### PINE RIVERS SHIRE COUNCIL
#### STANDARD DRAWINGS

**8-30000 Series**  
**STORMWATER DRAINAGE**

<table>
<thead>
<tr>
<th>DRAWING</th>
<th>AMEND</th>
<th>DESCRIPTION</th>
<th>DATE</th>
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<td>Gully Type ‘A’ for Upright Kerb and Channel</td>
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<td>8-30002</td>
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<td>Gully Grate and Frame - Type ‘A’</td>
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<td>8-30003</td>
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<td>Catchpit Type ‘A’ for Layback Kerb and Channel</td>
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<td>8-30004</td>
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<td>Standard Field Inlet</td>
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<td>8-30005</td>
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<td>Side Entry Field Inlet</td>
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<td>8-30010</td>
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<td>Standard Stormwater Manhole Cover &amp; Frame - Concrete Filled</td>
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<td>8-30012</td>
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<td>Field inlet Pit Dome Top Cover</td>
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<td>Wing Walls, Headwalls and Aprons for Pipe Culverts 750 - 2400 dia. - General arrangement</td>
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<td>R. C. Box Culvert crown unit holding down anchors</td>
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<td>8-30026</td>
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<td>Pathway Detail as an Overland Flow Path</td>
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<td>8-30027</td>
<td>-</td>
<td>Sample Roofwater As-Constructed Plan</td>
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<td>8-30028</td>
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<td>06/2003</td>
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<td>8-30029</td>
<td>-</td>
<td>Weir Type Sediment and Trash Trap</td>
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<td>8-30030</td>
<td>-</td>
<td>Scour Basin Typical Details</td>
<td>11/1996</td>
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<td>8-30031</td>
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<td>Water Course Advisory Sign</td>
<td>11/1996</td>
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<td>-</td>
<td>Minor Gross Pollutant Trap - General Arrangement</td>
<td>02/1997</td>
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<td>8-30033</td>
<td>-</td>
<td>Stormwater Drainage Calculation Sheet</td>
<td>02/2005</td>
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<td>8-30034</td>
<td>-</td>
<td>New Pits and Manholes Over Existing Stormwater Pipes</td>
<td>02/2005</td>
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<td>8-30035</td>
<td>-</td>
<td>Saddle Joint to Stormwater Systems</td>
<td>02/2005</td>
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<td>8-30036</td>
<td>-</td>
<td>Catchpit Stencil / Imprint Environmental Awareness Message</td>
<td>06/1999</td>
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<td>Special 610 x 380 Catchpit</td>
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<td>Roofwater Drainage Pit</td>
<td>11/2004</td>
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DETAIL OF HINGE PIN CLOSURES

SECTION A-A

GRATE

PLAN

SECTION B-B

LOCKING DEVICE DETAIL

HINGE COVER AND BOLT DETAIL

SPECIAL NOTE:
Tolerances specified for the locking device both in the frame and hinge pin are required for effectiveness and reliability.
All other tolerances to ±2mm.

NOTES:
1. Mass of grate = 71kg.
3. Grate and frame steel to be grade 300 structural steel to AS/NZS 3679.1.
4. Grate and frame to be hot dip galvanised to A.S.1650 after fabrication.
5. All welds 4 CFM unless noted otherwise.
6. This drawing derived from Brisbane City Council Dwg UMS 52-2 and 52-3.
SECTION A-A

TYPICAL CATCHPIT ON GRADE

TYPICAL CATCHPIT ON SAG

NOTES:
1. Precast concrete lintel to be Grade N30 to AS 3600. All other concrete to be Grade N25 to AS 3600.
2. Cover to all reinforcing bars to be 40 min.
3. Reinforcing steel to conform to AS 1302.
4. Each lifting anchor to be "SWIFTLIFT" or equivalent 1.3 tonne, galvanised, and fitted to manufacturer's specification.
5. Refer to P.R.S.C. Std Dwg 8-30001 for lintel sizes and details.
NOTES
1. In paved areas, the grate supplied shall be of either Cast (Grey) Ductile Iron or hot dipped galvanised Mild Steel complying with A.S.3996 and shall be hinged (Bicycle safe) Type C except where otherwise stated.
2. Certificate of Compliance with Standard to be supplied by Contractor.
3. A minimum surface area of 50% of total area shall be available for stormwater inlet flow.
4. Grate shown is indicative only.

SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D

SECTION F-F

SECTION E-E

FIELD INLET FOR PAVED AREAS
FIELD INLET FOR GRASSED AREAS

PLAN OF GRATE

PINE RIVERS SHIRE COUNCIL
STANDARD FIELD INLET

Scales
Not to Scale

Director Works & Services
C.E.O.

Date

Sheet 1 of 1 Sheets

File

55/4530

Drawing No.

