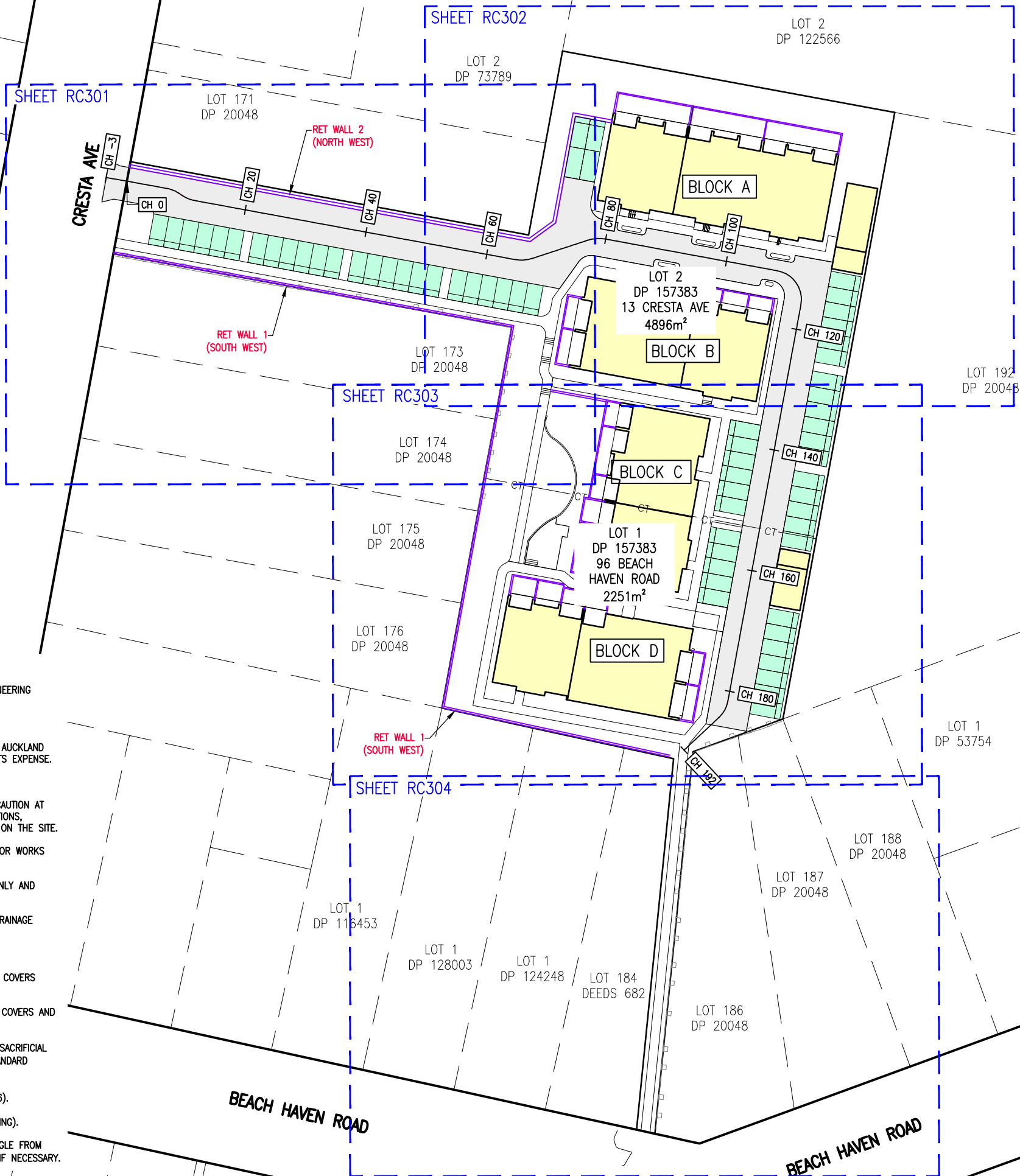
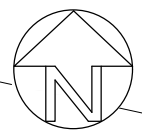


# Appendix B

## Engineering Plans



**NOTES**

1. ALL WORK TO BE CARRIED OUT TO AUCKLAND COUNCIL & WATERCARE SERVICES ENGINEERING STANDARDS.
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7. CONTOURS AND MEASUREMENTS HAVE BEEN PROVIDED FOR ENGINEERING PURPOSES ONLY AND SHOULD NOT BE USED FOR TOWN PLANNING PURPOSES.
8. PILOT ALL SERVICES AND EXISTING DRAINAGE LINES PRIOR TO INSTALLATION OF NEW DRAINAGE LINES.
9. LEVELS IN TERMS OF LANDS & SURVEY DATUM 1946.
10. ALL PROPOSED PUBLIC STORMWATER MANHOLES TO BE 1050Ø RC, WITH 600Ø HINGED COVERS INSTALLED, UNLESS SPECIFIED OTHERWISE.
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15. ALL 100Ø WASTEWATER LOT CONNECTIONS TO BE INSTALLED AT MIN. 30° INCOMING ANGLE FROM HORIZONTAL (MAX. 60°) PER WW15. INSTALL PLAIN BEND AT END OF WYE JUNCTION IF NECESSARY.

Original Size: 0 10 20 30 40 50

No.	Revision Details	Date	No.	Revision Details	Date
1	REVISED FOR CONSENT.	10/09/2021			

Design N.N.N.  
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 Checked M.T.W.  
 Date 15/09/2021  
 Scale A3 1:750  
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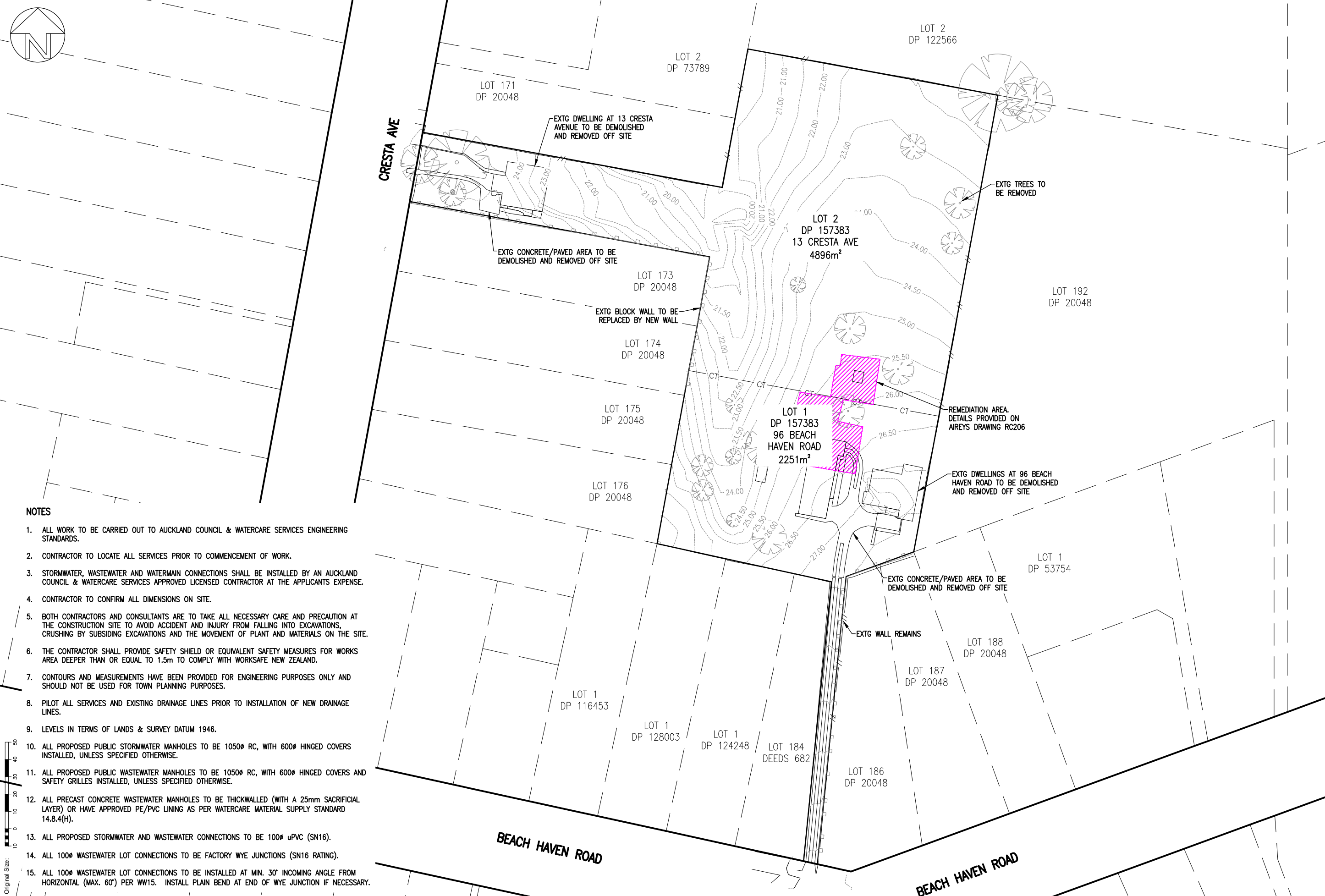
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Job Title:  
**PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD**  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE  
 BEACH HAVEN  
**RESOURCE CONSENT**



Drawing Title: <b>OVERALL SITE PLAN</b>	
File No. 200626/1	Rev. 1
Dwg. No. RC100	

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**NOTES**

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20  
10  
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No.	Revision Details	Date	No.	Revision Details	Date

Design B.T.S.  
Survey EASDALE SURVEYORS LTD  
Drawn B.T.S.  
Checked M.T.W.  
Date 15/09/2021  
Scale A3 1:750  
CAD Filename  
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**FINAL**

Job Title:  
**PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE BEACH HAVEN**

