

DESIGN FACTORS TO USE WITH AS 2566

Bedding constant,  $R = 0.100$   
 Deflection lag factor,  $L = 1.40$   
 50 year tensile creep modules,  $E_c = 690 \text{ N/mm}^2$   
 Modulus of soil reaction,  $E' = Y/(Dm/t) \text{ N/mm}^2$   
 $Y_{\text{factor}} = 83 \text{ N/mm}^2$



DETAIL:  
**TYPICAL PVC PIPE BEDDING DETAIL**

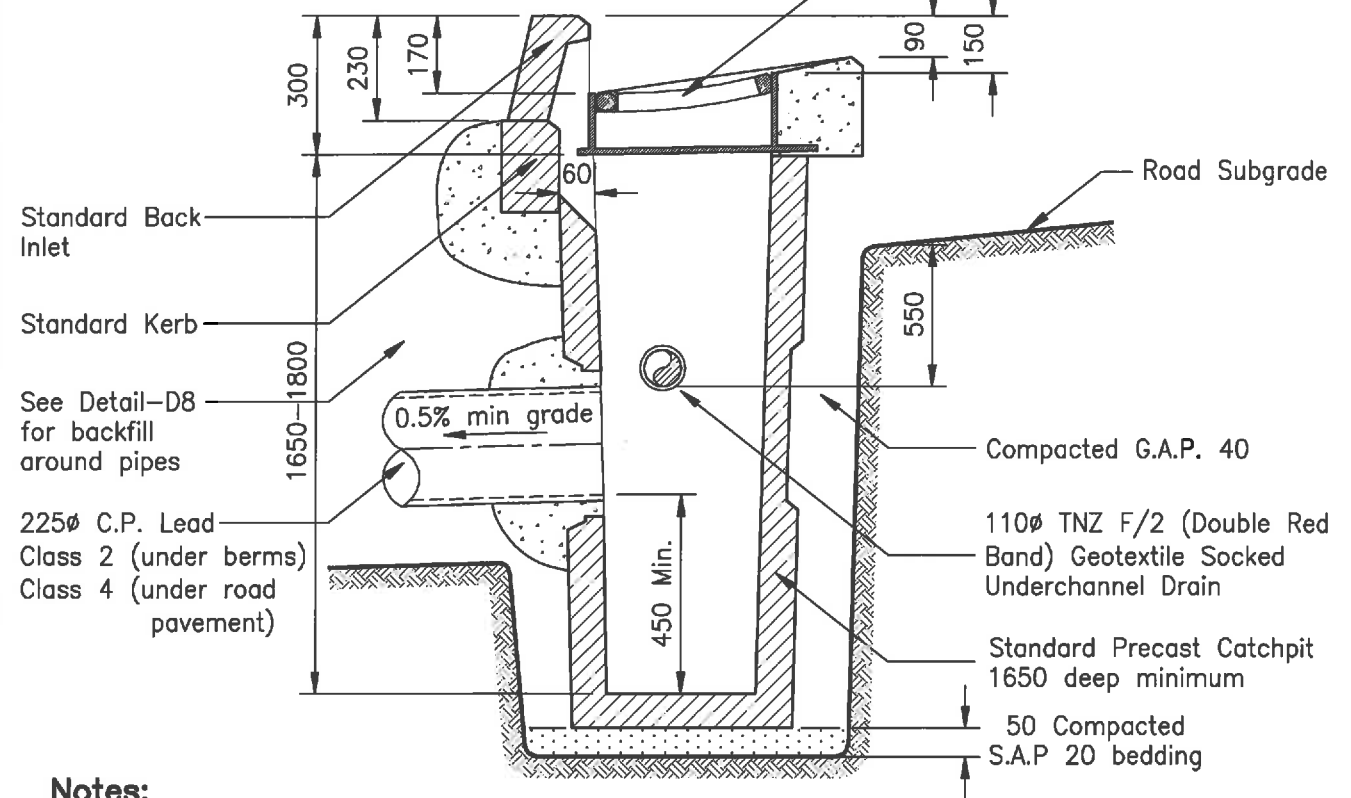
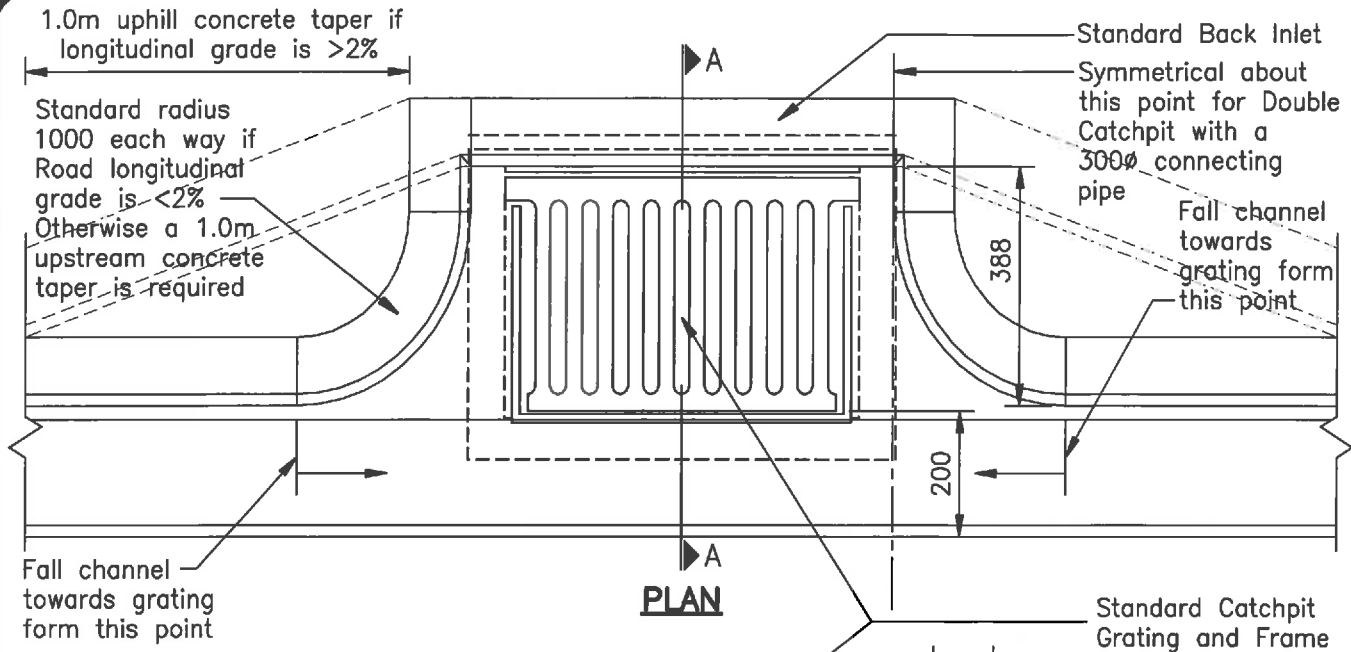
**Engineering Quality Standards**

DETAIL No:  
**D1**

**MANUKAU CITY COUNCIL**

UPDATED:  
**MAY 1995**

# SECTION 3



**Notes:**

1. All dimensions are in Millimetres unless noted otherwise.
2. All Concrete to be ordinary grade 17.5 MPa at 28 days.
3. All pipes to be finished flush with inside wall of Catchpit.
4. Captive Grates are required, refer to Manarc Manual.