400/26

Original Issue

JUL 2010

NOT TO SCALE

Disc

A1

30004
NOTES:
1. CONCRETE SHALL BE CLASS N25.
2. GENERAL DETAILS SHALL BE IN ACCORDANCE WITH PRSC STD DWG 8-30004.
3. WHERE SIDE ENTRY INLET IS INTO 650mm SIDE, PRECAST SIDESTONES ARE NOT TO BE USED.
4. DUAL INLETS MAY BE CONSTRUCTED INTO OPPOSITE SIDES OF PIT.
NOTES:
1. All bars ≥ Y12. Bars to be tack welded at all intersection points.
2. Provide 40mm clear cover to reinforcing.
3. Manholes shall be not less than minimum depth without prior approval of Council's Engineer.
4. Concrete shall be grade N32.
5. Minimum pipe diameter 900.
6. Use cast iron covers in roadways and footpaths, and where vehicular traffic is present; use concrete filled covers elsewhere unless otherwise directed by the Engineer.
7. Where depth to invert is less than 1.4m, step irons are not required. Elsewhere, step irons to be as detailed on section and to be offset alternatively 75 left and right of centre line of opening.
8. Approved 150 thick Precast manhole upstands may be used in Parks.

MANHOLE TOP

PINE RIVERS SHIRE COUNCIL
STANDARD 1100 DIA. STORMWATER MANHOLE

3006 400/26

N.T.S.
MAYOR

Legal Docum
NOTES:
1. All bars Ø Y12. Bars to be tack welded at all intersection points.
2. Provide 40mm clear cover to reinforcing.
3. Manholes shall be not less than minimum depth without prior approval of Council’s Engineer.
4. Concrete shall be grade N32.
5. Maximum pipe diameter 1200mm.
6. Use cast iron covers in roadways and footpaths, and where vehicular traffic is present; use concrete filled covers elsewhere unless otherwise directed by the Engineer.
7. Where depth to invert is less than 1.4m step irons are not required. Elsewhere, step irons to be as detailed on section and to be offset alternatively 750 left and right of centre line of opening.
8. Approved 150 thick Precast manhole upstands may be used in Parks.
NOTES:
1. Manholes shall not be less than minimum depth without prior approval of Council's Engineer.
2. Special Manhole shapes may be used with prior approval of the Engineer.
3. Concrete shall be grade N32.
4. Maximum Pipe diameter 1350.
5. All bars @ Y12. Bars to be tack welded at all intersection points.
6. Provide 40mm clear cover to reinforcing.
7. Use cast iron covers in roadways and footpaths, and where vehicular traffic is present; use concrete filled covers elsewhere unless otherwise directed by the Engineer.
8. Where depth to invert is less than 1.4 m step iron are not required. Elsewhere, step iron to be as detailed on section and to be offset alternatively 75 left and right of centre line of opening.
9. Approved 150mm thick Precast Manhole upstands may be used in Parks.

Weight: 37.7 kg
Concrete: 0.483 m³
MANHOLE TOP TOTAL 42450
SECTION A-A

R12 bars at 100c/c both ways with 25 clear cover at end.

Concrete Class 17.5 MPa

SECTION C-C

CAST IRON

SECTION B-B

CAST IRON

PLAN

(Lifting Slot refer details)

COVER

Mass of C.I. Cover Ring = 18 kg.

NOTES:

- Cast iron cover shall comply with Dept. of Local Government, Queensland specification for the Manufacture, Supply, inspection, Testing and Delivery of Cast Iron Manhole Covers and Frames.

PLAN

DETAIL OF LIFTING SLOTS

PLAN

FRAME

Mass = 51 KG.

N.T.S.

Director Works & Services

Mayor

S.W. Price

CAD

Checked: D.C. Recom.

Approved: F. Bl.

Printed: 12/30/10

PINE RIVERS SHIRE COUNCIL

STANDARD STORMWATER
MANHOLE COVER AND FRAME
- CONCRETE FILLED

Sheet 1 of 1 Sheets
SECTION A-A

SECTION C-C

SECTION B-B

PLAN

COVER
Mass = 62 kg.

DETAIL OF LIFTING SLOTS

PLAN

FRAME
Mass = 51 KG.

NOTES:
Cast iron cover shall comply with Dept. of Local Government, Queensland specification for the Manufacture, Supply, Inspection Testing and Delivery of Cast Iron Manhole Covers and Frames.
SECTION 1

R10 BAR - MAX 120 SPACES
CFW TO PIPE AND BARS
40mm NB x 3.2 CHS
CFW AT JOINTS
Hinge and base plate
fixed with 2 x m12
stainless steel
chemical anchors

SECTION 2

2 X R10 BARS
EQUALLY SPACED
CFW TO CHS
Hinge plate
refer detail

BASE PLATE
REFER DETAIL

1080

150

300 WIDE, 100
THICK SURROUND

150

50 x 50 x 3.0 SHS
(EACH END)
CFW AT JOINTS

50 x 50 x 3.0 SHS
CFW TO CHS

NOTES

1. CONCRETE CLASS N25.

2. GRATE AND HINGE TO BE HOT DIP GALVANISED AFTER FABRICATION, THEN POWDERCOATED "DULUX - COLORBOND CAVETOWN GREEN" OR APPROVED EQUIVALENT.

PINE RIVERS SHIRE COUNCIL
FIELD INLET PIT
DOME TOP COVER
NOTES

1. FOUNDATION BEDDING
   C = R.C. Pipes
      100 if D ≤ 1500
      150 if D > 1500
   G = Corrugated Steel Culverts
      100 in firm material other than rock
      D or 250 which ever the lesser in rock
   H = Precast Box Culverts
      75 min. in firm material other than rock
      150 min. in rock.

