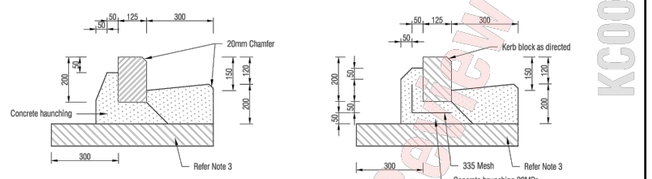
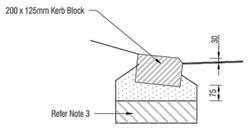
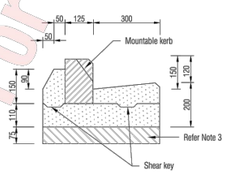


TYPE 1 STANDARD KERB AND CHANNEL

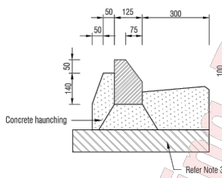
TYPE 1A KERB WITH REINFORCED HAUNCHING DETAIL



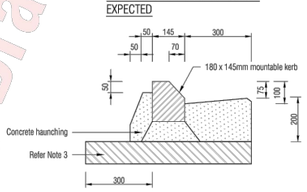
TYPE 1C ON SIDE VEHICLE CROSSING



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.

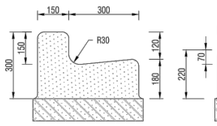
Transport Design Manual | Standard Engineering Details

KC0001

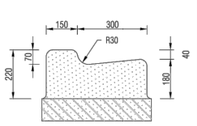
Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Kerb and channel - Type 1 - 2

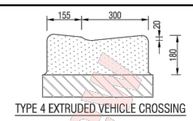
Date: Document in Review
SED No. KC0001 | Version A



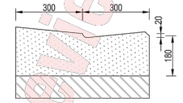
TYPE 3 EXTRUDED STANDARD KERB AND CHANNEL



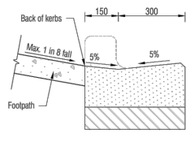
TYPE 3 EXTRUDED STANDARD KERB AND CHANNEL (OPTIONAL)



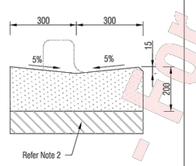
TYPE 4 EXTRUDED VEHICLE CROSSING



TYPE 4 IN-SITU VEHICLE CROSSING



TYPE 5 EXTRUDED PRAM CROSSING



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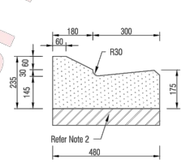
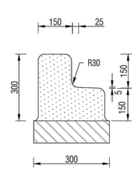
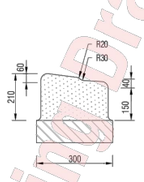


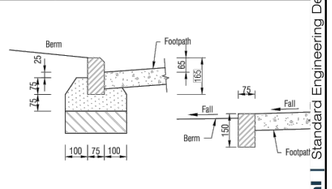
TYPE 6 EXTRUDED MOUNTABLE KERB AND CHANNEL



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

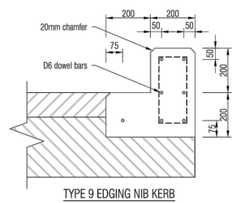
Transport Design Manual | Standard Engineering Details

KC0002

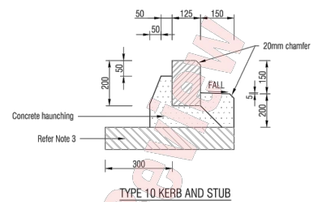
Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Kerb and channel - Type 3 - 8

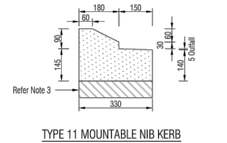
Date: Document in Review
SED No. KC0002 | Version A



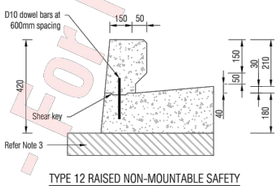
TYPE 9 EDGING NIB KERB



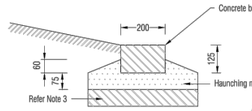
TYPE 10 KERB AND STUB



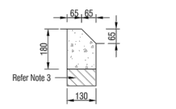
TYPE 11 MOUNTABLE NIB KERB



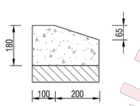
TYPE 12 RAISED NON-MOUNTABLE SAFETY KERB AND CHANNEL NIB



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 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Kerb and channel - Type 9 - 15

Date: Document in Review
SED No. KC0003 | Version A

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

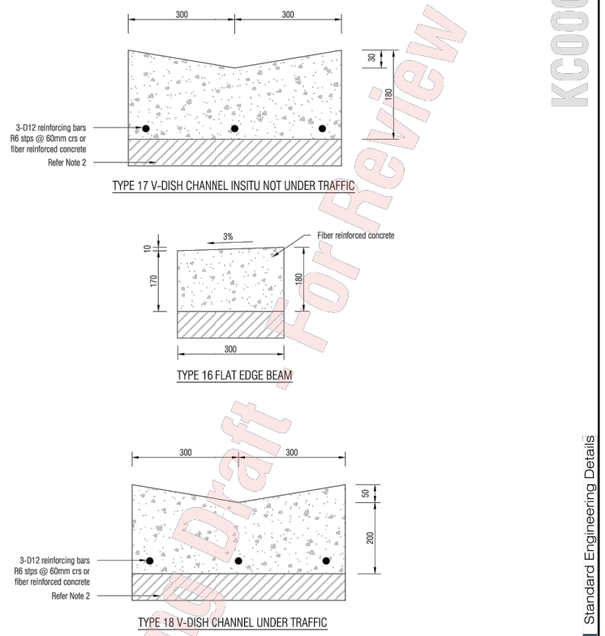
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C800 RD STD DETAILS.DWG
Drawing no.	C800 Rev A

RESOURCE CONSENT

Working Draft - For Review

DATE 4/25 FILE PATH F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD 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.

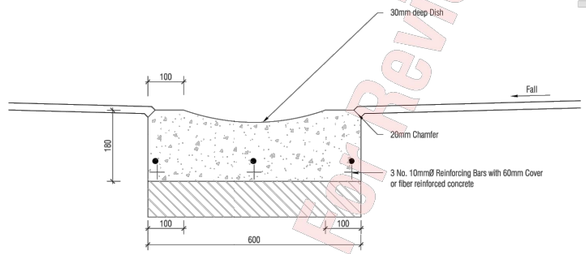
Transport Design Manual | Standard Engineering Details

KC0004

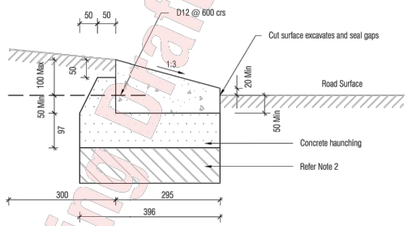
Review 1
DATE: February 14, 2020

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.

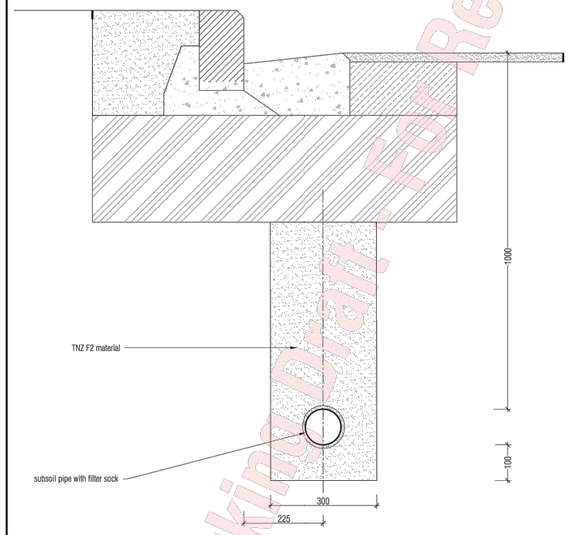
Transport Design Manual | Standard Engineering Details

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 sdfilt 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	SP	03/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

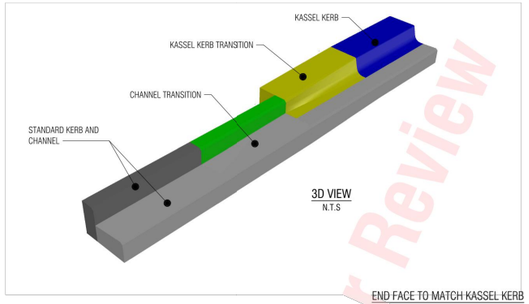
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-1	Rev	A

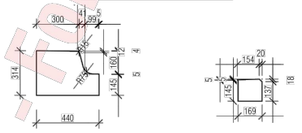
RESOURCE CONSENT

DATE 4/2/25 FILEPATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

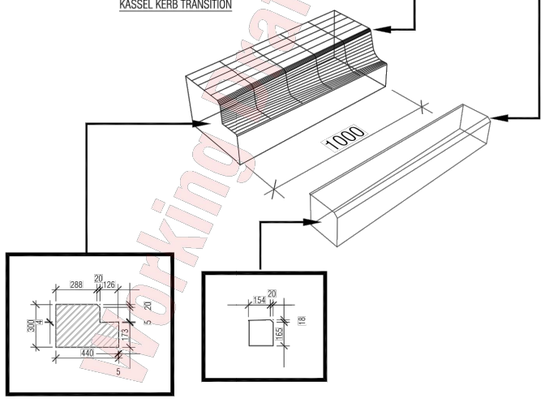
Working Draft - For Review



END FACE TO MATCH KASSEL KERB



KASSEL KERB TRANSITION

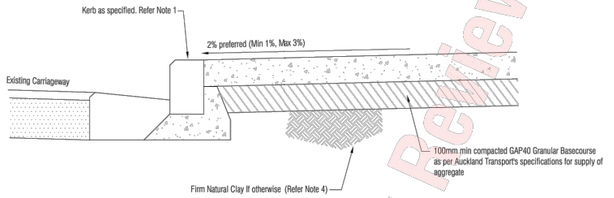


END FACE TO MATCH CHANNEL TRANSITION

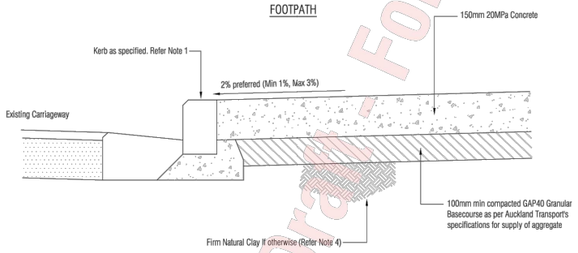
KC0030

Transport Design Manual | Standard Engineering Details

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



FOOTPATH



HEAVY DUTY FOOTPATH

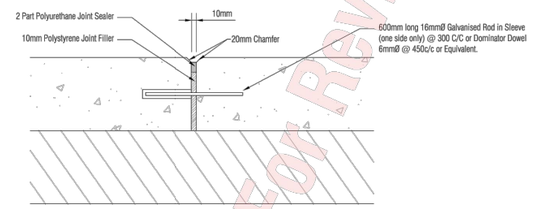
NOTES

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.

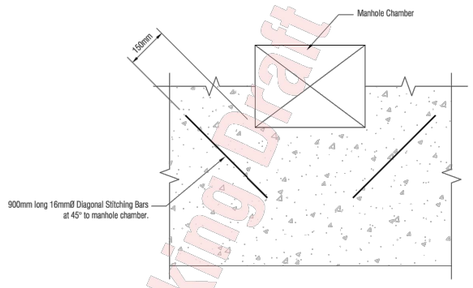
FP0001

Transport Design Manual | Standard Engineering Details

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



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.

FP0002

Transport Design Manual | Standard Engineering Details

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

Working Draft - For Review

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	SP	03/2025
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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-2	Rev	A

RESOURCE CONSENT

DATE: 4/2/25 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

NOTES

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

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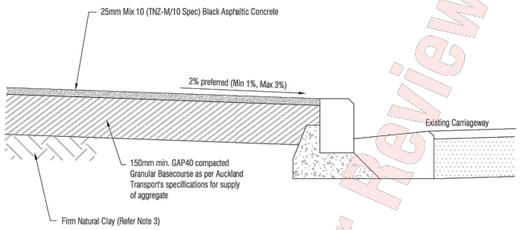
Working Draft

FP0003



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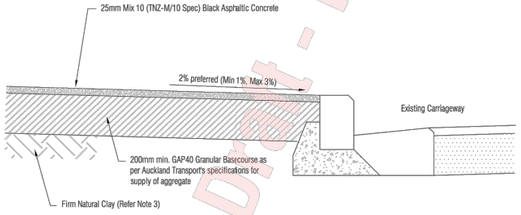


HEAVY DUTY FOOTPATH

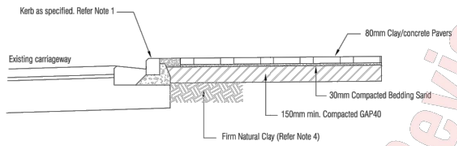
NOTES

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)

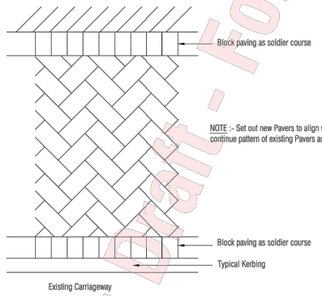
Transport Design Manual | Standard Engineering Details

Review	1	TDM TECHNICAL STANDARDS	Date: Document in Review
DATE: February 14, 2020		Asphalt footpath	SED No. FP0003 / Version A

FP0004



TYPICAL CROSS SECTION



TYPICAL PLAN VIEW

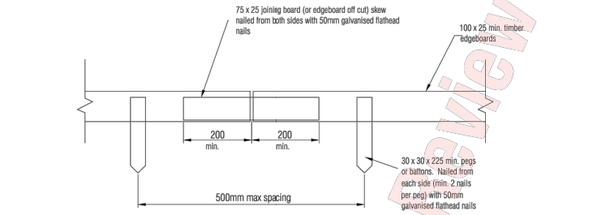
NOTES

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 .

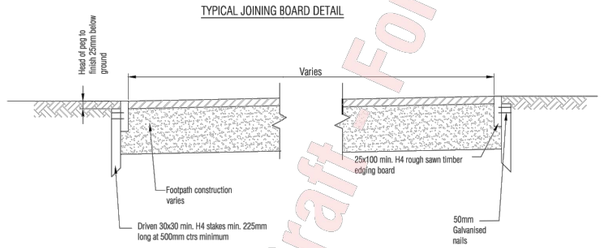
Transport Design Manual | Standard Engineering Details

Review	1	TDM TECHNICAL STANDARDS	Date: Document in Review
DATE: February 14, 2020		Footpath construction - paver type	SED No. FP0004 / Version A

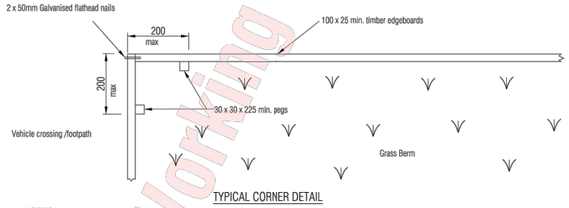
FP0005



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	TDM TECHNICAL STANDARDS	Date: Document in Review
DATE: February 14, 2020		Pedestrians and the Public Realm	SED No. FP0005 / Version A

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

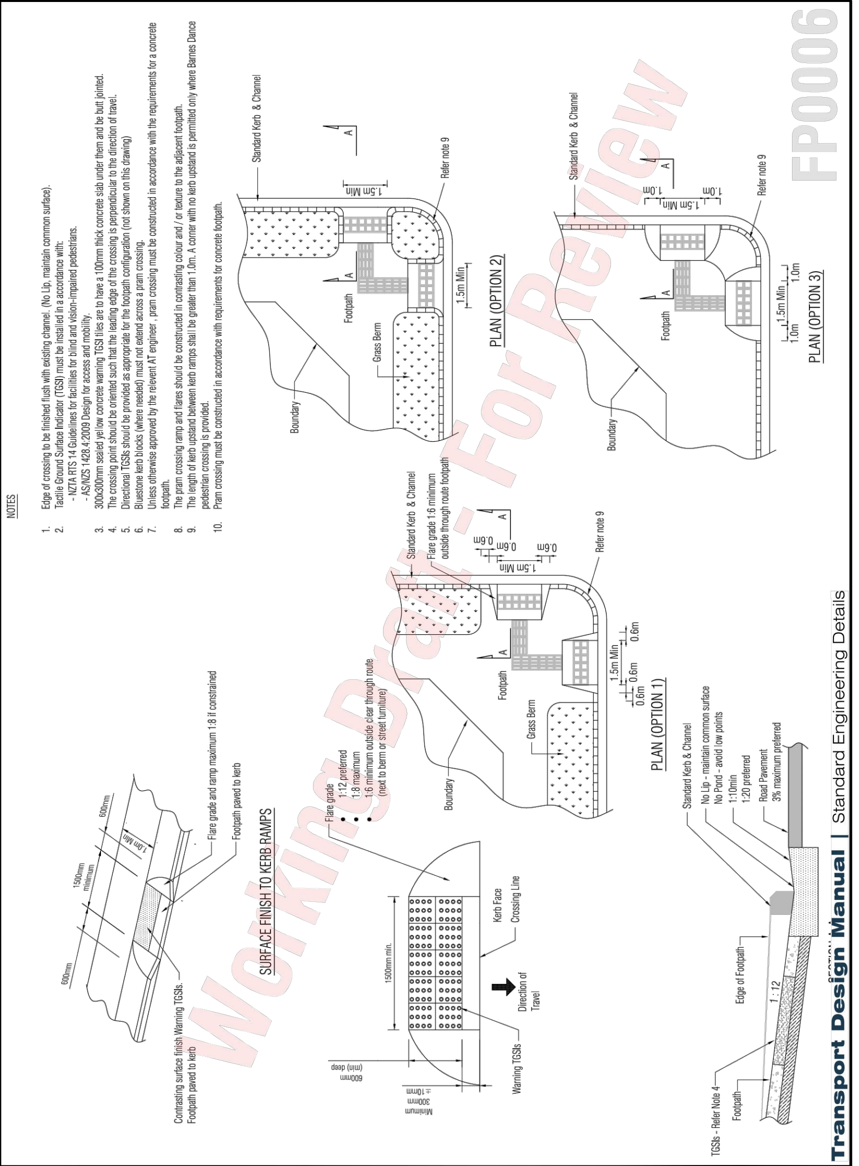
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-3	Rev	A

RESOURCE CONSENT

DATE: 4/25 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

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

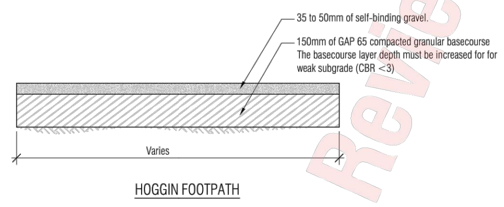


Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Pram crossing

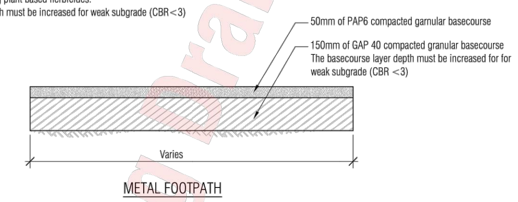
Document in Review — SED No. **FP0006** — Version **A**

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)



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)

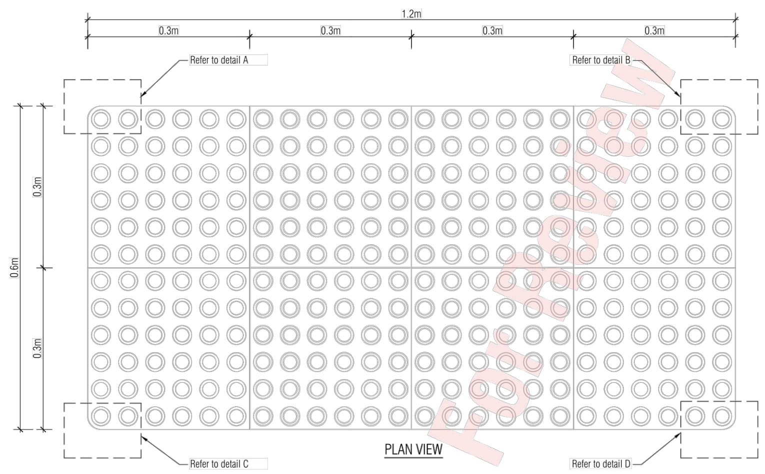


METAL FOOTPATH

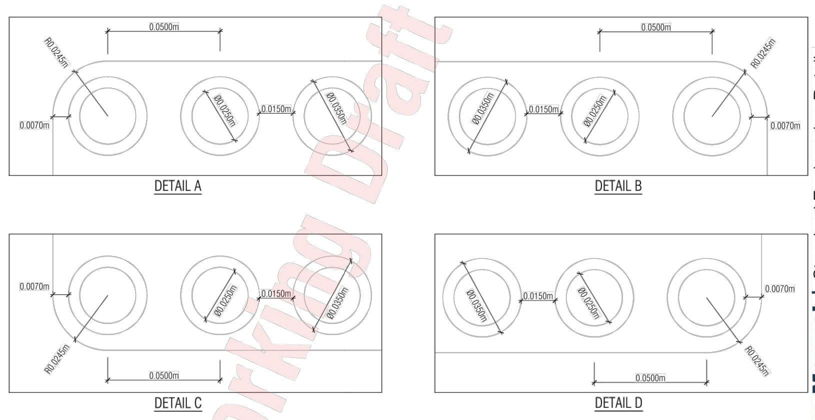
Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Metal and Hoggin footpath

Document in Review — SED No. **FP0009** — Version **A**



PLAN VIEW



DETAIL A
DETAIL B
DETAIL C
DETAIL D

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Tactile Pavers

Document in Review — SED No. **FP0010** — Version **A**

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

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

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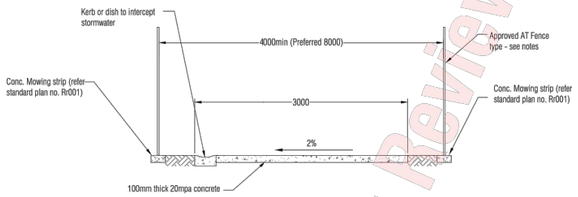
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

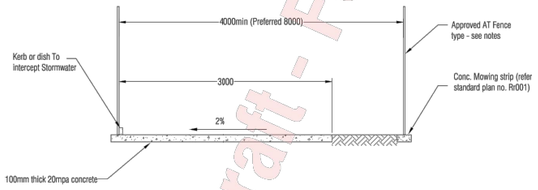
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C800 RD STD DETAILS.DWG
Drawing no.	C800-4 — Rev A

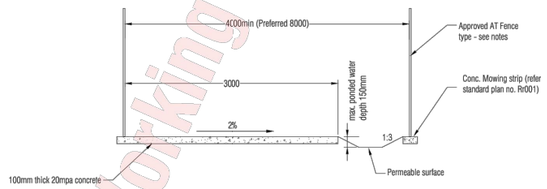
RESOURCE CONSENT



SECTION - CENTRAL 3.0m SHARED PATH
SCALE 1 : 50



SECTION - 3.0m PATH TO SIDE
SCALE 1 : 50



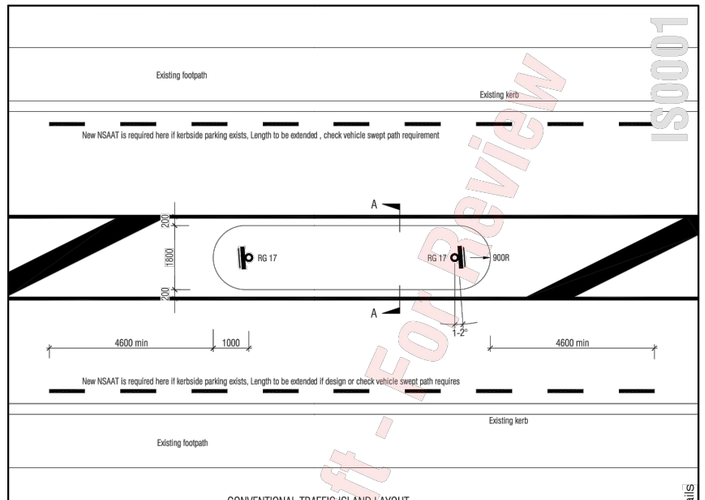
SECTION - ACCESS WAY WITH SWALE/RAINGARDEN
SCALE 1 : 50

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

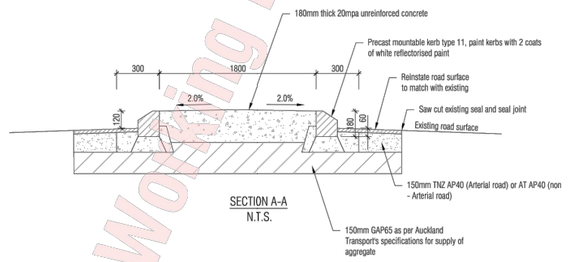
Transport Design Manual | Standard Engineering Details

FP0011

Review		TDM TECHNICAL STANDARDS	Date:	Document in Review
AT	1	Pedestrian & cyclist access way alternative sections	SED No. FP0011	Version A
DATE: February 14, 2020				



CONVENTIONAL TRAFFIC ISLAND LAYOUT
N.T.S.



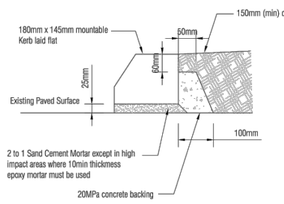
SECTION A-A
N.T.S.

