
Site Specific Environmental Management Plan

– Peka Peka to Ōtaki Project

SSEMP RW1: Retaining walls

FCCL-EV-MPN-0093

August 2019 – Revision C

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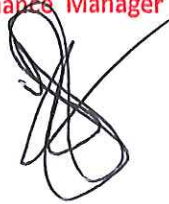
AUTHORISATION AND REVISION RECORD

Revision	Status	Author	Date	Description
A.1	Draft	Mhairi Rademaker	30/04/19	Distributed for general review
B	Draft	Alice Naylor	12/06/19	For Council Review
C	Final	Alice Naylor	20/08/19	For Council Certification

Certification Record

Revision	Action	Name	Position	Date	Signature
	Approved by:				
	On behalf of KCDC:				

CERTIFIED
VJAY SOMA
 Resource Consents & Compliance Manager
 Kapiti Coast District Council
 DATE: 5/9/2019



1 INTRODUCTION

This Site Specific Environmental Management Plan (SSEMP) has been developed to satisfy, in part, the requirements of Designation Conditions DC.12, DC.25, and G.30 in relation to the retaining walls required along the Peka Peka to Ōtaki Expressway.

During detailed design of the Expressway and associated local roads, a number of retaining walls have been incorporated into the design to retain works within the designation and/or avoid clashes with existing infrastructure. As these retaining walls were not able to be included in the Landscape and Urban Design Plan (LUDP), this activity specific SSEMP has been prepared to formally cover the various requirements and provide the councils an opportunity to review and certify the designs.

This SSEMP is limited to the design of the retaining walls. Designation Condition DC.25(a) / Consent Condition G.30(a) require that an SSEMP includes detailed design of all works covered by that SSEMP. Designation Condition DC.12(v) requires the provision of design plans that include the landscaping proposed, including both soft landscape (earthworks and planting) and urban design elements (built elements such as walls, structures, barriers, signs, etc.). This document provides details of retaining walls located in areas already covered by certified SSEMPs. To avoid retrospectively updating already certified SSEMPs, the below information instead provides the necessary construction details and associated impacts relevant to each retaining wall with a cross reference to the relevant general SSEMP for wall locations provided in Table 1.

Details for any retaining walls which have not yet been constructed and which do not have an already certified SSEMP will be detailed in future SSEMPs.

Works are not to commence on site until certification of this SSEMP has been confirmed in writing by Kāpiti Coast District Council (KCDC) and Greater Wellington Regional Council (GWRC).

1.1 Location of Works

Table 1: Retaining wall locations and relevant site SSEMP

Location:	Expressway Chainage:	Relevant site SSEMP:
County Road – between Country Road and the Expressway	1740	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Otaki Main Road North – East of Main Road	1900	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Otaki Main Road North – West of Main Road	1900	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Milk Station Access – Rahui Eastern Approach (Keystone)	2100	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Rahui Road – Milk Station Access (L-Shaped wall)	2100	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Ōtaki Motel Access – Rahui Road Western Approach	2100	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>

BP Retaining Wall – Between BP and the private access	2150	SSEMP BR04 Change <i>FCCL-EV-MPN-76</i>
Racecourse Stream inlet – between the Milk Factory and Expressway	2200	SSEMP NZ1 / BR04 Change FCCL-EV-MPN-0063
Gear Road – east side of Gear Road near the intersection with School Road	7850	SSEMP SLR1 FCCL-EV-MPN-0026
Local Arterial Road – west side of the new local arterial, either side of the access to 12 Derham Road	10600	SSEMP SE1 FCCL-EV-MPN-0032

1.2 Programme

The programme of works for each retaining wall will depend on the over-arching programme of the respective area and type of wall. Typically each retaining wall will take between 2 – 6 weeks to construct.

2 PLAN IMPLEMENTATION

2.1 Responsibilities

The following provides a summary of responsibilities relevant to the planning and implementation of this SSEMP.

Table 2: Roles and responsibilities

Role	Person	Contact Details	Responsibilities
Construction Manager	Steve Findlay	stevef@fcc.co.nz	<ul style="list-style-type: none"> Ensures there is a system in place so that construction works do not proceed until required environmental sign-offs are completed. Overviews systems and processes to ensure consent requirements are captured for construction works. Ensures adequate resources are provided to ensure environmental issues are appropriately managed. Reviews environmental incidents and complaints with the Environmental Manager and acts to address issues where needed. Reviews and monitors construction work methods to ensure compliance with RMA conditions

Environmental Manager	Alice Naylor	A.Naylor@Higgins.co.nz	<ul style="list-style-type: none"> • Develops, implements and reviews environmental management systems and environmental management plans. • Coordinates all environmental auditing functions and ensures relevant records are maintained. • Responds to and investigates all environmental complaints, issues or incidents. • Coordinates the SSEMP implementation process and pre-works requirements to ensure that environmental requirements are adhered to. • Provides training and briefings to site staff to ensure that there is sufficient knowledge of environmental requirements in the field. • Acts as the primary point of communication between regulatory bodies and the project. • Coordinates a team of experts in specialist disciplines such as contaminated land, ecology, groundwater, noise and vibration. • Communicates environmentally sensitive areas to the construction team.
Environmental Coordinator	Sevasti Hartley	sevastih@fcc.co.nz	<ul style="list-style-type: none"> • Supports the Environmental Manager and provides leadership to ensure all staff comply with environmental management systems. • Provides support in the formation of SSEMPs. • Undertakes as-built of environmental controls. • Undertakes regular site inspections and audits. • Coordinates all site monitoring including but not limited to groundwater, water quality, ecological, dust, noise, and vibration monitoring. • Manages maintenance and monitoring of Chemical Treatment Systems (if used).

			<ul style="list-style-type: none"> • Ensures spill kits are available and stocked and provides training on equipment use. • Conducts regular site inspections of erosion and sediment control devices and co-ordinates maintenance where necessary. • Monitors site controls during rain storms. • Trains staff in site specific environmental procedures.
Stakeholder & Communications Manager	Ed Breese	ebreese@tonkintaylor.co.nz	<ul style="list-style-type: none"> • Organises, co-ordinates and facilitates engagement with affected property holders and community prior to and during construction. • Works in partnership with Environmental Manager on engagement and construction activities in accordance with RMA conditions
Site Superintendent / Supervisors / Foreman	Simon Fifield	SimonF@fcc.co.nz	<ul style="list-style-type: none"> • Provides leadership to the site construction team. • Ensures environmental controls including erosion and sediment control works are protected and maintained on a day to day basis. • Ensures that the SSEMPs and Archaeological Authority requirements are implemented appropriately by the construction team. • Maintains contactability 24/7 during construction and has authority to initiate immediate response actions. • Reports all environmental incidents, compliance issues and complaints to the Environmental Manager. • Reviews the need to use a water cart or sprinklers to control dust.

Project Engineers	Richard Rakovics (Civil) Craig Service (Structural)	RichardR@fcc.co.nz CraigS@fcc.co.nz	<ul style="list-style-type: none"> Responsible for ensuring environmental controls and erosion and sediment control works are installed and modified as appropriate for each stage of construction. Develop, implements and monitors construction methods and environmental protection measures to ensure compliance with the SSEMPs. Demonstrate understanding of major environmental and community issues and environmentally sensitive areas. Coordinate environmental interfaces with subcontractors and suppliers. Reports all environmental incidents, compliance issues and complaints to the Environmental Manager.
Specialist support (contaminated land, ecology, noise and vibration)	Dean Miller (Principal Ecologist) Genevieve Smith – Contaminated land Brendon Shanks – Noise and Vibration	DCMiller@tonkintaylor.co.nz Genevieve.Smith@beca.co.nz Brendon.Shanks@mars hallday.co.nz	<ul style="list-style-type: none"> Provide expert advice to the Environmental Manager and Environmental Coordinator regarding specific site requirements. Submits reports to the Environmental Manager to fulfil requirements of consents relevant to their field. Briefs the construction team of site specific requirements for environmentally 'sensitive areas'.
Iwi	Rupene Waka (Ngā Hapū o Ōtaki Kiarahi)	Jujufromotaki@gmail.com	<ul style="list-style-type: none"> Provide input into project documentation such as management plans, design processes, planning documents. Reviews permits to work and coordinates the level of involvement of kaitiaki in site activities Coordinates all aspects of iwi monitoring. Key point of contact for Ngā Hapū o Ōtaki.

	Caleb Royal (Ngā Hapū o Ōtaki Consents Processing Officer)		<ul style="list-style-type: none"> Reviews consent applications and coordinates cultural monitoring activities. Provides specialist advice to Ngā Hapū o Ōtaki
Iwi	Muaupoko Tribal Authority	ceo@muaupoko.iwi.nz	<ul style="list-style-type: none"> Point of contact for any archaeological discoveries in accordance with the agreed accidental discovery protocols and MTA agreement.

2.2 SSEMP Changes

In the event that changes in works scope or methodology are required, changes may need to be made to this document in accordance with resource Consent Condition's DC.18B and / or G.21A. Any changes that are considered minor in accordance with SSEMP 'Project Minor Changes' FCCL-EV-MPN-0037 will be submitted for information to the respective Manager 2 working days prior to implementation of that change. Any change that is not covered by the Project Minor Changes SSEMP must be submitted to the respective Manager for certification prior to implementation of that change.

3 SITE MANAGEMENT

Site management including site establishment, traffic management, signage and exclusions, and general environmental requirements will be implemented in accordance with relevant site SSEMPs (refer to Table 1 for relevant SSEMPs).

3.1 Site Access

Site Access Points (SAPs) relevant to each wall site will be as follows:

- County Road – SAP-11A
- Ōtaki Main Road – SAP 11 / Ōtaki Main Road
- Rahui Road / Milk Station Access – SAP-11A
- Otaki Motel Access – SAP 11
- BP Retaining Wall – SAP 11
- Racecourse Stream Diversion – SAP-11
- Racecourse Stream Inlet – SAP-11A
- Gear Road – SAP-5
- Local Arterial Road (South) – SAP-2

Refer to Appendix D which outlines locations of site access points.

The access/egress points will be stabilised using clean aggregate or sealed to avoid any construction related material leaving the site. Any migration of material from the site onto SH1, the local road or footpaths will be removed immediately.

Stormwater from the local road or SH1 will not be impeded by vehicle crossing during and after construction and any damage made to road infrastructure as a direct result of these works shall be recorded and repaired immediately. Refer to the attached Site Specific Traffic Management Plan for a general layout of Site Access Points (SAPs).

3.2 Construction Plant

- Excavator
- Excavator with auger (timber and steel)
- Roller
- Level
- Concrete trucks
- Hand tools
- Power tools
- Plate compactor
- Loader
- Crane (L-Shaped Wall only)

Where practicable, plant will refrain from working within 10m of a live watercourse to minimise any risk of causing bank instability or spills to the receiving environment.

All plant is required to be inspected prior to commencing works and during construction activities at regular intervals. Unwanted vegetation, seeds or contaminants will be cleared prior to plant entering the site to avoid the introduction or spread of weeds or pest species.

Plant inspections will be recorded on daily plant inspection forms to demonstrate that all plant used on this project are in good working order and have been cleared of unwanted weeds and pest species. Any faulty equipment will be stood down until the necessary repairs are carried out and the given plant is fit for purpose.

Spill control kits will be available on site in areas where heavy machine is working. Refuelling activities will take place using a mini-tanker at least 10m away from any watercourse to prevent additional risk of spillage to water.

3.3 Pre-works Requirements

4 WORKS METHODOLOGY

4.1 County Road Steel Pole Retaining Wall

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate and replace retaining wall footprint
- Install necessary drainage
- Excavate post holes
- Install steel posts at 1500mm centres
- Backfill (combination of concrete and aggregate)
- Install post, wire and batten fence

Refer to Appendix A-C for detailed design information and location plan.

4.2 Otaki Main Road Timber Retaining Walls (East and West)

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate pole holes
- Install timber poles and secure with concrete
- Install drainage
- Install rails

4.3 Milk Station Access Keystone Retaining Wall

- Ensure temporary access is agreed with Milk Station Owner
- Install erosion and sediment control measures unless these are already in place on site
- Excavate and replace retaining wall footprint
- Pour concrete for footing
- Install necessary drainage
- Place compact IV blocks, drainage metal, GAP65, geotextile and sand fill as per design specification
- Install capping stones and safety fencing

Refer to Appendix A-C for detailed design information and location plan.

4.4 Rahui Road / Milk Station Access L-Shaped Retaining Wall

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate unsuitable materials and backfill with suitable aggregate fill
- Install precast panels and seal joins
- Backfill with sand and gravels
- Install drainage materials
- Place topsoil
- Install erosion protection mat

Refer to Appendix A-C for detailed design information and location plan.

4.5 Racecourse Stream Inlet Gabion Retaining Wall

- Excavate to base of wall
- Construct baskets ready for placement
- Fill gabion baskets with rock
- Place Gap-65 and compact
- Backfill behind baskets
- Erect permanent safety fence

Refer to Appendix A-C for detailed design information and location plan.

4.6 BP Timber Retaining Wall

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate pole holes
- Install timber poles and secure with concrete
- Install drainage
- Install rails

4.7 Motel Access Timber Retaining Wall

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate pole holes
- Install timber poles and secure with concrete
- Install drainage
- Install rails

4.8 Gear Road Timber Retaining Wall

- Install erosion and sediment control measures unless these are already in place on site
- Strip vegetation and mark out extent of the wall
- Excavate pole holes
- Install timber poles and secure with concrete
- Install drainage
- Install rails

Refer to Appendix A-C for detailed design information and location plan.

4.9 Local Arterial Road L-Shaped Retaining Walls

- Additional erosion and sediment control are not required as the wall locations are located within already established dirty water diversion bunds.
- Excavate wall footprint
- Drive poles into the ground 5m deep
- Secure with concrete
- Install necessary drainage
- Backfill
- Install safety fencing and final details

Refer to Appendix A-C for detailed design information and location plan.

5 SITE SPECIFIC ENVIRONMENTAL REQUIREMENTS

The following sections outlined key environmental risk areas relating to the construction of retaining walls. All other general requirements remain consistent with the certified SSEMPs for each general area (relevant SSEMPs have been listed in Table 1).

5.1 Erosion and Sediment Control

Location and heights of erosion and sediment control (ESC) measures will be installed in accordance with the relevant SSEMP for each wall. The general approach will be as follows:

- Ground disturbance relating to the construction of the retaining walls will be minimal.
- Majority of the retaining walls will be located in areas that are already controlled by established erosion and sediment control measures with no changes required.
- A combination of dirty water diversion bunds and silt fences (if space is restricted) will be used to contain site runoff.

- Dirty water and clean water diversion bunds will be sized in accordance with the project ESCP to convey the 5% AEP rainfall event and be consistent with the surrounding area.
- Any areas of ground disturbance outside of established sediment controls will be progressively covered using a combination of temporary mulches, aggregate or geotextiles depending on the desired finish.

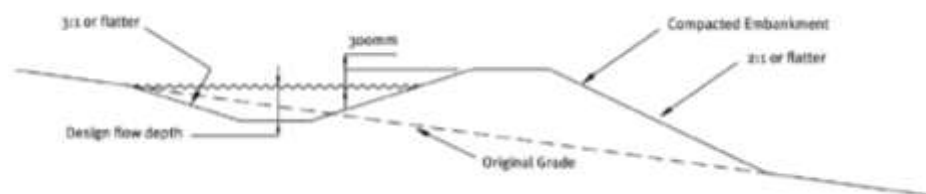


Figure 5: Typical cross section of dirty water diversion bund in accordance with the project ESCP.

5.1.1 Installation and decommissioning

Where required, erosion and sediment controls (ESCs) will be installed prior to all construction activities. Upon completion of the installation of all approved structural ESCs as-built certification plans will be provided to Council in writing prior to the activity commencing. The Project will submit certification documentation 2 Working Days prior to the commencement of construction in that area of work as per Condition E.6 and will retain the as-built record on site.

5.2 Noise and Vibration

It is not anticipated that noise and vibration output from retaining wall works will exceed that generated from activities already underway at each site location. Consideration will be given to neighbouring properties prior to use of any vibration generating equipment such as vibrating rollers and vibrating excavator attachments. Early notification to residents in close proximity will be fundamental to ensure that the works do not adversely impact neighbours.

In accordance with the CNVMP, works carried out under this SSEMP will generally be restricted to take place between the hours of:

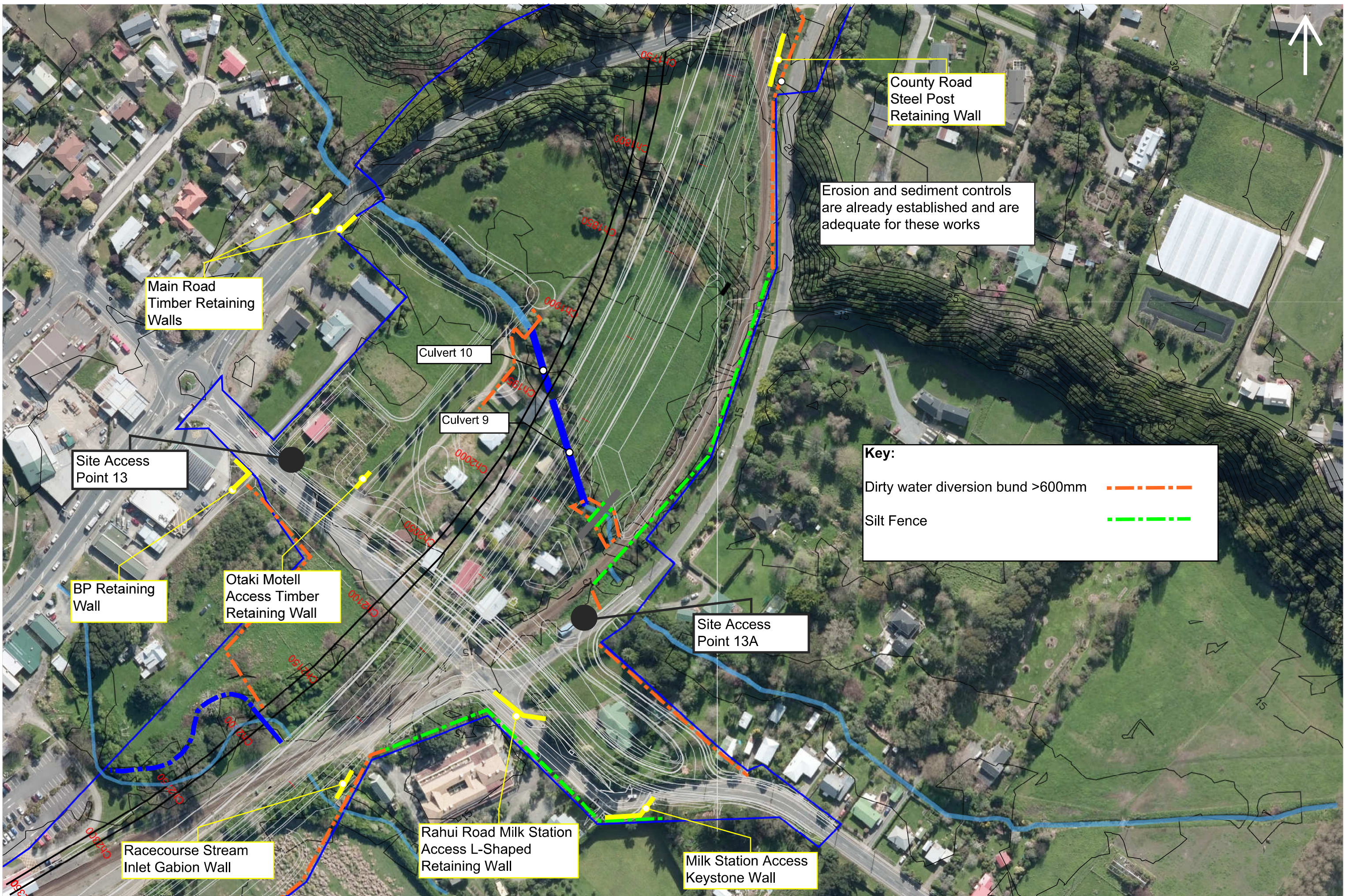
- 0630 and 2000hrs on weekdays; and
- 0730 and 1800hrs on Saturdays.

As far as practicable, works will be scheduled to avoid noisy activities in areas identified as sensitive receivers on the attached drawings between 0630 – 0730hrs in the morning, and between 1800 – 2000hrs in the evening to align with noise level criteria outlined in the CNVMP.

It is not anticipated that works will be required to take place outside of normal working hours for works outlined in this SSEMP. In the event that this changes, the procedures outlined in the CNVMP will be followed. Any works outside of the hours of 7am to 7pm require written approval from the Project Engineer.

The primary mitigation measure in regards to reducing the impacts from construction noise and vibration will be ongoing effective community consultation.

APPENDIX A: ESC LAYOUT DRAWINGS

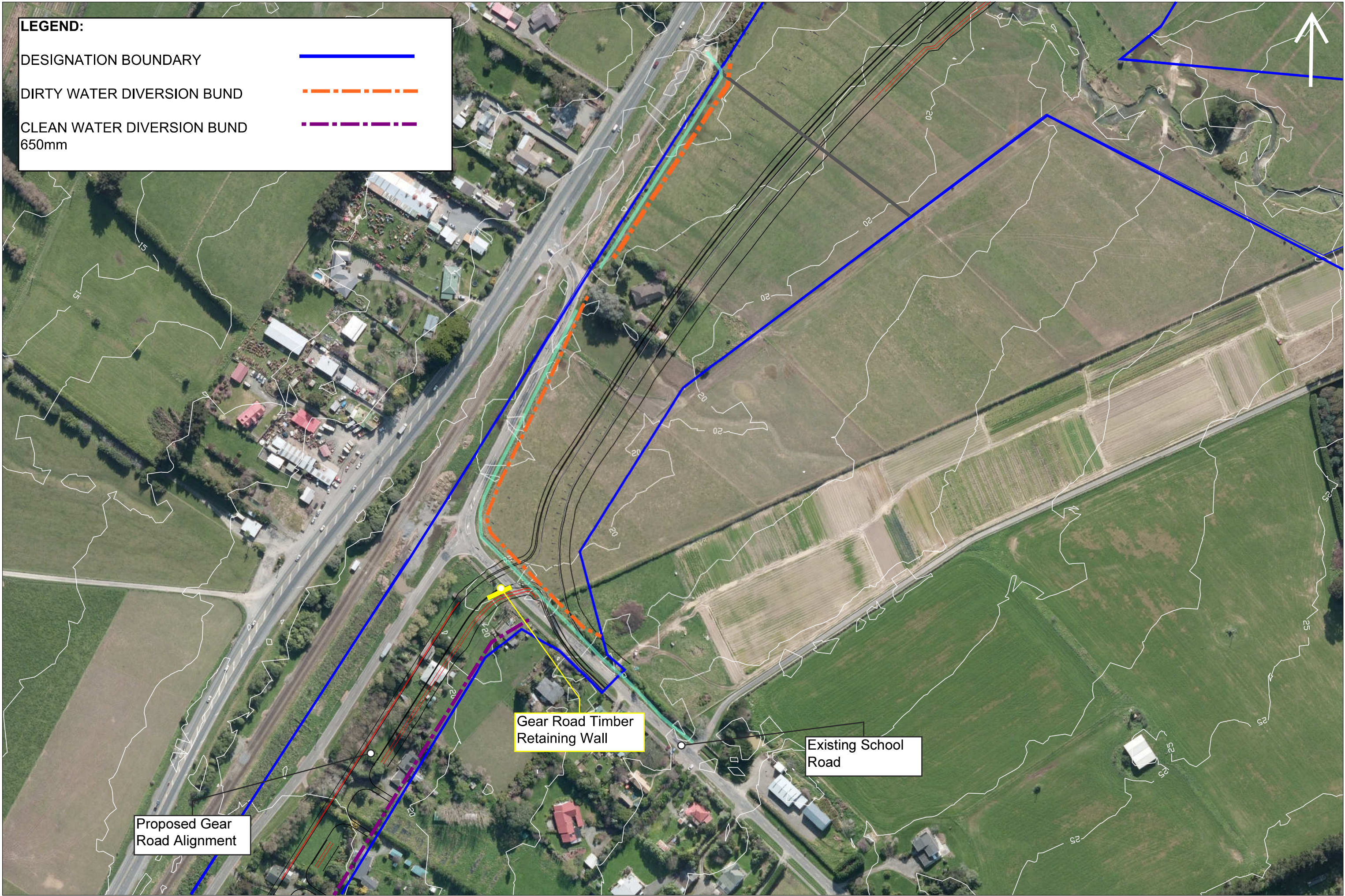


ESC LAYOUT: RETAINING WALLS BRIDGE 4 GENERAL AREA

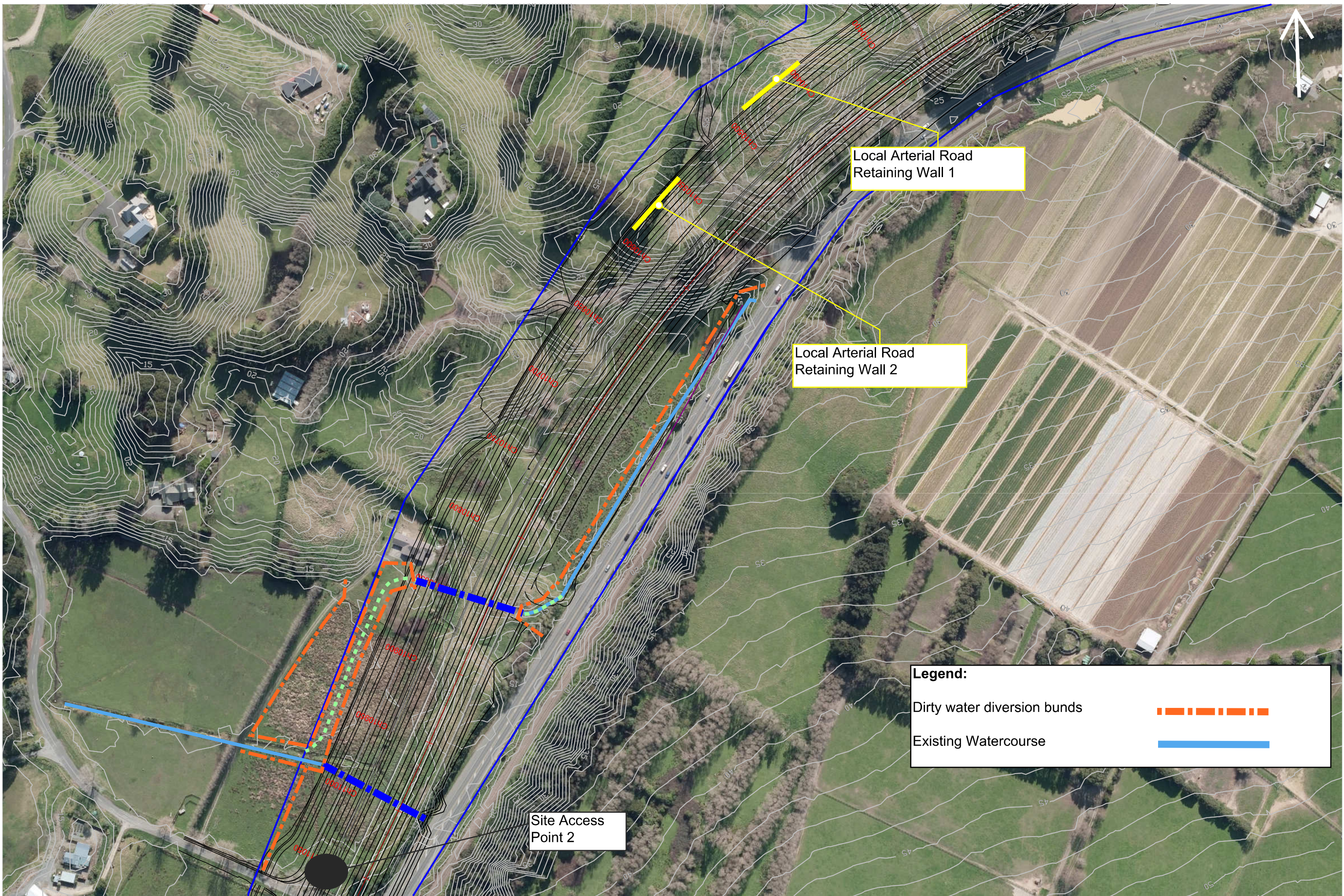
LEGEND:

- DESIGNATION BOUNDARY
- DIRTY WATER DIVERSION BUND
- CLEAN WATER DIVERSION BUND

650mm



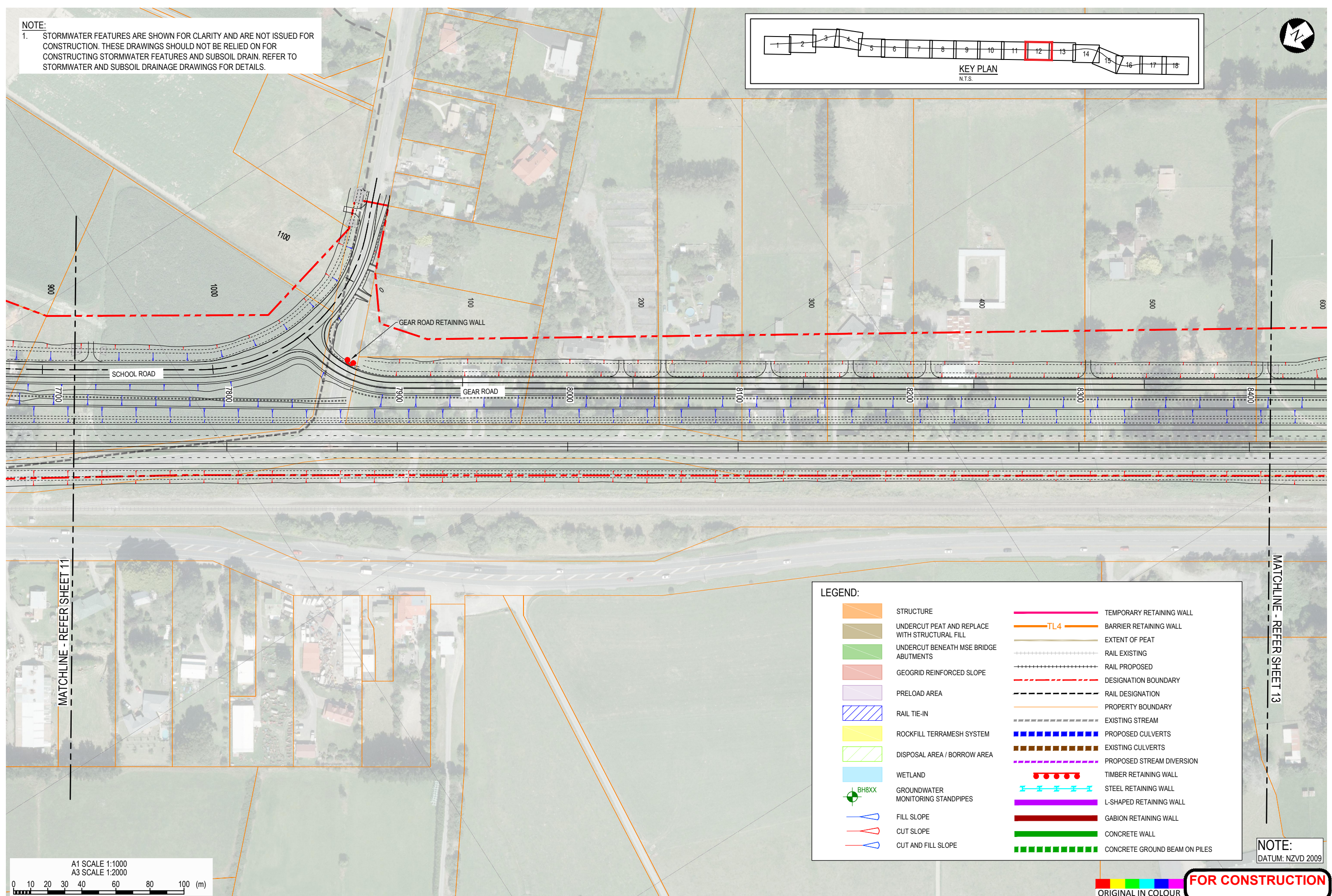
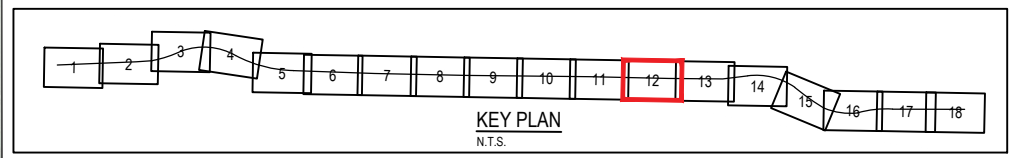
ESC LAYOUT: GEAR ROAD TIMBER RETAINING WALL



ESC LAYOUT: LOCAL ARTERIAL ROAD L-SHAPED RETAINING WALLS

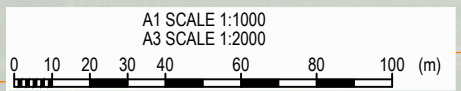
APPENDIX B: GENERAL ARRANGEMENT CONSTRUCTION DRAWINGS

NOTE:
 1. STORMWATER FEATURES ARE SHOWN FOR CLARITY AND ARE NOT ISSUED FOR CONSTRUCTION. THESE DRAWINGS SHOULD NOT BE RELIED ON FOR CONSTRUCTING STORMWATER FEATURES AND SUBSOIL DRAIN. REFER TO STORMWATER AND SUBSOIL DRAINAGE DRAWINGS FOR DETAILS.



