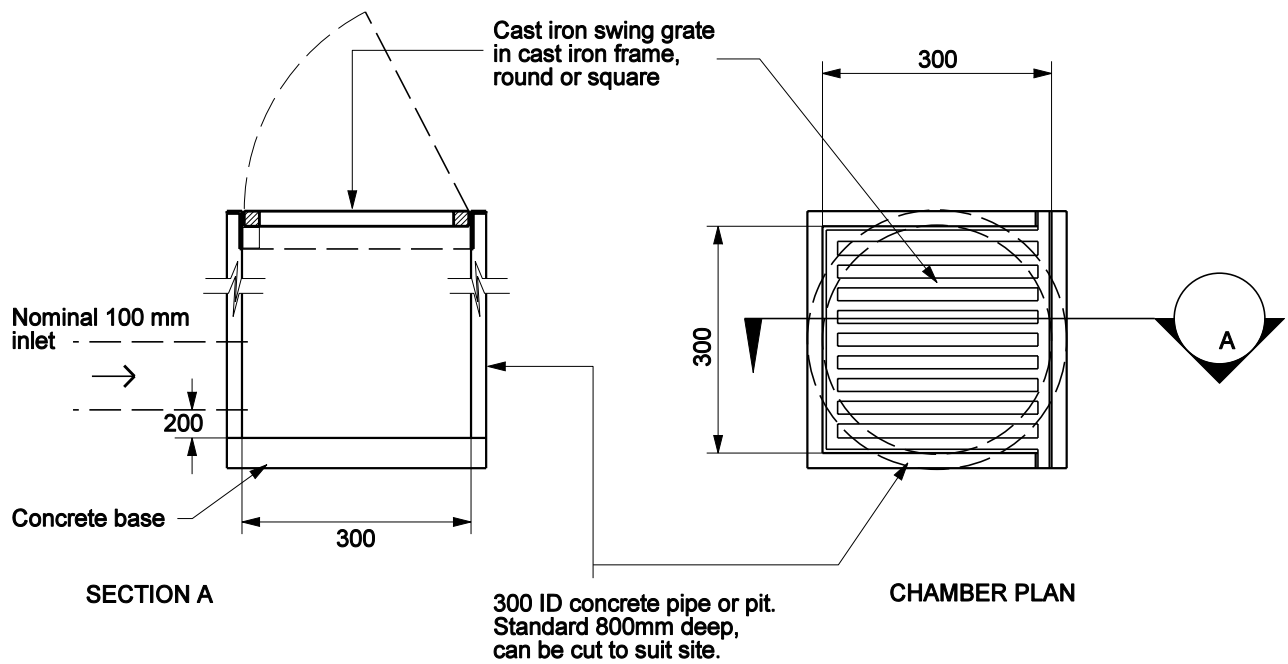
KEYHOLE PLAN



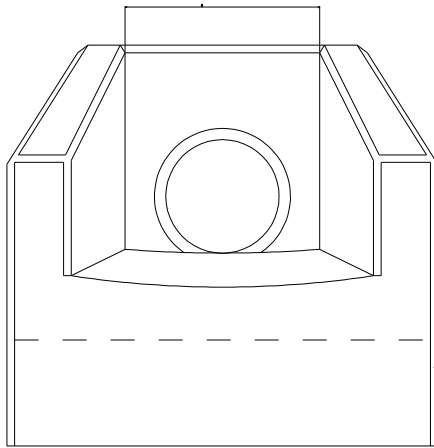
SECTION THROUGH FRAME



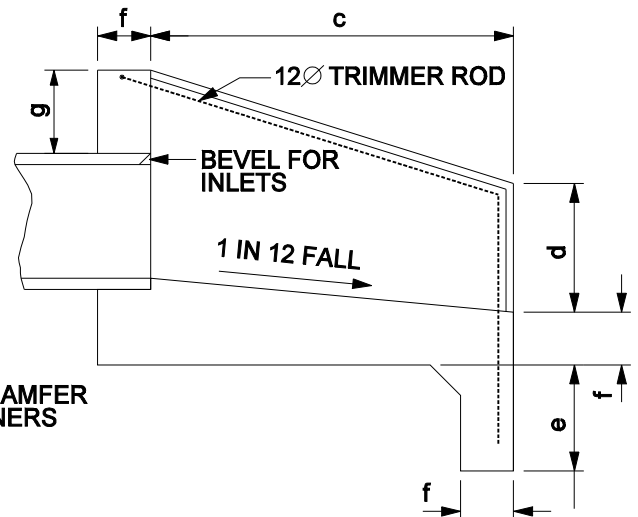
KEYHOLE SECTION



