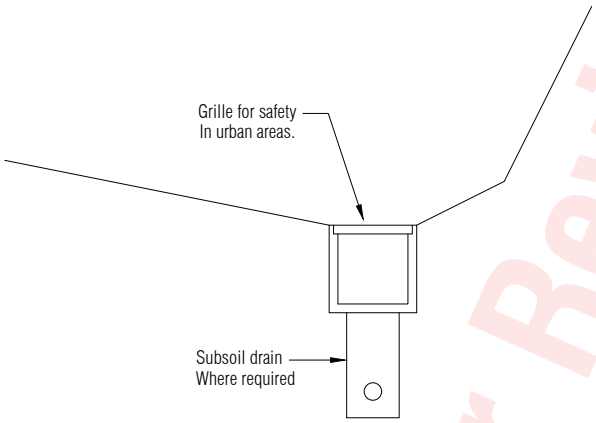
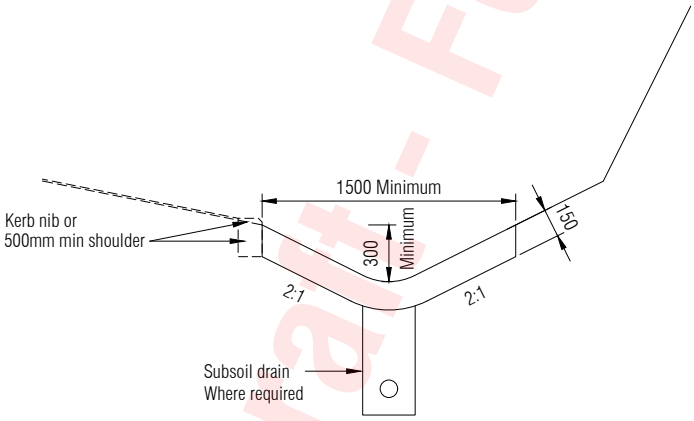
Road Drainage Index

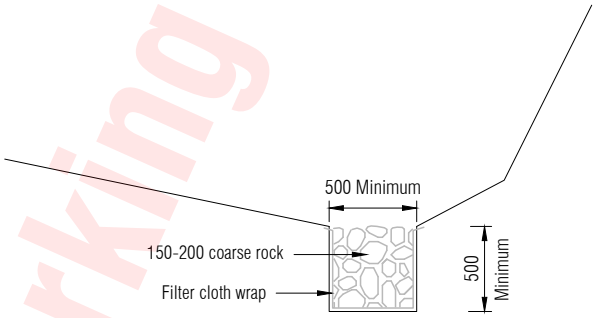
SED_NO	Title
RD0000	Road Drainage Index
RD0002	Rural surface channel drain in cutting
RD0003	Rural side drain culvert inlet
RD0004	Rural side drain culvert outlet
RD0010	Subsoil drain
RD0020	Semi-recessed catch pit
RD0021	Catchpit with half syphon
RD0022	Street catchpit 800 x 500
RD0023	Street catchpit 800 x 500 precast lintel details
RD0024	Street catchpit 800 x 500 precast unit details
RD0025	Splay catchpit
RD0026	Splay catchpit details
RD0027	Replacement Standard catchpit
RD0028	Field catchpit 440 x 440
RD0030	Megapit
RD0040	Catchpit gratings and frames
RD0041	Catchpit Backplate Installation Details
RD0042	Spring - latched (safety) grate catchpit
RD0050	Soakhole plan and section
RD0051	Soakhole filter cage details
RD0054	Soakage system inlet details
RD0056	Groundwater recharge pit for peat areas plan
RD0057	Groundwater recharge pit for peat areas (cross section)
RD0060	Kerb discharge



PRECAST CONCRETE GRATED CHANNEL DRAIN



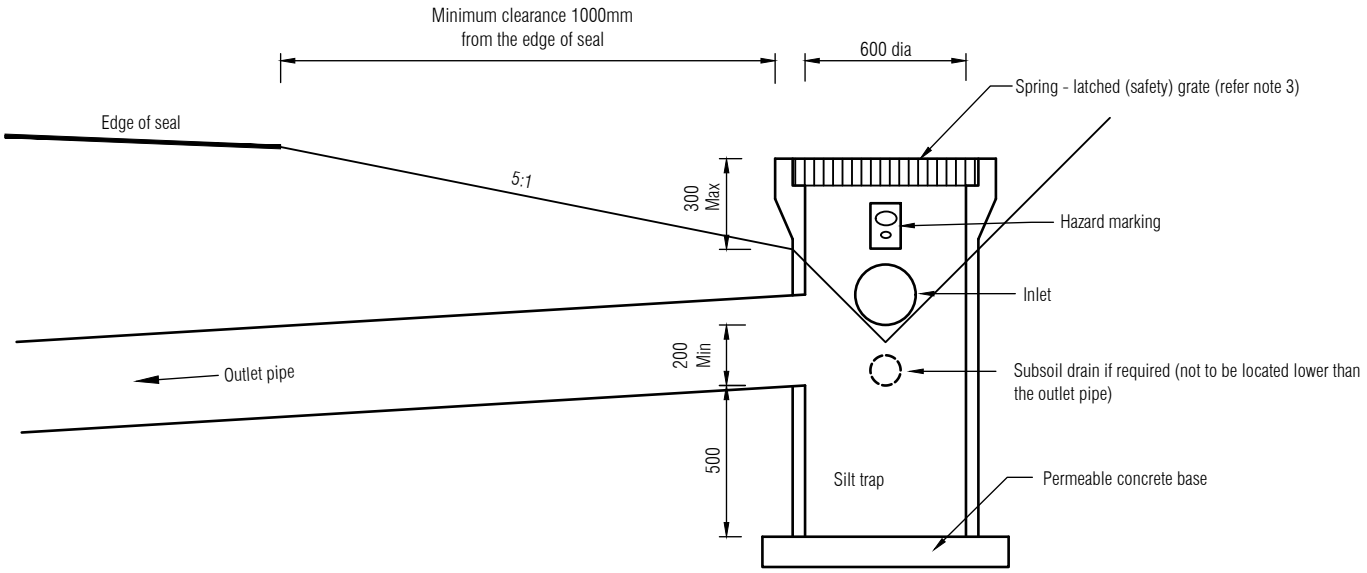
CONCRETE LINED



SURFACE WATER CHANNEL (ROCK LINED)

NOTES

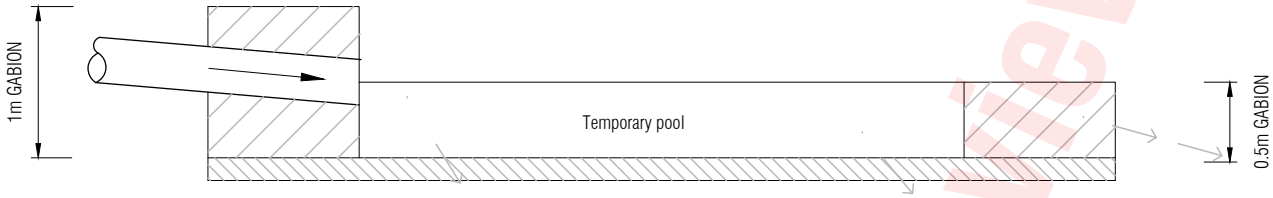
1. Side drain to be sized such that it caters for contributing catchment.
2. A subsoil drain should be provided where the open drain is located along the edge of the seal.
3. Catchpit grates should be spring - latched (safety) grate should be Class D with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5



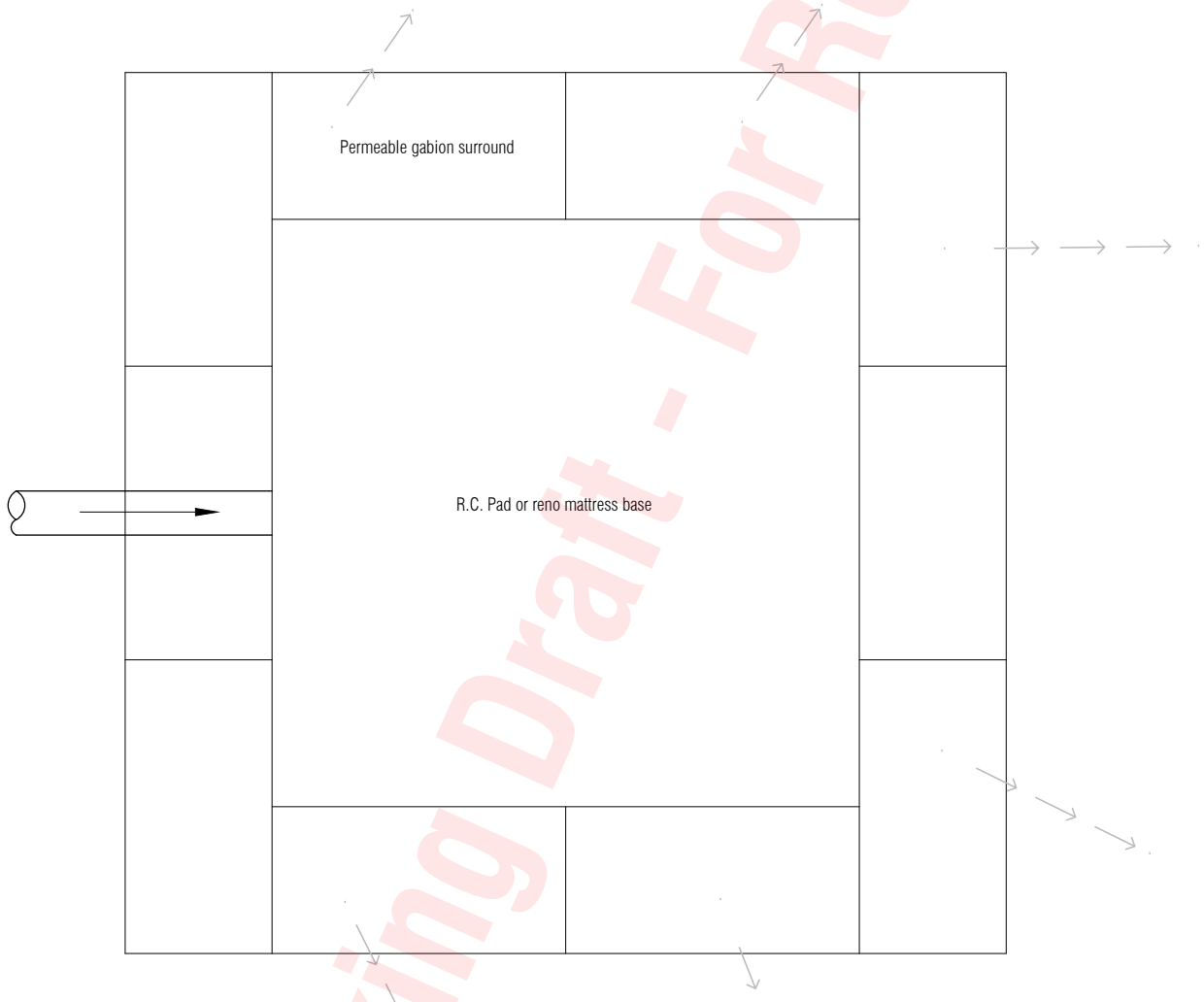
SILT TRAP DETAIL

NOTES :-

1. Fit top of pipe with grated cover in collar. Cover and fixing details to be approved by the engineer.
2. On any road with a speed limit of 50kmh or where risk of vehicle running into drain is significant, the approaches to the inlet shall be protected so as to be traversable. Alternative inlet designs can be considered
3. Catchpit grates should be spring - latched (safety) grate should be Class D with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5



SECTION

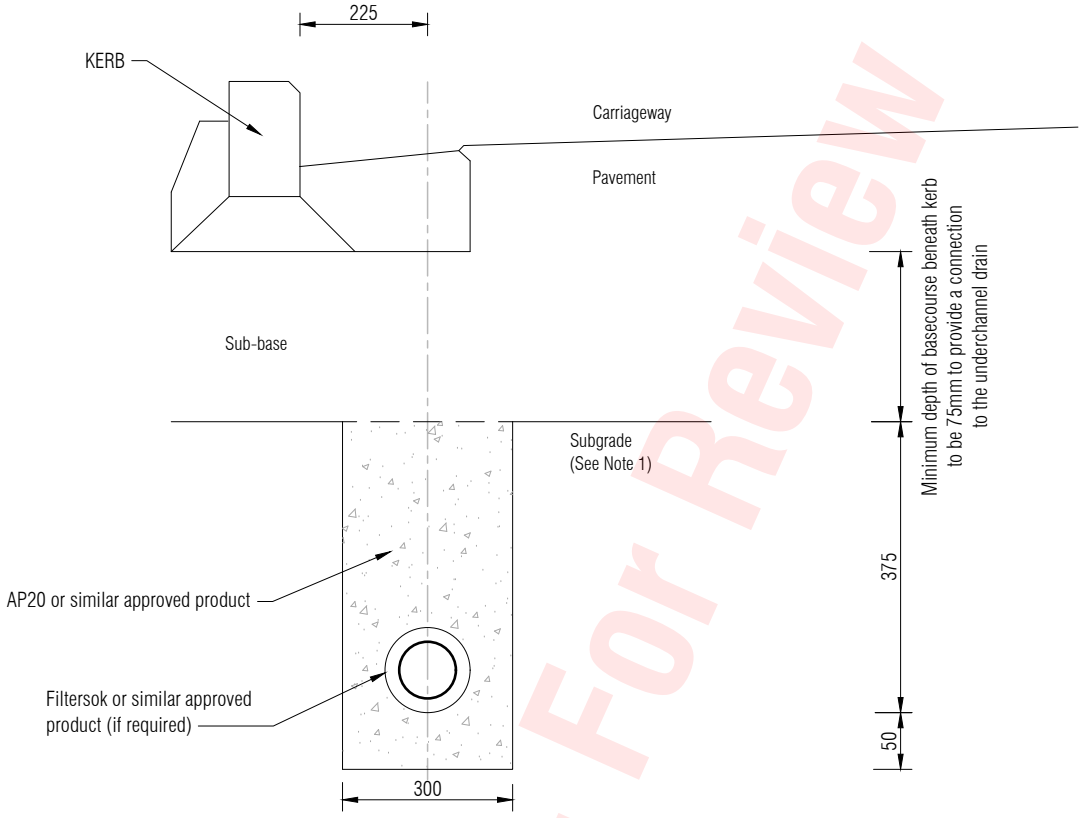


PLAN

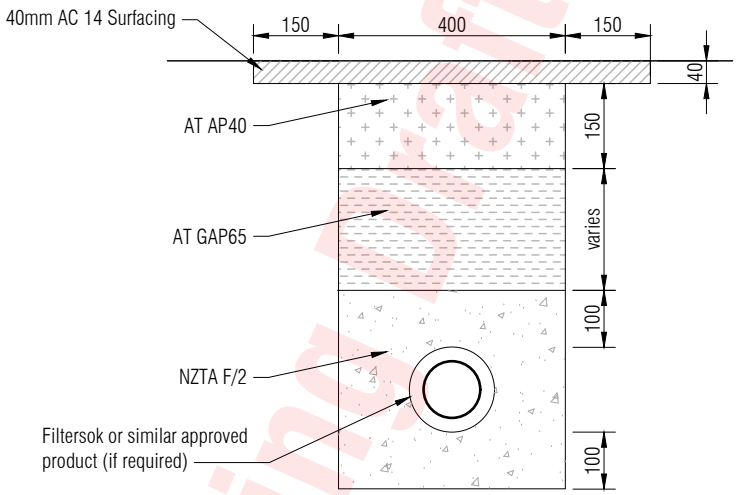
Gabion ponding & seepage through sides & base

FOR USE IN PROTECTED BUSH AREAS

Note: specific design required of seepage system such that it caters for contributing catchment .



