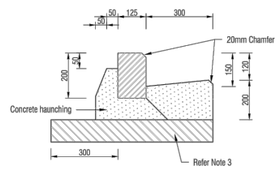
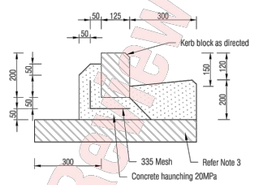
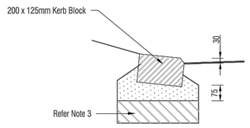


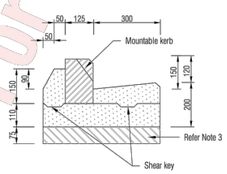
TYPE 1 STANDARD KERB AND CHANNEL



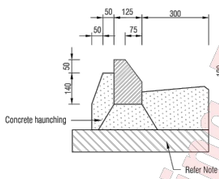
TYPE 1A KERB WITH REINFORCED HAUNCHING DETAIL



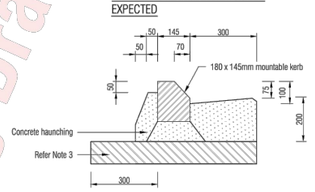
TYPE 1C ON SIDE VEHICLE CROSSING



TYPE 1S AND 2S WITH SHEAR KEY WHERE HIGH LATERAL LOADS ARE EXPECTED



TYPE 2A MOUNTABLE KERB AND CHANNEL



TYPE 2B MOUNTABLE KERB AND CHANNEL

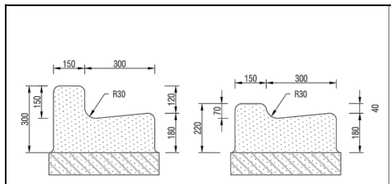
NOTES:

1. Concrete grades:
2. Precast kerb blocks: 20MPa. In-situ channel and haunching 20MPa. 25 MPa fibre reinforced concrete for slip-form.
3. Bedding:
   Kerbing must be laid on 300mm (min.) GAP65 subbase in roads and 100mm GAP40 in footpaths (where subgrade CBR>5). If the subgrade CBR<5 then roads and footpaths must be undercut and backfilled with an approved filling material.
4. Jointing:
   Precast kerbs to be neatly pointed with 10mm (min.) cement mortar. Extruded kerbs cracking control joints formed or saw cut to a minimum depth of 30mm at max. 3.0m intervals. If footpath is adjacent to kerb the saw cuts must coincide with the concrete footpath joints. Joints between bluestone kerb blocks must be approximately 20mm wide (measured at the top and front faces) with neat square jointing 2 to 4mm proud. Crack control joints must be located either side of vehicle crossings.
5. Basalt kerb blocks must not extend across vehicle or pram crossing.
6. All chamfers to be 20mm.

Transport Design Manual | Standard Engineering Details

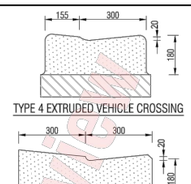
KC0001

Review		TDM TECHNICAL STANDARDS	Date:	Document in Review
1		Kerb and channel - Type 1 - 2	SED No.	Version
DATE: February 14, 2020			KC0001	A



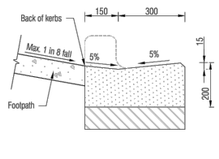
TYPE 3 EXTRUDED STANDARD KERB AND CHANNEL

TYPE 3 EXTRUDED STANDARD KERB AND CHANNEL (OPTIONAL)

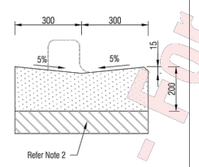


TYPE 4 EXTRUDED VEHICLE CROSSING

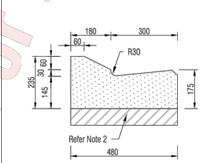
TYPE 4 IN-SITU VEHICLE CROSSING



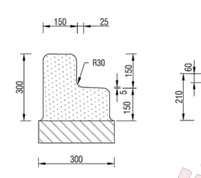
TYPE 5 EXTRUDED PRAM CROSSING



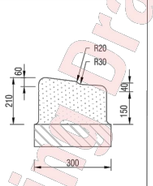
TYPE 5 IN-SITU PRAM CROSSING



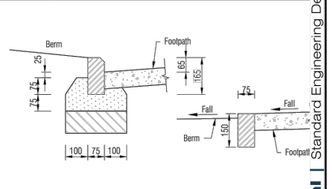
TYPE 6 EXTRUDED MOUNTABLE KERB AND CHANNEL



TYPE 7 EXTRUDED STANDARD KERB ONLY



TYPE 7C EXTRUDED KERB ONLY AT VEHICLE CROSSING



TYPE 8 BASALT OR PRE-CAST KERB EDGING (75x150mm)

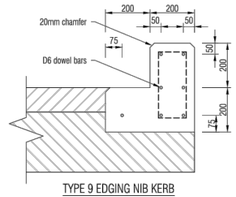
NOTES :

1. Jointing:
   Precast kerb neatly pointed with 10mm min. cement mortar. Extruded kerbs cracking control joints formed or saw cut to a minimum depth of 30mm at max. 3.00m. intervals to coincide with concrete footpath joints (where the kerb is adjacent to the footpath). Crack control joints between bluestone kerb blocks shall be approximately 20mm wide (measured at the top and front faces) with neat square jointing 2 to 4 mm proud. Joints must located either side of vehicle crossings.
2. Bedding:
   Kerbing must be laid on 300mm. min. GAP65 subbase in roads and 100mm GAP40 in footpaths (where subgrade CBR>5). If the subgrade CBR<5 then roads and footpaths must be undercut and backfilled with appropriate backfill material.
3. Concrete Grades:
   Precast kerb blocks 20 MPa. In-Situ channel and haunching 20 MPa. Extruded concrete 25 MPa fibre reinforced.
4. All chamfers 20mm

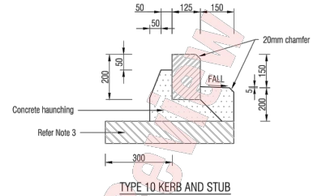
Transport Design Manual | Standard Engineering Details

KC0002

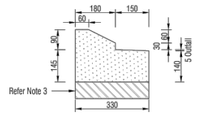
Review		TDM TECHNICAL STANDARDS	Date:	Document in Review
1		Kerb and channel - Type 3 - 8	SED No.	Version
DATE: February 14, 2020			KC0002	A



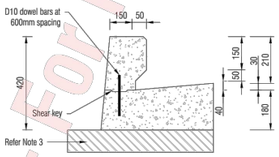
TYPE 9 EDGING NIB KERB



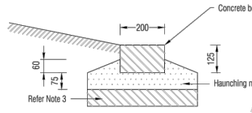
TYPE 10 KERB AND STUB



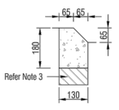
TYPE 11 MOUNTABLE NIB KERB



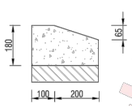
TYPE 12 RAISED NON-MOUNTABLE SAFETY KERB AND CHANNEL NIB



TYPE 13 FLAT EDGE BEAMS



TYPE 14 EXTRUDED CYCLE PATH BEVEL KERB



TYPE 15 EXTRUDED CYCLE MOUNTABLE KERB

NOTES:

1. Concrete grades:
2. Precast kerb blocks 20MPa. In-Situ channel and haunching 20MPa. 25 MPa fibre reinforced concrete for slip-form.
3. Bedding:
   Kerbing must be laid on 300mm. min. GAP65 subbase in roads and 100mm GAP40 in footpaths (where subgrade CBR>5). If the subgrade CBR<5 then roads and footpaths must be undercut and backfilled with an approved filling material
4. Jointing:
   Precast and blue stone kerb to be neatly pointed with 10mm (min) cement mortar. No preshaped mortar products shall be used. Extruded kerbs cracking control joints formed or saw cut to aminimum depth of 30mm at max. 3.00m intervals. If footpath is adjacent to kerb the saw cuts must coincide with the concrete footpath joints. Joints between bluestone kerb blocks must be approximately 20mm wide (measured at the top and front faces) with neat square jointing 2 to 4 mm proud. Crack control joints must located either side of vehicle crossings.
5. Basalt kerb blocks must not extend across vehicle or pram crossings.

Transport Design Manual | Standard Engineering Details

KC0003

Review		TDM TECHNICAL STANDARDS	Date:	Document in Review
1		Kerb and channel - Type 9 - 15	SED No.	Version
DATE: February 14, 2020			KC0003	A

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

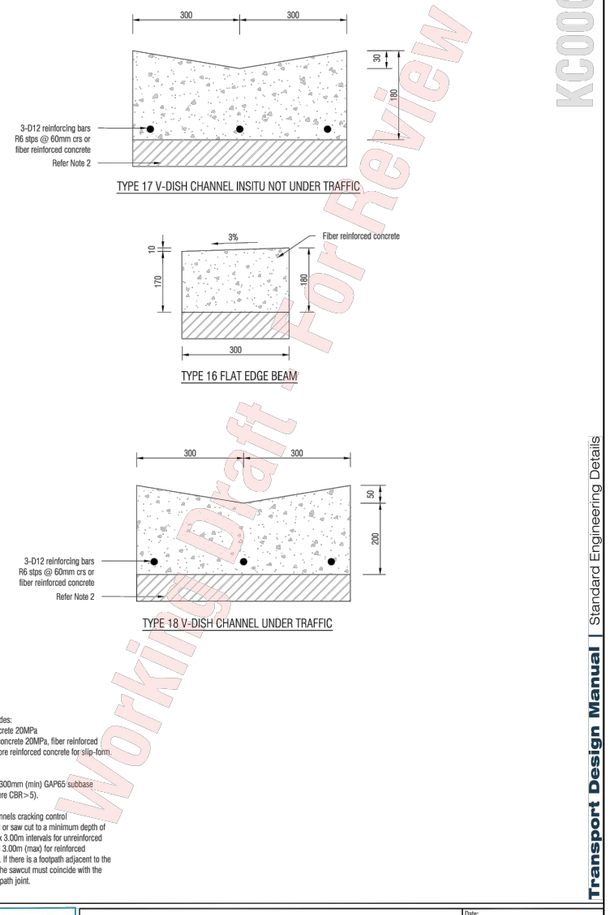
Title

ROADING STANDARD DETAILS SHEET 1

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800	Rev	A

RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG



TYPE 17 V-DISH CHANNEL INSITU NOT UNDER TRAFFIC

TYPE 16 FLAT EDGE BEAM

TYPE 18 V-DISH CHANNEL UNDER TRAFFIC

NOTES

1. Concrete Grades:
   Insitu concrete 20MPa
   Extruded concrete 20MPa, fiber reinforced
   25 MPa fibre reinforced concrete for slip-form.
2. Bedding:
   To consist of 300mm (min) GAP65 subbase in roads (where CBR>5).
3. Jointing:
   Extruded channels cracking control joints formed or saw cut to a minimum depth of 30mm at max 3.00m intervals for unreinforced channels and 3.00m (max) for reinforced channels/nib. If there is a footpath adjacent to the channel/nib the sawcut must coincide with the concrete footpath joint.

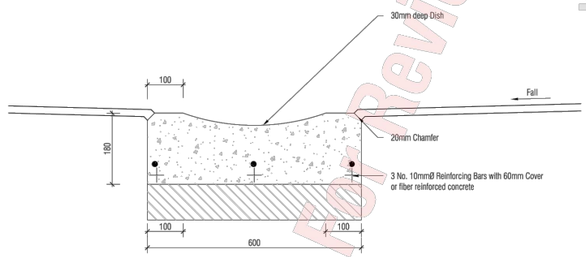
Transport Design Manual | Standard Engineering Details

KC0004

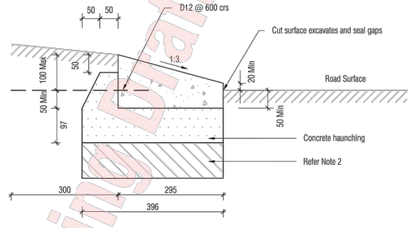
Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
V-Dish Channel - Type 16 to 18

Date: Document in Review
SED No. KC0004 | Version A



TYPE 19 STANDARD CONCRETE ROUND DISH CHANNEL



TYPE 20 KERB PROFILE FOR TRAFFIC ISLANDS AND ROUNDABOUT FOR OVER - DIMENSION ROUTES

NOTES:

1. 25 MPa fibre reinforced concrete for slip-form.
2. Bedding:
   To consist of 300mm (min) GAP65 subbase in roads (where CBR>5).
3. Jointing:
   Extruded channels cracking control joints formed or saw cut to a minimum depth of 30mm at max 3.00m intervals for unreinforced channels and 3.00m (max) for reinforced channels/nib. If there is a footpath adjacent to the channel/nib the sawcut must coincide with the concrete footpath joint.

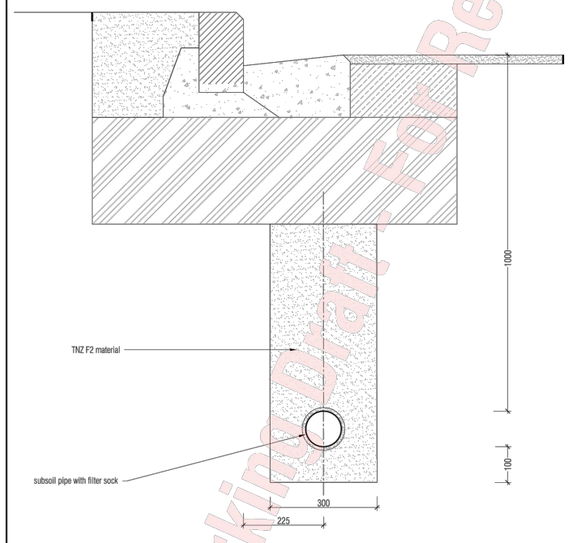
Transport Design Manual | Standard Engineering Details

KC0005

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Round Dish Channel - Type 19 & 20

Date: Document in Review
SED No. KC0005 | Version A



NOTES:

1. Kerb and channel installed as per GD014
2. The subsoil drain is to connect to a downstream street catchpit above the soffit level of the outlet pipe. Subsoil depth can be adjusted to meet this criteria.
3. Increase depth to match adjacent pavement depth where required. See RD025 for detail
4. Increase width where required to achieve positive fall to the channel.
5. Positive fall to the kerb and channel must be achieved unless otherwise approved by the relevant AT Engineer.
6. 25 MPa fibre reinforced concrete for slip-form.

Transport Design Manual | Standard Engineering Details

KC0007

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Kerb & Channel replacement with Subsoil

Date: Document in Review
SED No. KC0007 | Version A

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

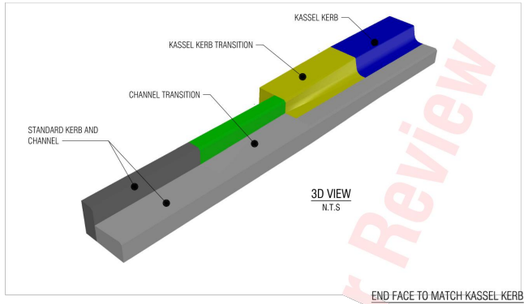
Title
ROADING STANDARD DETAILS SHEET 2

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-1	Rev	A

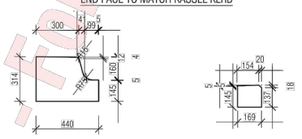
RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: P:\MAVEN PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG

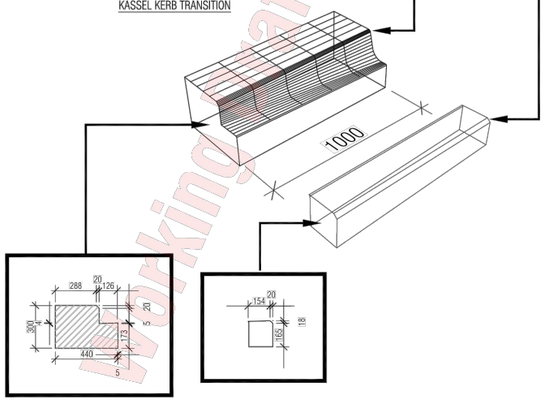
KC0030



END FACE TO MATCH KASSEL KERB



KASSEL KERB TRANSITION

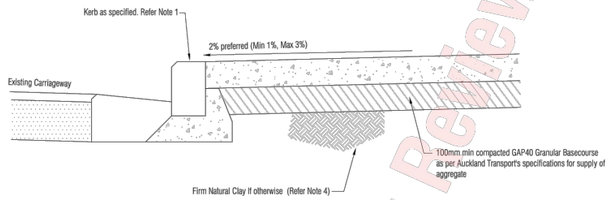


END FACE TO MATCH CHANNEL TRANSITION

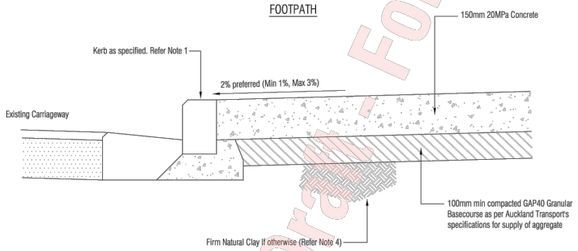
Transport Design Manual | Standard Engineering Details

Review		TDM TECHNICAL STANDARDS	Date:	Version
DATE: February 14, 2020	1	Kassel Kerb and Channel Transition	Document in Review SED No. KC0030	A

FP0001



FOOTPATH



HEAVY DUTY FOOTPATH

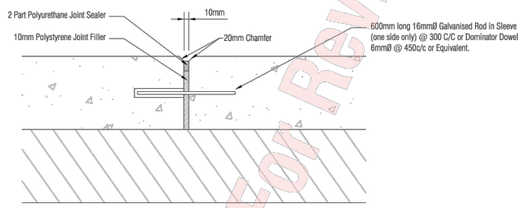
NOTES

1. Kerb profiles can be found in the kerb & Channel drawing set. Refer to Urban and Rural Roadway Engineering Design Code for further details.
2. All Services Lids must be raised or lowered to be flush with footpath levels.
3. Concrete to have minimum compressive strength of 20MPa at 28th day strength.
4. Basecourse (or bedding) layer depth must be increased for weak subgrade (CBR<3).
5. Concrete surface finish must comply with NZS 3114.

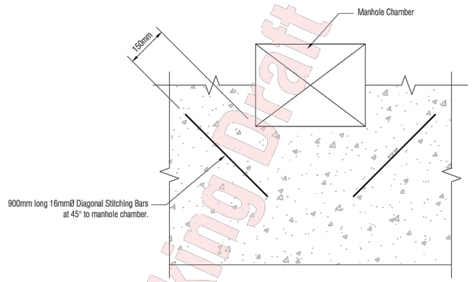
Transport Design Manual | Standard Engineering Details

Review		TDM TECHNICAL STANDARDS	Date:	Version
DATE: February 14, 2020	1	Concrete footpath	Document in Review SED No. FP0001	A

FP0002



EXPANSION / CONSTRUCTION JOINT CROSS SECTION



STITCHING BAR PLAN DETAIL

NOTES

1. Refer to Auckland Transport Standard Detail Drawing FP001 for footpath details
2. All Services Lids must be raised or lowered to be flush with footpath levels.
3. Concrete to have minimum compresion of 20MPa at 28th day
4. Concrete surface finish much comply with NZS 3114
5. Expansion / Construction Joint detail to be used when increasing the width of a footpath. Minimum width of new footpath must be two times the length of the dowel.

