**Inspection and test plan – Combi Slabs**

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| **Project no.** | | CC0394 | **Project name** | Rangebank BESS | | | | **Date** | | 22/08/2023 | | **Approved by** |  |
| **ITP no.** | 010 | | **Revision no.** |  | **Revision date** |  | **Plant and equipment used** | | | | 15T Exc, Roller, DPU, Grader, Watercart | | |
| **Lot no.** |  | | **Location (chainages, detailed description or marked up plan)** | | | | | |  | | | | |

Attach Dockets, Certificates and QA Documents to ITP

|  | |  |  |  |  | **Verification or test by** | | | | | **Remarks / record (eg. test frequency, reports, certificates, checklist etc)** | |
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|  | |  |  |  |  | **Symal Infrastructure** | | | **Client** | |
| **Item no.** | | **Activity** | **Ref docs** | **Acceptance criteria** | **Frequency** | **Key** | **Resp.** | **Initial/date** | **Key** | **Sign date** |
| **1.0 Preliminaries** | | | | | | | | | | | | |
| **1.1** | | SWMS approval |  | Has the subcontractors SWMS been reviewed and approved by Symal PM and HSE, and client.  Yes  No  N/A | Pre-commencement | H | PE/SE |  | W |  | Correspondence Reference #:\_\_\_\_\_\_\_\_\_ | |
| **1.2** | | AMS Creation |  | Has an AMS been created between Symal and the Subcontractor, reviewed and approved by the Symal engineering and management team.  Yes  No  N/A | Pre-commencement | H | PE |  | W |  | AMS Document Reference #:\_\_\_\_\_\_\_\_\_ | |
| **1.3** | | Enviro controls |  | Are all necessary environmental controls in place in accordance with the AMS | Pre-commencement | H | SS |  |  |  | Photos | |
| **1.4** | | Previous Layer Conformance |  | Has the previous layers been conformed and verified?  Yes  No  N/A | Pre-commencement | H | PE |  | W |  |  | |
| **2.0 Material Approvals and pre-commencement requirements** | | | | | | | | | | | | |
| **2.1** | | Manufacturer provide QA and manufacturing control procedure for approval | RANGEBANK 200MW BESS  SFRC/ COMBI SLAB SPECIFICATION  TECHNICAL DOCUMENT  3.17  IFC Drawings 5668-126-1006 | Mix design to be approved prior to placement.  Material properties meet project specification.   * 32Mpa DRAMIX 4D6560BG @ 35kg/m3   Ensure mix design quotes cementitious content of the mix 320kg/m3 for 32mPa concrete and has a maximum size of 20mm stone. | Pre-commencement | H | PE |  |  |  | Procedure approval ref No:--------------  Daily production reports  Mix design approval correspondence reference number: \_\_\_\_\_\_\_\_\_ | |
| **2.2** | | DRAMIX mixing dosage | RANGEBANK 200MW BESS  SFRC/ COMBI SLAB SPECIFICATION  TECHNICAL DOCUMENT  3.17  IFC Drawings 5668-126-1006  5668-132-0005 Rev 2 | Mix design to be approved prior to placement.  Material properties meet project specification.  - 32Mpa DRAMIX 4D6560BG @ 35kg/m3  Ensure mix design quotes cementitious content of the mix 320kg/m3 for 32mPa concrete and has a maximum size of 20mm stone.  Dramix steel fibre shall be mixed in accordance with the manufacturer's recommendations.  Refer to SFRC pavement details for dosages in kg/m 3 . Refer Table 1.    Has this been achieved?  Yes  No  N/A  Have all required pre-production tests been carried out to the satisfaction of the client?  Yes  No | Pre-commencement prior to each Planned Pour | H | SE |  | H |  | Procedure approval ref No:--------------  Daily production reports  Mix design approval correspondence reference number: \_\_\_\_\_\_\_\_\_ | |
| **2.3** | | DRAMIX mxing procedure | 5668-132-0005 Rev 2 | Concrete supplier to provide contractor with QA procedure to ensure correct Dramix steel  fibre is being batched and correct quantity of steel fibre is being dosed for each load  delivered.  While the truck is rotating at full mixing speed, if adding fibres: shall be no faster than the mixing  concrete carries them away, approx. 60kg/minute. Do not add the contents of a whole bag in a  single action.  Is a calibrated auto dispenser present at the batching plant? If not a notification is to be submitted to the designer for review and dispensation granted.  Have the fibres been added to the concrete load after all other components have been batched?  Add fibres at full mixing speed for a period of 5 minutes?  Has this been achieved?  Yes  No  N/A | Pre-commencement prior to each Planned Pour | H | SE |  |  |  | Supplier Certificate  Supplier Procedure  Calibrated Auto dispenser Certificate | |
| **2.4** | | DRAMIX and Supplier mixing documentation provision during concrete supply | 5668-132-0005 Rev 2 | Has the concrete supplier been engaged to produce documentation in accordance with specification:  Daily reports to be supplied to contractor and presented weekly (by email) to client noting  compliance. Report shall consist of a minimum of truck identification, batching time,  quantity of concrete, fibre dosage, fibre mixing time, site placement, test sampling.  Has this been provided, reviewed and approved?  Yes  No  N/A | Each Planned Pour | H | SE |  | S |  | QA Procedure required for review  Daily Reports  Email correspondence records (ie dates and addresses):  \_\_\_\_\_\_\_\_\_\_ | |
