Standard Construction Details - Series 500

April 2017
Standard Construction Details (SCDs) – Series 500

TII Publications contains Standard Construction Details (SCDs) for use on National Road schemes in Ireland. This composite document brings together all the Series 500 SCDs from TII Publications current at the date of this document’s publication, into a single location for convenience.

Every effort has been made to keep this composite document updated and available from the TII Publications website (http://www.tiipublications.ie/). Please note that the SCD drawings available from the TII Publications website (individually linked below) are the controlled versions for all SCDs.

The SCDs contained in this document are as follows:

**Series 500 Drainage and Service Ducts**

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# Chamber Types

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<th>225</th>
<th>300</th>
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<th>675</th>
<th>750</th>
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<tr>
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<td>A 975x1350</td>
<td>A 975x1350</td>
<td>B1350x1690</td>
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<td>E 1500</td>
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</tbody>
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- **A**: Block / In-Situ 975 x 1350
- **B**: Block / In-Situ 1350 x 1690
- **C**: Precast
- **D**: Precast
- **E**: Precast

**NOTES:**
1. All dimensions are in millimeters.
2. In accordance with EN 1433.1, the minimum distance between the outer edge of two pipes at the connection to the chamber shall be equal to the wall thickness of the chamber or 100 mm (whichever is smaller).
3. A minimum area of the chamber wall should remain in any plane.
4. In locations where the chamber is collecting surface water runoff, the treatment chamber shall be secured as shown on RCD/500/9.

TII Publication Number: CC-SCD-00501
NOT TO SCALE

SECTION Y-Y

SECTION X-X

PLAN SECTION A-A

PART SECTION SHOWING BENCHING
(FOR PIPES LESS THAN 600mm DIAMETER)

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. MANHOLES TO BE CONSTRUCTED IN 21N CONCRETE BLOCKS TO RO 20 COLOURED BLACK WITH MORTAR TO CLAUSE 507.13 OR IN-SITU MIX ST4 CONCRETE.
3. FOR INSET DETAILS, NUMBER OF BRANCHES, DIA. OF PIPES, TYPE OF COVER AND FRAME SEE APPENDIX 5/1.
4. DIMENSIONS OF CHAMBER VARY ACCORDING TO PIPE SIZE SEE RO/500/1.
5. MANHOLE COVERS ARRANGEMENT IN CARREIAGES TO BE IN ACCORDANCE WITH RO/500/14.
6. FLEXIBLE JOINTS TO BE IN ACCORDANCE WITH CLAUSE 507.14 AND RO/500/14.
NOT TO SCALE

SECTION X–X

IN SITU CONCRETE STITCH WITH FORMED TO HOLD WHERE REQUIRED

INTEGRAL IN-SITU MIX STA CONCRETE BASE WALLS, BENCHING AND BASE SLAB WITH PRECAST CHANNEL AS SHOWN OR IN-SITU FORGED INVERT AS ALTERNATIVE WALLS TO EXTEND 50MM BEYOND OUTER FACES OF CHAMBER RING

SECTION Y–Y

FLOW

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PRECAST CHANNELS AND COVER SLABS TO BE CONSTRUCTED IN PRECAST CONCRETE TO BS 5911–3 AND BS EN 1377.
3. FOR INVERT DETAILS, NUMBER OF BRANCHES, DETAILS OF PIPES AND TYPE OF COVER AND FRAME SEE APPENDIX 5/1.
4. COVER TO BE TO CLAUSE 507.13.
5. SAFETY CHAIN REQUIRED WHERE Pipe IS GREATER THAN 600 CM DIA. SEE DRAWING No. RCD/500/1/13 FOR DETAILS OF SAFETY CHAIN AND ATTACHMENTS.
6. MAXIMUM COVER ARRANGEMENT IN CARREGOFFA TO BE IN ACCORDANCE WITH RCD/500/14.
7. FLEXIBLE JOINTS TO BE IN ACCORDANCE WITH CLAUSE 507.14 AND RCD/500/14.

PLAN ON ANGLED INVERT

PLAN ON STRAIGHT INVERT

CHAMBER TYPE C
(PRECAST CONCRETE MANHOLE)
NOT TO SCALE

PLAN ON ANGLED INVERT
(BELOW REDUCING SLAB)

PLAN ON STRAIGHT INVERT
(BELOW REDUCING SLAB)

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CHAMBER WALLS AND COVER SLAB TO BE CONSTRUCTED IN PRECAST CONCRETE TO BS 5911-3 AND IS 1917.
3. FOR INVERT DETAILS, NUMBER OF BRANCHES, DEPTH OF PIPE AND TYPE OF COVER AND FRAME, SEE APPENDIX 5/7.
4. MORTAR TO BE TO CLAUSE 507.13
5. SAFETY CHAIN REQUIRED WHEN PIPE IS GREATER THAN 800MM DIAMETER. SEE BRACKING ( See RCD/550/2/14 FOR DETAILS OF SAFETY CHAIN AND HANDHOLDS.
6. MANHOLE COVER ARRANGEMENT IN CORRIDORS TO BE IN ACCORDANCE WITH RCD/500/14.
7. FLEXIBLE JOINTS TO BE IN ACCORDANCE WITH CLAUSE 507.14 AND RCD/500/14.

