Fulton Hogan	Inspection and Test Plan - Structural Concrete	Document # 1145-C200-FUL-QAC-ITP-0013 Revision : 00 Date : 26/05/2022

Client: MRPV	**Construction Process:** Structural Concrete	Prepared by:	Reviewed by :	Approved by :
Project: Craigieburn Road Upgrade	**Specifications:** VicRoads Specifications Section 204 (Dec 2015), 602 (Oct 2007), 610 (Feb 2020), 611 (Nov 2018), 613 (Jun 2017) & 614 (Jun 2017), AS5100, AS3810	Name: **Omar El-Khub**	Name: **Taj Minhas**	Name: **Babak Rudd**
Contract No: 1145	**Structure / Component:**	Position: Project Engineer	Position Senior Project Engineer	Quality Manager
	Location:	Date : 13/04/2022	Date : 13/04/2022	Date : 26/04/2022

Lot No: **Lot Details:** **Lot Size/ Quantity:**

Item No.	Task/Activity Description	Inspection / Controls and Verification Detail					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility	Checked by:			
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1	**Referenced Documentation**											
1.1	**Document Title**: ITP-013-AX-LOT-XXX - Description **ITP Description:** Structural Concrete **Document Number (in Teambinder):** 1145-C200-FUL-QAC-ITP-0013 **Revision Number:** 00 **Revision Date:** 26/05/2022 **ITP created by:** Omar El-Khub **ITP approved for use by:** Babak Rudd 1.1 VicRoads Section 204 Dec 2015 1.2 VicRoads Section 602 Oct 2007 1.3 VicRoads Section 610 Feb 2020 1.4 VicRoads Section 611 Nov 2018 1.5 VicRoads Section 613 Jun 2017 1.6 VicRoads Section 614 Jun 2017 1.7 AS5100 1.8 AS3810	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	**Preliminaries - Materials**											
2.1	Concrete mix design	Each Mix, not less than 4 weeks prior to the placement of concrete	Ensure all mix designs have been reviewed by the Superintendent, and allocated a registration number on the Register of VicRoads approved concrete mixes. Concrete Mix is Registered with VicRoads. Concrete mix meets strength, grade, and maximum aggregate size as detailed on drawings. Enter: Teambinder Material Approval number [free text box]	VicRoads Spec. Cl.610.07(b)	Document review	Approved Mix design	**HP***	Site Engineer & Superintendent	N/A		N/A	
2.2	Reinforcement Certification	Once for each supplier, 14 days of award of contract	Ensure the manufacturer and supplier of the steel reinforcement is in possession of a current certificate of approval, issued by the Australian Certification Authority for Reinforcing Steel (ACRS). Evidence of compliance submitted to superintendent within 14 days of contract award. Note: ACRS certificate may cover both aspects or be for each separate portion (e.g. 1 for the material supplier and another for the bar processor (bending, cropping and delivery) Enter: Teambinder Material Approval number [free text box]	VicRoads Spec. Cl.611.04 Cl.611.05(a)	Document review	ACRS Certificate of Approval.	**IP**	Site Engineer	N/A		N/A	
2.3	Bar Chairs/Aspros Certification	Once for each supplier, 14 days of award of contract	Plastic bar chairs, wheels, and spacers require bi-annual testing to demonstrate suitability to prevent excessive deformation under loads. Concrete aspros require annual compressive strength and soluble salt testing is required. Relevant test reports demonstrating compliance to this clause shall be submitted for review to the Nominated Authority. Enter: Teambinder Material Approval number [free text box]	VicRoads Spec. Cl.610.26 (a)	Document review	Approved bar chairs and aspros	**IP**	Site Engineer	N/A		N/A	