| **2.5** | | Curing Compound | Cl 3.23  5668-132-0005 Rev 2 | Curing of all SFRC pavement shall be undertaken using approved spray seal curing compound complying with AS 3799 and project brief. Curing compound shall be applied in accordance with the manufacturer's recommendations | Pre-commencement for each planned pour | H | SE |  | H |  | Data sheets and manufacturer installation procedure  Correspondence record from client for material and method approval:  \_\_\_\_\_\_\_\_ | |
| **3.0 Bedding and Surface Preparation** | | | | | | | | | | | | |
| **3.1** | | CBR Testing | 5668-132-0005 Rev 2 | Has a minimum value of 3% CBR been met on the layers below. The testing needs to be completed as 3 tests per 1000m2 lot.  (Note: minimum 3 tests per pour if less than 1000m2)  Has this been completed for the planned pour?  Yes  No  N/A | Each Pour | H | SE |  |  |  | Test Results showing compliance | |
| **3.2** | | Construction Joint Profiling | Drawing 5668-126-1006  5668-132-0005 Rev 2 | Have the 160mm slab construction joints been profiled to 200mm below FSL of the combi slab?  Yes  No  N/A | Each Pour | H | SE |  |  |  | Photos  Prepour inspection including Drawing markup | |
| **3.3** | | Base Conformance | 5668-132-0005 Rev 2 | Has the base been conformed within the allowable tolerances set out in the specification? Including the edge thickening.  Tolerance is 0 to -10mm unless otherwise agreed.  Yes  No  N/A | Each Pour | H  H | SE  Surveyor |  |  |  | Survey Results and sign off on the ITP | |
| **3.4** | | Water Ponding | 5668-132-0005 Rev 2 | Is water ponding on the surface?  Yes  No  N/A  If yes, has the surface been removed and replaced and proof rolled for approval to continue with pouring.  Yes  No | Each Pour | H | SE/SS |  | W (if ponding evident) |  | Photos if applicable.  This ITP | |
| **3.5** | | Bedding Surface Check | 5668-132-0005 Rev 2 | Is the surface free from damage and all other ruts and depressions have been carefully screeded and flattened?  Yes  No  If ruts or depressions found, rectification to be to satisfaction of client. Has client approved rectification  Yes  N/A | Each Pour | H | SE/SS |  |  |  | This ITP  Supported by General photos of pour area.  Email correspondence from client for approval of rectification if applicable. | |
| **3.6** | | 0.2mm Membrane Installation | 5668-132-0005 Rev 2 | Has the 0.2mm Membrane been installed with 200mm overlap over adjacent sheets and taped on the surface?  Has the membrane been otherwise lapped in accordance with the manufacturer’s specifications?  Yes  No  N/A | Each Pour | H | SE |  |  |  | This ITP and Photos of membrane overlap in a couple locations- date and geostamped. | |
| **4.0 Formwork and Reinforcement** | | | | | | | | | | | | |
| **4.1** | | Set out |  | Extents and levels correct to relevant drawings.  Has this been completed?  Yes  No  N/A | Each Planned Pour | H  S | SS/SE  (Signature by surveyor) |  |  |  | Surveyor attendance record and sign off on this ITP | |
| **4.2** | | Formwork and Boxing, including concrete culverts. |  | Has the formwork been set to the correct finished surface level?  Yes  No  N/A  Have all rebates, recesses, service boxes, pirs and sumps been included from all relevant architect, building civil and structural and electrical engineering drawings?  Yes  No  N/A | Each Planned Pour | H | SS |  |  |  | Photos  Quote drawing numbers for any rebates etc: \_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_ | |
| **4.3** | | Vertical Cover | 5668-132-0005 Rev 2 | Has the minimum cover of 40mm been achieved in all locations across the planned pour?  Yes  No  N/A  N12 bars to be installed – allowance is 2 sheets + 24mm tolerance. | Each Planned Pour | H | SE/PE/SS |  |  |  | Photos of cover measurements | |
| **4.4** | | Horizontal Cover | 5668-132-0005 Rev 2 | Has the minimum horizontal cover of 50mm been achieved in all locations across the planned pour?  Yes  No  N/A | Each Planned Pour | H | SE/PE/SS |  | W |  | Photos of cover measurements | |
| **4.5** | | Overlap/Splicing Sufficient Extents | 5668-132-0005 Rev 2 | Where there is splicing and overlap required, has the reinforcement been extended greater than 200mm over the adjacent reinforcement?  Yes  No  N/A | Each Planned Pour | H | SE/PE/SS |  | W |  | Photos with tape measure | |