UNDER KERB AND CHANNEL



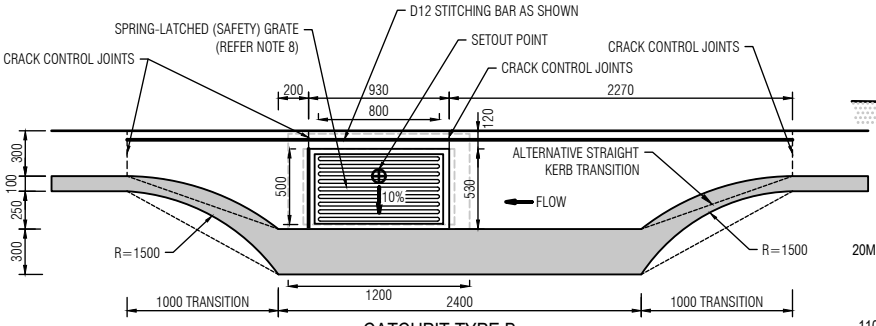
IN CARRIAGEWAY

NOTES

1. Construct subsoil drain after construction and shapeing of Subgrade. Subgrade must be level or fall towards subsoil drain

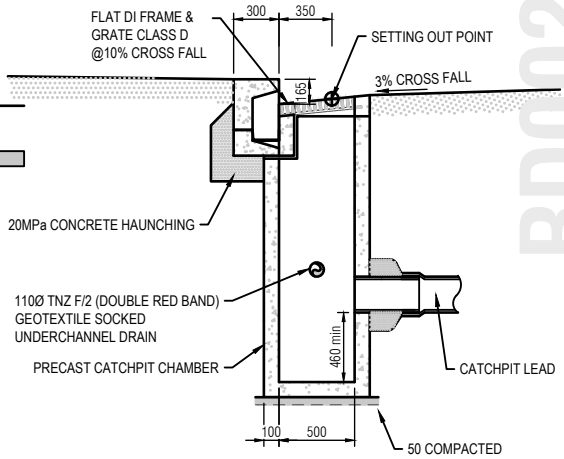
2. Underchannel Drains
Shall be approved perfotated drain pipe of 100mm internal diameter unless specifid or scheduled otherwise. Subsoildrain pipes shall comply with the requirements of TNZ Specifications F/2. Trench backfill shall be approved AP20 material or similar. Trench backfil shall be approved 30/10 scoria or similar if a filter sock is provided. Depth below subgrade to be 375mm.

3. Sub-base material shall be laid with fall towards a downstream catchpit or other access chamber with connection invert level above the soffit level of the outlet pipe (or water level in a chamber with half-siphon traps)



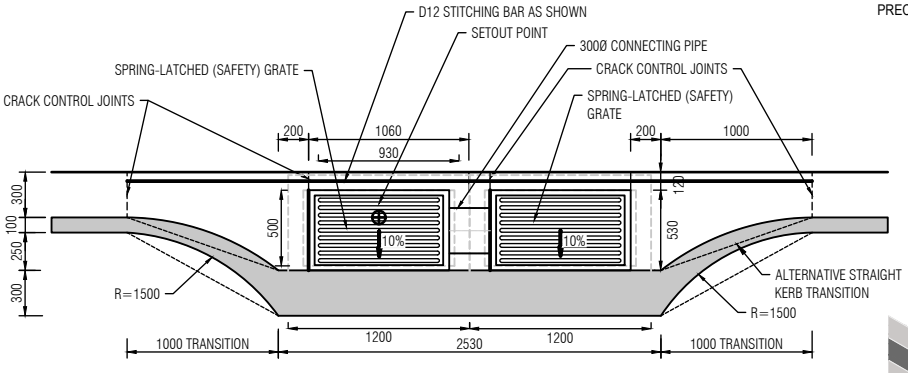
CATCHPIT TYPE B

SCALE: NTS



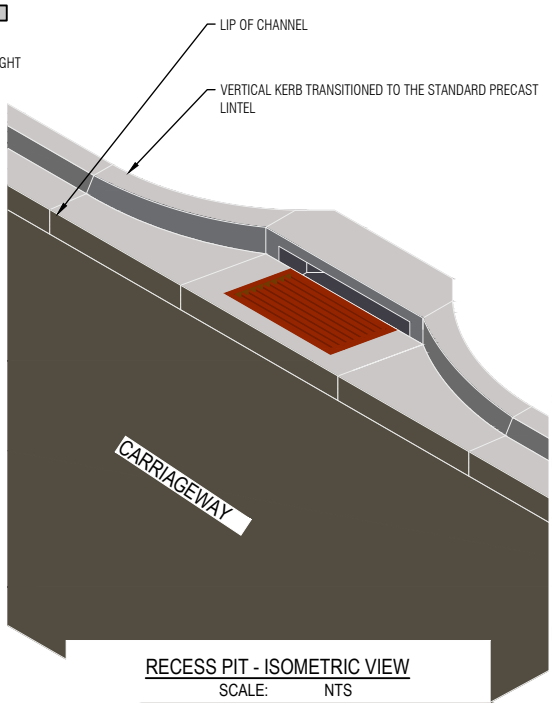
SECTION A

SCALE 1:20



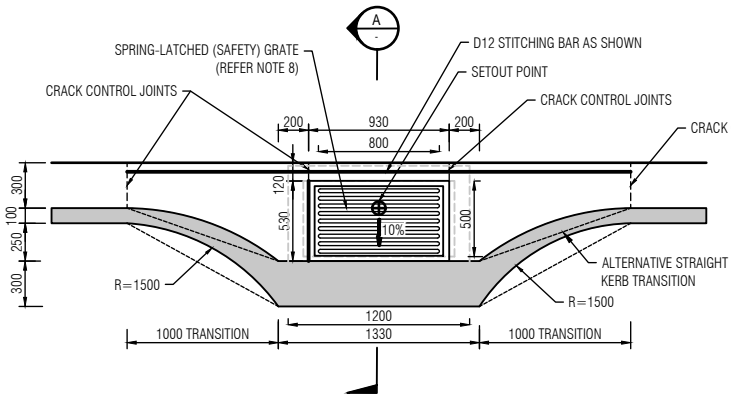
DOUBLE CATCHPIT

SCALE: NTS



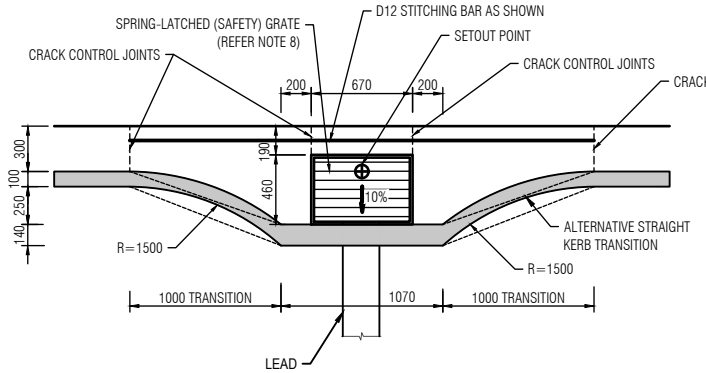
RECESS PIT - ISOMETRIC VIEW

SCALE: NTS



CATCHPIT TYPE A

SCALE: NTS



STANDARD 670x460 CATCHPIT

SCALE: NTS

NOTES:

1. Transition kerb to be precast, slip - formed to radius or with in situ concrete element to match to adjoining kerb type
2. Catchpit to be setout by kerbs stringline on-site to ensure correct location
3. Standard 670x460 dished grate is not cycle-friendly. Do not use where cycle access permitted.
4. Half syphon to be used in combined catchment areas only.
5. Standard 670x460 catchpit to be 1.4m deep.
6. Nominal Dimensions only. Refer to supplier's information for actual dimensions of catchpits. Minimum wall thickness 75 mm, Sump depth 450 min. Minimum depth to catchpit lead invert 725mm in grassed areas.
7. Increase class of pipe where minimum cover of 900mm cannot be achieved for Catchpit leads.
8. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
9. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.
10. Catchpit connecting to combined network system (wastewater/stormwater) should be installed with a spring latched safety grate.

