

BSBPMG513 MANAGE PROJECT QUALITY

PRACTICAL ASSESSMENT INSTRUCTIONS

- The following practical assessment will require the participant to complete work related activities.
- The assessor will conduct observations of the participant's work to determine whether they display sufficient practical skills and knowledge.
- Please fill in the details below, providing your name, signature and date of assessment.
 - Your signature acknowledges that the assessor provided clear instructions and the participant understood what was required to complete this assessment.
- The assessor may substitute a Practical Task with another task of equal value.
 - Alternate tasks must be fully documented by the assessor.

Participant name Paul Russo

Participant signature 

Assessor name _____

Assessor signature 

Date Click here to enter a date. 17/7/21

Number of tasks	Number of tasks completed	Satisfactory?	
		Yes	No
1		☐	☐

ASSESSOR COMMENTS

BSBPMG513 MANAGE PROJECT QUALITY

Practical Task 1	
Description of task: A suitable observer is to verify the participant's ability to manage quality within projects, including: • Determining quality requirements • Implementing quality control and assurance processes • Using review and evaluation to make quality improvements in current and future projects These tasks may be simulated or real. The participant is to gather evidence of how they have completed each component of the Practical Task, which is to be submitted with this Practical Assessment sheet. The observer is to provide detailed comments on the tasks completed by the participant. The assessor is to verify the observer's comments in the Assessor Comments section, and provide the Practical Assessment outcome on the front cover of this document.	
Resources required: Project documentation (including quality criteria, evidence of quality monitoring and improvement practices), Computer and appropriate software.	
Assessment of task	
Name of participant:	Paul Russo
Name of observer:	Rory Church
Role of observer (Confirm suitability to sign)	Senior Project Engineer
Email address of observer	Rory.church@cbgujv.com.au
Signature of observer:	
Date:	14/07/2021
When completing the task, did the participant:	Tick if satisfactorily completed. Provide comments if left unticked.
1 Determine quality requirements	
1.1A. Seek input from stakeholders to determine quality objectives and standards.	☒
1.1B. In a quality management plan, document: • Quality metrics for the project and product output • Agreed quality requirements	☒
1.1C. Select established quality management methods, techniques and tools to resolve quality issues.	☒
1.1D. Distribute, discuss and support quality requirements with project team and stakeholders.	☒
1.1E. Implement agreed quality requirements as the basis for performance measurement.	☒
2 Implement quality processes	
1.2A. Undertake a quality assurance audit of project processes for compliance with agreed plans.	☒

Attachment 1

11

Attachment 11

11

11

Attachment 2

1.2B.	Assess quality control of project and product output according to agreed quality specifications.	☒	②
1.2C.	Identify causes of variance to quality metrics and undertake remedial action.	☒	②
1.2D.	Maintain a quality management system to enable accurate and timely recording of quality audit data.	☒	③ - Qual. Lot Register
3 Implement project quality improvements			
1.3A.	Review processes and implement agreed changes continually throughout the project life cycle to ensure continuous quality improvement.	☒	Attachment 3 - Implementation of concrete pour procedure
1.3B.	Review project outcomes against performance requirements to determine the effectiveness of quality-management processes and procedures.	☒	ATTACHMENT #2
1.3C.	Identify and document lessons learned and recommended improvements.	☒	ATTACHMENT #5
The participant's performance was: ☐ Satisfactory ☐ Not Satisfactory			

OBSERVER COMMENTS	
1.1A	ITP HAS BEEN PREPARED BY PAUL RUSSO REFERRING
1.1B	CONSTRUCTION MANAGEMENT PLAN, MEETS SO QUALITY DOCUMENTATION
1.1C	AND OTHER VARIOUS SPECIFICATIONS OUTLINING QUALITY REQUIREMENTS.
1.2A	PROCESS CONTROL REVIEW AUDIT WAS PERFORMED ON LOT DOCUMENTATION
1.2B	ON 17/6/21 BY PAUL RUSSO AND SHANNON JONES, REFER
1.2C	IS A AUDIT TOOL WITHIN GBCVSV PROJECT.
1.2D	EVIDENCE OF QUALITY LOT REGISTER SUMMARY SHOWING POUR DATE AND LOT CLOSURE DATES WITH ASSOCIATED NCR'S AND WITNESS POINTS.
1.3A	ATTACHMENT 4 SHOWS EMAIL FROM PAUL TO OTHER TEAM MEMBERS ON NEW SITE PROCESS FOR CONCRETE POUR RECORDS PROCEDURE.
1.3B	SEE ATTACHMENT #2, PROCESS CONTROL REVIEW FORM, CHECKS ITP FOR PERFORMANCE REQUIREMENTS AND OTHER QUALITY PROCESSES WITHIN THE LOT DATA PROVIDED.
1.1C	NON CONFORMANCE REPORT TSD-NCR-CBEV-000235 IS RAISED AGAINST A QUALITY ISSUE IN ACCORDANCE WITH CBEVSV PROCESSES + PROCEDURES. THE NCR ALSO COVERS A REMEDIAL AND PREVENTATIVE ACTION WHICH WAS TABLED + DISTRIBUTED AT NEXT TEAM ENGINEERING MEETING.

CRR-TSD (Q80379 - Stations - Woolloongabba)

Brisbane City, Queensland

Q80379

000151 - Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) 00

11 Dec 2020, ID #42

REPORT DETAILS

Description TSD-410-STR-ISRC-000027 SW3 External Wall FRP

Submitted by Annabelle Kissane

Status Submitted

Last update 18 Jan 2021 12:09 pm

Last updated by Annabelle Kissane

Weather

💧 Rain: 0.1 cm

Powered by [Dark Sky](#)

7:00 AM Cloudy skies
Temperature: 24°C
Wind: 14kph, NW
Humidity: 59%



12:00 PM Cloudy skies
Temperature: 26°C
Wind: 18kph, NW
Humidity: 40%



4:00 PM Cloudy skies
Temperature: 23°C
Wind: 18kph, NW
Humidity: 54%



Updated Dec 12, 2020 at 10:08 AM

①



CBGU D&C JV

Inspection & Test Plan (ITP)

ITP Title.:	Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast)	Process: STR-INCO
ITP No.:	CRRTSD-CS-ITP-CBGU-000151	Revision: A
Date:	03/12/2020	Expiry Date: 03/06/2021

THIS INSPECTION & TEST PLAN COMPRISES THE FOLLOWING DOCUMENTS AND IS APPROVED FOR USE:

PART 1 Inspection and Test Plan

PART 2 Quality Control Checklist

PART 3 Lot Verification Checklist

Reference	Construction Management Plan
Documentation:	- MRTS50 Specific Quality System Requirement - Specification - Concrete for Stations, Station Precinct, Dive, Cut and Cover Tunnel Structures (Excluding Bridges) - <i>referred to within this document as PSTS-404-200</i> - MRTS71 Reinforcing Steel - AS 1379 Specification of Concrete - AS 1012 Method of Testing Concrete

Prepared by: Paul Russo Project Engineer	Signature: Russo, Paul Digitally signed by Russo, Paul DN: cn="Russo, Paul", ou=Users, ou=Milton, ou=QLD, ou=Cross River Rail TSD, ou=JV and Alliances, ou=People, dc=ic, dc=local Reason: I agree to the terms defined by the placement of my signature on this document Date: 2020.12.04 14:52:30+10'00'	Date:
Reviewed by: Michael Bertelsen Quality Engineer	Signature:  Michael Bertelsen 2020.12.04 15:09:40 +10'00'	Date:
Approved by: Troy Thompson Senior Project Engineer	Signature:  Troy Thompson 2020.12.03 09:20:50 +10'00'	Date:
Client acceptance (if required):	Signature:	Date:

