



CONCRETE STRUCTURES (NZ) LTD.

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GDC2019/13

Tender Form A

RFT Non-Price Response – **Conforming**

Gore District Council

Longford Shared Path Construction Contract



Dated: 19 December 2019

CSL Contact: Paul Romanes
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Methodology

3.4.1 Develop a Project Programme on a separate page of A3 and define the critical path to demonstrate how the contract works will be delivered, within a maximum timeframe of nine (9) months of possession of the site.



Note - the contract works programme will be taken as confirmation that the Tenderer can meet the project milestones within the stated timeframe.

3.4.2 Describe the construction and delivery process from the contract commencement through construction and commissioning (refer to Section 8.2 of the RFP document)

A detailed Master programme will be developed early in the Project on MS Project which clearly identifies the critical path. The programme will be continually updated with actual progress onsite on a fortnightly basis and distributed to all interested parties. Any issues identified as part of this process will be highlighted to the project team and mitigation measures developed by way of revised sequencing and/or additional plant and machinery to compensate for any delays that may have been experienced.

Overview of Construction Sequence:

1. Establish to site.
2. Bulk Earthworks.
3. Piling, Anchors and Abutments.
4. Temporary Piers.
5. Erect 900 dia CHS Mast.
6. Erect Bridge Deck Structure.
7. Cable install and Stressing.
8. Remove temporary piers.
9. Construct round Anchor Deadmen.
10. Complete Earthworks.
11. Disestablish from site.

Critical Risk Tasks:

Lifting of primary steelwork:

A lift plan will be established to capture the key elements involved in rigging and placement of all steel structures with emphasis on the mast structure. This will include necessary lifting points, rigging design, rated lifting capacities of the selected cranes, and safe working radiuses. CS will utilise two 85-ton crawler cranes to complete the works. Temporary piers will be installed either side of the waterway, approximately 20m from each abutment. Temporary crane platforms will be constructed on each side of the river to enable the cranes to perform all the lifting within their capacity charts.

Crane platforms will be constructed using rip rap rock, which will be salvaged for use in the final earthworks stages of the job.

Piling:

Piling will be self-performed by Concrete Structures plant and personnel.

Steel casings will be pitched and driven through guides with a crane and vibrated into final position with an Ice vibration hammer.

The piles will be drilled out with a Soilmec earth drill, which is a purpose-built machine that offers high levels of stability and manoeuvrability.

All plant operators will be trained, approved and hold the relevant experience and qualifications to perform the task.

Temporary works design:

Concrete Structures will, in conjunction with the bridge designer and our own temporary works engineer, facilitate the design, modelling and construction of all temporary works including crane pads and temporary piers to complete the project.

We will engage Chris Lenssen of Macroventures as our temporary works designer. CS and Chris have a long established relationship having completed numerous bridging projects throughout NZ since 2010.

Mast:

The mast will be fabricated and painted offsite and delivered in 2x20m pieces, along with the fin plate. All joints will be bolted, this removes any requirement for site welding or painting. The mast will be bolted together on the ground and lifted in one piece.

Stressing of Stay cables:

Stay cables will be installed and stressed following the installation of the bridge deck structure and mast. Cable installation sequence and stressing sequence will be as per Table 1 on Sheet S131 Rev A. Each pair of cables will be tested using load cells and jacks to ensure uniformity. Final stressing of backstay cables and mainstay cable set #1 and #3 will be completed using simplex RDP 306 steel cylinders (or similar) with a load capacity of 30T.

Evacuation of the flood plain:

All plant will be required daily to park in a nominated compound which is elevated from the flood plain. All small plant will be removed from the flood plain daily and secured in the compound at the end of Surrey St. Staff will always be available during the working week with the construction team living locally. One man will be available on standby and within 2 hours of the site during weekends where the construction team are not onsite. All plant is mobile and can be walked or transported out of the flood way and onto the stopbanks within half a day.

