

CIVIL DESIGN - COMMERCIAL BUILDING

5 & 7 EAGLE RAY ROAD

MANGAWHAI

RICHARDS
CONSULTING | ENGINEERS

STRUCTURAL DRAWING LIST

Job No A24339.C

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AS APPROVED BY
KAIPARA DISTRICT COUNCIL
Planning Department

RESOURCE CONSENT
RM240229

13/05/2025 knewman

		DATE
REVISION NO:		05.02.25
DWG No:	TITLE	A
C0.00	SPECIFICATION	A
C0.01	SPECIFICATION	A
C0.02	SPECIFICATION	A
C1.01	PROPOSED DRIVEWAY GRADING PLAN	A
C1.02	PROPOSED PAVEMENT PLAN	A
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REV A
FEBRUARY 2025
RESOURCE CONSENT

- 1.1 All drawings to be read in conjunction with all relevant Architect's (design), services, Structural Engineer's and Specialist's drawings and specifications.
- 1.2 All Work shall comply with the relevant clauses of the New Zealand Building Code, best practice and relevant New Zealand Standards and Codes of Practice.
- 1.3 The Contractor shall verify all dimensions on site and compare with Architectural drawings before commencing work or making shop drawings.
- 1.4 Do Not Scale from any drawings. Use figured dimensions only. If in doubt ask.
- 1.5 The Contractor shall be responsible for verifying all dimensions on site and ensuring that all dimensions and levels shown on the drawings are correct and consistent with other relevant drawings. Any discrepancies are to be reported immediately to the Engineer.
- 1.6 If at any time prior to Practical Completion, the Contractor should become aware of any signs of distress, excessive settlement or deflection, conflict of components or any other indications whatsoever of actual or potential damage to the Contract Works or any part thereof, they shall forthwith notify the Engineer, and confirm such notice in writing as soon as is practicable.
- 1.7 Materials and components to be appropriate for intended use.
- 1.8 For concrete nibs, chamfers, rebates and other Architectural features the Architectural drawings are to have preference over structural drawings.
- 1.9 The protection and durability requirements of steel, timber, concrete and masonry materials shall comply with Section 4 NZS 3604:2011. Please refer to Architectural plans and specifications for further details.
- 1.10 All weather tightness details are to be specified by others and are especially excluded from structural details.
- 1.11 The Contractor is required to do setting out where necessary to ensure that the works are constructed to the required lines and levels. Set out tolerances are to be $\pm 20\text{mm}$ horizontally.
- 1.12 In the event of any ambiguity or contradiction between the special requirements of this specification and any standard specifications, this specification will take precedence. In any case it shall be the Contractors' responsibility to bring any ambiguity or contradiction

1.13 A Quality Management Plan is required to demonstrate how the Contractor will achieve quality and complete the work to the specified requirements. The plan shall include, but not be limited to:

- Internal quality systems to be used by the Contractor;
- Construction methodology that will be followed to ensure the work complies with the contract documents;
- Names and details of key personnel;
- Corrective actions and non-conforming work procedures;
- List of employees who will work on site for the purpose of a police vet;

1.14 The care of the works shall be the responsibility of the Contractor. The Contractor shall be responsible for all damage including damage due to weather, careless or incompetent workmanship and handling, defective materials, or any other cause from the Contract commencement to the expiry of the defect's liability period.

1.15 Construction activities shall be undertaken to ensure vibrations produced do not cause damage to adjacent properties or structures.

1.16 The Contractor shall co-operate with the Local Authority's noise control officers. Assessment and measurement of noise levels shall be as per NZS 6803:1999 Acoustics and Construction Noise.

1.17 All fossils, artefacts, coins, articles of value or antiquity, or things of geological or archaeological interest discovered on the site shall be deemed to be the absolute property of the owner.

1.18 Any findings of the above shall be reported to the Engineer. All to remain undisturbed until approval is given for removal and all remain the property of the owner.

1.19 All works in the vicinity of electrical lines shall be carried out in full compliance with the Electricity Act 1992, Electricity Regulations 1993 and the Electricity Code of Practice No. 34 (NZCEP 34:2001).

1.20 The minimum working distances detailed in NZCEP 34:2001 shall be observed in all cases.

1.21 Contractors wishing to work within the minimum distances permitted by the regulations governing the undertaking of work near electricity lines are required to obtain written approval from the relevant power supply authority.

1.23 The Contractor shall be responsible for safety of all workmen and other persons entering the Works, and shall at his own expense; where not stated otherwise take all measures, subject to the Engineer's approval, necessary to ensure their safety. Such measures shall include but not be limited to:

- Provision of safety and emergency regulations for fire, gas, and electric shock prevention, together with rescue operation plan.
- Safe control of flowing water.
- Provision and maintenance of suitable lighting to provide adequate illumination at place of work with appropriate spares and standby unit.
- Provision of safe access to any part of the works.
- Provision of notices in local dialect temporarily or permanently during construction at locations likely to be used by the public. Placement of such notices shall depend on the existence of the nature of work in the vicinity.
- Control of the access of personnel to the site, and erect hoarding around the perimeter of works to restrict unauthorised access into the site (includes extent of excavated areas, and other areas under the control of the Contractor at any point during construction).

- Approval of as-built drawings.

- 2.1 To verify the works have been constructed as per the design the following inspections:

Structural Element	Construction monitoring method
Stormwater preconstruction meeting	Kaipara District Council & Richards Consulting Engineers
Wastewater preconstruction meeting	Kaipara District Council & Richards Consulting Engineers
Bearing and excavations	Geotechnical Engineer
Hardfill compaction	NDT tests by Contractor (Engineers approval required)
Manhole installation and pipe connections	Kaipara District Council & Richards Consulting Engineers
Drainage inspection	Kaipara District Council & Richards Consulting Engineers
Driveway prepour inspection	Richards Consulting Engineers

2.3 Failure to have the structural work inspected may result in Richards Consulting Engineers Limited not able to issue a PS4 or destructive testing to expose hidden structural elements.

3.3 Prior to construction, the site should be cleared of all obstructions, including designated

3.12 Place to NZBC G13/AS2: Foul water drainage, 5.0 Installation, figure 7, Bedding and Backfilling, using compacted granular material and compacted fill. Compact in layers not exceeding 100mm.

4.1.2 All ground cover vegetation outside the immediate earthworks area is to be preserved during the construction phase. Vegetated areas shall remain

introduced without the permission of the Engineer. Minimum lap lengths for plain bars shall be 45d_b. Minimum lap length for deformed bars (in mm) based on 20MPa concrete and ‘top’ bar:

DEVELOPMENT LENGTH		
<i>Dia. (mm)</i>	<i>Gr 300E</i>	<i>Gr 500E</i>
10	450	750
12	550	900
16	700	1200
20	900	1500
25	1100	1850

- 6.20 Lap the mesh in the slab by 250mm.
- 6.21 Hooked development length of bars in 20MPa concrete:

STANDARD HOOK DEVELOPMENT LENGTH		
<i>Dia. (mm)</i>	<i>Gr 300E</i>	<i>Gr 500E</i>
10	200	300
12	200	350
16	300	450
20	350	550
25	450	700

- 6.22 Bending of reinforcement shall comply with NZS 3101:

MAIN REBAR BENDS		
<i>Steel Grade</i>	<i>Bar Dia. (mm)</i>	<i>Min. Bend Dia.</i>
Grade 300E/500E	6-20	5d
Grade 300E/500E	25-32	6d

GALVANISED DEFORMED BARS		
<i>Steel Grade</i>	<i>Bar Dia. (mm)</i>	<i>Min. Bend Dia.</i>
Grade 300E/500E	<16mm	5d
Grade 300E/500E	>20mm	8d

STIRRUPS & TIE HOOK BENDS (<i>min. bend 135°</i>)			
<i>Steel Grade</i>	<i>Bar Dia. (mm)</i>	<i>Min. Bend Dia.</i>	
		<i>Plain</i>	<i>Deform.</i>
Grade 300E/500E	6-20	2d	4d
Grade 300E/500E	25-40	3d	6d

- 6.23 All spiral reinforcing shall be anchored at both free ends by one of the following means, unless specified otherwise:
- By anchoring the spiral stirrup with a 135° stirrup hook which is anchored around a longitudinal bar, the stirrup hook shall be located within a clear distance of 25mm or less from the previous spiral turn.
 - By anchoring the spiral stirrup with a welded single or double lap splice to the

previous spiral turn. Only grade 300E bars are permitted for welded connections.

- 6.24 Individual spirals of spiral reinforcing shall be lap spliced by one of the following means, unless specified otherwise:
- By lapping the spiral stirrup with a contact lap splice utilising standard 135° stirrup hooks with a minimum lap splice length as noted. The minimum lap splice length for spirals made up of plain bars shall be twice the anchorage length as noted in.
 - By lapping the spiral stirrup with a welded single or double lap splice. Only grade 300E bars are permitted for welded connections.
- 6.25 Where hooks are specified on reinforcing bars (where the diameter is equal or less than 20mm) they shall consist of either:
- A 180 degree turn plus an 80mm extension.
 - A 90 degree turn plus a 240mm extension.
- 6.26 Reinforcing shall have the following minimum covers:
- 50mm to exterior air and protected ground (i.e. DPM).
 - 75mm to unprotected ground.
 - 30mm to interior air (top of slab).

7.0 DRAINAGE AND SERVICES

- 7.1 Drainlayers to be experienced, competent and familiar with the materials and techniques specified. Carry out all work under the direct supervision of a certifying drainlayer under the Plumbers, Gasfitters and Drainlayers Act 2006.
- 7.2 It is the Contractors responsibility to locate and protect/divert (if necessary) any existing services within the area of the proposed works prior to the commencement of the construction works. Where relevant existing services shall be removed and reinstated in accordance with the relevant codes and utility service provider standards.
- 7.3 All existing soak holes and septic tanks on-site to be abandoned and removed and replaced with approved backfill material.
- 7.4 Refer to Section 3.0 for all bedding and backfill requirements around pipework.
- 7.5 Use string line, boning rod or laser equipment methods. Use surveying and levelling equipment to accurately set out design invert levels.
- 7.6 Only Council approved Contractors shall make connections to live public assets. Contractor to ensure that all necessary approvals and investigations are in place prior to making connection. Additionally, the asset inspector

shall be notified in advance of the new connection being installed.