Title: Inspection and Test Plan Template

ID: MSID-753926686-1160 Version: 6.0 Date Published: 17/02/2020

Cross River Rail – TSD Project / CRRTSD - Uncontrolled Document when Printed

Project Specific Document

Inspection and Test Plan

PART 1 OF INSPECTION & TEST PLAN

Contractor Name (if applicable):		Rocktown		ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) ITP No: CRTSD-CS-ITP-CBGU-000151		Lot No: TSD-410-STR-ISRC-000027		
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements SubCon CBGU PIC	Records or Checklist Reference
Preliminary Inspections and Tests								
1.	Define Lot	SE	MRTS50 Cl.7.3	Lot size = 1 per concrete pour or 1 continuous pour sequence during a day's production	R	Prior to commencing	V	Lot Map
2.	Underlying Lot conforms	PE	MRTS50 CL.8.4, 10.1.2	[INTERNAL HOLD POINT] All underlying lots closed, or lots open but acceptable to proceed with work.	R	Prior to commencing	HP	Team Binder
3.	Mix and concrete plant approval	PE	PSTS-404-200 Cl.9.2, 15.1	[MILESTONE/HOLD POINT 1] Approval of Concrete Mix Design by CBGU-JV nominated representative.	R	Each mix 2 weeks prior to commencing	HP	Team Binder TSD-HP-CBGU-000386
4.	Review and Approval of Procedures	PE	PSTS-404-200 Cl.13.1, 15.5 15.11 15.12 17.17	[MILESTONE/HOLD POINT 4] Review/approval of below procedures; - Hot weather concreting - Temperature monitoring (large elements and/or high cementitious contents) - Curing - Surface dressing of concrete Note: No 'On-site batching and mixing' to take place. 'Long distance travel and extended placement times' raised per mix through RFI. 'Placement under water' for wet cast-in-place piles – refer ITP CRTSD-CS-ITP-CBGU-000014	R	Each procedure 2 weeks prior to commencing	HP	TSD-WP-CBGU-000038

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Contractor Name (if applicable):		Rocktown		ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) ITP No: CRRTSD-CS-ITP-CBGU-000151		Lot No:	TSD-410-STR-ISRC-000027			
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference	
							SubCon	CBGU	PIG	
5.	Approval of falsework design and construction	PE	PSTS-404- 200 CI.15.3, 17.9 CPB Safety Essentials	[MILESTONE] - Falsework shall conform to AS 3610, except as otherwise required by the Technical Specification. - The Contractor shall supply the Administrator with detailed drawings of such falsework at least two weeks prior to the commencement of erection. - The design and erection of falsework, the method of founding or supporting the falsework and the time, order and manner of its release shall all require approval of the Administrator.	R	2 weeks prior to erection		HP N/A	WP N/A	RPEQ Certified Drawings.
6.	Approval of Steel Reinforcement Supplier	PE / SE	MRTS71 / CI.6.1	[HOLD POINT] ACRS Compliance certificate for reinforcement.	R	3 days before supply of each product per supplier		HP X	WP	ACRS Certs TSD-HP- CBGU-000386
7.	Engineering Certified lifting points on prefabricated reinforcement	PE	MRTS71 CI.15.1 IFC Drawings	[HOLD POINT] For large cages, confirm approved drawing by a certified RPEQ engineer which clearly shows the location and capacity of all lifting points and the location of all welding to ensure the reinforcing cage remains rigid during lifting and handling.	R	Each large cage design		HP X	WP	RPEQ Certified Drawings
8.	Approval for use of any tack welds, substitution of reinforcement, reinforcing couplers, welded splices or hot bending	PE / SE	MRTS71 CI.8.2, 11.3 13 14.4 14.5	[INTERNAL HOLD POINT] Prior approval is required for the following: - Tack weld - Substitution of reinforcement - Reinforcing couplers - Use of welded splices or - Hot bending	R	Prior to commencing (if required)		HP X		RFI#:

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Item No.		Inspection / Test Point		ITP No: CRRSTD-CS-ITP-CBGU-000151		Frequency				
Responsibility		Specification Reference		Method		Hold/Witness Requirements				
Records or Checklist Reference		SubCon		CBGU		PIC				
9.	Submission of Welding Procedures Sheets (WPS)	PE	MRTS71, Cl.14.2	Conformance Criteria summary No welding shall be carried out until a Welding Procedure Specification (WPS) Sheet, in accordance with Section 4 of AS/NZS 1554.3, has been completed and a copy submitted & approved.		R	Prior to commencing (If required)	HP 	WP	
10.	Mechanical reinforcing bar splices	PE	MRTS71, Cl.11.3, 11.3.2	Mechanical reinforcing bar splices shall be registered proprietary products used for splicing steel reinforcing bar. Alternative registered mechanical reinforcing bar splices shall not be used without prior approval. Bars shall be completely engaged and the joint assembled and tightened or locked in accordance with the manufacturer's instructions.		R	As required	HP N/A	WP	
11.	Unspecified Construction Joints	PE	PSTS-404-200 Cl.15.13	[HOLD POINT 7] Construction joints shown in the Drawings are mandatory. The use of construction joints elsewhere in the concrete work shall require the prior approval of the Designer.		R	Prior to placing concrete	HP 	WP	TSD-RFI-CBGU-000905
Construction (in-process) Inspections and Tests										
12.	Set out survey	SV / SE	MRTS01 Cl.8 MRTS03 Cl.17.3.1 IFC Drawings	- Correct line and level for placement of reinforcement and formwork as per Drawings - Design appropriateness of the set out with regards to site conditions.		S	Prior to commencing	V 		
13.	Concrete on ground surfaces/ foundation bedding	FM / SE	PSTS-404-200 Cl.15.6.1 IFC Drawings	- Where reinforced concrete is placed on earth, sand or rock foundations, the earth or sand shall be compacted to 95% Relative Compaction - Where shown in the Drawings the foundation shall be covered with a layer of blinding concrete. The maximum thickness of unreinforced blinding concrete shall be 100 mm unless otherwise approved.		I	Each lot	V N/A		Concrete Pre-pour Checklist

Contractor Name (if applicable):		Rocktown		ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast)	Lot No:	TSD-410-STR-ISRC-000027				
				ITP No: CRRTSD-CS-ITP-CBGU-000151						
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements	Records or Checklist Reference		
				- Forms for plane exposed surfaces shall consist of plastic coated plywood, waterproof plywood, timber lined with tempered hardboard or close-fitting unwarped metal forms - Forms for surfaces not exposed to general view may consist of modular timber or metal panels.						
16.	Construction of formwork	FM / SE	PSTS-200 Cl. 15.4.1, 17.10 IFC Drawings	[HOLD POINT 3 & 11] - All formwork shall be subject to inspection and approval by CBGUJV. - Forms shall be set and maintained to line and level such that the finished concrete shall conform within the specified dimensional tolerances and contours, as shown on the IFC Drawings. - All forms shall be cleaned and coated with the lightest practical coating of release agent prior to pour. - Unless otherwise shown in the Drawings, all corners shall be provided with 15 mm x 15 mm chamfers or fillets of an equivalent radius. - Cast-in metal form ties shall be of a type which permits removal of the end fittings to a depth of at least 40 mm below the finished surface of the concrete. - Wire ties, not cast into the concrete, shall not be used. - Forms which become unsatisfactory shall not be re-used.	I	Each lot	HP 	HP 	WP	Concrete Pre-pour Checklist PIC In attendance ☒ Yes ☐ No
							QA Note: Ref to WP-1970			
17.	Reinforcement placing and fixing	FM / SE	IFC Drawings MRTS71 Cl.9, 10	Steel reinforcement shall be; - Quantity, grade and size have been inspected and as per IFC Drawings - Free from mud, oil, grease, paint, other non-metallic coatings, and loose rust - Placed in position as shown in the Drawings	I	Each lot	V 	V 		Concrete Pre-pour Checklist

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Item No.		Inspection / Test Point		ITP No: CRRSTD-CS-ITP-CBGU-000151		Method																					
Responsibility		Specification Reference		Conformance Criteria summary		Frequency																					
				- Tied by wiring at each intersection, using annealed wire $\geq$ 1.25mm diameter, where bar spacing is $\leq$ 300mm alternate intersections only need to be tied - Correct lap lengths achieved as per drawings. - The system of fixing shall be such as to form a rigid cage which maintains dimensional tolerances under all applied loads applied before and during placement of concrete. <table><tr><td colspan="2">Tolerance on position of steel reinforcement</td></tr><tr><td colspan="2">a) For positions controlled by cover:</td></tr><tr><td>• in girders, beams, slabs, and deck and kerb units</td><td>- 5 mm, + 10 mm</td></tr><tr><td>• in slabs, columns and walls</td><td>- 5 mm, + 10 mm</td></tr><tr><td>• in slabs-on-ground including footings of walls and culverts</td><td>- 10 mm, + 20 mm</td></tr><tr><td>• in footings cast in the ground where the depth of the footing is 500 mm or more</td><td>- 10 mm, + 40 mm</td></tr><tr><td colspan="2">b) For positions not controlled by cover:</td></tr><tr><td>• the location of steel reinforcement on a profile</td><td>$\pm$ 10 mm</td></tr><tr><td>• the position of the ends of steel reinforcement along the line of the bar</td><td>$\pm$ 50 mm</td></tr></table>		Tolerance on position of steel reinforcement		a) For positions controlled by cover:		• in girders, beams, slabs, and deck and kerb units	- 5 mm, + 10 mm	• in slabs, columns and walls	- 5 mm, + 10 mm	• in slabs-on-ground including footings of walls and culverts	- 10 mm, + 20 mm	• in footings cast in the ground where the depth of the footing is 500 mm or more	- 10 mm, + 40 mm	b) For positions not controlled by cover:		• the location of steel reinforcement on a profile	$\pm$ 10 mm	• the position of the ends of steel reinforcement along the line of the bar	$\pm$ 50 mm	Hold/Witness Requirements		Records or Checklist Reference	
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				SubCon		CBGU																					