RIEGER CONSULT LIMITED

DRAINAGE

ROAD CONSTRUCTION DETAILS

CHAMBER TYPE D
(PRECAST CONCRETE MANHOLE)

PPS 03/15
P4 04/11
P3 01/16
Issue Date

Drawing No.
RCD/500/5

NATIONAL ROADS AUTHORITY
An tEorais um Bóthar Náisiúnta
DETAILS OF SWIVEL PIN BRACKET
(SECURED TO PLATFORM WITH 16 DIA BOLT)

SECTION A-A

PART PLAN

VIEW C-C

SECTION B-B

ASSEMBLY PLAN
(PLAN DETAIL ON GRATING POSITIONED ON LANDING SEAL)

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL WELDS ARE TO BE 3MM FILLET WELDS EXCEPT WHERE STATED OTHERWISE.
3. THE COUNTRY AND BRACKETS ARE TO BE FABRICATED FROM STEEL TO K. EN 10084
   AND TO BE PROTECTED BY HOT DIP GALVANISING.

TII PUBLICATION NUMBER: CC-SCD-00507

REVISION HISTORY:

ROAD CONSTRUCTION DETAILS

DRAINAGE

DRAWING NO:

RCD/500/7

P9 03/15
P4 12/10
P3 01/09

ISSUE DATE

CHAMBER TYPE E
TYPICAL HINGED GRATING DETAILS
SECTION A-A

65 Nominal bore pipe x 500 long on upstream side (see note 3)

SECTION B-B

NOTES:

1. All dimensions are in millimetres.
2. Catchpit to be constructed in precast concrete to BS EN 1917 and BS 5911-3.
3. Identity details, number of branches and type of gulley top are shown on the drawings and appendix 5/1.
4. Mortar to be to clause 507.13.
5. Pipes to be built into the catchpit with mortar shown on the drawings and appendix 5/1.
6. Pipe to be built into catchment drain leading position of drain pipe is to be placed above any concrete bed to flow drain.
7. The gulley top is to be set as dimensioned below the glacis.
8. Hard shoulder (non-kerb).
10. Finsihed level in other locations.
11. Site Works Sub-clause 507.6 Geomembrane/Surround to Chamber.
12. All catchpit shall be to work clause 20.
13. Alternative brickwork catchpit shall have raised internal dimension with a min 225 wall thickness and be constructed in 21N concrete blocks to BS 20 coloured black.

MAX PIPE DIAMETER 450
MAX DEPTH TO INVERT 1.8m

Chamber Type F
(Precast Catchpit)
NOT TO SCALE

GULLY CRATING AND FRAME
BITUMINOUS SEALANT
PRECAST OR IN-SITU HERB

25 MAX

BITUMINOUS SEALANT
TOP OF HERB

25 MAX

250 MIN

UNTRAPPED OUTLET SHOWN IN OUTLINE, TRAPPED OUTLET AND PLUG SHOWN DOTTED.

SECTION A-A

MIX ST4 CONCRETE OR TO MANUFACTURERS REQUIREMENTS

GULLY COVER SLAB (MIN. THICKNESS 100) WHERE REQUIRED

MORTAR TO 2400 SERIES

GULLY COVER SLAB OR IN-SITU CONCRETE FIDER

CLASS A ENGINEERING BRICKWORK TO BS 61 AND TO 2400 SERIES

MORTAR BED (10 MIN 20 MAX)
AND HAVING TO FRAME TO
CLAUSE 507.13

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THE MINIMUM DEPTH OF THE TOP OF
THE CRATING TO THE TOP OF THE
GULLY OUTLET IS TO BE 750 WHEN
THE CONNECTING Pipe IS UNDER A
CARREDAWAY OR A HARD SHOULDER
AND 600 ELSEWHERE.
3. PRECAST CONCRETE GULLIES AND
COVER SLABS SHALL BE TO BS EN 1917
OR BS 5981-6.
4. FOR DETAILS OF TYPICAL GULLY CRATING
SEE DRAWING NO. RCD/390/12.
5. WHERE A GULLY HAS A TRAP THE
STOPPERS SHALL COMPLY WITH THE
REQUIREMENTS OF BS 5981-4 AND IS
EN 1917.
6. FOR DETAILS OF GULLY CRATING REFER
TO APPENDIX 5/1.
7. SEE RCD/000/11 FOR IN-SITU
CONCRETE AND BLOCKWORK GULLIES.

TII PUBLICATION NUMBER: CC-SCD-00510

ROAD CONSTRUCTION DETAILS

DRAINAGE

PRECAST CONCRETE GULLY

102.6

5 TO 10 RECESS, GULLY PROFILE
TO FOLLOW ROAD PROFILE

FINISHED SURFACE LEVEL

MORTAR BED (10 MIN 20 MAX)
AND HAVING TO FRAME TO
CLAUSE 507.13

CLASS A ENGINEERING BRICKWORK
TO BS 61 AND TO 2400 SERIES
OR IN-SITU CONCRETE FIDER

MORTAR TO 2400 SERIES

GULLY COVER SLAB (MIN
THICKNESS 100) WHERE REQUIRED

MIX ST4 CONCRETE OR TO
MANUFACTURERS REQUIREMENTS

OUTLET POSITION TO BE AS
DETAILED ON THE DRAINAGE
DRAWINGS

EDGE OF HERB

PLAN

OUTLET POSITION TO BE AS
DETAILED ON THE DRAINAGE
DRAWINGS

EDGE OF HERB

PLAN

GULLY COVER SLAB

650

750

850 OR 350 MIN

25 MAX
NOTES:
1. All dimensions are in millimetres.
2. Gully grating to comply with EN 124.
3. Gully grating to be provided with a
   locking device in accordance with
   clause 506.

INDICATIVE GULLY GRATING DETAIL

GULLY PROFILE
NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SECTION 307.14 FOR DETAILS OF FLEXIBLE JOINTS THROUGH CHAMBER WALLS.