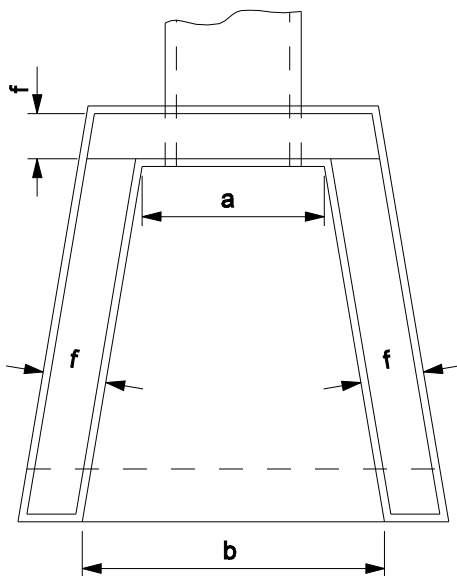
INFILL BUBBLE UP PIT CONSTRUCTION



END ELEVATION



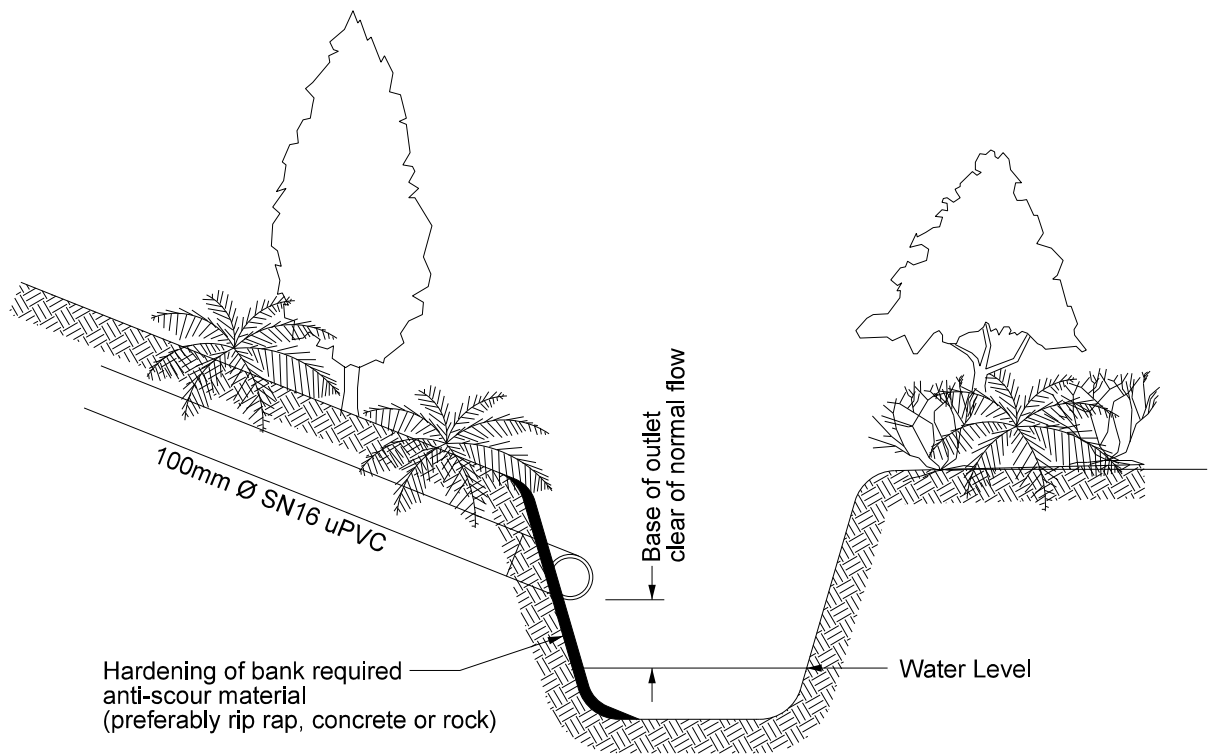
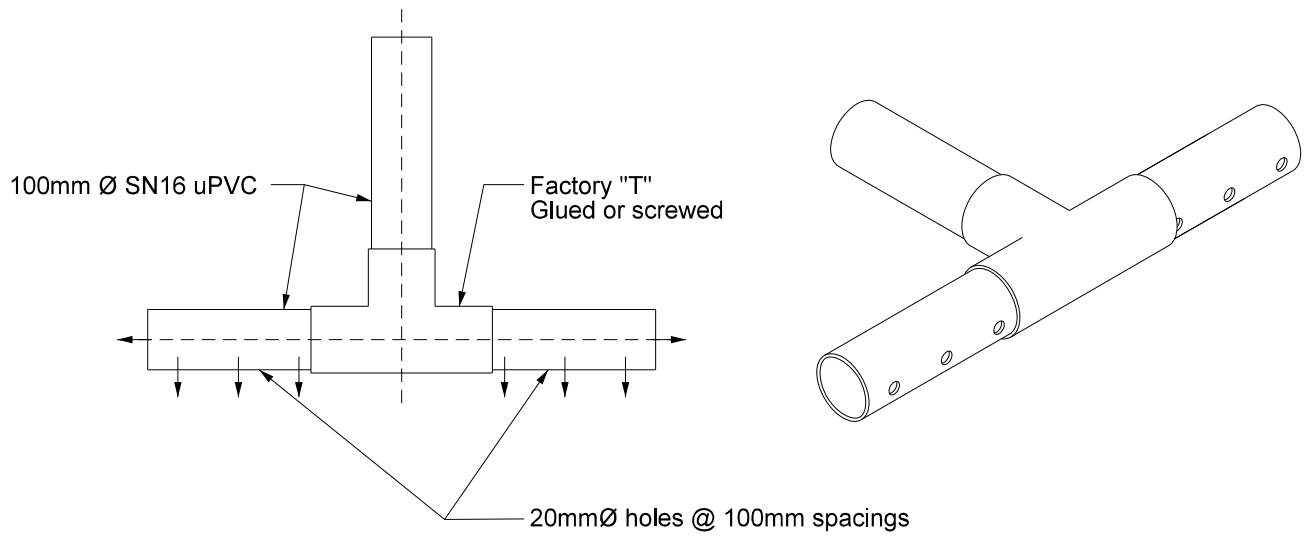
SECTION