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

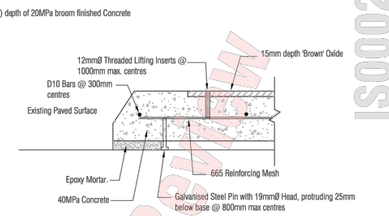
Transport Design Manual | Standard Engineering Details

IS0001

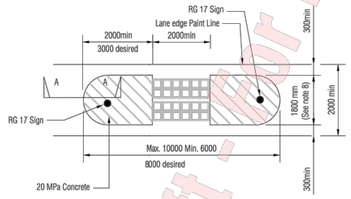
Review		TDM TECHNICAL STANDARDS	Date:	Document in Review
AT	1	Standard detail for traffic island	SED No. IS0001	Version A
DATE: February 14, 2020				



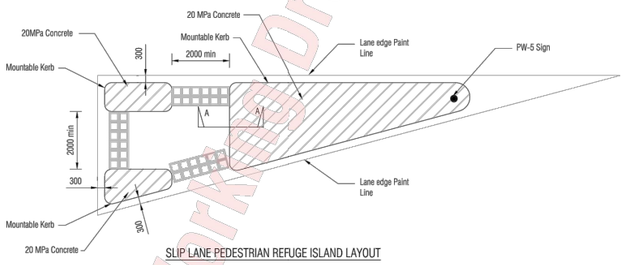
SECTION A-A - IN-SITU



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		TDM TECHNICAL STANDARDS	Date:	Document in Review
AT	1	Typical pedestrian refuge island	SED No. IS0002	Version A
DATE: February 14, 2020				

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	SP	03/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

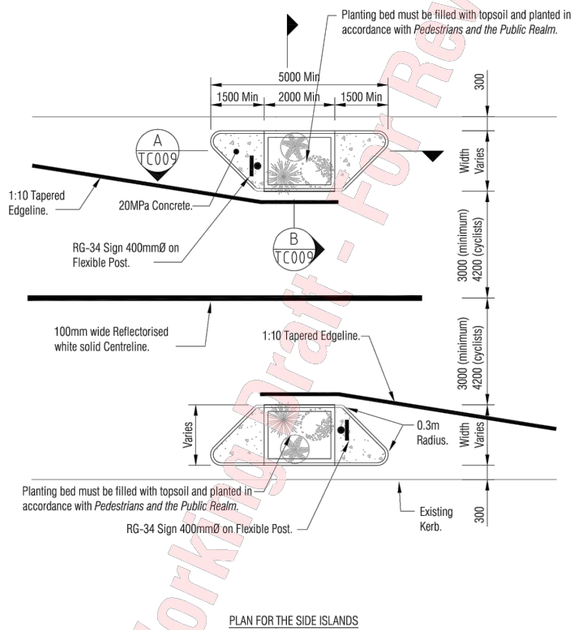
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C800 RD STD DETAILS.DWG
Drawing no.	C800-5 Rev A

RESOURCE CONSENT

Working Draft - For Review

DATE: 2/25 FILEPATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG



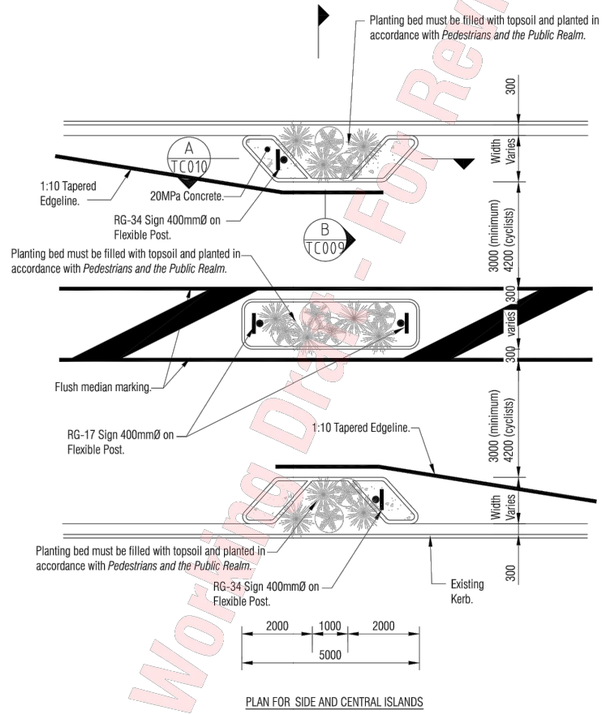
PLAN FOR THE SIDE ISLANDS

IS0003
Working Draft - For Review
Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Planted side islands - road narrowings

Date: Document in Review
SED No. IS0003 | Version A



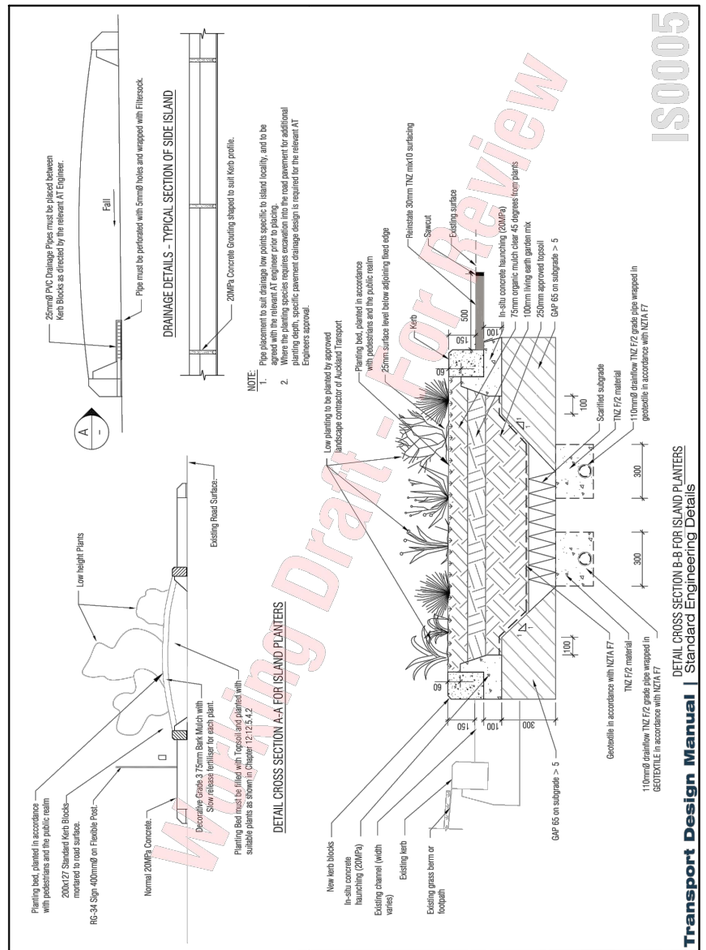
PLAN FOR SIDE AND CENTRAL ISLANDS

IS0004
Working Draft - For Review
Transport Design Manual | Standard Engineering Details

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



IS0005
Working Draft - For Review
Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Typical details - planted side islands

Date: Document in Review
SED No. IS0005 | 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	SP	03/2025
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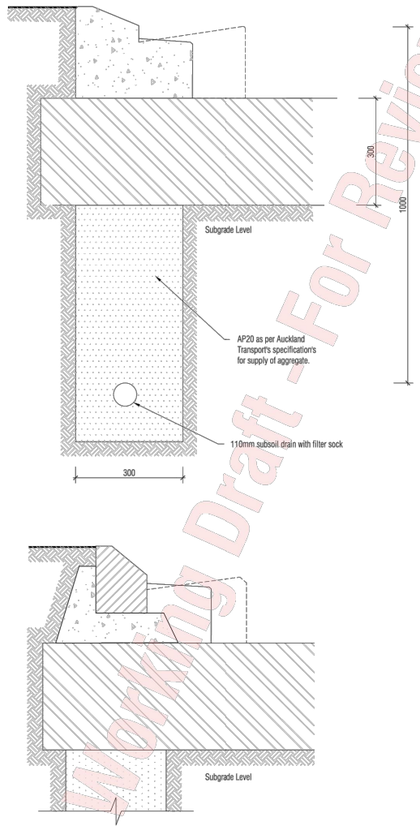
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C800 RD STD DETAILS.DWG
Drawing no.	C800-6 Rev A

RESOURCE CONSENT

DATE: 4/2/25 FILEPATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\08\01\RV-C800 RD STD DETAILS.DWG



NOTES:

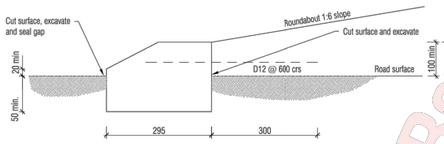
1. 25 MPa fibre reinforced concrete for slip-form.

Working Draft - For Review

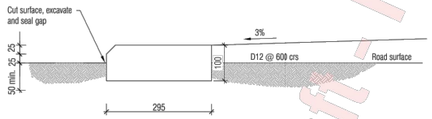
IS0006

Transport Design Manual | Standard Engineering Details

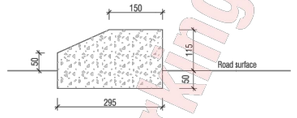
Review 1	TDM TECHNICAL STANDARDS	Date: Document in Review
DATE: February 14, 2020	Mountable kerb & nib For traffic islands	SED No. IS0006 | Version A



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 co 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.

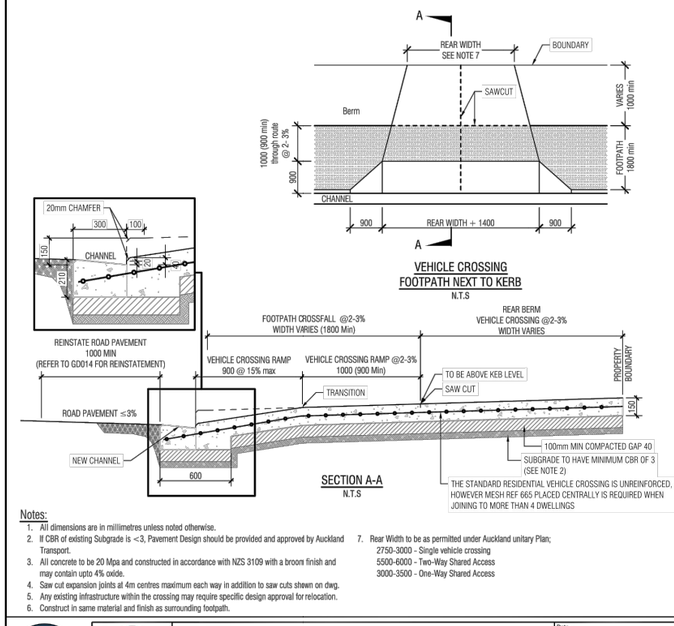
Working Draft - For Review

IS0007

Transport Design Manual | Standard Engineering Details

Review 1	TDM TECHNICAL STANDARDS	Date: Document in Review
DATE: February 14, 2020	Roundabout and traffic Island slip-formed kerbs	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 shewn 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

Transport Design Manual | Standard Engineering Details

	TDM TECHNICAL STANDARDS	Date: 20/05/2021
CHIEF ENGINEER APPROVED	Residential Vehicle Crossing (Sheet 2 of 4)	SED No. VX0102 | Version B

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	SP	03/2025
Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

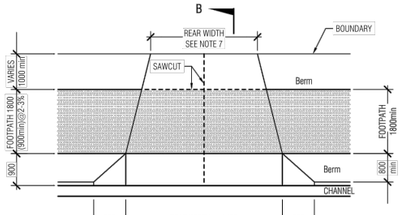
Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-7	Rev	A

RESOURCE CONSENT

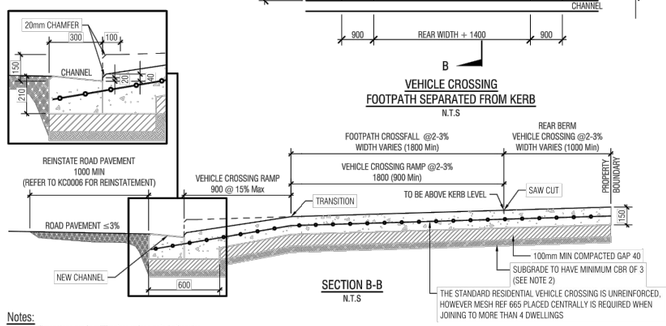
DATE 4/2025 FILEPATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

VX0103

PERSPECTIVE VIEW
N.T.S



VEHICLE CROSSING
FOOTPATH SEPARATED FROM KERB
N.T.S



SECTION B-B
N.T.S

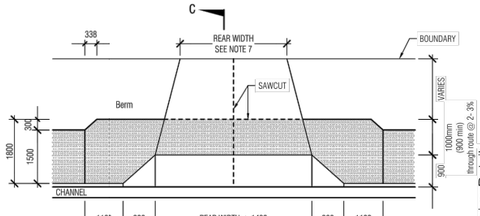
Notes:

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. 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

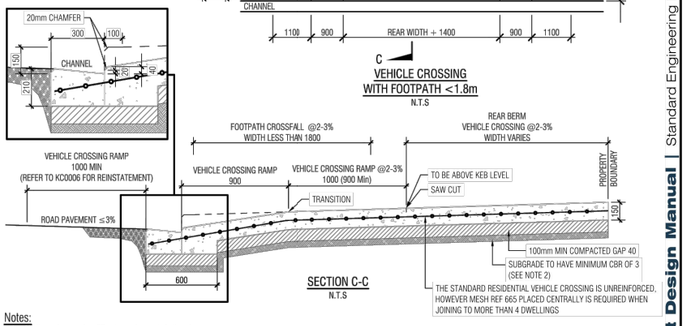
	TDM TECHNICAL STANDARDS Residential Vehicle Crossing (Sheet 3 of 4)	Date: 20/05/2021 SED No. VX0103	Version B

VX0104

PERSPECTIVE VIEW
N.T.S



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



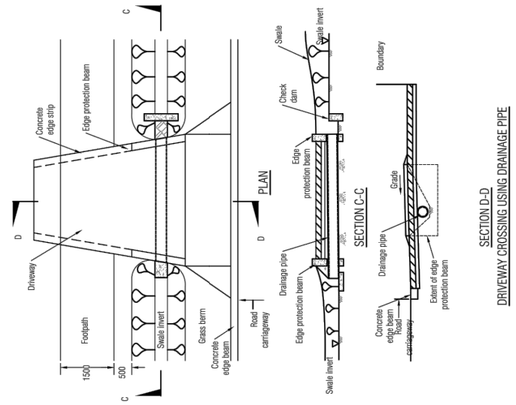
SECTION C-C
N.T.S

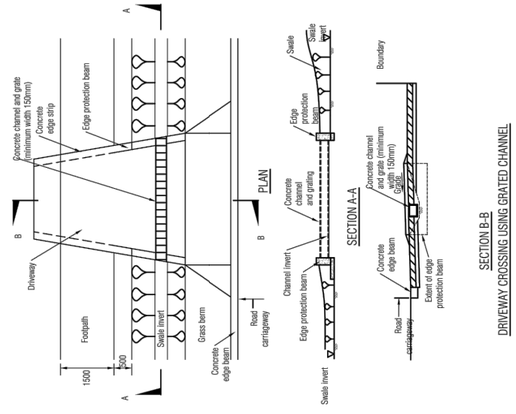
Notes:

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

	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.

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

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Survey	--	--/----
Design	--	--/----
Drawn	SP	03/2025
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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C800 RD STD DETAILS.DWG
Drawing no.	C800-8 Rev A

RESOURCE CONSENT

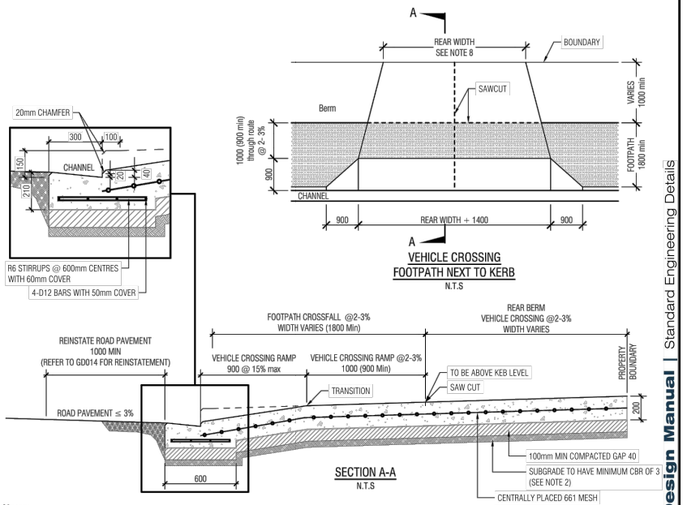
DATE: 4/2025 FILE PATH: T:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

NOTES

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

VX0202

PERSPECTIVE VIEW
N.T.S



SECTION A-A
N.T.S

VEHICLE CROSSING
FOOTPATH NEXT TO KERB
N.T.S

Notes:

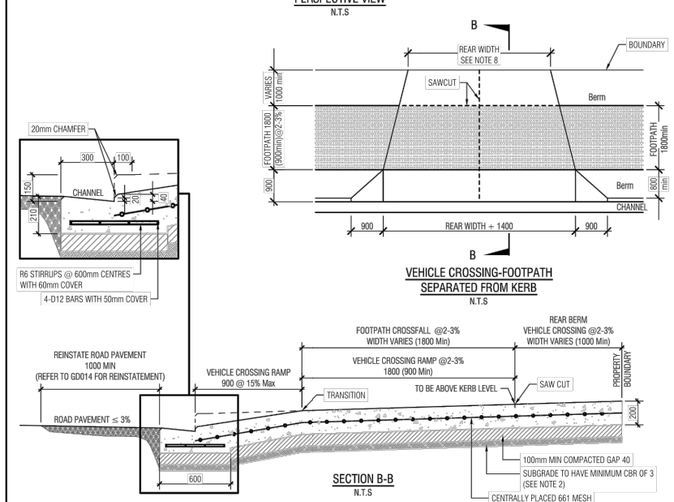
1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw 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

	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



SECTION B-B
N.T.S

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

Notes:

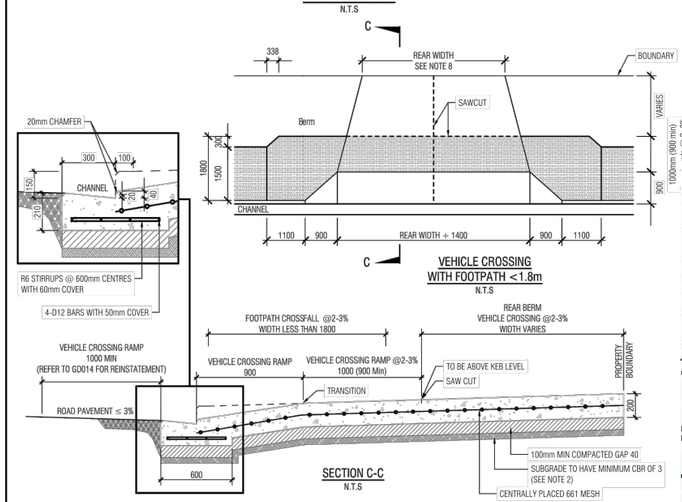
1. All dimensions are in millimetres unless noted otherwise.
2. If CBR of existing Subgrade is <3, Pavement Design should be provided and approved by Auckland Transport.
3. All concrete to be 20 Mpa and constructed in accordance with NZS 3109 with a broom finish and may contain upto 4% oxide.
4. Saw 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

	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



SECTION C-C
N.T.S

VEHICLE CROSSING
WITH FOOTPATH <1.8m
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

	TDM TECHNICAL STANDARDS Commercial Vehicle Crossing (Sheet 4 of 4)	Date: 20/05/2021 SED No. VX0204	Version A

Rev	Description	By	Date
A	RESOURCE CONSENT	MA	02/2025

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Survey	--	--/----
Design	--	--/----
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Checked	RW/KH	03/2025

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

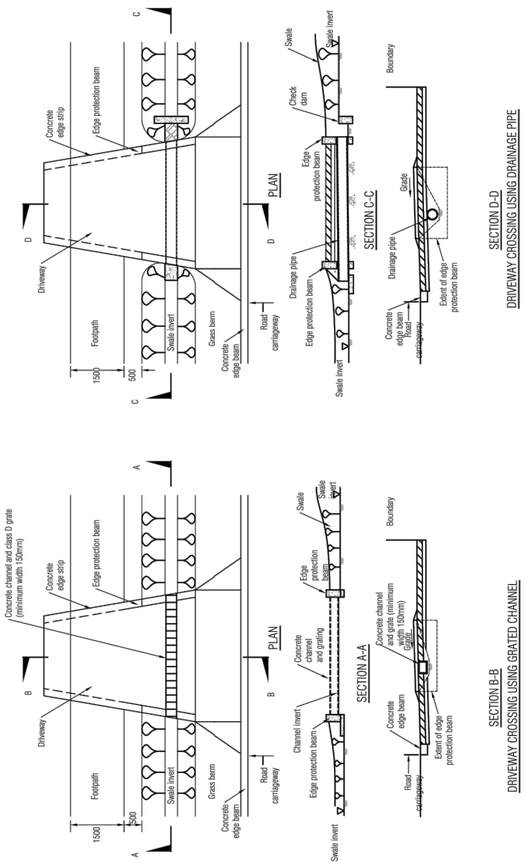
Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-9	Rev	A

RESOURCE CONSENT

DATE 4/25 FILEPATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG

VX0205



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

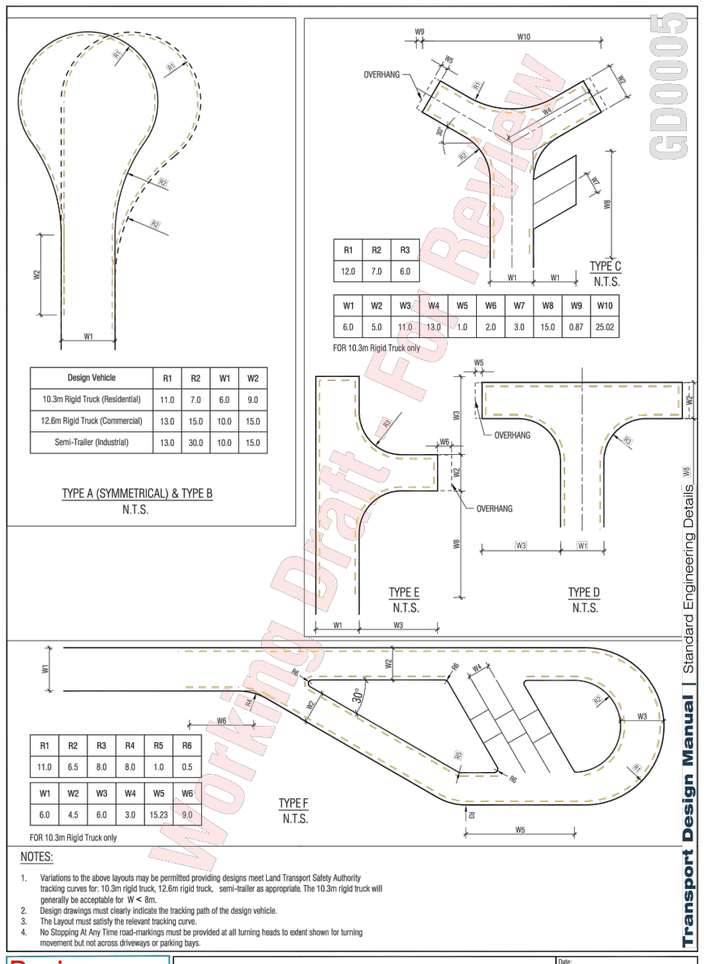
Transport Design Manual | Standard Engineering Details

CALTEX APPROVED ENGINEER

TDM TECHNICAL STANDARDS
Typical commercial driveway crossing through a swale

Date: 20/05/2021
SED No. **VX0205** Version **A**

GD0005



Design Vehicle	R1	R2	W1	W2
10.3m Rigid Truck (Residential)	11.0	7.0	6.0	9.0
12.6m Rigid Truck (Commercial)	13.0	15.0	10.0	15.0
Semi-Trailer (Industrial)	13.0	30.0	10.0	15.0

R1	R2	R3
12.0	7.0	6.0

W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
6.0	5.0	11.0	13.0	1.0	2.0	3.0	15.0	0.87	25.02

R1	R2	R3	R4	R5	R6
11.0	6.5	8.0	8.0	1.0	0.5

W1	W2	W3	W4	W5	W6
6.0	4.5	6.0	3.0	15.23	9.0

NOTES:

1. Variations to the above layouts may be permitted providing designs meet Land Transport Safety Authority tracking curves for: 10.3m rigid truck, 12.6m rigid truck, semi-trailer as appropriate. The 10.3m rigid truck will generally be acceptable for W < 8m.
2. Design drawings must clearly indicate the tracking path of the design vehicle.
3. The Layout must satisfy the relevant tracking curve.
4. No Stopping At Any Time road-markings must be provided at all turning heads to extent shown for turning movement but not across driveways or parking bays.

Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Turning heads

Date: Document in Review
SED No. **GD0005** Version **A**

Working Draft For Review

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	--	--/----
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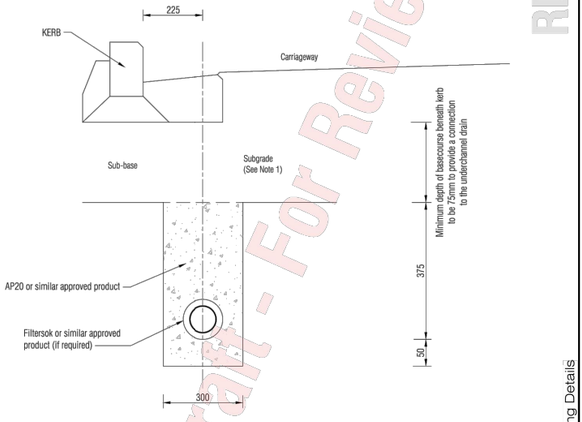
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C800 RD STD DETAILS.DWG		
Drawing no.	C800-10	Rev	A

DATE: 4/2025 FILEPATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C800 RD STD DETAILS.DWG



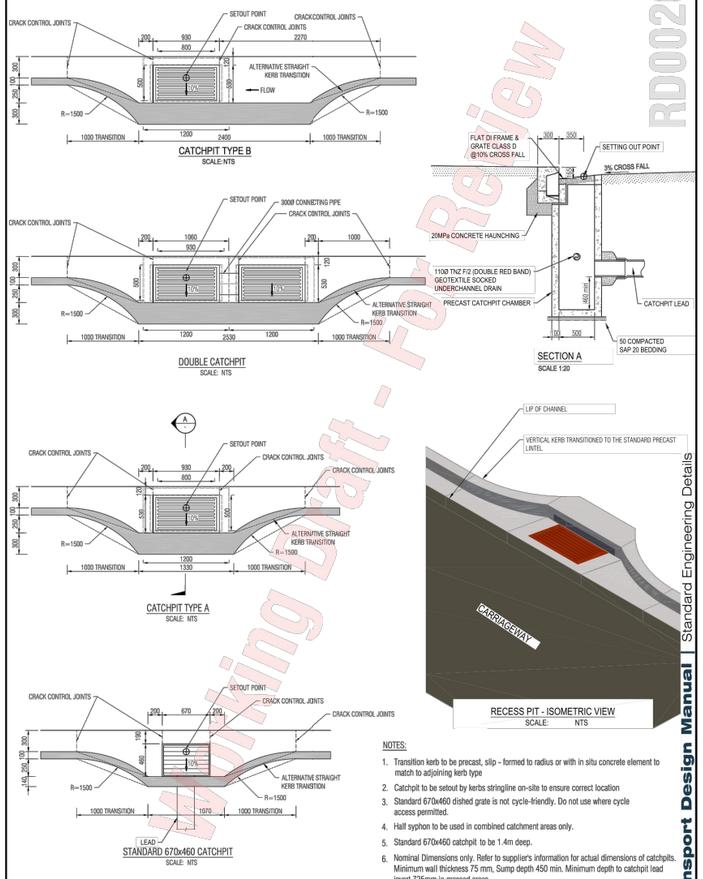
NOTES

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 specifid or scheduled otherwise. Subsoildrain pipes shall comply with the requirements of TNZ Specifications F/2. Trench backfill shall be approved AP20 material or similar. Trench backfil shall be approved 30/10 scoria or similar if a filter sock is provided. Depth below subgrade to be 375mm.
3. Sub-base material shall be laid with fall towards a downstream catchpit or other access chamber with connection invert level above the soffit level of the outlet pipe (or water level in a chamber with half-siphon traps)

Transport Design Manual | Standard Engineering Details

Review 1	TDM TECHNICAL STANDARDS Subsoil drain	Date: Document in Review SED No. RD0010	Version A

DATE: February 14, 2020



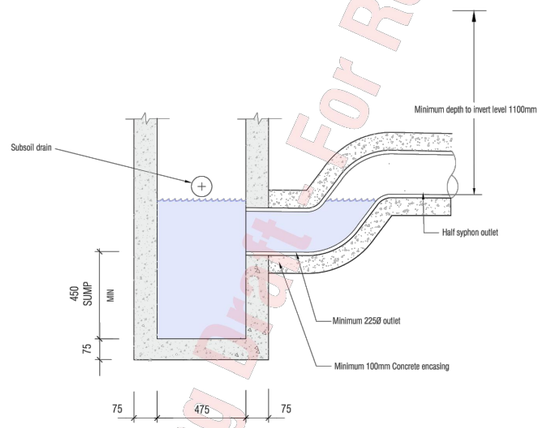
NOTES:

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 Semi-recessed catch pit	Date: Document in Review SED No. RD0020	Version A

DATE: February 14, 2020



Transport Design Manual | Standard Engineering Details

Review 1	TDM TECHNICAL STANDARDS Catchpit with half syphon	Date: Document in Review SED No. RD0021	Version A

DATE: February 14, 2020

NOTES

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

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A	RESOURCE CONSENT	SP	03/2025

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

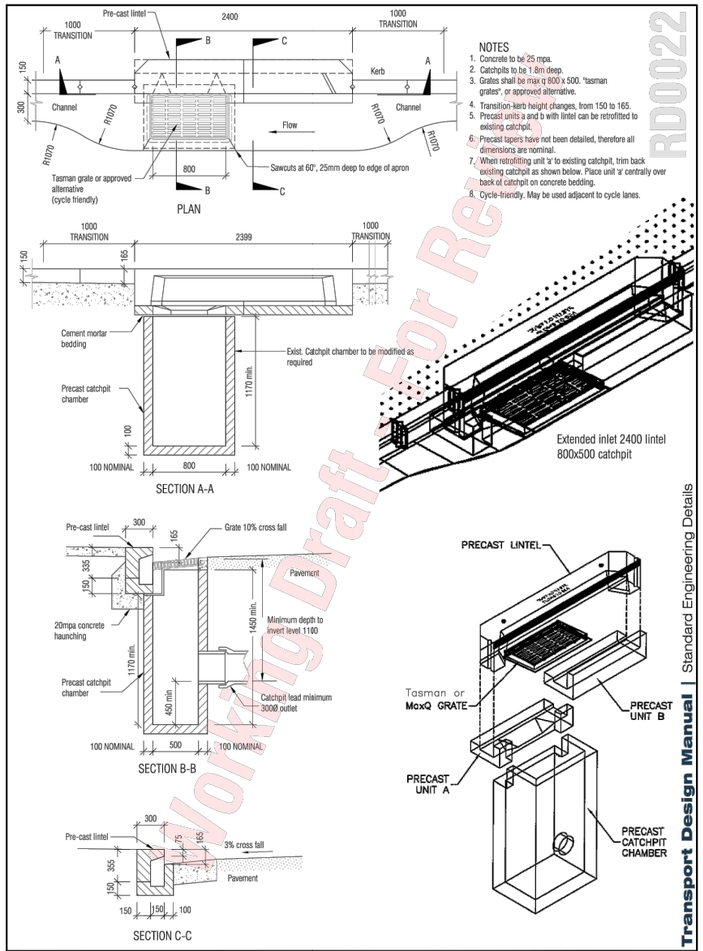
Title
RETIREMENT VILLAGE ROADING DRAINAGE STANDARD DETAILS

Project no.	147007		
Scale	N.T.S		
Cad file	147016-RV-C801 RD DRAINAGE DETAILS.DWG		
Drawing no.	C801	Rev	A

RESOURCE CONSENT

Working Draft - For Review
RD0010
RD0020
RD0021

DATE: 4/2025 FILEPATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C801 RD DRAINAGE DETAILS.DWG



NOTES

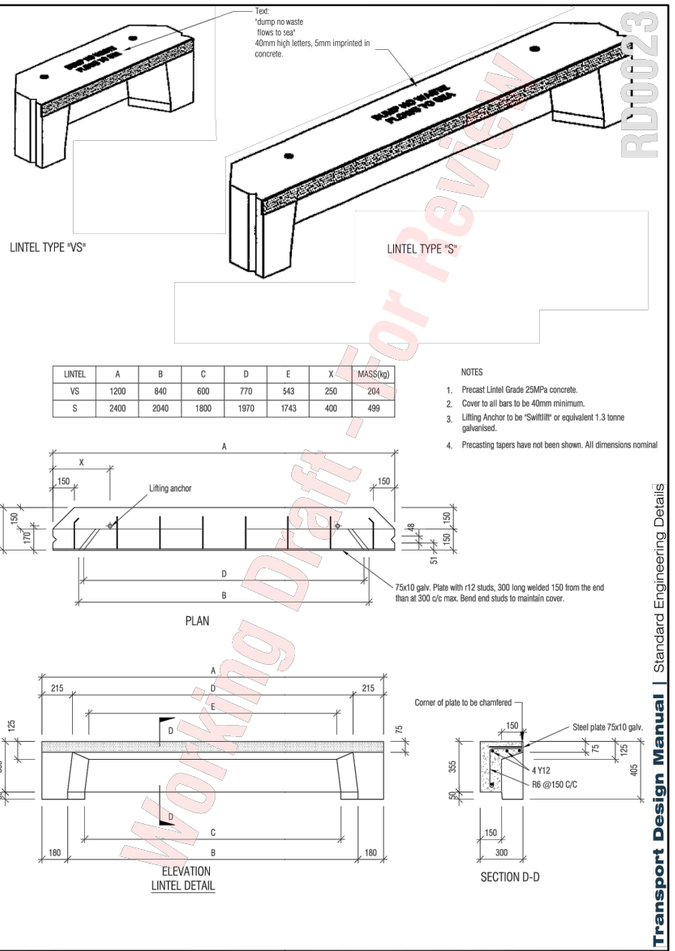
1. Concrete to be 25 mpa.
2. Catchpits to be 1.8m deep.
3. Grates shall be max q 800 x 500. "tasman grates", or approved alternative.
4. Transition kerb height changes, from 150 to 165.
5. Precast units a and b with lintel can be retrofitted to existing catchpit.
6. Precast tapers have not been detailed, 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

Working Draft - For Review

Review 1	TDM TECHNICAL STANDARDS Street catchpit 800 x 500	Date: Document in Review SED No. RD0022 | Version A
DATE: February 14, 2020		



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

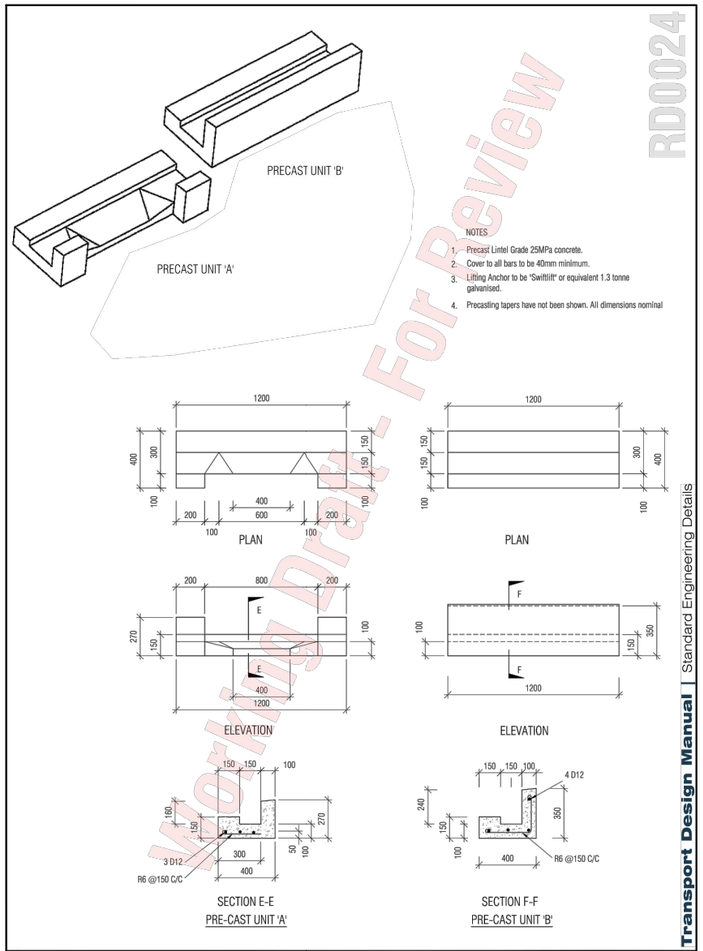
1. Precast Lintel Grade 25MPa concrete.
2. Cover to all bars to be 40mm minimum.
3. Lifting Anchor to be "Swiftlift" or equivalent 1.3 tonne galvanised.
4. Precasting tapers have not been shown. All dimensions nominal

Transport Design Manual | Standard Engineering Details

RD0023

Working Draft - For Review

Review 1	TDM TECHNICAL STANDARDS Street catchpit 800 x 500 precast lintel details	Date: Document in Review SED No. RD0023 | Version A
DATE: February 14, 2020		



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

Working Draft - For Review

Review 1	TDM TECHNICAL STANDARDS Street catchpit 800 x 500 precast unit details	Date: Document in Review SED No. RD0024 | Version A
DATE: February 14, 2020		

RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

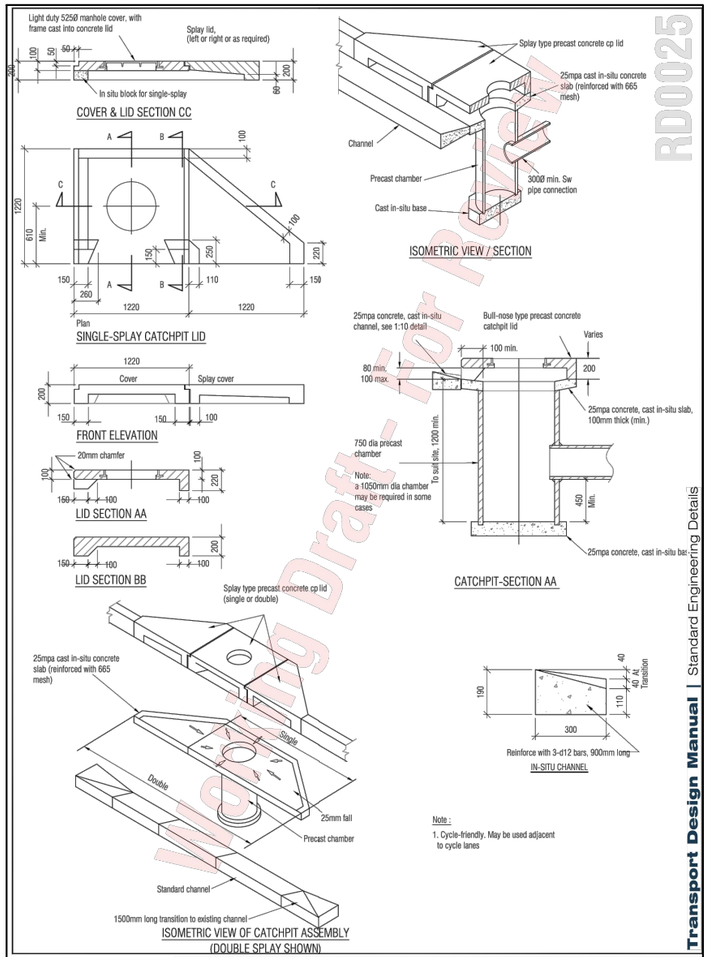
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE ROADING DRAINAGE STANDARD DETAILS

Project no.	147007
Scale	N.T.S
Cad file	147016-RV-C801 RD DRAINAGE DETAILS.DWG
Drawing no.	C801-1 Rev A

DATE: 4/2/25 - FILE PATH: P:\MAVEN\PROJECTS\14700_RIVERHEAD RETIREMENT VILLAGE\DWG\14701\RV-C801 RD DRAINAGE DETAILS.DWG

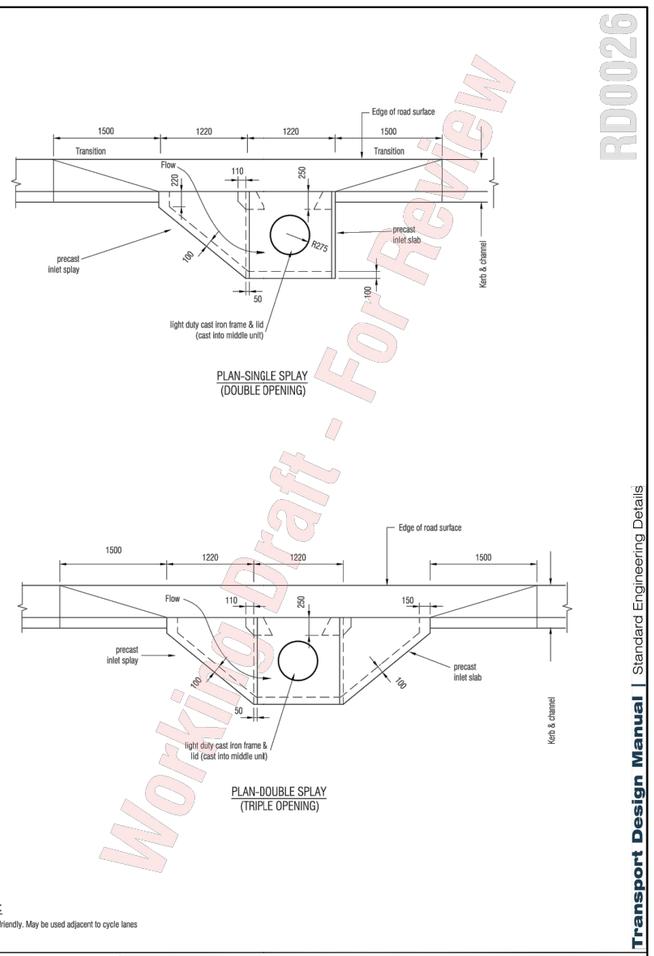


Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Splay catchpit

Date: Document in Review
SED No. RD0025 Version A

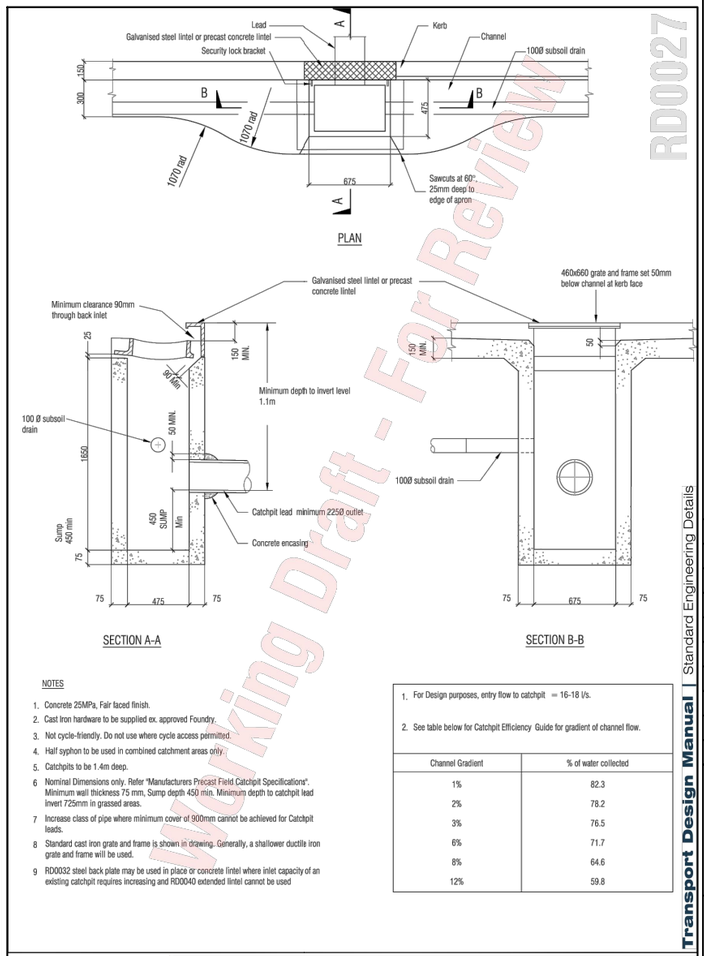


Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Splay catchpit details

Date: Document in Review
SED No. RD0026 Version A



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

Transport Design Manual | Standard Engineering Details

Review 1
DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Standard catchpit

Date: Document in Review
SED No. RD0027 Version A

NOTES

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

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A	RESOURCE CONSENT	SP	03/2025

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Survey	--	--/----
Design	--	--/----
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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE ROADING DRAINAGE STANDARD DETAILS

Project no.	147007
Scale	N.T.S
Cad file	147016-RV-C801 RD DRAINAGE DETAILS.DWG
Drawing no.	C801-2 Rev A

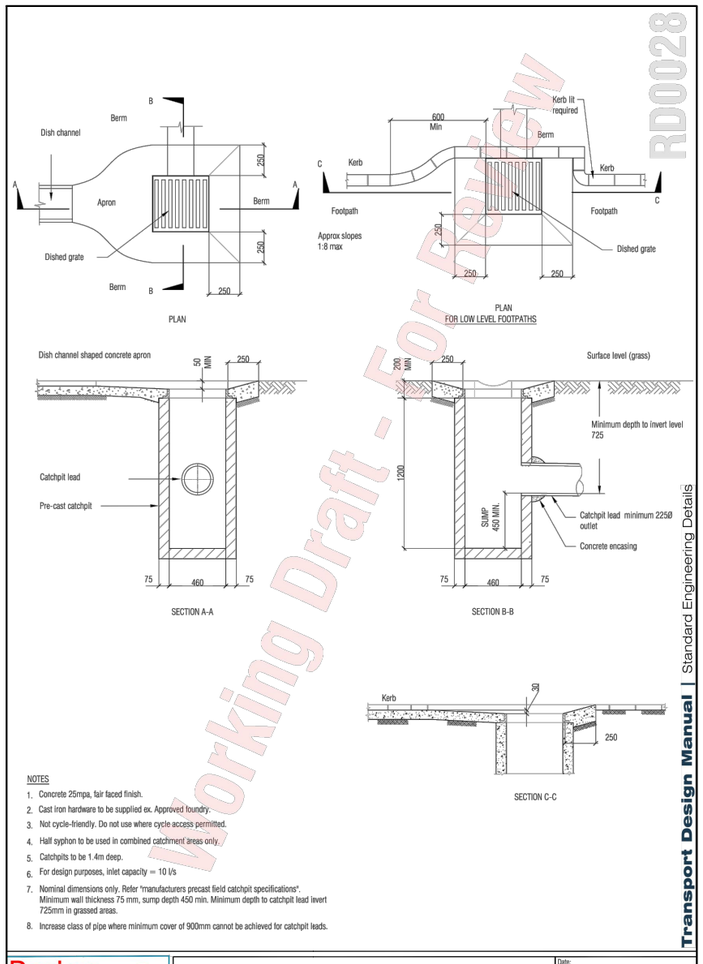
RESOURCE CONSENT

Working Draft - For Review

DATE 4/2/25 FILE PATH F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C801 RD DRAINAGE DETAILS.DWG

NOTES

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



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. Hall 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.

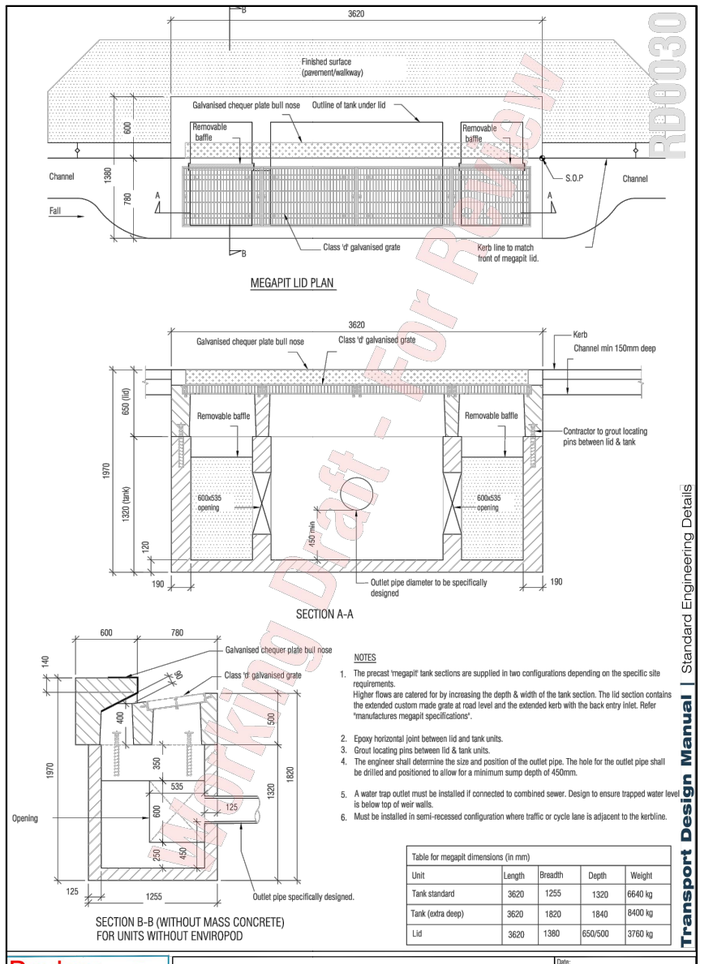
Transport Design Manual | Standard Engineering Details

RD0028

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

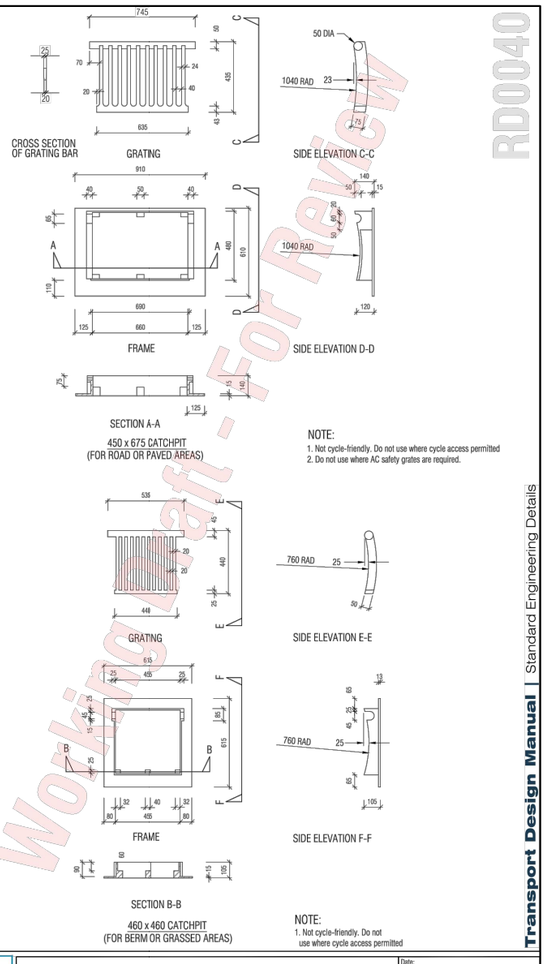
Transport Design Manual | Standard Engineering Details

RD0030

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Megapit

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



Transport Design Manual | Standard Engineering Details

RD0040

Review 1 — DATE: February 14, 2020

TDM TECHNICAL STANDARDS
Catchpit gratings and frames

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

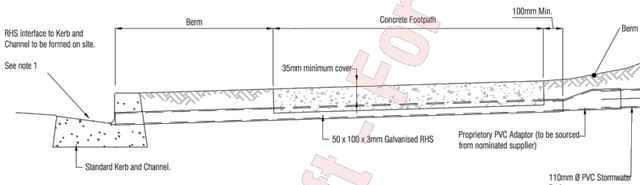
Title
RETIREMENT VILLAGE ROADING DRAINAGE STANDARD DETAILS

