**Inspection and test plan – Drainage (pre-cast structures)**

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| **Project no.** | CC0375 | | **Project name** | Hunter Power Project | | | | | | **Date** | |  |
| **Symal ITP no.** | | CC0375-ITP-003 | **Revision no.** | 7 | **Revision date** | | 24/03/2023 | **Layer thickness** |  | | | |
| **UGL ITP no.** | | | 3200-0663-HPP-QA-ITP-004 | | | | | **SHL ITP no.** | HPP-UGL-QUA-GN-GEN-ITP-0004 | | | |
| **Plant and equipment used** | | |  | | | | | | | | | |
| **Lot no.** | |  | | | | **Location (chainages, detailed description or marked up plan)** | | | | |  | |

Attach Dockets, Certificates and QA Documents to ITP

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| Contact Details | | Summary of Requirements | | | Principle Codes / Standards | | Records | |
| **Customer:**  **Construction Manager:**  **Project Engineer:**  **Quality Representative:**  Subcontractors    Surveillance / Inspection Key  **HOLD POINT (H):** Nominated point beyond which work shall not proceed without verified acceptance by nominee.  **WITNESS POINT (W):** Points at which the nominee shall be notified and invited to witness an activity, but further work may proceed without the presence of the nominee.  **SURVEILLANCE (S): Continuing** evaluation of the status of methods, analysis of records and monitoring of activities on a random basis to ensure quality requirements will be met.  **VISUAL (V): 100**% Visual Inspection of work / item to ensure compliance with code / specification.  **DIMENSIONAL (D): Measurement** of critical dimensions to ensure work / item is within tolerance. | | **Process Qualifications**  **Traceability:**  Material:  Alloy Verification  Heat Treatment:  Pressure Testing  Consumable:  NDT:  Welder ID:  WPS:  Electrical:  Instruments  **Heat Treatment:**  **Dimensional Control:**  **Testing (NDT):**  **Acceptance Specification:**  **Pressure Testing:**  **Elect. / Instrumentation:**  Notes: | | | **Client Specifications**  HPP-AEC-CIV-GN-GEN-SPT-0161\_0 QUALITY (CONSTRUCTION)  HPP-AEC-CIV-DD-SWS-SPT-1351\_0 STORMWATER DRAINAGE (CONSTRUCTION)  HPP-AEC-CIV-DD-SWS-SPT-1353\_0 PRECAST BOX CULVERTS  HPP-AEC-CIV-DD-SWS-SPT-1354\_0 DRAINAGE STRUCTURES  **Engineering Procedures / WI** | | **(MDR Insert as marked 3 )**   * Inspect Release Certs. * Deviations/Concessions * Material Certificates * Conformance Certificate * Welding Records * Welder Qual. Register * NDT Reports * Report on Repairs * Heat Treatment Records * Dimensional Records * Non-Conformance Rpts * Pressure Test Records * Drawings & Data Sheets * Misc Verification Records * Electrical Test Sheets | |
| Prepared by: | Steven Lee | | Date : 01/02/23 | Approved By: Joshua Fisicaro | | Date : 01/02/23 | |  |