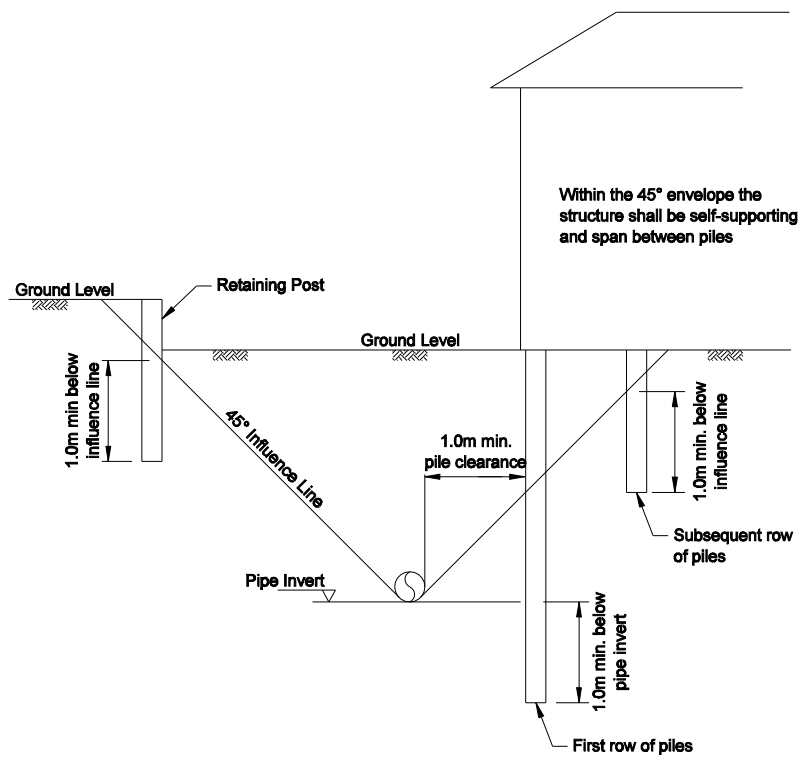


PLAN

PRINCIPAL DIMENSIONS (mm)							
DIA OF PIPE	a	b	c	d	e	f	g
150	300	450	600	200	150	100	150
225	380	600	700	250	200	100	150
300	450	750	750	300	200	100	150
375	550	900	850	350	200	100	150
450	630	1100	900	400	230	150	230
525	700	1200	1000	450	230	150	230
600	800	1400	1100	550	230	150	230
750	1000	1700	1200	600	300	150	300
900	1170	2000	1450	650	300	150	300
1050	1380	2300	1700	750	450	150	300
1200	1520	2600	2100	750	450	150	450
1350	1680	2800	2400	750	450	150	450

1. Reinforce floor & walls with;
 150 - 375 665 Mesh
 450 - 600 663 Mesh OR 10 dia. rods @ 250 crs.
 615 - 900 12 dia. rods @ 250 crs.
 1050 - 1350 12 dia. rods @ 150 crs.
2. All reinforcing shall be placed centrally in walls and floor, and shall be continuous between walls and floor.
3. Laps in structural grade bars to be 300mm minimum.
4. There shall be at least two bars whether mesh or MS over the top of the pipe.
5. Concrete is to be ordinary grade (17.5 MPa) in accordance with NZS 3108:1983.
6. Inlet Structures to have reverse apron fall.