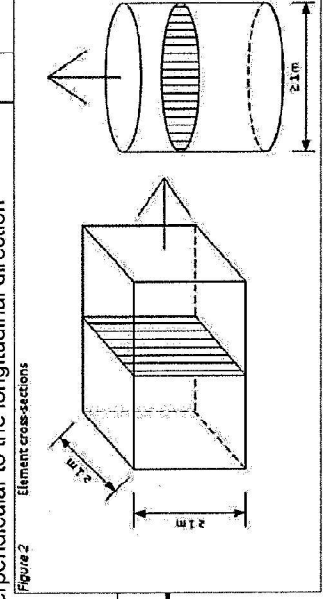
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Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference
							SubCon	CBGU	PIC
				- the spacing of bars in walls and slabs, and of fitments, the greater of: i. 10% of the specified spacing, and ii. 15 mm					
18.	Cast-in items	SE	IFC Drawings AS1379 Cl 2.7	All required service penetrations, conduit runs, cast-in ferrules or hold down bolts to be installed as per IFC drawings.	I	Each lot	V	V	Concrete Pre-pour Checklist
19.	Falsework	PE / FM	PSTS-404-200 Cl.15.3, 17.9 IFC Drawings Falsework Drawings	[HOLD POINT 2 & 10] - Falsework may be supported on completed sections of the Works provided that the construction loads imposed thereon do not result in over-stressing or instability and that due allowance is made for any deflection of the supporting sections. - The Contractor shall undertake structural strengthening or modification of such sections necessary for their use as support structures. Temporary works in accordance with CPB Safety Essentials. - Falsework/temporary works items have been constructed in accordance with the approved design drawings. Complete Permit to Load Temporary Works.	I	Each lot	HP N/A	HP N/A	Complete Permit to Load Temp. Works PIC In attendance ☐ Yes ☐ No
20.	Installation of Weep Holes	FM / SE	IFC Drawings MRTS03 Cl.6.1	Weepholes shall be provided at the locations specified within the Drawings.	I	Each lot	V	V	Concrete Pre-pour Checklist

0

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Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference	
21.	Pre-Pour Survey	SV / SE	IFC Drawings	Correct line and level of formwork achieved. Position of cast-ins verified.	S	Each lot	SubCon	CBGU	WP	Survey Report
22.	Concrete Temperature Monitoring	PE / SE	PSTS-404- 200 Cl.15.5	- Concrete shall be managed to ensure that at no stage does the concrete temperature exceed 80°C or the difference in temperature between two locations exceed 25°C. If these limits are exceeded, appropriate rectification or rejection of the element shall occur, and additional precautions enacted. - High cementitious contents: For elements manufactured with a concrete mix containing 520 kg/m³ of cementitious material or more, the following location shall be monitored for temperature: a) one at the geometric centre - For elements with concave sections, the geometric centre shall be determined as the point furthest from the formwork. - Large elements: For elements with a cross sectional area exceeding 1 m x 1 m square, or 1 m diameter, the following locations, at a minimum, shall be monitored for temperature: a) one at the geometric centre b) one at an upper corner c) two at centres of side faces - The maximum interval between readings shall be 15 minutes. - Surface temperatures (b and c above) shall be measured at the depth of reinforcement. For the purposes of this clause the cross section is defined as the plane perpendicular to the longitudinal direction (longest dimension).	T			WP		Temp. Data Log Tables (if required)

Figure 2
Element cross-sections



Contractor Name (if applicable):		Rocktown		ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast)	Lot No:		TSD-410-STR-ISRC-000027			
(if applicable):				ITP No: CRRTSD-CS-ITP-CBGU-000151						
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference	
							SubCon	CBGU	PIC	
23.	Evaporation Limits	SE / FM	PSTS-404- 200 CI 13.2	- When the predicted evaporation rate during the intended period of placement and finishing exceeds 0.75 kg/m²/h, measures shall be taken to reduce the predicted evaporation to below this value. - The forecast evaporation rate shall be estimated by the specified method on the proposed day of construction before work commences. - The use of a registered evaporation retarding compound shall be applied within 10 minutes of placement and initial screeding, and any subsequent screeding or finishing. - The evaporation rate shall be calculated using the following parameters: a) air temperature b) relative humidity c) concrete temperature, and d) wind velocity. Figure 1 (page 23.) is to be used for estimating the evaporation of surface moisture from the concrete for various weather conditions as represented by the above information.	R			V		
24.	Pre-Pour Inspection and Approval to place concrete	SE	PSTS-404- 200 CI. 15.6.1, 17.11.1 MRTS71 CI. 9,10	[HOLD POINT 5 & 12] No concrete shall be placed in the Works, until the pre-pour check is complete: - Falsework, formwork, reinforcement and stressing materials have been inspected. - All foreign material has been completely removed from the forms. - Cover requirements are achieved. - Box outs for services. - Cast-ins, weepholes, conduits, dowels, starter bars, expansion joints, hold-down bolts are in position. - Thermo couplers are installed (if required, in correct locations) If specified on construction drawings, conduct electrical conductivity by means of test results prior to placement of concrete.	I	Each lot	HP	HP	WP	Concrete Pre-pour Checklist PIC In attendance ☒ Yes ☐ No

QA Note: Ref to WP-1970

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Item No.	Inspection / Test Point	Responsibility	Specification Reference	ITP No: CRRTSD-CS-ITP-CBGU-000151	Method	Frequency	Hold/Witness Requirements	Records or Checklist Reference																													
25.	Acceptance and Rejection of Plastic Concrete	SE	PSTS-404-200 Cl. 11 AS1379, Table 5.1	Conformance Criteria summary - The consistency of concrete of each batch shall be checked by means of the slump or spread test. The plastic material properties shall lie within the range established using the approved nominated value and the tolerances specified in Table 22 and Table 23: Table 22 Tolerances for consistency test (slump) <table><thead><tr><th>NOMINATED SLUMP (MM)</th><th>TOLEANCE (MM)</th></tr></thead><tbody><tr><td>< 60</td><td>± 10</td></tr><tr><td>≥ 60, ≤ 80</td><td>± 15</td></tr><tr><td>> 80, ≤ 110</td><td>± 20</td></tr><tr><td>> 110, ≤ 150</td><td>± 30</td></tr><tr><td>> 150, ≤ 180</td><td>± 40</td></tr></tbody></table> Table 23 Tolerances for consistency test (spread) <table><thead><tr><th>NOMINATED SPREAD (MM)</th><th>TOLEANCE (MM)</th><th>VISUAL STABILITY INDEX</th><th>T500 (S)</th><th>TRIAL (S)</th></tr></thead><tbody><tr><td>550 – 650 (HWC)</td><td>± 80</td><td>0 or 1</td><td>–</td><td>4 – 11</td></tr><tr><td>650 – 700 (SWC)</td><td>± 50</td><td>0 or 1</td><td>≤ 5</td><td>–</td></tr></tbody></table> - Where the first test falls outside tolerance, an immediate single repeat test for slump or spread, as per AS 1379 Clause 5.2.4 shall be permitted with the results of both tests recorded and reported. - Before any concrete is placed in the Works it shall be visually checked and shall be rejected if it is defective in any of the following ways: - The slump is outside the limits specified in Table 22, noting Clauses 11.2 to 11.4, or	NOMINATED SLUMP (MM)	TOLEANCE (MM)	< 60	± 10	≥ 60, ≤ 80	± 15	> 80, ≤ 110	± 20	> 110, ≤ 150	± 30	> 150, ≤ 180	± 40	NOMINATED SPREAD (MM)	TOLEANCE (MM)	VISUAL STABILITY INDEX	T500 (S)	TRIAL (S)	550 – 650 (HWC)	± 80	0 or 1	–	4 – 11	650 – 700 (SWC)	± 50	0 or 1	≤ 5	–	T	Each lot	SubCon	CBGU	PLC	Concrete Pour Sheet
NOMINATED SLUMP (MM)	TOLEANCE (MM)																																				
< 60	± 10																																				
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550 – 650 (HWC)	± 80	0 or 1	–	4 – 11																																	
650 – 700 (SWC)	± 50	0 or 1	≤ 5	–																																	

