



CLIENT:	Watercare Services Limited	INSPECTION AND TEST PLAN FOR:	ITP No:	GAJV-ITP-00329_3.0
CONTRACT No. #	6661		JOB/ITP TITLE:	CONFLUENCE CHAMBER PRECAST ELEMENTS
CONTRACT:	Central Interceptor		PACKAGE No:	MPS-CON-DTMAN-20-0005.03
WORKPLACE NAME / ADDRESS:	Mangere Pump Station		CHAINAGE (if any):	N/A
DATE:	22/05/2024		WORK AREA:	Confluence Chamber
ENGINEERS NAME:	Kevin Rajan		RELATD CEP No:	GAJV-CEP-00363
		WORK DESCRIPTION: Confluence Chamber precast elements – Baffle wall, roof beam & roof slabs	SWMS No (if any):	TBC
		CONTRACTOR NAME: GAJV		
		SUBCONTRACTOR/S NAME: Seipp Construction		

The purpose of this Inspection and Test Plan is for identifying and tracking stages of completion and product traceability during all phases of construction.

ISSUED FOR CONSTRUCTION

Packages: - Discrete components or work areas.

Inspection and Test Plan: A sequential work method statement capturing quality related requirements that provide evidence of conformance to specifications.

Inspection Check Sheet: A document detailing specific criteria to be checked and recorded, often developed to meet testing requirements of standards and / or technical specifications.

Punch List / Defects List: A list of minor rectification type tasks which need to complete to satisfy the term of the contract.

Surveillance: Ongoing monitoring

Hold Point: A notice of the event must be provided and shall not proceed with the work without the client or its representative being present unless authority to proceed has been provided by the client in writing. Signature required

Witness Point: A notice of the event must be provided. If the client representative is not present at the designated time and place, work may proceed.

LEGEND:	W = WITNESS POINT	H = HOLD POINT	S= SURVEILLANCE	GAJV = GHELLA ABERGELDIE JOINT VENTURE	S/C = SUBCONTRACTOR	WSL = ENGINEER REPRESENTATIVE
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ACTIVITY No. #	DESCRIPTION	RESPONSIBILITY	REQUIREMENTS / REFERENCE	CONFORMANCE CRITERIA	METHOD	FREQUENCY/PROCESS HELD	HOLD/WITNESS REQUIREMENTS		RECORDS OR CHECKLISTS
							TYPE	ATTENDANCE REQUIRED	
1.0 Preliminaries									
1.1	Check - Drawings are IFC and current	GAJV	Ensure latest IFC drawings are used and available onsite	<ul style="list-style-type: none">Sighting of drawings	Retain Drawings	Before project execution	H	GAJV	DWG register with the drawing revision.
1.2	Check – Shop Drawings	SEIPP	Ensure latest IFC drawings and are approved by GAJV	<ul style="list-style-type: none">Sighting of drawings	Retain Drawings	Before project execution	H	GAJV	DWG register with the drawing revision.
2.0 Materials									
2.1	Concrete	SEIPP	2012034 & 2012036 DWG Series MS-18P	<ul style="list-style-type: none">Approved mix used – Allied/Holcim Mix 451PFA40CI	Review	Each Mix	H	GAJV	Material certificate
2.2	Reinforcing Steel	SEIPP	DWG 2012036 Series NZS 4671/ 3109 GC-C4P – 4.1 and 4.1.1.10	<ul style="list-style-type: none">Grade 500EProduced using micro-alloy process	Review	Each batch	W	GAJV	Material certificate
2.3	Bearing Strip	SEIPP	20120036.863 DWG	<ul style="list-style-type: none">FOSROC Cellfix or approved alternative	Review	Each delivery	W	GAJV	Delivery dockets
2.4	Gatic frames & Grates – Roof slabs only	GAJV	20120036 DWG Series	<ul style="list-style-type: none">Gatic covers delivered as per the drawings	Review	Each delivery	W	GAJV	Delivery dockets
2.5	PE Liner & Weld Rod	SEIPP	CG-27P Table 5.1	<ul style="list-style-type: none">Technical data sheetsManufacturers Certificates of compliance	Review	Prior to commencement of work	W	GAJV	Material Cert
2.6	PEF Rod & Sealant	SEIPP	GAJV-DCRQST-000344	<ul style="list-style-type: none">Closed cell Polyethene foam backing strip – FOSROC expandafoam or approved similar.Fosroc Nitoseal SC600 or approved equivalent	Review	Each delivery	W	GAJV	Delivery dockets