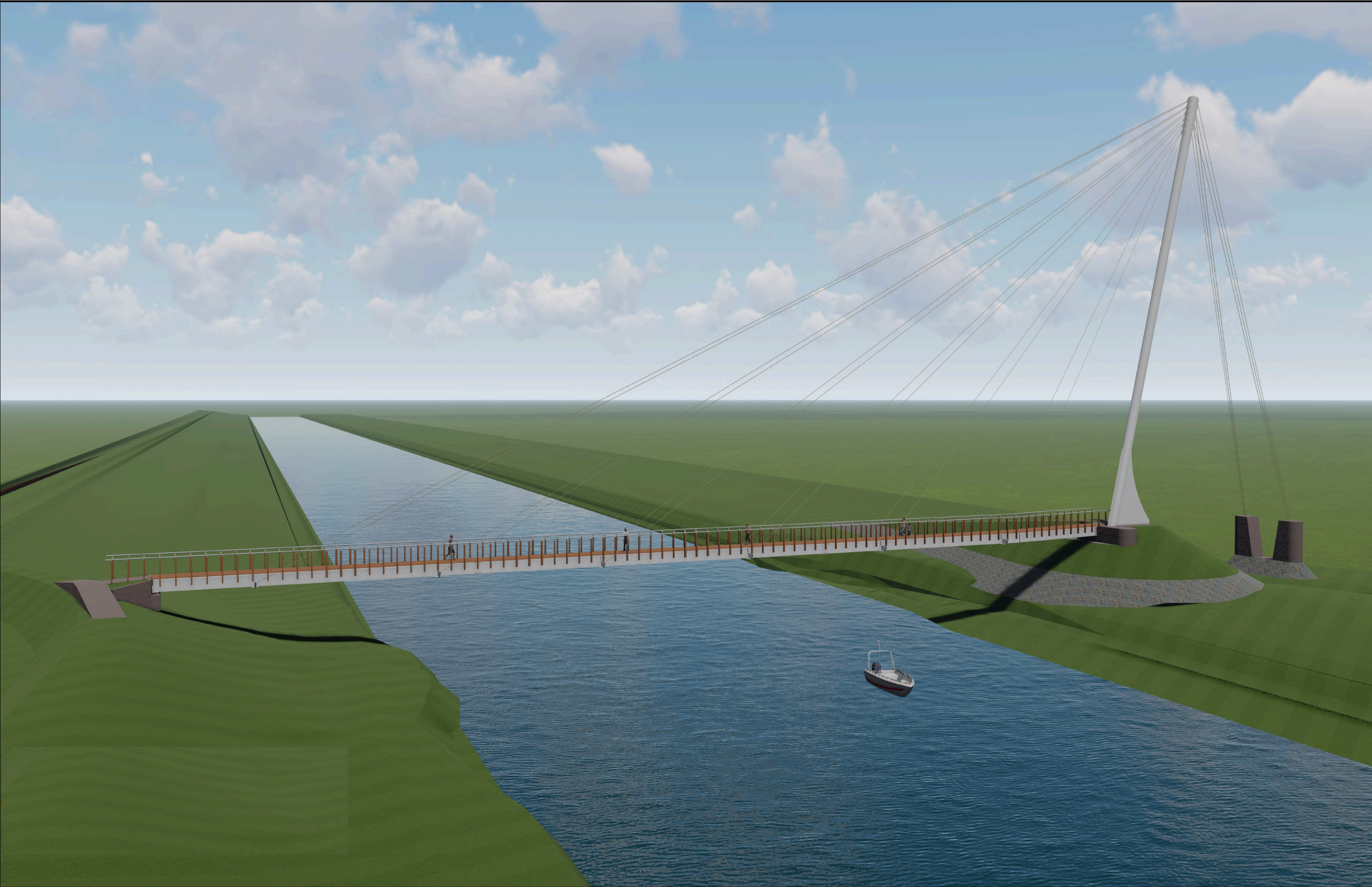
The temporary piers will be designed to withstand full flood loadings.

Detailed Construction Sequence:

1. Establish to site
 - Establish site fencing and environmental controls
 - Set up compound and lay down area
2. Earthworks
 - Site clearance
 - Topsoil stripping and stockpile
 - Construct crane access tracks and hard standing
 - Bulk fill to western abutment
 - Install geofabric and riprap to abutment locations

3. Piling
 - Pitch and drive casings to depth
 - Drill out piles to depth
 - Pour piles to bottom of abutment level
 - Construct ground anchors and test pull out capacity
 - Install remaining rip rap
4. Construct abutments
 - Tie reinforcing cages
 - Form abutments and set up Hold down bolts
 - Install CHS sleeve to both abutments
 - Pour abutments
 - Install subsoil drainage
 - Backfill around abutment
5. Temporary staging
 - Pitch and drive 310 UC piles to support temporary construction loads
 - Install pier beam and cross bracing
 - Piles to extend 6.5m above bridge deck level to allow for temporary RB bracing to support bridge structure in cantilever during construction.
6. Install 900 dia CHS mast
 - Deliver mast to site in 3 sections
 - Bolt together onsite
 - Pressure test to 20 bar to prevent internal corrosion
 - Erect mast and fix down to cast in HD bolts in the abutment
7. Bridge deck structure
 - Pour shear keys and install bridge bearings
 - Unload structural steelwork to lay down area
 - Fully construct bridge
 - Install each 45m section in one lift onto temporary piers
 - Cantilever supported using temporary RB bracing system
8. Cable install and stressing
 - Pin guy ropes to mast
 - Pin all guy ropes to stressing points on deck
 - Stress guy ropes to required tension
9. Remove temporary staging
 - Use vibro hammer and crane to extract piles
10. Construct round anchor deadmen
 - Install ground anchors
 - Tie reinforcing steel cages
 - Form and pour anchor deadmen
 - Install rip rap to deadmen
11. Earthworks
 - Finishing earthworks
 - Grass seeding
12. Disestablish from site.