CHAMBER COVER DETAIL IN CARRIAGeways

FLEXIBLE JOINT DETAIL THROUGH CHAMBER WALL

<table>
<thead>
<tr>
<th>NOMINAL PIPE DIAMETER</th>
<th>'Y'</th>
</tr>
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<tbody>
<tr>
<td>≤ 450</td>
<td>500–750</td>
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<tr>
<td>&gt; 450</td>
<td>750–1000</td>
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NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSION X IS THE EXTERNAL DIAMETER OF THE PIPE.
3. THE MINIMUM AND MAXIMUM WIDTH OF THE TRENCH APPLIES ON AND BELOW A LINE 1000mm ABOVE THE OUTSIDE TOP OF THE PIPE. ABOVE THE 1000mm LINE THE TRENCH BACKFILL MATERIAL SHALL BE AS DESCRIBED IN CLAUSE 503.2 OF WORK.
4. THE CONCRETE BED OR SURROUND MAY EXTEND TO THE SIDES OF THE TRENCH OR TO THE MINIMUM WIDTH MATERIAL TO CLAUSE 503.3(2) OR TO BE USED TO FILL ANY VOID SO FORMED.
5. FOR TYPE 2 THROUGH THE CONCRETE COVER MAY BE FORMED TO A VARIES BATTER ON HORIZONTAL SURFACE. MINIMUM COVER OF CONCRETE SHALL BE 150.

KEY:
- CLAUSE 503 COARSE AND LIGHT WEIGHT AGGREGATE TO TABLE 5/3 OF WORK SERIES 500
- 5TH CONCRETE TO WORK CLAUSE 2002
- CLAUSE 503 FINE AND ALL-IN AGGREGATE TO TABLE 5/4 WORK SERIES 500
- CLASS 1 OR 2 MATERIAL TO WORK CLAUSE 003.3 (W)
NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
3. THE EDGES OF THE CHANNEL SHOULD BE APPROXIMATELY VERTICAL, BUT ANGLE OA MAY BE BETWEEN 37° AND 2° FOR EASE OF SURFACING.
5. CONCRETE TO TYPE A CHANNEL SHALL COMPLY WITH WORMIN CLAUSE 1103 AND SHALL BE A DESIGNED MIX, STRENGTH CLASSES C25/30 TO C20/15.
6. CONTRACT J OINTS IN TYPE A CHANNELS SHALL BE SAID OR NOT PUNCHED. SPAN JOINTS SHALL BE CUT TO A MINIMUM DEPTH OF 25MM BELOW THE CHANNEL INLET OR TO A MINIMUM DEPTH OF ONE QUARTER OF THE CHANNEL SECTION WHEREVER IT IS THE GREATEST, IF P ERED J OINTS SHAL L BE CUT INTO THE CONCRETE WITHIN IT IS STILL LINE WITH A SHARP STEEL TRENCHER. LEAVE CONCRETE ADEQUATELY PATINATED TO A MINIMUM DEPTH OF 15MM BETWEEN JOINTS.
7. THE SPACING OF JOINTS IN TYPE A CHANNELS SHAL L BE 5000MM. WHEN REQUIRED BY WORMIN, CLAUSE 1103. EXPANSION JOINTS SHALL BE FORMED AT SPACINGS NOT EXCEEDING 4000MM IN ACCORDANCE WITH WORMIN, CLAUSE 1008. JOINTS SHALL BE SEATED IN ACCORDANCE WITH WORMIN, CLAUSE 1016 AND 1017.
8. SEALING STRIP IS REQUIRED WHEN TYPE A CHANNELS ARE USED WITH MOOD CARREGEWAY CONSTRUCTION AND SHALL BE IN ACCORDANCE WITH WORMIN, CLAUSE 1014 OF SRA.
9. T HE 40MM FLAT SLAB ON THE EDGE OF THE TYPE A CHANNEL IS INTENDED TO MINIMIZE DAMAGE WHEN THE ADJACENT PAVEMENT LAYERS ARE BEING COMPACTED.
10. TYPE A AND TYPE B CHANNELS ILLUSTRATE PROFILES OF TRAPEZOIDAL SURFACE WATER CHANNELS IN SOLID LEVELS. BOUNDARY LINES OF WIDTH T AT CROSSFALL 2:40 REPRESENT BASE PROFILE OF TRAPEZOIDAL SURFACE WATER CHANNEL.

TII PUBLICATION NUMBER: CC-SCD-00522

ROAD CONSTRUCTION DETAILS

EDGE OF PAVEMENT DETAILS

CROSS SECTION OF CONCRETE SURFACE WATER CHANNEL

DRAWING NO.

Issued Date

P4 03/15
P3 01/15
P2 10/07

RCD/300/22
NOT TO SCALE

SECTION A-A

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. DIMENSIONS IN MILLIMETRES SHALL BE AS DESCRIBED IN APPENDIX 5/3.
3. DRAINAGE CHANNEL BLOCKS TO BE MADE OF PRECAST CONCRETE TO BS EN 1277-1:2000 OR EXTRACTED IN-SITU FOR BLOCKS TYPE C. THE UPSTAND MAY BE MADE OF CONCRETE OR THE KERB TYPE USED FOR THE CARRIAGEWAY.

DRAINAGE CHANNEL BLOCK
TYPE A

DRAINAGE CHANNEL BLOCK
TYPE B

DRAINAGE CHANNEL BLOCK
TYPE C

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. DIMENSIONS IN MILLIMETRES SHALL BE AS DESCRIBED IN APPENDIX 5/3.
3. DRAINAGE CHANNEL BLOCKS TO BE MADE OF PRECAST CONCRETE TO BS EN 1277-1:2000 OR EXTRACTED IN-SITU FOR BLOCKS TYPE C. THE UPSTAND MAY BE MADE OF CONCRETE OR THE KERB TYPE USED FOR THE CARRIAGEWAY.