INSPECTION TEST PLAN

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2.7	Non-shrink grout	SEIPP	2012036.863	<ul style="list-style-type: none"> High strength non-shrink grout 	Review	Prior to commencement of work	MAR	WSL/GAJV	Material Approval Request
2.8	Epoxy (for dowel bar post install)	SEIPP	2012036.863	<ul style="list-style-type: none"> Hilti HIT-RE-500 or approved similar 	Review	Each delivery	W	GAJV	Delivery dockets
2.9	Galvanised dowel bars	SEIPP	2012036.863	<ul style="list-style-type: none"> 600mm long hot dip galvanised bars 	Review	Each delivery	W	GAJV	Material certificate
3.0 Concrete Element Construction									
3.1	Reinforcement Placement	SEIPP	CG-C4P – 4.1.2.12P CG-C4P – 4.1.1 2012036 DWG Series Approved shop drawings	<ul style="list-style-type: none"> Ensure that the placed reinforcement complies in all respects with the Design Drawings and Specification Minimum cover over reinforcement shall be as noted on the Design Drawings Lap lengths/cover shall generally be as detailed on the Design Drawings or 2012053 series 	Visual inspection	After steel placement	H	GAJV/WSL	Pre-pour checksheet Precast HQ QA Pack
3.2	Formwork/moulds	SEIPP	CG-C4P – 4.1.2.12P MS-41P – 12.1P CG-C4P – 4.5P NZS3109 Approved shop drawings	<ul style="list-style-type: none"> Dimensional tolerances as per NZS 3109 Table 5.1 Formwork to be treated with release agent where in direct contact with concrete Exposed concrete edges to have minimum 10mm chamfer unless otherwise shown on the drawings Formwork must provide cast surface in line with concrete finish requirements (U2 for floor & roof slabs) 	Visual Inspections	Prior to concrete pour	H	GAJV	Pre-pour checksheet Precast HQ QA Pack
3.3	Penetrations and Cast-in Items (including PE liner)	SEIPP	CG-C4P – 4.1.7P Approved shop drawings CG-C27P 6.2P	<ul style="list-style-type: none"> Penetrations shall be as per the design drawings Installation of CPL to form a smooth continuous surface free of sags, wrinkles bubbles and bulges. 	Visual Inspections	Prior to concrete pour	H	GAJV/WSL	Pre-pour checksheet Precast HQ QA Pack
3.4	Concrete Testing <ul style="list-style-type: none"> Consistency 28-day compressive strength Shrinkage Permeability Water absorption Sulphite content Alkali content Chloride content Temperature rise 	SEIPP	MS-41P - 5P MS-41P - 12P MS-41P – table 6.1P Consistency: NZS 3109 and NZS 3112 28-day compressive strength: NZS 3109 Section 9 and NZS 3112 Shrinkage: AS 1012.13 Permeability: DIN 1048 Water absorption: AS 4058 Appendix F Sulphite content: AS 1012.14 Alkali content: Chloride content: AS 1012.14 Temperature rise: Not applicable as pours are less than 0.9m thick (as per MPS Temperature Control Plan)	<ul style="list-style-type: none"> Consistency: For water retaining structures, slump tolerances shall be half those given in Table 9.1 of NZS 3109 28-day compressive strength: 45 MPa Shrinkage: 430mS at 21 days, 600 mS at 56 days with variance 10% precast & 15% for cast in-situ Permeability: <20mm Water absorption: <6.5% Sulphite content: <4% by mass Alkali content: <2.5kg/m3 Chloride content: As per table 5-1 of MS-41P Temperature rise: The lesser of: Thermal Control Plan limits <70°C maximum <40°C temperature rise from its fresh concrete casting temperature 	IANZ Lab tests	<p>Consistency: Slump test every batch</p> <p>28 days compressive strength: 3 Cylinders (1x7day, 2x28 day per shift or per 75m3 poured (NZS 3104), whichever is more frequent.</p> <p>Shrinkage: Every 1,500m3 of concrete</p> <p>Permeability: Every 1,500m3 of concrete</p> <p>Water absorption: Every 1,500m3 of concrete</p> <p>Sulphite content: Every 1,500m3 of concrete</p> <p>Shrinkage: Every 1,500m3 of concrete</p> <p>Permeability: Every 1,500m3 of concrete</p> <p>Water absorption: Every 1,500m3 of concrete</p> <p>Sulphite content: Every</p>	W	WSL/GAJV	Precast HQ QA Pack