LEGEND:

	STRUCTURE		TEMPORARY RETAINING WALL
	UNDERCUT PEAT AND REPLACE WITH STRUCTURAL FILL		BARRIER RETAINING WALL
	UNDERCUT BENEATH MSE BRIDGE ABUTMENTS		EXTENT OF PEAT
	GEOGRID REINFORCED SLOPE		RAIL EXISTING
	PRELOAD AREA		RAIL PROPOSED
	RAIL TIE-IN		DESIGNATION BOUNDARY
	ROCKFILL TERRAMESH SYSTEM		RAIL DESIGNATION
	DISPOSAL AREA / BORROW AREA		PROPERTY BOUNDARY
	WETLAND		EXISTING STREAM
	GROUNDWATER MONITORING STANDPIPES		PROPOSED CULVERTS
	FILL SLOPE		EXISTING CULVERTS
	CUT SLOPE		PROPOSED STREAM DIVERSION
	CUT AND FILL SLOPE		TIMBER RETAINING WALL
			STEEL RETAINING WALL
			L-SHAPED RETAINING WALL
			GABION RETAINING WALL
			CONCRETE WALL
			CONCRETE GROUND BEAM ON PILES



NOTE:
 DATUM: NZVD 2009

FOR CONSTRUCTION
 ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
2	GENERAL UPDATES	LW	RC	BS	14.09.18
1	ISSUED FOR CONSTRUCTION	AK	RC	BS	01.03.18

Scale (A1)	Design	Drawn	Drawn Date	Approved For Construction	Approved For Construction Date
1:1000	R.Ramilo	A.Kochar	22.08.17	B.Symmans	1.03.18
Scale (A3)	Dwg Verifier	R.Hillier	1.03.18		
1:2000	Dwg Check	G.Down	1.03.18		

* Refer to Original Hardcopy for Signature

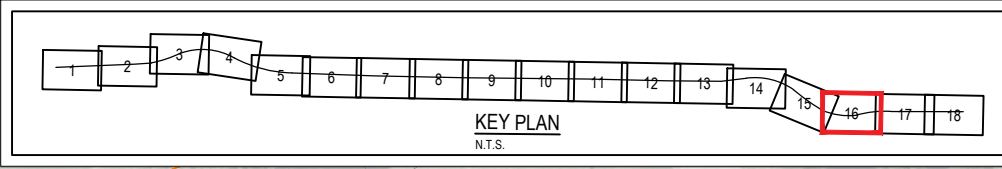
NZ TRANSPORT AGENCY **Peka Peka to Ōtaki Expressway** **Fletcher HIGGINS** **BECA** **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	GENERAL ARRANGEMENT PLAN	Drawing No.:	PP20-DR-GE-0012
	SHEET 12 OF 18	Rev.:	2

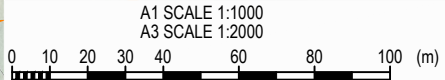
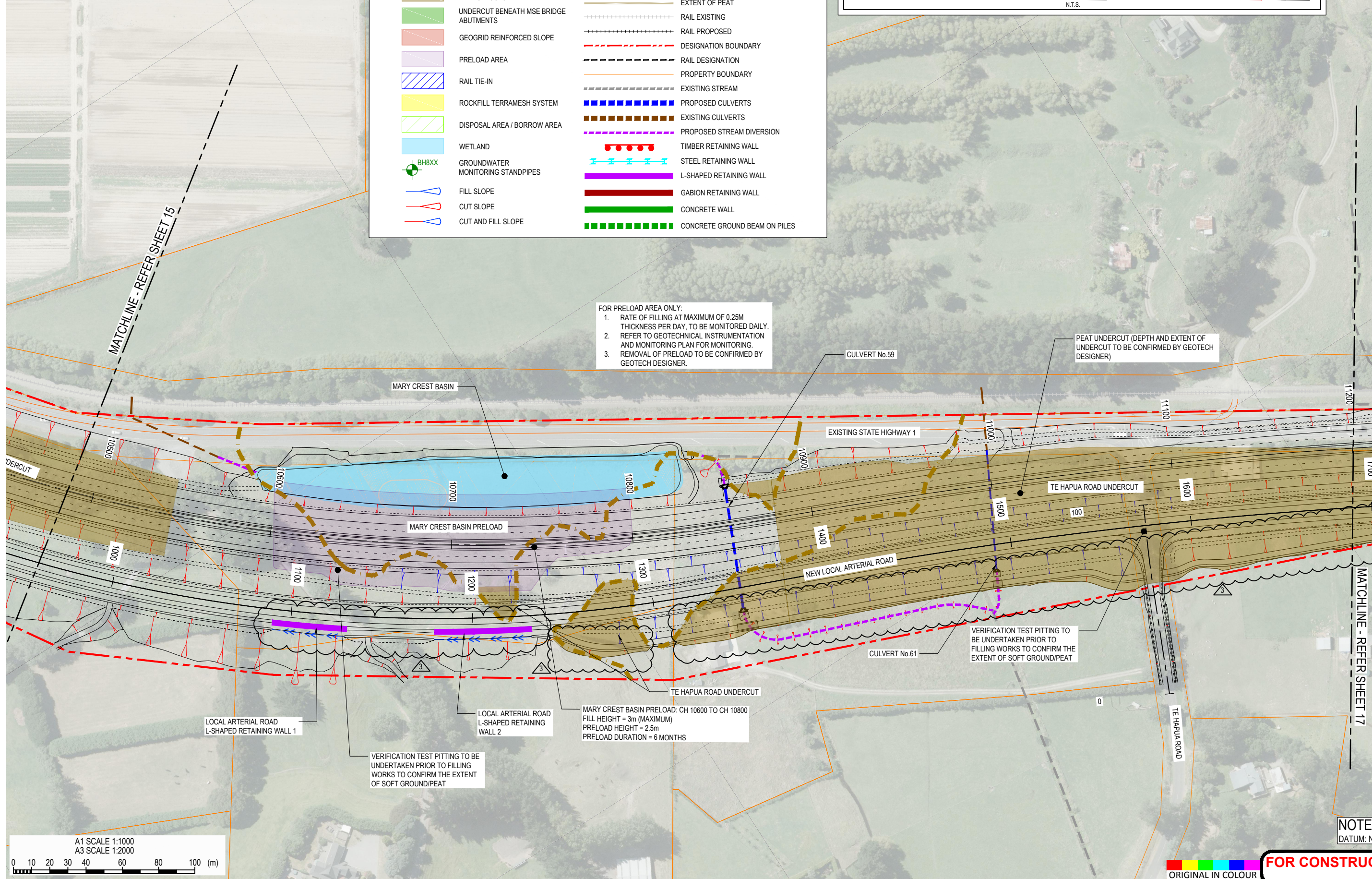
NOTE:
 1. STORMWATER FEATURES ARE SHOWN FOR CLARITY AND ARE NOT ISSUED FOR CONSTRUCTION. THESE DRAWINGS SHOULD NOT BE RELIED ON FOR CONSTRUCTING STORMWATER FEATURES AND SUBSOIL DRAIN. REFER TO STORMWATER AND SUBSOIL DRAINAGE DRAWINGS FOR DETAILS.

LEGEND:

	STRUCTURE		TEMPORARY RETAINING WALL
	UNDERCUT PEAT AND REPLACE WITH STRUCTURAL FILL		BARRIER RETAINING WALL
	UNDERCUT BENEATH MSE BRIDGE ABUTMENTS		EXTENT OF PEAT
	GEOGRID REINFORCED SLOPE		RAIL EXISTING
	PRELOAD AREA		RAIL PROPOSED
	RAIL TIE-IN		DESIGNATION BOUNDARY
	ROCKFILL TERRAMESH SYSTEM		RAIL DESIGNATION
	DISPOSAL AREA / BORROW AREA		PROPERTY BOUNDARY
	WETLAND		EXISTING STREAM
	GROUNDWATER MONITORING STANDPIPES		PROPOSED CULVERTS
	FILL SLOPE		EXISTING CULVERTS
	CUT SLOPE		PROPOSED STREAM DIVERSION
	CUT AND FILL SLOPE		TIMBER RETAINING WALL
			STEEL RETAINING WALL
			L-SHAPED RETAINING WALL
			GABION RETAINING WALL
			CONCRETE WALL
			CONCRETE GROUND BEAM ON PILES



FOR PRELOAD AREA ONLY:
 1. RATE OF FILLING AT MAXIMUM OF 0.25M THICKNESS PER DAY, TO BE MONITORED DAILY.
 2. REFER TO GEOTECHNICAL INSTRUMENTATION AND MONITORING PLAN FOR MONITORING.
 3. REMOVAL OF PRELOAD TO BE CONFIRMED BY GEOTECH DESIGNER.



NOTE:
 DATUM: NZVD 2009

FOR CONSTRUCTION
 ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
3	ADDED RETAINING WALLS AND UPDATED UNDERCUT EXTENT	AK	RC	BE	14.09.18
2	AREA OF PRELOAD MODIFIED	GD	RC	BS	13.04.18
1	ISSUED FOR CONSTRUCTION	AK	RC	BS	01.03.18

Scale (A1)	Design	Drawn	Checked	Approved For Construction
1:1000	R.Ramilo	A.Kochar	R.Hillier	B.Symmans
Scale (A3)				
1:2000		G.Down		

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION

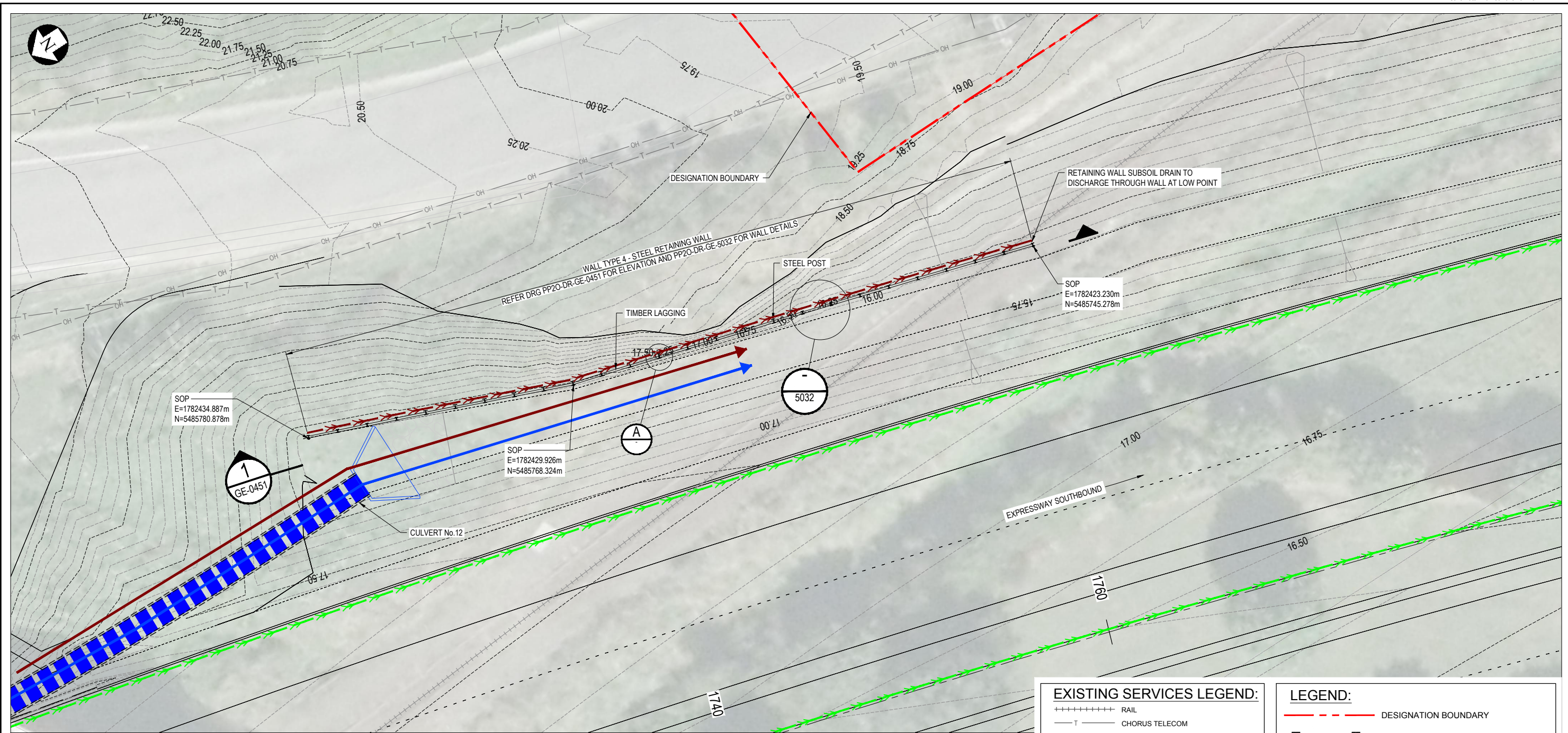
Peka Peka to Otaki Expressway

Fletcher HIGGINS

BECA **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	GENERAL ARRANGEMENT PLAN	Drawing No.:	PP20-DR-GE-0016
	SHEET 16 OF 18	Rev.:	3

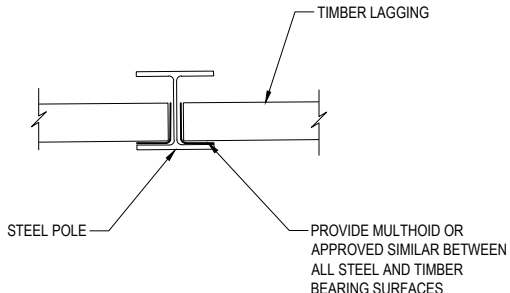
APPENDIX C: DESIGN DETAILS



PLAN
SCALE 1:100 (A1) 1:200 (A3)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO DRAWINGS PP20-DR-GE-0451 FOR ELEVATION.
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5032 FOR RETAINING WALL DETAILS, STEEL POLE AND LAGGING SIZES. SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT.
- CONTRACTOR TO POT HOLE FOR ALL SERVICES.
- STORMWATER FEATURES ARE SHOWN FOR CLARITY. THIS DRAWING SHOULD NOT BE RELIED ON FOR CONSTRUCTING STORMWATER FEATURES. REFER TO STORMWATER DRAWINGS FOR DETAILS.

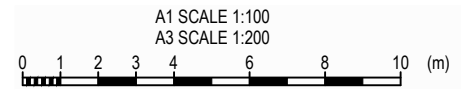


EXISTING SERVICES LEGEND:

+++++	RAIL
T	CHORUS TELECOM
UG	ELECTRA UNDERGROUND POWER CABLE
OH	ELECTRA OVERHEAD POWER CABLE
11kV	11KV POWER CABLE
33kV	33KV POWER CABLE
G	FIRST GAS
HW	WATER SUPPLY PIPE (HAUTERE)
AW	ARCUS WATER SUPPLY PIPE
W	WATER SUPPLY PIPE
SS	WASTEWATER PIPE
SW	STORMWATER PIPE
X X X X	SERVICE TO BE ABANDONED
---	SERVICE TO BE REMOVED

LEGEND:

---	DESIGNATION BOUNDARY
--- ---	STEEL POLE RETAINING WALL
T	CHORUS TELECOM
P	ELECTRA UNDERGROUND POWER CABLE
OH	ELECTRA OVERHEAD POWER CABLE
---	PAVEMENT SUBSOIL DRAINS
---	FILL SLOPE
---	CUT SLOPE
---	RETAINING WALL SUBSOIL DRAIN
---	DISH DRAIN
---	EXISTING CULVERTS
---	EXISTING STREAM
---	STREAM DIVERSION / FLOOD DIVERSION CHANNELS
---	WETLAND NON-PERFORATED SUBSOIL PIPE
---	REINFORCED SLOPE NON-PERFORATED SUBSOIL PIPE



No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	7.12.18

Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:100	R. Ramilo	L. Wang	R. Hillier	20.07.18	B. Symmans
Scale (A3) 1:200	R. Ramilo	L. Wang	R. Hillier	7.12.18	B. Symmans

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION

Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

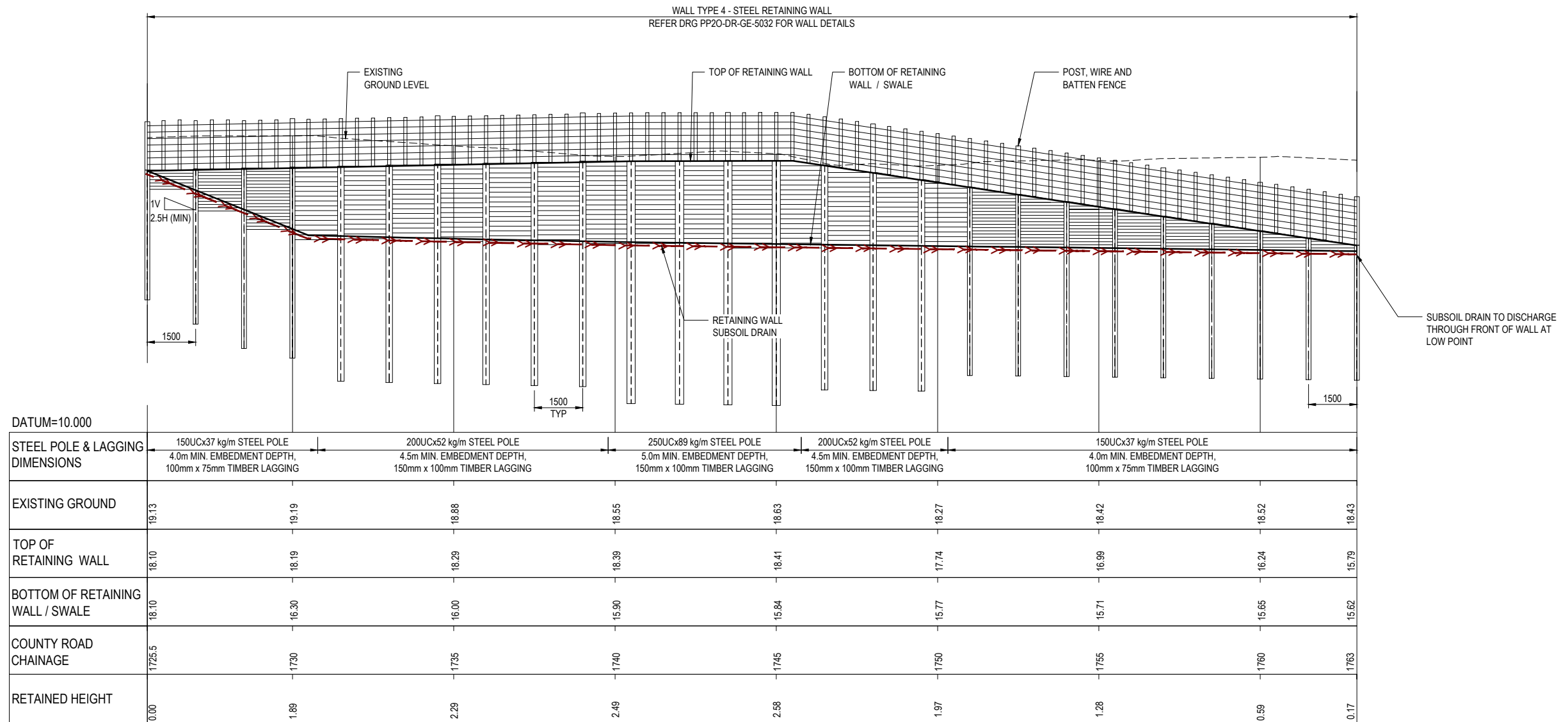
BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS
Title:	COUNTY ROAD RETAINING WALL PLAN

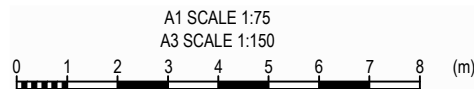
FOR CONSTRUCTION

ORIGINAL IN COLOUR

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0450
Rev.:	1



1 SECTION
0450 1:75 (A1) 1:150 (A3)



FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	7.12.18

Scale (A1)	Design	Drawn	Checked	Date	Approved For Construction
1:75	R. Ramilo	L. Wang	R. Hillier	20.07.18	B. Symmans
Scale (A3)	Dwg Check	G. Down		7.12.18	Date 7.12.18

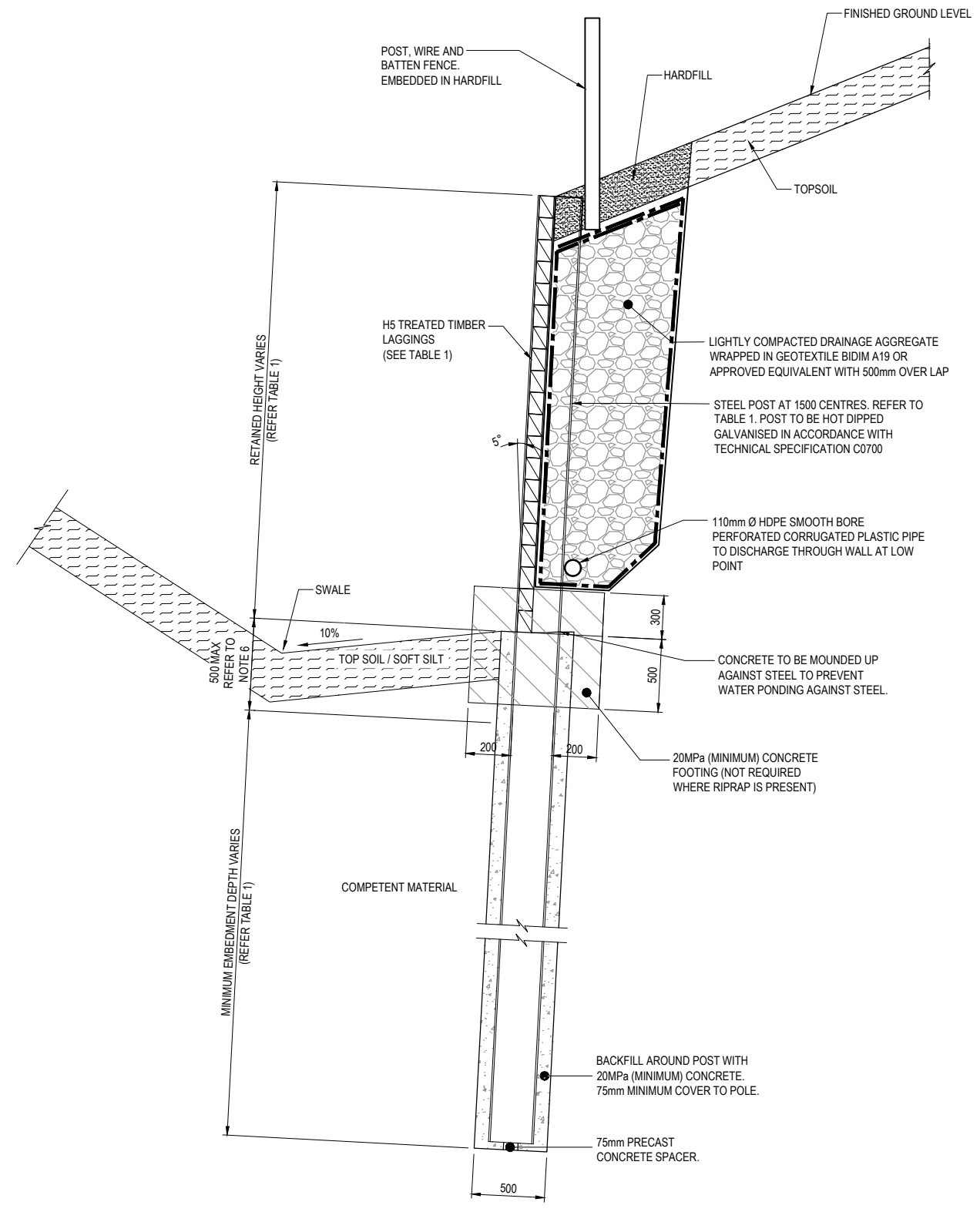
* Refer to Original Hardcopy for Signature



Peka Peka to Ōtaki Expressway



Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	COUNTY ROAD RETAINING WALL ELEVATION	Drawing No.:	PP20-DR-GE-0451
		Rev.:	1

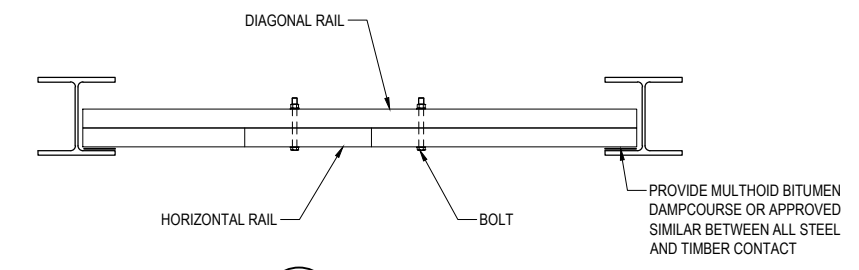


STEEL RETAINING WALL SECTION
SCALE: 1:20 (A1) 1:40 (A3)

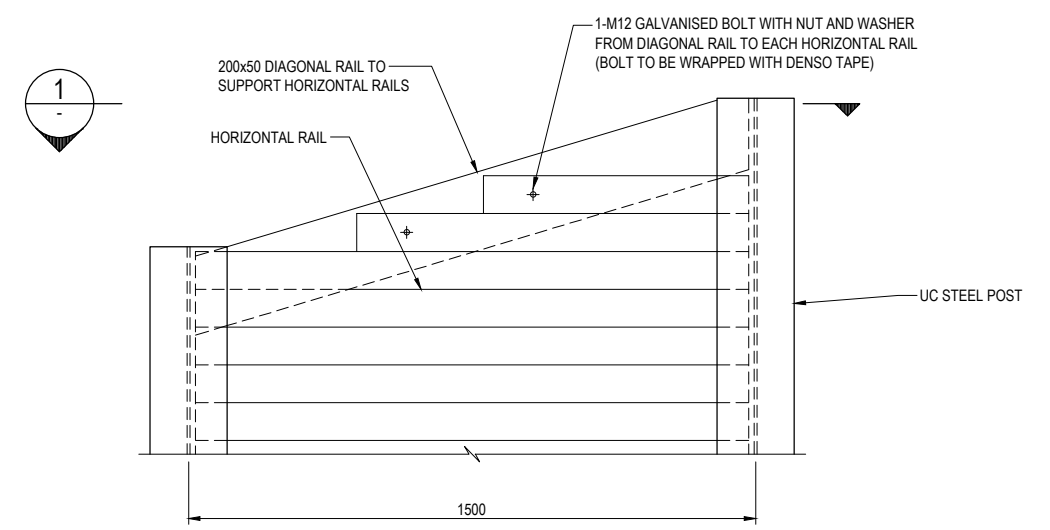
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. ALL CUTS AND HOLES IN TIMBER TO BE TREATED IN ACCORDANCE WITH THE TIMBER SPECIFICATIONS.
3. CONTRACTOR TO SET OUT WORKS. DESIGNER TO CONFIRM SETOUT OF ALL RETAINED WALL WORKS PRIOR TO CONSTRUCTION COMMENCING.
4. CONTRACTOR TO LOCATE AND PROTECT OR REINSTATE ALL BURIED SERVICES. CONTRACTOR TO POT HOLE FOR ALL SERVICES.
5. POST LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POST HOLES.
6. DESIGNER TO CONFIRM DEPTH OF COMPETENT MATERIAL. IF DEPTH OF COMPETENT MATERIAL IS GREATER THAN 0.5m, POLE DIAMETER AND EMBEDMENT DEPTH MAY NEED TO BE INCREASED.