Project no.	147007
Scale	N.T.S
Cad file	147016-RV-C801 RD DRAINAGE DETAILS.DWG
Drawing no.	C801-3 Rev A

RESOURCE CONSENT

Working Draft - For Review

DATE: 2/2025 - FILE PATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\100\15-RV-C801 RD DRAINAGE DETAILS.DWG



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

RD0060

Working Draft - For Review

RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE ROADING DRAINAGE STANDARD DETAILS

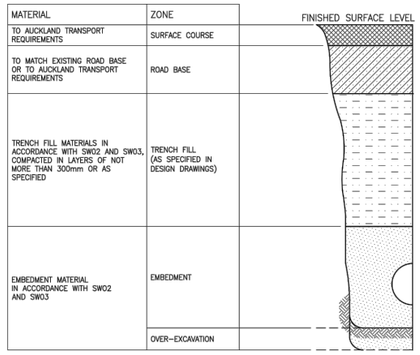
Project no.	147007		
Scale	N.T.S		
Cad file	147016-RV-C801 RD DRAINAGE DETAILS.DWG		
Drawing no.	C801-4	Rev	A

DATE 4/2/25 FILE PATH F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C801 RD DRAINAGE DETAILS.DWG

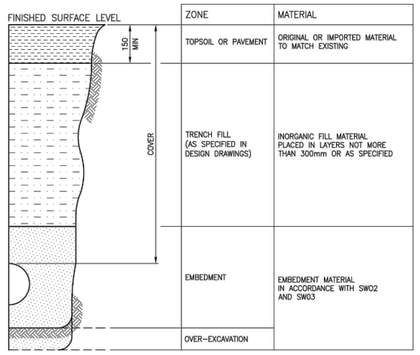
NOTES:

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)



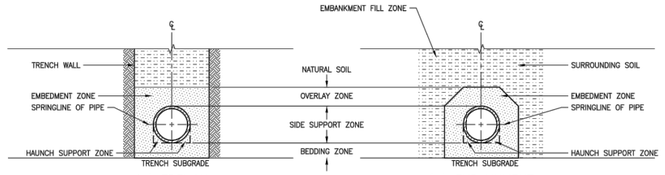
ZONE	MATERIAL
TOPSOIL OR PAVEMENT	ORIGINAL OR IMPORTED MATERIAL TO MATCH EXISTING
TRENCH FILL (AS SPECIFIED IN DESIGN DRAWINGS)	INORGANIC FILL MATERIAL PLACED IN LAYERS NOT MORE THAN 300mm OR AS SPECIFIED
EMBEDMENT	EMBEDMENT MATERIAL IN ACCORDANCE WITH SW02 AND SW03
OVER-EXCAVATION	

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

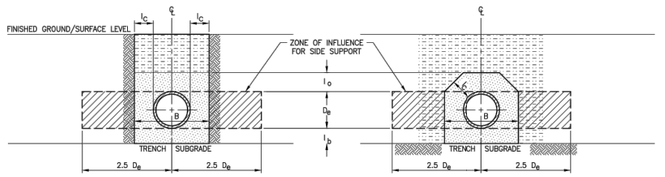
STORMWATER CODE OF PRACTICE STANDARD DETAILS	AUCKLAND COUNCIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S.
REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW01.DWG	EMBEDMENT & TRENCHFILL TYPICAL ARRANGEMENT	Auckland Council	DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW01 REV 3

NOTES:

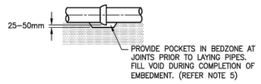
1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SW01.
2. FLEXIBLE PIPES INCLUDES PVC, GRP, PP AND PE.
3. PLACEMENT OF EMBEDMENT, TRENCHFILL, & COMPACTION SHALL MEET THE REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS.
4. EXCAVATE OR COMPACT TRENCH FLOOR TO PROVIDE A FLAT FIRM BASE TO SUPPORT BEDDING MATERIAL 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



PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

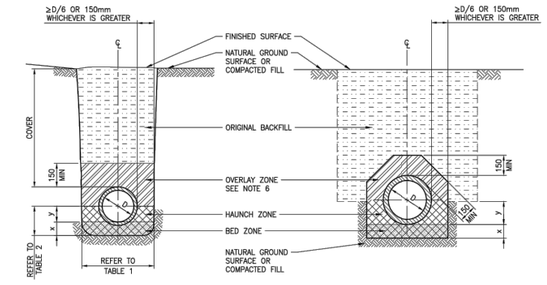
MINIMUM EMBEDMENT ZONE DIMENSIONS

D_e (mm)	MINIMUM DIMENSION (mm)			
	l_b	l_c	l_o	$B=D_e+2l_c$
$75 \le D_e \le 150$	75	100	100	275 – 350
$150 < D_e \le 300$	100	150	150	450 – 600
$300 < D_e \le 450$	100	200	150	700 – 850
$450 < D_e \le 900$	150	300	150	1050 – 1500
$900 < D_e \le 1500$	150	350	200	1600 – 2200
$1500 < D_e \le 4000$	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.

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



TRENCH CONDITION EMBANKMENT CONDITION

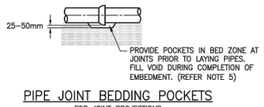
H2 TYPE BEDDING – CONCRETE PIPES

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

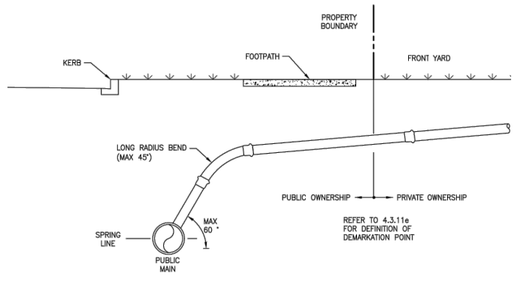


PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

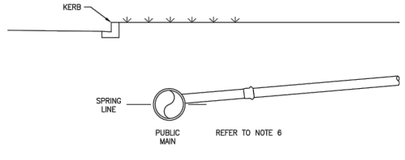
NOTES:

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.

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



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



LATERAL CONNECTION – SHALLOW PUBLIC MAIN

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.

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	SP	03/2025

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

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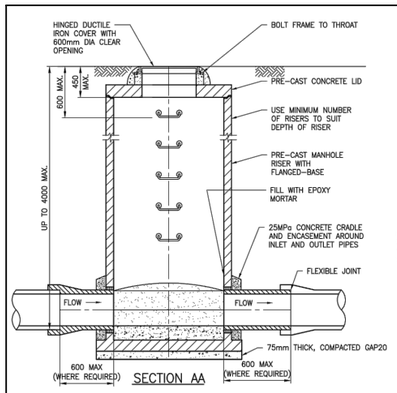
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

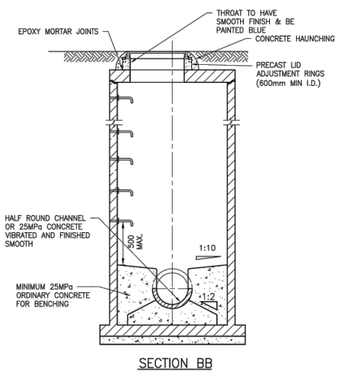
Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802 Rev A

RESOURCE CONSENT

DATE: 4/2025 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG





STANDARD MANHOLE UP TO 4.0m DEPTH TO INVERT – ELEVATION

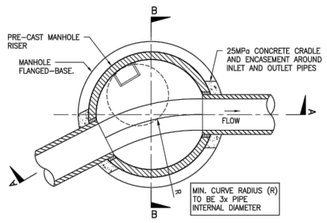
NOTES:

1. MANHOLES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THIS DRAWING AND SECTION 4.3.10 OF THE SWCoP AND IN COMPLIANCE WITH MANUFACTURERS 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.

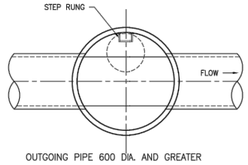
MINIMUM MANHOLE RISER DIAMETER

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

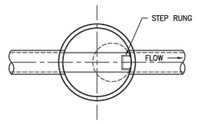


MANHOLE BASE & BENCHING PLAN



OUTGOING PIPE 600 DIA. AND GREATER

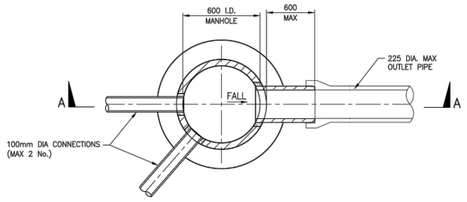
MANHOLE COVER AND RUNG ORIENTATION PLAN



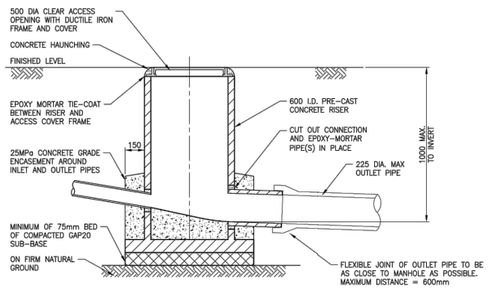
OUTGOING PIPE LESS THAN 600 DIA. (OR WHERE DEPTH TO INVERT ≤1.5m)

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 Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW05 REV 4



PLAN

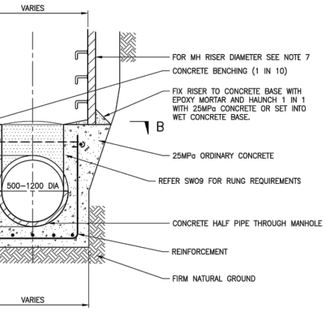


SECTION AA

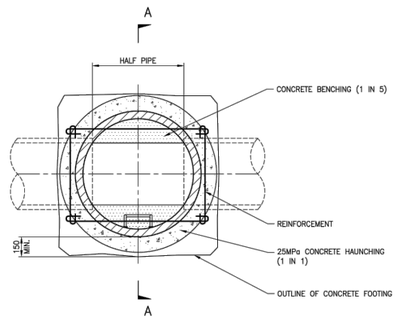
NOTES:

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 Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW06 REV 4



SECTION AA

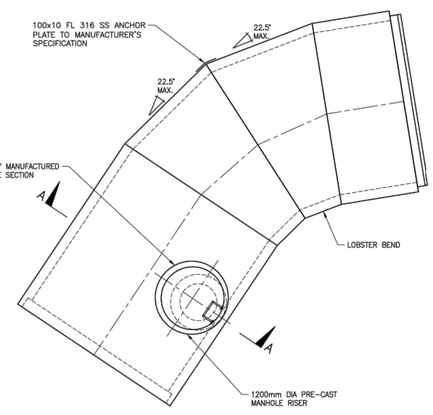


SECTION BB – PLAN

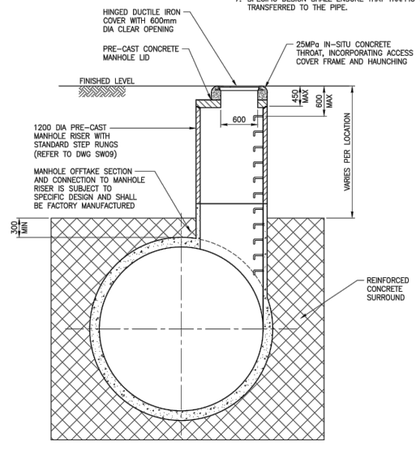
NOTES:

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 Auckland Council	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 Auckland Council	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	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

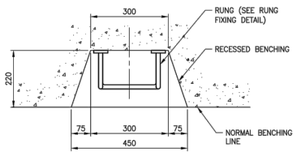
Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-1 Rev A

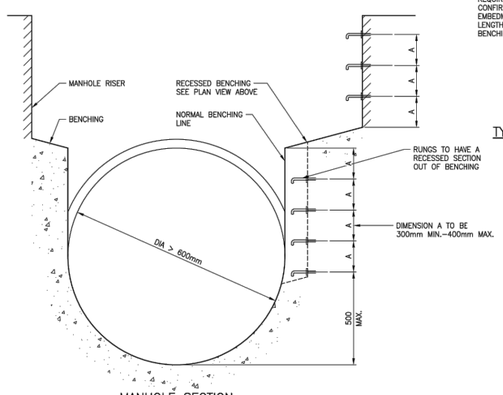
DATE: 3/025 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\01\01\RV-C802 SW STD DETAILS.DWG

NOTES:

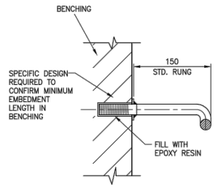
1. RECESSED RUNGS SHALL BE USED FOR PIPE DIAMETERS > 600mm.
2. RECESSED RUNGS SHALL BE LOCATED ON INSIDE CURVE OF BENCHING AND SHALL ALIGN WITH MANHOLE ACCESS RUNGS.
3. ALL STEELWORK SHALL BE 'HOT DIPPED GALVANISED' AFTER FABRICATION HAS BEEN COMPLETED, WITH A MINIMUM AVERAGE COATING WEIGHT OF ZINC=610g/sqm 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.



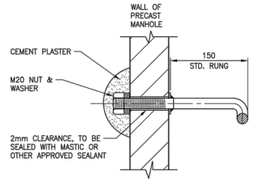
PLAN – RECESSED RUNG DETAIL



MANHOLE SECTION RECESSED RUNGS

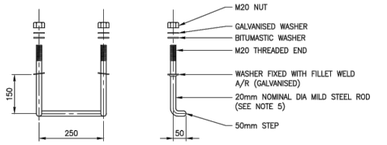


TYPICAL SECTION RUNG CONNECTION BY EPOXY RESIN
(FOR RECESSED STEPS AND RETRO ONLY)



TYPICAL SECTION RUNG CONNECTION BY NUT

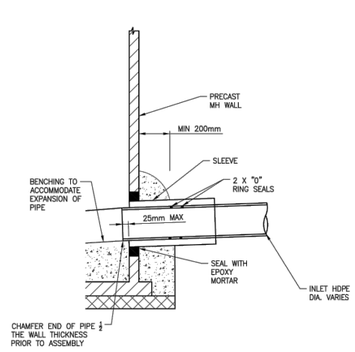
RUNG CONNECTIONS



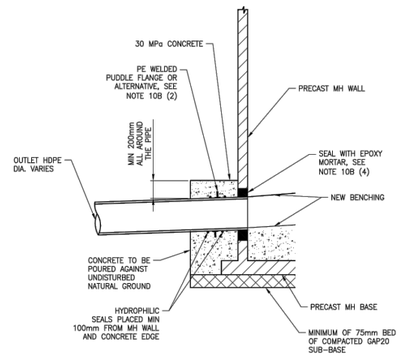
PLAN SIDE ELEVATION

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 Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW09 REV 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.

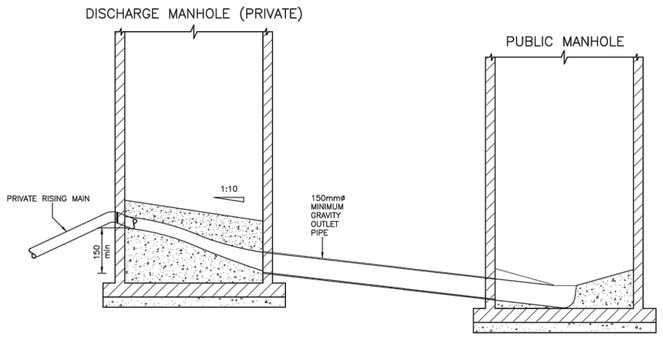
10B: RESTRAINED JOINT NOTES

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.

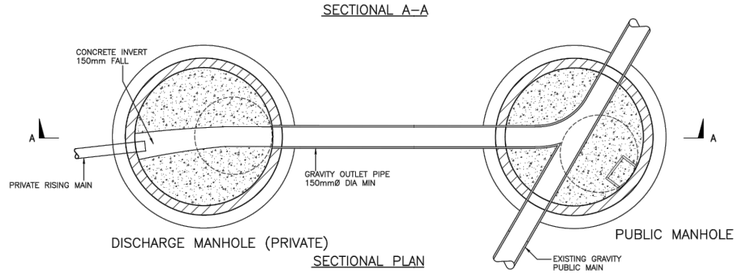
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 4 REV DATE: 18 DECEMBER 2023 CAD FILENAME: AC-STD-SW10 V4.1.DWG	AUCKLAND COUNCIL STORMWATER MANHOLE-PE PIPE JOINT (FOR PE PIPES LESS THAN DN450)	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING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

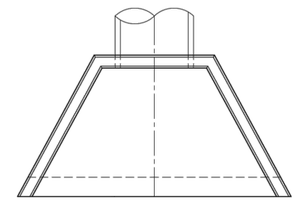


SECTIONAL PLAN

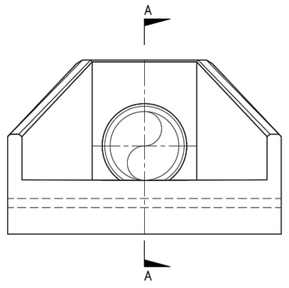
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW11.DWG	AUCKLAND COUNCIL RISING MAIN CONNECTION PRIVATE	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW11 REV 3

NOTES:

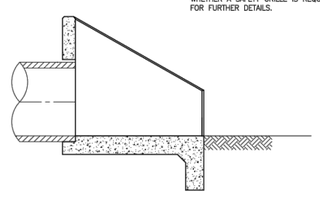
1. THIS DRAWING IS INTENDED TO PROVIDE AN OVERVIEW OF A TYPICAL CONFIGURATION FOR INLET/OUTLET STRUCTURES. WHERE STANDARD PRE-CAST PRODUCTS ARE NOT SUITABLE, SPECIFIC DESIGN IS REQUIRED.
2. DESIGN OF PRE-CAST INLET/OUTLET STRUCTURES SHALL INCLUDE ASSESSMENT OF THE STRUCTURE LOCATION AND THE VISIBILITY 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 Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET SWCoP SHEET 1 OF 1 DRAWING No. SW19 REV 3

RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

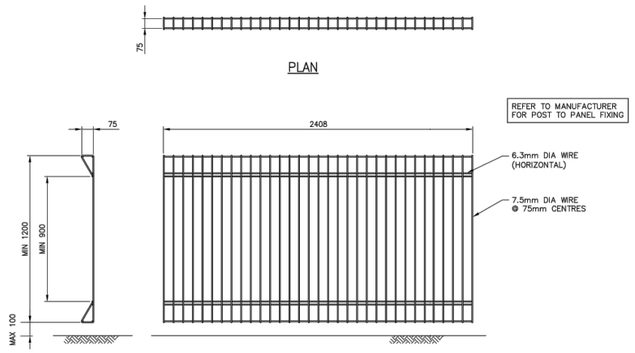
Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

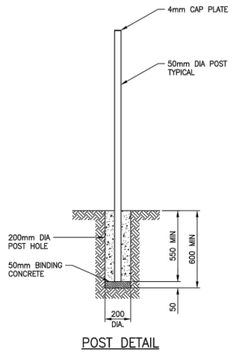
Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C802 SW STD DETAILS.DWG		
Drawing no.	C802-2	Rev	A

DATE: 4/2025 FILE PATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\01 RV-CAD\SW 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.

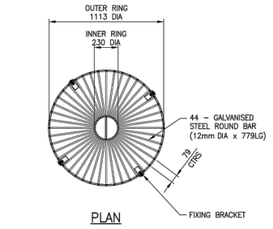


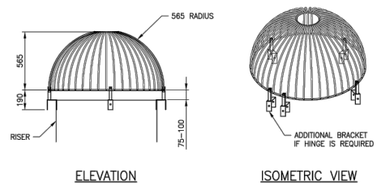


STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW20.DWG	AUCKLAND COUNCIL STORMWATER INLET/OUTLET STRUCTURES STANDARD SAFETY FENCE DETAIL	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING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

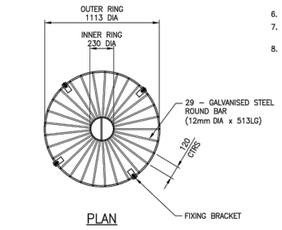
NOTES:

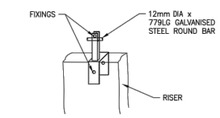
1. THE SCRUFFY DOME GRILLE PROVIDES A DEBRIS SCREEN. TYPICAL LOCATIONS FOR SCRUFFY DOMES INCLUDE PARKS, WETLANDS AND OVERLAND FLOW PATHS.
2. LOCKABLE HINGED VERSIONS ARE AVAILABLE AND MAY BE SPECIFIED WHERE NEEDED.
3. A MINIMUM OF 450mm SUMP DEPTH SHALL BE PROVIDED IN THE MANHOLE.
4. THERE SHALL BE NO 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.

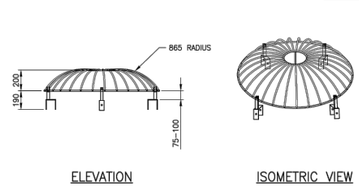




TYPE 1





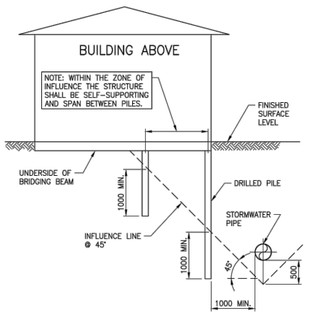


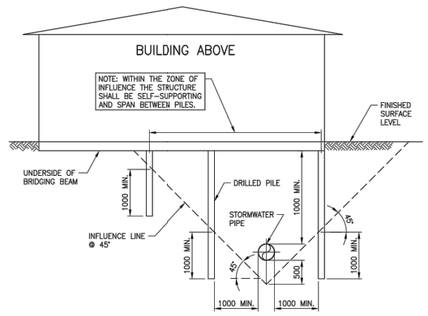
TYPE 2

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.



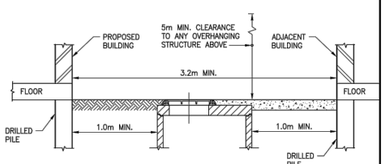


'WORKS CLOSE' NOTES:

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:

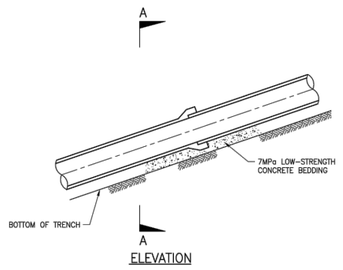
1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. THE DETAIL APPLIES TO STORMWATER PIPES ≤ 375mm NOMINAL DIAMETER AND ≤ 2.0m DEPTH TO INVERT.
3. WORKS OVER PIPES LARGER THAN 375mm NOMINAL DIAMETER IS NOT ALLOWED.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.
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.



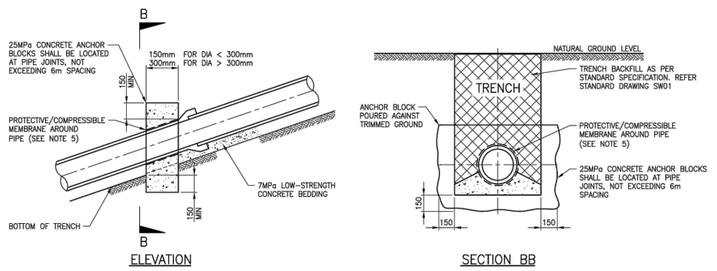
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW22.DWG	AUCKLAND COUNCIL STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS MANHOLES NEAR WORKS AND WORKS CLOSE TO, OR OVER, PIPES	ENVIRONMENTAL-SW Auckland Council	ORIGINAL SCALE A3 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

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

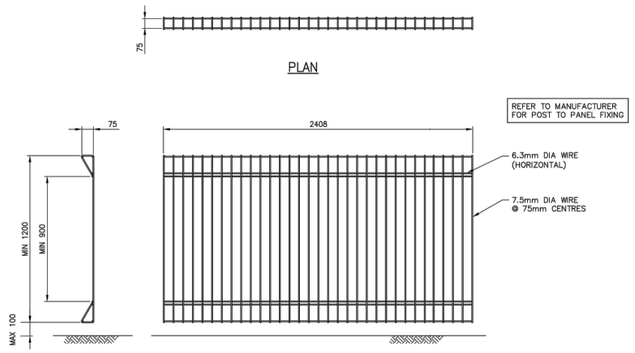
Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-3 Rev A

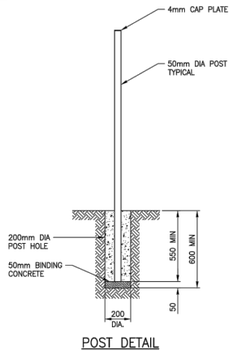
RESOURCE CONSENT

DATE: 4/25 FILE PATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWGS\100\16-RV-C802 SW 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.

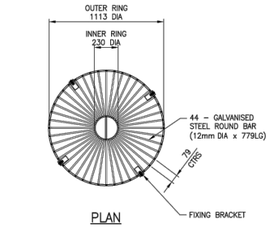


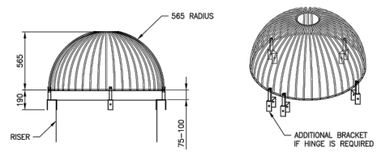


STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW20.DWG	AUCKLAND COUNCIL STORMWATER INLET/OUTLET STRUCTURES STANDARD SAFETY FENCE DETAIL	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW20, REV: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

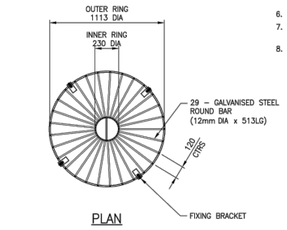
NOTES:

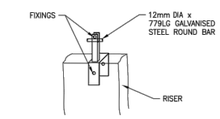
1. THE SCRUFFY DOME GRILLE PROVIDES A DEBRIS SCREEN. TYPICAL LOCATIONS FOR SCRUFFY DOMES INCLUDE PARKS, WETLANDS AND OVERLAND FLOW PATHS.
2. LOCKABLE HINGED VERSIONS ARE AVAILABLE AND MAY BE SPECIFIED WHERE NEEDED.
3. A MINIMUM OF 450mm SUMP DEPTH SHALL BE PROVIDED IN THE MANHOLE.
4. THERE SHALL BE NO 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.

