Site Specific Environmental Management Plan

– Peka Peka to Ōtaki Project

SSEMP BR6/7: Bridges 6 & 7

FCCL-EV-MPN-0038

July 2018 – Revision B

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	28/06/18	For Review
A.1	Draft	Alice Naylor	5/07/18	For Review
B	Draft	Alice Naylor	26/07/18	For Review

Certification Record

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

CERTIFIED
VIJAY SOMA
Resource ConsentS & Compliance Manager
Kapiti Coast District Council
DATE: 27/7/18

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Revision	Action	Name	Position	Date	Signature
	Approved by:	Richard Percy	Project Leader	1/8/18	
	On behalf of GWRC:				
	Approved by:				
	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 construction of the South Ōtaki Rail Overpass (Bridge 6), and Ōtaki Gorge Road Underpass (Bridge 7). Bridge 6 will carry Ōtaki Gorge Road over the existing rail corridor and Bridge 7 will carry Ōtaki Gorge Road over the Expressway, both forming part of the South Ōtaki Interchange. Opening these bridges to traffic in 2019 will remove traffic from the existing Ōtaki Gorge Road and therefore will open up the works footprint and allow construction of the main Expressway alignment in the general area. This SSEMP is focussed on the construction of Bridge's 6 and 7 and any associated earthworks to allow bridge construction. Streamworks are not required under this document and local road construction across the Bridges upon final completion is to be carried out under SSEMP SLR1 *FCCL-EV-MPN-0026.*

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

The proposed South Ōtaki Rail Overpass and Ōtaki Gorge Road Underpass (Bridge's 6 and 7 respectively) are situated between chainage 3900 and 4020 on the southern side of the Ōtaki River and the east of the existing SH1. Bridge 6 is to span across the North Island Main Trunk (NIMT) rail line. Bridge 7 is to span across the Expressway, approximately 200m to the south of the Ōtaki River Bridge (Bridge 5). The Ōtaki northbound off-ramp terminates at the approach embankment between Bridge's 6 and 7. Both bridges are to carry the local road traffic between the existing State Highway 1 (SH1) and Ōtaki Gorge Road. There is also to be a shared path across both bridges and the embankment between. Refer to figure 1 below for the site location.

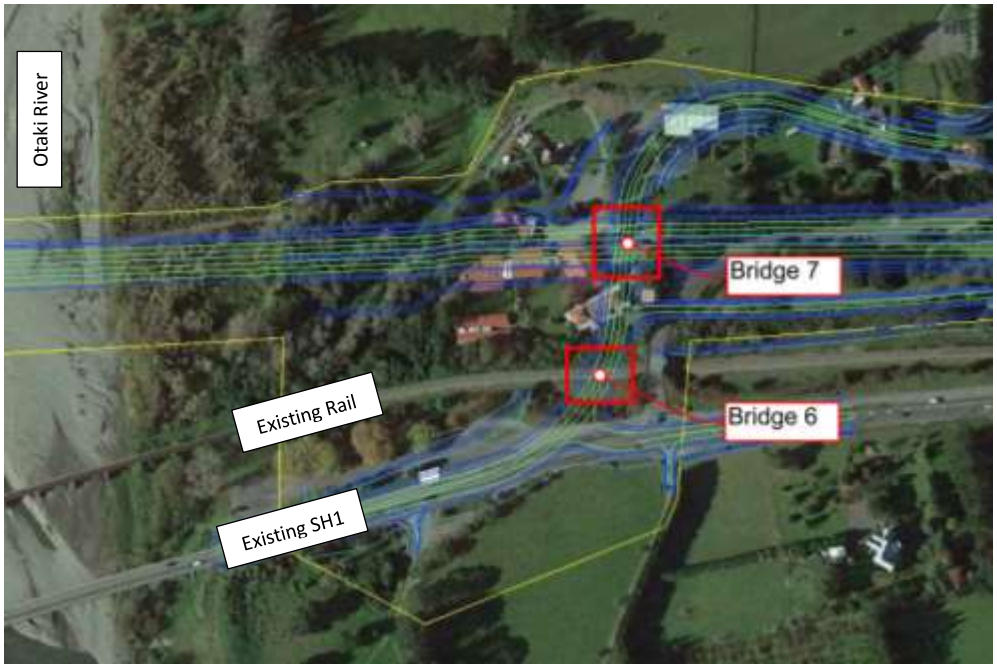


Figure 1: Location of works outlined in red

1.2 Site Description

The Expressway immediately to the north of, and beneath, Bridge 7 traverses a site previously used for a conference centre and events centre which is now the footprint of the main project compound 'Bridge Lodge'. The surrounding land to the east is predominantly semi-rural farmland.

Earthworks associated with the Ōtaki River Bridge (Bridge 5) have already commenced at the location of Bridge 7 and the eastern abutment of Bridge 6. The western abutment of Bridge 6 to the west of the existing railway has not yet been impacted by the project. Figure 2 below demonstrates the current layout of the site, since earthworks have commenced.

Figure 2: Existing Site with proposed Bridge Reinforced Earth Walls outlined in red.

1.3 Programme

Works are planned to start in August 2018 and will take approximately 1 year through to opening the two bridges to traffic across the new bridges. Final bridge works such as construction of the remaining portions of Bridge 6 East and Bridge 7 West Reinforced Earth (RE) Walls that currently encroach onto the existing Ōtaki Gorge Road footprint will be undertaken once traffic is diverted off the existing Ōtaki Gorge Road to instead travel across the two bridges along the new Ōtaki Road alignment.

2 PLAN IMPLEMENTATION

2.1 Responsibilities

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

Table 2: Roles and responsibilities

Role	Person	Contact Details	Responsibilities
Construction Manager	Steve Findlay	stevef@fcc.co.nz	• 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	• 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	• 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	• 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	• 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)	Dean Miller (Principal Ecologist) Genevieve Smith – Contaminated land Brendon Shanks – Noise and Vibration	DCMiller@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 Kiarahi)	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.
	Caleb Royal (Ngā Hapū o Ōtaki Consents Processing Officer)		• Reviews consent applications and coordinates cultural monitoring activities. • Provides specialist advice to 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 the event that changes in works scope or methodology are required, changes may need to be made to this document in accordance with resource Consent Condition's DC.18B and / or G.21A. Any 'major' changes will be submitted to the respective 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, unless an alternative process of approving a 'minor change' is agreed to by the Manager, Greater Wellington Regional Council.

3 GENERAL SITE MANAGEMENT

3.1 Site Access

Access to the site will be as follows:

- Bridge 6 West – Site Access Point 16 (SAP-16) off State Highway 1
- Bridge 6 East – Site Access Point 10 (SAP-10) off Ōtaki Gorge Road
- Bridge 7 East & West - Site Access Point 10 (SAP-10) off Ōtaki Gorge Road
- Following construction of the temporary road diversion (Ōtaki Gorge Road), a new access point will be established into Bridge Lodge Compound. An amendment will be made to this SSEMP once the final location and associated traffic management requirements have been confirmed.

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

Stormwater from the local road reserve will not be impeded by vehicle crossing during and after construction and any damage made to road infrastructure as a direct result of these works shall be recorded and repaired immediately.

3.2 Site Establishment

The main site compound already established at Bridge Lodge will be used. This will be the designated area for parking, sign-in sheds, and storage of miscellaneous materials (refer to Appendix C layout drawing). The western Bridge 6 site will also have an allocated area for sign-in and truck deliveries including RE fill material which will temporarily be stockpiled in this area as per Appendix C layout drawing. All areas of the site will be maintained in a tidy state with redundant materials removed off-site once no longer required.

3.3 Construction Plant

The plant items to be used are generally as follows:

Bridge Construction

- 350T crane x 2
- 20T excavator
- Concrete pump
- 30T crane
- Franner crane
- Merlo
- Hiab
- Light vehicles
- Drill rig (soil nails)
- Trucks

Pavement Construction

- Grader
- Water cart
- 14t Single Smooth Drum Oscillating Roller
- 14t Single Smooth Padfoot Vibrating Roller
- 2.4m Hoe Stabiliser
- Cement Spreader Truck
- Large Loader
- Bottom Dump Truck and Trailer

Plant will remain outside of watercourses at all times during the works and where practicable, refrain from working within 10m of a live watercourse to minimise any risk of causing bank instability or spills to the receiving environment.

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

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

Spill control kits will be available on site in areas where heavy machine is working. Refuelling activities will take place using a mini-tanker at least 10m away from any watercourse to prevent additional risk of spillage to water. Plant and machinery will not enter any waterway at any stage of works.

3.4 Pre-works Requirements

Prior to works commencing on site the following mitigation measures will be implemented to avoid or minimise adverse environmental effects:

- 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.
- Signage and safety fencing will be erected to clearly discourage the public from entering the site. Regular updates will be provided to the community regarding upcoming works and changes to works sequencing.

3.5 Water Supply

Water may be required to prevent dust discharge from site during works. Water required for these works will be collected from off-site.

Any water supply bores required on site must be constructed in accordance with Resource Consent Conditions BC.1 – 4 with any water take done so in accordance with GT. 4-7.

4 WORKS METHODOLOGY

Bridge 6 is an approximately 18m long single span bridge supported on Mechanically Stabilised Earth (MSE) abutments. Bridge 7 is an approximately 33m long single span bridge supported on MSE abutments.

Bridge 6 East and Bridge 7 west RE Walls will be constructed together, followed by Bridge 7 RE east and then Bridge 6 RE west which is adjacent to existing SH1.

Approximately 15,000m³ of gravel fill will be sourced from the Waitohu Quarry to be used as RE fill and final abutment backfill. Additional material will be sourced locally from the adjacent main cut for Bridge 5. The following sections outline the general sequence of works.

4.1 Enabling Works

- Bridge Lodge amenities will be used during the construction of Bridge's 6 and 7

- Establishment of site access points including signage
- Establishment of localised temporary construction fencing including exclusion fence to Kiwirail land.
- Relocation of existing unsuitable soils further north (refer to Appendix C layout drawing) to allow for additional room on site.

4.2 MSE Walls

The sequencing for Bridge 7 West and Bridge 6 East RE wall abutment construction will be staged in order to accommodate the existing road and bridge alignment on Ōtaki Gorge Road. That is the remainder of the southern side walls that clash with the existing road alignment are to be constructed once the new bridges are opened to traffic.

As the RE wall progresses the earthworks tying into the wall will be undertaken at the same time which will allow better access to the site.

The construction sequence for each RE wall is as follows:

- Install temporary works as required
- Install environmental controls in accordance with section 5.2 below)
- Construct RE base layer
- Excavate for footing beam
- Construct footing beam
- Construct RE Wall layers and any earthworks that ties into RE wall. All RE panels to be delivered progressively.
- Note that the RE wall will be constructed up to the underside of the abutment beam at which point the abutment beam will be constructed.

4.3 Abutment beams

The sequence for the abutment beams will follow directly on from the MSE wall as follows:

- Erect abutment beam edge protection
- Prep and Pour blinding
- Fix reinforcing
- Form
- Pour
- Cure
- Strip
- Prep abutment beam for bearing and beam placement.

4.4 Beams and bearings placement

The sequence of install for Bridge 6 beams will be governed by any track movements and rail authority approvals whereas Bridge 7 does not require any other approvals.

- Construct crane construction pads.

- Mobilise the crane to site into position
- Deliver the first set of steel beams to site ready for fit out and lifting into position.
- Dress the first beams with walkways and any other required items such as bridge services and fall protection. Once the beam has been fitted out, install in position.
- Deliver and fit out remaining beams.
- With beams installed, fit out any remaining bracing items.
- Establish crane for installation of precast deck panels.
- Deliver and install precast deck panels.

4.5 Deck construction

- Seal deck using timber, ply and sealant for any voids between precast panels.
- Erect deck edge form and stop ends ready for reinforcing.
- Fix reinforcing to height
- Establish screed rails
- Setup pump and associated secondary environmental and/or hazard controls where required, such as polythene over streams or catch nets over walkways.
- Place and finish concrete
- Setup curing system which will consist of hessian and black plastic with a water feed on trickle.
- Remove curing system and dispose of accordingly
- Remove walkways off beams and install temporary edge protection ready for installation of the precast barriers.

4.6 Continuation of MSE wall, settlement slab, and abutment backfill

- Form, reinforce and pour the insitu stitch between the abutment and MSE wall panels
- Complete the final layers of the RE wall
- Construct Settlement slab
- Setup curing system which will consist of hessian and black plastic with a water feed on trickle.
- Remove curing system and dispose of accordingly
- Backfill to required level

4.7 Barrier construction

The sequence of install for BR06 will be governed by any track movements and rail authority approvals

- Establish crane on abutment and atop MSE wall for installation of precast barriers.
- Deliver precast units to site and install.
- Install and grout rail atop of precast barrier.

4.8 Pavement construction

- Prepare subgrade
- Lay drainage and services
- Construct pavement
- Install signage and other ancillaries
- Divert traffic from old Ōtaki gorge road to the new Bridges 6 and 7

4.9 Complete remaining MSE Walls

- Remove temporary works installed
- Demolish existing Ōtaki Gorge road bridge (a separate SSEMP will be lodged once the methodology has been established)
- Complete construction of the remaining portions of Bridge 6 East and Bridge 7 West RE walls as per section's 4.2 and 4.3.

5 ENVIRONMENTAL REQUIREMENTS

5.1 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 four locations at the Bridge Lodge site that have been associated with bulk hydrocarbon storage; one above ground storage tank and three below ground storage tanks. These locations will not be impacted by the works covered in this SSEMP. The closest location to the works (Tank 3) will be marked off with visible tape or fencing to ensure that the area is not disturbed. Figure 3 below indicates the historic tank locations relative to the bridge works.

Figure 3: Location of the four storage tanks marked in red on the Bridge Lodge site.

5.2 Erosion and Sediment Control

- Location and heights of erosion and sediment control (ESC) measures are outlined on Appendix C 'Methodology / Layout' drawing.
- Due to the nature of the activities covered under this SSEMP, proposed sediment controls are minimal. Bridge 7 footprint will be contained within an already established site for Bridge 5 and the Bridge Lodge general compound (refer to Appendix C layout drawing).
- Bridge 6 west works will require sediment controls to be installed along the northern edge of the site to ensure that potentially dirty water is contained. Either a silt fence or dirty water diversion bund >500mm high will be installed along the northern boundary as shown in Appendix C Layout Drawing.
- Bridge 6 east works will require a small section of diversion bund to be installed immediately north of the works to capture any potential runoff form this area of the site.
- Diversion bunds will be suitably stabilised on the outer face using mulch or geotextile.

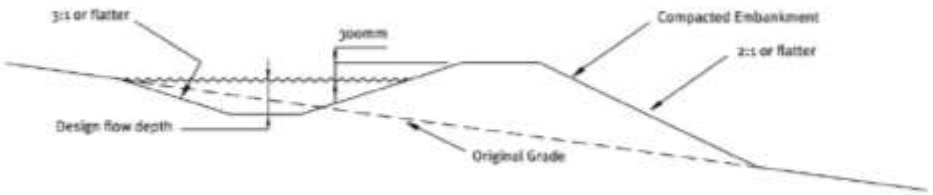


Figure 2: Typical cross section of dirty water diversion bund in accordance with the project ESCP.

5.2.1 Installation and decommissioning

Where required, erosion and sediment controls (ESCs) will be installed prior to all construction activities. Upon completion of the installation of all approved structural ESCs as-built certification plans will be provided to Council in writing prior to the activity commencing. The Project will submit

certification documentation 2 Working Days prior to the commencement of construction in that area of work as per condition E.6 and will retain the as-built record on site.

5.3 Ecological requirements

Project ecological requirements are set out in the Ecological Management Plan (EMP) which outlines a number of locations that have specific requirements in regards to terrestrial and aquatic species that need to be considered prior to and during works. These have been further refined following input from the project ecologists to ensure that potential effects are minimised as far as practicable.

There are no specific ecological requirements associated with these works.

5.4 Water Quality Monitoring

The closest watercourse to this site is the Ōtaki River located >300m to the north. Given this distance and the nature of the works (mostly gravel fill and bridge construction) routine water quality monitoring is not proposed during these works. The Project Erosion and Sediment Control Plan (ESCP) outlines requirements for triggered rainfall event monitoring and incident reporting which will be adhered to at all times during construction.

5.5 Cultural monitoring

A Kaiarahi (iwi guide / leader) is 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 Pūkenga (specialists / experts) and Kaitiaki (guardians) who provide support in supervision, monitoring activities and provision of specialist advice in regards to cultural monitoring. Ngā Hapū o Ōtaki will be informed of all works on site and invited to be present for all works with particular emphasis placed on initial topsoil stripping and streamworks.

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

5.6 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 probability archaeological areas across the project footprint.

This area of work is identified as 'high probability' in the Archaeological Management Plan (the original Clifden Cottage site' and therefore pre-works investigations were undertaken in the area.

Although already largely disturbed, the following will take place as a minimum unless otherwise specified by the project Archaeologist:

- Site visits will take place by kaitiaki and the project Archaeologist to monitor excavation.
- The 'On-call Protocol' will be adhered to in all areas.

Refer to Appendix E for the area identified as high probability. 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.

5.7 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

5.7.1 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 specific works.

5.8 Air Quality

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, particularly around public interface points such as site entry/exits to local roads
- Imposing a speed limit if required
- Use of stabilising agents such as polymers if required
- Assessing wind speed and direction on a daily basis and implementing additional mitigation based on conditions (or ceasing / re-programming works as required).

One property at 45 Ōtaki Gorge Road is approximately 250m from the works and falls within the 'high risk air quality' zone as identified in Appendix C 'Environmental Constraints' drawings. Provided that the site is managed effectively, it is not anticipated that these works will cause any adverse impacts.

6 TRAFFIC

Site Access Points (SAPs) have been outlined in Section 3.1 above. A Site Specific Traffic Management Plan (SSTMP) has been included as Appendix F. To ensure that potential impacts on local traffic movements are managed effectively and efficiently, more specific information will be submitted for approval to the relevant Road Controlling Authority if required i.e. the State Highway Network (NZTA) and the local road network (KCDC).

APPENDIX A – SSEMP AUTHORS

Name	Role	Company	Input
Alice Naylor	Environmental Manager	Higgins Projects	All
Harry Singh	Structural Site Engineer	FCC	Bridge Construction Methodology
Macu Waqa	Civil Site Engineer	FCC	Earthworks

APPENDIX B – CONSULTATION RECORD

Group	Date
Community Liaison Group	Distributed to CLG Group for comment

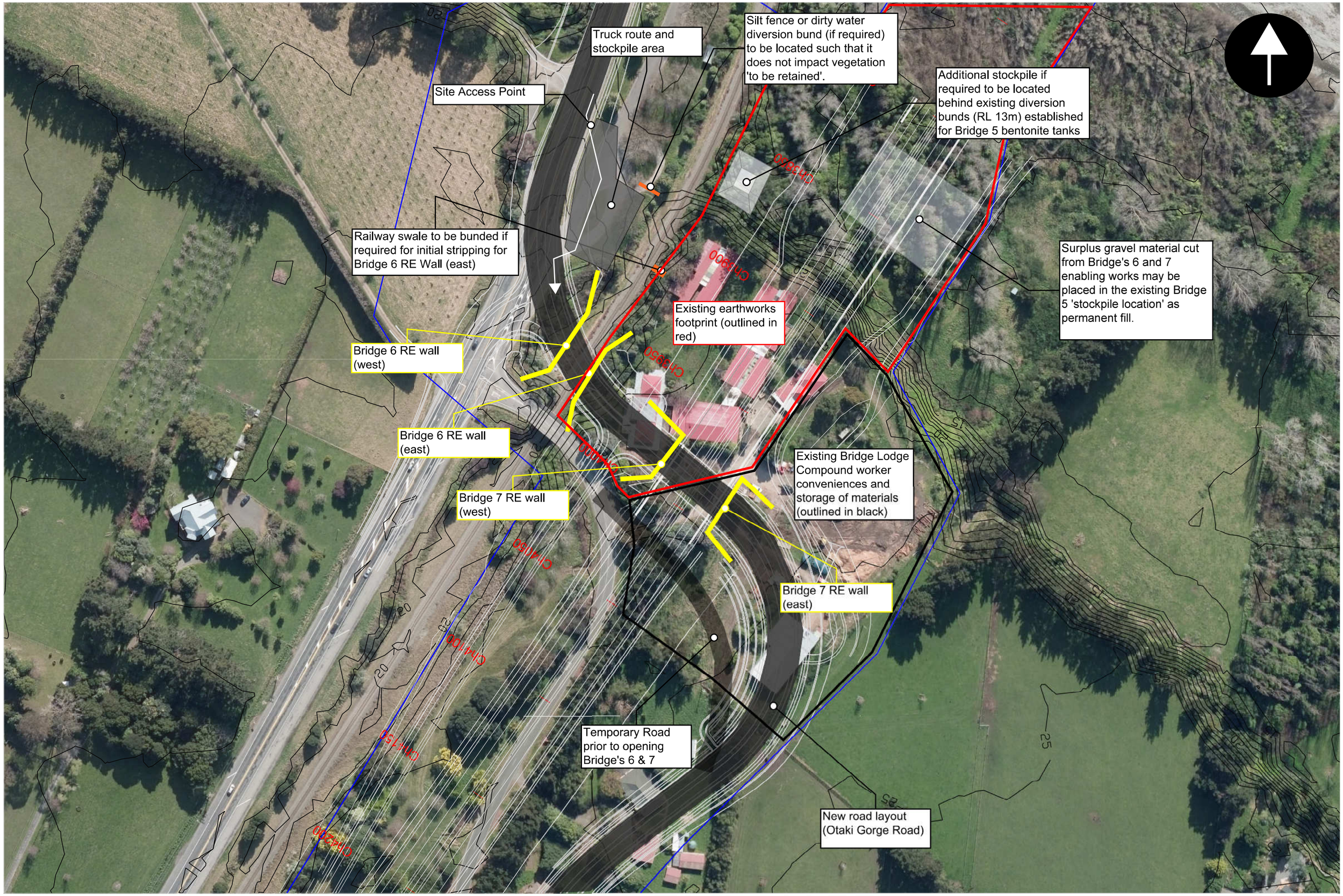
Outstanding Queries

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

Site Layout Plan



Bridge's 6 & 7 Layout

NZ TRANSPORT AGENCY WAKA KOTAHI

Peka Peka to Ōtaki Expressway

Environmental Constraints Drawings

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

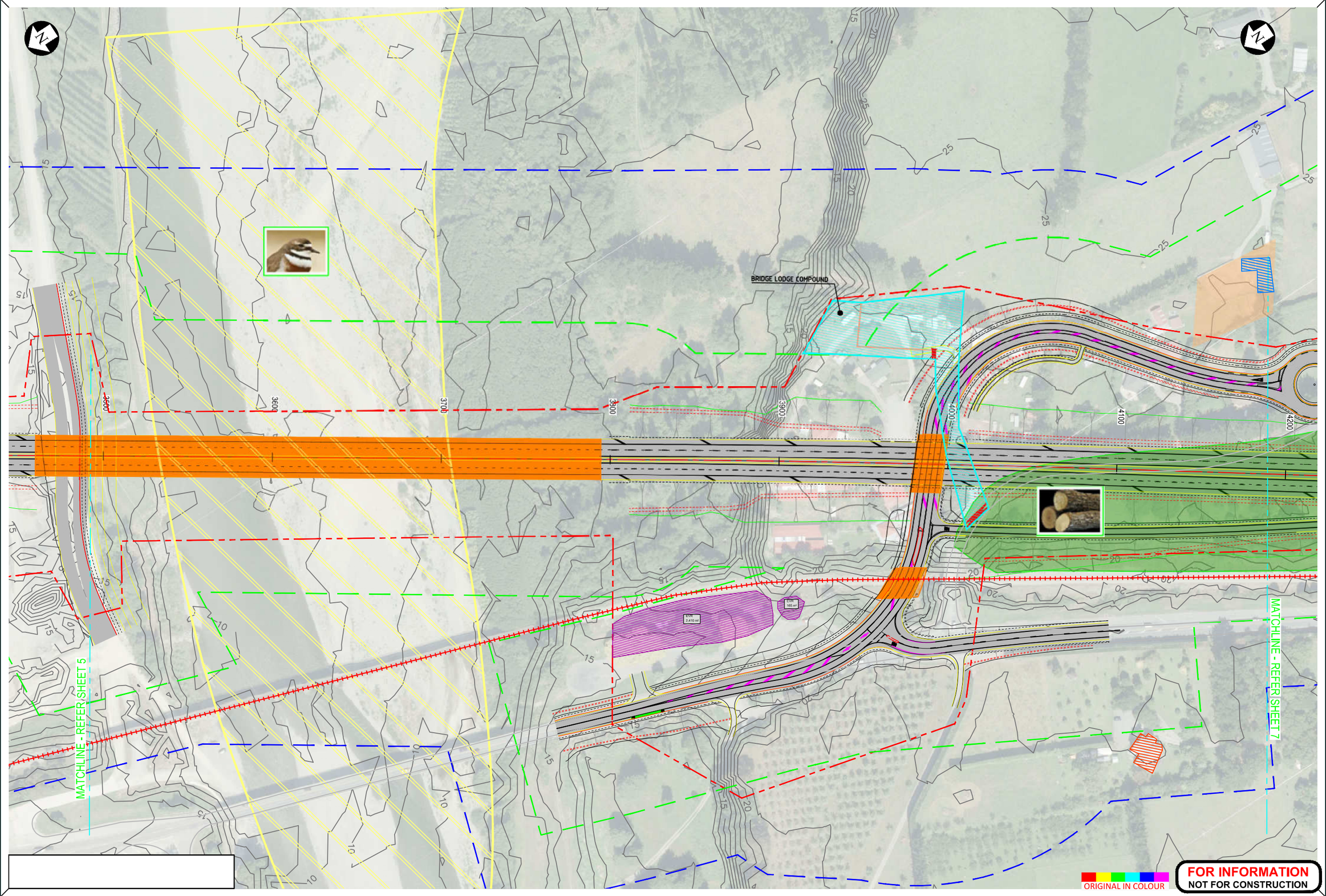
Rev.: B

Document No.

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

Save Date: 02 Nov 2017 10:16 a.m.