|  | |  | |  |  |  | **Verification of acceptance by** | | | | | | **Remarks / record (eg. test frequency, reports, certificates, checklist etc)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  | |  |  |  | **Symal** | | **UGL** | | **SHL** | |
| **Item no.** | | **Activity** | | **Ref docs** | **Acceptance criteria** | **Acceptance** | **Key** | **Sign date** | **Key** | **Sign date** | **Key** | **Sign date** |  |
| **1.0 Preliminaries** | | | | | | | | | | | | | |
| **1.1** | | Documentation | | Issued drawings / Site copy drawings | Check that you have the latest site and engineering drawings BEFORE starting each task/set of tasks. | Yes  No  N/A | S |  | S |  | S |  |  |
| **1.2** | | Lot Traceability | | Spec. 0161 Quality [Cl 7.3] | Prepare a lot map for traceability of the work area | Yes  No  N/A | S |  | S |  | S |  | Lot map |
| **1.3** | | Precast Pit  Approval | | Spec. 1354 Stormwater Drainage Structures [Cl 2.2] | Submit Drawings and Installation Procedures for Precast Pits to the Superintendent for Review prior to delivery of the first pit to site  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  | **H** |  |  |
| **1.4** | | Precast Supply | | Spec. 1354 Stormwater Drainage Structures [Cl 2.2] | Does the supplied pit, slab, culvert or headwall meet all requirements of the specification and the drawings | Yes  No  N/A | S |  | S |  | S |  | Material conformance certificates |
| **1.5** | | Underlying Lot Conformance | | Underlying Lot ITP | Underlying services and/or assets have been installed prior to commencing works over and/or above.  Refer underlying lot ITP(s) | Yes  No  N/A | S |  | S |  | S |  |  |
| **1.6** | | Set out | | Spec. 1351 Stormwater Drainage [Cl 2.2] | Setout pits to the location and levels on the drawings. This shall be presented for inspection by the superintendent. | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.0 Construction** | | | | | | | | | | | | | |
| **2.1** | | Unsuitable Material | | Spec. 1351 Stormwater Drainage [Cl 2.3] | Any Unsuitable Material to be removed to the depth as directed by the Superintendent  **Notice: Prior to Placing Bedding**  **HOLD POINT** | Yes  No  N/A | **H** |  | **H** |  | **H** |  |  |
| **2.2** | | Compaction - Foundation | | Spec. 1351 Stormwater Drainage [Cl 2.5] | Foundation (including any unsuitable replacement) to be compacted to a relative compaction of 95% to a depth of 150mm below foundation level | Yes  No  N/A | S |  | S |  | S |  | Test reports |
| **2.3** | | Compaction - Bedding | | Spec. 1353 Stormwater Box Culverts [Cl 3.4]  Spec. 1351 Stormwater Drainage [Cl 2.5] | Precast Structures to be installed on bed of Select Fill with a minimum thickness of 150mm  Bedding layer to be compacted to a relative compaction of 95% | Yes  No  N/A | S |  | S |  | S |  | Test reports |
| **2.4** | | Pit Buoyancy Slabs | | Design Drawings | Pit Buoyancy Slabs to be installed and bolted to precast pits as per the design drawings. | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.5** | | Pit Installation | | Spec. 1354 Stormwater Drainage Structures [Cl 3.1, 3.3] | Pits to be installed as per drawings and manufacturers specifications utilising certified lifting points. | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.6** | | Access Covers & Grates | | Spec. 1354 Stormwater Drainage Structures [Cl 3.3] | Access covers, grates and frames to be installed as per AS 3996 | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.7** | | Step Irons | | Spec. 1354 Stormwater Drainage Structures [Cl 3.3] | Pits deeper than 600 to be fitted with galvanised plastic-coated step irons as per AS1657 | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.8** | | Pit & Pipe Connections | | Spec. 1354 Stormwater Drainage Structures [Cl 3.3] | Inlet and outlet pipes to be connected into precast pit walls as per design drawings & manufacturer specifications | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.9** | | Pit Jointing | | Spec. 1354 Stormwater Drainage Structures [Cl 3.5] | Internal joints between precast pits and riser units to be waterproofed as per Symal RFI-037 & manufacturer recommendations.  External Joints between pits and abutting concrete pavement, kerb or structures to be a 10mm isolation joint. | Yes  No  N/A | S |  | S |  | S |  |  |
| **2.10** | | Backfill | | Spec. 1354 Stormwater Drainage Structures [Cl 3.7]  Spec. 1112 Earthworks [Cl 4.10] | Precast Structures to be backfilled & compacted in 150mm thick layers.  Backfill to be Select fill for material within 1.5m of pavement surface and General Fill below 1.5m deep.  Select backfill material to be a granular material with a maximum particle size of 50mm and a PI between 2 & 12  **HOLD POINT Prior to Backfill** | Yes  No  N/A | **H** |  | **W** |  | S |  | Material Test Report |
| **2.11** | | Compaction - Backfill | | Spec. 1112 Earthworks [Cl 4.13 | Minimum relative compaction requirements for backfill against pits to be:   * 92% for general fill * 97% for select fill | Yes  No  N/A | S |  | S |  | S |  | Test reports |
| **2.12** | | Moisture Content | | Spec. 1351 Stormwater Drainage [Cl 2.5] | Moisture Content for Backfill material to be within 60% to 95% OMC unless otherwise approved by Superintendent | Yes  No  N/A | S |  | S |  | S |  | Test reports |
| **3.0 Conformance Check** | | | | | | | | | | | | | |
| **3.1** | | Survey Report | | Spec. 0161 Quality [Cl 3.13]  RFI-026 | An as-built survey of the drainage system been completed to ensure all structures are within construction tolerances.  Plan: +/- 200mm  Level: +/- 20mm  **HOLD POINT** | ☐ Yes ☐ No ☐ N/A | **H** |  | **W** |  | S |  | Survey report |
| **3.2** | | Acceptance and closure of non-conforming items | | Spec. 0161 Quality [Cl 3.8] | NCRs to be opened for non-conforming items and closed prior to closing construction lot. **HOLD POINT** | ☐ Yes ☐ No ☐ N/A | **H** |  | **H** |  | **H** |  |  |
|  |  | | **Comments**: | | | | | | | | | | |
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| **Acceptance of works:** | | | | |  | |
| Symal Infrastructure representative name |  |  | Symal Infrastructure representative signature |  | Date |  |
| UGL representative name |  |  | UGL representative signature |  | Date |  |
| SHL representative name |  |  | SHL representative signature |  | Date |  |