Transport Design Manual | Standard Engineering Details

Review		TDM TECHNICAL STANDARDS	Date:	Version
DATE: February 14, 2020	1	Longitudinal joints and stitching bar details	Document in Review SED No. FP0002	A

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 3

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-2	Rev	A

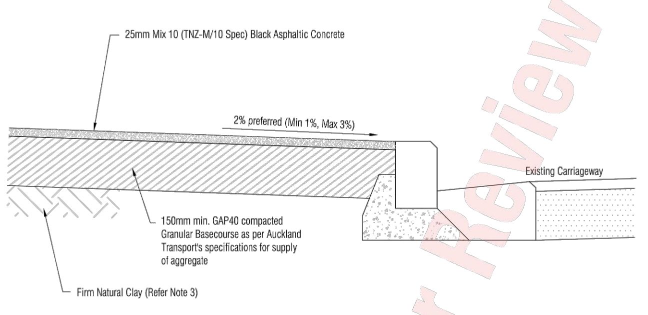
RESOURCE CONSENT

DATE: 3/27/25 FILEPATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

FP0003



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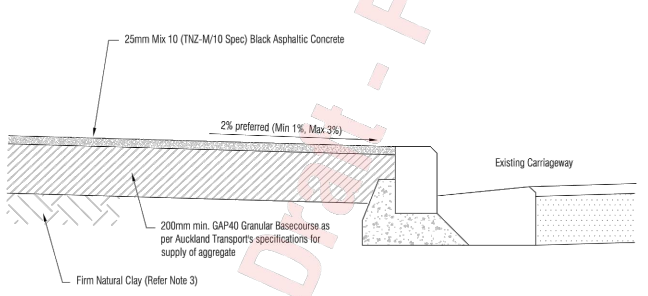


HEAVY DUTY FOOTPATH

NOTES

1. All Services Lids must be raised/lowered to be flush with Footpath levels.
2. Footpath crossfall is to be 2% minimum and 3% maximum..
3. Basecourse or Bedding Layer depth must be increased for weak subgrade (CBR<3)

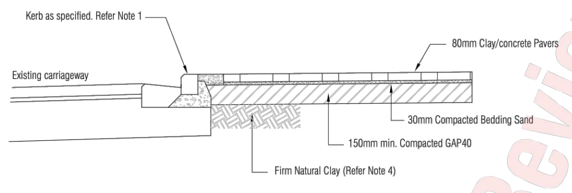
Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

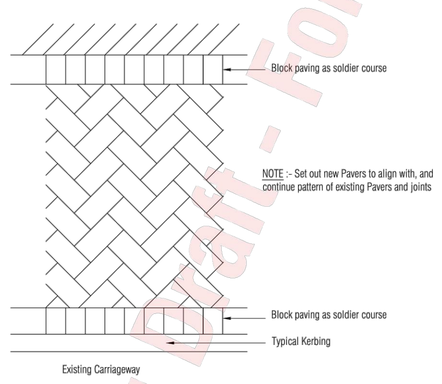
TDM TECHNICAL STANDARDS
Asphalt footpath

Date: Document in Review | SED No. FP0003 | Version A

FP0004



TYPICAL CROSS SECTION



TYPICAL PLAN VIEW

NOTES

1. Refer to Auckland Transport Standard Detail Drawings for the following details :-
   Pram crossings - Plan No. FP009
   Kerbs and Channels - Section GD000.
2. All Services Lids must be raised or lowered must be flush with footpath levels.
3. All work in accordance with NZS 3116:2002 - Concrete Segmental and Flagstone paving and Suppliers Instructions.
4. Basecourse Layer depth must be increased for weak subgrade (CBR<3), as directed by the relevant AT Engineer.
5. Plant based herbicide weed killer must be applied before placement of aggregate .

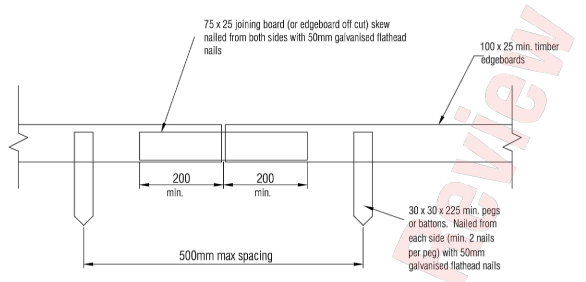
Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

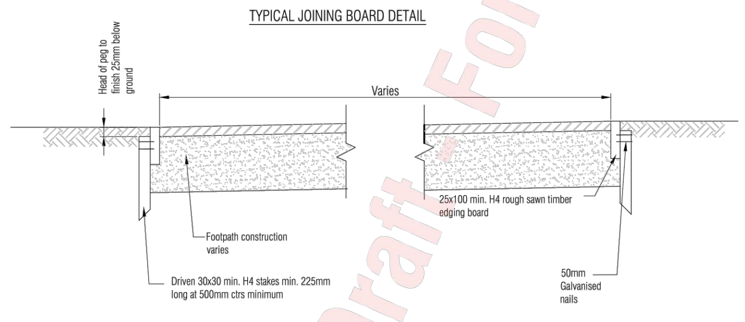
TDM TECHNICAL STANDARDS
Footpath construction - paver type

Date: Document in Review | SED No. FP0004 | Version A

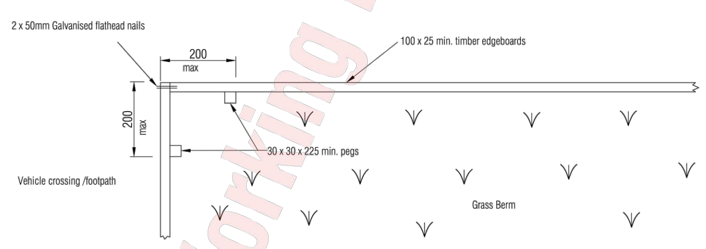
FP0005



TYPICAL JOINING BOARD DETAIL



TYPICAL FOOTPATH CROSS SECTION



TYPICAL CORNER DETAIL

NOTES:
1. All timber must be H4 treated.
2. The timber thicknesses and depths shown are minimum only and where site conditions require the dimensions are to be increased to suit or as directed by the relevant AT Engineer.

Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Pedestrians and the Public Realm

Date: Document in Review | SED No. FP0005 | Version A

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 4

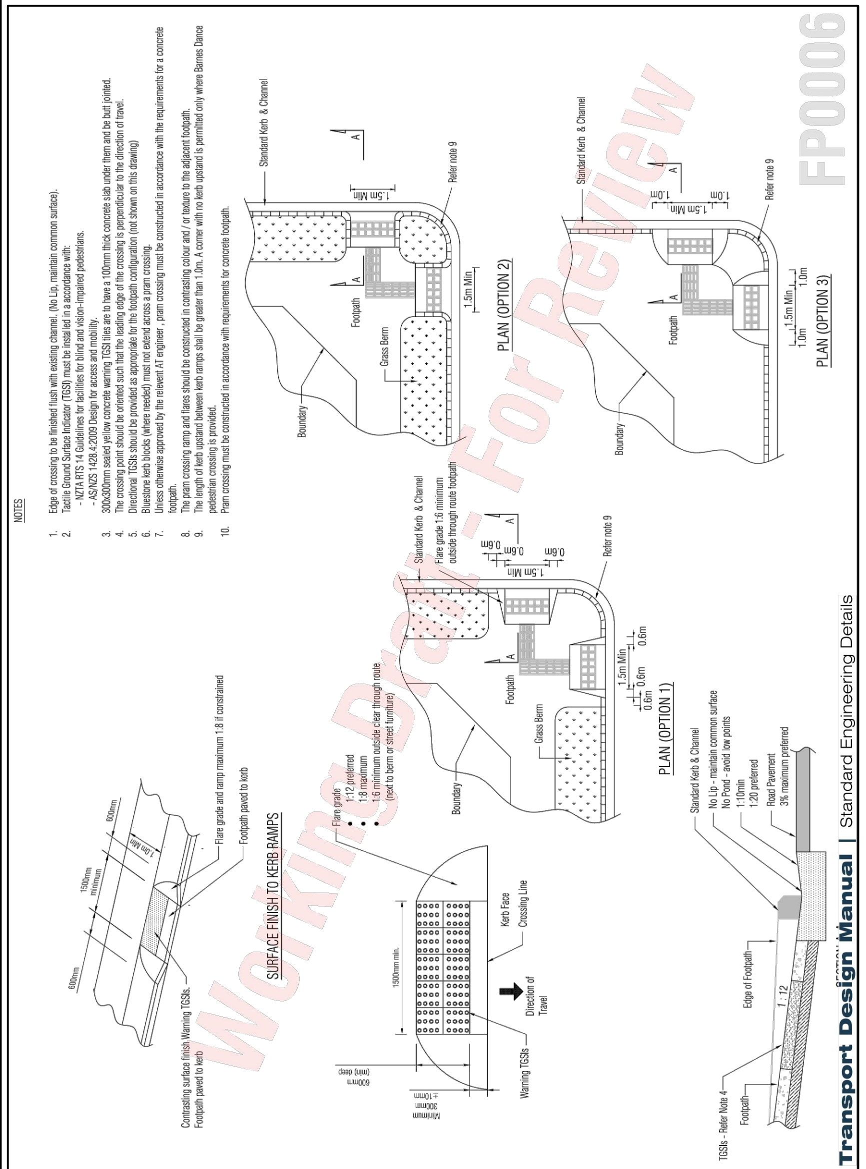
Project no.	147007
Scale	N.T.S
Cad file	147007-M-C800 ROADING STD DETAILS.DWG
Drawing no.	C800-3 — Rev A

RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG

NOTES

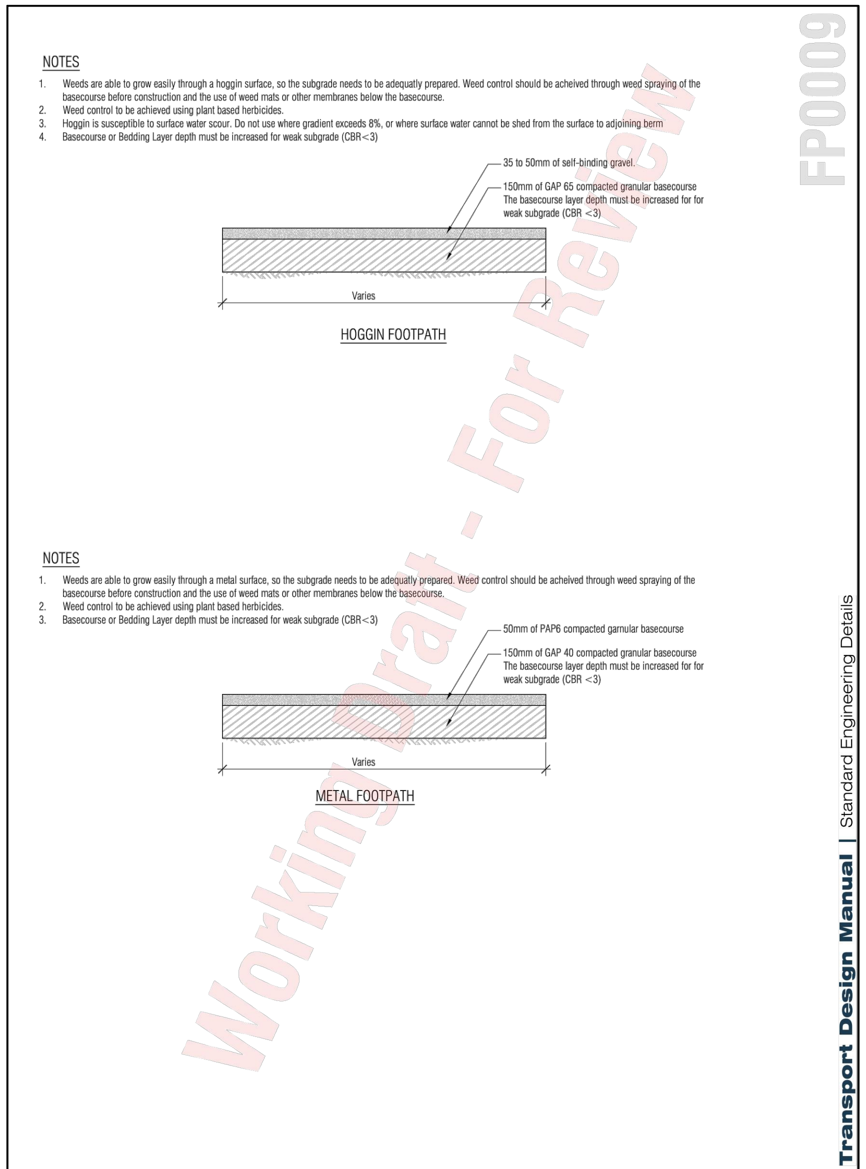
1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.



FP0006
Transport Design Manual | Standard Engineering Details
PLAN (OPTION 1)
PLAN (OPTION 2)
PLAN (OPTION 3)
SURFACE FINISH TO KERB RAMPS
Standard Kerb & Channel
Footpath
Grass Berm
Boundary
Refer note 9
Warning TGSIs
Direction of Travel
Kerb Face
Crossing Line
Working Draft - For Review

Review	1	TDM TECHNICAL STANDARDS Pram crossing	Date: Document in Review	SED No. FP0006	Version A

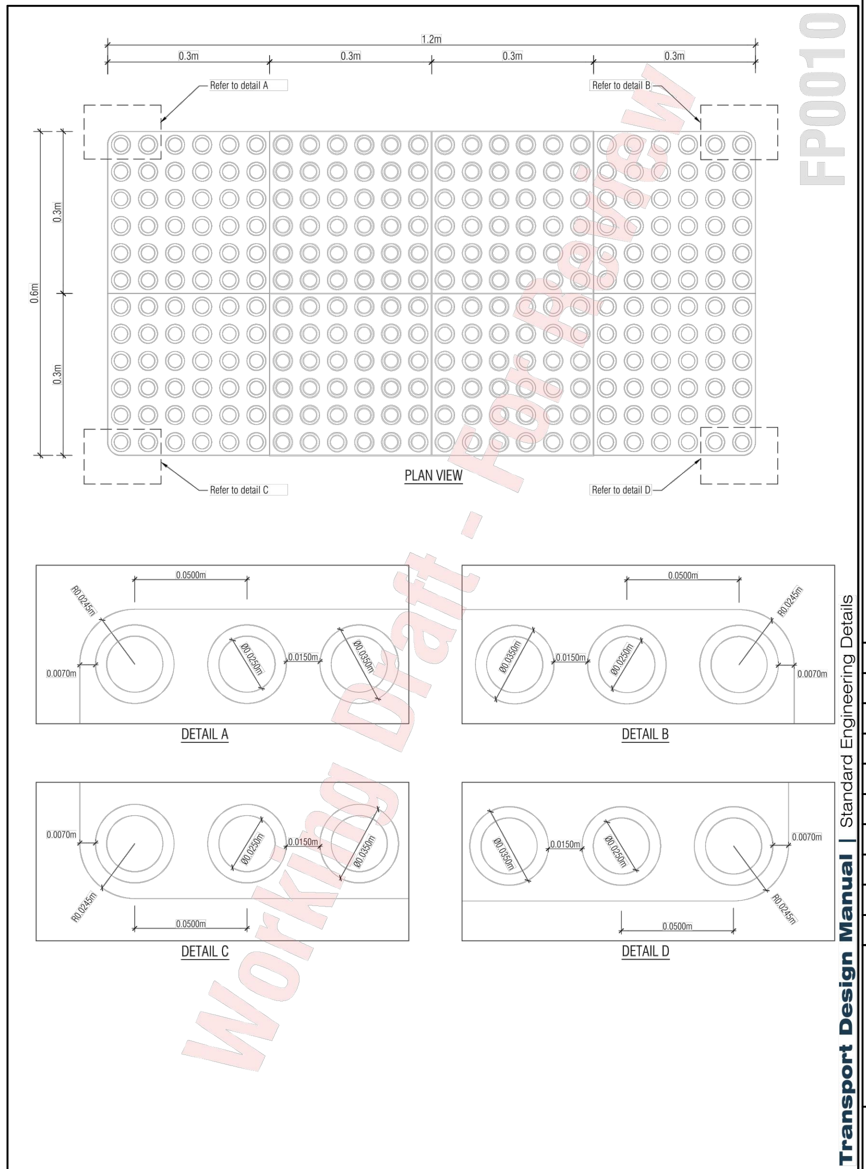
DATE: February 14, 2020



FP0009
NOTES
1. Weeds are able to grow easily through a hoggin surface, so the subgrade needs to be adequatly prepared. Weed control should be acheived through weed spraying of the basecourse before construction and the use of weed mats or other membranes below the basecourse.
2. Weed control to be achieved using plant based herbicides.
3. Hoggin is susceptible to surface water scour. Do not use where gradient exceeds 8%, or where surface water cannot be shed from the surface to adjoining berm
4. Basecourse or Bedding Layer depth must be increased for weak subgrade (CBR<3)
35 to 50mm of self-binding gravel.
150mm of GAP 65 compacted granular basecourse The basecourse layer depth must be increased for for weak subgrade (CBR <3)
Varies
HOGGIN FOOTPATH
NOTES
1. Weeds are able to grow easily through a metal surface, so the subgrade needs to be adequatly prepared. Weed control should be acheived through weed spraying of the basecourse before construction and the use of weed mats or other membranes below the basecourse.
2. Weed control to be achieved using plant based herbicides.
3. Basecourse or Bedding Layer depth must be increased for weak subgrade (CBR<3)
50mm of PAP6 compacted garnular basecourse
150mm of GAP 40 compacted granular basecourse The basecourse layer depth must be increased for for weak subgrade (CBR <3)
Varies
METAL FOOTPATH
Transport Design Manual | Standard Engineering Details
Working Draft - For Review

Review	1	TDM TECHNICAL STANDARDS Metal and Hoggin footpath	Date: Document in Review	SED No. FP0009	Version A

DATE: February 14, 2020



Review	1	TDM TECHNICAL STANDARDS Tactile Pavers	Date: Document in Review	SED No. FP0010	Version A

DATE: February 14, 2020

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

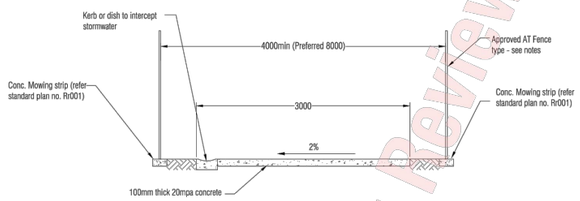
Title

ROADING STANDARD DETAILS SHEET 5

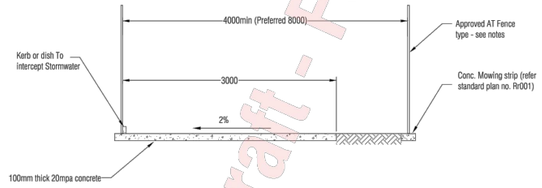
Project no.	147007
Scale	N.T.S
Cad file	147007-M-C800 ROADING STD DETAILS.DWG
Drawing no.	C800-4
Rev	A

RESOURCE CONSENT

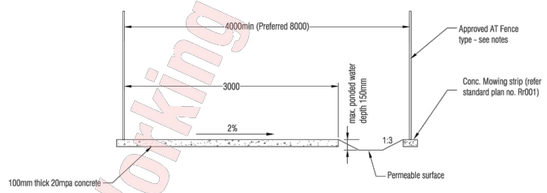
DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG



SECTION - CENTRAL 3.0m SHARED PATH
SCALE 1 : 50



SECTION - 3.0m PATH TO SIDE
SCALE 1 : 50



SECTION - ACCESS WAY WITH SWALE/RAINGARDEN
SCALE 1 : 50

NOTES
1. Fences shall be open boarded 1.2m in height as per the Fence standard details unless agreed by departure from standard.

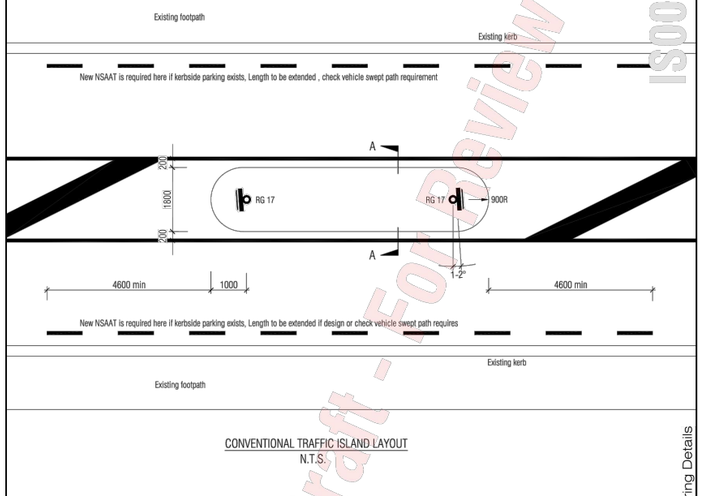
Transport Design Manual | Standard Engineering Details

FP0011

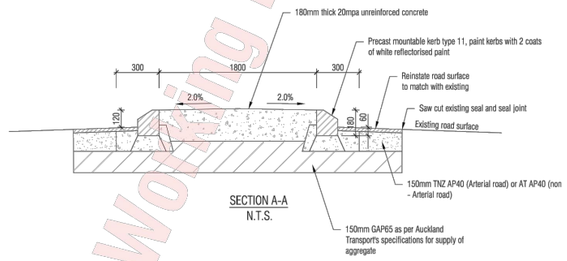
Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Pedestrian & cyclist access way alternative sections

Date: Document in Review
SED No. FP0011 Version A



CONVENTIONAL TRAFFIC ISLAND LAYOUT
N.T.S.



SECTION A-A
N.T.S.

NOTES:
1. Kerb blocks & insitu concrete - 20MPa.
2. 25 MPa fibre reinforced concrete for slip-form.