- 7.7 All PVC pipework shall be SN16 unless otherwise stated, and in accordance with AS/NZS 1254 or AS/NZS 1260, and installed as per AS/NZS 2032 or AS/NZS 2566.1 and AS/NZS 2566.2.
- 7.8 Polyethylene pipe and fittings shall be in accordance with AS/NZS 5065, and installed as per AS/NZS 2033.
- 7.9 Pipes to be laid in straight lines between changes of line or grade from the lower end of the pipeline with sockets pointing uphill, each pipe set true to line and grade and each joint completed before the next pipe is laid. To prevent entry of foreign matter cap ends of uncompleted runs each day. Test drains and backfill progressively to minimise site disruption. Concrete cap trenches to all drains with less than 375mm cover.
- 7.10 All manholes to be 1050mm dia. reinforced concrete manholes (in accordance with Christchurch City Council’s requirements), unless otherwise stated.
- 7.11 The Contractor shall provide flexible jointing, bedding and surrounding of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.
- 7.12 Inspection and access chambers are to be circular precast concrete or plastic to NZBC G13/AS2: Foul water drainage, 5.7, Access points, complete with removable cast iron lid and frame.
- 7.13 All cesspit frames and manhole lids shall be heavy duty and trafficable.
- 7.14 Service and utility works shall be undertaken in accordance with the relevant regulatory rules and regulations. Contractor to liaise and obtain necessary permits with affected utility providers.
- 7.15 Completely remove any existing drains no longer required and disconnect from the system at the junction with the live drain. Seal the live drain to the requirements of NZBC G13/AS2: Foul water drainage, 5.10 Disused drains.
- 7.16 All subsoil drainage (for site retaining walls etc) to be directed to the nearest cess pit, as indicated on the relevant drainage plans. Subsoil drainage shall be wrapped in an approved filter fabric laid at a minimum fall of 1:200. Refer to RCE’s Structural Drawings for the site retaining wall layout and construction.

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

KEY

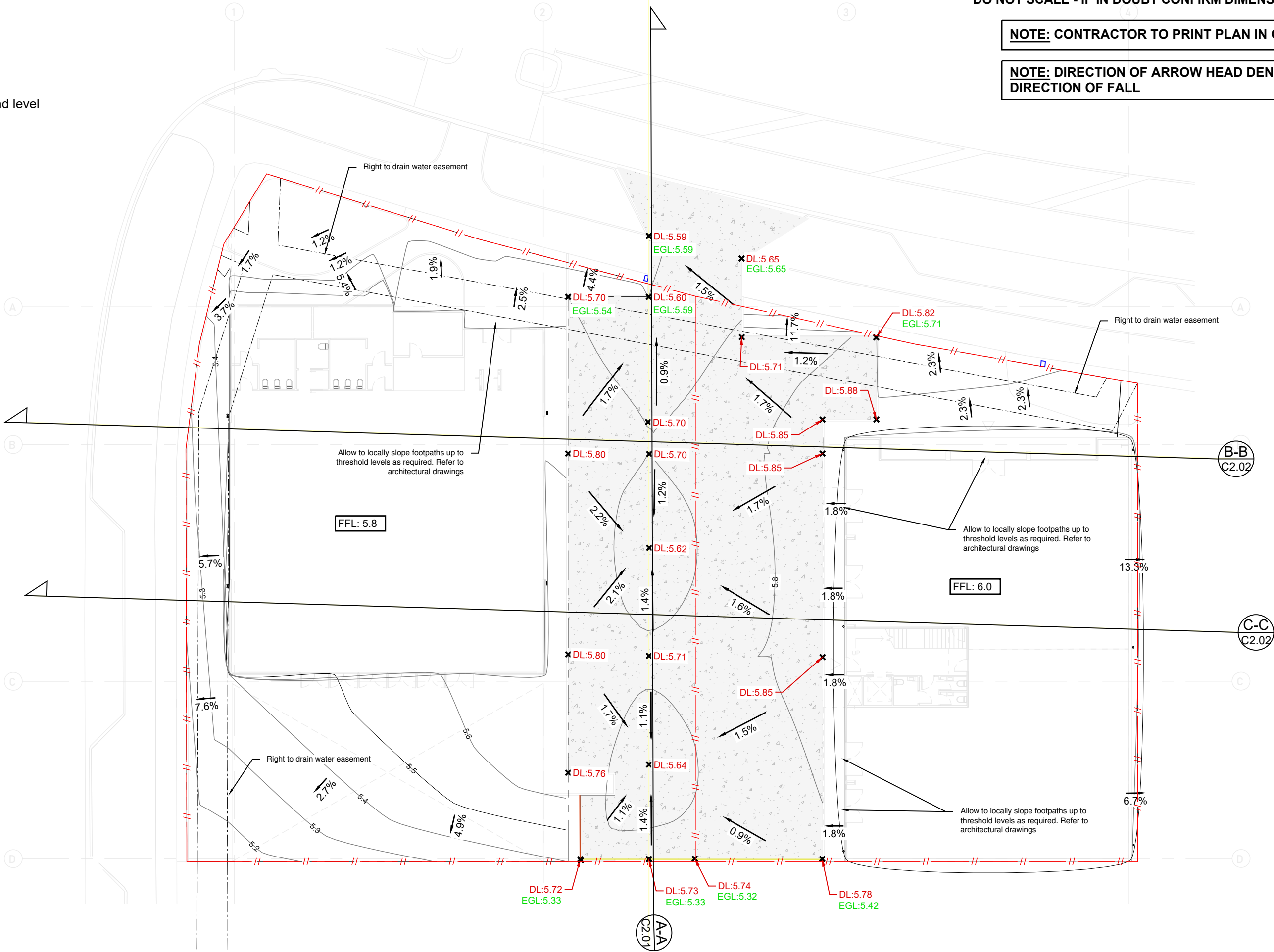
DL = Design level

EGL = Existing Ground level

-- Site boundary

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

NOTE: DIRECTION OF ARROW HEAD DENOTES
DIRECTION OF FALL



THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECT'S DRAWINGS

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PROJECT TITLE
CIVIL DESIGN - COMMERCIAL
BUILDING 5 & 7 EAGLE RAY
ROAD, MANGAWHAI

DRAWING TITLE
PROPOSED DRIVEWAY
GRADING PLAN

REV NO.	REVISION	DATE	APPROVED	PROJECT NOA24339.C	DESIGNED ZQ
1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3 1:250	DRAWN JK
				REV NO. A	SHEET NO. C1.01

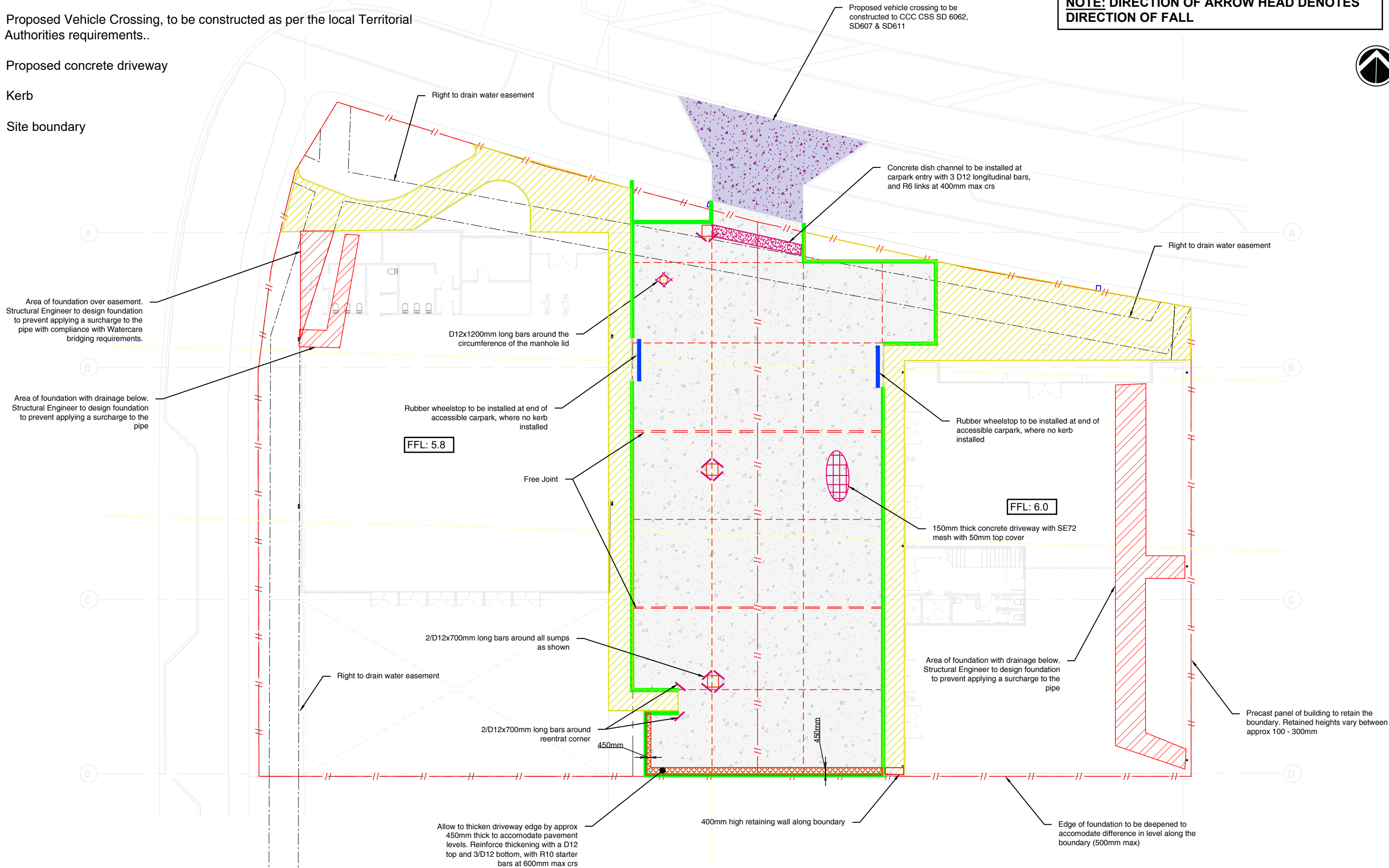
KEY

-  Footpath consisting of permeable paving, founded on drainage aggregate as per the manufacturers requirements. Refer to the architectural drawings.
-  Proposed Vehicle Crossing, to be constructed as per the local Territorial Authorities requirements..
-  Proposed concrete driveway
-  Kerb
-  Site boundary

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

NOTE: DIRECTION OF ARROW HEAD DENOTES DIRECTION OF FALL



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REV NO.	REVISION	DATE	APPROVED	PROJECT NOA24339.C	DESIGNED
1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3 1:250	ZQ
				REV NO. A	DRAWN JK
					SHEET NO. C1.02

