Site Specific Environmental Management Plan

– Peka Peka to Ōtaki Project

BR5A: Bridge 5 – Stage One

FCCL-EV-MPN-0021

February 2018 – Revision C

NZ TRANSPORT AGENCY WAKA KOTAHI
Peka Peka to Ōtaki Expressway
New Zealand Government

Contents

AUTHORISATION AND REVISION RECORD

Revision	Status	Author	Date	Description
A	Draft	Alice Naylor	11/12/17	For Review
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Revision	Action	Name	Position	Date
A	Internal Review	Sevasti Hartley	Environmental Coordinator	8/11/17

Certification Record

Revision	Action	Name	Position	Date	Signature
	Approved by:	Richard Verry	Project Leader	9/2/18	
	On behalf of GWRC:				
	Approved by:	Vijay Somd	Acting consents & compliance Manager	12/2/18	
	On behalf of KCDC:				

1 INTRODUCTION

This Site Specific Environmental Management Plan (SSEMP) provides the necessary information to demonstrate how the project team plan to avoid or mitigate potential adverse environmental effects relating to construction of the Peka Peka to Ōtaki Expressway.

This document covers the first stage of main works required for the Ōtaki River Bridge (Bridge 5). Specifically, this SSEMP covers works on the southern side of the Ōtaki River between chainage 3600 and 4000. The general SSEMP sequencing for Bridge 5 construction through to completion will be as follows:

Table 1: Overview of the SSEMP sequencing

SSEMP Bridge 5 Stage One (South)	SSEMP Bridge 5 Stage Two (North and South)	SSEMP PW4
Southern embankment earthworks		
South side piling (Pier's 5-9)		
Substructure: • Column construction (Pier's 5-9) • Crossheads (Pier's 5-9)		
	Northern embankment earthworks	
	Ōtaki River diversion	
	North side piling (Pier's 1-4)	
	Substructure: • Northern and southern abutments • Column construction (Pier's 1-4) • Crossheads (Pier's 1-4) Superstructure: • North and south beams, bearings, diaphragms, deck. Ancillary: • North and south approach slabs, metal work, finishing works.	
		Final landscaping, revegetation and road surfacing

This SSEMP reflects the requirements of the Construction Environmental Management Plan (CEMP) and its appendices, and is intended to be utilised by the construction team to clearly identify any site specific environmental requirements that must be adhered to prior to, and during works. A suite of over-arching environmental management plans have been drawn from to inform the contents of this SSEMP. All works will be carried out in general accordance with these management plans.

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

1.1 Location of works

Works will take place between Chainage 3600 – 4000 between the Ōtaki River and Ōtaki Gorge Road. The surrounding area is generally rural farm land. The Ōtaki River bed is relatively flat and generally lies between RL +10m to +12m. Approximately 100m south of the proposed bridge, the ground rises steeply up to RL +23m which will provide the necessary fill material for the southern embankment. The ground is mainly comprised of clean river gravels overlying interbedded beach alluvium with a silt layer separating the two. To the south of the river bank there is a moderately thick layer of soft silt / topsoil.

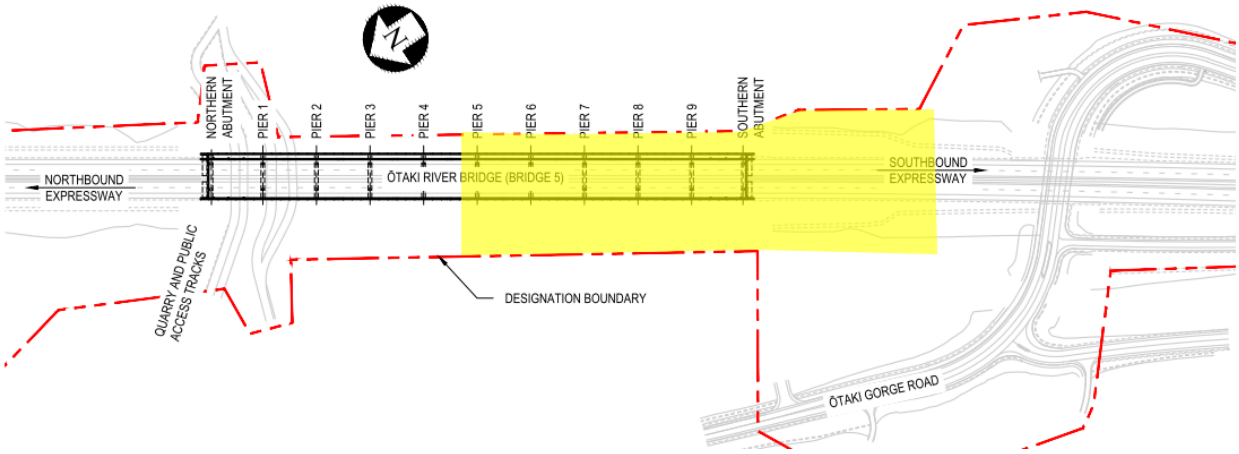

Figure 1: General location of works covered under this SSEMP (highlighted in yellow).

1.2 Description of works

The Ōtaki River Bridge will carry the new Expressway alignment over the Ōtaki River. This SSEMP covers early works required on the south side of the river only including the following activities:

- Southern preload embankment earthworks
- Bored piling (Pier's 5 – 9)
- Substructure
    - Column construction (Pier's 5 – 9)
    - Crossheads (Pier's 5 – 9)

1.3 Programme

The expected programme for the activities covered by this SSEMP are as follows:

Activity	Commencement	Duration
Southern embankment earthworks	Late January 2018	3 weeks (earthworks), 3 months (settlement), 1 week (earthworks)
Bored piling (Pier's 5 – 9)	Late January 2018	3 months
Column construction (Pier's 5 – 9)	February 2018	3 months
Crossheads (Pier's 5 – 9)	March 2018	3 months

A detailed programme can be found in Appendix D.

2 PLAN IMPLEMENTATION

2.1 Responsibilities

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

Role	Person	Contact Details	Responsibilities
Construction Manager	Steve Findlay	stevef@fcc.co.nz 029 770 3128	• 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 027 297 6055	• 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 0278078400	• 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-builting 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). • 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 021 333 726	• 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 027 209 2295	• 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	• 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)	Liz Deakin (Terrestrial Ecologist) Dean Miller (Principal Ecologist) Kathryn Longstaff (Avian Ecologist) Genevieve Smith – Contaminated land Brendon Shanks – Noise and Vibration	LDeakin@tonkintaylor.co.nz 027 568 1995 DCMiller@tonkintaylor.co.nz 021542396 KLongstaff@tonkintaylor.co.nz Genevieve.Smith@beca.co.nz Brendon.Shanks@marshallday.co.nz	• 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	Te Waari Carkeek (Ngā Hapū o Ōtaki)	TeWaariC@fcc.co.nz	• 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.
Iwi	Muaupoko Tribal Authority		• Point of contact for any archaeological discoveries in accordance with the agreed accidental discovery protocols and MTA agreement.

2.2 SSEMP amendments

In accordance with resource consent condition DC.18B and G.21A amendments may be made to this SSEMP if submitted to the Manager for certification at least 5 working days prior to implementation of that change.

In accordance with Condition G.21A, a 'minor change' may be submitted to the Manager for certification at least 2 working days prior to implementation of that change.

Minor amendments associated with this SSEMP are proposed as follows:

- Stabilisation following minor ground disturbance.
- Use of additional silt control provided that the controls can be installed in accordance with the project Erosion and Sediment Control Plan (ESCP).
- Ecological works provided they can occur in accordance with the Ecological Management Plan (EMP).
- Additional stockpiles.
- Any other change as agreed by the Manager.
- Minor ground disturbance provided runoff is contained on site or the area can be stabilised the same day of works.

3 CONSTRUCTION ACTIVITIES

3.1 Earthworks – southern preload embankment

- Remove topsoil from the southern embankment footprint and stockpile in allocated disposal site location (refer to Appendix C drawings).
- Construct the southern embankment using approximately 10,000m³ of gravel fill sourced from the main cut at the southern end of the site. The southern embankment will be built up in

stages to a final height of 8.5m above existing ground level to allow for required compaction between layers.
- Refer to Appendix C drawings for extent of works.
- Following a three month settlement period, the surcharge material will be removed. The excess material will be disposed of as fill to provide adequate access for the drilling rig from Bridge Lodge to the final abutment pile locations.
- A bench will be cut between the two abutment piles to allow for a piling platform.

3.1.1 Quarrying and transporting materials

Fill material required for the southern preload will be sourced from the large cut at the southern end of the site and therefore material will not need to be sourced from off-site.

3.1.2 Disposal sites

One disposal site will be required on the eastern side of the site for temporary stockpiling of topsoil and any encountered soft silty material. This will be encapsulated in perimeter bunds to protect the area from flood inundation for any event up to 20 year return period event.

3.2 Bored piling

A total of twelve 2.1m piles will be completed under this SSEMP (Pier's 5 – 9, and the southern abutment piles). Each pile is expected to take approximately one week, commencing from north (Pier 5) to south (southern abutment piles) and will be carried out as follows:

- Establish piling equipment such as bentonite tanks, de-sander and pumps
- Construct piling pad at pile location
- Prepare pile for construction
    - Install outer 3m diameter oversized casing to contain any overflow and provide stability when inner casing is extracted. This will be 3m long and embedded 1.5m into the ground with 1.5m protruding above ground.
    - Excavate material to top of pile (RL of 9.5m)
    - Setup column plunge jig
- Install 2.1m casing at pile location using vibro-hammer. The top of this casing will extend to RL +13m.
- Bore piles with bentonite, maintaining bentonite 1.5m above groundwater level.
- Drill cuttings will be transferred to the southern fill embankment to be disposed of within the fill material.
- Install pile reinforcing cage
- Concrete pile by tremmie, as the concrete comes up, pump bentonite from the top of the pile back to the bentonite plant.
- Remove temporary casing
- Setup remaining items for column plunge jig
- Plunge column cage
- Remove column plunge arrangement
- Repeat above for remaining columns

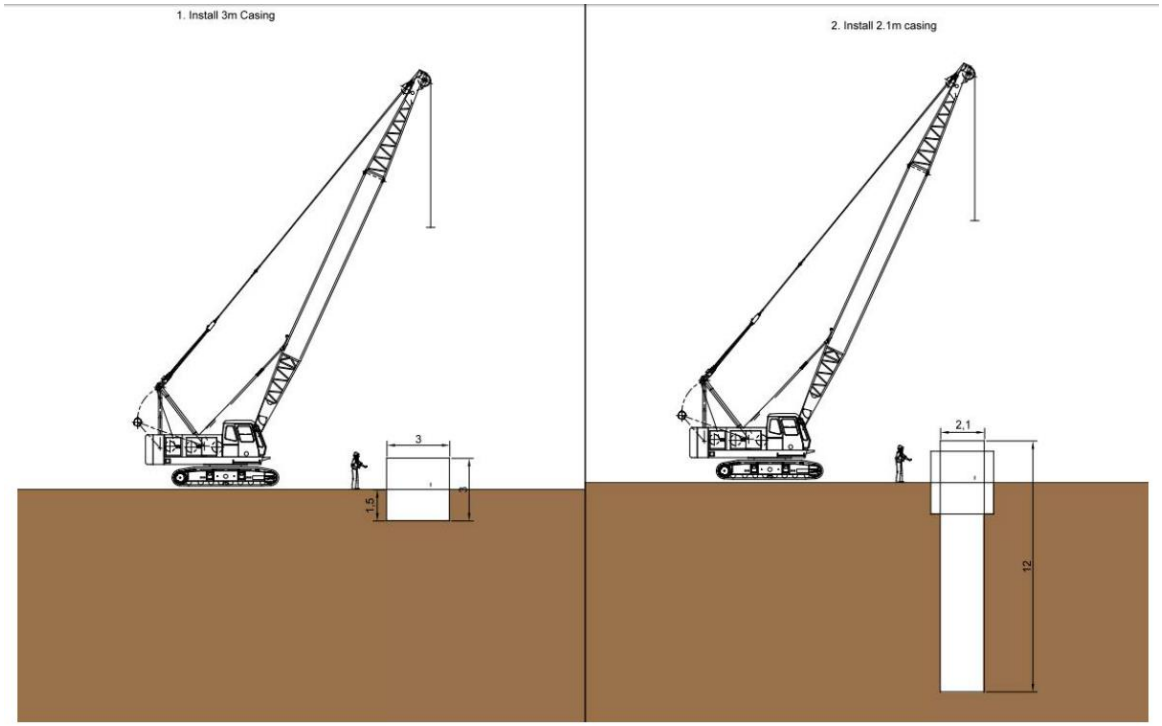

Figure 2: Casing install sketch

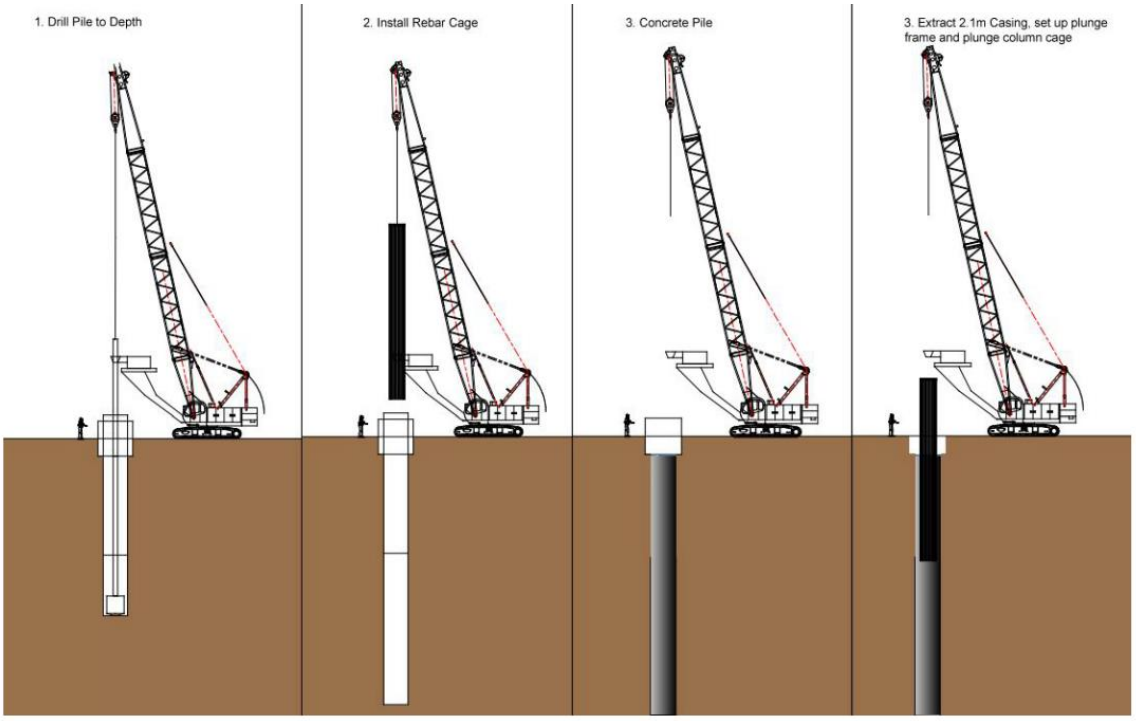

Figure 3: Pile installation sequence

3.3 Substructure

The bridge piers consist of reinforced concrete tapered crossheads with up-stands, each supported by two 1600mm diameter columns.

3.3.1 Column construction

- Install formwork with bracing
- Pour concrete
- Cure
- Strip

3.3.2 Crossheads

- Install falsework corbel
- Fit out falsework
- Install falsework
- Form soffit
- Install pre-fabricated reinforcing cage
- Form stage 1 (Bottom shelf)
- Pour stage 1
- Cure stage 1
- Strip stage and associated falsework 1
- Form stage 2
- Pour stage 2
- Cure stage 2
- Strip stage 2
- Patch
- Repeat above for remainder of crossheads

3.4 Site access

One access/egress point will be utilised for these works from Ōtaki Gorge Road as identified on the drawings in Appendix C.

The access/egress point will be stabilised using clean aggregate or sealed to avoid any construction related material leaving the site.

3.5 Construction plant

The plant items to be used to undertake each of the activities will generally be as follows:

Earthworks

- 6 – 20T excavators
- Motor scrapers
- Dozers

- 12T roller
- Dump trucks
- Water carts as required
- Light vehicles

Piling Works

- RT3 Drill Rig on Crawler Crane
- Service Crane
- Mobile cranes
- Bentonite mixers and plant
- PTC60 Vibro hammer
- Drilling buckets
- Auger
- Clam shell attachment

All plant will require to be inspected prior to start of 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.

General spill control kits will be available on site at the Bridge Lodge compound. A site-specific spill kit will also be available in the event of a spill to the Ōtaki River including an appropriate river boom to deploy if necessary. Refuelling activities will take place using a mini-tanker at least 10m away from the river to prevent additional risk of spillage to the river, with storage of any mini-tankers at Bridge Lodge Compound outside of the flood plain.

3.6 Water supply

An existing water supply bore exists directly to the east of the site, inherited by the project as part of the Bridge Lodge area. It is proposed that this existing bore be utilised in accordance with resource consent conditions BC.1 – BC.4, GT.1 – GT.7, and the Groundwater Management Plan.

Condition GT.4 requires that the rate at which water is taken from the water supply bore, other than for well testing, including simulation of effects shall not exceed:

- 110,000m³ / year at a maximum of 300m³ / day (cumulatively, across all bores); and
- A maximum pumping rate of 35 litres / sec from each bore.

A water meter will be installed and maintained in accordance with Condition GT.5 to track the amount of water abstracted from this bore.

4 ENVIRONMENTAL MANAGEMENT AND MITIGATION

The following section identifies key environmental aspects that need to be considered prior to and during construction activities covered under this SSEMP.

4.1 General pre-works requirements

As part of the site preparation and establishment works the following mitigation measures will be implemented to avoid or minimise adverse environmental effects:

- Sensitive areas in regards to ecology, archaeology, and residential / commercial receivers in close proximity to works will be clearly marked on drawings (attached) and provided to the relevant contractor(s) prior to commencement of works.
- Site specific information, including environmental constraints and requirements, will be discussed at the relevant pre-construction site meetings with input from specialists as required.
- Prior to works commencing in this area, the project surveyors will use GPS to identify the extent of works. The works area will be clearly marked-out with regular input from the survey team throughout works as required.
- Areas identified as 'retained vegetation' as per the approved vegetation retention plans will be clearly delineated using physical markers on site.
- Environmental requirements for any given area will be noted on each project "Permit to Work'. These permits are required for any activity on site and must be in place and signed off by the environmental team prior to works commencement.

4.2 Task-specific environmental requirements

4.2.1 Southern embankment earthworks

The following measures will be implemented to ensure that environmental impacts are mitigated during earthworks required to build up the southern preload embankment:

- Between 400m³ - 600m³ of soft material will be undercut from the preload embankment footprint and be stockpiled within the allocated stockpile location at least 50m away from the wetted river channel (refer to Appendix C drawings).
- Diversion bunds will be established around the stockpile to capture day to day dirty water runoff from the stockpile. These will be built to a height of RL +14.3m to sufficiently prevent flood water from inundating the stockpile area up to a 5% AEP flood event. These bunds will be stabilised on the outer face with in-situ aggregates or slash material to provide additional protection. Refer to figure 4 below for the typical design requirements for construction of the dirty water diversion bunds (doubling up as clean water diversion bunds in the event of a flood event).

- Gravel fill material will be used to build up the permanent embankment (plus preload surcharge material). Given the gravel make-up of this material and the fact that it is permanent embankment, no additional erosion protection is proposed. Compaction of the gravel embankment layers as it is constructed will ensure that loose material is not picked up during flood events and discharged downstream.
- As a contingency in the event that the material is not considered suitably 'stabilised', the eastern and northern batters will be stabilised progressively up to the 20 year return period storm level (RL 14.3m) using either geotextile or a hydro-mulch mix to bind the surface layer. All day-to-day site runoff will be directed away from the river. Refer to figures 5 and 6 below for details.

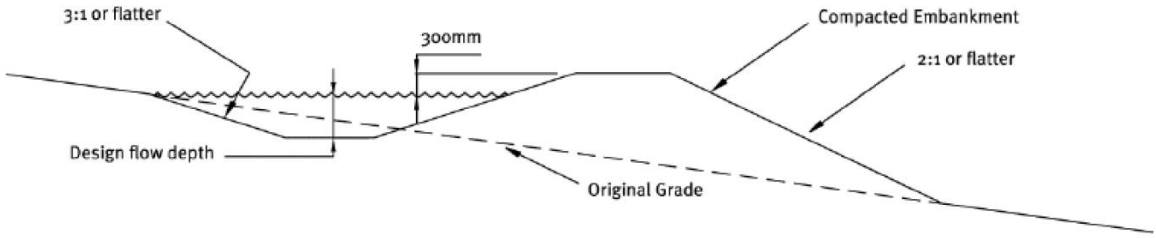

Figure 4: Typical cross section of dirty water diversion bund in accordance with the project ESCP.

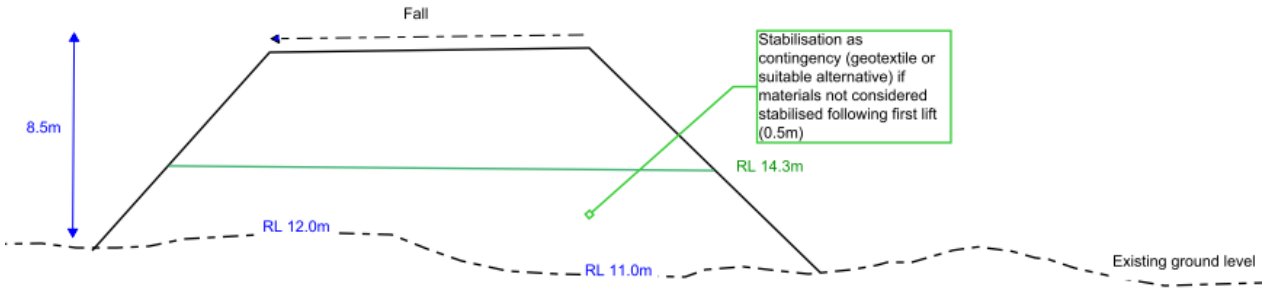

Figure 5: Typical cross section of contingency stabilisation method.