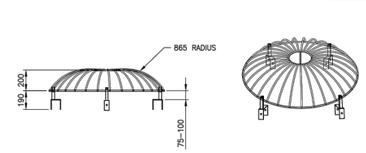




TYPE 1





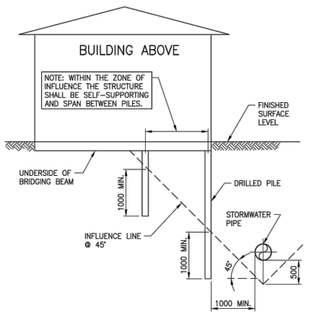


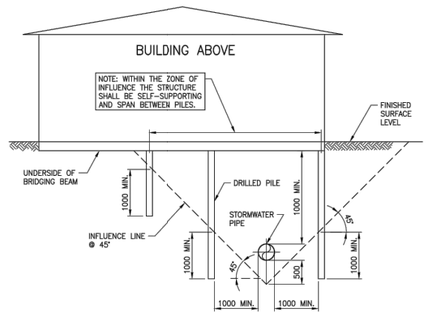
TYPE 2

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	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.



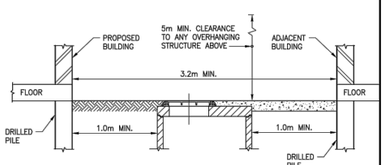


'WORKS CLOSE' NOTES:

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:

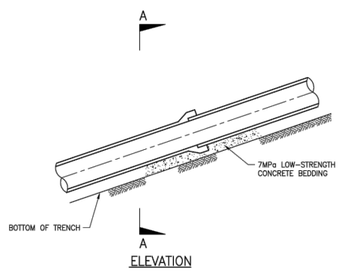
1. OUTSIDE ZONE OF INFLUENCE, NORMAL FOUNDATION REQUIREMENTS APPLY.
2. THE DETAIL APPLIES TO STORMWATER PIPES ≤ 375mm NOMINAL DIAMETER AND ≤ 2.0m DEPTH TO INVERT.
3. WORKS OVER PIPES LARGER THAN 375mm NOMINAL DIAMETER IS NOT ALLOWED.
4. PILES SHALL BE CONSTRUCTED TO A DEPTH OF 1.0m BELOW INFLUENCE LINE.
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.



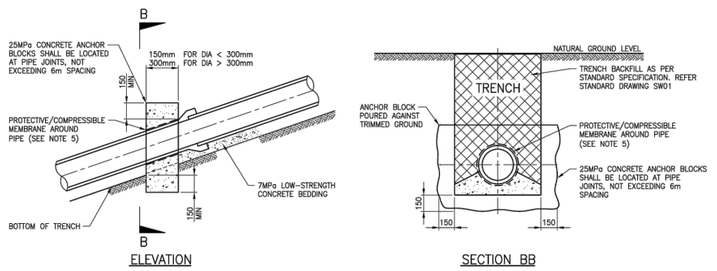
STORMWATER CODE OF PRACTICE STANDARD DETAILS REVISION: 3 REV DATE: 17 JANUARY 2022 CAD FILENAME: AC-STD-SW22.DWG	AUCKLAND COUNCIL STORMWATER PIPE AND MANHOLE CONSTRUCTION CLEARANCE REQUIREMENTS MANHOLES NEAR WORKS AND WORKS CLOSE TO, OR OVER, PIPES	ENVIRONMENTAL-SW	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING 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	ORIGINAL SCALE A3 SCALE: N.T.S. DRAWING SET: SWCoP, SHEET: 1 OF 1 DRAWING No.: SW23, REV: 4

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-4 Rev A

RESOURCE CONSENT

DATE: 4/25 FILE PATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWGS\100\16-RV-C802 SW STD DETAILS.DWG

Drawing set for Chapter 17 - Road Drainage

Gutter Flow as a function of road slope S

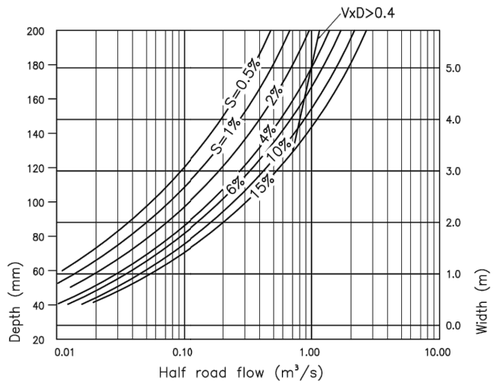


Chart 1: Kerb and Gutter Flow Using Izzard's Equation
Source: QUDM (1992)

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

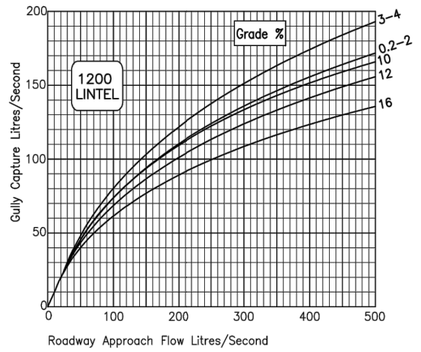
AUCKLAND TRANSPORT CODE OF PRACTICE

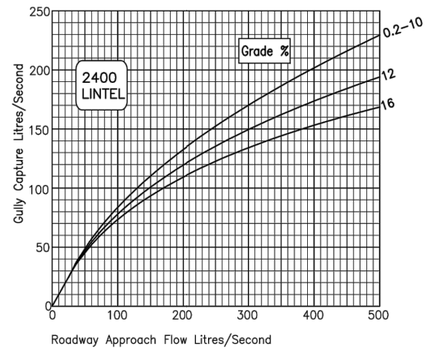
TITLE: STORMWATER INLET PITS DESIGN CHART 1

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	SP	03/2025

	By	Date
Survey	--	--/----
Design	--	--/----
Drawn	SP	03/2025
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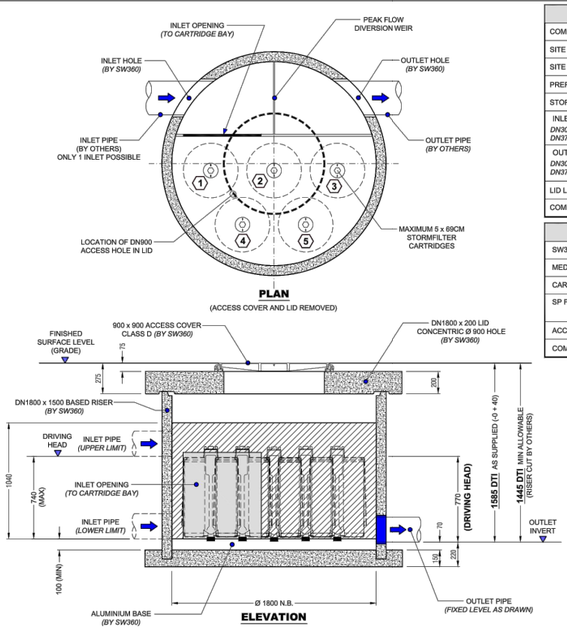
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE STORMWATER STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-5 Rev A

DATE 4/25 FILE PATH: F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG



TO BE COMPLETED BY CUSTOMER / CONTRACTOR			
COMPANY :		P.O. NUMBER :	
SITE ADDRESS :			
SITE CONTACT & PHONE :			
PREFERRED DELIVERY DATE (TBC SW360) :			
STORMFILTER REFERENCE (IF APPLICABLE) :			
INLET PIPE Ø : *DN300 RCRRJ - MAX DN375 PVC - MAX*	PIPE MATERIAL : *(PVC OR RCRRJ)*	CORE DRILL Ø :	INLET (IL) :
OUTLET PIPE Ø : *DN300 RCRRJ - MAX DN375 PVC - MAX*	PIPE MATERIAL : *(PVC OR RCRRJ)*	CORE DRILL Ø :	OUTLET (IL) :
LID LEVEL (RL) :	DTI :	ORIENTATION : 180° *(AS DRAWN)* / 90° / 135°	
COMPLETED BY :		SIGNED :	DATE :

TO BE COMPLETED BY SW360				
SW360 PRODUCT CODE :				
MEDIA TYPE (CIRCLE ONE) :	PERLITE	ZPG	OTHER :	
CARTRIDGE QTY (STATE) :			PRE-INSTALLATION (Y/N) :	
SP FLOW RATE (CIRCLE ONE) :	FULL (Ø 27.6 ID) BLACK/MUSTARD	3 QTR (Ø 24.0 ID) WHITE/OPAL	HALF (Ø 19.7 ID) GREEN	OTHER :
ACCESS COVER (CIRCLE ONE) :	900 x 900 WEB-FORGE / CLASS D		OTHER :	
COMPLETED BY :	SIGNED :		DATE :	

NOTES

1. MANHOLE UNIT FITTED WITH 2 SWIFTLIFT ANCHOR POINTS. DO NOT EXCEED 60 DEGREE LIFT ANGLE. CONCRETE LID FITTED WITH 4 SWIFTLIFT ANCHOR POINTS.
2. UNIT SUPPLIED WITH INLET & OUTLET CORE DRILLED.
3. SEALING / GROUTING OF MANHOLE COMPONENTS AND PIPES BY CONTRACTOR. ENSURING LOCAL CODES AND REGULATIONS ARE COMPLIED WITH.
4. ANY RISERS REQUIRED TO INCREASE THE DEPTH TO INVERT (DTI) FROM THAT AS DRAWN TO BE SUPPLIED BY THE CONTRACTOR.
5. FOR A DTI EXCEEDING 5m PLEASE CONTACT **0800STORMWATER**.
6. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION RELATED EROSION RUNOFF.
7. BACKFILL, BEDDING AND BUOYANCY DESIGN BY ENGINEER OF RECORD
8. QTY OF CARTRIDGES BY ENGINEER OF RECORD.
9. CONCRETE MANHOLE RISERS ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH AS/NZS 4058 : 2007
10. CONCRETE MANHOLE BASES ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NZS 3101 : 2006 & NZS 3109 : 1997
11. CONCRETE LID DESIGNED AND MANUFACTURED TO HN-HO-72
12. FOR REQUIREMENTS OUTSIDE OF DRAWING SPECIFICATIONS PLEASE CONTACT **0800STORMWATER**.

APPROX WEIGHTS

MANHOLE SECTION INCLUDING CARTRIDGES : **3900 Kg**
(AS DELIVERED, BASED ON QTY 5 ZPG CARTS)
LID WEIGHT : **1800 Kg**

Stormwater360 BETWEEN SKY AND SEA

0800 STORMWATER
sales@stormwater360.co.nz
www.stormwater360.co.nz

CONDITION OF USE

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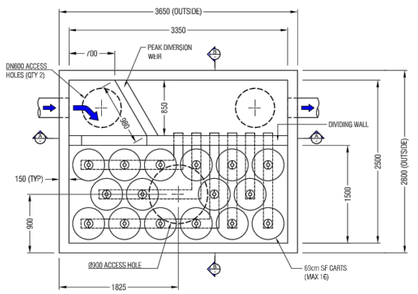
STORMFILTER® PEAK DIVERSION
OFF - LINE CARTRIDGE FILTRATION SYSTEM
69cm CART / DN1800 x 1500 MH - TRAFFICABLE
GENERAL ARRANGEMENT

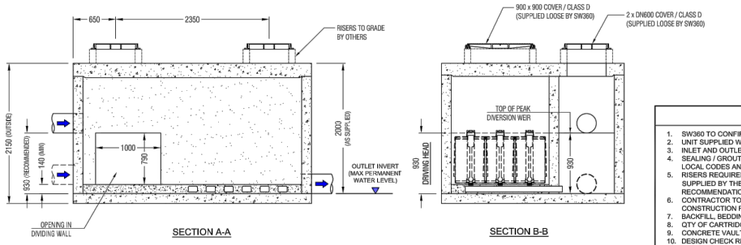
SCALE : N.T.S. | DRG No : SF-MHPD-69-1800-T-20 | REV : 0 | DATE : 22.05.19

JOB NO :				REV	REVISION DETAIL	DATE
PROJECT :				A	FOR APPROVAL	22.05.19
				0	APPROVED	23.05.19
DRN :	R.P.	22.05.19				
CKD :	G.S.	22.05.19				



TO BE COMPLETED BY CUSTOMER / CONTRACTOR			
COMPANY :		P.O. NUMBER :	
SITE ADDRESS :			
SITE CONTACT & PHONE :			
PREFERRED DELIVERY DATE (TBC SW360) :			
STORMFILTER REFERENCE (IF APPLICABLE) :			
INLET PIPE Ø :	PIPE MATERIAL :	CORE DRILL Ø :	INLET (IL) :
OUTLET PIPE Ø :	PIPE MATERIAL :	CORE DRILL Ø :	OUTLET (IL) :
LID LEVEL (RL) :		DTI :	
COMPLETED BY :		SIGNED :	DATE :

TO BE COMPLETED BY SW360				
SW360 PRODUCT CODE :				
MEDIA TYPE (CIRCLE ONE) :	PERLITE	ZPG	OTHER :	
CARTRIDGE QTY (STATE) :			PRE-INSTALLATION (Y/N) :	
SP FLOW RATE (CIRCLE ONE) :	FULL (Ø 27.6 ID) BLACK/MUSTARD	3 QTR (Ø 24.0 ID) WHITE/OPAL	HALF (Ø 19.7 ID) GREEN	OTHER :
ACCESS COVERS (CIRCLE ONE) :	AS DRAWN - YES or NO		OTHER :	
COMPLETED BY :	SIGNED :		DATE :	



APPROX WEIGHTS

VAULT WEIGHT: **15700 Kg** (EMPTY)
VAULT WEIGHT: **16500 Kg** (WITH 16 x ZPG CARTS FITTED)
LID WEIGHT: **4700 Kg**

NOTES

1. SW360 TO CONFIRM WEIGHTS AND LIFTING DETAILS PRIOR TO DELIVERY.
2. UNIT SUPPLIED WITH INLET & OUTLET HOLES PRE-CORED.
3. INLET AND OUTLET PIPES BY OTHERS.
4. SEALING / GROUTING OF CONCRETE LID AND PIPES BY CONTRACTOR, ENSURING LOCAL CODES AND REGULATIONS ARE COMPLIED WITH.
5. RISERS REQUIRED FROM VAULT LID TO ACCESS COVERS (FINISHED SURFACE LEVEL) SUPPLIED BY THE CONTRACTOR. CONTACT **0800STORMWATER** FOR RECOMMENDATIONS.
6. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION RELATED EROSION RUNOFF.
7. BACKFILL, BEDDING AND BUOYANCY DESIGN BY ENGINEER OF RECORD
8. QTY OF CARTRIDGES BY ENGINEER OF RECORD.
9. CONCRETE VAULT AND LID DESIGNED AND MANUFACTURED TO HN-HO-72
10. DESIGN CHECK REQUIRED WHEN COVER ABOVE LID EXCEEDS 1.0M
11. OTHER CONFIGURATIONS ARE POSSIBLE, FOR REQUIREMENTS OUTSIDE OF DRAWING SPECIFICATIONS PLEASE CONTACT **0800STORMWATER**.

Stormwater360 BETWEEN SKY AND SEA

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www.stormwater360.co.nz

CONDITION OF USE

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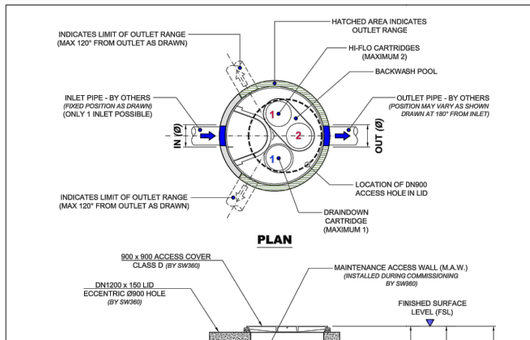
STORMFILTER® PEAK DIVERSION
OFF-LINE CARTRIDGE FILTRATION SYSTEM
16 x 69cm CART PD VAULT (LEFT INLET)
GENERAL ARRANGEMENT

SCALE : N.T.S. | DRG No : SF-VPD-69-3425-L-20 | REV : 1 | DATE : 27/03/20

JOB NO :				REV	REVISION DETAIL	DATE
PROJECT :				1	WEIGHTS ADDED	27/03/20
				0	APPROVED	17/03/20
DRN :	G.S.	04/03/20				
CKD :	K.J.	17/03/20				



TO BE COMPLETED BY CUSTOMER / CONTRACTOR			
COMPANY :		P.O. NUMBER :	
SITE ADDRESS :			
SITE CONTACT & PHONE :			
PREFERRED DELIVERY DATE (TBC SW360) :			
FILTER REFERENCE (IF APPLICABLE) :		LID LEVEL (INPUT REQUIRED) :	
INLET PIPE DATA (DN225 RCRRJ-MAX) : (DN300 PVC-MAX)	IL :	DIA :	MATERIAL :
OUTLET PIPE DATA (DN225 RCRRJ-MAX) : (DN300 PVC-MAX)	IL :	DIA :	MATERIAL :
OUTLET PIPE ORIENTATION : (CIRCLE 180° OR INPUT REQUIREMENT)	AS DRAWN : 180° FROM INLET	CLOCKWISE FROM INLET : (60° MIN)	ANTICLOCKWISE FROM INLET : (60° MIN)
COMPLETED BY :	SIGNED :		DATE :

TO BE COMPLETED BY SW360				
DRIVING HEAD (DH) (CIRCLE REQUIREMENT OR INPUT CUSTOM VALUE) :	305 mm	460 mm	CUSTOM DRIVING HEAD : (INPUT DETAILS IF REQUIRED)	
DEPTH TO INVERT (DTI) CHECK : (CALCULATE AND RECORD) :	INLET / OUTLET IL CHECK : (CALCULATE AND RECORD) :		No. OF FILTERS :	
ACCESS COVER : 900 x 900 WEBFORGE / CLASS D : (SUPPLIED UNLESS STATED OTHERWISE)		DETAILS OF OTHER : (IF REQUIRED)		
COMPLETED BY :	SIGNED :		DATE :	

NOTES :

1. CONCRETE MANHOLE RISER UNITS FITTED WITH SWIFTLIFT ANCHOR POINTS (QTY 2). DO NOT EXCEED 60 DEGREE LIFT ANGLE. CONCRETE LID FITTED WITH SWIFTLIFT ANCHOR POINTS (QTY 4).
2. UNIT SUPPLIED WITH BOTH INLET AND OUTLET CORE DRILLED.
3. SEALING / GROUTING OF MANHOLE COMPONENTS AND PIPES BY CONTRACTOR. ENSURING LOCAL CODES AND REGULATIONS ARE COMPLIED WITH.
4. ANY RISERS REQUIRED TO INCREASE THE DEPTH TO INVERT (DTI) FROM THAT AS DRAWN TO BE SUPPLIED BY THE CONTRACTOR.
5. FOR A DTI EXCEEDING 5m PLEASE CONTACT **0800STORMWATER**.
6. BACKFILL, BEDDING AND BUOYANCY DESIGN BY ENGINEER OF RECORD.
7. CONCRETE MANHOLE RISERS ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH AS/NZS 4058 : 2007
8. CONCRETE MANHOLE BASES ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NZS 3101 : 2006 AND NZS 3109 : 1997
9. CONCRETE LID DESIGNED AND MANUFACTURED TO HN-HO-72.
10. FILTERS AND MAINTENANCE ACCESS WALL (MAW) TO BE INSTALLED DURING COMMISSIONING BY STORMWATER360.
11. COMMISSIONING TO OCCUR ONLY WHEN CONSTRUCTION IS COMPLETE, AND SITE IS CLEAN.
12. CONTRACTOR TO ENSURE MANHOLE IS CLEAN FROM SITE RUN-OFF PRIOR TO COMMISSIONING.
13. CONTACT **0800STORMWATER** FOR COMMISSIONING OR ANY REQUIREMENTS OUTSIDE THIS DRAWING.

DATA FOR PRODUCTION ONLY (COMPLETED BY SW360)

OUT (Ø) OUTLET CORE Ø	MAX Ø 350	OUT (HEIGHT) = 920 mm - 0.5 PIPE ID	IN (Ø) OUTLET CORE Ø	MAX Ø 350	IN (HEIGHT) = OUT (HEIGHT) - Δ INVERT

INLET TO OUTLET DISTANCE : *WRAP MEASUREMENT FROM C/L INLET TO C/L OUTLET* = (ANGLE) x (3.14 x RISER OD) / 360

COMPLETED BY : | SIGNED : | DATE :

APPROX WEIGHTS

- RISER #1 *(BASED ON DN1200 x 1500)* : 1900 Kg
- RISER #2 *(DN1200 x 1500 INCL DECK)* : 1150 Kg
- CONCRETE LID *(DN1200 x 150 THICK)* : 520 Kg

Stormwater360 BETWEEN SKY AND SEA

0800 STORMWATER
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www.stormwater360.co.nz

CONDITION OF USE

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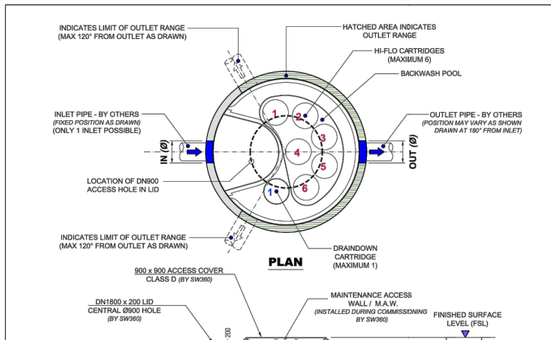
JELLYFISH® FILTER
STORMWATER MEMBRANE FILTER
DN1200 / 54" FILTERS 2 + 1 / OFFLINE / TRAFFICABLE
GENERAL ARRANGEMENT

SCALE : N.T.S. | DRG No : JF-MH-54-1200-T-OFF-20 | REV : 1 | DATE : 25.05.19

JOB NO :				REV	REVISION DETAIL	DATE
PROJECT :				0	APPROVED	25.05.19
				1	FORMULA REV	12.08.19
DRN :	R.P.	25.05.19				
CKD :	G.S.	25.05.19				



TO BE COMPLETED BY CUSTOMER / CONTRACTOR			
COMPANY :		P.O. NUMBER :	
SITE ADDRESS :			
SITE CONTACT & PHONE :			
PREFERRED DELIVERY DATE (TBC SW360) :			
FILTER REFERENCE (IF APPLICABLE) :		LID LEVEL (INPUT REQUIRED) :	
INLET PIPE DATA (DN375 RCRRJ-MAX) : (DN375 PVC-MAX)	IL :	DIA :	MATERIAL :
OUTLET PIPE DATA (DN375 RCRRJ-MAX) : (DN375 PVC-MAX)	IL :	DIA :	MATERIAL :
OUTLET PIPE ORIENTATION : (CIRCLE 180° OR INPUT REQUIREMENT)	AS DRAWN : 180° FROM INLET	CLOCKWISE FROM INLET : (60° MIN)	ANTICLOCKWISE FROM INLET : (60° MIN)
COMPLETED BY :	SIGNED :		DATE :

TO BE COMPLETED BY SW360				
DRIVING HEAD (DH) (CIRCLE REQUIREMENT OR INPUT CUSTOM VALUE) :	305 mm	460 mm	CUSTOM DRIVING HEAD : (INPUT DETAILS IF REQUIRED)	
DEPTH TO INVERT (DTI) CHECK : (CALCULATE AND RECORD) :	INLET / OUTLET IL CHECK : (CALCULATE AND RECORD) :		No. OF FILTERS :	
ACCESS COVER : 900 x 900 WEBFORGE / CLASS D : (SUPPLIED UNLESS STATED OTHERWISE)		DETAILS OF OTHER : (IF REQUIRED)		
COMPLETED BY :	SIGNED :		DATE :	

NOTES :

1. CONCRETE MANHOLE RISER UNITS FITTED WITH SWIFTLIFT ANCHOR POINTS (QTY 2). DO NOT EXCEED 60 DEGREE LIFT ANGLE. CONCRETE LID FITTED WITH SWIFTLIFT ANCHOR POINTS (QTY 4).
2. UNIT SUPPLIED WITH BOTH INLET AND OUTLET CORE DRILLED.
3. SEALING / GROUTING OF MANHOLE COMPONENTS AND PIPES BY CONTRACTOR. ENSURING LOCAL CODES AND REGULATIONS ARE COMPLIED WITH.
4. ANY RISERS REQUIRED TO INCREASE THE DEPTH TO INVERT (DTI) FROM THAT AS DRAWN TO BE SUPPLIED BY THE CONTRACTOR.
5. FOR A DTI EXCEEDING 5m PLEASE CONTACT **0800STORMWATER**.
6. BACKFILL, BEDDING AND BUOYANCY DESIGN BY ENGINEER OF RECORD.
7. CONCRETE MANHOLE RISERS ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH AS/NZS 4058 : 2007
8. CONCRETE MANHOLE BASES ARE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH NZS 3101 : 2006 AND NZS 3109 : 1997
9. CONCRETE LID DESIGNED AND MANUFACTURED TO HN-HO-72.
10. FILTERS AND MAINTENANCE ACCESS WALL (MAW) TO BE INSTALLED DURING COMMISSIONING BY STORMWATER360.
11. COMMISSIONING TO OCCUR ONLY WHEN CONSTRUCTION IS COMPLETE, AND SITE IS CLEAN.
12. CONTRACTOR TO ENSURE MANHOLE IS CLEAN FROM SITE RUN-OFF PRIOR TO COMMISSIONING.
13. CONTACT **0800STORMWATER** FOR COMMISSIONING OR ANY REQUIREMENTS OUTSIDE THIS DRAWING.