**RESOURCE CONSENT**



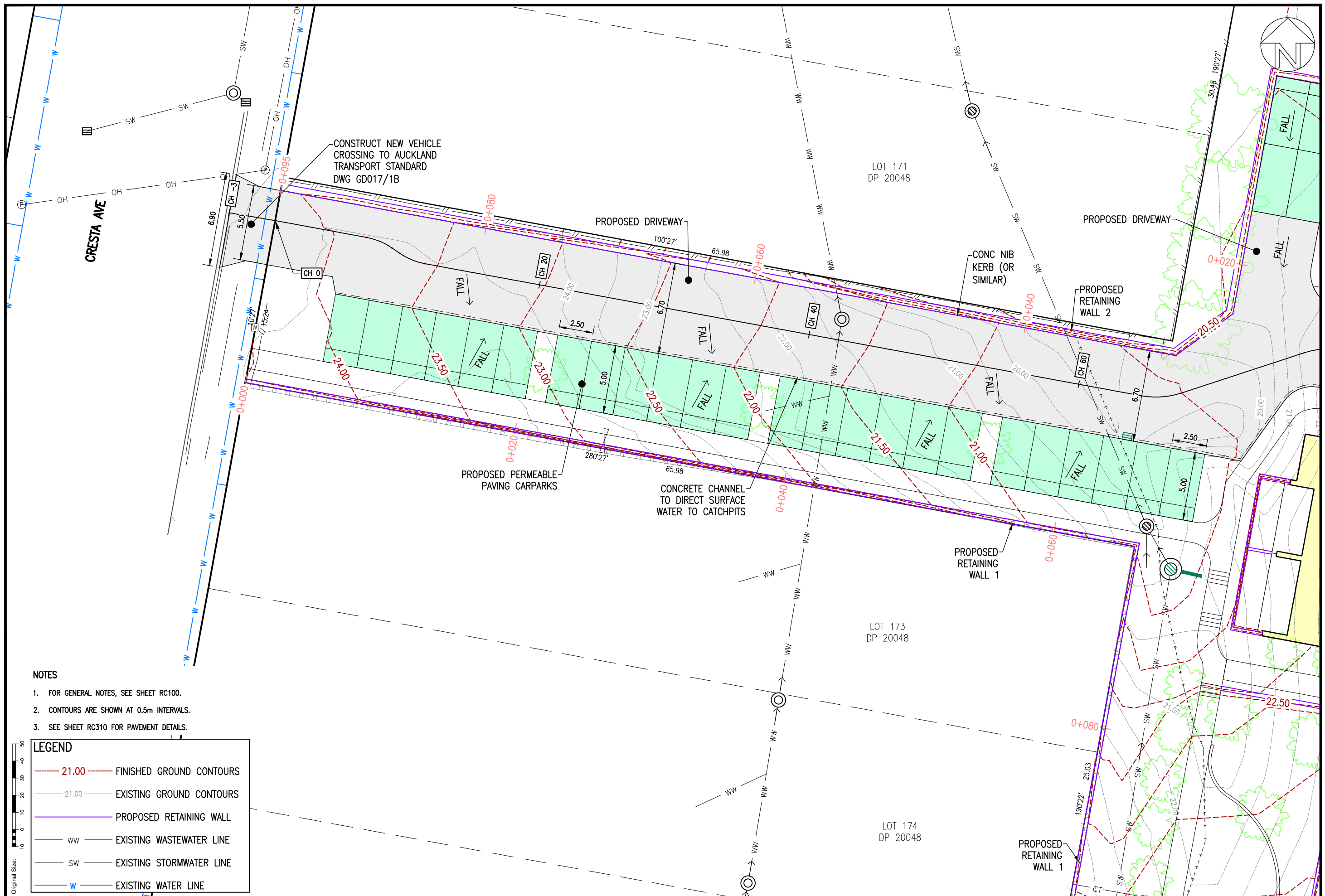
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File No. 200626/1  
Rev. -  
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- NOTES**
- FOR GENERAL NOTES, SEE SHEET RC100.
  - CONTOURS ARE SHOWN AT 0.5m INTERVALS.
  - SEE SHEET RC310 FOR PAVEMENT DETAILS.

**LEGEND**

- 21.00 --- FINISHED GROUND CONTOURS
- 21.00 --- EXISTING GROUND CONTOURS
- --- PROPOSED RETAINING WALL
- WW --- EXISTING WASTEWATER LINE
- SW --- EXISTING STORMWATER LINE
- W --- EXISTING WATER LINE

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Survey	EASDALE SURVEYORS LTD
Drawn	B.T.S.
Checked	M.T.W.
Date	15/09/2021
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Job Title:  
**PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD**  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE BEACH HAVEN

RESOURCE CONSENT

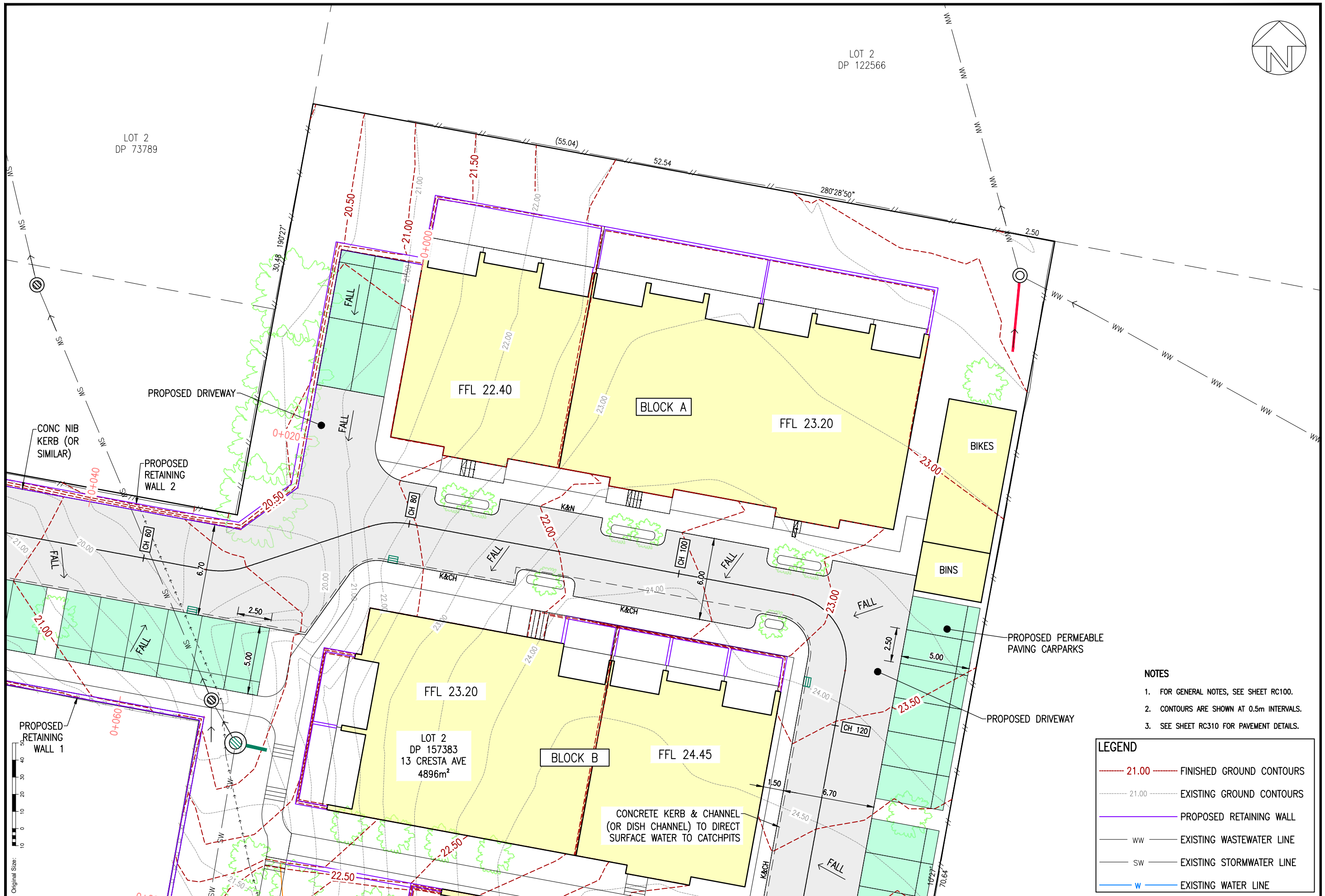


Drawing Title: <b>PART SITE PLAN - SHEET 1 OF 4</b>	
File No. 200626/1	Rev. -
Dwg. No. RC301	



LOT 2  
DP 122566

LOT 2  
DP 73789



**NOTES**

1. FOR GENERAL NOTES, SEE SHEET RC100.
2. CONTOURS ARE SHOWN AT 0.5m INTERVALS.
3. SEE SHEET RC310 FOR PAVEMENT DETAILS.

**LEGEND**

- 21.00 --- FINISHED GROUND CONTOURS
- 21.00 --- EXISTING GROUND CONTOURS
- --- PROPOSED RETAINING WALL
- ww --- EXISTING WASTEWATER LINE
- sw --- EXISTING STORMWATER LINE
- w --- EXISTING WATER LINE

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No.	Revision Details	Date	No.	Revision Details	Date

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 Checked M.T.W.  
 Date 15/09/2021  
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**FINAL**

Job Title:  
**PROPOSED ENGINEERING WORKS  
 FOR  
 BENTLEY STUDIOS LTD  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE  
 BEACH HAVEN**