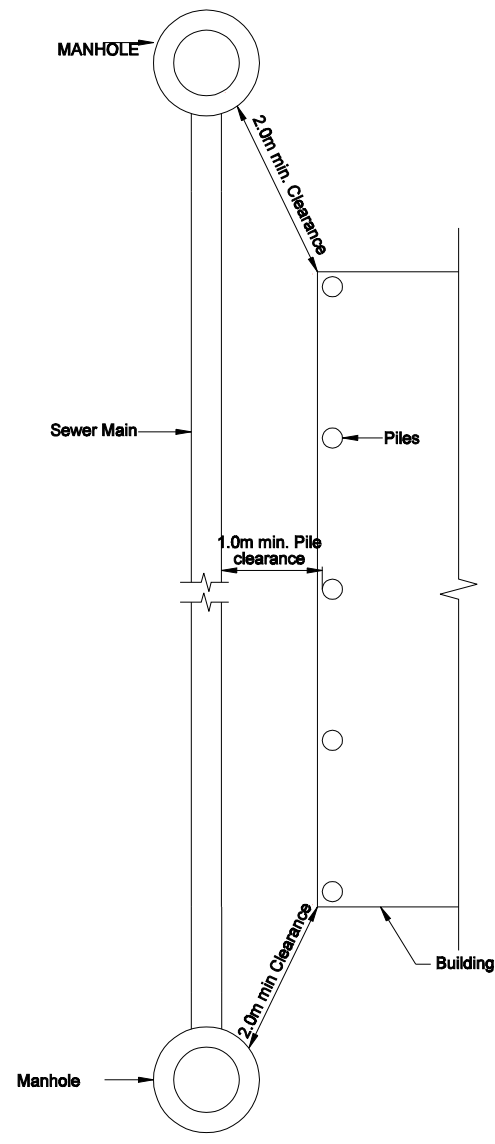




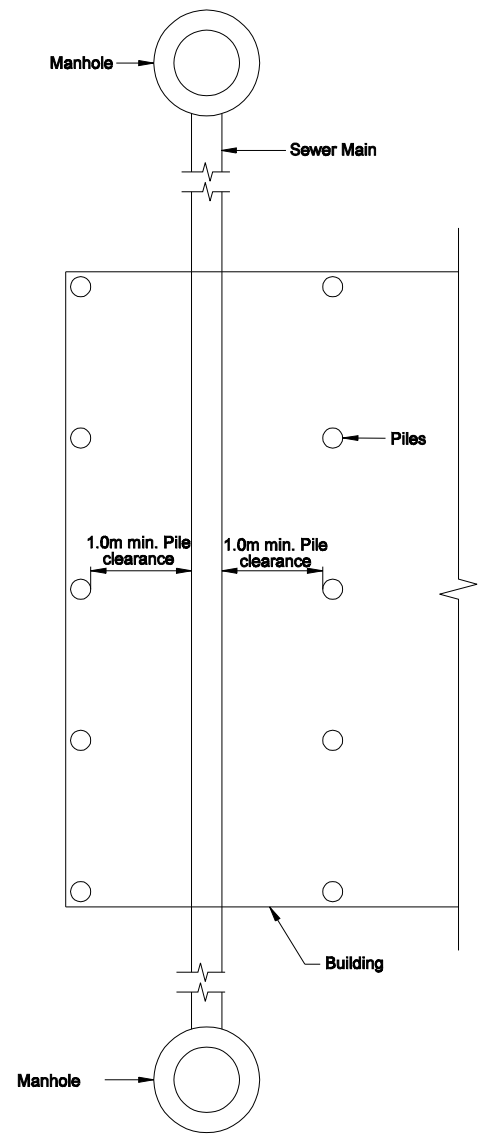
ELEVATION

NOTES

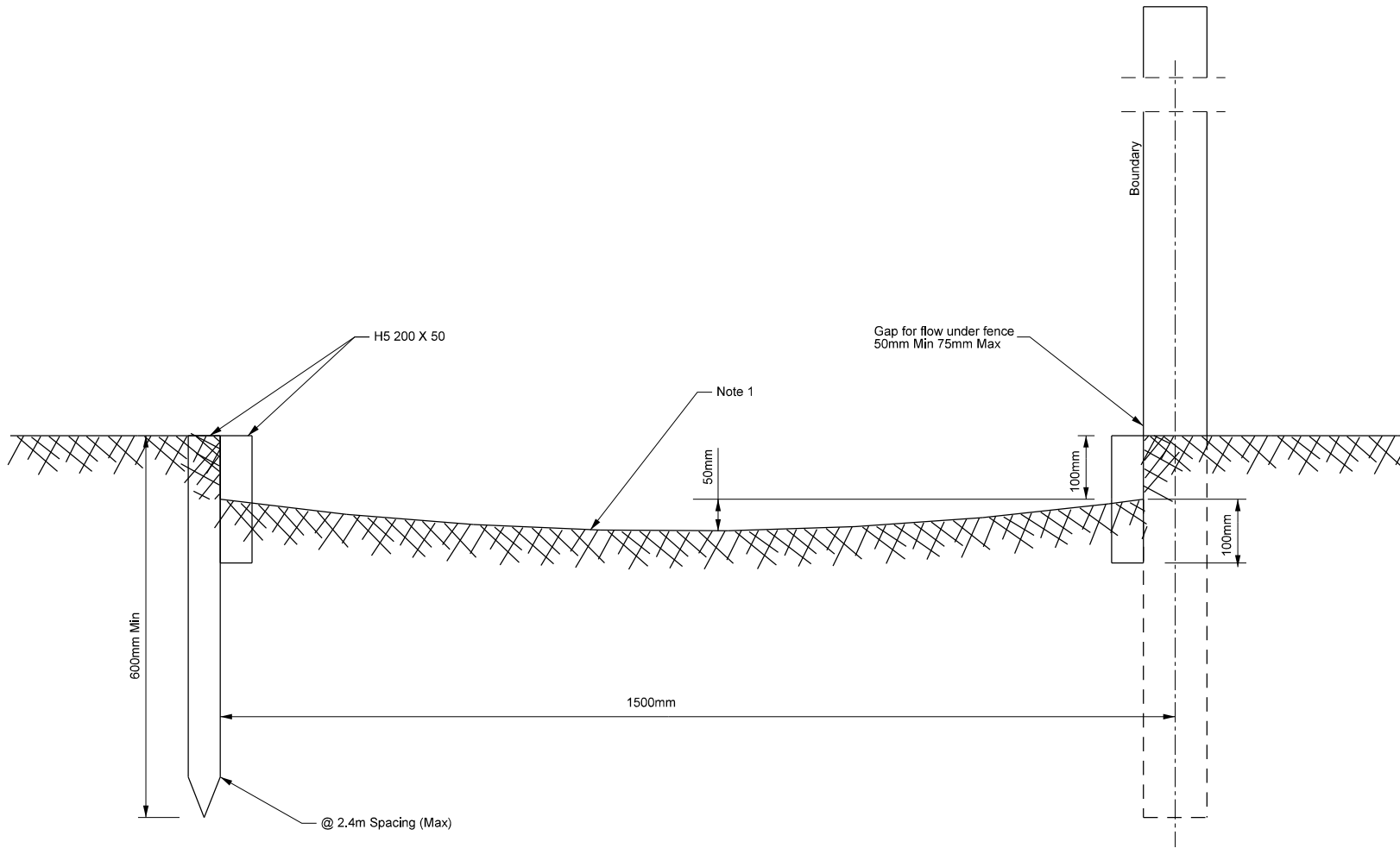
1. Construction over a Drainage Pipeline must not occur unless approved by HCC Engineers.
2. Where it has been approved, the following apply:
 - Prior to construction the pipeline to be covered, shall be CCTV surveyed to assess integrity
 - There shall be no buildings located over manholes and connections
 - There shall be no structural load placed on the pipeline
 - Piles (if used) should be a minimum of 1.0m clear of pipelines
 - Council may require the drainage pipeline to be relaid. This is at the discretion of HCC Engineers



**PLAN
BUILDING ADJACENT TO A SEWER**



**PLAN
BUILDING OVER A SEWER**



NOTES

1. For 10 year ARI flow velocities : < 1.0m/s grass cover is sufficient
: 1.0-1.5m/s reinforcing is required
: > 1.5m/s Hardening is required