DRAINAGE CHANNEL BLOCK
TYPE A

DRAINAGE CHANNEL BLOCK
TYPE B

DRAINAGE CHANNEL BLOCK
TYPE C

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. DIMENSIONS IN MILLIMETRES SHALL BE AS DESCRIBED IN APPENDIX 5/3.
3. DRAINAGE CHANNEL BLOCKS TO BE MADE OF PRECAST CONCRETE TO BS EN 1277-1:2000 OR EXTRACTED IN-SITU FOR BLOCKS TYPE C. THE UPSTAND MAY BE MADE OF CONCRETE OR THE KERB TYPE USED FOR THE CARRIAGEWAY.

DRAINAGE CHANNEL BLOCKS
TYPES A, B, AND C

TII PUBLICATION NUMBER: CC-SCD-00523
TYPE D BLOCKS – PLAN

ASSEMBLED TYPE D BLOCKS

SECTION A–A

END VIEW

SECTION B–B

END VIEW

NOT TO SCALE

TII PUBLICATION NUMBER: CC-SCD-00524

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. BLOCKS TO BE MADE OF PRESS L CONCRETE TO BS EN 1340.

ROAD CONSTRUCTION DETAILS

DRAINAGE

DRAINAGE CHANNEL BLOCKS
TYPES D, E AND F
NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. SWALES MAY BE ALLOWED TO ENCROACH IN TO MAINTENANCE STRIP WHERE PROVIDED.
3. CHECK DAMS MAY BE REQUIRED TO LIMIT VELOCITIES DURING EXTREME EVENTS TO 1-2 m/s. CONSTRUCTION SLOPE SHOULD BE MINIMUM 1 IN 50 AND MAXIMUM 1 IN 40. UNLESS CHECK DAMS ARE USED.
4. PERFORATED PIPE UNDERGRAN REQUIRED WHERE GROUNDWATER LEVELS ARE LESS THAN 300MM BELOW FINISHED SURFACE LEVEL OR SUB-CORNATION LEVEL WHERE CAPPING IS PRESENT.
5. THE DEPTH TO THE BOTTOM OF THE PERFORATED PIPE MUST BE either THE DEPTH OF 100MM BELOW BASE OR FINISHED LEVEL OR 600MM BELOW FINISHED SURFACE LEVEL.

NOT TO SCALE
NOT TO SCALE

SECTION A-A

TRIANGULAR S.W. CHANNEL

TRANSVERSE JOINT (SEE NOTE 6)

IN-SITU MIX 5:6:1 CONCRETE BASE SLAB

APRON SLAB (SEE NOTE 8)

PLAN (GRATINGS NOT SHOWN)

SECTION B-B

CHAMBER GRATING (SEE NOTE 3)

REINFORCED CONCRETE CHAMBER (SEE NOTE 5)

CONCRETE APRON SLAB

PRECAST CONCRETE CHAMBER (SEE NOTE 6)

OUTLET DRAIN AS DETAILED ON THE DRAWINGS AND SCHEDULES

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PLAN AND SECTION A-A INDICATE OUTLET WITH LINING INSTALLATION AND ASSOCIATED CHAMBERS. DETAIL CAN BE MODIFIED FOR SINGLE OR DOUBLE CHAMBER INSTALLATION. ASSOCIATED DRAINS AND SCHEDULES SHALL BE AS DETAILED ON THE DRAWINGS AND SCHEDULES. APRON SLAB ON PLAN AND SECTION B-B SHOWN TO SUIT VARIOUS INSTALLATION SLAB WIDTHS AND PROFILE OUTLINES WHEN USED IN TYPICAL CROSS-SECTION LOCATION.
3. CHAMBER GRATINGS AS SPECIFIED TO SUIT CROSS-SECTION OF APRON. MINIMUM INTERNAL DIMENSION 600 X 500. GRATINGS FRAMES TO BE REINFORCED AS REQUIRED, DETAIL TO BE APPLIED AS SPECIFIED ON THE DRAWINGS AND SCHEDULES.
4. SUPPORT BEAM PERMISSIBLE SPACING BETWEEN GRATING MASTS NECESSARY TO WITHSTAND LOADING DEFINED IN NOTE 8. FRAME TO BE REMOVABLE HANGER CLEAR OPENING 600 X 600 NOT REQUIRED AVAILABLE FOR ACCESS PURPOSES, REMOVABLE BEAMS TO BE SUPPORTED ON PURPOSE MADE STEEL BRACKETS HANGING UPON GRATING FRAME MASTS AND ATTACHED TO THE FRAMES OF THE APRON SLABS WITHIN THE ACCESS OPENINGS. BRACKETS SHALL DEPICT THE IDEA FROM GIRDERS OR CASING ELEMENTS. GRATING框架和支座的所有钢梁必须按Eurocode 1004和钢梁尺寸不可少于1500。
5. CHAMBER BENEATH APRON SLAB TO BE AS RCD/500/8 BUT WITH INTERNAL DIAMETER D AS SPECIFIED TO PROVIDE MINIMUM CLEAR OPENING BENEATH CHAMBER GRATING AND BE NOT LESS THAN 1550.
6. A TRANSVERSE JOINT SHALL BE FORMED AT EACH END OF THE APRON SLAB IN ACCORDANCE WITH Module Guide 1009. TRANSVERSE JOINTS SHALL NOT BE FILTERED WITHIN THE APRON SLABS, NO JOINTS SHALL BE FILTERED WITHIN ADJACENT LENGTHS OF CONCRETE PAVEMENT SLABS. NECESSARY JOINTS IN SUCH SLABS SHALL BE FILTERED ACCORDINGLY.
7. INCLUSION H TO PROVIDE NECESSARY SUPPORT/BRACING TO REMOVABLE SUPPORT BEAM.
8. APRON SLAB AND ASSOCIATED DIMENSION H TO BE DESIGNED TO WITHSTAND THE ACCIDENTAL WHEEL LOADS DEFINED IN SD 37. DIMENSION A TO BE MANUFACTURED AS REQUIRED. CONCRETE TO APRON SLAB SHALL COMPLY WITH Module Guide 1009. PLAN CONCRETE SHALL BE AT REINFORCED CONCRETE, STRENGTH CLASS C 35/50 TO RCD 206/1. REINFORCED CONCRETE SHALL BE STRENGTH CLASS C 35/50 TO Module Guide 1009. CONCRETE TO APRON SLAB CAST IN ONE WITH ADJACENT CONCRETE PAVEMENT SLAB TO BE AS SPECIFIED FOR THE APRON SLAB.
9. DIMENSIONS Y AND C SHALL BE AS DEFINED IN Appendix S/3.