DETAIL:

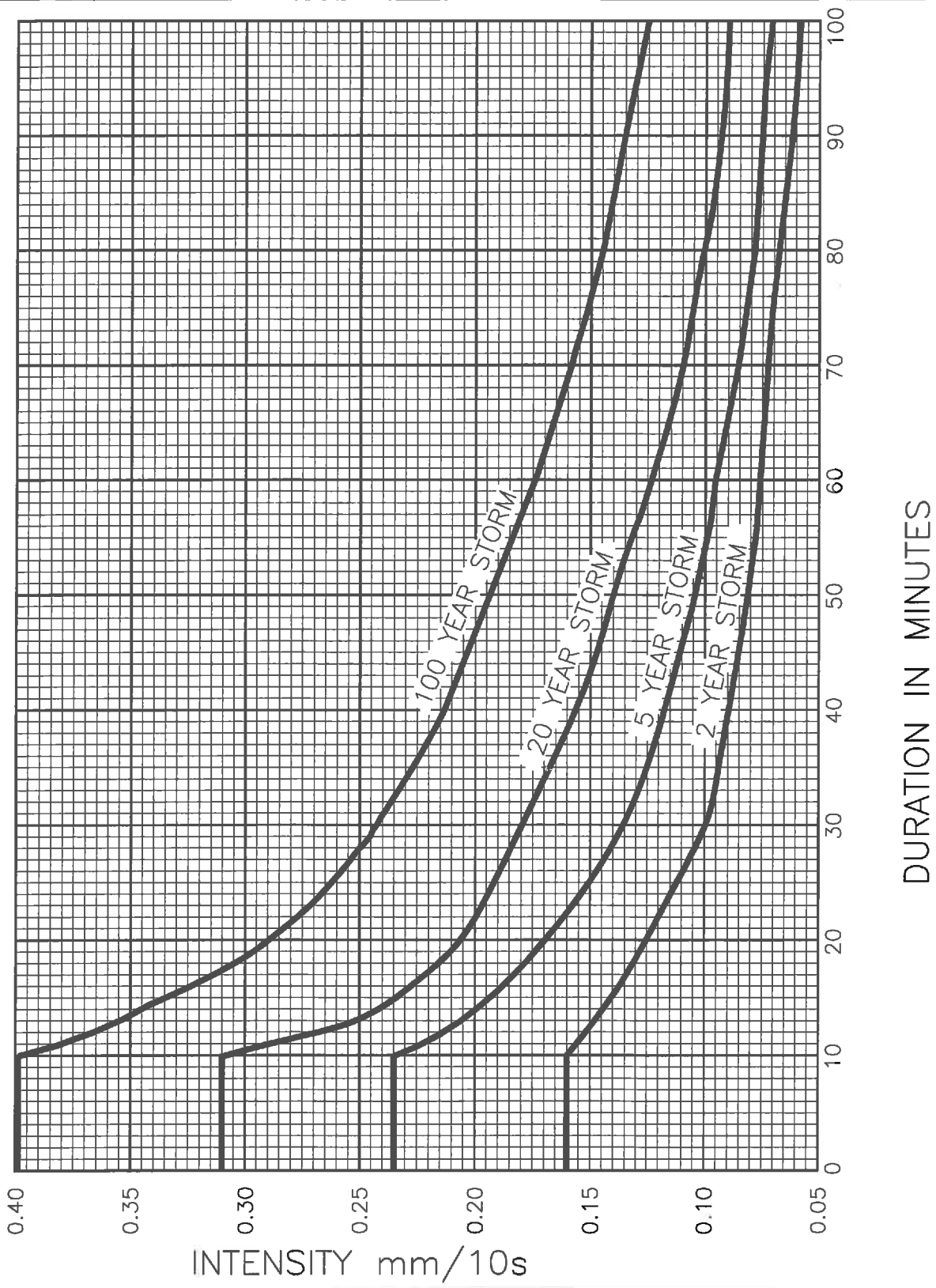
**RECESS CATCHPIT**

**Environmental Management**

DETAIL No: **D4**

**MANUKAU CITY COUNCIL**

UPDATED: **SEP 2009**



DETAIL:  
**INTENSITY CURVES**

**MANUKAU CITY COUNCIL**

Engineering  
Quality  
Standards

DETAIL No:  
**D2**

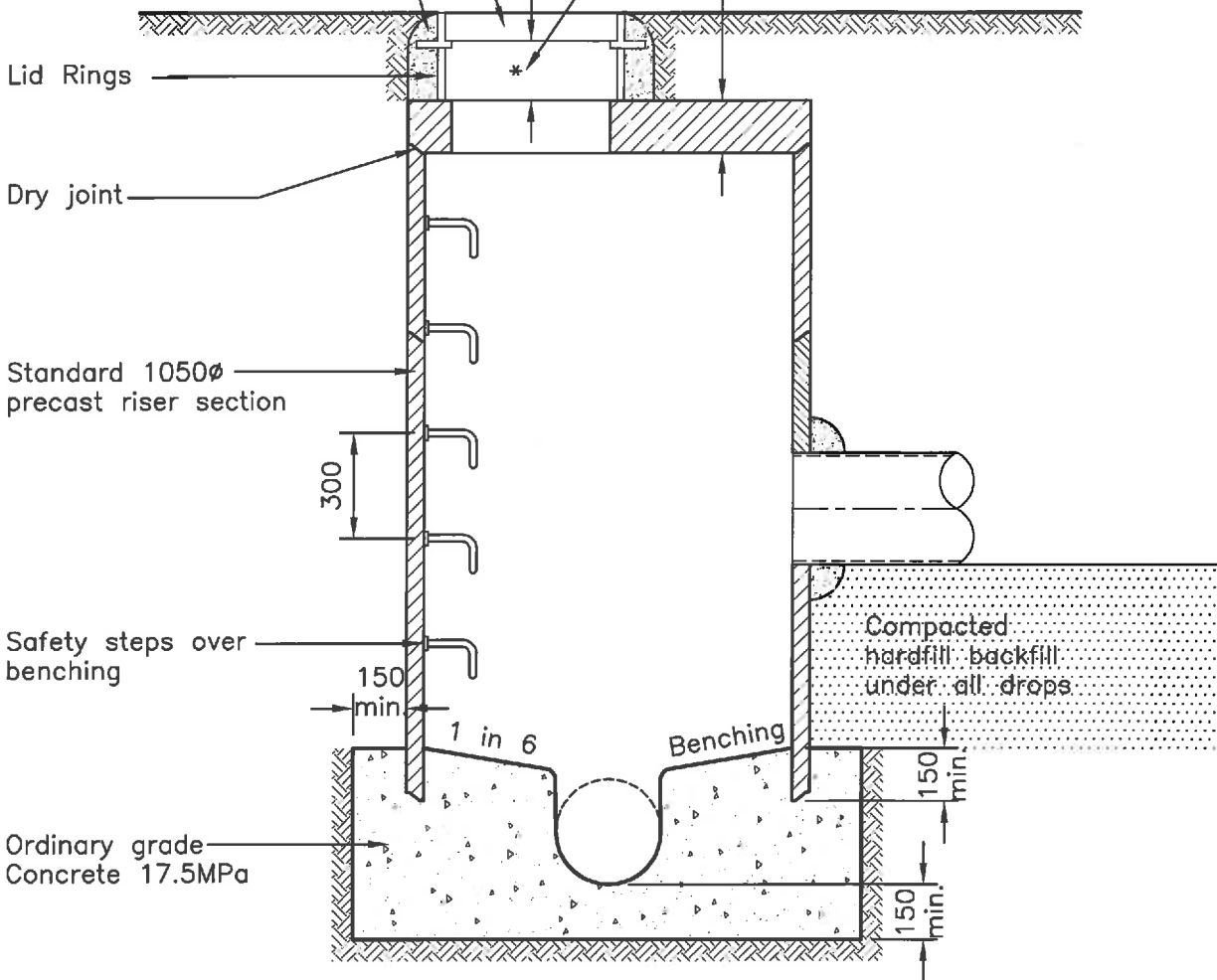
UPDATED:  
**JUL 2004**

Cast iron cover & concrete throat to be painted BLUE:  
 MD-1 Residential Areas  
 MD-2 Road reserves & Industrial areas  
 Non rock in road carriageways

Maximum throat thickness of 250mm\*  
 (\* May increase to 350 with heavy duty lids when fixed surface levels are to be matched)

Ordinary grade Concrete 17.5MPa, steel float finish.

100mm Residential  
 150mm Industrial & roads



**Sectional View**

**Notes:**

- 1- All dimensions are in Millimetres unless noted otherwise.
- 2- For pipes greater than 600mm dia., manholes are to be specifically designed.
- 3- For pipes 1200 dia. and greater, manholes to be factory fabricated bends with riser off-taker.