INSPECTION TEST PLAN

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						1,500m3 of concrete Temperature rise: Not applicable as pours are less than 0.9m thick (as per MPS Temperature Control Plan)			
3.5	Construction Joints (Baffle wall & Beam only)	SEIPP	CG-C4P - 4.1.2P	<ul style="list-style-type: none"> Construction joints shall conform to NZS 3109, Clause 5.6.3, type B Joint position shall be as shown on the Design Drawings unless otherwise agreed with the engineer 	Visual Inspection	Post Pour	W	GAJV	Post pour check sheet Precast HQ QA Pack
3.6	Concrete Curing	SEIPP	MS-41P - 11.1 CG-C4P – 4.1.12.6P NZS 3109 Clause 7.8	<ul style="list-style-type: none"> All concrete shall be properly and adequately cured. Concrete shall be maintained at a reasonable constant temperature with minimum moisture loss for the curing period The curing period shall be 7 days 	Visual Inspection	Post Pour	W	GAJV	Post pour check sheet Precast HQ QA Pack
3.7	Concrete Finishes	SEIPP	CG-C4P - 4.1.6P CG-C4P – 4.1.2.12P	<ul style="list-style-type: none"> Concrete finishes to be in line with the design drawings and specification. Full post pour inspection review of the concrete finish to identify surface defects, concrete cover checks or any other defects identified or non-conformances. Repair work shall be carried out using a method approved by the Engineer Penetrations and cast-in items to be measured and location confirmed 	Visual Inspection	Post Pour	W	GAJV	Post pour check sheet Precast HQ QA Pack
4.0 Installation									
4.1	Survey and Set out	GAJV	2012034 & 2012036 DWG Series	<ul style="list-style-type: none"> Set out to be as per drawings. 	Visual Inspection	As required	W	GAJV	N/A
4.2	Precast inspection (delivery)	SEIPP	CG-C4P – 4.1.2.12P Approved shop drawings	<ul style="list-style-type: none"> Precast units shall be handled in such a manner that will not cause damage of any kind. 	Visual Inspection	Each delivery	W	GAJV/WSL	Post pour check sheet
4.3	PE liner inspection	SEIPP	CG-C27P 4.5P CG-C27P 5.1P	<ul style="list-style-type: none"> Tapping survey completed to identify voids Surface inspection of The CPL. CPL shall be free from cracks, cleavages, or other defects. 	Visual Inspection	Post Pour	H	GAJV/WSL	Post pour check sheet
4.4	PE extrusion weld certificates	SEIPP	CG-C27P	<ul style="list-style-type: none"> Welders PE extrusion certs 	Copy of Certificate	All welders	W	GAJV	Copy of certificate
4.5	PE extrusion weld testing	SEIPP	CG-C27P ASTM D4437, ASTM D5641 DVS2227	<ul style="list-style-type: none"> All site welds shall be tested 	High voltage spark test Visual inspection	All welds	W	WSL/GAJV	Visual Inspection
4.6	Gatic Cover Installation (Post-installed)	SEIPP	Gatic installation guides	<ul style="list-style-type: none"> Installation as per the Gatic installation guidelines 	Visual Inspection	Each frame & cover	W	GAJV	Installation checklist
4.7	Precast installation	SEIPP	2012034 & 2012036 DWG Series	<ul style="list-style-type: none"> Bearing strip in position Unit sitting level/plumb Unit positioned in the correct location 	Visual Inspection	After Installation	W	GAJV	Installation Checklist
4.8	Dowel bar installation (drill & epoxy fix)	SEIPP	As per manufacturer's installation instructions	<ul style="list-style-type: none"> Hole cored to correct diameter and depth Hole clean and free of loose debris Epoxy placed in the hole and dowel bar installed to correct depth 	Visual Inspection	Prior to placement of epoxy	W	WSL	Installation Checklist
							H	GAJV	