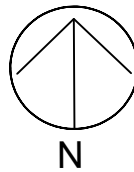
A '3 week rolling programme' will be maintained. This tool will be used with the workforce onsite to ensure they have an understanding of what is required, by when, on a weekly basis and will be discussed at weekly site programme meetings. Open discussion and agreement / buy in of the site team is paramount. It will ensure that staff effectively plan and co-ordinate all works on a day-to-day basis.



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						A3	MICHAEL HEARD	DEC 2019
			A	FOR INFORMATION	16.12.2019	JOB No:	DRAWING No:	ISSUE:
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BACK-STAY ANCHORAGE

EARTH EMBANKMENT
0 HIGH AT SOUTH, 5300 HIGH AT NORTH
TOTAL EARTWORKS VOLUME (ABOVE TOPSOIL) = 3260 CUBIC METERS
REMOVE 300mm TOP SOIL & FILL = 375 CUBIC METERS

1V:2H SIDE SLOPE.
RIPRAP TO EXTEND 50% UP THE EMBANKMENT,
AND TURF REINFORCEMENT MAT USED FOR THE REMAINDER.
REFER TO NOTE 2 AND 3.
ESTIMATED RIP RAP AREA = 580 SQM
ESTIMATED RIP RAP VOLUME = 870 CUBIC METERS
ESTIMATE REINFORCED TURF AREA = 580 SQM

70,000 X 3000 X 100 CONCRETE CYCLEWAY
PLANTING CAREX GRASSES EITHER SIDE (100 SQM)

(FUTURE) SURREY STREET

10,000 X 3000 X 200 PATH THROUGH FLOOD PLAIN
TO BE GRAVEL TRACK CONSTRUCTED AT GRADE
(PREVENTS FURTHER FLOOD OBSTRUCTION)

SCOPE OF WORKS
(10000 FROM BASE OF EMBANKMENT)

MATAURA RIVER

SCOPE OF WORKS
(FINISH AT TIE-IN TO STOP-BANK)

HURON STREET



TITLE:

MATAURA CYCLE BRIDGE
LONGFORD SHARED PATH
BRIDGE PLAN

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2	FOR INFORMATION	17.12.19
1	PRELIMINARY	12.12.19
ISS.	AMENDMENT	DATE