**RESOURCE CONSENT**

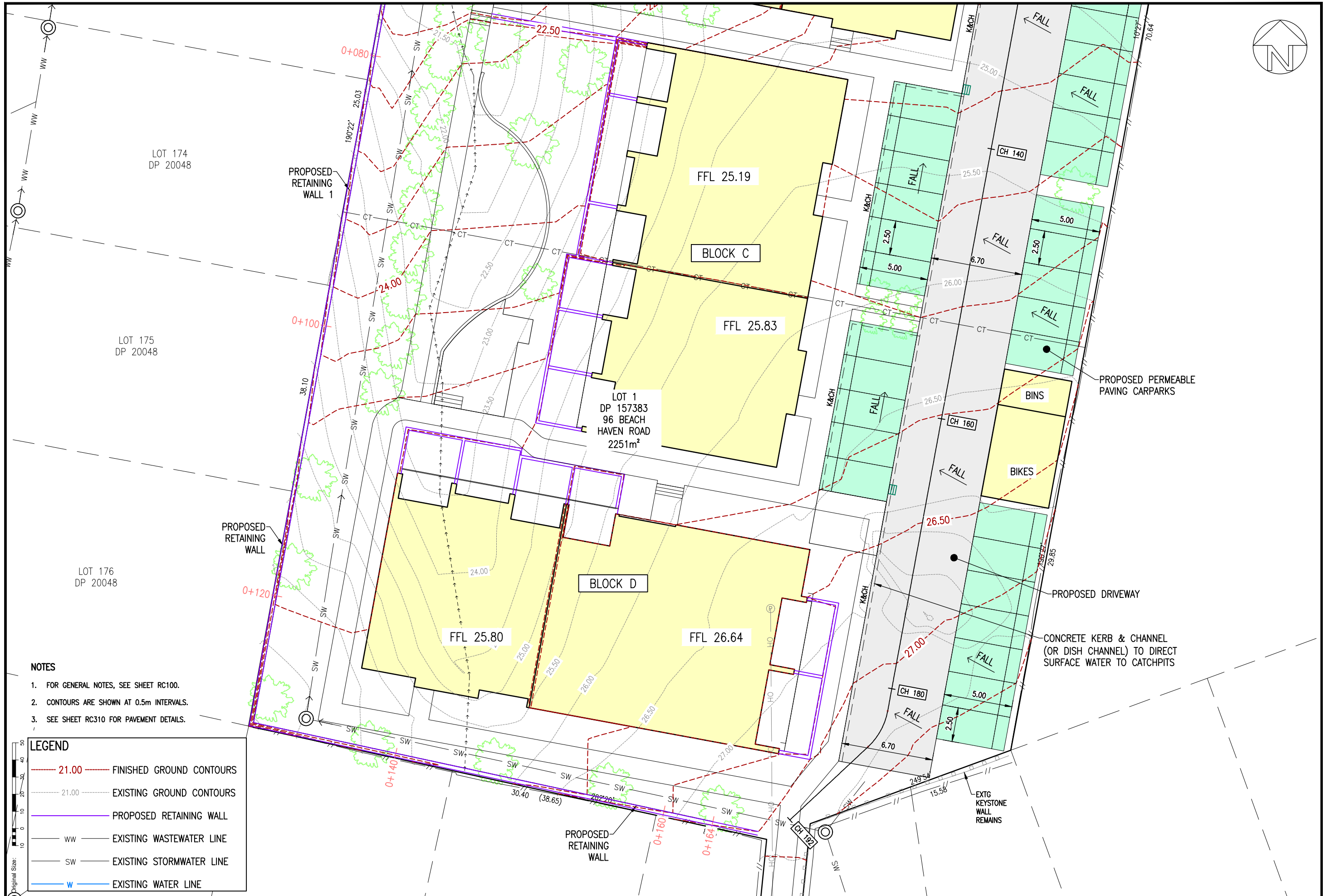


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- NOTES**
1. FOR GENERAL NOTES, SEE SHEET RC100.
  2. CONTOURS ARE SHOWN AT 0.5m INTERVALS.
  3. SEE SHEET RC310 FOR PAVEMENT DETAILS.

**LEGEND**

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	21.00	EXISTING GROUND CONTOURS
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		EXISTING WASTEWATER LINE
		EXISTING STORMWATER LINE
		EXISTING WATER LINE

No.	Revision Details	Date	No.	Revision Details	Date

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 Drawn B.T.S.  
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 Date 15/09/2021  
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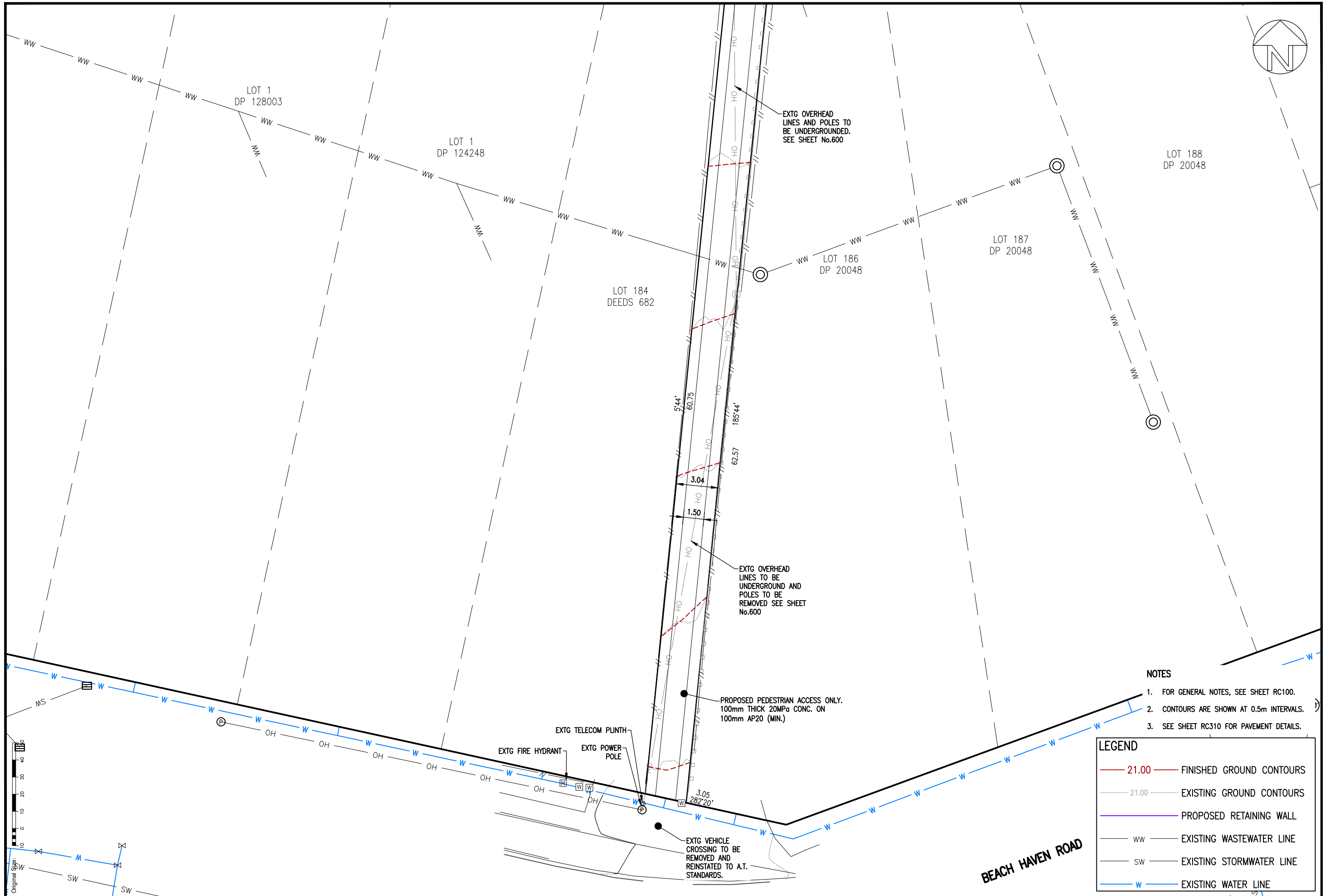
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 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE BEACH HAVEN  
**RESOURCE CONSENT**



Drawing Title:  
**PART SITE PLAN - SHEET 3 OF 4**

File No. 200626/1	Rev. -	Dwg. No. RC303
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- NOTES**
1. FOR GENERAL NOTES, SEE SHEET RC100.
  2. CONTOURS ARE SHOWN AT 0.5m INTERVALS.
  3. SEE SHEET RC310 FOR PAVEMENT DETAILS.

**LEGEND**

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	21.00	EXISTING GROUND CONTOURS
		PROPOSED RETAINING WALL
		EXISTING WASTEWATER LINE
		EXISTING STORMWATER LINE
		EXISTING WATER LINE

No.	Revision Details	Date

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 Checked M.T.W.  
 Date 15/09/2021  
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**FINAL**

Job Title  
**PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD**  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE BEACH HAVEN