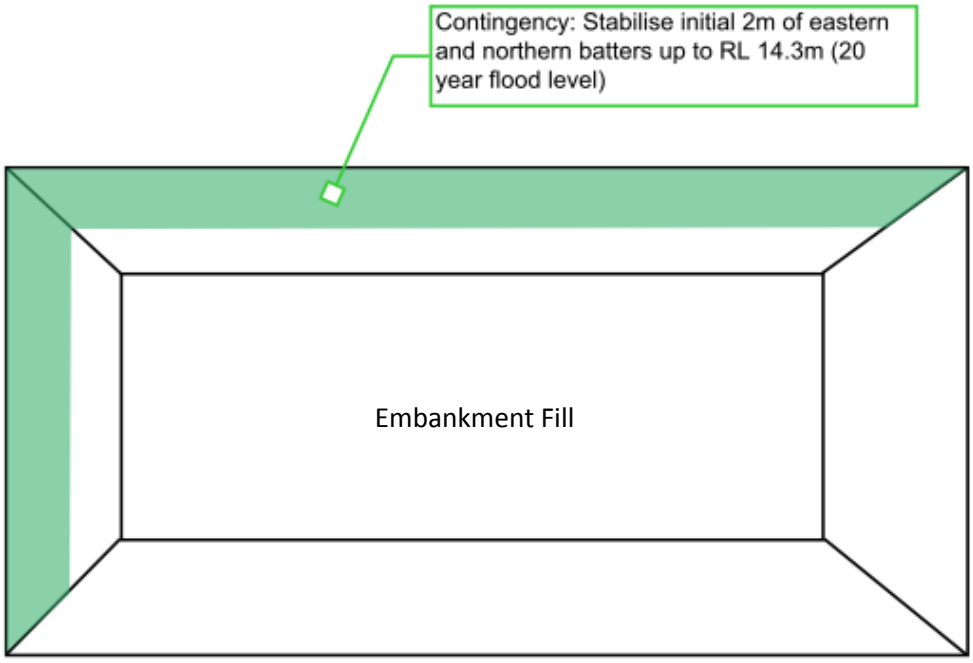

Figure 6: Overview of contingency stabilisation method.

4.2.2 Bored piling and column / crosshead construction

The following measures will be implemented to ensure that environmental impacts are mitigated during bored piling and construction of the columns and crossheads for pier's 5 – 9:

- Regular communications will be maintained with Greater Wellington Regional Council – Flood Protection Team.
- Weather forecasts will be checked daily (Metservice) to ensure that site personnel can incorporate flood risk into planning of the works.
- Crane pads will be formed as shown in Appendix C drawings with either existing river gravels or gravel fill material from the main cut area at the southern end of the site.
- During piling, an oversized 3m diameter casing will be installed over the 2.1m diameter casing to ensure that any over-spill is captured within the outer casing.
- The top of the 2.1m diameter casing will extend to >RL +13.0m (approximately 10% AEP flood event).
- Bentonite will be maintained >1.5m above groundwater level.
- Drill cuttings will be transferred from the bore location and disposed of to a lined skip bin or suitable alternative to be disposed of within the southern embankment fill material or stockpile area on a daily basis.
- During piling, as concrete comes up, bentonite will be disposed of back to the bentonite plant.
- Polythene sheets will be used around the outer casing if deemed necessary following the first concrete pour (contingency only).
- Any contaminated over-spill into the outer casing will be disposed of via sucker truck directly offsite to an appropriate landfill.

- River booms will be available on site at all times during the works as a contingency in the event of a spill.
- River levels and rain warnings will be monitored to ensure that adequate flood response procedures are followed and plant and equipment is removed the river bed promptly. Refer to Section 5 for further details.

The site will be maintained in a tidy state free of rubbish (to be disposed of at Bridge Lodge Compound). Loose materials are to be located temporarily within the bentonite storage area and removed as necessary in accordance with flood triggers outlined in Section 5. Worker facilities (i.e. portaloos) will be located at the Bridge Lodge Compound outside of the flood plain.

4.3 Ecological requirements

Appendix C outlines areas which require ecological input prior to and / or during construction activities. The following sections outline site specific ecological requirements relating to works due to be carried out under this SSEMP.

4.3.1 Banded Dotterels

Consent Condition G.38 (d) requires that surveys for banded dotterels are undertaken in the vicinity of the proposed Ōtaki River bridge crossing immediately prior to and during bridge construction.

Works have already taken place at this site which required a pre-works survey to be carried out. Nesting banded dotterel were not recorded during pre-works surveys and therefore works commenced. To date, works at this site have included:

- Proof bores at pier's 5 – 9;
- 1 x bore stability trial at pier 9; and
- Construction of 2 x gravel platforms to allow for the above bore stability trial.

Prior to re-commencement of works in this area, the following will take place:

- A suitably qualified ecologist is to survey the site 48 hours prior to works commencement.
- If dotterels are found within close proximity to the work site (within 50m) work must stop immediately and wait until chicks have fledged their nests and approval to proceed has been granted by the ecologist.
- The findings of this survey will be reported to the Manager, Greater Wellington Regional Council within 5 working days of completion of the survey.

In accordance condition G.46A, nesting habitat enhancement for dotterels is also required at a suitable site upstream of the proposed bridge. A separate proposal will be submitted to the Manager, Greater Wellington Regional Council to identify the confirmed location and maintenance regime for the proposed nesting area prior to commencement of construction of the bridge.

4.4 Water quality monitoring

Triggered turbidity monitoring within the Ōtaki River will occur in accordance with Section 6.3 of the project Erosion and Sediment Control Plan (ESCP), and section 6.6 of the Ecological Management Plan (EMP) however revised rainfall triggers have been adopted for this site to align with required flood response within the flood plain.

In the event that any of the flood alert levels 1 – 4 outlined in Section 5 below are exceeded, NTU monitoring is required upstream and downstream of the works 24 and 48 hours post-rain event. Procedures outlined within Section 6.3 of the ESCP, and section 6.6 of the EMP will be followed in the event of any exceedances.

During bored piling, in addition to the above triggered monitoring, twice daily NTU monitoring using hand-held monitors will be carried out, as well as pH testing during any concrete related works within the river bed. This is precautionary only, and provided that the measures outlined in Section 4.2 are adhered to, it is not anticipated that the works will cause any adverse impacts to the Ōtaki River water quality.

4.5 Iwi

A Kaiarahi (iwi guide / leader) has now been appointed which will be the key point of contact and coordination for Ngā Hapū o Ōtaki. The Kaiarahi will be involved in the design process, construction supervision and environmental monitoring. The Kaiarahi will be supported by the Kaitiaki (guardians) who provide support in supervision and monitoring activities and provision of specialist advice. Ngā Hapū o Ōtaki will be informed of all works on site and invited to be present for all works, particularly in regards to initial topsoil stripping or ecological surveys required prior to physical works commencement.

Contact must also be maintained with Muaupoko Tribal Authority (MTA) in accordance with MTA agreement and confirmed accidental discovery protocols, summarised in Appendix E.

4.6 Archaeology

All works under this SSEMP will be carried out in accordance with the approved archaeological authority and the Archaeological Site Management Plan. The Archaeological Site Management Plan outlines high, medium, and low risk archaeological areas across the project footprint. Figure 7 below outlines the archaeological high risk area south of Ōtaki Gorge Road. All pre-construction archaeological investigations are now complete at this site. Clifden Cottage remains are no-go zone until the destination for the cottage has been confirmed and relocation can commence in accordance with the final conservation plan.

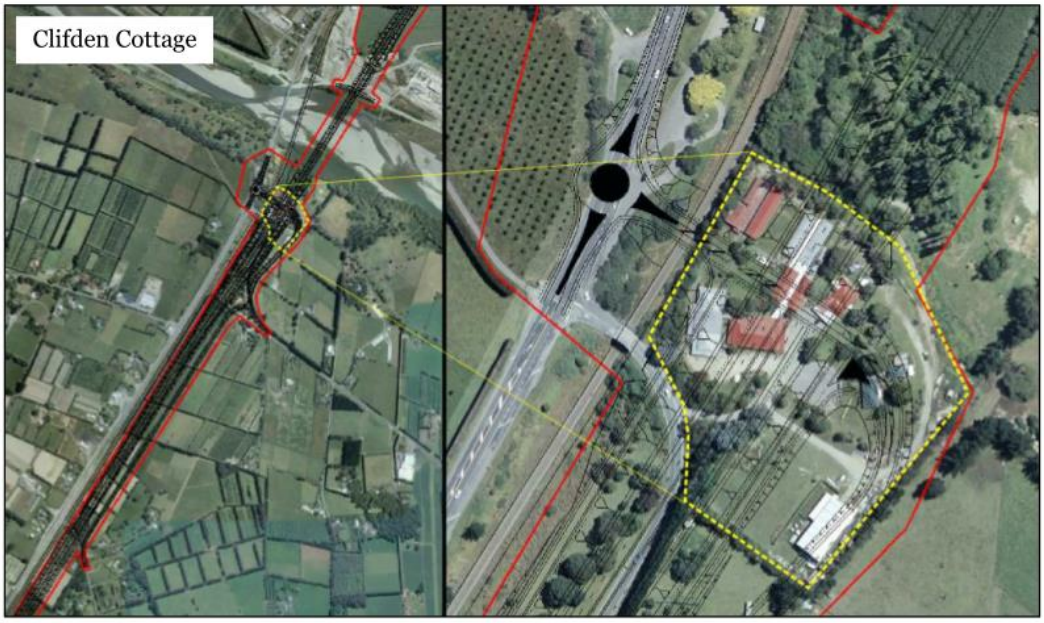

Figure 7: The original Clifden Cottage property is a high risk archaeological area. Pre-construction investigations are now complete at this site.

All other areas are deemed to be low-risk areas and will be covered by 'Accidental Discovery Protocols'. Accidental discovery protocols are outlined in the Archaeological Site Management Plan and must be adhered to in instances where subsurface archaeological remains, koiwi tangata, or taonga are exposed during construction.

The agreed protocols are summarised in Appendix E.

4.7 Noise and vibration

The Construction Noise and Vibration Management Plan (CNVMP) identifies the noise and vibration performance standards that must, where practicable, be complied with. It also sets out best practicable options for noise and vibration management for the Project, including mitigation measures, monitoring requirements, and communication and complaint procedures. All works under this SSEMP will be carried out in general accordance with the CNVMP.

High-risk areas in regards to potential noise and vibration effects as a result of works have been identified in Appendix C. Individual dwellings located within the high risk areas have also been listed below.

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, particularly when transitioning from one works phase to another.

Noise and vibration monitoring will take place throughout the works to assess the impacts on adjacent properties at various locations. In the event that noise or vibration criteria is exceeded, mitigation options will be reassessed in an effort to comply with the construction limits, and a site specific noise 'schedule' will be submitted to Kapiti Coast District Council in accordance with the CNVMP.

Dwellings located within the noise and vibration boundary are as follows:

- 45 Ōtaki Gorge Road

Dwellings within the vibration boundary only are as follows:

- 1277 SH1

4.7.1 Pre-condition building surveys

Section 7 of the CNVMP outlines activities that are expected to generate vibration that will potentially cause medium and high level vibration and therefore must be assessed to determine whether a pre-condition building survey is required. There are no dwellings that trigger the requirement for a pre-condition building survey prior to these works.

4.8 Air quality

Although not anticipated given the nature of the material and location of works, there is potential for works to generate dust discharge if the site is not managed effectively. The Construction Air Quality Management Plan (CAQMP) outlines methods to be used to prevent dust and odour nuisance during construction from the site. All works under this SSEMP will be carried out in general accordance with the CAQMP.

To ensure that dust does not become an issue across the boundary of the site, the following measures will be implemented as a minimum:

- Use of water carts as required during vehicle movements to and from the Bridge Lodge Compound
- Imposing a speed limit if required
- Use of stabilising agents such as polymers if required (not anticipated given the location of works and gravel fill material but may be utilised on stockpiled topsoil / unsuitables).
- Assessing wind speed and direction on a daily basis

One property is located within the 'high risk air quality' zone as identified in Appendix C drawings. This property is >300m away from the works and therefore provided that the site is managed effectively, it is not anticipated that these works will cause an adverse impact in this location.

4.9 Contaminated land

The Bulk Earthworks Contaminated Land Management Plan (BECLMP) provides a framework and general procedures for the management of contaminated soil and other contaminated materials/structures potentially present in ground that may be disturbed or require removal to complete the Project. A number of potentially contaminated sites located within the Project corridor were identified during the desk based Phase 1 Contaminated Land Assessment. There are three confirmed HAIL sites immediately south of the works site covered under this SSEMP which are identified on the attached drawing in Appendix C 'Works methodology / Layout Plan'. These sites contained underground fuel storage tanks, all of which have now been removed.

These areas will not be disturbed until the final results of investigation works at each site are assessed and associated NES consents obtained if required.

5 STORMWATER / FLOOD MANAGEMENT

Rainfall frequency is based on Waitatapia Stream at Taungata – *GWRC Flood Procedures Manual,* and levels are based on *NZVD (2009).* Rainfall vs *actual* inundation of this area will continue to be assessed throughout the works. A conservative approach will be taken initially in regards to starting works with a fine weather window to avoid the need to abandon the works once works commence.

In the event of flood alert levels 1, 2, 3, or 4, the following actions and associated environmental monitoring will take place:

5.1.1.1 Alert level 1: Inundation of piling locations.

Return Period (Years)	Average Annual Probability (%)	Water level (RL m)	Flow at Pukehinau gauge[1] (m^3/s)
<1			431

Note[1]: Flow based on Ōtaki River at Pukehinau – GWRC Flood Procedures Manual

Alert level sequence:

- Automated GWRC Alarm 1 at Pukehinau (triggered at 431m^3/s) received via phone indicating that piling locations are at risk of inundation.
- Based on historical information, there is approximately a 2-4 hour window from rain falling at the gauge until inundation of the work site.

Associated actions / monitoring:

- Visual inspection of site focussing specifically on erosion and sediment controls and containment of dirty water.
- Handheld NTU sampling upstream and downstream of the site in accordance with ESCP section 6.3.3 (24 and 48 hours post event).
- Low level risk of flood inundation unless works are taking place at the piling locations – initial warning to be issued to site team to indicate level one alert.
- Piling locations only: The site will be tidied as far as practicable (i.e. removal of loose items such as spill kits, skip bins, pumps and hoses).
- Piling locations only: Loose material will be removed (i.e. drill cuttings) or compacted (gravels) to prevent material from re-suspending as far as practicable.

5.1.1.2 Alert level 2: Expected inundation of the bentonite storage area

Return Period (Years)	Average Annual Probability (%)	Water level at site[1] (RL m NZVD 2009)	Flow at Pukehinau gauge[2] (m^3/s)	Rainfall Depth at Taungata gauge[3] (cumulative mm) for Selected Duration (Hours)					
				1hr	2hrs	3hrs	6hrs	12hrs	24hrs
2	50	12.5	900	24mm	37mm	48mm	76mm	114mm	145mm

Note[1]: Based on the mean annual flood level upstream of the rail bridge reported in section 18.9.6 of the Specimen Design Report (Opus September 2015)

Note[2]: Flow based on Ōtaki River at Pukehinau gauge – GWRC Flood Procedures Manual, also consistent with updated flood frequency analysis for PP2Ō.

Note[3]: Rainfall frequency information based on Waitatapia Stream at Taungata – GWRC Flood Procedures Manual.

Alert level sequence:

- Automated GWRC Alarm 2 at Pukehinau (triggered at $555m^3/s$) received via phone indicating that the bentonite area is at risk of inundation.
- Based on historical information, there is approximately a 2-4 hour window from rain falling at the gauge until inundation of this area.

Associated actions / monitoring:

- The site team will remove any mobile plant and equipment from the river bed and relocate to either the southern embankment (depending on works progress), or up to Bridge Lodge, which is several metres above the 100 year return period flood level.
- Loose material will be removed (i.e. drill cuttings) or compacted (gravels) to prevent material from re-suspending as far as practicable.
- The site will be tidied as far as practicable (i.e. removal of loose items such as spill kits, skip bins, pumps and hoses).

- Handheld NTU sampling upstream and downstream of the site in accordance with ESCP section 6.3.3 (24 and 48 hours post event).

5.1.1.3 Alert level 3: Expected inundation of the stockpile area

Return Period (Years)	Average Annual Probability (%)	Water level at site[1] (RL m NZVD 2009)	Flow at Pukehinau gauge[2] (m^3/s)	Rainfall Depth at Taungata gauge[3] (cumulative mm) for Selected Duration (Hours)					
				1hr	2hrs	3hrs	6hrs	12hrs	24hrs
20	5	14.3	1370	39mm	57mm	71mm	116mm	161mm	249mm

Note[1]: Based on the mean annual flood level upstream of the rail bridge reported in section 18.9.6 of the Specimen Design Report (Opus September 2015)

Note[2]: Flow based on Ōtaki River at Pukehinau gauge – GWRC Flood Procedures Manual, also consistent with updated flood frequency analysis for PP2Ō.

Note[3]: Rainfall frequency information based on Waitatapia Stream at Taungata – GWRC Flood Procedures Manual.

Alert level sequence:

- Switch from automated GWRC alert to PP2Ō active monitoring (environmental team) of Metservice rain radar, rainfall at Taungata gauge and discharge at Ōtaki River at Pukehinau gauge using GWRC's live data viewer, supported by observations of rainfall and river levels on site.
- Based on historical information, there is approximately a 4 – 4 ½ hour window from rain falling at the gauge until inundation of this area.

Associated actions / monitoring:

- Level 2 alert levels should have already initiated flood response.
- The site team will remove any mobile plant and equipment from the river bed and relocate to either the southern embankment (depending on works progress), or up to Bridge Lodge which is several metres above the 100 year return period flood level.
- Plant and machinery located within the stockpile area will be relocated to the areas mentioned above.
- Loose stockpile material will be compacted / shaped if safe to do so. Note that if this level of event is predicted then safety will be the first priority for personnel working within the flood plain. All measures to tidy the site will be carried out in advance during level 2 alert response.
- Handheld NTU sampling upstream and downstream of the site in accordance with ESCP section 6.3.3 (24 and 48 hours post event).

5.1.1.4 Alert level 4: 100 year return period expected

If the 100 year return period flood level below is reached then inundations of the entire site is likely.

Return Period (Years)	Average Annual Probability (%)	Water level at site[1] (RL m NZVD 2009)	Flow at Pukehinau gauge[2] (m^3/s)	Rainfall Depth at Taungata gauge[3] (cumulative mm) for Selected Duration (Hours)					
				1hr	2hrs	3hrs	6hrs	12hrs	24hrs
100	1	14.85	1690	53mm	71mm	83mm	135mm	181mm	314mm

Note[1]: Based on the mean annual flood level upstream of the rail bridge reported in section 18.9.6 of the Specimen Design Report (Opus September 2015)

Note[2]: Flow based on Ōtaki River at Pukehinau gauge – GWRC Flood Procedures Manual, also consistent with updated flood frequency analysis for PP2Ō.

Note[3]: Rainfall frequency information based on Waitatapia Stream at Taungata – GWRC Flood Procedures Manual.

Alert level sequence:

- Same approach to be applied as 'Alert Level 3'. PP2Ō active monitoring (environmental team) of Metservice rain radar, rainfall at Taungata gauge and discharge at Ōtaki River at Pukehinau gauge using GWRC's live data viewer, supported by observations of rainfall and river levels on site.
- Based on historical information, there is approximately a 4 – 4 ½ hour window from rain falling at the gauge until inundation of this area (20 year event response applied here given the severity of the event).

Associated monitoring / actions:

- Plant and machinery will be evacuated to Bridge Lodge.
- Measures should have been implemented as per level 2 and 3 alert level responses.
- Priority will be given to ensuring safety of site personnel and the public in the general Ōtaki area.

In the event that any project plant or materials are swept downstream during a flood event, it will be the responsibility of the PP2Ō project to repair any damage and clean-up / remove any plant or materials downstream of the site in a timely manner.

6 TRAFFIC

There are no additional site access / egress points required for works covered under this SSEMP. The existing access / egress point into the Bridge Lodge Compound area (SAP 10) will be utilised for concrete deliveries and light vehicle access. All heavy machinery will be transported to site as one-off

deliveries and will not require temporary traffic management. Cut to fill operations will take place within the site itself and therefore material will not be required to be imported to site for the southern embankment works. Although already covered in SSTMP PW1, details specific to SAP 10 have been included in the attached SSTMP in Appendix F for completeness.

7 STAKEHOLDER AND COMMUNICATIONS

Site access is permitted from the Bridge Lodge site which is an already established entry / egress point from Ōtaki Gorge Road. Immediate neighbours and the general public will be notified of each stage of works in accordance with requirements set out in the Stakeholder and Community Management Plan (SCMP). The Greater Wellington Flood Protection Team will be kept up to date with works progress given the location of these works within the flood plain. Additional signage will be erected at the downstream pedestrian river access to ensure that the public are aware of works happening within the river bed further upstream.

Any construction routes / access points to the river used during construction will be considered for use as permanent access points prior to decommissioning. The GWRC Flood protection Team will be liaised with to determine whether these can remain in place as longer-term river access.

APPENDIX A – SSEMP AUTHORS

Name	Role	Company	Input
Ed Breese	Stakeholder, Communications and Compliance Manager	Tonkin and Taylor	All
Alice Naylor	Environmental Manager	Higgins	All

Richard Rakovics	Project Civils Manager	Fletcher Construction	Enabling Earthworks Methodology
Craig Service	Structures Manager	Fletcher Construction	Bridge Works Methodology
Macu Waga	Site Engineer	Fletcher Construction	General sequencing and works methodology
Michelle Knappstein	Stormwater Engineer	Tonkin & Taylor	Stormwater details – temporary design
Dewi Knappstein	Project Lead – Water Resources Engineer	Tonkin & Taylor	Stormwater review – temporary design

APPENDIX B – CONSULTATION RECORD

Group	Date
Community Liaison Group	Distributed and discussed at CLG final meeting 2018
GWRC Flood Protection	SSEMP distribution list Rev A and B

Outstanding Queries

The following outlines any queries (relevant to works covered under this SSEMP) that have not been resolved through the SSEMP preparation process, but will instead be closed out via alternative project stakeholder and communication channels:

NIL

APPENDIX C – DRAWINGS

Works Methodology / Layout Plan

Save Date: 04 Nov 2017 9:15 p.m.

N

Approximate upstream NTU monitoring location

Piling platforms (Pier's 5-7): Re-shape river gravels if required to create level crane pad

Piling platform (Pier's 8-9): Remove unsuitable materials and stockpile within allocated stockpile area. Stbilise with gravel fill.

