

**Inspection and Test Plan (ITP)**  
**Project Name** Whatatuna flood gate  
**Location** Manutuke

Activity Description	Spec	Verification Activity	Methods or reference	Frequency	Acceptance criteria	Inspection Type	Assessor	Reports to be delivered	Responsible Person	Records/ Remarks Sign and date if appropriate	
Pre commencement											
Submit pre commencement docs	Updated Works Programme Quality Plan Health and Safety Plan Traffic Management Plan Environmental Management Plan including Erosion and Sediment Control	Engineers approval	In line with supplied specifications	Once	Compliant with lead contractors requirements	Hold Point	GHD	Copy of documents	CC		
Implementation of site specific safety plans	Compliance to document monitored	daily checks	Supplied SSSP	Daily	In line with supplied document	Verification	CC	Document	CC		
Implementation of environmental management plan	Compliance with all requirements of approved EMP including RC conditions	daily checks	Supplied EMP	Daily	In line with supplied document	Verification	CC	Document	CC		
Implementation of traffic management plan	Meets requirements of approved traffic management plan	weekly monitoring reports	Supplied TMP	Weekly	In line with supplied document	Verification	CC	Document	CC		
Setting out	Setout survey controls in line with supplied co-ordinates	Survey control report	Supplied plans	Once	Within tolerance of specification - +/- 50mm horiz, +/- 5mm vert	Verification	CC	Document	CC		
Submit progress reports	-	Visual Check	-	Weekly	-	Verification	GHD	Copy of documents	CC		
Materials											
Pre characterisation testing of borrow pit materials to establish target density	Undertake lab testing of borrow pit material to establish required compaction criteria for site won structural fill	Lab testing	-	Once	Meets engineers approval	Verification	GHD	Lab report	CC		
Submission of shop drawings	-	Engineers review approval of submitted shop drawings	-	Once	As per design	Verification	GHD	Document	CC		
Submit concrete mix design	Capping beam 40MPa - concrete approach slab - 20MPa	Approval of submitted mix design	Structural specification	Once	Meets design specification - 40MPa capping beams, 20MPa slab	Hold Point	GHD	Document	CC		
Submit steel / reinforcing manufacturers certs for approval	mill certificates and test sheets, showing the chemical properties and results of tensile tests, shall be provided by the Contractor to the Engineer prior to commencing the Works.	Email	NZS4671 and 4672	Once	Reinforcing in line with NZA4671 and 4672	Verification	GHD	Copy of documents	CC		
Sheet pile mill cert	-	Submit Mill cert	-	Once	Properties in line with steel specification	Verification	GHD	Copy of documents	CC		
Cycleway barrier	-	Submit manufacturers warranty / guarantee	General spec item 607	Once	In line with specification	Verification	GHD	Copy of documents	CC		
FRP panels	-	Submit manufacturers warranty / guarantee	-	Once	In line with specification	Verification	GHD	Copy of documents	CC		
Weld testing	Non-destructive testing shall be performed in accordance with ISO 3452, AS 2177 and AS 2207. Materials rejected as a result of non-destructive testing, shall be replaced or repaired and re-tested in accordance with this specification. The quantity of pile welds tested shall be subject to a minimum of: • 100% Visual 20% Ultrasonic testing	Engineers approval	AS2177 and 2207	Once	In line with AS2177 and AS2207	Verification	GHD	Copy of documents	CC		