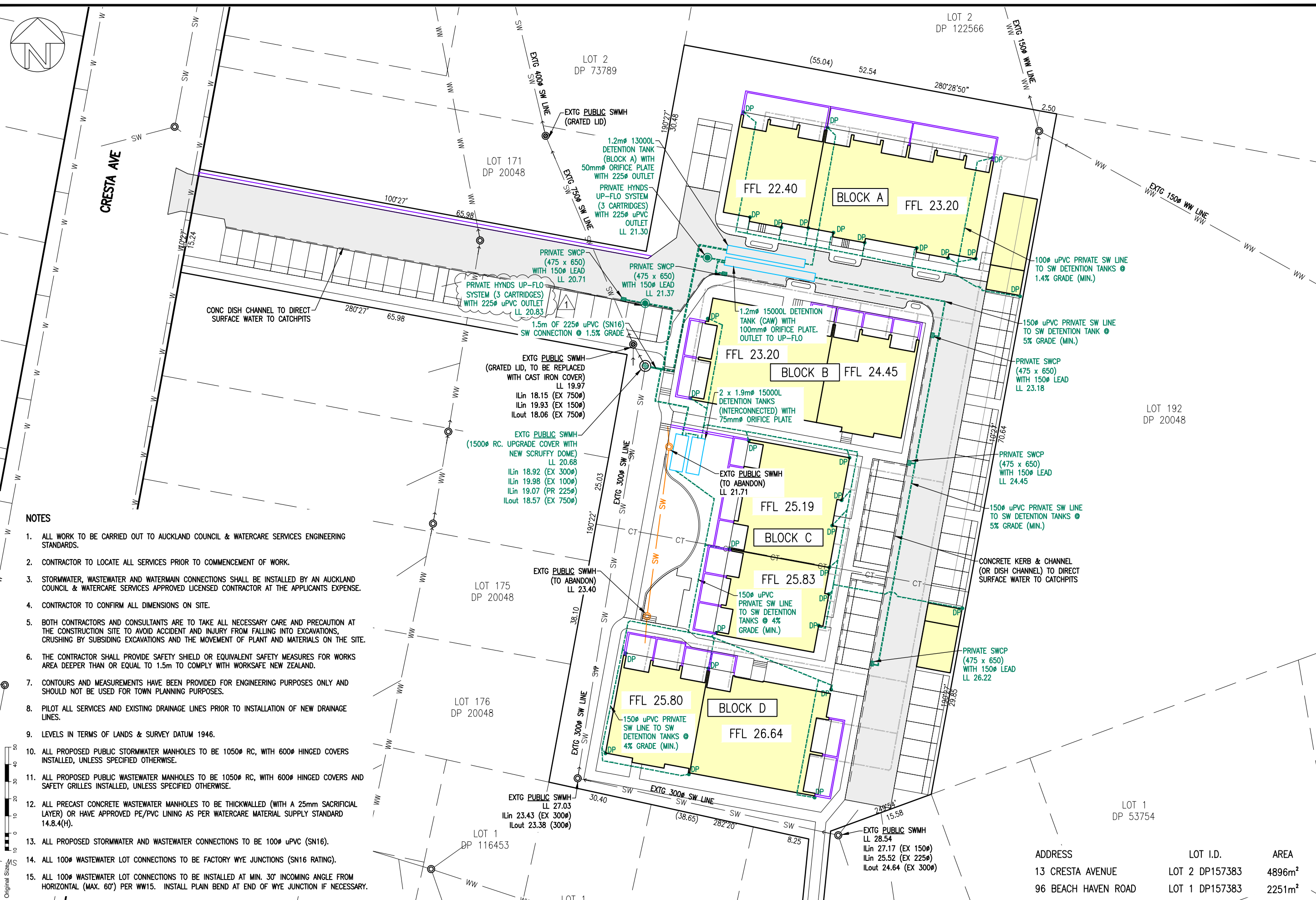
**RESOURCE CONSENT**



Drawing Title  
**PART SITE PLAN - SHEET 4 OF 4**

File No. 200626/1	Rev. -	Dwg. No. RC304
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ADDRESS	LOT I.D.	AREA
13 CRESTA AVENUE	LOT 2 DP157383	4896m <sup>2</sup>
96 BEACH HAVEN ROAD	LOT 1 DP157383	2251m <sup>2</sup>

Design N.N.N./S.W. Survey EASDALE SURVEYORS LTD Drawn B.T.S. Checked M.T.W. Date 14/09/2021 Scale A3 1:500 CAD Filename		Job Title <b>PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD</b> 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE BEACH HAVEN		CONSULTING CIVIL & STRUCTURAL ENGINEERS Takapuna, Botany, Queenstown	Drawing Title <b>OVERALL STORMWATER PLAN</b>	
1 UP-FLO DEVICE ADDED PER S92. 16/06/2022		<b>FINAL</b> RESOURCE CONSENT			File No. 200626/1	Rev. 1

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**LEGEND:**

- PAVED AREA
- ROOFED AREA

TOTAL SITE AREA = 7147m<sup>2</sup>

PAVED AREA = 221.3m<sup>2</sup>

ROOFED AREA = 338.1m<sup>2</sup>

LANDSCAPED AREA = 6587.6m<sup>2</sup>

ADDRESS	LOT I.D.	AREA
13 CRESTA AVENUE	LOT 2 DP157383	4896m <sup>2</sup>
96 BEACH HAVEN ROAD	LOT 1 DP157383	2251m <sup>2</sup>

No.	Revision Details	Date	No.	Revision Details	Date

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 Survey EASDALE SURVEYORS LTD  
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 Checked M.T.W.  
 Date 14/09/2021  
 Scale A3 1:500  
 CAD Filename

**FINAL**

Job Title:  
**PROPOSED ENGINEERING WORKS  
 FOR  
 BENTLEY STUDIOS LTD  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE  
 BEACH HAVEN**

**RESOURCE CONSENT**



Drawing Title: <b>EXISTING CATCHMENT PLAN</b>		
File No. 200626/1	Rev. -	Dwg. No. RC405

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ADDRESS	LOT I.D.	AREA
13 CRESTA AVENUE	LOT 2 DP157383	4896m <sup>2</sup>
96 BEACH HAVEN ROAD	LOT 1 DP157383	2251m <sup>2</sup>

No.	Revision Details	Date	No.	Revision Details	Date

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Survey	EASDALE SURVEYORS LTD
Drawn	B.T.S.
Checked	M.T.W.
Date	14/09/2021
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CAD Filename	
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**FINAL**

Job Title:  
**PROPOSED ENGINEERING WORKS FOR BENTLEY STUDIOS LTD**  
 96 BEACH HAVEN ROAD & 13 CRESTA AVENUE  
 BEACH HAVEN

**RESOURCE CONSENT**



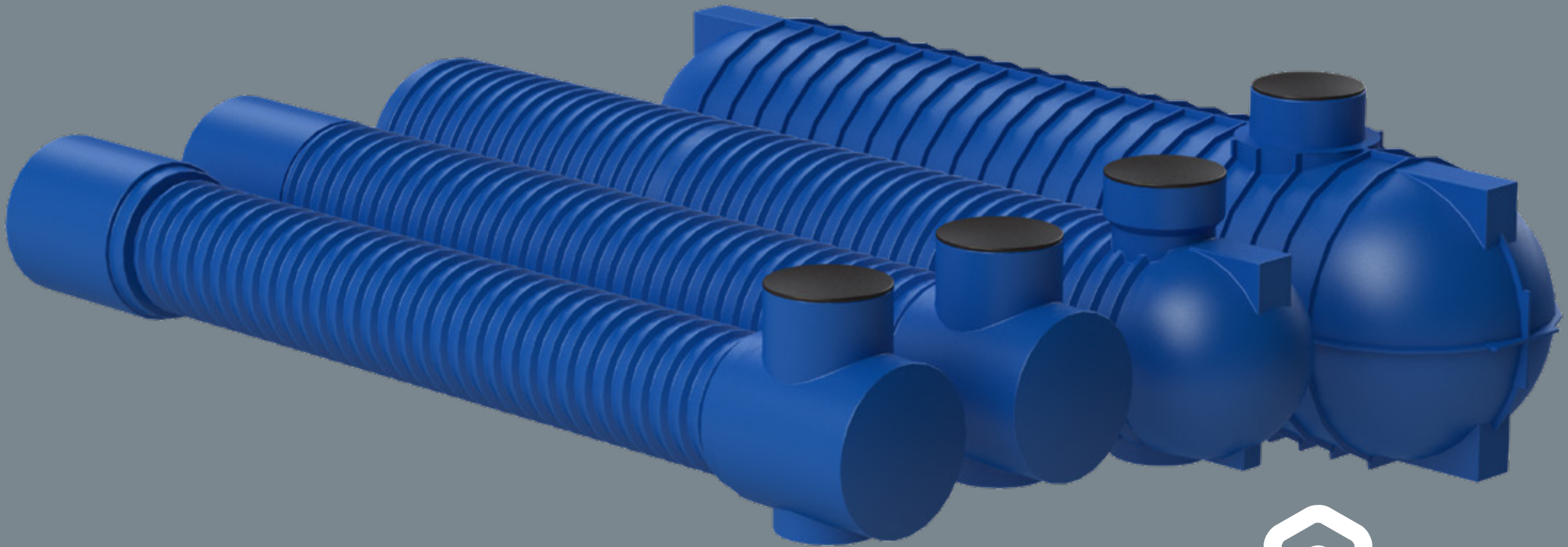
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File No. 200626/1	Rev. -	Dwg. No. RC406

# Appendix C

## Promax Tank Product Specification



# Underground Tank Installation Guide 2020



**Promax**

LIQUID MANAGEMENT SOLUTIONS

FREephone 0800 77 66 29 | SALES@PROMAXPLASTICS.CO.NZ | WWW.PROMAXPLASTICS.CO.NZ

# Underground Tank Installation Specifications

## Promax polyethylene Underground Tanks must be installed according to these instructions.

Local Council regulations may apply and should be consulted. Failure to follow these installation instructions will void the warranty and may result in tank failure. Proper installation of underground tanks is required to prevent tank damage and insure long term trouble free service.

It is imperative to read and understand the instructions below prior to any installation commences.

Promax will not be held liable for any cost associated with poor installation. Customer must check all ground conditions and installation guide with an engineer before installation of tanks.

## 1. Handling

- Do not roll or drop tank.
- Only use appropriate lifting equipment with enough evenly spaced banded straps to unload, lift or move tanks - see handling diagram below
- Do not stand on tank while being lifted. Always place tanks on smooth ground, free of rocks and Harmful objects. Tanks must be secured in high wind areas to prevent damage before being installed.
- Any mishandling makes void all warranties given.

## 2. Tank Location

### Proximity To Nearby Structures:

- The location of the tank excavation is the responsibility of the contractor and the tank owner. The contractor is to follow the limitations of the diagrams shown or notify a chartered professional engineer for a site specific consultation.
- Contractor to ensure nearby foundations of new and/or existing structures are not undermined by the excavation for the tank.

### **If tank excavation location does not comply with the requirements below - contractor to notify chartered professional engineer for a site specific consultation:**

- Tank position near house: 45 degree line of influence to begin 1000mm min from edge of house foundations. Contractor to determine foundation depths/locations prior to excavation.