Gravel fill embankment

Topsoil stockpile location with perimeter bunds <RL 14.3m

AST, no contam, not a HAIL site

Gravel ramp to allow safe access from Bridge Lodge.

UST, removed Jan 2018, HAIL site

Pier 5

Pier 6

Pier 7

Pier 8

Pier 9

UST, removed 2012, HAIL site

Access from Otaki Gorge Road to Bridge Lodge Compound

UST, removed Jan 2018, HAIL site

Existing bentonite tanks and crane platform

Gravel fill source for the southern embankment.

Plant / equipment storage areas (embankment for earthworks machinery, crane platform area for piling plant and equipment).

Designation Boundary

ESC Diversion Bunds

HAIL location - Contaminated site

Approximate downstream NTU monitoring location

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
B	SSEMP FOR INFORMATION	WW			14.09.17
A	SSEMP FOR INFORMATION	AK	GD	AN	26.07.17

Scale (A1) 1:1000
Scale (A3)

Design	AK	13.07.17	Approved For Construction
Drawn	AK	13.07.17	
Dsg Verifier	-	-	
Drg Check	-	-	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Beca | HIGGINS | Tonkin+Taylor

Subject: SSEMP Bridge 5: Stage One

Title: Sheet 1 of 1

Discipline: CIVIL

Drawing No.: -

Rev.: -

Document No.: \\WZPPSP-FCC.INTERNAL\DAVWWROOT\2000\7\270 SECTOR GENERAL\PRECAST WORKING SHOP DRAWINGS\PP2O\FOR ALICE\PP2O-CR-CE-0801-0818 2017-08-28- STANDARDSKAS.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

Environmental Constraints Drawing

Save Date: 18 Sep 2017 9:36 a.m.

ECOLOGY LEGEND:

TERRESTRIAL ECOLOGY REQUIREMENTS:


LIZARD SURVEYS, SALVAGING AND MONITORING


NATIVE TREE LOG SALVAGE


PERIPATUS MANAGEMENT


POWELLIPHANTA TRAVERSI OTAKI SURVEY

BIRD SURVEY


PIPIT SURVEY


BANDED DOTTEREL SURVEY

NOISE VIBRATION LEGEND:

VIBRATION - LOW RISK (RESIDENTIAL)

VIBRATION - LOW RISK (COMMERCIAL)

COMMERCIAL STRUCTURES WITHIN VIBRATION BOUNDARY

DWELLINGS WITHIN VIBRATION BOUNDARY

DWELLINGS WITHIN BOTH NOISE AND VIBRATION BOUNDARIES

AIR QUALITY:

AIR QUALITY SENSITIVE RECEIVERS

DRAINAGE LEGEND:

DESIGNATION

RAILWAY DESIGNATION

EXISTING STREAMS

STORMWATER WETLAND/POND

SITE COMPOUNDS:

HARD STAND AREA

SITE ENTRY AND EXIT

ARCHAEOLOGICAL HIGH-RISH AREAS:

SITE ARCHAEOLOGICAL

SITES ARCHAEOLOGICAL-AERIAL-PHOTO

LANDSCAPE:

EXISTING VEGETATION RETAINED

ORIGINAL IN COLOUR

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
B	SSEMP FOR INFORMATION	WW			14.09.17
A	SSEMP FOR INFORMATION	AK	GD	AN	20.07.17

Scale (A1) 1:1000	Design	AN	13.07.17
	Drawn	AK	13.07.17
Scale (A3)	Dsg Verifier		
	Drg Check		

Approved For Construction

Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher | HIGGINS | Beca | Tonkin+Taylor

Subject: ECOLOGY

Title: LEGENDS

Discipline: CIVIL

Drawing No.: PP2O-DR-CE-0800

Rev. B

Document No.

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IF IN DOUBT ASK

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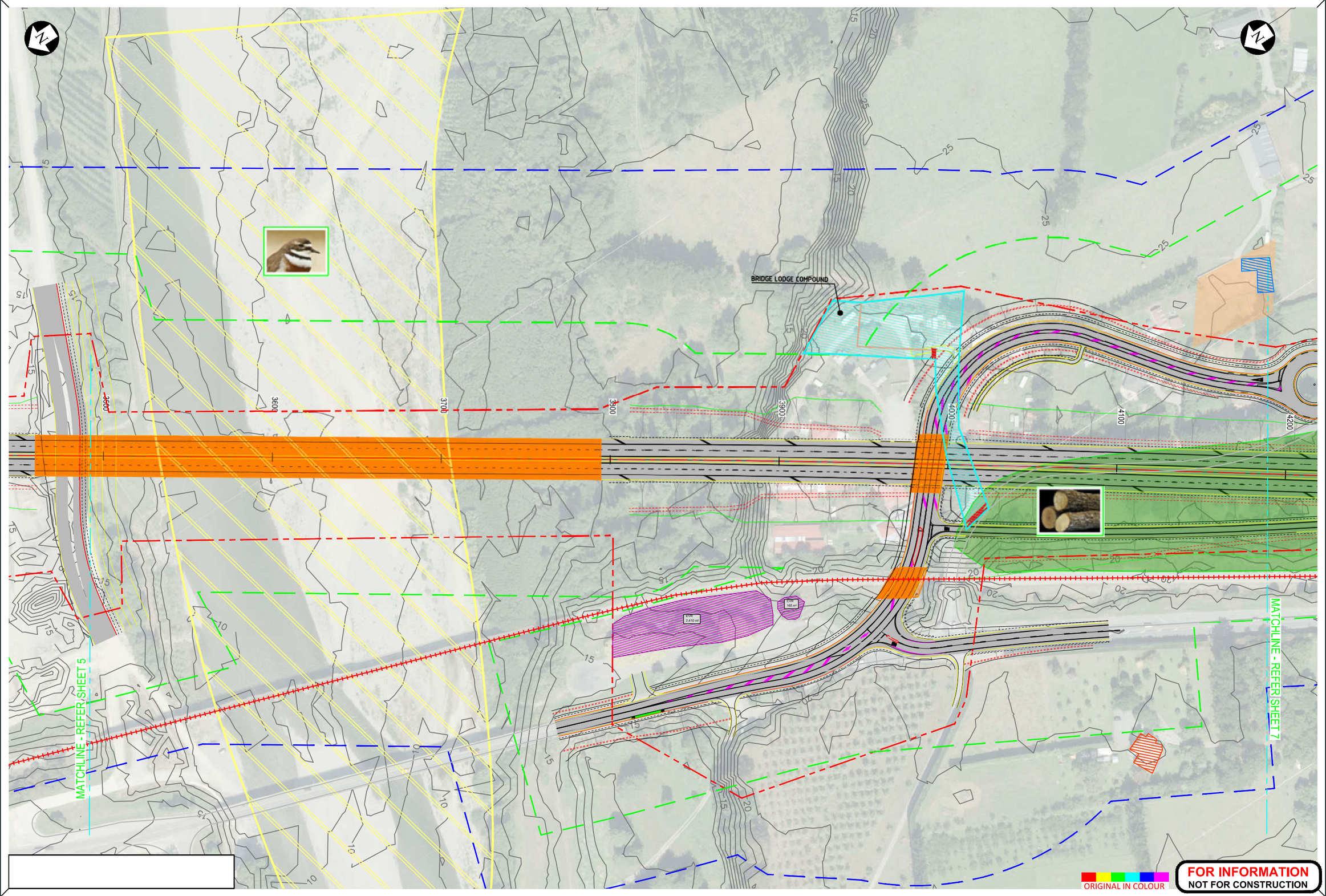

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
A	SSEMP FOR INFORMATION	AN			08.12.17

Scale (A1) 1:1000	Design	AN	13.07.17
Scale (A3)	Drawn	AN	13.07.17
	Dsg Verifier		
	Drg Check		
	* Refer to Original Hardcopy for Signature		Approved For Construction Date

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Beca | HIGGINS | Tonkin+Taylor

Subject: Environmental Constraints Drawing
Title: Page 1 of 1

Discipline: CIVIL
Drawing No.: SSEMP-B5-S1-ECD
Rev.: B

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

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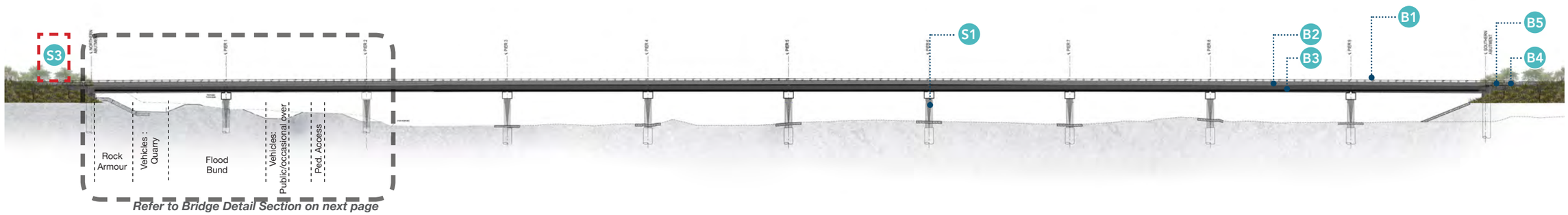
Construction Drawings

6.6.4 Bridge 5 - Ōtaki River Bridge

Ōtaki River Bridge Elevation 1:1000

Figure 86.Bridge 5 location -Ōtaki River Bridge



Refer to Bridge Detail Section on next page

Ōtaki River Bridge Plan 1:1000

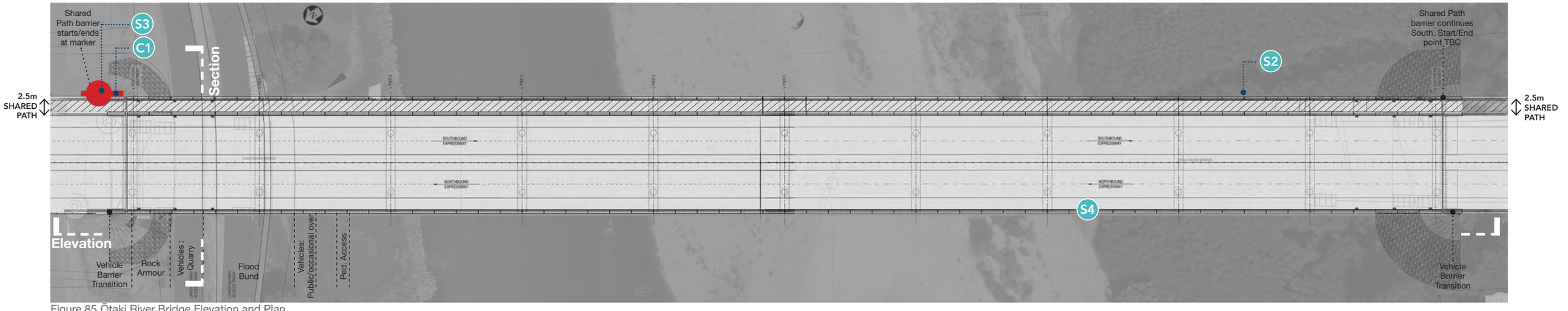


Figure 85.Ōtaki River Bridge Elevation and Plan

Ngā Hapū o Ōtaki regard the bridge as an opportunity to express manaakitanga to people visiting the area. The relationship between iwi, maunga, awa, moana and other local landmarks is integral within Māori value systems. Connectivity to these features engage users in the ever changing state of their environment. It is therefore considered paramount that the visual connection to the river, mountains and sea when driving over the bridge is maintained and enhanced. The slatted steel and lower concrete barriers of the bridge will allow these view shafts to be framed.

» Refer to section *6.3 Bridge Assemblage* for general objectives key

Specific Objectives

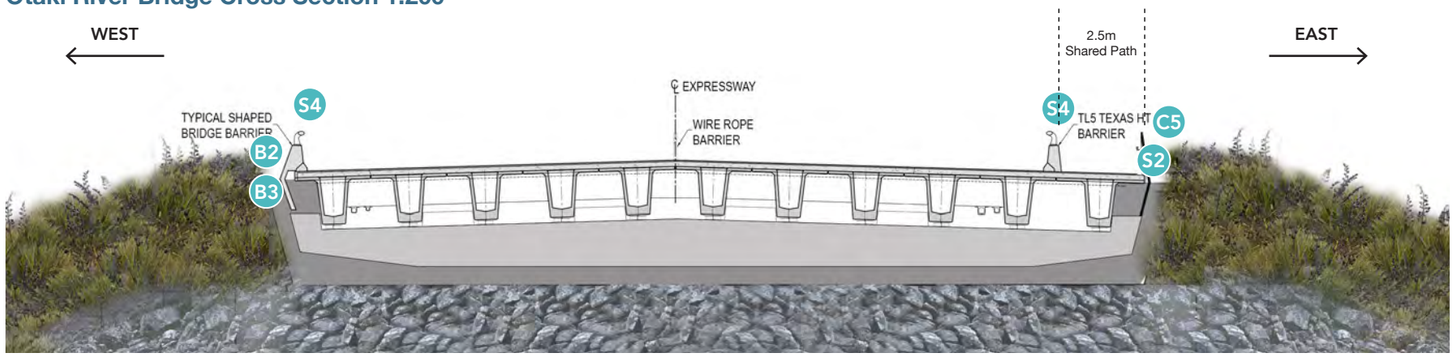
S1 Ōtaki River and Waitohu Stream piers to be the same profile, with a triangular face to the outside edge of a circular column, facing away from the bridge. The triangular profile is to have a textured finish. Refer to section 6.6.4.4 for the river bridge pier profile.

S2 The shared path is to be located on the eastern side of the bridge at 1.4m high, fabricated from metal flat bars in a slatted formation. With a folded creased profile, black finish and integrated lighting it will read similar to M2PP foot bridges. Refer to section 6.6.4.2 for the shared path barrier profile.

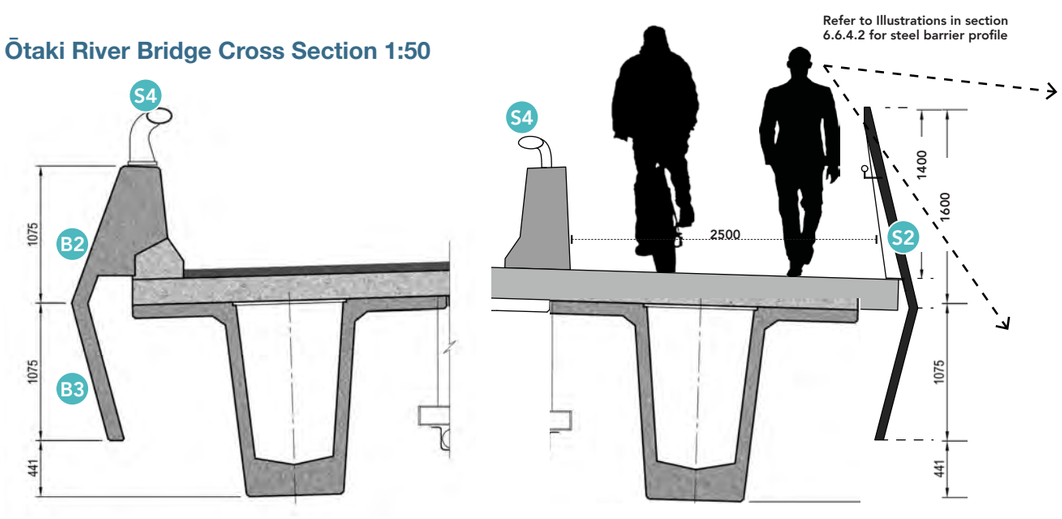
S3 The Ōtaki River is significant to the people. This significance is to be recognised in a vertical marker which is to be integrated at the northern end of the shared path barrier. The markers singular location sits as a transition between concrete and steel barriers of the bridge. Refer to section 6.6.4.3 for the vertical marker profile.

S4 The crash rail on both sides of the bridge and shared path barrier are to be finished in the same black paint.

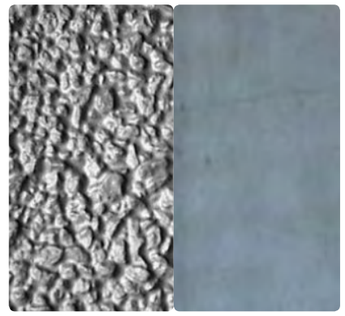
Ōtaki River Bridge Cross Section 1:200



Ōtaki River Bridge Cross Section 1:50

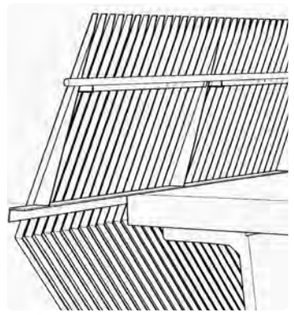


Material Palette



Pier Finish

S1 Textured Form liner finish to triangular face. Off the form standard concrete finish to the remaining structure.



Metal Barrier

S2 Metal barrier - profiled metal slatted barrier with lighting to handrail.

Bridge Barrier

B2 Simple horizontal element. Finish is off the form concrete with a selected NZTA approved graffiti coating.

B3

Ōtaki River Bridge Detail Section NTS

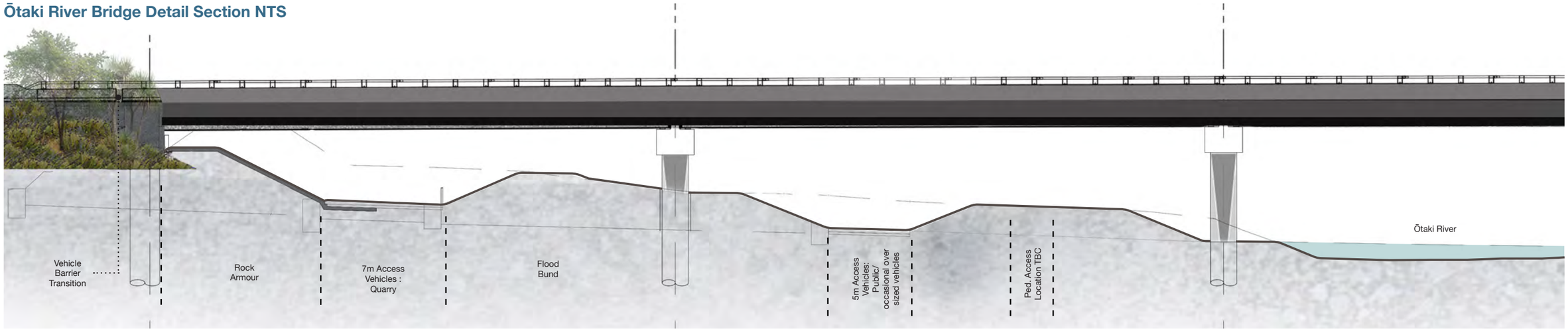


Figure 87. Ōtaki River Bridge Sections

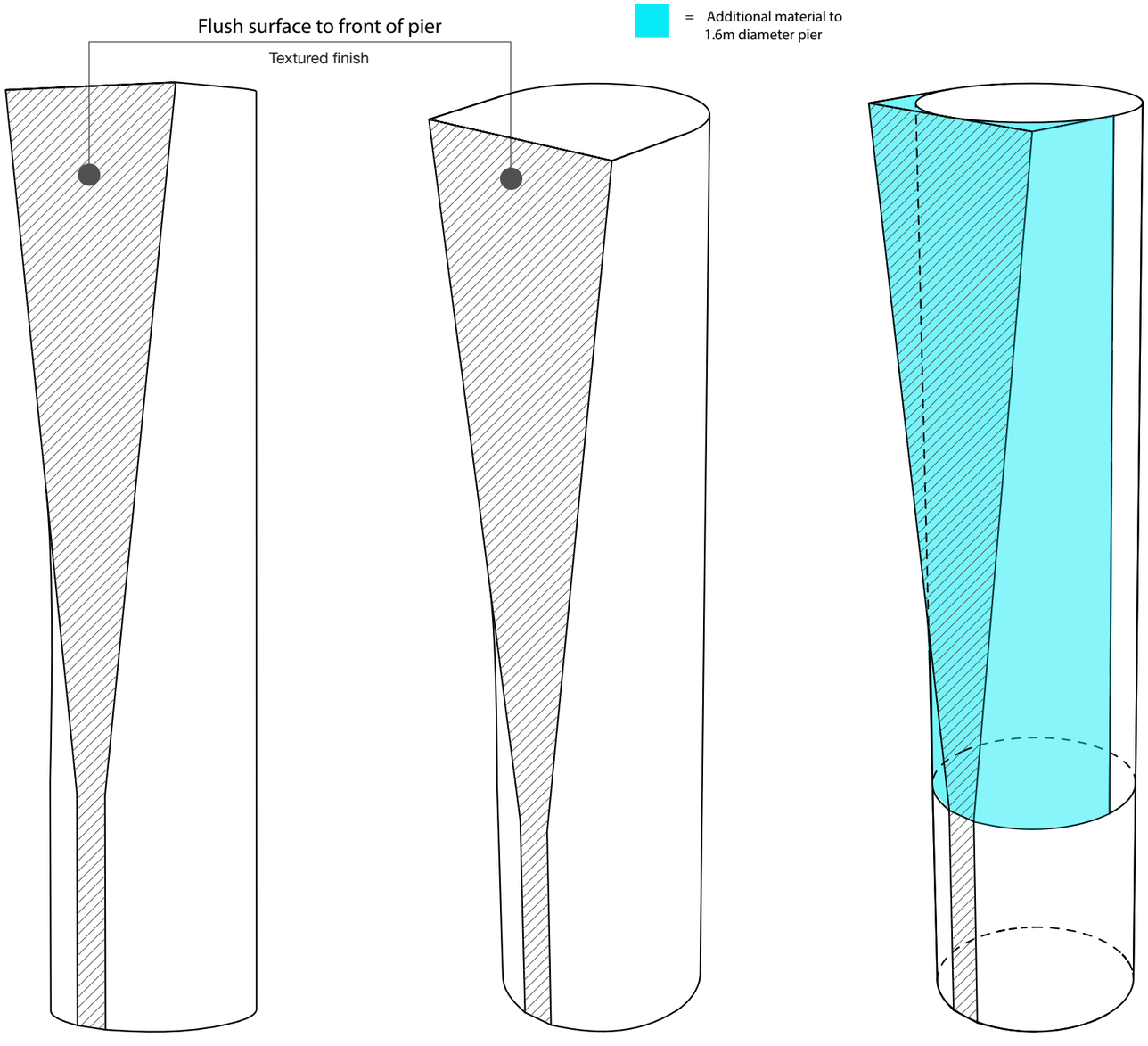
6.6.4.4 Pier Profile

Bridge 5 & 1 - Ōtaki River & Waitohu Stream Bridge Pier Profile

The Ōtaki River and Waitohu Stream piers are to be the same profile, with a triangular face to the outside edge of a circular column, facing away from the bridge. This allows the square, horizontal top of the triangle to sit up adjacent to the underside of the square crosshead. The triangular profile is to have a textured finish, achieved with an exposed aggregate form liner.