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①

Contractor Name (if applicable):		Rocktown		ITP Title: ITP No:	Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) CRRTSD-CS-ITP-CBGU-000151		Lot No:	TSD-410-STR-ISRC-000027			
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary		Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference	
				b) The spread, VSI, T500 or T final is outside the limits specified in Table 23, noting Clauses 11.2 to 11.4, or c) The appearance, colour or cohesiveness of the batch is significantly different from other batches of the same mix, or d) The concrete contains significant lumps of unmixed material that are unresponsive to further mixing. • Samples for compression strength testing, shall be taken from separate batches of concrete during the placing operation. Two cylinders (minimum) shall be cast from each sample. The normal rate of sampling per lot is defined in Table 25.				SubCon	CBGU	PLC	
				Table 25 Sampling frequencies per lot for 28 day strength tests							
				TOTAL NUMBER OF BATCHES IN LOT (N)		NUMBER OF SAMPLES					
				1 – 3		Every Batch					
				4 – 10		4					
				11 – 23		5					
				> 23		n/4					
26.	Concrete Placement	SE	PSTS-404-200 Cl. 10.4 13.1 15.6.1 17.11.1 PSTR Ann – B Cl 5.2.3.1	[WITNESS POINT 2 & 8] • No concrete shall be placed in the Works if: a) the temperature of the concrete is less than 10 °C or exceeds 35 °C, or b) based on temperature recording at the Site for three days prior to the proposed pour and the forecast by the Bureau of Meteorology, the ambient air temperature is likely to be greater than 45 °C during placement or within two hours subsequent to placement; or c) the temperature of the formwork or reinforcement exceeds 55 °C		I	Each lot	V	WP	WP	Team-Binder Notification Concrete Pre-pour Checklist Concrete Delivery Dockets.
				QA Note: Ref to WP-1970							

Contractor Name (if applicable):		Rocktown		ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) ITP No: CRRTSD-CS-ITP-CBGU-000151		Lot No:	TSD-410-STR-ISFC-000027				
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements				
				- Special attention shall be paid to providing early curing for hot weather concreting operations. - Concrete shall be placed under dry conditions and in a continuous manner between construction joints as shown in the Drawings. - If an interruption to pouring greater than 60 minutes, or initial set has occurred, an approved construction joint shall be placed. - Concrete shall be poured at a height less than 2m. - Concrete shall not be placed in any other manner which results in segregation or loss of mortar or damage to formwork or reinforcement. - Pneumatic placers and concrete pumps may be used only when a concrete mix designed for such placing is approved for use by the Administrator. - Formwork shall not be disturbed or adjusted during the concreting operation and shall remain undisturbed up to the minimum removal time specified in Section 15.8. - Concrete shall be placed and compacted within the times in Table 21 from the discharging of the batch plant.			SubCon	CBGU	PIC	Records or Checklist Reference	
											PIC in attendance ☒ Yes ☐ No
27.	Compaction of Concrete		PSTS-404-200 Cl. 15.6.2 17.11.2	Concrete shall be deposited in horizontal layers not more than 400mm thick, Compaction of concrete shall commence immediately after deposition.		Each Pour	V	WP			

Table 21 Placement and Transport Time Limits

TEMPERATURE OF CONCRETE		TIME LIMIT
< 32 °C 32 – 35 °C > 35 °C		*50 minutes
		60 minutes
		Reject load

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Item No.	Inspection / Test Point	Responsibility		Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference
								SubCon	CBGU	
31.	Surface Dressing of Concrete	FM / SE	PSTS-404- 200 Cl. 15.12.1 IFC Drawings	- For soffits, until minimum strength of 28MPa or 70% of 28 day strength (f_c), whichever is higher, is achieved - For side forms, until minimum of 12MPa is achieved - Unless specified in the design drawings, temporary works drawings or approved by the Administrator, concrete shall not be loaded until a minimum strength of 70% of 28 day compressive strength has been achieved, including foundations. - Concrete surfaces shall be free of honeycombing and pockets and free of voids larger than 20 mm in lateral - Following the removal of formwork the following operations shall be carried out to the standard approved by the Administrator: a) all fins and other unwanted projections shall be ground off to provide a smooth surface, b) where specified in the Drawings that surfaces shall achieve a Class 1 or 2 surface finish, the surface shall finish to AS 3610 (Figure B1 or B2) or be bagged as set out below within four hours of removal of formwork from each section of the concrete. Curing as specified in Clause 15.11 shall commence on completion of stripping or bagging as appropriate, c) where surface finish is not specified in the Drawings, a Class 3 surface finish to AS 3610 is required. Where surfaces of concrete do not achieve a Class 3 surface finish, the surface shall be bagged as set out below. Bagging to achieve this class of finish may be done immediately, prior to curing, or on completion of curing. - Bagging shall be carried out by the following procedure: a) Produce a plastic grout mix consisting of equal parts of cement and fine sand passing a 0.600 mm test sieve, mixed with a suitable bonding additive and water.	I	Each lot	V 	WP 		Team-Binder
32.	Bagging to achieve required finish	SE / PE	PSTS-404- 200 Cl. 15.12.1	- Bagging shall be carried out by the following procedure: a) Produce a plastic grout mix consisting of equal parts of cement and fine sand passing a 0.600 mm test sieve, mixed with a suitable bonding additive and water.	I	Each lot	V 	WP 		Team-Binder

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Contractor Name (if applicable):		Rocktown		ITP Title: ITP No:		Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) CRRTSD-CS-ITP-CBGU-000151		Lot No:		TSD-410-STR-ISRC-000027	
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements	SubCon	CBGU	PLC	Records or Checklist Reference
			Concrete Repair Procedure	b) An equivalent proprietary product (for example a fairing coat mortar) is a suitable alternative. c) Apply uniformly to the surface in a suitable manner using a pad of hessian or similar material to fill all air holes and other minor surface blemishes. d) Keep surface damp while this work is carried out. e) Remove surplus material while the initial application is still plastic.							
Completion Inspections and Tests											
33.	Acceptance and Rejection of Hardened Concrete		PSTS-404- 200 Cl.12.5	- Concrete shall be accepted or rejected on a statistical basis using the results of 28 day tests as set out below. Concrete in a lot shall be deemed rejected if any of the following apply: a) Any sample strength is less than 0.9 times the specified characteristic strength, f_c. b) The average strength of three consecutive samples is less than the specified characteristic strength. c) Unless indicated on drawings, the average 28 day strength of three consecutive samples from the lot is greater than 1.8 times f_c, without prior Administrator and Designer approval.	T	Each Lot	V				Test Report
34.	Dimensional Tolerances	SE	PSTS-404- 200 Cl.15.7, 17.12 IFC Drawings	- Dimensions and levels shall be verified for all positions shown in the Drawings. - The tolerances given in Table 26 are to ensure strength, durability and fit of cast-insitu elements.	S	Each lot	V				Survey Report