SCALE:
A3 1:500

JOB No: -

DRAWN:
WARWICK JAMESON

DRAWING No: 1

DATE:
DEC 2019

ISSUE: 2



TITLE: MATAURA CYCLE BRIDGE
LONGFORD SHARED PATH
SITE SET UP PLAN

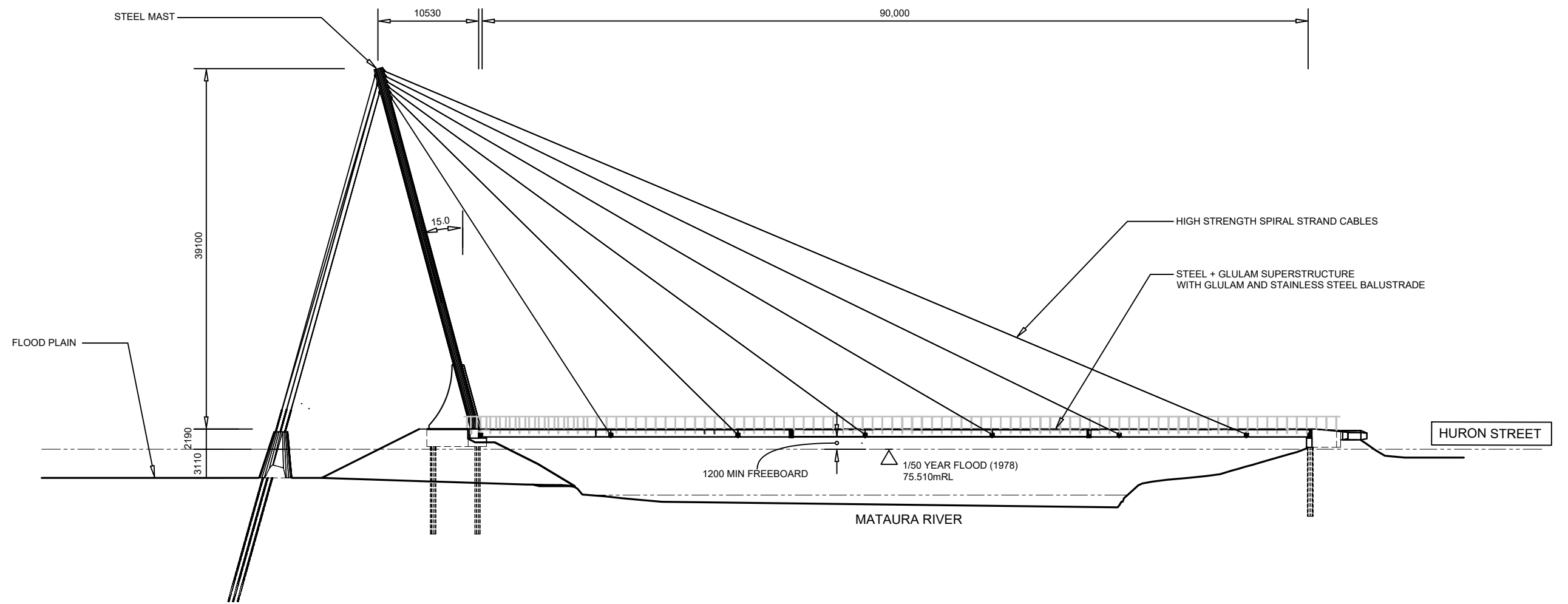
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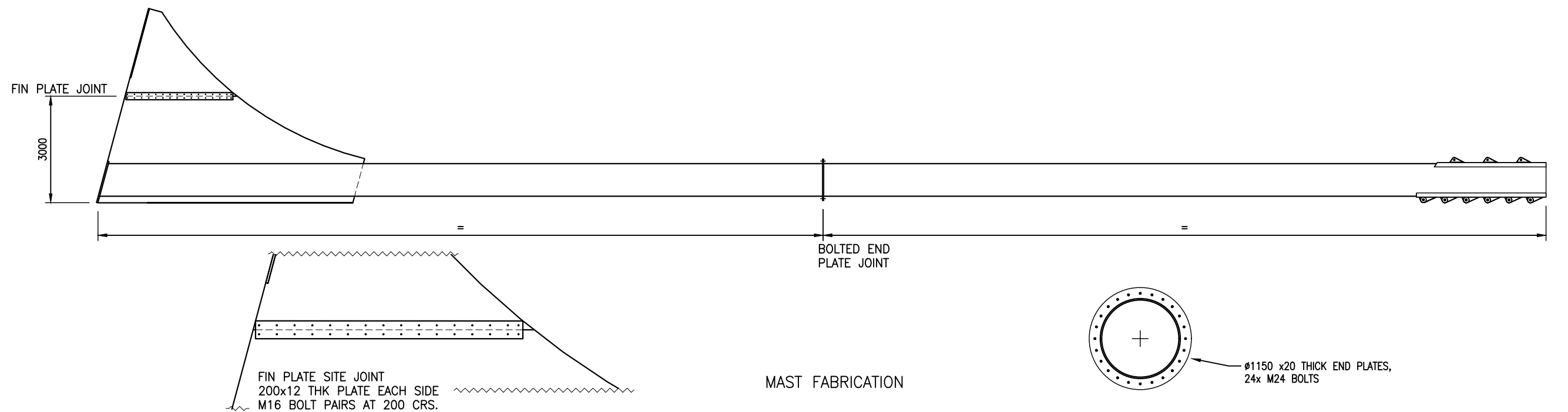