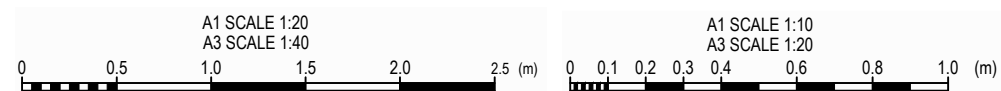
MAXIMUM RETAINED HEIGHT (m)	STEEL POLE SECTIONS & DIMENSION		TIMBER LAGGING DIMENSIONS (mm)
	SECTION	MINIMUM EMBEDMENT DEPTH (m)	
0.0 - 2.0	150UC x 37 kg/m	4	100 x 75
2.0 - 2.5	200UC x 52 kg/m	4.5	150 x 100
2.5 - 3.5	250UC x 89 kg/m	5.0	150 x 100



1 PLAN
SCALE 1:10 (A1) 1:20 (A3)



TIMBER LAGGING DETAIL FOR SLOPING GROUND (FRONT OF RETAINING WALL)
SCALE: 1:10 (A1) 1:20 (A3)



FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUE FOR CONSTRUCTION	GD	RC	BS	6.12.18

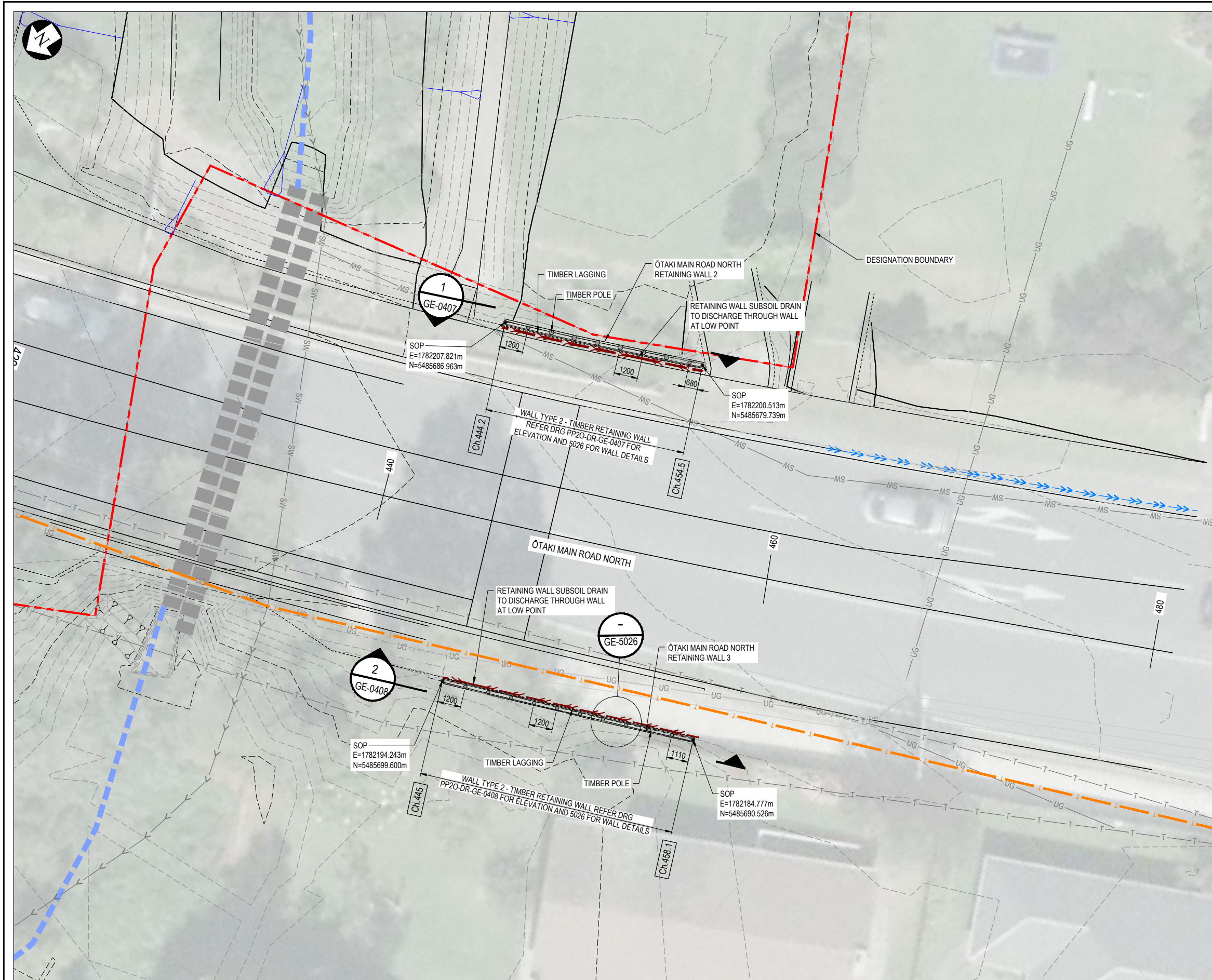
Design: R.Ramilo 17.09.18 Approved For Construction
 Drawn: L.Wang 17.09.18
 Dwg Verifier: _____
 Dwg Check: _____
 Date: _____

Scale (A1) AS SHOWN
 Scale (A3) 1/2 SHOWN
 *Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS
BECA **TFT** **Tonkin+Taylor**

Subject: EARTHWORKS	Discipline: GEOTECHNICAL
Title: STANDARD DETAIL WALL TYPE 4 - STEEL RETAINING WALL	Drawing No. PP20-DR-GE-5032
	Rev. 1



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. REFER TO DRAWINGS PP20-DR-GE-407 AND 408 FOR ELEVATION.
3. REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5026 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
4. SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
5. CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- RETAINING WALL SUBSOIL DRAIN
- DISH DRAIN
- EXISTING CULVERTS
- EXISTING STREAM
- STREAM DIVERSION / FLOOD DIVERSION CHANNELS

EXISTING SERVICES LEGEND:

- RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11kV 11KV POWER CABLE
- 33kV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- SS WASTEWATER PIPE
- SW STORMWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

NOTE:
DATUM: NZVD 2009

ORIGINAL IN COLOUR

FOR CONSTRUCTION

A1 SCALE 1:100
A3 SCALE 1:200

PLAN
SCALE 1:100 (A1) 1:200 (A3)

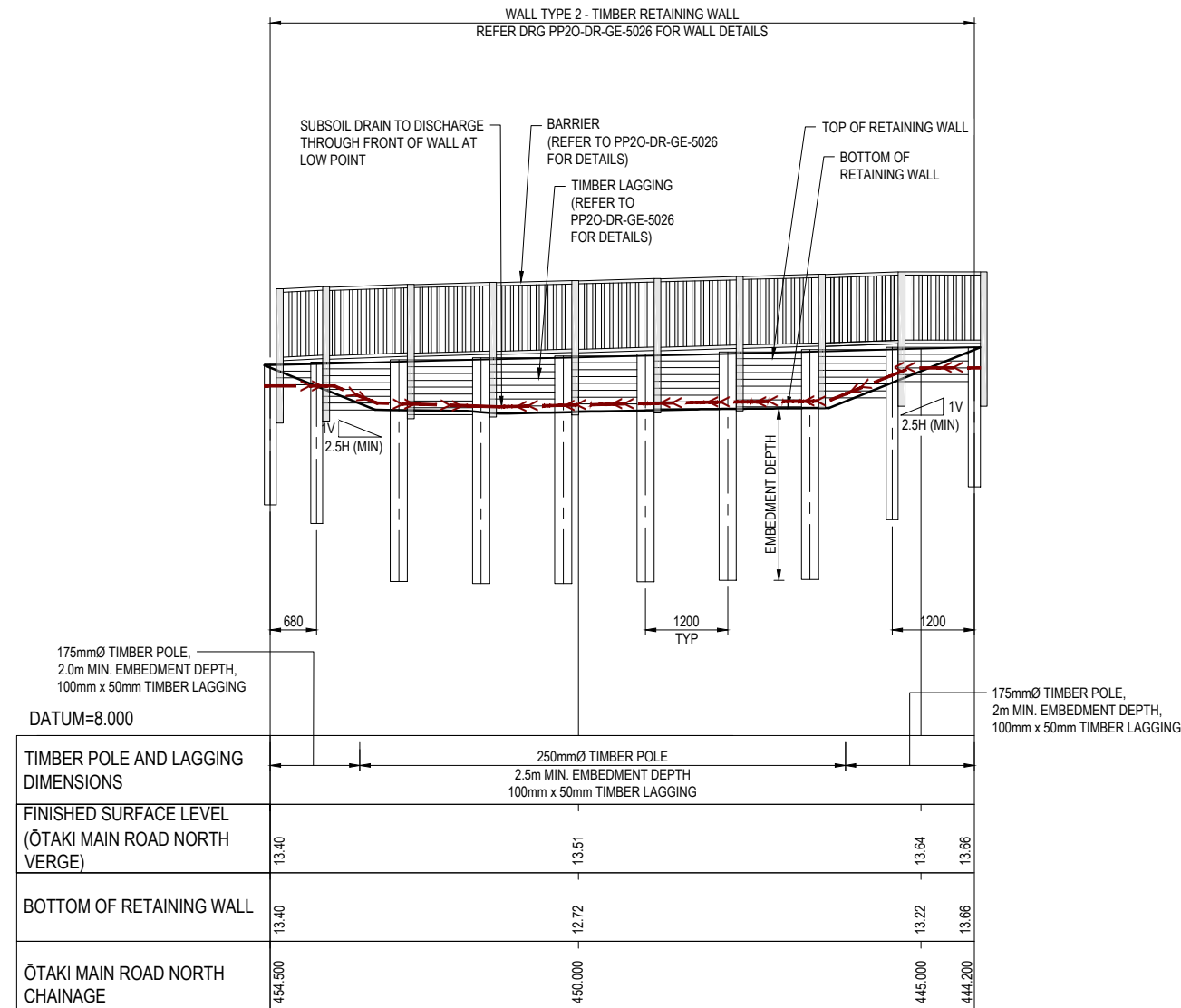
No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	25.10.18

Scale	Design	Drawn	Drawn Date	Approved For Construction	Approved For Construction Date
Scale (A1) 1:100	R.Ramilo	L.Wang	14.02.18	B.Symmans	14.02.18
Scale (A3) 1:200	R.Hillier	G.Down	17.08.18		17.08.18

* Refer to Original Hardcopy for Signature



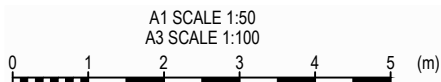
Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL	
Title:	ŌTAKI MAIN ROAD NORTH TIMBER RETAINING WALL 2 AND 3 PLAN		Drawing No.:	PP20-DR-GE-0406
			Rev.:	1



1 ŌTAKI MAIN ROAD NORTH
GE-0406 TIMBER RETAINING WALL 2 ELEVATION
1:50 (A1) 1:100 (A3)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5026 FOR RETAINING WALL DETAILS.
- WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES.
- POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION

ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	25.10.18

Scale	Design	Drawn	Dwg Verifier	Dwg Check	Date	Approved For Construction
Scale (A1) 1:50	R.Ramilo	L.Wang	R.Hillier	G.Down	20.03.18	B.Symmans
Scale (A3) 1:100					17.08.18	

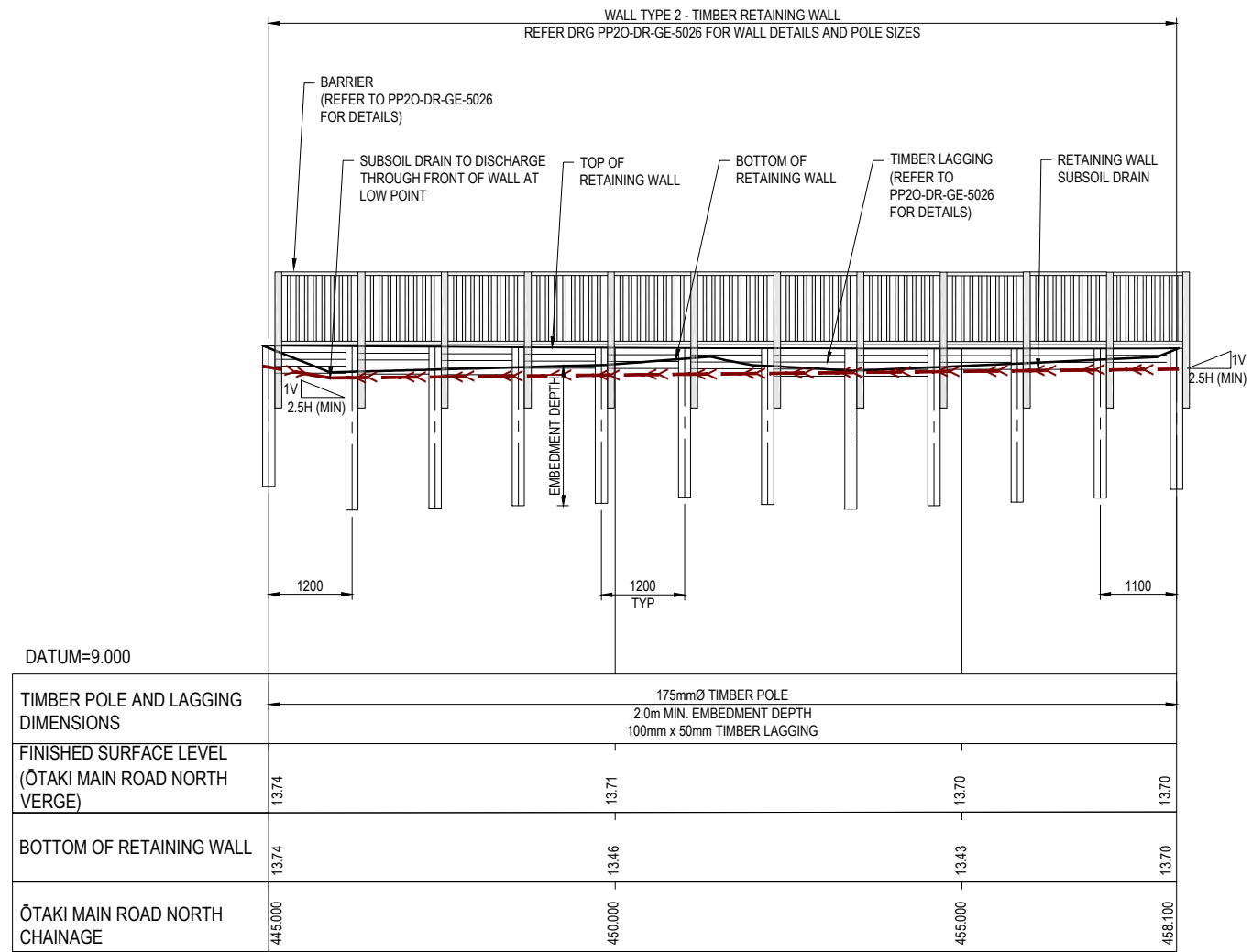
* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS
BECA TTT Tonkin+Taylor

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	ŌTAKI MAIN ROAD NORTH TIMBER RETAINING WALL 2 ELEVATION		

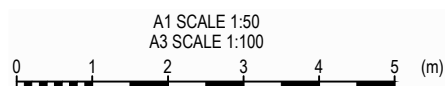
Drawing No.	PP20-DR-GE-0407	Rev.	1
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2 ŌTAKI MAIN ROAD NORTH
 GE-0408 TIMBER RETAINING WALL 3 ELEVATION
 1:50 (A1) 1:100 (A3)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5026 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
- WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES.
- POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



NOTE:
 DATUM: NZVD 2009

FOR CONSTRUCTION

ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	25.10.18

Scale (A1)	Design	R.Ramilo	20.03.18	Approved For Construction
1:50	Drawn	L.Wang	20.03.18	B.Symmans
Scale (A3)	Dwg Verifier	R.Hillier	17.08.18	
1:100	Dwg Check	G.Down	17.08.18	Date 25.10.18

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY
 Peka Peka to Ōtaki Expressway
 Fletcher HIGGINS
 BECA
 Tonkin+Taylor

Subject:	EARTHWORKS
Title:	ŌTAKI MAIN ROAD NORTH TIMBER RETAINING WALL 3 ELEVATION

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0408
Rev.:	1

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL CUTS AND HOLES IN TIMBER ARE TO BE TREATED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. CONTRACTOR TO SET OUT WORKS. DESIGNER TO CONFIRM SET OUT OF ALL RETAINING WALL WORKS PRIOR TO CONSTRUCTION COMMENCING.
4. CONTRACTOR TO LOCATE AND PROTECT OR REINSTATE ALL BURIED SERVICES. CONTRACTOR TO POT HOLE FOR ALL SERVICES.
5. POLE LENGTH TO BE CONFIRMED ON SITE BY THE DESIGNER AFTER EXCAVATION OF POLE HOLES.
6. IF DEPTH TO COMPETENT MATERIAL GREATER THAN 0.5m ADVISE DESIGNER. POLE DIAMETER AND EMBEDMENT MAY NEED TO BE INCREASED.

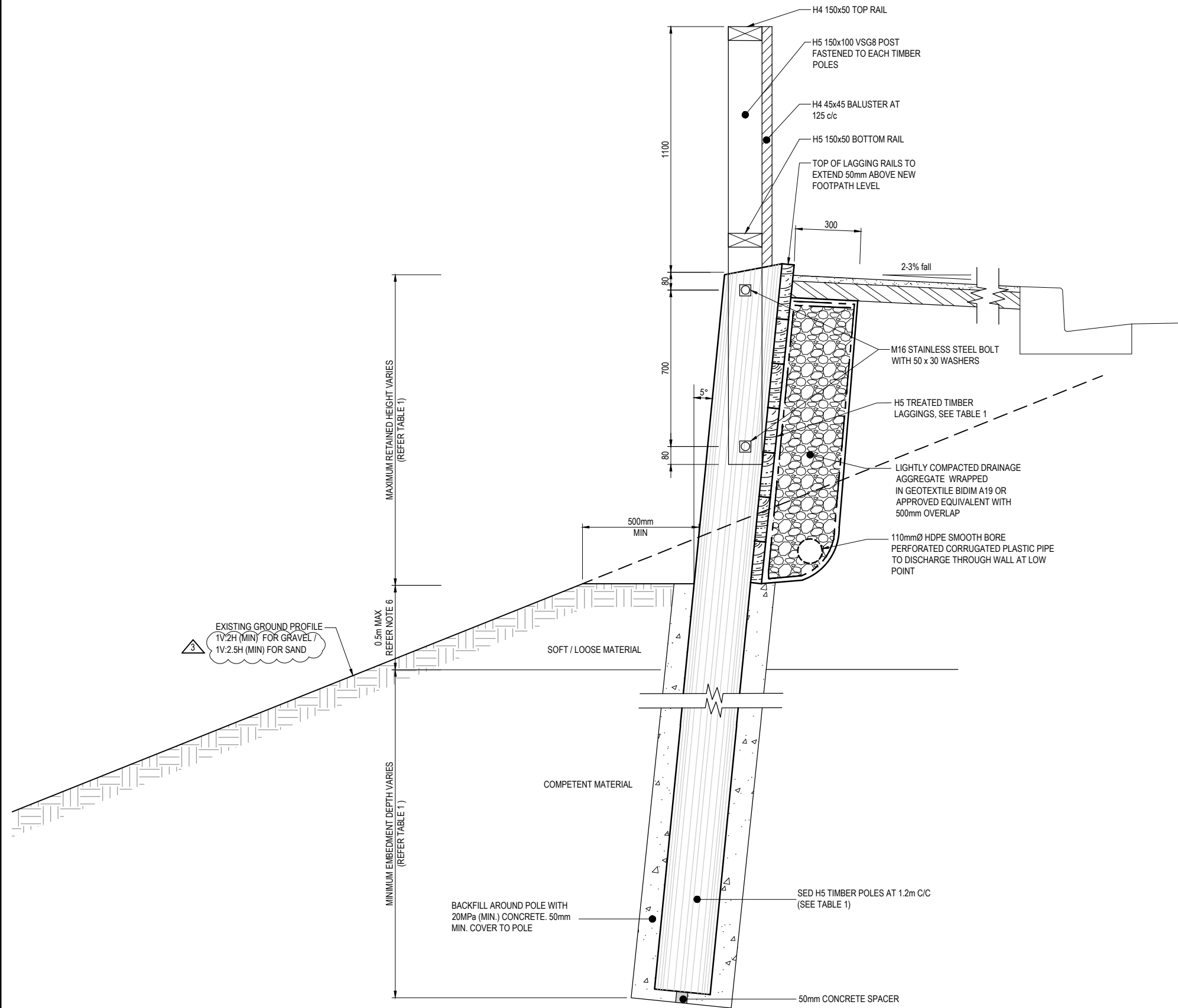


TABLE 1 - TIMBER POLE & LAGGING SCHEDULE

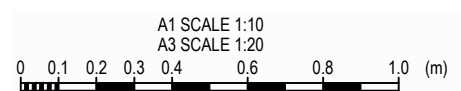
MAXIMUM RETAINED HEIGHT (m)	POLE DIMENSIONS		LAGGING DIMENSIONS (mm)
	POLE DIAMETER (mm)	MINIMUM EMBEDMENT DEPTH (m)	
0.0 - 0.5	175	2.0	100 x 50
0.5 - 1.0	250	2.5	100 x 50
1.0 - 1.5	325	3.0	100 x 75
1.5 - 2.0	375	3.5	100 x 75

EXISTING GROUND PROFILE
1V:2H (MIN) FOR GRAVEL /
1V:2.5H (MIN) FOR SAND

MAXIMUM RETAINED HEIGHT VARIES
(REFER TABLE 1)

MINIMUM EMBEDMENT DEPTH VARIES
(REFER TABLE 1)

TIMBER RETAINING WALL TYPE 2
SCALE: 1:10 (A1) 1:20 (A3)



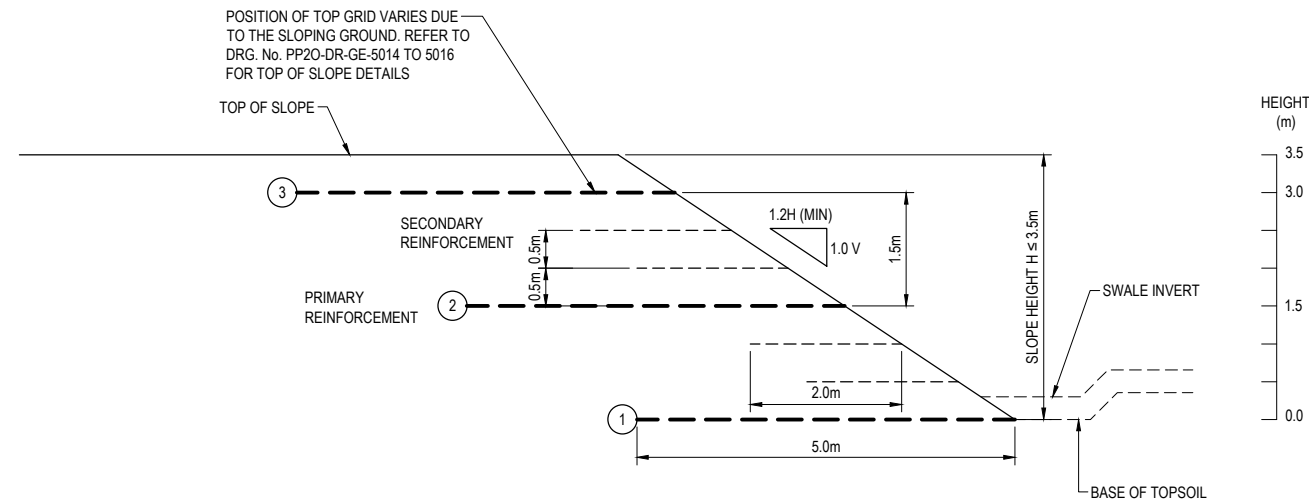
FOR CONSTRUCTION
 ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
3	UPDATED NOTE	LW	RC	BS	21.06.18
2	UPDATED NOTES	LW	RC	BS	23.04.18
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	27.03.18

Scale (A1)	Design	Date	Approved For Construction
1:10	R. Ramilo	27.03.18	B. Symmans
Scale (A3)	Drawn	27.03.18	
	Dwg Verifier	27.03.18	
	Dwg Check	27.03.18	
1:20			

* Refer to Original Hardcopy for Signature

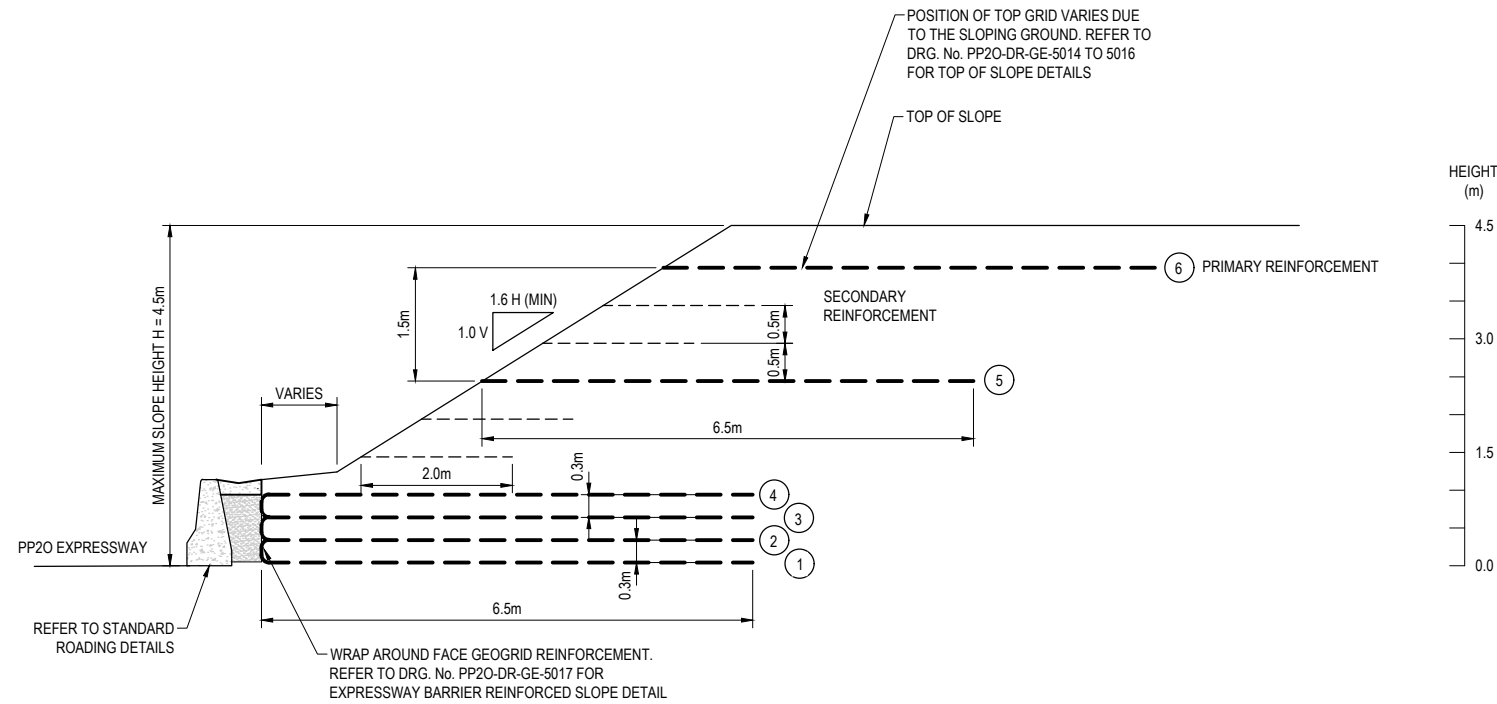
Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	STANDARD DETAIL WALL TYPE 2 - TIMBER RETAINING WALL	Drawing No.:	PP20-DR-GE-5026
		Rev.:	3



TYPE 9 GEOGRID REINFORCED SLOPE
1:50 (A1) 1:100 (A3)

TABLE 9: TYPE 9 - GEOGRID DIMENSIONS			
ROW NUMBER	HEIGHT ABOVE TOE OF SLOPE (m)	LENGTH (m)	GEOGRID TYPE
PRIMARY GEOGRID			
3	3.0	5	GX 40/ 40
2	1.5	5	GX 40/ 40
1	0.0	5	GX 40/ 40
SECONDARY GEOGRID			
ALL ROWS	VARIES	2	GX 40/ 40

NOTE: TOE OF SLOPE IS THE BASE OF TOPSOIL.



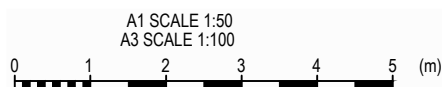
TYPE 10 GEOGRID REINFORCED SLOPE
1:50 (A1) 1:100 (A3)

TABLE 10: TYPE 10 - GEOGRID DIMENSIONS			
ROW NUMBER	HEIGHT ABOVE TOE (m)	LENGTH (m)	GEOGRID TYPE
PRIMARY GEOGRID			
6	3.900	6.5	GX 60/ 30
5	2.400	6.5	GX 60/ 30
4	0.900	6.5	GX 60/ 30
3	0.600	6.5	GX 60/ 30
2	0.300	6.5	GX 60/ 30
1	0.000	6.5	GX 60/ 30
SECONDARY GEOGRID			
ALL ROWS	VARIES	2	GX 40/ 40

NOTE: THE TOE IN THE ABOVE TABLE IS THE TOE OF THE BARRIER WALL.

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. DO NOT SCALE FROM THIS DRAWING.
3. SOME DETAILS ARE NOT SHOWN FOR CLARITY.
4. EQUIVALENT GEOGRID WITH SIMILAR PHYSICAL PROPERTIES MAY BE USED WITH THE APPROVAL OF THE DESIGNER.