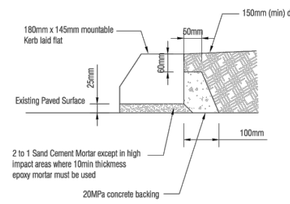
Transport Design Manual | Standard Engineering Details

IS0001

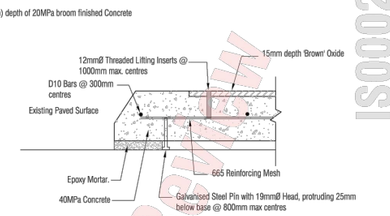
Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Standard detail for traffic island

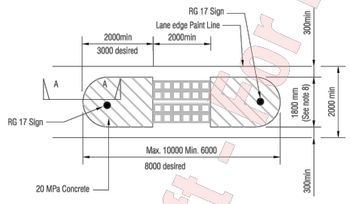
Date: Document in Review
SED No. IS0001 Version A



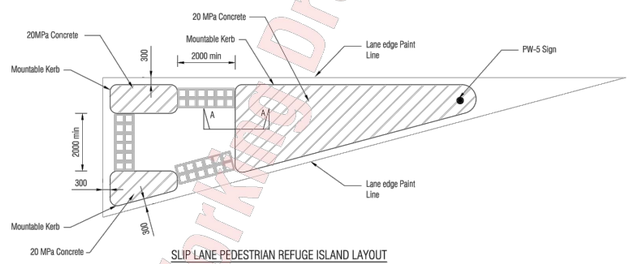
SECTION A-A - IN-SITU



SECTION A-A - PRECAST



CENTRAL MEDIAN PEDESTRIAN REFUGE ISLAND LAYOUT
STRAIGHT (90°) WALK-THROUGH



SLIP LANE PEDESTRIAN REFUGE ISLAND LAYOUT

NOTES
1. The existing paved surface (concrete or asphalt) must be coated with approved bonding agent prior to the placing of any mortar bedding or concrete backing material.
2. Surface of island must have a crossfall of 10% or max rise to centre of 150mm.
3. Use radius blocks as required.
4. All sign posts are to be SS-3 type - (Vertiflex Posts).
5. A minimum clearance of 300mm should be achieved between edge of any signs and kerb faces.
6. A minimum clearance of 300mm between kerb face and lane edge line should be achieved.
7. RG 17 signs on traffic islands must be rotated 4-5° away from the driver viewing axis.
8. Width of the island maybe reduced to not less than 1400mm if road width is constrained.

Transport Design Manual | Standard Engineering Details

IS0002

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Typical pedestrian refuge island

Date: Document in Review
SED No. IS0002 Version A

NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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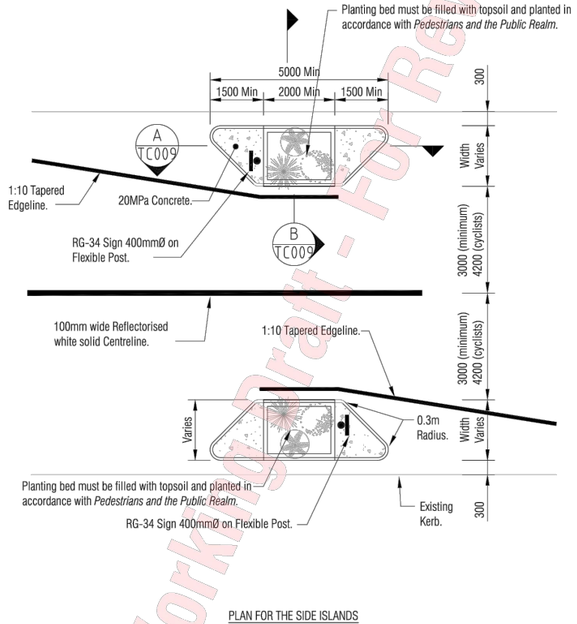
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 6

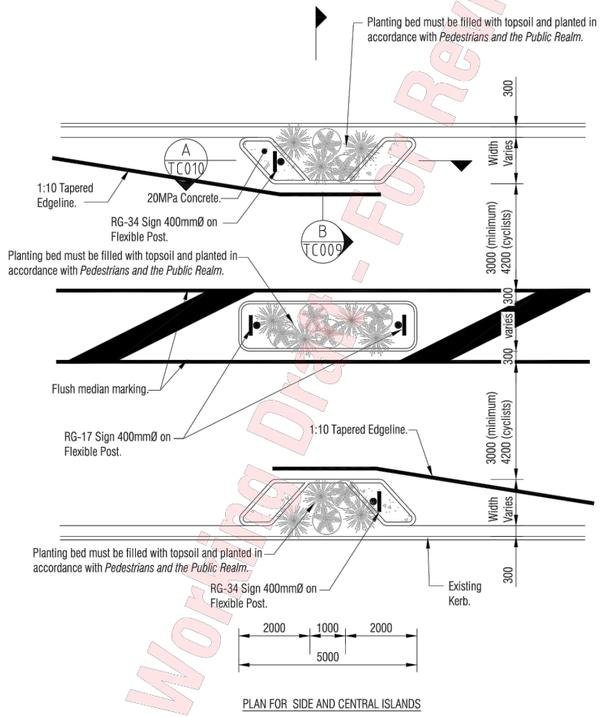
Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-5	Rev	A

RESOURCE CONSENT

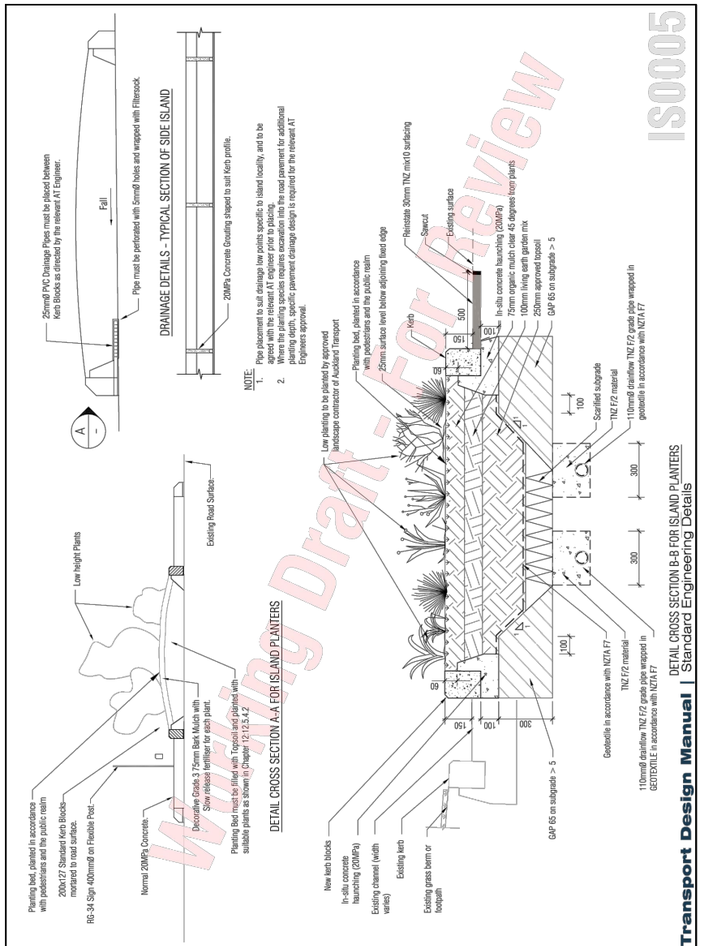
DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG



PLAN FOR THE SIDE ISLANDS



PLAN FOR SIDE AND CENTRAL ISLANDS



NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 7

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-6	Rev	A

Review 1 — DATE: February 14, 2020
TDM TECHNICAL STANDARDS — Planted side islands - road narrowings
Date: Document in Review | SED No. IS0003 | Version A

Review 1 — DATE: February 14, 2020
TDM TECHNICAL STANDARDS — Planted side and central islands - road narrowings
Date: Document in Review | SED No. IS0004 | Version A

Review 1 — DATE: February 14, 2020
TDM TECHNICAL STANDARDS — Typical details - planted side islands
Date: Document in Review | SED No. IS0005 | Version A

Transport Design Manual | Standard Engineering Details

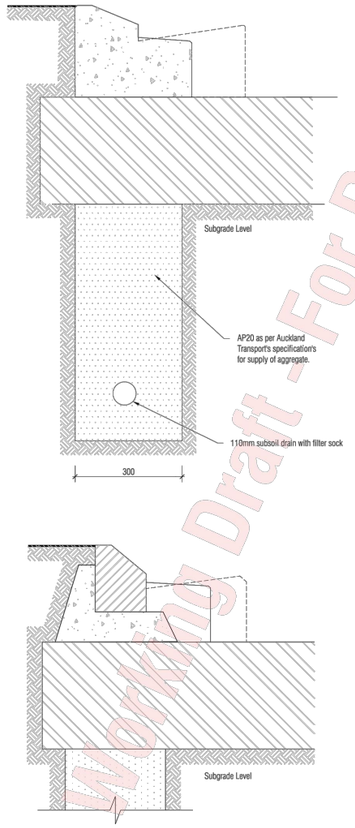
IS0003 IS0004 IS0005

RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: P:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.



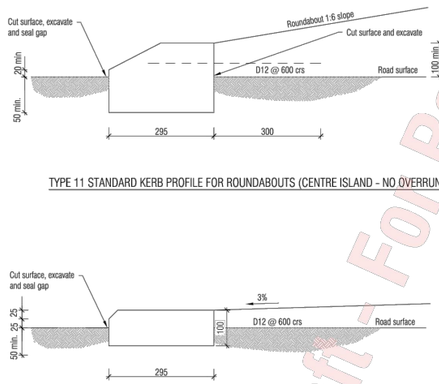
NOTES:

1. 25 MPa fibre reinforced concrete for slip-form.

IS0006

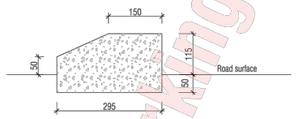
TDM TECHNICAL STANDARDS
Mountable kerb & nib For traffic islands

Review 1 — DATE: February 14, 2020
Date: Document in Review
SED No. IS0006 | Version A



TYPE 11 STANDARD KERB PROFILE FOR ROUNDABOUTS (CENTRE ISLAND – NO OVERRUN)

KERB PROFILE FOR OVER-RUN APRONS



SECTION THROUGH TRAFFIC ISLAND KERB INLAID ON ROAD SURFACE

NOTES:

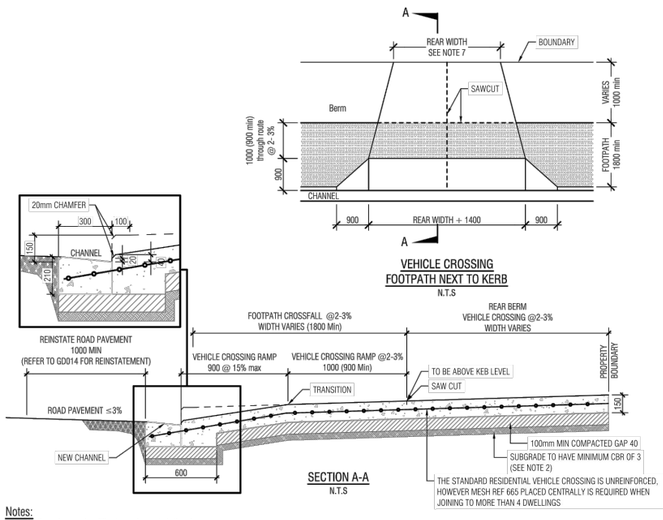
1. 25MPa Concrete with 4Kg/m3 of Brown Oxide no over-run
2. 25 MPa fibre reinforced concrete for slip-form.
3. Splitter islands or pedestrian refuge islands shall be c 50mm below finished road surface. Any over-excavatio shall be backfilled, compacted and resurfaced to matc adjacent surface.
4. Concrete apron to roundabouts. Where roundabout will not be infilled with concrete, a concrete apron 1m wide must be constructed behind the kerb.
5. Where required concrete infill to islands/roundabouts shall be 100mm thick, 20MPa concrete with exposed aggregate.

IS0007

TDM TECHNICAL STANDARDS
Roundabout and traffic Island slip-formed kerbs

Review 1 — DATE: February 14, 2020
Date: Document in Review
SED No. IS0007 | Version A

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING FOOTPATH NEXT TO KERB
N.T.S

SECTION A-A
N.T.S

Notes:

1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation.
6. Construct in same material and finish as surrounding footpath.
7. Rear Width to be as permitted under Auckland unitary Plan;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

VX0102

TDM TECHNICAL STANDARDS
Residential Vehicle Crossing (Sheet 2 of 4)

Date: 20/05/2021
SED No. VX0102 | Version B

Transport Design Manual | Standard Engineering Details

A	RESOURCE CONSENT	MA	02/2025
Rev	Description	By	Date

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 8

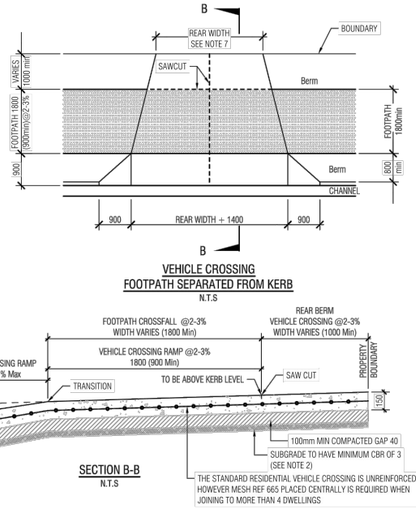
Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-7	Rev	A

RESOURCE CONSENT

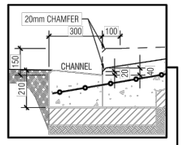
DATE: 3/2025 FILE PATH: P:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\ATOM\A4\C800 ROADING STD DETAILS.DWG

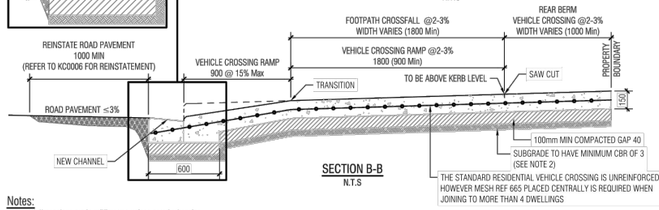
VX0103

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING
FOOTPATH SEPARATED FROM KERB
N.T.S





SECTION B-B
N.T.S

THE STANDARD RESIDENTIAL VEHICLE CROSSING IS UNREINFORCED, HOWEVER MESH REF 665 PLACED CENTRALLY IS REQUIRED WHEN JOINING TO MORE THAN 4 DWELLINGS

Notes:

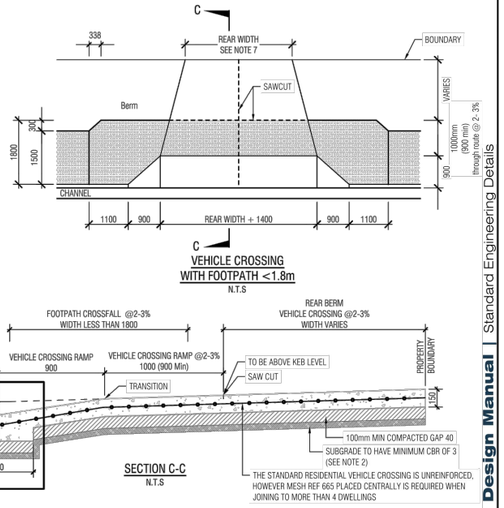
1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation.
6. Construct in same material and finish as surrounding footpath.
7. Rear Width to be as permitted under Auckland unitary Plan;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

Transport Design Manual | Standard Engineering Details

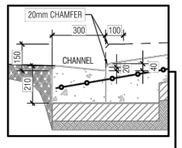
TDM TECHNICAL STANDARDS Residential Vehicle Crossing (Sheet 3 of 4)	Date: 20/05/2021	SED No. VX0103	Version B

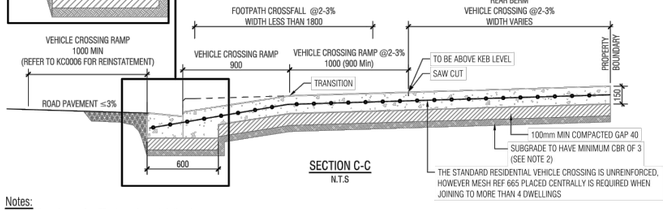
VX0104

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING
WITH FOOTPATH <1.8m
N.T.S





SECTION C-C
N.T.S

THE STANDARD RESIDENTIAL VEHICLE CROSSING IS UNREINFORCED, HOWEVER MESH REF 665 PLACED CENTRALLY IS REQUIRED WHEN JOINING TO MORE THAN 4 DWELLINGS

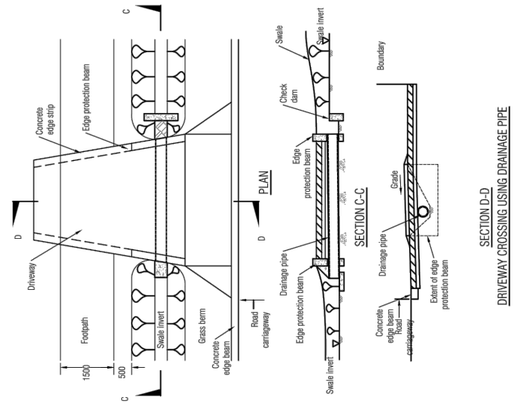
Notes:

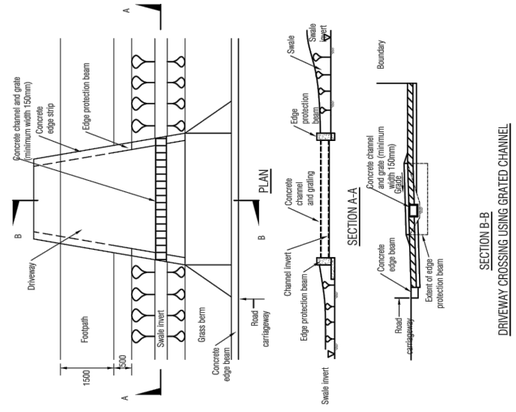
1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation..
6. Construct in same material and finish as surrounding footpath.
7. Rear Width to be as permitted under Auckland unitary Plan;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

Transport Design Manual | Standard Engineering Details

TDM TECHNICAL STANDARDS Residential Vehicle Crossing (Sheet 4 of 4)	Date: 20/05/2021	SED No. VX0104	Version B

VX0105





Note: this drawing is for indicative purpose only and use only as a guide. Site specific designs will be required.