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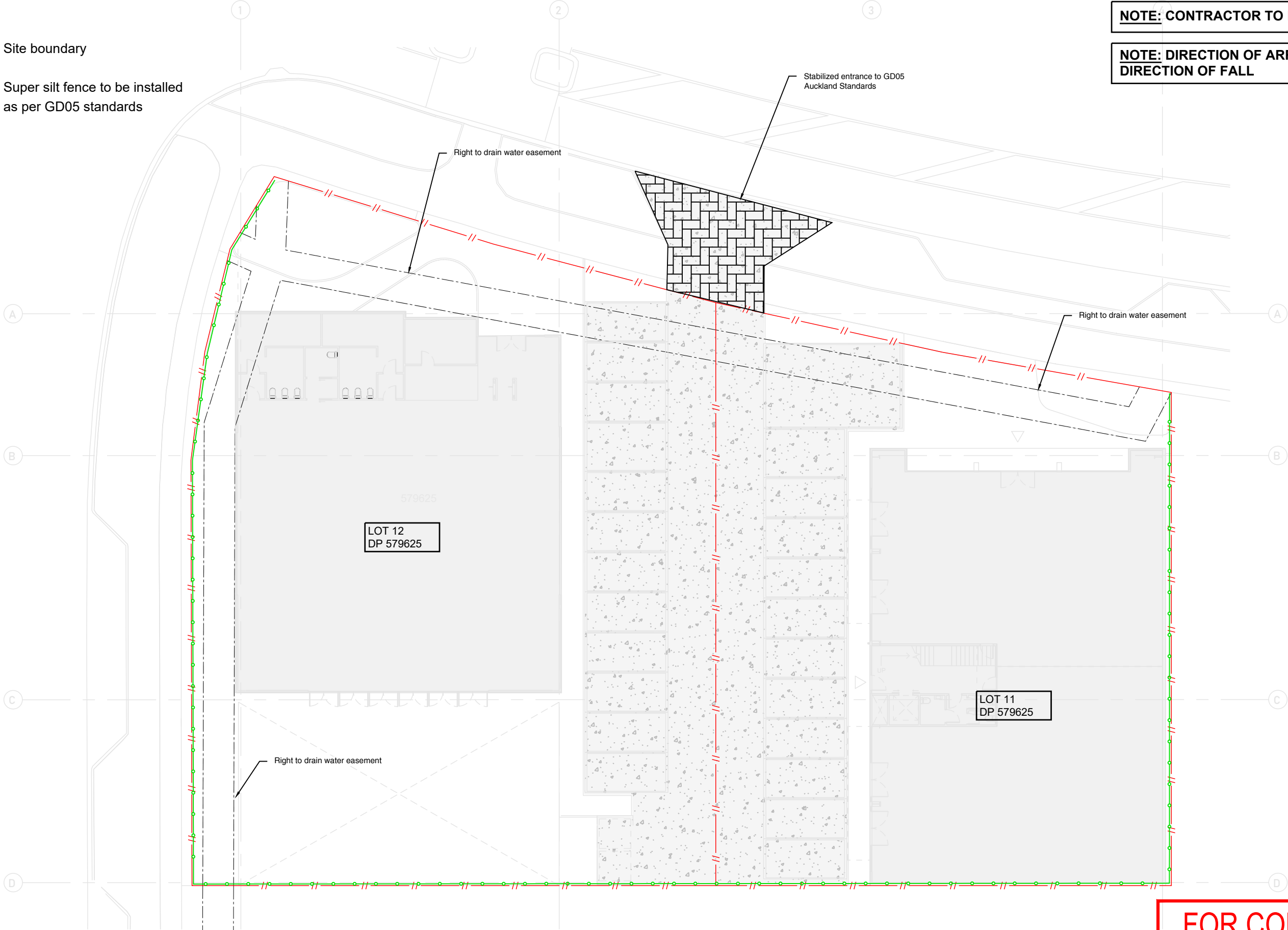
DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

KEY

- Site boundary
- Super silt fence to be installed as per GD05 standards

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

NOTE: DIRECTION OF ARROW HEAD DENOTES DIRECTION OF FALL



FOR CONSTRUCTION

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PROJECT TITLE
CIVIL DESIGN - COMMERCIAL
BUILDING 5 & 7 EAGLE RAY
ROAD, MANGAWHAI

DRAWING TITLE
PROPOSED SEDIMENT
CONTROL PLAN

REV NO.	REVISION	DATE	APPROVED	PROJECT NOA24339.C	DESIGNED ZQ
1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3 1:250	DRAWN JK
				REV NO. A	SHEET NO. C1.03

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

KEY

Site boundary

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1	Red	-0.211	-0.150
2	Grey	-0.150	0.000
3	Light Grey	0.000	0.150
4	Light Green	0.150	0.300
5	Medium Green	0.300	0.500
6	Dark Green	0.500	0.600



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
VOLUME SURFACE	1.000	1.000	2442.677sq.m	2,898 Cu. M.	566.232 Cu. M.	563.334 Cu. M.<Fill>
Totals			2442.677sq.m	2,898 Cu. M.	566.232 Cu. M.	563.334 Cu. M.<Fill>

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RICHARDS CONSULTING ENGINEERS	Christchurch office: (03) 347 1624 Auckland office: (09) 3911324 Website: rcengineers.co.nz Email: rce@rcengineers.co.nz	CIVIL DESIGN - COMMERCIAL BUILDING 5 & 7 EAGLE RAY ROAD, MANGAWHAI	DRAWING TITLE CUT AND FILL PLAN	REV NO.	REVISION	DATE	APPROVED	PROJECT NOA24339.C	DESIGNED ZQ
				1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3 1:250	DRAWN JK
								REV NO. A	SHEET NO. C1.04

KEY

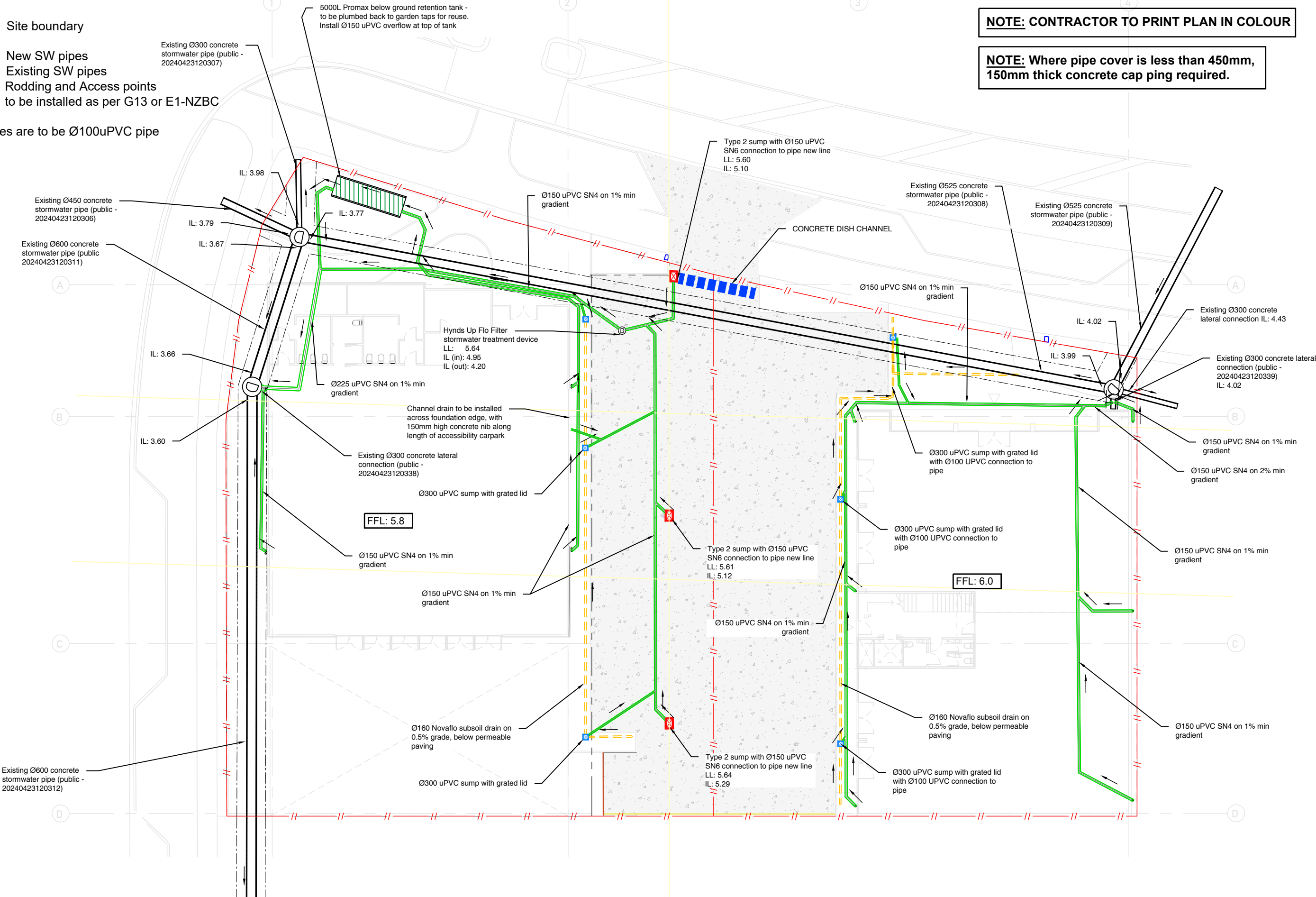
- Site boundary
- New SW pipes
- Existing SW pipes
- Rodding and Access points to be installed as per G13 or E1-NZBC

All downpipes are to be Ø100uPVC pipe

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

NOTE: Where pipe cover is less than 450mm, 150mm thick concrete cap ping required.