Contractor Name (if applicable):		Rocktown		ITP Title: ITP No:		Insitu Concrete - PSTS-404-200 (excluding cast-in-place piles & precast) CRTSD-CS-ITP-CBGU-000151		Lot No:		TSD-410-STR-ISRC-000027						
Item No.	Inspection / Test Point	Responsibility	Specification Reference	Conformance Criteria summary	Method	Frequency	Hold/Witness Requirements		Records or Checklist Reference							
				that line or surface. Departure may be sudden (e.g. misfit at joint in formwork) or gradual (e.g. a wobble in the surface). Tolerance on gradual departure is the value calculated by multiplying the overall length of the line or surface under consideration by the factor given in Table 28. Table 28 Relative tolerances <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; font-size: x-small;">DESCRIPTION</th> <th style="text-align: center; font-size: x-small;">TOLERANCE 100 YEARS DESIGN LIFE (AS 5100)</th> <th style="text-align: center; font-size: x-small;">TOLERANCE 50 YEARS DESIGN LIFE (AS 3600)</th> </tr> <tr> <td style="text-align: left; font-size: x-small;">Exposed surface</td> <td style="text-align: center; font-size: x-small;">0.004</td> <td style="text-align: center; font-size: x-small;">0.004</td> </tr> </table> Note: A positive value indicates the amount of the cover that may increase, and a negative value indicates the amount the cover that may decrease.	DESCRIPTION	TOLERANCE 100 YEARS DESIGN LIFE (AS 5100)	TOLERANCE 50 YEARS DESIGN LIFE (AS 3600)	Exposed surface	0.004	0.004						
DESCRIPTION	TOLERANCE 100 YEARS DESIGN LIFE (AS 5100)	TOLERANCE 50 YEARS DESIGN LIFE (AS 3600)														
Exposed surface	0.004	0.004														
35.	Final Inspection of Site Work	PE	IFC Drawings	- All works completed in accordance with IFC drawings and specifications - All NCRs are closed out Redline Mark-up Drawings where applicable	R	Each lot	SubCon	CBGU	PIC	Redline Mark-up Drawings (If required)						

Responsibility Legend			Method Legend		Verification Requirement Legend		
FM	Foreman	QM	Quality Manager	I	Inspection	HP	Hold Point
SE	Site Engineer	QR	Quality Representative	R	Review	WP	Witness Point
PE	Project Engineer	PIC	Project Independent Certifier	S	Survey	M	Milestone
SPE	Senior Project Engineer			T	Test	V	Verification
SV	Surveyor						
EM	Environmental Manager						

Quality Control Checklist

PART 2 OF INSPECTION & TEST PLAN

RESPONSIBLE ENGINEER: Annabelle K. Sissane
 RESPONSIBLE FOREMAN: Jam esM. alher
 LOT NUMBER: TSD-410-STR-ISRC-000027
 DATE WORK COMMENCE: 23. / 11. / 2020
 LOT DESCRIPTION: SV 3 external wall FRP
 DATE WORK COMPLETE: 13. / 12. / 2020

Concrete Pre-Pour Inspection Checklist

Activity	Description	Initial	Date	Notes
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Site Preparation				
Survey set out report	• Gridlines and other reference points have been established • Surveyor has provided report	XK	10/12	Surveyor
Subgrade	• Site has been excavated to the correct level • and subgrade is acceptable. • If required - tested and capacity / compaction results have been received	N/A	N/A	
Services	• All in and below slab embedment's have been installed correctly • Services checklist has been completed and signed off	N/A	N/A	
Blinding	• Blinding has been placed to the correct level • Surveyor has produced survey grid	XK	10/12	Slab height in tolerance

Reinforcement				
Condition of material	• Reinforcement is in good condition, free from any contaminants • Material is of the correct grade	XK	10/12	
Placement	• Reinforcement is tied correctly and placed as per IFC drawings • Splicing is of the correct length and are as indicated in the IFC drawings • Dowel bars are installed where required and are de-bonded	XK	10/12	
Electrical	• If specified on construction drawings, conduct electrical conductivity by means of test results prior to placement of concrete.	XK	10/12	
Cover + Spacing	• Minimum concrete cover is maintained • Space between bars is sufficient to allow for concrete movement	XK	10/12	

Formwork + Joints				
Installation	• Formwork has been set out as per original survey marks. • Concrete levels have been marked. • Forms are clean and mortar tight. • Have had debonding agent applied and will strip from concrete cleanly	XK	10/12	
Strength	• Forms are strong with no evidence of damage and have adequate propping. • Will not warp/twist/bend or break under the concrete weight • Sufficient tie rods, bracings installed	XK	10/12	
Joints	• Allowances have been made for Expansion/contraction/Construction joints • Joint materials (if any) & stop ends have been installed • Joints do not interrupt reinforcement shown as continuous on the IFC drawings	XK	10/12	

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Striping	Exposure Classification:		A - B1, B2 - C1, C2 - Soffits – Until 7 days	48 Hrs. (Min) - 72 Hrs. (Min) - 120 Hrs. (Min)	Xk	15/12	
	(04) • If required, repair concrete surface as per approved repair procedure (Refer ITP item No.						
Post-Pour							
Joints	•	Constructors Joints are scabbled or green cut as per IFC Drawings	Xk	14/12			
Curing	•	If using a curing compound, manufacturer's instructions are to be followed/as per approved curing procedure (Refer ITP item No. 04)	Xk	12/12			
Surface finish	•	Correct finish is applied e.g. Wood float, Steel trowel, Panned, Burnished, Broomed etc.	Xk	12/12			
	•	Surface finish is to good standard					
Toppings	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Spread evenly and worked into surface					
Concrete	•	Toppings applied as per manufacturers specifications	Xk	11/12			
	•	bars and below pedestals					
Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
	•	blended into preceding layers					
Approval to pour	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
	•	Concrete is placed at heights less than 2m					
Surface conditions	•	Pump inspection checklist has been completed	Xk	11/12			
	•	Final approval to pour					
Testing	•	Blinding has been moistened immediately prior to pour	Xk	11/12			
	•	excess water					
Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
+ Block-outs	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Surveyor	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Pre-Pour	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Inspection	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
signoff	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Weather	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
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Toppings	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
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Concrete	•	Toppings applied as per manufacturers specifications	Xk	11/12			
	•	Spread evenly and worked into surface					
Surface finish	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Surface finish is to good standard					
Curing	•	Correct finish is applied e.g. Wood float, Steel trowel, Panned, Burnished, Broomed etc.	Xk	12/12			
	•	Surface finish is to good standard					
Joints	•	Constructors Joints are scabbled or green cut as per IFC Drawings	Xk	14/12			
	•	Surface finish is to good standard					
Striping	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Spread evenly and worked into surface					
Toppings	•	Toppings applied as per manufacturers specifications	Xk	11/12			
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Surface conditions	•	Pump inspection checklist has been completed	Xk	11/12			
	•	Final approval to pour					
Testing	•	Blinding has been moistened immediately prior to pour	Xk	11/12			
	•	excess water					
Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Pre-Pour	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
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Testing	•	Blinding has been moistened immediately prior to pour	Xk	11/12			
	•	excess water					
Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Pre-Pour	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
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Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
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Curing	•	Correct finish is applied e.g. Wood float, Steel trowel, Panned, Burnished, Broomed etc.	Xk	12/12			
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Joints	•	Constructors Joints are scabbled or green cut as per IFC Drawings	Xk	14/12			
	•	Surface finish is to good standard					
Striping	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Spread evenly and worked into surface					
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Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Pre-Pour	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
signoff	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
	•	blended into preceding layers					
Toppings	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
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Concrete	•	Toppings applied as per manufacturers specifications	Xk	11/12			
	•	Spread evenly and worked into surface					
Surface finish	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Surface finish is to good standard					
Curing	•	Correct finish is applied e.g. Wood float, Steel trowel, Panned, Burnished, Broomed etc.	Xk	12/12			
	•	Surface finish is to good standard					
Joints	•	Constructors Joints are scabbled or green cut as per IFC Drawings	Xk	14/12			
	•	Surface finish is to good standard					
Striping	•	Continually worked until the required finish is achieved.	Xk	11/12			
	•	Spread evenly and worked into surface					
Toppings	•	Toppings applied as per manufacturers specifications	Xk	11/12			
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Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
	•	blended into preceding layers					
Approval to pour	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
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Surface conditions	•	Pump inspection checklist has been completed	Xk	11/12			
	•	Final approval to pour					
Testing	•	Blinding has been moistened immediately prior to pour	Xk	11/12			
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Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Pre-Pour	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
signoff	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
	•	blended into preceding layers					
Toppings	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
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Concrete	•	Toppings applied as per manufacturers specifications	Xk	11/12			
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Surface finish	•	Continually worked until the required finish is achieved.	Xk	11/12			
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Surface conditions	•	Pump inspection checklist has been completed	Xk	11/12			
	•	Final approval to pour					
Testing	•	Blinding has been moistened immediately prior to pour	Xk	11/12			
	•	excess water					
Weather	•	All surfaces are clean, free from rubbish and	Xk	11/12			
	•	place					
signoff	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
Embedment's + Block-outs	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Pre-Pour	•	Concrete volume has been calculated and order has been placed	Xk	11/12			
	•	Pump has been booked					
Inspection	•	Testing has been booked and will have the right equipment	Xk	11/12			
	•	Reserve equipment and backup plans are in place					
signoff	•	Weather reports indicate suitable conditions	Xk	11/12			
	•	Refer to Appendix-A for the estimation of water evaporation of surface moisture.					
Placement	•	Concrete is vibrated into all gaps/between	Xk	11/12			
	•	blended into preceding layers					
Toppings	•	Placed in layers not exceeding 400mm, directly into position (not vibrated)	Xk	11/12			
	•	Concrete is placed at heights less than 2m					
Concrete	•	Toppings applied as per manufacturers specifications					