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

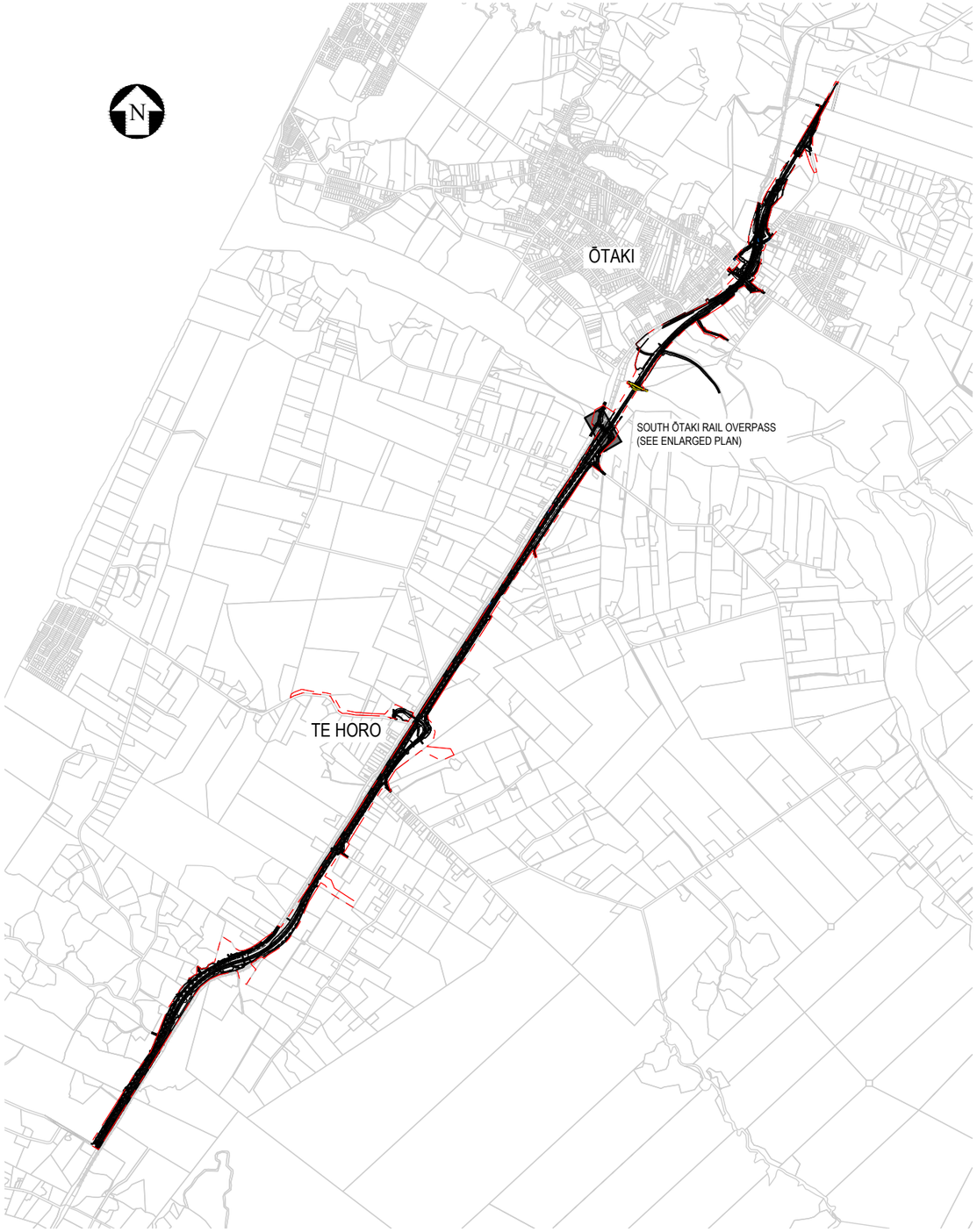
Discipline: CIVIL
Drawing No.: SSEMP-B5-S1-ECD
Rev.: B

ORIGINAL SIZE A1 : DO NOT SCALE

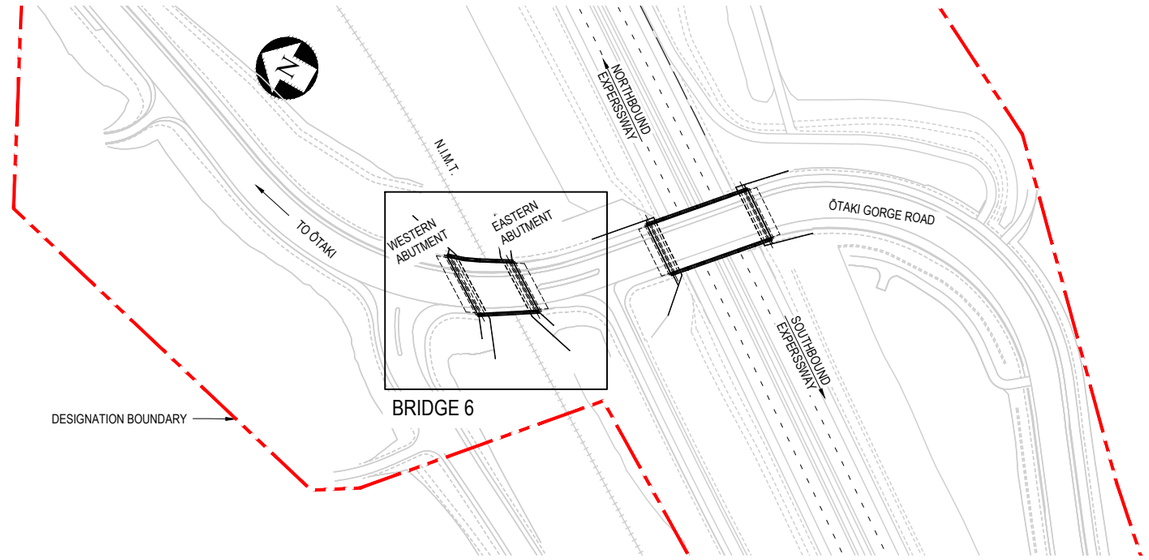
IF IN DOUBT ASK

Document No.: \\WZPPSP FCC.INTERNAL\DAV\WWROOT\2000\27\270 SECTOR GENERAL\PRECAST WORKING SHOP DRAWINGS\PP2O\FOR ALICE\PP2O-DR-CE-0801-0818 2017-08-28- STANDARD\PP2O-DR-CE-0801-0818_29.09-SET2.DWG

Construction Drawings



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-6000	STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST	1
PP2O-DR-SB-6001	GENERAL ARRANGEMENT PLAN	1
PP2O-DR-SB-6011	GENERAL ARRANGEMENT SECTIONS	1
PP2O-DR-SB-6021	GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN	1
PP2O-DR-SB-6022	SUBSTRUCTURE DETAILS SHEET 1	1
PP2O-DR-SB-6023	SUBSTRUCTURE DETAILS SHEET 2	1
PP2O-DR-SB-6024	SUBSTRUCTURE DETAILS SHEET 3	1
PP2O-DR-SB-6031	ABUTMENT BANK SEAT CONCRETE	1
PP2O-DR-SB-6041	ABUTMENT BANK SEAT REINFORCEMENT	1
PP2O-DR-SB-6081	VERTICAL GUIDE BEARING DETAILS	1
PP2O-DR-SB-6082	BEARING DETAILS	1
PP2O-DR-SB-6101	SUPERSTRUCTURE CONCRETE SHEET 1	1
PP2O-DR-SB-6102	SUPERSTRUCTURE CONCRETE SHEET 2	1
PP2O-DR-SB-6121	BACK WALL CONCRETE	1
PP2O-DR-SB-6125	BACK WALL REINFORCEMENT SHEET 1	1
PP2O-DR-SB-6126	BACK WALL REINFORCEMENT SHEET 2	1
PP2O-DR-SB-6161	DECK REINFORCEMENT	1
PP2O-DR-SB-6191	EARTHWORKS, BACKFILLING, AND DRAINAGE	1
STANDARD DRAWINGS		
PP2O-DR-SD-0010	NOTES FOR PRECAST AND PRE-TENSIONED BRIDGE BEAMS	1
PP2O-DR-SD-0031	SUPER T BEAM - COMMON DETAILS	2
PP2O-DR-SD-0041	1025 SUPER T BEAM - TYPICAL GEOMETRY	1
PP2O-DR-SD-0042	1025 SUPER T BEAM - PRE-STRESSING DETAILS (20m SPAN)	1
PP2O-DR-SD-0043	1025 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 1	1
PP2O-DR-SD-0044	1025 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 2	1
PP2O-DR-SD-0101	TL5 PRECAST BARRIER SHEET 1	2
PP2O-DR-SD-0102	TL5 PRECAST BARRIER SHEET 2	2
PP2O-DR-SD-0201	TEXAS T80HT RAIL SHEET 1	1
PP2O-DR-SD-0202	TEXAS T80HT RAIL SHEET 2	1
PP2O-DR-SD-0401	SETTLEMENT SLAB DETAILS	2

ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	26.02.18	
Drg Check	C.BURKE	26.02.18	Date 01.05.18

* Refer to Original Hardcopy for Signature

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

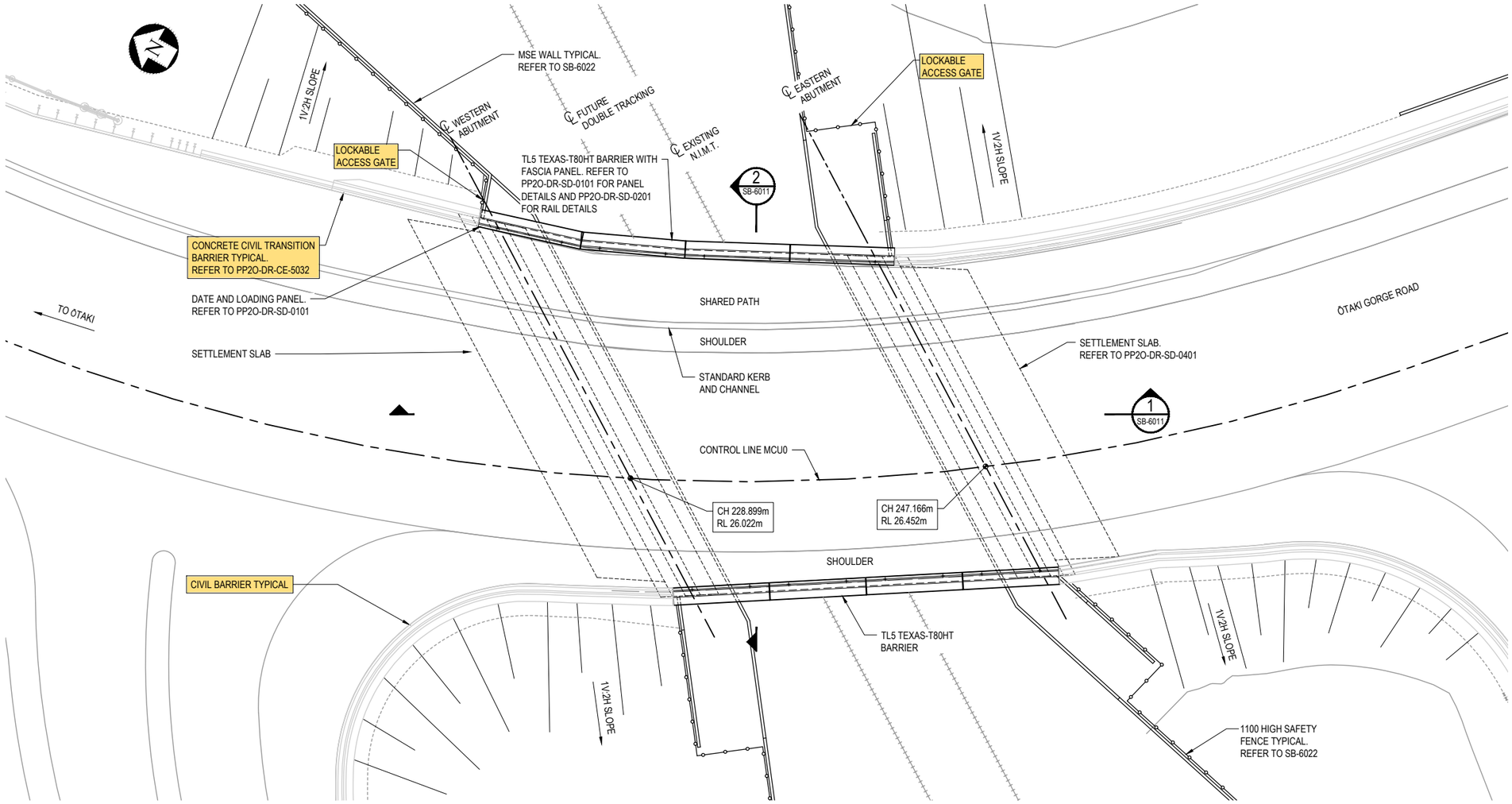
Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6000
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6000.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK



GENERAL ARRANGEMENT PLAN

SCALE 1:125

NOTES:

1. REFERENCES
   - 1.1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
   - 1.2. REFER TO RELEVANT CIVIL DRAWINGS FOR ROADING GEOMETRY, BARRIER EXTENTS, LANE WIDTHS ETC.
   - 1.3. REFER TO RELEVANT CIVIL DRAWINGS FOR LOCATION OF UTILITIES AND SERVICES.
   - 1.4. ALL LEVELS GIVEN ARE TO STRUCTURAL SURFACE UNO.

2. DESIGN STANDARDS
   - 2.1. NZTA BRIDGE MANUAL, THIRD EDITION (2013), WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.2. NZS 3101:2006 CONCRETE STRUCTURES STANDARD WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.3. REFER TO DESIGN STATEMENT REPORT FOR FURTHER DETAILS.

3. DESIGN LOADING
   - 3.1. SUPERIMPOSED DEAD LOAD ALLOWANCE:
     - a) SURFACING = 2.0kPa (INCLUDING 0.5kPa FOR LEVELLING COURSE)
     - b) SERVICES = ALLOWANCES ARE MADE AS FOLLOWS:
       - i) 2 No Ø150mm PVC DUCTS FOR FUTURE UTILITIES (ONE EACH SIDE)
       - ii) PLUS ADDITIONAL UNIFORMLY DISTRIBUTED LOAD APPLIED OVER ENTIRE DECK AREA OF 0.25kPa.
   - 3.2. TRAFFIC LOAD HN-HO-72
   - 3.3. SEISMIC LOAD BASED ON NZS1170.5 AND SSSHA STUDY WITH:
     - a) SUBSOIL CLASS D
     - b) ULS AEP (1/2500)
     - c) ULS DESIGN PGA 0.567g
   - 3.4. TEMPERATURE AND DIFFERENTIAL TEMPERATURE AS PER NZTA BRIDGE MANUAL.
   - 3.5. CREEP AND SHRINKAGE BASED ON AS3600 AND NZTA BRIDGE MANUAL 3rd EDITION FOR RELATIVE HUMIDITY 80%.
   - 3.6. JACKING OF BRIDGE DECK FOR BEARING REPLACEMENT / RE-LEVELLING. THE DESIGN INCLUDES THE FOLLOWING REQUIREMENTS:
     - a) TRAFFIC SHALL BE RESTRICTED TO 40km/h ONCE BRIDGE DECK IS JACKED.
     - b) SEE ABUTMENT DRAWINGS FOR JACKING LOCATIONS AND LOADS.
     - c) JACKING LOADS ARE BASED ON HN LOADINGS
     - d) ALL JACKS AT EACH ABUTMENT SHALL BE HYDRAULICALLY LINKED AND HAVE A CENTRAL MECHANISM TO ENSURE THAT THE SAME VERTICAL DISPLACEMENTS OCCUR AT EACH JACKING POINT AT ALL TIMES DURING THE JACKING OPERATION.
     - e) BRIDGE BEARINGS SHALL BE REPLACED USING LIFTS OF NOT GREATER THAN 10mm.
     - f) STEEL PLATES SHALL BE PLACED BETWEEN CONCRETE BEARING SURFACE AND HYDRAULIC JACK.
     - g) MAXIMUM ALLOWABLE CONTACT PRESSURE BETWEEN CONCRETE SURFACE AND STEEL PLATE SHALL BE 25MPa.
     - h) HORIZONTAL RESTRAINTS AT ABUTMENTS SHALL BE MAINTAINED.

4. DRAWING LIST
   - 4.1. FOR THE LIST OF ALL DRAWINGS APPLICABLE TO THIS BRIDGE, REFER TO DRG. SB-6000.

5. SPECIFICATIONS APPLICABLE TO THIS BRIDGE:
   - 5.1. C0203 - BULK EARTHWORKS
   - 5.2. C0310 - INSTRUMENTATION AND MONITORING
   - 5.3. C0600 - REINFORCED CONCRETE SUPPLY
   - 5.4. C0601 - REINFORCED CONCRETE CONSTRUCTION
   - 5.5. C0607 - PRESTRESSED CONCRETE ELEMENTS
   - 5.6. C0614 - ANTI-GRAFFITI COATINGS
   - 5.7. C0700 - STRUCTURAL STEELWORKS

6. CONSTRUCTION LOADS
   - 6.1. BRIDGE BEAMS ARE DESIGNED FOR CONSTRUCTION LIVE LOAD OF 1.5kPa. TEMPORARY WORK SHALL BE ADEQUATE FOR 1/500 APE (R = 1.0) SEISMIC AND WIND LOADING.

7. STRUCTURAL ELEMENTS INCLUDED IN PACKAGE:
   - 7.1. ABUTMENTS, SETTLEMENT SLABS, PRESTRESSED BEAMS, BEARINGS, TL5 TEXAS-T80HT BARRIERS WITH FASCIA PANEL, BACKWALL, MSE WALL WITH METAL STRIPS, SAFETY FENCE, BIRD PROOFING AND FIXING FOR SERVICE SUPPORT.
   - 7.2. TRAFFIC BARRIERS DETAILED IN THE STRUCTURAL DRAWINGS TERMINATE AT THE EXTENT OF THE BRIDGE (BARRIERS BEYOND THAT ARE CONSIDERED TO BE STANDARD ROAD TRAFFIC BARRIERS. FOR THESE REFER TO THE RELEVANT CIVIL DRAWINGS).

8. COATING FOR EXPOSED CONCRETE SURFACES:
   - 8.1. GRAFFITI SOLUTION (OR EQUIVALENT APPROVED BY THE DESIGNER) SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES TO THE EXTENT SUMMARISED IN TABLE 1.
   - 8.2. FOR THE APPLICATION OF SURFACE COATING, PLEASE REFER TO THE SPECIFICATION C0614.

TABLE 1. CONCRETE SURFACE COATINGS

BRIDGE ELEMENTS	EXPOSED SURFACE	ANTI-GRAFFITI COATING
BRIDGE BARRIER	INSIDE FACES, (FACING ŌTAKI GORGE ROAD)	YES
	TOP SURFACE, OUTSIDE FACE OF FASCIA	YES
ABUTMENTS	FRONT FACES (FACING RAIL TRACK)	YES
	SIDES OF ABUTMENTS	YES
DECK SOFFIT	1.5m HORIZONTALLY FROM AN ACCESSIBLE SUBSTRUCTURE ELEMENT	YES

9. CONSTRUCTION SEQUENCE:

TABLE 2. CONSTRUCTION SEQUENCE

SEQUENCE	ACTIVITY
1	INSTALL MONITORING INSTRUMENTATION ON EXISTING BRIDGE.
2	CONSTRUCT TEMPORARY WORKS FOR RE WALL ADJACENT TO THE EXISTING BRIDGE.
3	PREPARE ABUTMENT GROUND FOR MSE WALLS.
4	CONSTRUCT MSE WALLS AND APPROACH EMBANKMENTS.
5	MONITOR SETTLEMENT OF BRIDGE ABUTMENT AND 'HOLD' CONSTRUCTION (IF NECESSARY).
6	CONSTRUCT ABUTMENT BANK SEAT.
7	INSTALL BEARINGS AND PRECAST SUPER T BEAMS.
8	CAST ABUTMENT BACKWALL.
9	COMPLETE BRIDGE DECK.
10	BACKFILL UP TO SETTLEMENT SLAB.
11	INSTALL SETTLEMENT SLABS.
12	COMPLETE BACKFILL ADJACENT TO ABUTMENT BACKWALLS.
13	POUR SHARED PATH.
14	PLACE BARRIER AND POUR STITCH. INSTALL TOP RAILS.
15	MONITOR SETTLEMENT OF BRIDGE ABUTMENTS AND APPROACH EMBANKMENTS.
16	COMPLETE BRIDGE PAVEMENT, APPROACH EMBANKMENT PAVEMENT AND ANCILLARY ITEMS.
17	INSTALL UTILITIES TO THE BRIDGE AND RELOCATE TRAFFIC.

THE ABOVE CONSTRUCTION SEQUENCE SHOWS THE SEQUENCING AS ASSUMED FOR DESIGN PURPOSES. CONSTRUCTOR TO ADVISE DESIGNER IF ALTERNATIVE CONSTRUCTION SEQUENCE IS PROPOSED.

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	26.02.18	
Drg Check	C.BURKE	26.02.18	Date 01.05.18

* Refer to Original Hardcopy for Signature

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

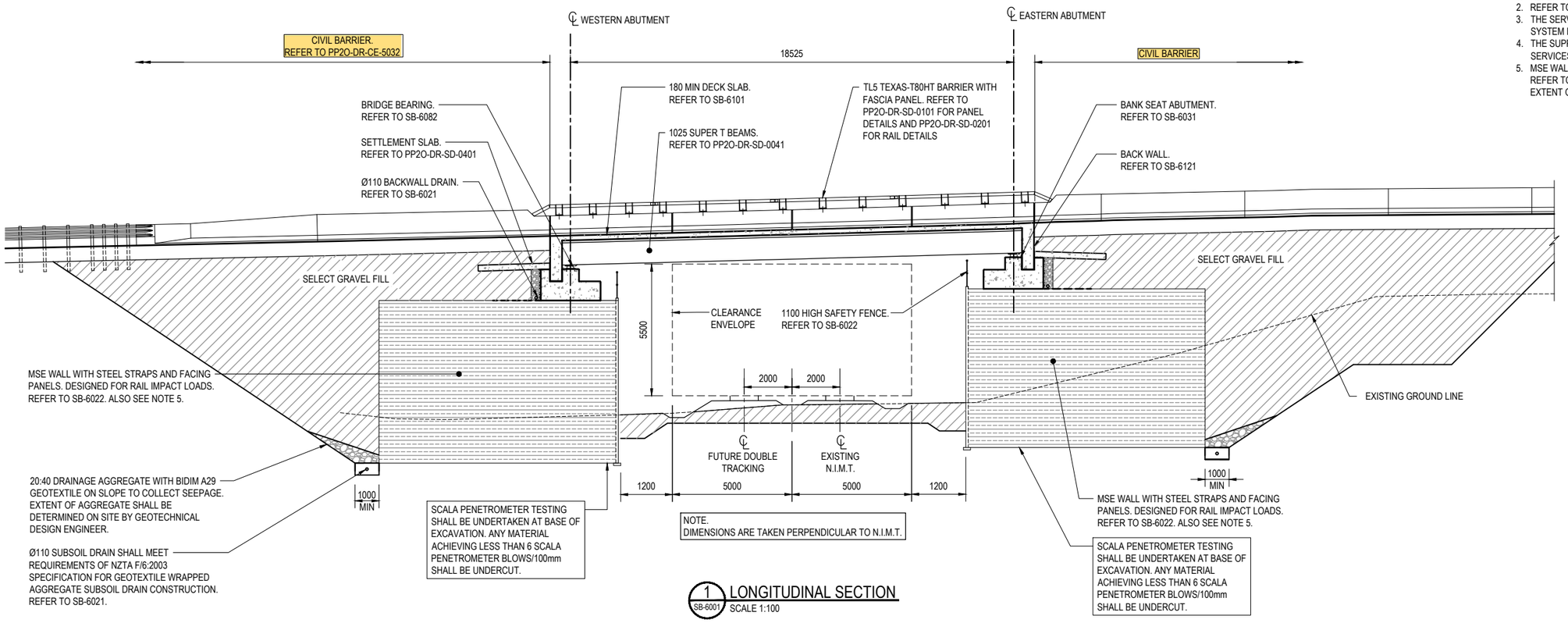
Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: GENERAL ARRANGEMENT PLAN

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6001
Rev.: 1

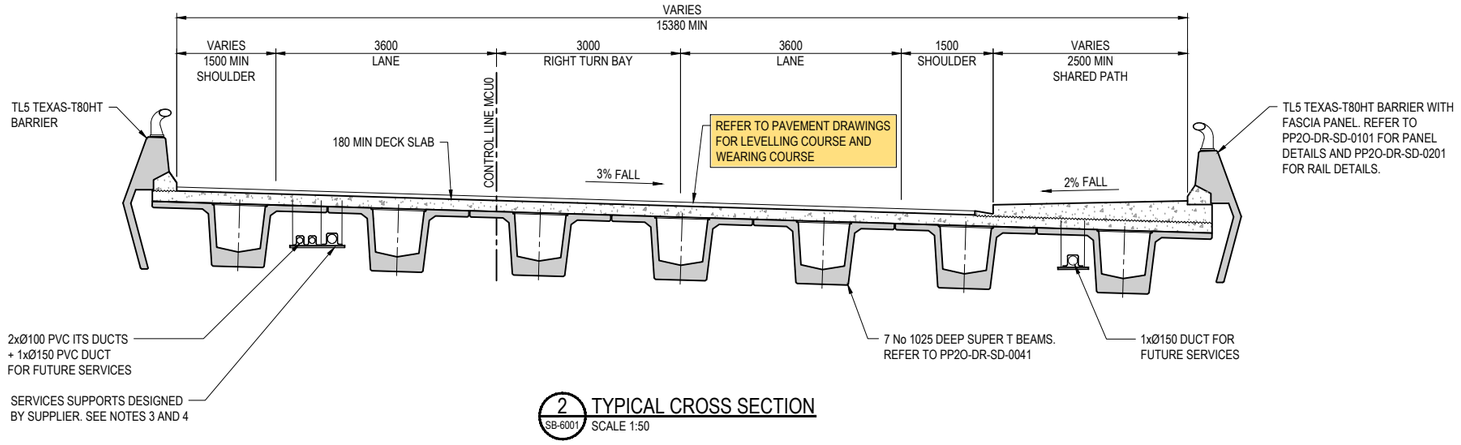
Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6001.DWG

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-6001 FOR BRIDGE SPECIFIC NOTES.
3. THE SERVICES SUPPORT SYSTEM SHALL BE A UNISTRUT PROPRIETARY SYSTEM DESIGNED BY THE SUPPLIER.
4. THE SUPPLIER SHALL PROVIDE THE FIXING REQUIREMENTS FOR THE SERVICES SUPPORT SYSTEM TO CAST IN TO THE DECK SLAB.
5. MSE WALLS ARE DESIGNED BY REINFORCED EARTH LTD (REL). REFER TO DRAWINGS 6089F/C/01 TO 6089F/C/14 FOR MSE INFORMATION. EXTENT OF MSE WALL SHALL BE CONFIRMED BY REL.



1 / SB-6001 LONGITUDINAL SECTION
SCALE 1:100



2 / SB-6001 TYPICAL CROSS SECTION
SCALE 1:50

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
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NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: GENERAL ARRANGEMENT SECTIONS

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6011
Rev.: 1

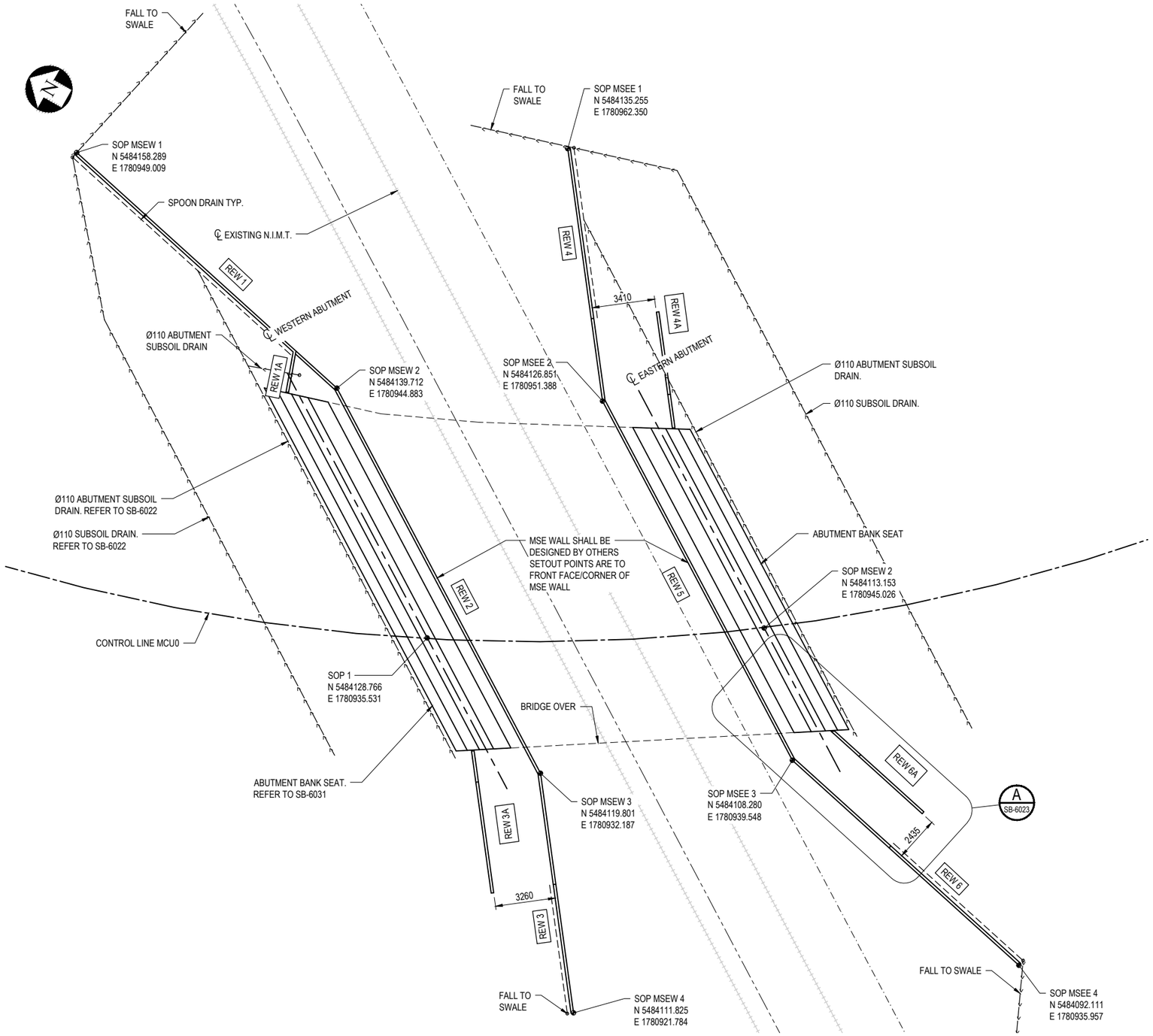
Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SEPP2O-DR-SB-6011.DWG

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-6001 FOR BRIDGE SPECIFIC NOTES.