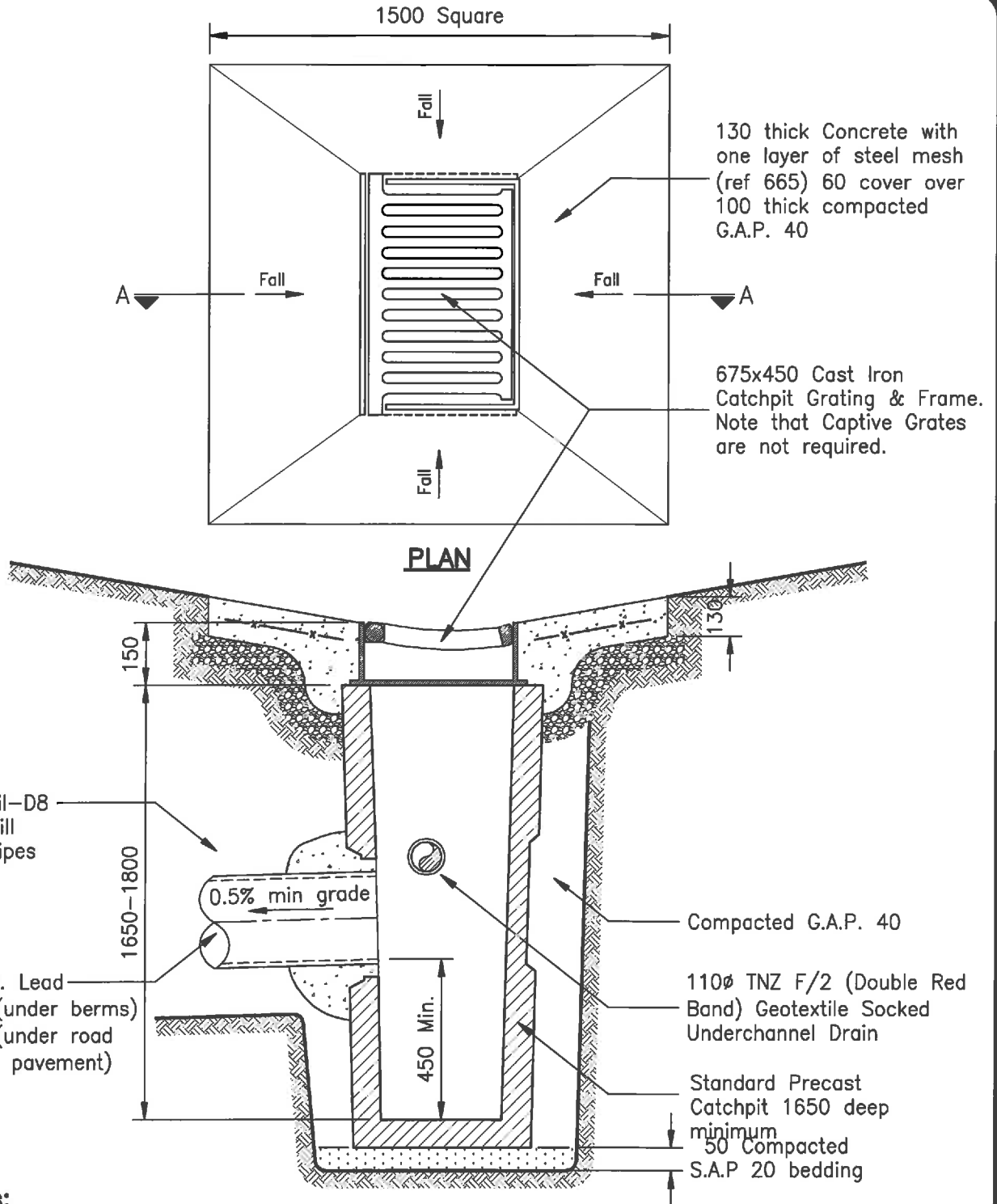
DETAIL:  
**STORMWATER MANHOLE DETAIL**

Environmental  
 Management

DETAIL No:  
**D5**

**MANUKAU CITY COUNCIL**

UPDATED:  
**OCT 2008**



**Notes:**

1. All dimensions are in Millimetres unless noted otherwise.
2. All Concrete to be ordinary grade 17.5 MPa at 28 days.
3. All pipes to be finished flush with inside wall of Catchpit.



DETAIL:

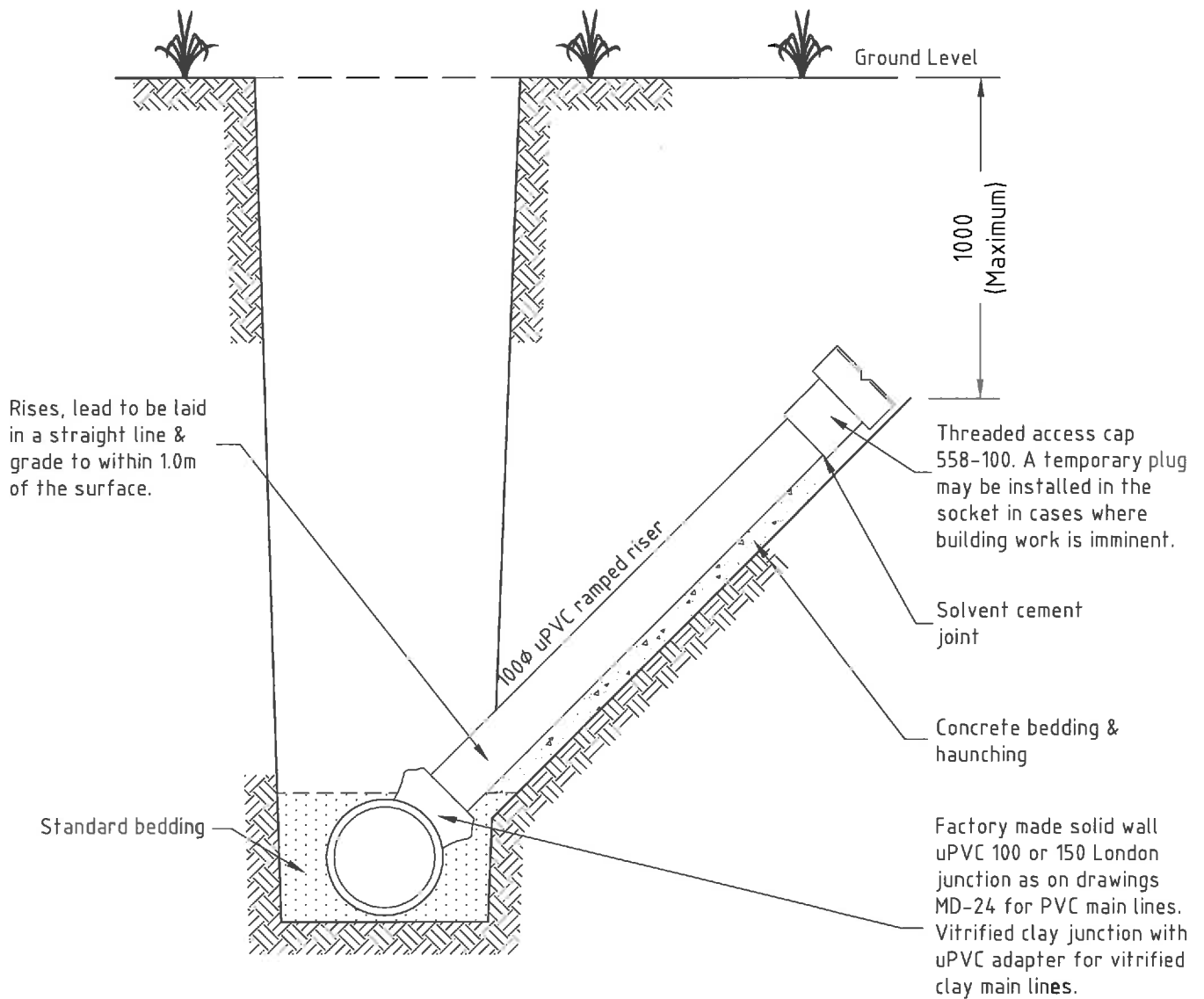
**FIELD CATCHPIT**

**Environmental Management**

DETAIL No:  
**D6**

**MANUKAU CITY COUNCIL**

UPDATED:  
**SEP 2009**



**Note:**

Maximum gradient desirable 1:1. Steeper gradient will be permitted to maintain building area. Pipe must be supported on natural ground where possible.