Figure 93. Ōtaki River Bridge piers - Illustrative only (Note: accessways under bridge have not been shown in this image).

Bridge 5 & 1 - Ōtaki River & Waitohu Stream Bridge Pier Profile

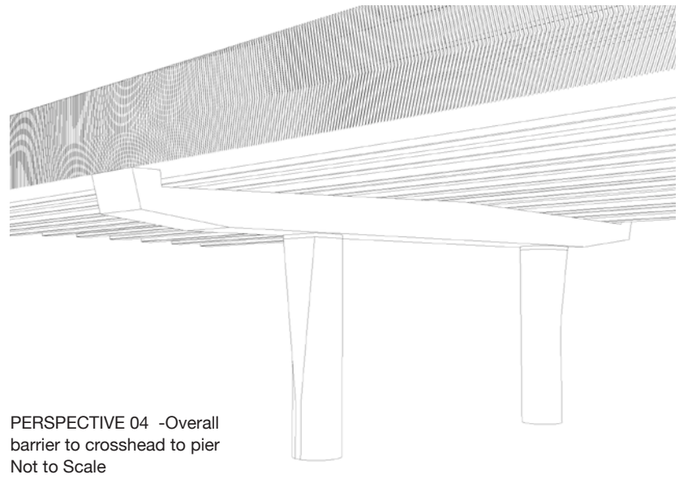


PERSPECTIVE 01
Not to Scale

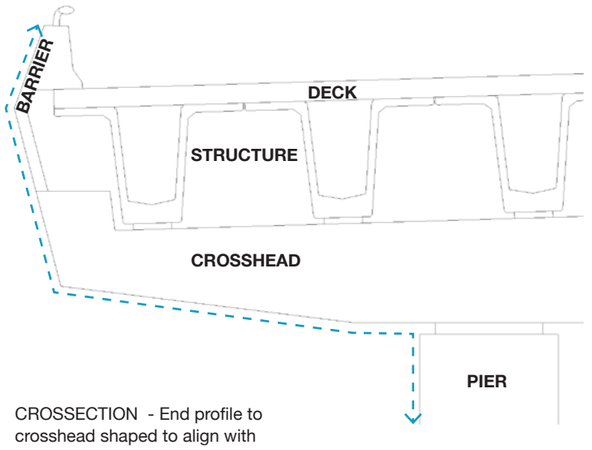
PERSPECTIVE 02
Not to Scale

PERSPECTIVE 03
Not to Scale

Figure 94.Bridge 5&1 Ōtaki River & Waitohu Stream Bridge Pier Profile

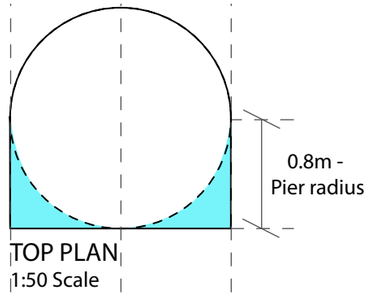


PERSPECTIVE 04 -Overall barrier to crosshead to pier
Not to Scale

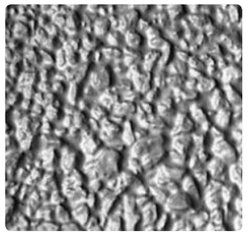


CROSSECTION - End profile to crosshead shaped to align with shaping to bridge barrier
Not to Scale

Bridge 5 & 1 - Ōtaki River & Waitohu Stream Bridge Pier Profile

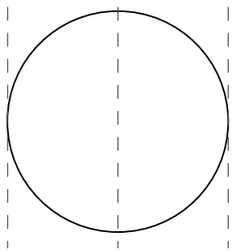


TOP PLAN
1:50 Scale

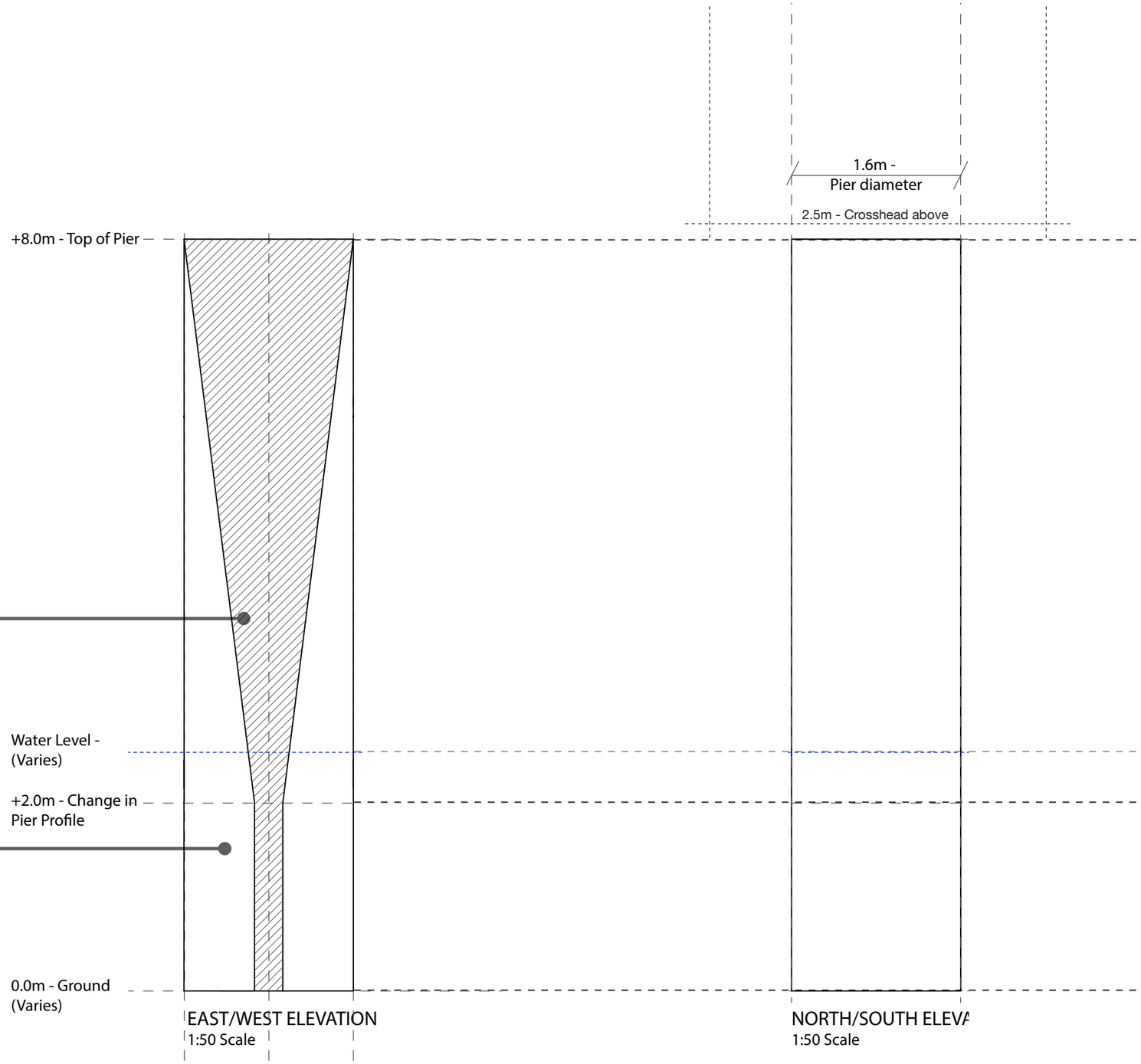


Illustrative - exposed aggregate textured appearance, achieved with a formliner to the triangular face

Illustrative - Off the form standard concrete finish to pier profile

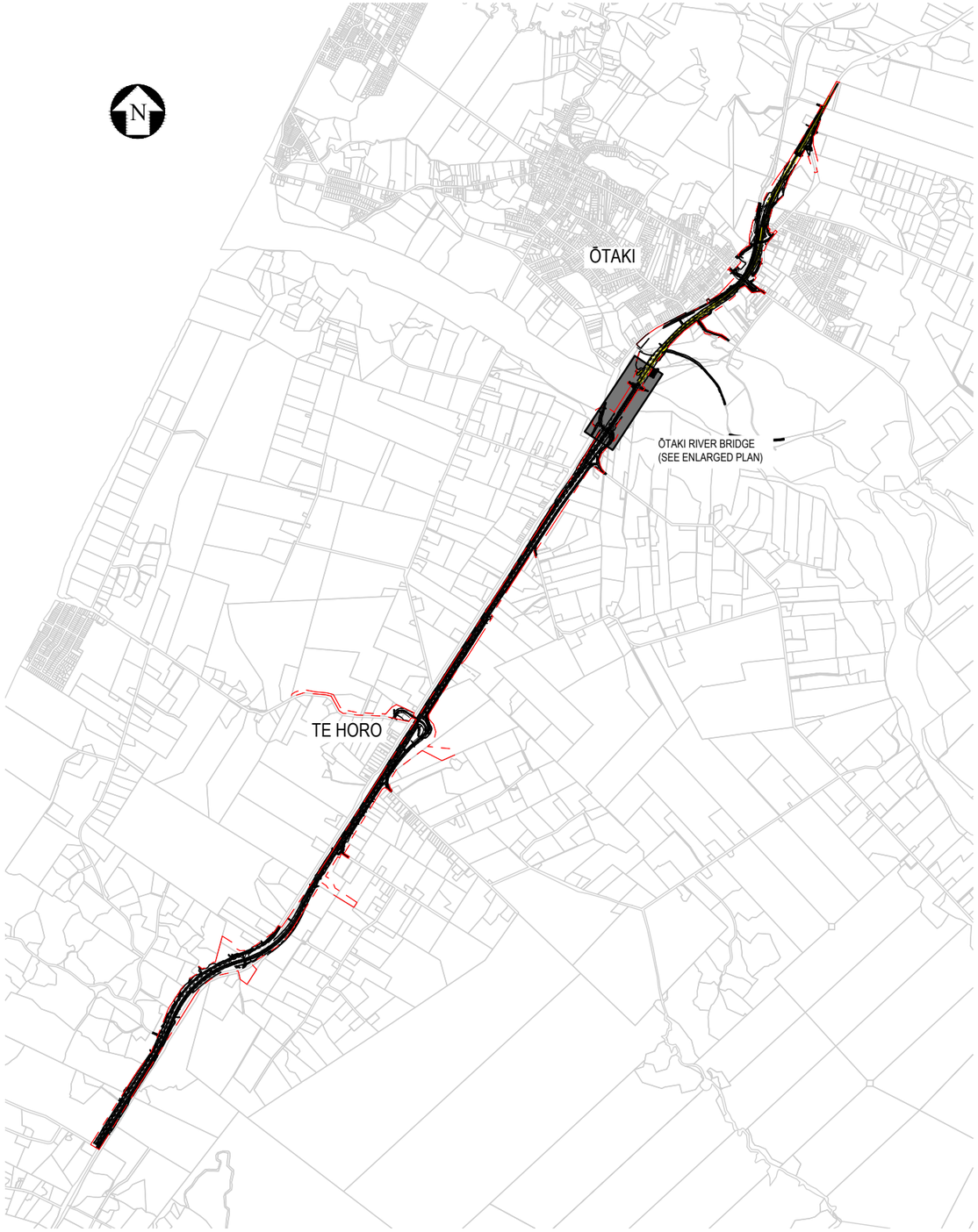


BASE PLAN
1:50 Scale

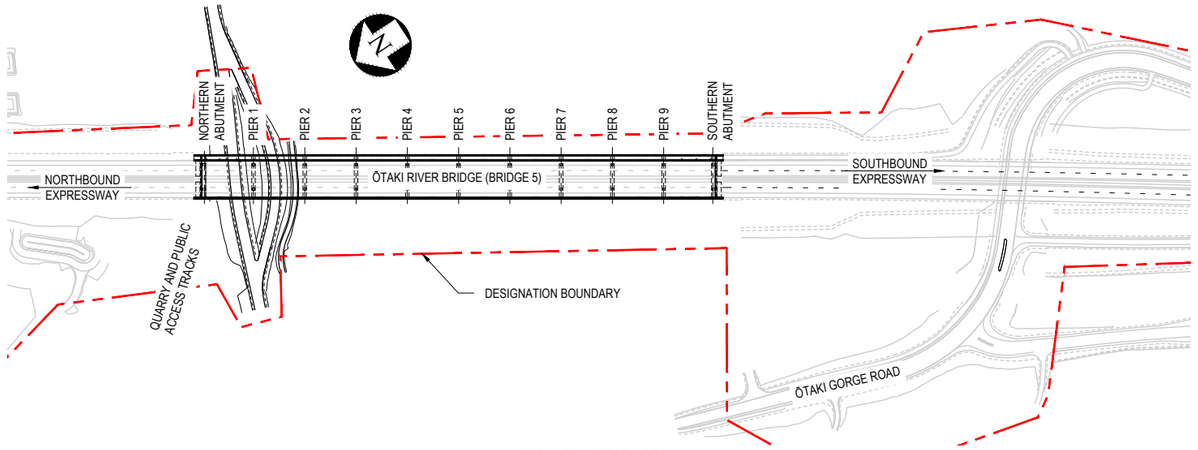


EAST/WEST ELEVATION
1:50 Scale

NORTH/SOUTH ELEVA
1:50 Scale



LOCATION PLAN
NTS



ENLARGED PLAN
NTS

STRUCTURAL DRAWING LIST

DRAWING NUMBER	DRAWING NAME	REVISION
GENERAL NOTES		
PP2O-DR-SA-0001	GENERAL NOTES	2
PP2O-DR-SA-0002	GENERAL NOTES - REINFORCED CONCRETE SHEET 1	1
PP2O-DR-SA-0003	GENERAL NOTES - REINFORCED CONCRETE SHEET 2	1
PP2O-DR-SA-0004	GENERAL NOTES - STRUCTURAL STEEL	1
PROJECT DRAWINGS		
PP2O-DR-SB-5000	STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST	E
PP2O-DR-SB-5001	GENERAL ARRANGEMENT PLAN SHEET 1	E
PP2O-DR-SB-5002	GENERAL ARRANGEMENT PLAN SHEET 2	E
PP2O-DR-SB-5011	GENERAL ARRANGEMENT SECTIONS SHEET 1	E
PP2O-DR-SB-5012	GENERAL ARRANGEMENT SECTIONS SHEET 2	E
PP2O-DR-SB-5013	GENERAL ARRANGEMENT SECTIONS SHEET 3	E
PP2O-DR-SB-5021	GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN	0
PP2O-DR-SB-5022	BORED PILE DETAILS	0
PP2O-DR-SB-5031	ABUTMENT CONCRETE SHEET 1	0
PP2O-DR-SB-5032	ABUTMENT CONCRETE SHEET 2	0
PP2O-DR-SB-5041	ABUTMENT REINFORCEMENT SHEET 1	0
PP2O-DR-SB-5042	ABUTMENT REINFORCEMENT SHEET 2	0
PP2O-DR-SB-5043	ABUTMENT REINFORCEMENT SHEET 3	0
PP2O-DR-SB-5044	ABUTMENT REINFORCEMENT SHEET 4	0
PP2O-DR-SB-5051	PIER COLUMN CONCRETE	0
PP2O-DR-SB-5052	PIER CROSSHEAD BEAM CONCRETE SHEET 1	C
PP2O-DR-SB-5053	PIER CROSSHEAD BEAM CONCRETE SHEET2	D
PP2O-DR-SB-5054	COLUMN SLEEVE DETAILS	B
PP2O-DR-SB-5061	PIER COLUMN REINFORCEMENT	0
PP2O-DR-SB-5062	PIER CROSSHEAD BEAM REINFORCEMENT SHEET 1	C
PP2O-DR-SB-5063	PIER CROSSHEAD BEAM REINFORCEMENT SHEET 2	B
PP2O-DR-SB-5081	VERTICAL GUIDE BEARING DETAILS	C
PP2O-DR-SB-5082	ELASTOMERIC BEARING DETAILS	D
PP2O-DR-SB-5083	POT BEARING DETAILS	C
PP2O-DR-SB-5084	BEARING LAYOUT PLAN	B
PP2O-DR-SB-5101	SUPERSTRUCTURE CONCRETE SHEET 1	C
PP2O-DR-SB-5102	SUPERSTRUCTURE CONCRETE SHEET 2	C
PP2O-DR-SB-5103	SUPERSTRUCTURE CONCRETE SHEET 3	C
PP2O-DR-SB-5104	SUPERSTRUCTURE CONCRETE SHEET 4	B
PP2O-DR-SB-5161	SUPERSTRUCTURE REINFORCEMENT SHEET 1	C
PP2O-DR-SB-5162	SUPERSTRUCTURE REINFORCEMENT SHEET 2	C
PP2O-DR-SB-5163	SUPERSTRUCTURE REINFORCEMENT SHEET 3	C
PP2O-DR-SB-5164	SUPERSTRUCTURE REINFORCEMENT SHEET 4	B

STRUCTURAL DRAWING LIST

DRAWING NUMBER	DRAWING NAME	REVISION
PP2O-DR-SB-5171	EXPANSION JOINT DETAILS	C
PP2O-DR-SB-5172	STEEL COVER PLATE DETAILS	C
PP2O-DR-SB-5181	SERVICES DETAILS SHEET 1	C
PP2O-DR-SB-5182	SERVICES DETAILS SHEET 2	B
PP2O-DR-SB-5191	EARLY EMBANKMENT CONSTRUCTION	B
PP2O-DR-SB-5192	SETTLEMENT INSTRUMENTATION AND MONITORING	B
PP2O-DR-SB-5193	EARTHWORKS, BACKFILLING AND DRAINAGE	B
PP2O-DR-SB-5201	SCOUR PROTECTION DETAILS	A
STANDARD DRAWINGS		
PP2O-DR-SD-0010	NOTES FOR PRECAST AND PRE-TENSIONED BRIDGE BEAMS	1
PP2O-DR-SD-0011	1525 SUPER T BEAM - TYPICAL GEOMETRY	1
PP2O-DR-SD-0012	1525 SUPER T BEAM - PRE-STRESSING DETAILS (33.5m SPAN)	C
PP2O-DR-SD-0014	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 1	1
PP2O-DR-SD-0016	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 3	C
PP2O-DR-SD-0031	SUPER T BEAM - COMMON DETAILS	1
PP2O-DR-SD-0101	TL5 PRECAST BARRIER SHEET 1	1
PP2O-DR-SD-0102	TL5 PRECAST BARRIER SHEET 2	1
PP2O-DR-SD-0103	TL5 PRECAST BARRIER SHEET 3	B
PP2O-DR-SD-0201	TEXAS T80HT RAIL SHEET 1	1
PP2O-DR-SD-0202	TEXAS T80HT RAIL SHEET 2	1
PP2O-DR-SD-0301	PEDESTRIAN BARRIER SHEET 1	B
PP2O-DR-SD-0302	PEDESTRIAN BARRIER SHEET 2	A
PP2O-DR-SD-0401	SETTLEMENT SLAB DETAILS	1

ORIGINAL IN COLOUR

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
E	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
D	80% DESIGN REVIEW	CRB	LZC	JK	17.10.17
C	30% DESIGN REVIEW	CRB	LZC	JK	17.08.17
B	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	17.02.17	Approved For Construction
Drawn	C.BURKE	07.02.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI
Peka Peka to Ōtaki Expressway
Fletcher HIGGINS Beca Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST

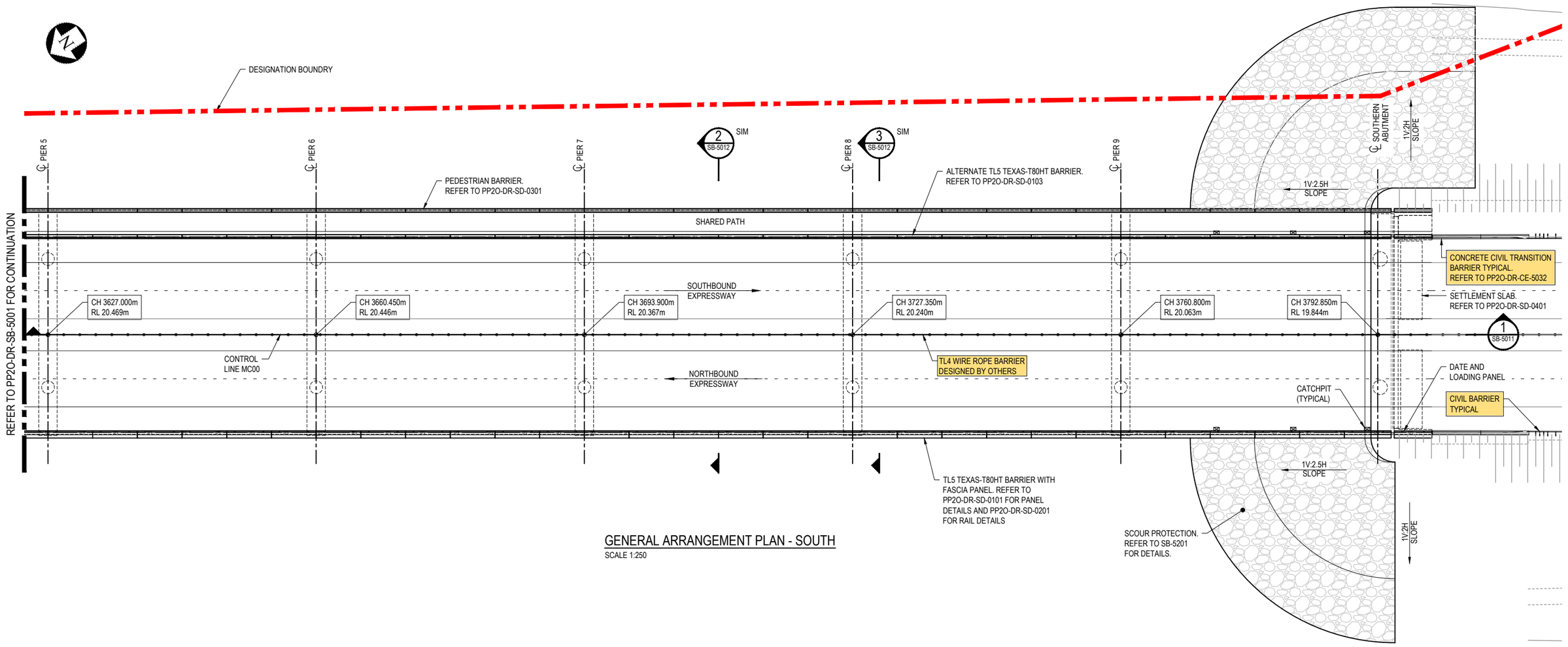
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5000
Rev.: E

Document No. R130DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5000.DWG

Save Date: 20 Dec 2017 1:16 p.m.