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	



SUBSTRUCTURE SETOUT PLAN

SCALE 1:125

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	26.02.18	
Drg Check	C.BURKE	26.02.18	Date 01.05.18

* Refer to Original Hardcopy for Signature

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

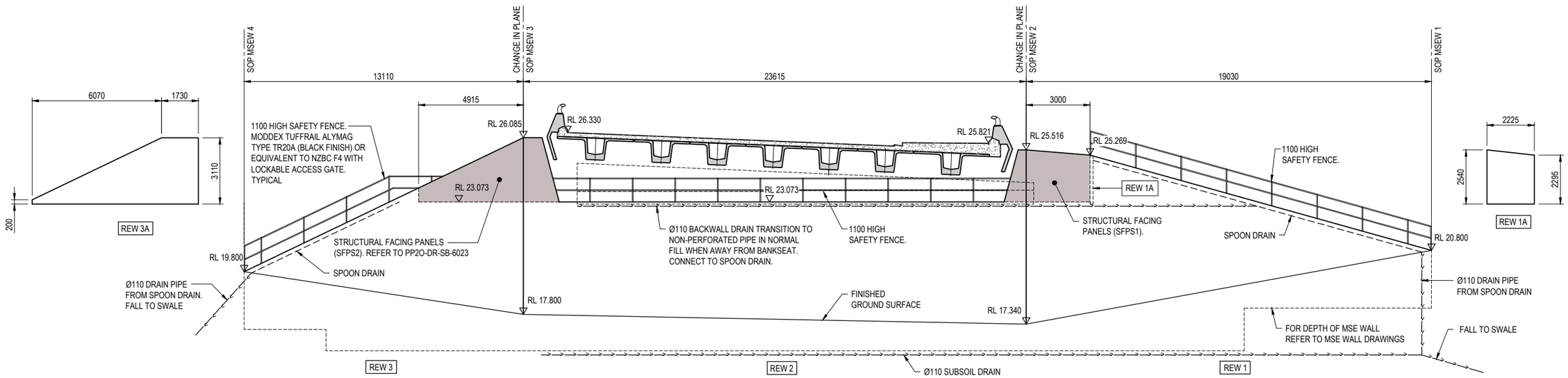
Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6021
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6021.DWG

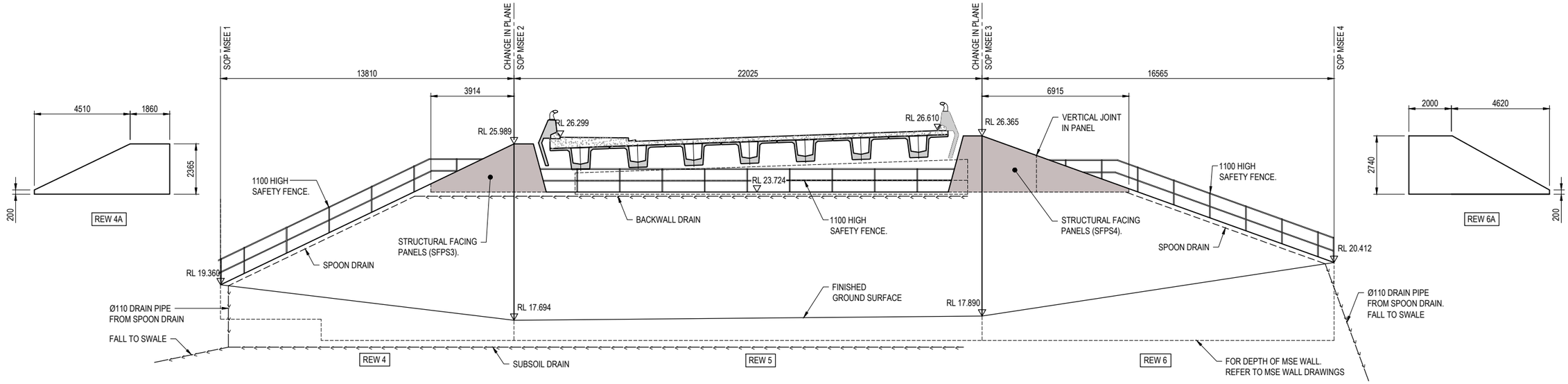
NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-6001 FOR BRIDGE SPECIFIC NOTES.
3. REW # = REFER TO REINFORCED EARTH WALL NUMBER. REFER TO RE WALL DRAWINGS FOR DETAILS.
4. REFER TO DRAWINGS 6089F/C/01-14 FOR MSE WALL INFORMATION.



WESTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100



EASTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100

ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
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NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: SUBSTRUCTURE DETAILS SHEET 1

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6022
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6022.DWG

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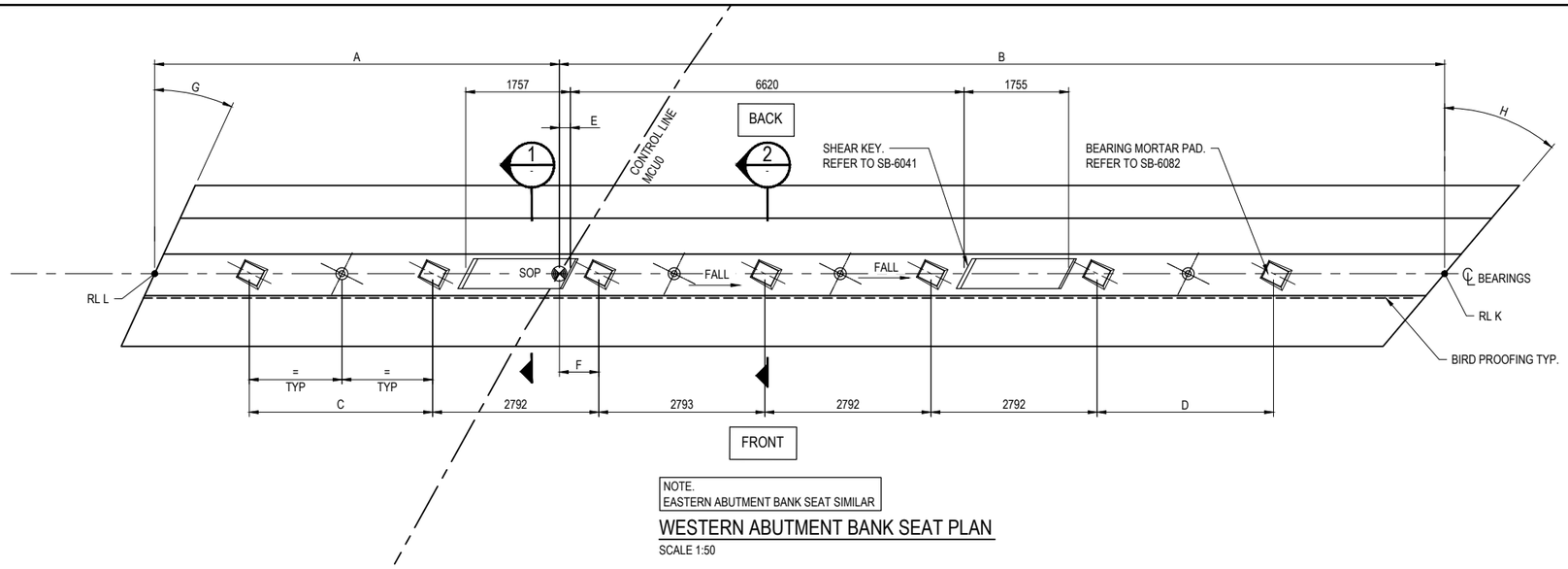
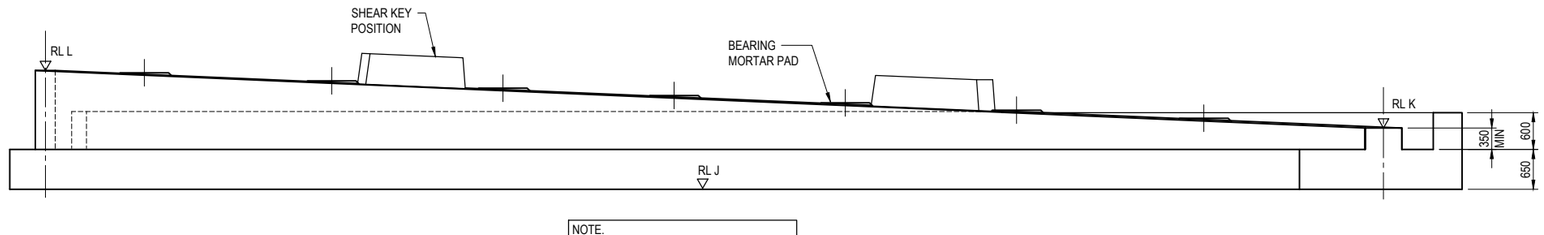


FRONT

NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT PLAN

SCALE 1:50



NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT ELEVATION

SCALE 1:50

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-6001 FOR BRIDGE SPECIFIC NOTES.
3. STEEL REINFORCEMENT SHALL BE G500E TO AS/NZS 4671 (REFER SPECIFICATION).
4. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH (f'c) OF THE ABUTMENT BEAM SHALL BE 40 MPa MIX REF.
5. COVER
   5.1. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm UNO.
   5.2. TOLERANCE ON COVERS SHALL BE:
      a) FOR 20mm BAR DIAMETER & BELOW +10,-0
      b) FOR BAR DIAMETER GREATER THAN 20mm +15,-0
6. CURING SHALL BE UNDERTAKEN AS PER THE REQUIREMENTS OF NZS3109 & PROJECT SPECIFICATIONS. MINIMUM CURING DURATION = 7 DAYS.
7. FORMED SURFACES SHALL BE F4 FINISH AS PER NZS3114.
8. ALL CONSTRUCTION JOINT 'CJ' SHALL BE TYPE B AS PER NZS3109 UNO. THE LOCATION OF CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS REPRESENT THE DESIGN INTENT. ALTERNATIVE CONSTRUCTION JOINTS MAY BE DEVELOPED THROUGH CONSULTATION WITH THE DESIGNER.

LEGEND:

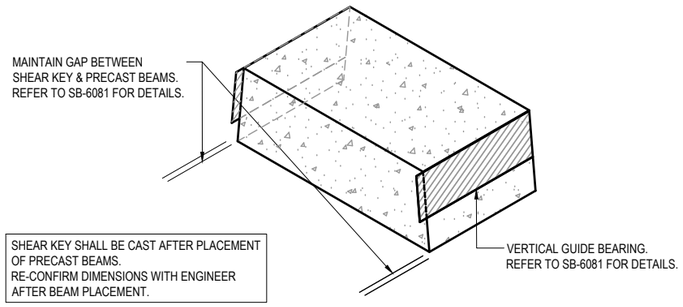
JACKING POINT LOCATION

TABLE 1. BANK SEAT DIMENSION

LOCATION	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (Degrees)	H (Degrees)
WESTERN ABUTMENT	6800	14880	3085	2965	185	660	25°	40°
EASTERN ABUTMENT	6375	12300	2525	2605	-455	-20	25°	30°

TABLE 2. BANK SEAT LEVELS

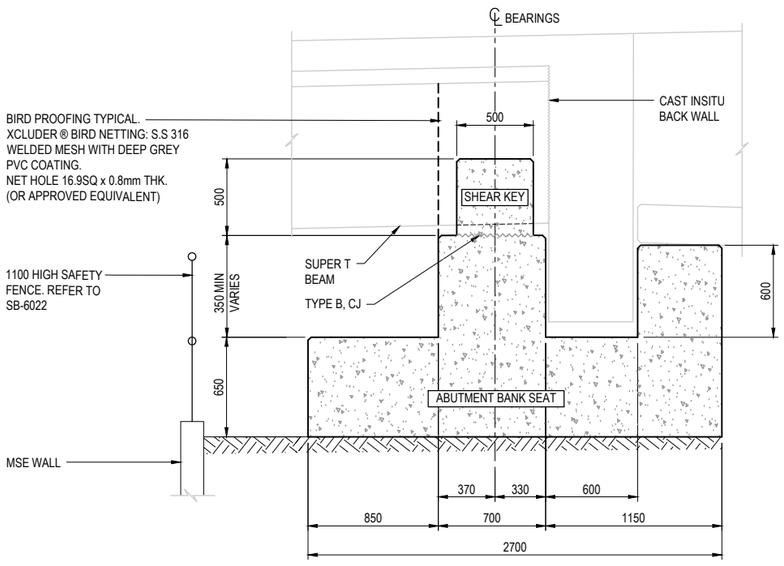
LOCATION	J (m)	K (m)	L (m)
WESTERN ABUTMENT	24.891	23.955	22.955
EASTERN ABUTMENT	25.261	24.606	23.606



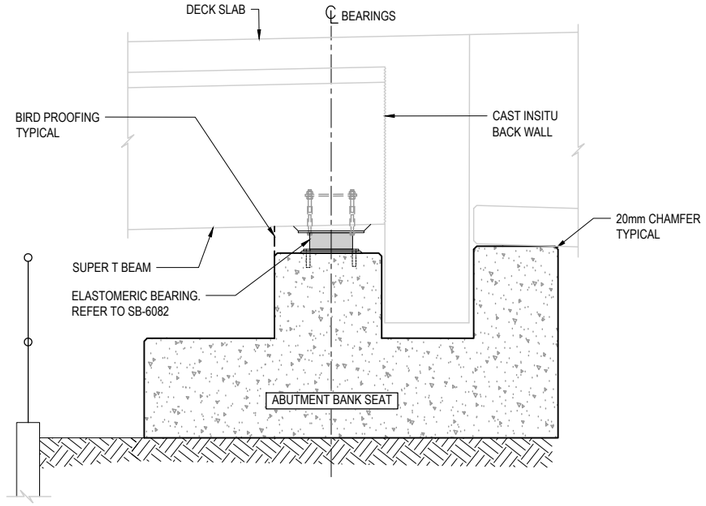
SHEAR KEY SHALL BE CAST AFTER PLACEMENT OF PRECAST BEAMS.
RE-CONFIRM DIMENSIONS WITH ENGINEER AFTER BEAM PLACEMENT.

DETAIL - ABUTMENT SHEAR KEY

NTS



1 SECTION
SCALE 1:20



2 SECTION
SCALE 1:20

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	26.02.18	
Drg Check	C.BURKE	26.02.18	Date 01.05.18

* Refer to Original Hardcopy for Signature

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

Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)
Title: ABUTMENT BANK SEAT CONCRETE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-6031
Rev.: 1

Document No. R/30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6031.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

Save Date: 04 May 2018 1:35 p.m.

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-6001 FOR BRIDGE SPECIFIC NOTES.
3. ABUTMENT BACKFILLING AND COMPACTION SHALL BE CARRIED OUT AFTER BACKWALL HAS REACHED ITS 28 DAY STRENGTH.
4. BACKFILL SHALL BE INSTALLED WITH A MAXIMUM DIFFERENTIAL BETWEEN ABUTMENTS OF 0.5m
5. 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.
6. THE PLANT USED FOR COMPACTING FILL MATERIAL SHALL BE RESTRICTED TO:
   - 6.1. VIBRATING ROLLERS, HAVING A MASS PER METRE WIDTH OF ROLLER NOT EXCEEDING 1300kg WITH A TOTAL MASS NOT EXCEEDING 1500kg.
   - 6.2. VIBRATING PLATE COMPACTORS HAVING A MASS NOT EXCEEDING 100kg.
   - 6.3. VIBRO TAMPERS HAVING A MASS NOT EXCEEDING 75kg.
7. BACKFILL MATERIAL BEHIND ABUTMENT:
   - 7.1. SHALL BE COMPACTED SELECT GRAVEL FILL IN BULK EARTHWORKS SPECIFICATION C0203.
8. APPROACH EMBANKMENT FILL SHALL BE SELECT GRAVEL FILL. REFER TO EARTHWORKS PACKAGE FOR OTHER EMBANKMENT REQUIREMENTS AND GEOMETRY. REFER EARTHWORKS SPECIFICATION C0203 FOR COMPACTION REQUIREMENTS.

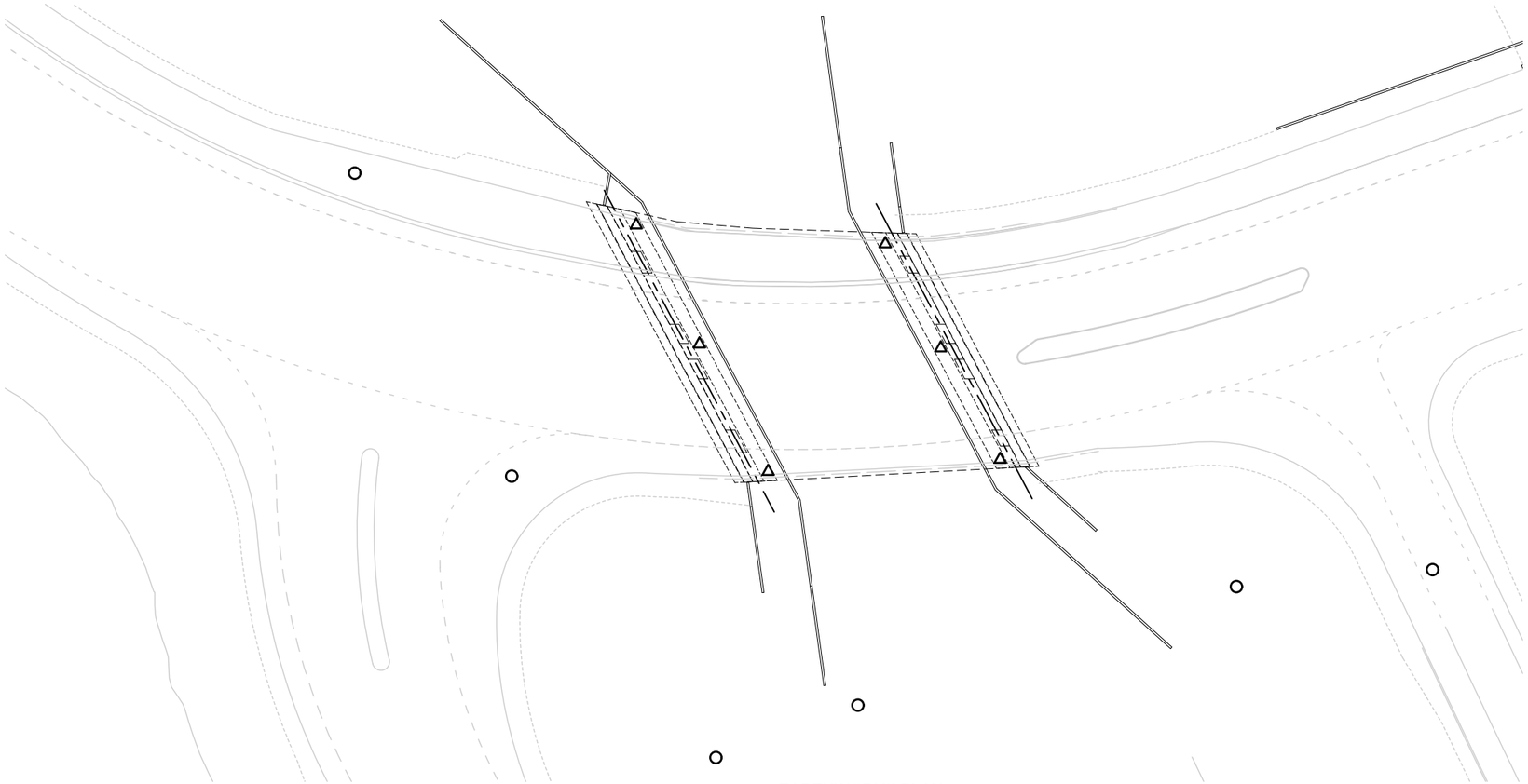
SETTLEMENT MONITORING LEGEND:

- SETTLEMENT PINS (ON BRIDGE) △
- SETTLEMENT PLATES (AT BASE UNDERCUT) WITH PLASTIC SLEEVE THROUGH EMBANKMENT □
- SETTLEMENT STATION. (REFER TO PP2O-DR-GE-0184 FOR DETAILS) ○

REFER TO PP2O-DR-GE-0131 FOR TYPICAL DETAILS

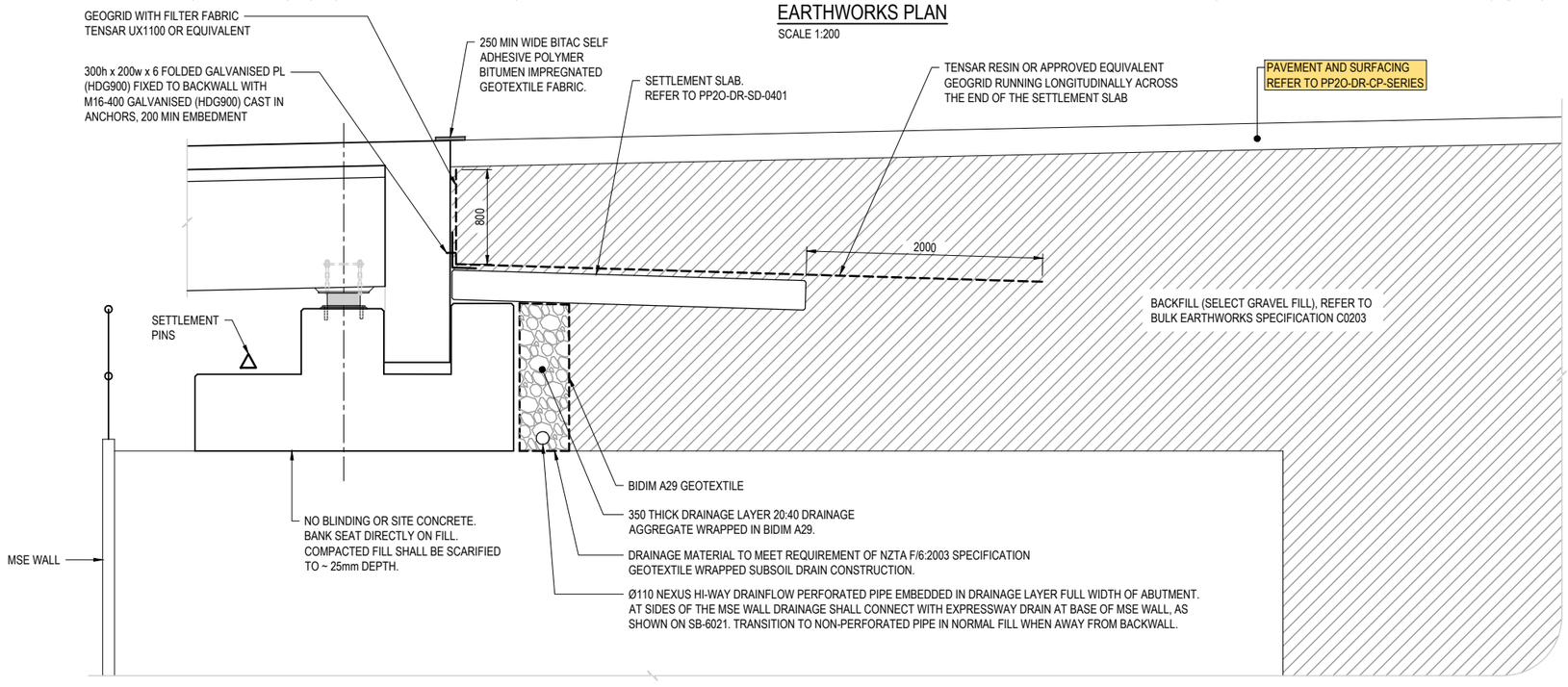
EARTHWORKS PLAN

SCALE 1:200



TYPICAL SECTION OF ABUTMENT BACKFILL

SCALE 1:25



FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	30.04.18

Scale (A1)	AS SHOWN	Approved For Construction	S.WATERS
Scale (A3)		Date	01.05.18

Design	L.CHEN	25.07.17
Drawn	M.JULATON	25.07.17
Dsg Verifier	G.BROWN	26.02.18
Drg Check	C.BURKE	26.02.18

* Refer to Original Hardcopy for Signature

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

Subject: SOUTH ŌTAKI RAIL OVERPASS (BRIDGE 6)

Title: EARTHWORKS, BACKFILLING, AND DRAINAGE

Discipline: STRUCTURAL

Drawing No.: PP2O-DR-SB-6191

Rev.: 1

Document No. R:\30DD - DESIGN\DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-6191.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