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2.4	Evaporative Retardant	Once, for each product, 4 weeks prior to placement of concrete	Details of evaporative retardant, application procedure (including application rates) to be submitted for review to the Nominated Authority. Enter: Teambinder Material Approval number [free text box]	VicRoads Spec. Cl.610.17 (f)	Document review	Approved evaporative retardant	IP	Site Engineer	N/A		N/A	
2.5	Curing Compound	Once, for each product, 4 weeks prior to placement of concrete	Details of curing compound and NATA test certificate stating compliance with AS3799 no more than 3 years from issue, to be submitted for review to the Nominated Authority. Enter: Teambinder Material Approval number [free text box]	VicRoads Spec. Cl.610.23 (b)	Document review	Approved curing compound	IP	Site Engineer	N/A		N/A	
3	**Preliminary Works**											
3.1	Concrete Placement and Compaction Work Method Statements	Once, 4 weeks prior to placement of concrete	Concrete placement and compaction WMS to be submitted for review to MRPV Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.18 (a) (i)	Document review	Approved WMS	HP*	Site Engineer & Superintendent	N/A		N/A	
3.2	Concrete Sampling and Testing Procedure	Once, 4 weeks prior to placement of concrete	Concrete sampling and testing procedure to be submitted for review to MRPV Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.18 (a) (v)	Document review	Approved procedure	HP*	Site Engineer & Superintendent	N/A		N/A	
3.3	Concrete Placement and Compaction Toolbox Meeting	Once, 4 weeks prior to placement of concrete	Concrete placement and compaction toolbox meeting held to discuss the quality requirements. Minutes of this meeting to be submitted to MRPV Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.18 (a) (iv)	Document review	Approved quality requirements	HP*	Site Engineer & Superintendent	N/A		N/A	
3.4	Hot and/or Cold Weather Concreting Procedure	Once, 2 weeks prior to placement of concrete	Hot and/or cold weather concreting procedure to be submitted for review to MRPV. Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.17	Document review	Approved procedure	HP*	Site Engineer & Superintendent	N/A		N/A	
3.5	Curing Methodology (for Concrete and Grout)	Once, 4 weeks prior to placement of concrete	Curing methodology/procedure to be submitted for review to MRPV. Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.23 (a)	Document review	Approved methodology	HP*	Site Engineer & Superintendent	N/A		N/A	
3.6	Concrete Drilling Procedure	Where applicable, once, 2 days prior to drilling	Where holes are to be drilled into existing (new or old) concrete members, the locations shall positioned to avoid striking any existing reinforcing bars, tendons and services. The planned locations and drilling procedure shall be submitted for review to MRPV. Enter: Teambinder Approval number [free text box]	VicRoads Spec. Cl.610.46	Document review	Approved drilling location and procedure	HP*	Site Engineer & Superintendent	N/A		N/A	
4	**Pre-construction activities**											
4.1	Check that IFC drawings are being used	Prior to Commencing	Issued For Construction (IFC) and latest available revision on TeamBinder is used	Project Drawings / Drawing Register	Document review	Latest Revision Drawings	HP*	Site Engineer / Site Foreman	N/A		N/A	

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Contract No: 1145	**Structure / Component:**	Position: Project Engineer	Position Senior Project Engineer	Quality Manager
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		Frequency	Acceptance Criteria	Reference Documents	Inspection / Test Method	Record of conformity			Superintendent	Fulton Hogan	FH's Sub-contractor	Date
4.2	Survey set out works	Prior to Work Commencement	Survey activities undertaken to ensure and validate that all works meet level and location requirements. The establishment and integrity of the survey network shall be verified before commencing any survey and set out activity. IFC and latest available revision used	Project Spec. Cl.1190.06	Site inspection	Survey records & pegs on the ground This ITP Signed off	SCP	Site Engineer, Foreman & Surveyor	N/A		N/A	
4.3	Excavation Permit issued	Prior to Commencing Work	Current Excavation Permit signed and specific for the area where works will be executed.	Excavation Permit	Document review & Site inspection	Excavation Permit #	HP*	Site Engineer	N/A		N/A	
4.4	Excavation Inspection	Where applicable, prior to placing blinding concrete	Blinding concrete shall not be placed until the bottom of the excavation has been reviewed by the Nominated Authority.	VicRoads Spec. Cl.602.03	Site inspection	Superintendent approval	HP	Site Engineer/ Project Engineer			N/A	