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Subgrade testing	the contractor will arrange and complete Scala penetrometer testing to confirm the suitability of the ground for all areas where concern exists. The Engineer will consider all results prior to confirming for the Contractor to either proceed with general filling or to undertake undercut to waste. Removal of unsuitable material shall only be undertaken with approval of the Engineer.	NDM results - visual inspection of subgrade formation level prior to	Supplied specification	Once	In line with engineers specification	Hold Point	GHD	Copy of documents / testing results	CC		
Subgrade inspection	After stripping and prior to placement of fill engineer will inspect formation level - this will be done prior to any excavation of unsuitable material which will be defined based on soil testing and site visit information	Inspection request visual inspection of subgrade formation level prior to	Supplied specification section 300-4	Once	In line with engineers specification	Hold Point	GHD	Site Visit	CC		
FIRST LIFT Site won structural fill compaction	Where field tests indicate that the specified standard of compaction has not been achieved, corrective action shall be taken to bring the fill to the required standard and as required by the Engineer. This may require excavation and removal of the failed fill material. the contractor shall supply the engineer the test results to demonstrate compaction compliance after placement of first lift and prior to next lift - NDM or other approved method.	NDM, MDD, OPC testing results	Supplied specification section 300-4	each lift, testing every 10m linear length of stop bank - 3x tests to be taken at each location and averaged.	MDD ave 95% (min 92%) max 12% air voids - shear vane - within 5% of established shear strength coorelation	Hold Point	GHD	Submit compaction results	CC		
Site won structural fill compaction	The Engineer may carry out density tests of compaction at any time. The Contractor shall stop or divert his machines as required by the Engineer to allow the tests to be safely carried out. Where field tests indicate that the specified standard of compaction has not been achieved, corrective action shall be taken to bring the fill to the required standard and as required by the Engineer. This may require excavation and removal of the failed fill material. the contractor shall supply the engineer the test results to demonstrate compaction compliance after placement of first lift and prior to next lift - NDM or other approved method.	Inspection request NDM, MDD, OPC testing results	Supplied specification	each lift, testing every 10m linear length of stop bank - 3x tests to be taken at each location and averaged.	MDD ave 95% (min 92%) max 12% air voids - shear vane - within 5% of established shear strength coorelation	Hold Point	GHD	Site Visit / compaction results	CC		
Imported fill compaction - basecourse	The Engineer may carry out density tests of compaction at any time. The Contractor shall stop or divert his machines as required by the Engineer to allow the tests to be safely carried out. Where field tests indicate that the specified standard of compaction has not been achieved, corrective action shall be taken to bring the fill to the required standard and as required by the Engineer. This may require excavation and removal of the failed fill material. the contractor shall supply the engineer the test results to demonstrate compaction compliance after placement of first lift and prior to next lift - NDM or other approved method.	Inspection request NDM, MDD, OPC testing results	Supplied specification	each lift, testing every 10m linear length of stop bank - 3x tests to be taken at each location and averaged.	MDD ave 95% (min 92%) max 12% air voids -	Hold Point	GHD	Site visit / compaction results	CC		
Pile driving	The following records shall be kept where appropriate, and shall be submitted to the Engineer for review no later than 24 hours after each days' driving: <ul style="list-style-type: none"><li>• Pile reference number or location;</li><li>• Pile type and grade of steel;</li><li>• Pile length;</li><li>• Type of hammer and details (energy, blow per minute, etc.);</li><li>• Details of any packing or cushioning at the pile head;</li><li>• Date of driving;</li><li>• Commencing surface level;</li><li>• Depth driven;</li><li>• Length of offcuts;</li><li>• Length of pile extensions;</li></ul> • The measurement of driving resistance at appropriate depths (number of blows per 250 mm penetration over the length of the pile and number of blows every 100 mm penetration in the founding stratum); <ul style="list-style-type: none"><li>• The recorded level of top of founding stratum of increased driving resistance;</li><li>• The termination toe level and depth of embedment in the founding stratum; and</li><li>• The final position of the driven sheet pile and any deviation from specified location</li><li>• All</li></ul> information regarding interruptions, unexpected changes in driving characteristics, obstructions and times taken in overcoming them. Document pre augered holes and bentonite slurry if required	Fill in pile log / engineers approval	Pile sets and depth supplied	Once	Meets construction tolerances and in line with supplied documents	Verification	GHD	Pile logs	CC		
Pre pour inspection	Check covers - dimensions in line with supplied documents check reinforcing bar size, spacing / quantity and arrangement	Inspection request Engineers approval	Supplied drawings and specifications	Once	In line with supplied documents and NZS3101	Hold Point	GHD	Site Visit	CC		
Post pour inspection	The engineer shall be afforded the opportunity to inspect the concrete finish after formwork has been removed - based on this inspection and the nature of any defects, a remedial proposal will be made by the contractor including submittal of any proposed concrete repair materials	Inspection request Approval from engineer	Supplied drawings and specifications	Once	In line with supplied drawings and specifications	Hold Point	GHD	Site Visit	CC		
Concrete testing	Carry out sampling and concrete acceptance tests during construction to NZS 3109.9. Concrete acceptance tests during construction. Conduct 7 day and 28 day strength tests. Include slump test documentation.	Approval from Engineer / engineers representative	Supplied specifications	Once	In line with specifications in engineers documentation and NZS3109, 3112 and 3104	Verification	GHD	Copy of documents	CC		
Welder qualifications	Only qualified welders shall be employed on the Works. Proof of any welder's proficiency shall be made available on request.	Approval from Engineer / engineers representative	-	Once	-	Verification	GHD	Relevant documents	CC		

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Notify commencement of fabrication	Give notice so that inspection may be made of the following; materials including welding consumables before fabrication submission of proposed welding procedure to prevent distortion and non-ductile welds in tension zones testing of welding procedures and welder qualification tests commencement of shop fabrication commencement of welding before placement of root runs of complete penetration butt welds completion of fabrication before surface preparation surface preparation before shop painting completion of protective coating before delivery to site	Email	-	Once	-	Verification	GHD	Email	CC		
Completion											
As Built drawings	Supply of as built drawings	Approval from Engineer / engineers representative	Supplied specification	Once	Meets requirements in section 107 of contract specification +/- 50mm horiz +/- 5mm vert	Hold Point	GHD	Copy of documents	CC		
Complete works inspection	As per drawings, technical specs and amendments	On site inspection	As per drawings, technical specs and amendments	Once	As agreed	Hold Point	GHD	Site Visit	CC/GHD		