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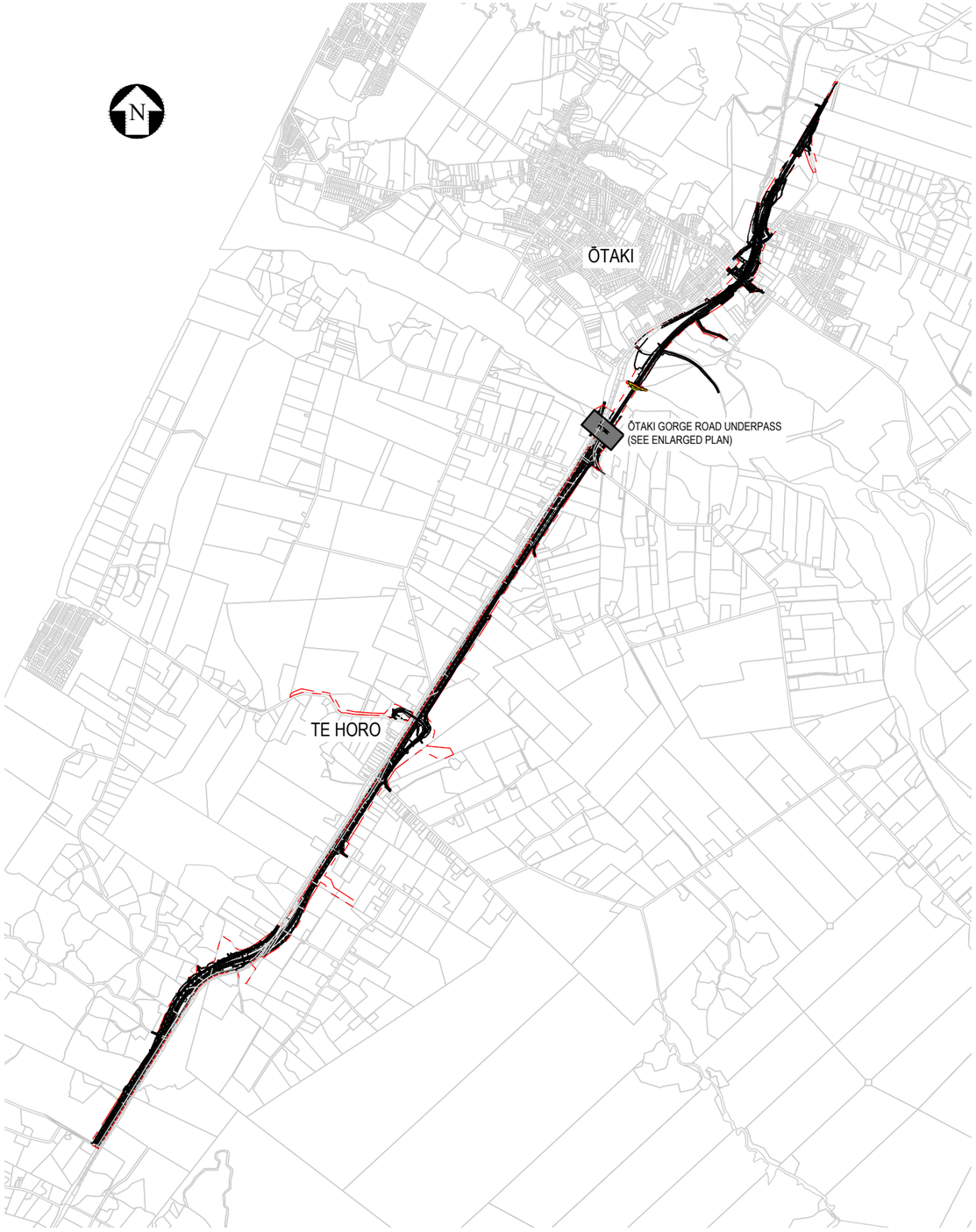
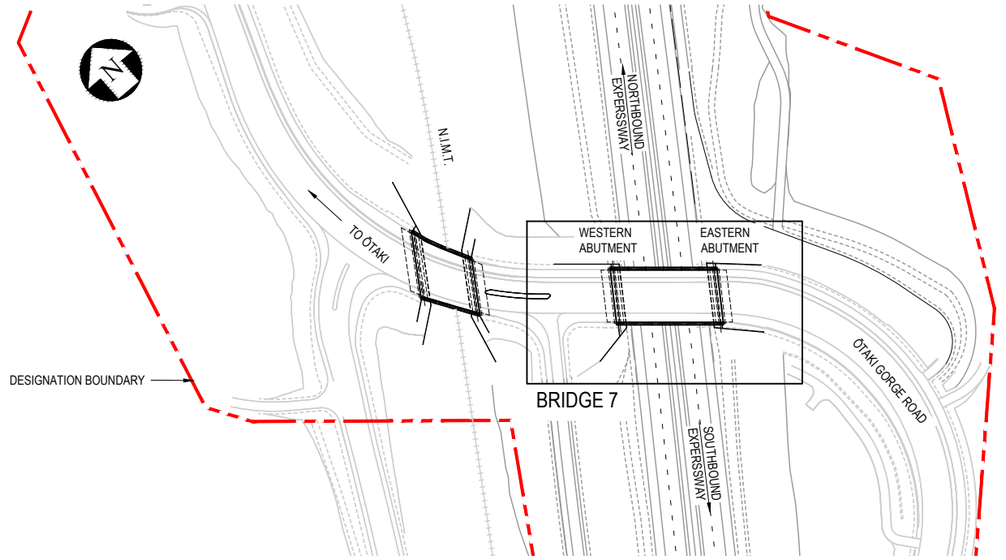


LOCATION PLAN
NTS



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-7000	STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST	1
PP2O-DR-SB-7001	GENERAL ARRANGEMENT PLAN	1
PP2O-DR-SB-7011	GENERAL ARRANGEMENT SECTIONS	1
PP2O-DR-SB-7021	GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN	1
PP2O-DR-SB-7022	SUBSTRUCTURE DETAILS	1
PP2O-DR-SB-7031	ABUTMENT BANK SEAT CONCRETE	1
PP2O-DR-SB-7041	ABUTMENT BANK SEAT REINFORCEMENT	1
PP2O-DR-SB-7081	VERTICAL GUIDE BEARING DETAILS	1
PP2O-DR-SB-7082	BEARING DETAILS	1
PP2O-DR-SB-7101	SUPERSTRUCTURE CONCRETE SHEET 1	1
PP2O-DR-SB-7102	SUPERSTRUCTURE CONCRETE SHEET 2	1
PP2O-DR-SB-7121	BACK WALL CONCRETE	1
PP2O-DR-SB-7125	BACK WALL REINFORCEMENT SHEET 1	1
PP2O-DR-SB-7126	BACK WALL REINFORCEMENT SHEET 2	1
PP2O-DR-SB-7161	DECK REINFORCEMENT	1
PP2O-DR-SB-7191	EARTHWORKS, BACKFILLING, AND DRAINAGE	1
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)	1
PP2O-DR-SD-0014	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 1	1
PP2O-DR-SD-0015	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 2	1
PP2O-DR-SD-0031	SUPER T BEAM - COMMON DETAILS	2
PP2O-DR-SD-0101	TL5 PRECAST BARRIER SHEET 1	2
PP2O-DR-SD-0102	TL5 PRECAST BARRIER SHEET 2	2
PP2O-DR-SD-0201	TEXAS T80HT RAIL SHEET 1	1
PP2O-DR-SD-0202	TEXAS T80HT RAIL SHEET 2	1
PP2O-DR-SD-0401	SETTLEMENT SLAB DETAILS	2
PP2O-DR-SD-0601	STRUCTURAL FACING PANELS SHEET 1	1
PP2O-DR-SD-0602	STRUCTURAL FACING PANELS SHEET 2	1

ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date 18.04.18

* Refer to Original Hardcopy for Signature

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

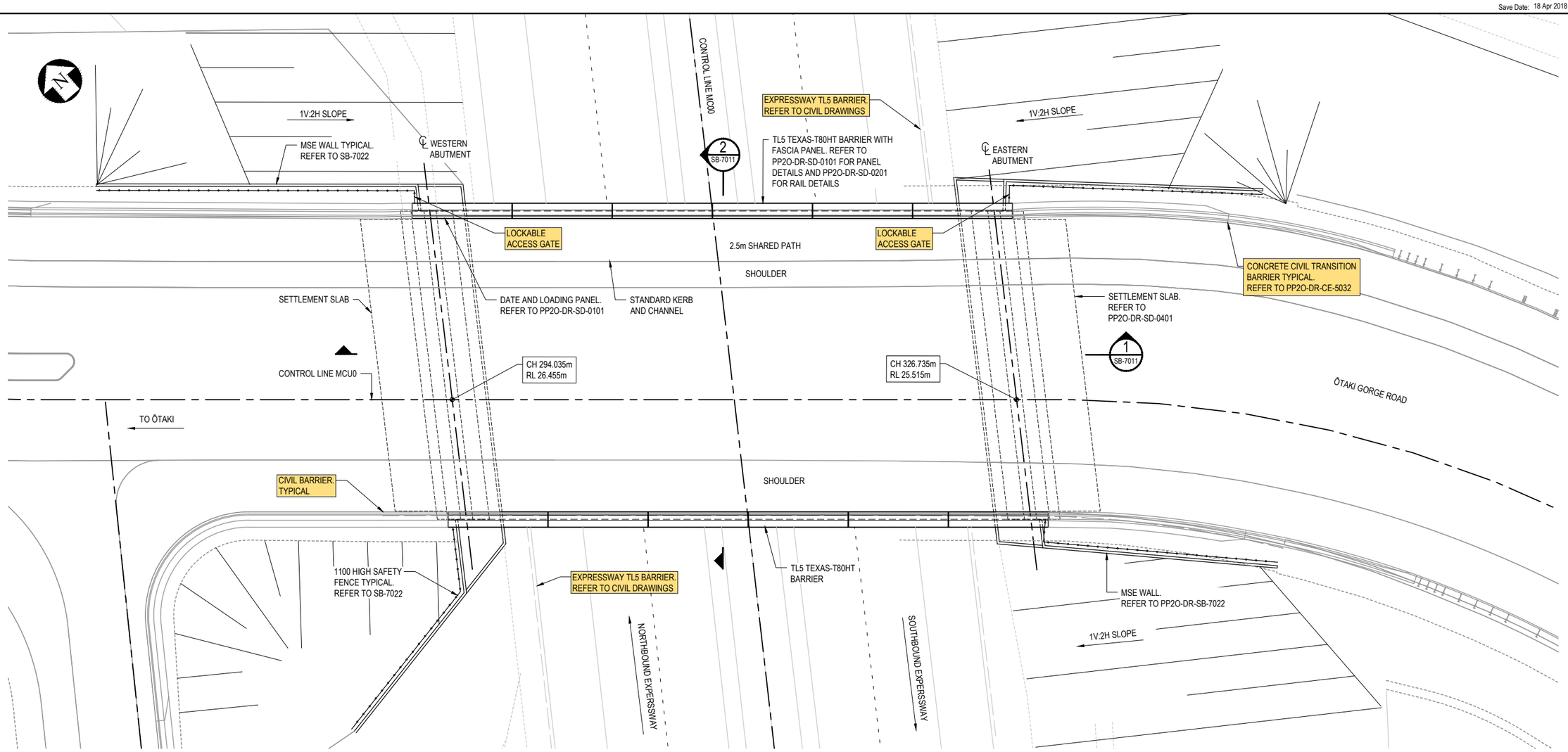
Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7000
Rev.: 1

Document No. R:\300D - DESIGN\DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7000.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK



GENERAL ARRANGEMENT PLAN

SCALE 1:125

NOTES:

1. REFERENCES
   - 1.1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
   - 1.2. REFER TO RELEVANT CIVIL DRAWINGS FOR CONTROL LINES, ROADING GEOMETRY, BARRIER EXTENTS, LANE WIDTHS ETC.
   - 1.3. REFER TO RELEVANT CIVIL DRAWINGS FOR LOCATION OF UTILITIES AND SERVICES.
   - 1.4. ALL LEVELS GIVEN ARE TO STRUCTURAL SURFACE UNO.

2. DESIGN STANDARDS
   - 2.1. NZTA BRIDGE MANUAL, THIRD EDITION (2013), WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.2. NZS 3101:2006 CONCRETE STRUCTURES STANDARD WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.3. REFER TO DESIGN STATEMENT REPORT FOR FURTHER DETAILS.

3. DESIGN LOADING
   - 3.1. SUPERIMPOSED DEAD LOAD ALLOWANCE:
     - a) SURFACING = 2.0kPa (INCLUDING 0.5kPa FOR LEVELLING COURSE)
     - b) SERVICES = ALLOWANCES ARE MADE AS FOLLOWS:
       - i) 2 No Ø150mm PVC DUCTS FOR FUTURE UTILITIES (ONE EACH SIDE)
       - ii) PLUS ADDITIONAL UNIFORMLY DISTRIBUTED LOAD APPLIED OVER ENTIRE DECK AREA OF 0.25kPa
   - 3.2. TRAFFIC LOAD HN-HO-72.
   - 3.3. SEISMIC LOAD BASED ON NZS 1170.5 AND SSSHA STUDY WITH:
     - a) SUBSOIL CLASS D
     - b) ULS AEP (1/2500)
     - c) ULS DESIGN PGA 0.567g
   - 3.4. TEMPERATURE AND DIFFERENTIAL TEMPERATURE AS PER NZTA BRIDGE MANUAL.
   - 3.5. CREEP AND SHRINKAGE BASED ON AS3600 AND NZTA BRIDGE MANUAL 3rd EDITION FOR RELATIVE HUMIDITY 80%.
   - 3.6. JACKING OF BRIDGE DECK FOR BEARING/ HORIZONTAL RESTRAINT REPLACEMENT. THE DESIGN INCLUDES THE FOLLOWING REQUIREMENTS:
     - a) TRAFFIC SHALL BE RESTRICTED TO 40km/h ONCE BRIDGE DECK IS JACKED.
     - b) SEE ABUTMENT DRAWINGS FOR JACKING LOCATIONS AND LOADS.
     - c) JACKING LOADS ARE BASED ON HN LOADINGS
     - d) ALL JACKS AT EACH ABUTMENT SHALL BE HYDRAULICALLY LINKED AND HAVE A CENTRAL MECHANISM TO ENSURE THAT THE SAME VERTICAL DISPLACEMENTS OCCUR AT EACH JACKING POINT AT ALL TIMES DURING THE JACKING OPERATION.
     - e) BRIDGE BEARINGS SHALL BE REPLACED USING LIFTS OF NOT GREATER THAN 10mm.
     - f) STEEL PLATES SHALL BE PLACED BETWEEN CONCRETE BEARING SURFACE AND HYDRAULIC JACK.
     - g) MAXIMUM ALLOWABLE CONTACT PRESSURE BETWEEN CONCRETE SURFACE AND STEEL PLATE SHALL BE 25MPa.
     - h) HORIZONTAL RESTRAINTS AT ABUTMENTS SHALL BE MAINTAINED.

4. DRAWING LIST
   - 4.1. FOR THE LIST OF ALL DRAWINGS APPLICABLE TO THIS BRIDGE, REFER TO DRG. SB-7000.

5. SPECIFICATIONS APPLICABLE TO THIS BRIDGE:
   - 5.1. C0203 - BULK EARTHWORKS
   - 5.2. C0310 - INSTRUMENTATION AND MONITORING
   - 5.3. C0600 - REINFORCED CONCRETE SUPPLY
   - 5.4. C0601 - REINFORCED CONCRETE CONSTRUCTION
   - 5.5. C0607 - PRESTRESSED CONCRETE ELEMENTS
   - 5.6. C0614 - ANTI-GRAFFITI COATINGS
   - 5.7. C0700 - STRUCTURAL STEELWORKS

6. CONSTRUCTION LOADS
   - 6.1. BRIDGE BEAMS ARE DESIGNED FOR CONSTRUCTION LIVE LOAD OF 1.5kPa. TEMPORARY WORK SHALL BE ADEQUATE FOR 1/500 APE (R = 1.0) SEISMIC AND WIND LOADING.

7. STRUCTURAL ELEMENTS INCLUDED IN PACKAGE:
   - 7.1. ABUTMENTS, SETTLEMENT SLABS, PRESTRESSED BEAMS, BEARINGS, TL5 TEXAS - T80HT BARRIERS WITH FASCIA, BACK WALL, MSE WALLS WITH METAL STRAPS.
   - 7.2. TRAFFIC BARRIERS DETAILED IN THE STRUCTURAL DRAWINGS TERMINATE AT THE EXTENT OF THE BRIDGE (BARRIERS BEYOND THAT ARE CONSIDERED TO BE STANDARD ROAD TRAFFIC BARRIERS. FOR THESE REFER TO THE RELEVANT CIVIL DRAWINGS).

8. COATING FOR EXPOSED CONCRETE SURFACES:
   - 8.1. GRAFFITI SOLUTION (OR EQUIVALENT APPROVED BY THE DESIGNER) SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES TO THE EXTENT SUMMARISED IN TABLE 1.
   - 8.2. FOR THE APPLICATION OF SURFACE COATING, PLEASE REFER TO THE SPECIFICATION C0614.

TABLE 1. CONCRETE SURFACE COATINGS

BRIDGE ELEMENTS	EXPOSED SURFACE	ANTI-GRAFFITI COATING
BRIDGE BARRIER	INSIDE FACES (FACING ŌTAKI GORGE ROAD)	YES
	TOP SURFACE, OUTSIDE FACE OF FASCIA	YES
ABUTMENTS	FRONT FACES (FACING EXPRESSWAY)	YES
	SIDES OF ABUTMENTS	YES
DECK SOFFIT	1.5m HORIZONTALLY FROM AN ACCESSIBLE SUBSTRUCTURE ELEMENT	YES

9. CONSTRUCTION SEQUENCE:

TABLE 2. CONSTRUCTION SEQUENCE

SEQUENCE	ACTIVITY
1	PREPARE ABUTMENT GROUND FOR MSE WALLS.
2	INSTALL STORMWATER PIPE AT WESTERN ABUTMENT PRIOR TO CONSTRUCTING THE MSE WALL (EASTERN ABUTMENT STORMWATER PIPE MAY BE INSTALLED BEFORE OR AFTER THE MSE WALL IS CONSTRUCTED)
3	CONSTRUCT MSE WALLS AND APPROACH EMBANKMENTS.
4	MONITOR SETTLEMENT OF BRIDGE ABUTMENT AND 'HOLD' CONSTRUCTION (IF NECESSARY).
5	CONSTRUCT ABUTMENT BANK SEAT.
6	INSTALL BEARINGS AND PRECAST SUPER T BEAMS.
7	CAST ABUTMENT BACK WALL.
8	COMPLETE BRIDGE DECK.
9	BACKFILL UP TO SETTLEMENT SLAB.
10	INSTALL SETTLEMENT SLABS.
11	COMPLETE BACKFILL ADJACENT TO ABUTMENT BACK WALLS.
12	POUR SHARED PATH.
13	PLACE BARRIER AND POUR STITCH. INSTALL TOP RAILS.
14	MONITOR SETTLEMENT OF BRIDGE ABUTMENTS AND APPROACH EMBANKMENTS.
15	COMPLETE BRIDGE PAVEMENT, APPROACH EMBANKMENT PAVEMENT AND ANCILLARY ITEMS.
16	INSTALL UTILITIES TO THE BRIDGE AND RELOCATE TRAFFIC.

THE ABOVE CONSTRUCTION SEQUENCE SHOWS THE SEQUENCING AS ASSUMED FOR DESIGN PURPOSES. CONSTRUCTOR TO ADVISE DESIGNER IF ALTERNATIVE CONSTRUCTION SEQUENCE IS PROPOSED.

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date 18.04.18

* Refer to Original Hardcopy for Signature

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT PLAN

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7001
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\EPP2O-DR-SB-7001.DWG

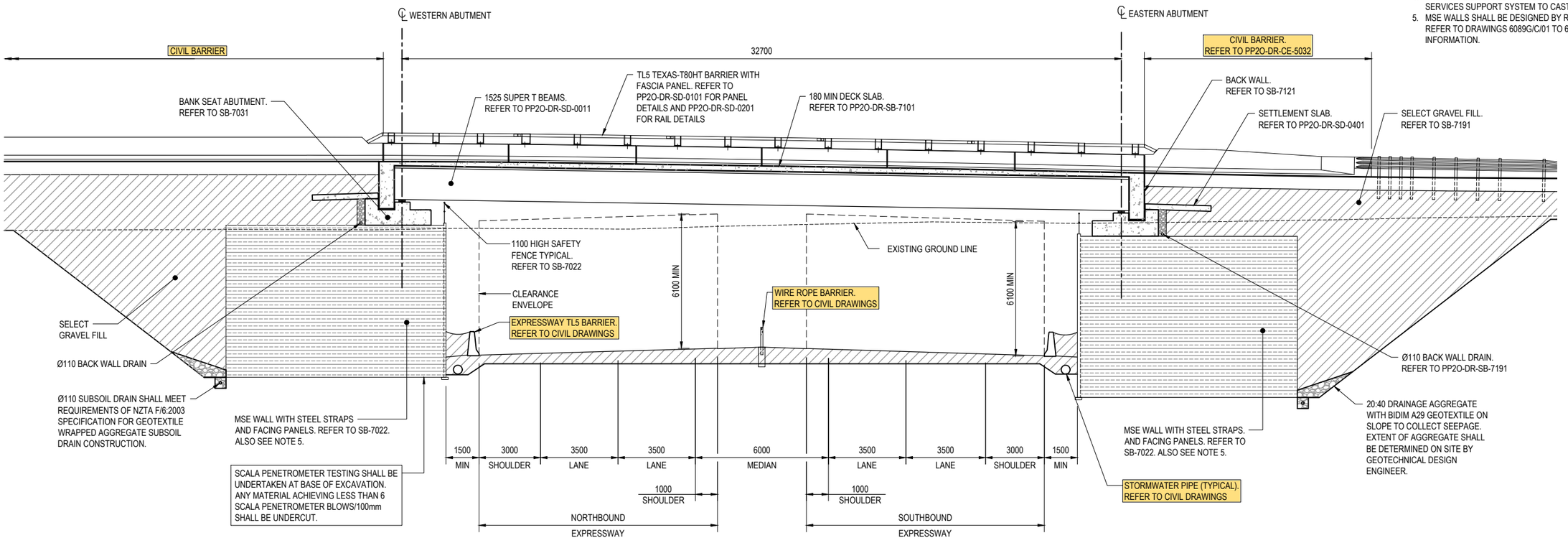
ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

Save Date: 18 Apr 2018 3:51 p.m.

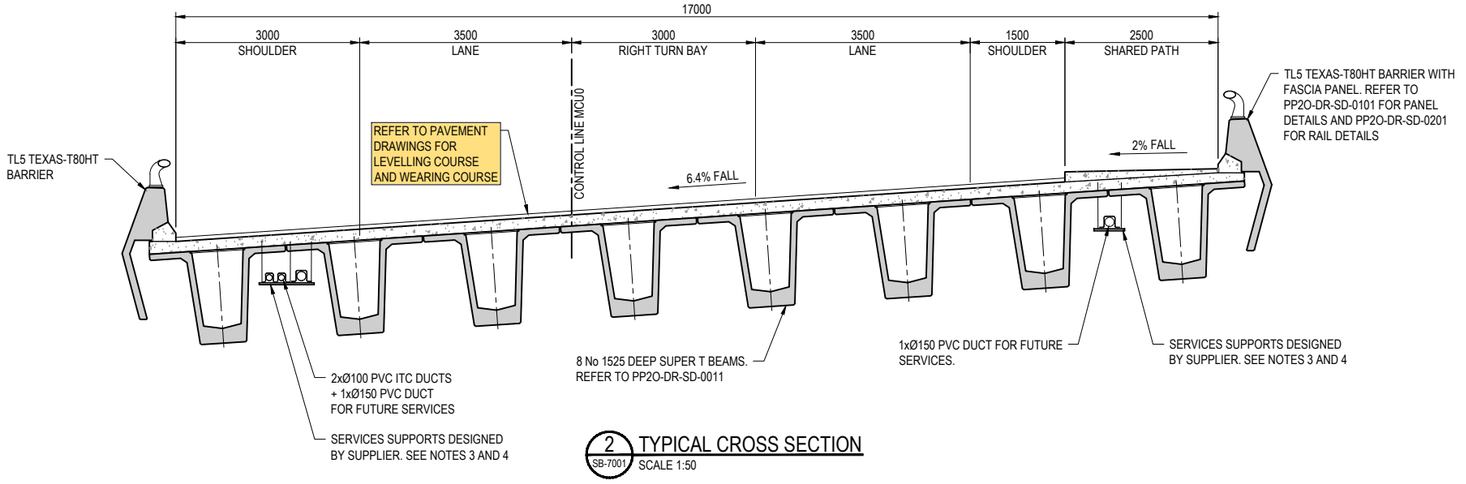
NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. THE SERVICES SUPPORT SYSTEM SHALL BE DESIGNED BY THE SUPPLIER.
4. THE SUPPLIER SHALL PROVIDE THE FIXING REQUIREMENTS FOR THE SERVICES SUPPORT SYSTEM TO CAST IN TO THE DECK SLAB.
5. MSE WALLS SHALL BE DESIGNED BY REINFORCED EARTH LTD (REL). REFER TO DRAWINGS 6089G/C/01 TO 6089G/C/14 FOR MSE WALL INFORMATION.



NOTE:
ALL EXPRESSWAY DIMENSIONS ARE TAKEN PERPENDICULAR TO CONTROL LINE MC00

1 SB-7001 LONGITUDINAL SECTION
SCALE 1:100



2 SB-7001 TYPICAL CROSS SECTION
SCALE 1:50

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

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Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	S.WATERS
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date 18.04.18

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT SECTIONS

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7011
Rev.: 1

Document No. R:\30\DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SEPP2O-DR-SB-7011.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

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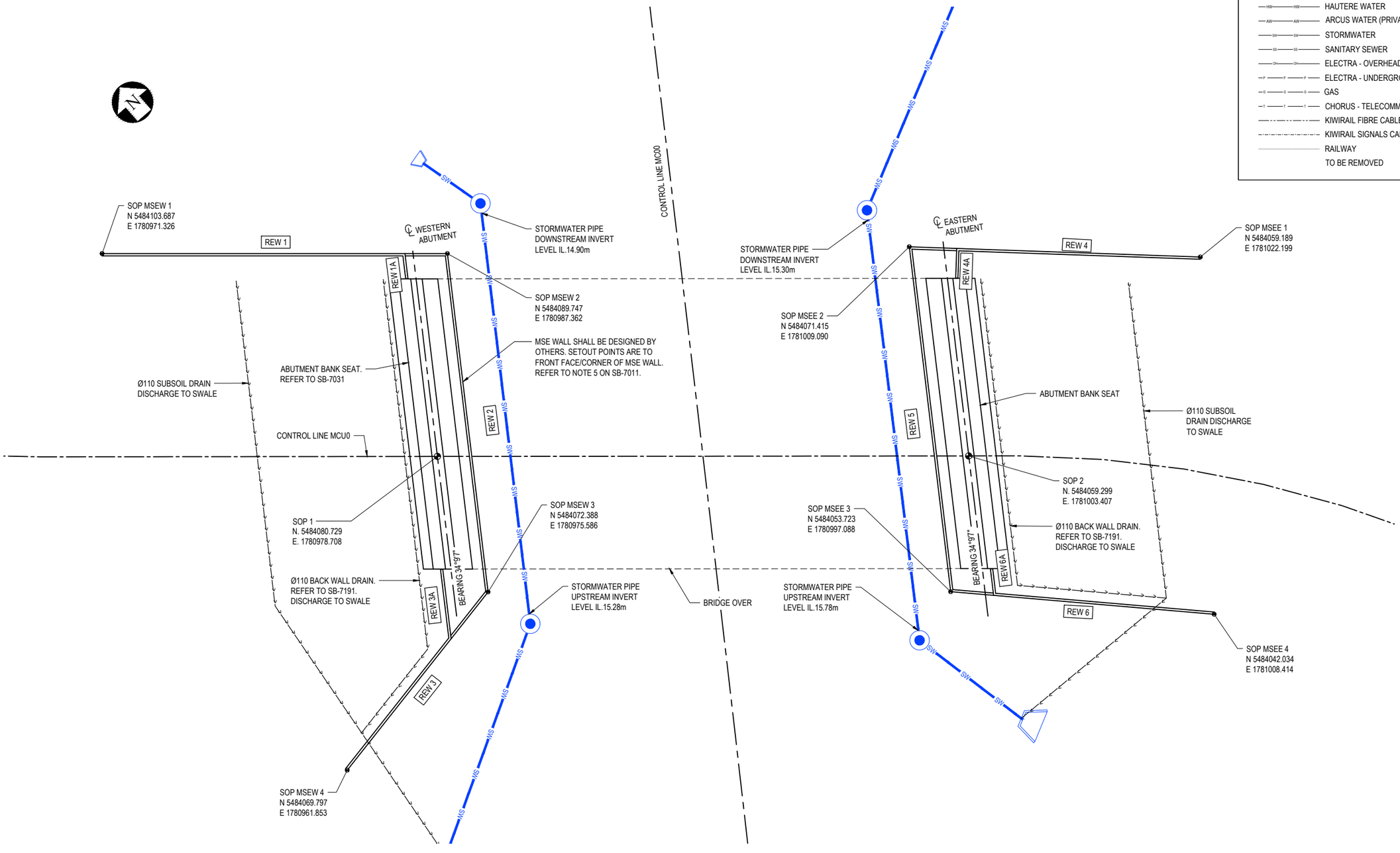
Save Date: 18 Apr 2018 3:51 p.m.