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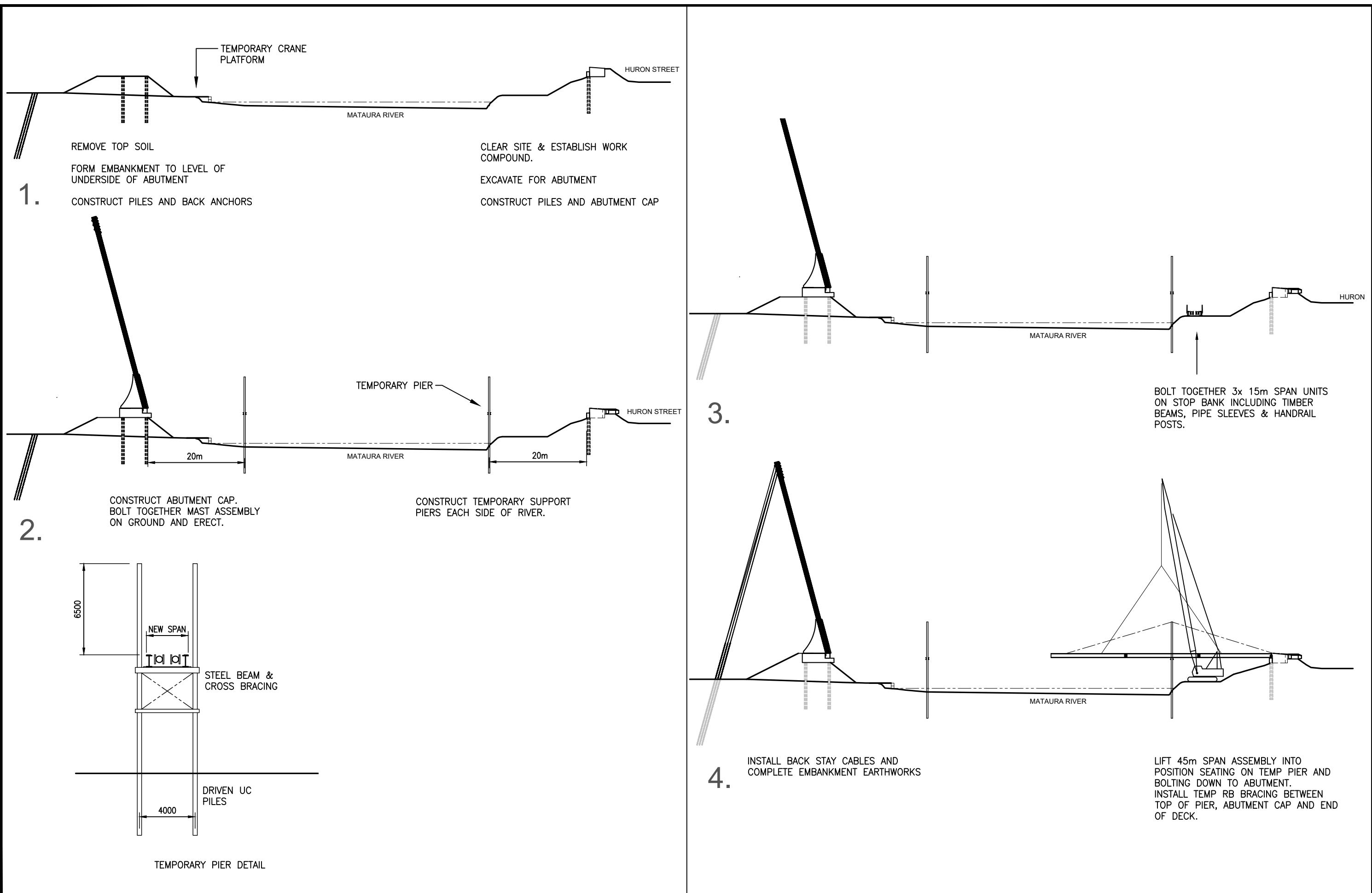
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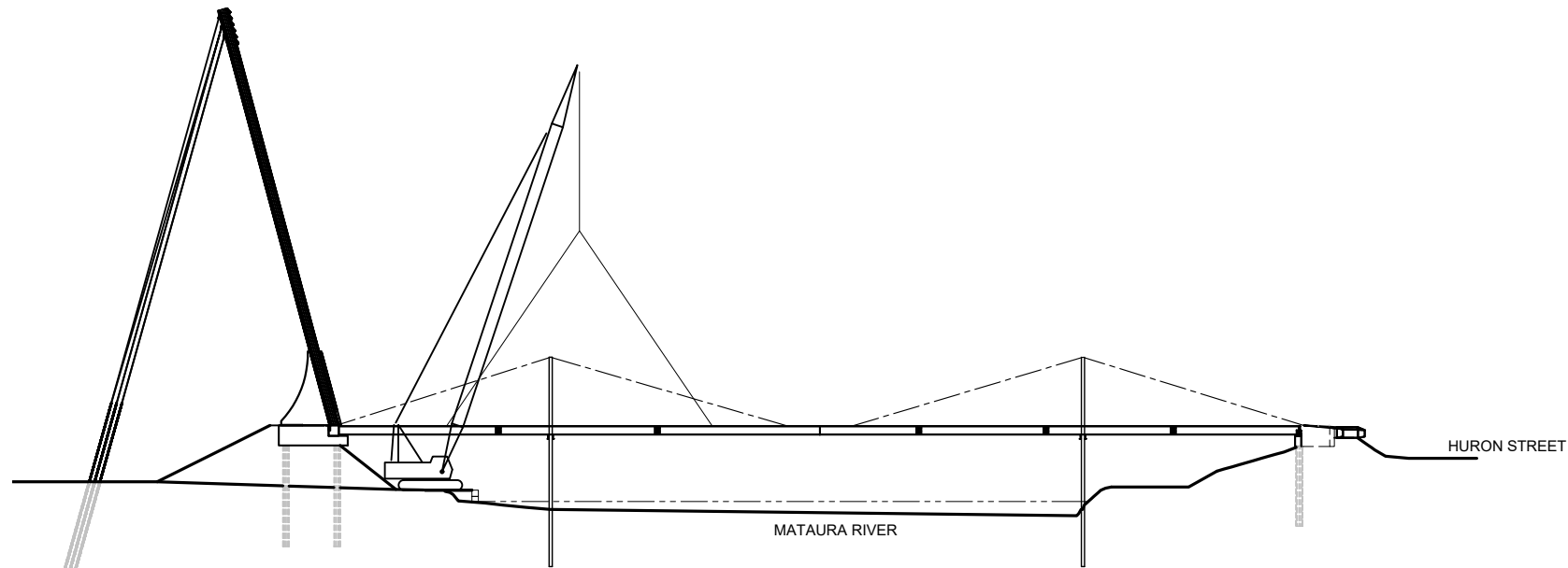
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ISSUE:	2