2. SPACING BETWEEN MULTIPLE CULVERTS
   S = R.C. Pipes
      300 when nominal D ≤ 600
      600 when nominal D > 1500
      900 when nominal D > 1800
   S = Corrugated Steel Culverts
      1. Nestable Culverts:
         Dia/300 min.
      2. Helical Lock-seam Culvert:
         300 (when nominal D ≤ 600)
         Dia/2 (when nominal D > 600)
         1200 (when nominal D > 1800)
      3. Plate Culverts:
         Dia (or span) of 1200 max.

3. WINGWALLS: fill/backfill material shall be placed
   300mm thick behind wingwalls for the length
   and height of the wings.

4. OVERLAY MATERIAL can be obtained from excavation
   of the pipe trench or elsewhere, having 100% less
   than 150mm and at least 80% less than 75mm, and
   capable of achieving required compaction standards.

5. SIDE SUPPORT COMPACTION of natural ground or
   embankment.
   Minimum 90% Standard R.D.D for minimum 2.50
   each side of trench wall and to a minimum depth of 0.7D.

6. WORKING LOADS are those due to fill material and
   standard highway vehicles as per AS 3725.
   Construction loads have not been allowed for.

7. These drawings have been compiled from Queensland
   Transport Department drawing 1359

8. Dimensions are in millimetres unless otherwise specified.

LEGEND

Overlay material
Fill/Backfill material
Foundation Bedding, Haunch material
R.C. Pipes and R.C. Box Culverts
Foundation Bedding material, Corrugated Steel Pipes

Alternative construction methods in accordance
with the Cement and Concrete Pipe Association's
"Concrete Pipe Selection and Installation" Manual
may be permitted with written approval from
Council's Engineer.

This Drawing is to be read in conjunction with
Standard Drawing 8–30014.
S* – Refer to Standard Drawings 8-30013 & 8-30014 Bedding & Backfill to Pipes & Culverts

Notes:
1. This drawing has been compiled from Queensland Transport Drawing 1305.
2. Refer to Standard Drawings 8-30017 & 8-30018 for reinforcing details.

Wingwall Angle 'a' refers to wingwall nearest to Control Line.

Culvert Chainage as specified

Skew Angle Z

<table>
<thead>
<tr>
<th>Skew Angle Z'</th>
<th>Wingwall Angle</th>
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<td>0–10</td>
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<td>11–20</td>
<td>25</td>
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<tr>
<td>21–30</td>
<td>20</td>
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<tr>
<td>31–45</td>
<td>15</td>
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</table>

Control Line

Sketch Angle

Plan – Single Skew Culvert

Plan – Multiple Skew Culvert
**TYPE 1 APRON** (Stone pitched)

- Mass concrete cut-off wall
- Weepholes (Refer Note 4)
- D1 Bars at 'C' crs.
- Culvert invert

**ELEVATION X**

170, 230 or 300 - as specified (Refer Note 10)

Non-Woven Filter fabric
Needle punched, 180gm/sq.m
(or as specified)

**TYPE 2 APRON** (Rock filled wire mattresses)

- Reinforced concrete cut-off wall
- Direction of main bars

**ELEVATION**

**PLAN**

**TYPICAL MESH LAYOUT DETAILS**

(Refer Notes 5, 6)

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**TABLE 1 - CULVERT DETAILS**

(Refer Notes 2, 3)

<table>
<thead>
<tr>
<th>up to H</th>
<th>F</th>
<th>T</th>
<th>M</th>
<th>D1 Bars</th>
<th>12 dia. D2 Bars</th>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>1000</td>
<td>200 (230)</td>
<td>FB18</td>
<td>12</td>
<td>550</td>
<td>400</td>
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<tr>
<td>1500</td>
<td>200 (230)</td>
<td>FB18</td>
<td>12</td>
<td>550</td>
<td>400</td>
</tr>
<tr>
<td>2000</td>
<td>250 (280)</td>
<td>F1018</td>
<td>12</td>
<td>600</td>
<td>400</td>
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<tr>
<td>2500</td>
<td>300 (330)</td>
<td>F1018</td>
<td>12</td>
<td>650</td>
<td>400</td>
</tr>
<tr>
<td>3000</td>
<td>300 (330)</td>
<td>F1218</td>
<td>20</td>
<td>750</td>
<td>500</td>
</tr>
</tbody>
</table>

*Where H = Internal Pipe Diameter (d) + Pipe Thickness (t) + 230

**NOTES:**

1. All concrete shall be grade N32. (N40)
   Concrete cover to be 50 mm unless otherwise shown.
2. All bars 10Ø to be grade 230R to AS1302.
   All other bars to be grade 410Y to AS1302.
3. Dimensions indicating steel cover and "H" are shown in brackets for aggressive environment.
4. Weepholes of 90 dia. are to be provided at 800 crs. for wingwall lengths >3000. A 300 x 300 x 150 no fines concrete block is to be provided at each weephole.
5. Mesh layouts shown are minimum requirements, actual detailing depending on most efficient use of materials. Details for the appropriate value of "H" may be used for lower parts of the wing.
6. Laps shall be made so that the two outermost wires of one fabric overlap the two outermost wires of the sheet being lapped.
7. Excess bar length protruding outside the dimensions of the wall or the footing shall be cut to provide the minimum cover.
8. A continuous reinforced concrete apron is to be provided between the walls when "H" > 3000.
9. Dimensions are in millimetres unless otherwise shown.
10. Details to be shown elsewhere on the documents include:
    Wingwall lengths W1 and W2. Apron type (1, 2 or 3). Depth of type 2 Apron (if required). Apron cut-off wall, u/s and/or d/s (if required).
11. These Drawings have been compiled from Queensland Transport Drawing 1304.