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. ALL STORMWATER INVERT LEVELS SHALL BE CONFIRMED WITH STORMWATER DESIGN DOCUMENTS.

SERVICES LEGEND:

EXISTING	NEW
PUBLIC WATER	
HAUTERE WATER	
ARCUS WATER (PRIVATE IRRIGATION SUPPLY)	
STORMWATER	
SANITARY SEWER	
ELECTRA - OVERHEAD POWER CABLES	
ELECTRA - UNDERGROUND POWER CABLES	
GAS	
CHORUS - TELECOMMUNICATIONS	
KIWIRAIL FIBRE CABLE	
KIWIRAIL SIGNALS CABLE	
RAILWAY	
TO BE REMOVED	



SUBSTRUCTURE SETOUT PLAN

SCALE 1:125

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction S.WATERS
Drawn	M.JULATON	25.07.17	
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NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7021
Rev.: 1

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ORIGINAL SIZE A1 : DO NOT SCALE

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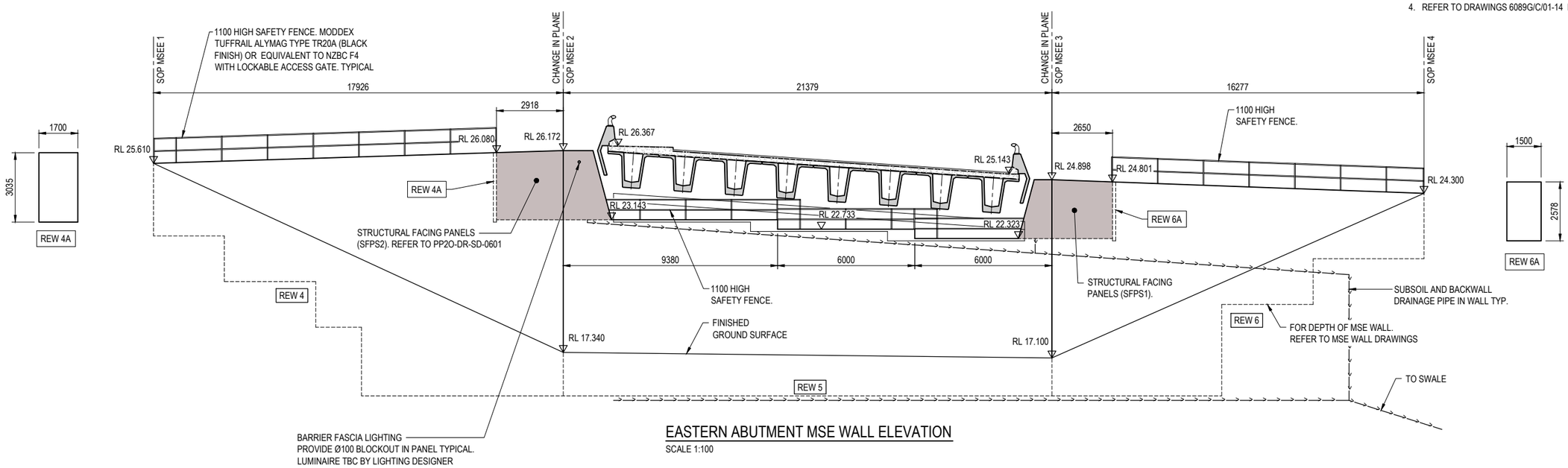
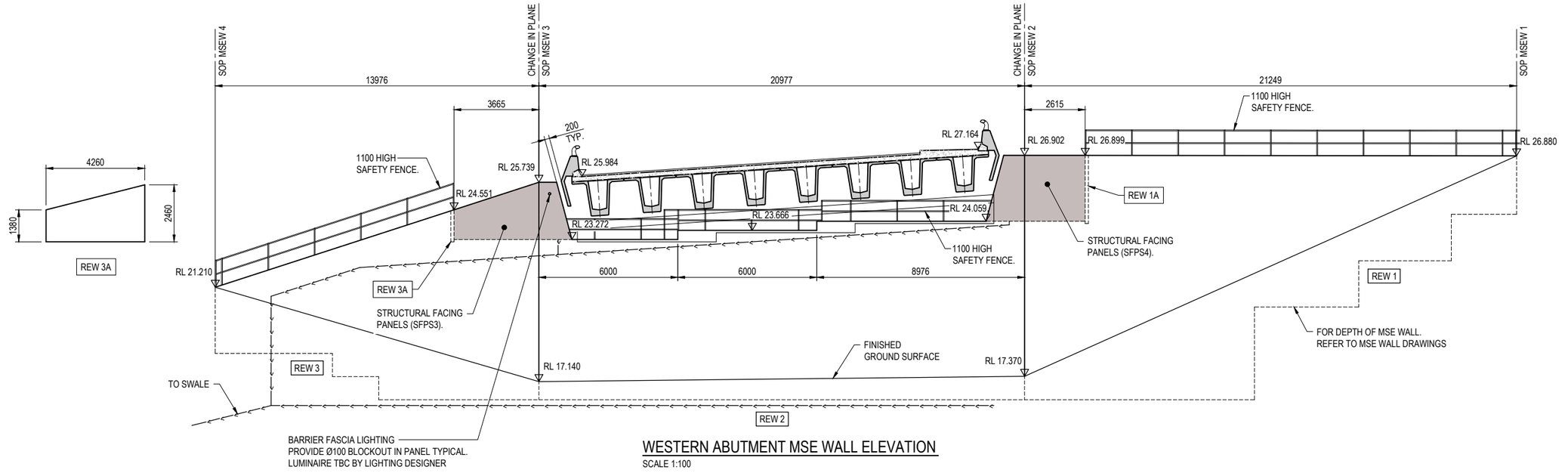
NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. REW # = REFER TO REINFORCED EARTH WALL NUMBER. REFER TO RE WALL DRAWINGS FOR DETAILS.
4. REFER TO DRAWINGS 6089G/C/01-14 FOR MSE WALL INFORMATION.



EASTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100



WESTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100

TABLE 1. STRUCTURAL FACING PANEL DIMENSIONS

PANEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (Degrees)
SFPS1	775	1465	2575	2470	2490	345	97
SFPS2	1300	2110	3030	2740	2940	405	135
SFPS3	770	1430	2470	3485	1280	380	81
SFPS4	905	1665	2840	2435	2840	320	102

REFER PP2O-DR-SD-0601

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

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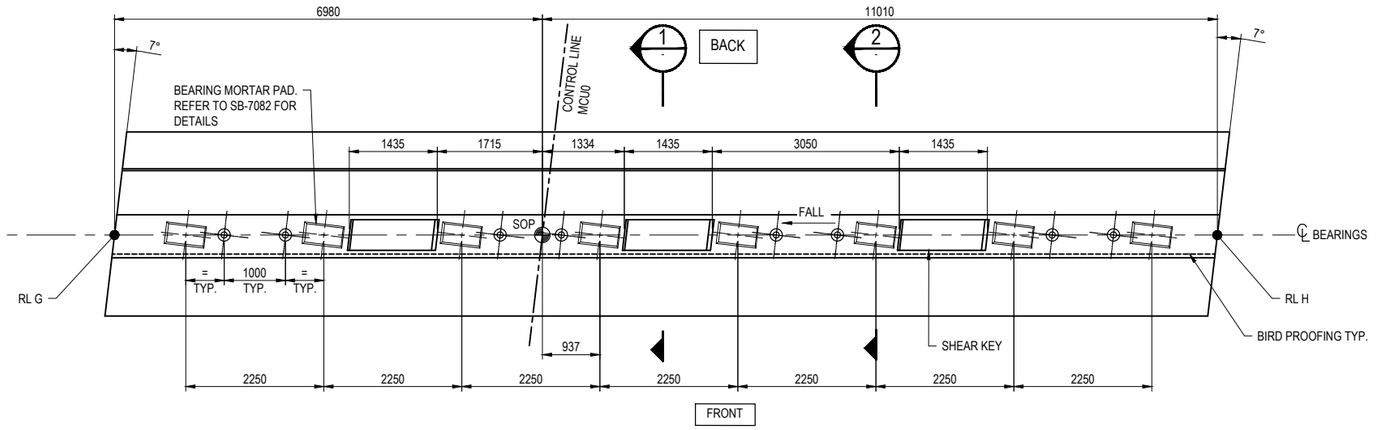
NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

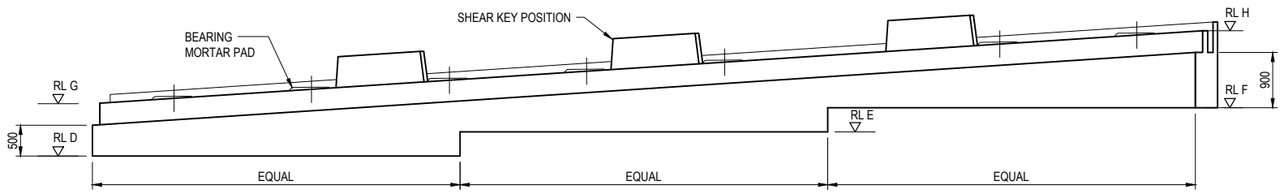
Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: SUBSTRUCTURE DETAILS
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7022
Rev.: 1



NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT PLAN

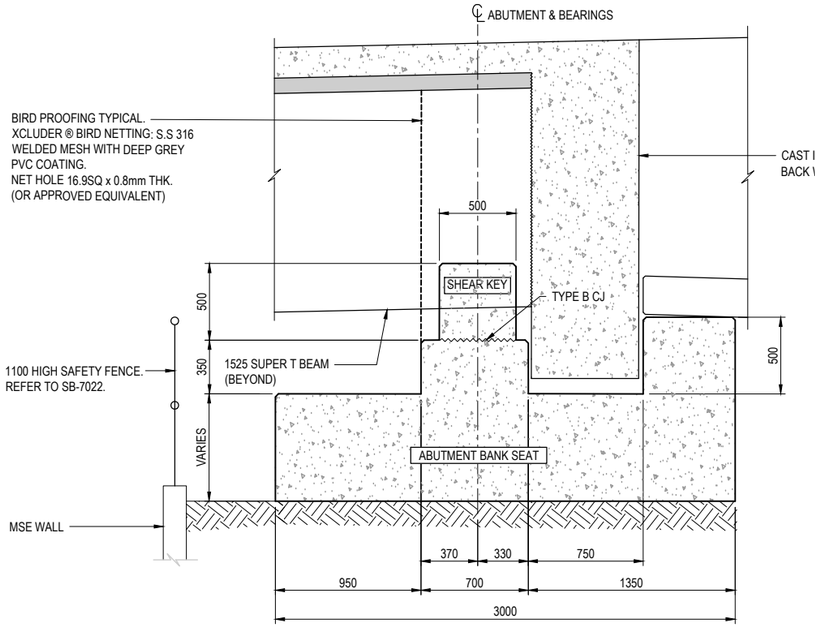
SCALE 1:50



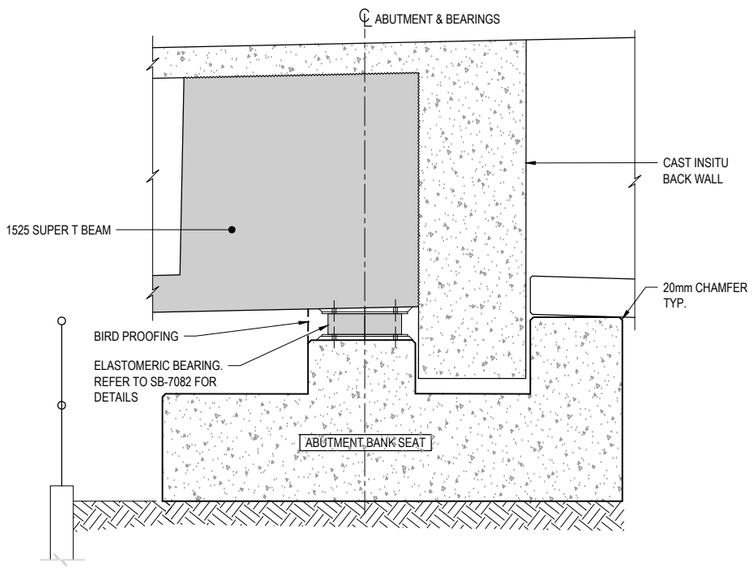
NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT ELEVATION

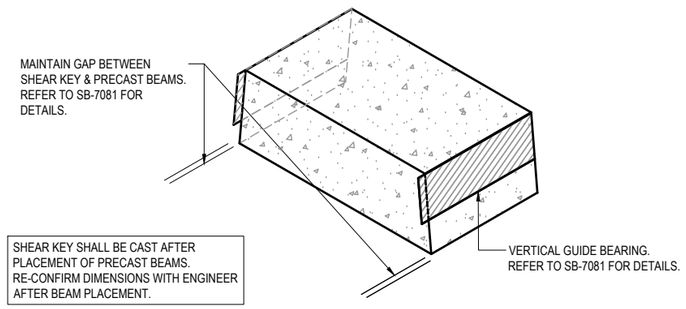
SCALE 1:50



1 SECTION
SCALE 1:20



2 SECTION
SCALE 1:20



SHEAR KEY SHALL BE CAST AFTER
PLACEMENT OF PRECAST BEAMS.
RE-CONFIRM DIMENSIONS WITH ENGINEER
AFTER BEAM PLACEMENT.

DETAIL - ABUTMENT SHEAR KEY

NTS

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. STEEL REINFORCEMENT SHALL BE G500E TO AS/NZS 4671 (REFER SPECIFICATION).
4. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH (f'c) FOR ABUTMENT SHALL BE 40 MPa MIX REF.
5. COVER
   5.1. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm UNO.
   5.2. TOLERANCE ON COVERS SHALL BE:
   a) FOR 20mm BAR DIAMETER & BELOW +10,-0
   b) FOR BAR DIAMETER GREATER THAN 20mm +15,-0
6. CURING SHALL BE UNDERTAKEN AS PER THE REQUIREMENTS OF NZS3109 & PROJECT SPECIFICATIONS. MINIMUM CURING DURATION = 7 DAYS.
7. FORMED SURFACES SHALL BE F4 FINISH AS PER NZS3114.
8. ALL CONSTRUCTION JOINT 'CJ' SHALL BE TYPE B AS PER NZS3109 UNO. THE LOCATION OF CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS REPRESENT THE DESIGN INTENT. ALTERNATIVE CONSTRUCTION JOINTS MAY BE DEVELOPED THROUGH CONSULTATION WITH THE DESIGNER.

LEGEND:

JACKING POINT LOCATION

TABLE 1 - BANK SEAT RL

LOCATION	D (m)	E (m)	F (m)	G (m)	H (m)
WESTERN ABUTMENT	23.158	23.552	23.945	24.011	25.192
EASTERN ABUTMENT	22.209	22.619	23.029	23.054	24.284

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	S.WATERS
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date 18.04.18

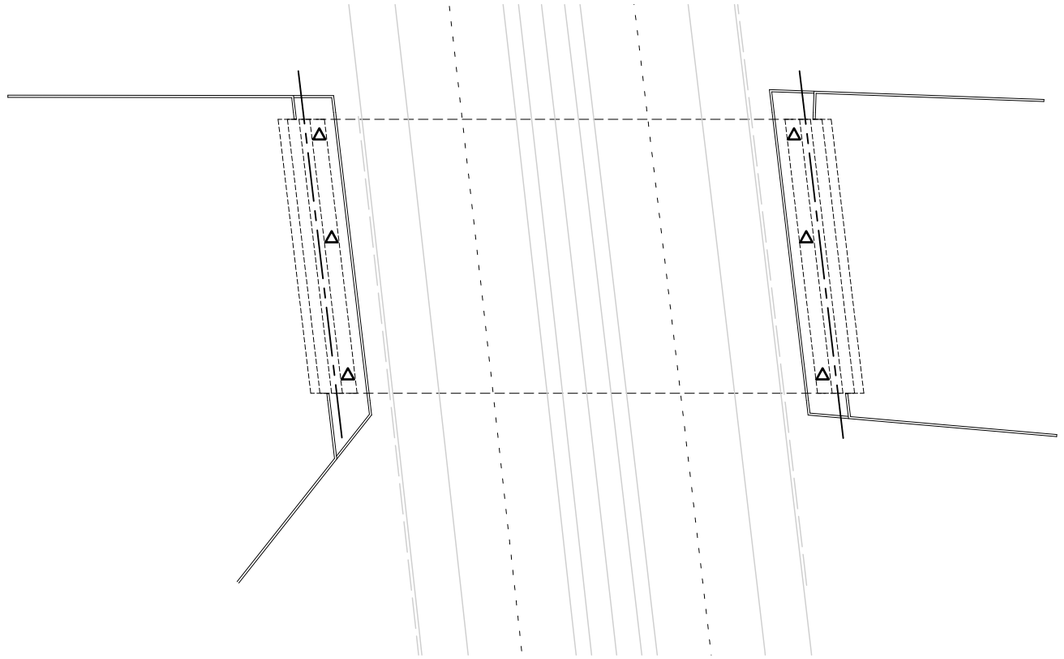
* Refer to Original Hardcopy for Signature

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: ABUTMENT BANK SEAT CONCRETE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7031
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7031.DWG



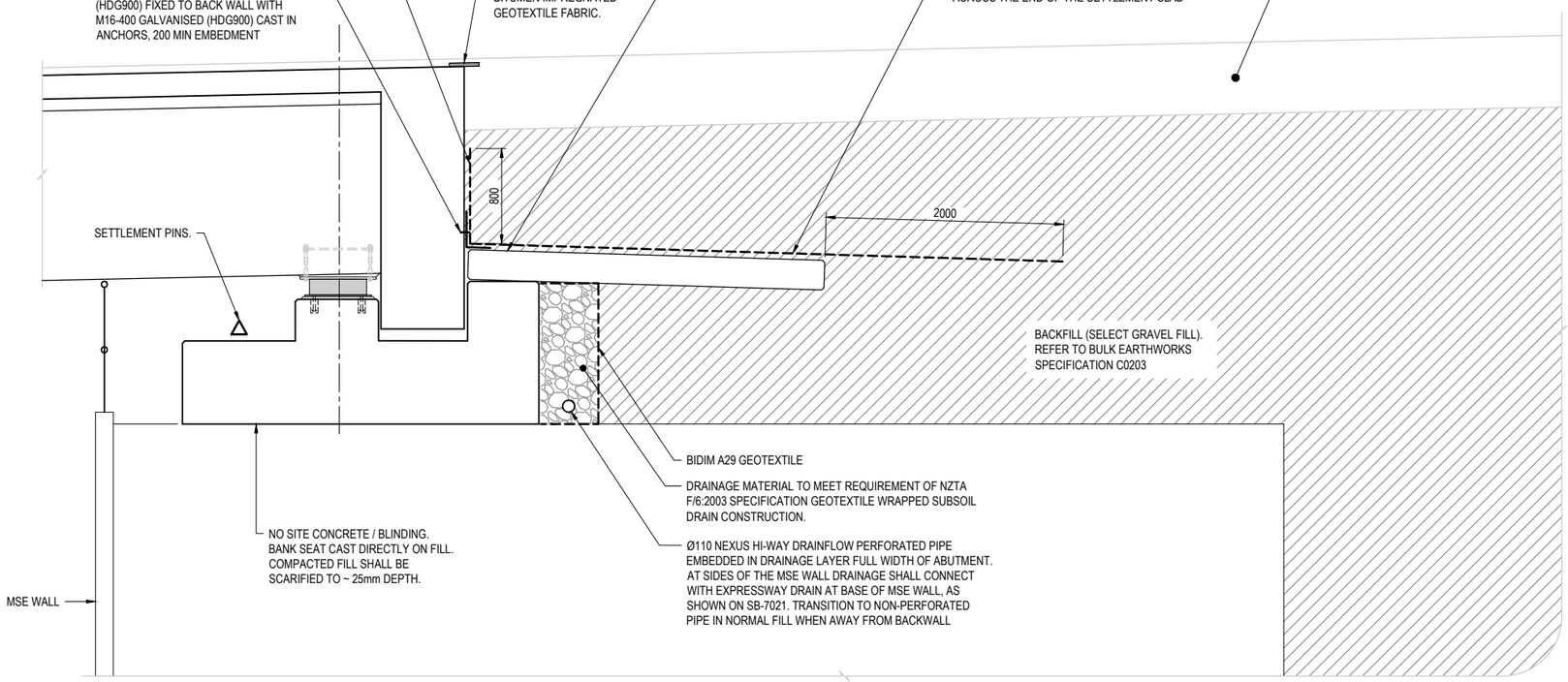
EARTHWORKS PLAN
SCALE 1:200

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. ABUTMENT BACKFILLING AND COMPACTION SHALL BE CARRIED OUT AFTER BACKWALL HAS REACHED ITS 28 DAY STRENGTH.
4. BACKFILL SHALL BE INSTALLED WITH A MAXIMUM DIFFERENTIAL BETWEEN ABUTMENTS OF 0.5m
5. 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.
6. THE PLANT USED FOR COMPACTING FILL MATERIAL SHALL BE RESTRICTED TO:
   - 6.1. VIBRATING ROLLERS, HAVING A MASS PER METRE WIDTH OF ROLLER NOT EXCEEDING 1300kg WITH A TOTAL MASS NOT EXCEEDING 1500kg.
   - 6.2. VIBRATING PLATE COMPACTORS HAVING A MASS NOT EXCEEDING 100kg.
   - 6.3. VIBRO TAMPERS HAVING A MASS NOT EXCEEDING 75kg.
7. BACKFILL MATERIAL BEHIND ABUTMENT:
   - 7.1. SHALL BE COMPACTED SELECT GRAVEL FILL IN BULK EARTHWORKS SPECIFICATION C0203.
8. APPROACH EMBANKMENT FILL SHALL BE SELECT GRAVEL FILL. REFER TO EARTHWORKS PACKAGE FOR OTHER EMBANKMENT REQUIREMENTS AND GEOMETRY. REFER EARTHWORKS SPECIFICATION C0203 FOR COMPACTION REQUIREMENTS.

SETTLEMENT MONITORING LEGEND:

SETTLEMENT PINS (ON BANK SEAT)	△
SETTLEMENT PLATES (AT BASE UNDERCUT) WITH PLASTIC SLEEVE THROUGH EMBANKMENT	□
SETTLEMENT STATION (AT TOP OF EMBANKMENT) REFER TO PP2O-DR-GE-0131 FOR TYPICAL DETAILS	○



TYPICAL SECTION OF ABUTMENT BACKFILL
SCALE 1:25

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN	Design	L.CHEN	25.07.17
Scale (A3)	Drawn	M.JULATON	25.07.17
	Dsg Verifier	G.BROWN	14.02.18
	Drg Check	B.FLYNN	14.02.18
	* Refer to Original Hardcopy for Signature		

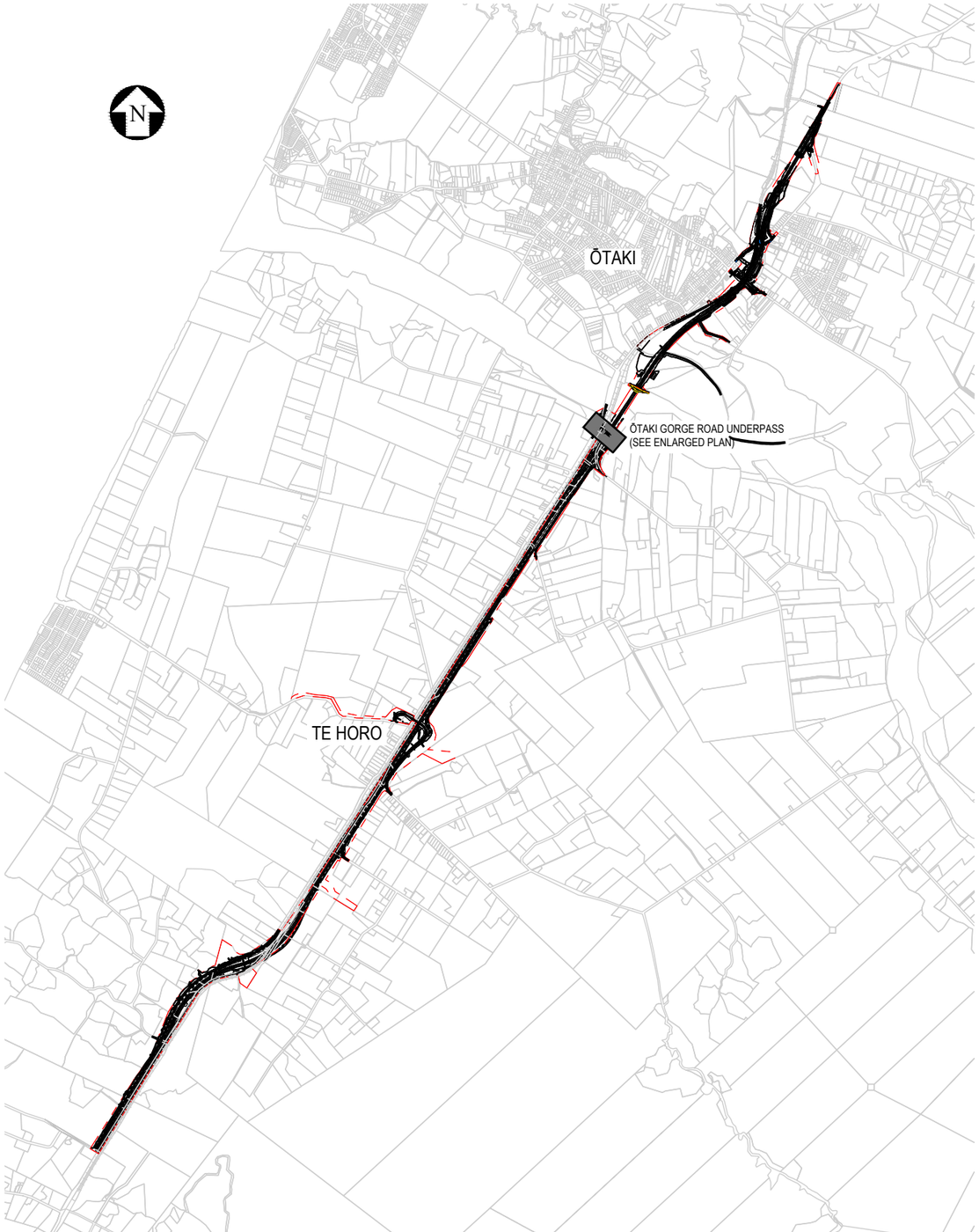
Approved For Construction: S.WATERS
Date: 18.04.18