RD0020

Transport Design Manual | Standard Engineering Details

CHIEF ENGINEER APPROVED

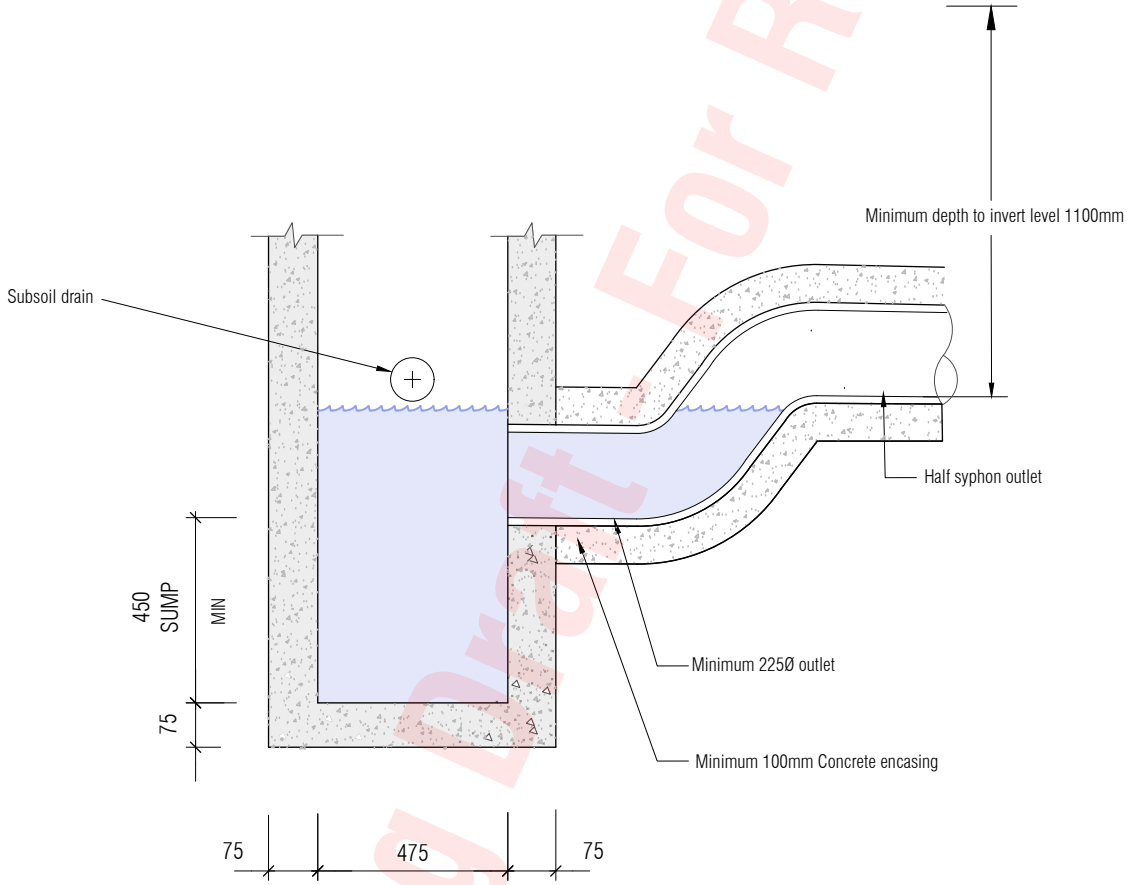
TDM TECHNICAL STANDARDS

Semi recessed catchpit

Date: 30/11/2021

SED No. RD0020

Version C



Review 1

DATE: February 14, 2020

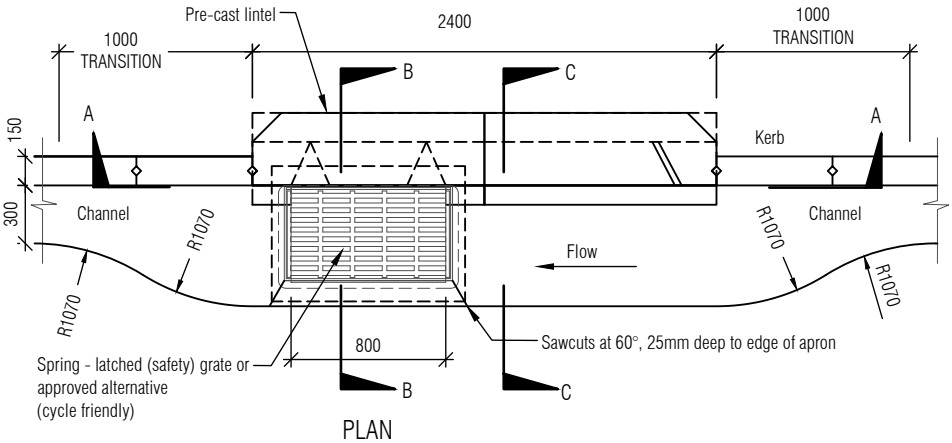
TDM TECHNICAL STANDARDS

Catchpit with half syphon

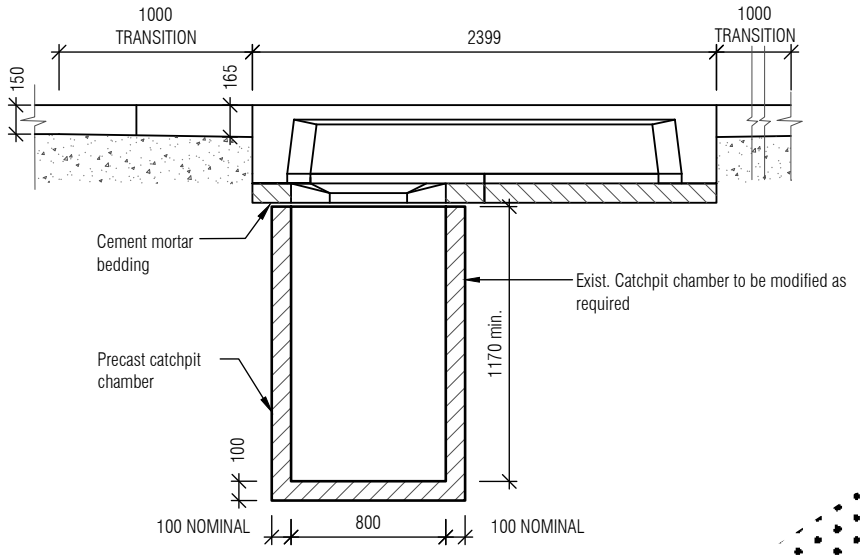
Date: Document in Review

SED No. RD0021

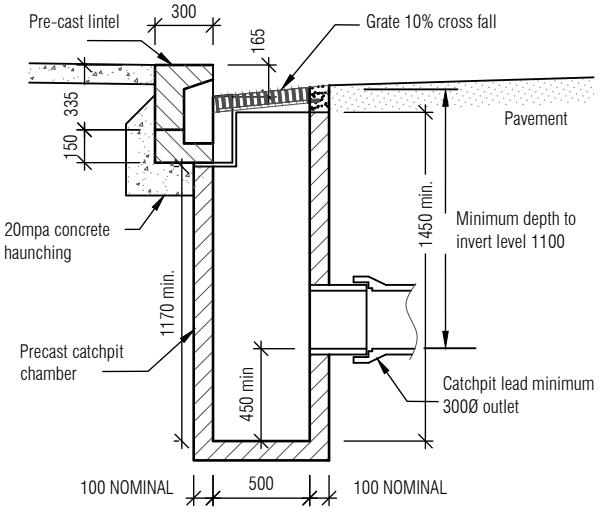
Version A



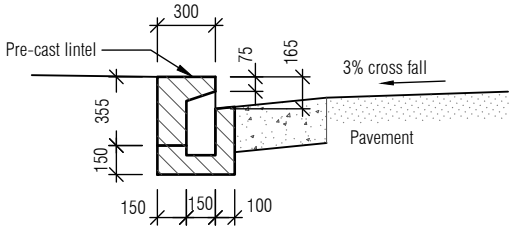
PLAN



SECTION A-A



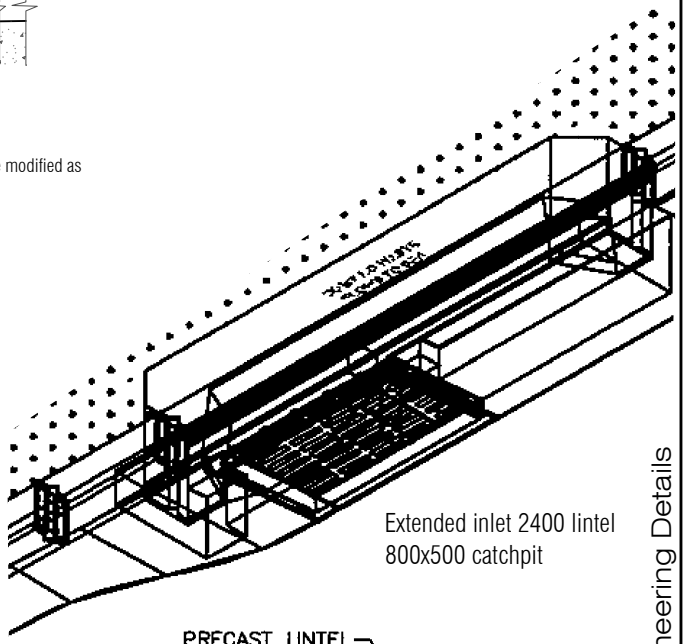
SECTION B-B



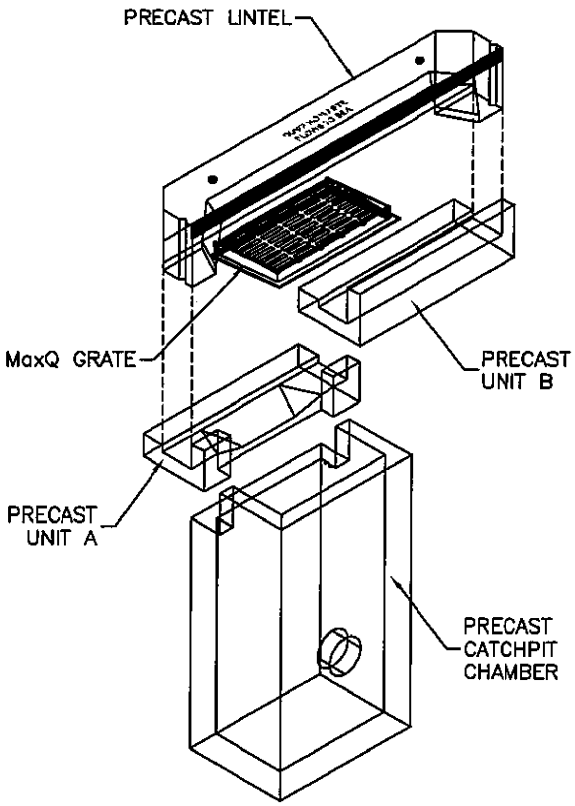
SECTION C-C

NOTES

1. Concrete to be 25 mpa.
2. Catchpits to be 1.8m deep.
3. Transition-kerb height changes, from 150 to 165.
4. Precast units a and b with lintel can be retrofitted to existing catchpit.
5. Precast tapers have not been detailed, therefore all dimensions are nominal.
6. When retrofitting unit 'a' to existing catchpit, trim back existing catchpit as shown below. Place unit 'a' centrally over back of catchpit on concrete bedding.
7. Cycle-friendly. May be used adjacent to cycle lanes.
8. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
9. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.



Extended inlet 2400 lintel 800x500 catchpit



RD0022

Transport Design Manual | Standard Engineering Details

CHIEF ENGINEER APPROVED

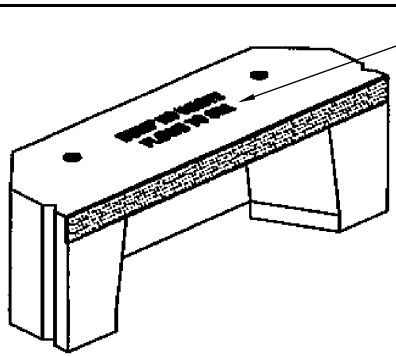
TDM TECHNICAL STANDARDS

Street catchpit 800 x 500

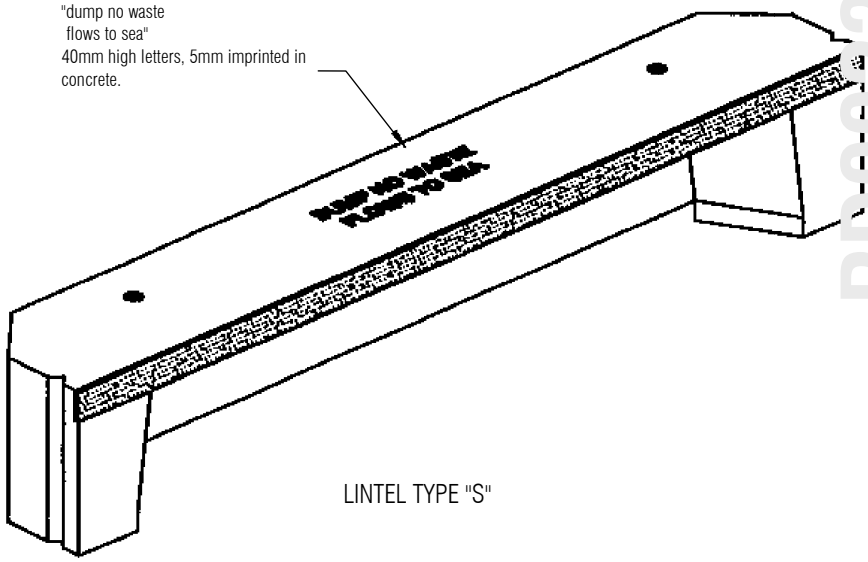
Date: 30/11/2021

SED No. RD0022

Version B



LINTEL TYPE "VS"



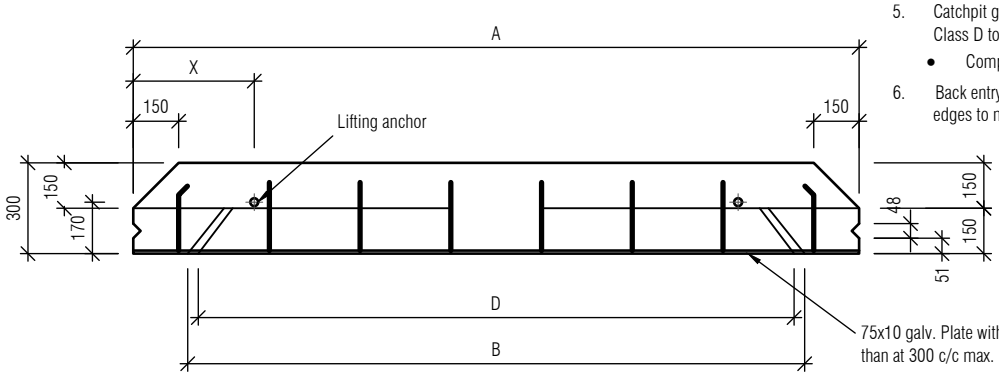
LINTEL TYPE "S"

RD0023

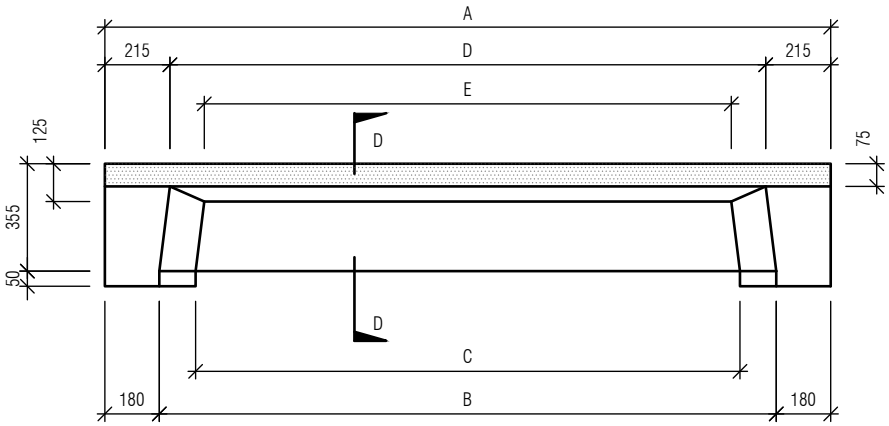
LINTEL	A	B	C	D	E	X	MASS(kg)
VS	1200	840	600	770	543	250	204
S	2400	2040	1800	1970	1743	400	499

NOTES

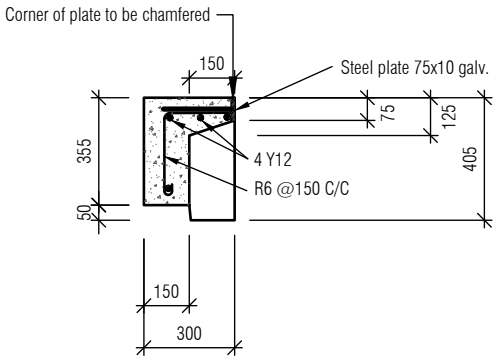
1. Precast Lintel Grade 25MPa concrete.
2. Cover to all bars to be 40mm minimum.
3. Lifting Anchor to be "Swiftlift" or equivalent 1.3 tonne galvanised.
4. Precasting tapers have not been shown. All dimensions nominal
5. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
6. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.



PLAN

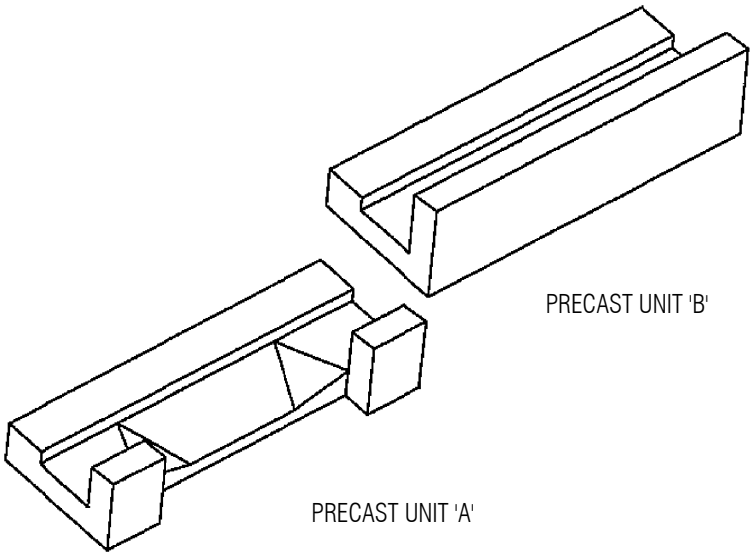


ELEVATION
LINTEL DETAIL



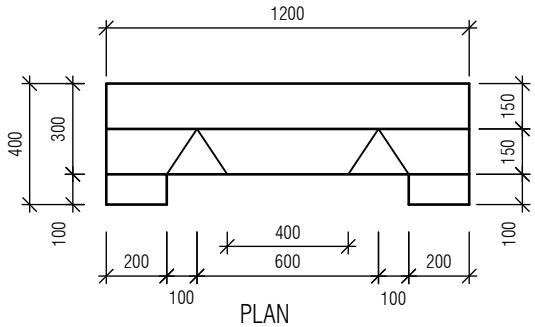
SECTION D-D

Transport Design Manual | Standard Engineering Details

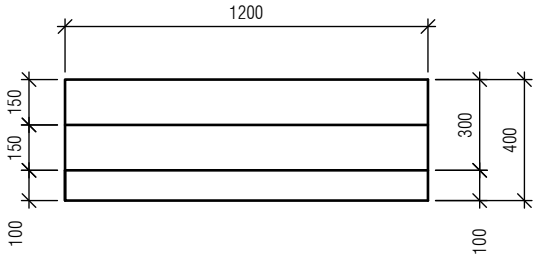


NOTES

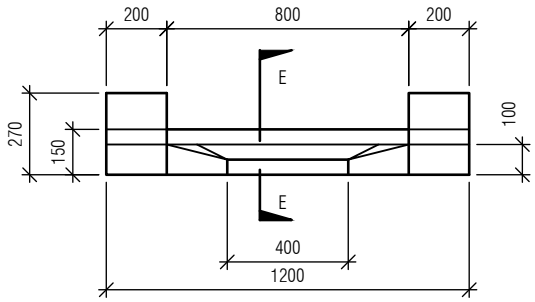
1. Precast Lintel Grade 25MPa concrete.
2. Cover to all bars to be 40mm minimum.
3. Lifting Anchor to be "Swiftlift" or equivalent 1.3 tonne galvanised.
4. Precasting tapers have not been shown. All dimensions nominal
5. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 and with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
6. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.