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.



GENERAL ARRANGEMENT PLAN - SOUTH

SCALE 1:250

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
E	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
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C	30% DESIGN REVIEW	CRB	LZC	JK	17.08.17
B	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17

Scale (A1) AS SHOWN
Scale (A3)

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Dsg Verifier	G.BROWN	15.05.17	
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NZ TRANSPORT AGENCY WAKA KOTAHI
Peka Peka to Ōtaki Expressway
Fletcher HIGGINS Beca Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: GENERAL ARRANGEMENT PLAN SHEET 2

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5002
Rev.: E

ORIGINAL SIZE A1 : DO NOT SCALE

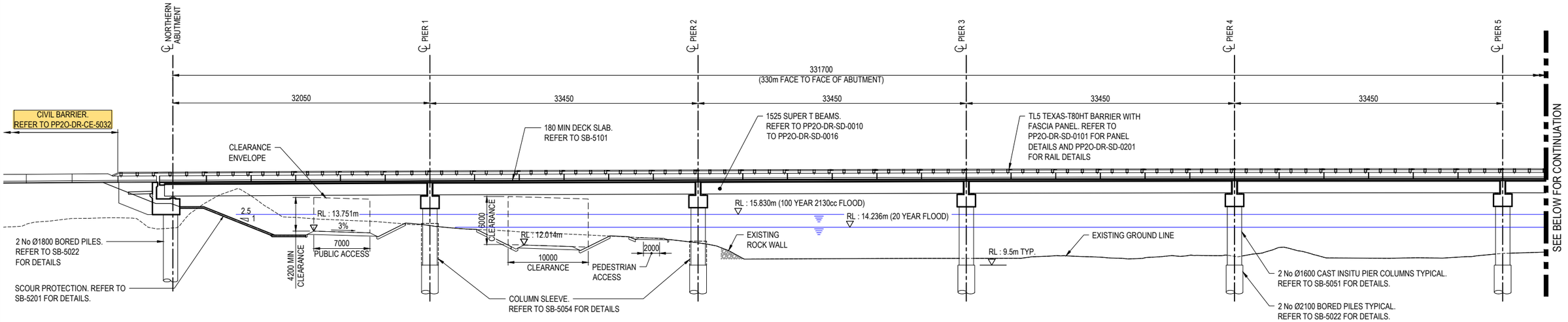
IF IN DOUBT ASK

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5002.DWG

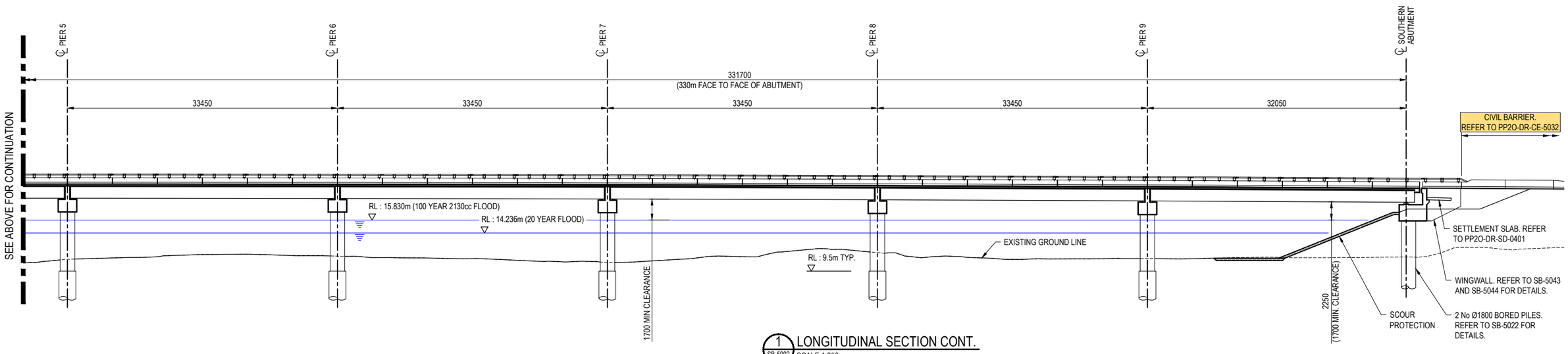
Save Date: 20 Dec 2017 1:31 p.m.

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.



1 SB-5001 LONGITUDINAL SECTION
SCALE 1:250



1 SB-5002 LONGITUDINAL SECTION CONT.
SCALE 1:250

FOR INFORMATION
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No.	Revision	By	Chk	Appd	Date
E	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
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B	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	17.02.17	Approved For Construction
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Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI
Peka Peka to Ōtaki Expressway
Fletcher HIGGINS Beca Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: GENERAL ARRANGEMENT SECTIONS SHEET 1

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5011
Rev.: E

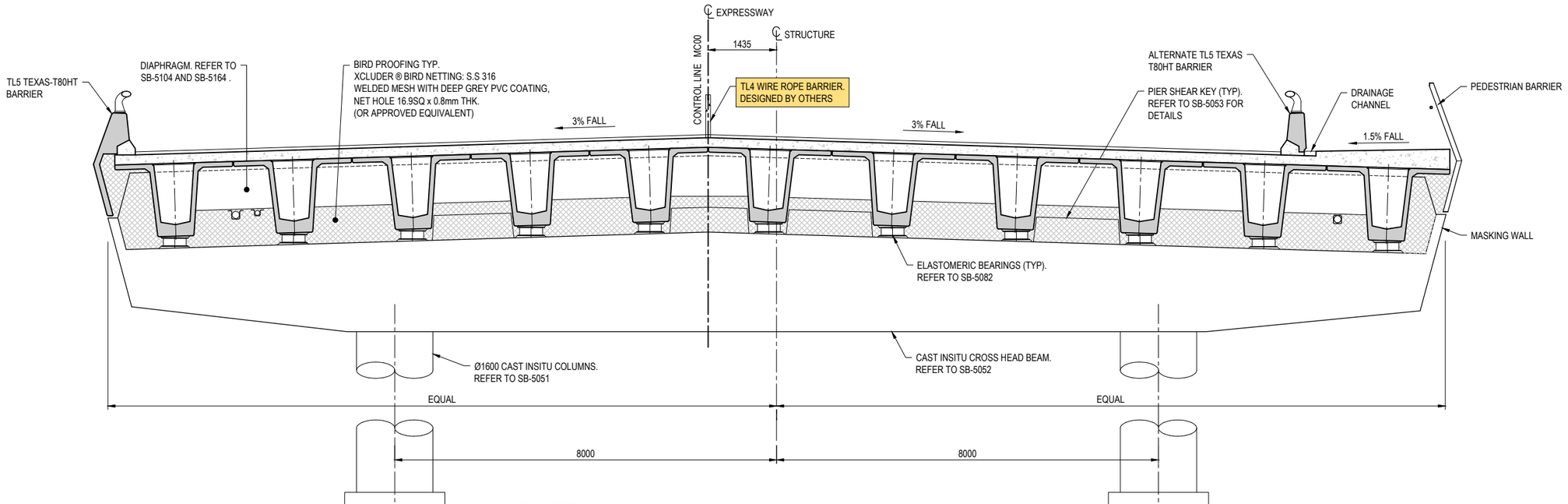
Document No. R/30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5011.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.



3 / SB-5001 TYPICAL CROSS SECTION AT PIER
SCALE 1:50

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
E	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
D	80% DESIGN REVIEW	CRB	LZC	JK	17.10.17
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B	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17

Scale (A1) AS SHOWN
Scale (A3)

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Drawn	C.BURKE	07.02.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

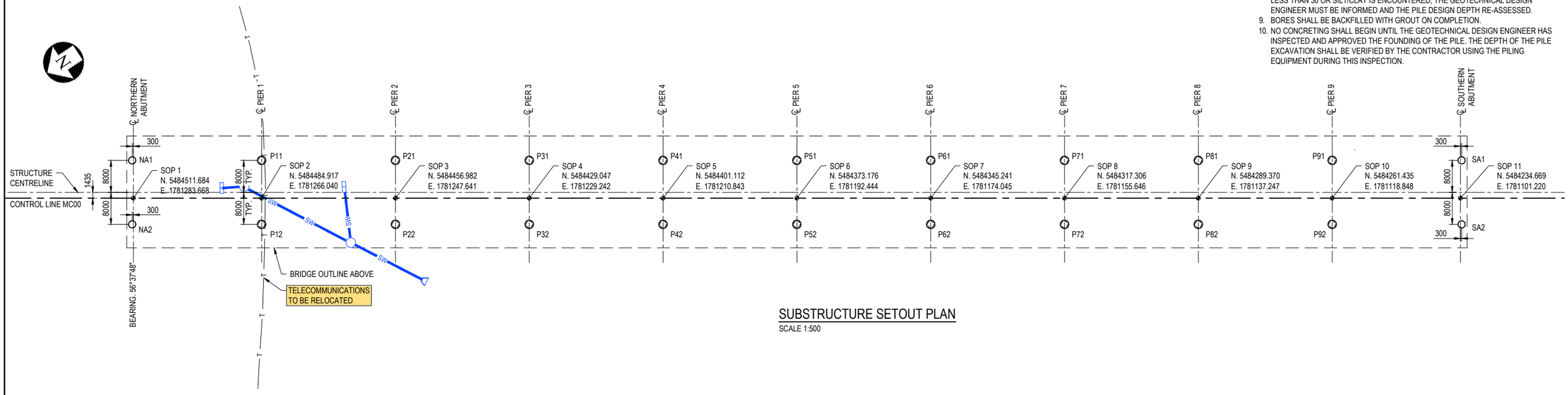
NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: GENERAL ARRANGEMENT SECTIONS SHEET 3
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5013
Rev.: E

Document No. R:\3OOD - DESIGN\DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5013.DWG

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PP2O-DR-SB-5022.
4. TABLE 1 SHOWS PRELIMINARY PILE TOE ELEVATIONS ONLY. THIS SHALL BE CONFIRMED BY THE GEOTECHNICAL DESIGN ENGINEER BASED ON RESULTS OF PROOF BORES.
5. PROOF BORES SHALL BE DRILLED AT LOCATIONS PRESENTED IN TABLE. PROOF BORES SHALL BE LOGGED BY GEOTECHNICAL DESIGN ENGINEER (OR REPRESENTATIVE). REFER TO C0501-BORED PILE SPECIFICATION FOR PROOF BOREHOLE REQUIREMENTS. BORES SHALL BE SONIC DRILLED (PQ SIZE) WITH SPT TESTING AT 1.5m CRS. PROOF BORES SHALL BE LOCATED 1.5m FROM PILE CENTRE, IN LINE WITH THE PIER CAP.
6. SEE PROOF BORE INVESTIGATION TARGET RLs. PROOF BORES SHALL ONLY BE TERMINATED WHEN INSTRUCTED TO DO SO BY THE GEOTECHNICAL DESIGN ENGINEER. THE GEOTECHNICAL DESIGN ENGINEER WILL NEED TO HAVE RECEIVED AND REVIEWED THE DAILY DRILL RECORDS FOR A PARTICULAR BOREHOLE BEFORE INSTRUCTING THE CONTRACTOR TO TERMINATE THAT BOREHOLE.
7. ADDITIONAL PROOF BORES MAY BE REQUIRED BY THE GEOTECHNICAL DESIGN ENGINEER IF PROOF BORES ENCOUNTER VARIABLE GROUND CONDITIONS.
8. PILES MUST HAVE DENSE GRAVEL OR GRAVELLY SAND (SPT N>30) 3 PILE DIAMETERS (D) ABOVE AND 5D BELOW PILE FOUNDING DEPTH. IF ANY OF THE SPT N VALUES ARE LESS THAN 30 OR SILT/CLAY IS ENCOUNTERED, THE GEOTECHNICAL DESIGN ENGINEER MUST BE INFORMED AND THE PILE DESIGN DEPTH RE-ASSESSED.
9. BORES SHALL BE BACKFILLED WITH GROUT ON COMPLETION.
10. NO CONCRETING SHALL BEGIN UNTIL THE GEOTECHNICAL DESIGN ENGINEER HAS INSPECTED AND APPROVED THE FOUNDING OF THE PILE. THE DEPTH OF THE PILE EXCAVATION SHALL BE VERIFIED BY THE CONTRACTOR USING THE PILING EQUIPMENT DURING THIS INSPECTION.



SUBSTRUCTURE SETOUT PLAN

SCALE 1:500

TABLE 1. PILE DATA

PILE LOCATION	DESIGN				GEOTECHNICAL COMPRESSION CAPACITY WITH SRF (kN)	MAXIMUM ULS AXIAL LOAD (kN)	PROOF BORE INVESTIGATION			PROOF BORE COMPLETED
	PILE SIZE	PILE TOE (RL m)	TOP OF PILE (RL m)	BASE OF TEMPORARY CASING (RL m)			PROOF BORE (REFER NOTE 5)	START SPT TESTING RL (MIN No OF SPT TESTS)	PRELIMINARY TARGET RL (m)	
NA1	Ø1800	-13.100	15.570	3.570	13600	13100	-	-	-	-
NA2							Y	-6.0 (14 No.)	-26.0	Y
P11	Ø2100	-15.000	9.500	-2.500	17000	16600	Y	-6.0 (14 No.)	-26.0	N
P12							-	-	-	-
P21	Ø2100	-15.000	9.500	-2.500	17000	16600	-	-	-	-
P22							Y	-6.0 (14 No.)	-26.0	N
P31	Ø2100	-15.000	9.500	-2.500	17000	16600	Y	-2.5 (14 No.)	-22.5	N
P32							-	-	-	-
P41	Ø2100	-13.500	9.500	-2.500	17000	16600	-	-	-	-
P42							Y	-2.5 (14 No.)	-22.5	N
P51	Ø2100	-12.800	9.500	-2.500	17000	16600	Y	-2.5 (14 No.)	-22.5	Y
P52							-	-	-	-
P61	Ø2100	-12.300	9.500	-2.500	17000	16600	-	-	-	-
P62							Y	-2.5 (14 No.)	-22.5	Y
P71	Ø2100	-11.500	9.500	-2.500	17000	16600	Y	-2.5 (14 No.)	-22.5	Y
P72							-	-	-	-
P81	Ø2100	-11.000	9.500	-2.500	17000	16600	-	-	-	-
P82							Y	-2.5 (14 No.)	-22.5	Y
P91	Ø2100	-11.000	9.500	-2.500	17000	16600	Y	-2.5 (14 No.)	-22.5	Y
P92							-	-	-	-
SA1	Ø1800	-11.000	15.450	3.450	13600	13100	-	-	-	-
SA2							Y	-1.0 (14 No.)	-21.0	Y

SERVICES LEGEND:

EXISTING		NEW
W	PUBLIC WATER	W
HW	HAUTERE WATER	HW
AW	ARCUS WATER (PRIVATE IRRIGATION SUPPLY)	AW
SW	STORMWATER	SW
SS	SANITARY SEWER	SS
OH	ELECTRA - OVERHEAD POWER CABLES	OH
P	ELECTRA - UNDERGROUND POWER CABLES	P
G	GAS	G
T	CHORUS - TELECOMMUNICATIONS	T
	KIWIRAIL FIBRE CABLE	
	KIWIRAIL SIGNALS CABLE	
	RAILWAY	
	TO BE REMOVED	

FOR BUILDING CONSENT

No.	Revision	By	Chk	Appd	Date
0	FOR BUILDING CONSENT	CRB	LZC	JK	18.12.17

Scale (A1) AS SHOWN
Scale (A3)

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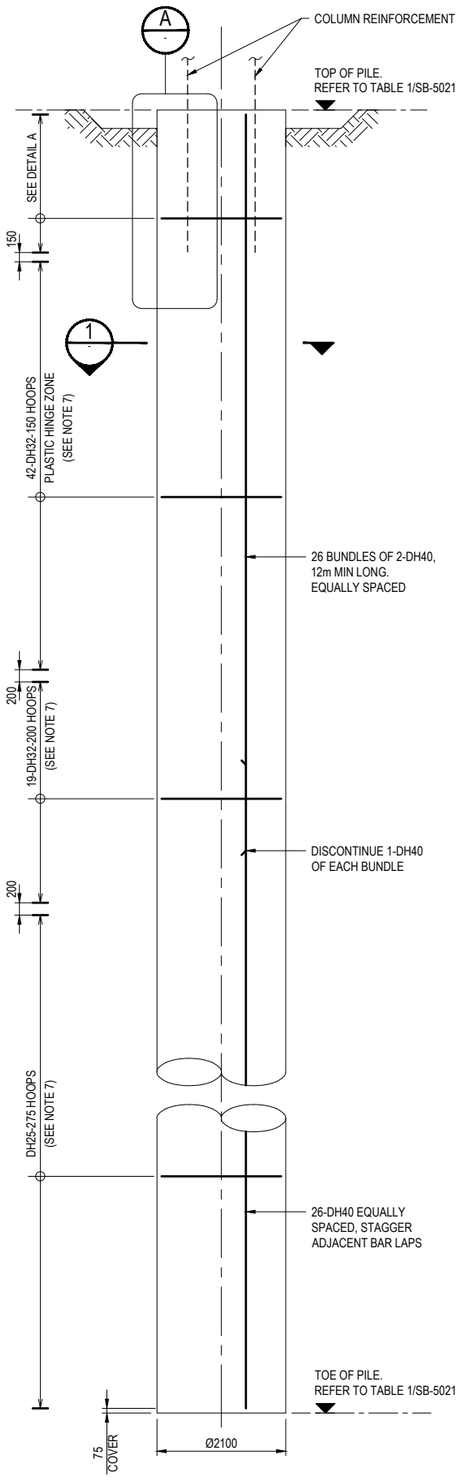
Drawn	C.BURKE	07.02.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

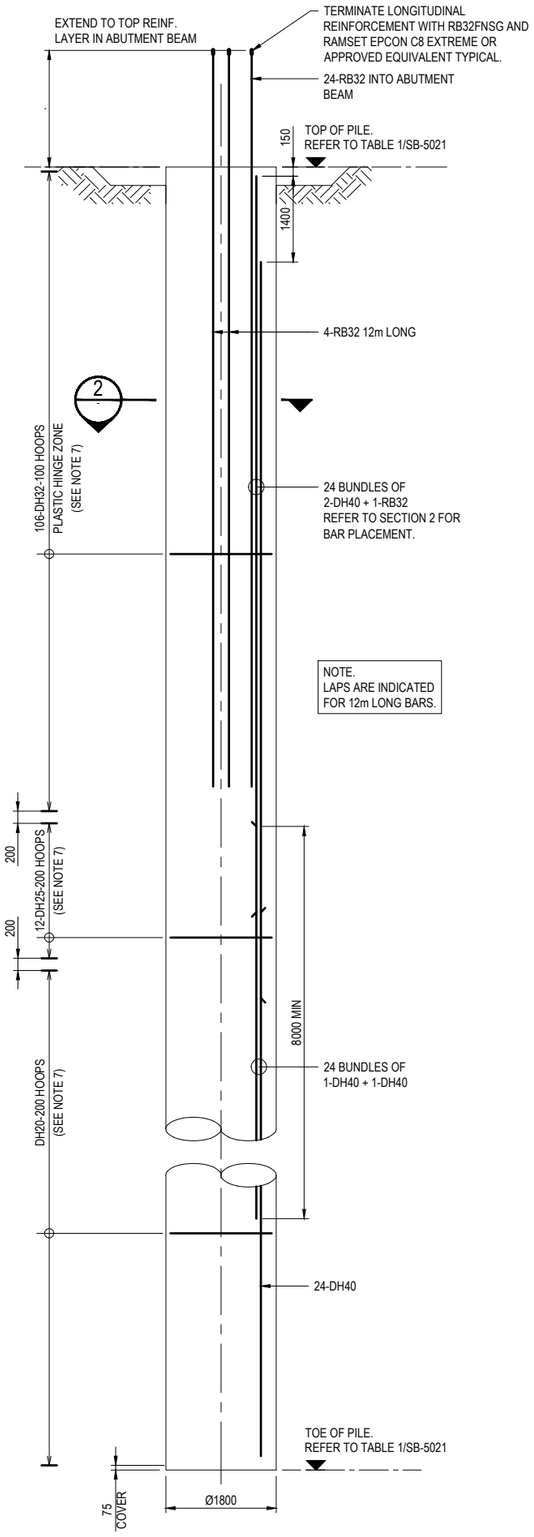
Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5021
Rev.: 0

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5021.DWG



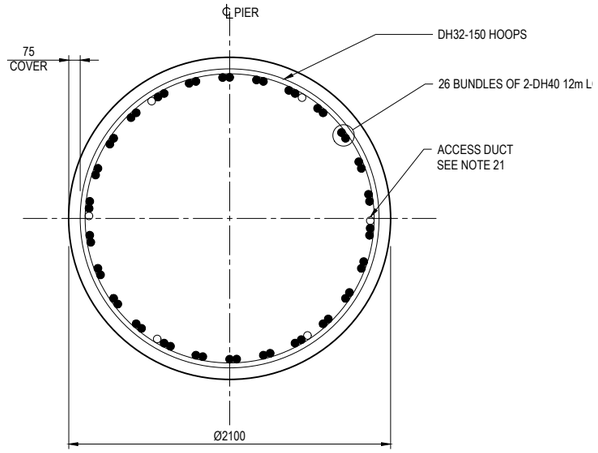
Ø2100 BORED PILE TYPICAL

SCALE. 1:50

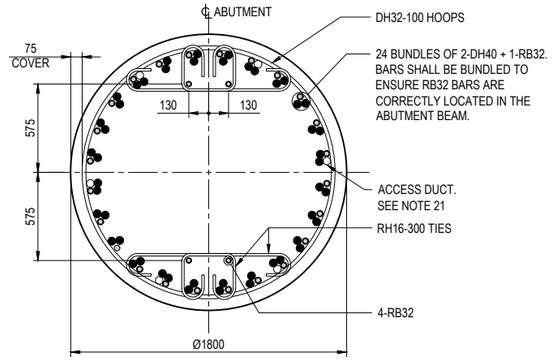


Ø1800 BORED PILE TYPICAL

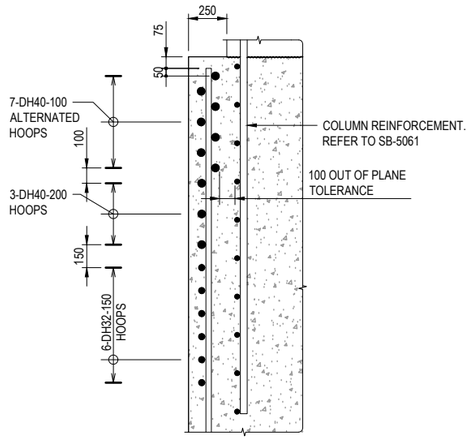
SCALE. 1:50



1 SECTION
SCALE 1:20



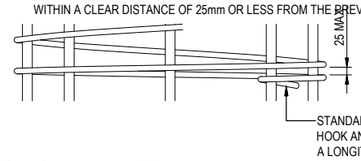
2 SECTION
SCALE 1:20



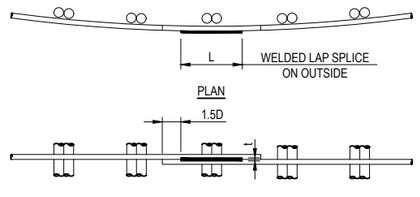
A DETAIL
SCALE 1:20

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH SB-5021.
4. COVER TO OUTER REINFORCEMENT SHALL BE A MINIMUM OF 75mm.
5. THE CONCRETE FOR BORED PILES SHALL BE GRADE 40 MPa UNO IN ACCORDANCE WITH TABLE C0600.1 OF TECHNICAL SPECIFICATION C0600.
6. ALL REINFORCEMENT SHALL BE G500E TO AS/NZS4671.
7. HOOPS SHALL BE WELDED IN ACCORDANCE WITH AS/NZS1554. HOOP SPLICES SHALL BE STAGGERED IN PLAN.
8. REINFORCEMENT ANCHORAGE AND LAP SPLICES OF TRANSVERSE REINFORCEMENT.
   - 8.1. FOR BAR DIAMETER ≤ 20mm:
     UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, ALL SPIRAL REINFORCEMENT SHALL BE ANCHORED AT BOTH FREE ENDS BY THE FOLLOWING MEANS: BY ANCHORING THE SPIRAL STIRRUP WITH A STANDARD 135° STIRRUP HOOK WHICH IS ANCHORED AROUND A LONGITUDINAL BAR. THE STIRRUP HOOK SHALL BE LOCATED WITHIN A CLEAR DISTANCE OF 25mm OR LESS FROM THE PREVIOUS SPIRAL TURN.