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

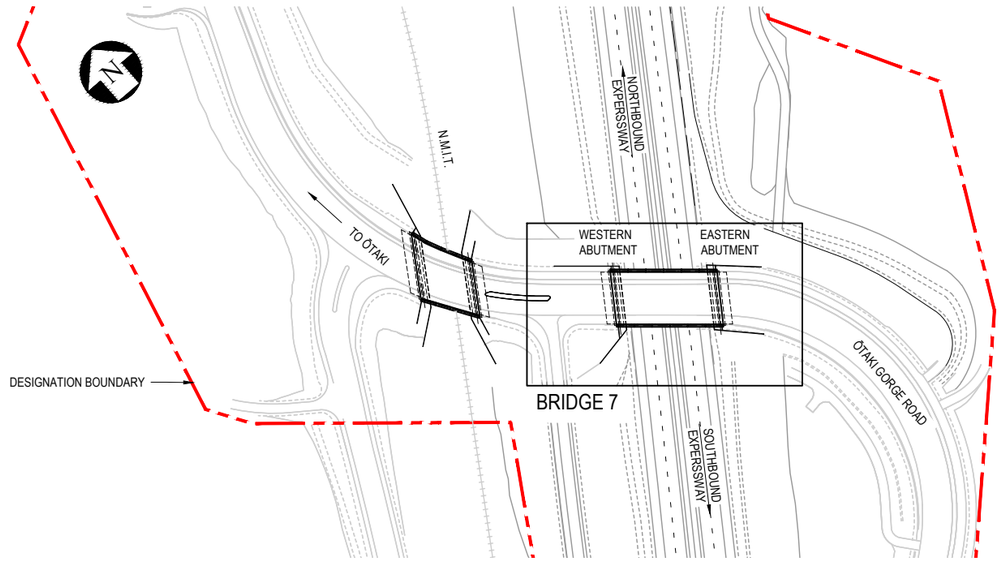
Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: EARTHWORKS, BACKFILLING, AND DRAINAGE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7191
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SEPP2O-DR-SB-7191.DWG



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-7000	STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST	1
PP2O-DR-SB-7001	GENERAL ARRANGEMENT PLAN	1
PP2O-DR-SB-7011	GENERAL ARRANGEMENT SECTIONS	1
PP2O-DR-SB-7021	GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN	1
PP2O-DR-SB-7022	SUBSTRUCTURE DETAILS	1
PP2O-DR-SB-7031	ABUTMENT BANK SEAT CONCRETE	1
PP2O-DR-SB-7041	ABUTMENT BANK SEAT REINFORCEMENT	1
PP2O-DR-SB-7081	VERTICAL GUIDE BEARING DETAILS	1
PP2O-DR-SB-7082	BEARING DETAILS	1
PP2O-DR-SB-7101	SUPERSTRUCTURE CONCRETE SHEET 1	1
PP2O-DR-SB-7102	SUPERSTRUCTURE CONCRETE SHEET 2	1
PP2O-DR-SB-7121	BACK WALL CONCRETE	1
PP2O-DR-SB-7125	BACK WALL REINFORCEMENT SHEET 1	1
PP2O-DR-SB-7126	BACK WALL REINFORCEMENT SHEET 2	1
PP2O-DR-SB-7161	DECK REINFORCEMENT	1
PP2O-DR-SB-7191	EARTHWORKS, BACKFILLING, AND DRAINAGE	1
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)	1
PP2O-DR-SD-0014	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 1	1
PP2O-DR-SD-0015	1525 SUPER T BEAM - REINFORCEMENT DETAILS SHEET 2	1
PP2O-DR-SD-0031	SUPER T BEAM - COMMON DETAILS	2
PP2O-DR-SD-0101	TL5 PRECAST BARRIER SHEET 1	2
PP2O-DR-SD-0102	TL5 PRECAST BARRIER SHEET 2	2
PP2O-DR-SD-0201	TEXAS T80HT RAIL SHEET 1	1
PP2O-DR-SD-0202	TEXAS T80HT RAIL SHEET 2	1
PP2O-DR-SD-0401	SETTLEMENT SLAB DETAILS	2
PP2O-DR-SD-0601	STRUCTURAL FACING PANELS SHEET 1	1
PP2O-DR-SD-0602	STRUCTURAL FACING PANELS SHEET 2	1

ORIGINAL IN COLOUR

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
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* Refer to Original Hardcopy for Signature

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

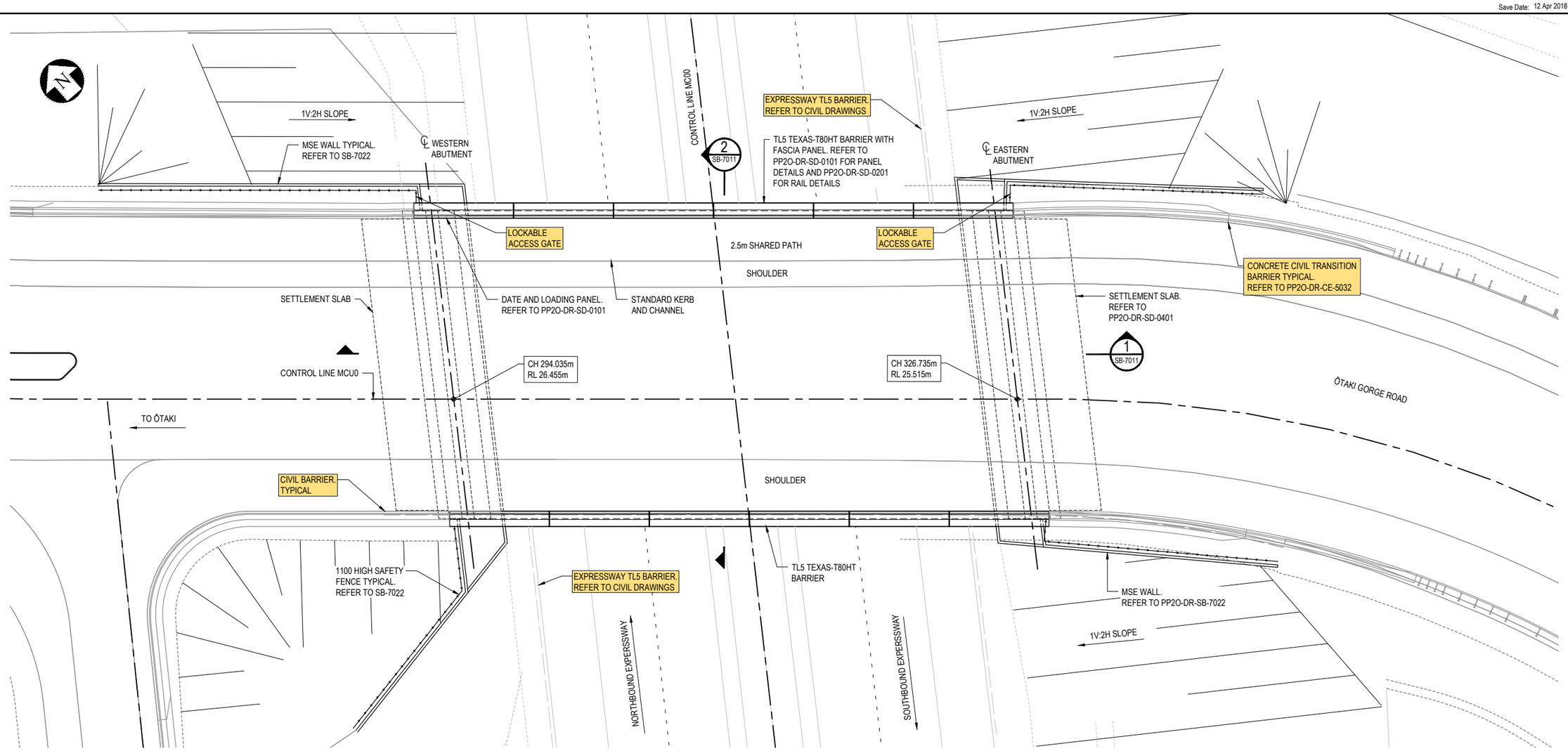
Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: STRUCTURAL DRAWINGS COVER SHEET AND DRAWING LIST

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7000
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7000.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK



GENERAL ARRANGEMENT PLAN

SCALE 1:125

NOTES:

1. REFERENCES
   - 1.1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
   - 1.2. REFER TO RELEVANT CIVIL DRAWINGS FOR CONTROL LINES, ROADING GEOMETRY, BARRIER EXTENTS, LANE WIDTHS ETC.
   - 1.3. REFER TO RELEVANT CIVIL DRAWINGS FOR LOCATION OF UTILITIES AND SERVICES.
   - 1.4. ALL LEVELS GIVEN ARE TO STRUCTURAL SURFACE UNO.

2. DESIGN STANDARDS
   - 2.1. NZTA BRIDGE MANUAL, THIRD EDITION (2013), WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.2. NZS 3101:2006 CONCRETE STRUCTURES STANDARD WITH PROJECT SPECIFIC AMENDMENTS.
   - 2.3. REFER TO DESIGN STATEMENT REPORT FOR FURTHER DETAILS.

3. DESIGN LOADING
   - 3.1. SUPERIMPOSED DEAD LOAD ALLOWANCE:
     - a) SURFACING = 2.0kPa (INCLUDING 0.5kPa FOR LEVELLING COURSE)
     - b) SERVICES = ALLOWANCES ARE MADE AS FOLLOWS:
       - i) 2 No Ø150mm PVC DUCTS FOR FUTURE UTILITIES (ONE EACH SIDE)
       - ii) PLUS ADDITIONAL UNIFORMLY DISTRIBUTED LOAD APPLIED OVER ENTIRE DECK AREA OF 0.25kPa
   - 3.2. TRAFFIC LOAD HN-HO-72.
   - 3.3. SEISMIC LOAD BASED ON NZS 1170.5 AND SSSHA STUDY WITH:
     - a) SUBSOIL CLASS D
     - b) ULS AEP (1/2500)
     - c) ULS DESIGN PGA 0.567g
   - 3.4. TEMPERATURE AND DIFFERENTIAL TEMPERATURE AS PER NZTA BRIDGE MANUAL.
   - 3.5. CREEP AND SHRINKAGE BASED ON AS3600 AND NZTA BRIDGE MANUAL 3rd EDITION FOR RELATIVE HUMIDITY 80%.
   - 3.6. JACKING OF BRIDGE DECK FOR BEARING/ HORIZONTAL RESTRAINT REPLACEMENT. THE DESIGN INCLUDES THE FOLLOWING REQUIREMENTS:
     - a) TRAFFIC SHALL BE RESTRICTED TO 40km/h ONCE BRIDGE DECK IS JACKED.
     - b) SEE ABUTMENT DRAWINGS FOR JACKING LOCATIONS AND LOADS.
     - c) JACKING LOADS ARE BASED ON HN LOADINGS
     - d) ALL JACKS AT EACH ABUTMENT SHALL BE HYDRAULICALLY LINKED AND HAVE A CENTRAL MECHANISM TO ENSURE THAT THE SAME VERTICAL DISPLACEMENTS OCCUR AT EACH JACKING POINT AT ALL TIMES DURING THE JACKING OPERATION.
     - e) BRIDGE BEARINGS ARE DESIGNED SHALL BE REPLACED USING LIFTS OF NOT GREATER THAN 10mm.
     - f) STEEL PLATES SHALL BE PLACED BETWEEN CONCRETE BEARING SURFACE AND HYDRAULIC JACK.
     - g) MAXIMUM ALLOWABLE CONTACT PRESSURE BETWEEN CONCRETE SURFACE AND STEEL PLATE SHALL BE 25MPa.
     - h) HORIZONTAL RESTRAINTS AT ABUTMENTS SHALL BE MAINTAINED.

4. DRAWING LIST
   - 4.1. FOR THE LIST OF ALL DRAWINGS APPLICABLE TO THIS BRIDGE, REFER TO DRG. SB-7000.

5. SPECIFICATIONS APPLICABLE TO THIS BRIDGE:
   - 5.1. C0203 - BULK EARTHWORKS
   - 5.2. C0310 - INSTRUMENTATION AND MONITORING
   - 5.3. C0600 - REINFORCED CONCRETE SUPPLY
   - 5.4. C0601 - REINFORCED CONCRETE CONSTRUCTION
   - 5.5. C0607 - PRESTRESSED CONCRETE ELEMENTS
   - 5.6. C0614 - ANTI-GRAFFITI COATINGS
   - 5.7. C0700 - STRUCTURAL STEELWORKS

6. CONSTRUCTION LOADS
   - 6.1. BRIDGE BEAMS ARE DESIGNED FOR CONSTRUCTION LIVE LOAD OF 1.5kPa. TEMPORARY WORK SHALL BE ADEQUATE FOR 1/500 APE (R = 1.0) SEISMIC AND WIND LOADING.

7. STRUCTURAL ELEMENTS INCLUDED IN PACKAGE:
   - 7.1. ABUTMENTS, SETTLEMENT SLABS, PRESTRESSED BEAMS, BEARINGS, TL5 TEXAS - T80HT BARRIERS WITH FASCIA, BACK WALL, MSE WALLS WITH METAL STRAPS.
   - 7.2. TRAFFIC BARRIERS DETAILED IN THE STRUCTURAL DRAWINGS TERMINATE AT THE EXTENT OF THE BRIDGE (BARRIERS BEYOND THAT ARE CONSIDERED TO BE STANDARD ROAD TRAFFIC BARRIERS. FOR THESE REFER TO THE RELEVANT CIVIL DRAWINGS).

8. COATING FOR EXPOSED CONCRETE SURFACES:
   - 8.1. GRAFFITI SOLUTION (OR EQUIVALENT APPROVED BY THE DESIGNER) SHALL BE APPLIED TO THE EXPOSED CONCRETE SURFACES TO THE EXTENT SUMMARISED IN TABLE 1.
   - 8.2. FOR THE APPLICATION OF SURFACE COATING, PLEASE REFER TO THE SPECIFICATION C0614.

TABLE 1. CONCRETE SURFACE COATINGS

BRIDGE ELEMENTS	EXPOSED SURFACE	ANTI-GRAFFITI COATING
BRIDGE BARRIER	INSIDE FACES (FACING ŌTAKI GORGE ROAD)	YES
	TOP SURFACE, OUTSIDE FACE OF FASCIA	YES
ABUTMENTS	FRONT FACES (FACING EXPRESSWAY)	YES
	SIDES OF ABUTMENTS	YES
DECK SOFFIT	1.5m HORIZONTALLY FROM AN ACCESSIBLE SUBSTRUCTURE ELEMENT	YES

9. CONSTRUCTION SEQUENCE:

TABLE 2. CONSTRUCTION SEQUENCE

SEQUENCE	ACTIVITY
1	PREPARE ABUTMENT GROUND FOR MSE WALLS.
2	INSTALL STORMWATER PIPE AT WESTERN ABUTMENT PRIOR TO CONSTRUCTING THE MSE WALL (EASTERN ABUTMENT STORMWATER PIPE MAY BE INSTALLED BEFORE OR AFTER THE MSE WALL IS CONSTRUCTED)
3	CONSTRUCT MSE WALLS AND APPROACH EMBANKMENTS.
4	MONITOR SETTLEMENT OF BRIDGE ABUTMENT AND 'HOLD' CONSTRUCTION (IF NECESSARY).
5	CONSTRUCT ABUTMENT BANK SEAT.
6	INSTALL BEARINGS AND PRECAST SUPER T BEAMS.
7	CAST ABUTMENT BACKWALL.
8	COMPLETE BRIDGE DECK.
9	BACKFILL UP TO SETTLEMENT SLAB.
10	INSTALL SETTLEMENT SLABS.
11	COMPLETE BACKFILL ADJACENT TO ABUTMENT BACKWALLS.
12	POUR SHARED PATH.
13	PLACE BARRIER AND POUR STITCH. INSTALL TOP RAILS.
14	MONITOR SETTLEMENT OF BRIDGE ABUTMENTS AND APPROACH EMBANKMENTS.
15	COMPLETE BRIDGE PAVEMENT, APPROACH EMBANKMENT PAVEMENT AND ANCILLARY ITEMS.
16	INSTALL UTILITIES TO THE BRIDGE AND RELOCATE TRAFFIC.

THE ABOVE CONSTRUCTION SEQUENCE SHOWS THE SEQUENCING AS ASSUMED FOR DESIGN PURPOSES. CONSTRUCTOR TO ADVISE DESIGNER IF ALTERNATIVE CONSTRUCTION SEQUENCE IS PROPOSED.

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date

* Refer to Original Hardcopy for Signature

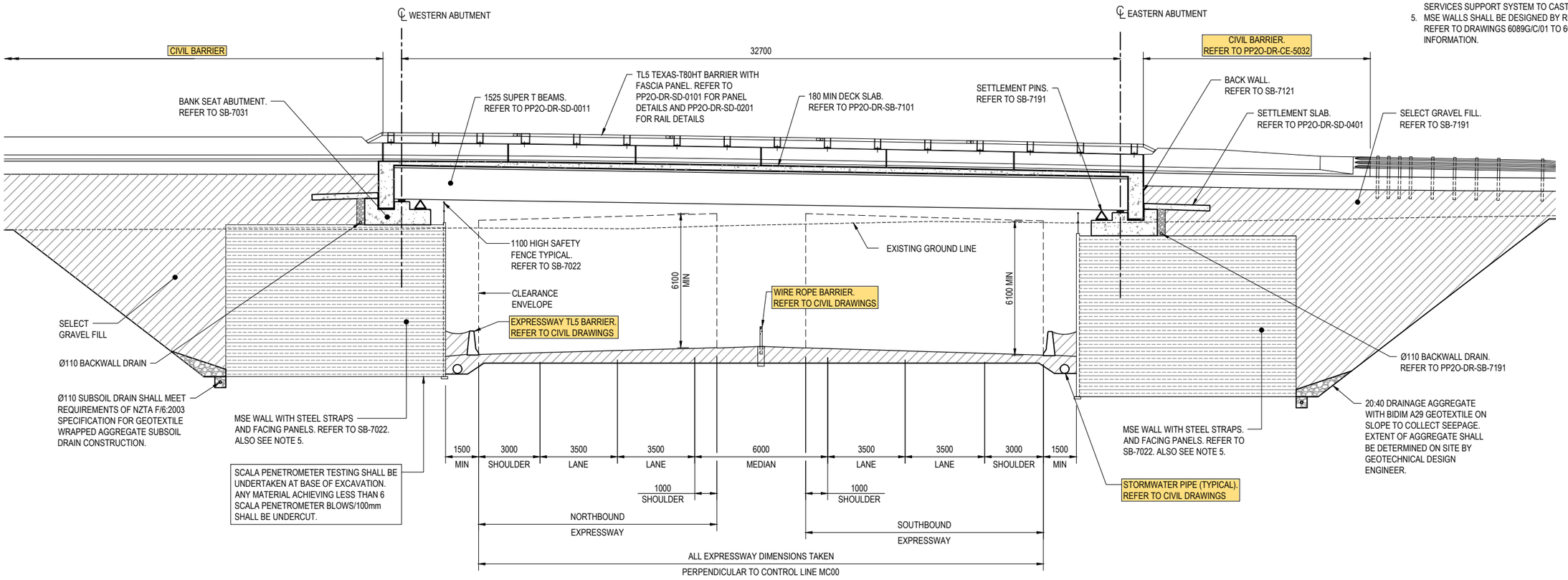
NZ TRANSPORT AGENCY WAKA KOTAHI | Peka Peka to Ōtaki Expressway | Fletcher HIGGINS | Beca | Tonkin+Taylor

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT PLAN
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7001
Rev.: 1

Document No. R:\30\DO - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\EPP2O-DR-SB-7001.DWG

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. THE SERVICES SUPPORT SYSTEM SHALL BE DESIGNED BY THE SUPPLIER.
4. THE SUPPLIER SHALL PROVIDE THE FIXING REQUIREMENTS FOR THE SERVICES SUPPORT SYSTEM TO CAST IN TO THE DECK SLAB.
5. MSE WALLS SHALL BE DESIGNED BY REINFORCED EARTH LTD (REL). REFER TO DRAWINGS 6089G/C/01 TO 6089G/C/14 FOR MSE WALL INFORMATION.



1 SB-7001 LONGITUDINAL SECTION
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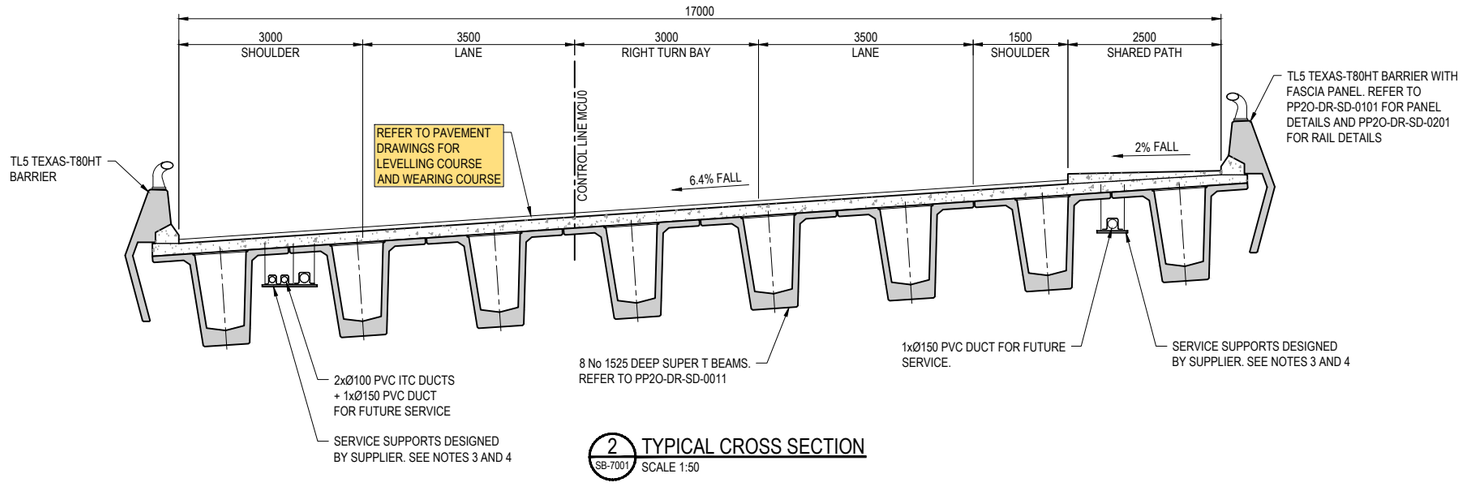

2 SB-7001 TYPICAL CROSS SECTION
SCALE 1:50

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT SECTIONS
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7011
Rev.: 1

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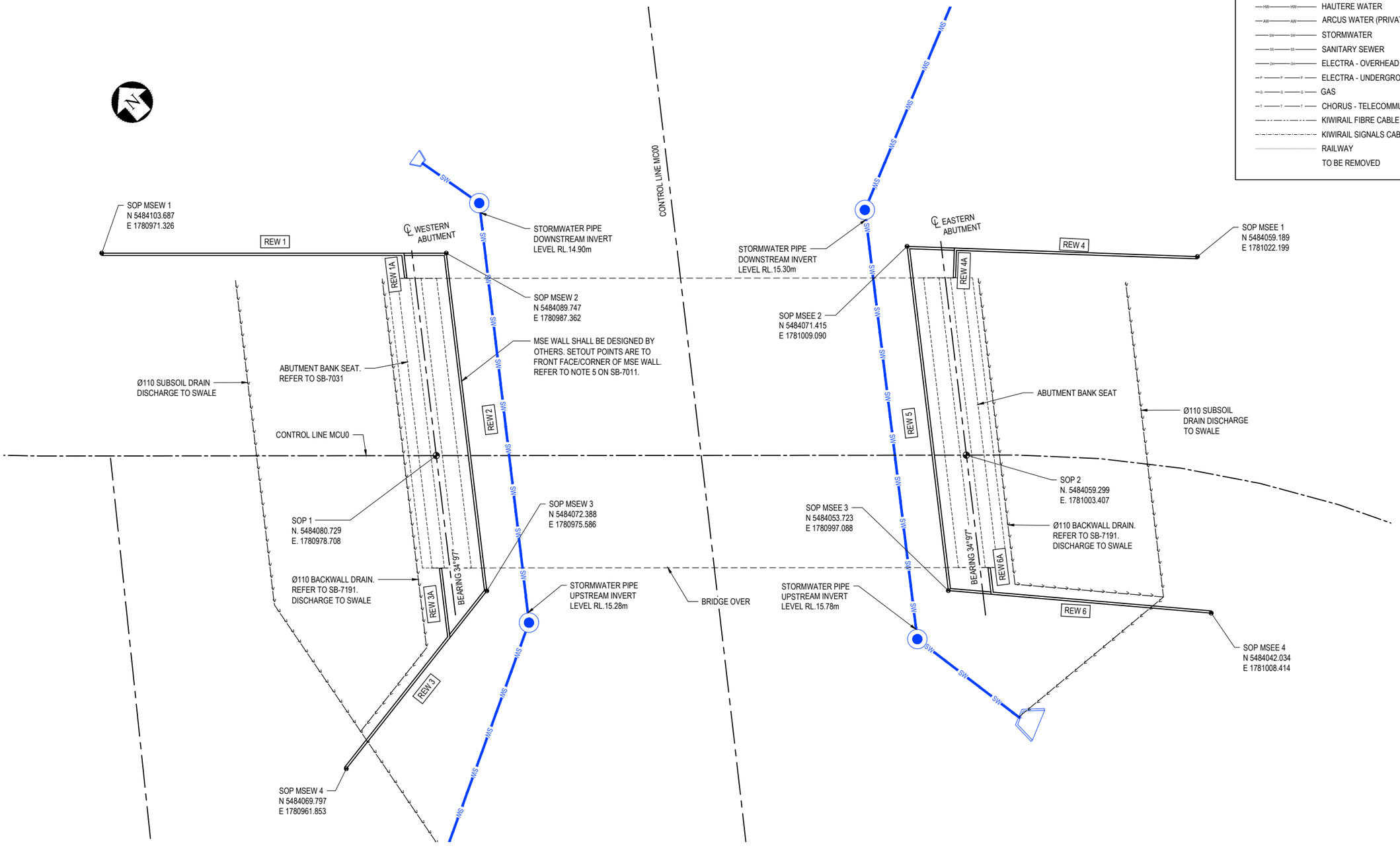
Save Date: 12 Apr 2018 9:19 a.m.

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.