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5	**Construction Activities - Formwork**											
5.1	Formwork Design and Construction	Each Pour/ Type of element	Designed and constructed in such a manner so it can be removed without damage to the concrete. Formwork to be rigid, watertight, braced, tied together & selected to achieve the required surface finish. Formwork shall not be placed where steel & fixtures cannot be inspected.	VicRoads Spec. Cl.614.04 Cl.614.05 Cl.614.06 Table 614.041	Document review & Site inspection	Proof Engineering Certificate approved This ITP signed	**IP**	Site Engineer & Superintendent	N/A		N/A	
5.2	Formwork Certification - Formwork Inspection (Members Greater than 2m)	Each element (where greater than 2m)	The application of any load shall not proceed until the Certificate of Compliance - Formwork Inspection of the constructed formwork has been reviewed by the Nominated Authority Abutments, pile caps, footings, solid piers, pier columns and walls, with heights greater than 2.0 metres All other concrete members Any member for which self-compacting concrete is proposed. Attach: Attachment A Attach: Attachment B	VicRoads Spec. Cl.614.08	Document Review Visual Measure	ConQA Hold Point Release	**HP**	Temporary Works Designer Proof Engineer SE/PE/SPE			N/A	
5.3	Formwork Certification - Formwork Inspection (Members Less than or Equal to 2m)	Each element (where 2m or less)	The application of any load shall not proceed until the Certificate of Compliance - Formwork Inspection of the constructed formwork has been reviewed by the Nominated Authority Abutments, pile caps, footings, solid piers, pier columns and walls, with heights less than or equal to 2.0 metres Attach: Attachment C	VicRoads Spec. Cl.614.08	Document Review Visual Measure	ConQA Hold Point Release	**HP**	PE/SPE			N/A	
5.4	Reinforcement Placement	Each Structure	The correct reinforcement grade, quantity, size, orientation, location and spacing as shown on the structural drawings. Projecting reinforcement is the correct length and location. Splice lengths achieve the minimum length and are in contact for this length. The reinforcement surface condition is free from dirt, debris and damage. The resulting cage securely held with sufficient ties to limit displacement or deformation during the concrete pour. Minimum cover as shown on the structural drawings for each face has been achieved (including tie wire locations).	VicRoads Spec 611.06 611.09 611.10 611.11 611.12	Measure Visual	This ITP Signed	**IP**	Foreman SE/PE/SPE	N/A		N/A	
5.5	Pre-pour Survey ~~Pre-pour Inspection~~	Prior to concrete pour	A pre-pour survey carried out by a surveyor. Erected formwork within the tolerance as Cl.610.36.	VicRoads Spec. Cl.610.47 Table.610.471 Table.610.472 Table.610.473 Table.610.474	Site Inspection	This ITP signed/	**SCP**	Site Engineer/ Surveyor/Foreman	N/A		N/A	
6	**Construction Activities - Concrete Pour**											

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6.1	Construction Joint Preparation	Each concrete pour, prior placing concrete (As required)	Construction joint preparation in accordance with CL.610.20 Existing concrete to be roughened by removing all laitance and sufficient mortar to expose the course aggregate to a depth of 3mm. All surfaces should be cleaned, moistened with water with any excess removed immediately prior to placing concrete. Joints shall be at the locations specified on the drawings	VicRoads Spec. Cl.610.20	Site Inspection	This ITP signed	**IP**	Site Engineer	N/A		N/A	
6.2	Cast-in Items	Where applicable, each element	All cast-in items are the correct type, grade, quantity, size, orientation and location as shown on the structural drawings and are securely fastened or restrained to withstand impact and pressure during the concreting operations to prevent dislodgement. Any exposed threads, conduits, ducts or voids shall be protected by suitable means to prevent concrete or grout ingress. Tack welding of any cast-in items shall be performed by someone pre-qualified to do so. Grout tubes shall be fastened at regular intervals to prevent kinking. Placement tolerances to comply with the IFC drawings, if not specified, use the following: i. Bolts, ferrules, projecting bars & couplers = ±3mm ii. Running dimensions of a group of the above = ±6mm iii. Ducts and conduit location = ±12mm iv. Diameter of ducts and conduits = ±3mm	VicRoads spec. Cl.610.47 (a) AS3180.1 Table 3.3.6.2	Site inspection	This ITP signed	**IP**	Site Engineer/ Foreman	N/A		N/A	
~~6.3~~ 6.4	Weather Conditions & Evaporation Limits	Prior to concrete pour	Unless otherwise approved by the superintendent, the following conditions must be satisfied when placing concrete: a) The temperature of concrete, measured immediately prior to placing, shall not be less than 10º C or greater than 32º C b) Concrete shall not be placed if the air temperature is greater than 35º C or less than 5º C. c) Concrete shall not be placed during rain or when rain appears imminent. Freshly placed concrete shall be protected from the rain d) Rate of evaporation < 0.50 kg/m2/hr. If not, additional controls initiated as per 610.17. Refer to concrete pour record	VicRoads Spec. Cl.610.17	Visual Inspection Concrete Pour Record	This ITP signed Concrete Pour Record Concrete Dockets	**IP**	Site Engineer/ Foreman	N/A		N/A	