Transport Design Manual | Standard Engineering Details

TDM TECHNICAL STANDARDS Typical driveway crossing through a swale	Date: 20/05/2021	SED No. VX0105	Version A

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

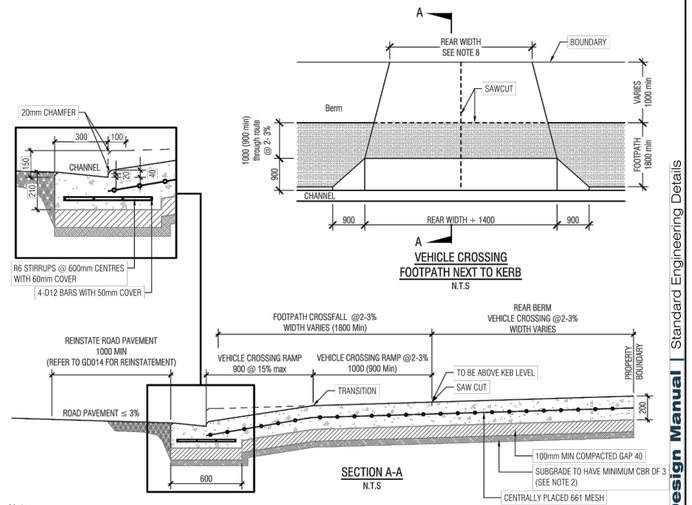
Title
ROADING STANDARD DETAILS SHEET 9

Project no.	147007
Scale	N.T.S
Cad file	147007-M-C800 ROADING STD DETAILS.DWG
Drawing no.	C800-8 Rev A

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 ROADING STD DETAILS.DWG

VX0202

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING
FOOTPATH NEXT TO KERB
N.T.S

SECTION A-A
N.T.S

Notes:

1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation.
6. Construct in same material and finish as surrounding footpath.
7. Width of vehicle crossing to be designed by using tracking curves for intended large heavy vehicles.
8. Rear Width as permitted under Auckland Unitary Plan;
   COMMERCIAL USE;
   3700-4000 - Single vehicle crossing
   6000-7000 - Double vehicle crossing
   RESIDENTIAL USE;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

Transport Design Manual | Standard Engineering Details

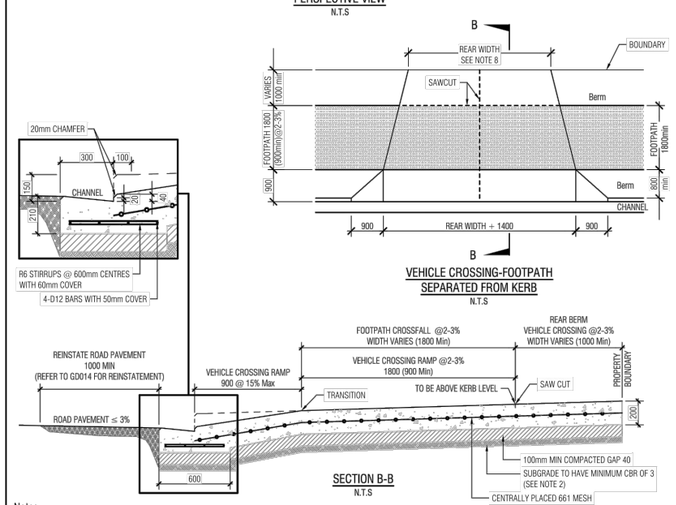
APPROVED CHIEF ENGINEER

TDM TECHNICAL STANDARDS
Commercial Vehicle Crossing (Sheet 2 of 4)

Date: 20/05/2021
SED No. **VX0202** Version **A**

VX0203

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING-FOOTPATH
SEPARATED FROM KERB
N.T.S

SECTION B-B
N.T.S

Notes:

1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation.
6. Construct in same material and finish as surrounding footpath.
7. Width of vehicle crossing to be designed by using tracking curves for intended large heavy vehicles.
8. Rear Width as permitted under Auckland Unitary Plan;
   COMMERCIAL USE;
   3700-4000 - Single vehicle crossing
   6000-7000 - Double vehicle crossing
   RESIDENTIAL USE;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

Transport Design Manual | Standard Engineering Details

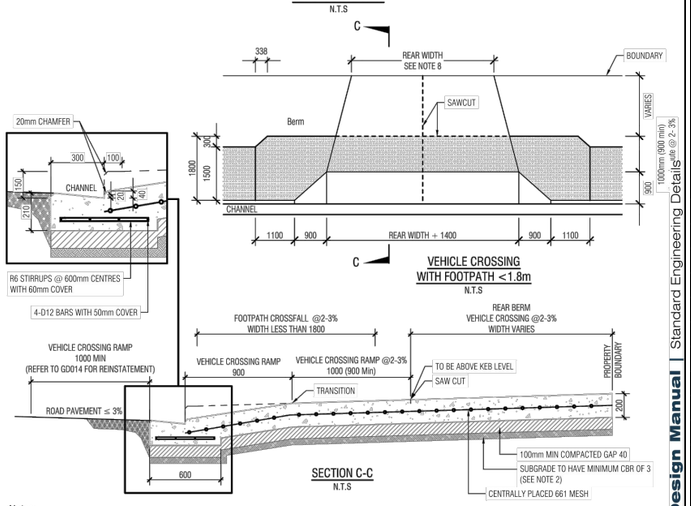
APPROVED CHIEF ENGINEER

TDM TECHNICAL STANDARDS
Commercial Vehicle Crossing (Sheet 3 of 4)

Date: 20/05/2021
SED No. **VX0203** Version **A**

VX0204

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING
WITH FOOTPATH <1.8m
N.T.S

SECTION C-C
N.T.S

Notes:

1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw cut expansion joints at 4m centres maximum each way in addition to saw cuts shown on dwg.
5. Any existing infrastructure within the crossing may require specific design approval for relocation.
6. Construct in same material and finish as surrounding footpath.
7. Width of vehicle crossing to be designed by using tracking curves for intended large heavy vehicles.
8. Rear Width as permitted under Auckland Unitary Plan;
   COMMERCIAL USE;
   3700-4000 - Single vehicle crossing
   6000-7000 - Double vehicle crossing
   RESIDENTIAL USE;
   2750-3000 - Single vehicle crossing
   5500-6000 - Two-Way Shared Access
   3000-3500 - One-Way Shared Access

Transport Design Manual | Standard Engineering Details

APPROVED CHIEF ENGINEER

TDM TECHNICAL STANDARDS
Commercial Vehicle Crossing (Sheet 4 of 4)

Date: 20/05/2021
SED No. **VX0204** Version **A**

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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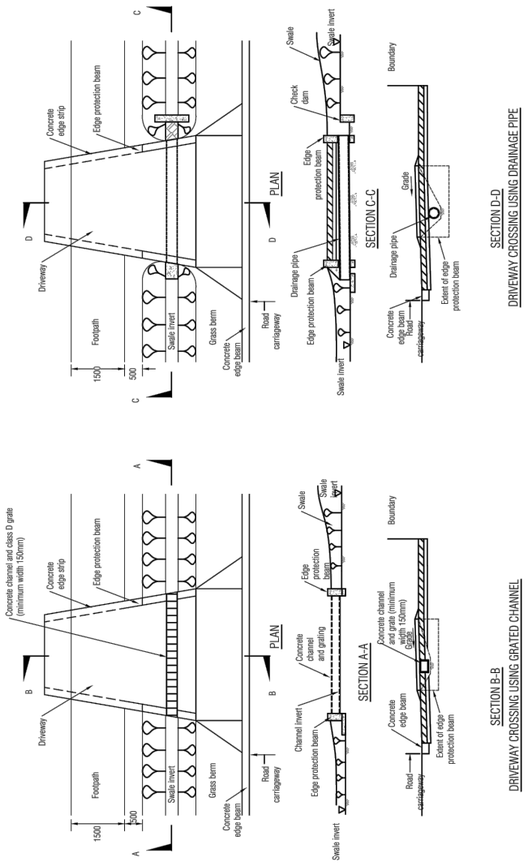
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING STANDARD DETAILS SHEET 10

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-9	Rev	A

DATE: 3/2025 FILE PATH: P:\MAVEN PROJECTS\147007 RIVERHEAD FOREST\DWG\14700 M-C800 ROADING STD DETAILS.DWG



Note: this drawing is for indicative purpose only and use only as a guide. Site specific designs will be required.

VX0205

Transport Design Manual | Standard Engineering Details

CALTEC APPROVED ENGINEER

TDM TECHNICAL STANDARDS

Typical commercial driveway crossing through a swale

Date: 20/05/2021

SED No. **VX0205** Version **A**

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
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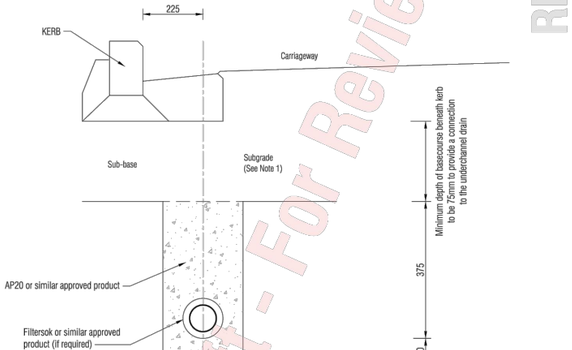
Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

ROADING STANDARD DETAILS SHEET 11

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C800 ROADING STD DETAILS.DWG		
Drawing no.	C800-10	Rev	A

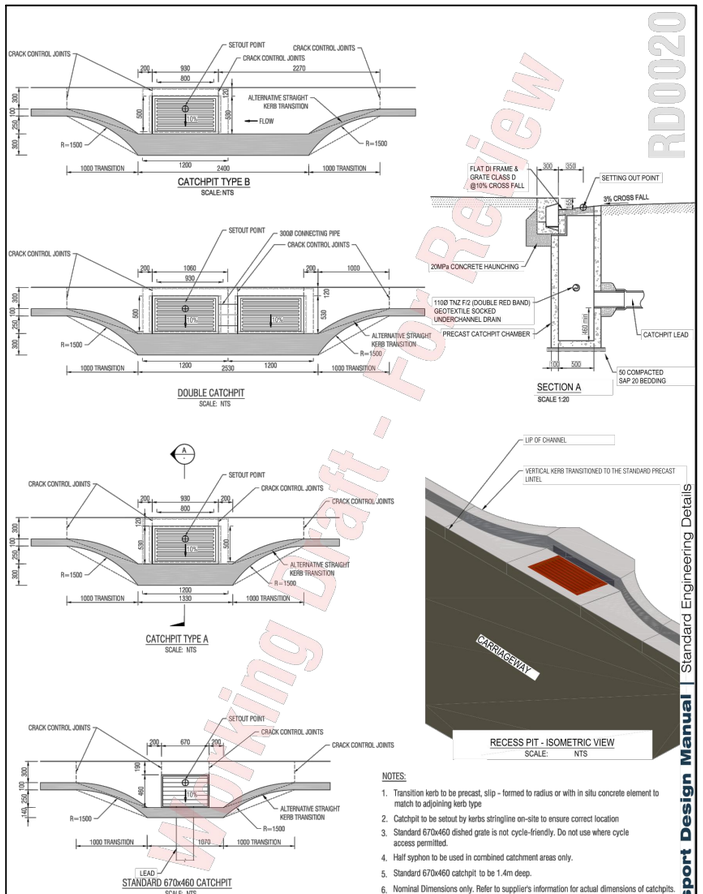


NOTES

1. Construct subsoil drain after stabilization 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 specifiid 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)

Transport Design Manual | Standard Engineering Details

Review	1	TDM TECHNICAL STANDARDS	Date: Document in Review	
DATE: February 14, 2020		Subsoil drain	SED No. RD0010	Version A

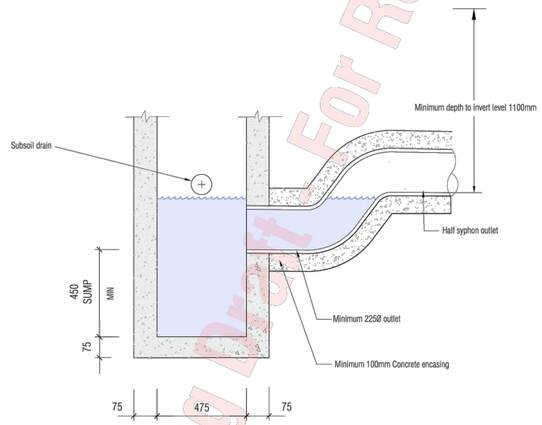


NOTES:

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.

Transport Design Manual | Standard Engineering Details

Review	1	TDM TECHNICAL STANDARDS	Date: Document in Review	
DATE: February 14, 2020		Semi-recessed catch pit	SED No. RD0020	Version A



Transport Design Manual | Standard Engineering Details

Review	1	TDM TECHNICAL STANDARDS	Date: Document in Review	
DATE: February 14, 2020		Catchpit with half syphon	SED No. RD0021	Version A

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
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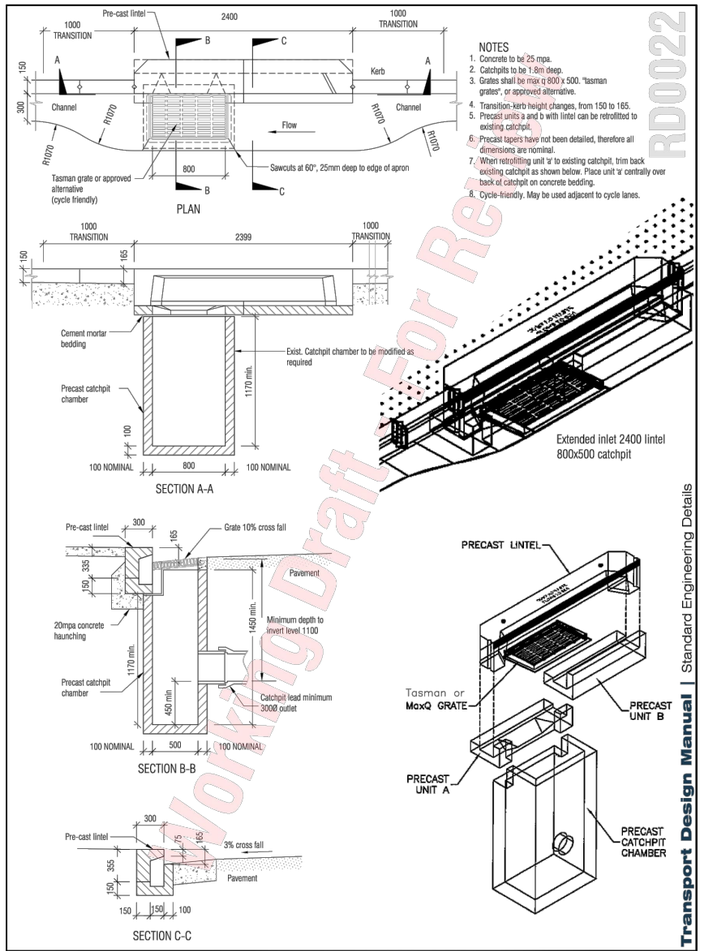
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING DRAINAGE STANDARD DETAILS SHEET 1

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C801 ROADING DRAINAGE DETAILS.DWG		
Drawing no.	C801	Rev	A

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C801 ROADING DRAINAGE DETAILS.DWG



NOTES

1. Concrete to be 25 mpa.
2. Catchpits to be 1.8m deep.
3. Grates shall be max q 800 x 500. "tasman grates", or approved alternative.
4. Transition kerb height changes, from 150 to 165.
5. Precast units a and b with lintel can be retrofitted to existing catchpit.
6. Precast tapers have not been detailed, therefore all dimensions are nominal.
7. 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.
8. Cycle-friendly. May be used adjacent to cycle lanes.

Transport Design Manual | Standard Engineering Details

RD0022

Review 1

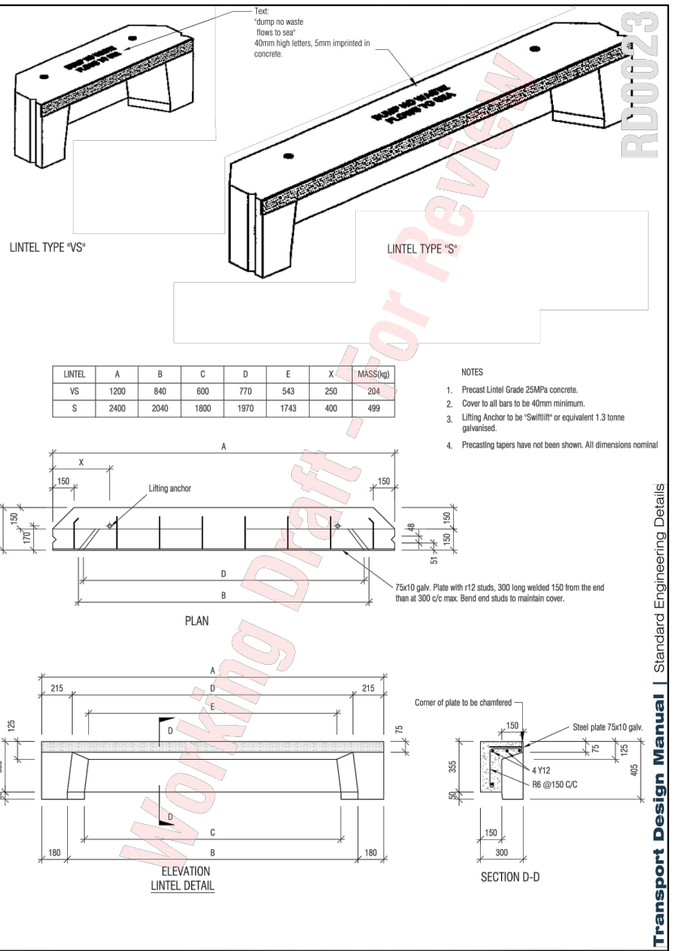
DATE: February 14, 2020

TDM TECHNICAL STANDARDS

Street catchpit 800 x 500

Date: Document in Review

SED No. RD0022 | Version A



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

Transport Design Manual | Standard Engineering Details

RD0023

Review 1

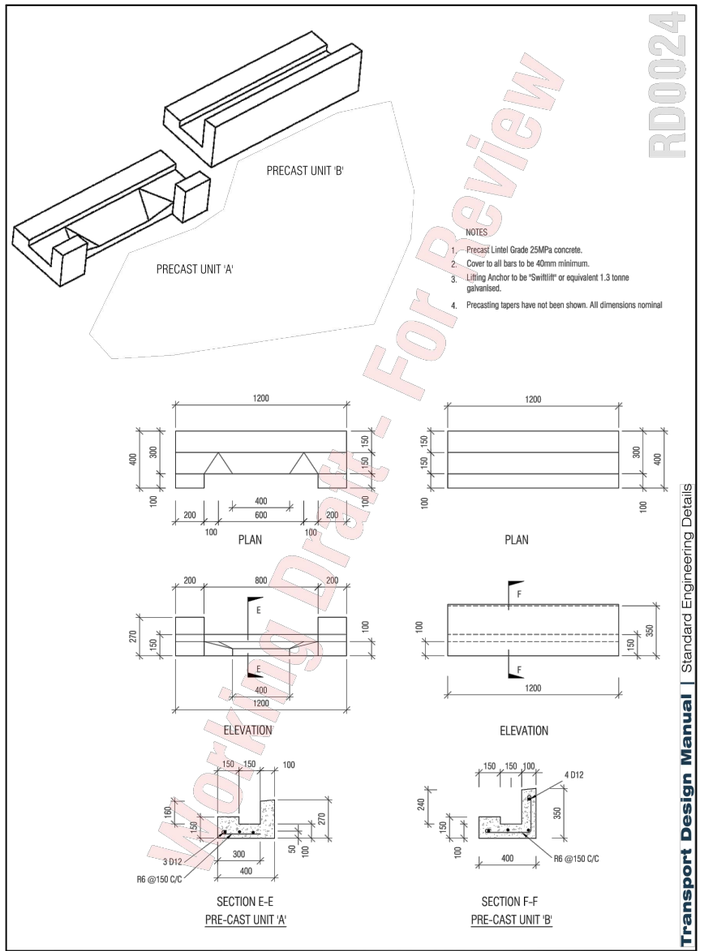
DATE: February 14, 2020

TDM TECHNICAL STANDARDS

Street catchpit 800 x 500 precast lintel details

Date: Document in Review

SED No. RD0023 | Version A



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

Transport Design Manual | Standard Engineering Details

RD0024

Review 1

DATE: February 14, 2020

TDM TECHNICAL STANDARDS

Street catchpit 800 x 500 precast unit details

Date: Document in Review

SED No. RD0024 | Version A

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

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Survey	--	--/----
Design	--	--/----
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Project

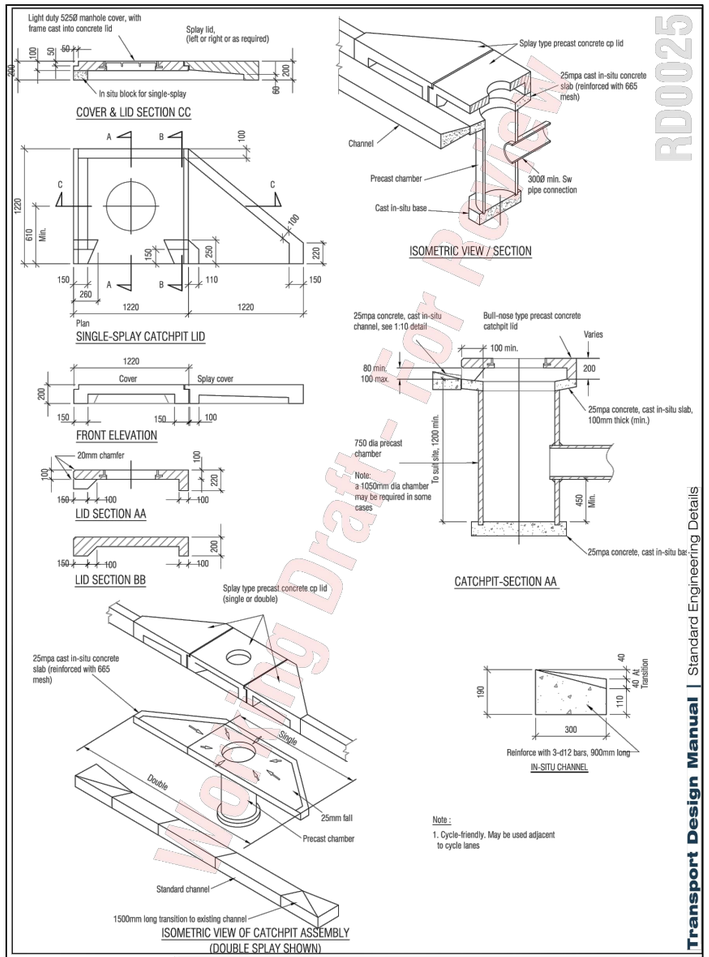
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

ROADING DRAINAGE STANDARD DETAILS SHEET 2

Project no.	147007
Scale	N.T.S
Cad file	147007-M-C801 ROADING DRAINAGE DETAILS.DWG
Drawing no.	C801-1 Rev A