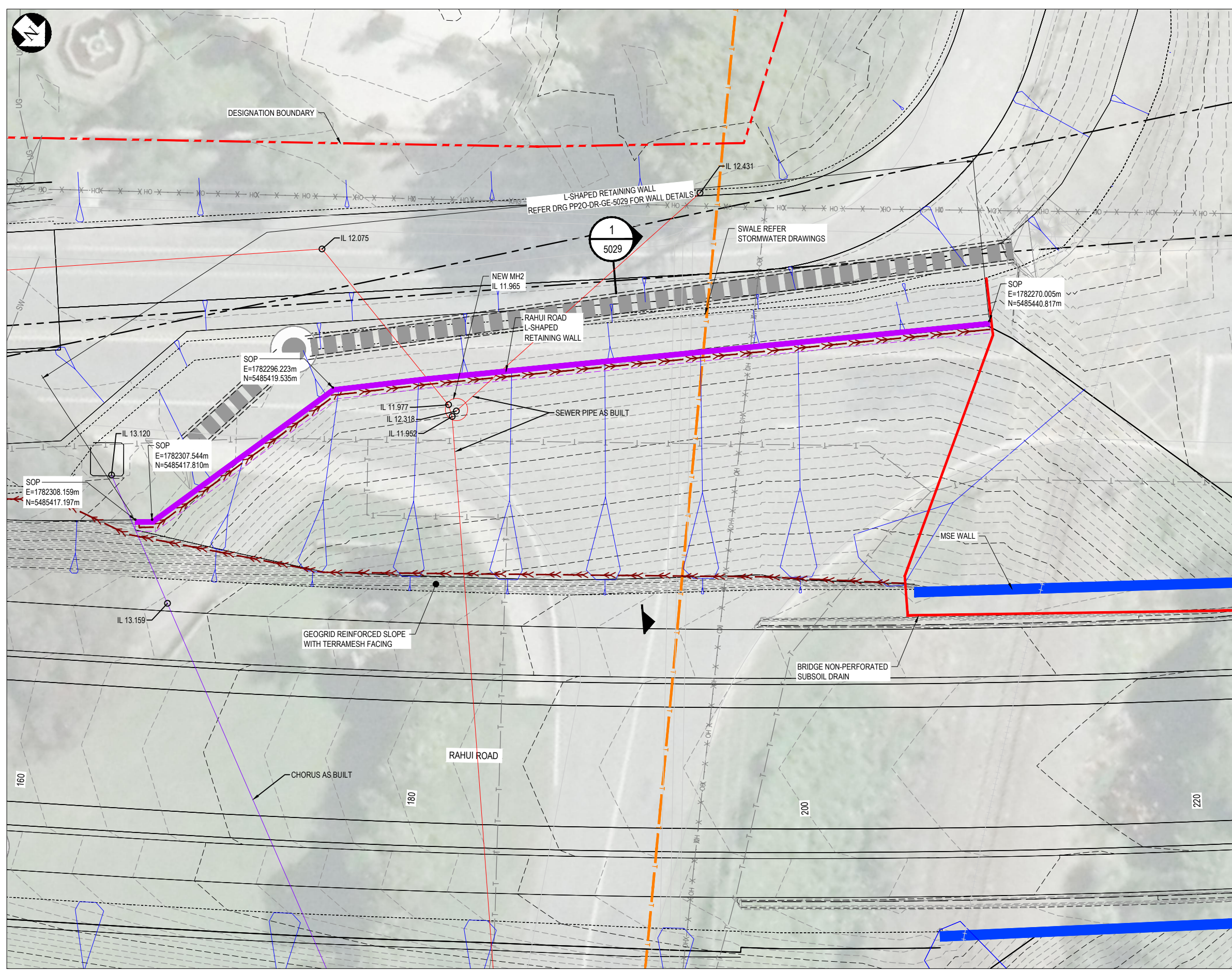
No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	LW	RC	BS	27.03.18

Scale (A1)	Design	Drawn	Checked	Approved For Construction
1:50	R.Ramilo	A.Kochar	B.Symmans	22.08.17
1:100	G.Down	G.Down		27.03.18

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	GEOGRID LAYOUT TYPES 9 AND 10	Drawing No.:	PP20-DR-GE-5023

FOR CONSTRUCTION

ORIGINAL IN COLOUR



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. REFER TO DRAWINGS PP20-DR-GE-5029 FOR DETAILS.
2. SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
3. CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

LEGEND:

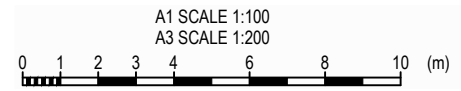
- DESIGNATION BOUNDARY
- L-SHAPED RETAINING WALL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- GEOTECHNICAL SUBSOIL DRAIN
- BRIDGE NON-PERFORATED SUBSOIL DRAIN
- BRIDGE MSE WALL

EXISTING SERVICES LEGEND:

- RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11kV 11KV POWER CABLE
- 33kV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- WASTEWATER PIPE
- SW STORMWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR



PLAN
SCALE 1:100 (A1) 1:200 (A3)

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	1.11.18

Design	R.Ramilo	8.05.18	Approved For Construction
Drawn	L.Wang	8.05.18	B.Symmans
Dwg Verifier	R.Hillier	1.11.18	
Dwg Check	G.Down	1.11.18	Date 1.11.18

* Refer to Original Hardcopy for Signature

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	RAHUI ROAD EASTERN APPROACH L-SHAPED RETAINING WALL PLAN	Drawing No.:	PP20-DR-GE-0416
		Rev.:	1

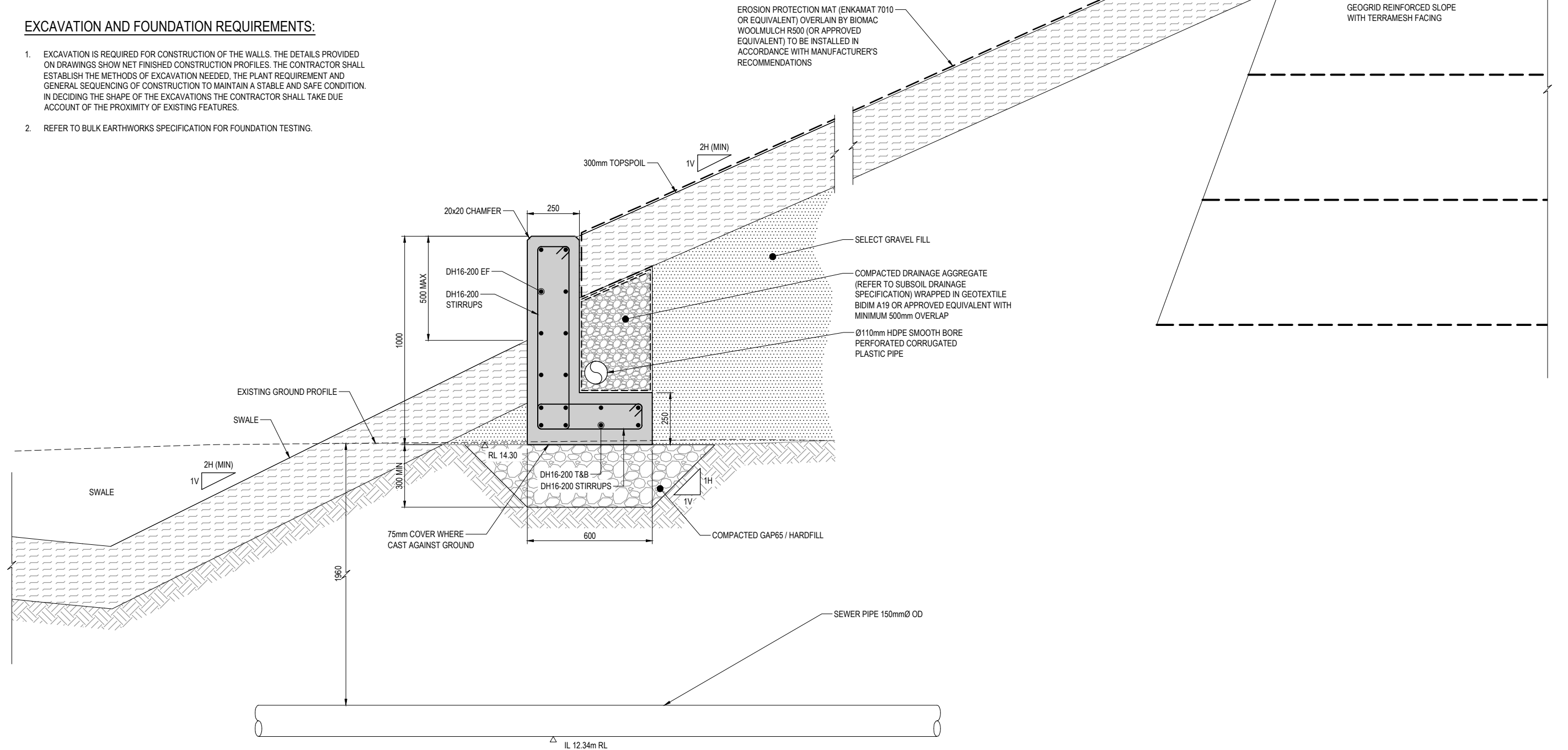
Document No. R3000 - DESIGN DEVELOPMENT GENERAL/09 CAD/DRAWINGS/GEOTECH/PP20-DR-GE-0416.DWG

GENERAL NOTES:

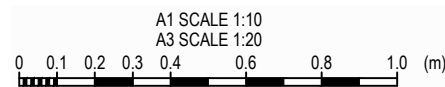
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
2. DIMENSIONS MUST NOT BE SCALED FROM THESE DRAWINGS.
3. CONSTRUCTOR TO ENSURE ALL EXCAVATIONS ARE STABLE.
4. CONSTRUCTOR TO CONFIRM POSITION OF EXISTING AND PROPOSED NEW SERVICES PRIOR TO CONSTRUCTION & ADVISE THE DESIGNER WHERE WORKS ADDITIONAL TO THOSE SHOWN ARE REQUIRED TO ACCOMMODATE THESE SERVICES.
5. REFER TO PP20-DR-SA-0001 TO PP20-DR-SA-0003 FOR GENERAL NOTES.
6. MINIMUM 28 DAY COMPRESSIVE STRENGTH (f_c) SHALL BE 40MPa.
7. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm UNO.

EXCAVATION AND FOUNDATION REQUIREMENTS:

1. EXCAVATION IS REQUIRED FOR CONSTRUCTION OF THE WALLS. THE DETAILS PROVIDED ON DRAWINGS SHOW NET FINISHED CONSTRUCTION PROFILES. THE CONTRACTOR SHALL ESTABLISH THE METHODS OF EXCAVATION NEEDED, THE PLANT REQUIREMENT AND GENERAL SEQUENCING OF CONSTRUCTION TO MAINTAIN A STABLE AND SAFE CONDITION. IN DECIDING THE SHAPE OF THE EXCAVATIONS THE CONTRACTOR SHALL TAKE DUE ACCOUNT OF THE PROXIMITY OF EXISTING FEATURES.
2. REFER TO BULK EARTHWORKS SPECIFICATION FOR FOUNDATION TESTING.



1 L-SHAPED WALL TYPICAL SECTION
SCALE 1:10 (A1) 1:20 (A3)



ORIGINAL IN COLOUR **FOR CONSTRUCTION**

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	1.11.18

Scale (A1)	Design	R.Ramilo	10.05.18	Approved For Construction
AS SHOWN	Drawn	L.Wang <td>10.05.18</td> <td>B.Symmans</td>	10.05.18	B.Symmans
Scale (A3)	Dwg Verifier	R.Hillier <td>1.11.18</td> <td></td>	1.11.18	
1/2 SHOWN	Dwg Check	G.Down <td>1.11.18</td> <td>Date 1.11.18</td>	1.11.18	Date 1.11.18

* Refer to Original Hardcopy for Signature

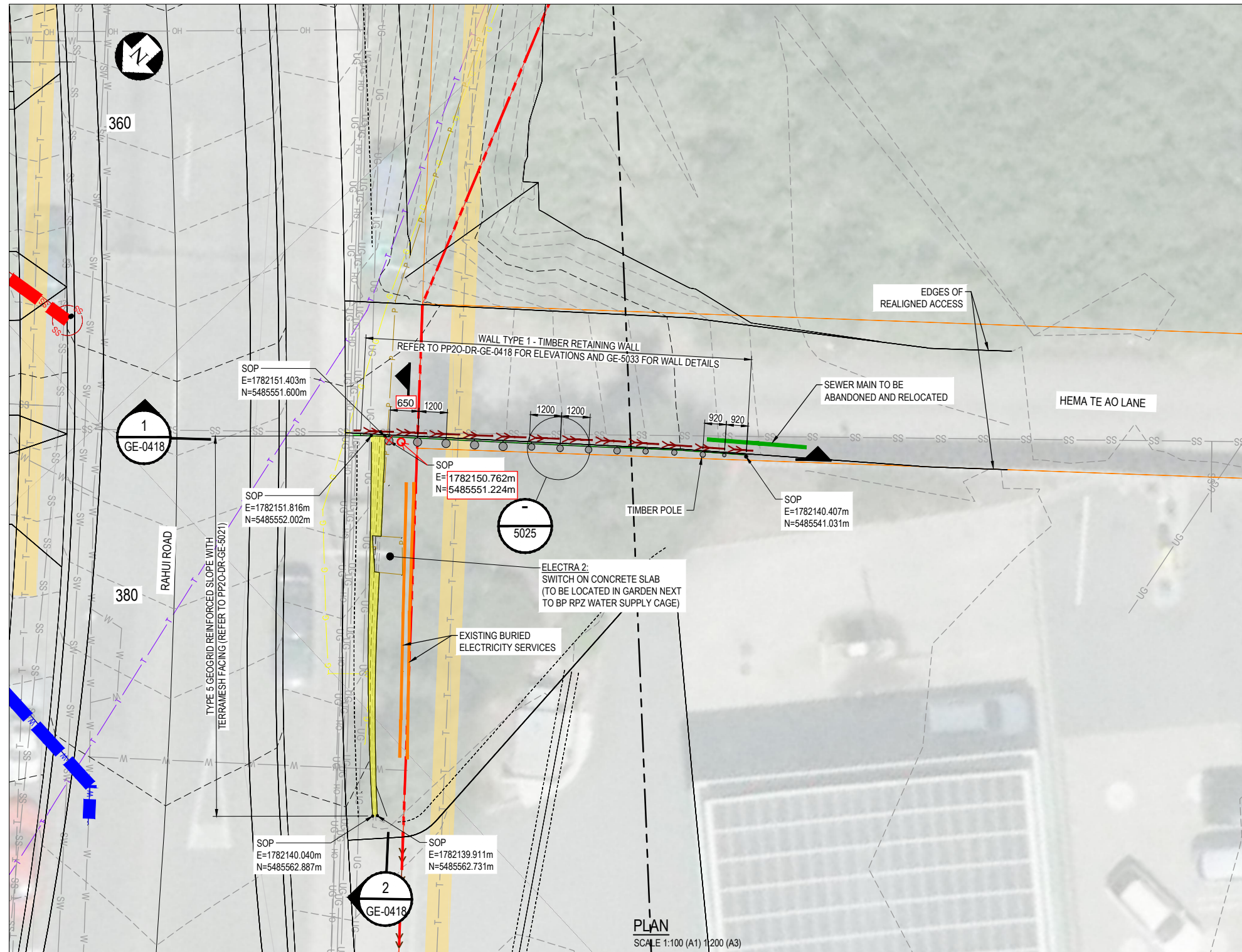
NZ TRANSPORT AGENCY WAIKATO REGION

Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	STANDARD DETAIL L-SHAPED RETAINING WALL TYPE 1	Drawing No.:	PP20-DR-GE-5029
		Rev.:	1

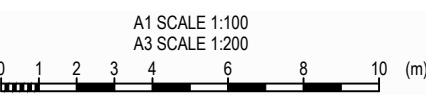


LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- TERRAMESH FACING TO SLOPE
- T CHORUS TELECOM
- P ELECTRA UNDERGROUND POWER CABLE
- OH ELECTRA OVERHEAD POWER CABLE
- >>> PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- >>> RETAINING WALL SUBSOIL DRAIN
- >>> DISH DRAIN
- EXISTING CULVERTS
- EXISTING STREAM
- STREAM DIVERSION / FLOOD DIVERSION CHANNELS
- W AS BUILT WATER PIPE
- SS AS BUILT SEWER PIPE

EXISTING SERVICES LEGEND:

- +++++ RAIL
- T CHORUS TELECOM
- UG ELECTRA UNDERGROUND POWER CABLE
- OH ELECTRA OVERHEAD POWER CABLE
- 11kV 11KV POWER CABLE
- 33kV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- SS WASTEWATER PIPE
- SW STORMWATER PIPE
- X X X SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED



- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - REFER TO DRAWINGS PP20-DR-GE-0411 FOR ELEVATION.
 - REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5033 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
 - SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

MARKUP HISTORY

Ref:	By:	Date:	Comment:
1.	JW	08/08/2019	FCCL-NTCN-001350

NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
RED LINE

ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	JW	VS		08/08/2019

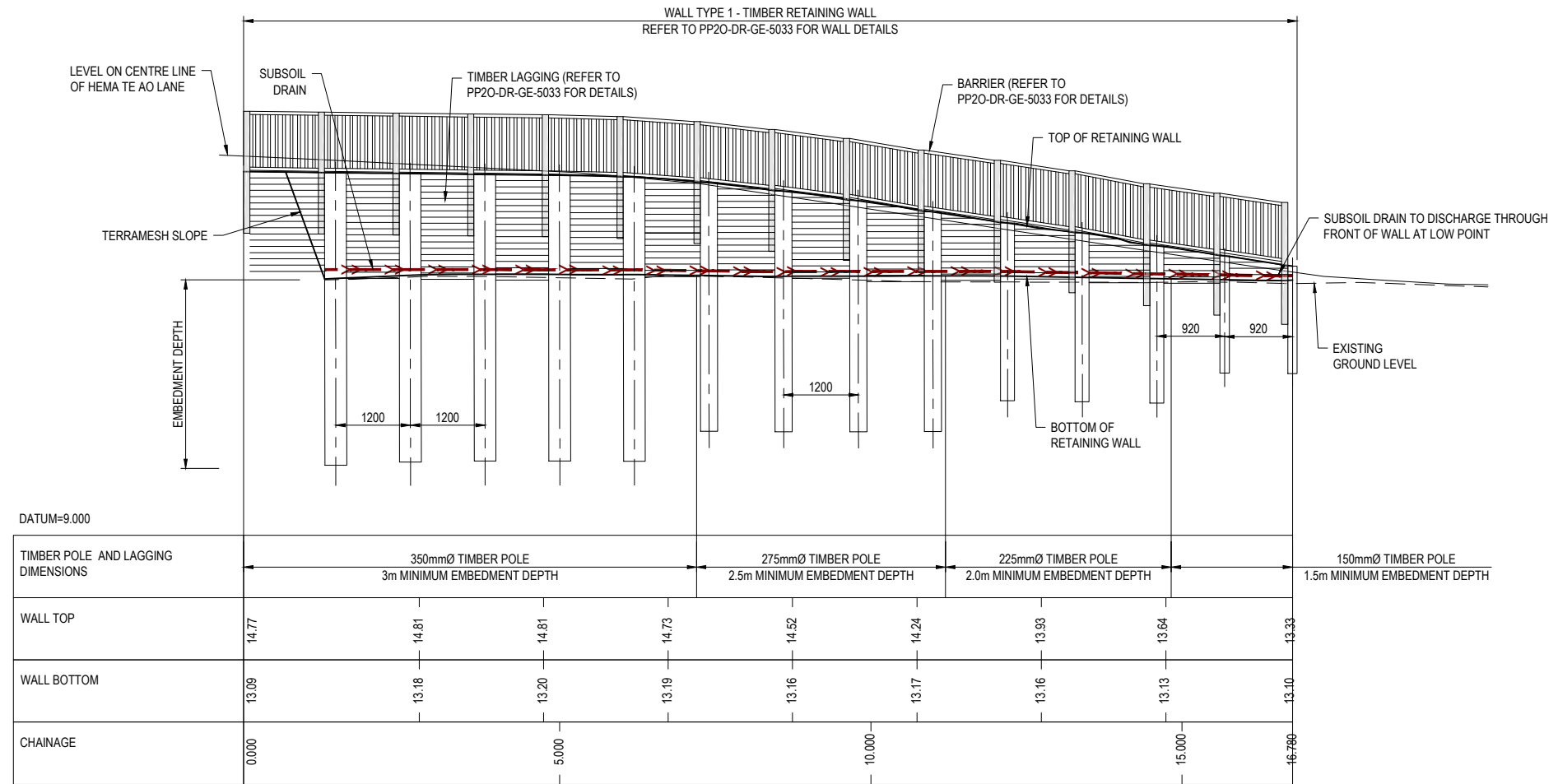
Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:100	R.Ramilo	R.Townsend		19.11.18	B.Symms
Scale (A3) 1:200		R.Hillier	G.Down	22.05.19	

NZ TRANSPORT AGENCY
Peka Peka to Ōtaki Expressway

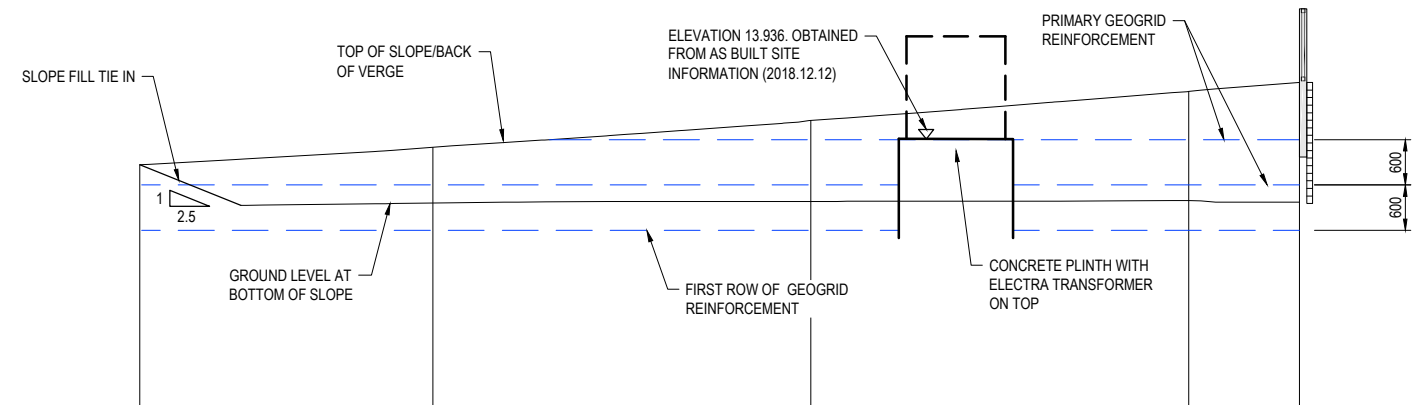
Fletcher HIGGINS
BECA TTT Tonkin+Taylor

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	BP RETAINING WALL AND SLOPE PLAN	Drawing No.:	PP20-DR-GE-0417

Rev:	1
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1 HEMA TE AO LANE
GE-0417 TIMBER RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)



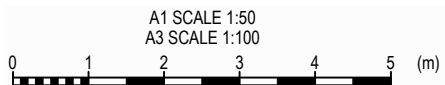
DATUM= 10.000

GEOGRID TYPE	TYPE 5 GEOGRID SLOPE REFER TO DRG. No. PP20-DR-GE-5021																											
TOP OF SLOPE	13.616	13.622	13.685	13.705	13.783	13.809	13.866	13.910	13.946	14.001	14.003	14.034	14.075	14.129	14.165	14.181	14.228	14.274	14.305	14.347	14.386	14.442	14.454	14.508	14.568	14.584	14.621	14.770
BOTTOM OF SLOPE	13.068	13.069	13.081	13.085	13.101	13.104	13.115	13.123	13.127	13.132	13.133	13.133	13.133	13.133	13.133	13.133	13.133	13.134	13.134	13.134	13.134	13.136	13.137	13.141	13.146	13.146	13.122	13.090
CHAINAGE ALONG RAHUI ROAD	-388.874						-385.000									-380.000									-375.000		373.538	
ELEVATION OF BOTTOM GEOGRID	12.75						12.75									12.75									12.75		12.75	

2 RAHUI ROAD
GE-0417 GEOGRID SLOPE - ELEVATION
1:50 (A1) 1:100 (A3)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5025 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
- WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON DRAWINGS ARE INDICATIVE ONLY AND MAY NOT REPRESENT THE SERVICES PRESENT. CONTRACTOR TO POTHOLE FOR ALL SERVICES.
- POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	22.05.19

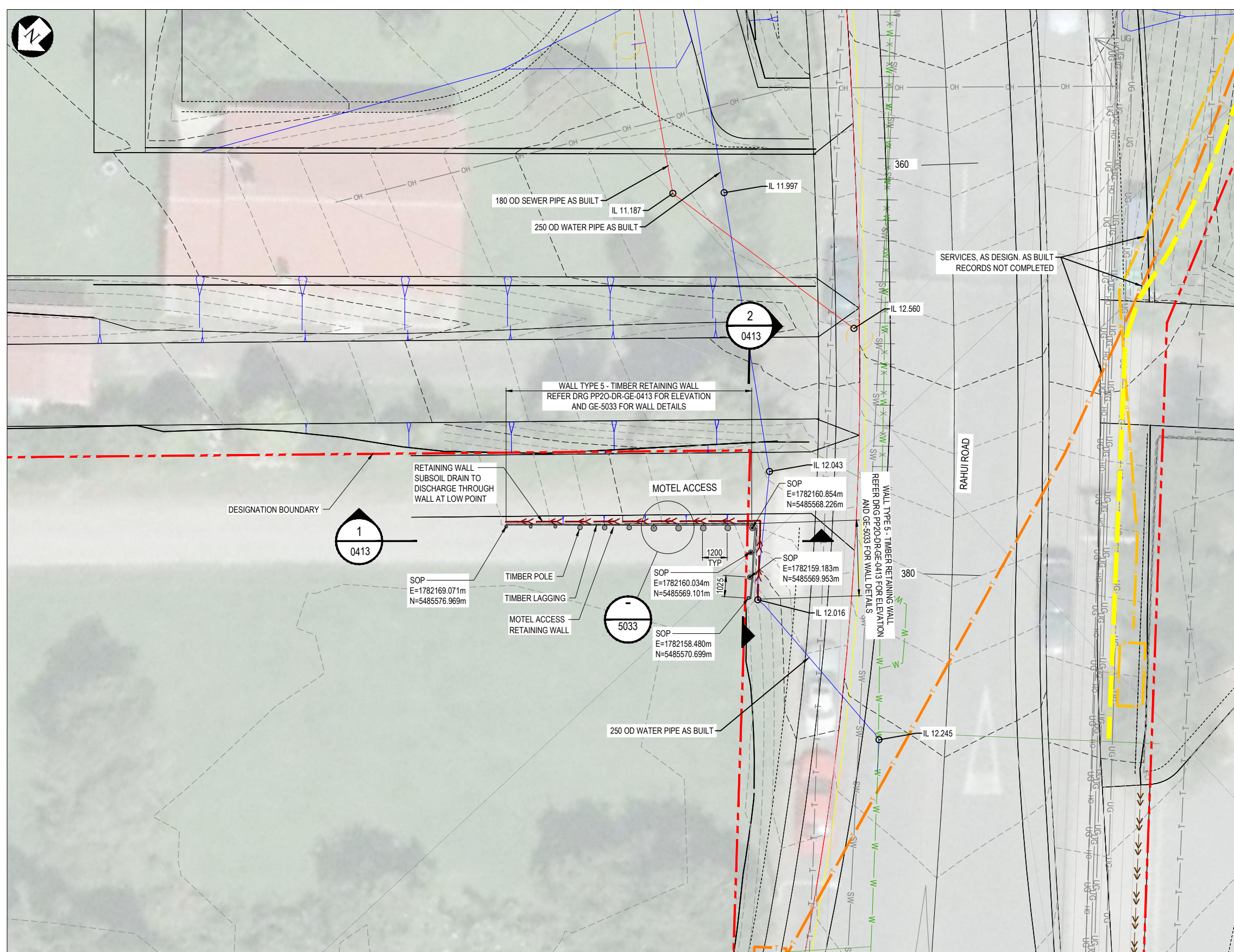
Design	R. Ramilo	19.11.18	Approved For Construction
Drawn	R. Townsend	19.11.18	B. Symmans
Dwg Verifier	R. Hillier	22.05.19	
Dwg Check	G. Down	22.05.19	Date 22.09.19

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKA KOTAHU
Peka Peka to Otaki Expressway
Fletcher HIGGINS
BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS
Title:	BP RETAINING WALL AND SLOPE ELEVATIONS

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0418
Rev.:	1



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. REFER TO DRAWINGS PP20-DR-GE-413 FOR ELEVATION.
3. REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5025 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES. SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
4. CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

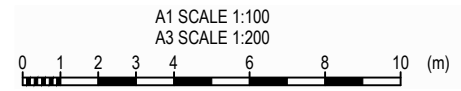
LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- WATERMAIN
- SEWERMAIN
- ELECTRA OVERHEAD POWER CABLE
- PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- RETAINING WALL SUBSOIL DRAIN
- DISH DRAIN
- EXISTING CULVERTS
- EXISTING STREAM
- STREAM DIVERSION / FLOOD DIVERSION CHANNELS

EXISTING SERVICES LEGEND:

- +++++ RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11KV 11KV POWER CABLE
- 33KV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- SS WASTEWATER PIPE
- SW STORMWATER PIPE
- X · X · X · SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

PLAN
SCALE 1:100 (A1) 1:200 (A3)



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	16.11.18

Scale (A1)	Design	Drawn	Dwg Verifier	Dwg Check	Date	Approved For Construction
1:100	R.Ramilo	L.Wang	R.Hillier	G.Down	14.02.18	B.Symmans
1:200					16.11.18	