TII PUBLICATION NUMBER: CC-SCD-00526

RCD/500/26
NOT TO SCALE

SECTION A-A

S.W. CHANNEL
CONCRETE APRON SLAB
S.W. CHANNEL

SPECIAL GRATING AND FRAME TO SUIT APRON PROFILE AND PROVIDE CLEAR OPENING 600 X 600

APRON TRANSITION/ TERMINAL RAMP (SEE NOTE 7)

GRATING AND FRAME TO SUIT APRON PROFILE

SECTION B-B

CONCRETE APRON SLAB (SEE NOTE 6)

PRECAST CONCRETE CHAMBER (SEE NOTE 4)

OUTLET DRAIN AS DETAILED ON THE DRAWINGS AND SCHEDULES

PRECAST CONCRETE COVER SLAB

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.

2. PLAN AND SECTION A-A ILLUSTRATE TYPICAL OUTLET IN-LINE WITH TRIPLE GRATING INSTALLATION AND ASSOCIATED CHAMBERS. SHELTER CAN BE ACCOMMODATED FOR THE AND SINGLE GRATING INSTALLATION OR FOR OFF-ILNE OUTLETS TO TRAPEZIoidal OR TRAPEZIoidal S.W. CHANNEL ASSOCIATED CHAMBERS AND POSSIBLE SLAB SHOWN AS DETAINED ON THE DRAWINGS AND SCHEDULES; APRON SLAB ON PLAN AND SECTION A-A SHOWN TO SUIT FIXED INSTALLATION. SLAB WIDTH AND PROFILE CUTTERS WHEN USED IN CENTRAL RESERVE LOCATION.

3. CHAMBER GRATING AS SPECIFIED IN CHAMBER SCHEDULE TO SUIT CROSS-SECTION OF APRON GRATING FRAMES TO BE REINFORCED WITH CONCRETE IN LINE WITH APPOINTED MECHANICAL MEANS. FRAME TO BE OTHERWISE REINFORCED ET AL. APRON APRON.

4. MAIN CHAMBER (BELOW APRON SLAB) TO BE AS RCD/500/9 (1050 CATD/HT).

5. A TRANSVERSE JOINT SHALL BE FORMED AT EACH END OF THE APRON SLAB IN ACCORDANCE WITH MORRIS CLAUSE 1005. TRANSVERSE JOINTS SHALL NOT BE PERMITTED WITHIN THE APRON SLAB. NO JOINTS SHALL BE PERMITTED WITHIN 480MM LENGTHS OF CONCRETE APRON SLAB. NEEDED JOINTS IN SUCH SLAB SHALL BE SPACED ACCORDINGLY.

6. APRON SLAB AND ASSOCIATED DIMENSION H TO BE DESIGNED TO WITHSTAND THE ACCIDENTAL WHEEL LOADS DEFINED IN BD.37, CONCRETE TO APRON SLAB SHALL CONFORM WITH MORRIS CLAUSE 1105. PLAN CONCRETE SLAB SHALL BE A REINFORCED CONCRETE STRENGTH CLS 32.5/3 TO BS 503.5. REINFORCED CONCRETE SHALL BE SWOLLEN CLASS C 32.5/3 TO MORRIS CLAUSE 1005.

7. TRANSVERSE/TERMINAL RAMP TO BE FORMED AS AN INTEGRAL PART OF THE APRON SLAB.

8. OVER-EXCAVATION FOR MAIN CHAMBER BELOW SUBRAYARY CHAMBERS TO BE BACKFILLED WITH ST 1 CONCRETE TO MORRIS CLAUSE 2002.

IN-LINE OUTLET TO TRAPEZIoidal SURFACE WATER CHANNEL

ROAD CONSTRUCTION DETAILS

DRAWING No. RCD/500/27

DRAWING No. P3 03/15 P2 03/15 P1 07/07

DRAINAGE

ISSUE DATE
NOT TO SCALE

LAYOUT OF HERRINGBONE DRAINS

SECTION THROUGH HERRINGBONE DRAINS

NOTES:
1. ALL DIMENSIONS ARE IN METRES.
2. THE SECTION THROUGH THE DRAINED SLOPE SHOWS THE MOST COMMON USE OF HERRINGBONE DRAINS IN A CUT SLOPE DRACING INTO A VEIN FILTER DRAIN.
3. DRAINAGE BLANKET MAY BE USED AS AN ALTERNATIVE AS DESCRIBED IN SPEC SERIES 600.
NOT TO SCALE