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REV NO.	REVISION	DATE	APPROVED	PROJECT NO	DESIGNED
1.	RESOURCE CONSENT	FEB 2025	SR	A24339.C	ZQ
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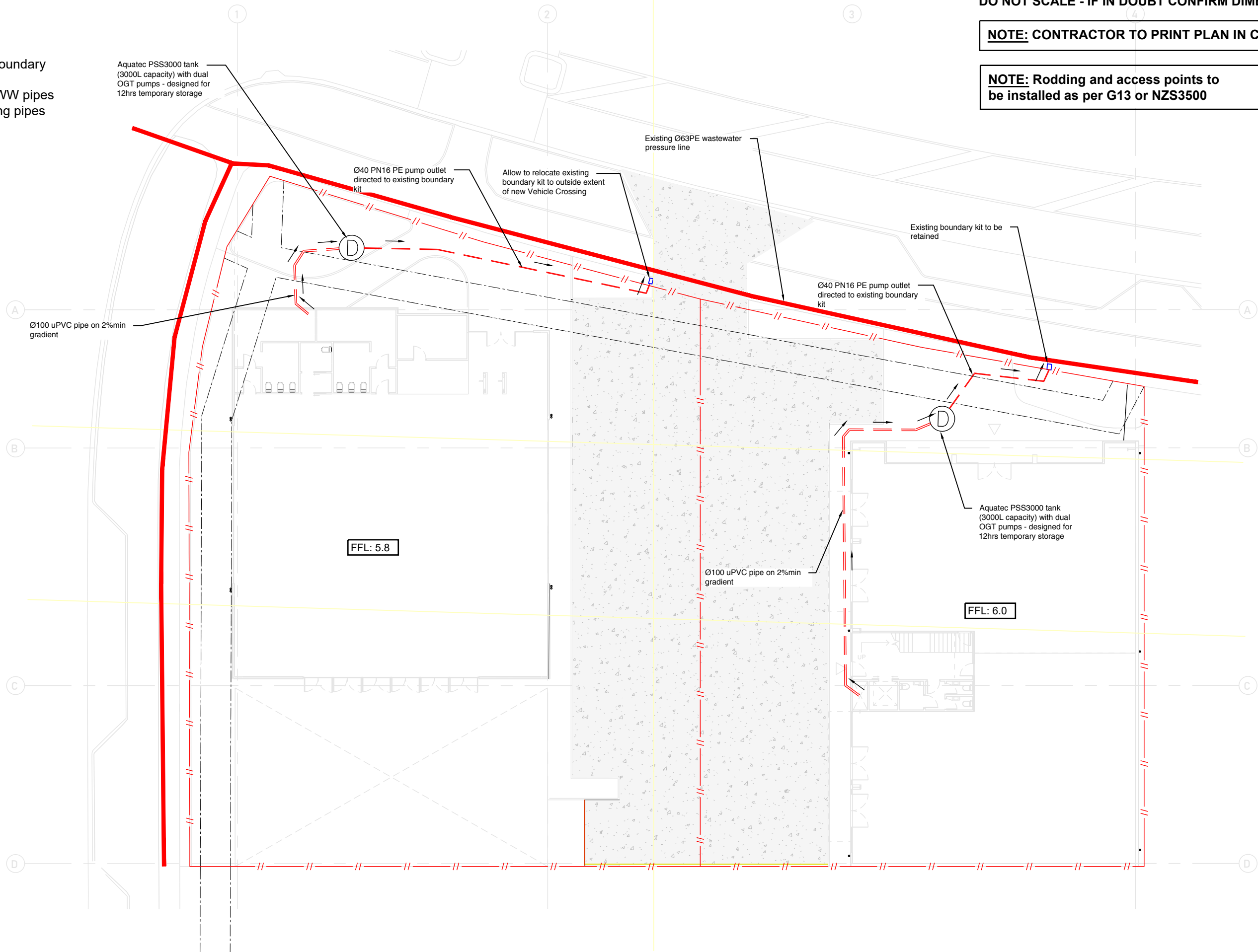
DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR

NOTE: Rodding and access points to be installed as per G13 or NZS3500

KEY

- Site boundary
- New WW pipes
- Existing pipes



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BUILDING 5 & 7 EAGLE RAY
ROAD, MANGAWHAI

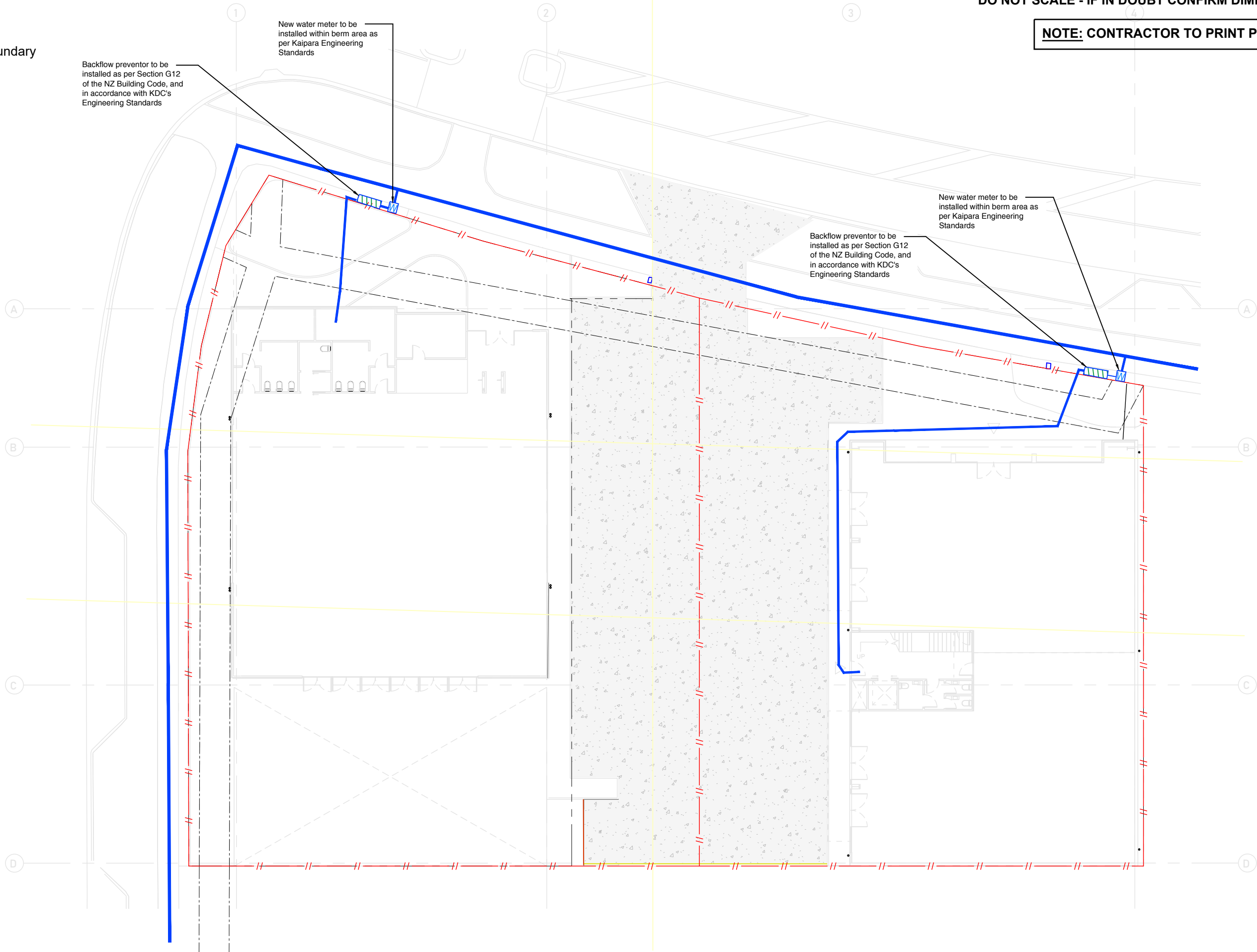
DRAWING TITLE
PROPOSED WASTE WATER
LAYOUT

REV NO.	REVISION	DATE	APPROVED	PROJECT NO	DESIGNED
1.	RESOURCE CONSENT	FEB 2025	SR	A24339.C	ZQ
				SCALE @ A3 1:250	DRAWN JK
				REV NO. A	SHEET NO. C1.06

KEY

Site boundary

NOTE: CONTRACTOR TO PRINT PLAN IN COLOUR



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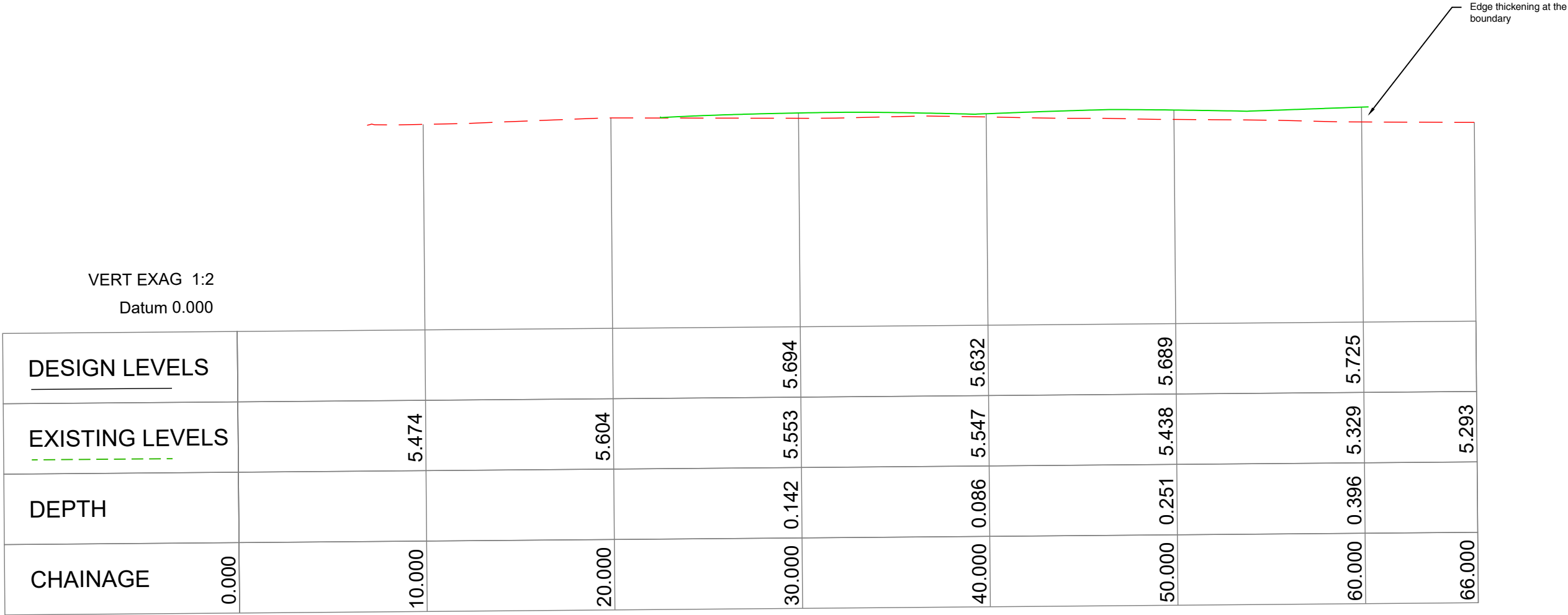
PROJECT TITLE
CIVIL DESIGN - COMMERCIAL
BUILDING 5 & 7 EAGLE RAY
ROAD, MANGAWHAI

DRAWING TITLE
WATER SUPPLY PLAN

REV NO.	REVISION	DATE	APPROVED	PROJECT NOA24339.C	DESIGNED ZQ
1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3 1:250	DRAWN JK
				REV NO. A	SHEET NO. C1.07