* Refer to Original Hardcopy for Signature

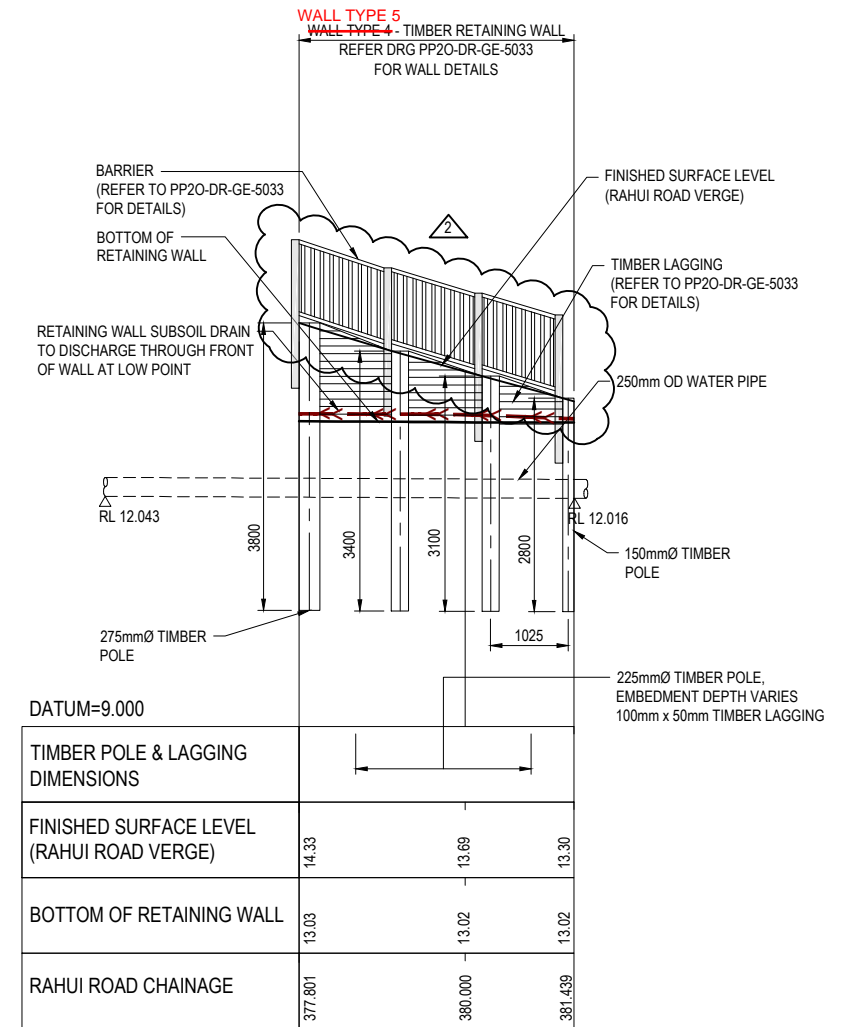
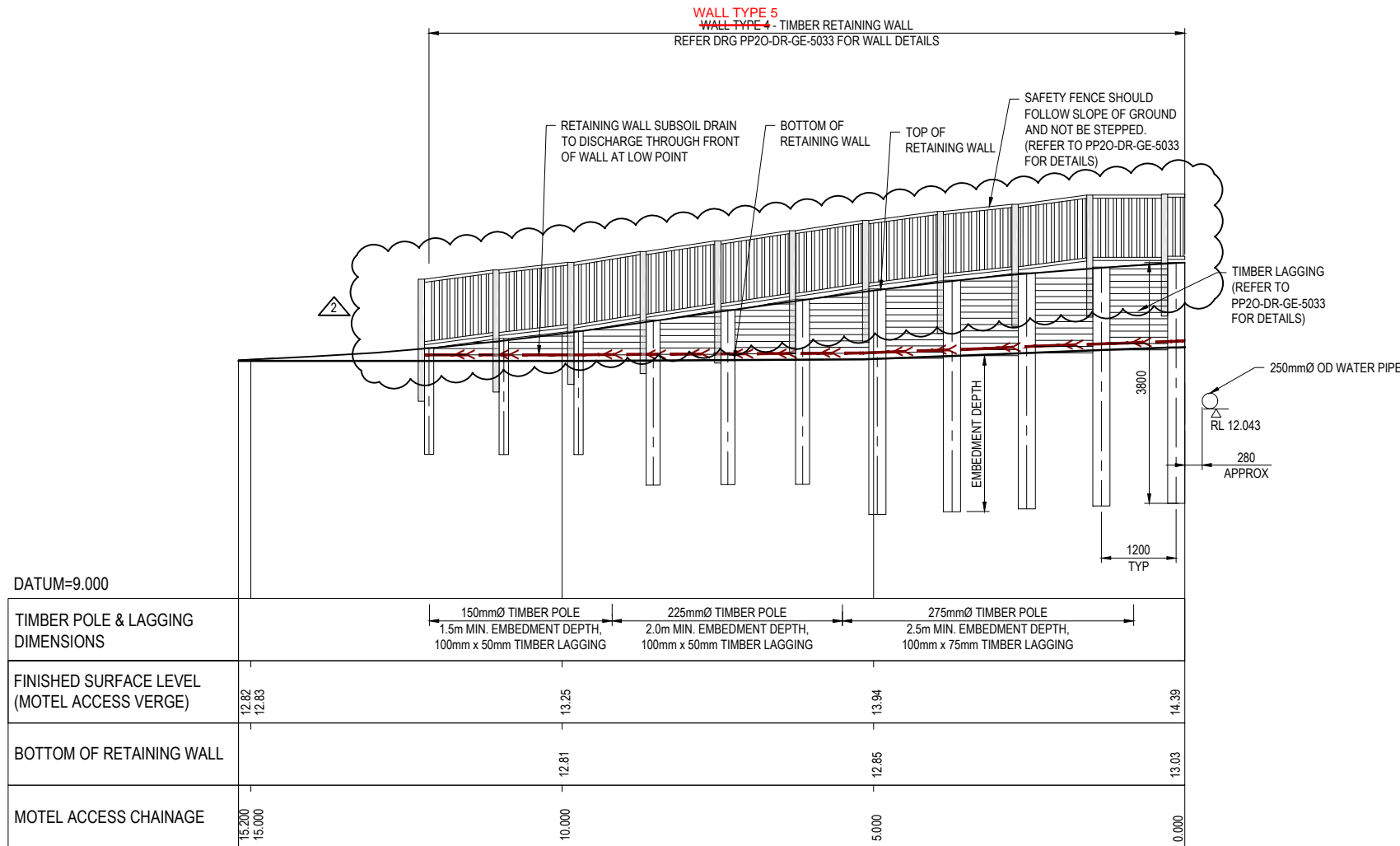
NZ TRANSPORT AGENCY WAIKATO REGION

Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	MOTEL ACCESS RETAINING WALL PLAN	Drawing No.:	PP20-DR-GE-0412
		Rev.:	1

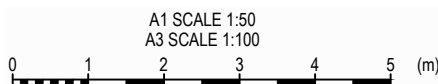


1 MOTEL ACCESS
GE-0412 TIMBER RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)

2 MOTEL ACCESS
GE-0412 TIMBER RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5033 FOR RETAINING WALL DETAILS.
- WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON DRAWINGS ARE INDICATIVE ONLY AND MAY NOT PRESENT THE SERVICES PRESENT. CONTRACTOR TO POTHOLE ALL SERVICES.
- POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



MARKUP HISTORY:

REF:	DATE:	BY:	COMMENT:
1. T&T-DA-000575	25/2/19	VS	Correction to Retaining wall types

NOTE:
DATUM: NZVD 2009

ORIGINAL IN COLOUR

FOR CONSTRUCTION
RED LINE

RL2 RED LINE MARKUP 25/2/19					
2	SAFETY FENCE UPDATED	DGV	RR	BS	05.12.18
1	ISSUED FOR CONSTRUCTION	LW	RC	BS	16.11.18
No.	Revision	By	Chk	Appd	Date

Scale (A1)	Design	R.Ramilo	20.03.18	Approved For Construction
1:50	Drawn	L.Wang	20.03.18	B.Symms
Scale (A3)	Dwg Verifier	R.Hillier	16.11.18	
1:100	Dwg Check	G.Down	16.11.18	Date 16.11.18
* Refer to Original Hardcopy for Signature				

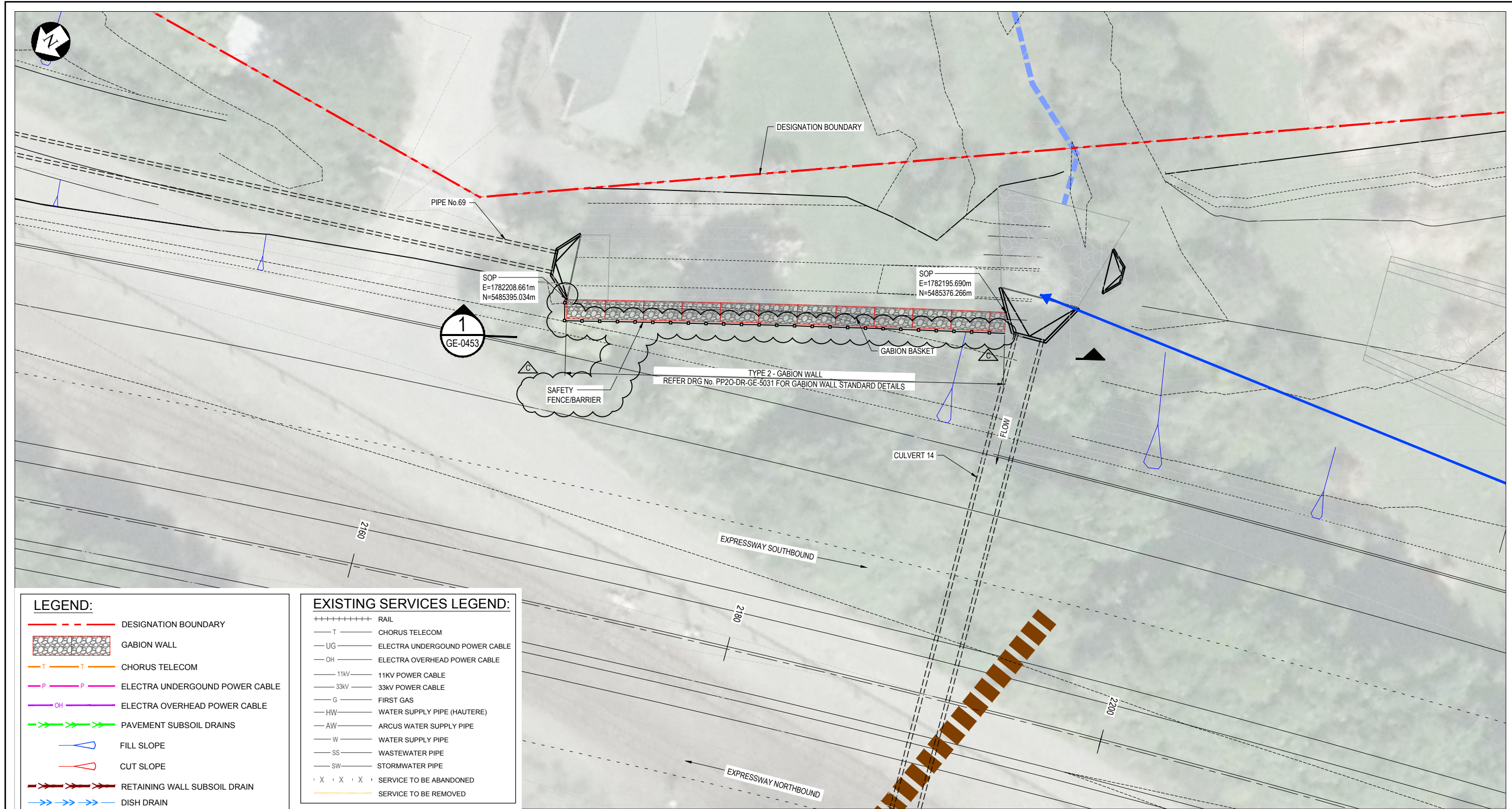
NZ TRANSPORT AGENCY WAIKA TOTORI

Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

BECA TTT Tonkin+Taylor

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	MOTEL ACCESS TIMBER RETAINING WALL ELEVATION	Drawing No.:	PP20-DR-GE-0413
		Rev.:	RL2



PLAN
SCALE 1:100 (A1) 1:200 (A3)

NOTE:
NO EXISTING OR PROPOSED SERVICES IN THE VICINITY OF THE RETAINING WALL

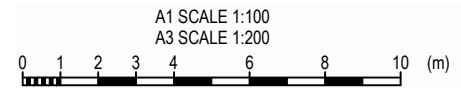
LEGEND:

- DESIGNATION BOUNDARY
- GABION WALL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- RETAINING WALL SUBSOIL DRAIN
- DISH DRAIN
- EXISTING CULVERTS
- EXISTING STREAM
- STREAM DIVERSION / FLOOD DIVERSION CHANNELS
- WETLAND NON-PERFORATED SUBSOIL PIPE
- RIPRAP

EXISTING SERVICES LEGEND:

- RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11KV POWER CABLE
- 33KV POWER CABLE
- FIRST GAS
- WATER SUPPLY PIPE (HAUTERE)
- ARCUS WATER SUPPLY PIPE
- WATER SUPPLY PIPE
- WASTEWATER PIPE
- STORMWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

- NOTES:**
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5031 FOR GABION WALL DETAILS.
 - SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.
 - STORMWATER FEATURES ARE SHOWN FOR CLARITY. THIS DRAWING SHOULD NOT BE RELIED ON FOR CONSTRUCTING STORMWATER FEATURES. REFER TO STORMWATER DRAWINGS FOR DETAILS.



ORIGINAL IN COLOUR
FOR INFORMATION NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
C	SAFETY FENCE/BARRIER ADDED	GD	RC	BS	6.12.18
B	BUILDING CONSENT EXEMPTION	GD	RR	BS	2.11.18
A	100% DESIGN	LW	RC	BS	28.09.18

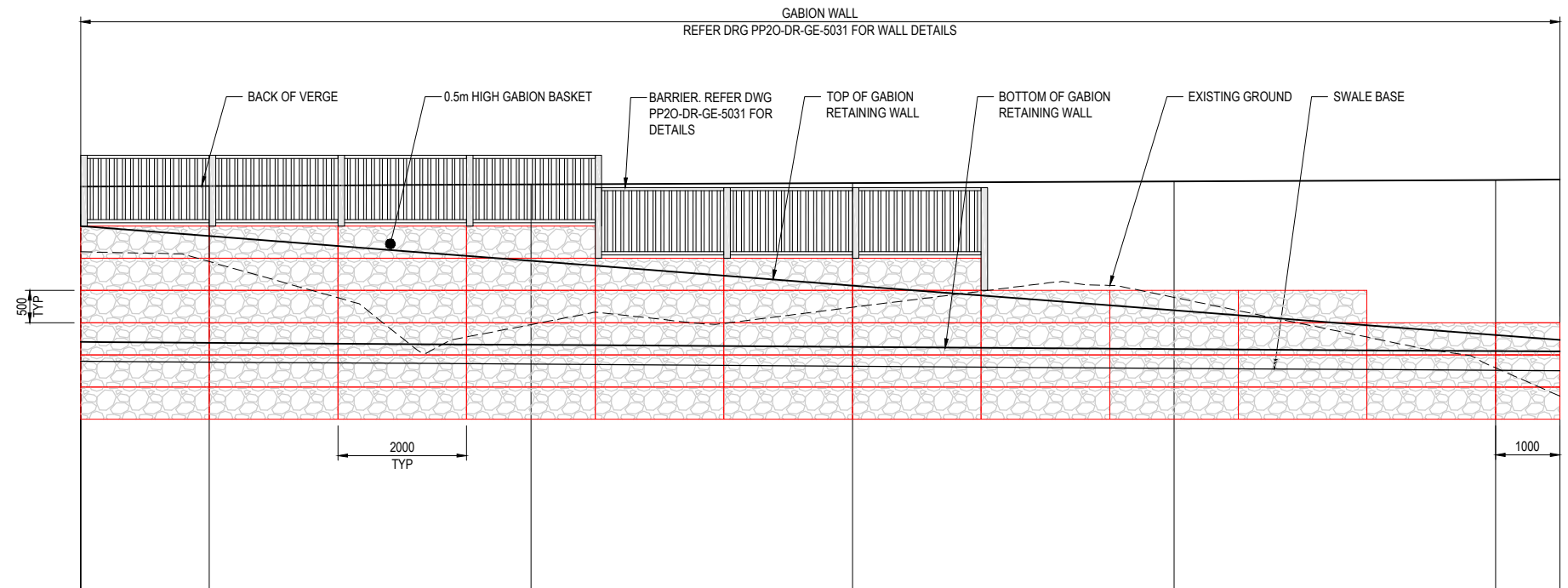
Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:100	R.Ramilo	L.Wang		20.07.18	
Scale (A3) 1:200				20.07.18	

*Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS
BECA **TFT** **Tonkin+Taylor**

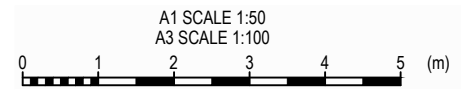
Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	RACECOURSE STREAM CULVERT NO. 14 INLET GABION WALL PLAN	Drawing No.:	PP20-DR-GE-0452
		Rev.:	C



DATUM=9.000

BACK OF VERGE	15.32	15.32	15.35	15.37	15.40	15.42	15.42
EXISTING GROUND	14.30	14.15	13.17	13.44	13.59	12.50	12.06
TOP OF RETAINING WALL	14.70	14.55	14.16	13.78	13.39	13.01	12.93
BOTTOM OF RETAINING WALL	12.90	12.88	12.88	12.82	12.79	12.76	12.75
SWALE BASE	12.60	12.59	12.86	12.52	12.49	12.46	12.45
EXPRESSWAY CHAINAGE	2166	2170	2175	2180	2185	2190	2191
RETAINED HEIGHT	1.80	1.67	1.31	0.95	0.60	0.25	0.18

1 RACECOURSE STREAM
 0452 GABION RETAINING WALL ELEVATION
 1:50 (A1) 1:100 (A3)



ORIGINAL IN COLOUR **FOR INFORMATION NOT FOR CONSTRUCTION**

Design	R. Ramilo	20.07.18	Approved For Construction
Drawn	L. Wang	20.07.18	Date
Design Verifier			
Dwg Check			

Scale (A1) 1:100
 Scale (A3) 1:200
 * Refer to Original Hardcopy for Signature

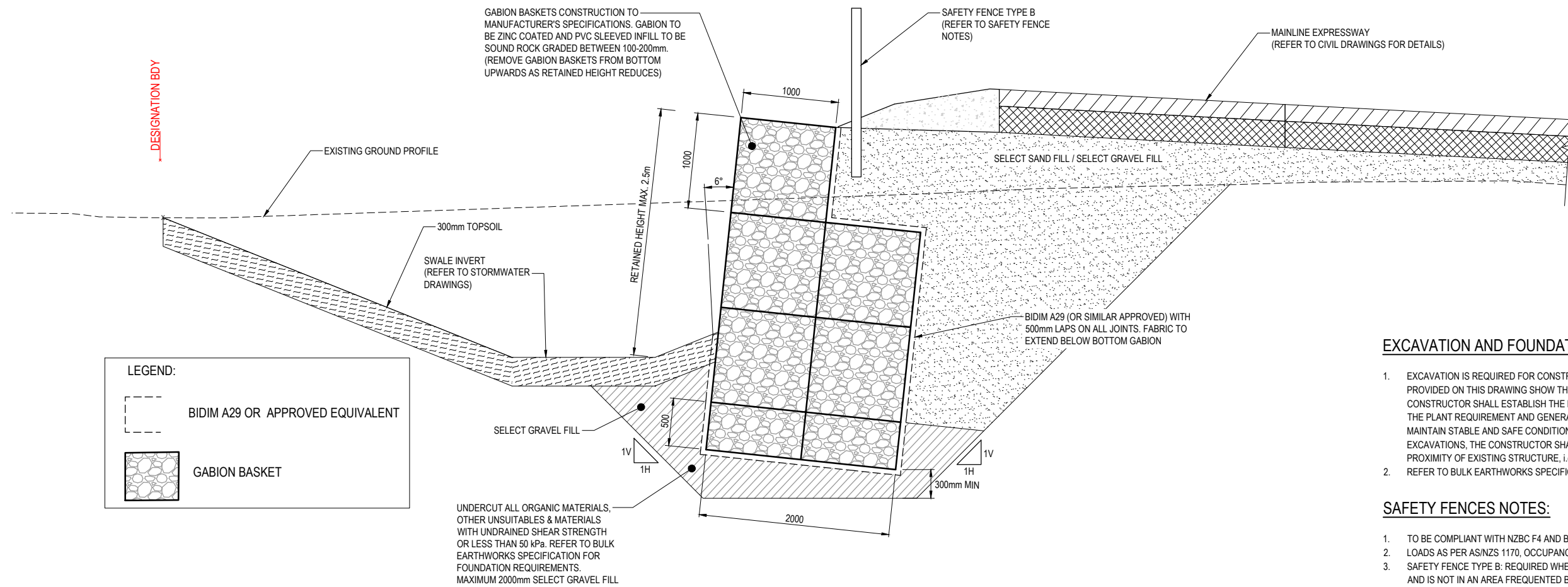
No.	Revision	By	Chk	Appd	Date
A	100% DESIGN	LW	RC	BS	-

NZ TRANSPORT AGENCY WAIKATO REGION
Peka Peka to Ōtaki Expressway
Fletcher HIGGINS
BECA **TFT** Tonkin+Taylor

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	RACECOURSE STREAM GABION RETAINING WALL ELEVATION	Drawing No.:	PP20-DR-GE-0453
		Rev.:	A

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MUST NOT BE SCALED FROM THESE DRAWINGS.
3. CONTRACTOR TO ENSURE ALL EXCAVATIONS ARE STABLE.
4. CONTRACTOR TO CONFIRM POSITION OF EXISTING AND PROPOSED NEW SERVICES PRIOR TO CONSTRUCTION AND ADVISE THE DESIGNER WHERE WORKS ADDITIONAL TO THOSE ARE REQUIRED TO ACCOMMODATE THESE SERVICES.
5. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



TYPE 2 - GABION WALL SECTION
1:25 (A1) 1:50 (A3)

EXCAVATION AND FOUNDATION REQUIREMENTS:

1. EXCAVATION IS REQUIRED FOR CONSTRUCTION OF THE WALLS. THE DETAILS PROVIDED ON THIS DRAWING SHOW THE NET FINISHED PROFILES. THE CONSTRUCTOR SHALL ESTABLISH THE METHODS OF EXCAVATION REQUIRED, THE PLANT REQUIREMENT AND GENERAL SEQUENCING OF CONSTRUCTION TO MAINTAIN STABLE AND SAFE CONDITIONS. IN DECIDING THE SHAPE OF THE EXCAVATIONS, THE CONSTRUCTOR SHALL TAKE DUE ACCOUNT OF THE PROXIMITY OF EXISTING STRUCTURE, i.e. NORTH ISLAND MAIN TRUNK RAILWAY.
2. REFER TO BULK EARTHWORKS SPECIFICATION FOR FOUNDATION TESTING.

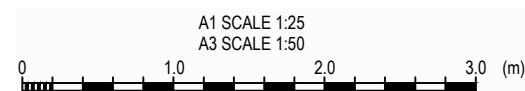
SAFETY FENCES NOTES:

1. TO BE COMPLIANT WITH NZBC F4 AND B1.
2. LOADS AS PER AS/NZS 1170, OCCUPANCY CLASS C3.
3. SAFETY FENCE TYPE B: REQUIRED WHERE THE RETAINING WALL HEIGHT IS >1m AND IS NOT IN AN AREA FREQUENTED BY CHILDREN. THE SAFETY FENCE IS TO:
 - a. HAVE A MAXIMUM GAP BETWEEN HORIZONTAL BARS OF 460mm,
 - b. HAVE A MAXIMUM GAP BETWEEN THE TOP OF THE RETAINING WALL AND THE BOTTOM OF FENCE OF 100mm,
 - c. HAVE A MINIMUM HEIGHT OF 1100mm,
4. CONSTRUCTOR TO SUBMIT SUPPLIER/FABRICATOR FENCE DESIGN AND SHOP DRAWINGS INCLUDING FIXINGS FOR EACH SAFETY FENCE TO THE DESIGNER PRIOR TO FABRICATION.

LEGEND:

--- BIDIM A29 OR APPROVED EQUIVALENT

GABION BASKET



ORIGINAL IN COLOUR

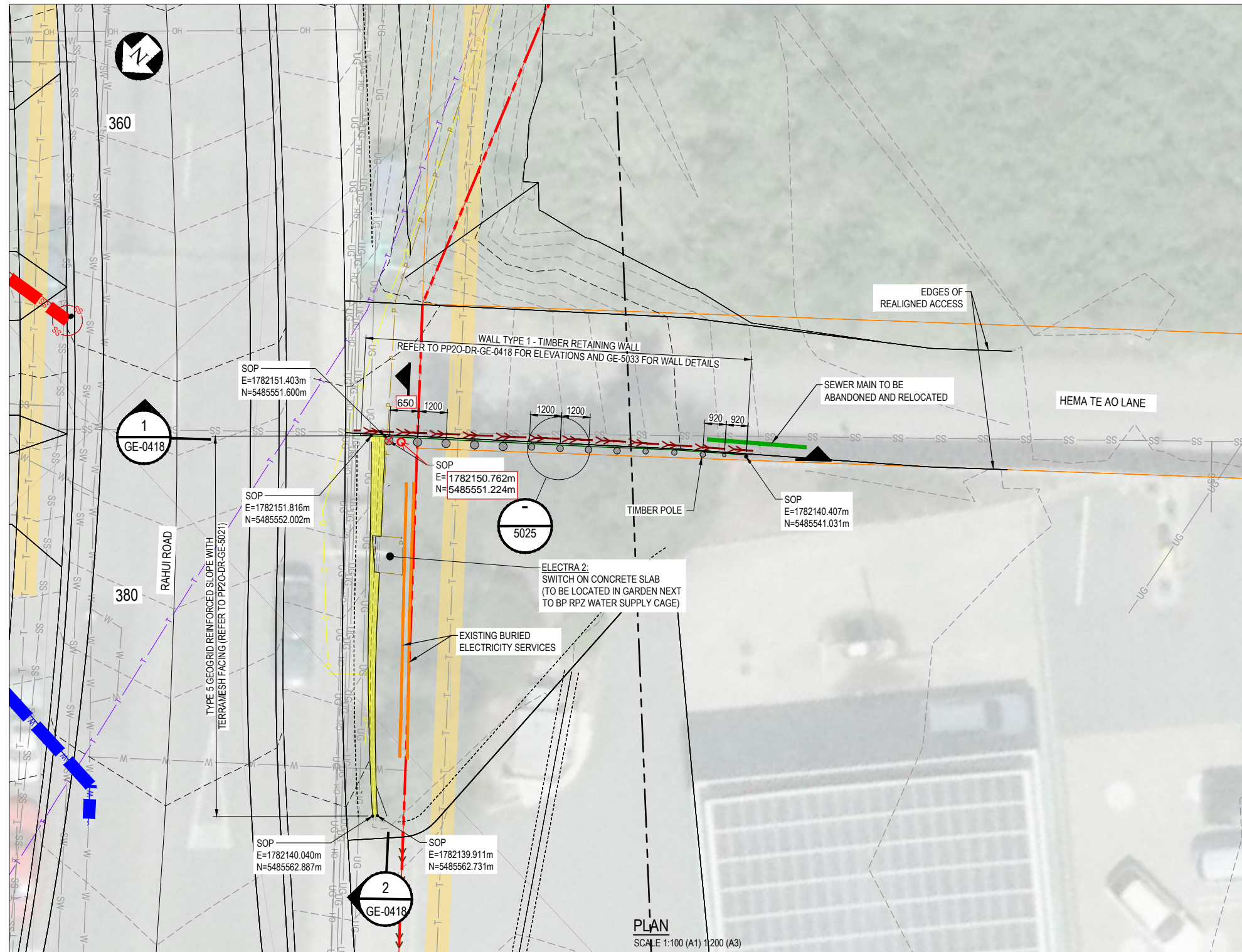
BUILDING CONSENT
NOT FOR CONSTRUCTION

Scale (A1) AS SHOWN		Design	R. Ramilo	23.08.18	Approved For Construction
Scale (A3) 1/2 SHOWN		Drawn	G. Down	23.08.18	
		Dwg Verifier			Date
		Dwg Check			
		* Refer to Original Hardcopy for Signature			

Peka Peka to Otaki Expressway

Subject:	EARTHWORKS		Discipline:	GEOTECHNICAL
Title:	STANDARD DETAIL TYPE 2 - GABION WALL		Drawing No.:	PP20-DR-GE-5031
			Rev.:	B

Document No. R:\3000 - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\GEO\UPDATES\PP20-DR-GE-5031.DWG

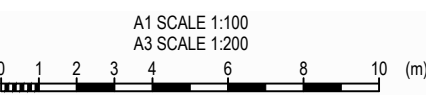


LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- TERRAMESH FACING TO SLOPE
- T CHORUS TELECOM
- P ELECTRA UNDERGROUND POWER CABLE
- OH ELECTRA OVERHEAD POWER CABLE
- >>> PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- >>> RETAINING WALL SUBSOIL DRAIN
- >>> DISH DRAIN
- EXISTING CULVERTS
- EXISTING STREAM
- STREAM DIVERSION / FLOOD DIVERSION CHANNELS
- W AS BUILT WATER PIPE
- SS AS BUILT SEWER PIPE

EXISTING SERVICES LEGEND:

- +++++ RAIL
- T CHORUS TELECOM
- UG ELECTRA UNDERGROUND POWER CABLE
- OH ELECTRA OVERHEAD POWER CABLE
- 11kV 11KV POWER CABLE
- 33kV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- SS WASTEWATER PIPE
- SW STORMWATER PIPE
- X X X SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED



- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - REFER TO DRAWINGS PP20-DR-GE-0411 FOR ELEVATION.
 - REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5033 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
 - SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

MARKUP HISTORY

Ref:	By:	Date:	Comment:
1.	JW	08/08/2019	FCCL-NTCN-001350

NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
RED LINE

ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	JW	VS		08/08/2019

Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:100	R.Ramilo	R.Townsend		19.11.18	B.Symms
Scale (A3) 1:200		R.Hillier		22.05.19	
		G.Down		22.05.19	