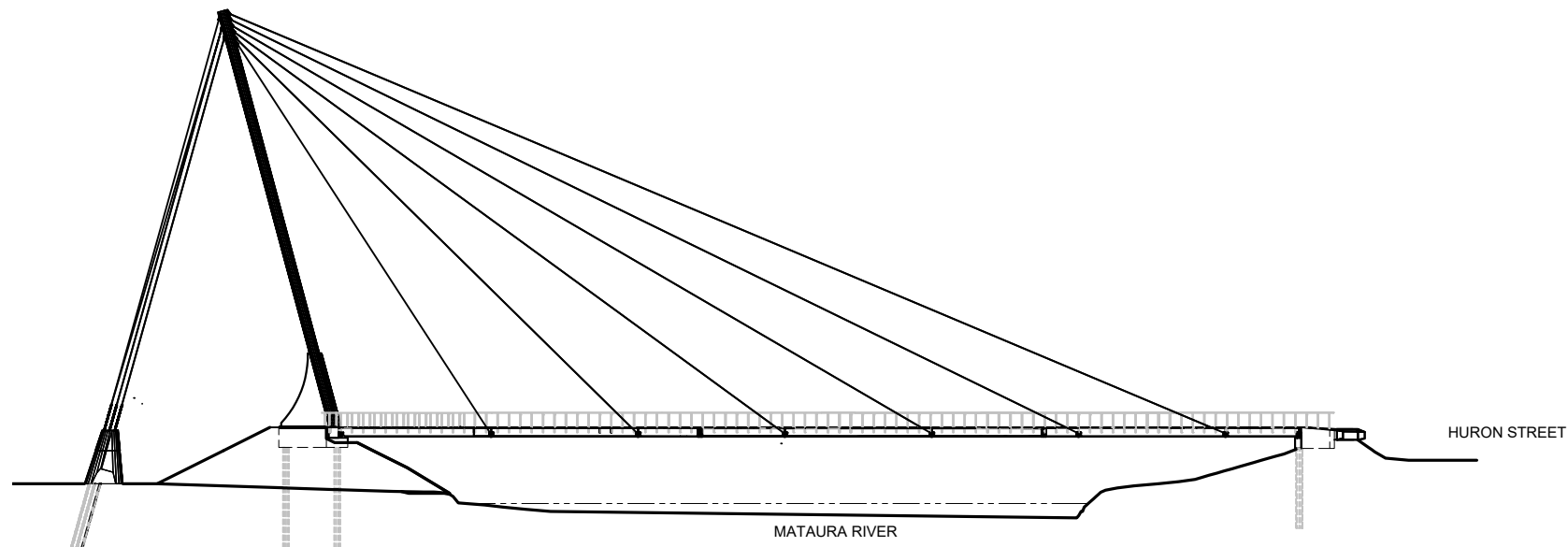
BRIDGE ELEVATION (FROM SOUTH LOOKING UPSTREAM)