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DETAIL:

STORMWATER HOUSE  
CONNECTION

Engineering  
Quality  
Standards

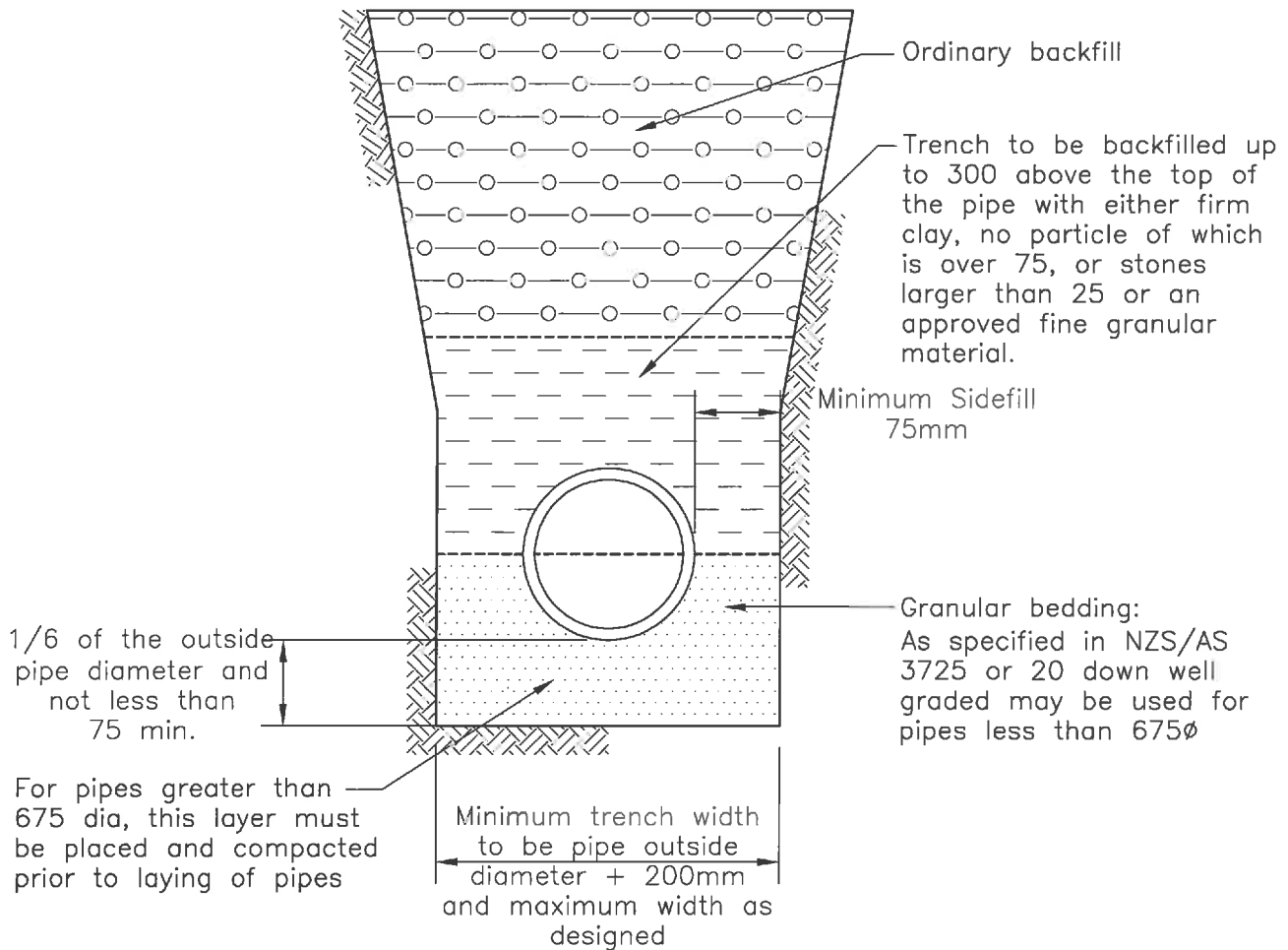
DETAIL No:

D7

MANUKAU CITY COUNCIL

UPDATED:

AUG 2006



DESIGN FACTORS TO USE WITH NZS/AS 3725

Load factor for wide and narrow trench condition  $F_t = 1.9$   
 Settlement ratio for wide trench condition  $Y_s = +0.6$ .  
 Projection ratio for wide trench condition  $p = 1.15$



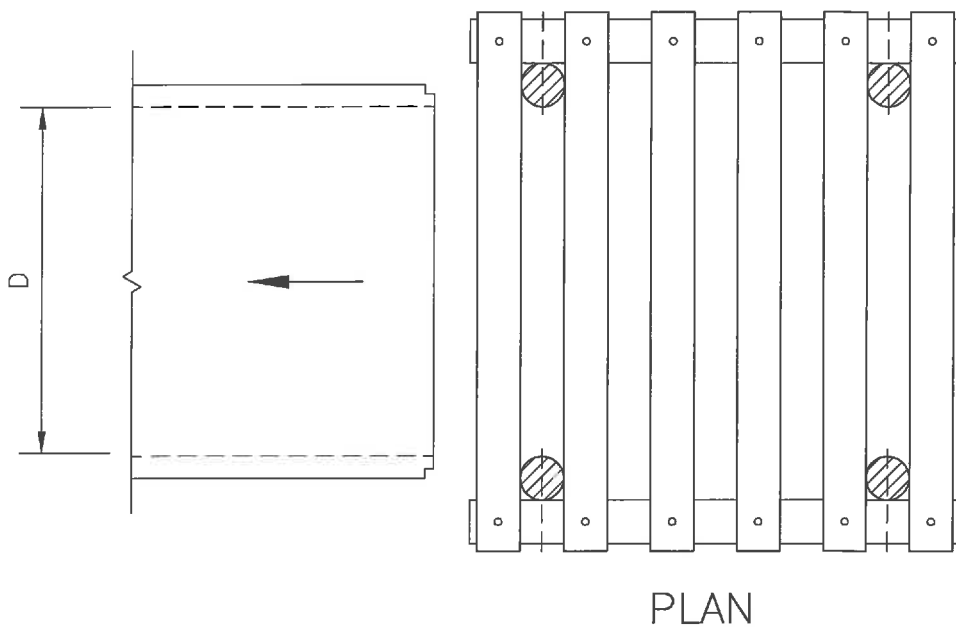
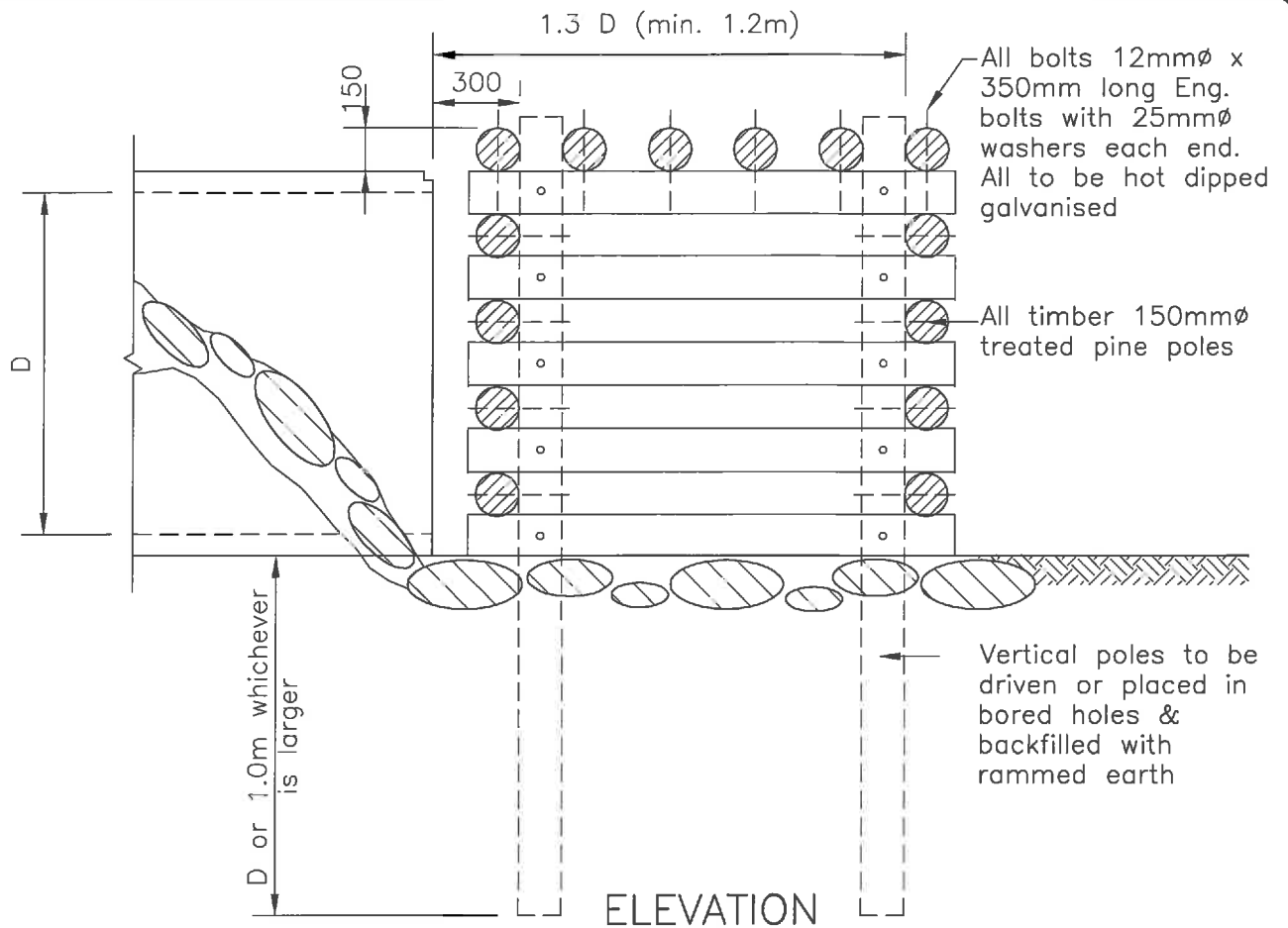
DETAIL:  
**TYPICAL GRANULAR BEDDING  
 DETAIL**