| **4.6** | | Overlap/Splicing Cover Considerations  Mesh Corners | 5668-132-0005 Rev 2 Cl3.3 | Where there are 3 or more overlapping locations of reinforcement, has the middle sheets/reinforcement been cut to ensure that the tolerance as per design drawings and specifications is met?  Tolerance is between 40mm and 94mm from the surface.  Yes  No  N/A  Has the following been carried out correctly for all mesh laps:  Reinforcement cover shall comply with AS 3600 and shall be 40 mm unless noted  otherwise. Minimum N12 bar cover shall be 40mm from surface +48mm to allow for two layers  each-way, with 12mm of additional tolerance below. Bar position to be between centre and  top of slab. Yes  No  N/A | Each Planned Pour | H | SE/PE/SS |  | W |  | Photos  Prepour inspection | |
| **4.7** | | RJE Earthing Installation |  | Has RJE Installed their earthing to the required locations?  Yes  No  N/A | Each Planned Pour | H |  |  | H |  | RJE to confirm in writing | |
| **4.8** | | Pre-pour Inspection |  | Has a pre-pour inspection been completed with the client and has it been approved for the pour by all relevant parties?  Yes  No  N/A | Each Planned Pour | H | SS/SE/PE |  | H |  | Prepour Checklist  Photos | |
| **5.0 Placement and Finishing** | | | | | | | | | | | | |
| **5.1** | | Concrete Supply |  | Material quoted on Delivery Dockets to match approved mix  Yes  No  Is the mixing procedure quoted on dockets in accordance with approved procedure  Yes  No | Each Pour (and regular intervals during pour) | H | SS/SE |  |  |  | Delivery Dockets | |
| **5.2** | | Temperature | 5668-132-0005 Rev 2 CL3.10 | Concrete placement shall not occur on days where ambient temperature exceeds 30 degrees  centigrade, nor below 5 degrees centigrade.  Has this been achieved?  Yes  No  N/A | Each Planned Pour | W | SS |  |  |  | Weather forecast record (eg phone screen shot of willy weather forecast) | |
| **5.3** | | Strength testing | AS1012.9  5668-132-0005 Rev 2  AS1379 and Section 16.7 of AS3600 | Cylinder compression tests shall be in accordance with AS 1012.9. one test sample  (consisting of a minimum of 3 test cylinders) per 50 m 3 of concrete.  Has the tester been engaged to test in accordance with AS1012.9?  Yes  No  All 7- and 28-day test results shall be forwarded to the engineer.  Is the concrete pumped?  Yes  No  If no, Slump is to be 90mm +- 20mm.  If yes, Slump is to be 140mm +-30mm.  Has the correct slump been achieved?  Yes  No  N/A | Each Planned Pour | H | SS/SE |  |  |  | This ITP or preferably a record of the slump test: photo or other | |
| **5.4** | | Delivery and Placement |  | Concrete shall be transported, handled and placed to prevent segregation, loss or leakage of materials.  Concrete to be tamped/vibrated to increase density and prevent voids, honeycombing or surface defects.  Weather Conditions, air temperature and concrete temperature to be recorded at time of pour.  Has this been completed?  Yes  No  N/A | Each Planned Pour | H | SS/SE |  |  |  | This ITP for concrete tamping etc.  Record of pour conditions on pour progress sheet.  Document Reference Number: \_\_\_\_\_\_\_\_\_\_ | |
| **5.5** | | Surface finish | As per drawings | Concrete surfaces shall be true and even, free from honeycombed surface depressions or rejections.  All protruding steel fibres to be removed from the surface during pour.  Has this been completed?  Yes  No  N/A | Each Planned Pour | H | SS |  |  |  | This ITP  Photos | |
| **5.6** | | Curing | Cl 3.23 of 5668-132-0005 Rev 2  AS3799 | In accordance with specification, the SFRC pavement will be cured with an approved spray seal curing compound complying with AS3799.  Note the requirements of 3.19 do not apply.  Has an approved curing spray been applied to the surface after the pour in accordance with the manufacture’s requirements?  Yes  No  N/A | Each Planned Pour | H | SS |  | H |  | Photos of application  Delivery docket for Spray:  \_\_\_\_\_\_\_\_\_\_\_ | |
| **6.0 Conformance and Documentation** | | | | | | | | | | | | |
| **6.1** | | Tolerances |  | The maximum deviation of any point on the pavement surface from a 3-m straightedge should  not exceed 12 mm. Minimum slab thickness at any point to be as per design/ drawing  specification of 160mm thickness. | Each Pour | H | SE |  |  |  | Survey record including conformance report:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **6.2** | | Documentation |  | Daily reports to be supplied to contractor and presented weekly (by email) to client noting  compliance. Report shall consist of a minimum of truck identification, batching time,  quantity of concrete, fibre dosage, fibre mixing time, site placement, test sampling. |  |  |  |  |  |  | Daily Reports  Email correspondence records (ie dates and addresses):  \_\_\_\_\_\_\_\_\_\_ | |
|  | **Comments:** | | | | | | | | | | |  |
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| **Lot acceptance:** | | | | |
| Symal Infrastructure representative name |  |  | Client representative name |  |
| Symal Infrastructure representative signature |  |  | Client representative signature |  |