5. ASSEMBLE REMAINING SPAN SECTIONS ON OPPOSITE BANK & LIFT INTO POSITION ON PIER AND BOLT TO ABUTMENT. INSTALL TEMP BRACING & BOLT MID SPAN SPLICE.



6. INSTALL ALL SUPPORT CABLES, LEVEL DECK AND TENSION. INSTALL REMAINING PIPE SLEEVES, DECKING AND HANDRAILS. CONSTRUCT ANCHORAGE CAPS. REMOVED TEMPORARY PIERS AND COMPLETE LANDSCAPING & REINSTATE SITE.

3.4.3 Describe the significant risks you anticipate (especially in the flood zone) and how you will manage them.

If slippage is accumulating, an action plan will be drawn up by the Project Manager to assess and improve the performance. Programme is critical to success and will be actioned as such.

CSL group owns all its own plant, including mobile and crawler cranes, vibro hammers, excavators, staging and carries no debt.

A risk register will be compiled specifically for this project and agreed with GDC, key subcontractors, and key stakeholders prior to commencing on site and will form part of the site specific Health and Safety Plan. It is intended the risk register would be updated, reported and discussed at monthly project meetings to revisit and monitor key issues so as to ensure that all risks are collaboratively and proactively managed. With risk being managed in this manner, it keeps risk management front of mind, and ensures a project focus on areas and issues that will potentially have the most effect on project success.

CSL considers the protection of its people, GDC's reputation, stakeholder relationships, the environment, and the project outcome to be its most important priorities. It is therefore committed to:

- The prevention of injury to people,
- The maintenance of safe working conditions,
- Prevention of loss of property and of damage to property and the environment,
- Developing and enhancing relationships with key project stakeholders,
- Minimising and removing negative effects of the project on the environment and leaving an enhanced environmental outcome on project completion,
- Providing a high level of innovation and value to the project by implementing smart construction methodologies, managing subcontractors and suppliers to ensure an efficient and competitive delivery of services.

In order to achieve these objectives, CSL will identify and describe risks, their causes, their consequences, risk owners and treatments. Risks are categorised as either open or closed and given a status as to where it lies in the project lifecycle. The exposure of the project to these risks is factored into determining a treatment plan which includes the controls to be implemented, the resources required and the level of monitoring. Once a risk is realised, the outcome is recorded and used for discussion in determining future risk treatment procedures.

Reasonable Foreseeable Circumstances (Major Programme Risks)

Risk	Consequence	Management
Flooding	Loss of plant and structures, materials access and time.	Implement flood monitoring and evacuation procedures to ensure ability to evacuate the flood path within 20 hours of a predicted high-water event. To mitigate the risk, the following monitoring is undertaken; Weekly and daily monitoring of MetService forecast and rain radar, any severe weather warnings are scrutinized to see if the programme needs to be adapted. Daily monitoring of: http://envdata.es.govt.nz/?c=flow&tab=table for info on river flow. Set flow limit where plant is removed from access platforms.

	Materials entering the waterway	Contamination of the river	Housekeeping is paramount during construction and will be implemented onsite with the use of front-loading skip bins with a fold down lid. Building materials will be tidied away in the storage area and rubbish will be placed in the skip bin provided with the lid securely fixed at the end of each day.
	Environmental Spills	Contamination / Loss of time. Financial implications	Ensure all plant and equipment is well maintained and hoses checked daily for leaks. Spill kit maintained on site and a register of spills kept. All plant is washed prior to arrival on site and kept clear of the river. Best practice will be used to determine fuelling location, waste disposal, concrete placement wash and earthworks.
	Sedimentation	Contamination of the river	Sediment control measures will be established at the beginning of the project and removed upon completion. Silt fence will be set up within 1m of the edge of the river and extend 20m either side of the work area. Secondary protection will be installed in areas of high earthworks and groundwater controls and settlement ponds utilised where possible. Stockpiles are to be no closer than 5m from the edge of the river.
	Accident / Injuries	Suspension of contract /delays	Full integration of the SMP. Follow all H&S procedures contained within. Staff to be well informed of their hazard identification and reporting requirements. Daily pre-start meetings and weekly toolbox meetings allow staff collaboration regarding current hazards.
	Access issues	Delays / Tracking of mud and dirt	A temporary haul road will be established to provide clear access for construction vehicles and minimise the risk of tracking sediments into public areas and neighbouring properties.
	Erosion and slippage	Undermining of assets	The building platform will be constructed with the appropriate materials and the site will be left in a state that meets the GDC Longford shared path specifications.
3.4.4 Describe the environmental protection measures working nearby the river	<p>We are ISO14001:2015 Environmental Management Systems Standard certified. Environmental and Sustainability Policies are applied to all of our projects which in turn improves resource efficiency, reduces waste and consistently drives down costs.</p> <p>The Contract Environmental Plan will incorporate:</p> <ul style="list-style-type: none"> – Site Environment Plan showing Environmental controls – Spill kit locations – Drawings of all bunds and silt fence locations proposed – Emergency Procedures and Emergency Contacts – Fueling procedures – Controlled washout / discharge areas 		

Erosion and Sediment Control

The principles for minimising sediment discharges will be as follows:

- Minimise disturbance to waterways
- Prompt stabilisation of disturbed areas using temporary and permanent techniques as appropriate
- Diversion of off-site runoff
- Control of on-site runoff through the installation of silt fences
- Perimeter controls to prevent clean water from crossing exposed areas;
- Use of best practice erosion and sediment control techniques
- Bunds around work areas during construction
- Silt fencing across natural drainage channels
- Allowing for the plan to evolve in response to experience gained on site or new technologies
- Ensuring regular inspections and audits of erosion and sediment control measures, and regular planning meetings and updating of plans to suit changing site conditions.
- Monitoring weather forecasts to ensure works are undertaken during fine weather and suitable river conditions.