**Engineering  
 Quality  
 Standards**

DETAIL No:  
**D8**

**MANUKAU CITY COUNCIL**

UPDATED:  
**MAY 1995**



Note:  
Grouted stonework to be placed at 45° to retain adjoining ground.



DETAIL:  
**STORMWATER INLET  
GRILLE**

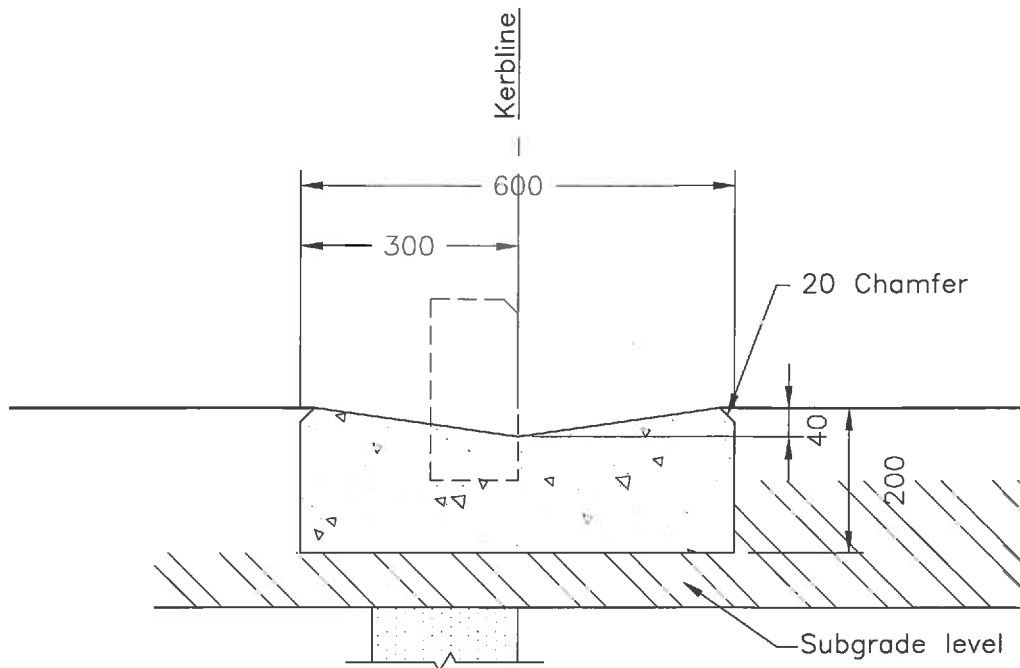
**MANUKAU CITY COUNCIL**

**Engineering  
Quality  
Standards**

DETAIL No:  
**D9**

UPDATED:  
**DEC 1992**

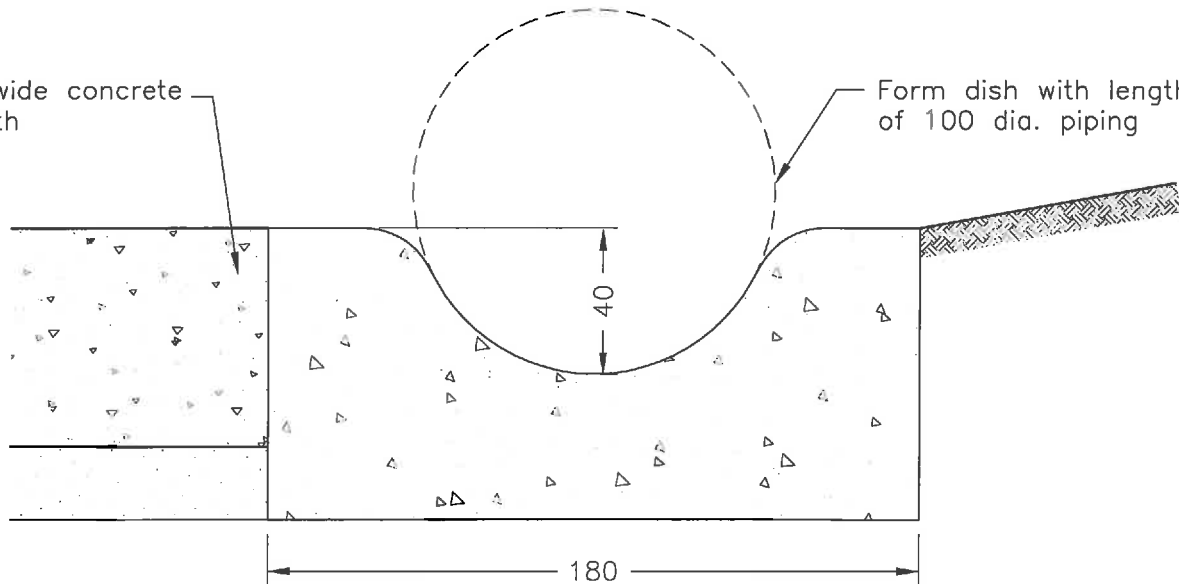




PARKING AREA

1400 wide concrete footpath

Form dish with length of 100 dia. piping



LOW LEVEL PATH



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DETAIL:

DISHED CHANNEL

Engineering  
Quality  
Standards

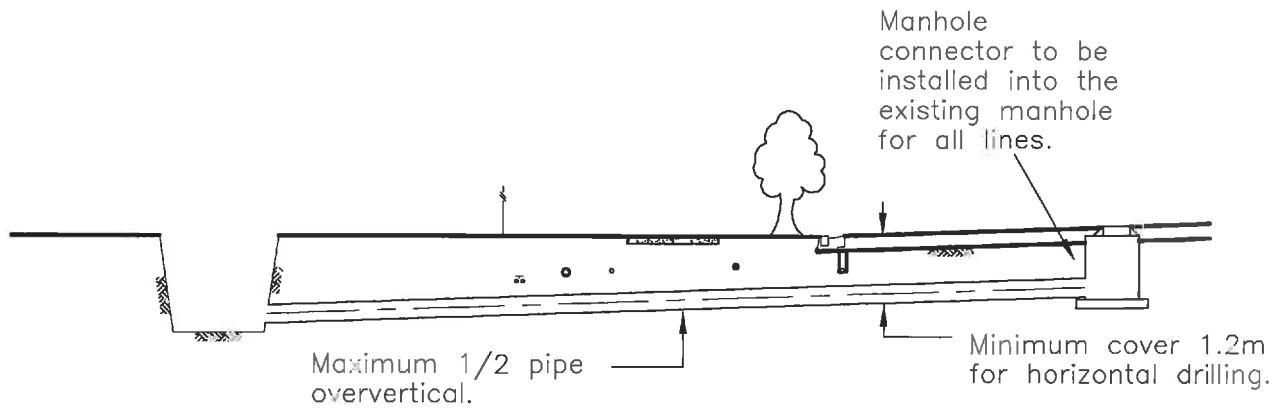
DETAIL No:

D10

MANUKAU CITY COUNCIL

UPDATED:

DEC 1992



### DESIGN

Minimum grade of 1 in 100 & minimum cover of 1.2m below kerb level. For pipe lines larger than 150mm $\phi$  utilising vitrified clay or concrete, with belled joints, the void between the pipe and drilled hole is to be concrete grouted.