KEY

- Designed ground level
- Existing ground level



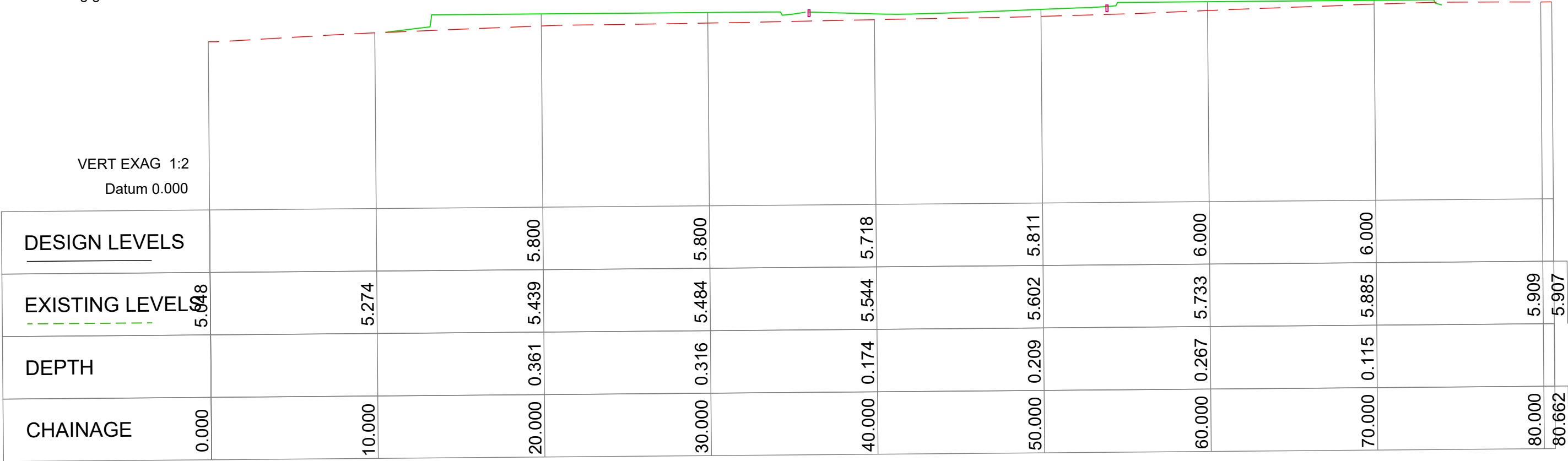
A-A
C1.01 **LONG SECTION ALONG DRIVEWAY**

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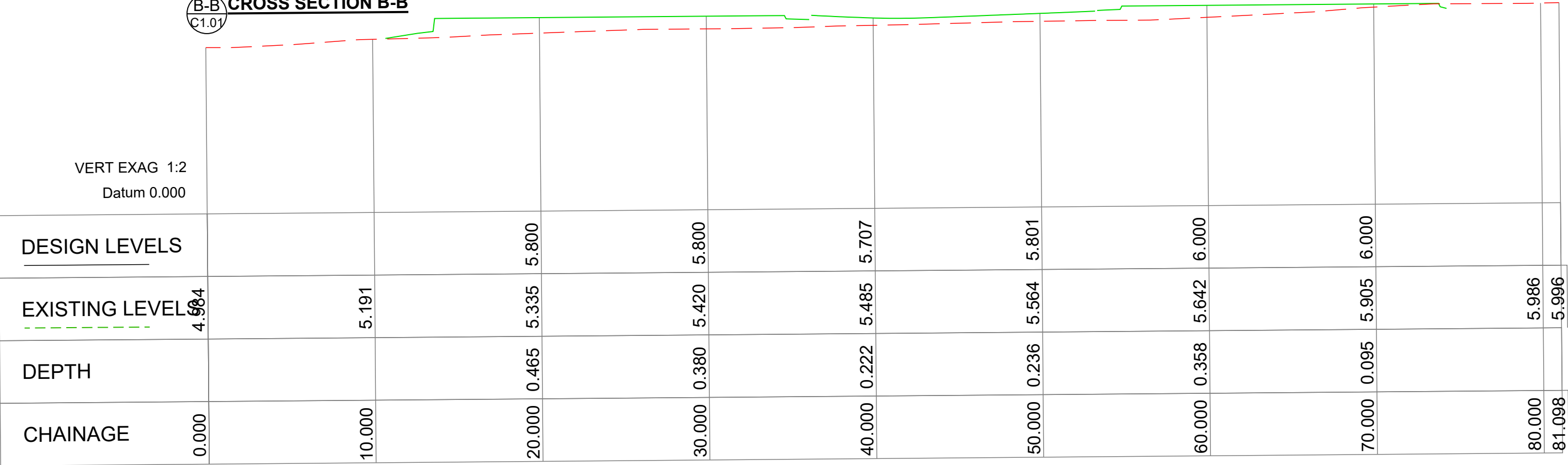
KEY

- Designed ground level
- Existing ground level

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE



B-B
C1.01
CROSS SECTION B-B

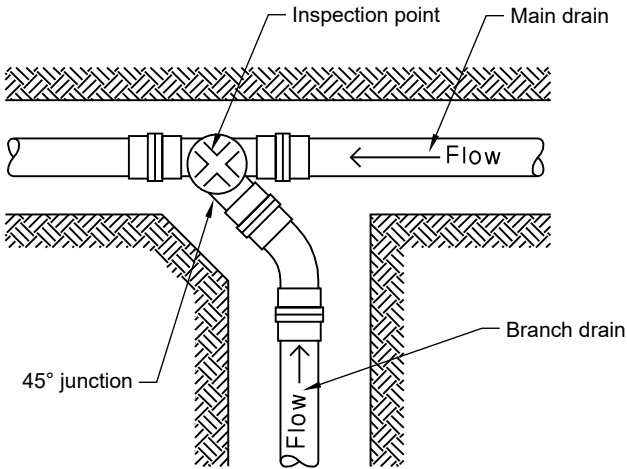


C-C
C1.01
CROSS SECTION C-C

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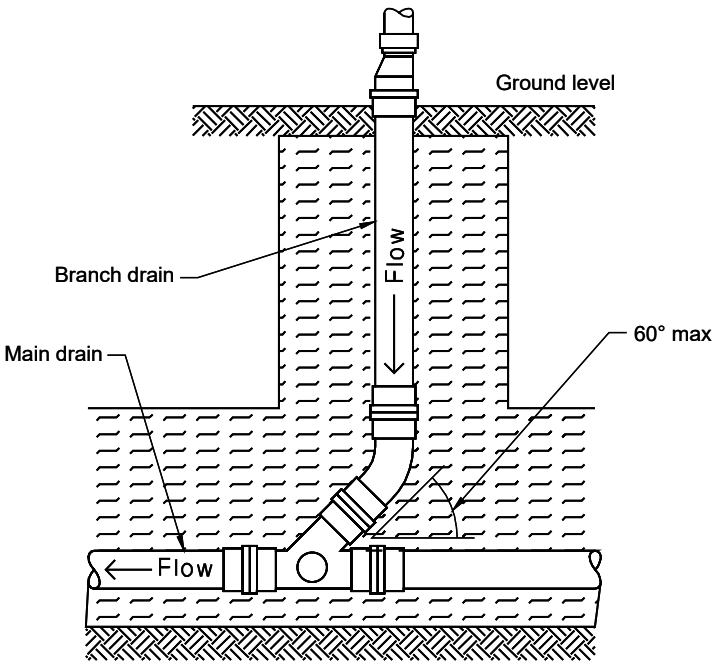
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1.	RESOURCE CONSENT	FEB 2025	SR	A24339.C	ZQ
				SCALE @ A3	DRAWN JK
				REV NO. 1	SHEET NO. C2.02

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE



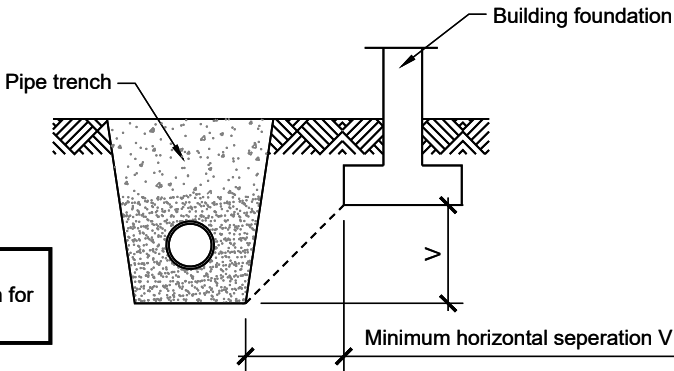
INSPECTION POINT HORIZONTAL CONNECTION

SCALE 1:20



INSPECTION POINT VERTICAL CONNECTION

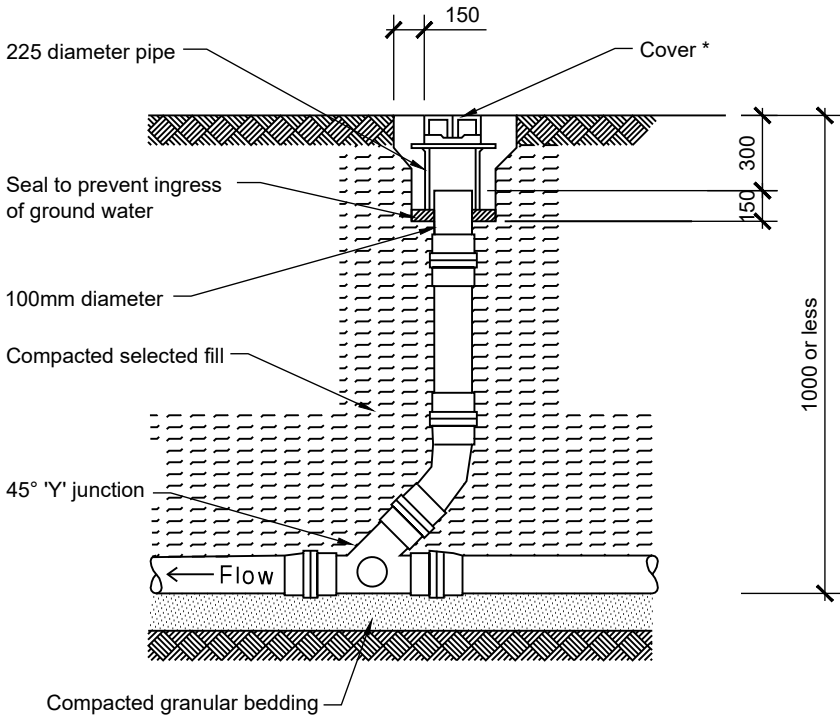
SCALE 1:20



NOTE
Trench shall be left open for
no longer than 24 hours

RELATIONSHIP OF PIPE TRENCH TO BUILDING

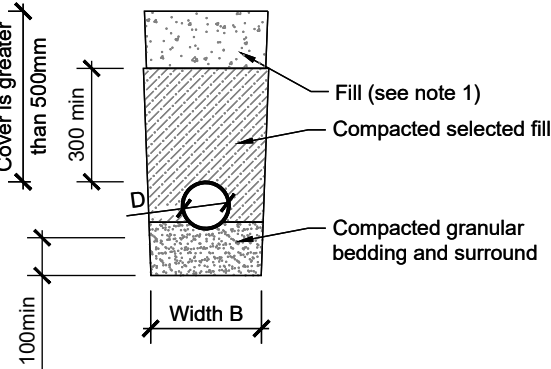
SCALE 1:20



* Where the rodding point is located inside a building
the cover shall be sealed at floor level