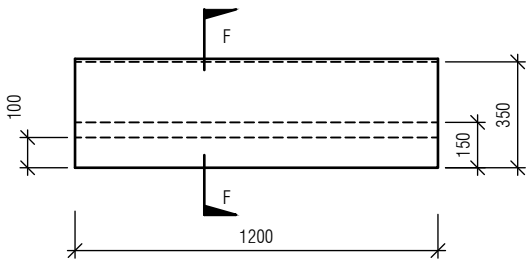
PLAN



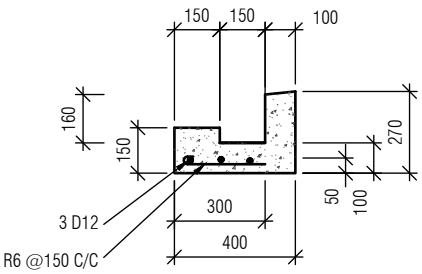
PLAN



ELEVATION

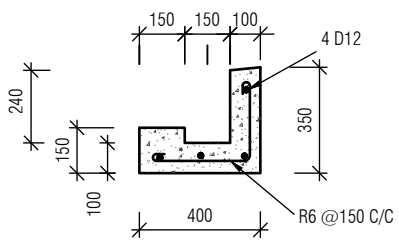


ELEVATION



SECTION E-E

PRE-CAST UNIT 'A'



SECTION F-F

PRE-CAST UNIT 'B'

CHIEF ENGINEER APPROVED

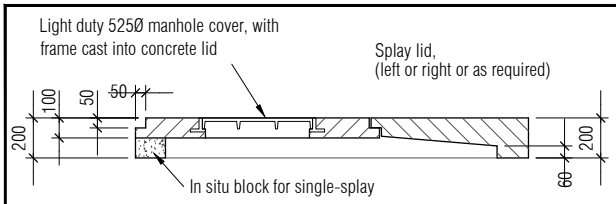
TDM TECHNICAL STANDARDS

Street catchpit 800 x 500 precast unit details

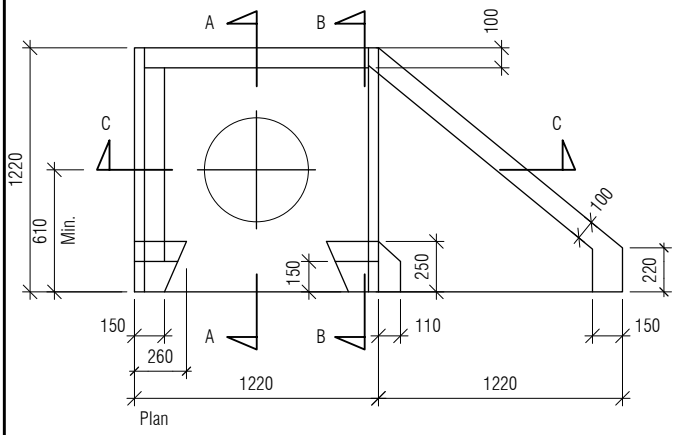
Date: 30/11/2021

SED No. RD0024

Version B

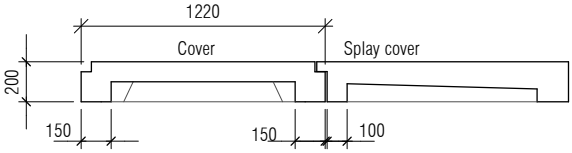


COVER & LID SECTION CC

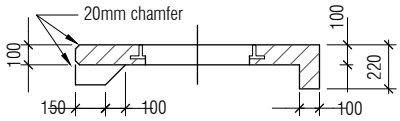


Plan

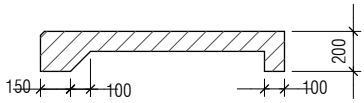
SINGLE-SPLAY CATCHPIT LID



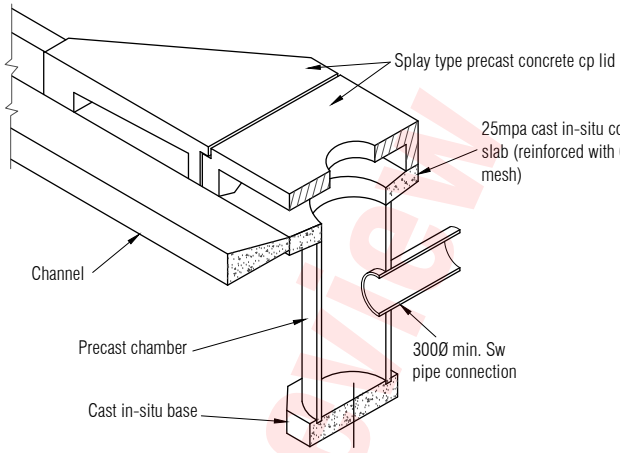
FRONT ELEVATION



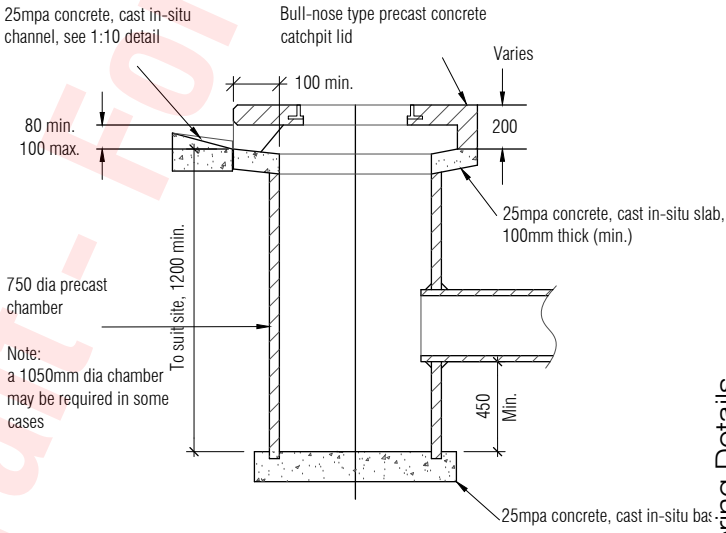
LID SECTION AA



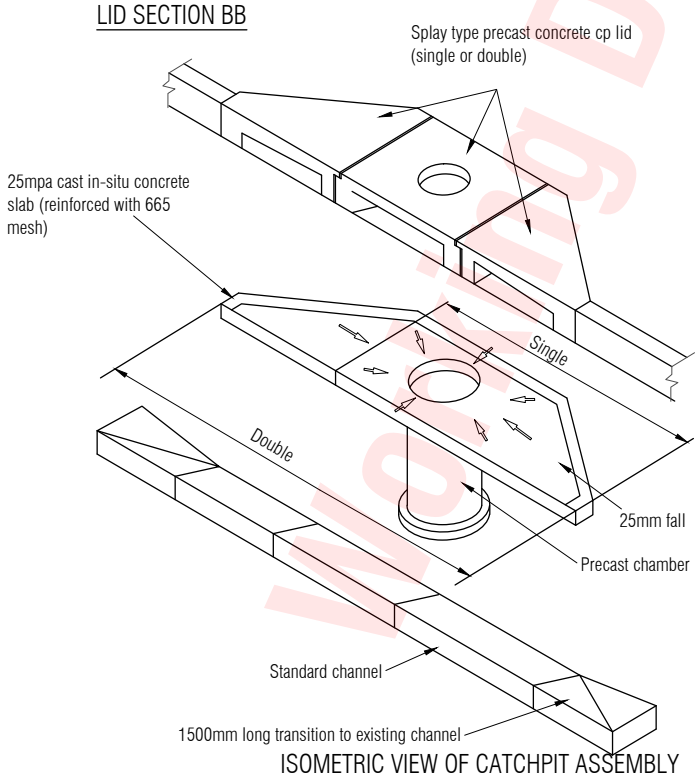
LID SECTION BB



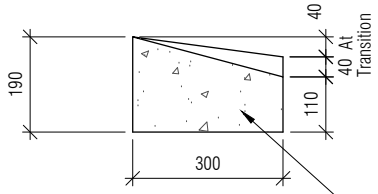
ISOMETRIC VIEW / SECTION



CATCHPIT-SECTION AA



ISOMETRIC VIEW OF CATCHPIT ASSEMBLY (DOUBLE SPLAY SHOWN)



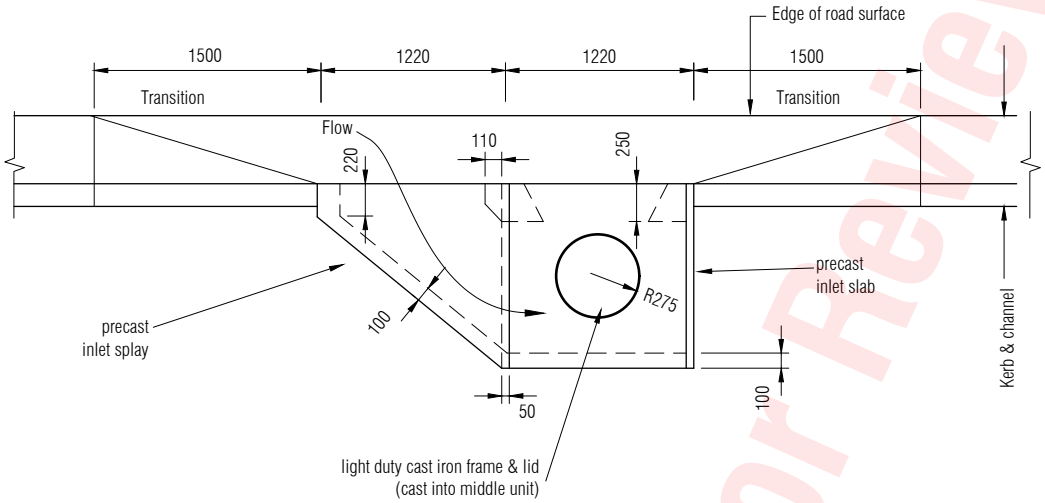
IN-SITU CHANNEL

Notes :

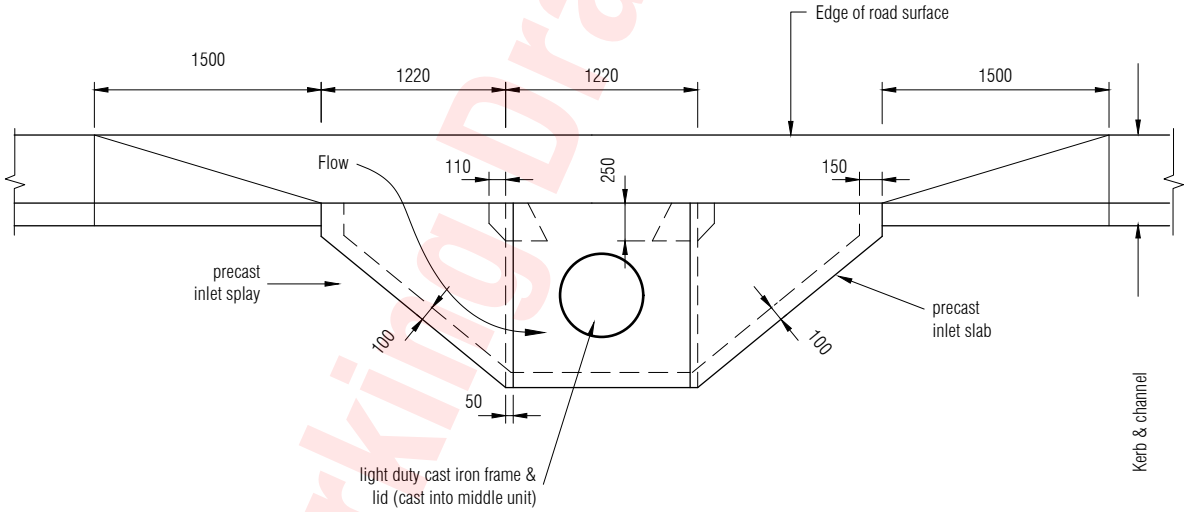
1. Cycle-friendly. May be used adjacent to cycle lanes

RD0025

Transport Design Manual | Standard Engineering Details



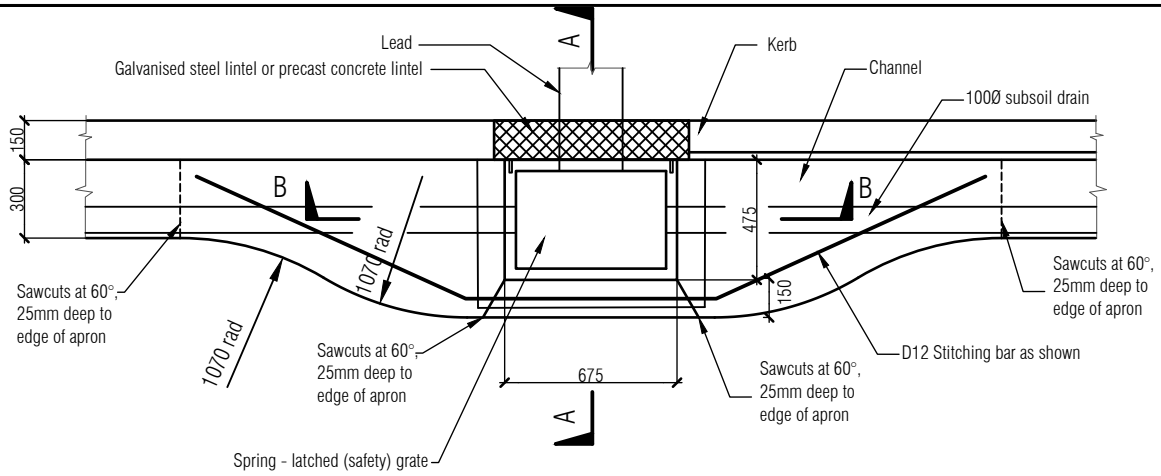
PLAN-SINGLE SPLAY
(DOUBLE OPENING)



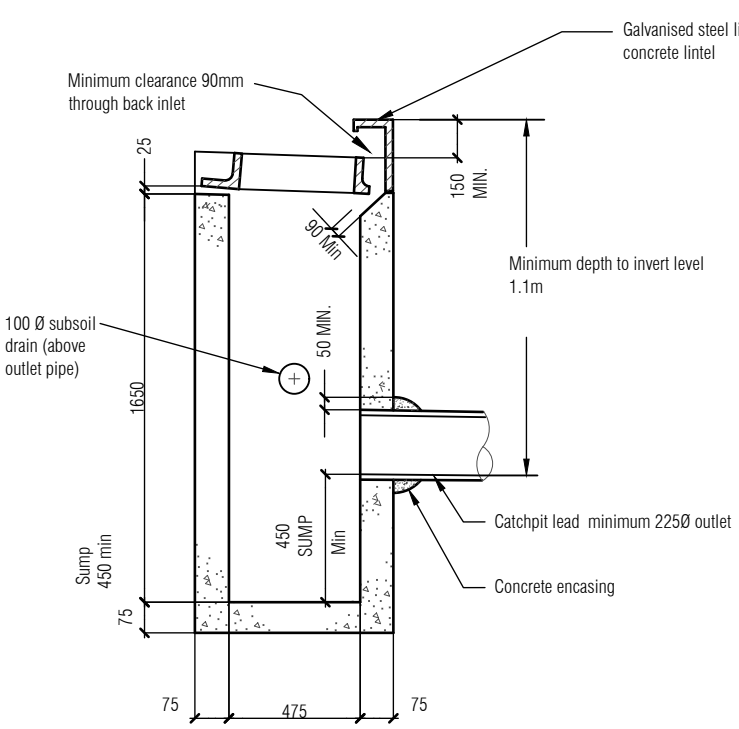
PLAN-DOUBLE SPLAY
(TRIPLE OPENING)