Activity	Inspection	Requirements	Tests	Initial
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ECR Test Components (CRRTS-800-0687-DAN-SAFC-1720-000006)

Design Package Number: CRRTS-410-0450-DRG-RBGT-1470				
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External Connection - Galvanised Tags (Concrete)	Locations and number of drawings.	Components installed as per the embedded earthing drawings.	As per drawing	N/A
	Tag	Tag is manufactured correctly and is as per specification.	As per drawing	N/A
	Orientation	Component protrudes through correct concrete surface as well as the correct orientation (inside, outside, up or down).	As per drawing	N/A
	Tag length	Tag protrudes correct length from concrete surface to facilitate external connections as required.	As per drawing	N/A
	Relative level	Tag protrudes through concrete at correct RL.	As per drawing	N/A
	Galvanising (where applicable)	All surfaces of tag adequately coated including ends.	Visual	N/A
	Mechanical Protection	Adequate temporary mechanical protection is provided to prevent damage during the remainder of construction.	Visual	N/A
	Weld quality	Minimum weld length and cross-sectional area achieved.	As per specification	N/A
	Tag Weld	Continuity measured from external tag to embedded conductor (across weld). Testing to be undertaken using the four-wire resistance measurement method.	Less than 10 mΩ	N/A
	Water Proofing	Adequate water proofing has been installed around the edge of the tag to prevent moisture ingress.	Visual	N/A
	Locations and number of drawings.	Components installed as per the embedded earthing drawings.	As per drawing	N/A
	Boss	Boss is as per specification	As per drawing	N/A
	Orientation	Component positioned on correct concrete surface as well as the correct orientation (inside, outside, up or down).	As per drawing	N/A
	Boss position	Boss is correct correctly secured to form work surface to provide flush finish and to prevent concrete ingress to facilitate external connections later, as required.	As per drawing	N/A
	Relative level	Boss installed at correct RL.	As per drawing	N/A
External Connection - Flush Mounted Boss (Concrete)	Mechanical Protection	Adequate temporary mechanical protection is provided to prevent damage during the remainder of construction.	Visual	N/A
	Weld quality (where relevant)	Minimum weld length and cross-sectional area achieved. Adequate weld strength (test 25% sample)	As per specification	N/A
	Crimp connection	Crimp connection correctly made with calibrated crimping equipment.	As per specification.	N/A
	Boss connection	Continuity measured from external connection to embedded conductor (across weld). Testing to be undertaken using the four-wire resistance measurement method.	Less than 10 mΩ	N/A
	Locations	Components installed as per the embedded earthing drawings.	As per drawing	N/A
	Size and number of bars	Selected rebar has correct minimum cross-sectional area and correct number of parallel bars selected.	As per drawing	N/A
	Weld quality	Minimum weld length and cross-sectional area achieved.	As per specification	N/A
Embedded Earthing Conductors	Locations and number of bars	Selected rebar has correct minimum cross-sectional area and correct number of parallel bars selected.	As per drawing	N/A
	Size and number of bars	Selected rebar has correct minimum cross-sectional area and correct number of parallel bars selected.	As per drawing	N/A
	Locations	Components installed as per the embedded earthing drawings.	As per drawing	N/A
	Size and number of bars	Selected rebar has correct minimum cross-sectional area and correct number of parallel bars selected.	As per drawing	N/A
	Weld quality	Minimum weld length and cross-sectional area achieved.	As per specification	N/A
	Locations and number of drawings.	Components installed as per the embedded earthing drawings.	As per drawing	N/A
	Tag	Tag is manufactured correctly and is as per specification.	As per drawing	N/A
	Orientation	Component protrudes through correct concrete surface as well as the correct orientation (inside, outside, up or down).	As per drawing	N/A
	Tag length	Tag protrudes correct length from concrete surface to facilitate external connections as required.	As per drawing	N/A
	Relative level	Tag protrudes through concrete at correct RL.	As per drawing	N/A
	Galvanising (where applicable)	All surfaces of tag adequately coated including ends.	Visual	N/A
	Mechanical Protection	Adequate temporary mechanical protection is provided to prevent damage during the remainder of construction.	Visual	N/A
	Weld quality	Minimum weld length and cross-sectional area achieved.	As per specification	N/A
	Tag Weld	Continuity measured from external tag to embedded conductor (across weld). Testing to be undertaken using the four-wire resistance measurement method.	Less than 10 mΩ	N/A
	Water Proofing	Adequate water proofing has been installed around the edge of the tag to prevent moisture ingress.	Visual	N/A
	Locations and number of drawings.	Components installed as per the embedded earthing drawings.	As per drawing	N/A

Activity	Inspection	Requirements	Tests	Initial
	Orientation and geometry	Rebar extended in correct directions to paths and connects to required components, including across the slab and between levels.	As per drawing	
	Starter Bars to next slab (where relevant)	Starter bars into next slab correctly nominated and identified and at correct RL.	As per drawing	
	Connections between levels (where relevant)	Starter bars into walls, columns and piles correctly nominated, welded and identified and at correct RL.	As per drawing	
	Mechanical Protection	Adequate temporary mechanical protection is provided to prevent damage during the remainder of construction.	Visual	
	Conductor Continuity	Note: If there is only one connection point associated with the slab then continuity is to be measured from the connection point to the remote end of the embedded conductors (rebar). Continuity measured between adjacent slabs i.e. From a connection point in a previously poured slab to the remote end of the embedded conductors or external connection points of the slab to be poured. Testing to be undertaken using the four-wire resistance measurement method.	Less than 20mΩ Continuity measured between all external connection point associated with the slab under construction, ie from one external point to all other external connection points. Less than 20mΩ per 50m between measurement points.	