DRAIN TYPE 5

DRAIN TYPE 6
DRAINS LAID IN NARROW TRENCHES

DRAIN TYPE 7
DRAINS LAID IN THE SIDE OF EXCAVATION PRIOR TO THE PLACEMENT OF PAVEMENT/CAPPING LAYERS

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. FIN DRAINS SHALL BE A MINIMUM OF 150 FROM THE EDGE OF THE SURFACE WATER CHANNEL WHERE APPROPRIATE
3. MARKER TAPES, SURROUND / BACKFILL MATERIAL AND MAXIMUM DRAIN SLOPE ANGLE (φ) SHALL BE AS DESCRIBED IN MODR CH2E G14
4. PIPE SURROUND MATERIALS SHALL BE AS SHOWN ON RCD/500/40
5. INSTALLATION OF THE DRAINS SHALL BE MODIFIED ACCORDING TO COLLECTIVE WITH ENSUING DRAINAGE CHANNEL UNITS
6. THE DRAIN SHALL BE CONSTRUCTED WITH ONE DETECTABLE PAIR IN CONTACT WITH THE SIDE OF THE EXCAVATION. THE DRAINING THE ORDERED DRAINAGE SHALL ENCOUNTER TOWARDS AND BE IN CONTACT WITH THE PAVEMENT CONSTRUCTION WHERE APPROPRIATE
7. SLITS IN DRAIN TYPE 7 SHALL NOT BE MORE THAN 67 FROM THE DRAIN OF THE PIPE

TII PUBLICATION NUMBER: CC-SCD-00541

ROAD CONSTRUCTION DETAILS
DRAINAGE

EDGE OF PAVEMENT DRAINS—INSTALLATION OF FIN DRAINS

Drawing No.
RCD/500/41

Issue Date
P1 03/15
NOT TO SCALE

TII PUBLICATION NUMBER: CC-SCD-00542

ROAD CONSTRUCTION DETAILS

DRAINAGE

EDGE OF PAVEMENT DRAINS—INSTALLATION OF NARROW FILTER DRAINS

EDGES OF PAVEMENT'S CURB OR EDGE

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. NARROW FILTER DRAINS SHALL BE A MINIMUM OF 250MMもちTHE EDGE OF THE
   SURFACE WATER CHANNEL AS APPROPRIATE.
3. MARKER TAPE AND MAXIMUM DRAIN SLOPE
   ANGLE OF 0.5 hobE AS INDICATED IN THE
   MORRIN CLAUSE 3/4.
4. PIPE SURROUND MATERIALS SHALL BE AS
   SHOWN ON DRAWING NO. RCD/500/41.
5. THE DRAIN SHALL BE CONSTRUCTED WITH
   ONE FACE IN CONTACT WITH THE PAVEMENT
   CONSTRUCTION.
6. THE MAXIMUM INCREASED WIDTH OF FILTER
   MATERIAL SHALL BE 150MM in the area.
   OTHER FILTER MATERIAL OR CAPPING
   MATERIAL MAY BE PLACED.

NOT TO SCALE

DRAINS LAID IN NARROW TRENCHES

DRAIN TYPE 8

DRAIN TYPE 9

NOT TO SCALE

DRAINS LAID IN THE SIDE OF EXCAVATION PRIOR TO
THE PLACEMENT OF PAVEMENT/CAPPING LAYERS

DRAIN TYPE 8

DRAIN TYPE 9

NOT TO SCALE

EDGE OF PAVEMENT DRAINS—INSTALLATION OF NARROW FILTER DRAINS

NOT TO SCALE
DRAIN TYPE 10
UNDER CHANNEL DRAINAGE LAYER (FIN DRAIN)

NOTES:
1. WIDTH OF DRAIN TYPE 10 EQUALS A + B + 200.
2. FURTHER DETAILS OF THE APPLICATION OF DRAIN TYPES 5 TO 9 ARE SHOWN ON RCD/500/61 AND RCD/500/42.
3. UNDER CHANNEL DRAINAGE LAYER SHALL BE IN ACCORDANCE WITH WORK CLAUSE 514.

ALTERNATIVE CORNER DETAILS

2. The minimum dimensions and maximum slope gradient outlined in the RCD shall be retained in the detailed design.

3. The RCD is suitable for maximum flow velocities of 0.5 m/s. The designer is required to demonstrate that the RCD is suitable for use.

4. Rock armour shall be handled and placed to the full depth thickness in one operation so that segregation is minimised and the geotextile used under the rock armour is not disturbed after the initial rock placement.

5. Rock armour placement should begin at the toe section and progress up the slope maintaining the designed rock placement thickness as the work proceeds.

6. If this RCD is not suitable for use, the designer is required to provide a solution taking into account of notes 1-14.

7. The designer shall specify the grading and stone size type and account the specific site conditions. The hydraulic conditions and water levels; a filter layer is required between the coarse cover layer and the transmission geotextile are to be used as part of the filtration system.

8. The designer is required to assess the scours potential, 2006.

9. Determination of the stability shall be carried out for different design situations such as normal loads induced by flood or navigation or other types of loads.

10. Dimensions of cover layers and filters shall take into consideration who and to whom loaded and current water levels.

11. The designer is required to ensure that the conditions are met in accordance with EN 14337/PA relevant to the site.

12. The stones shall be angular and rectangular in shape rather than rounded.

13. The designer shall take into account site specific design requirements (e.g. soil type, channel installation damage, rock armour size etc.) when specifying the geotextiles.

14. The designer is required to provide the appropriate design to protect the river bank materials and remain beneath the outer rock armour.

**NOT TO SCALE**

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**NOT TO SCALE**

**ROAD CONSTRUCTION DETAILS**

**DRAINAGE**

**ROCK ARMOUR: SCOUR PROTECTION**

**Drawing No.:**

**RCD/500/50**
NOT TO SCALE

SECTION A-A

DETAILS OF SWIVEL PIN BRACKET
(SECURED TO HEADWALL WITH 16 DIA BOLT)

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL WELDS ARE TO BE FILLET WELDS EXCEPT WHERE STATED.
3. THE GRANITES AND BRACKETS ARE TO BE FABRICATED FROM STEEL, IF EN 10219 AND TO BE PROTECTED BY H热 OXIDISING.
4. OUTLET GRID IS ONLY TO BE USED WHERE SELF CLEAVING FILLETS GRID DETAILS TO RCD/500/52 IS PROVIDED.
5. PROPERTY SYSTEM MAY BE USED SUBJECT TO APPROVAL.