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**PINE RIVERS SHIRE COUNCIL**

**WINGWALLS, HEADWALLS AND APRONS**

**FOR PIPE CULVERTS 750 - 2400 DIA REINFORCING DETAILS**

**N.T.S.**

Director Works & Services

Drum. S.W. Project CAD
Checked. D.C. Records
Approved. T. Hw.

Disc. A3

Drawing No. 830017

Sheet 1 of 2 Sheets
**Plan - Multiple Skew Culvert**

- **2 x 12A bars**
- **25 Arris**
- **Q Spon Q**

**Elevation**

- **12K anchor, 50 min cover bend radius 40, bars to be set in end plugs**

**Concrete end plug between culvert cells of 250 min. length**

**For base and apron details refer to Standard Drawings 8-30022 & 8-30023**

**Table of Dimensions**

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<tr>
<th>Skew Angle</th>
<th>Dim.</th>
<th>150</th>
<th>225</th>
<th>300</th>
<th>375</th>
<th>450</th>
<th>600</th>
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<td>250</td>
<td>300</td>
<td>450</td>
<td>600</td>
<td>750</td>
<td>900</td>
</tr>
<tr>
<td>11 – 20</td>
<td>X</td>
<td>250</td>
<td>300</td>
<td>500</td>
<td>650</td>
<td>800</td>
<td>1000</td>
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<td>21 – 30</td>
<td>X</td>
<td>300</td>
<td>350</td>
<td>550</td>
<td>700</td>
<td>900</td>
<td>1100</td>
</tr>
<tr>
<td>31 – 45</td>
<td>X</td>
<td>300</td>
<td>400</td>
<td>600</td>
<td>800</td>
<td>1000</td>
<td>1200</td>
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**Note:**
This drawing has been compiled from Queensland Transport Drawings 1174 & 1318

**SECTION 1**

- **Headwall contact area to be scabbled**

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**PINE RIVERS SHIRE COUNCIL**

**END WALLS TO R.C. BOX CULVERTS H < THAN 750**

**Sheet 1 of 1 Sheets**
**UNIT DIMENSIONS**

<table>
<thead>
<tr>
<th>Span</th>
<th>Thickness of Slab (d)</th>
<th>Reinforcing Fabric Type</th>
<th>Position of Fabric in Slab</th>
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<tr>
<td>300</td>
<td>120</td>
<td>F1118</td>
<td>Single layer on centre line</td>
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<tr>
<td>375</td>
<td>120</td>
<td>F1118</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>120</td>
<td>F1118</td>
<td></td>
</tr>
<tr>
<td>600</td>
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<td>F818</td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>130</td>
<td>F818</td>
<td></td>
</tr>
<tr>
<td>900</td>
<td>140</td>
<td>F1018</td>
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</tr>
<tr>
<td>1200</td>
<td>150</td>
<td>F1118</td>
<td></td>
</tr>
<tr>
<td>1520</td>
<td>160 (170)</td>
<td>F818</td>
<td></td>
</tr>
<tr>
<td>1830</td>
<td>170 (180)</td>
<td>F818</td>
<td></td>
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<tr>
<td>2130</td>
<td>180 (190)</td>
<td>F918</td>
<td>Single layer at top and bottom 40 (50) cover</td>
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<tr>
<td>2440</td>
<td>190 (200)</td>
<td>F1018</td>
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<tr>
<td>2740</td>
<td>200 (210)</td>
<td>F1118</td>
<td></td>
</tr>
<tr>
<td>3050</td>
<td>210 (220)</td>
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<tr>
<td>3650</td>
<td>230 (240)</td>
<td>F1118</td>
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</tr>
</tbody>
</table>

**NOTES**

1. Construction Joints are to be provided where:
   - (a) the length of the base slab and/or
   - (b) the width of the base slab exceed 20m.
   When construction joints are required across the width of the base slab, they are to be located at 1/4 span points of crown units. 24 hours (min) is to be allowed between pours. Reinforcing fabric is to be continuous across construction joints.

2. Aprons—protection works at outlets/inlets are typical and may be varied to suit local conditions (where approved by Council's Engineer).

3. Base Slab dimensions given are applicable to a maximum height over the culvert crown of 1.5m. An on site check of the unit dimensions should be made before setting out the base slab as there are variations between manufacturers.

4. Laps shall be made so that the two outermost wires of one fabric overlap the two outermost wires of the sheet being lapped.

5. Overlaps—Where 4 sheets overlap, cut out cross wires to limit build up in thickness of fabric.

6. Aggressive Environment—Dimensions indicating slab thickness, steel cover and concrete class are shown in brackets for aggressive environment.