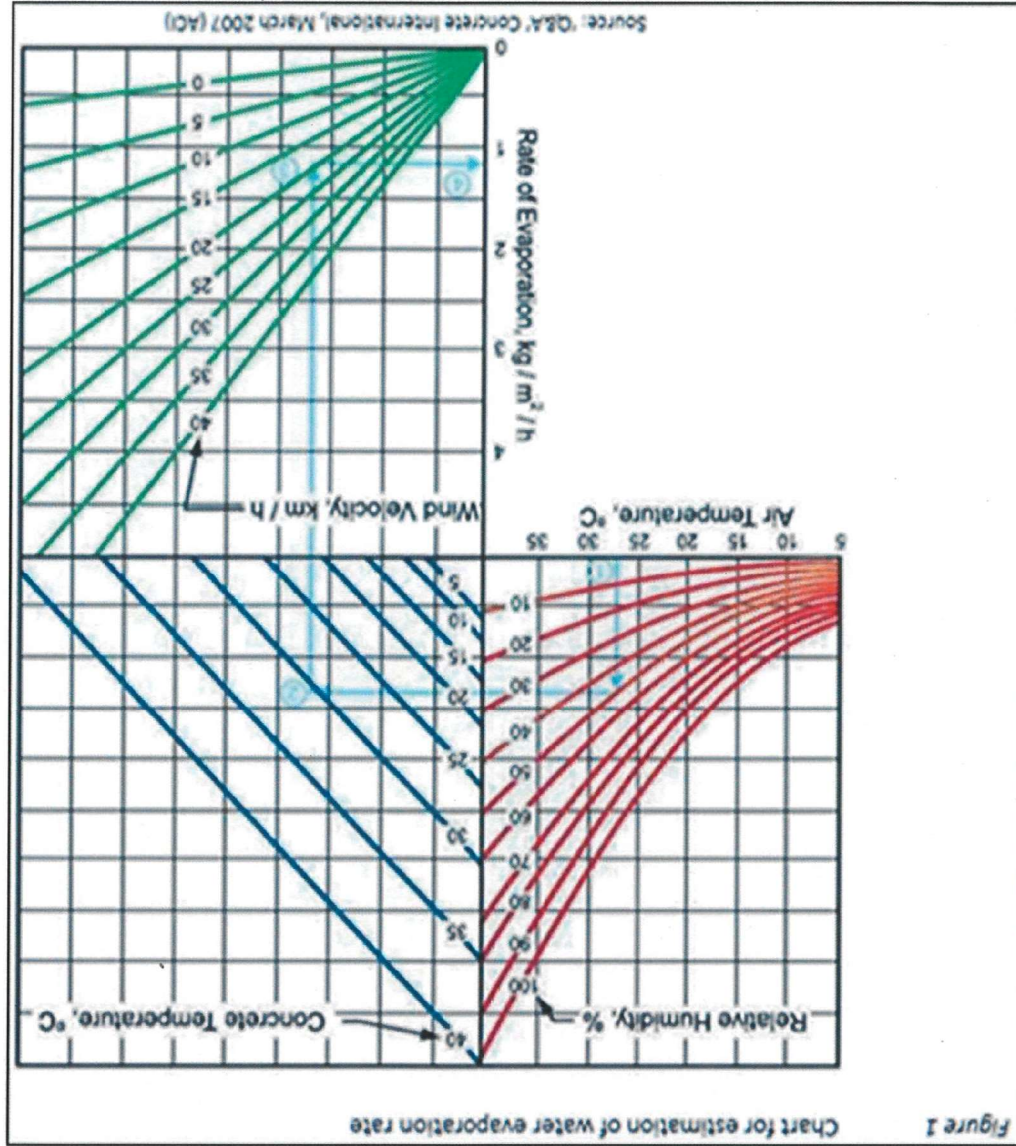


Figure 1. is to be used for estimating the evaporation of surface moisture from the concrete for various weather conditions as represented by the above information

Sub-Contractor Representative Name: <u>Danny McGrath</u> Position: <u>Supervisor</u> Signature: <u>D.McGrath</u> Date: <u>15/12/2020</u>	CBGUVJ. Name: <u>Annabelle Kissane</u> Position: <u>Site Engineer</u> Signature: <u>A.Kissane</u> Date: <u>15/12/2020</u>
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Lot Verification Checklist

PART 3 OF INSPECTION & TEST PLAN

ITP Title: Insitu Concrete - PSTS-404-200 (excluding cast-in-place Lot No. TSD-410-STR-ISRC-000027 piles & precast)

ITP No. CRTSD-CS-ITP-CBGU-000151

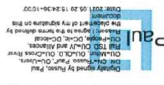
Date opened: 23/11/2020

Lot Type Element

No.	Item	Number of Records Required	Remarks (initial / date)
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Quality Control Checklists			
1	Lot Map	1	A.K 18/01/2021
Contractor Quality Checklists			
2	Pre-pour checklist	1	A.K 18/01/2021
3	Concrete Pour Sheet	1	A.K 18/01/2021
Survey Results			
4	Survey Report	1	A.K 18/01/2021
Test Results			
6	Temp. Data Log Tables (if required)	1	A.K 18/01/2021
7	Concrete Test Report	1	A.K 18/01/2021

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 dispositioned in accordance with the contract requirements.

Closed by:		Quality Management Representative	Date:
Senior Project Engineer (or delegate):	P. Russo	 Russo, Paul	20/5/21
Quality Management Representative	P. Pettet		20/04/2021
PIC Review (if required) by:			

Title: Inspection and Test Plan Template

ID: MSID-753926686-1160 Version: 6.0 Date Published: 17/02/2020

Cross River Rail – TSD Project / CRTSD - Uncontrolled Document when Printed

Project Specific Document

3

4

Russo, Paul

From: Russo, Paul
Sent: Wednesday, 7 July 2021 3:19 PM
To: Church, Rory; Clarke, Sophie; Walker, Ben; Rykiert, Patrick; Eustace, David
Cc: Pettet, Phillip; Purcell, Joel; Tresider, Warren; Wiese, Mark; Ivory, Aaron; Hollett, David; Jones, Shannon
Subject: Concrete Pour Record Procedure

Hi All,

Below is our concrete pour procedure going forward which is being implemented to manage our workloads more effectively.

- Concrete order is raised from relevant lot
 - **Responsibility:** Engineer in charge of the work lot
- Concrete order is confirmed via phone with Hanson (at the very latest, afternoon prior to pour). It is at this point that all of the required additional testing is to be confirmed with Hanson. If time permits, updated TB order
 - **Responsibility:** Engineer/supervisor in charge of the works
- Concrete pour plan to be completed for each pour incl. early age cylinders, etc
 - **Responsibility:** Engineer in charge of works
- Concrete pour record is completed **using plangrid** on the IPADs
 - **Responsibility:** Patrick Rykiert in the first instance. David Eustace to fill in where required, particularly on jump form pour where we have two points of discharge. Engineers to swap out as required for breaks etc during longer pours. Responsible engineer for worklot to advise pour record take of any additional testing, etc.
 - **Concrete pour record to be 100% completed and assigned to responsible engineer in charge of works after pour**
- Concrete dockets to be scanned in after the pour and handed to East Coast/Heinrich
 - **Responsibility:** Concrete record taker

Also, please note we have two weather meters that can be bluetoothed to your phone and records environmental temperature data (ambient temp, humidity, wind speed etc) which in turn calculates a evaporation rate.

Download the Kestrel Link app from Google Play Store for Android or Apple iOS App store . Looks like this below.



Kestrel LiNK

Nielsen-Kellerman Weather

E Everyone

 This app is available for all of your devices

Connect the weather meter to your phone after opening App and record whatever you need.

Happy to hear if there are any recommendations to refine the above.

Regards

Paul Russo
Project Engineer



91 Leopard Street, Woolloongabba, QLD 4102, Australia
T +0417 247 069 M 0417 247 069
E Paul.Russo@cbgujv.com.au

Non Conformance Report

NCR Reference No: TSD-NCR-CBGU-000275

Status: CLOSED-OUT

For Action:

Choon (William) Tan, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Chris Power, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Frank Catrastellero, WW Surveys Pty Ltd [Role: Gabba Stn CT Review NCR/RFI]
 Leover Polestico, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Moiz Arbaz, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Nick Brockhurst, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Paul Russo, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Peter Liebrich, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Phillip Pettet, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Rory Church, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Shannon Jones, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Wade McHarg, CBGU Joint Venture [Role: Gabba Stn CT Review NCR/RFI]
 Andrew Richmond, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Cansu Esmer, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Daniel Barlow, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Dominique Marchand, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Lucas Surka, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Tom Butterworth, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Yann Martin, CBGU Joint Venture [Role: Stn CPS Review NCR/RFI]
 Andrea Lawton, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Andrew Gardner, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Anko Griffioen, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Ben Ringrose, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Lauren Best, CBGU Joint Venture [Role: RBGT Design Review RFI/NCR]
 Michael Barker, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Michael Di Sipio, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Patrick Lancaster, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Richard Valenti, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Scott Williams, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Willy Huang, Robert Bird Group [Role: RBGT Design Review RFI/NCR]
 Chris Joyce, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Duminda Ranaweera, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Ivy Teh, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Kelly Pearson, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Mark Drobitko, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Matt Barr, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Tayfe Hamwi, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Tracie Fong, Cross River Rail Delivery Authority [Role: DA Review NCR]
 Andrew Bertelsen, Arcadis / APP [Role: PIC Review NCR & RFI]
 Claudio Valenca, Arcadis / APP [Role: PIC Review NCR & RFI]
 Daphne Becquet Gonzales, Arcadis / APP [Role: PIC Review NCR & RFI]
 Forrester Ross, CBGU Joint Venture [Role: PIC Review NCR & RFI]
 Jai Lebby, Arcadis / APP [Role: PIC Review NCR & RFI]
 James Austin, Arcadis / APP [Role: PIC Review NCR & RFI]
 Leo Lee, Arcadis / APP [Role: PIC Review NCR & RFI]
 Philip Low, Arcadis / APP [Role: PIC Review NCR & RFI]
 Sean Jordan, Arcadis / APP [Role: PIC Review NCR & RFI]
 Steve Farrance, CBGU Joint Venture [Role: PIC Review NCR & RFI]

For Info:

Danielle Merrick, Arcadis / APP
 Document Control, Cross River Rail Delivery Authority
 Greg Cameron, Pulse - Project Co
 Neil Robinson, RGB Assurance - ISA

Project: Cross River Rail - Tunnels & Stations Development - Delivery Project

Subject: Wolloongabba Station - Level B8 Suspended Slab

Reinforcement bars have not been installed as per CRRTSD-410-0450-DRG-RBGT-1470-136025. Refer to attached mark up for the area in question.