NOTES :

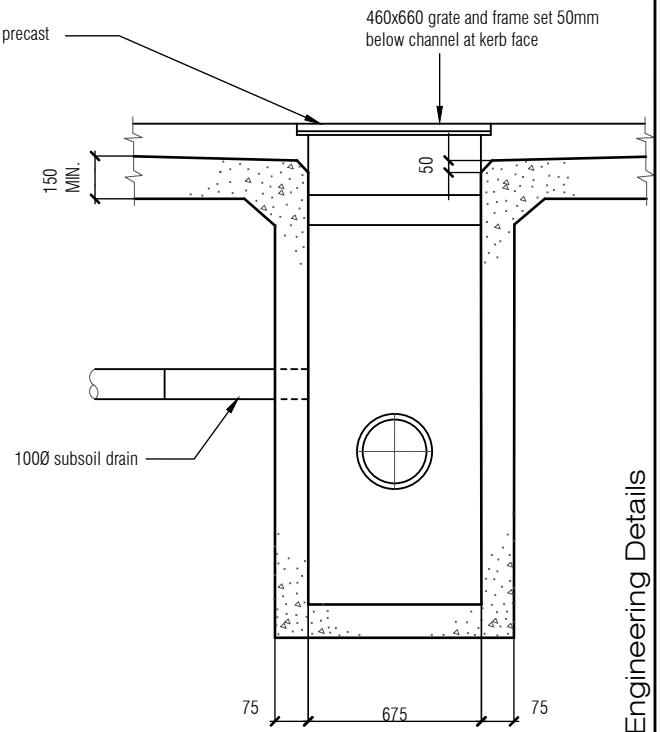
1. Cycle-friendly. May be used adjacent to cycle lanes



PLAN



SECTION A-A



SECTION B-B

NOTES

1. Concrete 25MPa, Fair faced finish.
2. Cast Iron hardware to be supplied ex. approved Foundry.
3. Not cycle-friendly. Do not use where cycle access permitted.
4. Half syphon to be used in combined catchment areas only.
5. Catchpits to be 1.4m deep.
6. Nominal Dimensions only. Refer "Manufacturers Precast Field Catchpit Specifications". Minimum wall thickness 75 mm, Sump depth 450 min. Minimum depth to catchpit lead invert 725mm in grassed areas.
7. Increase class of pipe where minimum cover of 900mm cannot be achieved for Catchpit leads.
8. Standard cast iron grate and frame is shown in drawing. Generally, a shallower ductile iron grate and frame will be used.
9. RD0032 steel back plate may be used in place or concrete lintel where inlet capacity of an existing catchpit requires increasing and RD0040 extended lintel cannot be used
10. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
    - Comply with EDC - Road drainage & surface water control, Clause 6.5
11. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.

1. For Design purposes, entry flow to catchpit = 16-18 l/s.
2. See table below for Catchpit Efficiency Guide for gradient of channel flow.

Channel Gradient	% of water collected
1%	82.3
2%	78.2
3%	76.5
6%	71.7
8%	64.6
12%	59.8

CHIEF ENGINEER APPROVED

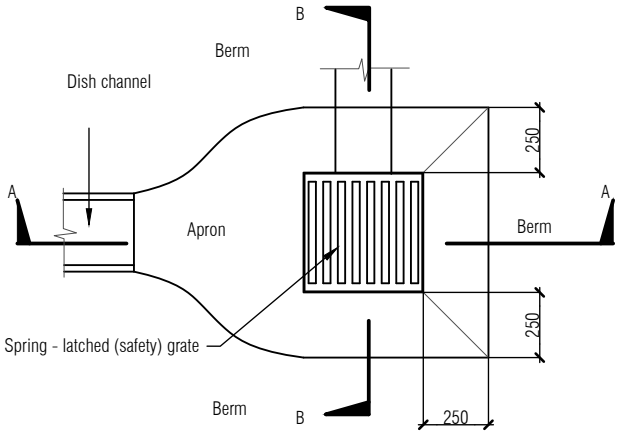
TDM TECHNICAL STANDARDS

Replacement standard catchpit

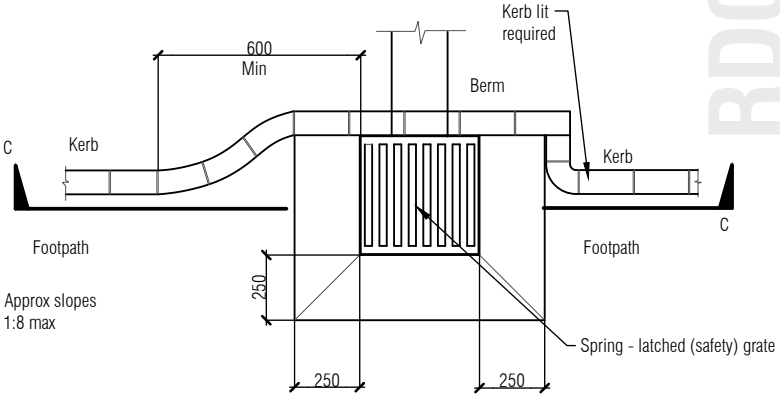
Date: 30/11/2021

SED No. RD0027

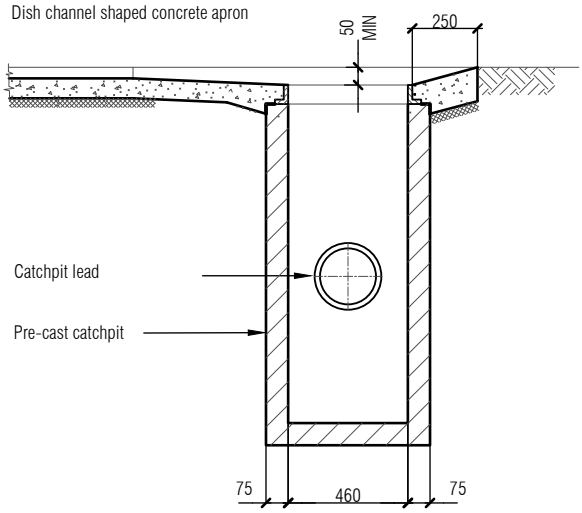
Version C



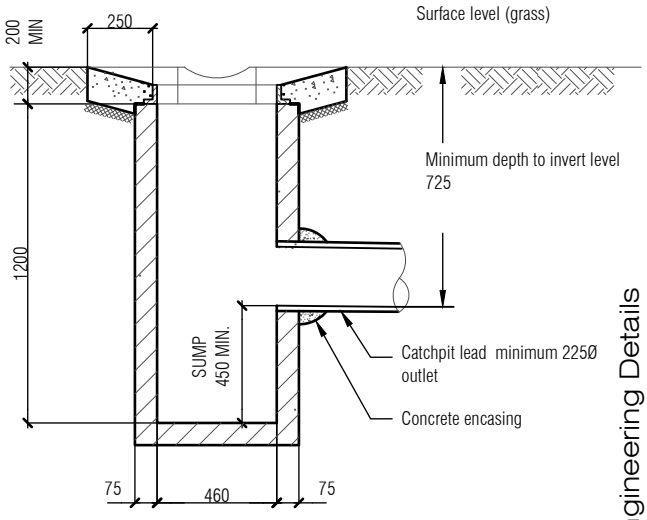
PLAN



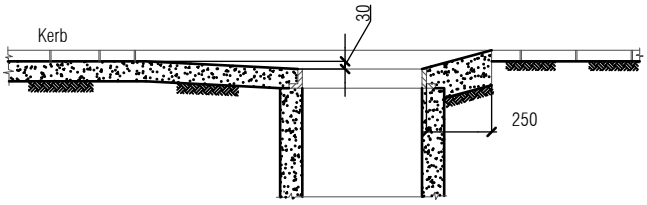
PLAN
FOR LOW LEVEL FOOTPATHS



SECTION A-A



SECTION B-B



SECTION C-C

NOTES

1. Concrete 25mpa, fair faced finish.
2. Cast iron hardware to be supplied ex. Approved foundry.
3. Not cycle-friendly. Do not use where cycle access permitted.
4. Half syphon to be used in combined catchment areas only.
5. Catchpits to be 1.4m deep.
6. For design purposes, inlet capacity = 10 l/s
7. Nominal dimensions only. Refer "manufacturers precast field catchpit specifications". Minimum wall thickness 75 mm, sump depth 450 min. Minimum depth to catchpit lead invert 725mm in grassed areas.
8. Increase class of pipe where minimum cover of 900mm cannot be achieved for catchpit leads.
9. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
10. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.

CHIEF ENGINEER APPROVED

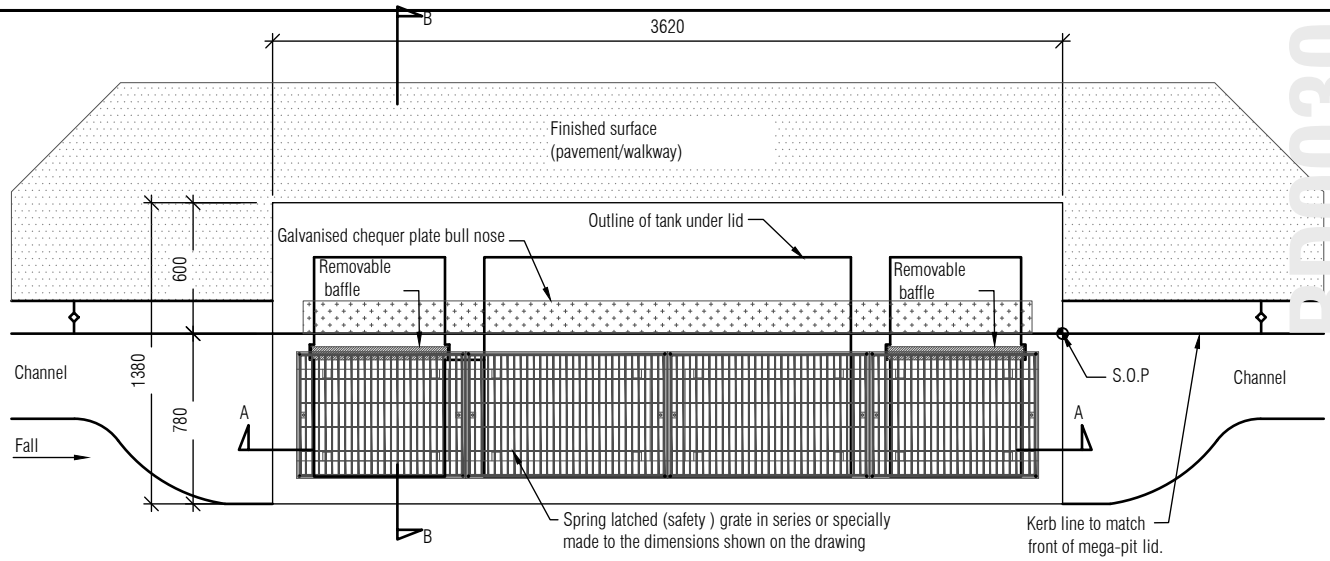
TDM TECHNICAL STANDARDS

Field catchpit 440 x 440

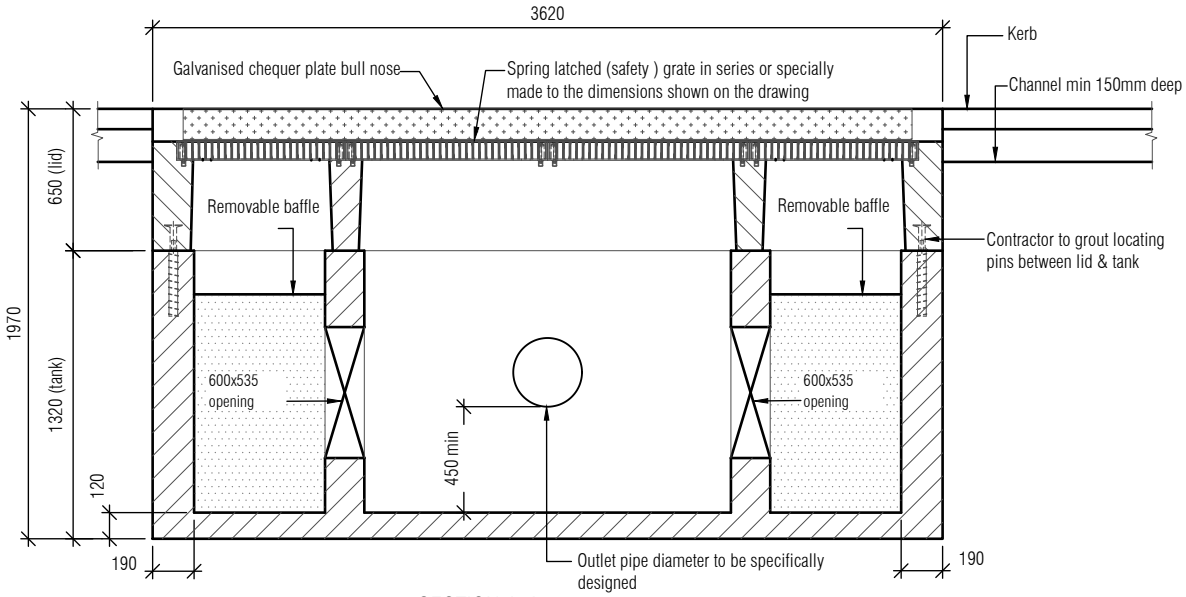
Date: 30/11/2021

SED No. RD0028

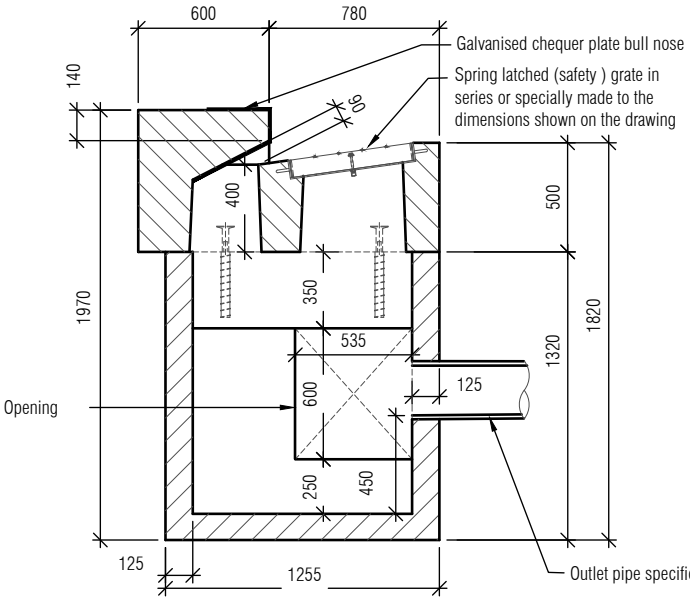
Version B



MEGA-PIT LID PLAN



SECTION A-A



SECTION B-B (WITHOUT MASS CONCRETE)
FOR UNITS WITHOUT ENVIROPOD

NOTES

1. The precast 'mega-pit' tank sections are supplied in two configurations depending on the specific site requirements.
   Higher flows are catered for by increasing the depth & width of the tank section. The lid section contains the extended custom made grate at road level and the extended kerb with the back entry inlet. Refer "manufactures mega-pit specifications".
2. Epoxy horizontal joint between lid and tank units.
3. Grout locating pins between lid & tank units.
4. The engineer shall determine the size and position of the outlet pipe. The hole for the outlet pipe shall be drilled and positioned to allow for a minimum sump depth of 450mm.
5. A water trap outlet must be installed if connected to combined sewer. Design to ensure trapped water level is below top of weir walls.
6. Must be installed in semi-recessed configuration where traffic or cycle lane is adjacent to the kerbline.
7. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
8. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.