TII PUBLICATION NUMBER: CC-SCD-00552

ROAD CONSTRUCTION DETAILS

DRAINAGE

OUTLET GRID DETAIL

DRAWING NO.

RCD/500/52

ISSUE DATE

P4 03/15
P2 01/09
P1 10/07
LONGITUDINAL SECTIONS

LETTER D TO BE CAST INTO MARSHALL CONCRETE BLOCK TO A DEPTH OF 10. ALL LETTERS AND NUMBERS TO COMPLY WITH THE TRANSPORT MEDIUM ALPHABET 62.5 X 760.

DEPTH OF DUCT TO INVENT IN METERWELTER CEMENT 5MM DEEP INTO BLOCKS.

MARK REQUIRED FOR DUCT WHERE COVER DEPTH IS 1500 OR LESS BELOW FINAL LEVEL.

MARK REQUIRED FOR DUCT WHERE COVER DEPTH IS MORE THAN 1500 BELOW FINAL LEVEL.

500MM DIAMETER BLANKING PLUGS FOR TIMES TO CLEAR "D" LETTERS TO BE CAST INTO A RECESS IN BLOCK NOT EXCEEDING 45MM DEEP X 100 X 100.

DETAIL OF MARKER BLOCK

TO BE POSITIONED OVER DUCT IN TRACKS AND ON CENTRE LINE IN CENTRAL RESERVE. MARK IN DRAIN NOSE (MINIMUM 100) TO BE COINED UNDER BLOCK.

NOT TO SCALE

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. DUCTS TO BE 300MM INTERNAL DIAMETER UNLESS OTHERWISE STATED IN APPENDIX 5/2.
3. FOR DETAILS OF LOCATION OF DUCTS SEE THE LAYOUT PLANS.
4. FOR DETAILS OF THE PERMITTED FORMS OF CONSTRUCTION FOR DUCTS SEE DRAWING NO RCD/500/61.
5. DUCTS ARE TO BE LAYED STRAIGHT EXCEPT WHEN THEY HAVE TO CURVE AROUND OBSTRUCTIONS AND AT THE END OF DUCTS. NO CHANGE OF DIRECTION TO BE GREATER THAN 1 IN 30. THE MARKET BLOCKS ON DRAWING NO RCD/500/62 SHALL BE DRAWN THROUGH THE COMPLETED DUCT.
6. ALL DUCTS SHALL EXTEND A MINIMUM OF 305MM BEYOND THE PAVEMENT CONSTRUCTION AND WHERE POSSIBLE THE DRAINAGE TRENCH.
7. DUCTS AND MARKERS SHALL NOT BE SET UNDER SAFETY FENCE POSTS.
8. WHERE DESIGNED IN APPENDIX 5/2, 15/18 MARKER UNIT TERMINALS SHALL BE DETAILED WITH DUCT CHARGERS.
9. SEE DRAWING NO RCD/500/63 FOR DUCT CROSSING TYPES.