   - 7.2. FOR BAR DIAMETER > 20mm:
     SPLICING OF THIS INDIVIDUAL HOOP REINFORCEMENT IS REQUIRED, THE INDIVIDUAL HOOP SHALL BE LAP SPLICED BY WELDS AS SHOWN BELOW.



HOOP SIZE	WELD LENGTH L (mm)	WELD THICKNESS t (mm)	MIN. THROAT THICKNESS (mm)
Ø25	350	8	6.5
Ø32	450	10	8
Ø40	500	14	10

8. PILES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION C0501 "BORED PILES".
9. ALL TOLERANCE SHALL BE IN ACCORDANCE WITH NZS 3109:1997.
   TOPS OF PILES SHALL NOT VARY MORE THAN 75mm HORIZONTALLY AND 25mm VERTICALLY FROM THEIR TRUE POSITION AS INDICATED ON THE DRAWINGS
   THE MAXIMUM PERMITTED DEVIATION OF PILES FROM VERTICAL AT ANY LEVEL SHALL NOT BE MORE THAN 1:75.
10. PROOF BORES SHALL BE CARRIED OUT AND DESIGN PILE TOE LEVELS SHALL BE CONFIRMED BY THE DESIGNER BASED ON DRILLING RECORDS. THESE WILL BE GIVEN IN THE PILE TOE TABLE 1/SB-5021.
11. FINAL TOE LEVELS SHALL BE CONFIRMED ON SITE BY DESIGNER SUBJECT TO MATERIALS ENCOUNTERED DURING DRILLING.
12. PILES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PILE CONSTRUCTION METHODOLOGY ACCEPTED BY THE DESIGNER. OTHER METHODS OF CONSTRUCTION ARE NOT PERMITTED.
    - 12.1. DESIGN HAS ASSUMED TEMPORARY CASING WILL BE INSTALLED TO RL +0.5m BELOW GROUND LEVEL, AND THE BORE DRILLED AND SUPPORTED WITH BENTONITE BELOW.
    - 12.2. SUITABILITY OF CONSTRUCTION METHOD TO BE CONFIRMED ON THE BASIS OF BORE STABILITY TRIALS.
    - 12.3. TRIAL BORE TO BE CONSRUCTED USING THE SAME METHOD AS PROPOSED FOR PRODUCTION PILES AND METHOD ACCEPTED BY DESIGNER.
13. THE PILE WALLS SHALL BE CLEANED AND ROUGHENED TO REMOVE ALL MECHANICALLY SOFTENED MATERIALS RESULTING FROM ITS DRILLING PROCESS.
14. THE BASE OF PILE SHALL BE CLEANED TO ENSURE THAT ALL SOFT MATERIAL, BROKEN PIECES AND LOOSE MATERIALS ARE REMOVED FROM THE BASE BEFORE LOWERING THE REINFORCEMENT CAGE.
15. PLACEMENT OF REINFORCEMENT SHALL FOLLOW IMMEDIATELY AFTER THE DESIGNER'S APPROVAL OF FOUNDING CONDITION.
16. PILE CONCRETE SHALL BE PLACED BY TREMIE CONCRETE METHOD, AS SPECIFICIED IN THE TECHNICAL SPECIFICATION C0601 "REINFORCED CONCRETE SUPPLY ".
17. REMOVE THE OVERCAST CONCRETE, WITHOUT DISTURBING OR DAMAGING THE REINFORCEMENT AND ENSURE ALL LAITANCE IS REMOVED.
18. SONIC LOGGING TUBES SHALL BE INSTALLED AND PILES TESTED FOR INTEGRITY IN ACCORDANCE WITH THE SPECIFICATIONS.
19. ALL WELDS SHALL BE SP WELD AND SHALL BE VISUALLY EXAMINED BY A SUITABLY QUALIFIED AND EXPERIENCED WELDING INSPECTOR.
20. FOR THE EXTENT OF NON-DESTRUCTIVE WELD TESTING, REFER TO TABLE C0601.1 OF TECHNICAL SPECIFICATION C0601.
21. 6 No. 40 TO 50mm ID MILD STEEL ACCESS DUCTS EQUALLY SPACED AROUND DIAMETER OF PILE AS SHOWN ON SECTION 1 (CROSS HOLE SONIC LOGGING TUBES FOR INTEGRITY TESTING) IN ACCORDANCE WITH ASTM D6760-14:
    - 21.1. DUCTS SHALL BE CLOSE ENDED AT BOTTOM AND FITTED WITH REMOVABLE END CAPS AT TOP.
    - 21.2. FILL DUCTS WITH WATER PRIOR TO CONCRETING.
    - 21.3. PROVIDE 200mm COVER TO BASE OF PILE. TOP OF DUCTS SHALL BE KEPT FREE FROM OBSTRUCTIONS WHICH COULD PREVENT ACCESS FOR TESTING. EXTEND TOP OF DUCTS TO A MAXIMUM OF 500mm PAST THE TOP OF PILE OR 100mm PAST THE LONGITUDINAL REINFORCEMENT TO ALLOW ACCESS FOR TESTING.
    - 21.4. THE TOPS OF ALL DUCTS IN A PILE SHALL BE AT THE SAME LEVEL.

FOR BUILDING CONSENT

No.	Revision	By	Chk	Appd	Date
0	FOR BUILDING CONSENT	CRB	LZC	JK	18.12.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	08.05.17	Approved For Construction
Drawn	C.BURKE	17.02.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

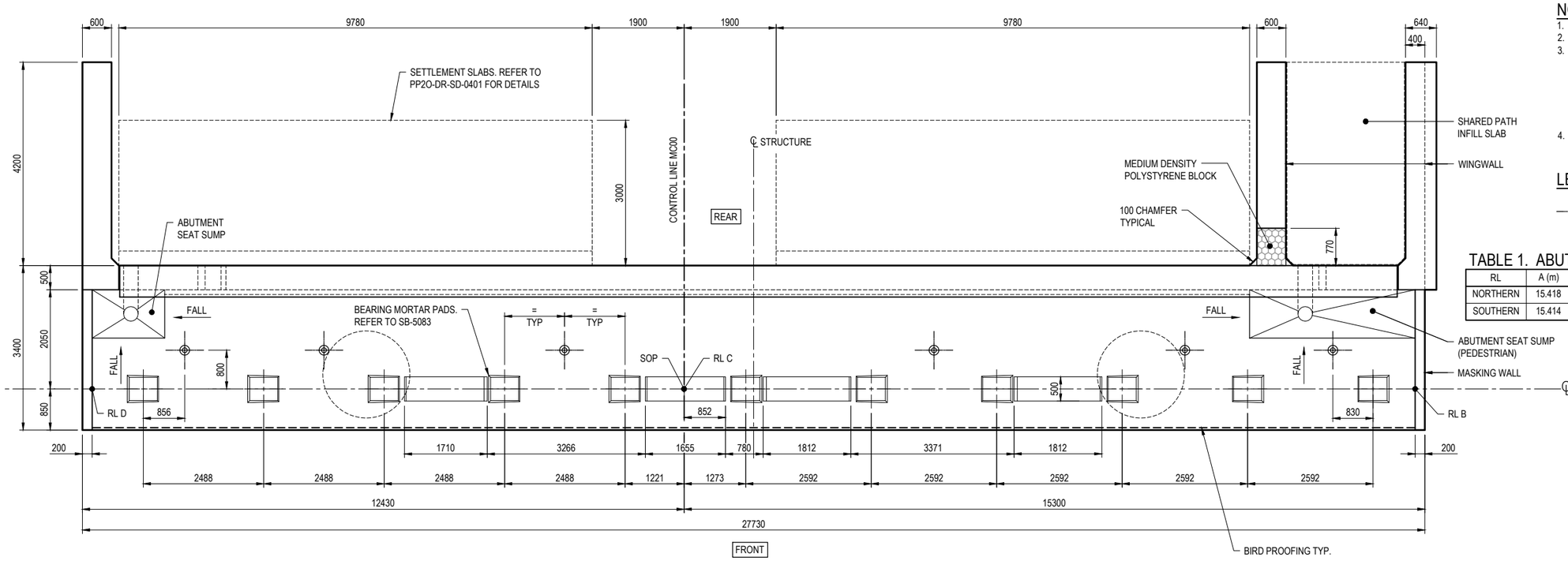
Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: BORED PILE DETAILS

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5022
Rev.: 0

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SB\PP2O-DR-SB-5022.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK



NOTE.
SOUTHERN ABUTMENT HANDED

NORTHERN ABUTMENT PLAN

SCALE 1:50

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. ALL TOLERANCE SHALL BE IN ACCORDANCE WITH NZS 3109:1997.

LENGTH	±10mm
CROSS SECTION	± 5mm
DUCT SIZES AND POSITIONS (IF ANY)	± 5mm
CONCRETE COVERS	+ 5mm , - 0mm
REINFORCEMENT PLACEMENT	± 10mm
STRAIGHTNESS	L/500

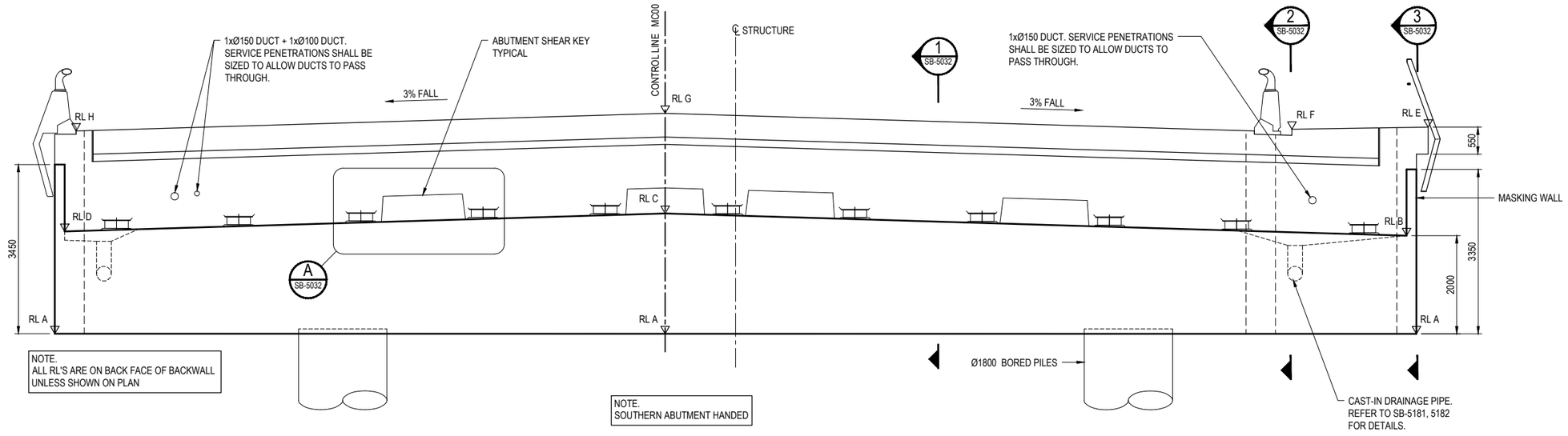
4. MAXIMUM JACKING LOAD (SLS): 2100kN

LEGEND:

JACKING POINT LOCATION

TABLE 1. ABUTMENT REDUCED LEVELS

RL	A (m)	B (m)	C (m)	D (m)	E (m)	F (m)	G (m)	H (m)
NORTHERN	15.418	17.416	17.869	17.502	19.630	19.562	19.844	19.536
SOUTHERN	15.414	17.412	17.865	17.498	19.625	19.558	19.840	19.532



NOTE.
ALL RL'S ARE ON BACK FACE OF BACKWALL UNLESS SHOWN ON PLAN

NOTE.
SOUTHERN ABUTMENT HANDED

NORTHERN ABUTMENT ELEVATION

SCALE 1:50

FOR BUILDING CONSENT

No.	Revision	By	Chk	Appd	Date
0	FOR BUILDING CONSENT	CRB	LZC	JK	18.12.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	08.05.17	Approved For Construction
Drawn	C.BURKE	14.03.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

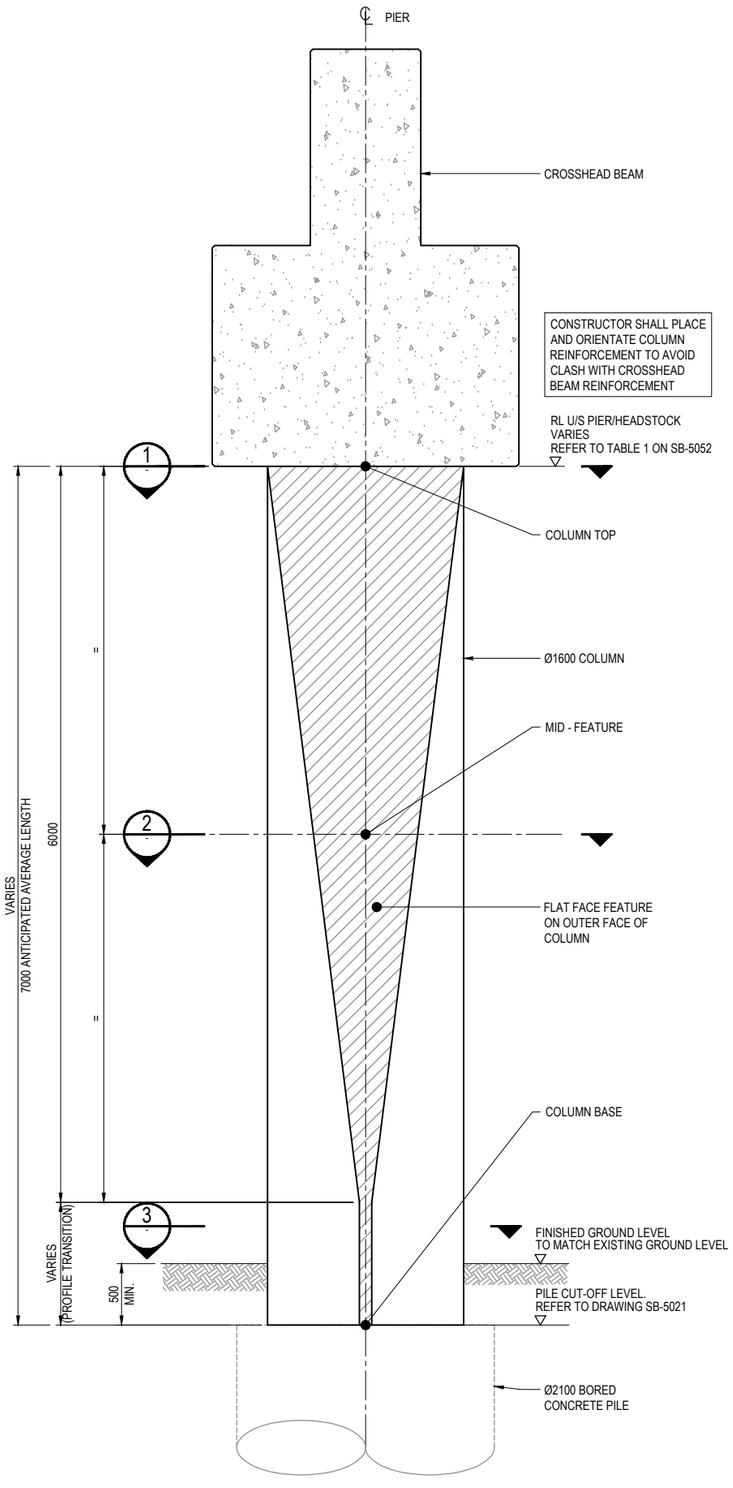
* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

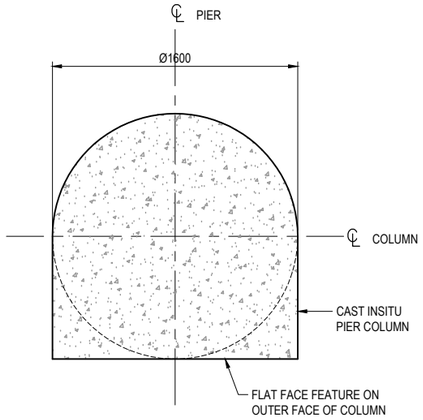
Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: ABUTMENT CONCRETE SHEET 1

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5031
Rev.: 0

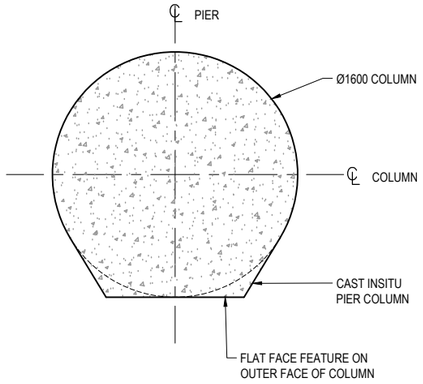
Document No. R:\30\DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SEPP2O-DR-SB-5031.DWG



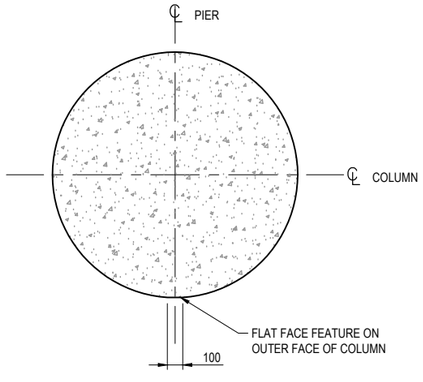
COLUMN END ELEVATION
SCALE 1:25



1 COLUMN TOP GEOMETRY
SCALE 1:20

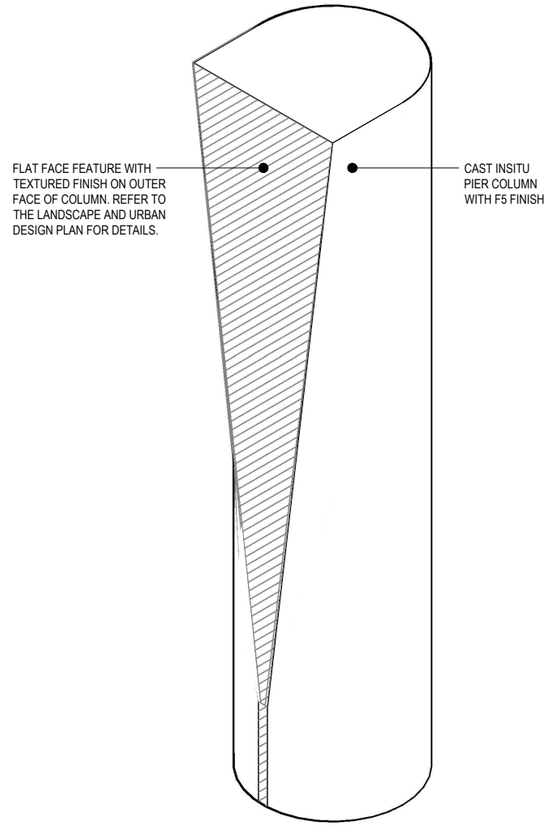


2 COLUMN AT MID - FEATURE GEOMETRY
SCALE 1:20



3 COLUMN BASE GEOMETRY
SCALE 1:20

FLAT FACE FEATURE WITH TEXTURED FINISH ON OUTER FACE OF COLUMN. REFER TO THE LANDSCAPE AND URBAN DESIGN PLAN FOR DETAILS.



3D VIEW
NTS

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR ALL GENERAL NOTES UNO.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm UNO.
4. ALL TOLERANCES SHALL BE IN ACCORDANCE WITH NZS 3109:1997.