- Tank position near retaining wall: 45 degree line of influence to begin at a distance of a minimum of twice the height retaining away from the edge of the retaining wall posts.
- Contractor to determine prior to excavation.

## 3. Excavation Clearance

- Contractor to ensure a minimum of 150mm between edge of tank and edge of excavation wall at the narrowest location.

### Soil conditions:

- This design assumes site soils will meet the requirements of nzs3604:2011 classification of 'good ground'. Contractor to confirm site exhibits these properties or notify chartered Professional engineer for consultation.

# Underground Tank Installation Specifications

## 4. Backfill & Base Course

### Backfill and base course material to be either;

- Crushed stone or gravel: washed, with angular particle sizes no larger than 13.2mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/cubic meter.
- Approved backfill should not be mixed with sand or native soils and should always be brought up to at least the tank crown level. The use of non-specified backfill material could result in tank failure. (I.E. Gap 7).
- Naturally rounded gravel: clean naturally-rounded aggregate with particle sizes no larger than 19mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/ cubic meter.
- Contractor to work in maximum backfill lifts of 300mm. After each lift, contractor to use long handled probe to work the backfill material under the entire length of the tank and within any ribs.
- All voids and spaces should be filled to ensure adequate support of tank.

## 5. Backfill, Depth & Cover

### See attached relevant drawings

- See attached relevant drawings. Stated depths assume no hydraulic loads. Consult Promax if high water table is possible or expected.

## 6. Anchoring

- For tank burial where the need for anchoring has been evaluated and found advisable use the promax deadman anchor solution.
- The weight of overburden on top of the deadman and tank provides the anchoring force. Lay deadman along each side and parallel to tank. The tank must not 'overshadow' the deadman anchor. Deadman anchors are available from promax plastics.

### A) backfill

When using anchors, tanks must be backfilled with approved drainage metal to be effective

### B) hold down strapping

Use the hold-down straps provided in between ribs using 1m spacing (500mm with 1900mm dia tanks) straps should be snug but cause no tank deflection.

## 7. Manhole Access Points

- The standard manway is 600 mm in diameter and can be extended using addition manhole extension risers.
- Tank will come with standard polyethylene lid which is suitable for garden application only.
- If being used in a pedestrian or trafficable area a steel manhole lid is advisable.

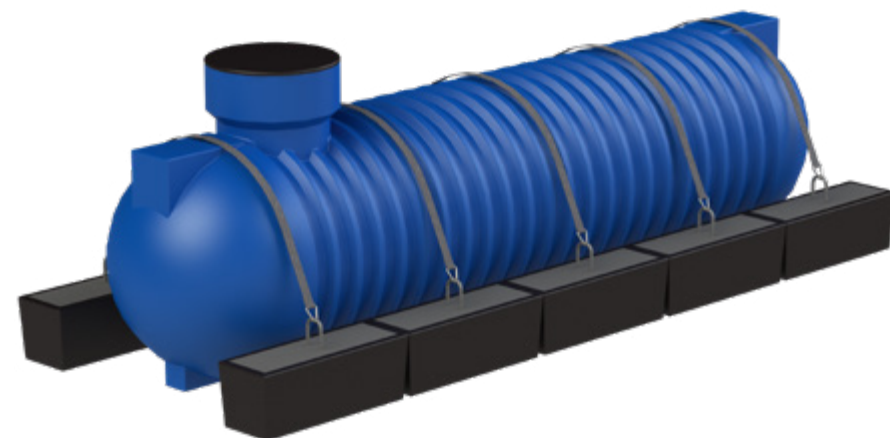
- Using the promax adjustable height riser makes this simple, it has a recess for concrete to eliminate direct traffic loading onto the tank from vehicles.

## 8. Refer to structural specifications sheet for concrete reinforcing & other notes

### See attached relevant drawings

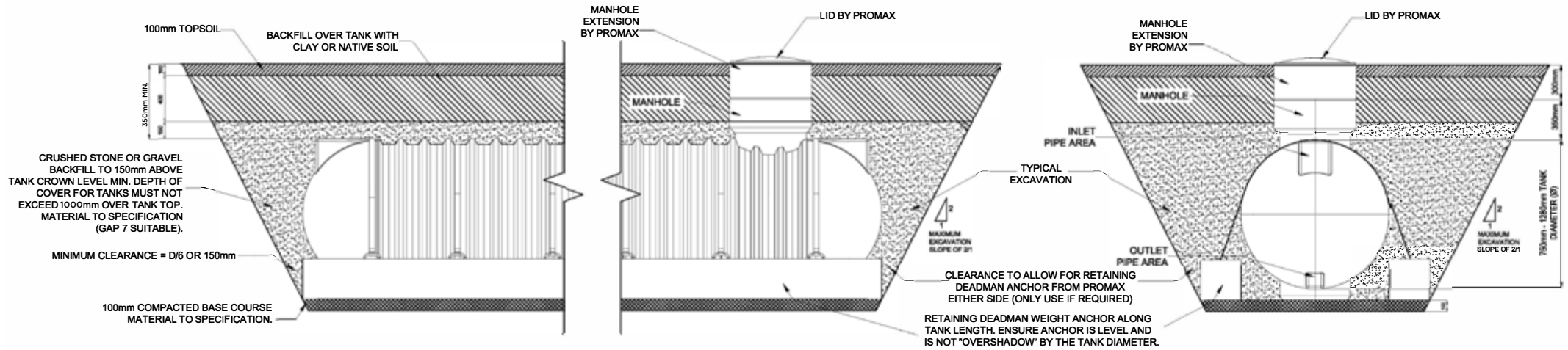
- See attached relevant drawings. Stated depths assume no hydraulic loads. Consult Promax if high water table is possible or expected.

Promax Deadman Anchor System



# UNDER LAWN INSTALLATION GUIDE

NTS



© COPYRIGHT

ORIG. SCALE	NTS	XXX	X	XX XXX XXXX
DESIGNER		XXX	X	XX XXX XXXX
DETAIL:	UNDER LAWN INSTALLATION (ALL NEW ZEALAND LOCATIONS)	REMARKS		
PROJECT:	750mm - 1200mm DIAMETER TANK INSTALLATION GUIDE	ISS	DATE	

**PROMAX** ENGINEERED PLASTICS

389 Waipapa Rd  
Kaitiaki 6255  
Bay of Islands  
Phone (09) 407 3575  
Free Phone 0800 778629



# TANK INSTALLATION UNDER RESIDENTIAL DRIVEWAY (2500KG VEHICLE OR LESS)

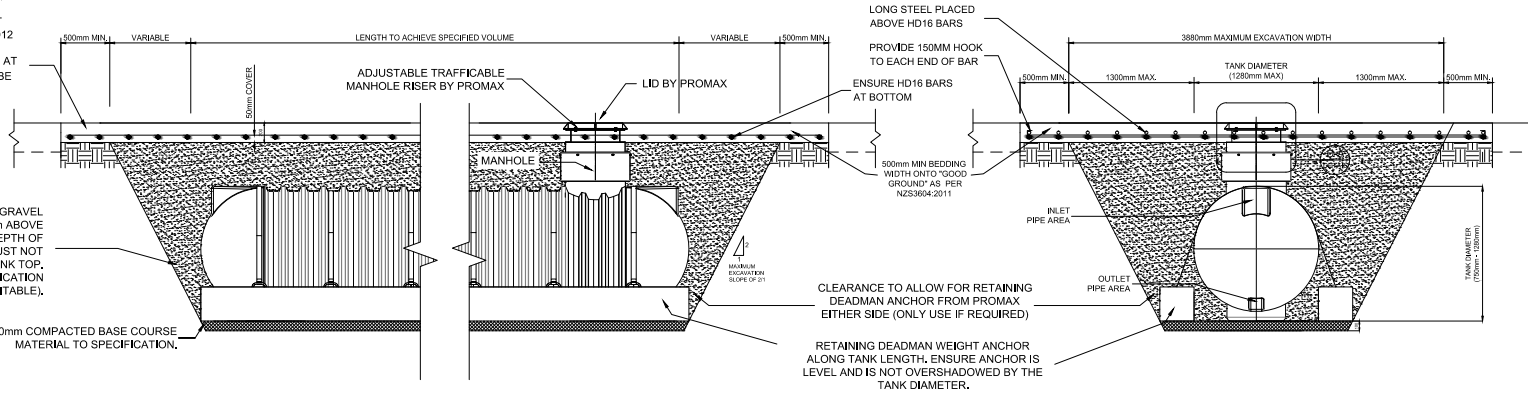
NTS

**NOTE ABOUT DESIGN CRITERIA (UNDER RESIDENTIAL DRIVEWAY):** SLAB DESIGNED FOR LIVE LOAD AS PER NZS1170.1 TABLE 3.1: "LIGHT VEHICLE TRAFFIC AREAS"; 2.5 kPA AND POINT LOAD OF 13 kN.

200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD16 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK. IMPORTANT: HD16 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD16 BARS.