Table for mega-pit dimensions (in mm)

Unit	Length	Breadth	Depth	Weight
Tank standard	3620	1255	1320	6640 kg
Tank (extra deep)	3620	1820	1840	8400 kg
Lid	3620	1380	650/500	3760 kg

CHIEF APPROVED ENGINEER

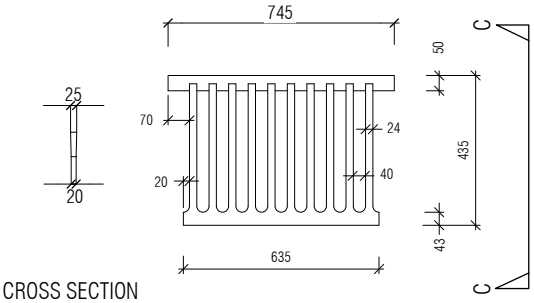
TDM TECHNICAL STANDARDS

Mega-pit

Date: 30/11/2021

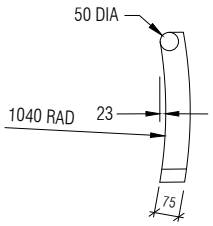
SED No. RD0030

Version B

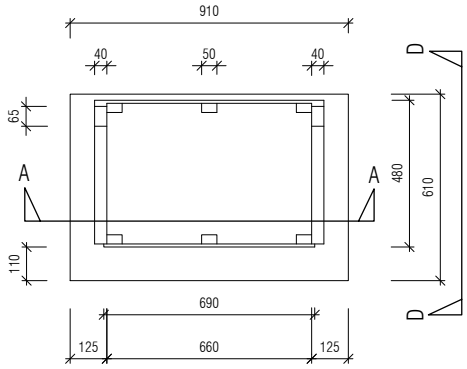


CROSS SECTION OF GRATING BAR

GRATING



SIDE ELEVATION C-C



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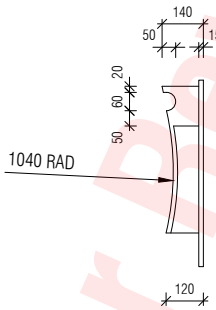
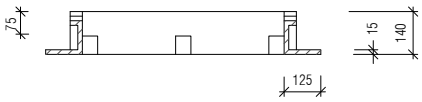


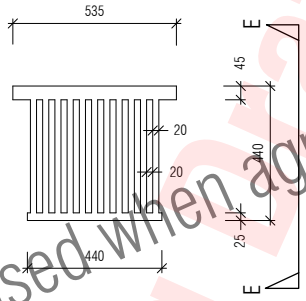
SIDE ELEVATION D-D



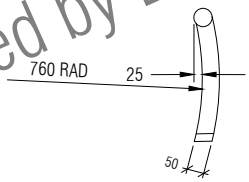
SECTION A-A

450 x 675 CATCHPIT
(FOR ROAD OR PAVED AREAS)

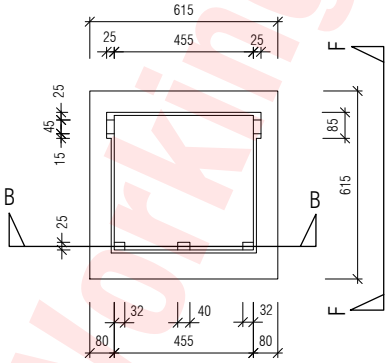
NOTE:
1. Not cycle-friendly. Do not use where cycle access permitted
2. Do not use where AC safety grates are required.



GRATING



SIDE ELEVATION E-E



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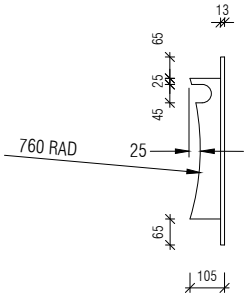
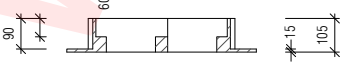


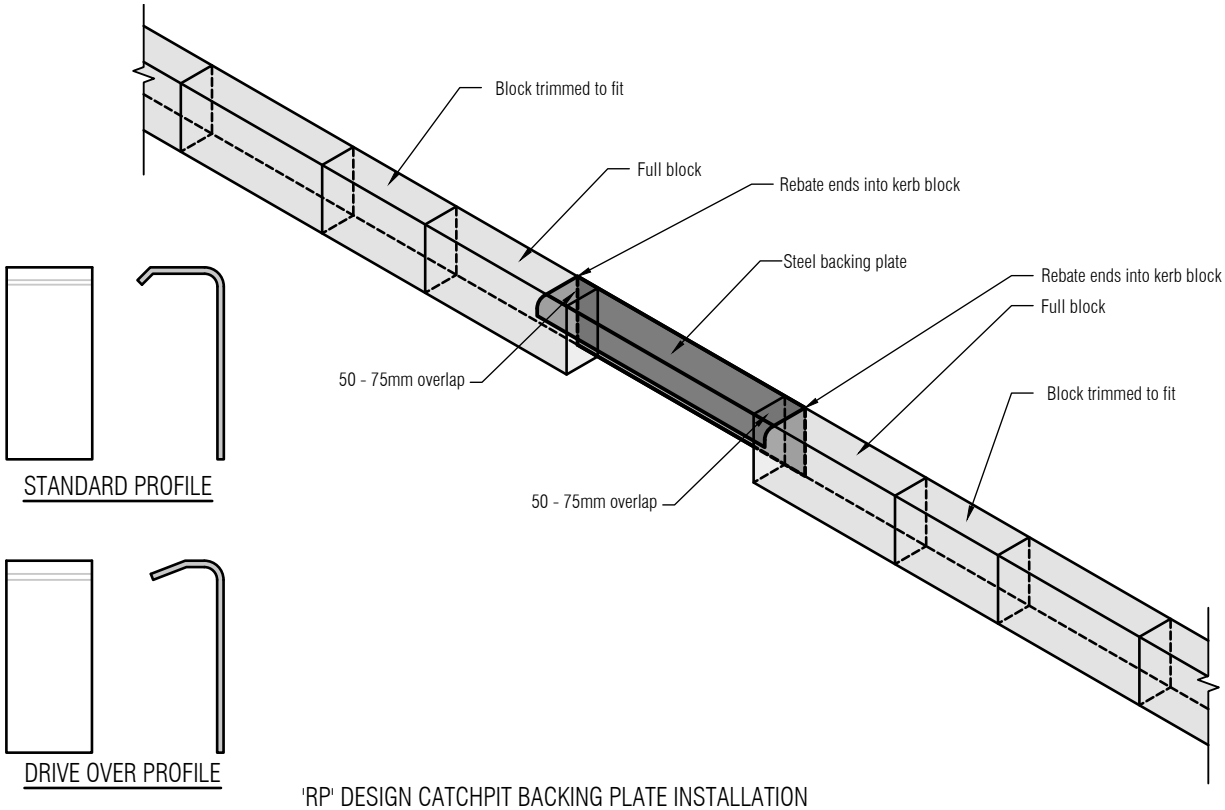
SIDE ELEVATION F-F



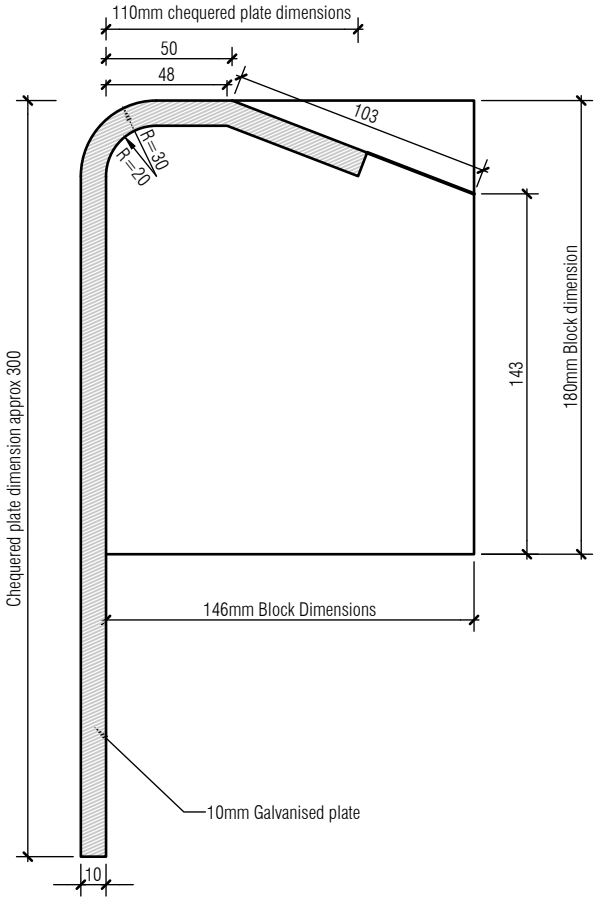
SECTION B-B

460 x 460 CATCHPIT
(FOR BERM OR GRASSED AREAS)

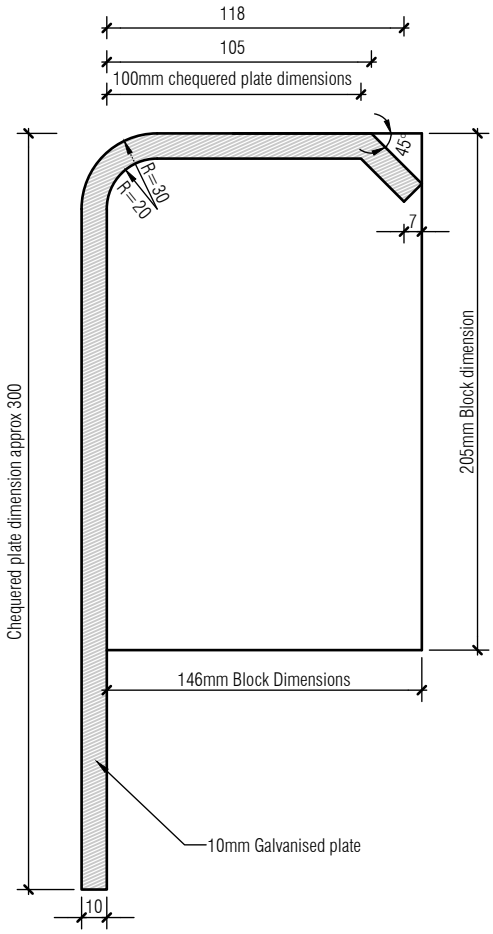
NOTES:
1. Not cycle-friendly. Do not use where cycle access permitted
2. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
3. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.



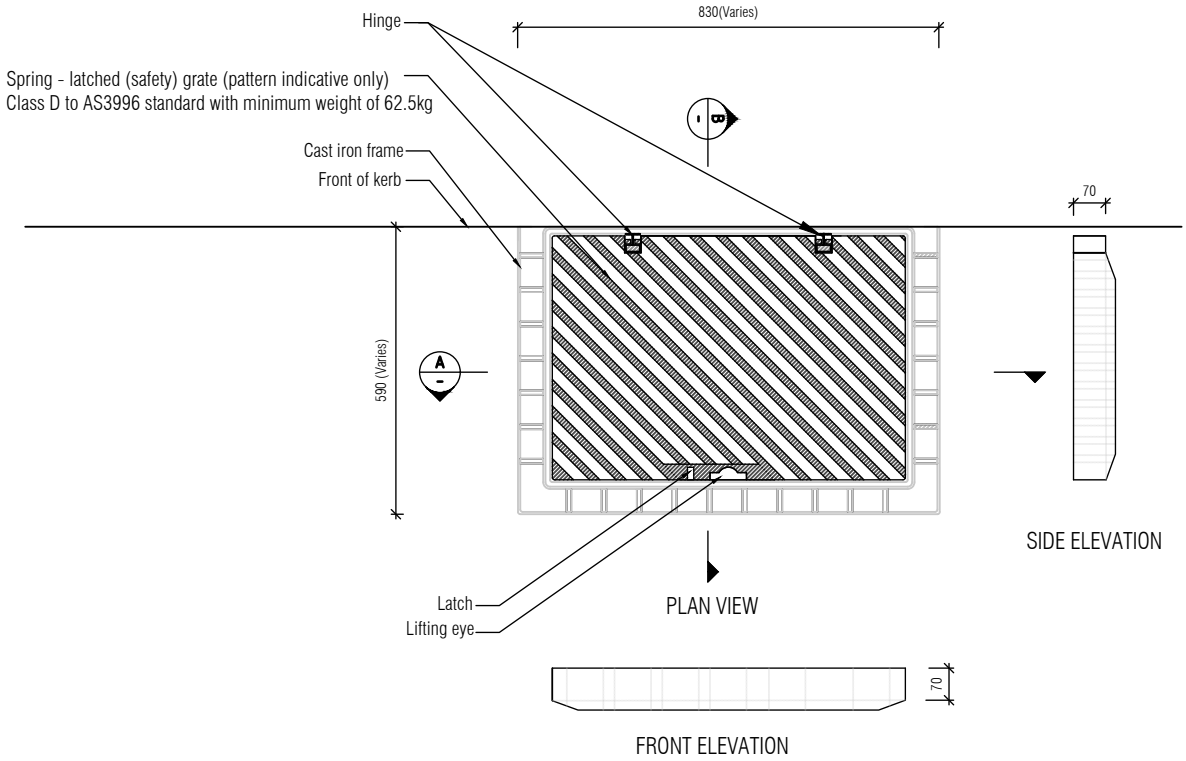
'RP' DESIGN CATCHPIT BACKING PLATE INSTALLATION

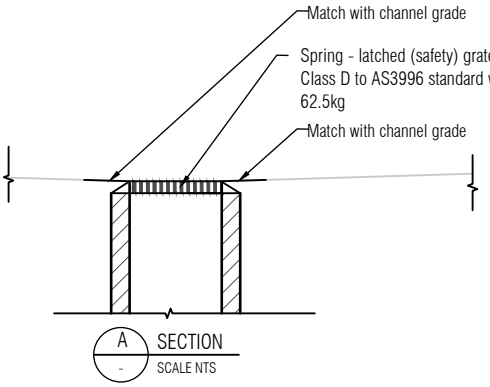


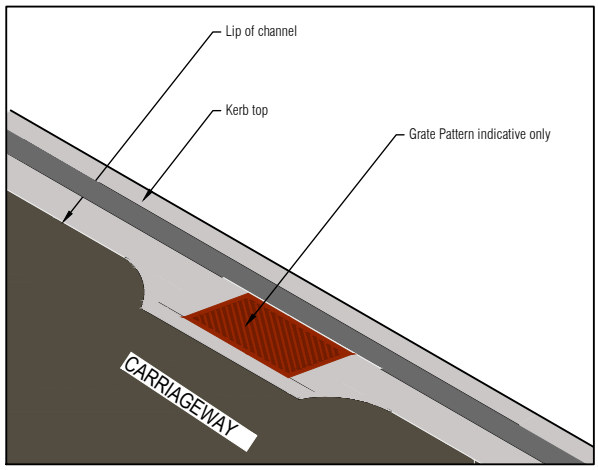
'RP' DESIGN 'DRIVE OVER' PROFILE
BACK PLATE FOR CATCHPIT



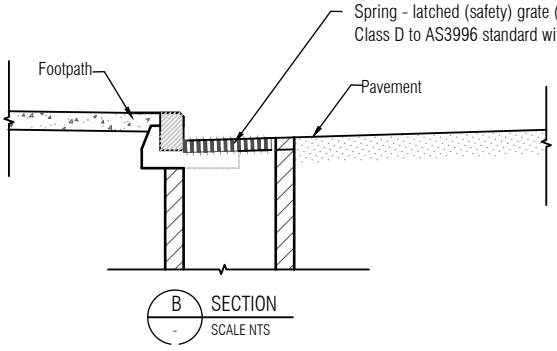
'RP' DESIGN STANDARD PROFILE
BACK PLATE FOR CATCHPIT







ISOMETRIC VIEW
SCALE : NTS



NOTES:

1. Grates to be cycle friendly unless instructed otherwise by AT
2. Catchpit grates should be spring - latched (safety) grate should be Class D to AS3996 with a minimum weight of 62.5kg
   - Comply with EDC - Road drainage & surface water control, Clause 6.5
3. Use only precast concrete catch-pits and make connection to grate/frame with "epoxy bedding" under frame as required. CP grate frame interface with concrete pit should sit true to level.
4. Catchpit exposed to marine conditions should be coated with black corrosion resistance paint.
5. Recommended that frame with flange on 3 sides, allowing installation along kerb.
6. Back entry plates and galvanised lintel edges should have rounded edges to minimise worker injury.

CHIEF ENGINEER APPROVED

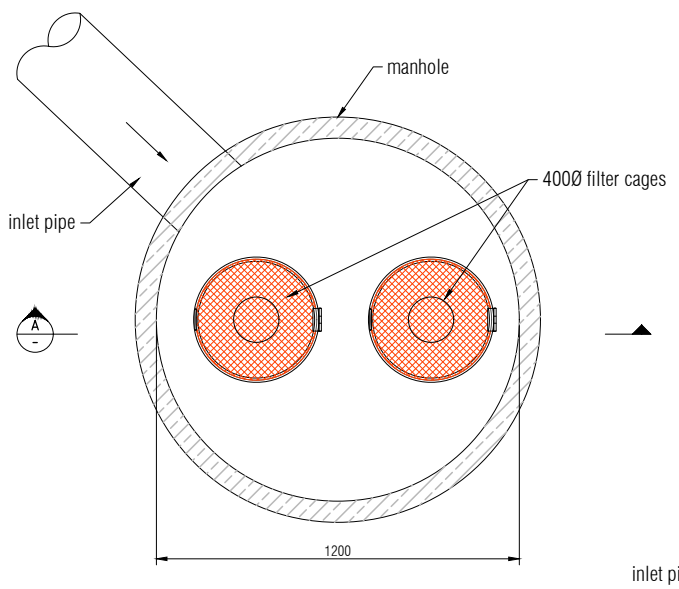
TDM TECHNICAL STANDARDS

Spring latched (safety) grate catchpit

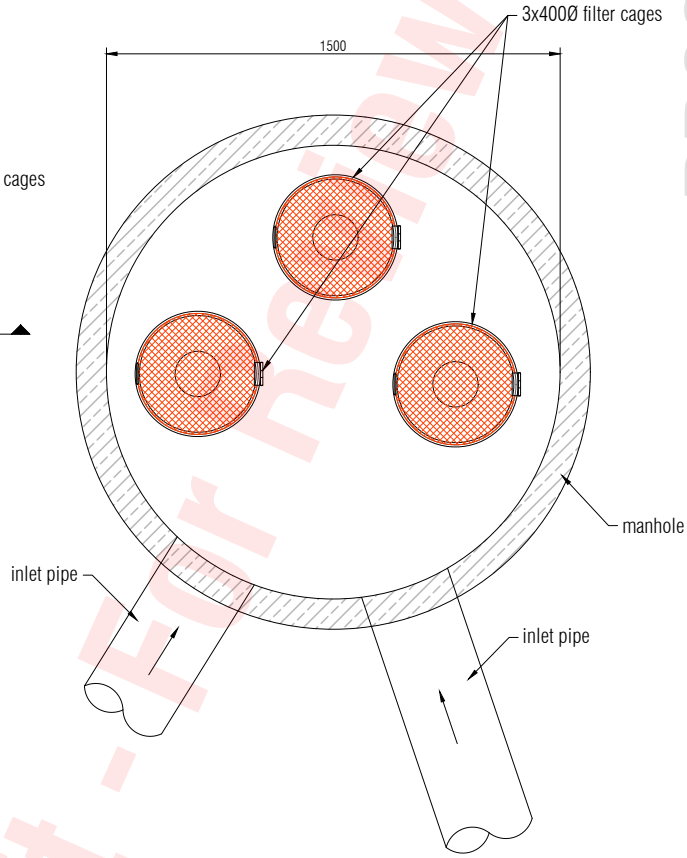
Date: 30/11/2021

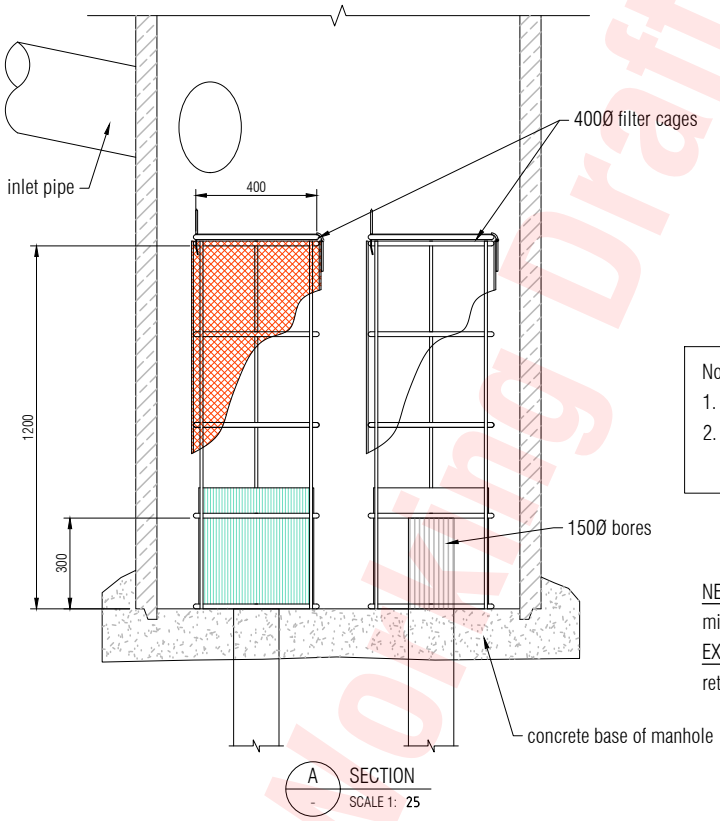
SED No. RD0042

Version A



SOAKHOLE WITH 2 BORES
SCALE 1:25



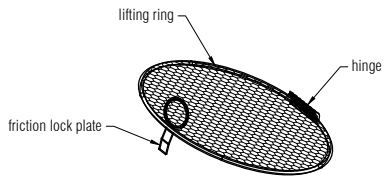


A SECTION
SCALE 1: 25

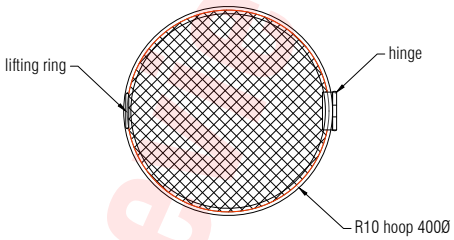
No. Of bore	Min. Soakhole diameter
2	1200
3	1500
4	1800

Notes:
1. Minimum of two bores to be installed in soakhole.
2. Flow testing of soakholes to be carried out before and after cage installation.

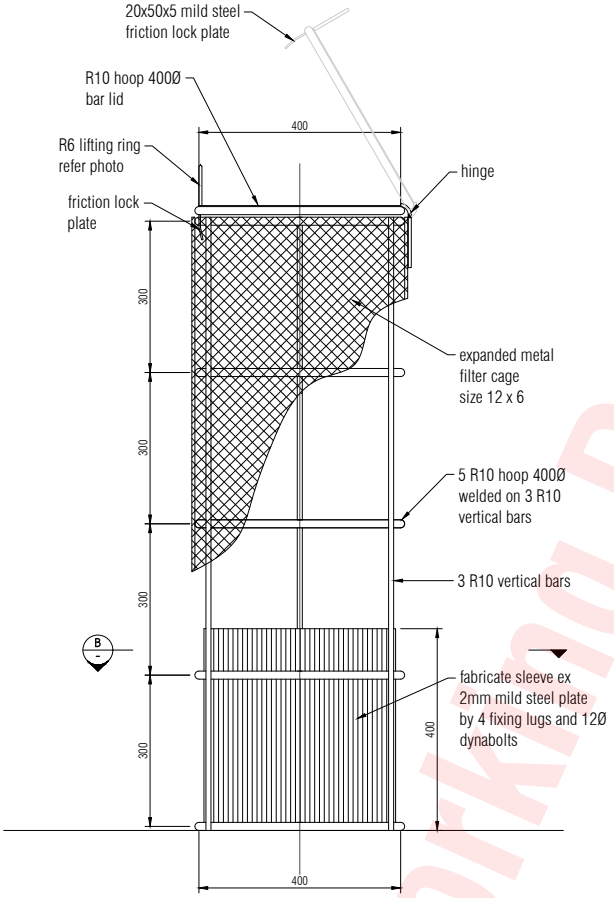
NEW SOAKHOLE
minimum depth of manhole = 2.5m
EXISTING SOAKHOLE
retrofit to existing soakhole: cage height = mh depth - 1.0m
minimum cage height to be 1.0m



LID 3D VIEW

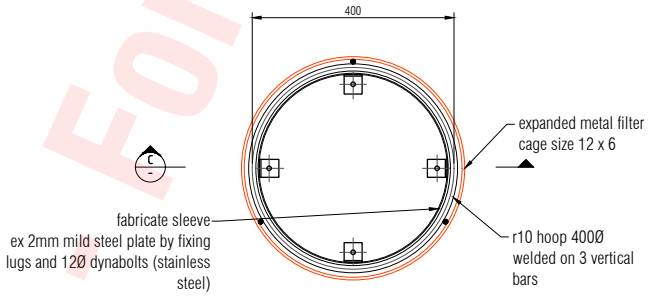


LID

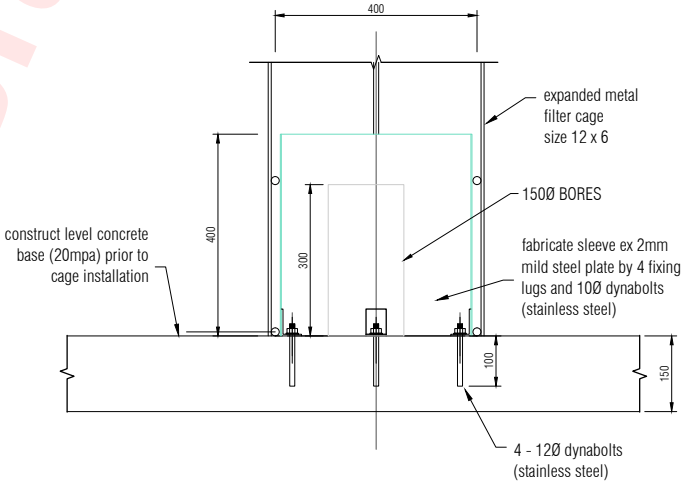


NOTE:
hot dip galvanised whole cage and sleeve after fabrication.
(approximate weight of whole cage 16 to 18kg)