DATE: 3/2025 FILE PATH: Z:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C801 ROADING DRAINAGE DETAILS.DWG

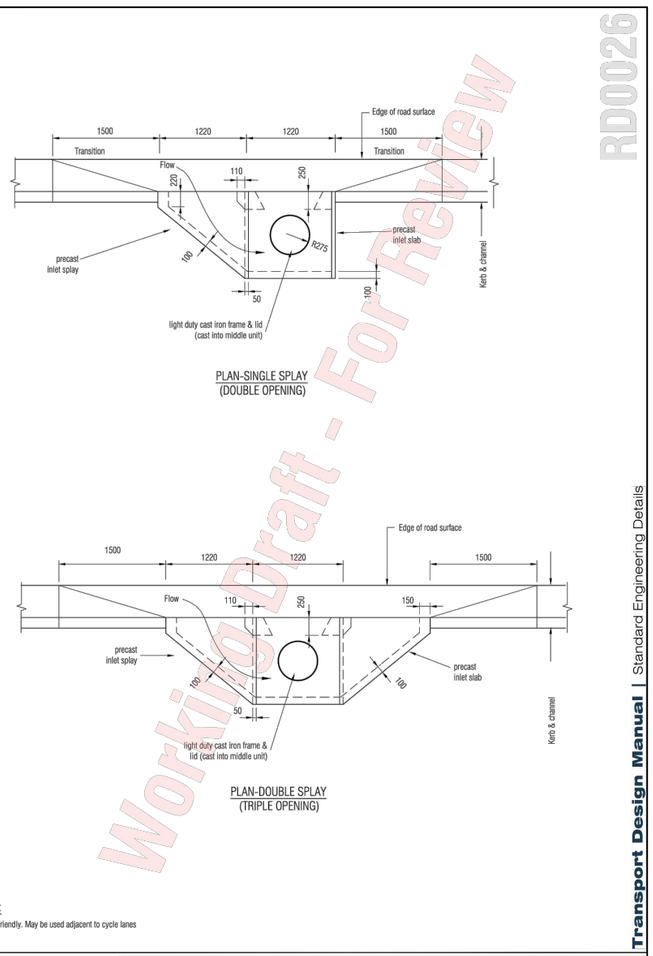


Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Splay catchpit

Date: Document in Review
SED No. RD0025 Version A

Transport Design Manual | Standard Engineering Details

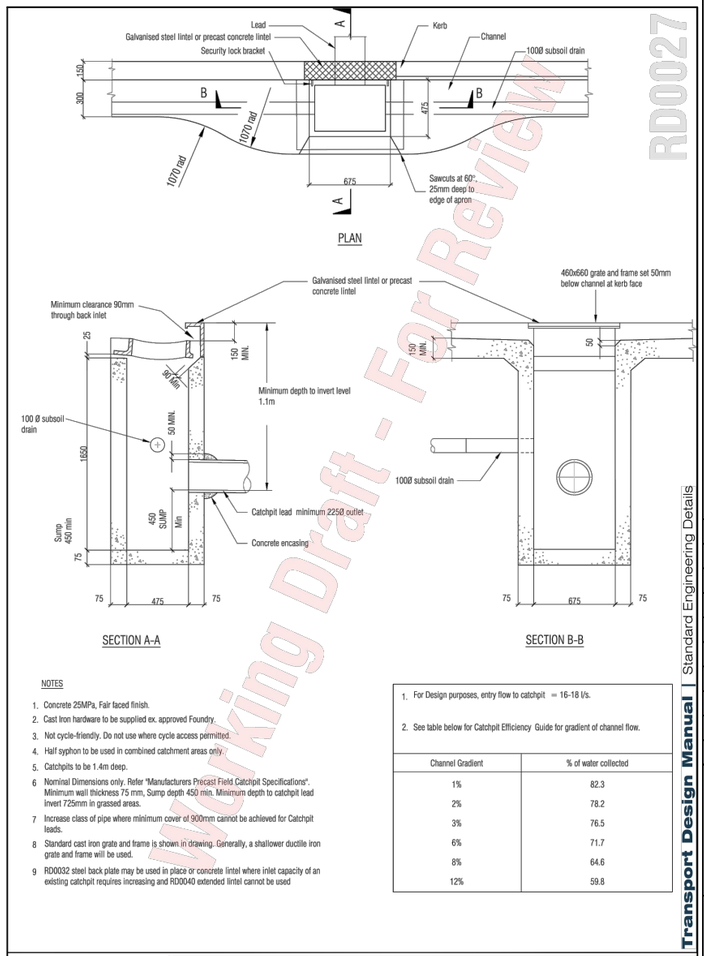


Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Splay catchpit details

Date: Document in Review
SED No. RD0026 Version A

Transport Design Manual | Standard Engineering Details



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

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

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Standard catchpit

Date: Document in Review
SED No. RD0027 Version A

Transport Design Manual | Standard Engineering Details

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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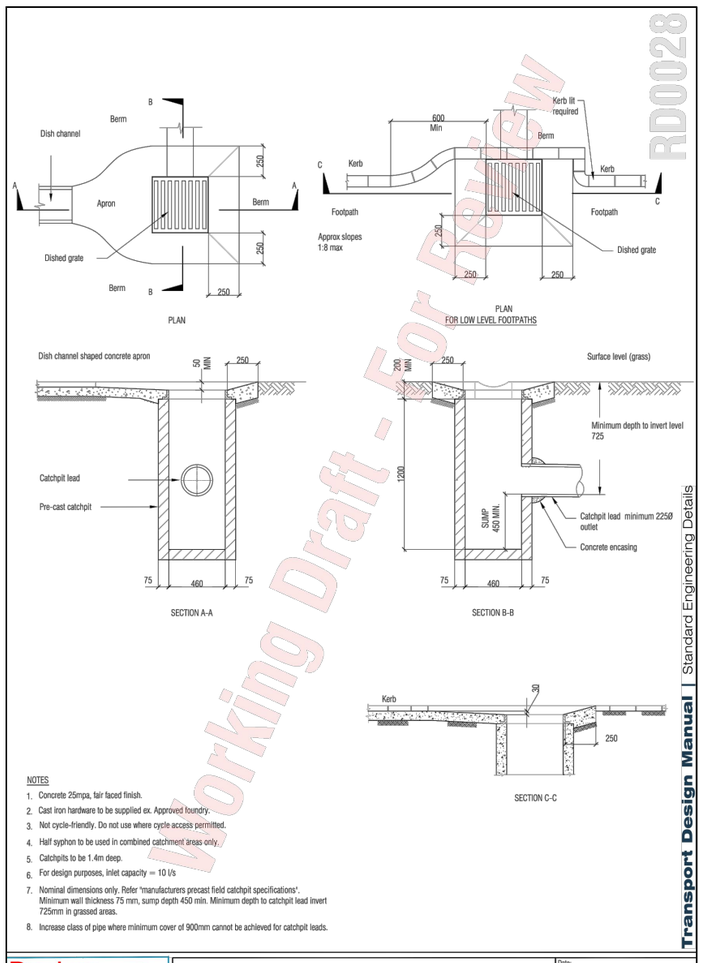
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
ROADING DRAINAGE STANDARD DETAILS SHEET 3

Project no.	147007
Scale	N.T.S
Cad file	147007-M-C801 ROADING DRAINAGE DETAILS.DWG
Drawing no.	C801-2 Rev A

RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C801 ROADING DRAINAGE DETAILS.DWG



NOTES

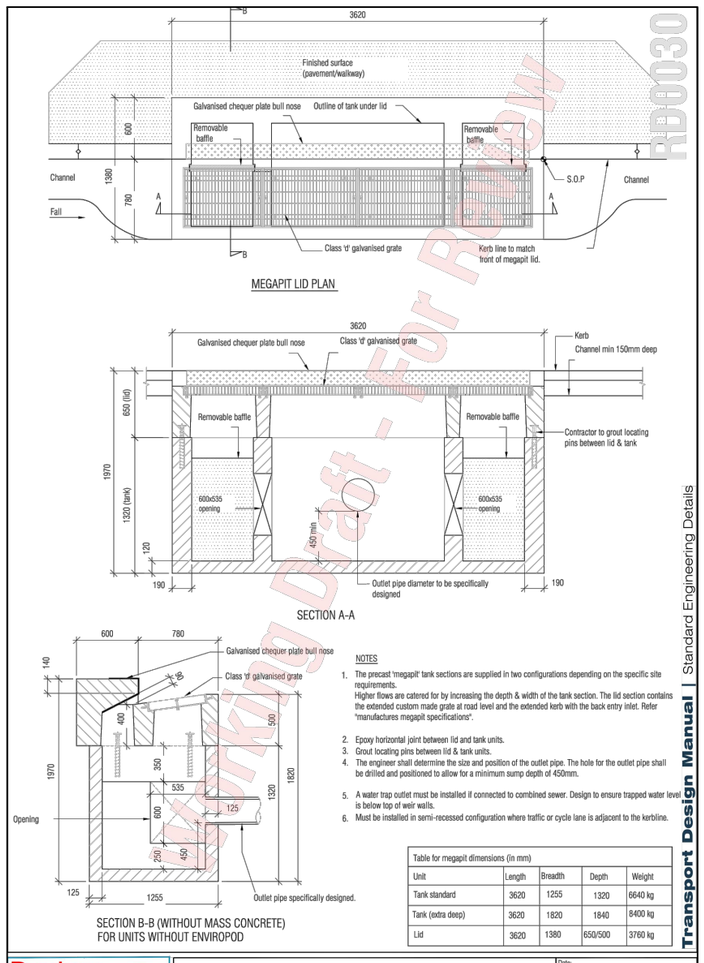
1. Concrete 25mpa, fair faced finish.
2. Cast iron hardware to be supplied ex. Approved foundry.
3. Not cycle-friendly. Do not use where cycle access permitted.
4. Half syphon to be used in combined catchment areas only.
5. Catchpits to be 1.4m deep.
6. For design purposes, inlet capacity = 10 l/s
7. 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.

Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Field catchpit 440 x 440

Date: Document in Review
SED No. **RD0028** Version **A**



NOTES

1. The precast 'megapit' 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 megapit 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.

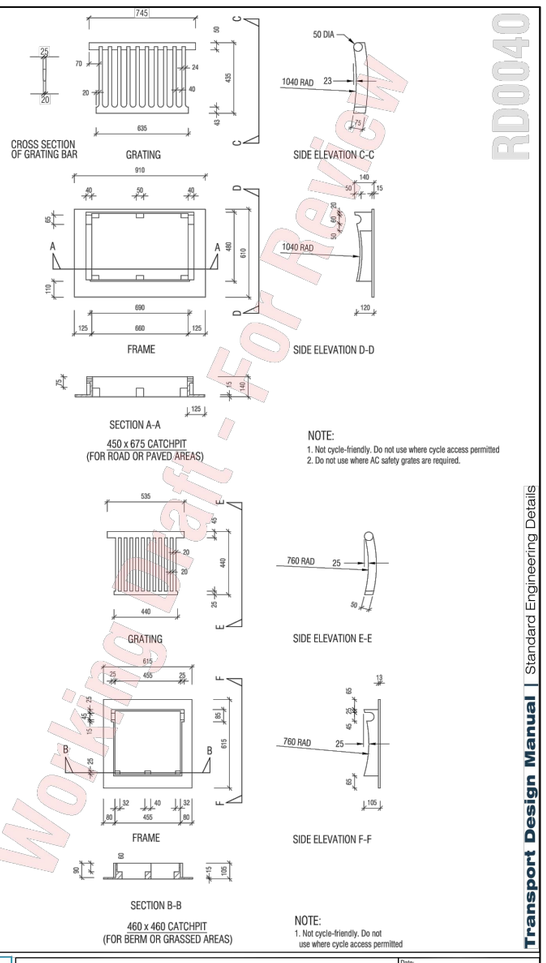
Table for megapit dimensions (in mm)				
Unit	Length	Breadth	Depth	Weight
Tank standard	3620	1255	1320	6640 kg
Tank (extra deep)	3620	1820	1840	8400 kg
Lid	3620	1380	650/500	3760 kg

Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Megapit

Date: Document in Review
SED No. **RD0030** Version **A**



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

NOTE:
1. Not cycle-friendly. Do not use where cycle access permitted

Transport Design Manual | Standard Engineering Details

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Catchpit gratings and frames

Date: Document in Review
SED No. **RD0040** Version **A**

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

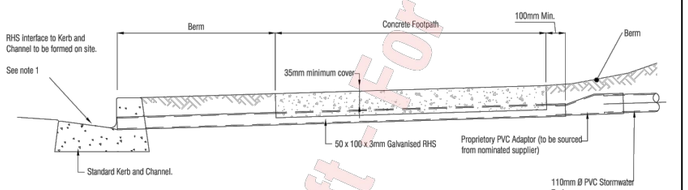
Title
ROADING DRAINAGE STANDARD DETAILS SHEET 4

Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C801 ROADING DRAINAGE DETAILS.DWG		
Drawing no.	C801-3	Rev	A

RESOURCE CONSENT

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C801 ROADING DRAINAGE DETAILS.DWG

RD0060



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.

Transport Design Manual | Standard Engineering Details

Review 1

DATE: February 14, 2020

TDM TECHNICAL STANDARDS

Kerb discharge

Date: Document in Review

SED No. **RD0060** | Version **A**

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

ROADING DRAINAGE STANDARD DETAILS SHEET 5

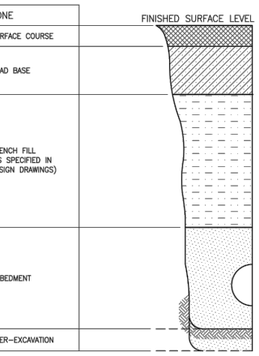
Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C801 ROADING DRAINAGE DETAILS.DWG		
Drawing no.	C801-4	Rev	A

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C801 ROADING DRAINAGE DETAILS.DWG

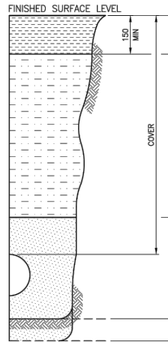
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. EMBEDMENT, TRENCH FILL AND COMPACTION SHALL MEET THE REQUIREMENT OF DESIGN DRAWINGS OR SPECIFICATIONS.
3. SIDES OF EXCAVATION SHALL BE KEPT VERTICAL TO AT LEAST 150mm ABOVE THE PIPE.

MATERIAL	ZONE
TO AUCKLAND TRANSPORT REQUIREMENTS	SURFACE COURSE
TO MATCH EXISTING ROAD BASE OR TO AUCKLAND TRANSPORT REQUIREMENTS	ROAD BASE
TRENCH FILL MATERIALS IN ACCORDANCE WITH SW02 AND SW03, COMPACTED IN LAYERS OF NOT MORE THAN 300mm OR AS SPECIFIED	TRENCH FILL (AS SPECIFIED IN DESIGN DRAWINGS)
EMBEDMENT MATERIAL IN ACCORDANCE WITH SW02 AND SW03	EMBEDMENT
	OVER-EXCAVATION



VEHICULAR LOADING (CARRIAGEWAY)



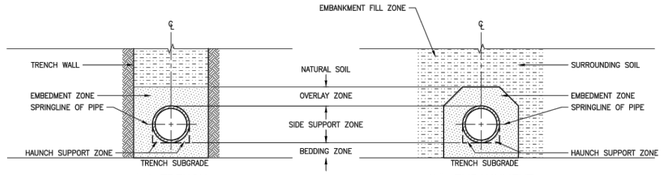
ZONE	MATERIAL
TOPSOIL OR PAVEMENT	ORIGINAL OR IMPORTED MATERIAL TO MATCH EXISTING
TRENCH FILL (AS SPECIFIED IN DESIGN DRAWINGS)	INORGANIC FILL MATERIAL PLACED IN LAYERS NOT MORE THAN 300mm OR AS SPECIFIED
EMBEDMENT	EMBEDMENT MATERIAL IN ACCORDANCE WITH SW02 AND SW03
OVER-EXCAVATION	

NO VEHICULAR LOADING (NON CARRIAGEWAY)
INCLUDES LOCATIONS WHERE OCCASIONAL VEHICLE LOADING OCCURS

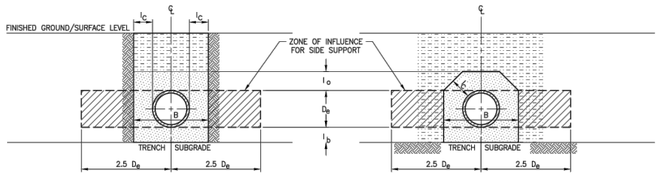
STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S.
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW01.DWG	EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT	Auckland Council	DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW01 REV 3

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SW01.
2. FLEXIBLE PIPES INCLUDES PVC, GRP, PP AND PE.
3. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION SHALL MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. REPLACE EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL FOR BEDDING.
5. ENSURE THAT THE BEDDING IS DEEP ENOUGH SO THAT PIPE JOINT PROJECTIONS (SOCKETS, FLANGES) DO NOT TOUCH THE TRENCH FLOOR (SEE DETAIL BELOW).
6. BEDDING MATERIALS SHALL BE GAP/SAP < 12.
7. THIS DRAWING IS BASED ON AS/NZS 2566 PART 2: 2002 "BURIED FLEXIBLE PIPELINES & INSTALLATION" AND REPRODUCED WITH THE PERMISSION OF STANDARDS NEW ZEALAND.



(a) TRENCH (b) EMBANKMENT

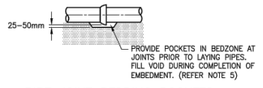


(a) TRENCH (b) EMBANKMENT

MINIMUM EMBEDMENT ZONE DIMENSIONS				
D_e (mm)	MINIMUM DIMENSION (mm)			
	l_b	l_c	l_o	$B=D_e+2l_c$
75 ≤ D_e ≤ 150	75	100	100	275 – 350
150 < D_e ≤ 300	100	150	150	450 – 600
300 < D_e ≤ 450	100	200	150	700 – 850
450 < D_e ≤ 900	150	300	150	1050 – 1500
900 < D_e ≤ 1500	150	350	200	1600 – 2200
1500 < D_e ≤ 4000	150	0.25D_e	300	2250 – 6000

DEFINITIONS OF SYMBOLS USED:

- B TRENCH WIDTH
- D_e EXTERNAL DIAMETER OF PIPELINE.
- l_b DEPTH OF BEDDING UNDER BARREL OF PIPELINE.
- l_c MINIMUM DISTANCE BETWEEN SPRINGLINE OF PIPE AND PERMANENT SIDE OF TRENCH.
- l_o MINIMUM DEPTH OF COVER OVER SOFFIT OF PIPELINE.

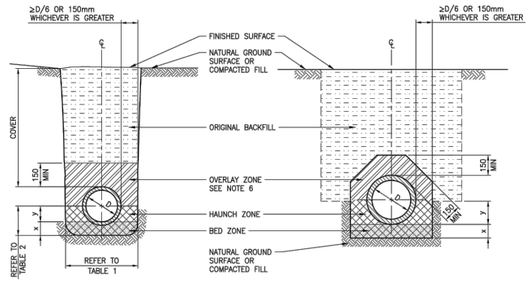


PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S.
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW02.DWG	PIPE EMBEDMENTS STANDARD EMBEDMENT FOR FLEXIBLE PIPES	Auckland Council	DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW02 REV 3

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SW01.
2. CONCRETE PIPE CLASS SHALL BE DESIGNED IN ACCORDANCE WITH AS/NZS 3725: 2007, USING H2 BEDDING, TO CONSTRUCTION OR FINAL CONDITION LOADINGS, WHICHEVER IS GREATER.
3. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION SHALL MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL AND MINIMISE PIPELINE SETTLEMENT. REPLACE EXCAVATED MATERIAL WITH SUITABLE GRANULAR MATERIAL FOR BEDDING.
5. ENSURE BEDDING IS DEEP ENOUGH THAT PIPE JOINT PROJECTIONS (SOCKETS) DO NOT TOUCH TRENCH FLOOR (SEE DETAIL BELOW).
6. OVERLAY ZONE AGGREGATE TO BE IN ACCORDANCE WITH AS/NZS 3725:2007.
7. MATERIAL SHALL BE COMPACTED AS NECESSARY TO PREVENT EXCESSIVE SETTLEMENT IN THE GROUND SURFACE LEVEL OVER THE INSTALLED PIPE.
8. WHERE REQUIRED BY SITE CONDITIONS SPECIFIC DESIGN OF PIPE EMBEDMENT MAY BE REQUIRED. THIS SHOULD BE UNDERTAKEN IN ACCORDANCE WITH AS/NZS 3725: 2007 TO THE APPROVAL OF AUCKLAND COUNCIL.
9. EMBEDMENT FOR 'RIGID PIPES' OTHER THAN CONCRETE IS SUBJECT TO SPECIFIC DESIGN AND APPROVAL.