SERVICES LEGEND:

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



SUBSTRUCTURE SETOUT PLAN

SCALE 1:125

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

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Scale (A3)

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: GENERAL ARRANGEMENT SUBSTRUCTURE SETOUT PLAN
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7021
Rev.: 1

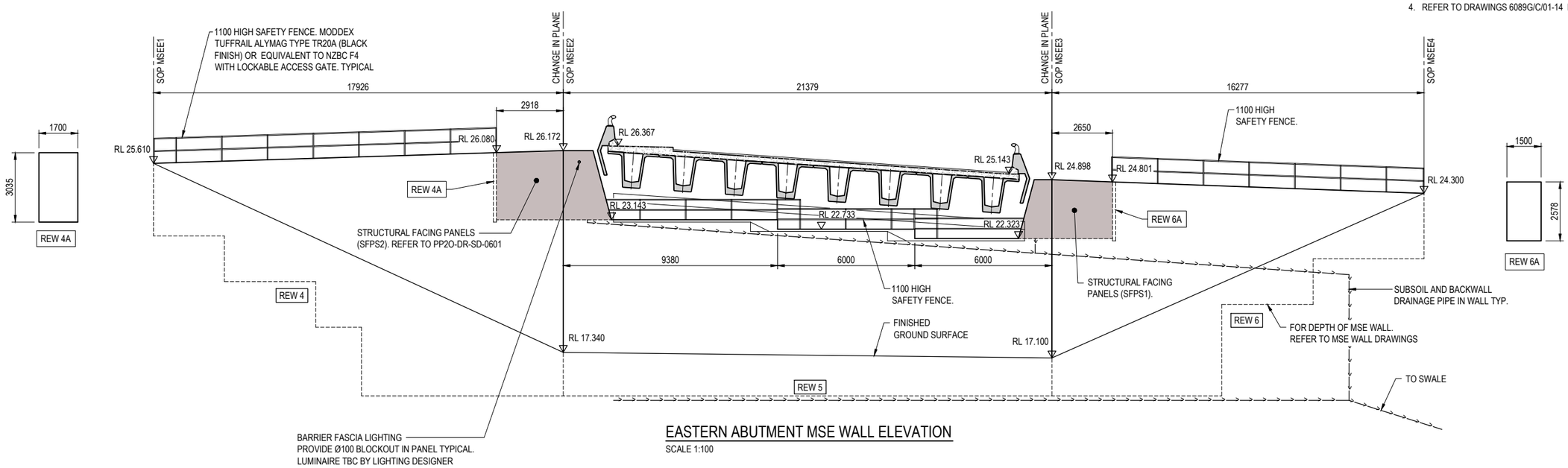
Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7021.DWG

ORIGINAL SIZE A1 : DO NOT SCALE

IF IN DOUBT ASK

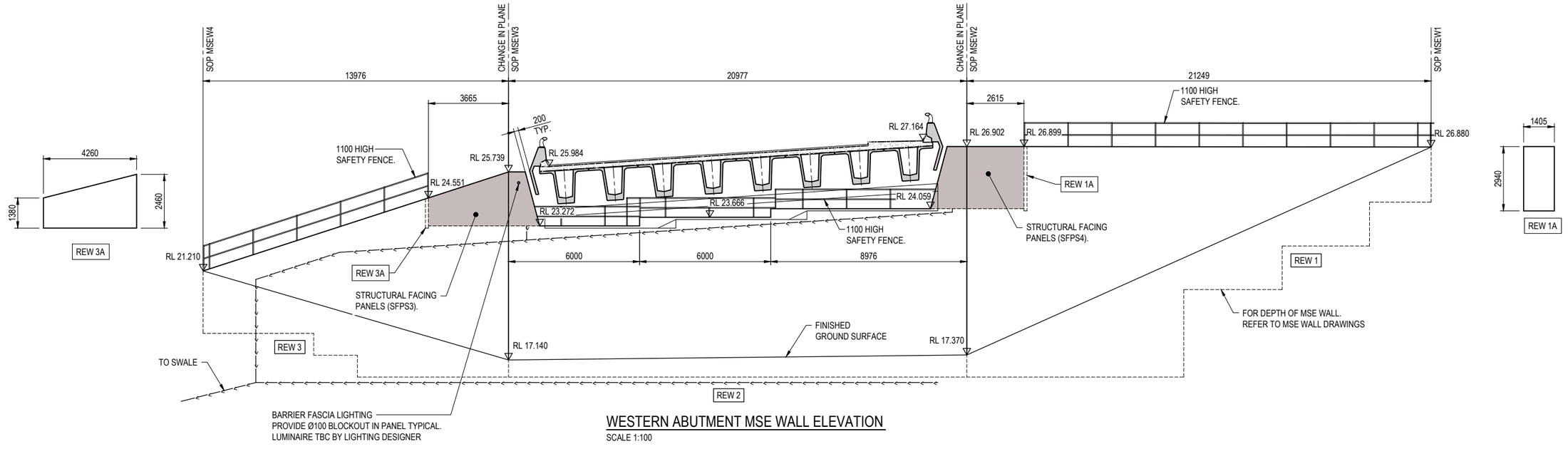
NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. REW # = REFER TO REINFORCED EARTH WALL NUMBER. REFER TO RE WALL DRAWINGS FOR DETAILS.
4. REFER TO DRAWINGS 6089G/C/01-14 FOR MSE WALL INFORMATION.



EASTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100



WESTERN ABUTMENT MSE WALL ELEVATION

SCALE 1:100

TABLE 1. STRUCTURAL FACING PANEL DIMENSIONS

PANEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (Degrees)
SFPS1	775	1465	2575	2470	2490	345	97
SFPS2	1300	2110	3030	2740	2940	405	135
SFPS3	770	1430	2470	3485	1280	380	81
SFPS4	905	1665	2840	2435	2840	320	102

REFER PP2O-DR-SD-0601

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

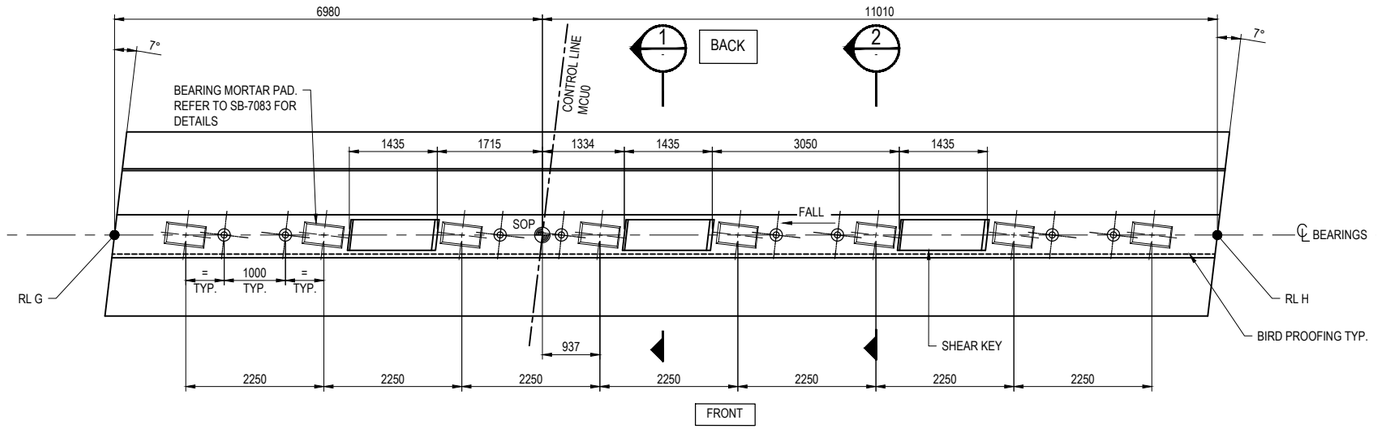
Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date

* Refer to Original Hardcopy for Signature

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: SUBSTRUCTURE DETAILS
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7022
Rev.: 1

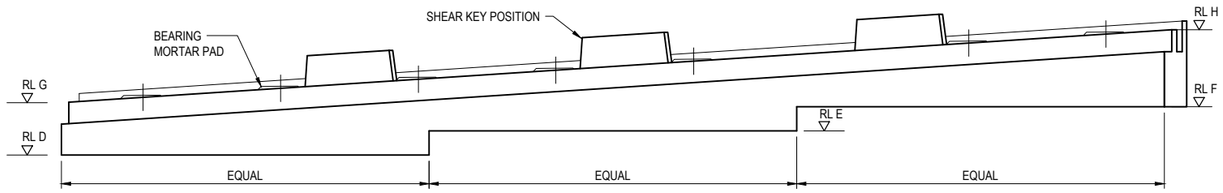
Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7022.DWG



NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT PLAN

SCALE 1:50



NOTE.
EASTERN ABUTMENT BANK SEAT SIMILAR

WESTERN ABUTMENT BANK SEAT ELEVATION

SCALE 1:50

NOTES:

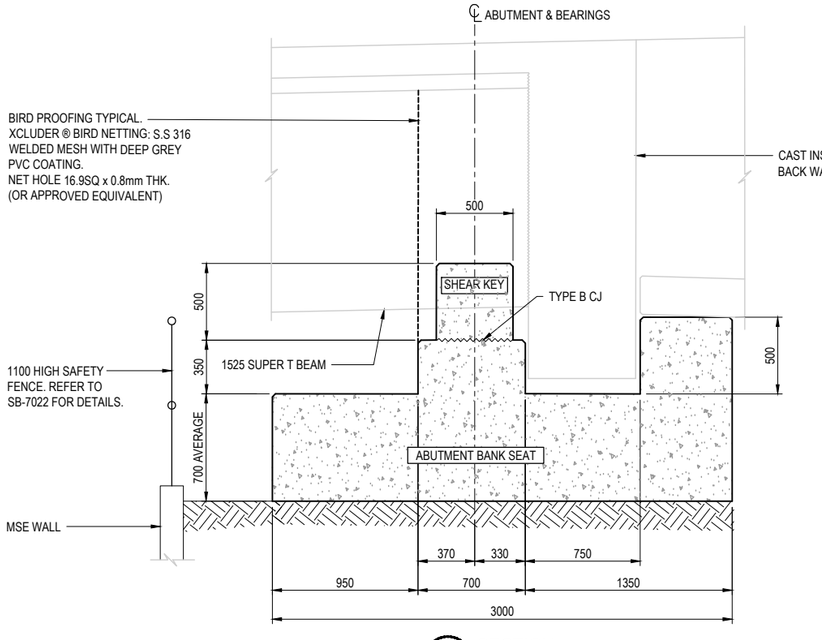
1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. STEEL REINFORCEMENT SHALL BE G500E TO AS/NZS 4671 (REFER SPECIFICATION).
4. MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE:
   a) ABUTMENT BEAM = 40 MPa MIX REF
5. COVER
   5.1. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm UNO.
   5.2. TOLERANCE ON COVERS SHALL BE:
   a) FOR 20mm BAR DIAMETER & BELOW +10,-0
   b) FOR BAR DIAMETER GREATER THAN 20mm +15,-0
6. CURING SHALL BE UNDERTAKEN AS PER THE REQUIREMENTS OF NZS3109 & PROJECT SPECIFICATIONS. MINIMUM CURING DURATION - 7 DAYS.
7. FORMED SURFACES SHALL BE F4 FINISH AS PER NZS3114.
8. ALL CONSTRUCTION JOINT 'CJ' SHALL BE TYPE B AS PER NZS3109 UNO. THE LOCATION OF CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS REPRESENT THE DESIGN INTENT. ALTERNATIVE CONSTRUCTION JOINTS MAY BE DEVELOPED THROUGH CONSULTATION WITH THE DESIGNER.

LEGEND:

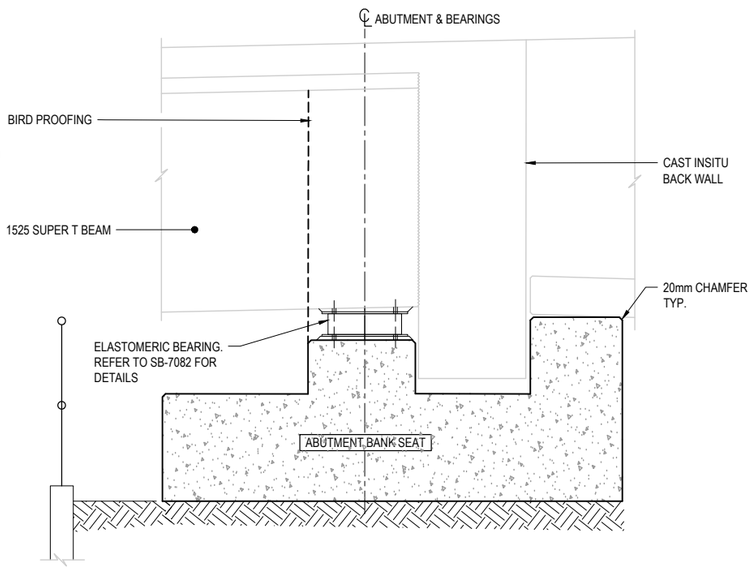
JACKING POINT LOCATION

TABLE 1 - BANK SEAT RL

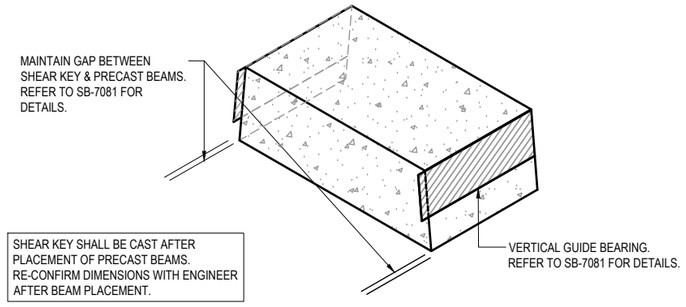
LOCATION	D (m)	E (m)	F (m)	G (m)	H (m)
WESTERN ABUTMENT	23.158	23.552	23.945	24.011	25.192
EASTERN ABUTMENT	22.209	22.619	23.029	23.054	24.284



1 SECTION
SCALE 1:20



2 SECTION
SCALE 1:20



SHEAR KEY SHALL BE CAST AFTER PLACEMENT OF PRECAST BEAMS. RE-CONFIRM DIMENSIONS WITH ENGINEER AFTER BEAM PLACEMENT.

DETAIL - ABUTMENT SHEAR KEY

NTS

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date

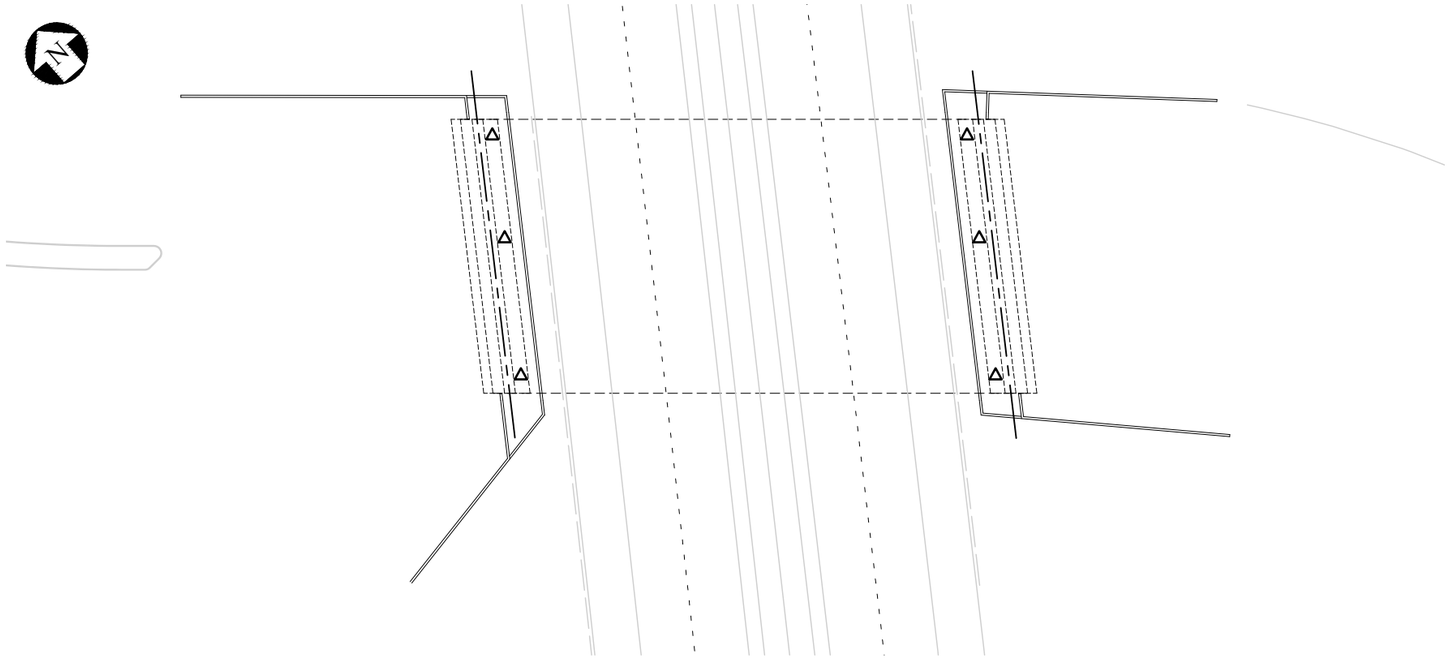
* Refer to Original Hardcopy for Signature

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: ABUTMENT BANK SEAT CONCRETE

Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7031
Rev.: 1

Document No. R:\30DD - DESIGN DEVELOPMENT GENERAL\09 CAD\DRAWINGS\SE\PP2O-DR-SB-7031.DWG



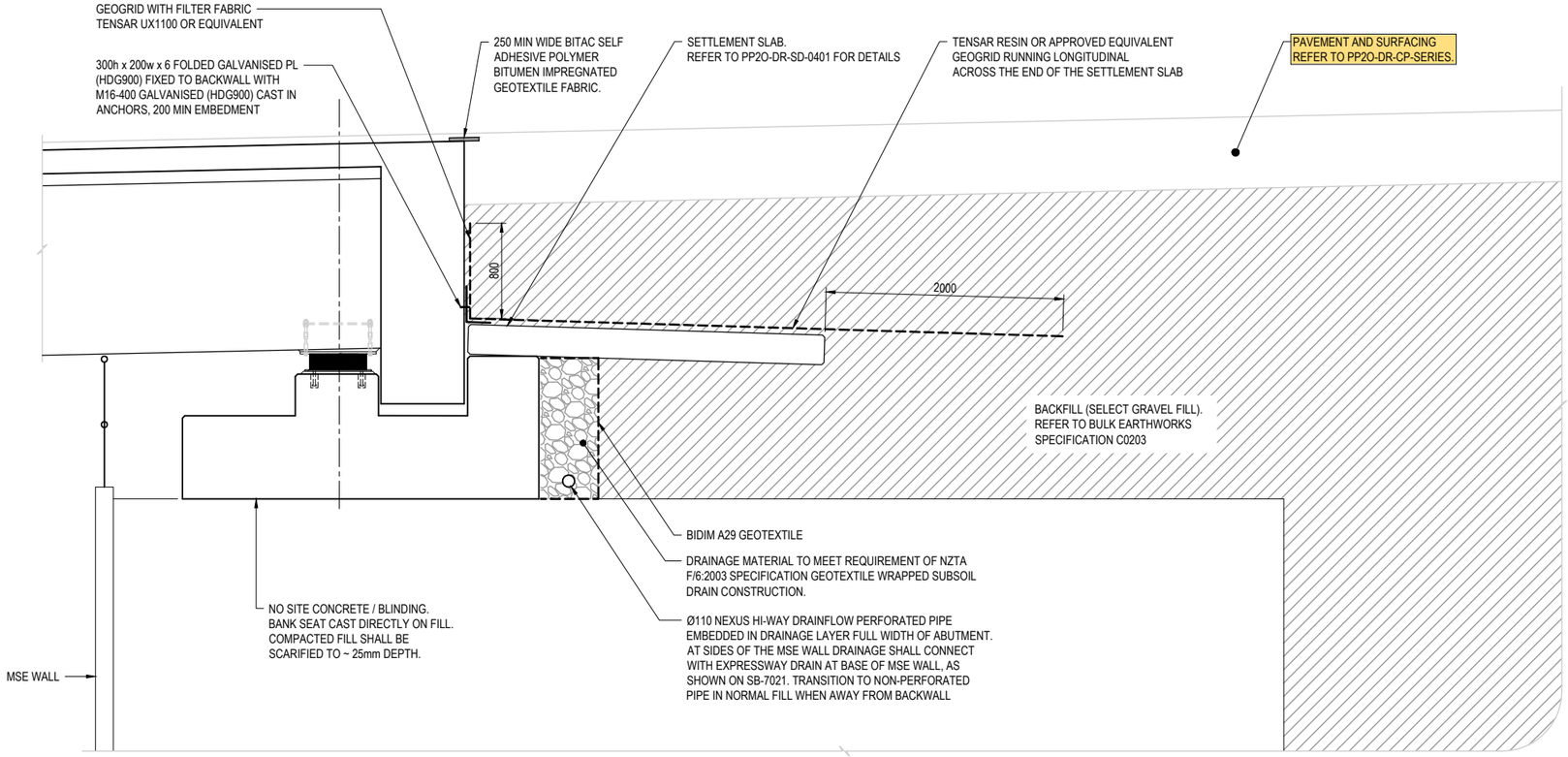
EARTHWORKS PLAN
SCALE 1:200

NOTES:

1. REFER TO PP2O-DR-SA-0001 TO PP2O-DR-SA-0004 FOR GENERAL NOTES.
2. REFER TO PP2O-DR-SB-7001 FOR BRIDGE SPECIFIC NOTES.
3. ABUTMENT BACKFILLING AND COMPACTION SHALL BE CARRIED OUT AFTER BACKWALL HAS REACHED ITS 28 DAY STRENGTH.
4. BACKFILL SHALL BE INSTALLED WITH A MAXIMUM DIFFERENTIAL BETWEEN ABUTMENTS OF 0.5m
5. 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.
6. 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.
7. BACKFILL MATERIAL BEHIND ABUTMENT:
   7.1. SHALL BE COMPACTED SELECT GRAVEL FILL IN BULK EARTHWORKS SPECIFICATION C0203.
8. APPROACH EMBANKMENT FILL SHALL BE SELECT GRAVEL FILL. REFER TO EARTHWORKS PACKAGE FOR OTHER EMBANKMENT REQUIREMENTS AND GEOMETRY. REFER EARTHWORKS SPECIFICATION C0203 FOR COMPACTION REQUIREMENTS.

SETTLEMENT MONITORING LEGEND:

SETTLEMENT PINS (ON BANK SEAT)	△
SETTLEMENT PLATES (AT BASE UNDERCUT) WITH PLASTIC SLEEVE THROUGH EMBANKMENT	□
SETTLEMENT STATION (AT TOP OF EMBANKMENT) REFER TO PP2O-DR-GE-0131 AND 0132 FOR TYPICAL DETAILS	○



TYPICAL SECTION OF ABUTMENT BACKFILL
SCALE 1:25

FOR CONSTRUCTION

No.	Revision	By	Chk	Appd	Date
1	FOR CONSTRUCTION	CRB	LZC	JK	13.04.18

Scale (A1) AS SHOWN
Scale (A3)

Design	L.CHEN	25.07.17	Approved For Construction
Drawn	M.JULATON	25.07.17	
Dsg Verifier	G.BROWN	14.02.18	
Drg Check	B.FLYNN	14.02.18	Date

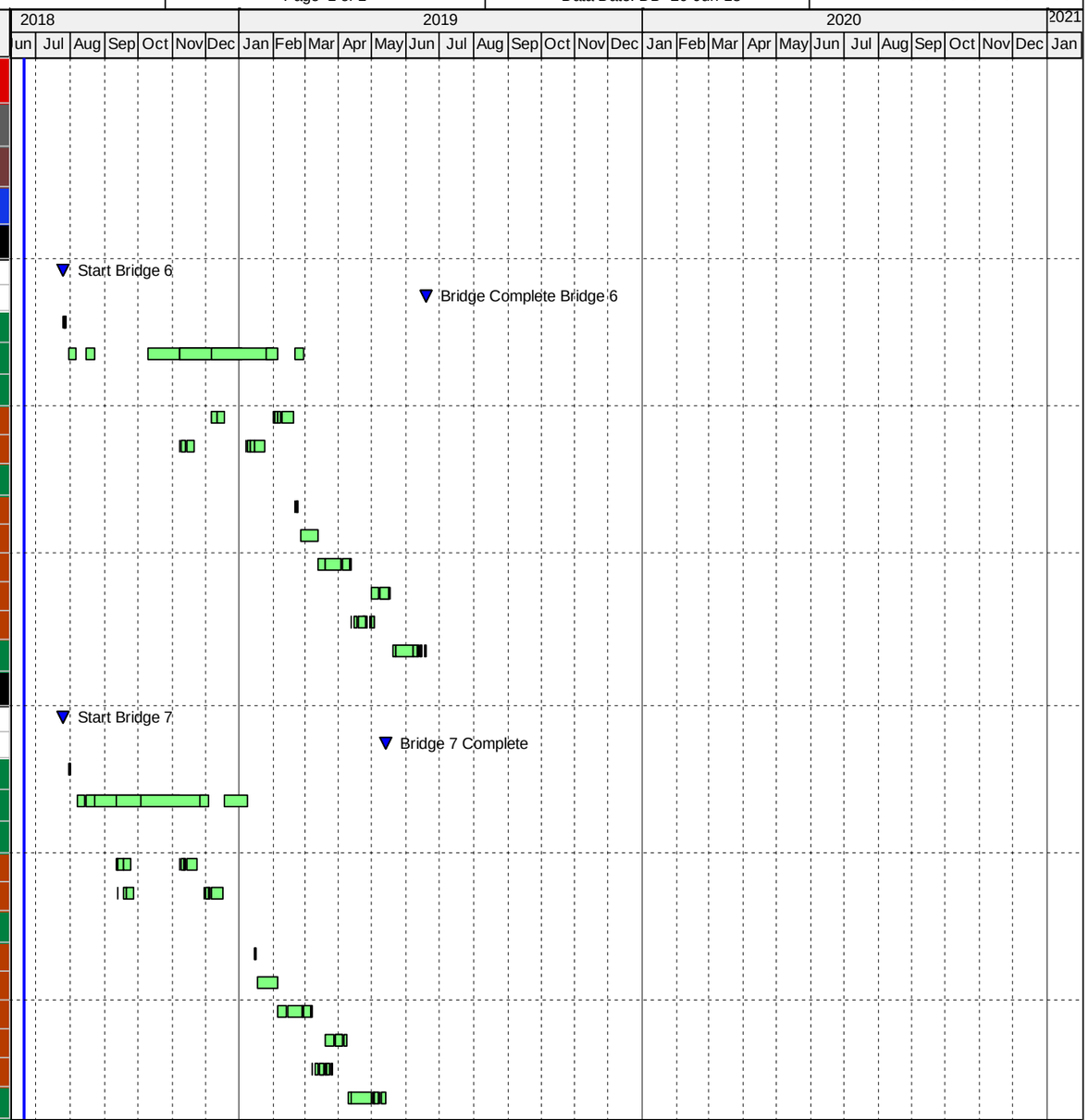
* Refer to Original Hardcopy for Signature

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

Subject: ŌTAKI GORGE ROAD UNDERPASS (BRIDGE 7)
Title: EARTHWORKS, BACKFILLING, AND DRAINAGE
Discipline: STRUCTURAL
Drawing No.: PP2O-DR-SB-7191
Rev.: 1

APPENDIX D – PROGRAMME

Activity Name	Orig Dur	Rem Dur	Start	Finish
Peka Peka to Otaki Expressway - Master	219d	219d	25-Jul-18	19-Jun-19
Construction	219d	219d	25-Jul-18	19-Jun-19
Zone 2 (South): 3800 - 12200	219d	219d	25-Jul-18	19-Jun-19
Structures	219d	219d	25-Jul-18	19-Jun-19
Bridge 6 - South Otaki Rail Overpass (Ch 4000)	219d	219d	25-Jul-18	19-Jun-19
Start Bridge 6	0d	0d	25-Jul-18	
Bridge Complete Bridge 6	0d	0d		19-Jun-19
Enabling Works	3d	3d	25-Jul-18	27-Jul-18
Ground Works	140d	140d	30-Jul-18	27-Feb-19
Substructure	62d	62d	08-Nov-18	19-Feb-19
East Abutment	42d	42d	06-Dec-18	19-Feb-19
West Abutment	46d	46d	08-Nov-18	24-Jan-19
Superstructure	60d	60d	20-Feb-19	17-May-19
Beams	3d	3d	20-Feb-19	22-Feb-19
Diaphragms	12d	12d	25-Feb-19	12-Mar-19
Deck	22d	22d	13-Mar-19	11-Apr-19
Barriers	14d	14d	30-Apr-19	17-May-19
Approach slabs	13d	13d	12-Apr-19	03-May-19
Ancillary	22d	22d	20-May-19	19-Jun-19
Bridge 7 - South Otaki Underpass (Ch 4000)	193d	193d	25-Jul-18	13-May-19
Start Bridge 7	0d	0d	25-Jul-18*	
Bridge 7 Complete	0d	0d		13-May-19
Enabling Works	3d	3d	30-Jul-18	01-Aug-18
Ground Works	100d	100d	07-Aug-18	08-Jan-19
Substructure	68d	68d	12-Sep-18	17-Dec-18
East Abutment	52d	52d	12-Sep-18	23-Nov-18
West Abutment	67d	67d	13-Sep-18	17-Dec-18
Superstructure	59d	59d	14-Jan-19	08-Apr-19
Beams	3d	3d	14-Jan-19	16-Jan-19
Diaphragms	12d	12d	17-Jan-19	04-Feb-19
Deck	22d	22d	05-Feb-19	07-Mar-19
Barriers	14d	14d	20-Mar-19	08-Apr-19
Approach slabs	12d	12d	08-Mar-19	25-Mar-19
Ancillary	22d	22d	09-Apr-19	13-May-19



APPENDIX E: ARCHAEOLOGICAL MAPS

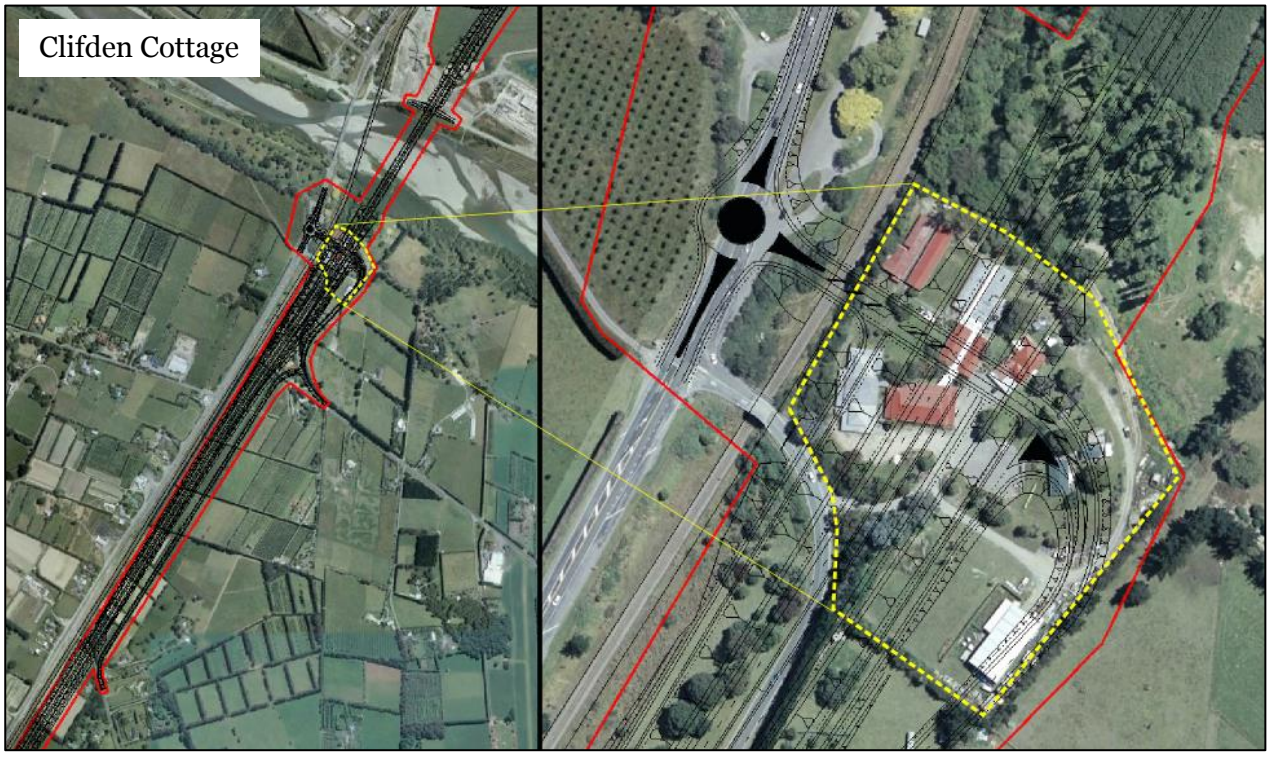


Figure 3: The original Clifden Cottage property (outlined in yellow) which will undergo pre-construction investigation.