ELEVATION

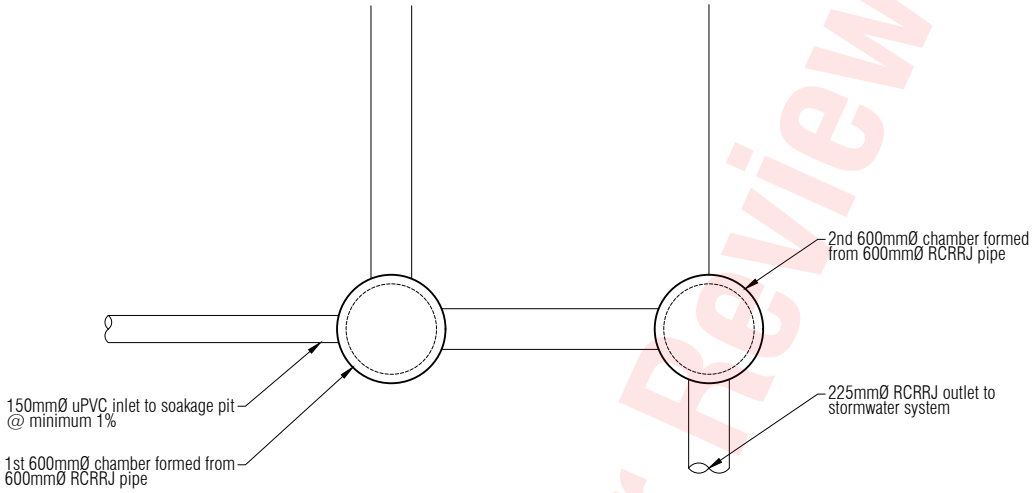


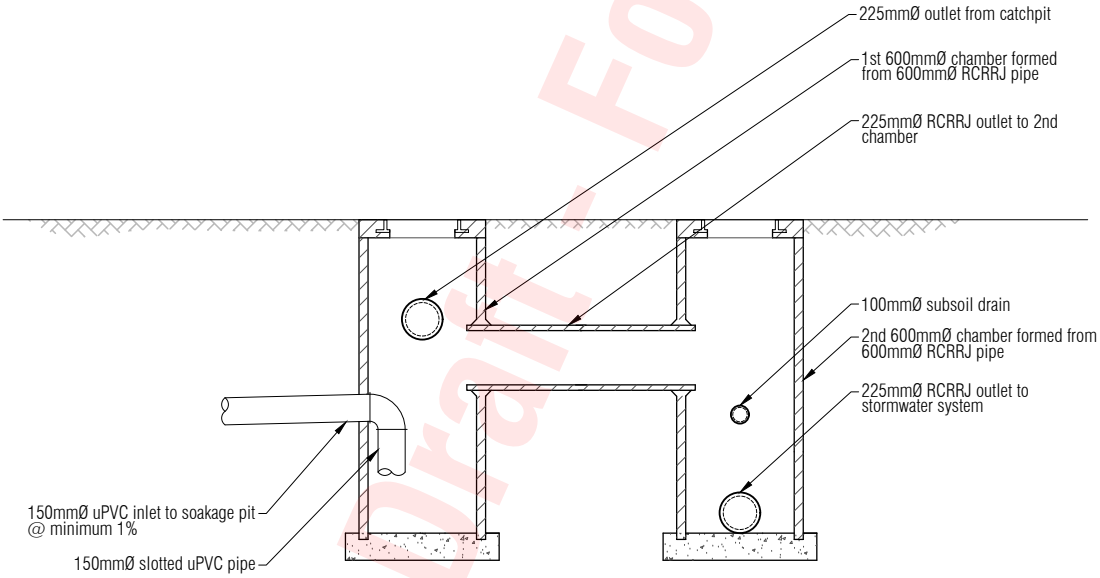
SECTION B
SCALE 1: 15



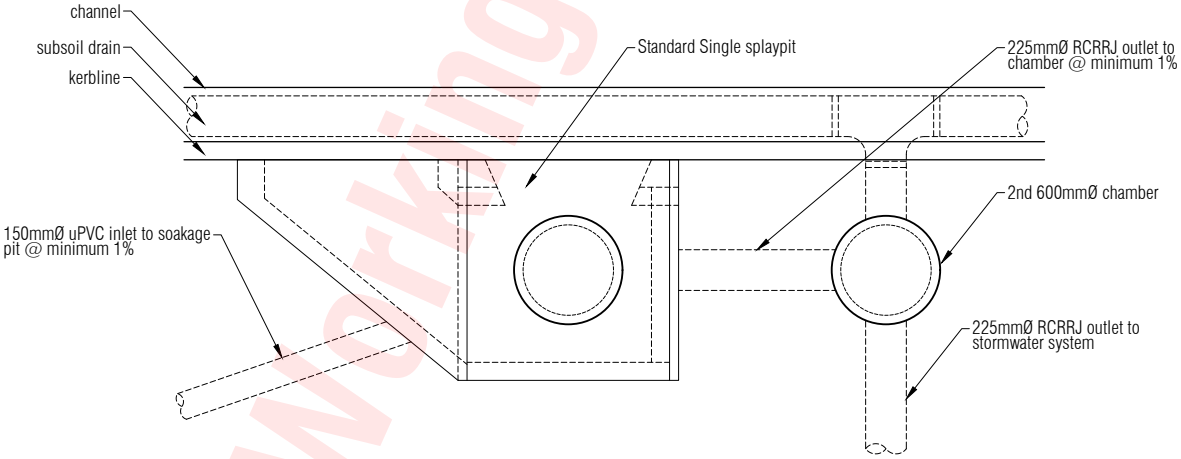
SECTION C
SCALE 1: 15

DETAIL 1 FILTER CAGE DETAIL
SCALE 1: 15





SECTION A - A



PLAN : STANDARD SPLAYPIT INLET

Review 1

DATE: March 2, 2023

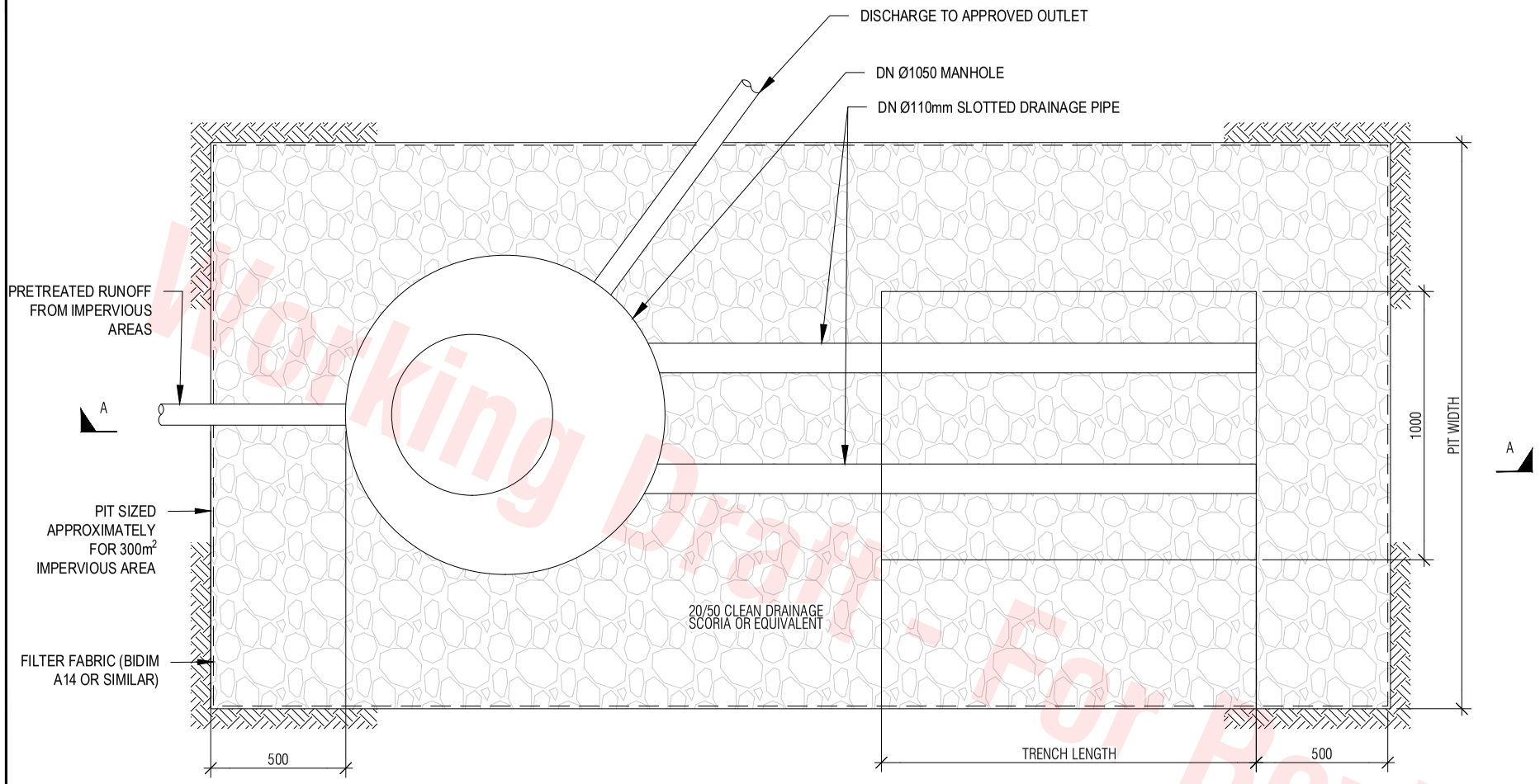
TDM TECHNICAL STANDARDS

Groundwater recharge pit for peat areas plan

SED No. RD0056

Date: Document in Review

Version B



NOTES

1. All dimensions are in mm unless otherwise specified.
2. Private sw connection pipes laid with <600mm cover require concrete protection.
3. Manhole installation and sw connection to the public system as per the relevant parts of the ac/at code.
4. Leaf trap to be installed in roof gutters.
5. All scoria/soil interfaces to be lined with filter fabric (bidim a14 or similar).
6. Recharge pits must not be located within 3.0m of buildings or boundaries, or 2.0m of sanitary sewers.
7. 20mm Ø holes in mh chamber to be drilled at 300mm horizontal spacing and 150mm vertical spacing.
8. Device dimensions to be sized in accordance with atcop-rd053.

RD0056

Review 1

DATE: March 2, 2023

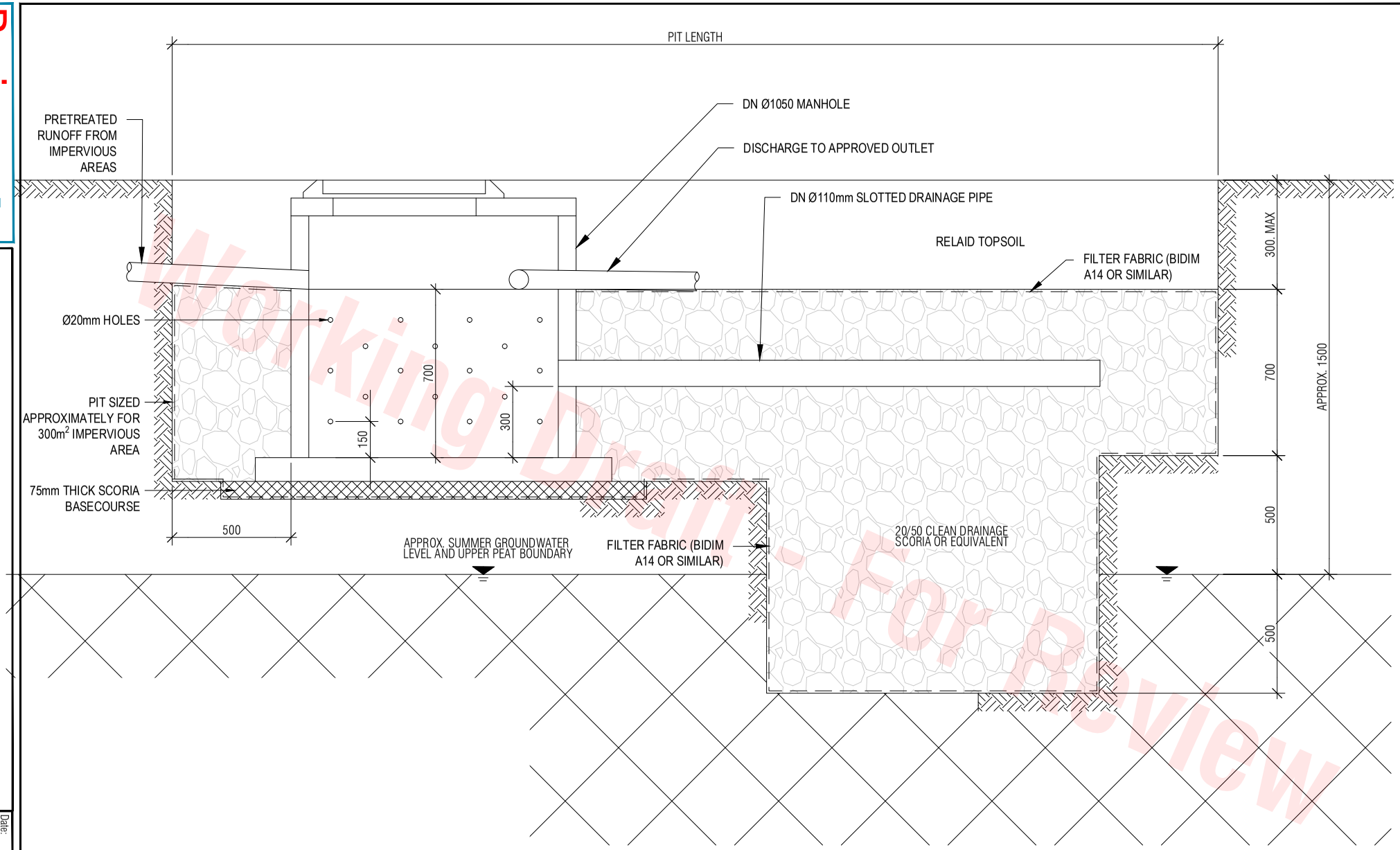
TDM TECHNICAL STANDARDS

Groundwater recharge pit for peat areas (cross section)

SED No. RD0057

Version B

Date: Document in Review

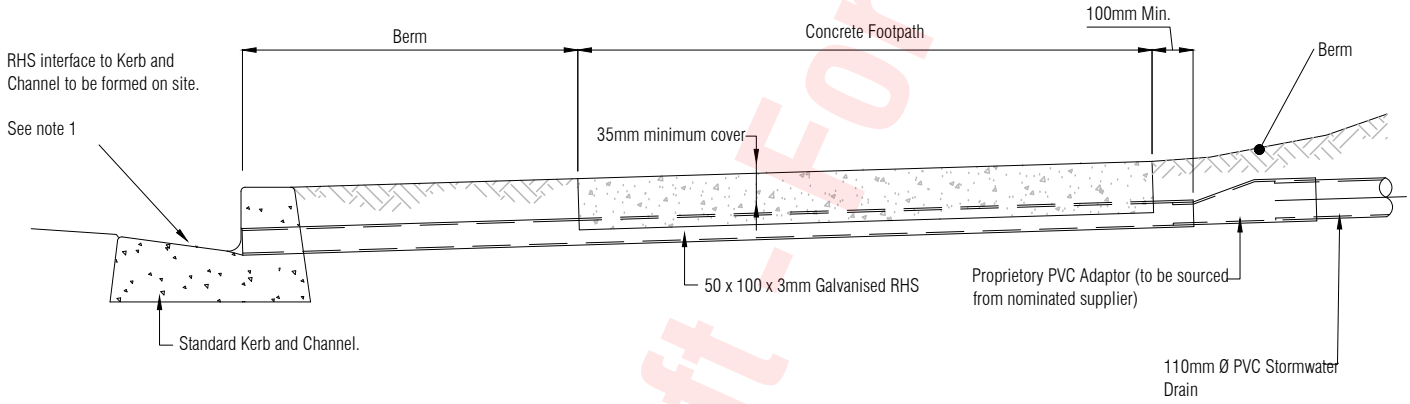


SECTION A-A

NOTES

1. All dimensions are in mm unless otherwise specified.
2. Private sw connection pipes laid with < 600mm cover require concrete protection.
3. Manhole installation and sw connection to the public system as per the relevant parts of the ac/at code.
4. Leaf trap to be installed in roof gutters.
5. All scoria/soil interfaces to be lined with filter fabric (bidim a14 or similar).
6. Recharge pits must not be located within 3.0m of buildings or boundaries, or 2.0m of sanitary sewers.
7. 20mm Ø holes in mh chamber to be drilled at 300mm horizontal spacing and 150mm vertical spacing.

RD0057



TYPICAL CROSS SECTION

Scale: Not to Scale

NOTES

1. Invert of pipe may be up to 10mm below the invert of the road channel if exposed kerb face is less than 105mm in height.
2. All dimensions are in millimetres unless otherwise stated.
3. RHS - Rectangular Hollow Section
4. 35mm min.
5. Reinstatement width to be 500mm either side of the new pipe. Kerb cutout to be wide enough to ensure 50mm cover to the new stormwater pipe.
6. Existing kerb to be cut out to facilitate installation of new stormwater pipe and reinstated using epoxy mortar or similar approved to the satisfaction of AT asset manager.
7. A shallow inspection chamber is required at any change of direction between road boundary and outlet.