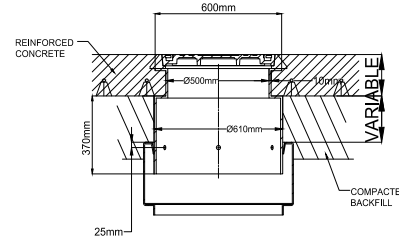
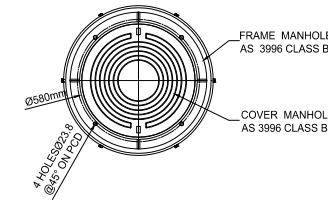
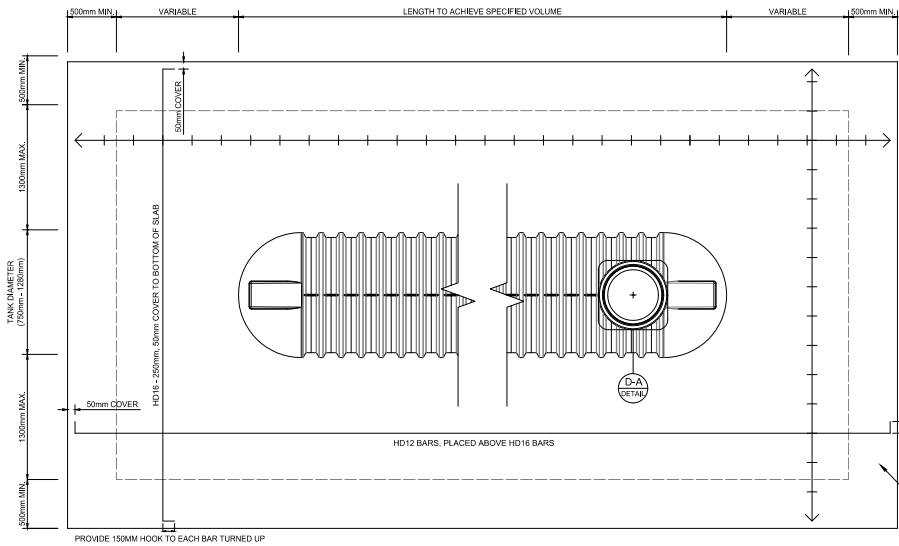
CRUSHED STONE OR GRAVEL BACKFILL TO 150mm ABOVE TANK CROWN LEVEL MIN. DEPTH OF COVER FOR TANKS MUST NOT EXCEED 1000mm OVER TANK TOP. MATERIAL TO SPECIFICATION (GAP 7 SUITABLE).

100mm COMPACTED BASE COURSE MATERIAL TO SPECIFICATION.



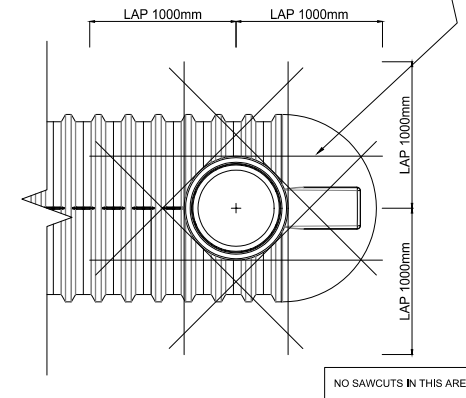
CLEARANCE TO ALLOW FOR RETAINING DEADMAN ANCHOR FROM PROMAX EITHER SIDE (ONLY USE IF REQUIRED)

RETAINING DEADMAN WEIGHT ANCHOR ALONG TANK LENGTH. ENSURE ANCHOR IS LEVEL AND IS NOT OVERSHADOWED BY THE TANK DIAMETER.



**DETAIL - A**  
NTS

8/HD16 BARS ADDITIONAL TO SLAB REINFORCING. ARRANGE AS SHOWN. FULL 1000MM LAP EACH WAY.



**SLAB STRENGTHENING AROUND MANHOLE OPENING**

200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD16 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK. IMPORTANT: HD16 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD16 BARS.

**SLAB SAWCUTS (SC):**

1. SAWCUTS SHOULD BE PLACED AT 5m MAX CENTRES
2. PLACE 25mm DEEP SAWCUTS WITHIN 24-48 HOURS AFTER POURING CONCRETE

IF DRIVEWAY IS EXISTING; SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S. EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

IF DRIVEWAY IS EXISTING; SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S. EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

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ORIG. SCALE	NTS	XXX	X	XX XXX XXXX
DESIGNER	A2	XXX	X	XX XXX XXXX
DETAIL:	UNDER RESIDENTIAL DRIVEWAY (ALL NEW ZEALAND LOCATIONS)		ISS	DATE
PROJECT:	750mm - 1200mm DIAMETER TANK INSTALLATION GUIDE			

389 Waipara Rd  
Kaitiaki 5225  
Bay of Island  
Phone (09) 407 3575  
Free Phone 0800 776629



# TANK INSTALLATION UNDER COMMERCIAL DRIVEWAY (VEHICLE NOT EXCEEDING 10000 KG)

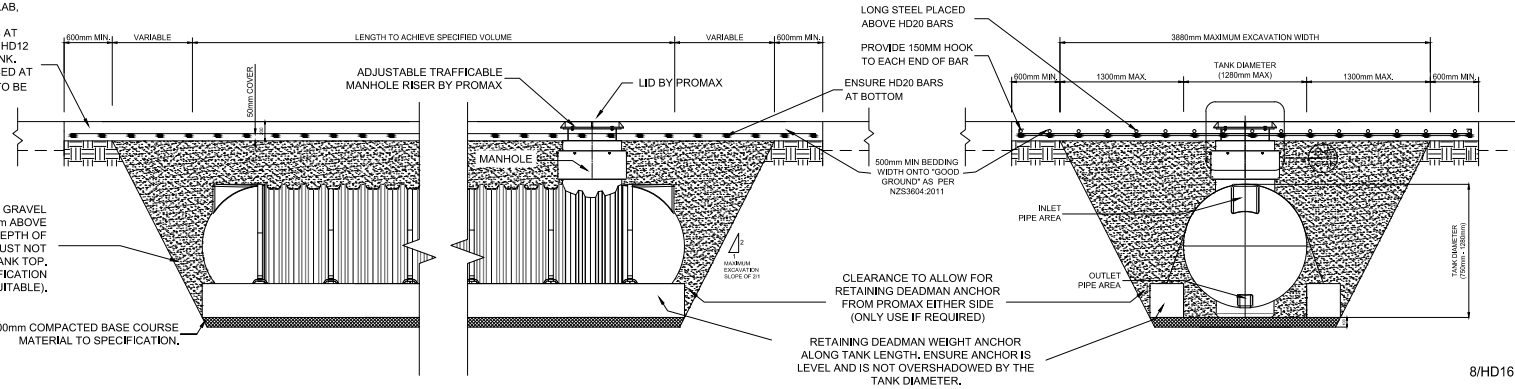
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**NOTE ABOUT DESIGN CRITERIA (UNDER COMMERCIAL DRIVEWAY):** SLAB DESIGNED FOR LIVE LOAD AS PER NZS1170.1 TABLE 3.1: "MEDIUM VEHICLE TRAFFIC AREAS"; 5 kPA AND POINT LOAD OF 31 KN.

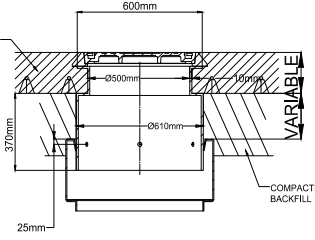
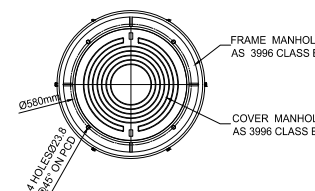
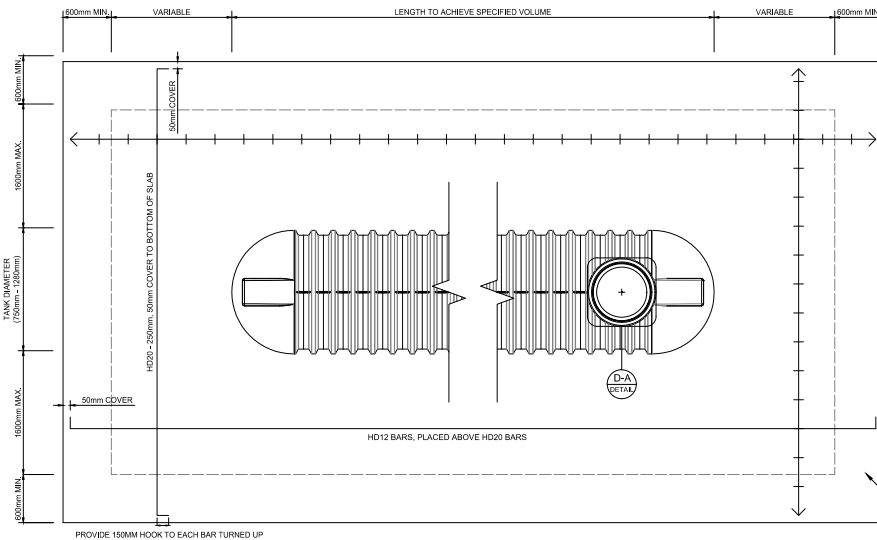
200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD20 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK; IMPORTANT: HD20 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD20 BARS.

CRUSHED STONE OR GRAVEL BACKFILL TO 150mm ABOVE TANK CROWN LEVEL MIN, DEPTH OF COVER FOR TANKS MUST NOT EXCEED 1000mm OVER TANK TOP, MATERIAL TO SPECIFICATION (GAP 7 SUITABLE),

100mm COMPACTED BASE COURSE MATERIAL TO SPECIFICATION.

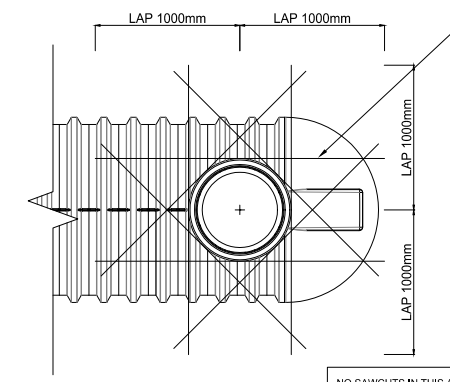


8/HD16 BARS ADDITIONAL TO SLAB REINFORCING. ARRANGE AS SHOWN. FULL 1000MM LAP EACH WAY.



**DETAIL - A**  
NTS

200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD20 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK; IMPORTANT: HD20 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD20 BARS.