PIER COLUMNS:	
- LENGTH	±10mm
- CROSS SECTION	± 5mm
- DUCT SIZES AND POSITIONS (IF ANY)	± 5mm
- CONCRETE COVERS	+ 5mm, - 0mm
- REINFORCEMENT PLACEMENT	±10mm
- STRAIGHTNESS	L/500

FOR BUILDING CONSENT

No.	Revision	By	Chk	Appd	Date
0	FOR BUILDING CONSENT	CRB	LZC	JK	18.12.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	08.05.17	Approved For Construction
Drawn	C.BURKE	14.03.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: PIER COLUMN CONCRETE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5051
Rev.: 0

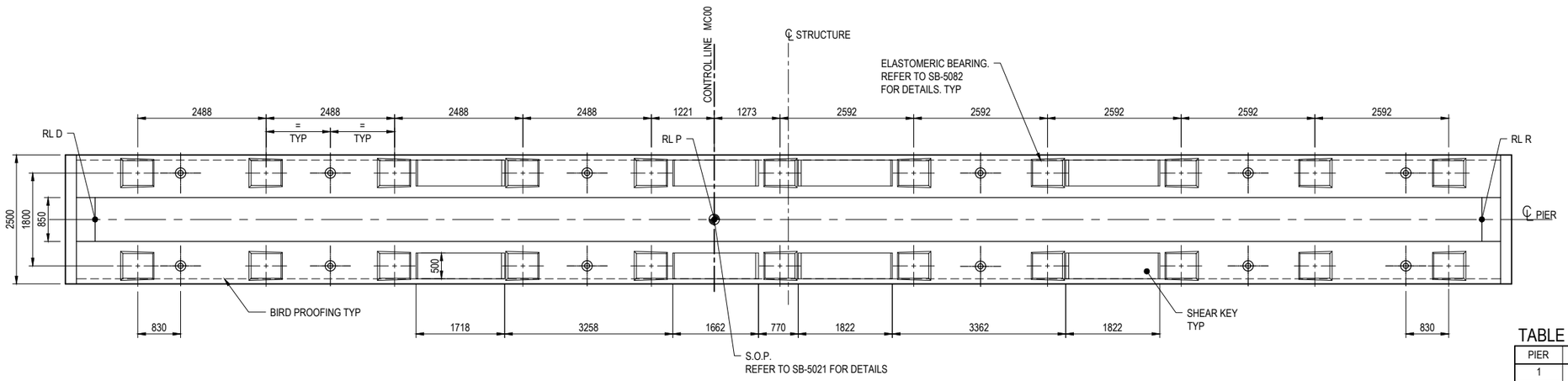
Document No. R:\30DD - DESIGN\DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SB\PP2O-DR-SB-5051.DWG

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PP2O-DR-SB-5051.
4. ALL TOLERANCES SHALL BE IN ACCORDANCE WITH NZS 3109:1997.
   CROSS HEAD BEAM:
   - LENGTH ±10mm
   - CROSS SECTION ± 5mm
   - DUCT SIZES AND POSITIONS (IF ANY) ± 5mm
   - CONCRETE COVERS + 5mm, - 0mm
   - REINFORCEMENT PLACEMENT ±10mm
   - STRAIGHTNESS L/500
5. MAXIMUM JACKING LOAD (SLS): 2100kN

LEGEND:

JACKING POINT LOCATION

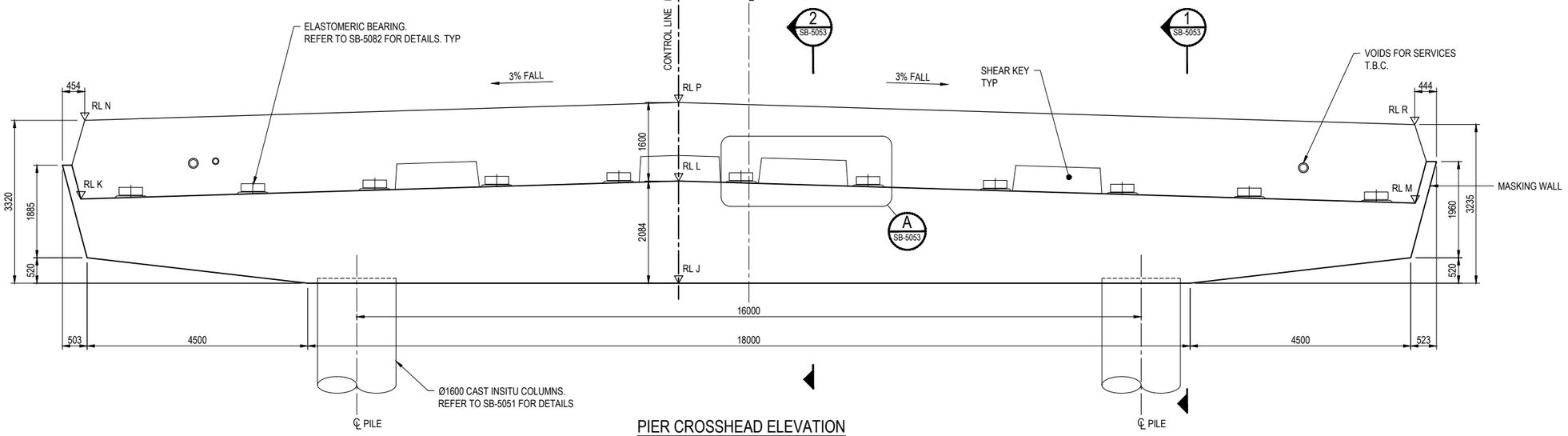


PIER CROSSHEAD PLAN

SCALE 1:50

TABLE 1. PIER LEVELS

PIER	J (m)	K (m)	L (m)	M (m)	N (m)	P (m)	R (m)
1	15.987	17.705	18.071	17.618	19.307	19.671	19.221
2	16.187	17.905	18.271	17.818	19.507	19.871	19.421
3	16.306	18.024	18.390	17.937	19.626	19.990	19.540
4	16.387	18.105	18.471	18.018	19.707	20.071	19.621
5	16.417	18.135	18.501	18.048	19.737	20.101	19.651
6	16.385	18.103	18.469	18.016	19.705	20.069	19.619
7	16.305	18.023	18.389	17.936	19.625	19.989	19.539
8	16.184	17.902	18.268	17.815	19.504	19.868	19.418
9	16.001	17.719	18.085	17.632	19.321	19.685	19.235



PIER CROSSHEAD ELEVATION

SCALE 1:50

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
C	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
B	80% DESIGN REVIEW	CRB	LZC	JK	17.10.17
A	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	08.05.17	Approved For Construction
Drawn	C.BURKE	14.03.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

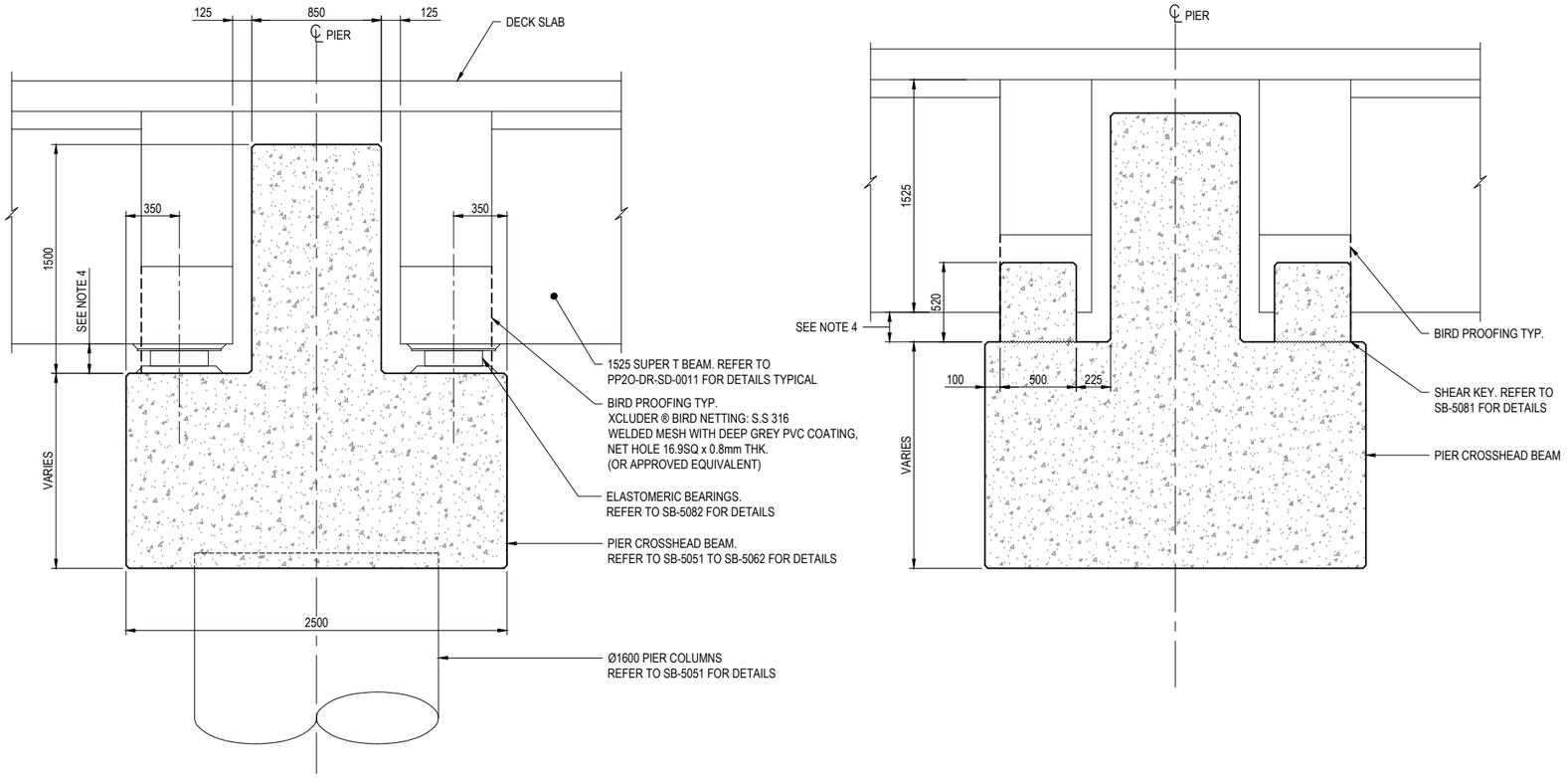
NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: PIER CROSSHEAD BEAM CONCRETE SHEET 1
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5052
Rev.: C

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5052.DWG

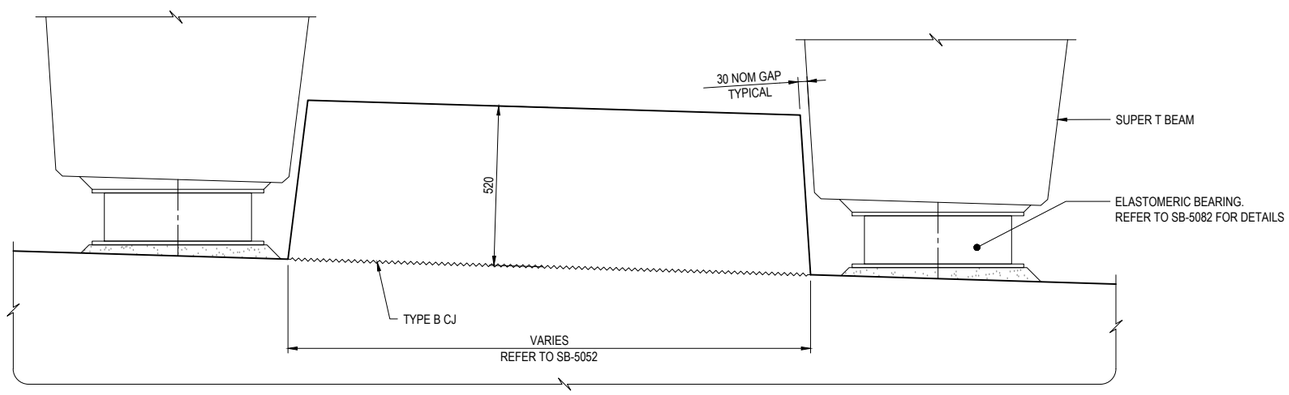
NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-5001 FOR BRIDGE SPECIFIC NOTES.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH PP2O-DR-SB-5052.
4. BEARING HEIGHT SHALL BE CONFIRMED WITH FINALISED BEARING SUPPLIER.



1 SB-5052 SECTION
SCALE 1:20

2 SB-5052 SECTION
SCALE 1:20



A SB-5052 DETAIL - SHEAR KEY
SCALE 1:10

No.	Revision	By	Chk	Appd	Date
D	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
C	80% DESIGN REVIEW	CRB	LZC	JK	17.10.17
B	80% DESIGN REVIEW	CRB	LZC	JK	22.05.17
A	30% DESIGN REVIEW	CRB	LZC	JK	24.02.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	17.02.17	Approved For Construction
Drawn	C.BURKE	07.02.17	
Dsg Verifier	G.BROWN	15.05.17	
Drg Check	B.FLYNN	22.05.17	Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

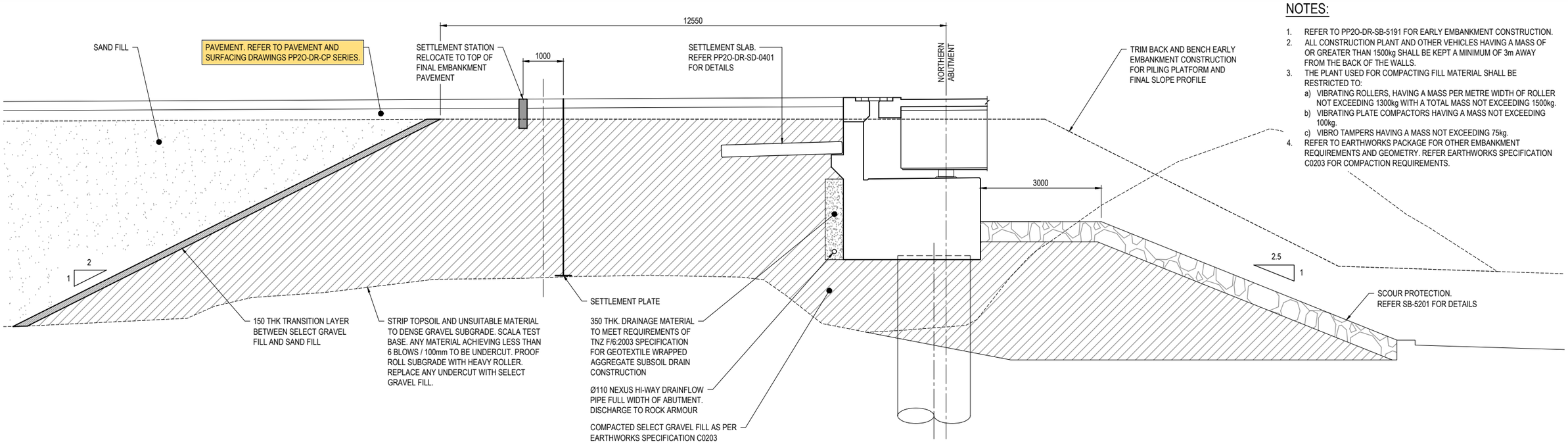
Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: PIER CROSSHEAD BEAM CONCRETE SHEET2

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5053
Rev.: D

FOR INFORMATION
NOT FOR CONSTRUCTION

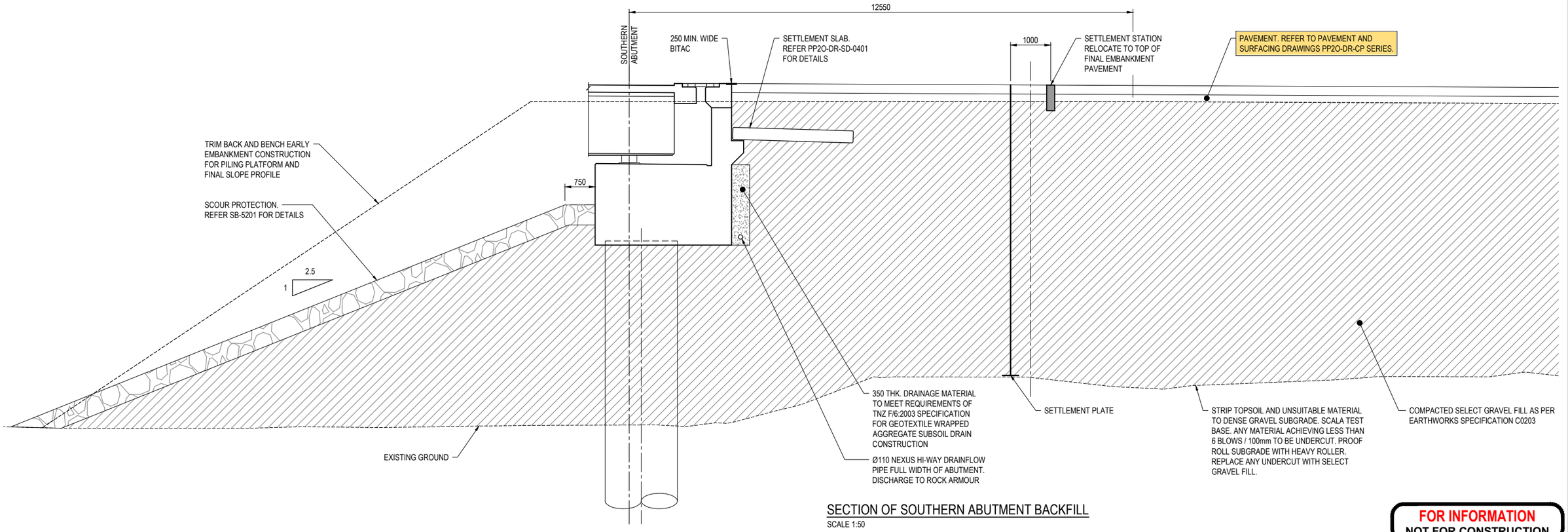
NOTES:

1. REFER TO PP2O-DR-SB-5191 FOR EARLY EMBANKMENT CONSTRUCTION.
2. ALL CONSTRUCTION PLANT AND OTHER VEHICLES HAVING A MASS OF OR GREATER THAN 1500kg SHALL BE KEPT A MINIMUM OF 3m AWAY FROM THE BACK OF THE WALLS.
3. THE PLANT USED FOR COMPACTING FILL MATERIAL SHALL BE RESTRICTED TO:
   a) VIBRATING ROLLERS, HAVING A MASS PER METRE WIDTH OF ROLLER NOT EXCEEDING 1300kg WITH A TOTAL MASS NOT EXCEEDING 1500kg.
   b) VIBRATING PLATE COMPACTORS HAVING A MASS NOT EXCEEDING 100kg.
   c) VIBRO TAMPERS HAVING A MASS NOT EXCEEDING 75kg.
4. REFER TO EARTHWORKS PACKAGE FOR OTHER EMBANKMENT REQUIREMENTS AND GEOMETRY. REFER EARTHWORKS SPECIFICATION C0203 FOR COMPACTION REQUIREMENTS.



SECTION OF NORTHERN ABUTMENT BACKFILL

SCALE 1:50



SECTION OF SOUTHERN ABUTMENT BACKFILL

SCALE 1:50

FOR INFORMATION
NOT FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
B	100% DESIGN REVIEW	CRB	LZC	JK	20.12.17
A	80% DESIGN REVIEW	CRB	LZC	JK	17.10.17

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	08.05.17	Approved For Construction
Drawn	D.PILIANG	08.05.17	
Dsg Verifier			
Drg Check			Date

* Refer to Original Hardcopy for Signature

NZ TRANSPORT AGENCY WAKA KOTAHI
Peka Peka to Ōtaki Expressway
Fletcher HIGGINS Beca Tonkin+Taylor

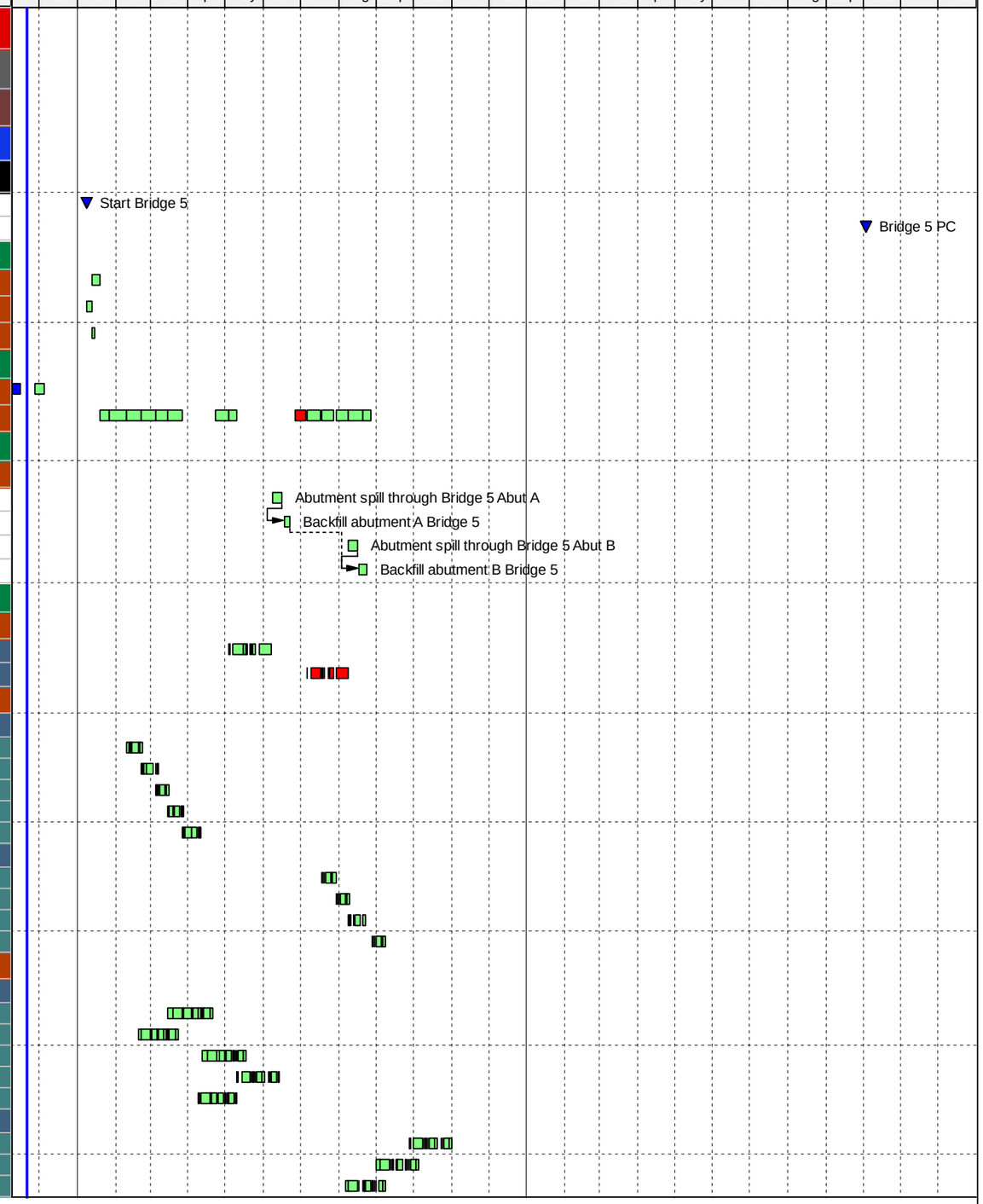
Subject: ŌTAKI RIVER BRIDGE (BRIDGE 5)
Title: EARTHWORKS, BACKFILLING AND DRAINAGE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-5193
Rev.: B