7. Design Loading—Design loading 144

8. All concrete shall be grade N32 (N40)

9. Steel—Bar reinforced to be grade 410Y to AS 1302
   - Fabric reinforced to AS 1304

10. Dimensions are in millimetres unless shown otherwise.

11. These Drawings have been compiled from Queensland Transport Drawing 1318

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**PLAN**

**SLAB & APRON DETAILS**
**TYPE 3 APRON**
**SECTION B**
**(FOR SPANS OF 1200 AND LESS)**

- Reinforced Concrete Apron - Refer Note 2
- 600 mm Cover
- 150 mm Slope thickness (d)
- F52 Reinforcing Fabric
- Mass concrete cut-off wall

**TYPE 1 APRON**

- End of Culvert
- Recess (e) 100 mm
- Cover
- 225 mm Lap
- 40 (50) cover
- Slab thickness (d)
- Stone pitched Apron - Refer Note 2

**PART SECTION A**

- 2J + 90(*)
- Span
- 40 min.
- 25 nom.
- 25 nom.
- Recess (e)

- Set units in 10 mortar bed
- End laps permitted in mid span only. Reinforcing as per Table 1

**TABLE 2 – RECESS DETAILS**

<table>
<thead>
<tr>
<th>Height of Opening (H mm)</th>
<th>Depth of Recess (e) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>H ≤ 600</td>
<td>nil</td>
</tr>
<tr>
<td>(H &gt; 600) – (H &gt; 750)</td>
<td>20</td>
</tr>
<tr>
<td>(H &gt; 750) – (H &gt; 1200)</td>
<td>30</td>
</tr>
<tr>
<td>H &gt; 1200</td>
<td>40</td>
</tr>
</tbody>
</table>

(*) Where a single supporting leg is used, adopt J + 50

**TYPE 3 APRON**
**SECTION B**
**(FOR SPANS OVER 1200)**

- Reinforced Concrete Apron - Refer Note 2
- 600 mm Cover
- 150 mm Slope thickness (d)
- F52 Reinforcing Fabric

**TYPE 2 APRON**

- End of Culvert
- Recess (e) 100 mm
- Cover
- 225 mm Lap
- 40 (50) cover
- Slab thickness (d)
- Needle punched, 180gm/sq.m

**PART SECTION A**

- 2J + 90(*)
- Span
- 40 min.
- 25 nom.
- 25 nom.
- Recess (e)

- Set units in 10 mortar bed
- End laps permitted in mid span only of bottom layer. Reinforcing as per Table 1

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**PINE RIVERS SHIRE COUNCIL**

**BASES AND APRONS TO R.C. BOX CULVERTS**

**REINFORCING DETAILS**

Director Works & Services
N.T.S.

400/26 95/4530

Bases and Aprons to R.C. Box Culverts
Reinforcing Details

8 30023

Sheet 2 of 2 Sheets
HOLDING DOWN ANCHORS (Bases without recesses)

30 dia cored hole
Bolt J + 65 long
Bolt 150 long (See Note 5)
Holding down bracket

10 of 1:3 cement mortar bed
Refer Note 1

HOLDING DOWN ANCHORS (Bases with recesses)

30 dia cored hole
Bolt J + 65 long
Bolt 150 long (See Note 5)
Holding down bracket

10 of 1:3 cement mortar bed
Refer Note 1

PECAST BASE UNIT

NOTES
1. Bolts— hexagonal bolts and screws M20 grade 4.6 to A.S.1111 with M20 nuts and washers grade 5 to A.S.1112 and A.S.1237, hot dipped galvanised.
2. Steel— 10 dia bar to be grade 250S. All other bars to be grade 410Y
3. Brackets to be hot dipped galvanised after fabrication to A.S.1650
4. Approved Mild Steel Ferrule with cross bar for use in precast base slabs
   a) Length 65, thread depth 32, for P.C. base slabs 80 thick or greater
   b) to take hexagonal screw M20 x 45 to A.S.1111
   c) Cross holed to take 12 x 250 M.S. bar
   d) Ferrule and cross bar to be hot dipped galvanised.
   e) Ferrule located 300 from ends to match cored holes in crown units
      (if precast base slabs are less than 80 thick, the ferrule length,
      thread depth and screw length are to be reduced in order to
      maintain clear cover of 15).
5. Holding down bolts to be placed in drilled 30 dia holes and grouted with 1:2 cement sand grout after placing crowns.
6. Dimensions are in millimetres unless shown otherwise.
NOTES:

1. Concrete is to be grade N20 and generally in accordance with Standard Drawing No. 8–10036.
2. The concrete is to be finished with either a wooden float or stiff broom to achieve a non-slip surface.
3. This drawing to be read in conjunction with Std. Dawgs. 8–60033 to 8–60038.

TYPICAL CONSTRUCTION DETAIL – PLAN

PATHWAY DETAIL AS AN OVERLAND FLOW PATH
1. Kerb adaptors and other ancillary components within the verge are to conform to AS 1280 for uPVC Fittings and AS 2179.1 for Metal Fittings. Kerb adaptors cast in marine grade aluminium are preferred.

2. Roofwater/Stormwater drains are to transport only clean stormwater runoff from roofed or otherwise uncontaminated areas.