6.3	Pre-pour Inspection	Each element	Evidence that the forms, reinforcement and cast-in items conforming to the requirements of this specification and the drawings has been reviewed by the Nominated Authority. All foreign material has been completely removed from the forms.	IFC Drawings VicRoads Spec. 610.18 (a) (ii) & (iii)	Measure Visual	ConQA Hold Point Release	HP	Superintendent

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~~6.4~~ 6.5	Concrete Testing - Sampling Frequency	Each concrete pour	Concrete cast in one continuous operation to be tested at a frequency as shown below: 0m³ to 10m³ = 1 sample 10m³ to 25m³ = 2 samples 25m³ to 50m³ = 3 samples 50m³ to 100m³ = 4 samples + 2 no. VPV cylinders. For each additional 50m³ and additional sample shall be taken. Each sample shall consist of 1 no. slump or spread test and 3 no. compressive strength cylinders minimum. Compressive strength cylinders = 1 no. 7 day strength, 2 no. 28 day strength. Note: Additional cylinders may be required for other purposes such as early trafficking or removal of formwork. Record: Required information on the Concrete Pour Record.	VicRoads Spec. Cl.610.16 (b)	Testing Concrete Pour Record	This ITP signed Concrete Pour Record	IP	Site Engineer	N/A		N/A	
~~6.5~~ 6.6	Concrete Testing - Slump	Each concrete pour	Slump testing tolerances = <60mm = ±10mm ≥60mm to ≤80mm = ±15mm >80mm to ≤110mm = ±20mm >110mm to ≤150mm = ±30mm >150mm = ±40mm Record: Required information on the Concrete Pour Record.	VicRoads Spec. Cl.610.16 (c)	Testing	Concrete Pour Record	IP	Site Engineer	N/A		N/A	
~~6.6~~ 6.7	Concrete Testing - Spread, Passability & Viscosity	Each concrete pour	Spread range = 550mm to 750mm T500 = 2 seconds to 5 seconds (to reach a spread of 500mm) Passability = ≤10mm (aggregate height differential) Record: Required information on the Concrete Pour Record.	VicRoads Spec. Cl.610.13 (b)	Testing	Concrete Pour Record	IP	Site Engineer	N/A		N/A	
~~6.7~~ 6.8	Concrete Testing - Compressive Strength Cylinders	Each concrete pour	Correct quantity of cylinders manufactured per sample. Record: Required information on the Concrete Pour Record.	Site Sampling and Testing Procedure	Testing	Concrete Pour Record	IP	Site Engineer	N/A		N/A	
~~6.8~~ 6.9	Supply & Discharge Rates	Prior to concrete pour (each load)	Concrete is supplied at an adequate rate to ensure no cold joints are formed. No water is to be added once discharge commences. Maximum time between batching trucks is 25 minutes. Maximum elapsed time for discharge (including compaction) is 60 minutes from batching unless the mix design has an extension using set retardants. Concrete that stiffens or is showing signs of stiffening shall not be used. Concrete is not dropped freely from a height exceeding 2m. Concrete is not moved horizontally by use of vibrators. Record: Required information on the Concrete Pour Record.	VicRoads Spec. Cl.610.13 (a) & (e)	Visual Inspection	Concrete Pour Record	IP	Site Engineer/ Foreman	N/A		N/A	

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~~6.9~~ 6.10	Surface Finishes	Each element	Surface finish as per IFC drawings. Where surface finish is not detailed, the VicRoads class finishes will apply as per 610.31. Construction joints shall be roughened in locations shown on the drawings - any proposed changes to construction joints shall be subject to approval from the Nominated Authority.	VicRoads Spec. Cl.610.31 Cl.610.20	Site Inspection	This ITP signed	**IP**	Site Engineer	N/A		N/A	
7	**Post-pour Details and Inspection**											
7.1	Thermal Differential Monitoring	Each concrete pour	Maximum thermal differential between the core and exposed surface not to exceed 20°C. Only applicable if the element has: i. the smallest sectional dimension exceeding 500mm ii. one or more faces being restrained by previously hardened concrete or other external constraints. Attach: Thermal Monitoring Report	VicRoads Spec. Cl.610.22	Site Inspection	Temperature data acquired and proposed control measures to reduce differential temperature submitted to Superintendent for review **(if applicable)**	**IP**	Site Engineer Subcontractor	N/A		N/A	