Attachments: NCR - AS Bars B8.pdf

Specification Requirements:

CRRTSD-000-0404-SPE-CBGU-1470-000200

Proposed Corrective Actions:

Leave as is. CBGU have been advised by RBG that these bars are not required in this area.

Zone: 410 - Wolloongabba Station

Design Package: 410-0450 - Underground Primary Structure,

Construction Team: CT-150 - Gabba - Stations

Engineering Team: ET-130 - Stations

Design Team: DT-100 - Robert Bird

Origin of NCR: 010 - Internal

NCR Owner /

Responsible Person: Paul Russo, CBGU Joint Venture

NCR by: Paul Russo, CBGU Joint Venture

On: 23 January 2021

Created By: Paul Russo, CBGU Joint Venture

On: 23 January 2021, 08:04:58 AM
+11:00

Last Edited By:

On:

01 - Lot Information

Lot No	Title	Process	Sub Process	From Chainage	To Chainage
TSD-410-STR-ISRC-000029	Woolloongabba Station - B8 Suspended Slab Stage 1, SW10, SW17	STR	STR-ISRC	0.000	0.000

02 - Investigation

Reinforcement bars have not been installed as per CRRTSD-410-0450-DRG-RBGT-1470-136025. Refer to attached mark up for the area in question.

The bars were installed on the decline side of the construction joint without couplers to enable splicing of these bars on layer 4 into the adjacent pour (on the suspended slab side of the construction joint). As such, the AS bars will not extend through to the suspended slab.

Time Line of Events:

Detailed Root Cause Description:

The couplers were delivered separately and were not screwed onto the bars prior to installation. The omission of the couplers was not identified in the pre-pour inspection for the first B8 slab pour. At the time of the pre-pour inspection, substantial attention was focussed on the congestion of reinforcement within this area which has inadvertently resulted in the coupler omission being overlooked.

Remedial Action:

Leave as is. On site discussions with RBG have confirmed that the AS bars in layer 4 are not required to extend through to the suspended slab. They are only required to extend a lap length from the decline. The bars on the design drawing should only have been shown to this extent.

Root Cause Category:

DS - Design

Sub Root Cause Category:

DS01 - Design Error

NCR Range:010 - \$0 - \$10K | 0 Days Critical
Path Delay | 0 - 5 Non Critical
Activity**Impact Classification:**

C3 - Class 3

Proposed**Disposition/Action:** 010 - Accept As Is**Preventive Action:**

This has been unintentionally missed during the pre-pour inspection. This shall be tabled at the Gabba's weekly engineering meeting as an item that needs to be considered.

Proposed Date for Action Completion:

Investigation by: Paul Russo, CBGU Joint Venture

On: 23 January 2021

Created By: Paul Russo, CBGU Joint Venture

On: 23 January 2021, 08:07:13 AM
+11:00

Last Edited By: Paul Russo, CBGU Joint Venture

On: 29 March 2021, 11:53:52 AM +11:00

03 - Construction Review

Construction Review by: Paul Russo, CBGU Joint Venture

On: 23 January 2021

Created By: Paul Russo, CBGU Joint Venture

On: 23 January 2021, 08:07:13 AM
+11:00

Last Edited By: Paul Russo, CBGU Joint Venture

On: 23 January 2021, 08:07:13 AM
+11:00**04 - Internal Review****Consultant Review Required?:** Yes

Internal Review by: Cansu Esmer, CBGU Joint Venture

On: 08 February 2021

Created By: Cansu Esmer, CBGU Joint Venture

On: 25 January 2021, 10:03:53 AM
+11:00

Last Edited By: Cansu Esmer, CBGU Joint Venture

On: 08 February 2021, 01:13:17 PM
+11:00**05 - Consultant Review**

Hi Cansu,

RBG accepts the reinforcement as is on the basis that the bottom layer does have couplers installed and will continue effectively as intended.

We confirm that this single layer of N36-150 exceeds what is required for this portion of slab, as it is more than what we had in our original design prior to the PE review (previously we have 1 layer of AGs - N28-150).

In the PE review, AS bars were added, however they were only required to continue a lap length (1700mm) into the B8 SOG. As RBG had then added them for the entire span conservatively, their omission in this portion does not affect the design.

The designer accepts the disposition in accordance with PSTR Ann D Cl 2.4.1 (i)(v), subject to any actions identified in the designer's response, with no lessening of the PSTR requirements required.

Regards Anko Griffioen 13581,

The works referenced in the NCR still meets the design intent including the required durability performance & design life requirements, based on the proposed disposition or/and any required rectification works required as detailed in the design response.

Engineering Review

Certification:

Yes

If No, then the following details are to be provided in the Engineering Requirements Below,

- **Details on reduction of performance requirements**
- **Any additional maintenance requirements or restrictions to be agreed and captured in the O&M.**

Engineering Requirement

Details:

Consultant Review

Response?:

ACCCOM - Accepted Subject to Comments

Design Change Request Required?: No **Design Change Request Number?:**

Consultant Review by:	Anko Griffioen, Robert Bird Group	On: 24 February 2021
Created By:	Cansu Esmer, CBGU Joint Venture	On: 08 February 2021, 01:13:31 PM +11:00
Last Edited By:	Anko Griffioen, Robert Bird Group	On: 24 February 2021, 04:26:01 PM +11:00

06 - PIC Review

The PIC has reviewed the NCR and has no objection to the proposed disposition to use as is based on the Design advice that the AS bars were only required to continue a lap length (1700mm) into the B8 SOG and their certification that the works referenced in the NCR still meets the design intent including the required durability performance & design life requirements.

Client Review Required?:

Yes

PIC Review by:	James Austin, Arcadis / APP	On: 03 March 2021
Created By:	James Austin, Arcadis / APP	On: 03 March 2021, 08:34:38 AM +11:00
Last Edited By:	James Austin, Arcadis / APP	On: 03 March 2021, 08:34:38 AM +11:00

07 - Client Review

Please see State response.

Attachments: CRRDA NCR Response_TSD-NCR-CBGU-000275_Wolloongabba Station - Level B8 Suspended Slab.pdf

Client Review Response?:

Client Review by:		On: 05 March 2021
Created By:	Matt Barr, Cross River Rail Delivery Authority	On: 05 March 2021, 01:37:37 PM +11:00

Last Edited By: Matt Barr, Cross River Rail Delivery Authority On: 05 March 2021, 01:37:37 PM +11:00

08 - Remedial Cost Estimate

Remedial Action Cost Estimate (\$):

Remedial Action Recoverable Cost Estimate (\$):

Remedial Cost Estimate by:	Paul Russo, CBGU Joint Venture	On: 23 January 2021
Created By:	Paul Russo, CBGU Joint Venture	On: 23 January 2021, 08:07:13 AM +11:00
Last Edited By:	Paul Russo, CBGU Joint Venture	On: 23 January 2021, 08:07:13 AM +11:00

09 - Remedial Action Completion

No rectification required.

Date Completed:	29 March 2021	Cost Code:	Q80379.22140 - Concrete - Supply
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NOTE: For the Minimum amount Refer to CMS Knowledge: "NCR Impact and Cause Table" - NCR Impact Classification Table

Total Cost to CPB + Total Cost to Others

Final Total Cost (minus) Recoverable Cost

Final Cost (\$): 500.00

Recoverable Cost - Actual (\$): 500.00

NOTE: Attach Verification Evidence of Close Out (i.e. Photo, Checksheet, etc)

Remedial Action Completion by:	Paul Russo, CBGU Joint Venture	On: 23 January 2021
Created By:	Paul Russo, CBGU Joint Venture	On: 23 January 2021, 08:07:13 AM +11:00
Last Edited By:	Michael Bertelsen, CBGU Joint Venture	On: 23 April 2021, 03:05:13 PM +10:00

10 - NCR Close out (by Quality Representative)

Preventative Action in Section 1 filled out as per DA request.

NCR Close out (by Quality Representative) by:	Michael Bertelsen, CBGU Joint Venture	On: 12 March 2021
Created By:	Michael Bertelsen, CBGU Joint Venture	On: 12 March 2021, 09:14:52 AM +11:00
Last Edited By:	Michael Bertelsen, CBGU Joint Venture	On: 29 March 2021, 01:00:44 PM +11:00