TRENCH CONDITION EMBANKMENT CONDITION

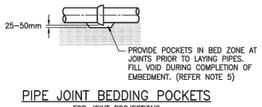
H2 TYPE BEDDING – CONCRETE PIPES

TABLE 1

MAXIMUM PERMISSIBLE TRENCH WIDTHS (IF TRENCH WIDER, USE EMBANKMENT CONDITION)															
NORMAL INTERNAL PIPE DIAMETER (mm)	150	225	300	375	450	525	600	675	750	825	900	975	1050	1200	>1200
MAXIMUM TRENCH WIDTH (mm)	600	600	700	800	900	1000	1100	1200	1300	1400	1500	1500	1600	1800	OD+700

TABLE 2

H2 SUPPORT TYPE	MINIMUM DEPTH (mm)	
	x BED ZONE (mm)	y HAUNCH ZONE (mm)
	100 IF D ≤ 1500 150 IF D > 1500	0.3D



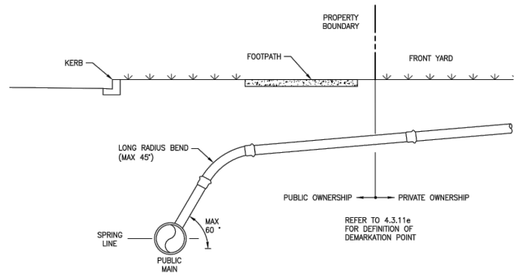
PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S.
REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW03_V4.0.DWG	PIPE EMBEDMENTS STANDARD EMBEDMENT FOR CONCRETE PIPES	Auckland Council	DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW03 REV 4

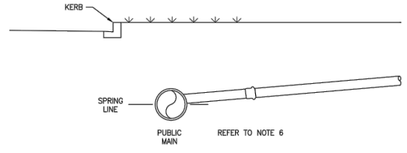
NOTES:

GENERAL NOTES:

1. REFER SWCoP SECTION 4.3.9.5 FOR MINIMUM PIPE DIAMETERS.
2. REFER SWCoP SECTION 4.3.11 FOR PUBLIC/PRIVATE DEMARKATION DEFINITIONS.
3. REFER SWCoP SECTION 4.3.12 FOR LATERAL CONNECTION REQUIREMENTS.
4. REFER SWCoP SECTION4.3.13 FOR CATCHPIT CONNECTIONS DETAILS.
5. A RODDING POINT OR CHAMBER SHALL BE PROVIDED ON THE PUBLIC OR PRIVATE SECTION OF THE LATERAL TO ALLOW CCTV ACCESS. WHERE THIS CANNOT BE PROVIDED, THE CONNECTION SHALL BE MADE AT A MANHOLE.
6. THE CENTRELINE OF THE LATERAL SHALL BE ABOVE THE SPRING LINE OF THE PUBLIC MAIN IT CONNECTS TO.
7. THE LATERAL CONNECTION SHALL BE FULLY SUPPORTED WITH COMPACTED BEDDING MATERIAL, WHICH SHALL EXTEND FROM THE BEDDING OF THE PUBLIC MAIN TO AT LEAST THE SPRING LINE OF THE LATERAL CONNECTION PIPE THROUGH ITS LENGTH UNTIL BEYOND THE TRENCH WALL OF THE PUBLIC MAIN.



LATERAL CONNECTION – DEEP PUBLIC MAIN
(SINGLE LOT CONNECTION SHOWN)



LATERAL CONNECTION – SHALLOW PUBLIC MAIN

NOTES FOR CONNECTION TO A PVC PUBLIC MAIN:

1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A REINFORCED MOULDED PVC SWEPT TEE OR Y–JUNCTION FITTING WHERE SUCH FITTINGS ARE NORMALLY AVAILABLE WITHIN THE LOCAL MARKET. SADDLE CONNECTIONS ARE PERMITTED ONLY WHEN SWEPT TEE OR Y–JUNCTIONS ARE UNAVAILABLE.

NOTES FOR CONNECTION TO A REINFORCED CONCRETE PUBLIC MAIN:

1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A FLANGED VITREOUS CLAY SADDLE INSERT APPROPRIATELY SIZED TO MATCH THE PUBLIC MAIN.
2. THE HOLE INTO THE EXISTING PUBLIC MAIN SHALL BE DRILLED.
3. THE SADDLE INSERT SHALL BE SEALED VIA EPOXY MORTAR TO THE PUBLIC MAIN.
4. THERE SHALL BE NO PROTRUSION OF THE SADDLE INSERT INSIDE THE BORE OF THE PUBLIC MAIN.

NOTES FOR CONNECTION TO A PE PUBLIC MAIN:

1. LATERAL CONNECTIONS SHALL BE CONSTRUCTED USING A JUNCTION CUT IN WITH ELECTROFUSION COUPLERS. ALTERNATIVELY A SADDLE MAY BE ELECTROFUSED ONTO THE PIPE. SPECIFIC APPROVAL FROM AUCKLAND COUNCIL IS REQUIRED TO SADDLE INTO A PE MAIN.
2. ELECTROFUSION FITTINGS SHALL BE SELECTED TO MATCH SDR AND RESIN OF HOST PIPE, AND SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION.

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S.
REVISION: 4 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW04.DWG	STORMWATER LATERAL CONNECTIONS DIRECT CONNECTIONS	Auckland Council	DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW04 REV 4

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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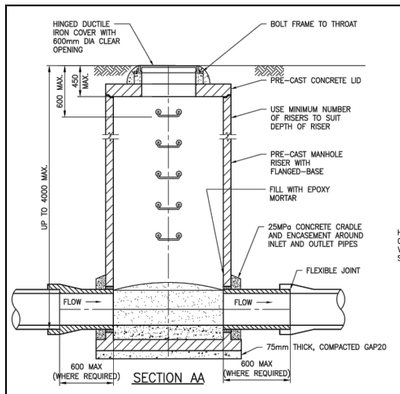
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
STORMWATER STANDARD DETAILS SHEET 1

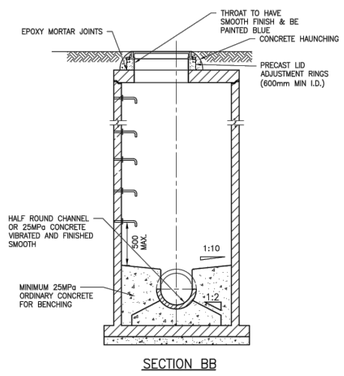
Project no.	147007
Scale	N.T.S
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG
Drawing no.	C802 Rev A

RESOURCE CONSENT

DATE: 3/27/25 - FILE PATH: P:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C800 STORMWATER STD DETAILS.DWG



SECTION AA



SECTION BB

STANDARD MANHOLE UP TO 4.0m DEPTH TO INVERT – ELEVATION

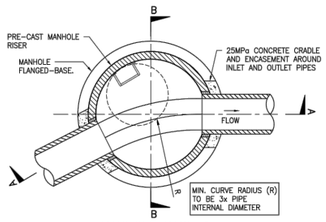
NOTES:

1. MANHOLES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THIS DRAWING AND SECTION 4.3.10 OF THE SWCoP AND IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION.
2. MANHOLE RISER DIAMETER IS TO ALLOW FOR A MINIMUM CURVE RADIUS BETWEEN THE INLET AND OUTLET PIPES OF THREE TIMES THE INTERNAL DIAMETER OF THE OUTLET PIPE.
3. PRECAST LID ADJUSTMENT RINGS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATION.
4. FOR FLEXIBLE PIPELINES, UP TO 300mm DIA, ON GRADIENTS OF 10% AND GREATER, REQUIRED BENCHING DEPTHS WITHIN THE DOWNSTREAM MANHOLE CAN BE REDUCED, BY THE REDUCTION OF THE GRADIENT IMMEDIATELY OUTSIDE THE MANHOLE. THIS MAY BE ACHIEVED BY INSTALLING A MANUFACTURED, PRE-FORMED BEND WITH VERTICAL RADIUS MIN. 8x INSIDE PIPE DIAMETER.
5. MANHOLE COVERS ON ROADS SHALL BE ALIGNED SO THAT A VEHICLE STRIKING A HINGED COVER IN A PARTIALLY OPEN POSITION SHALL PUSH THAT COVER TOWARDS ITS CLOSED POSITION.
6. REFER SWCoP SECTION 4.3.10.10 FOR MANHOLE SAFETY GRILLE REQUIREMENTS AND DETAILS.

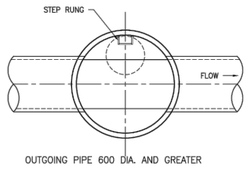
MINIMUM MANHOLE RISER DIAMETER

PIPE DIA	DEFLECTION 0°	15°	30°	45°	60°	75°
450	1050	1050	1050	1200	1500	2050
525	1050	1050	1050	1350	1800	2300
600	1050	1050	1200	1500	2050	SD
750	1200	1200	1350	1800	SD	SD
825	1350	1350	1500	2050	SD	SD
900	1500	1500	1800	2300	SD	SD
1050	1800	1800	1800	SD	SD	SD

SD* Specific Design
>75° deflection requires specific design

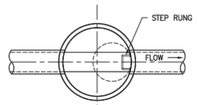


MANHOLE BASE & BENCHING PLAN



OUTGOING PIPE 600 DIA. AND GREATER

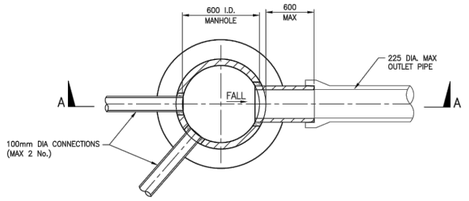
MANHOLE COVER AND RUNG ORIENTATION PLAN



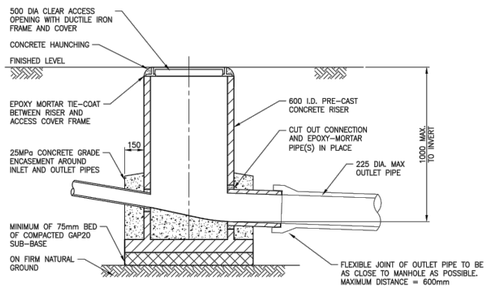
OUTGOING PIPE LESS THAN 600 DIA. (OR WHERE DEPTH TO INVERT ≤1.5m)

MANHOLE COVER AND RUNG ORIENTATION PLAN

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW05_V4.1.DWG	AUCKLAND COUNCIL STANDARD STORMWATER MANHOLE SUITABLE FOR UP TO 4.0m DEPTH TO INVERT	ENVIRONMENTAL–SW ORIGINAL SCALE: A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW05, REV: 4



PLAN

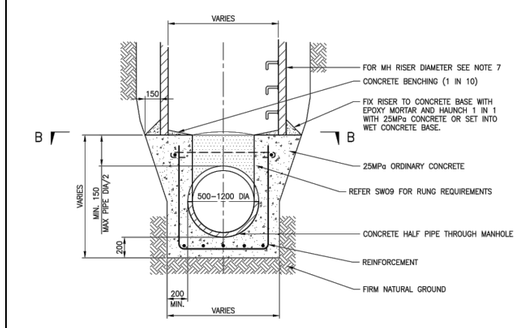


SECTION AA

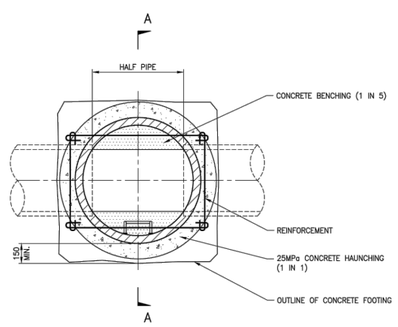
NOTES:

1. NON-ACCESS CHAMBER, SUITABLE FOR OUTLET INVERT DEPTH OF LESS THAN 1000mm.
2. MAXIMUM OUTLET PIPE DIAMETER SHALL BE 225mm.
3. MAXIMUM NUMBER OF CONNECTIONS SHALL BE TWO 100mm DIA INLET CONNECTIONS PER NON-ACCESS CHAMBER.
4. ADDITIONAL CONNECTIONS REQUIRE MANHOLE.
5. BENCHING ABOVE INVERT OF OUTLET PIPE WITHIN NON-ACCESS CHAMBERS IS NOT MANDATORY.
6. REFER SWCoP SECTION 4.3.10.10 FOR MANHOLE SAFETY GRILLE REQUIREMENTS AND DETAILS.

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW06_V4.0.DWG	AUCKLAND COUNCIL STORMWATER MANHOLES – NON-ACCESS CHAMBER TYPICAL DETAIL (OUTLET INVERT DEPTH LESS THAN 1000mm)	ENVIRONMENTAL–SW ORIGINAL SCALE: A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW06, REV: 4



SECTION AA

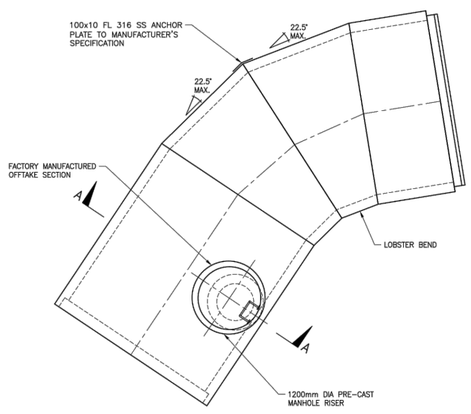


SECTION BB – PLAN

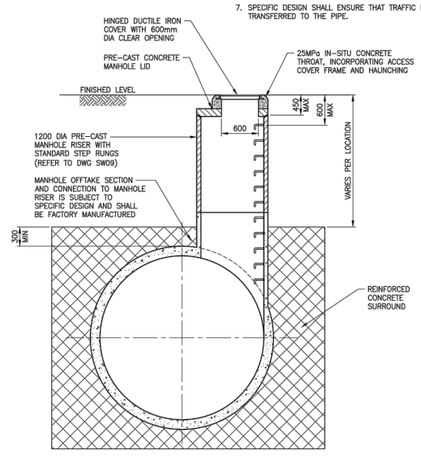
NOTES:

1. SPECIFIC DESIGN IS REQUIRED.
2. AUCKLAND COUNCIL APPROVAL REQUIRED FOR CAST IN-SITU MANHOLE BASES WHERE OUTLET PIPE DIAMETER IS LESS THAN 500mm
3. FOR PIPE DIAMETERS GREATER THAN 1200mm A FACTORY PRODUCED OFFTAKE MANHOLE WITH LOBSTER BACK BEND MAY BE AN ACCEPTABLE SOLUTION SUBJECT TO SPECIFIC DESIGN TO AUCKLAND COUNCIL APPROVAL.
4. FOR MANHOLE RISER DIAMETERS, SIZING SHALL BE IN ACCORDANCE WITH TABLE 1 OF DRAWING SW05 BASED ON DEFLECTION ANGLES.
5. REFER TO DRAWING SW09 IF 'RECESSED RUNGS' ARE REQUIRED IN THE CONCRETE BASE.
6. REINFORCEMENT IS SHOWN AS GENERAL ARRANGEMENT ONLY AND SHALL BE SPECIFICALLY DESIGNED FOR EACH APPLICATION.
7. MANHOLE RISER DIAMETER IS TO ALLOW FOR A MINIMUM CURVE RADIUS BETWEEN THE INLET AND OUTLET PIPES OF THREE TIMES THE INTERNAL DIAMETER OF THE OUTLET PIPE. (REFER SW05)

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW07.DWG	AUCKLAND COUNCIL STORMWATER MANHOLE WITH IN-SITU CONCRETE BASE – SUBJECT TO SPECIFIC DESIGN SUITABLE FOR MANHOLES UP TO 5m DEEP	ENVIRONMENTAL–SW ORIGINAL SCALE: A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW07, REV: 3



PLAN



SECTION AA

NOTES:

1. THIS DETAIL IS ONLY CONCEPTUAL. FINAL APPROVAL OF MANHOLE IS SUBJECT TO SPECIFIC DESIGN.
2. DETAILS SHOWN ON THIS PLAN ARE SUITABLE WHERE THE DIAMETER OF THE OUTLET PIPE IS 1200mm OR GREATER.
3. LOBSTER BENDS AND LOBSTER BEND UNITS INCORPORATING THE CONNECTION TO THE RISER MUST BE SPECIFICALLY DESIGNED AND FACTORY MANUFACTURED.
4. ALL LOBSTER BENDS AND PIPEWORK CONNECTIONS TO LOBSTER BENDS REQUIRE SPECIFIC DESIGN AND APPROVAL.
5. NO LOBSTER BENDS SHALL BE CONSTRUCTED ON SITE.
6. CONSIDERATION OF NECESSITY OF THRUST BLOCKS SHALL FORM PART OF THE SPECIFIC DESIGN ON LOBSTER BENDS.
7. SPECIFIC DESIGN SHALL ENSURE THAT TRAFFIC LOADING IS NOT TRANSFERRED TO THE PIPE.

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 2 REV DATE: 1 NOVEMBER 2015 CAD FILENAME: AC-STD-SW08.DWG	AUCKLAND COUNCIL STORMWATER MANHOLE OFFTAKE – SUBJECT TO SPECIFIC DESIGN FOR PIPES 1200mm DIAMETER OR GREATER	ENVIRONMENTAL–SW ORIGINAL SCALE: A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW08, REV: 2

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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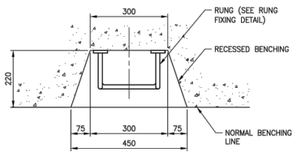
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
STORMWATER STANDARD DETAILS SHEET 2

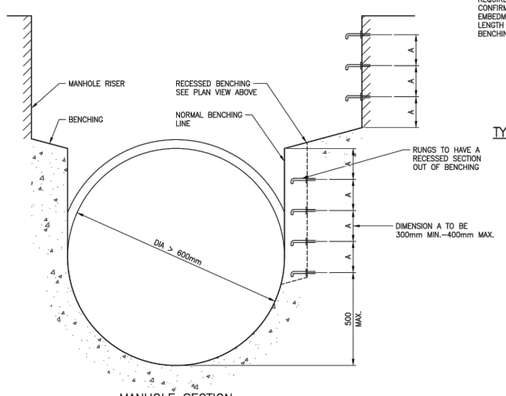
Project no.	147007
Scale	N.T.S
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG
Drawing no.	C802-1 Rev A

NOTES:

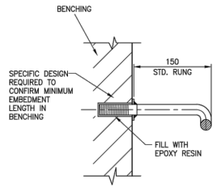
1. RECESSED RUNGS SHALL BE USED FOR PIPE DIAMETERS > 600mm.
2. RECESSED RUNGS SHALL BE LOCATED ON INSIDE CURVE OF BENCHING AND SHALL ALIGN WITH MANHOLE ACCESS RUNGS.
3. ALL STEELWORK SHALL BE 'HOT DIPPED GALVANISED' AFTER FABRICATION HAS BEEN COMPLETED, WITH A MINIMUM AVERAGE COATING WEIGHT OF ZINC=610g/sqm TO AS/NZS 4680-2006.
4. STEEL PARTS WITH THREADS THAT ARE CENTRIFUGED AFTER THE GALVANISATION TO MAINTAIN THE THREADING SHALL HAVE A MINIMUM AVERAGE COATING MASS FOR THOSE PARTS IS 390g/m².
5. BELOW RL 4.00m OR IN SEVERE EXPOSURE CONDITIONS, PE COATED HOT DIPPED GALVANISED STEEL OR PE COATED 316 STAINLESS STEEL RUNGS SHALL BE USED.
6. STAINLESS STEEL RUNGS MAY BE 16mm DIA SUBJECT TO AUCKLAND COUNCIL APPROVAL.
7. OTHER RUNG SYSTEMS MAY BE UTILISED SUBJECT TO AUCKLAND COUNCIL APPROVAL.
8. ALL MATERIALS TO BE USED AND INSTALLED AS PER MANUFACTURERS SPECIFICATIONS.