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION

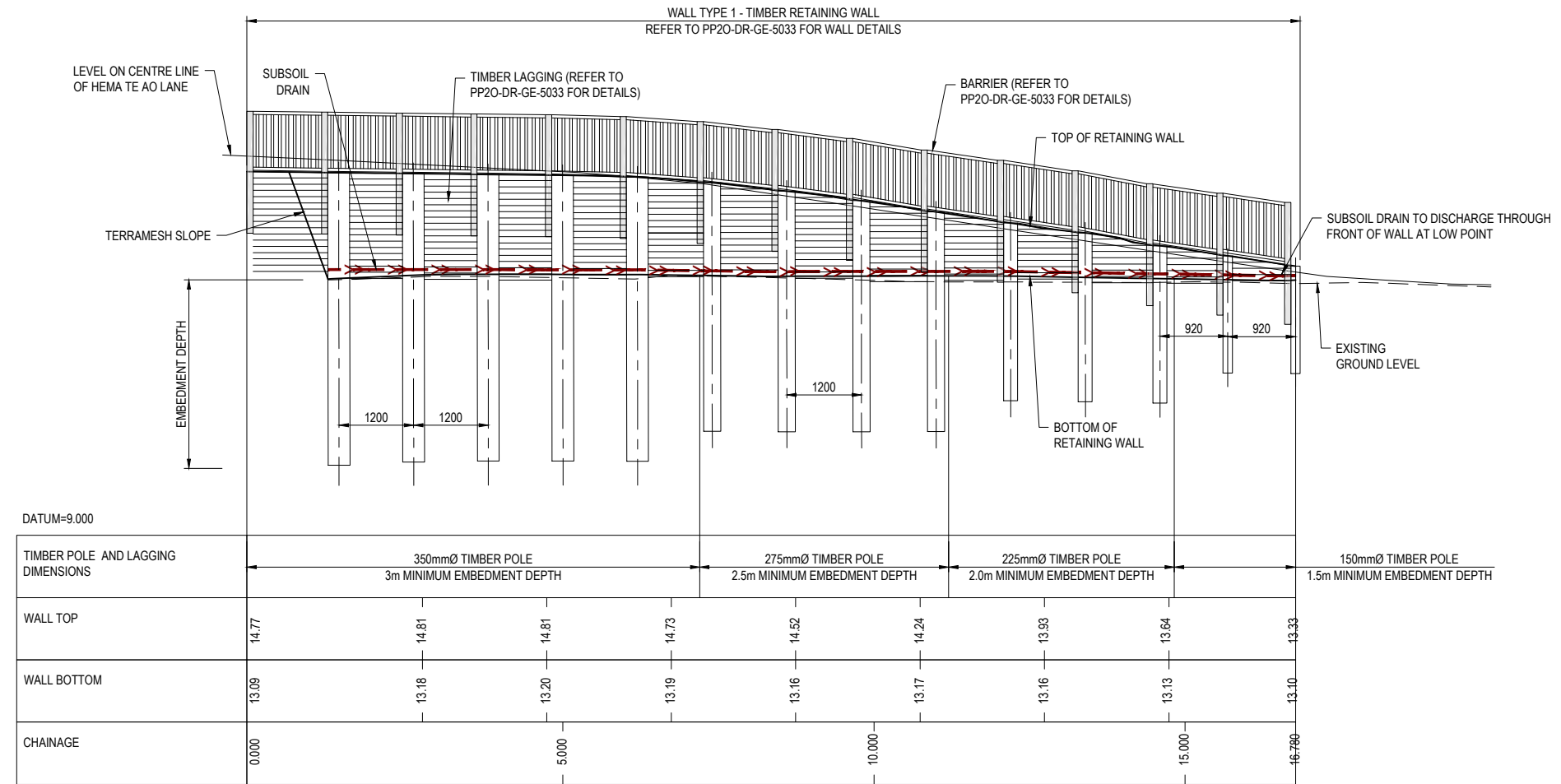
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

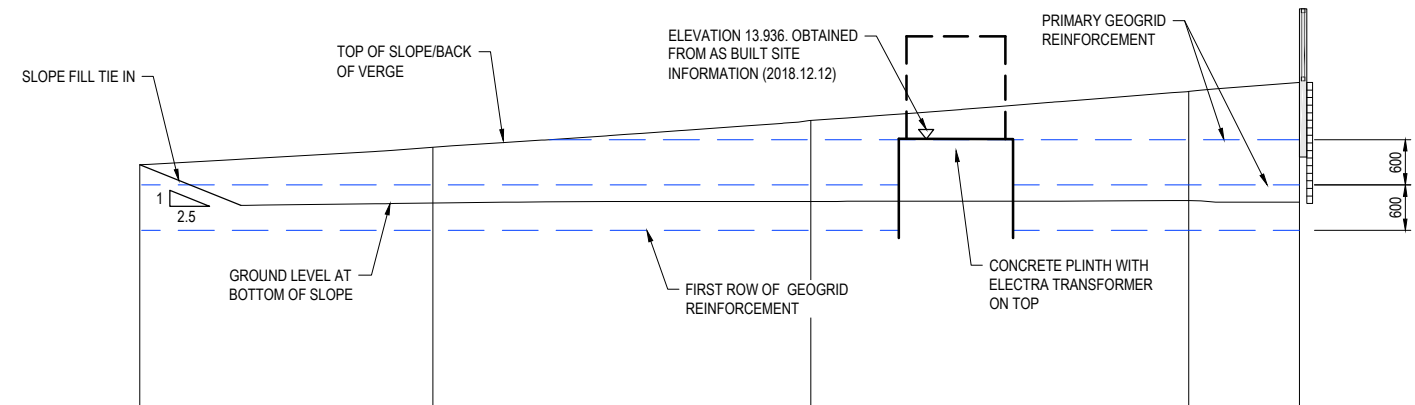
BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS
Title:	BP RETAINING WALL AND SLOPE PLAN

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0417
Rev:	RL1



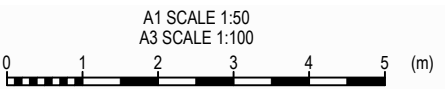
1 HEMA TE AO LANE
GE-0417 TIMBER RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)



DATUM= 10.000																													
GEOGRID TYPE	TYPE 5 GEOGRID SLOPE REFER TO DRG. No. PP20-DR-GE-5021																												
TOP OF SLOPE	13.616	13.622	13.685	13.705	13.783	13.809	13.866	13.910	13.946	14.001	14.003	14.034	14.075	14.129	14.165	14.181	14.228	14.274	14.305	14.347	14.386	14.442	14.454	14.508	14.568	14.584	14.621	14.770	
BOTTOM OF SLOPE	13.068	13.069	13.081	13.085	13.101	13.104	13.115	13.123	13.127	13.132	13.133	13.133	13.133	13.133	13.133	13.133	13.133	13.133	13.134	13.134	13.134	13.134	13.136	13.137	13.141	13.146	13.146	13.122	13.090
CHAINAGE ALONG RAHUI ROAD	-388.874						-385.000										-380.000									-375.000		373.538	
ELEVATION OF BOTTOM GEOGRID	12.75						12.75										12.75									12.75		12.75	

2 RAHUI ROAD
GE-0417 GEOGRID SLOPE - ELEVATION
1:50 (A1) 1:100 (A3)

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5025 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
 - WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON DRAWINGS ARE INDICATIVE ONLY AND MAY NOT REPRESENT THE SERVICES PRESENT. CONTRACTOR TO POTHOLE FOR ALL SERVICES.
 - POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	22.05.19

Design	R. Ramilo	19.11.18	Approved For Construction
Drawn	R. Townsend	19.11.18	B. Symmans
Dwg Verifier	R. Hillier	22.05.19	
Dwg Check	G. Down	22.05.19	Date 22.09.19

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKA TŌHIMĀ

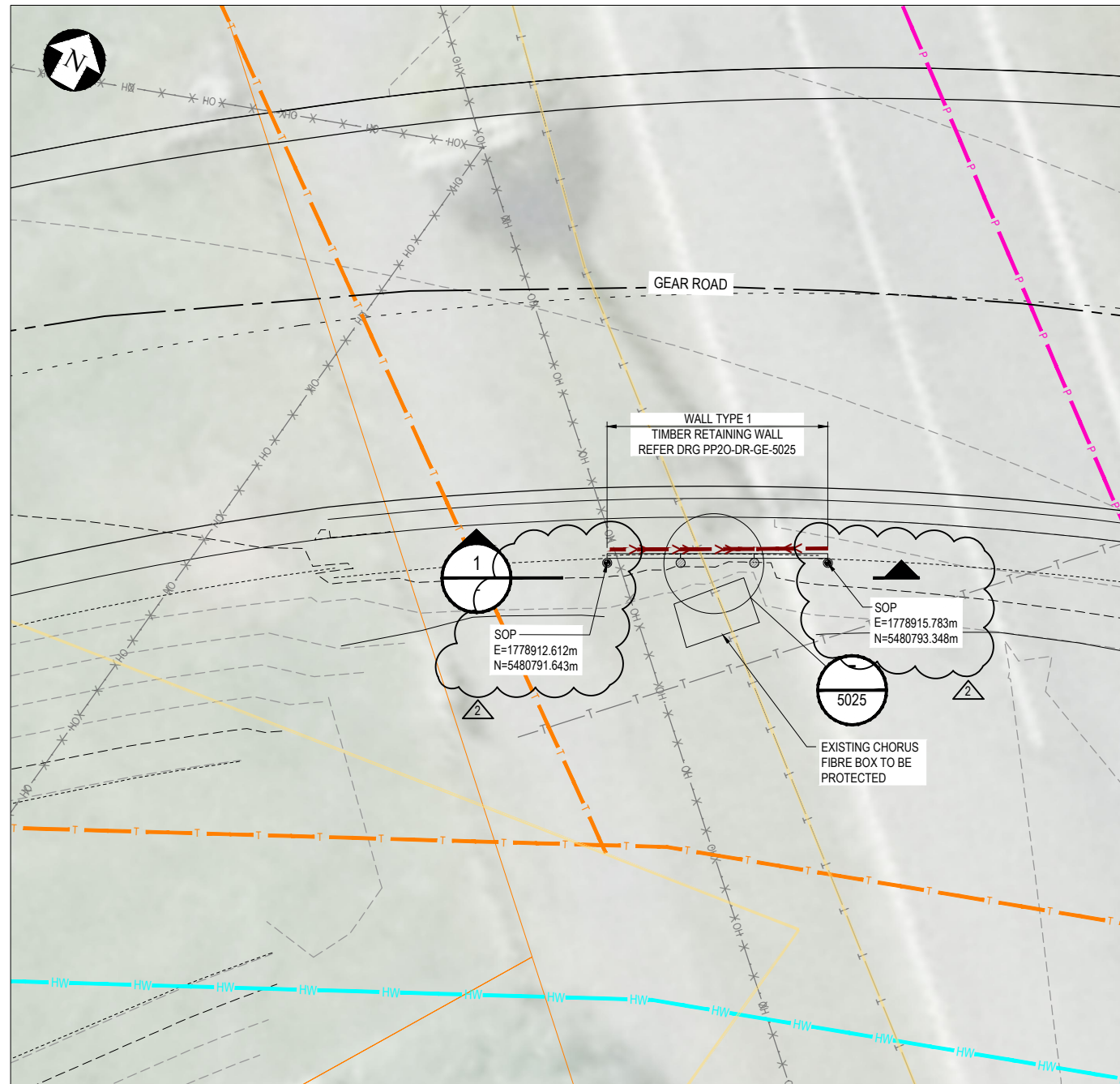
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

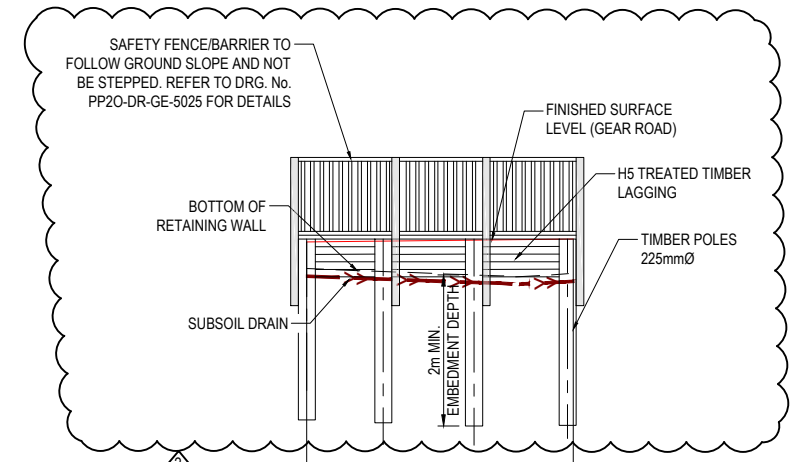
BECA **TFT** **Tonkin+Taylor**

Subject:	EARTHWORKS
Title:	BP RETAINING WALL AND SLOPE ELEVATIONS

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0418
Rev.:	1



PLAN
SCALE 1:50 (A1) 1:100 (A3)



DATUM = 14.00

CHAINAGE	32+113	38+947
FINISHED SURFACE LEVEL (GEAR ROAD VERGE)	20+020	20+058
BOTTOM OF RETAINING WALL	19+67	19+57

1 GEAR ROAD
RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)

NOTES:

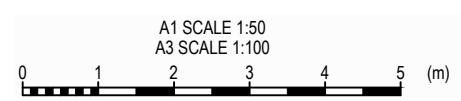
- REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5025 FOR TIMBER POLE DETAILS.

LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- STEEL POLE RETAINING WALL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- WATER SUPPLY PIPE (HAUTERE)
- PAVEMENT SUB-SOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- RETAINING WALL SUBSOIL DRAIN

EXISTING SERVICES LEGEND:

- RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11KV POWER CABLE
- 33KV POWER CABLE
- FIRST GAS
- WATER SUPPLY PIPE (HAUTERE)
- ARCUS WATER SUPPLY PIPE
- WATER SUPPLY PIPE
- WASTEWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
2	SETTING OUT POINTS, SAFETY FENCE AND NOTATION ADDED	GD	RR	BS	6.12.18
1	FOR CONSTRUCTION	LW	RC	BS	1.03.18

Scale (A1)	Design	Drawn	14.02.18	Approved For Construction
1:50	R.Ramilo	L.Wang	14.02.18	B.Symmans
Scale (A3)	Design	Drawn	1.03.18	Date
1:100	R.Hillier	G.Down	1.03.18	1.03.18

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION

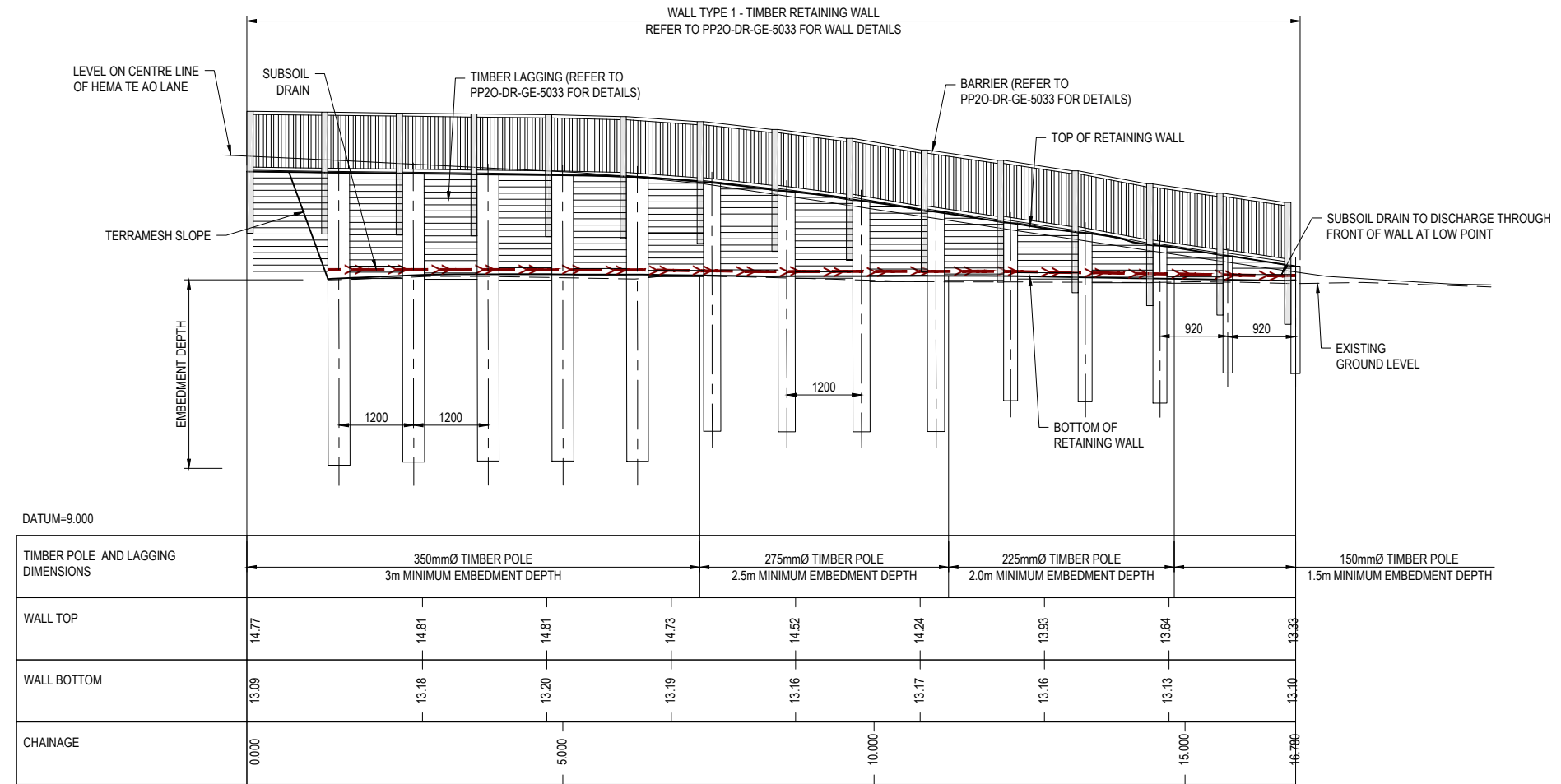
Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

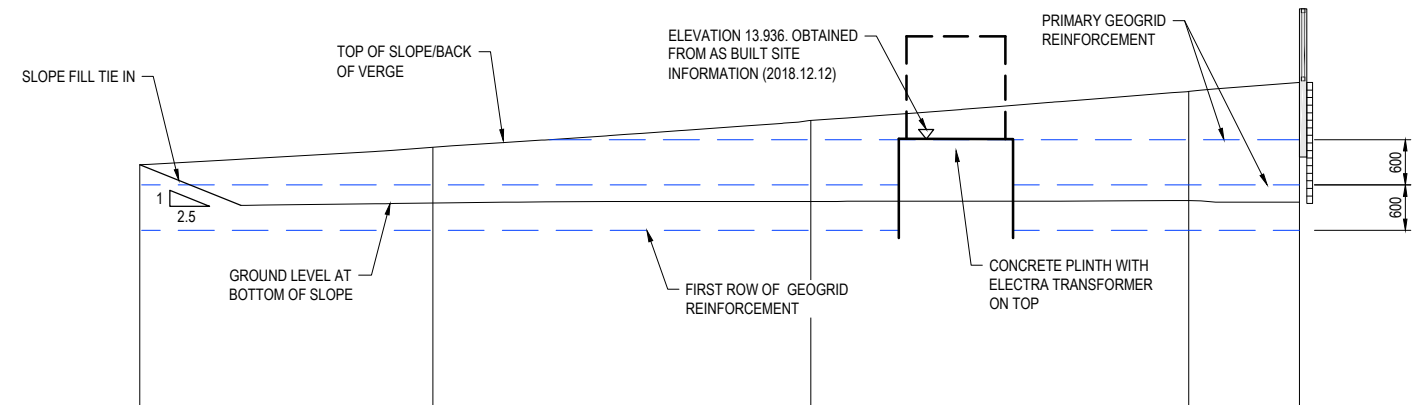
BECA **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	GEAR ROAD TIMBER RETAINING WALL - PLAN & ELEVATION	Drawing No.:	PP20-DR-GE-0423
		Rev.:	2

Document No. R3000 - DESIGN DEVELOPMENT GENERAL/09 CAD/DRAWINGS/GEOTECH/PP20-DR-GE-0421 & 0423.DWG



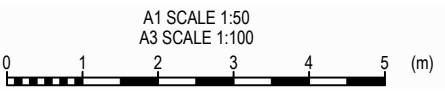
1 HEMA TE AO LANE
GE-0417 TIMBER RETAINING WALL ELEVATION
1:50 (A1) 1:100 (A3)



DATUM= 10.000																													
GEOGRID TYPE	TYPE 5 GEOGRID SLOPE REFER TO DRG. No. PP20-DR-GE-5021																												
TOP OF SLOPE	13.616	13.622	13.685	13.705	13.783	13.809	13.866	13.910	13.946	14.001	14.003	14.034	14.075	14.129	14.165	14.181	14.228	14.274	14.305	14.347	14.386	14.442	14.454	14.508	14.568	14.584	14.621	14.770	
BOTTOM OF SLOPE	13.068	13.069	13.081	13.085	13.101	13.104	13.115	13.123	13.127	13.132	13.133	13.133	13.133	13.133	13.133	13.133	13.133	13.134	13.134	13.134	13.134	13.136	13.137	13.141	13.146	13.146	13.146	13.122	13.090
CHAINAGE ALONG RAHUI ROAD	-388.874						-385.000										-380.000									-375.000		373.538	
ELEVATION OF BOTTOM GEOGRID	12.75						12.75										12.75									12.75		12.75	

2 RAHUI ROAD
GE-0417 GEOGRID SLOPE - ELEVATION
1:50 (A1) 1:100 (A3)

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5025 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
 - WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON DRAWINGS ARE INDICATIVE ONLY AND MAY NOT REPRESENT THE SERVICES PRESENT. CONTRACTOR TO POTHOLE FOR ALL SERVICES.
 - POLE LENGTH TO BE CONFIRMED ON SITE BY DESIGNER AFTER EXCAVATION OF POLE HOLES.



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	22.05.19

Design	R.Ramilo	19.11.18	Approved For Construction
Drawn	R.Townsend	19.11.18	B.Symans
Dwg Verifier	R.Hillier	22.05.19	
Dwg Check	G.Down	22.05.19	Date 22.09.19

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKA TOIHOA
Peka Peka to Otaki Expressway
Fletcher HIGGINS
BECA **TFT** **Tonkin+Taylor**

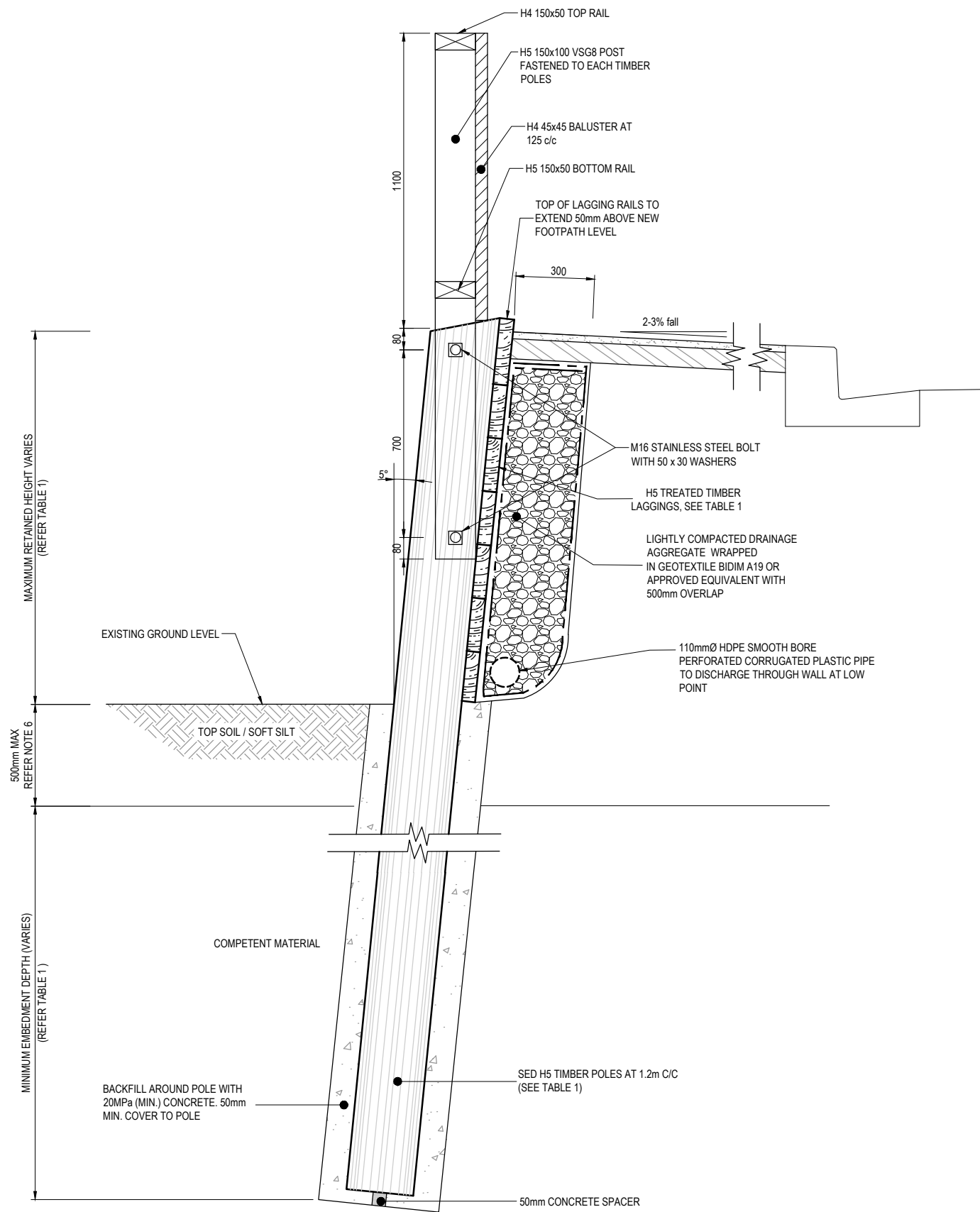
Subject:	EARTHWORKS
Title:	BP RETAINING WALL AND SLOPE ELEVATIONS

Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0418
Rev.:	1

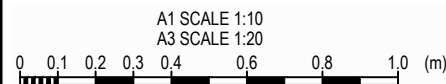
MAXIMUM RETAINED HEIGHT (m)	POLE DIMENSIONS		LAGGING DIMENSIONS (mm)
	POLE DIAMETER (mm)	MINIMUM EMBEDMENT DEPTH (m)	
0.0 - 0.5	150	1.5	100 x 50
0.5 - 1.0	225	2.0	100 x 50
1.0 - 1.5	275	2.5	100 x 75
1.5 - 2.0	350	3.0	100 x 75

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL CUTS AND HOLES IN TIMBER ARE TO BE TREATED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. CONTRACTOR TO SET OUT WORKS. DESIGNER TO CONFIRM SET OUT OF ALL RETAINING WALL WORKS PRIOR TO CONSTRUCTION COMMENCING.
4. CONTRACTOR TO LOCATE AND PROTECT OR REINSTATE ALL BURIED SERVICES. CONTRACTOR TO POT HOLE FOR ALL SERVICES.
5. POLE LENGTH TO BE CONFIRMED ON SITE BY THE DESIGNER AFTER EXCAVATION OF POLE HOLES.
6. IF DEPTH TO COMPETENT MATERIAL GREATER THAN 0.5m ADVISE DESIGNER. POLE DIAMETER AND EMBEDMENT MAY NEED TO BE INCREASED.