3. The requirements of AS 3500.3.1 Stormwater drainage — Performance requirements and the Queensland Building Code Regulations are to be met.

4. Roofwater/Stormwater drain outlets are not to be positioned within 5 metres of the upstream side of a catchpit (measured from the nearest catchpit component). This is so as to not compromise the capture efficiency of the catchpit. Outlets in this area are to discharge into the catchpit.

5. Permission may be given by Council’s Division of Assets and Development to connect to other stormwater infrastructure such as manholes, catchpits and the like.

6. An alternative Roofwater/Stormwater drain within the verge is two contiguous lengths of 125x100mm hot dipped galvanised RHS of a grade no flatter than 1 in 200 and cut to finish flush with the kerb profile. All cut ends are to be cold galvanised and the kerb reinstated. This is the minimum requirement for commercial or industrial sites.

7. Council’s policy is that provision and maintenance of private Roofwater/Stormwater drains are the responsibility of the property owner. The property owner is also responsible for verge restoration to original conditions after construction.

8. Appropriate measures are to be taken to ensure work site safety during construction.

9. Verge services (Telstra/Energy etc) are normally deeper than standard Roofwater/Stormwater drains but the position of services should be investigated. “Dial Before You Dig” could be contacted in this regard.

10. The minimum subdivision requirement is the provision of two kerb adaptors with pipe drainage to the far edge of the concrete footpath and two kerb adaptors only where no concrete footpath is to be provided. Kerb outlets are generally to be 0.5m and 1m from the lowest side boundary and clear of uniformed pedestrian walkways.

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PINE RIVERS SHIRE COUNCIL

ROOFWATER & STORMWATER DRAINS IN VERGE WITH KERB OUTLET

TYPICAL FULL HEIGHT KERB ADAPTOR

For specifications refer to manufacturer’s product information.
1. This treatment is to be used for pipe outlets with a catchment of greater than 2 ha and less than 5 ha.
2. For catchments greater than 5 ha a minor gross pollutant trap is to be provided in accordance with Council's design manual.
3. Minimum distance from pipe outlet to weir:
   - Φ 300 to Φ 450 = 10 m
   - Φ 525 to Φ 900 = 20 m
4. Minimum weir length (dimension "X")
   - Φ 300 to Φ 450 = 2400 mm
   - Φ 525 to Φ 900 = 4800 mm
5. All metalwork to be hot-dipped galvanised after fabrication.
6. Basin area is to be free draining.

**Plan**

- 125 mm thick concrete apron
- F72 mesh placed centrally

**Elevation of Weir**

- 600 wide x 300 deep footing under weir structure
- 4 bar F8 trench mesh placed centrally
- 100 x 75 treated hardwood slats
- 6mm chamfer to edges, gap between to be 20 mm ± 2 mm

**Detail 1**

- M12 masonry anchor
- 75 x 75 x 6mm galvanised angle
- 4 x 125 x 75 x 6mm angle
- 5 fillet weld all round

**Detail 2**

- 4/M16 masonry anchors
- M12 bolts
- Treated hardwood
- 12mm plate

**Notes**

- NOT TO SCALE
- Scales
- Original issue
- Maysor
- Director Works & Services
- Chief Executive Officer
- Date

**Pine Rivers Shire Council**

**Weir Type**

- Sediment & Trash Trap
NOTES

1. SCOUR BASIN DIMENSIONS ARE TO BE CALCULATED IN ACCORDANCE WITH THE METHOD SET OUT IN COUNCIL'S DESIGN MANUAL.

2. SCOUR BASINS SHALL BE LINED WITH DUMPED ROCK OR ROCK FILLED WIRE MATTRESSES WHEN EXCAVATED INTO SAND OR DISPERSIVE CLAY WHERE DIRECTED BY COUNCIL'S ENGINEER.

3. LOW FLOW PIPES SHALL BE GRADED TO A FREE OUTLET.

4. ALTERNATIVE OUTLET SCOUR PROTECTION DEVICES MAY BE USED AS SET OUT IN COUNCIL'S DESIGN MANUAL.

5. DETAILED DESIGN OF THE SCOUR BASIN SHALL INCLUDE LANDSCAPING OR OTHER TREATMENTS TO MINIMISE THE VISUAL IMPACT OF THE BASIN.
BLACK DUCK CREEK

THE UPSTREAM CATCHMENT AREA TO THIS LOCATION IS 123 HECTARES
THIS WATERWAY FLOWS TO FRESHWATER CREEK 3.7km DOWNSTREAM

NOTES
1. SIGNS ARE TO BE ERECTED WHERE REQUIRED BY COUNCIL'S ENGINEER.
2. SHIRE LOGO IS TO BE USED IN STANDARD COLOURS – PMS 300 BLUE, PMS 349 GREEN, AND BLACK, AS SHOWN.
3. BORDER AND LETTERING IS TO BE STANDARD DARK GREEN ON A WHITE NON-REFLECTIVE BACKGROUND.
TABLE 5.5.2 PAGE 5.5 - DESIGN MANUAL

