**SECTION 18  STANDARD DRAWINGS**

**Drainage**

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>D01</td>
<td>Standard Manhole – Cross Section</td>
<td>18-3</td>
</tr>
<tr>
<td>D02</td>
<td>Standard Manhole – Plan View</td>
<td>18-4</td>
</tr>
<tr>
<td>D03</td>
<td>Shallow Manhole Details</td>
<td>18-5</td>
</tr>
<tr>
<td>D04</td>
<td>Deep Manhole Details</td>
<td>18-6</td>
</tr>
<tr>
<td>D05</td>
<td>Deep Manhole Details</td>
<td>18-7</td>
</tr>
<tr>
<td>D06</td>
<td>Heavy Duty Manhole Cover and Frame</td>
<td>18-8</td>
</tr>
<tr>
<td>D07</td>
<td>Standard Drop Manhole Details</td>
<td>18-9</td>
</tr>
<tr>
<td>D08</td>
<td>Manhole Components</td>
<td>18-10</td>
</tr>
<tr>
<td>D09</td>
<td>Access Chamber / Shaft</td>
<td>18-11</td>
</tr>
<tr>
<td>D10</td>
<td>Standard Cleaning Eyes Details</td>
<td>18-12</td>
</tr>
<tr>
<td>D11</td>
<td>Cleaning Eyes Cover Details</td>
<td>18-13</td>
</tr>
<tr>
<td>D12</td>
<td>Trench Reinstatement Works – Vehicle Crossings</td>
<td>18-14</td>
</tr>
<tr>
<td>D13</td>
<td>Trench Reinstatement Works – Footpaths and Berms</td>
<td>18-15</td>
</tr>
<tr>
<td>D14</td>
<td>Standard Drop Sump</td>
<td>18-16</td>
</tr>
<tr>
<td>D15</td>
<td>Stormwater Outfall Inlet and Outlet Structures</td>
<td>18-17</td>
</tr>
<tr>
<td>D16</td>
<td>Standard Stormwater Pipe Kerb and Channel Connection</td>
<td>18-18</td>
</tr>
<tr>
<td>D17</td>
<td>Standard House Connection Details – Shallow Connection</td>
<td>18-19</td>
</tr>
<tr>
<td>D18</td>
<td>Standard House Connection Details – Deep Connection</td>
<td>18-20</td>
</tr>
<tr>
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<td>Land Stormwater Drainage Sump Manhole</td>
<td>18-21</td>
</tr>
</tbody>
</table>
**Note:** These details apply to manholes of 1050 mm size, but are also to be referred to for mini manholes of minimum 600 mm diameter and a maximum of 1.25 metre depth.
**MINIMUM MANHOLE INTERNAL DIAMETER (mm)**

<table>
<thead>
<tr>
<th>OUTLET PIPE UIA. (mm)</th>
<th>PIPELINE DEVIATION ANGLE (Θ)</th>
<th>0°-15°</th>
<th>16°-45°</th>
<th>46°-75°</th>
<th>76°-90°</th>
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</table>

* TO BE USED AS A GUIDE ONLY. LARGER DIAMETERS MAY BE REQUIRED WHERE MORE THAN 1 INLET PIPE IS TO BE CONSTRUCTED.

**NOTES**

1. ALL IN SITU CONCRETE OTHER THAN SITE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20MPa @ 28 DAYS.
2. ALL PRECAST MANHOLE UNITS (SHOWN SHADED) ARE STANDARD MANUFACTURED UNITS. (IE. HUMES OR SIMILAR APPROVED)
3. ALL BRANCHES SHALL BE CONSTRUCTED SUCH THAT THEY CAN BE READILY ACCESSED BY A CCTV CAMERA. THE HAUNCHING DETAIL (IE. CROSS SECTION) IS NOT TO BE COMPROMISED. IF REQUIRED, THE STRAIGHT THROUGH CHANNEL SHALL BE OFFSET FROM THE MANHOLE CENTRELINE AND THE BRANCH CHANNELLING LEFT STRAIGHT FOR A SUFFICIENT LENGTH TO ACHIEVE THE DESIRED RESULT.
4. ACCESS OPENING & RUNGS TO BE POSITIONED OVER THE UPSTREAM SIDE OF THE MANHOLE.

**Note:** These details apply to manholes of 1050 mm size, but are also to be referred to for mini manholes of minimum 600 mm diameter and a maximum of 1.25 metre depth.
Note: These details apply to manholes of 1050 mm size, but are also to be referred to for mini manholes of minimum 600 mm diameter and a maximum of 1.25 metre depth.