**SLAB STRENGTHENING AROUND MANHOLE OPENING**

**IF DRIVEWAY IS EXISTING:** SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S. EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

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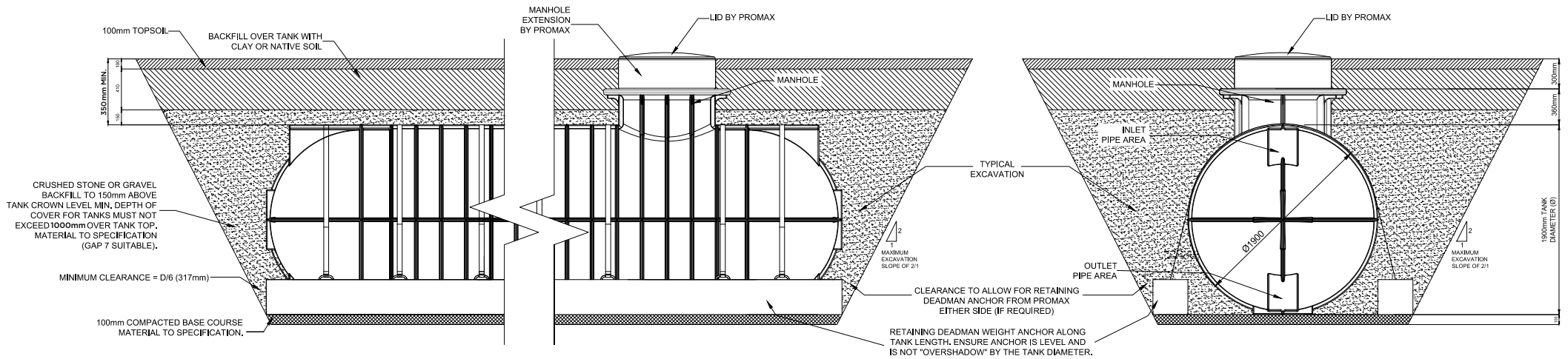
**SLAB SAWCUTS (SC):**  
1. SAWCUTS SHOULD BE PLACED AT 5m MAX CENTRES  
2. PLACE 25mm DEEP SAWCUTS WITHIN 24-48 HOURS AFTER POURING CONCRETE

© COPYRIGHT		XXX	X	XX XXX XXXX
ORIG. SCALE	NTS	XXX	X	XX XXX XXXX
DESIGNER	REMARKS		ISS	DATE
DETAIL:	UNDER COMMERCIAL DRIVEWAY (ALL NEW ZEALAND LOCATIONS)		389 Waipara Rd Kenken 0295 Bay of Island	
PROJECT:	750mm - 1200mm DIAMETER TANK INSTALLATION GUIDE		Phone (09) 407 3575 Free Phone 0800 776629	



# UNDER LAWN INSTALLATION GUIDE

NTS



1.90m DIAMETER TANK - UNDER LAWN INSTALLATION

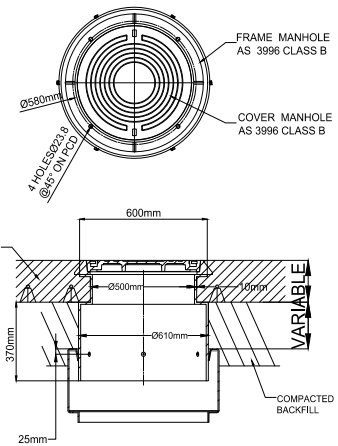
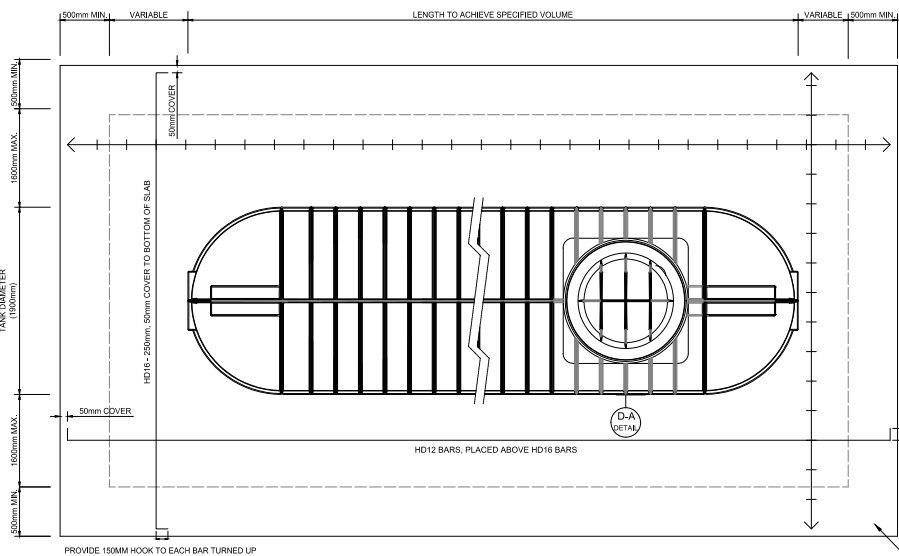
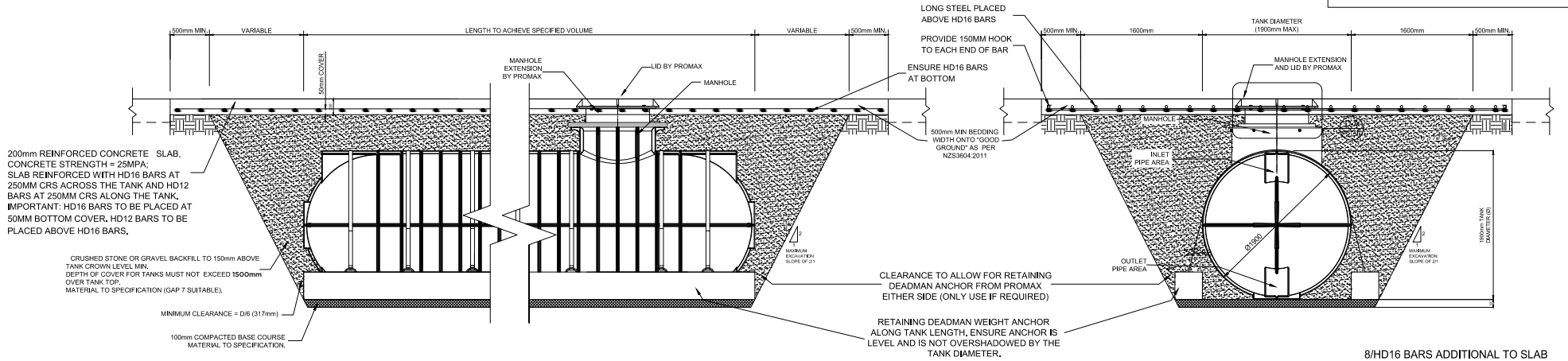
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ORIG. SCALE	NTS	XXX	X	XX XXX XXXX
DESIGNER		XXX	X	XX XXX XXXX
DETAIL:	UNDER LAWN INSTALLATION (ALL NEW ZEALAND LOCATIONS)	REMARKS	ISS	DATE
PROJECT:	1900mm DIAMETER TANK INSTALLATION GUIDE	<b>PROMAX</b> ENGINEERED PLASTICS 389 Waipara Rd Karikeri 0225 Bay of Island Phone (09) 407 3575 Free Phone 0800 776629		

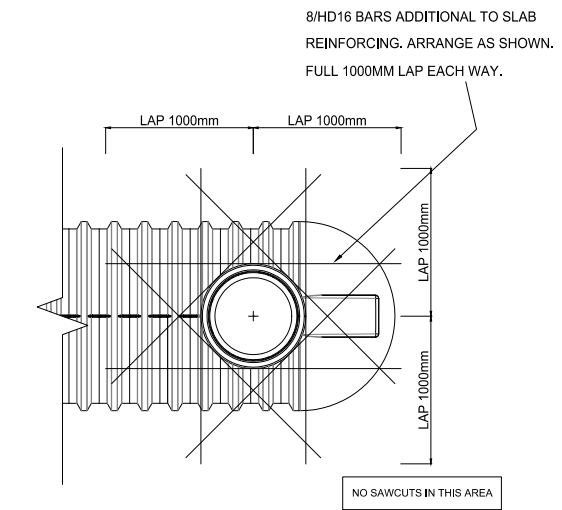
# TANK INSTALLATION UNDER RESIDENTIAL DRIVEWAY (2500KG VEHICLE OR LESS)

NTS

NOTE ABOUT DESIGN CRITERIA (UNDER RESIDENTIAL DRIVEWAY): SLAB DESIGNED FOR LIVE LOAD AS PER NZS1170.1 TABLE 3.1: "LIGHT VEHICLE TRAFFIC AREAS"; 2.5 KPA AND POINT LOAD OF 13 KN.



DETAIL - A  
NTS



SLAB STRENGTHENING AROUND MANHOLE OPENING

200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD16 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK. IMPORTANT: HD16 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD16 BARS.