### ACCEPTANCE

No undervertical in pipe, maximum 1/2 pipe oververtical provided no ponding in the line. If not within the specified tolerance the pipe may have to be reconstructed by normal trenching techniques requiring an open excavation permit.

When direct drilled into existing manhole, all debris to be caught and removed.

If the drill hole exceeds the pipe outside diameter by more than 25mm it shall be concrete grouted.

### MATERIAL

All pipe materials and connections are to comply with the approved standards. For stormwater thrusting purposes, solvent cement jointed PVC pipes complying with the following standard diameter wall thickness maybe used.

Normal size (ID)	Diamter (OD)	Wall thickness
225mm	250mm	8.9mm
300mm	315mm	11.2mm
375mm	400mm	14.2mm



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DETAIL:

## HORIZONTAL DRILLING OF PIPES

**Engineering  
Quality  
Standards**

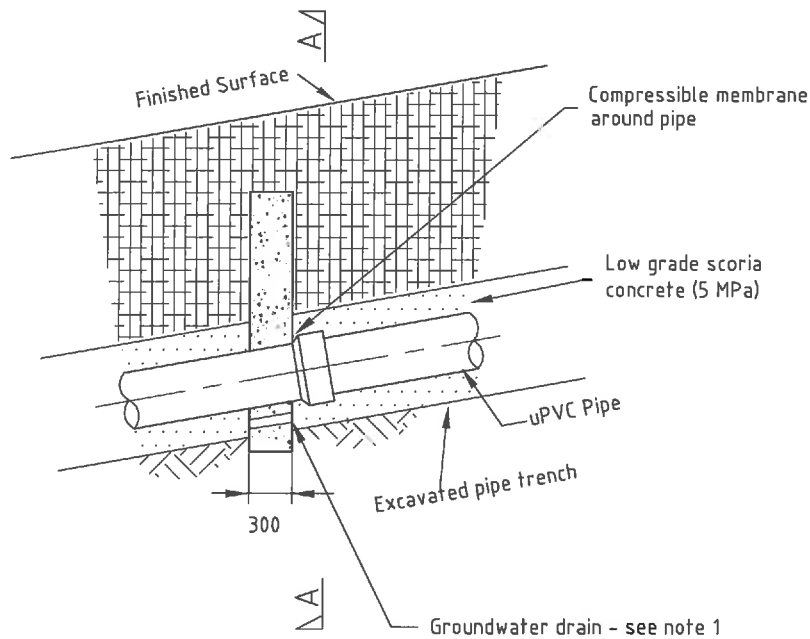
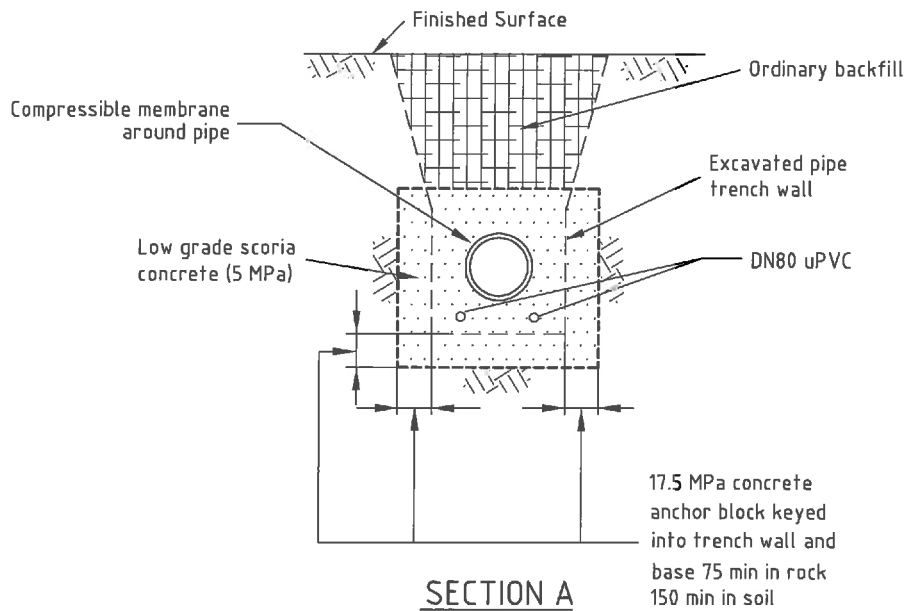
DETAIL No:

**D12**

**MANUKAU CITY COUNCIL**

UPDATED:

**OCT 2004**



**CONCRETE ANCHOR BLOCK DETAIL**

**NOTES**

1. Groundwater drain through anchor block 2x DN 80 PVC drain pipes. Cover upstream opening with filter membrane and anchor the filter membrane to a minimum of 150mm deep in the bedding material on the upstream side.
2. Reinforcing for concrete anchor block to be shown on design drawing.
3. For PVC and PE pipes, concrete anchor blocks are to be located at pipe joints and not exceed 6m spacings.



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DETAIL:

**ANCHOR BLOCK DETAIL**

Engineering  
Quality  
Standards

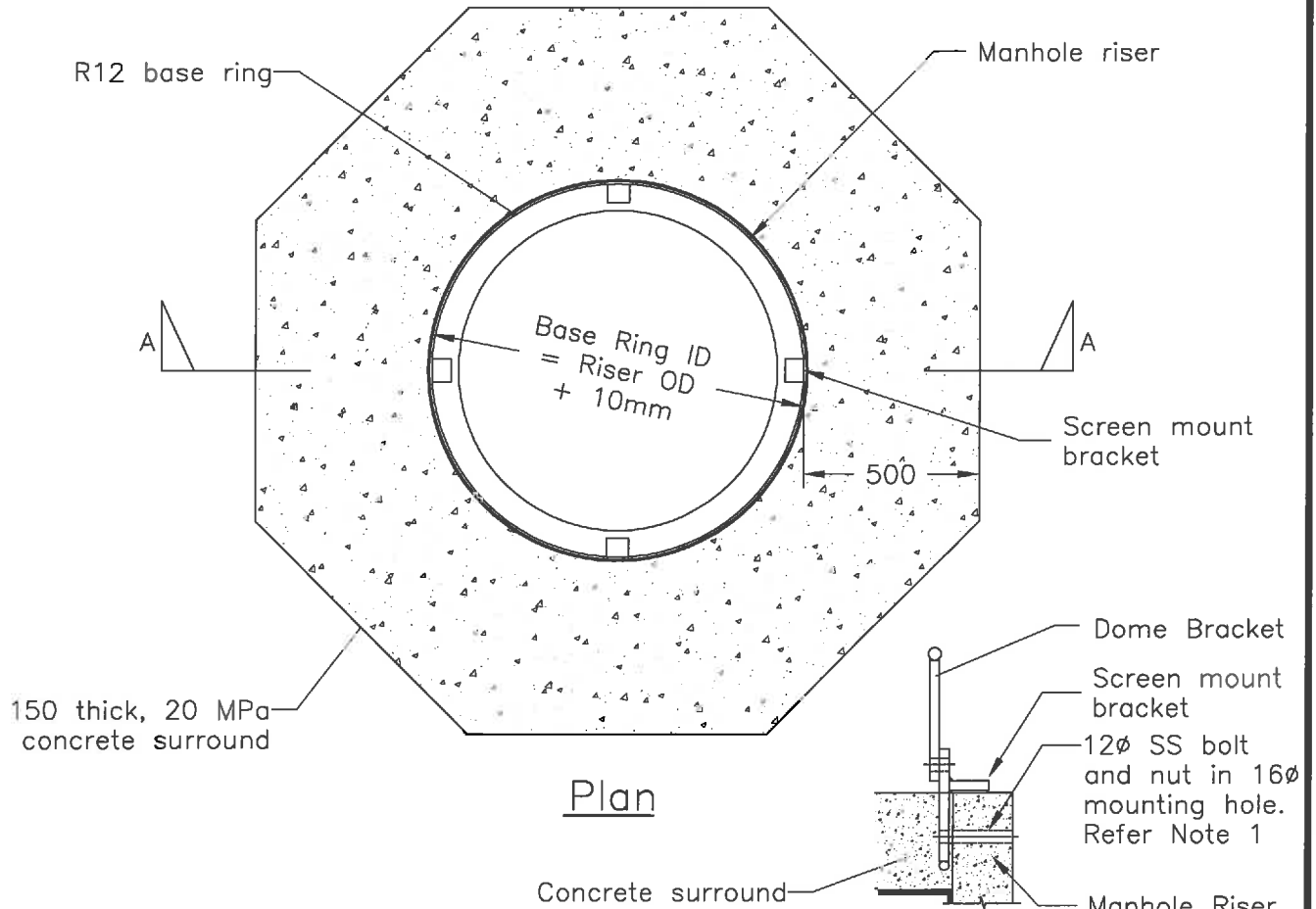
DETAIL No:

**D13**

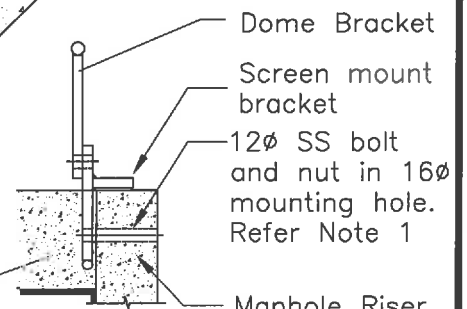
**MANUKAU CITY COUNCIL**

UPDATED:

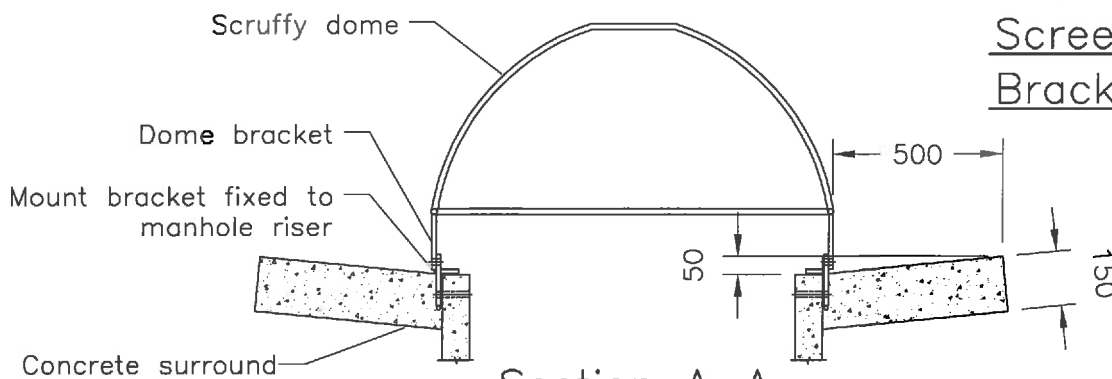
**OCT 2004**



Plan



Screen Mount Bracket Detail



Section A-A

Notes

1. Mounting holes in risers only required if riser top is above surrounding ground level.
2. Burr bolt end after installation.

	Fix dome to mount bracket with
Up to 1050 $\phi$ Riser	2x 12 $\phi$ SS bolts and locknuts, and 2x Standard pattern padlocks
Over 1050 $\phi$ Riser	3x 12 $\phi$ SS bolts and locknuts, and 3x Standard pattern padlocks



DETAIL:

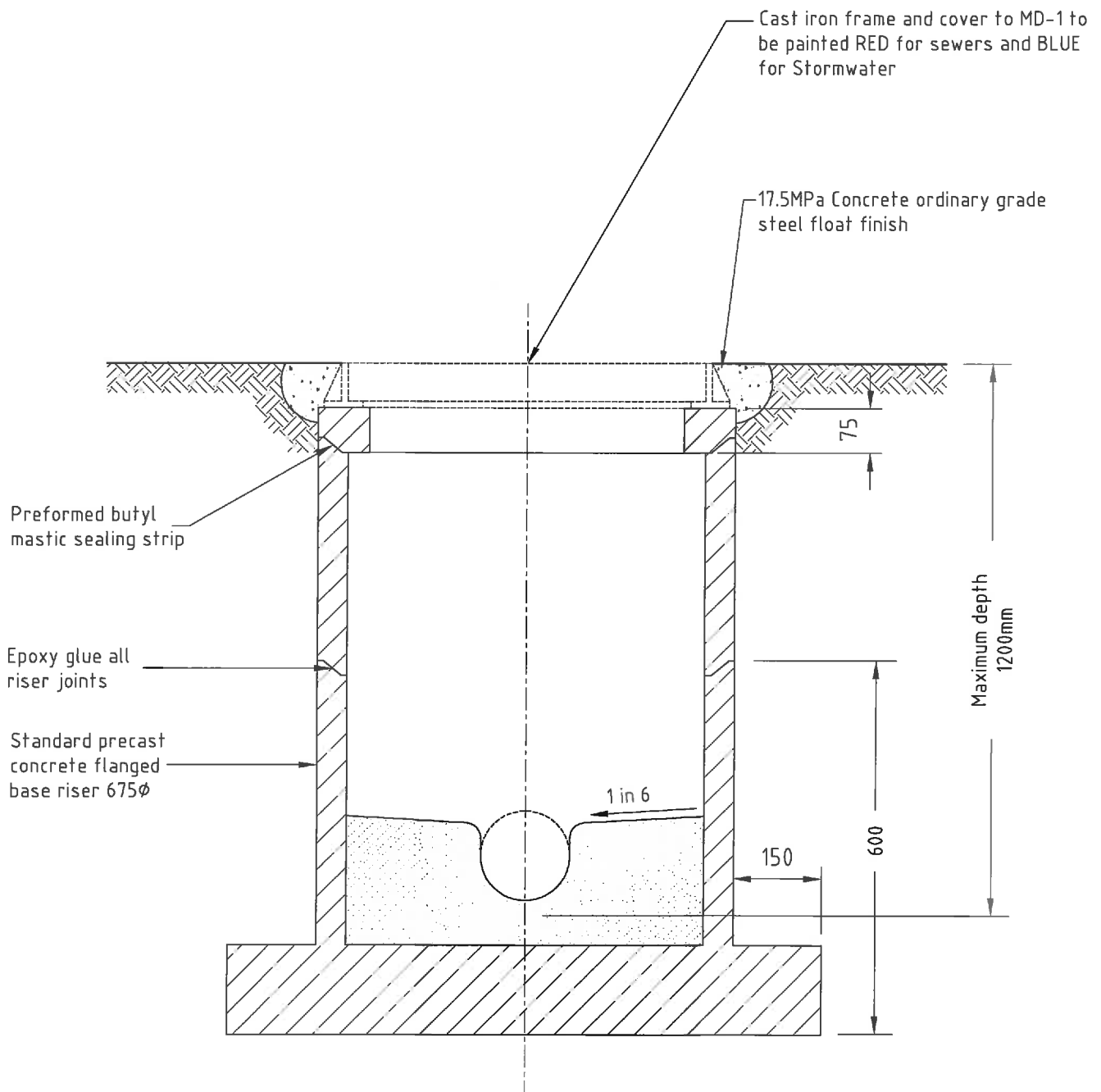
SCRUFFY DOME  
INSTALLATION

Engineering  
Quality  
Standards

DETAIL No:  
D14

MANUKAU CITY COUNCIL

UPDATED:  
OCT 2003



**Note:**

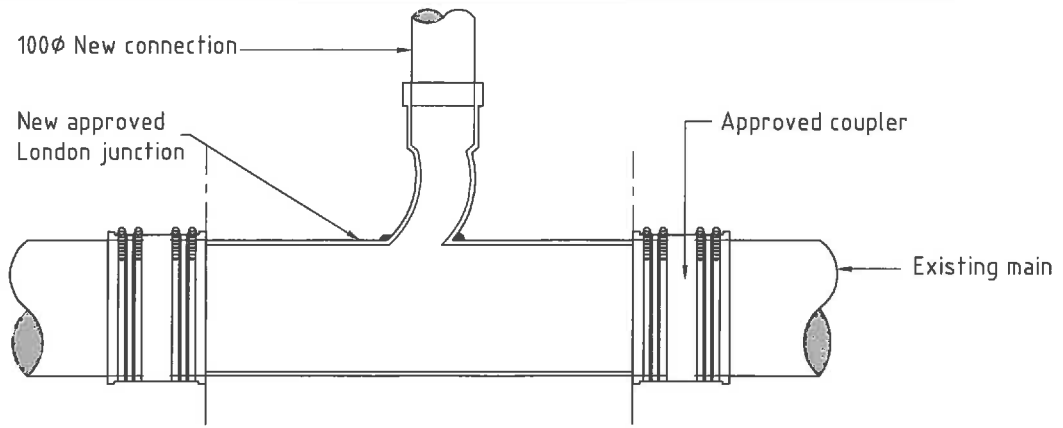
Only to be used for the terminating manholes on level Residential sites with a maximum of three 100mmØ House Connections or when a fixed surface level is established.