Shallow Manhole Details
Refer to Section 11
SAFETY PLATFORM
(Where required by the engineer
- at maximum 4m CRS)

Note: The internal dia. to be increased
where internal drops are used.
Note: These details apply to manholes of 1050 mm size, but are also to be referred to for mini manholes of minimum 600 mm diameter and a maximum of 1.25 metre depth.

Heavy Duty Manhole Cover and Frame

Refer to Section 11

Approx. Weights

Cover 48 kg.
Frame 40 kg.
**Standard Drop Manhole Details**

Refer to Section 11

**Note:** These details apply to manholes of 1050 mm size, but are also to be referred to for mini manholes of minimum 600 mm diameter and a maximum of 1.25 metre depth.
Manhole Components

Refer to Section 11

Plan View
(PRE-CAST MANHOLE)

BOLT HOLES TO BE FILLED FLUSH WITH MORTAR OR AN APPROPRIATE EPOXY RESIN, SUCH THAT INGRESS OF WATER IS NOT POSSIBLE.
Access Chamber/Shaft

Refer to Section 11

Not To Scale
Original Size A4
Sheet D09
November 2011
**TYPICAL ELEVATION**

**WITHIN ROAD RESERVES**

- **STANDARD 'Y' JUNCTION.**
- **CONCRETE BLOCK AROUND.**
- **75mm CONCRETE BED.**
- **CAP END, IF MAIN TERMINATES.**
- **HALF HAUNCHING WITH WEAK-MIX CONCRETE 75mm MINIMUM UNDER PIPE.**

---

**TYPICAL ELEVATION (PART VIEW)**

**WITHIN FARM LAND**

- **1200mm LENGTH OF 50mm DIA. GALV. WATER PIPE AS MARKER POST.**
- **APPROX. 830x630.**
- **CONCRETE SURROUND.**
- **HALF HAUNCHING WITH WEAK-MIX CONCRETE 75mm MINIMUM UNDER PIPE.**

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**Standard Cleaning Eyes Details**

Refer to Section 11

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**Gore District Council**

Not To Scale

Original Size A4

Sheet D10

November 2011
Cleaning Eye Cover Details
Refer to Section 11

CAST IRON FRAME AND COVER. APPROXIMATE WEIGHT 19.0kg

Not To Scale
Original Size A4
Sheet D11
November 2011
If installed, approved detector tape shall be placed 300 mm directly above the crown of the service.

Trench Reinstatement Works - Vehicle Crossing

Refer to Section 10.10

Mix 10 asphalt, 50 mm for domestic and 60 mm for commercial

GAP 65 or other approved backfill material compacted to 95% MDD in accordance with TNZ F/1 specification. Compacted in layers not exceeding 200 mm.

Approved backfill material compacted to 90% MDD in accordance with TNZ F/1 specification. Compacted in layers to achieve compaction standard.

Bedding material shall not exceed 800 mm above top of service.

Note presence of subsoil drain when working near kerb and channel.
If installed, approved detector tape shall be placed 300 mm directly above the crown of the service.

Trench Reinstatement Works - Footpaths and Berms

Refer to Section 10.10

NOT TO SCALE

Original Size A4

November 2011

FOOTPATHS AND BERMS

ASPHALT

CONCRETE

GAP 65 or other approved backfill material compacted to 90% MDD in accordance with NZ F1 specification. Compacted in layers not exceeding 200 mm.

Approved backfill material compacted to 90% MDD in accordance with NZ F1 specification. Compacted to achieve compaction standard.

Bedding material shall not exceed 300 mm above top of service

Bedding material as per principal provider’s specification

GRASS AREA

Refer to Appendix B - Schedule of Special Local Conditions for grass areas

GAP 65 or other approved backfill material compacted to 85% MDD in accordance with NZ F1 specification. Compacted in layers to achieve compaction standard.

NOTE - Where trench lies within 1 m of kerb, reinstatement shall be as for a vehicle crossing

100 mm deep topsoil

Bedding material as per principal provider’s specification

100 mm of 20 MPa concrete

100 mm overlap

150 mm trench shoulder

1,200 mm

30 mm of mix 10 asphalt

180 mm -

100 mm -
HUMES KERB ENTRY OR PRECAST CONCRETE KERB ENTRY OR AS APPROVED BY THE ENGINEER.

HUMES 40059 HEAVY DUTY SUMP GRATE AND FRAME OR AUSTINS No. 2 HEAVY DUTY SUMP GRATE AND FRAME OR AS APPROVED BY THE ENGINEER.

AS SHOWN OR HUMES 980 YARD SUMP OR AS APPROVED BY THE ENGINEER.