NORMALLY THE STRUCTURE ACCEPTING THE SUBCATCHMENT UNDER INVESTIGATION AND ANY UPSTREAM PIPE FLOW

<table>
<thead>
<tr>
<th>TABLE 5.5.2 PAGE 5.5 - DESIGN MANUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURE NO. (FROM COLUMN 2) TO THE NEXT DOWNSTREAM STRUCTURE (STRUCTURES ARE NORMALLY MANHOLES BUT CAN BE INLETS, DOWNSPOUTS, OUTLETS ETC.)</td>
</tr>
<tr>
<td>DRAIN SECTION (SEE 5.5.3)</td>
</tr>
<tr>
<td>ALL SUBCATCHMENTS DRAINED THROUGH THE STRUCTURE FROM COLUMN 2</td>
</tr>
<tr>
<td>ZONING FROM GIS, GENERALLY CONFORMING TO THE ZONE COLUMN IN TABLE 5.5.3 PAGE 5.6 - DESIGN MANUAL</td>
</tr>
<tr>
<td>AVERAGE FLOW OF CATCHMENT ALONG THE FLOW PATH</td>
</tr>
<tr>
<td>STANDARD INLET TIMES FROM DRAIN ARE NORMALLY USED, SEE TABLE 5.6. PAGE 5.15 DRAIN</td>
</tr>
<tr>
<td>FROM CHART 8 PAGE 5.26 - DESIGN MANUAL</td>
</tr>
<tr>
<td>FROM TABLE 5.5.3, PAGE 5.6 - DESIGN MANUAL - SUBCATCHMENTS WITH MORE THAN ONE CO-EFFICIENT CAN OCCUR</td>
</tr>
<tr>
<td>AREA OF THE SUBCATCHMENT WITH THE 'C' VALUE IN COLUMN 10</td>
</tr>
<tr>
<td>FROM SURVEY, SITE MEASUREMENT, CONTOUR PLANS OR DESIGN PLANS</td>
</tr>
<tr>
<td>AREA - AREA WHICH DETERMINES THE RELEVANT CHART (11 TO 35) OF DESIGN MANUAL TO FIND 36 AND 37</td>
</tr>
<tr>
<td>FROM CHARTS 12, 13, 15, 17 ETC. TO 35 - Pages 5.31, 5.33 ETC. TO 5.53 - DESIGN MANUAL</td>
</tr>
<tr>
<td>FROM CALCULATION: FLOW WIDTH/SPREAD</td>
</tr>
<tr>
<td>FROM CHART 11, PAGE 5.29 - DESIGN MANUAL</td>
</tr>
<tr>
<td>NOT TO EXCEED 6.8 (OR 2.4 IF THERE IS NO RISK OF PEDESTRIAN INJURY)</td>
</tr>
<tr>
<td>IDENTIFICATION NUMBER IF NECESSARY</td>
</tr>
<tr>
<td>NORMALLY CATCHMENT (TYPE 'C', 'D', OR 'L')</td>
</tr>
<tr>
<td>FROM CHARTS 4 TO 7, PAGES 5.22 TO 5.25 - DESIGN MANUAL</td>
</tr>
<tr>
<td>TRANSFER TO COLUMN 14 FOR DOWNSTREAM CAPTURE</td>
</tr>
<tr>
<td>SUM OF INLET TIMES AT TOP OF CATCHMENT AND TIME OF FLOW IN MAIN DRAIN (13 / 2)</td>
</tr>
<tr>
<td>FROM CHART 8 PAGE 5.26 - DESIGN MANUAL (CALCULATE FOR MAJOR &amp; MAJOR FLOWS ON SEPARATE LINES)</td>
</tr>
<tr>
<td>FROM TABLE 5.5.3 PAGE 5.6 - MAJOR FLOW IN MAIN DRAIN</td>
</tr>
<tr>
<td>TOTAL OF ALL UPSTREAM SUBCATCHMENT EQUIVALENT AREAS SHOULD BE PROGRESSIVE SUM OF COLUMN 12</td>
</tr>
<tr>
<td>TOTAL FLOW = MAJOR (12) + MINOR</td>
</tr>
<tr>
<td>FORM CHARTS 13, 15, 17 ETC. TO 35 - Pages 5.31, 5.33 ETC. TO 5.53 - DESIGN MANUAL</td>
</tr>
<tr>
<td>Q1010 = GROSS Q10 OR THE MAJOR SURFACE FLOW CAPACITY WITH Q1010 = Q10 ADDED TO THE MINOR SYSTEM</td>
</tr>
<tr>
<td>CAPACITY SHOULD BE THAT OF THE MAJOR SYSTEM PLUS ANY EXCESS (IF ANY) OF OVERLAND FLOW (51)</td>
</tr>
<tr>
<td>MANHOLES TO HAVE TWO MAXIMUM SPACINGS</td>
</tr>
<tr>
<td>USE CHARTS FOR SOLUTION OF MANHOLES FORMULA (ROCLA CHARTS)</td>
</tr>
<tr>
<td>AS A GENERAL RULE FOR INITIAL TRIALS - SIZE PIPES TO GIVE VELOCITIES OF 2 - 2.5 m/sec (MAX) TO ACHIEVE REALISTIC HEADLOSSES</td>
</tr>
<tr>
<td>USE THESE TIMES AND INITIAL INLET TIME TO CALCULATE 52</td>
</tr>
</tbody>
</table>

GENERAL CONCEPT OF HGL IS EXPLAINED IN GUSM VOLUME 1, 5.21.3 & FIGURE 5.21.1, PAGES 5.88 TO 5.88. USE CHARTS & EXAMPLES FROM VOLUME 2 FOR APPLICATIONS. FOR CONFIGURATIONS NOT COVERED IN GUSM, THE MAX/0 GUSM EQUATION CAN BE USED. GENERAL PROCEDURE IS TO USE COLUMNS 38 AND 39 AS A TRAIL WORKING UP COLUMNS 40 TO 52 THE SMOOTHEST AND FINE TUNING SIZES AND GRADES ALONG THE WAY.