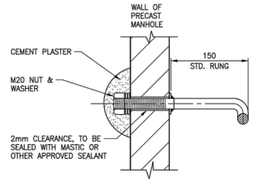
PLAN – RECESSED RUNG DETAIL



MANHOLE SECTION RECESSED RUNGS

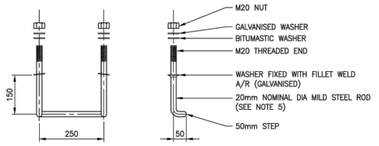


TYPICAL SECTION RUNG CONNECTION BY EPOXY RESIN
(FOR RECESSED STEPS AND RETRO ONLY)



TYPICAL SECTION RUNG CONNECTION BY NUT

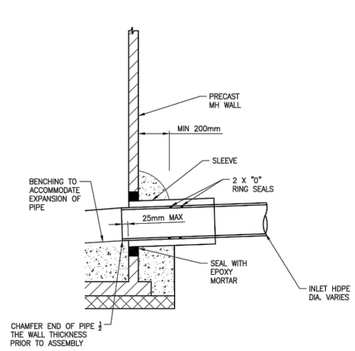
RUNG CONNECTIONS



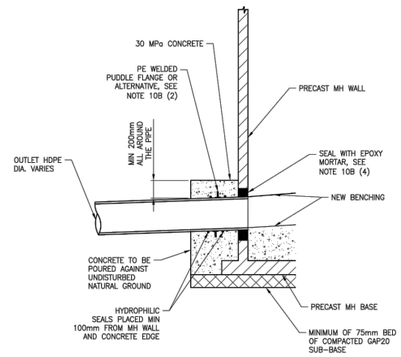
PLAN SIDE ELEVATION

TYPICAL RUNG ASSEMBLY

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW09.DWG	AUCKLAND COUNCIL STORMWATER MANHOLE ACCESS RECESSED RUNGS AND GENERAL ACCESS RUNGS DETAILS	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SHEET SWCoP 1 OF 1 DRAWING No. REV SW09 3



HDPE SLIDING JOINT (DOWNSTREAM)



RESTRAINED JOINT (UPSTREAM)

10A: SLIDING JOINT NOTES

1. THE SLIDING SLEEVE IS TO BE MADE OF PVC, FRP OR VITRIFIED CLAY AND THE EXTERIOR SURFACE OF THE SLEEVE SHALL BE PRE-TREATED TO ALLOW CONCRETE TO BOND.
2. THE PE PIPE SHALL BE ALLOWED TO COOL DOWN FOR A PERIOD OF 24HRS PRIOR TO INSTALLATION OF THE SLIDING JOINT.
3. SPECIFIC DESIGN AND APPROVAL IS REQUIRED FOR PE PIPES GREATER THAN DN450.

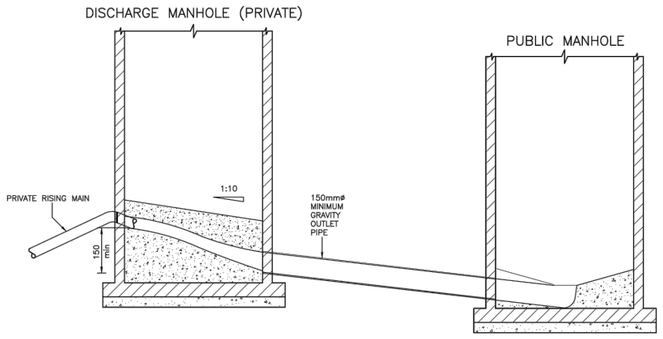
10B: RESTRAINED JOINT NOTES

1. THE CONCRETE CAST AROUND THE PUDDLE FLANGE SHALL BE AT LEAST 150mm BETWEEN THE OUTSIDE FACE OF THE PUDDLE FLANGE AND THE OUTSIDE OF THE CONCRETE BLOCK.
2. AN ELECTROFUSION COUPLER OR PE FLEX RESTRAINT FITTING (GEORGE FISCHER OR SIMILAR APPROVED) CAN BE USED INSTEAD OF THE PUDDLE FLANGE PROVIDED THAT THE 150mm MIN DISTANCE BETWEEN THE OUTSIDE END OF COUPLER/RESTRAINT FITTING AND THE OUTSIDE FACE OF CONCRETE IS MAINTAINED.
3. SPECIFIC DESIGN AND APPROVAL FOR PE PIPES GREATER THAN DN450.
4. THE GAP BETWEEN MH WALL AND PIPE SHALL BE A MIN. OF 30mm TO ALLOW FOR EPOXY MORTAR TO FILL THE VOID.

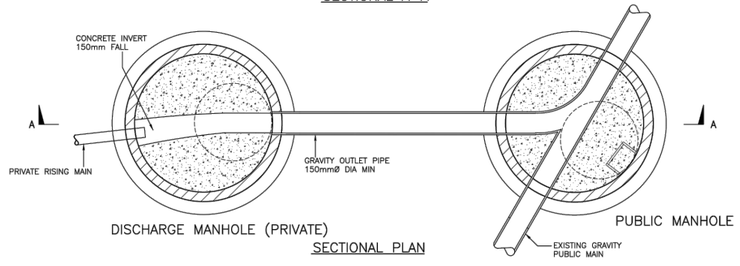
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW10 V4.1.DWG	AUCKLAND COUNCIL STORMWATER MANHOLE–PE PIPE JOINT (FOR PE PIPES LESS THAN DN450)	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SHEET SWCoP 1 OF 1 DRAWING No. REV SW10 4

NOTES:

1. ALL CONCRETE TO BE 25MPa.
2. A SINGLE PRIVATE CONNECTION TO A PUBLIC MAIN CAN BE MADE VIA A PRIVATE NON ACCESS CHAMBER WITH A 150mm MIN. GRAVITY PIPE FEED TO THE PUBLIC MAIN OR MANHOLE.
3. MANHOLE COVER AND STEP IRON LOCATION TO BE DETERMINED IN ACCORDANCE WITH SW05.
4. DISCHARGE MANHOLE SHALL ALWAYS REMAIN IN PRIVATE OWNERSHIP.
5. OWNERSHIP OF PIPELINE DOWNSTREAM OF DISCHARGE MANHOLE TO BE DETERMINED IN ACCORDANCE WITH SECTION 4.3.11 OF THE SWCoP.



SECTIONAL A–A

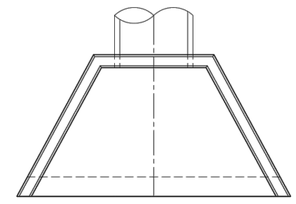


SECTIONAL PLAN

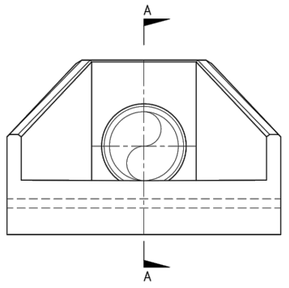
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW11.DWG	AUCKLAND COUNCIL RISING MAIN CONNECTION PRIVATE	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SHEET SWCoP 1 OF 1 DRAWING No. REV SW11 3

NOTES:

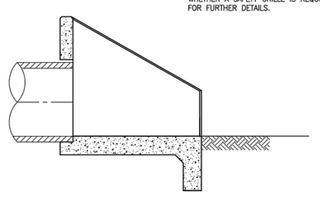
1. THIS DRAWING IS INTENDED TO PROVIDE AN OVERVIEW OF A TYPICAL CONFIGURATION FOR INLET/OUTLET STRUCTURES. WHERE STANDARD PRE-CAST PRODUCTS ARE NOT SUITABLE, SPECIFIC DESIGN IS REQUIRED.
2. DESIGN OF PRE-CAST INLET/OUTLET STRUCTURES SHALL INCLUDE ASSESSMENT OF THE STRUCTURE LOCATION AND THE VISIBILITY OF THE STRUCTURE. IT MAY BE NECESSARY TO SPECIFICALLY DESIGN THE STRUCTURE AND USE BASALT ROCKS EMBEDDED IN CONCRETE OR APPROVED ALTERNATIVE IN HIGH VISIBILITY AREAS.
3. FOR OUTLET STRUCTURES, SPECIFIC DESIGN OF SCOUR PREVENTION AND ENERGY DISSIPATION WILL BE REQUIRED IN ACCORDANCE WITH AUCKLAND COUNCIL TECHNICAL REPORT TR2013/018. ENERGY DISSIPATORS MAY INCLUDE BAFFLES, ROCK RIP-RAP OR RENO MATTRESSES (OR GABIONS).
4. FOR INLET STRUCTURES, SPECIFIC DESIGN OF SCOUR PREVENTION MEASURES SHALL BE REQUIRED IN ACCORDANCE WITH AUCKLAND COUNCIL TECHNICAL REPORT TR2013/018.
5. ALL CONCRETE SHALL BE ORDINARY GRADE 40MPa.
6. THERE SHALL BE AT LEAST TWO BARS OF REINFORCING (WHETHER MESH OR MILD STEEL BARS), OVER THE TOP OF THE PIPE.
7. ALL REINFORCING BARS SHALL BE "GRADE 500E" AND MESH SHALL BE "GRADE 500L".
8. THE ENGINEER SHALL ENSURE THE STRUCTURE IS PLACED ON ADEQUATE FOUNDATION MATERIAL.
9. FENCING AROUND INLET/OUTLET STRUCTURES IS REQUIRED UNLESS IT CAN BE DEMONSTRATED THAT HUMAN ACCESS TO THE INLET/OUTLET STRUCTURE IS UNLIKELY AND/OR THE HEIGHT OF THE STRUCTURE IS LESS THAN 1.0m. FENCING SHALL BE IN ACCORDANCE WITH DRAWING SW20.
10. INLETS TO THE STORMWATER NETWORK SHALL BE FITTED WITH A SAFETY GRILLE. THE GRILLE SHALL BE SPECIFICALLY DESIGNED AND REQUIRES AUCKLAND COUNCIL APPROVAL. FOR CULVERT INLETS, A RISK ASSESSMENT SHOULD BE COMPLETED TO DECIDE WHETHER A SAFETY GRILLE IS REQUIRED. SEE SECTION 4.3.9.9 FOR FURTHER DETAILS.



PLAN



FRONT ELEVATION



SECTION AA

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW19.DWG	AUCKLAND COUNCIL STORMWATER INLET/OUTLET STRUCTURES TYPICAL CONFIGURATION	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SHEET SWCoP 1 OF 1 DRAWING No. REV SW19 3

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

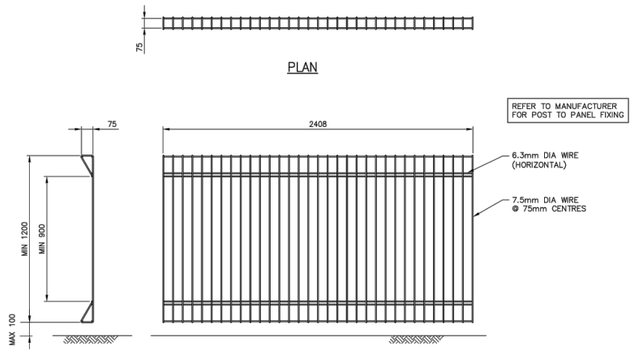
Title
STORMWATER STANDARD DETAILS SHEET 3

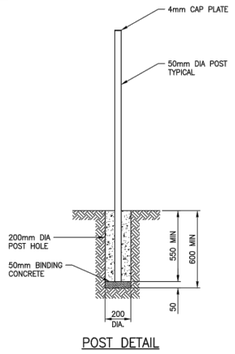
Project no.	147007
Scale	N.T.S
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG
Drawing no.	C802-2 Rev A

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\MA\CAD\ STORMWATER STD DETAILS.DWG

NOTES:

1. FENCE PANELS SHALL BE HOT DIPPED GALVANISED AND POWDER COATED BLACK.
2. FENCE PANELS SHALL NOT HAVE MORE THAN 100mm GAP FROM GROUND LEVEL TO INSTALLED PANEL.
3. POSTS SHALL BE 50mm DIA HOT DIPPED GALVANISED PIPE AND POWDER COATED BLACK.
4. POSTS SHALL BE INSTALLED VERTICAL.

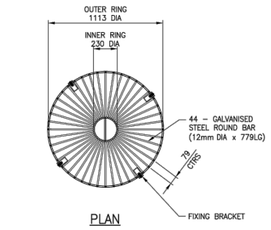


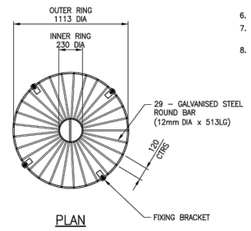


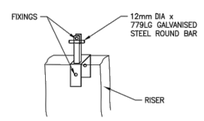
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW20.DWG	AUCKLAND COUNCIL STORMWATER INLET/OUTLET STRUCTURES STANDARD SAFETY FENCE DETAIL	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP — SHEET: 1 OF 1 DRAWING No.: SW20 — REV: 3

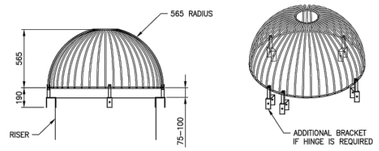
NOTES:

1. THE SCRUFFY DOME GRILLE PROVIDES A DEBRIS SCREEN. TYPICAL LOCATIONS FOR SCRUFFY DOMES INCLUDE PARKS, WETLANDS AND OVERLAND FLOW PATHS.
2. LOCKABLE HINGED VERSIONS ARE AVAILABLE AND MAY BE SPECIFIED WHERE NEEDED.
3. A MINIMUM OF 450mm SUMP DEPTH SHALL BE PROVIDED IN THE MANHOLE.
4. THERE SHALL BE NO SCRUFFY DOME GRILLES IN FOOTPATHS, DRIVEWAYS OR ROADWAYS.
5. SCRUFFY DOME BRACKETS SHALL BE BOLTED TO THE RISER WITH GALVANISED STEEL BOLTS (CLEAR OF RISER REINFORCING).
6. PAINTING MAY BE REQUIRED IN CERTAIN LOCATIONS.
7. FOR SCRUFFY DOMES ON RISERS GREATER THAN 1050mm DIA, SPECIFIC DESIGN IS REQUIRED.
8. SCRUFFY DOMES IN PONDS AND WETLANDS MUST BE HINGED AND LOCKABLE. OUTLET RISER MUST BE LOCATED SUCH AS TO FACILITATE EASY AND SAFE ACCESS FOR CLEARING AND MAINTENANCE DURING STORM EVENTS.

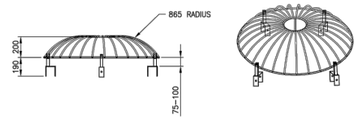








TYPE 1

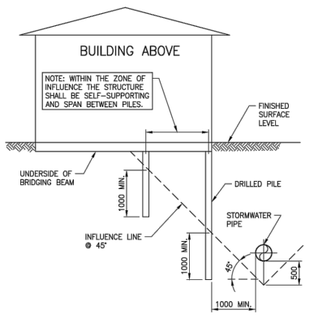


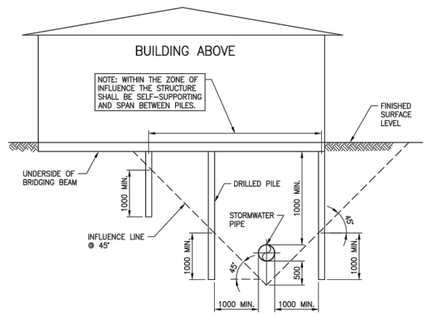
TYPE 2

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW21.DWG	AUCKLAND COUNCIL DEBRIS CONTROL SCREEN FOR 1050 DIA RISER SCRUFFY DOME TYPICAL DETAIL	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP — SHEET: 1 OF 1 DRAWING No.: SW21 — REV: 3

GENERAL NOTES:

1. THE INFORMATION ON THIS PAGE IS INTENDED TO SHOW EXAMPLES OF TYPICAL SCENARIOS AND SHALL BE USED FOR GENERAL GUIDANCE PURPOSES ONLY. SIGNIFICANT VARIATIONS ON A SITE-BY-SITE BASIS ARE TO BE EXPECTED AND IT IS IN NO WAY IMPLIED THAT MEETING ANY OF THESE REQUIREMENTS WILL GUARANTEE APPROVAL.
2. WHERE CONSTRUCTION WORKS ARE PROPOSED IN THE VICINITY OF EXISTING PUBLIC STORMWATER ASSETS, ANY NECESSARY MEASURES TO PROTECT SUCH ASSETS SHALL BE IMPLEMENTED, IN ACCORDANCE WITH SECTION 4.3.23 OF THE SWCoP.
3. REQUIREMENTS FOR FOUNDATION DESIGN, ETC. APPLY TO BOTH SIDES OF THE PIPE.
4. NO DRIVEN PILES ARE PERMITTED WITHIN 10m OF BRICK STORMWATER STRUCTURES, OR WITHIN 5m OF ALL OTHER STORMWATER STRUCTURES.
5. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL FOR DRIVEN PILES IN PARTIALLY DRILLED HOLES, WITHIN THE 5m–10m ZONE.
6. PILES THAT MAY BE REQUIRED TO RESIST HORIZONTAL FORCES WILL REQUIRE SPECIFIC DESIGN.
7. PILE/FOOTING LOCATION POINT MUST BE BELOW 45° "ZONE OF INFLUENCE".
8. ALL MANHOLES SHALL HAVE 24 HOURS UNOBSTRUCTED ACCESS.
9. MANHOLES IN BASEMENTS, OR IN LOCATIONS WHERE SUFFICIENT CLEARANCE IS UNAVAILABLE, ARE NOT PERMITTED.
10. ALL PIPE 'WORK OVER' WILL REQUIRE SPECIFIC APPROVAL BY AUCKLAND COUNCIL.
11. REFER TO SECTION 4.3.23 OF THE SWCOP FOR PIPE 'WORK OVER' REQUIREMENTS.
12. FOR MANHOLES GREATER THAN 4m DEEP OR LARGER THAN 1200mm DIA. SPECIFIC DESIGN (INCLUDING CLEARANCE REQUIREMENTS) IS REQUIRED.
13. SPECIFIC APPROVAL FROM COUNCIL IS REQUIRED FOR WORKS WITHIN 10 METERS OF A RISING MAIN.
14. WORKS OVER RISING MAIN IS NOT ALLOWED.



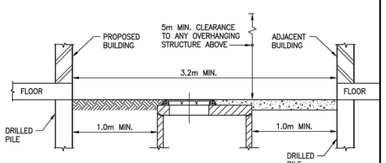


'WORKS CLOSE' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL IF WORKS ARE ADJACENT TO PIPES LARGER THAN 375mm INTERNAL DIAMETER, OR GREATER THAN 2.0m DEEP.
3. BUILDING SHALL BE OUTSIDE ALL OVERLAND FLOW PATHS AND FLOODPLAINS. SEE SECTION 4.3.5.6 AND 4.3.5.7 OF THE SWCoP FOR FURTHER DETAILS.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.

'WORKS OVER' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. THE DETAIL APPLIES TO STORMWATER PIPES ≤ 375mm NOMINAL DIAMETER AND ≤ 2.0m DEPTH TO INVERT.
3. WORKS OVER PIPES LARGER THAN 375mm NOMINAL DIAMETER IS NOT ALLOWED.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.
5. BRIDGING IS NOT ALLOWED OVER PIPES WHERE CLEAR VERTICAL SEPARATION DISTANCE FROM TOP OF PIPE TO UNDERSIDE OF BRIDGING BEAM IS LESS THAN 1.0m.

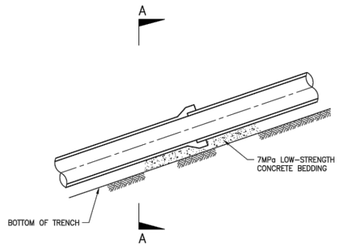


MANHOLE CONSTRUCTION CLEARANCE

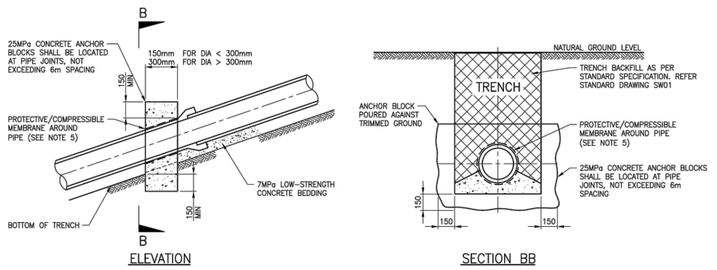
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW22.DWG	AUCKLAND COUNCIL STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS MANHOLES NEAR WORKS AND WORKS CLOSE TO, OR OVER, PIPES	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP — SHEET: 1 OF 1 DRAWING No.: SW22 — REV: 3

NOTES:

1. USE LOW-STRENGTH CONCRETE (7MPa) BEDDING FOR PIPES ON GRADIENTS BETWEEN 10% AND 20%.
2. USE ANCHOR BLOCKS FOR PIPES ON GRADIENTS STEEPER THAN 20% (1 IN 5).
3. SPECIFIC DESIGN AND SPACING MAY BE NEEDED FOR PIPES ON GRADIENTS >30% OR WHERE GROUNDWATER IS CONSIDERED SIGNIFICANT.
4. ANCHOR BLOCK TO BE CONSTRUCTED ON LOWER SIDE OF JOINT.
5. PIPE SHALL BE WRAPPED FOR LENGTH OF THE ANCHOR BLOCK AT THE CONCRETE INTERFACE. WRAPPING SHALL BE COMPRESSIBLE MATERIAL, (e.g. DENSO TAPE OR POLYETHYLENE FILM).
6. WHERE PIPES ARE EMBEDDED IN LOW-STRENGTH CONCRETE, A TRANSVERSE EXPANSION JOINT SHALL BE PROVIDED AT EACH JOINT.
7. FOR FLEXIBLE PIPELINES, UP TO 300mm DIA, ON GRADIENTS OF 10% AND GREATER, REQUIRED BENCHING DEPTHS WITHIN THE DOWNSTREAM MANHOLE CAN BE REDUCED, BY THE REDUCTION OF THE GRADIENT IMMEDIATELY OUTSIDE THE MANHOLE. THIS MAY BE ACHIEVED BY INSTALLING A MANUFACTURED, PRE-FORMED BEND WITH VERTICAL RADIUS MIN. 8x INSIDE PIPE DIAMETER.