EXPLODED VIEW

N.1.5

CHANNEL SHAPED TO ALLOW WATER TO DRAIN TO CENTRE OF GRATE

HEAVY DUTY SUMP GRATE AND FRAME AS SPECIFIED ABOVE

GRATE 30mm BELOW CHANNEL INVERT

MINIMUM BASECOURSE COMPACTION REQUIRED

UNDER CONCRETE 20 CIV

ROAD REINSTATEMENT 40 CIV

SUMP DETAILS

1:50

Standard Drop Sump

Refer to Section 11
Stormwater Outfall
Inlet and Outlet Structures

NOTES
1. REINFORCING FLOOR AND WALLS WITH:
   150 TO 375 - 665 MESH
   450 TO 600 - 663 MESH OR 100 RODS @ 250 CRS
   675 TO 900 - 12Ø RODS @ 250 CRS
   1050 TO 1350 - 12Ø RODS @ 150 CRS
2. ALL REINFORCEMENT SHALL BE PLACED CENTRAL IN WALLS & FLOOR, AND SHALL BE CONTINUOUS BETWEEN WALL AND FLOOR.
3. LAPS IN STRUCTURAL GRADE BARS TO BE 300mm MINIMUM.
4. THERE SHALL BE AT LEAST TWO BARS WHETHER MESH OR MILD STEEL, OVER THE TOP OF THE PIPE.
5. CONCRETE COMPRESSIVE STRENGTH IS TO BE 17.5MPa @ 28 DAYS.
6. BAFFLES ARE TO BE CONSTRUCTED AS SHOWN WHEN OUTLET VELOCITIES AND SOIL CONDITIONS DICTATE.
   IN EXTREME CASES SPECIFIC DESIGN MAY BE REQUIRED.
7. INLET STRUCTURES SHALL HAVE REVERSE APRON FALL AND NO BAFFLES.

<table>
<thead>
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<th>PIPE DIA.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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PLAN VIEW

November 2011
PLACE PVC 100 mm RECTANGULAR KERB OUTLET CONNECTION AT CHANNEL INVERT

- MINIMUM 25mm ASPHALTIC CONCRETE COVER OVER PIPE

2% CROSSFALL ON FOOTPATH

MIN 1% FALL ON PIPE

- PLACE 80mm DIA STORMWATER PIPE THROUGH FOOTPATH. PROVIDE MIN CONCRETE OF 25mm ON TOP AND 50mm ON SIDES AND BOTTOM OF PIPE.

CONCRETE FOOTPATH

PIPE TO BE RIGID STEEL OR SIMILAR

TRANSACTION

75mm MIN COMPACTED GRANULAR BACKFILL.

SECTION ON A

MINIMUM 50mm DEPTH CONCRETE BEDDING

MINIMUM 75mm COMPACTED GRANULAR BACKFILL

45° ANGLE

Gore District Council

Standard Stormwater Pipe Kerb and Channel Connection

Refer to Section 11

Not To Scale

Original Size A4

Sheet D16

November 2011
IF CONNECTION SADDLED ON TO EXISTING PIPE USE GAP FILLING GLUE AND BANDAGE STRAPS, SET IN HAUCHED CONCRETE.

PLAN VIEW

SHALLOW CONNECTION
DEPTH TO INVERT LESS THAN 1.2m
1 in 75 recommended grade
1 in 120 minimum grade.

PROPERTY BOUNDARY

500

RODDING EYE WITH SEALED SCREW CAP

1000 MIN

PIPE TO BE SEALED OFF WITH GLUE CAP IF NOT IMMEDIATELY CONNECTED

DEPTH TO BE SUFFICIENT TO ALLOW CONNECTION TO FURTHEREST POINT OF SITE

DEEP CONNECTION

DEPTH TO INVERT MORE THAN 1.2m

HALF HAUNCH WITH 75mm WEAK MIX CONCRETE

STANDARD ‘Y’ OR SADDLE JUNCTION

COMPACTED SAND FILL OR 5MM DOWN GRAVEL

45° INSPECTION BEND

Gore District Council

Standard House Connection Details
Deep Connection

Refer to Section 11

Not To Scale
Original Size A4

Sheet D18
November 2011
REMOVEABLE STEEL OR CONCRETE GRATE ENTRY HOLES OR LATTICE TO BE 40Ø mm max. OR 40mm WIDE TO PREVENT THE ENTRY OF DEBRIS AND THE ENTRAPMENT OF STOCK. THE GRATE SHOULD BE SECURELY FITTED AND OF SUFFICIENT WEIGHT TO PROVIDE A CHILD-PROOF ACCESS.