EXPLANATION NOTES HERE CAN SAVE A LOT OF TIME LATER.
1. Proposed saddle joints require the approval of Council’s Engineer.

2. Flows from one (1) allotment only shall be considered for possible connection to the stormwater system by means of a saddle joint.

3. Road pavements and footpaths shall be reinstated to the satisfaction of Council’s Engineer.

4. Saddle joints are to connect on line with or above the centreline of the through pipe.

**NOTES**

**RECEIVING PIPE**

- Receiving pipe shall be cleaned and wire brushed. Saddle to be bonded using two pack epoxy such as PHEROPI and braced until self supporting.
- Existing stormwater pipe, (Receiving Pipe) shall be surrounded by 150mm thick Class N25 concrete.
- Cutting or coring equipment shall be used to create the opening for pipe access (25mm > incoming Ø max.).
- Treat any exposed reinforcing with a two pack epoxy such as PHEROPI to prevent corrosion attack.

**TABLE**

<table>
<thead>
<tr>
<th>Receiving Pipe Dia.</th>
<th>Branch Line Maximum Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; Ø600</td>
<td>Not Permitted</td>
</tr>
<tr>
<td>Ø600—Ø750</td>
<td>Ø225</td>
</tr>
<tr>
<td>Ø825—Ø900</td>
<td>Ø300</td>
</tr>
<tr>
<td>Ø1050—Ø1250</td>
<td>Ø375</td>
</tr>
<tr>
<td>Ø1350</td>
<td>Ø450</td>
</tr>
</tbody>
</table>

**SECTION A—A**

**PERSPECTIVE**

- Fabricated fitting
- Rubber Ring Joint socket
40mm high text

DUMP NO WASTE - FLOWS TO CREEK

PROTECT OUR WATERWAYS

Precast concrete lintel

Refer detail below

PLAN

TYPICAL CONCRETE LINTEL

PLATYPUS TEMPLATE DETAIL

10mm Grid Squares at full size – Template 430mm x 110mm at full size.

7.5mm line thickness
1. AT STREET INTERSECTIONS BACK INLETS SHALL BE DELETED IN KERB RETURNS AND THE STANDARD KERB AND CHANNEL CARRIED THROUGH.

2. THIS CATCHPIT SHALL GENERALLY BE USED ONLY ON KERB RETURNS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

NOTE:

PINE RIVERS SHIRE COUNCIL

610 X 380 CATCHPIT
(SPECIAL)
NOTES:

1. WITHIN PRIVATE PROPERTY THE ROOFWATER PIPE MAY BE ANY OF THE FOLLOWING:
   A) UPVC SEWER PIPE IN ACCORDANCE WITH AS1260–2002
   B) RC PIPE CLASS IN ACCORDANCE WITH AS4058–1992
   C) FRC PIPE CLASS IN ACCORDANCE WITH AS4139–2003

2. ROOFWATER PIPES ARE TO BE LAID ON A 2.0m ALIGNMENT FROM PROPERTY BOUNDARIES. AS OBLIQUE JUNCTION IS TO BE PROVIDED FOR EACH ALIGNMENT AND LOCATED 3.0m UPSTREAM FROM THE PROPERTY BOUNDARY.

3. MINIMUM DIAMETER OF A ROOFWATER PIPE IS TO BE 150mm. RUN–OFF FROM EACH ROOF IS TO BE BASED ON A ROOF AREA OF 150m², INTENSITY OF 150mm/hr, AND CO–EFFICIENT OF RUN–OFF OF 0.3.

4. A 150mm DIA ROOFWATER PIPE MAY BE PERMITTED BY COUNCIL’S ENGINEER IN EXCEPTIONAL CIRCUMSTANCES TO DISCHARGE INTO THE Kerb AND CHANNEL USING 2/100mm DIA PIPES.

5. ALL ROOFWATER LINES ARE TO BE BEDDED AND SURROUNDED WITH SAND TO 100mm ABOVE THE CROWN OF PIPE.

6. AS CONSTRUCTED INFORMATION IS TO BE PROVIDED INDICATING THE DEPTH OF THE JUNCTION OR PIT, SIZE AND GRADE OF THE ROOFWATER DRAIN AND ITS LOCATION RELATIVE TO PROPERTY BOUNDARIES SUCH THAT THEY MAY BE LOCATED.

7. PITS ARE TO BE LOCATED AT EACH CHANGE OF DIRECTION AND JUNCTION OF ANY OTHER ROOFWATER LINES. THE MAXIMUM SPACING BETWEEN PITS IS TO BE 90m.