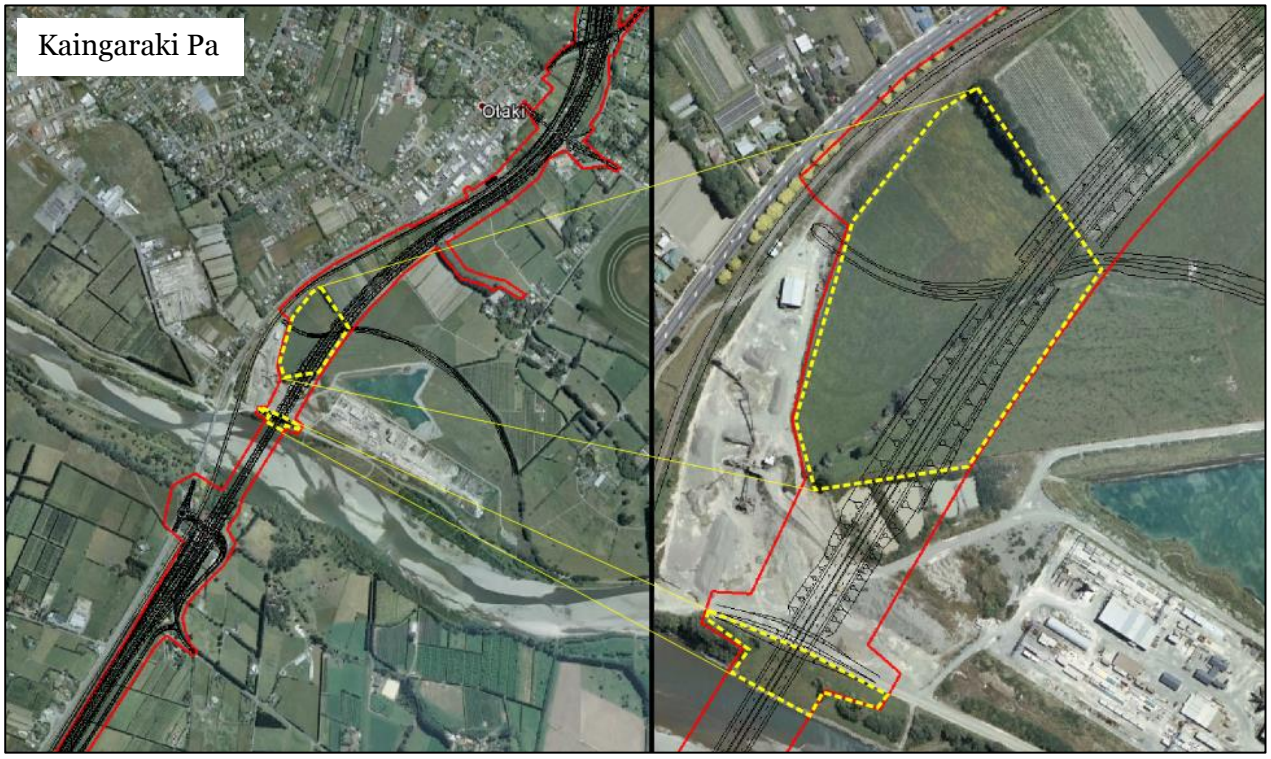


Figure 4: Kaingaraki Pa and Cultivation area (outlined in yellow), which will undergo pre-construction investigation.

APPENDIX F: SITE SPECIFIC TRAFFIC MANAGEMENT PLAN

Site Specific Traffic Management Plan

– Peka to Ōtaki Project

Bridge's 6 & 7

June 2018

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 the construction of the South Ōtaki Rail Overpass (Bridge 6), and Ōtaki Gorge Road Underpass (Bridge 7). Bridge 6 will carry Ōtaki Gorge Road over the existing rail corridor and Bridge 7 will carry Ōtaki Gorge Road over the Expressway, both forming part of the South Ōtaki Interchange. Opening these bridges to traffic in 2019 will remove traffic from the existing Ōtaki Gorge Road and therefore will open up the works footprint and allow construction of the main Expressway alignment in the general area.

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 temporary traffic management required to carry out these works across the site will consist of various types of Temporary Closures including, but not limited to, Site Access, Shoulder, Footpath, Stop/Go, Contra Flow and Temporary Concrete Barrier installations with works undertaken on Local Roads as covered by this SSEMP.

Specific Traffic Management methodologies will be finalised and submitted to the relevant Road Controlling Authority as the construction programme is finalised and becomes more detailed. These more specific Traffic Management Plans (TMPs) will cover specific mitigation for each individual temporary traffic management requirement. This document will be a living document that will have multiple stages and traffic layouts that will be amended as and when required to suit varying construction stages and required traffic management.

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)

Each of the work areas will have the required (CoPTTM) signage and early warning delineation provided by a combination of cones and line marking – all in accordance with the respective RCA TMP requirements. Each Traffic Management Plan will be submitted to the relevant RCA and Approved prior to implementation. Until site specific construction plans are finalised a location specific Traffic Management Plan cannot be prepared. Once methodologies are finalised location specific Traffic Management plans will be prepared and submitted to KCDC for approval.

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

Each Traffic Management plan will incorporate an assessment of expected delays and will also provide delay calculations where any are expected to occur. It is not envisaged that any significant delays will occur at any time. Any oversized loads will be escorted with Pilot Vehicles again with no anticipated delays with their operations covered by Oversized Vehicle Permits. These oversized movements will be of an occasional nature only to move large plant in and off site.

2.3 Detour Routes - BOI condition 34 b (iii)

Detours will be required during various phases of works in this area. Sequencing of traffic management during the initial phase of works (Bridge 4 western abutment) is demonstrated in the attached drawings. As the works progress, the necessary TMPs will be submitted to KCDC for approval.

2.4 Existing Accesses - BOI condition 34 b (iv)

The proposed Temporary Traffic Management measures do not knowingly affect existing accesses to private or commercial properties. Should this occur consultation will be undertaken with affected parties to ensure they retain access at all times.

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

Detours are not expected to be required during works in this area. Sequencing of traffic management during the works is demonstrated in the attached drawings. As the works progress, the necessary TMPs will be submitted to KCDC for approval.

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

The proposed Temporary Traffic Management measures for implementation of the work areas 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)

The use of TSL's will be kept to a minimum and will be identified as and when required in Site Specific Traffic Management Plans submitted to and approved by the relevant RCA.

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

The primary objective of this SSTMP is the planning (TMP's), approvals (RCA's) and incorporation of Site Access Points (SAP's) as outlined in this SSTMP to ensure the safe and efficient access to and from site of construction related traffic.

The operating hours of the SAP's 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)

As the effects of the proposed measures are as yet unknown, implementation and operation of the SSTMP's will be communicated to stakeholders, road users and the community via the methods and processes as included within the project Stake Holder 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

The implementation and operation of some SSTMP's may involve the need to collaborate with Kiwirail as sites may cross the NIMT Railway or existing at grade carriageway crossings. Traffic Management strategies will include having no delays created for Kiwirail and the NIMT.

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. Should any roads be affected by temporary traffic management any likely delays will be communicated prior to works to all Emergency Service Providers by way of weekly Road Works Reporting procedures as required by both RCA's. All major works that impact the roading network will have SSTMP's developed with consultation of Emergency Services.

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 any SSTMP's.

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

Monitoring, Auditing and Reporting of the Traffic Management Measure (once implemented) shall be in accordance with the CTMP and CoPTTM guidelines.

3.5 Complaints – CTMP sections 3.5

Feedback including complaints received related to the implementation of Temporary Traffic Management measures covered within this SSTMP shall be recorded and processed in line with the CTM

SAP 16

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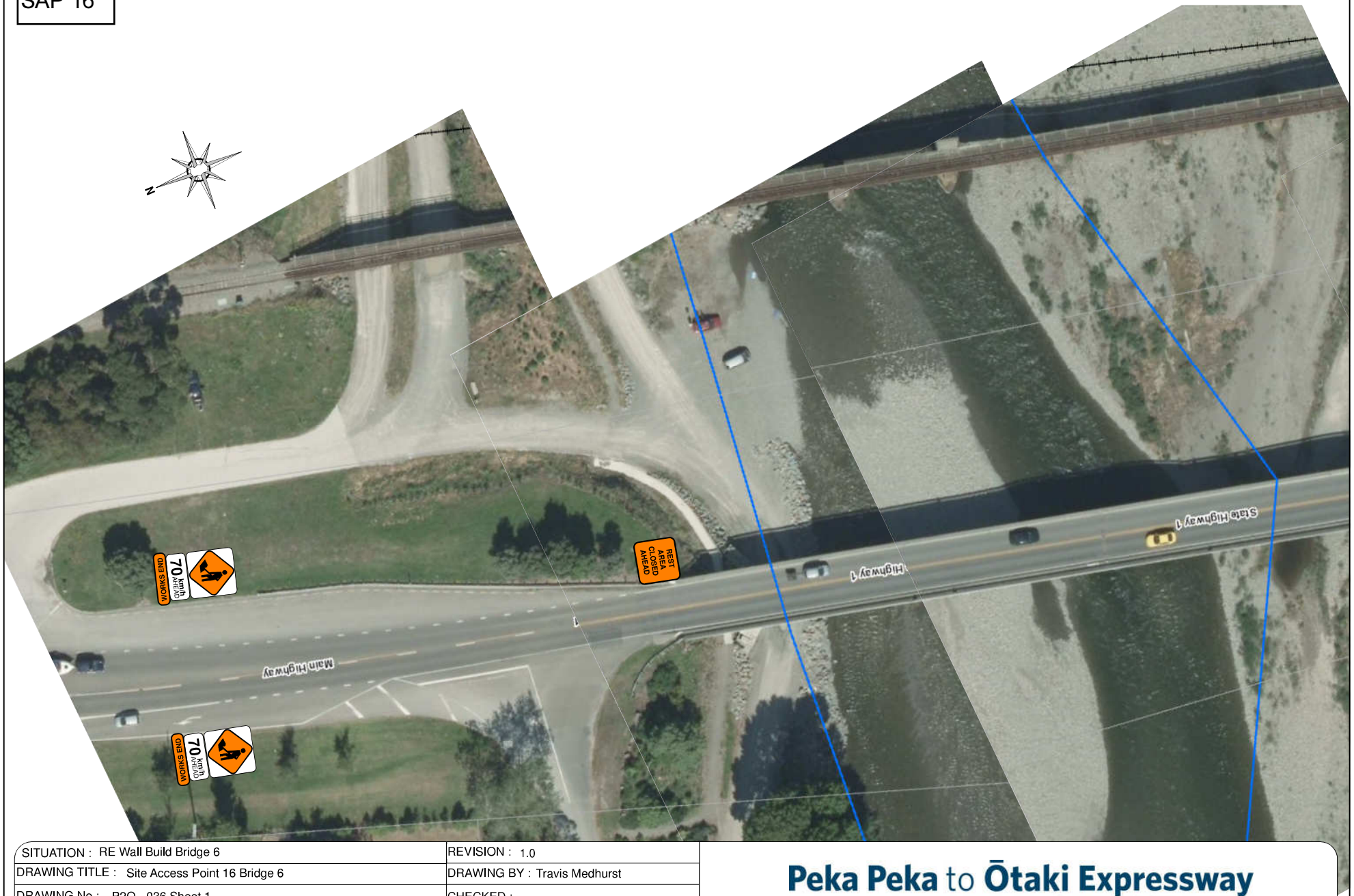

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DRAWING TITLE : Site Access Point 16 Bridge 6	DRAWING BY : Travis Medhurst
DRAWING No : P2O - 036 Sheet 1	CHECKED :
	DATE : 19/06/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway

NZ TRANSPORT AGENCY WAKA KOTAHI

Fletcher

SAP 16

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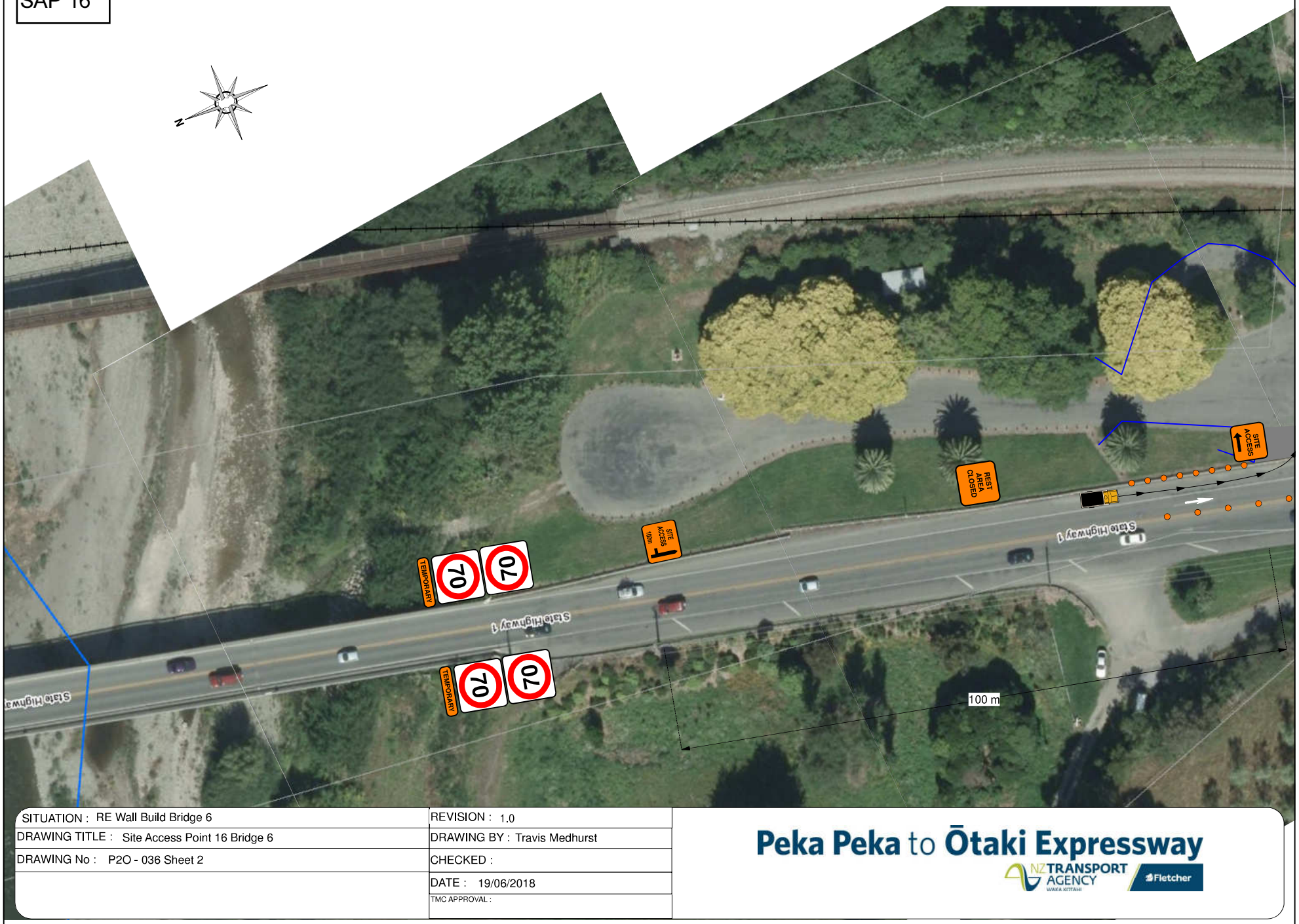

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DRAWING TITLE : Site Access Point 16 Bridge 6	DRAWING BY : Travis Medhurst
DRAWING No : P2O - 036 Sheet 2	CHECKED :
	DATE : 19/06/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway

NZ TRANSPORT AGENCY WAKA KOTAHI

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SAP 16

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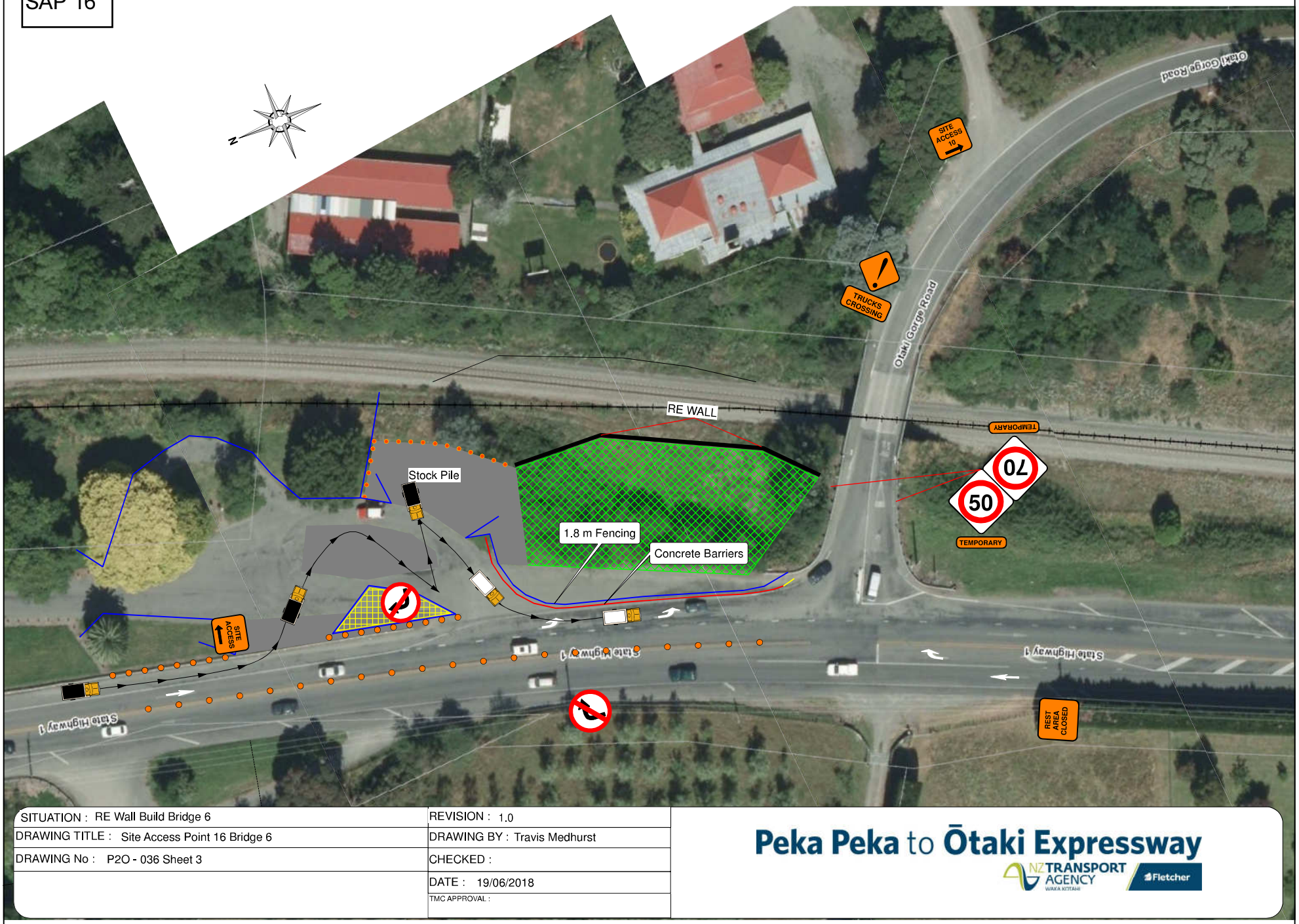

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DRAWING TITLE : Site Access Point 16 Bridge 6	DRAWING BY : Travis Medhurst
DRAWING No : P2O - 036 Sheet 3	CHECKED :
	DATE : 19/06/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway

NZ TRANSPORT AGENCY WAKA KOTAHI

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SAP 16

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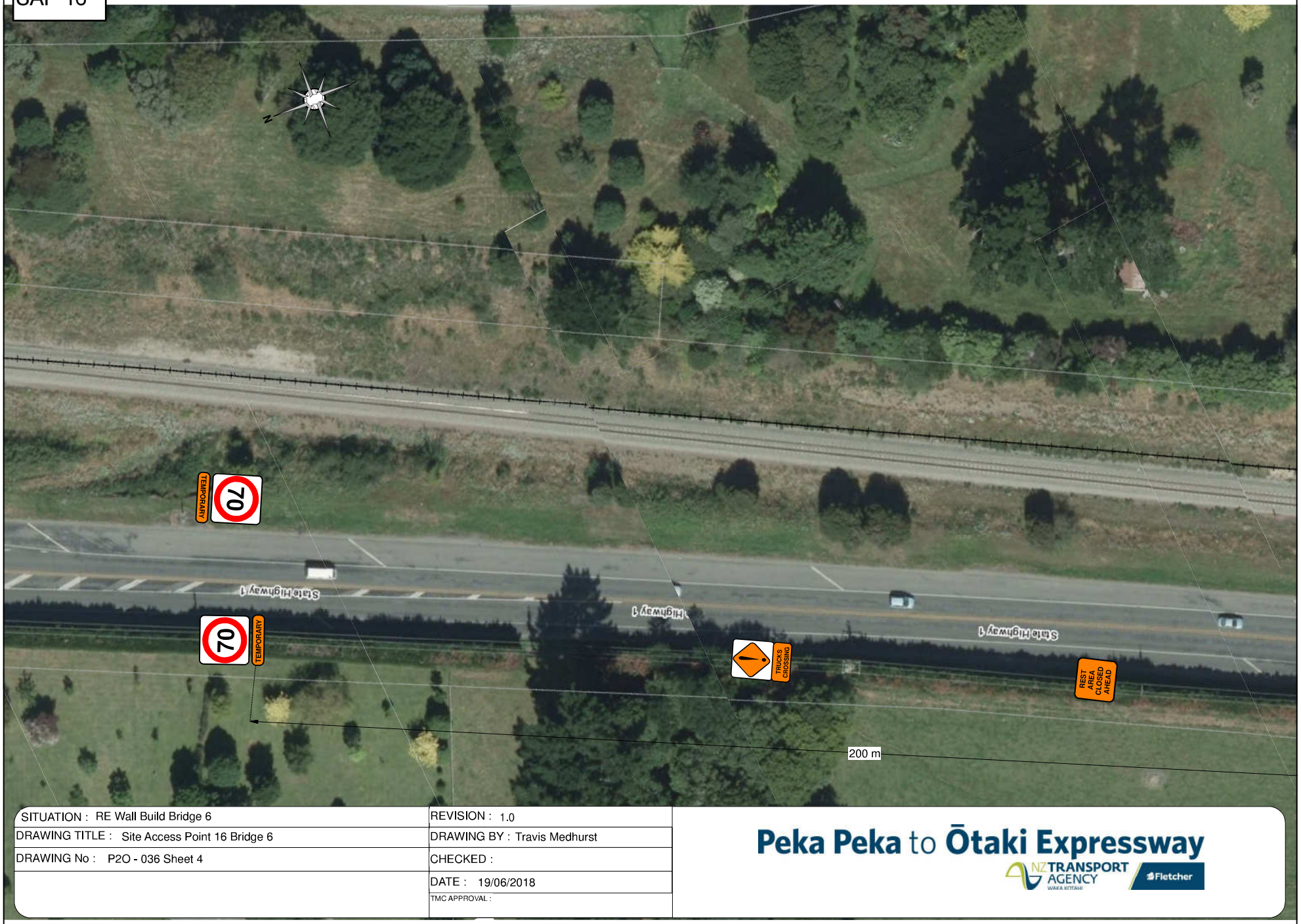

SITUATION : RE Wall Build Bridge 6	REVISION : 1.0
DRAWING TITLE : Site Access Point 16 Bridge 6	DRAWING BY : Travis Medhurst
DRAWING No : P2O - 036 Sheet 4	CHECKED :
	DATE : 19/06/2018
	TMC APPROVAL :

Peka Peka to Ōtaki Expressway

NZ TRANSPORT AGENCY WAKA KOTAHI

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