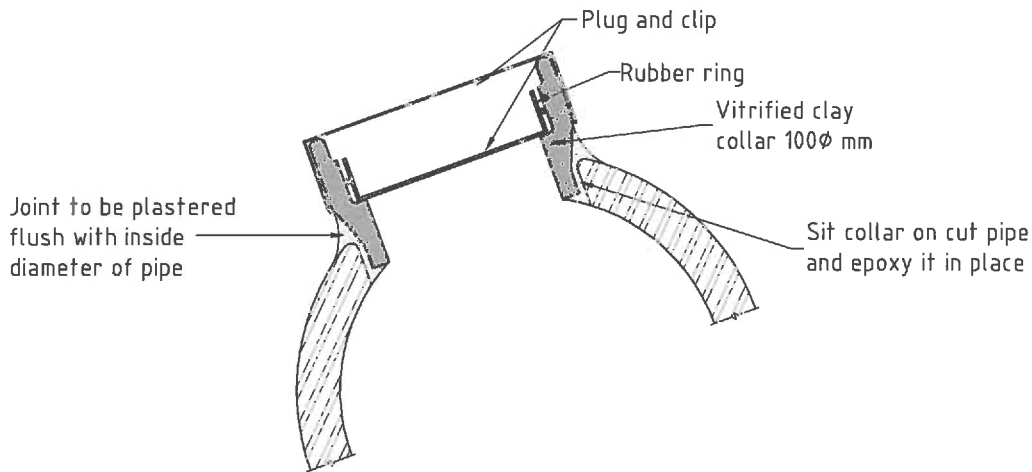
DETAIL:  
**SHALLOW MANHOLE DETAILS**

**Engineering Quality Standards**  
DETAIL No: **D15**  
UPDATED: **AUG 2006**

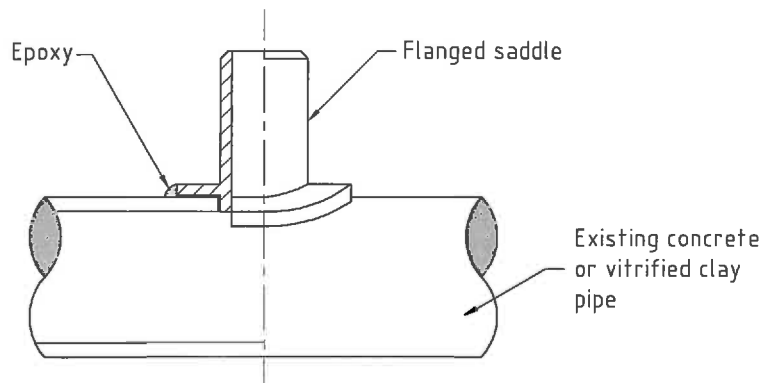
**MANUKAU CITY COUNCIL**



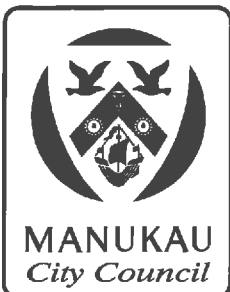
JUNCTIONS INSERTED INTO EXISTING MAINS  $\phi < 225\text{mm}$



VITRIFIED CLAY COLLAR INSERTED INTO EXISTING CONCRETE OR CLAY PIPE MAIN  $\phi \geq 225\text{mm}$



VITRIFIED CLAY SADDLE INSERTED INTO EXISTING CONCRETE OR CLAY PIPE



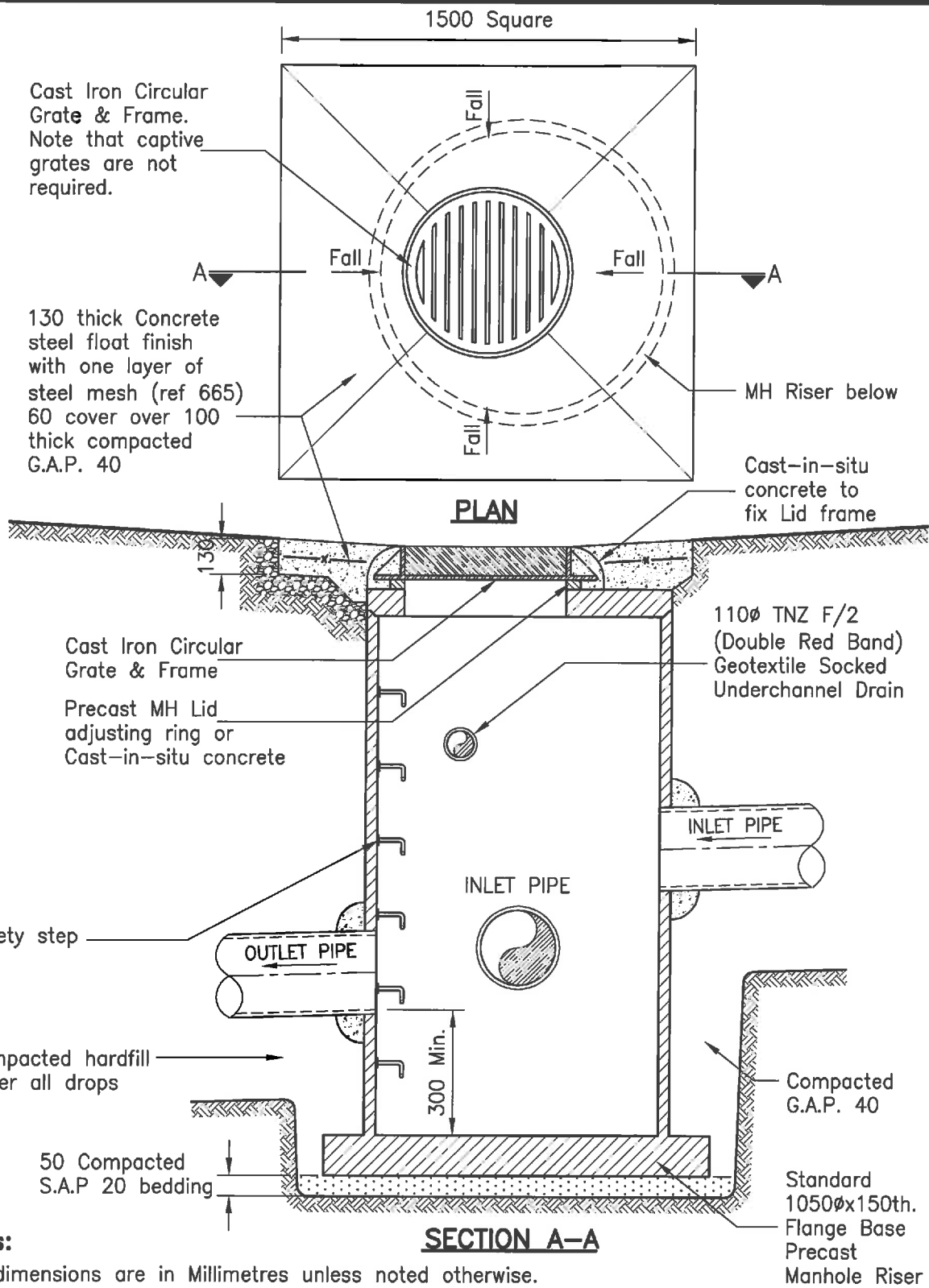
DETAIL:  
**CONNECTION INTO EXISTING PIPES**

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**Engineering Quality Standards**

DETAIL No:  
**D16**

UPDATED:  
**AUG 2006**



DETAIL:

**CATCHPIT MANHOLE DETAIL**

Environmental Management

DETAIL No:  
**D-17**

**MANUKAU CITY COUNCIL**

UPDATED:  
**SEP 2008**