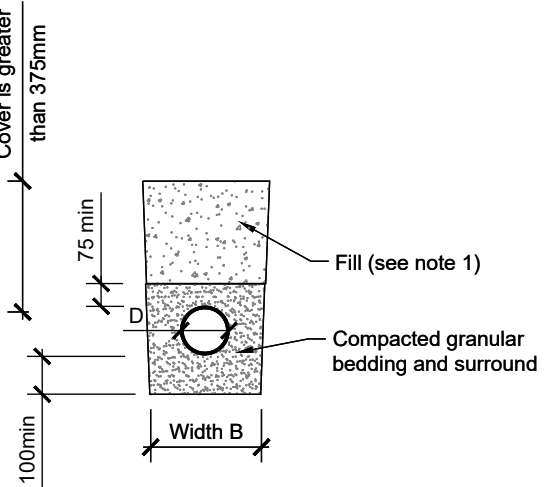
INSPECTION POINT DETAIL

SCALE 1:20



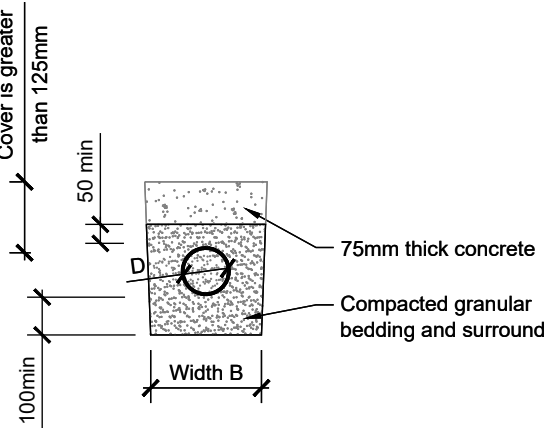
COVER GREATER THAN 500mm

SCALE 1:20



COVER GREATER THAN 375mm

SCALE 1:20

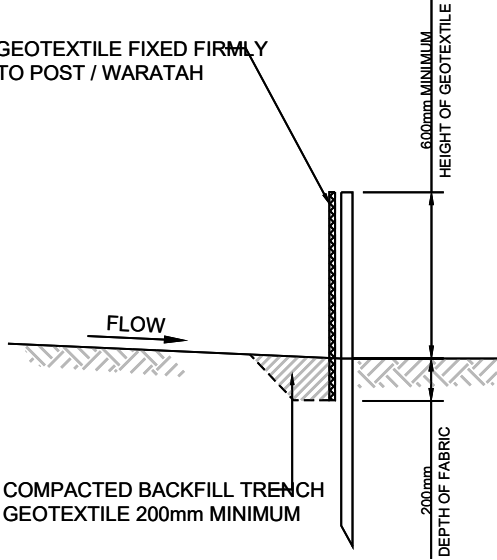
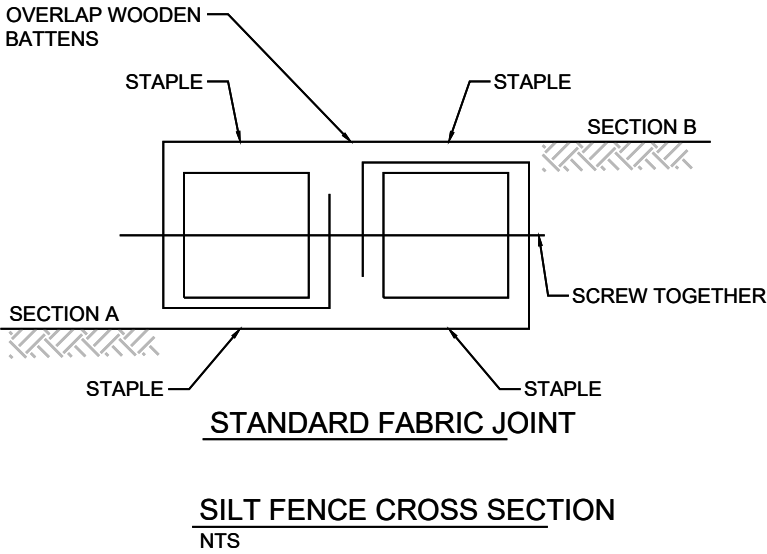
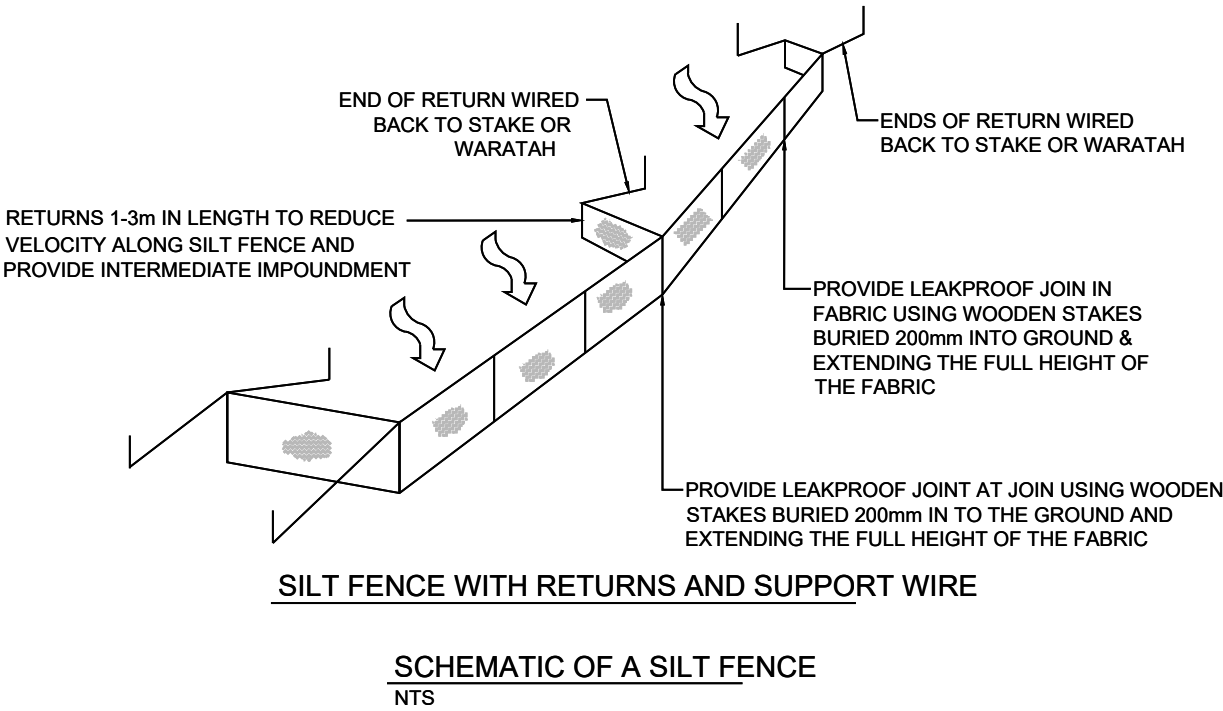
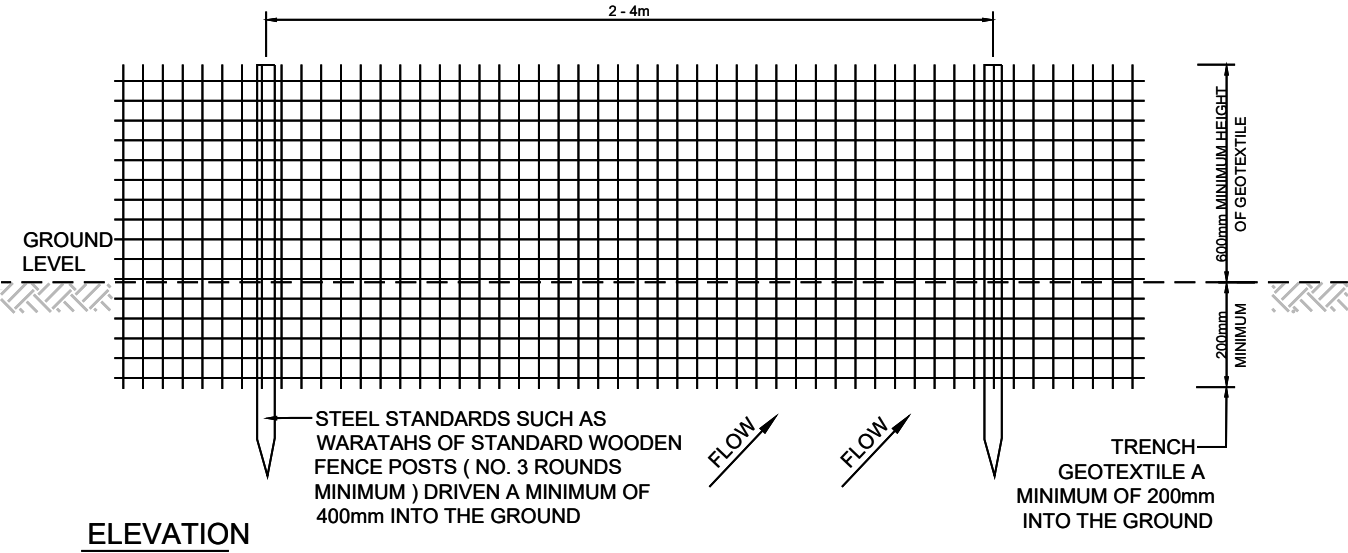


COVER BETWEEN 125mm & 375mm

SCALE 1:20

- NOTE
1. Fill shall be
 - Ordinary fill where drains are located below gardens and open country
 - Compacted selected fill where the drains are located below residential driveways and similar areas subject to light traffic