TIMBER RETAINING WALL - TYPE 1
SCALE: 1:10 (A1) 1:20 (A3)



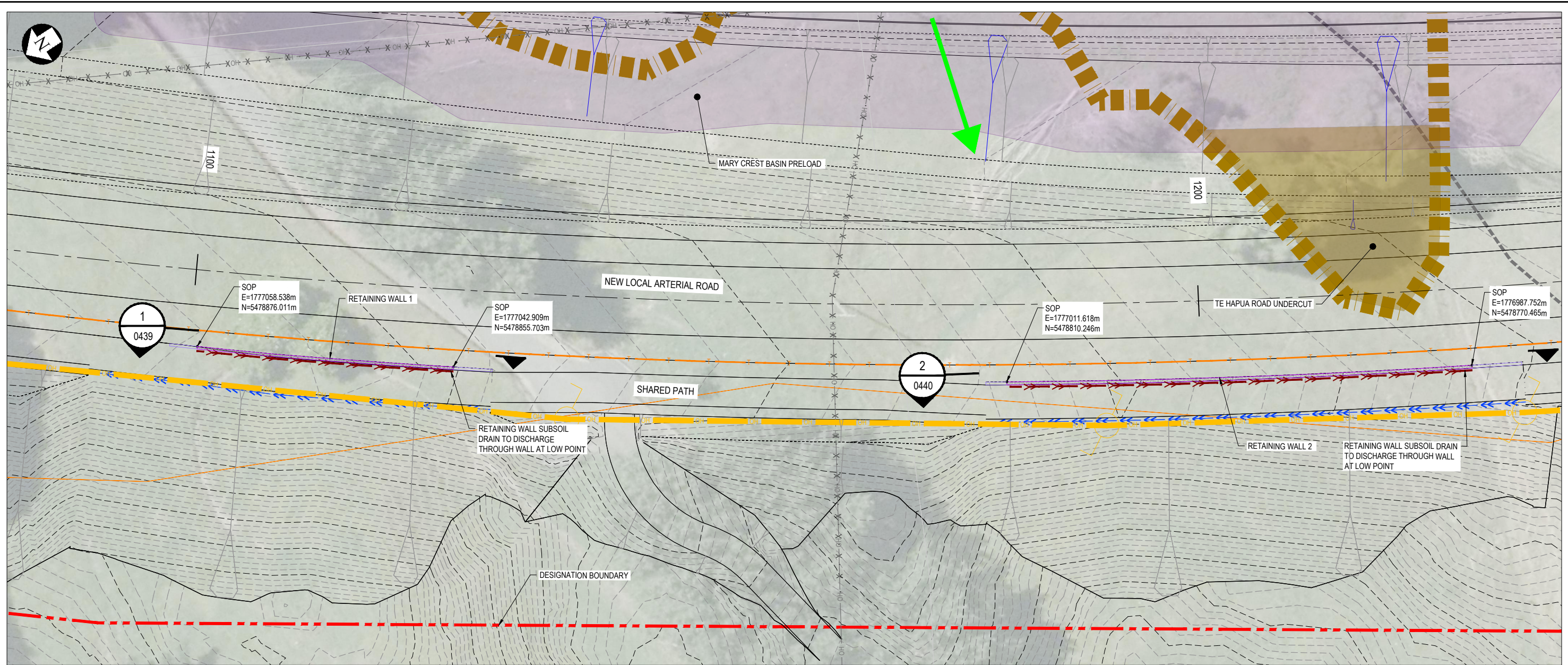
No.	Revision	By	Chk	Appd	Date
4	WALL TYPE ADDED	LW	RC	BS	21.06.18
3	NOTATION MODIFIED AS SHOWN	GD	RC	BS	24.04.18
2	UPDATED TABLE 1 AND NOTES	LW	RC	BS	27.03.18
1	ISSUED FOR CONSTRUCTION	RMT	RC	BS	1.03.18

Scale	Design	Drawn	Checked	Date	Approved For Construction
1:10	R. Ramilo	J. Libeau	R. Hillier	1.11.17	B. Symmans
1:20	G. Down	G. Down	G. Down	1.03.18	

* Refer to Original Hardcopy for Signature

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	STANDARD DETAIL WALL TYPE 1 - TIMBER RETAINING WALL	Drawing No.:	PP20-DR-GE-5025
		Rev.:	4

FOR CONSTRUCTION
 ORIGINAL IN COLOUR



PLAN
SCALE: 1:200 (A1) 1:400 (A3)

LEGEND:

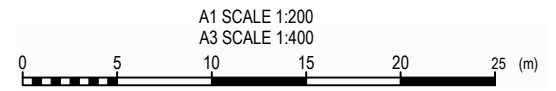
- UNDERCUT PEAT AND REPLACE WITH STRUCTURAL FILL
- PRELOAD AREA
- EXTENT OF PEAT
- PAVEMENT SUBSOIL DRAIN
- RETAINING WALL SUBSOIL DRAIN
- PRE-LOAD SLOPE SUBSOIL DRAIN
- WETLAND SUBSOIL DRAIN
- DESIGNATION BOUNDARY
- PROPERTY BOUNDARY
- PROPOSED CHORUS TELECOM
- PROPOSED OVERHEAD POWER
- FILL SLOPE
- CUT SLOPE
- SERVICE TO BE ABANDONED
- L-SHAPED RETAINING WALL
- LOCATION OF NEW POWER POLE

EXISTING SERVICES LEGEND:

- RAIL
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11KV POWER CABLE
- 33KV POWER CABLE
- FIRST GAS
- WATER SUPPLY PIPE (HAUTERE)
- ARCUS WATER SUPPLY PIPE
- WATER SUPPLY PIPE
- WASTEWATER PIPE
- STORMWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

NOTES:

- SETOUT POINTS ARE INDICATIVE ONLY. RETAINING WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.



NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUE FOR CONSTRUCTION	GD	RC	BS	10.12.18

Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:200	R.Ramilo	L.Wang	R.Hillier	21.09.18	B.Symmans
Scale (A3) 1:400	G.Down	G.Down	G.Down	10.12.18	

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAIKATO REGION

Peka Peka to Ōtaki Expressway

Fletcher HIGGINS

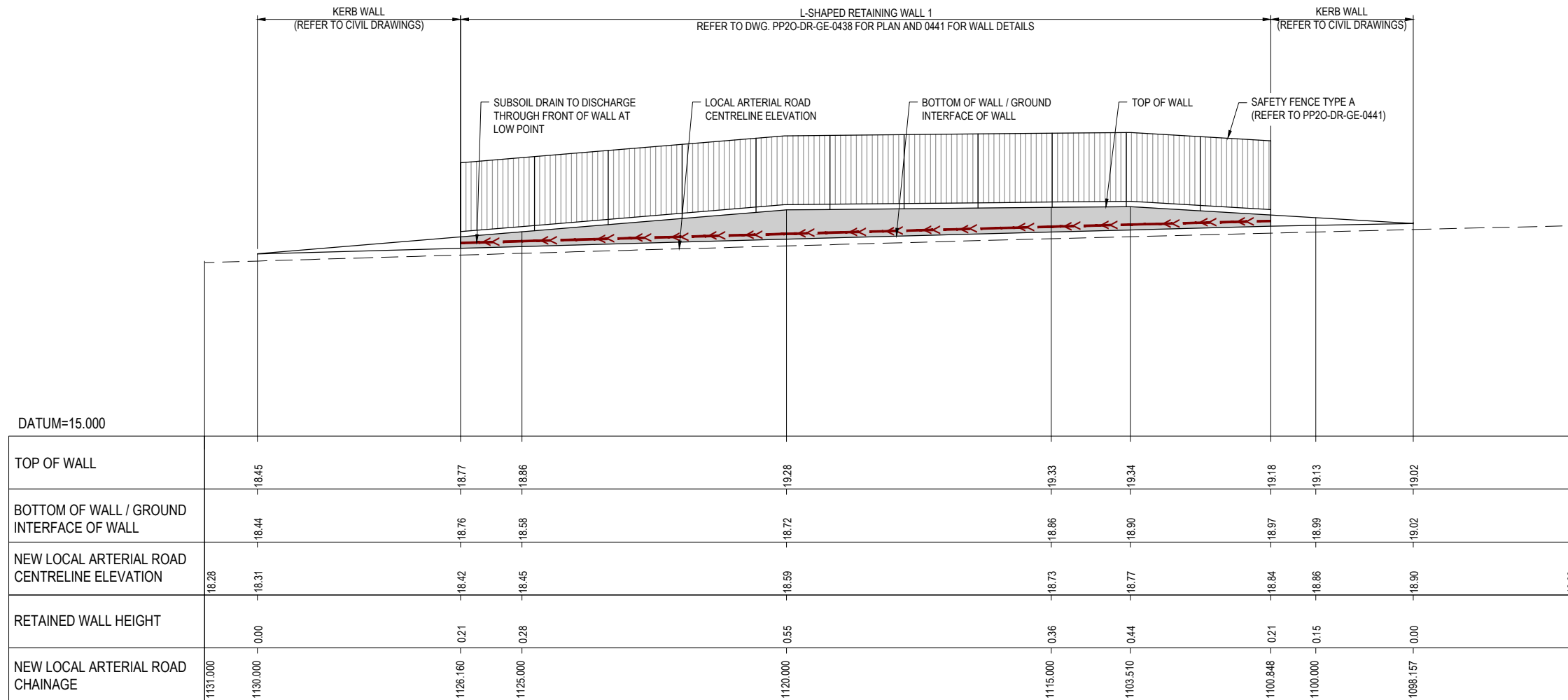
BECA **Tonkin+Taylor**

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	LOCAL ARTERIAL ROAD L-SHAPED RETAINING WALL 1 AND 2 PLAN	Drawing No.:	PP20-DR-GE-0438
Rev.:	1		

Document No. PP20-DR-GE-0438.DWG - DESIGN DEVELOPMENT GENERAL/09 CAD/DRAWINGS/GEOTECHNICAL/PP20-DR-GE-0438.DWG

NOTES:

1. REFER TO DRAWING PP20-DR-GE-0441 FOR RETAINING WALL SECTION AND DETAILS.
2. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
3. CONSTRUCTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES.
4. CONSTRUCTOR TO ENSURE ALL EXCAVATIONS ARE STABLE.



1 SECTION
0438 SCALE: 1:50 (A1) 1:100 (A3)

NOTE:
DATUM: NZVD 2009 ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	7.12.18

Design	R.Ramilo	21.09.18	Approved For Construction
Drawn	L.Wang	21.09.18	B.Symmans
Dwg Verifier	R.Hillier	7.12.18	
Dwg Check	G.Down	7.12.18	Date 7.12.18

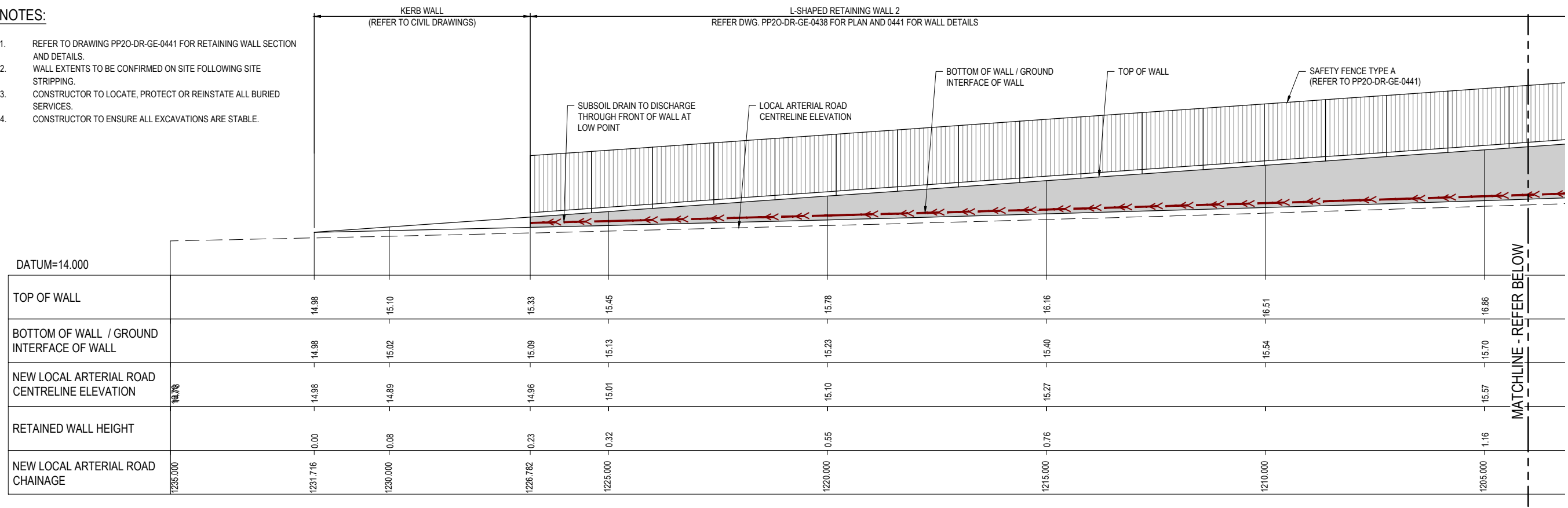
* Refer to Original Hardcopy for Signature

Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	LOCAL ARTERIAL ROAD L-SHAPED RETAINING WALL 1 ELEVATION	Drawing No.:	PP20-DR-GE-0439

Rev.	1
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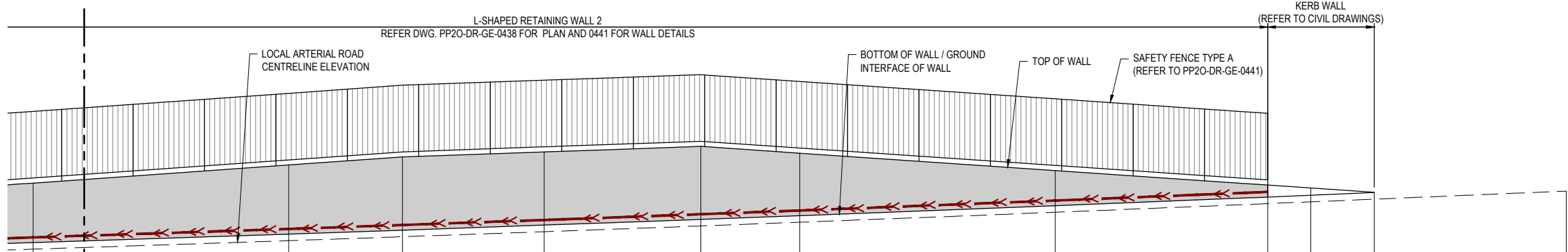
NOTES:

- REFER TO DRAWING PP20-DR-GE-0441 FOR RETAINING WALL SECTION AND DETAILS.
- WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
- CONSTRUCTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES.
- CONSTRUCTOR TO ENSURE ALL EXCAVATIONS ARE STABLE.



		14.98	15.10	15.33	15.45	15.78	16.16	16.51	16.86
DATUM=14.000									
TOP OF WALL		14.98	15.10	15.33	15.45	15.78	16.16	16.51	16.86
BOTTOM OF WALL / GROUND INTERFACE OF WALL		14.96	15.02	15.09	15.13	15.23	15.40	15.54	15.70
NEW LOCAL ARTERIAL ROAD CENTRELINE ELEVATION	14.78	14.98	14.89	14.96	15.01	15.10	15.27	15.57	15.77
RETAINED WALL HEIGHT		-0.00	-0.08	-0.23	-0.32	-0.55	-0.76	-1.16	-1.16
NEW LOCAL ARTERIAL ROAD CHAINAGE	1235.000	1231.716	1230.000	1226.782	1225.000	1220.000	1215.000	1210.000	1205.000

2 SECTION
0438 SCALE: 1:50 (A1) 1:100 (A3)



		16.86	17.21	17.37	17.47	17.58	17.45	17.11	16.82	16.77	16.68
DATUM=14.000											
TOP OF WALL		16.86	17.21	17.37	17.47	17.58	17.45	17.11	16.82	16.77	16.68
BOTTOM OF WALL / GROUND INTERFACE OF WALL		15.70	15.87	15.94	16.04	16.15	16.23	16.42	16.59	16.62	16.68
NEW LOCAL ARTERIAL ROAD CENTRELINE ELEVATION	15.57	15.57	15.74	15.81	15.91	16.02	16.10	16.29	16.46	16.50	16.55
RETAINED WALL HEIGHT	1.16	1.35	1.43	1.43	1.43	1.22	0.69	0.23	0.23	0.17	0.13
NEW LOCAL ARTERIAL ROAD CHAINAGE	1205.000	1200.000	1197.773	1195.000	1191.935	1190.000	1185.000	1180.842	1180.000	1178.782	1175.000

2 SECTION - CONTINUED
0438 SCALE: 1:50 (A1) 1:100 (A3)

NOTE:
DATUM: NZVD 2009 ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	GD	RC	BS	7.12.18

Scale (A1)	Design	Drawn	Dwg Check	Date	Approved For Construction
1:100	R. Ramilo	L. Wang	R. Hillier	21.09.18	B. Symmans
1:200	G. Down			7.12.18	

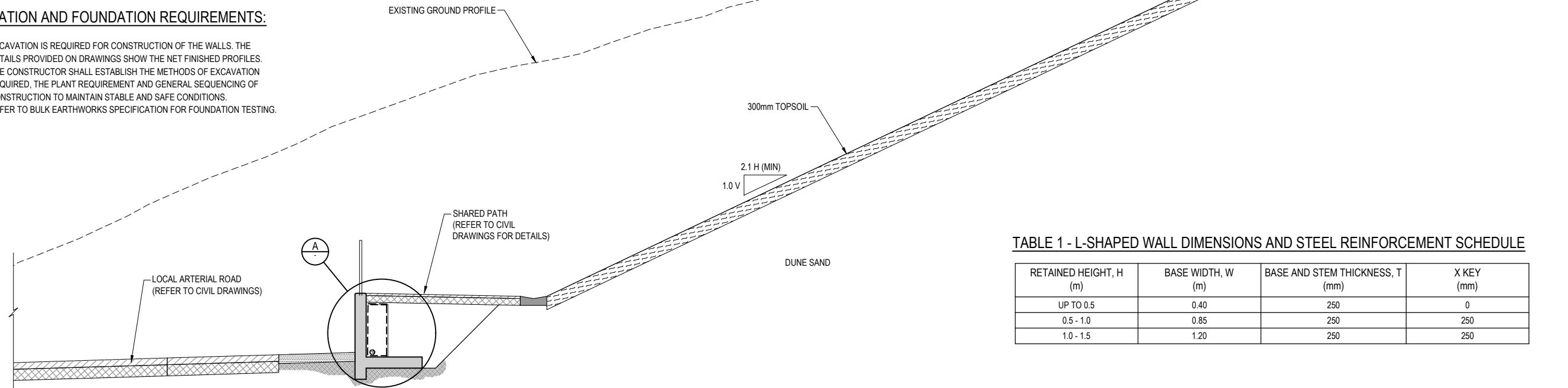
Subject:	EARTHWORKS	Discipline:	GEOTECHNICAL
Title:	LOCAL ARTERIAL ROAD L-SHAPED RETAINING WALL 2 ELEVATION	Drawing No.:	PP20-DR-GE-0440
		Rev.:	1

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
2. DIMENSIONS MUST NOT BE SCALED FROM THESE DRAWINGS.
3. THE CONSTRUCTOR IS TO ENSURE ALL EXCAVATIONS ARE STABLE.
4. THE CONSTRUCTOR IS TO CONFIRM THE POSITION OF EXISTING AND PROPOSED NEW SERVICES PRIOR TO CONSTRUCTION AND ADVISE THE DESIGNER WHERE WORKS ADDITIONAL TO THOSE SHOWN ARE REQUIRED TO ACCOMMODATE THOSE SERVICES.
5. REFER TO DRG. Nos. PP20-DR-SA-0001 TO 0003 FOR GENERAL NOTES.
6. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH (f_c) SHALL BE 40MPa.
7. MINIMUM CONCRETE COVER TO REINFORCEMENT SHALL BE 50mm UNLESS STATED OTHERWISE. MINIMUM CONCRETE COVER TO REINFORCEMENT SHALL BE 75mm WHERE CAST AGAINST GROUND.

EXCAVATION AND FOUNDATION REQUIREMENTS:

1. EXCAVATION IS REQUIRED FOR CONSTRUCTION OF THE WALLS. THE DETAILS PROVIDED ON DRAWINGS SHOW THE NET FINISHED PROFILES. THE CONSTRUCTOR SHALL ESTABLISH THE METHODS OF EXCAVATION REQUIRED, THE PLANT REQUIREMENT AND GENERAL SEQUENCING OF CONSTRUCTION TO MAINTAIN STABLE AND SAFE CONDITIONS.
2. REFER TO BULK EARTHWORKS SPECIFICATION FOR FOUNDATION TESTING.



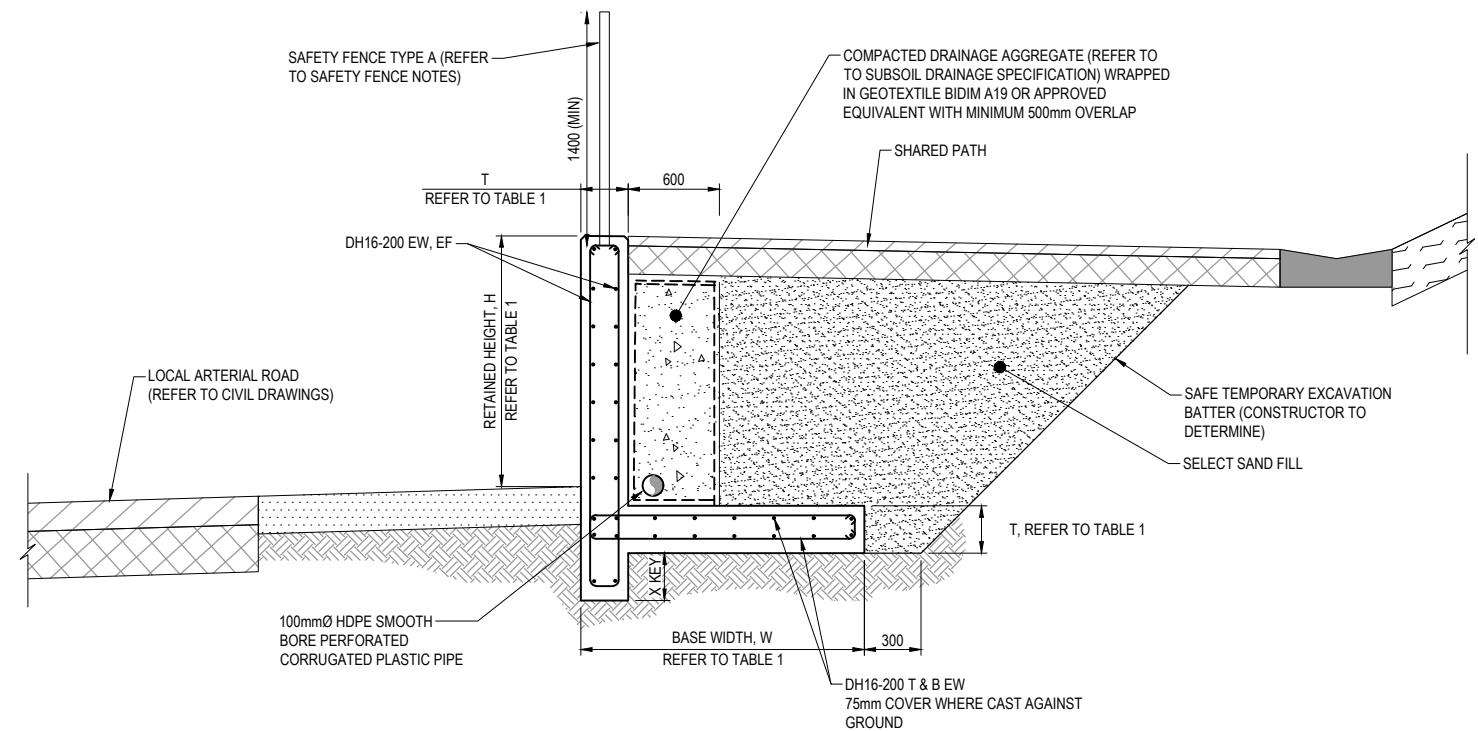
TYPICAL SECTION OF RETAINING WALL
SCALE 1:50 AT A1 (1:100 AT A3)

TABLE 1 - L-SHAPED WALL DIMENSIONS AND STEEL REINFORCEMENT SCHEDULE

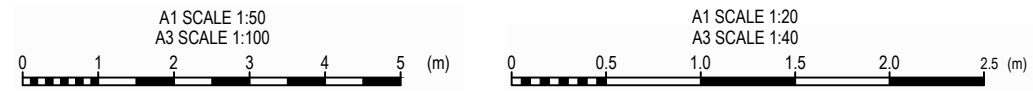
RETAINED HEIGHT, H (m)	BASE WIDTH, W (m)	BASE AND STEM THICKNESS, T (mm)	X KEY (mm)
UP TO 0.5	0.40	250	0
0.5 - 1.0	0.85	250	250
1.0 - 1.5	1.20	250	250

SAFETY FENCES:

1. TO BE COMPLIANT WITH NZBC F4 AND B1.
2. LOADS AS PER AS/NZS 1170, OCCUPANCY CLASS C3.
3. SAFETY FENCE TYPE A: REQUIRED WHERE THE RETAINING WALL HEIGHT IS >1m AND IS IN AN AREA FREQUENTED BY CHILDREN i.e. ADJACENT TO CYCLEWAY. THE SAFETY FENCE IS TO:
 - a) BE COMPLIANT WITH FIGURE 2(a) OF NZBC F4,
 - b) HAVE A MAXIMUM GAP BETWEEN VERTICAL BARS OF 100mm,
 - c) HAVE A MAXIMUM GAP BETWEEN THE TOP OF THE RETAINING WALL AND THE BOTTOM OF THE FENCE OF 100mm,
 - d) HAVE A MINIMUM HEIGHT OF 1400mm.
4. SAFETY FENCES TO BE GALVANISED STEEL (WEBFORGE MONOWILLS OR SIMILAR APPROVED).
5. CONSTRUCTOR TO SUBMIT SUPPLIER/FABRICATOR FENCE DESIGN AND SHOP DRAWINGS INCLUDING FIXINGS FOR EACH SAFETY FENCE TO THE DESIGNER PRIOR TO FABRICATION.
6. FENCES TO BE FIXED TO RETAINING WALLS. FIXING TO BE CONFIRMED BY SUPPLIER.



L-SHAPED RETAINING WALL DETAIL
SCALE 1:20 AT A1 (1:40 AT A3)



FOR CONSTRUCTION
ORIGINAL IN COLOUR

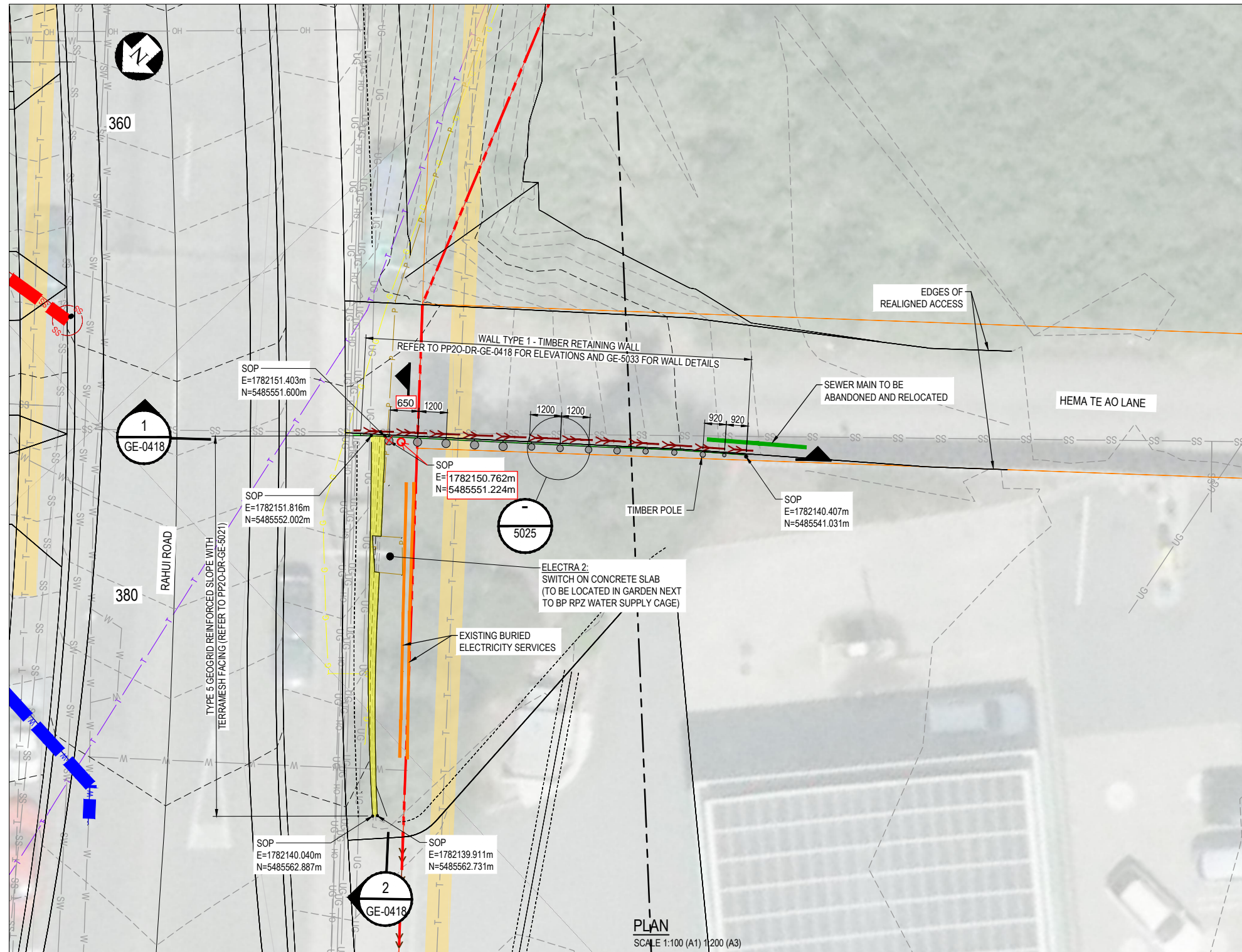
No.	Revision	By	Chk	Appd	Date
1	ISSUE FOR CONSTRUCTION	GD	RC	BS	6.12.18

Scale (A1)	Design	Date	Approved For
AS SHOWN	R.Ramilo	14.09.18	Construction
Scale (A3)	Drawn	L.Wang	14.09.18
1/2 SHOWN	Design		
	Check		

NZ TRANSPORT AGENCY | **Peka Peka to Ōtaki Expressway** | **Fletcher HIGGINS** | **BECA** | **Tonkin+Taylor**

Subject: EARTHWORKS	Discipline: GEOTECHNICAL
Title: LOCAL ARTERIAL ROAD L-SHAPED RETAINING WALL DETAIL	Drawing No. PP20-DR-GE-0441
	Rev. 1

Document No. R1000 - DESIGN DEVELOPMENT GENERAL/09 CAD/DRAWINGS/GEOTECH/PP20-DR-GE-0441.DWG

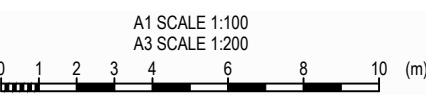


LEGEND:

- DESIGNATION BOUNDARY
- TIMBER POLE RETAINING WALL
- TERRAMESH FACING TO SLOPE
- T-T- CHORUS TELECOM
- P-P- ELECTRA UNDERGROUND POWER CABLE
- OH- ELECTRA OVERHEAD POWER CABLE
- >>> PAVEMENT SUBSOIL DRAINS
- FILL SLOPE
- CUT SLOPE
- >>> RETAINING WALL SUBSOIL DRAIN
- >>> DISH DRAIN
- EXISTING CULVERTS
- - - EXISTING STREAM
- - - STREAM DIVERSION / FLOOD DIVERSION CHANNELS
- W-W- AS BUILT WATER PIPE
- SS-SS- AS BUILT SEWER PIPE

EXISTING SERVICES LEGEND:

- + + + + + RAIL
- T- CHORUS TELECOM
- UG- ELECTRA UNDERGROUND POWER CABLE
- OH- ELECTRA OVERHEAD POWER CABLE
- 11kV- 11KV POWER CABLE
- 33kV- 33KV POWER CABLE
- G- FIRST GAS
- HW- WATER SUPPLY PIPE (HAUTERE)
- AW- ARCUS WATER SUPPLY PIPE
- W- WATER SUPPLY PIPE
- SS- WASTEWATER PIPE
- SW- STORMWATER PIPE
- X · X · X · SERVICE TO BE ABANDONED
- - - SERVICE TO BE REMOVED



- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
 - REFER TO DRAWINGS PP20-DR-GE-0411 FOR ELEVATION.
 - REFER TO STANDARD DETAIL DRAWINGS PP20-DR-GE-5033 FOR RETAINING WALL DETAILS, TIMBER POLE AND LAGGING SIZES.
 - SETOUT POINTS ARE INDICATIVE ONLY. WALL EXTENTS TO BE CONFIRMED ON SITE FOLLOWING SITE STRIPPING.
 - CONTRACTOR TO LOCATE, PROTECT OR REINSTATE ALL BURIED SERVICES. SERVICES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY AND MAY NOT REPRESENT SERVICES PRESENT. CONTRACTOR TO POT HOLE FOR ALL SERVICES.