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7.2	Early Age Compressive Strength Test Results - Removal of Formwork	Each concrete pour	Where IFC drawings do not nominate minimum strength development for removal of formwork, refer to Table 610.251. Where IFC nominates minimum strength development, ensure strength is verified by additional cylinder or other approved method (such as maturity testing).	VicRoads Spec. Cl.610.25 (b) Table 610.251	Site Inspection	This ITP signed	IP	Site Engineer	N/A		N/A	
7.3	Surface Inspection - Cracks	Each element	Repair procedure submitted to the Superintendent. Repair undertaken in accordance with VicRoads Section 687. Cracks investigated and if greater than specified in the table 610.241, an NCR raised. Not withstanding the requirements of this clause the acceptable crack width at the concrete surface of pre-cast pre-stressed concrete elements shall not exceed 0.1 mm.	VicRoads Spec. Cl.610.24 (a) Table 610.241 Section 687	Site Inspection	Superintendent approval (if applicable)	IP	Site Engineer	N/A		N/A	
7.4	Early Age Compressive Strength Test Results - ~~Removal of Formwork~~ - Placement of Fill Against Concrete	Each Pour	No fill is to be placed against concrete within 14 days of casting in accordance with the requirements of Clause 204.11 of Section 204. Proposed placement prior to 14 days from casting shall comply with the early application of loading requirements of Clause 610.16(l) or maturity testing requirements of Clause 610.16(m). No fill shall be placed against or within 3 m of a structure until the foundation for the fill has been reviewed by the Superintendent.	VicRoads Spec. Cl.610.35 Cl.204.11(b) Table 204.111 Cl.610.16(m)	Site Inspection	Holdpoint released This ITP signed	HP	Site Engineer/ Superintendent			N/A	
7.5	Compressive Strength Result	Each Specimen	7 day compressive strength to comply with table 610.051 for early indication that the strength is tracking correctly. 28 day compressive strength (average of the 2 no. cylinders) per sample comply with the design strength. Note: 1 of the 2 no. 28 day cylinders per sample may be as low as 90% of the required strength, so long as the average meets the required strength. Attach: Compressive Strength Test Results	VicRoads Spec. Cl.610.16 (g) Table 610.051	Document Review	Concrete Test Result	IP	Site Engineer	N/A		N/A	
7.6	Post Pour Concrete Cover	Every 25m2 or part thereof.	Concrete covermeter check one 3m² test area for every 25m² exterior surface area. Minimum 10 no. measurements recorded in each area. Where low cover is identified, an assessment to evaluate the influence on durability of the structure is submitted to the Nominated Authority. Attach: Covermeter Check Record	VicRoads Spec. Cl.610.34 IFC drawings	Site Inspection	This ITP signed	IP	Site Engineer	N/A		N/A	
7.7	Prepare As Built Drawings	Prior to lot closure	As-built survey completed and drawings (IFC Mark up Drawings) prepared for the lot and copy of the drawings kept in the files The tolerances listed in Tables 610.471, 610.472, 610.473 and 610.474 are the allowable deviations of the finished product from the dimensions shown on the drawings. These tolerances will be a basis for acceptance of the work.	IFC Project Drawings	Site Inspection	As-built survey and drawings This ITP signed	IP	Site Engineer	N/A		N/A	

Notes

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Lot No: **Lot Details:** **Lot Size/ Quantity:**

Item No.	Task/Activity Description	Inspection / Controls and Verification Detail					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection / Test Method	Record of conformity		Project Engineer Site Engineer Superintendent Surveyor Foreman	Superintendent	Fulton Hogan	FH's Sub-contractor	Date

Final Inspection

The signature below verifies that this ITP has been completed in accordance with the FH's Quality system Procedures and verifies lot compliance with specifications.

Print Name: Position: Signature: Date:

Work Completed On: (free text field)

Legend

HP	Hold Point	Work shall not proceed past the HP until released by the Superintendent	**IP**	Inspection point	Formal Inspection to be done and recorded
HP*	FH Hold Point	Work shall not proceed past the HP* until released by FH	**TP**	Test Point	Product compliance test to be undertaken and recorded/reported
AP	Approval Point	Written or verbal approval given by the Superintendent	**SCP**	Survey conformance point	A qualified surveyor to check product/section/structure and report
			WP	Witness Point	An inspection which must be witnessed by the Superintendent