IF DRIVEWAY IS EXISTING; SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S, EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

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SLAB SAWCUTS (SC):  
1. SAWCUTS SHOULD BE PLACED AT 5m MAX CENTRES  
2. PLACE 25mm DEEP SAWCUTS WITHIN 24-48 HOURS AFTER POURING CONCRETE

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ORIG. SCALE	NTS	XXX	X	XX XXX XXXX
DESIGNER		XXX	X	XX XXX XXXX
DETAIL:			ISS	DATE
PROJECT:	1900mm DIAMETER TANK INSTALLATION GUIDE			

REMARKS

388 Waipara Rd  
Karikeri 0205  
Bay of Island

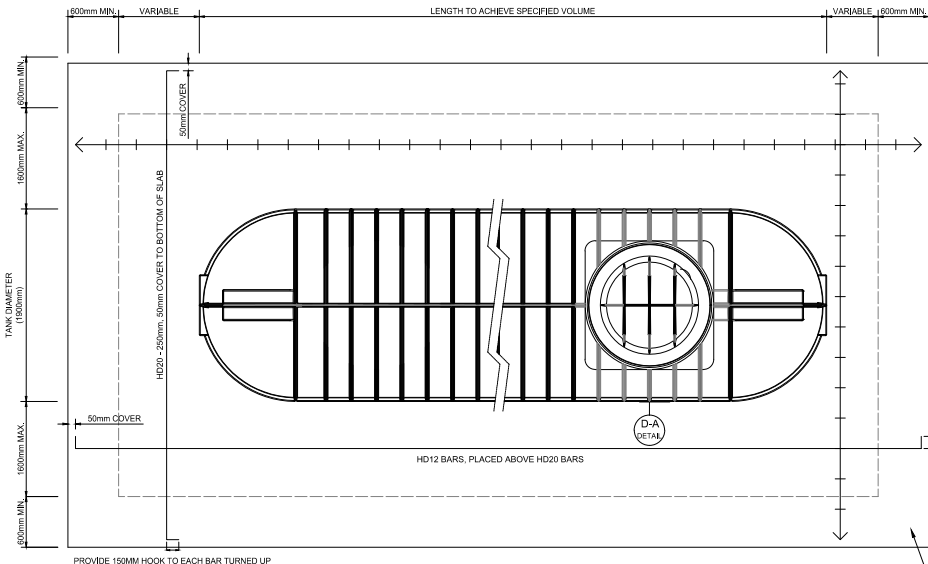
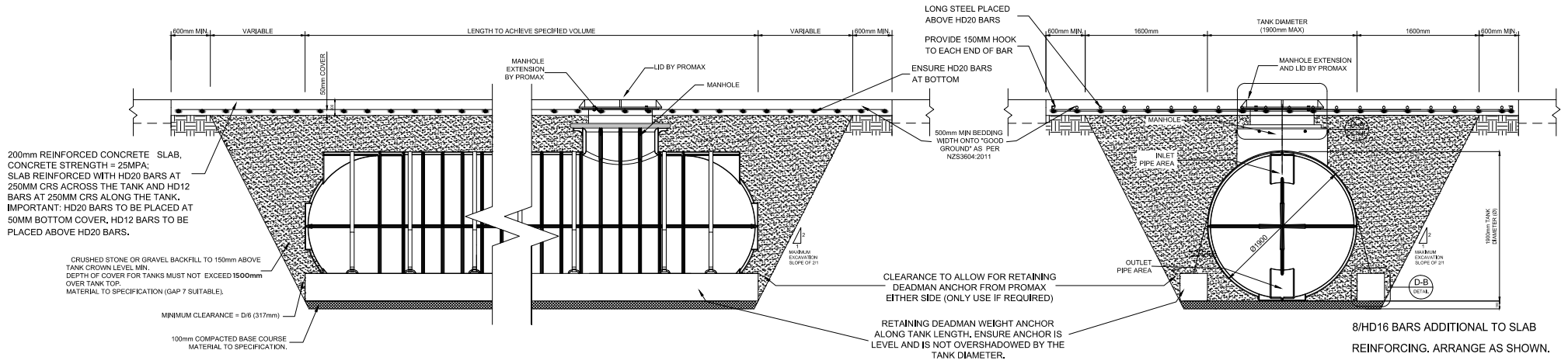
Phone (09) 407 3575  
Free Phone 0800 776629



# TANK INSTALLATION UNDER COMMERCIAL DRIVEWAY (VEHICLE NOT EXCEEDING 10000 KG)

NTS

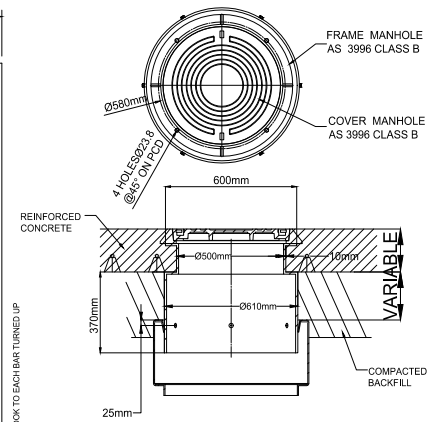
NOTE ABOUT DESIGN CRITERIA (UNDER COMMERCIAL DRIVEWAY): SLAB DESIGNED FOR LIVE LOAD AS PER NZS1170.1 TABLE 3.1: "MEDIUM VEHICLE TRAFFIC AREAS"; 5 kPa AND POINT LOAD OF 31 kN.



IF DRIVEWAY IS EXISTING; SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S. EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

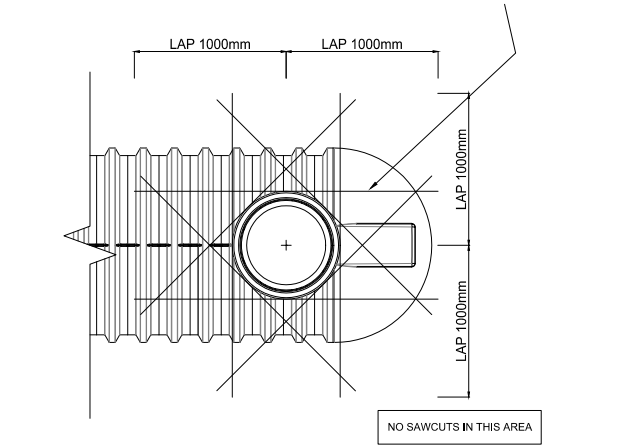
IF DRIVEWAY IS EXISTING; SCABBLE EDGE AND TIE WITH D12 DRILL & EPOXY STARTERS AT 400MM CR'S. EMBED MIN OF 100MM INTO EXISTING AND LAP 600MM INTO NEW TOPPING SLAB.

SLAB SAWCUTS (SC):  
 1. SAWCUTS SHOULD BE PLACED AT 5m MAX CENTRES  
 2. PLACE 25mm DEEP SAWCUTS WITHIN 24-48 HOURS AFTER POURING CONCRETE



DETAIL - A  
NTS

200mm REINFORCED CONCRETE SLAB, CONCRETE STRENGTH = 25MPA; SLAB REINFORCED WITH HD20 BARS AT 250MM CRS ACROSS THE TANK AND HD12 BARS AT 250MM CRS ALONG THE TANK. IMPORTANT: HD20 BARS TO BE PLACED AT 50MM BOTTOM COVER, HD12 BARS TO BE PLACED ABOVE HD20 BARS.



SLAB STRENGTHENING AROUND MANHOLE OPENING

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DETAIL:		UNDER COMMERCIAL DRIVEWAY (ALL NEW ZEALAND LOCATIONS)		
PROJECT: 1900mm DIAMETER TANK INSTALLATION GUIDE		389 Waiwara Rd Kerikeri 0295 Bay of Island		
		Phone (09) 407 3575 Free Phone 0800 776629		



# Appendix D

## Operation and Maintenance Plan



**DRAFT OPERATION AND MAINTENANCE PLAN  
FOR DETENTION TANKS, ROOF AND CATCHPITS  
FOR  
BENTLEY STUDIOS LIMITED  
96 BEACH HAVEN ROAD/13 CRESTA AVENUE  
BEACH HAVEN**

**Job Number:** 200626-01

**Issue Date:** 15 September 2021



# Document Control Record

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Revision Schedule				
Rev. No	Date	Description	Prepared by	Approved by
A	15.09.2021	Draft Issue	NNN	



# Contents

1. Introduction
2. Carpark and Access Road
3. Roof
4. Catchpits
5. Detention Tank
6. Monitoring Report
7. Retention of Records

- Appendix A**      Operation and Maintenance Checklists
- Roof Maintenance Checklist
  - Catchpits Maintenance Checklist
  - Detention Tank Maintenance Checklist

15 September 2021

*In all correspondence, please quote our reference: 200626-01*

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## INTRODUCTION

The purpose of this maintenance programme is to ensure the efficient operation of the Stormwater System serving the site.

1. The Owner should be aware that there is a stormwater system which is serving the site which needs to be maintained. The Owner is responsible for the implementation of this Operation and Maintenance Programme.
2. Carpark and Access Road Frequency  
The carpark and access Road are to be inspected and any rubbish or debris removed and disposed of offsite. This can be to the rubbish collection agency servicing the site. W
3. Roof  
The roof of the buildings are to be inspected. Any debris, particularly in the gutters, is to be removed and disposed of. This debris could be placed on gardens or removed from site via the rubbish collection agency servicing the site. A
4. Catchpits  
The catchpits shall be inspected and any debris removed and disposed of to an appropriate disposal facility. This can be to the rubbish collection agency servicing the site. 6M  
AS
5. Detention Tank  
The tank shall be inspected and any debris removed. A

### Legend

W = Weekly

6M = 6 Monthly

A = Annual

AS = After significant storm event

## 6. MONITORING REPORT

Upon request, a Monitoring Report shall be prepared and held by the Owner. The report shall include at least the details of any maintenance undertaken and what inspections were completed over the preceding 12 months.

## 7. RETENTION OF RECORDS

The Owner shall retain records of all inspections and maintenance for the stormwater management system for a minimum of 3 years.

Report prepared by

A handwritten signature in black ink, appearing to read 'N. Naidoo', with a horizontal line underneath.

**Natalie Naidoo**  
Senior Civil Engineer  
Airey Consultants Ltd

# Appendix A

Operation and Maintenance Checklists

# Roof Maintenance Checklist

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect roof, remove and dispose of debris.		
Inspect gutters, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect roof, remove and dispose of debris.		
Inspect gutters, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect roof, remove and dispose of debris.		
Inspect gutters, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect roof, remove and dispose of debris.		
Inspect gutters, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect roof, remove and dispose of debris.		
Inspect gutters, remove and dispose of debris.		

Date: \_\_\_\_\_



# Catchpits Maintenance Checklist

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect catchpits, remove and dispose of debris.		

# Detention Tank Maintenance Checklist

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		

Date: \_\_\_\_\_

Item	Completed	Initials
Inspect Detention tank, remove and dispose of debris.		