DATA FOR PRODUCTION ONLY (COMPLETED BY SW360)

OUT (Ø) OUTLET CORE Ø	MAX Ø 906	OUT (HEIGHT) = 1520 mm - 0.5 PIPE ID	IN (Ø) OUTLET CORE Ø	MAX Ø 906	IN (HEIGHT) = OUT (HEIGHT) - Δ INVERT

INLET TO OUTLET DISTANCE : *WRAP MEASUREMENT FROM C/L INLET TO C/L OUTLET* = (ANGLE) x (3.14 x RISER OD) / 360

COMPLETED BY : | SIGNED : | DATE :

APPROX WEIGHTS

- RISER #1 *(BASED ON DN1800 x 1500)* : 3520 Kg
- RISER #2 *(DN1800 x 2100 INCL DECK)* : 2950 Kg
- CONCRETE LID *(DN1800 x 200 THICK)* : 1800 Kg

Stormwater360 BETWEEN SKY AND SEA

0800 STORMWATER
sales@stormwater360.co.nz
www.stormwater360.co.nz

CONDITION OF USE

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JELLYFISH® FILTER
STORMWATER MEMBRANE FILTER
DN1800 / 54" FILTERS 6 + 1 / OFFLINE / TRAFFICABLE
GENERAL ARRANGEMENT

SCALE : N.T.S. | DRG No : JF-MH-54-1800-T-OFF-20 | REV : 1 | DATE : 10.04.19

JOB NO :				REV	REVISION DETAIL	DATE
PROJECT :				0	FIRST DRAFT	10.04.19
				1	FORMULA REV	12.08.19
DRN :	R.P.	10.04.19				
CKD :	G.S.	G.Y.	10.04.19			

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Auckland 1023

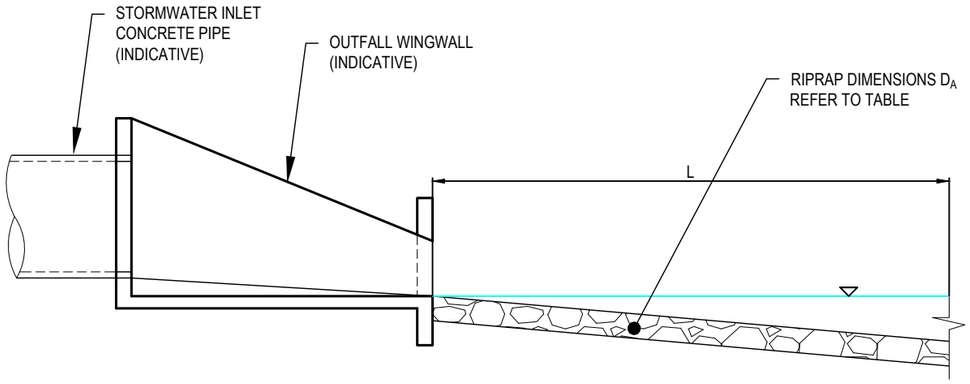
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE STORMWATER FILTER STANDARD DETAILS

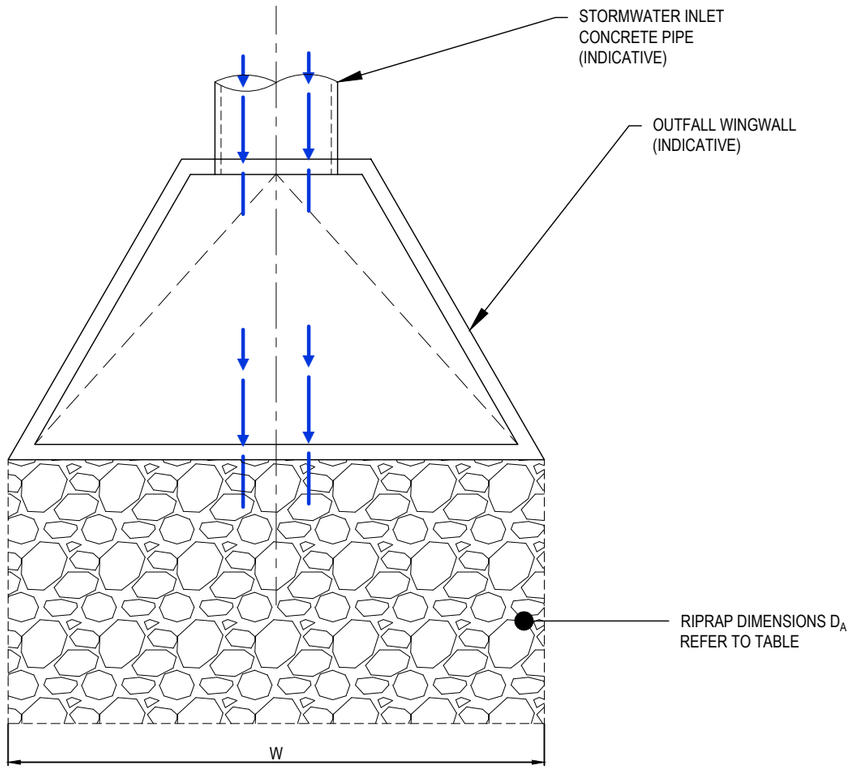
Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-6 Rev A

RESOURCE CONSENT

DATE : 4/25 FILEPATH: F:\MAVEN\PROJECTS\147016 - RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG



SIDE VIEW
N.T.S



TYPICAL OUTLET STRUCTURE WITHOUT BAFFLES
N.T.S

TABLE OF RIPRAP DIMENSIONS			
OUTFALL NUMBER	L (m)	W (m)	D_A (m)
1-0	6.4	1.8	0.44
2-0	5.8	1.4	0.44
3-0	3.5	0.7	0.30
4-0	3.3	0.7	0.28
5-0	7.3	2.1	0.50
6-0	3.0	0.8	0.20
6-P-0	11.8	2.5	0.98
7-0	4.2	0.9	0.34
8-0	6.3	1.6	0.46
9-0	8.1	2.3	0.56
10-0	3	0.9	0.20
15-0	2.3	0.9	0.14
16-0	2.3	0.9	0.14
17-0	2.3	0.9	0.14
18-0	2.3	0.9	0.14
19-0	2.3	0.9	0.14
20-0	2.3	0.9	0.14
21-0	2.3	0.9	0.14
22-0	2.3	0.9	0.14
23-0	2.3	0.9	0.14
24-0	3	0.9	0.20
25-0	2.9	1.2	0.18

RESOURCE CONSENT

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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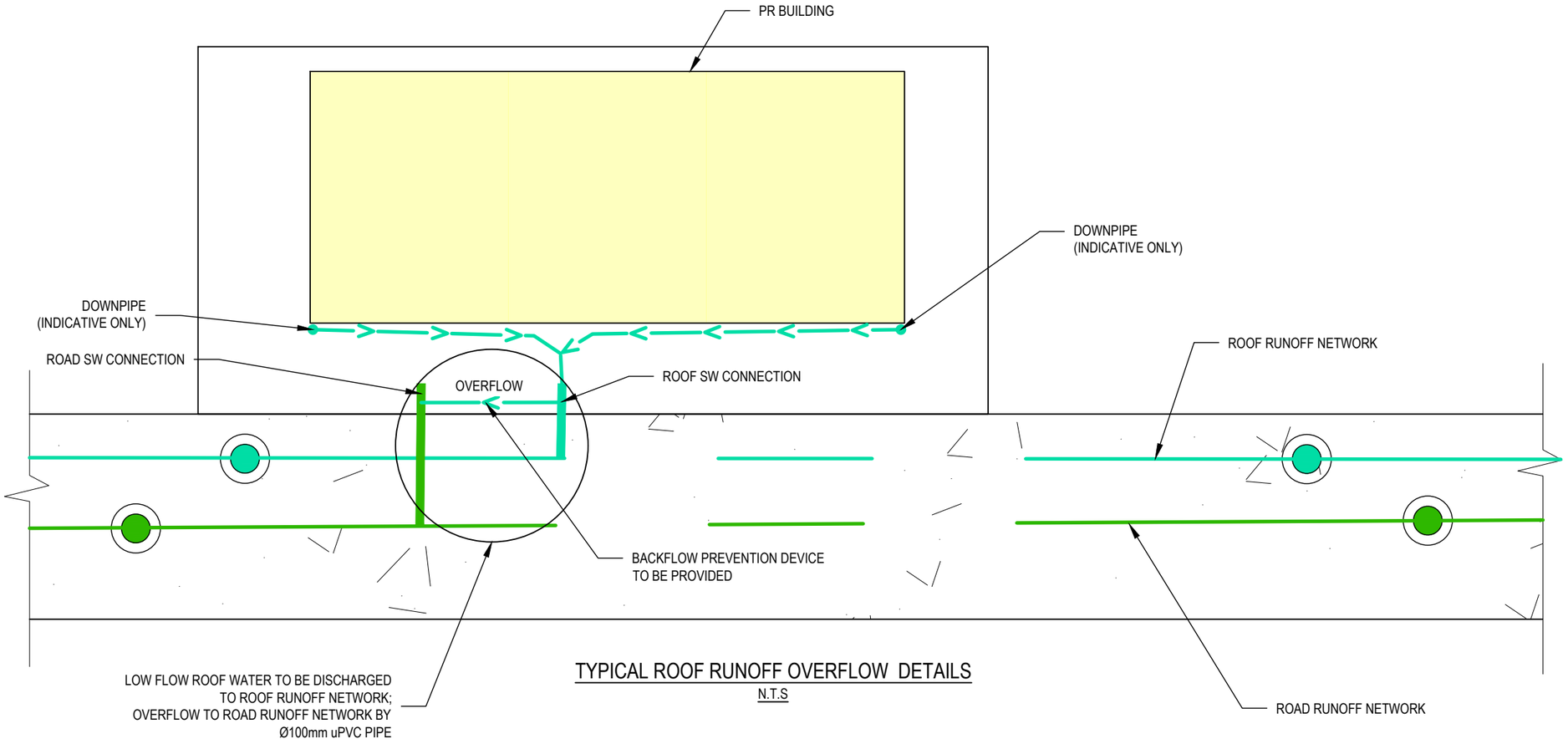
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE STORMWATER OUTLET STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-7 Rev A

DATE 4/3/25 FILE PATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG



TYPICAL ROOF RUNOFF OVERFLOW DETAILS

N.T.S

RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

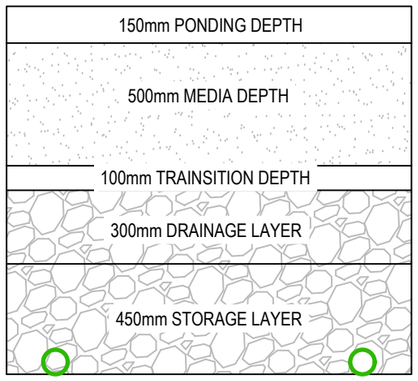
RETIREMENT VILLAGE STORMWATER ROOF RUN OFF STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C802 SW STD DETAILS.DWG		
Drawing no.	C802-8	Rev	A

DATE 4/25 FILE PATH F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG

NOTES

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



TYPICAL STORMWATER RAINGAREN CROSS SECTION

N.T.S

SMAF RAINGARDEN MAKEUP WITHIN FORESTRY ROAD. THIS DETAIL IS SUBJECT TO DETAILED DESIGN.

RESOURCE CONSENT

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Auckland 1023

Project

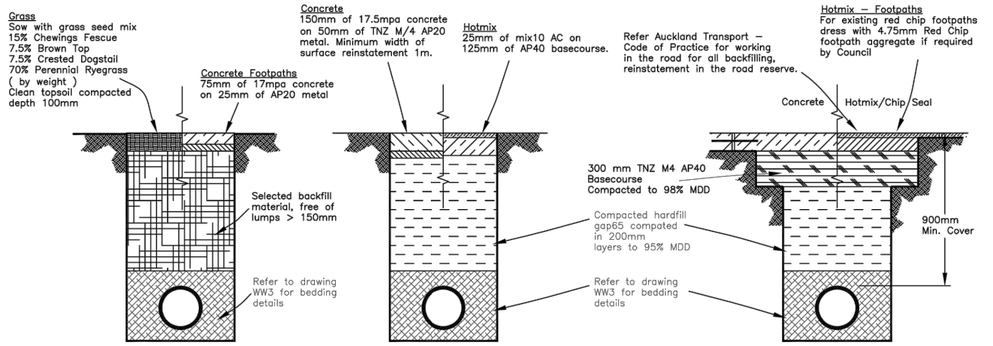
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE STORMWATER RAINGARDEN DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C802 SW STD DETAILS.DWG
Drawing no.	C802-9 Rev A

DATE 4/25 FILEPATH: F:\MAVEN\PROJECTS\147016 - RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C802 SW STD DETAILS.DWG



GRASS AREA & FOOTPATH
(Not in Road reserve)
REINSTATEMENT

DRIVEWAY REINSTATEMENT
(Not in Road Reserve)

FOOTPATH/VEHICLE CROSSING,
CARRIAGEWAY REINSTATEMENT

NOTES
1. All trench surface reinstatement within the road reserve shall comply with Auckland Transport requirements.
   The details shown are typical expectations for reinstatements.
2. Backfill shall be compacted in 200mm layers to obtain maximum density as described in Watercare's Construction Standards.
3. Where concrete or other stabilized layers exist in the roadway, the trench shall be reinstated with similar material or as directed by the roading engineer.

Watercare
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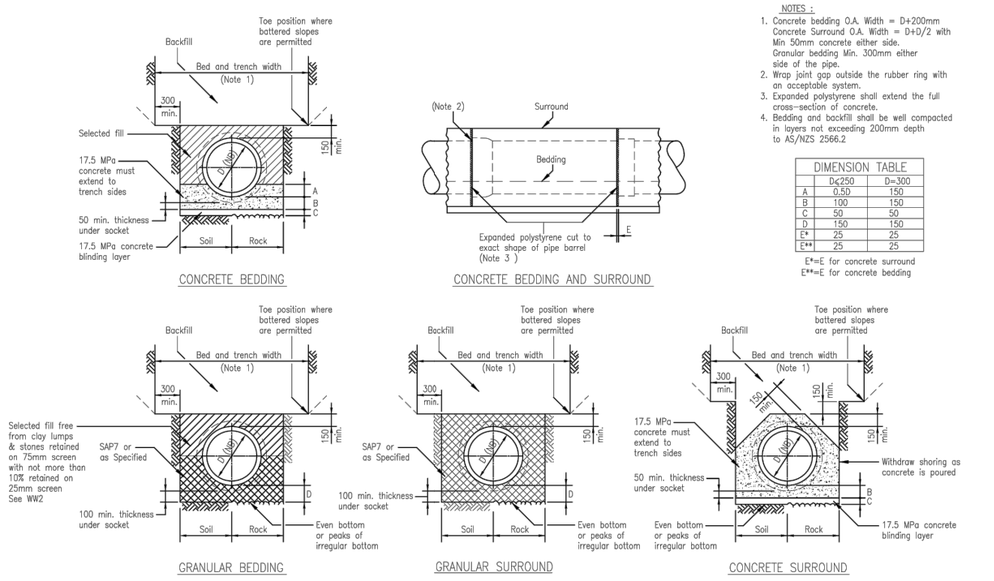
TYPICAL TRENCH REINSTATEMENT
DETAILS FOR WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	06–03–2017
DWG No.	2010070.001C
REFERENCE No.	WW 2



CONCRETE BEDDING

CONCRETE BEDDING AND SURROUND

NOTES :
1. Concrete bedding O.A. Width = D+200mm
   Concrete Surround O.A. Width = D+D/2 with Min 50mm concrete either side.
   Granular bedding Min. 300mm either side of the pipe.
2. Wrap joint gap outside the rubber ring with an acceptable system.
3. Expanded polystyrene shall extend the full cross–section of concrete.
4. Bedding and backfill shall be well compacted in layers not exceeding 200mm depth to AS/NZS 2566.2

DIMENSION TABLE		
	D≤250	D=300
A	0.5D	150
B	100	150
C	50	50
D	150	150
E*	25	25
E**	25	25

E*=E for concrete surround
E**=E for concrete bedding

GRANULAR BEDDING

GRANULAR SURROUND

CONCRETE SURROUND

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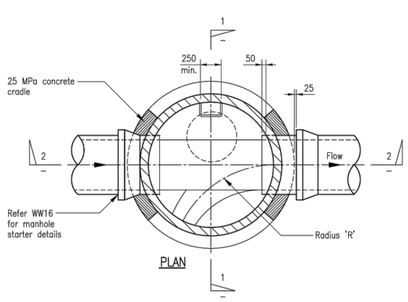
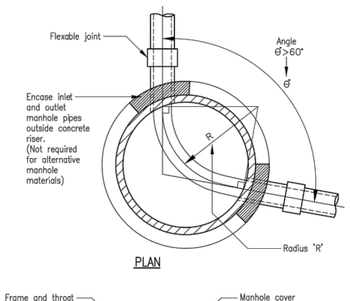
BEDDING DETAILS

SCALE:	N.T.S.
ISSUE DATE:	23–01–2017
DWG No.	2010070.005C
REFERENCE No.	WW 3





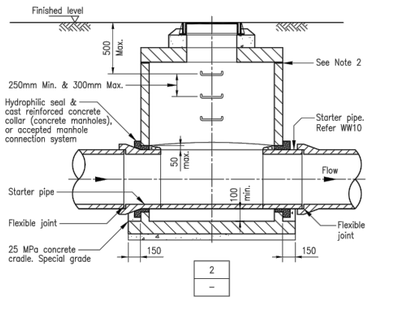
MANHOLE RISER DIAMETERS			
MAX. PIPE DIA.	NO. OF INCOMING PIPES **		
	1	2*	3***
≤250	1050	1050	1050
300	1500	1500	1500
>300	Refer to transmission dwgs.		

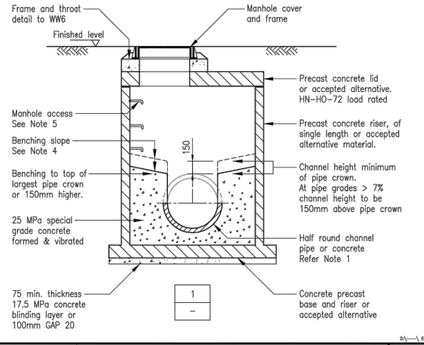
* Based on Max. 120 Deg deflection through manhole.

** To be determined with due regard for future potential connections.

*** Based on Min. 60 Deg between pipes & ≤ 180 Deg between pipe 1 & pipe 3

[Outside these criteria requires specific design]





NOTES:
1. Half round channels shall be pre–formed from a corrosion, prehibitive material.
2. Joint seals shall be an acceptable flexible seal. The joint shall be closed with an epoxy mortar (if concrete) & externally wrapped with an acceptable wrapping system.
3. Refer WW6 for manhole throat and cover details.
4. Concrete benching shall have a minimum slope of 1 in 12, proprietary benching products with a smooth surface (such as Polyethylene) shall not be less than 1 in 20. Refer to Watercare material supply standard.
5. Refer to the material supply standard for step–rung and ladder policy.
6. For manholes deeper than 1.8m Refer to WW9
6. Abbreviations :
   Min. = Minimum
   I.D. = Internal diameter
   'R' = Min. Radius (3 x I.D.).

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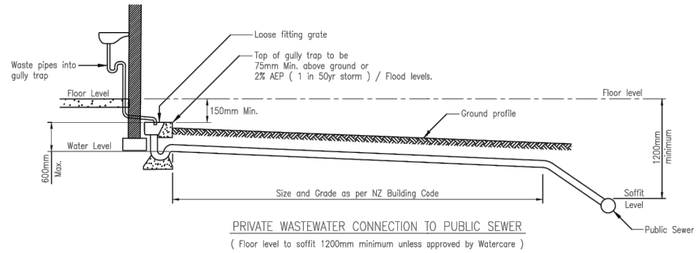
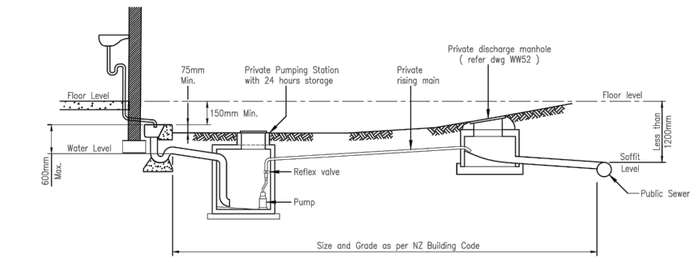
MANHOLE GENERAL DETAILS AND LAYOUT
FOR MANHOLES UP TO 1.8m DEEP

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010070.010D
REFERENCE No.	WW 5



PRIVATE WASTEWATER CONNECTION TO PUBLIC SEWER
(Floor level to soffit 1200mm minimum unless approved by Watercare)

NOTE:
EXAMPLE OF HOUSE SERVICE CONNECTION TO A PUBLIC SEWER
1. Minimum requirements are satisfied when the floor level is at least 1200mm above the soffit of the receiving sewer.
2. Where the receiving sewer is less than 1200mm a private pumping station and discharge manhole shall be installed.
3. Ground around gully trap shall be at least 75mm below the gully trap or 2% of the AEP (Annual exceedance probability) – Rain fall flood levels.
4. Building floor shall be at least 150mm above the gully trap. Gully traps shall not be placed in over land flow paths.



PRIVATE WASTEWATER PUMPING STATION CONNECTION TO PUBLIC SEWER
(Floor level to soffit less than 1200mm)

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PRIVATE CONNECTIONS
MINIMUM FLOOR LEVEL TO SOFFIT OF WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	23–01–2017
DWG No.	2010070.037B
REFERENCE No.	WW 17

RESOURCE CONSENT

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE WASTEWATER STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C803 WW STD DETAILS.DWG		
Drawing no.	C803	Rev	A

DATE: 4/25 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C803 WW STD DETAILS.DWG

GENERAL CONSTRUCTION NOTES

STANDARDS RELATING TO WORKS

Works shall to be carried out to the requirements of the Health & Safety at work in Employment Act 2015

Works shall be completed to Watercare Construction Standards.

MANUFACTURERS SPECIFICATIONS

Materials shall be installed to the Manufacturers requirements unless otherwise specified.

WELDING & FIXINGS

All steelwork shall be be workshop fabricated.

Steelwork and fixings shall be hot–dip galvanised to AS/NZS 4680 unless otherwise stated.

A Nickel anti–seize free of copper , lead , sulphides , chlorides & carbons (graphite) shall be used on bolts.

REINFORCING STEEL

Reinforcing shall be centrally placed with the specified minimum cover.

Bends shall be cold formed.

JOINT SEALS

Flanges : Per WSL Material Standard.

Manhole Joints : Concrete manhole with flexable joint seal such as rubber or butyl.
All joints must be externally wrapped with an accepted tape wrapped system.
Alternative materials to suppliers' specifications.

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Watercare	GENERAL CONSTRUCTION NOTES	SCALE:	N.T.S.
		ISSUE DATE:	13–07–2018
		DWG No.	2010070.002D
		REFERENCE No.	WW 1

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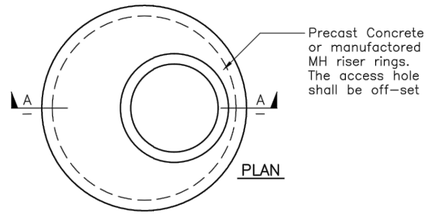
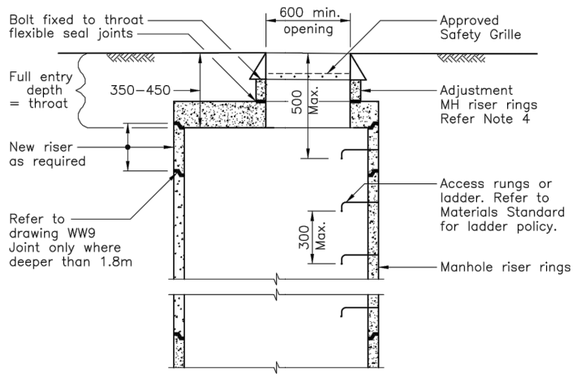


PLAN



TYPICAL SECTION A–A THROUGH MANHOLE

NOTES:

1. Lid supplied to HN–HO–72 loading and compliance certified.
2. When the throat depth is greater than 450mm, a new manhole riser is required with a new adjustment ring.
3. Refer drawing WW9 for manholes deeper than 1.8m
4. Refer drawing WW7 for sloping ground.
5. Refer drawing WW5 for manhole details.
6. Approved Safety Grille below access manhole cover.
7. Manhole covers in the road shall be constructed so that the cover hinge is facing the oncoming traffic. (Refer Fig 1)
8. For all other covers the orientation should be so that the cover hinge is at 90 degrees from the ladder, Either side. (Refer Fig 2)

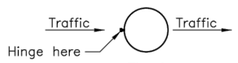


Fig 1

Fig 2

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Watercare	TYPICAL MANHOLE THROAT AND COVER DETAILS	SCALE:	N.T.S.
		ISSUE DATE:	13–07–2018
		DWG No.	2010070.029C
		REFERENCE No.	WW 6

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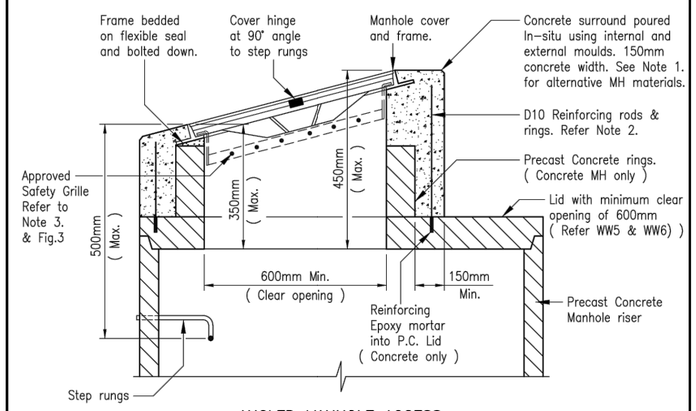
Fig.3



ANGLED MANHOLE ACCESS

NOTES :

1. MH material other than concrete cut to suit on–site.
2. D10 vertical reinf. rods & horizontal rings to be spaced at 300mm max. crs.
3. Approved Safety Grille below access manhole cover.
4. Manhole covers in road shall be constructed so that the cover hinge is facing the oncoming traffic. (Refer Fig.1)
5. For all other covers the orientation shall be so that the cover hinge is at 90 degrees from the ladder, either side. (Refer Fig.2)
6. See Fig.3 for safety grilles. Type and position must be considered for angled installation.