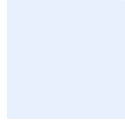
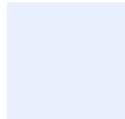
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4.9	Grouting of lifting points & dowel bar connections	SEIPP	2012036.904 note Manufacturer's installation instructions	<ul style="list-style-type: none">Grout lifting eyes and dowels with non-shrink groutArea to be free of dust	Visual Inspection	Each pour	W	GAJV	Installation Checklist
5.0 Post Construction:									
5.1	As built records	GAJV	Watercare Standard Specification 225.31	<ul style="list-style-type: none">Tables 5.1 & 5.2 of NZS 3109 – (+-10mm)	Survey asbuilt	At completion	H	GAJV/WSL	As built records



ITEM	QA DOCUMENT CHECKLIST	TICK APPROPRIATE BOX	COMMENTS	ITEM	QA DOCUMENT CHECKLIST	TICK APPROPRIATE BOX	COMMENTS
1	Completed Inspection and Test Plan	<input type="checkbox"/>		12	Check sheets Completed and signed	<input type="checkbox"/>	
2	Material Delivery Dockets (if applicable)	<input type="checkbox"/>		13	Independent Reviewer Report	<input type="checkbox"/>	
3	Incoming Material Inspection Checklist	<input type="checkbox"/>		14	Operation and Maintenance Manuals (if applicable)	<input type="checkbox"/>	
4	All Aconex Mails Closed-Out - Related to Lots	<input type="checkbox"/>		15	Warranties / Guarantees (if applicable)	<input type="checkbox"/>	
5	Conformance Certificates (if applicable)	<input type="checkbox"/>		16	Producer Statements	<input type="checkbox"/>	
6	Test Reports	<input type="checkbox"/>		17	Compliance Statement	<input type="checkbox"/>	
7	Engineers Red-Line mark ups	<input type="checkbox"/>		18	Relevant RFIs -	<input type="checkbox"/>	
8	As Built Survey	<input type="checkbox"/>		19	Instructions -	<input type="checkbox"/>	
9	Photos	<input type="checkbox"/>		20	Factory Acceptance Test (if applicable)	<input type="checkbox"/>	
10	Geotechnical Site Inspection Report (if applicable)	<input type="checkbox"/>		21	Other -	<input type="checkbox"/>	
11	QA Engineer Site Inspection Report	<input type="checkbox"/>		22	Other -	<input type="checkbox"/>	

CONFORMANCE / VERIFICATION STATEMENT

This closed lot conforms in all respects with the standards and requirements specified in the Contract Documents. The lot verification records are complete, and any non-conformances have been closed out in accordance with the Projects requirements.

Construction Lot checked by the Senior Project Engineer responsible for the works	PRINT NAME	Michael Pilkington	SIGNATURE		DATE	16/05/2024
Construction Lot verified and closed by Quality Management Representative	PRINT NAME	Click or tap here to enter text.	SIGNATURE		DATE	Click or tap to enter a date.
Independent Verification Review (if required) by:	PRINT NAME	Click or tap here to enter text.	SIGNATURE		DATE	Click or tap to enter a date.