TII PUBLICATION NUMBER: CC-SCD-00560

ROAD CONSTRUCTION DETAILS

DUCTS

TRANSVERSE DUCTS

Drawing No.
RCD/500/60

Issue Date
P1 03/15
NOT TO SCALE

TII PUBLICATION NUMBER: CC-SCD-00562

ROAD CONSTRUCTION DETAILS

DUCTS

P1 03/15

TRENCH CROSS SECTIONS
UNDER NON-TRAFFICKED AREAS

DUCT DIAMETER: LESS 10%
NOTES:
1. ALL DIMENSIONS IN MILLIMETERS.
2. FOUNDATIONS TO BE AS PER SPEC 507.2.
3. CONCRETE MIX SHALL BE 5TH AS PER SPEC 507.2.
4. CHAMBER SHALL BE TYPE ST1 B LOCKS CONSTRUCTED FROM 10 N/mm² MINIMUM COMPRESSIVE STRENGTH AND CLAS B ENGINEERING BRICKS WITH 50 N/mm² MINIMUM COMPRESSIVE STRENGTH.
5. BLOCK AND BRICK LAYERS TO BE IN ACCORDANCE WITH DECTL WITH 80 x 25 x 100mm REINFORCED CONCRETE UNITS TO 6 x 150mm ABOVE DUCT OPENINGS. ALLOW 3 DAYS FOR BLOCKWORK MORTAR TO GIVE BEFORE INSTALLATION VIBRATING DUCT LAYERS. CONCRETE OR SUBSTITUTE TO CLAD AREAS TO A MINIMUM OF 20mm THICK, LAYERED EACH LAYER WILL CONSISTED WITH A MEMBRANE.
6. OPORTUNE POSITION OF DUCTS TO BE 110mm ABOVE PEAK OF CHAMBER.
7. MORTAR TO BE 1:3 CEMENT/SAND MIX AS PER SPEC 507.13.
8. SIZE OF BLOCK = 440 x 215 x 100mm SIZE OF ENGINEERING BLOCK = 215 x 100 x 50mm.
9. ALL LAYERS TO BE 5mm THICK AS PER SPEC 507.3 AND SPEC 2590.
10. COVER FRAME TO BE FULLY COVERED ON MINIMUM 10mm DESTINATION 1 MORTAR AS PER SPEC 507.3.
11. POSITION OF CABLE HANGER BRACKETS AND GPU TO BE DECIDED ON SITE WHERE REQUIRED.
12. WHERE SUMP IS INSTALLED IT SHOULD BE DRENCHED AND NOT EXTENDING THROUGH DUCTS.
13. DECKPLATE COVERS CAN ONLY BE REMOVED FROM CLOSED ENDS. FRAMES MUST BE LAYERED TO ALLOW FOR EASY REMOVAL OF COVERS AS PER 507.7.
14. PRECAST CHAMBERS TO BE EN1917 ARE ALSO PERMITTED AS PER SPEC 507.4.
15. CAST IN-PLACE CONCRETE CHAMBERS ARE ALSO PERMITTED AND SHALL BE CONSTRUCTED AS PER SPEC 507.4.
NOTES:
1. ALL DIMENSIONS IN MILLIMETRES.
2. FOUNDATIONS TO BE AS PER SPEC 507.2.
3. CONCRETE MIX SHALL BE 5th AS PER SPEC 507.2.
4. MORTAR USING HYDRAULIC MORTAR AND ALLOW TO SET OVERNIGHT.
5. CHAMBER WALLS TO BE SOLID BLOCKS TO 150 COLOURED BLOCK WITH 21 N/mm² MINIMUM COMPRESSIVE STRENGTH.
6. BLOCK LAYERS TO BE IN ACCORDANCE WITH DETAIL NO. 55529 250x250x100mm (REF-FIGURED CONCRETE LINTEL TO 150 above DUCT OPENING: ALLOW 5 DAYS FOR RECKONING MATERIAL TO CURVE ACEP Size CEMENT): Voids outside Reckoning with Grade C25/10 Concretes Well Consolidated with A MECHANICAL CONNECTOR.
7. MORTAR TO BE 1:3 CEMENT/SAND Mix as PER SPEC 507.3.
8. SIZE OF BLOCK = 440x215x100mm.
9. ALL GROUT TO BE 9 TO 15mm THICK S PER SPEC 507.3 AND DENSITY 2400.
10. COVER FRAME TO BE FULLY RECKONED ON MINIMUM OF 10 cm DEEP RECKONING 1 MORTAR.
11. POSITION OF CABLE BEAVER BRACKETS AND SUMP TO BE RECKONED ON SITE.
12. ANCHOR ROLES TO BE SET IN FLOOR WITH BASE OF BEAMS BELOW BEAMS.
13. PIPELINE CHAMBERS TO B/E 117 ARE ALSO DETERMINED AS PER SPEC 507.4.
14. CAST IN-PLACE CONCRETE CHAMBERS ARE ALSO DETERMINED AND SHALL BE CONSTRUCTED AS PER SPEC 507.4.
1. All dimensions in millimeters.
2. Foundations to be as per spec 507.2.
3. Concrete mix shall be as per spec 507.2.
4. Vibrate using mechanical vibrator and allow to set over night.
5. Chamer walls to be solid blocks to be 200 mm thick with 2:1 mix minimum compressive strength.
6. Block layers to be in accordance with detail 1200 x 253 x 100 mm reinforced concrete up to 150 mm above duct openings. Allow 3 days for blockwork mortar to cure before aligning voids. Cast ductwork with grade C25/10 concrete well consolidated with a mechanical compactor.
7. Mortar to be 1:3 cement/sand mix as per spec 507.13.
8. Size of block = 440 x 215 x 100 mm.
9. All joints to be 8 mm thick as per spec 507.3 and 3000 W.
10. Cover frame to be fully fixed on minimum of 10 cm reinforcement 1:3 mortar as per spec 507.3.
11. Position of cable bearer brackets and sump to be decided on site.
12. Anchor rods to be set in floor with rate of rods below level.
13. Precast chambers to be EN 1917 are also permitted as per spec 507.4.
14. Cast-in-place concrete chambers are also permitted and shall be constructed as per spec 507.4.
NOT TO SCALE

SECTION THROUGH LONGITUDINAL DUCT ARRANGEMENT

ALTERNATIVE SPACER/CLIP ARRANGEMENT

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.

2. DUCTS SHALL BE SEPARATED BY MEANS OF A PURPOSE MADE SPACE. THE SPACER SHALL ENSURE THAT THERE IS SUFFICIENT ROOM FOR JOINTING COLLARS = NOMINALLY 300MM SEPARATION. SPACERS ARE PROVIDED TO ENSURE THAT THE SEPARATION BETWEEN DUCTS REMAINS CONSTANT ALONG THE LENGTH OF DUCTS DURING INSTALLATION, BACKFILLING AND IN SERVICE. SPACERS SHALL NOT CAUSE DAMAGE TO THE DUCTS EITHER DURING INSTALLATION OR IN SERVICE.

3. THE STRAPPING IS TO BE PURPOSE MADE AND SPACED AT INTERVALS TO ENSURE THAT THE DUCT AND SPACER ARRANGEMENT SHOWN IN THE SECTIONAL VIEW IS NOT DISTURBED DURING INSTALLATION, BACKFILLING AND IN SERVICE. THE STRAPPING WOULD TYPICALLY BE INSTALLED AT 1000MM INTERVALS.

4. A PURPOSE MADE COMBINED SPACE/CLIP ARRANGEMENT MAY BE USED AS AN ALTERNATIVE TO SEPARATE SPACER AND STRAPPING PRODUCED. THE CONTRACTOR TO DEMONSTRATE THAT THE SPACE/CLIP IS CAPABLE OF RETURNING DUCTS IN PLACE DURING INSTALLATION AND SERVICE.

TII PUBLICATION NUMBER: CC-SCD-00567

ROAD CONSTRUCTION DETAILS

DUCTS

DUCT SPACER AND STRAPPING FOR TRENCHLESS CONSTRUCTION

Drawing No. RCD/500/67

P1 03/15 Issue Date