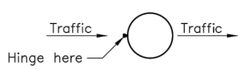


Fig.1

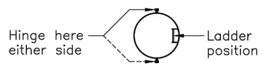


Fig.2

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Watercare	ANGLED MANHOLE ACCESS DETAILS	SCALE:	N.T.S.
		ISSUE DATE:	13–07–2018
		DWG No.	2010070.033D
		REFERENCE No.	WW 7

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RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

	By	Date
Survey	--	--/----
Design	--	--/----
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Checked	RW/KH	03/2025

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Project

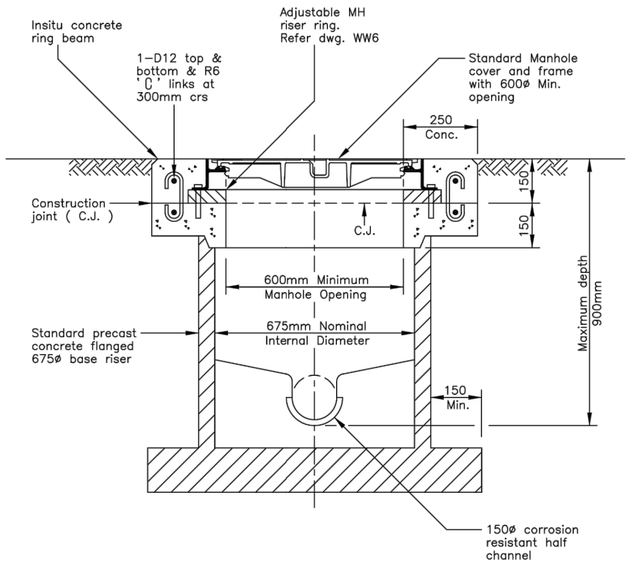
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE WASTEWATER STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C803 WW STD DETAILS.DWG		
Drawing no.	C803-1	Rev	A

DATE 4/25 FILE PATH P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C803 WW STD DETAILS.DWG



Notes:

1. Only to be used as terminating manhole on level Residential sites with more than two 100ø House connections.
2. This drawing to be read with WW5 and WW6

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Watercare	TERMINATING MANHOLE DETAIL 675mm NOMINAL DIAMETER	SCALE:	N.T.S.
		ISSUE DATE:	06–03–2017
		DWG No.	2010070.009C
		REFERENCE No.	WW 8

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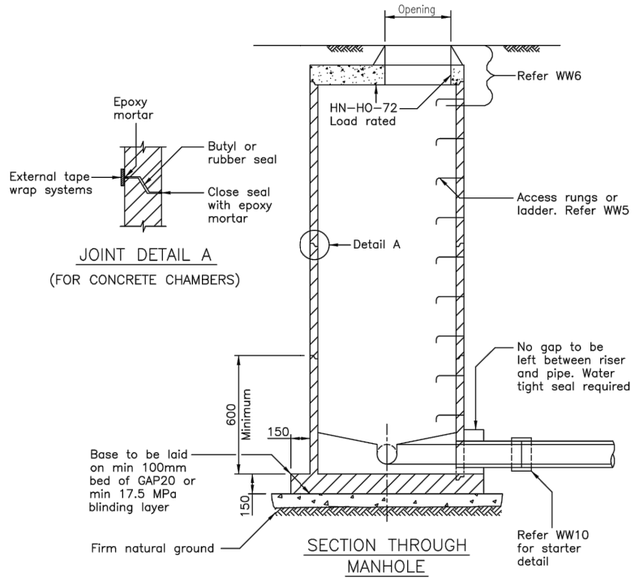

JOINT DETAIL A
(FOR CONCRETE CHAMBERS)

SECTION THROUGH MANHOLE

Notes:

1. Refer to WW5 for general details.
2. Channel through manhole to be lined.
3. All manhole openings must be cut.
4. For droppers refer to WW13
5. The manhole diameter shall be increased to minimum internal 1200mm for all manholes greater than 3.0 metres deep.
6. For manholes > 6.0 meters deep the minimum internal diameter shall be 1500mm.
7. Refer WW6 for manhole throat and cover details.
8. Manholes greater than 6m deep must be installed with landing platforms. Refer drawing in (Transmission drawing set)

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Watercare	MANHOLES > 1.8m DEEP	SCALE:	N.T.S.
		ISSUE DATE:	13–03–2017
		DWG No.	2010070.012D
		REFERENCE No.	WW 9

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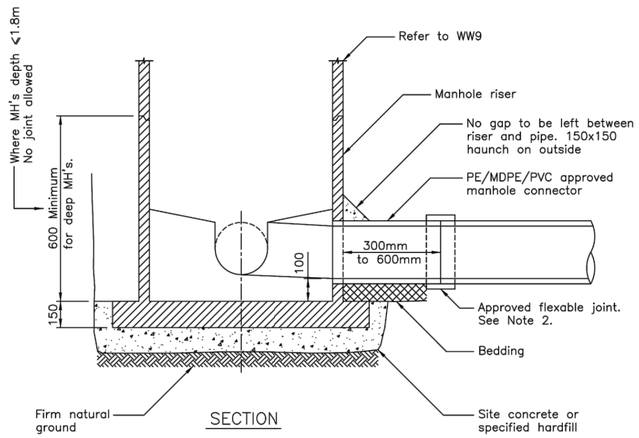

SECTION

Notes:

1. This drawing shall be read with WW5.
2. For PE pipe connections to a concrete manhole refer to WW11 and WW12 for acceptable solutions.
3. Detail may differ for accepted proprietary manhole systems other than concrete.

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Watercare	MANHOLE CONNECTION & STARTER DETAIL	SCALE:	N.T.S.
		ISSUE DATE:	06–03–2017
		DWG No.	2010070.013D
		REFERENCE No.	WW 10

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RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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Survey	--	--/----
Design	--	--/----
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Checked	RW/KH	03/2025

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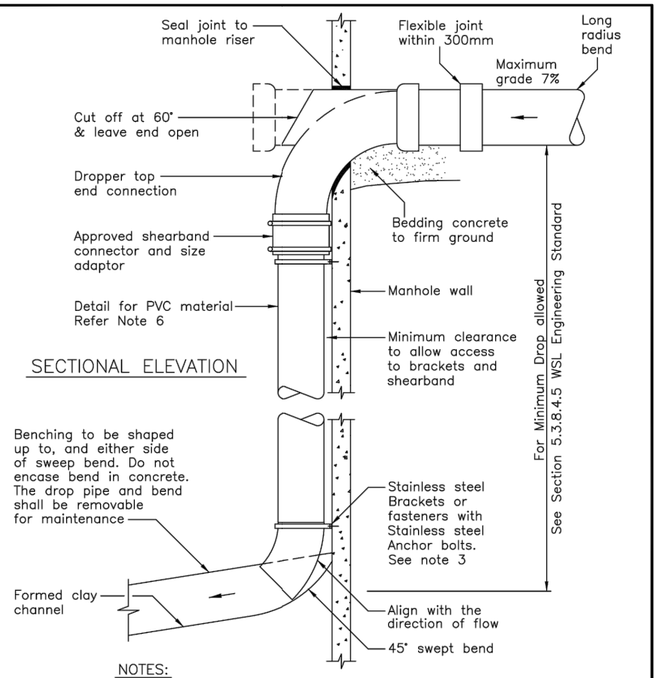
Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE WASTEWATER STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C803 WW STD DETAILS.DWG		
Drawing no.	C803-2	Rev	A

DATE 4/2025 FILE PATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C803 WW STD DETAILS.DWG



NOTES:

1. Specific approval is required from Watercare for all internal drop connections to existing manholes. Considerations include space available in the existing manhole and number of existing internal drop connections.
2. Internal drop shall be clear of Manhole rungs/ladders.
3. 100ø to 300ø PVC drop pipe held in place by Stainless steel brackets or fasteners with M10 Stainless steel anchor bolts every 600 mm.
4. Specific design is required where the incoming grade exceeds 7%, high velocity or where deep manholes make plunge-droppers unsuitable.
5. The minium clear diameter in the manhole shall be 1m. Vertical droppers are not allowed in manholes under 1200mm diameter.
6. This detail is suitable for GRP. For PE, joints shall be butt-welded. The PE top end connections shall be fabricated to fit over the incoming pipe with an O-ring seal.

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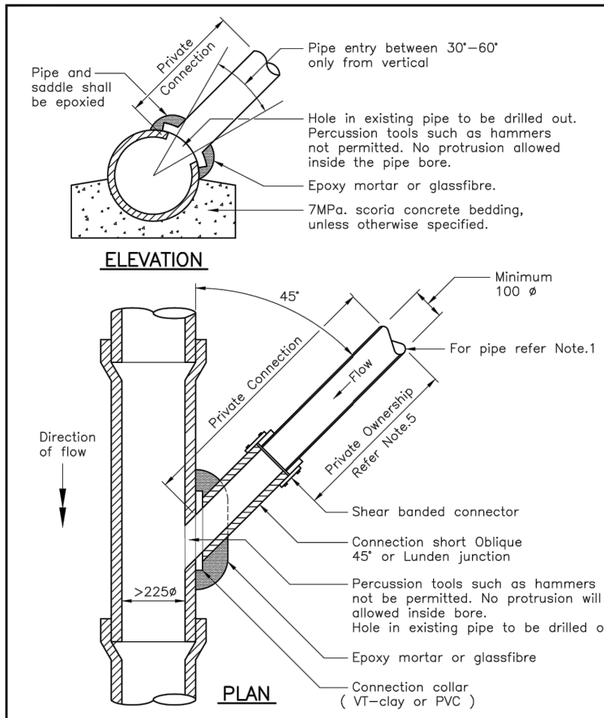
INTERNAL MANHOLE PLUNGE-DROP PIPE

SCALE:	N.T.S.
ISSUE DATE:	06-03-2017
DWG No.	2010070.018C
REFERENCE No.	WW 13



NOTES:

1. Applies to concrete, VT-clay, or PVC pipe saddle connections only. For other materials refer WW15.
2. The maximum lateral pipe size shall be less than half of the main.
3. For pipe lateral to main ratio outside the above parameters, refer to WW15, or a manhole shall be constructed where approved.
4. If the existing sewer pipe has PE or CIPP liner, specific design & approval required from Watercare.
5. Refer to Watercare Point-of-Supply Policy.

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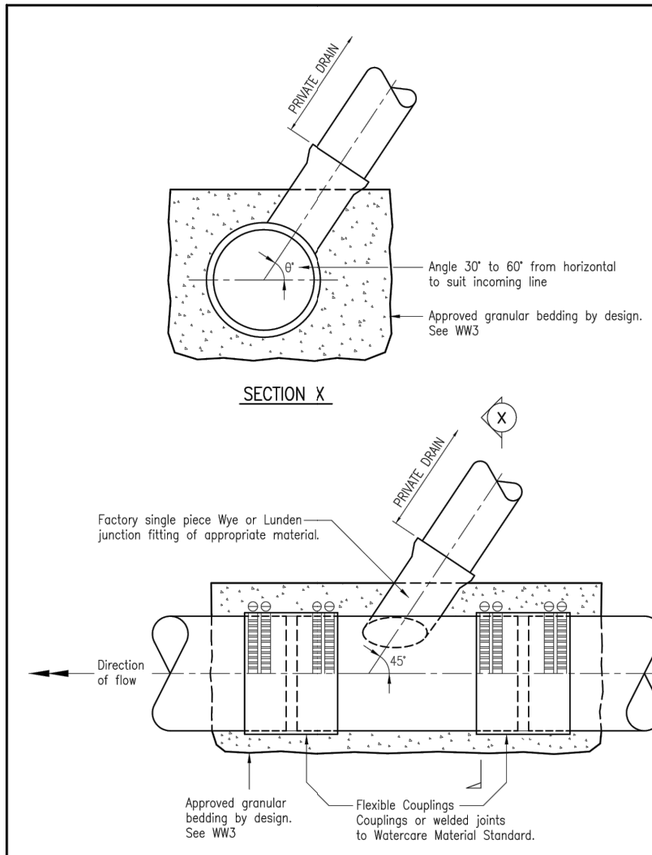
SADDLE CONNECTIONS TO GRAVITY PUBLIC WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	13-07-2018
DWG No.	2010070.036C
REFERENCE No.	WW 14



NOTES:

1. For saddle connections refer WW14
2. Refer to Watercare Point-of-Supply policy

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IN-LINE SERVICES CONNECTIONS TO PUBLIC GRAVITY WASTEWATER

SCALE:	N.T.S.
ISSUE DATE:	17-11-2017
DWG No.	2010070.038A
REFERENCE No.	WW 15

RESOURCE CONSENT

NOTES

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

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A	RESOURCE CONSENT	SP	03/2025

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Survey	--	--/----
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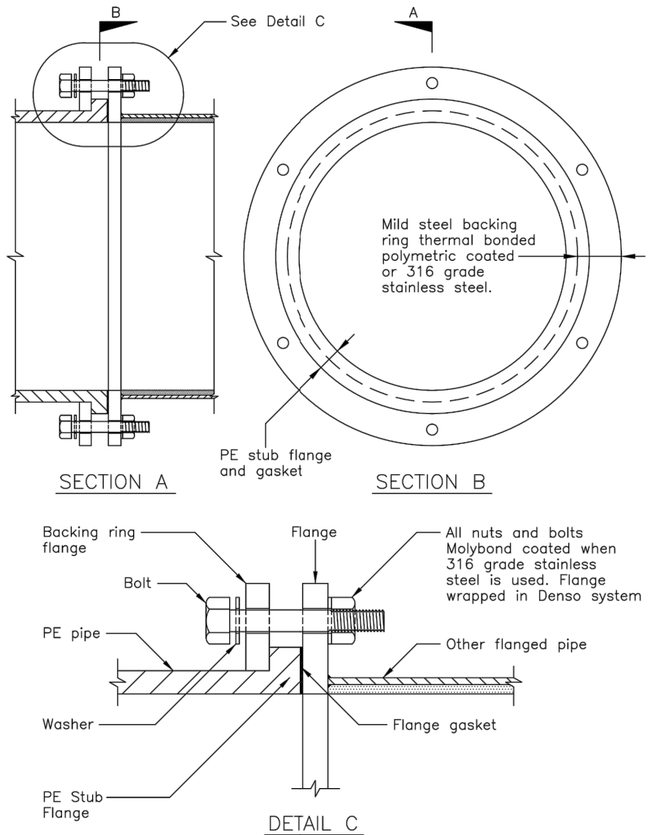
Title
RETIREMENT VILLAGE WASTEWATER STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C803 WW STD DETAILS.DWG		
Drawing no.	C803-3	Rev	A

DATE: 4/25 FILE PATH: F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C803 WW STD DETAILS.DWG



Note:
Where stub flange reduced to fit, calculations should show Max. allowable operating pressure is met.

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FLANGE CONNECTION DETAIL
PE MAIN TO OTHER
FOR PRESSURE SYSTEMS

SCALE:	N.T.S.
ISSUE DATE:	13-03-2017
DWG No.	2010070.052B
REFERENCE No.	WW 25

RESOURCE CONSENT

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

	By	Date
Survey	--	--/----
Design	--	--/----
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Checked	RW/KH	03/2025

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Title
RETIREMENT VILLAGE WASTEWATER STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C803 WW STD DETAILS.DWG		
Drawing no.	C803-4	Rev	A

DATE 4/25 FILE PATH: F:\MAVEN\PROJECTS\147016 - RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C803 WW STD DETAILS.DWG

GENERAL CONSTRUCTION NOTES

STANDARDS RELATING TO WORKS

Works shall to be carried out to the requirements of the Health & Safety at work in Employment Act 2015

Works shall be completed to Watercare Construction Standards.

MANUFACTURERS SPECIFICATIONS

Materials shall be installed to the Manufacturers requirements unless otherwise specified.

WELDING & FIXINGS

All steelwork shall be be workshop fabricated.

Steelwork and fixings shall be hot-dip galvanised to AS/NZS 4680 unless otherwise stated.

A Nickel anti-seize free of copper , lead , sulphides , chlorides & carbons (graphite) shall be used on bolts.

REINFORCING STEEL

Reinforcing shall be centrally placed with the specified minimum cover.

Bends shall be cold formed.

JOINT SEALS

Couplings & Flanges : Per WSL Material Standard.

Concrete joints around pipe penetrations through chambers shall be made with a suitable hydrophilic sealant to the manufacturer's requirements. Concrete repair shall be reinforced and box-cast to prevent cracking from sealant forces.

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Watercare	GENERAL CONSTRUCTION NOTES	SCALE:	N.T.S.
		ISSUE DATE:	13-07-2018
		DWG No.	2010069.002D
		REFERENCE No.	WS 1

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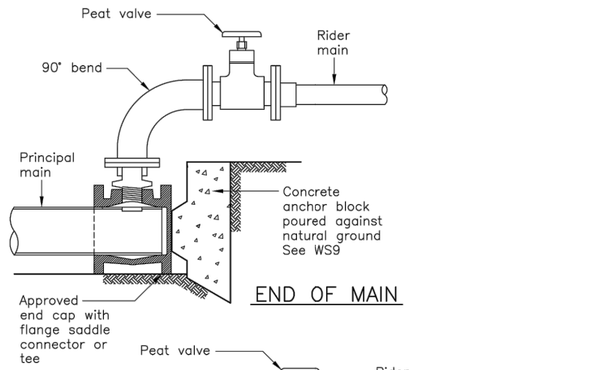
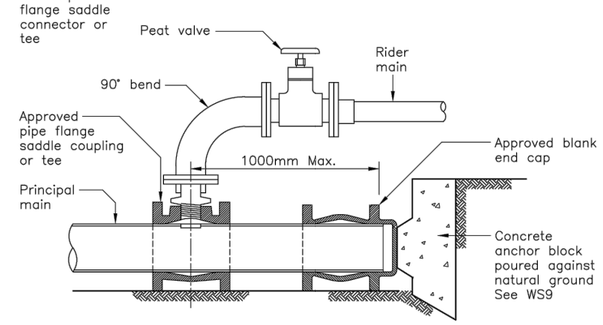
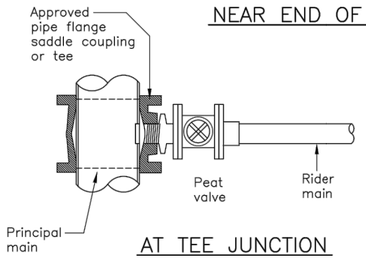


END OF MAIN



NEAR END OF MAIN



AT TEE JUNCTION

Notes

1. Tapping saddles are only allowed on principal mains up to DN300mm. A reducing Tee shall be used for 300mm and over.

0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.036C .DWG

Watercare	RIDER MAIN ALTERNATIVE CONNECTION	SCALE:	N.T.S.
		ISSUE DATE:	13-07-2018
		DWG No.	2010069.036C
		REFERENCE No.	WS 5

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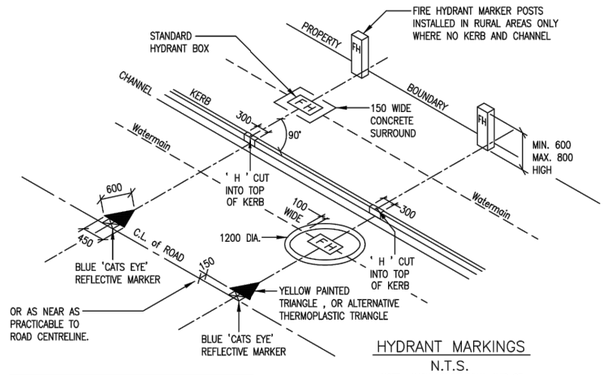


HYDRANT MARKINGS

N.T.S.

NOTE: ALIGN LONGITUDINAL AXIS OF HYDRANT BOX WITH WATERMAIN

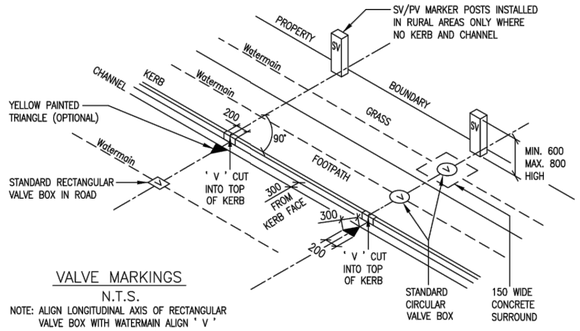
NOTES

PAINT USED FOR ALL MARKINGS AND CI/DI LIDS SHALL BE TRANSIT "ROAD MARKING PAINT" AS FOLLOWS:-

HYDRANTS - YELLOW
PROTECTIVE PAINTS LTD.- WAY CODE: 880-403
OR - RESENE M7-W ;
(ALTERNATIVE OPTION THERMOPLASTIC TRIANGLE)

VALVES (PV, SV, AV"s) - WHITE

SPECIAL CONTROL VALVES (SHUT) - RED
RESENE RED OXIDE - VINYL ETCH
ADHESION PRIMER



VALVE MARKINGS

N.T.S.

NOTE: ALIGN LONGITUDINAL AXIS OF RECTANGULAR VALVE BOX WITH WATERMAIN ALIGN ' V ' WITH WATERMAIN AS SHOWN

0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.006B .DWG

Watercare	VALVE AND HYDRANT MARKINGS	SCALE:	N.T.S.
		ISSUE DATE:	10-02-2017
		DWG No.	2010069.006B
		REFERENCE No.	WS 7

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RESOURCE CONSENT

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE WATER SUPPLY STANDARD DETAILS

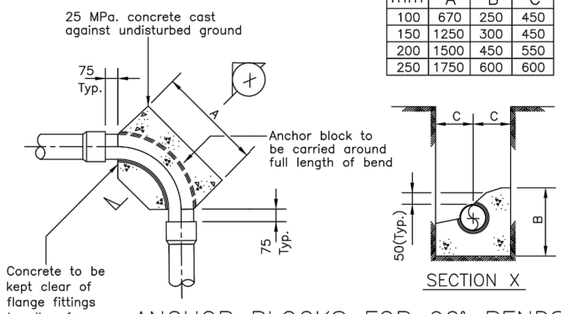
Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C804 WS STD DETAILS.DWG		
Drawing no.	C804	Rev	A

DATE 4/25 FILE PATH: F:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C804 WS STD DETAILS.DWG

Notes :

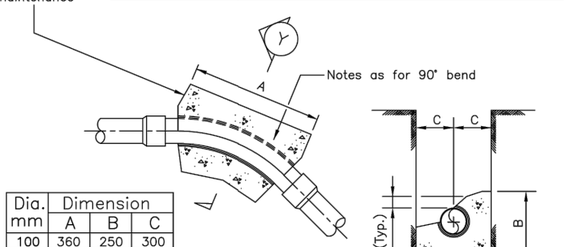
1. Thrust block dimensions are based on firm soil conditions.
2. The dimensions to be increased or decreased for variation in soil conditions.
3. Allowable bearing stress used – 100KPa.
4. As built locations to be obtained prior to backfill.
5. Protective membrane (Polythene) between concrete & pipe.
6. 75mm clearance between fittings/flanges and concrete casting.
7. All fittings to be wrapped with a suitable wrapping system.

Dia. mm	Dimension A	B	C
100	670	250	450
150	1250	300	450
200	1500	450	550
250	1750	600	600



SECTION X

ANCHOR BLOCKS FOR 90° BENDS



Dia. mm	Dimension A	B	C
100	360	250	300
150	680	300	400
200	800	450	500
250	1000	600	600

SECTION Y

ANCHOR BLOCKS FOR 45° BENDS

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.013B .DWG

Watercare	ANCHOR BLOCK DETAILS FOR 90° & 45° BENDS	SCALE:	N.T.S.
		ISSUE DATE:	10–02–2017
		DWG No.	2010069.013B
		REFERENCE No.	WS 8

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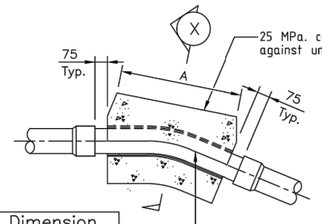
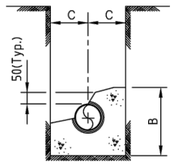
Notes :

1. Thrust block dimensions are based on firm soil conditions.
2. The dimensions to be increased or decreased for variation in soil conditions.
3. Allowable bearing stress used - 100KPa.
4. As built locations to be obtained prior to backfill.
5. Protective membrane (Polythene) between concrete & pipe.
6. 75mm clearance between fittings/flanges and concrete casting.
7. All fittings to be wrapped with a suitable wrapping system.