MARKUP HISTORY

Ref:	By:	Date:	Comment:
1.	JW	08/08/2019	FCCL-NTCN-001350

NOTE:
DATUM: NZVD 2009

FOR CONSTRUCTION
RED LINE

ORIGINAL IN COLOUR

No.	Revision	By	Chk	Appd	Date
1	ISSUED FOR CONSTRUCTION	JW	VS		08/08/2019

Scale	Design	Drawn	Checked	Date	Approved For Construction
Scale (A1) 1:100	R.Ramilo	R.Townsend		19.11.18	B.Symms
Scale (A3) 1:200		R.Hillier	G.Down	22.05.19	

NZ TRANSPORT AGENCY | **Peka Peka to Ōtaki Expressway** | **Fletcher HIGGINS** | **BECA** | **Tonkin+Taylor**

Subject:	EARTHWORKS
Title:	BP RETAINING WALL AND SLOPE PLAN





Discipline:	GEOTECHNICAL
Drawing No.:	PP20-DR-GE-0417
Rev:	RL1

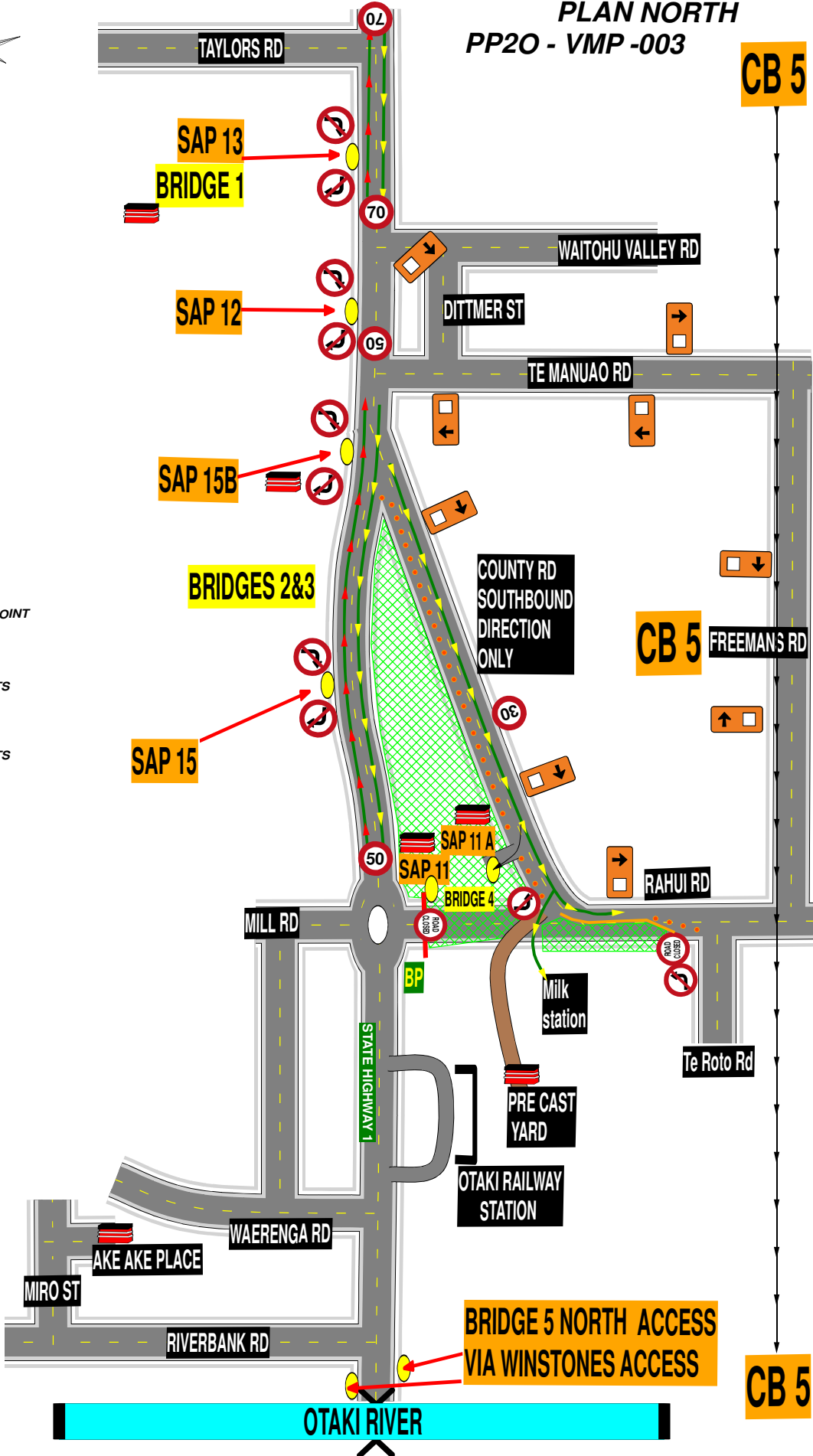
APPENDIX D: SITE ACCESS POINTS

STATE HIGHWAY 1 NORTH OF OTAKI







VEHICLE MOVEMENT PLAN NORTH PP20 - VMP -003



-  Skip Bin Locations
-  CROSS INDICATES (SAP) SITE ACCESS POINT NOT IN OPERATION
-  INDICATES APPROVED TURNING MOVEMENTS
-  INDICATES RESTRICTED TURNING MOVEMENTS



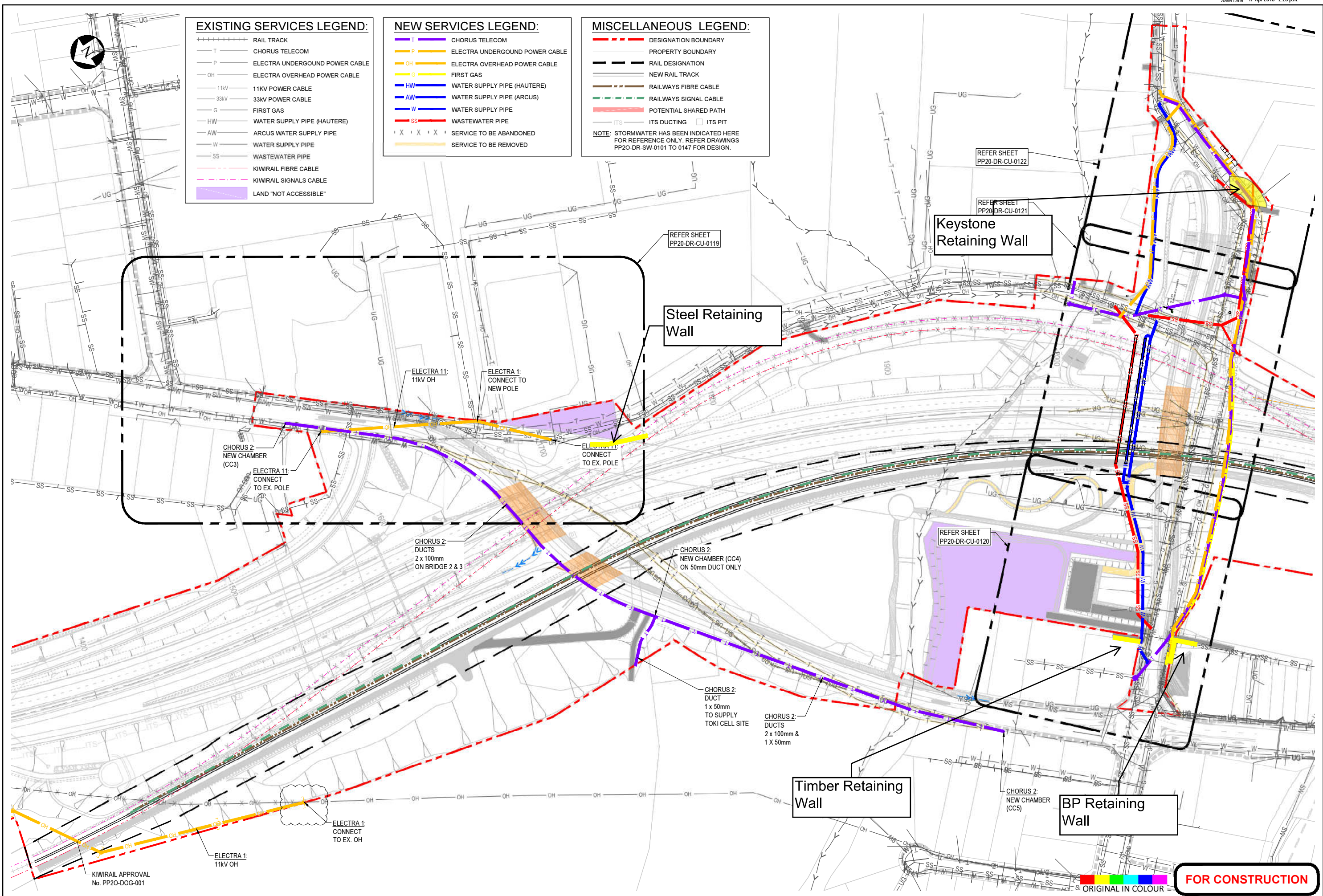
DATE : 19/06/2019

SITE ACCESS POINT #	OPERATIONS	SITE ENTRY PROTOCOL	SITE CONTACT	CB Channel
13  BRIDGE 1 NORTH	- Bridge 1 North - RE Wall build	- Beacon activated prior to site entry - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry - No Right Turn In or Out of Site	Dane Morgan - 0278390241 (STRUCTURES) Dennis McSweeney 0272488332 (Project STMS)	5
12  PIZZA PLACE BRIDGE 2	- Pizza Place - Storage/Deliveries - Access to Bridge 2 & 1 - Light Vehicle Access ONLY	- Beacon activated prior to site entry - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry - No Right Turn In or Out of Site	Martin Leitner - 0278390241 (UTILITIES) Dennis McSweeney 0272488332 (Project STMS)	5
11  BRIDGE 4 WEST & RAILWAY	- Bridge 4 WEST - CIVILS Earthworks - RE Wall Build, Concrete Pours, Beam Lifts - Access to New Rail Alignment	- Beacon Activated prior to entering site - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry	Dane Morgan - 0278390241 (STRUCTURES) Dennis McSweeney 0272488332 (Project STMS)	5
11 A  BRIDGE 4 EAST & RAILWAY	- Civil Works Rahui Rd Build - Bridge 4 EAST - RE Wall Build, Concrete Pours, Beam Lifts - Access to New Rail Alignment - Access to Pre Cast Yard	- Beacon Activated prior to entering site - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry	Dane Morgan - 0278390241 (STRUCTURES) Travis Medhurst 0276050934 (TM Supervisor)	5
15B  BRIDGE 2 Pizza Place	- Bridge 2 & Pizza Place - Pavements - Earthworks/Drainage	- Beacon activated prior to site entry - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry - No Right Turn In or Out of Site	Dane Morgan - 0278390241 (STRUCTURES) Dennis McSweeney 0272488332 (Project STMS)	5
15  BRIDGE 2/3 & RAILWAY	- Bridge 2/3 - Pavements - Earthworks/Drainage ACCESS to New Railway Works	- Beacon activated prior to site entry - "10km/h Speed Limit" - All Visitors sign into DogBox - Full PPE around grounds. - Call on CB prior to Site Entry - No Right Turn In or Out of Site	Dane Morgan - 0278390241 (STRUCTURES) Dennis McSweeney 0272488332 (Project STMS)	5

ADDITIONAL SITE CONTACTS

SIMON FIFIELD - SUPERINTENDANT (027 209 2295)
 BEN SUTTON - STRUCTURES ENGINEER (027 405 6513)
 ETHAN COLEMAN - STRUCTURES ENGINEER (027 285 9857)
 HARRY SINGH - STRUCTURES ENGINEER (027 536 8394)
 HENRY LYTTLE - CIVILS SUPERVISOR (027 266 8385)
 SHAY MOORE - PROJECT STMS (027 275 9540)
 JASON HIGHT - RAILWAY ENGINEER (027 211 7680)
 JULIA ROBERTS - PAVEMENTS ENGINEER (027 556 5284)
 MIKE SARTEN - H & S MANAGER (027 577 9379)
 POLIMIA POULOPOULOS - H & S Co Ordinator (027 587 8400)
 MACU WAQA - CIVILS ENGINEER (027 623 2456)

APPENDIX E: UTILITIES IN RELATION TO RETAINING WALLS



EXISTING SERVICES LEGEND:

- RAIL TRACK
- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- 11KV 11KV POWER CABLE
- 33KV 33KV POWER CABLE
- G FIRST GAS
- HW WATER SUPPLY PIPE (HAUTERE)
- AW ARCUS WATER SUPPLY PIPE
- W WATER SUPPLY PIPE
- SS WASTEWATER PIPE
- KIWRIL FIBRE CABLE
- KIWRIL SIGNALS CABLE
- LAND "NOT ACCESSIBLE"

NEW SERVICES LEGEND:

- CHORUS TELECOM
- ELECTRA UNDERGROUND POWER CABLE
- ELECTRA OVERHEAD POWER CABLE
- FIRST GAS
- WATER SUPPLY PIPE (HAUTERE)
- WATER SUPPLY PIPE (ARCUS)
- WATER SUPPLY PIPE
- WASTEWATER PIPE
- SERVICE TO BE ABANDONED
- SERVICE TO BE REMOVED

MISCELLANEOUS LEGEND:

- DESIGNATION BOUNDARY
- PROPERTY BOUNDARY
- RAIL DESIGNATION
- NEW RAIL TRACK
- RAILWAYS FIBRE CABLE
- RAILWAYS SIGNAL CABLE
- POTENTIAL SHARED PATH
- ITS DUCTING
- ITS PIT

NOTE: STORMWATER HAS BEEN INDICATED HERE FOR REFERENCE ONLY. REFER DRAWINGS PP20-DR-SW-0101 TO 0147 FOR DESIGN.

No.	Revision	By	Chk.	Appd.	Date
2	ISSUED FOR CONSTRUCTION	AMcL	MGY	SW	17.04.18
1	ISSUED FOR CONSTRUCTION	AMcL	MGY	BS	16.03.18

Scale (A1)	Design	Drawn	Dwg Verifier	Dwg Check	Approved For Construction
1:2000	C.HIDDLESTON 12.06.17	A.McLAUGHLIN 12.06.17	M.YARRALL 16.03.18	G.DOWN 16.03.18	B.SYMMANS 16.03.18

* Refer to Original Handcopy for Signature

ANZ TRANSPORT AGENCY
Peka Peka to Otaki Expressway
Fletcher HIGGINS
BECA **Tonkin+Taylor**

Subject:	SERVICES	Discipline:	UTILITIES
Title:	LAYOUT PLAN SHEET 03	Drawing No:	PP20-DR-CU-0103
		Rev:	2

FOR CONSTRUCTION



EXISTING SERVICES LEGEND:

-----	RAIL TRACK
— T —	CHORUS TELECOM
— P —	ELECTRA UNDERGROUND POWER CABLE
— OH —	ELECTRA OVERHEAD POWER CABLE
— 11KV —	11KV POWER CABLE
— 33KV —	33KV POWER CABLE
— G —	FIRST GAS
— HW —	WATER SUPPLY PIPE (HAUTERE)
— AW —	ARCUS WATER SUPPLY PIPE
— W —	WATER SUPPLY PIPE
— SS —	WASTEWATER PIPE
-----	KIWRAIL FIBRE CABLE
-----	KIWRAIL SIGNALS CABLE
-----	LAND "NOT ACCESSIBLE"

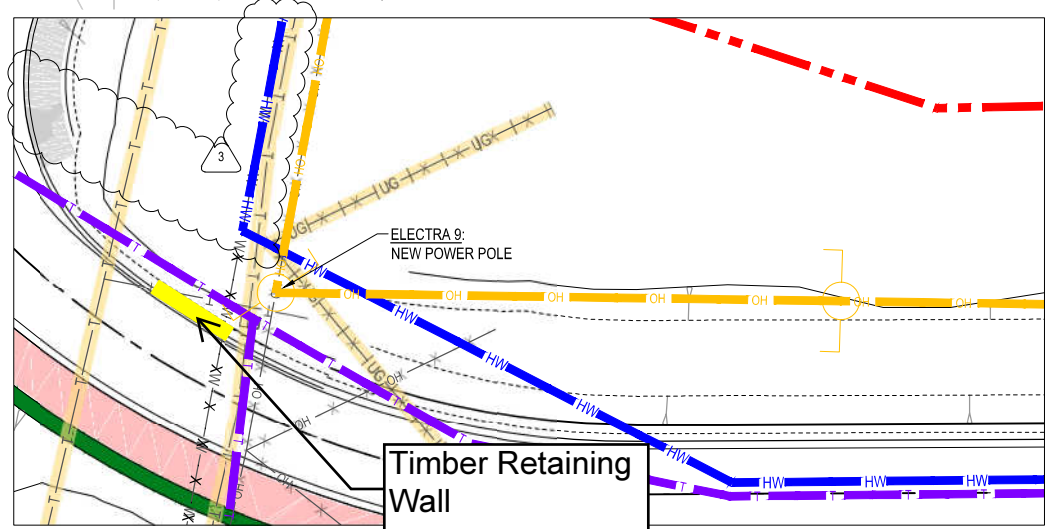
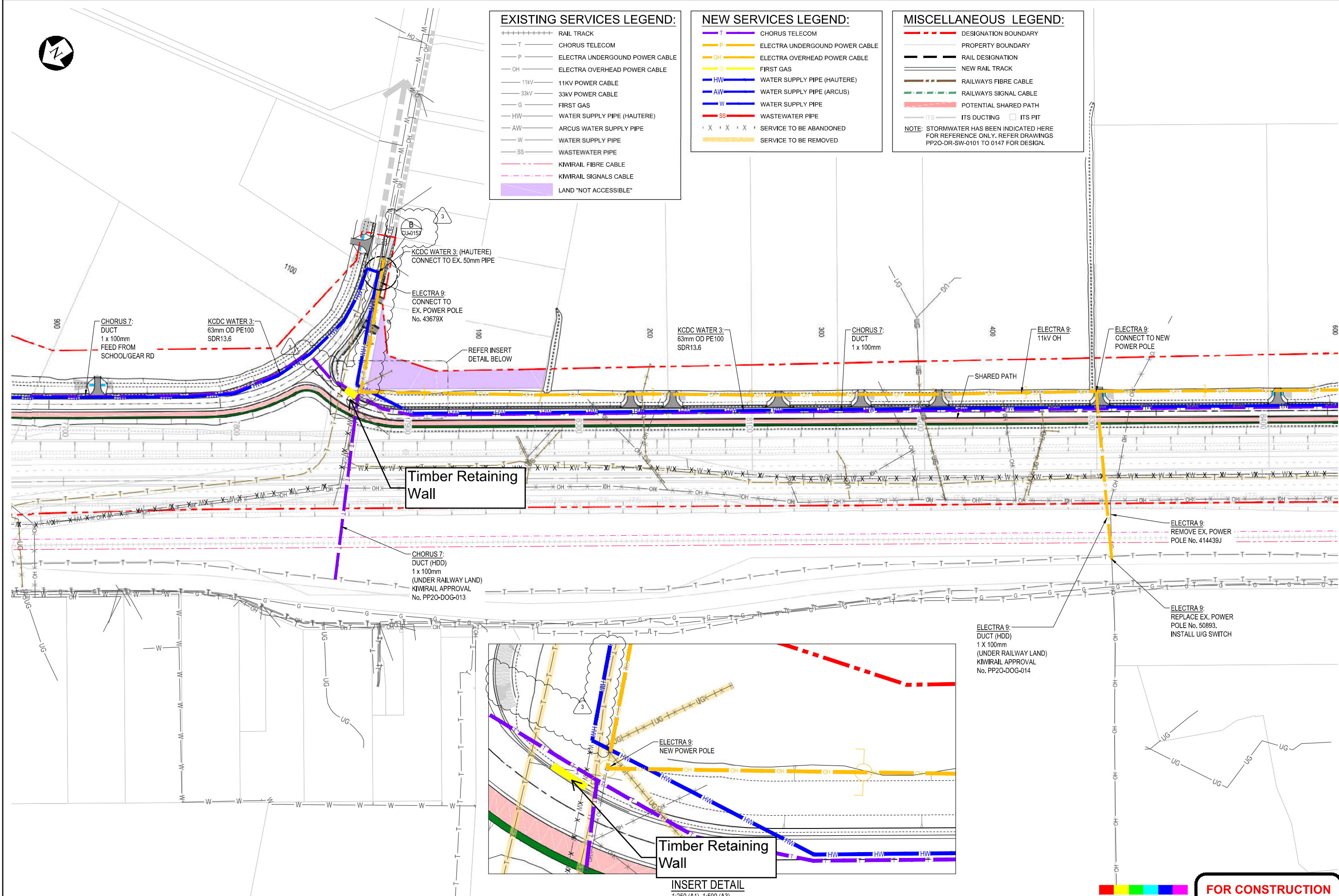
NEW SERVICES LEGEND:

— T —	CHORUS TELECOM
— P —	ELECTRA UNDERGROUND POWER CABLE
— OH —	ELECTRA OVERHEAD POWER CABLE
— G —	FIRST GAS
— HW —	WATER SUPPLY PIPE (HAUTERE)
— AW —	WATER SUPPLY PIPE (ARCUS)
— W —	WATER SUPPLY PIPE
— SS —	WASTEWATER PIPE
· X · X · X ·	SERVICE TO BE ABANDONED
-----	SERVICE TO BE REMOVED

MISCELLANEOUS LEGEND:

-----	DESIGNATION BOUNDARY
-----	PROPERTY BOUNDARY
-----	RAIL DESIGNATION
-----	NEW RAIL TRACK
-----	RAILWAYS FIBRE CABLE
-----	RAILWAYS SIGNAL CABLE
-----	POTENTIAL SHARED PATH
-----	ITS DUCTING
□	ITS PIT

NOTE: STORMWATER HAS BEEN INDICATED HERE FOR REFERENCE ONLY. REFER DRAWINGS PP20-DR-SW-0101 TO 0147 FOR DESIGN.



ORIGINAL IN COLOUR **FOR CONSTRUCTION**

No.	Revision	By	Chk	Appd	Date
3	ISSUED FOR CONSTRUCTION - NEW WATER CONNECTIONS	AMcL	MGY	SW	08.08.19
2	ISSUED FOR CONSTRUCTION	AMcL	MGY	SW	17.04.18
1	ISSUED FOR CONSTRUCTION	AMcL	MGY	BS	16.03.18

Scale (A1)	Design	Drawn	Design	Checked	Date	Approved For Construction
1:2000, 1:500	C.HIDDLESTON	A.McLAUGHLIN	12.06.17	M. YARRALL	16.03.18	B. SYMMANS
		G. DOWN	16.03.18		16.03.18	

* Refer to Original Handcopy for Signature

NZ TRANSPORT AGENCY **Peka Peka to Ōtaki Expressway** **Fletcher HIGGINS** **BECA** **Tonkin+Taylor**

Subject:	SERVICES	Discipline:	UTILITIES
Title:	LAYOUT PLAN SHEET 12	Drawing No.:	PP20-DR-CU-0112
		Rev.:	3

Document No. R19000 - DESIGN DEVELOPMENT GENERAL09 CADDRAWINGS\PP20-DR-CU-0101-0122.DWG



EXISTING SERVICES LEGEND:

+++++	RAIL TRACK
T	CHORUS TELECOM
P	ELECTRA UNDERGROUND POWER CABLE
OH	ELECTRA OVERHEAD POWER CABLE
11KV	11KV POWER CABLE
33KV	33KV POWER CABLE
G	FIRST GAS
HW	WATER SUPPLY PIPE (HAUTERE)
AW	ARCUS WATER SUPPLY PIPE
W	WATER SUPPLY PIPE
SS	WASTEWATER PIPE
---	KIWRAIL FIBRE CABLE
---	KIWRAIL SIGNALS CABLE
---	LAND "NOT ACCESSIBLE"

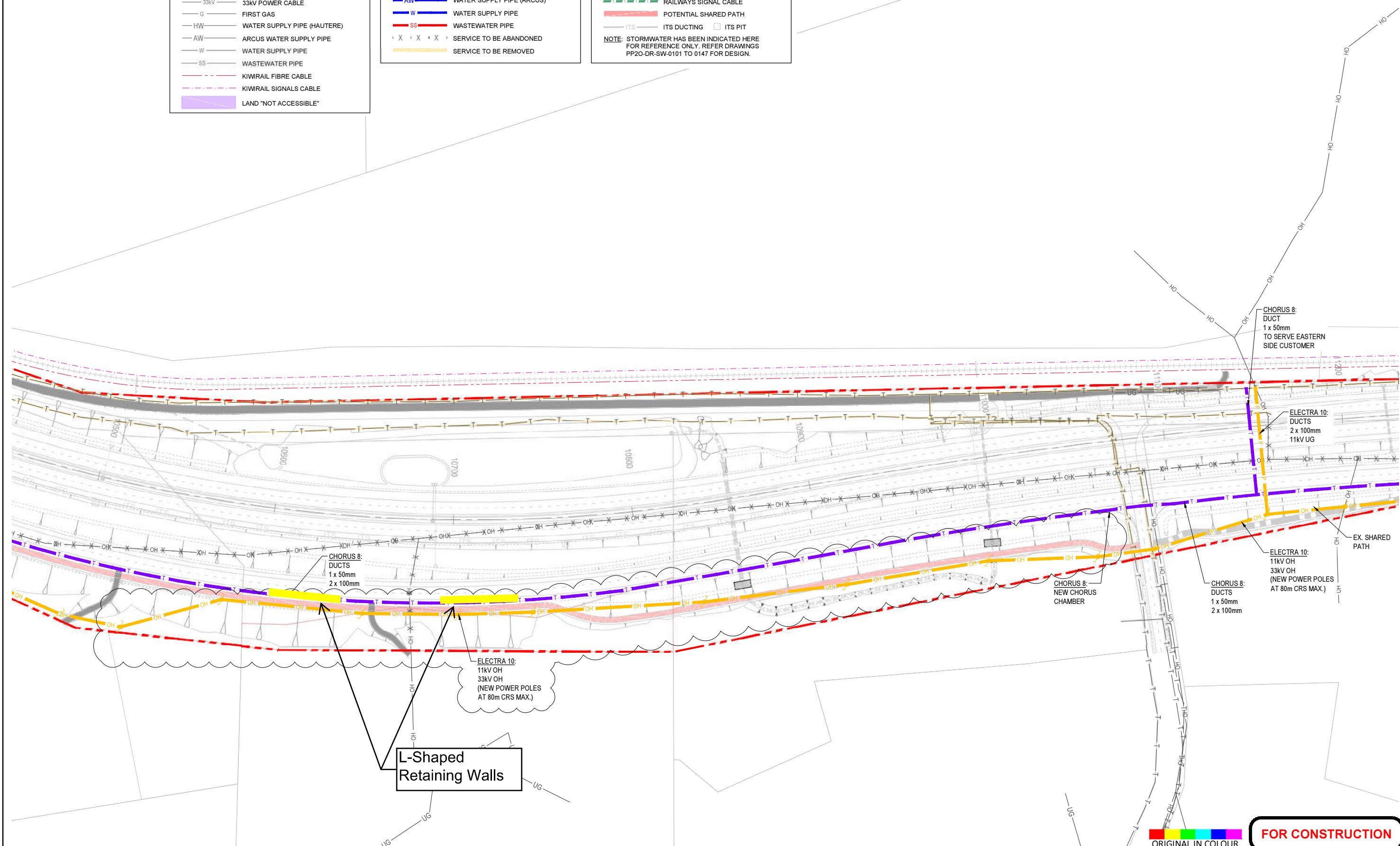
NEW SERVICES LEGEND:

T	CHORUS TELECOM
P	ELECTRA UNDERGROUND POWER CABLE
OH	ELECTRA OVERHEAD POWER CABLE
G	FIRST GAS
HW	WATER SUPPLY PIPE (HAUTERE)
AW	WATER SUPPLY PIPE (ARCUS)
W	WATER SUPPLY PIPE
SS	WASTEWATER PIPE
X X X X	SERVICE TO BE ABANDONED
---	SERVICE TO BE REMOVED

MISCELLANEOUS LEGEND:

---	DESIGNATION BOUNDARY
---	PROPERTY BOUNDARY
---	RAIL DESIGNATION
---	NEW RAIL TRACK
---	RAILWAYS FIBRE CABLE
---	RAILWAYS SIGNAL CABLE
---	POTENTIAL SHARED PATH
---	ITS DUCTING
□	ITS PIT

NOTE: STORMWATER HAS BEEN INDICATED HERE FOR REFERENCE ONLY. REFER DRAWINGS PP20-DR-SW-0101 TO 0147 FOR DESIGN.



FOR CONSTRUCTION

No.	Revision	By	Chk.	Appd.	Date
2	ISSUED FOR CONSTRUCTION	AMcL	MGY	SW	17.04.18
1	ISSUED FOR CONSTRUCTION	AMcL	MGY	BS	16.03.18

Scale (A1)	Design	C.HIDDLESTON	12.06.17	Approved For Construction
	Drawn	A.McLAUGHLIN	12.06.17	B. SYMMANS
	Dwg Verifier	M. YARRALL	16.03.18	
Scale (A3)	Dwg Check	G. DOWN	16.03.18	Date 16.03.18

* Refer to Original Handcopy for Signature

Subject:	SERVICES	Discipline:	UTILITIES
Title:	LAYOUT PLAN	Drawing No:	PP20-DR-CU-0116
	SHEET 16	Rev:	2

Document No. R19000 - DESIGN DEVELOPMENT GENERAL09 CADDRAWINGS\PP20-DR-CU-01-0122.DWG