**Inspection Checklist Report**

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| **Project no.** | CC0375 | **Project name:** | Hunter Power Project | | **Date:** |  |
| **Symal ITP no.** | CC0375-ITP-003 | | | | | |
| **UGL ITP no.** | 3200-0663-HPP-QA-ITP-004 | | **SHL ITP no.** | | HPP-UGL-QUA-GN-GEN-ITP-0004 | |
| **Symal Lot no.** | **ITP03-002** | | | | **Symal Sub Lot no.** |  |
| **Location (chainages, detailed description or marked up plan)** | | | |  | | |

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|  | | **Verify of acceptance by** | | | | | | | | | **Remarks / records** |
|  | | **Symal** | | | **UGL** | | | **SHL** | | |
| **ID No.** | **Activity to be verified** | **ITP Step No.** | **Items conforms?** | | | **NCR / Test Report No.** | | **Key** | | **Sign Date** | **Key** | | **Sign Date** | **Key** | | **Sign Date** |  | |
| Yes | No | NA |
| **Preliminaries** | | | | | | | | | | | | | | | | | | |
| 1. | Documentation | 1.1 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 2. | Lot Traceability | 1.2 |  |  |  |  | | S | |  | S | |  | S | |  | Lot map | |
| 3. | Precast Pit Approval  **HOLD POINT** | 1.3 |  |  |  |  | | **H** | |  | **H** | |  | **H** | |  |  | |
| 4. | Precast Supply | 1.4 |  |  |  |  | | S | |  | S | |  | S | |  | Material conformance certificate | |
| 5. | Underlying Lot Conformance | 1.5 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 6. | Set out | 1.6 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| **Construction** | | | | | | | | | | | | | | | | | | |
| 6. | Unsuitable Material  **HOLD POINT** | 2.1 |  |  |  |  | | **H** | |  | **H** | |  | **H** | |  |  | |
| 7. | Compaction - Foundation | 2.2 |  |  |  |  | | S | |  | S | |  | S | |  | Test reports | |
| 8. | Compaction - Bedding | 2.3 |  |  |  |  | | S | |  | S | |  | S | |  | Test reports | |
| 9. | Pit Buoyancy Slabs | 2.4 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 10. | Pit Installation | 2.5 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 11. | Access Covers & Grates | 2.6 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 12. | Step Irons | 2.7 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 13. | Pit & Pipe Connections | 2.8 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 14. | Pit Jointing | 2.9 |  |  |  |  | | S | |  | S | |  | S | |  |  | |
| 15. | Backfill  **HOLD POINT** | 2.10 |  |  |  |  | | **H** | |  | **W** | |  | S | |  | Material Test report | |
| 16. | Compaction –Backfill | 2.11 |  |  |  |  | | S | |  | S | |  | S | |  | Test reports | |
| 17. | Moisture Content | 2.12 |  |  |  |  | | S | |  | S | |  | S | |  | Test reports | |
| **Conformance Check** | | | | | | | | | | | | | | | | | | |
| 18. | Survey Report  **HOLD POINT** | 3.1 |  |  |  |  | | **H** | |  | **W** | |  | S | |  | Survey Report | |
| 19. | Acceptance and closure of non-conforming items **HOLD POINT** | 3.2 |  |  |  |  | | **H** | |  | **H** | |  | **H** | |  |  | |

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| I certify that this Lot conforms to the requirements of the design and specifications; that all associated NCRs have been closed out: and all survey, conformance testing and inspections have been undertaken in accordance with the specified requirements. | | | | |
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| **Symal Representative** |  | **Signature** |  | **Date** |
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| **UGL Representative** |  | **Signature** |  | **Date** |
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| **SHL Representative** |  | **Signature** |  | **Date** |
| **Comments:** | | | | |
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