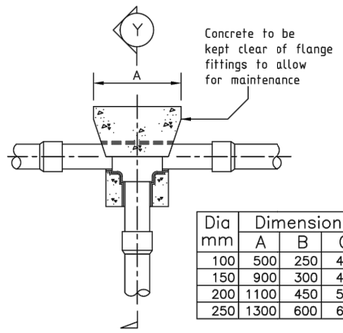


Dia mm	Dimension A	B	C
100	300	250	300
150	400	300	400
200	500	450	500
250	600	600	600

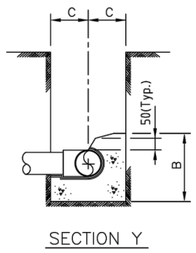


SECTION X

ANCHOR BLOCKS FOR 22½° & 11¼° BENDS



Dia mm	Dimension A	B	C
100	500	250	450
150	900	300	450
200	1100	450	550
250	1300	600	600



SECTION Y

ANCHOR BLOCKS TEE JUNCTION & END CAPS

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.014B .DWG

Watercare	ANCHOR BLOCK DETAILS FOR 22½° & 11¼° BENDS AND TEE JUNCTION	SCALE:	N.T.S.
		ISSUE DATE:	10–02–2017
		DWG No.	2010069.014B
		REFERENCE No.	WS 9

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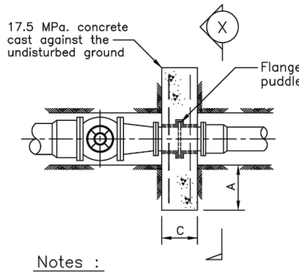
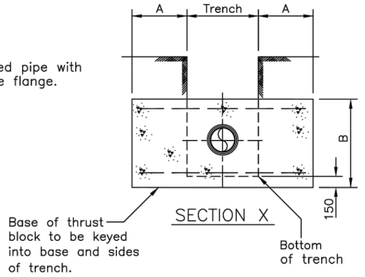




SECTION X

Notes :

1. Concrete thrust block dimensions are based on firm soil conditions.
2. The dimensions to be increased or decreased for variation in soil conditions.
3. Allowable bearing stress used - 100KPa.
4. As built locations to be obtained prior to backfill.
5. Protective membrane (Polythene) between concrete and pipe.
6. 75mm clearance between fittings/flanges and concrete casting.
7. All fittings to be wrapped with a suitable wrapping system.

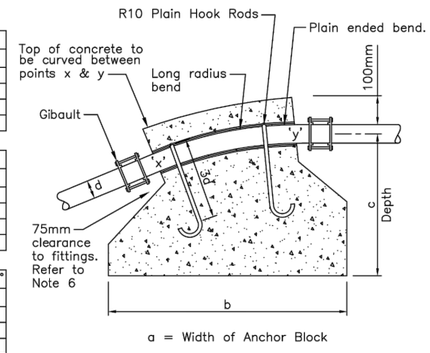
Reducer mm	Reducers A	B	C
100–150	250	350	300
100–200	500	350	300
150–200	250	500	300
150–250	500	500	300
200–250	250	600	300
200–300	400	700	300

ANCHOR BLOCKS AT REDUCERS

Pipe Dia	Vertical Bends–45° a	b	c
100mm	600	800	700
150mm	800	1000	800
200mm	1000	1200	800
250mm	1000	1600	1000

Pipe Dia	Vertical Bends–22.5° a	b	c
100mm	500	500	500
150mm	500	800	800
200mm	700	1000	800
250mm	800	1200	900

Pipe Dia	Vertical Bends–11.25° a	b	c
100mm	400	500	500
150mm	500	600	600
200mm	500	800	800
250mm	700	1000	800



a = Width of Anchor Block

VERTICAL SECTION

ANCHOR BLOCKS AT BENDS IN VERTICAL PLANE

O:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.015B .DWG

Watercare	ANCHOR BLOCK DETAILS REDUCERS AND VERTICAL BENDS	SCALE:	N.T.S.
		ISSUE DATE:	10–02–2017
		DWG No.	2010069.015B
		REFERENCE No.	WS 10

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NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project

DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

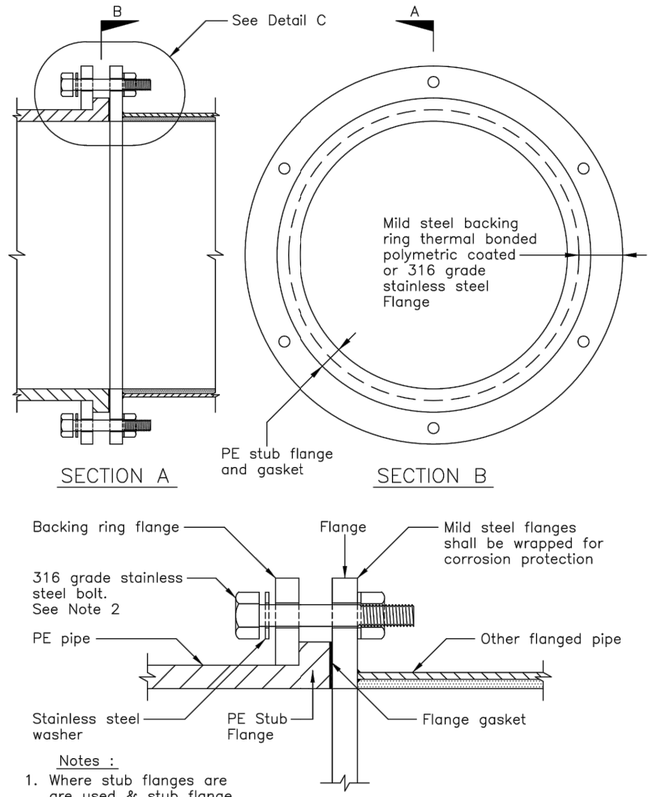
Title

RETIREMENT VILLAGE WATER SUPPLY STANDARD DETAILS

Project no.	147016		
Scale	N.T.S		
Cad file	147016-RV-C804 WS STD DETAILS.DWG		
Drawing no.	C804-1	Rev	A

RESOURCE CONSENT

DATE: 4/25 FILEPATH: P:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C804 WS STD DETAILS.DWG



Notes :

1. Where stub flanges are are used & stub flange machined to fit, calculations must show Max. allowable operating pressure is met.
2. When using mild steel flanges the stainless steel bolts must be isolated with an appropriate sleeve to prevent galvanic corrosion.

Notes continued :

3. Bolt assemblies must be to Watercare's mechanical construction standard.

0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.034B .DWG

Watercare	FLANGE CONNECTION DETAIL PE MAIN TO OTHER	SCALE: N.T.S. ISSUE DATE: 10-02-2017 DWG No. 2010069.034B REFERENCE No. WS 11

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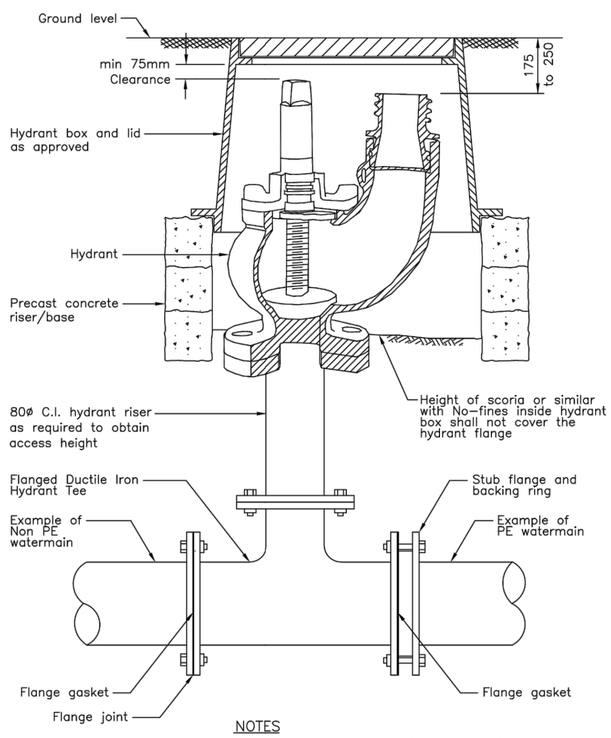

NOTES

1. The hydrant box shall be spaced to provide clear access to the valve spindle and outlet.
2. All flanges and fittings shall be wrapped with suitable corrosion protection wrapping to the manufacturers requirements. Refer WS11
3. Concrete support to be provided under hydrant Tee. Refer WS9. (The concrete overbear can be ignored)

0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.027A .DWG

Watercare	HYDRANT DETAIL	SCALE: N.T.S. ISSUE DATE: 06-03-2017 DWG No. 2010069.027A REFERENCE No. WS 12

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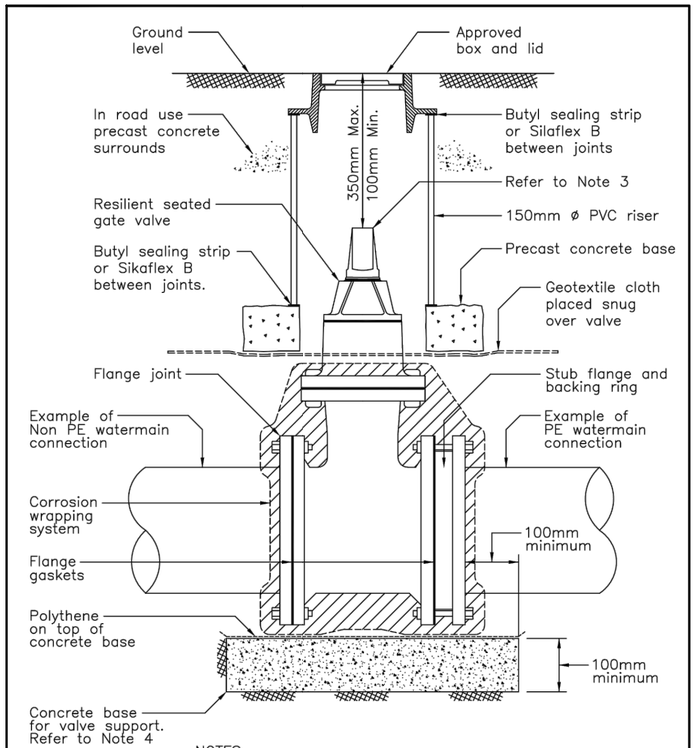

NOTES

1. The valve, including flanges shall be completely wrapped in approved corrosion protected wrapping system to the wrapping manufacturers requirements.
2. Refer WS11 for typical notes on flange bolting .
3. An extension spindle shall be incorperated as required to ensure the top of the spindle is no more than 350mm below the finished surface level.
4. For valves 150mm and greater the valve shall be supported on a in-situ cast concrete base of suitable dimension to prevent any loads transfered to the pipe.

0:\---\ EGCADFI \ 2017 \ WATER & WASTEWATER NETWORK STD DWGS \ 2010069.029B .DWG

Watercare	FLANGED SLUICE VALVE DETAIL	SCALE: N.T.S. ISSUE DATE: 26-05-2017 DWG No. 2010069.029B REFERENCE No. WS 13

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RESOURCE CONSENT

DATE: 02/25 FILE PATH: P:\MAVEN\PROJECTS\147016_RIVERHEAD RETIREMENT VILLAGE\DWG\ 07\01\RV-C804 WS STD DETAILS.DWG

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project

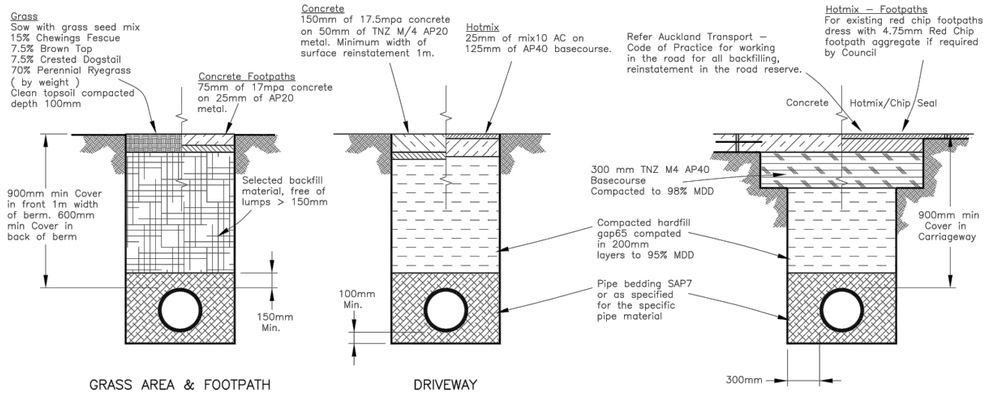
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title

RETIREMENT VILLAGE WATER SUPPLY STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C804 WS STD DETAILS.DWG
Drawing no.	C804-2 Rev A

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



GRASS AREA & FOOTPATH REINSTATEMENT

DRIVEWAY REINSTATEMENT

FOOTPATH/VEHICLE CROSSING, CARRIAGEWAY REINSTATEMENT

NOTES
1. Trench reinstatement within the road reserve shall comply with the Auckland Transport requirements.
2. Backfill is to be compacted in 200mm, layers to obtain maximum density, as per standard specifications.
3. Where concrete or other stabilized layers exist in the roadway, the trench shall be reinstated with similar material or as directed by the roading engineer.
4. Minimum cover in carriageway for watermains 900mm. 900mm cover in front 1m of berm and Minimum 600mm in the back of berm.
5. Fill shall be clean, Non-contaminated material. Recycled material is not acceptable.
6. Pipe bedding shall be compacted to AS/NZS 2566.2 clause 5.6.3 for compaction control.
7. Alternative embedment details by specific design for pipe at steep grades, inadequate trench foundation and erosion is not covered by this drawing.

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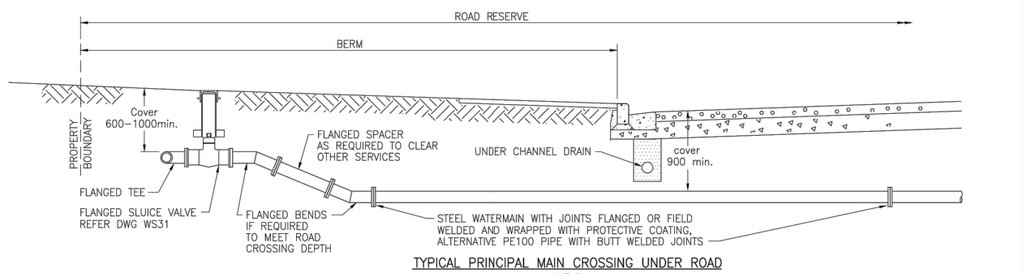
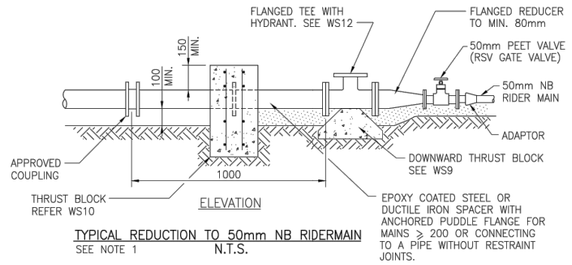
TYPICAL TRENCH REINSTATEMENT AND BEDDING DETAILS FOR WATER SUPPLY

SCALE:	N.T.S.
ISSUE DATE:	28–09–2017
DWG No.	2010069.001D
REFERENCE No.	WS 2



TYPICAL PRINCIPAL MAIN CROSSING UNDER ROAD
N.T.S.



TYPICAL REDUCTION TO 50mm NB RIDERMAIN
SEE NOTE 1
N.T.S.

NOTES
1. FOR AN ALTERNATIVE RIDERMAIN CONNECTION SEE WS5.
2. PIPE AND BENDS TO BE SUPPORTED AN CORROSION PROTECTED.
3. ALL SPECIAL FITTINGS INCLUDING TEES AND BENDS TO BE FLANGED DUCTILE IRON OR AN ACCEPTED PROPRIETARY ALTERNATIVE.

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ROAD CROSSING DETAILS AND PRINCIPAL MAIN TO RIDER MAIN CONNECTIONS

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010069.004C
REFERENCE No.	WS 4

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

	By	Date
Survey	--	--/----
Design	--	--/----
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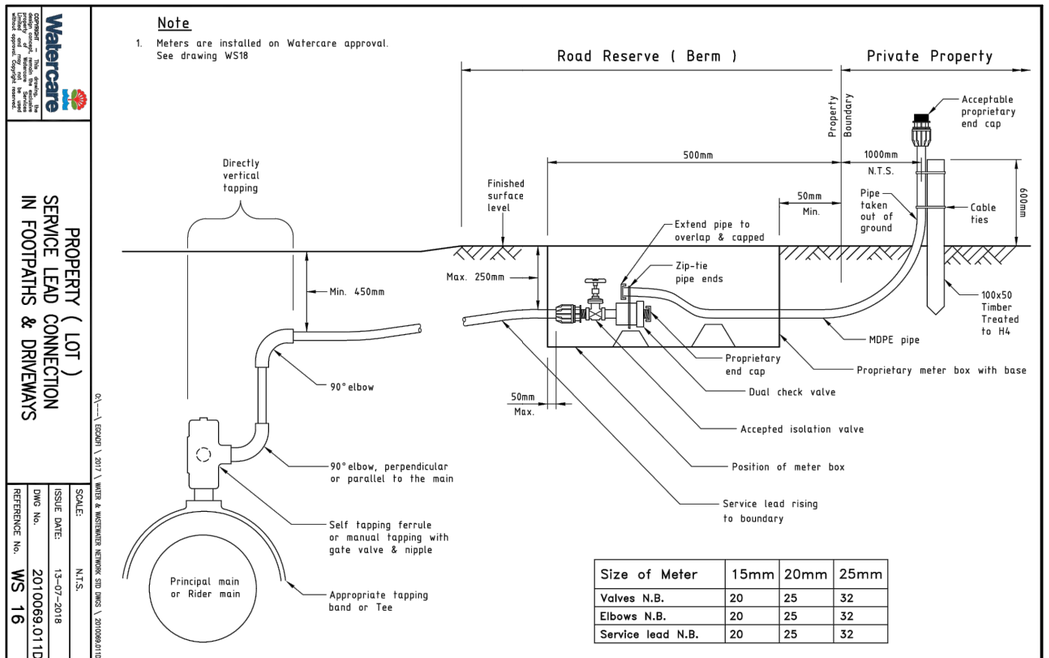

Size of Meter	15mm	20mm	25mm
Valves N.B.	20	25	32
Elbows N.B.	20	25	32
Service lead N.B.	20	25	32

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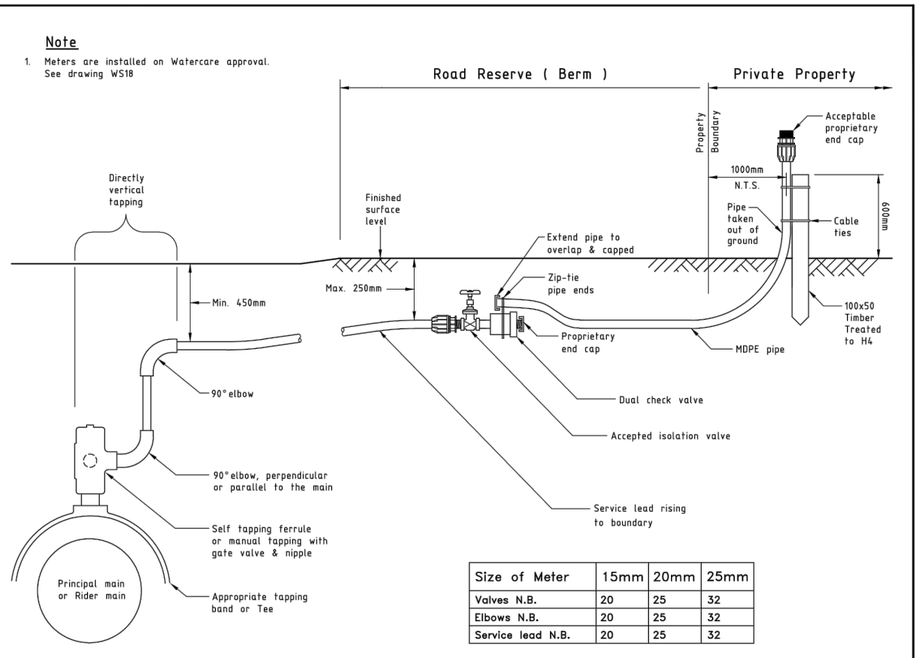
PROPERTY (LOT) SERVICE LEAD CONNECTION IN FOOTPATHS & DRIVEWAYS

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010069.011D
REFERENCE No.	WS 16



Size of Meter	15mm	20mm	25mm
Valves N.B.	20	25	32
Elbows N.B.	20	25	32
Service lead N.B.	20	25	32

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PROPERTY (LOT) SERVICE LEAD CONNECTION IN BERM/SOFT SURFACES

SCALE:	N.T.S.
ISSUE DATE:	13–07–2018
DWG No.	2010069.046
REFERENCE No.	WS 17

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE WATER SUPPLY STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C804 WS STD DETAILS.DWG
Drawing no.	C804-3 Rev A

RESOURCE CONSENT

DATE 4/25 F:\EXPATH_F:\MAVEN\PROJECTS\147016 RIVERHEAD RETIREMENT VILLAGE\DWG\147016-RV-C804 WS STD DETAILS.DWG

Watercare

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DOMESTIC WATER METER CONNECTION
15mm, 20mm & 25mm DIAMETER

SCALE: N.T.S.
ISSUE DATE: 13-07-2018
DWG No. 2010069.012D
REFERENCE No. WS 18

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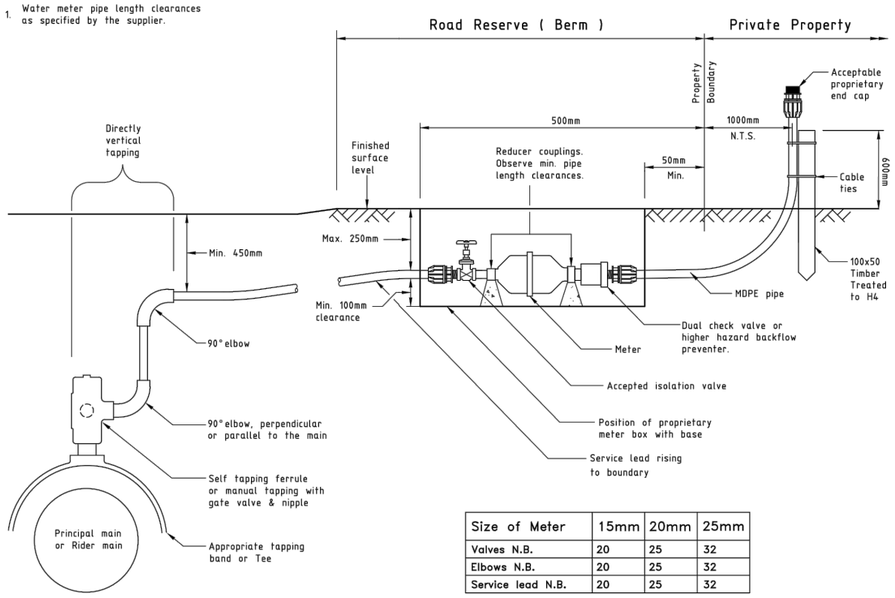
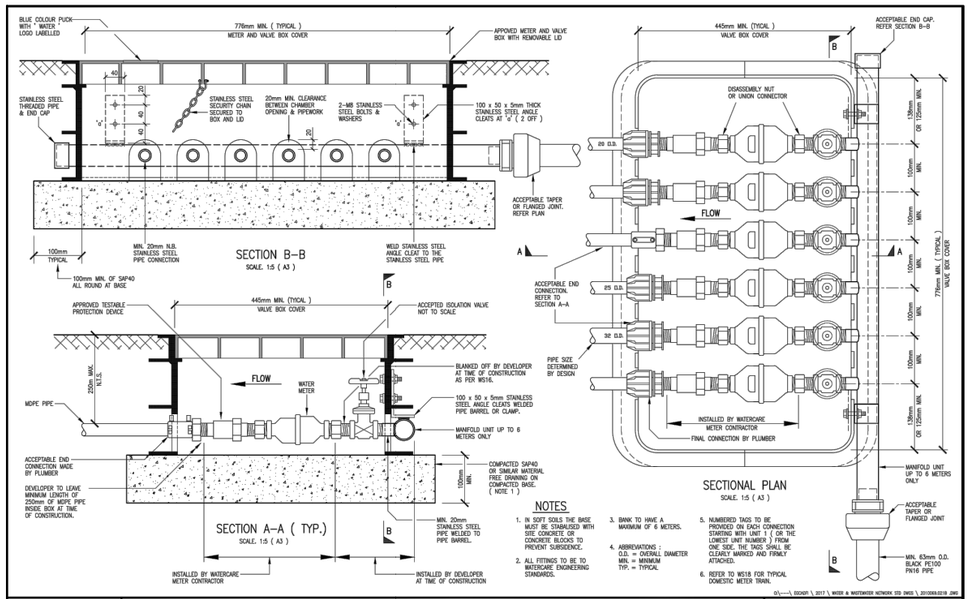
Note

1. Water meter pipe length clearances as specified by the supplier.



Size of Meter	15mm	20mm	25mm
Valves N.B.	20	25	32
Elbows N.B.	20	25	32
Service lead N.B.	20	25	32



NOTES

1. IN SOFT SOILS THE BASE MUST BE STABILISED WITH SITE CONCRETE OR CONCRETE BLOCKS TO PREVENT SUBSIDENCE.
2. ALL FITTINGS TO BE TO WATERCARE ENGINEERING STANDARDS.
3. BANK TO HAVE A MAXIMUM OF 6 METERS.
4. ABBREVIATIONS : O.D. = OVERALL DIAMETER MIN. = MINIMUM TYP. = TYPICAL
5. NUMBERED TAGS TO BE PROVIDED ON EACH CONNECTION STARTING WITH UNIT 1 (OR THE LOWEST UNIT NUMBER) FROM ONE SIDE. THE TAGS SHALL BE CLEARLY MARKED AND FIRMLY ATTACHED.
6. REFER TO W518 FOR TYPICAL DOMESTIC METER TRAIN.

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Watercare

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MANIFOLD METER BANK
LESS THAN 50mmØ

SCALE: 1:5 & N.T.S. (A3)
ISSUE DATE: 13-07-2018
DWG No. 2010069.021B
REFERENCE No. WS 22

NOTES

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

Rev	Description	By	Date
A	RESOURCE CONSENT	SP	03/2025

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

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Project
DEVELOPMENT OF RIVERHEAD FOREST FOR RANGITOOPUNI DEVELOPMENTS LIMITED PARTNERSHIP

Title
RETIREMENT VILLAGE WATER SUPPLY STANDARD DETAILS

Project no.	147016
Scale	N.T.S
Cad file	147016-RV-C804 WS STD DETAILS.DWG
Drawing no.	C804-4 Rev A

RESOURCE CONSENT

DATE 4/2025 FILEPATH F:\MAVEN\PROJECTS\147016 -RIVERHEAD RETIREMENT VILLAGE\DWG\147016RV-C804 WS STD DETAILS.DWG