Noise and Vibration Control

There will be a number of noise and vibration generating machines operating on site. The major noise will be generated by hammers for driving pile sections, and earthmoving equipment such as excavators. Noise will be minimized as far as practicable with use of silenced earthmoving plant and compressors.

Noise will be monitored at the site boundary and at an equivalent distance to the nearest house to ensure no nuisance is being caused. These readings will be taken as part of the on-site auditing process. Regular contact with landowners will be carried out to ensure noise levels are not causing undue stress.

Control of Dust and Slurry

Dust can affect human health, livestock and plant life on the site and the adjacent environment. Dust will be regularly monitored during the course of the works. If found that dust is developing from the works a water cart will damp down regularly to alleviate dust nuisance. The site supervisor will be responsible for monitoring this activity and ensuring the water cart is available.

Environmental Monitoring

Scheduled environmental monitoring of environmental performance and compliance with resource consents and designations will be carried out throughout the construction phase of the Project. This will form part of the on-site auditing process carried out by the Project Manager. These will be carried out once a month as a minimum and all corrective actions closed out and signed off.

General Site Monitoring

In addition to formal monitoring the following general monitoring will be undertaken:

- Daily site inspections by construction supervisor to check compliance with the EMP.
- Site check lists to check compliance with resource consent conditions and the EMP. Issues will be noted if they present significant risk e.g. noisy works, works near waterways, site conditions creating dust, transportation of materials.
- Monthly meetings involving a Client representative, Engineer's Representative and site supervisor will be arranged. Environmental issues will be discussed at this

	meeting as a separate agenda item. Formal monthly reports will include a summary of environmental and H+S issues, actions and complaints received, incidents, associated investigations and corrective actions and awareness training.
3.4.5 Explain how minimum disruption to the residents and industries around the project location can be achieved during the construction	<p>Liaison and Stakeholder Consultation</p> <p>Prior to the commencement of works CSL will meet with GDC and other stakeholders to explain the works and address any specific concerns that may be raised. Stakeholders will be updated regularly by email, telephone communications and invitation to weekly meetings.</p> <p>We see the key stakeholder issues as;</p> <ul style="list-style-type: none"> – Early and regular communications with the Stakeholders and in particular the nearby Residents. – Safe and continuous access off Surrey St (Safety & minimizing delay and disruption). – Mitigation of Noise and Vibration. <p>CSL will ensure nominated on call staff are available by phone 24 hrs a day, seven days a week to respond to any incidents or customer concerns. Communication channels will also be established with GDC and Southland regional council.</p> <p>Any public notification deemed required will be organized through Gore District Council. No communication with the media will be carried out and all enquiries from the media for information will be passed back to Gore District Council.</p>
3.4.6 Proactive communication with GDC is important. Describe how you will achieve this particularly with regard to any issues that may affect the budget, quality, operational performance and other matters affecting stakeholders.	<p>Concrete Structure's conduct their activities in a collaborative and cooperative manner. Evidence of this is that many of our clients are repeat customers. By example, over the last 4 years we have completed 3 No projects for the Whanganui District Council totalling \$12M, and 4 No projects for Napier City Council totalling \$6M.</p> <p>We will proactively engage with GDC to highlight and manage project risks and opportunities, ensuring there are "no surprises", be reactive to all stakeholder concerns, and achieving all QHSE goals including zero harm.</p> <p>Nearby residents, businesses, adjacent landowners and other stakeholders will be regularly contacted and updated. This will be achieved by letter drops, weekly email updates and/or monthly community meetings. The Project Manager will facilitate these.</p> <p>The Project Manager is responsible for the overarching programme. Daily targets are set from the agreed 3 weekly programme and highlighted at daily toolbox meetings. If daily targets are not met the Project Manager will discuss the reasons behind the delays with the project team and remedial actions (if required) decided upon and actioned. If delays are not absorbed within the time frames agreed with the site team, further action will be decided upon by the Project Manager in discussion with the site team. This may include items such as methodology changes, additional resourcing in both plant and personnel or agreed supplier / product changes. New targets will be agreed and monitored as above.</p>
3.4.7 Explain how zero harm construction can be achieved in the project context	CS strives to achieve zero harm in a high-risk construction environment. This is due to the commitment and development of solid management structures including task analysis, recording of incidents and near misses, regular review of systems and worker engagement. Our site supervisors hold relevant site safe qualifications.