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ARCHITECT'S DRAWINGS



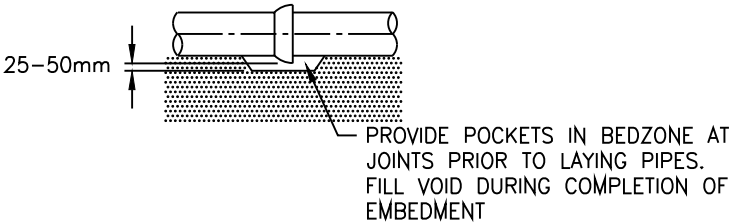
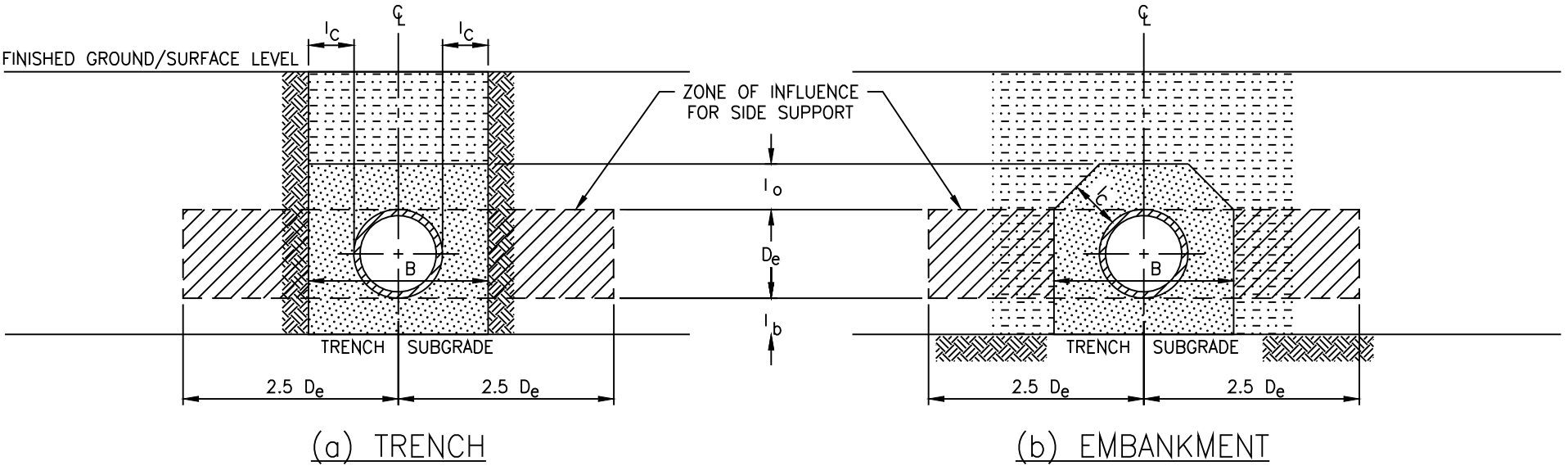
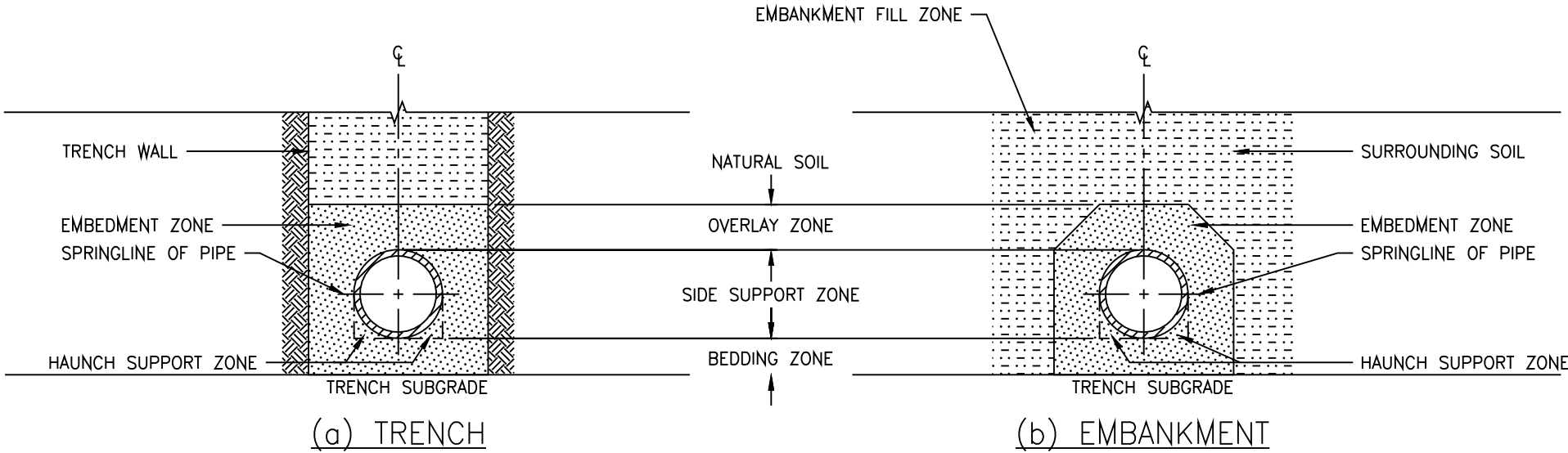
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REV NO.	REVISION	DATE	APPROVED	PROJECT NO. A24339.C	DESIGNED ZQ
1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3	DRAWN JK
				REV NO. 1	SHEET NO. C3.04

DO NOT SCALE - IF IN DOUBT CONFIRM DIMENSIONS ON SITE

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.



PIPE JOINT BEDDING POCKETS
FOR JOINT PROJECTIONS

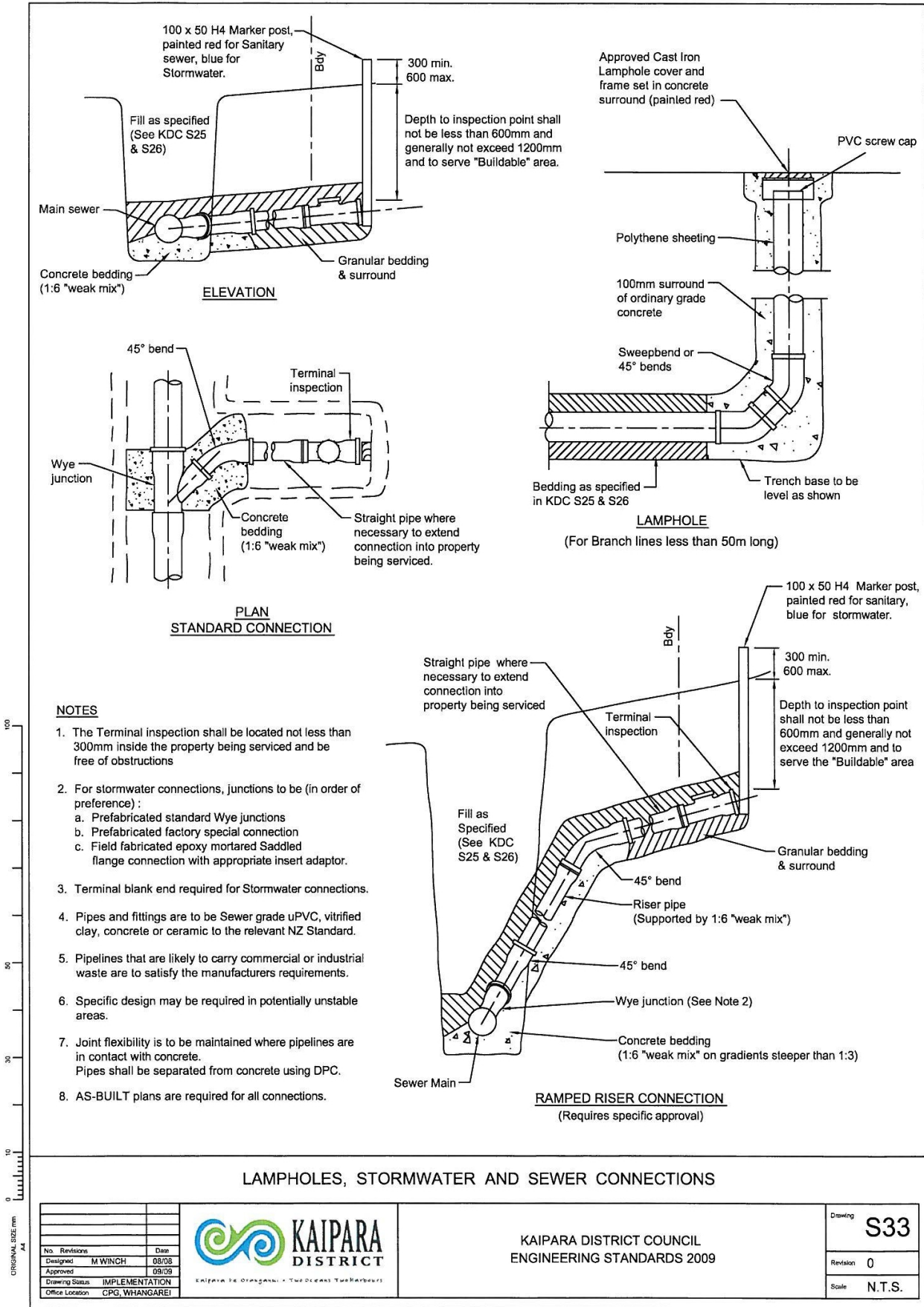
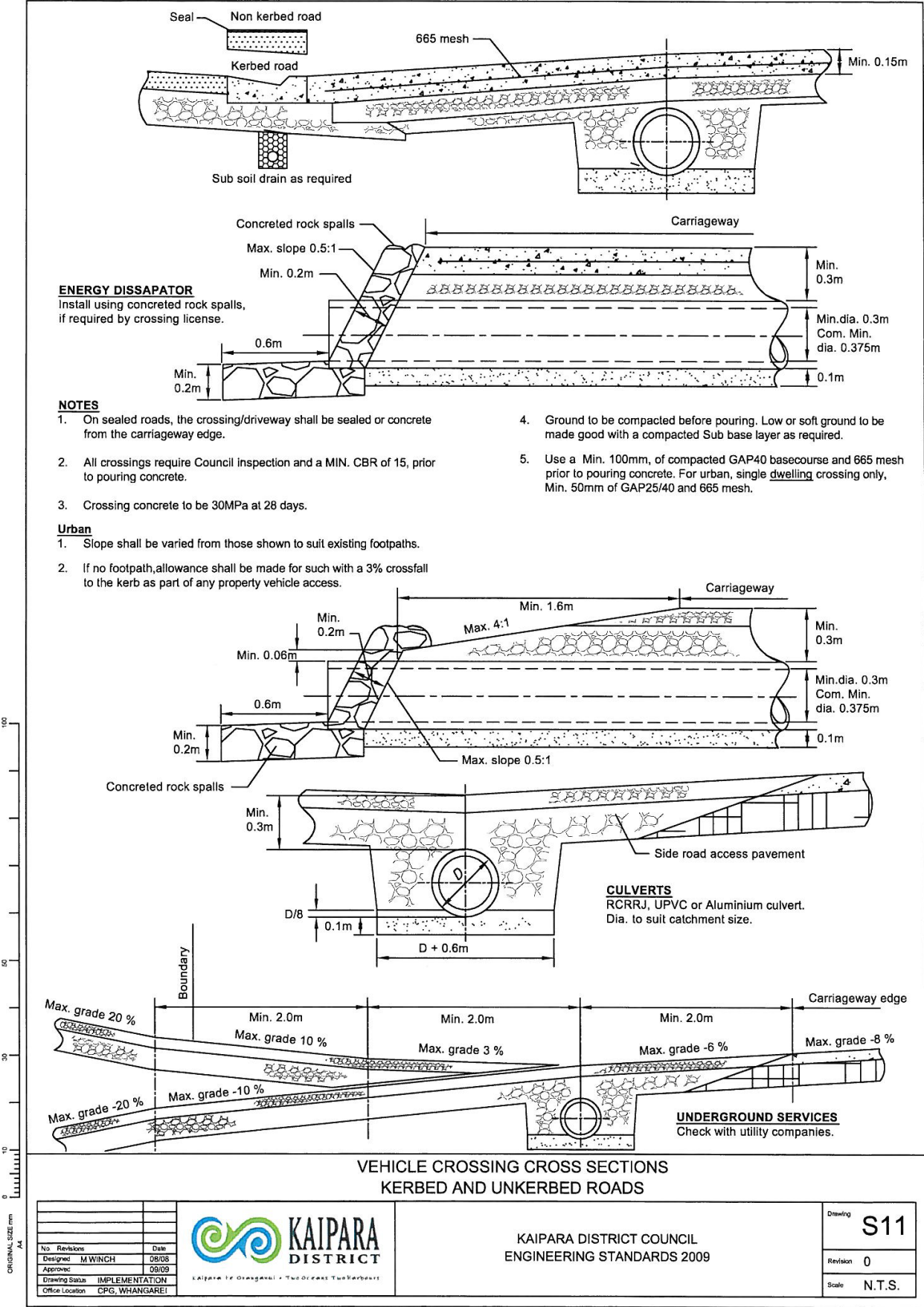
MINIMUM EMBEDMENT ZONE DIMENSIONS