Document No. R:\30\0D - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-5193.DWG

APPENDIX D – PROGRAMME

Activity Name	Orig Dur	Rem Dur	Start	Finish
Peka Peka to Otaki Expressway - Master Tar	498d	451d	20-Sep-17 A	03-Oct-19
Construction	498d	451d	20-Sep-17 A	03-Oct-19
Zone 1 (North): Ch 0 - 3800	498d	451d	20-Sep-17 A	03-Oct-19
Structures	498d	451d	20-Sep-17 A	03-Oct-19
Bridge 5 - Otaki River Bridge (Ch 3450-3800)	498d	451d	20-Sep-17 A	03-Oct-19
Start Bridge 5	0d	0d	08-Jan-18*	
Bridge 5 PC	0d	0d		03-Oct-19
Enabling Works	10d	10d	08-Jan-18	19-Jan-18
13 Construction Pads	5d	5d	12-Jan-18	19-Jan-18
12 Access Track	5d	5d	08-Jan-18	12-Jan-18
11 Establishment / Disestablishment	1d	1d	12-Jan-18	15-Jan-18
Piling	227d	180d	20-Sep-17 A	27-Aug-18
Proof Bore Holes	53d	6d	20-Sep-17 A	04-Dec-17
Bored Piling	151d	151d	19-Jan-18	27-Aug-18
Ground Works	55d	55d	08-Jun-18	23-Aug-18
Other	55d	55d	08-Jun-18	23-Aug-18
Abutment spill through Bridge 5 Abut A	6d	6d	08-Jun-18	15-Jun-18
Backfill abutment A Bridge 5	5d	5d	18-Jun-18	22-Jun-18
Abutment spill through Bridge 5 Abut B	6d	6d	09-Aug-18	16-Aug-18
Backfill abutment B Bridge 5	5d	5d	17-Aug-18	23-Aug-18
Substructure	184d	184d	09-Feb-18	31-Oct-18
51 Abutments	68d	68d	04-May-18	08-Aug-18
Abutment A	24d	24d	04-May-18	07-Jun-18
Abutment B	24d	24d	06-Jul-18	08-Aug-18
53 Columns	147d	147d	09-Feb-18	07-Sep-18
Stage 1 Columns (5 Piers)	42d	42d	09-Feb-18	11-Apr-18
Pier 5	9d	9d	09-Feb-18	22-Feb-18
Pier 6	11d	11d	21-Feb-18	07-Mar-18
Pier 7	9d	9d	05-Mar-18	16-Mar-18
Pier 8	10d	10d	15-Mar-18	28-Mar-18
Pier 9	10d	10d	27-Mar-18	11-Apr-18
Stage 2 Columns (4 Piers)	38d	38d	18-Jul-18	07-Sep-18
Pier 1	9d	9d	18-Jul-18	30-Jul-18
Pier 2	9d	9d	30-Jul-18	09-Aug-18
Pier 3	10d	10d	09-Aug-18	22-Aug-18
Pier 4	9d	9d	28-Aug-18	07-Sep-18
54 Crosshead	178d	178d	19-Feb-18	31-Oct-18
Stage 1 Crossheads (5 Piers)	79d	79d	19-Feb-18	13-Jun-18
Pier 6	24d	24d	15-Mar-18	20-Apr-18
Pier 5	24d	24d	19-Feb-18	23-Mar-18
Pier 7	25d	25d	12-Apr-18	17-May-18
Pier 8	24d	24d	10-May-18	13-Jun-18
Pier 9	23d	23d	09-Apr-18	10-May-18
Stage 2 Crossheads (4 Piers)	69d	69d	26-Jul-18	31-Oct-18
Pier 4	24d	24d	27-Sep-18	31-Oct-18
Pier 3	25d	25d	31-Aug-18	04-Oct-18
Pier 2	24d	24d	07-Aug-18	07-Sep-18



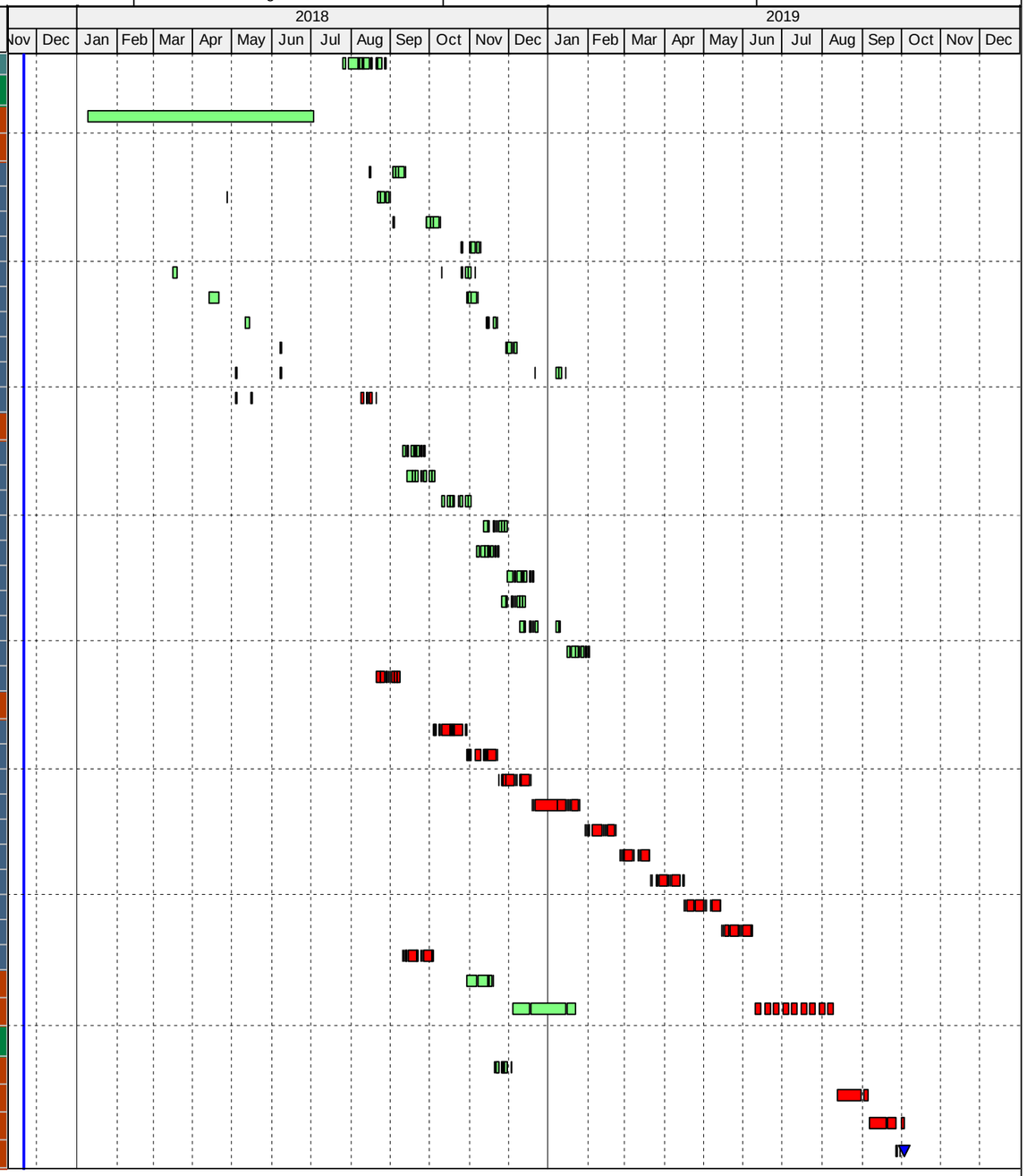
NZ TRANSPORT AGENCY WAKA KOTAHI

Peka Peka to Otaki Bridge 5 Programme

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Milestones
Critical Remaining Work
Milestone
WBS Summary

Fletcher HIGGINS
Beca
Tonkin+Taylor

Activity Name	Orig Dur	Rem Dur	Start	Finish
Pier 1	24d	24d	26-Jul-18	28-Aug-18
Superstructure	391d	391d	09-Jan-18	09-Aug-19
61 Bearings	120d	120d	09-Jan-18	03-Jul-18
62 Beams	202d	202d	16-Mar-18	14-Jan-19
Span 2	20d	20d	15-Aug-18	12-Sep-18
Span 1	90d	90d	27-Apr-18	31-Aug-18
Span 3	27d	27d	03-Sep-18	09-Oct-18
Span 4	12d	12d	25-Oct-18	09-Nov-18
Span 5	162d	162d	16-Mar-18	05-Nov-18
Span 6	146d	146d	13-Apr-18	07-Nov-18
Span 7	138d	138d	11-May-18	22-Nov-18
Span 8	131d	131d	07-Jun-18	07-Dec-18
Span 9	170d	170d	04-May-18	14-Jan-19
Span 10	76d	76d	04-May-18	20-Aug-18
63 Diaphragms	107d	107d	21-Aug-18	01-Feb-19
Span 1	14d	14d	10-Sep-18	27-Sep-18
Span 2	16d	16d	13-Sep-18	04-Oct-18
Span 3	16d	16d	10-Oct-18	01-Nov-18
Span 4	14d	14d	12-Nov-18	29-Nov-18
Span 5	14d	14d	06-Nov-18	23-Nov-18
Span 6	15d	15d	30-Nov-18	20-Dec-18
Span 7	14d	14d	26-Nov-18	13-Dec-18
Span 8	14d	14d	10-Dec-18	10-Jan-19
Span 9	13d	13d	15-Jan-19	01-Feb-19
Span 10	14d	14d	21-Aug-18	07-Sep-18
64 Deck	178d	178d	10-Sep-18	07-Jun-19
Span 1	17d	17d	04-Oct-18	29-Oct-18
Span 2	18d	18d	30-Oct-18	22-Nov-18
Span 3	18d	18d	23-Nov-18	18-Dec-18
Span 4	18d	18d	19-Dec-18	25-Jan-19
Span 5	18d	18d	29-Jan-19	22-Feb-19
Span 6	18d	18d	25-Feb-19	20-Mar-19
Span 7	18d	18d	21-Mar-19	15-Apr-19
Span 8	18d	18d	16-Apr-19	14-May-19
Span 9	17d	17d	15-May-19	07-Jun-19
Span 10	18d	18d	10-Sep-18	03-Oct-18
65 Expansion Joints	15d	15d	30-Oct-18	19-Nov-18
66 Barriers	163d	163d	04-Dec-18	09-Aug-19
Ancillary	212d	212d	20-Nov-18	03-Oct-19
Approach slabs	10d	10d	20-Nov-18	03-Dec-18
Metalwork	19d	19d	12-Aug-19	05-Sep-19
Miscellaneous	20d	20d	06-Sep-19	03-Oct-19
Surfacing	5d	5d	27-Sep-19	03-Oct-19



NZ TRANSPORT AGENCY WAKA KOTAHI

Peka Peka to Otaki Bridge 5 Programme

Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Milestones
Critical Remaining Work
Milestone
WBS Summary

Fletcher HIGGINS
Beca
Tonkin+Taylor

APPENDIX E – ACCIDENTAL DISCOVERY PROTOCOLS

Accidental Discovery Protocols

The protocols for accidental archaeological discovery set out below will be followed if subsurface archaeological remains, koiwi tangata (human remains) or taonga are exposed during construction in areas that are not being monitored by an archaeologist or when archaeologists are not present on site.

Information provided below outlines procedures to be followed in the case of suspected unrecorded archaeological sites being located during the course of work.

Discovery of Suspected Archaeological Features or Deposits

If suspected archaeological remains are exposed in the course of works, the following procedure will be implemented:

1. Contractors shall cease all work within the vicinity of the suspected archaeological site, and immediately notify the Site Project Manager.

2. The area of the suspected archaeological deposit or feature is to be made secure, ensuring that the area (and any objects contained within) remains undisturbed and meets health and safety requirements.

3. The Project Manager will arrange for the Project Archaeologist to visit the site, to confirm the nature of the archaeological site, and to define the extent of the deposit or feature.

4. Following confirmation of the site as archaeological, the Project Manager will notify the Regional Archaeologist HNZPT, The Transport Agency, Nga Hapū o Ōtaki and M.T.A representatives and, if appropriate, district and city council representatives.

5. The archaeological remains will be investigated and recorded in accordance with archaeological best practice, and in line with the legal conditions of any authority granted by HNZPT.

6. Works can resume once the Project Archaeologist confirms that the required investigation and recording are complete and Nga Hapū o Ōtaki and M.T.A representatives and HNZPT give their agreement.

Discovery of Koiwi Tangata (Human Remains)

If suspected human remains are identified, the following protocol will be adopted:

1. Earthworks shall cease within 20 meters of the find while an appropriately qualified archaeologist is consulted to establish whether the bone is human.

2. The area of the site containing koiwi will be secured, ensuring that the area (and any objects contained within) remains undisturbed and meets health and safety requirements.

3. If it is determined that bone is human, earthworks will not resume in the immediate vicinity (as determined by the Project Archaeologist) until HNZPT, Nga Hapū o ōtaki and M.T.A representatives, the New Zealand Police and district council representatives have been notified.

4. Nga Hapū o ōtaki and M.T.A representatives will be given the opportunity to conduct karakia in association with appropriate tikanga Māori prior to the removal of koiwi for reburial.

5. If Nga Hapū o ōtaki and M.T.A representatives so request, koiwi may be further analysed by a specialist osteo-archaeologist prior to reburial.

6. Work within the area can recommence as soon as the remains have been removed from site, and with the agreement of all relevant agencies.

Discovery of Taonga

Maori artefacts such as carvings, stone adzes, and greenstone are considered to be taonga (treasures). These objects are identified as taonga tuturu in the Protected Objects Act 1975. Taonga may be discovered in isolated contexts, but are generally found within archaeological sites, modification of which is subject to the provisions of the HNZPT Act.

If taonga are discovered, the procedure established for the discovery of archaeological sites (as detailed above) must be followed, and the following procedure will apply to the taonga itself:

1. The area of the site containing the taonga will be secured in such a way that protects the taonga from further disturbance or damage.
2. The archaeologist will inform HNZPT and Nga Hapū o ōtaki and M.T.A representatives so that appropriate actions can be determined, and appropriate tikanga protocols to be undertaken.
3. If the object is identified as taonga tuturu the Project Archaeologist will notify the Ministry for Culture and Heritage of the finding, as required under the Protected Objects Act 1975.
4. The Ministry for Culture and Heritage, in consultation with Nga Hapū o ōtaki and M.T.A representatives, will decide on custodianship of the taonga. If the taonga requires conservation treatment this can be carried out by the Archaeological Conservation Laboratory, University of Auckland.

Specific Tikanga Maori Protocols

1. Nga Hapū o ōtaki and M.T.A shall be informed **48 hours** before the start and finish of the archaeological work.

2. Any alterations to the Archaeological Site Management Plan will be discussed with Nga Hapū o ōtaki and M.T.A.

3. Access for Nga Hapū o ōtaki and M.T.A shall be enabled in order to undertake tikanga Maori protocols consistent with any requirements of site safety.

4. Nga Hapū o Ōtaki and M.T.A shall be provided with a copy of all reports completed as a result of the archaeological work associated with this authority(s) and be given an opportunity to discuss it with the archaeologist if required.

5. Nga Hapū o Ōtaki will notify other iwi parties of any archaeological finds (e.g. taonga or kōiwi tangata) and subsequent ceremonies as deemed appropriate by Nga Hapū o Ōtaki and M.T.A.

APPENDIX F – SITE SPECIFIC TRAFFIC MANAGEMENT PLAN

Site Specific Traffic Management Plan

– Peka Peka to Ōtaki Project

FCCL-TM-MPN-0004

Revision A – December 2017

NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | New Zealand Government

Contents

1 INTRODUCTION

This Site Specific Traffic Management Plan (SSTMP) provides the necessary information to demonstrate how the project team plan to avoid or mitigate potential construction traffic effects from activities associated with project-wide site clearance and enabling works activities as outlined in **SSEMP PW1.**

This SSTMP reflects the requirements of the Construction Traffic Management Plan (CTMP) including sections 1.3 (Performance Standards) and section 3.2.1 - specifically the need to interface with TTM on other networks. This plan is also consistent with the requirements set out in the over-arching Construction Environmental Management Plan (CEMP).

This document is intended to be utilised by the construction team to clearly identify any site specific traffic management requirements that must be adhered to prior to, and during works in any given area.

The scope of works detailed within **SSEMP 'Bridge 5 Stage 1'** and for which this SSTMP covers includes:

- Ōtaki River Bridge Works – Stage One including:
  - Southern embankment earthworks
  - Southern bored piling (Pier's 5 – 9)
  - Southern column construction (Pier's 5 – 9)
  - Southern crossheads (Pier's 5 – 9)

Note that there are no additional temporary traffic requirements associated with these works with the already established site access / egress covered under SSTMP PW1. For clarity, this has been summarised within this SSTMP to ensure that this activity is covered.

Site Access Point (SAP) number 10 (refer to the attached drawing), is the relevant established access / egress point for these works.

1.1 The SSTMP and TMP Process

This SSTMP provides the necessary information from a project level on how the effects of construction traffic related to the site activities will be avoided or mitigated across the two roading networks in the location of the expressway works i.e. the State Highway Network (NZTA) and the local road network (KCDC).

Each of the two Road Controlling Authorities (RCA's) has its own processes and procedures for the approvals (TMP's) and implementation of temporary traffic management within their respective networks which is separate to the SSTMP process.

It is recognised that approval / implementation of TMPs associated with this SSTMP will be staged and implemented at differing times over the course of the works. In addition, it is recognised that the TMP's themselves may alter due to both project and surrounding community requirements.

The purpose of this SSTMP is to provide the base (minimum) standard of service / maximum practical level of mitigation to be incorporated into the development of the respective TMP's all the while ensuring that the BOI consent conditions and subsequent CTMP requirements are met during the construction process.

2 SSTMP CONSENT CONSIDERATIONS

Reference should also be made to section 3.2 of the CTMP.

2.1 Proposed Temporary Traffic Management Measures – BOI condition 34 b (i)

Access to the site will be via one already established access point (SAP 10), covered initially under SSTMP PW1. SAP 10 has the required (CoPTTM) signage and early warning delineation provided by a combination of cones and signage – all in accordance with the respective RCA TMP requirements.

2.2 Assessment of delays – BOI condition 34 b (ii)

As there are no closures or detours associated with the implementation and operation of these works, delays to existing traffic flows are not expected.

2.3 Detour Routes – BOI condition 34 b (iii)

There are no detours associated with the temporary traffic management measures included within this SSTMP.

2.4 Existing Accesses – BOI condition 34 b (iv)

Works carried out under this SSTMP do not affect existing accesses to private or commercial properties.

2.5 Pedestrian and Cyclist Access – BOI condition 34 b (v)

Works carried out under this SSTMP will not affect existing pedestrian or cycle routes. Adequate signage will be put in place at river pedestrian access points to notify the public that works are underway. Physical delineation within the river bed is not practicable so signage will be the primary mitigation measure.

2.6 Maintaining Existing Transport Services – BOI condition 34 b (vi)

Works carried out under this SSTMP will not affect any existing public transport services and facilities such as bus stops.

2.7 Temporary Speed Limits (TSL) – BOI condition 34 b (vii)

There are no TSL's proposed or required in conjunction with the safe operation of SAP 10.

2.8 Access to & From the Construction Site – BOI condition 34 b (viii)

The primary objective of SSTMPs is the planning (TMP's), approvals (RCA's) and implementation of Site Access Points (SAP's) to ensure the safe and efficient access to and from site of construction related traffic.

The operating hours of SAP 10 will be in accordance with the proposed hours of work included within the **CNVMP i.e.**

- Monday to Friday 6.30am to 8pm
- Saturday 7.30am to 6pm

Operation outside those hours will be at the approval of the Engineer and in accordance with the provisions of the **CNVMP.**

2.9 Communications and Stakeholders – BOI condition 34 b (ix)

Implementation and operation of SAP 10 will be communicated to stakeholders, road users and the community via the methods and processes as included within the project Stakeholder and Communications Management Plan, with particular emphasis on the key groups identified in Section 3.1 of the CTMP as required.

3 ADDITIONAL CTMP CONSIDERATIONS

3.1 Kiwirail NIMTR – CTMP section 2.1.2

Works carried out under this SSTMP will not interfere or affect the operation of the Kiwirail NIMT Railway or existing at grade carriageway crossings

3.2 Emergency Action Plan(s) – CTMP section 3.2.3.8

All emergency services shall have unimpeded access along all State Highway and local roads 24 hrs. per day.

3.3 Access to KCDC Owned and Operated Water and Waste Water Assets – CTMP section 3.2.1.1.7

Access to existing KCDC water and waste water assets will not be impeded by these works.

3.4 Monitoring, Auditing & Reporting – CTMP sections 3.3 & 3.4

Monitoring, auditing and reporting of the traffic management measures will be carried out in accordance with the CTMP.

3.5 Complaints – CTMP sections 3.5

Feedback including complaints received related to these will be recorded and processed in accordance with the CTMP and the Stakeholder and Communications Management Plan.

APPENDIX A – SITE ACCESS POINT (I.D) AND LOCATION

Site Access Point No	Location
10	Ōtaki Gorge Road

SAP 10 (note SAP 9 not relevant to this SSTMP)