BEDDING FOR PIPES ON GRADIENTS BETWEEN 10% AND 20%



ANCHOR BLOCKS FOR PIPES ON GRADIENT > 20%

STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW23_V4.0.DWG	AUCKLAND COUNCIL STORMWATER LINES STEEP GRADIENTS, WATERSTOPS AND ANCHOR BLOCKS	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP — SHEET: 1 OF 1 DRAWING No.: SW23 — REV: 4

RESOURCE CONSENT

NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

STORMWATER STANDARD DETAILS SHEET 4

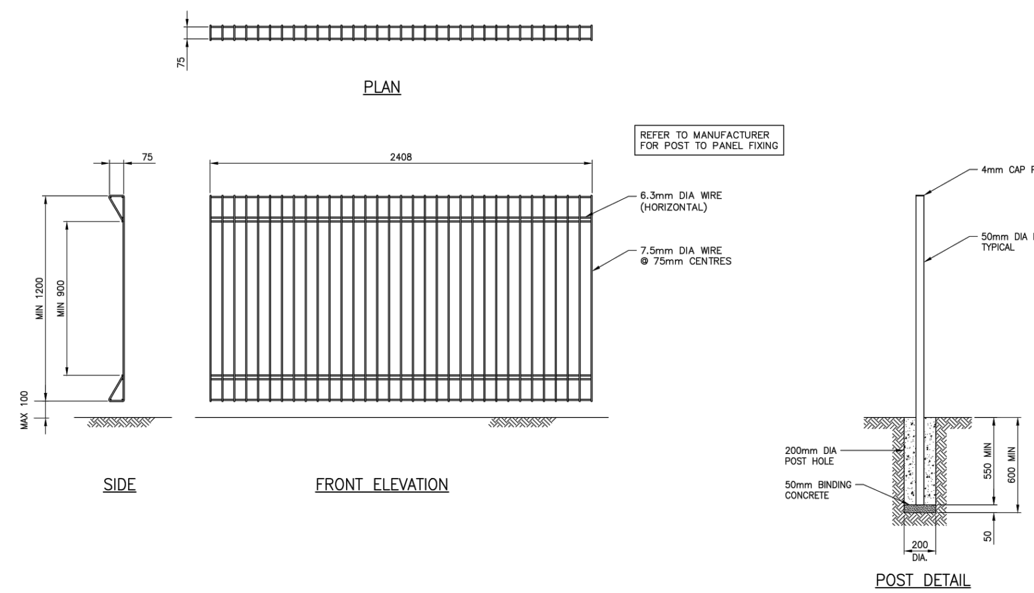
Project no.	147007		
Scale	N.T.S		
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG		
Drawing no.	C802-3	Rev	A

DATE: 3/2/25 FILE PATH: P:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007A CAD\ STORMWATER STD DETAILS.DWG

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C802 STORMWATER STD DETAILS.DWG

NOTES

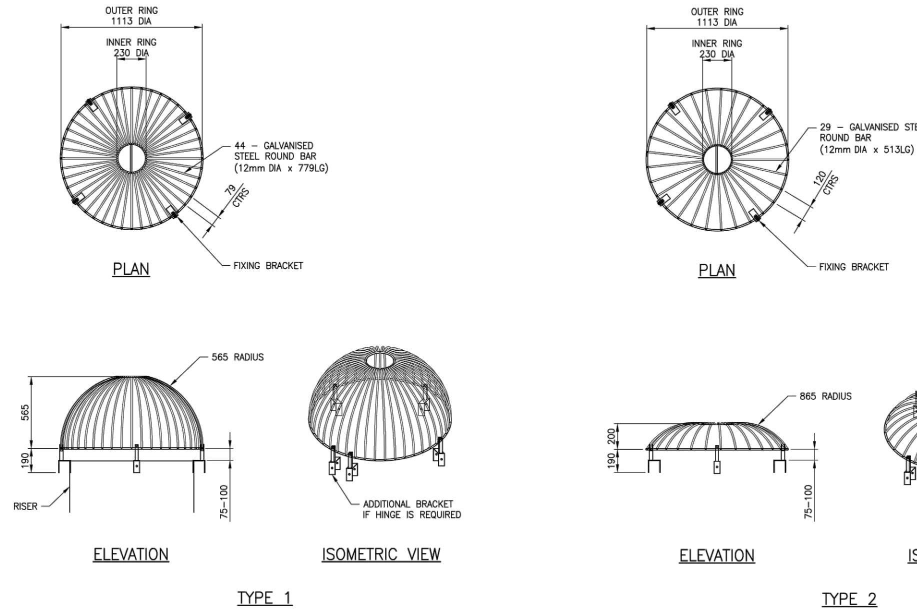
1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

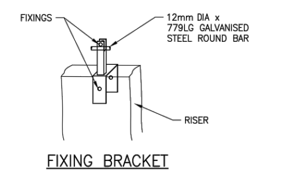


NOTES:

1. FENCE PANELS SHALL BE HOT DIPPED GALVANISED AND POWDER COATED BLACK.
2. FENCE PANELS SHALL NOT HAVE MORE THAN 100mm GAP FROM GROUND LEVEL TO INSTALLED PANEL.
3. POSTS SHALL BE 50mm DIA HOT DIPPED GALVANISED PIPE AND POWDER COATED BLACK.
4. POSTS SHALL BE INSTALLED VERTICAL.

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL–SW	ORIGINAL SCALE A3 SCALE: N.T.S.	
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC–STD–SW20.DWG	STORMWATER INLET/OUTLET STRUCTURES STANDARD SAFETY FENCE DETAIL	Auckland Council	DRAWING SET SWCoP	SHEET 1 OF 1
			DRAWING No. SW20	REV 3

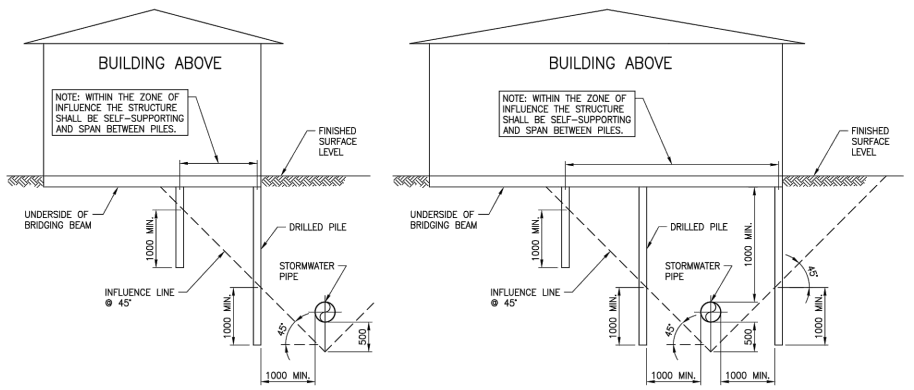




NOTES:

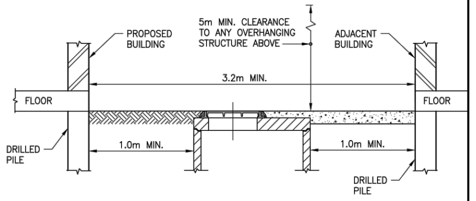
1. THE SCRUFFY DOME GRILLE PROVIDES A DEBRIS SCREEN. TYPICAL LOCATIONS FOR SCRUFFY DOMES INCLUDE PARKS, WETLANDS AND OVERLAND FLOW PATHS.
2. LOCKABLE HINGED VERSIONS ARE AVAILABLE AND MAY BE SPECIFIED WHERE NEEDED.
3. A MINIMUM OF 450mm SUMP DEPTH SHALL BE PROVIDED IN THE MANHOLE.
4. THERE SHALL BE NO SCRUFFY DOME GRILLES IN FOOTPATHS, DRIVEWAYS OR ROADWAYS.
5. SCRUFFY DOME BRACKETS SHALL BE BOLTED TO THE RISER WITH GALVANISED STEEL BOLTS (CLEAR OF RISER REINFORCING).
6. PAINTING MAY BE REQUIRED IN CERTAIN LOCATIONS.
7. FOR SCRUFFY DOMES ON RISERS GREATER THAN 1050mm DIA, SPECIFIC DESIGN IS REQUIRED.
8. SCRUFFY DOMES IN PONDS AND WETLANDS MUST BE HINGED AND LOCKABLE. OUTLET RISER MUST BE LOCATED SUCH AS TO FACILITATE EASY AND SAFE ACCESS FOR CLEARING AND MAINTENANCE DURING STORM EVENTS.

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL–SW	ORIGINAL SCALE A3 SCALE: N.T.S.	
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC–STD–SW21.DWG	DEBRIS CONTROL SCREEN FOR 1050 DIA RISER SCRUFFY DOME TYPICAL DETAIL	Auckland Council	DRAWING SET SWCoP	SHEET 1 OF 1
			DRAWING No. SW21	REV 3



BUILD CLOSE

BUILD OVER



MANHOLE CONSTRUCTION CLEARANCE

GENERAL NOTES:

1. THE INFORMATION ON THIS PAGE IS INTENDED TO SHOW EXAMPLES OF TYPICAL SCENARIOS AND SHALL BE USED FOR GENERAL GUIDANCE PURPOSES ONLY. SIGNIFICANT VARIATIONS ON A SITE–BY–SITE BASIS ARE TO BE EXPECTED AND IT IS IN NO WAY IMPLIED THAT MEETING ANY OF THESE REQUIREMENTS WILL GUARANTEE APPROVAL.
2. WHERE CONSTRUCTION WORKS ARE PROPOSED IN THE VICINITY OF EXISTING PUBLIC STORMWATER ASSETS, ANY NECESSARY MEASURES TO PROTECT SUCH ASSETS SHALL BE IMPLEMENTED, IN ACCORDANCE WITH SECTION 4.3.23 OF THE SWCoP.
3. REQUIREMENTS FOR FOUNDATION DESIGN, ETC. APPLY TO BOTH SIDES OF THE PIPE.
4. NO DRIVEN PILES ARE PERMITTED WITHIN 10m OF BRICK STORMWATER STRUCTURES, OR WITHIN 5m OF ALL OTHER STORMWATER STRUCTURES.
5. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL FOR DRIVEN PILES IN PARTIALLY DRILLED HOLES, WITHIN THE 5m–10m ZONE.
6. PILES THAT MAY BE REQUIRED TO RESIST HORIZONTAL FORCES WILL REQUIRE SPECIFIC DESIGN.
7. PILE/FOOTING LOCATION POINT MUST BE BELOW 45° "ZONE OF INFLUENCE".
8. ALL MANHOLES SHALL HAVE 24 HOURS UNOBSTRUCTED ACCESS.
9. MANHOLES IN BASEMENTS, OR IN LOCATIONS WHERE SUFFICIENT CLEARANCE IS UNAVAILABLE, ARE NOT PERMITTED.
10. ALL PIPE 'WORK OVER' WILL REQUIRE SPECIFIC APPROVAL BY AUCKLAND COUNCIL.
11. REFER TO SECTION 4.3.23 OF THE SWCOP FOR PIPE 'WORK OVER' REQUIREMENTS.
12. FOR MANHOLES GREATER THAN 4m DEEP OR LARGER THAN 1200mm DIA. SPECIFIC DESIGN (INCLUDING CLEARANCE REQUIREMENTS) IS REQUIRED.
13. SPECIFIC APPROVAL FROM COUNCIL IS REQUIRED FOR WORKS WITHIN 10 METERS OF A RISING MAIN.
14. WORKS OVER RISING MAIN IS NOT ALLOWED.

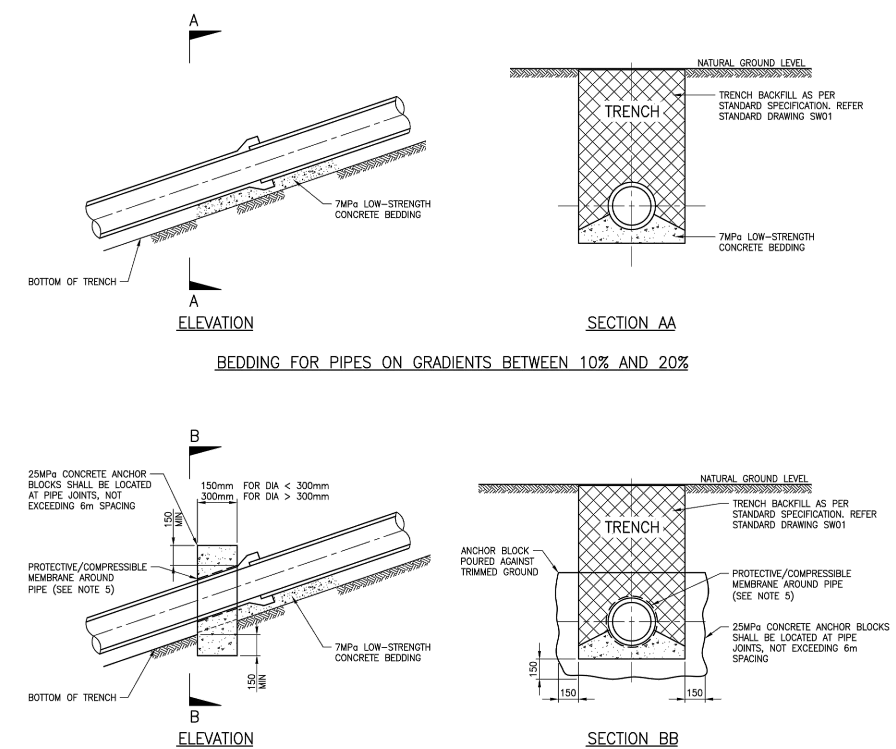
'WORKS CLOSE' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. SPECIFIC APPROVAL IS REQUIRED FROM AUCKLAND COUNCIL IF WORKS ARE ADJACENT TO PIPES LARGER THAN 375mm INTERNAL DIAMETER, OR GREATER THAN 2.0m DEEP.
3. BUILDING SHALL BE OUTSIDE ALL OVERLAND FLOW PATHS AND FLOODPLAINS. SEE SECTION 4.3.5.6 AND 4.3.5.7 OF THE SWCoP FOR FURTHER DETAILS.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.

'WORKS OVER' NOTES:

1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. THE DETAIL APPLIES TO STORMWATER PIPES ≤ 375mm NOMINAL DIAMETER AND ≤ 2.0m DEPTH TO INVERT.
3. WORKS OVER PIPES LARGER THAN 375mm NOMINAL DIAMETER IS NOT ALLOWED.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.
5. BRIDGING IS NOT ALLOWED OVER PIPES WHERE CLEAR VERTICAL SEPARATION DISTANCE FROM TOP OF PIPE TO UNDERSIDE OF BRIDGING BEAM IS LESS THAN 1.0m.

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL–SW	ORIGINAL SCALE A3 SCALE: N.T.S.	
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC–STD–SW22.DWG	STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS MANHOLES NEAR WORKS AND WORKS CLOSE TO, OR OVER, PIPES	Auckland Council	DRAWING SET SWCoP	SHEET 1 OF 1
			DRAWING No. SW22	REV 3



ANCHOR BLOCKS FOR PIPES ON GRADIENT > 20%

NOTES:

1. USE LOW–STRENGTH CONCRETE (7MPa) BEDDING FOR PIPES ON GRADIENTS BETWEEN 10% AND 20%.
2. USE ANCHOR BLOCKS FOR PIPES ON GRADIENTS STEEPER THAN 20% (1 IN 5).
3. SPECIFIC DESIGN AND SPACING MAY BE NEEDED FOR PIPES ON GRADIENTS >30% OR WHERE GROUNDWATER IS CONSIDERED SIGNIFICANT.
4. ANCHOR BLOCK TO BE CONSTRUCTED ON LOWER SIDE OF JOINT.
5. PIPE SHALL BE WRAPPED FOR LENGTH OF THE ANCHOR BLOCK AT THE CONCRETE INTERFACE. WRAPPING SHALL BE COMPRESSIBLE MATERIAL, (e.g. DENSO TAPE OR POLYETHYLENE FILM).
6. WHERE PIPES ARE EMBEDDED IN LOW–STRENGTH CONCRETE, A TRANSVERSE EXPANSION JOINT SHALL BE PROVIDED AT EACH JOINT.
7. FOR FLEXIBLE PIPELINES, UP TO 300mm DIA, ON GRADIENTS OF 10% AND GREATER, REQUIRED BENCHING DEPTHS WITHIN THE DOWNSTREAM MANHOLE CAN BE REDUCED, BY THE REDUCTION OF THE GRADIENT IMMEDIATELY OUTSIDE THE MANHOLE. THIS MAY BE ACHIEVED BY INSTALLING A MANUFACTURED, PRE–FORMED BEND WITH VERTICAL RADIUS MIN. 8x INSIDE PIPE DIAMETER.

STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL–SW	ORIGINAL SCALE A3 SCALE: N.T.S.	
REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC–STD–SW23_V4.0.DWG	STORMWATER LINES STEEP GRADIENTS, WATERSTOPS AND ANCHOR BLOCKS	Auckland Council	DRAWING SET SWCoP	SHEET 1 OF 1
			DRAWING No. SW23	REV 4

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
STORMWATER STANDARD DETAILS SHEET 5

Project no.	147007
Scale	N.T.S
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG
Drawing no.	C802-4 Rev A

RESOURCE CONSENT

Drawing set for Chapter 17 - Road Drainage

Gutter Flow as a function of road slope S

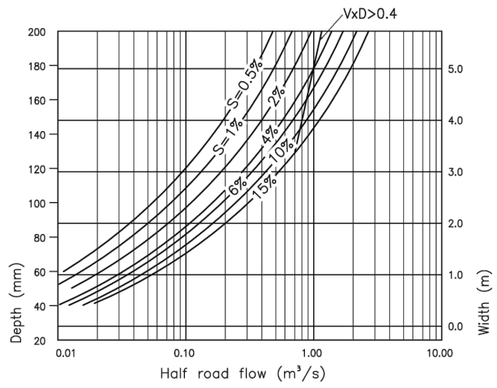


Chart 1: Kerb and Gutter Flow Using Izzard's Equation
Source: QUDM (1992)

Based on 3% road crossfall.
Barrier kerb type 1 (450mm),
n_p =0.015
ng=0.013

Charts have been sourced from the 'Queensland Urban Drainage Manual' and 'Max Q'.

REVISION	BY	DATE

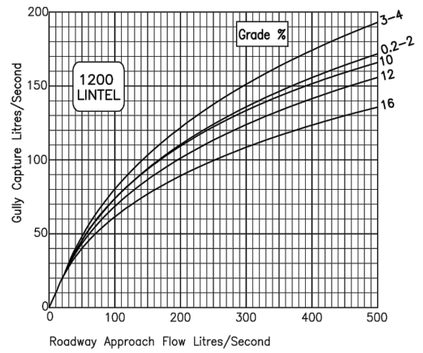
AUCKLAND TRANSPORT CODE OF PRACTICE

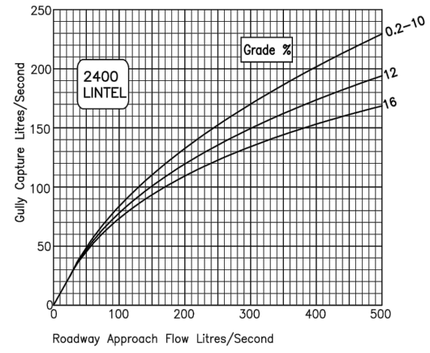
TITLE: STORMWATER INLET PITS DESIGN CHART 1

SCALE: N.T.S.
DRAWING No. RD001
VERSION

Drawing set for Chapter 17 - Road Drainage

TASMAN / MANNING GRATE *
BARRIER KERB - 3% CROSSFALL





INLETS ON GRADE

* Tasman Grate to be used. Graph taken from Manning's Grate test results. Tasman Grate performance very similar.

Charts have been sourced from the 'Queensland Urban Drainage Manual' and 'Max Q'.

REVISION	BY	DATE

AUCKLAND TRANSPORT CODE OF PRACTICE

TITLE: STORMWATER INLET PITS DESIGN CHART 2 INLET CAPTURE

SCALE: N.T.S.
DRAWING No. RD002
VERSION

RESOURCE CONSENT

NOTES
1. ALL WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STANDARDS.

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	MA	02/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
STORMWATER STANDARD DETAILS SHEET 6

Project no.	147007
Scale	N.T.S
Cad file	147007-M-C802 STORMWATER STD DETAILS.DWG
Drawing no.	C802-5 Rev A

DATE: 3/27/25 FILE PATH: F:\MAVEN\PROJECTS\147007 RIVERHEAD FOREST\DWG\147007-M-C802 STORMWATER STD DETAILS.DWG