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

DEFINITIONS OF SYMBOLS USED:

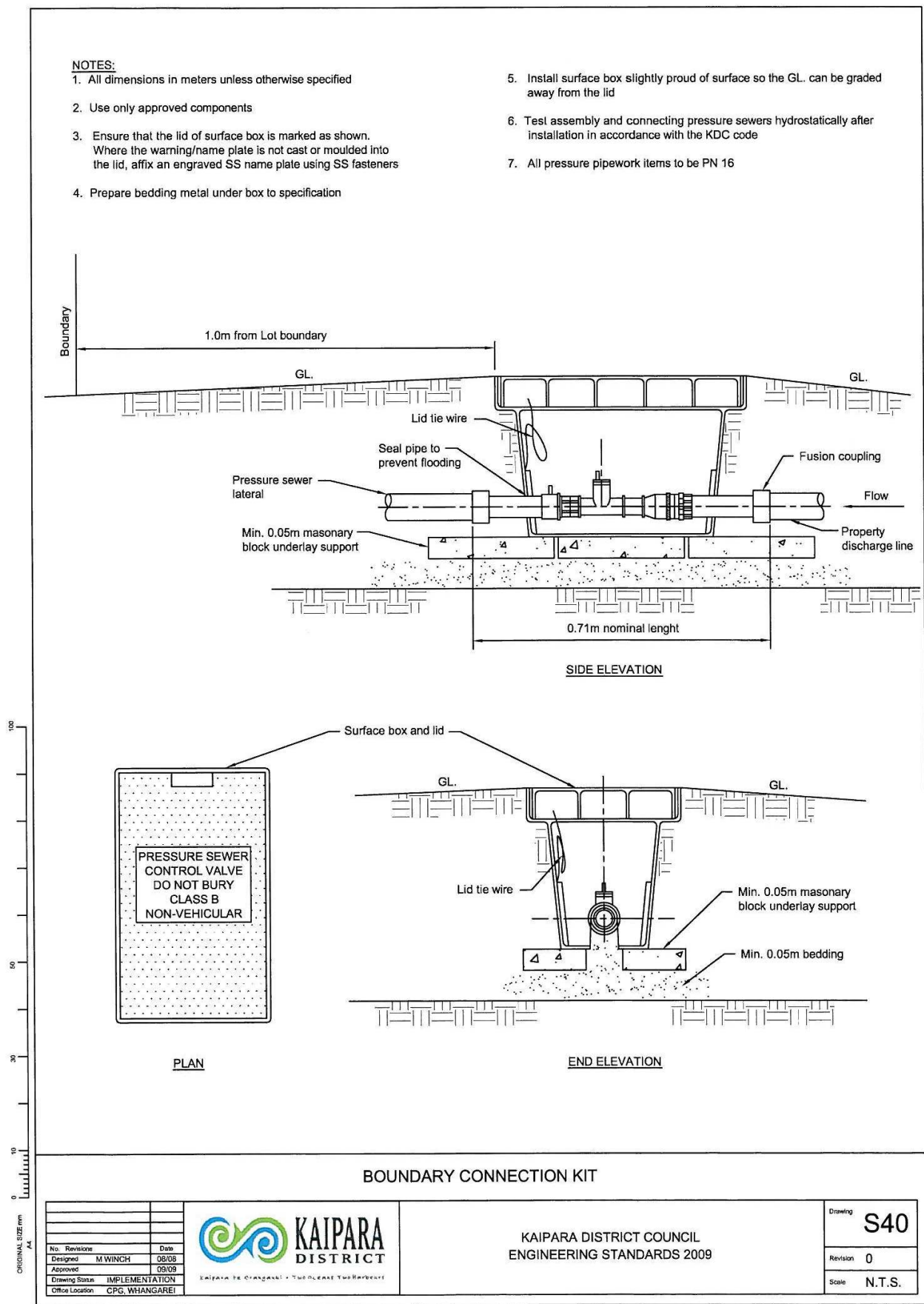
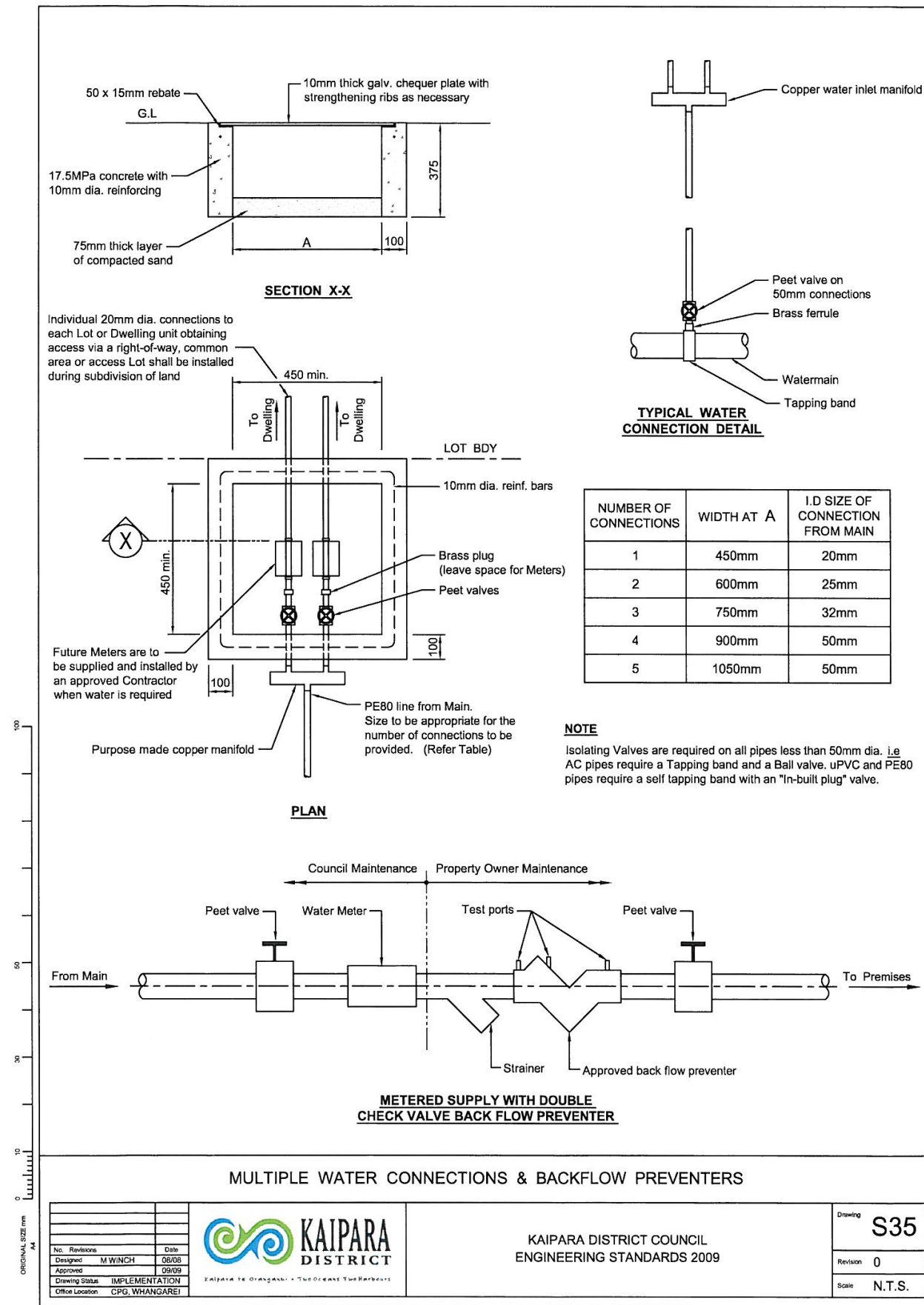
- B TRENCH WIDTH
 D_e EXTERNAL DIAMETER OF PIPELINE.
 l_b DEPTH OF BEDDING UNDER BARREL OF PIPELINE.
 l_c MINIMUM DISTANCE BETWEEN SPRINGLINE OF PIPE AND PERMANENT SIDE OF TRENCH.
 l_o MINIMUM DEPTH OF COVER OVER SOFFIT OF PIPELINE.

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RICHARDS CONSULTING ENGINEERS	Christchurch office: (03) 347 1624 Auckland office: (09) 3911324 Website: rcengineers.co.nz Email: rce@rcengineers.co.nz	PROJECT TITLE CIVIL DESIGN - COMMERCIAL BUILDING 5 & 7 EAGLE RAY ROAD, MANGAWHAI	DRAWING TITLE DETAILS	REV NO.	REVISION	DATE	APPROVED	PROJECT NO. A24339.C	DESIGNED ZQ
				1.	RESOURCE CONSENT	FEB 2025	SR	SCALE @ A3	DRAWN JK
								REV NO.	SHEET NO.
								1	C3.06



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