

Inspection and test plan – GRE (Glass Reinforced Epoxy) Excavation, Bonding and Backfill

# Project

CC0398 **Project**

VIVA ULSG **Date Approved**

Ari Birch

**no.**  **name**  **by**  **ITP no.**  032 **Revision no.**  1 **Revision date**  01/02/2024 **Plant and equipment used**  **Lot no.** VIVA-GRE-032- **Location (chainages, detailed description or marked up plan)**

Attach Dockets, Certificates and QA Documents to ITP

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|  | | | | | **Verification of acceptance by** | | | | **Remarks / record (eg. test frequency, reports, certificates,**  **checklist etc)** |
| **Symal Infrastructure** | | **MDR/VIVA** | |
| **Item no.** | **Activity** | **Ref docs** | **Acceptance criteria** | **Acceptance** | **Key** | **Sign date** | **Key** | **Sign date** |
| **1.0 Preliminaries** | | | | | | | | | |
| **1.1** | Set out | Drawings | Is the position of the pipe in accordance with the drawings? | * Yes ☐ No ☐ N/A | H |  | W |  | Drawing No.  Rev |
| **1.2** | IFC Submission & Approval | Drawings | Is IFC Construction Drawing and Most Current Revision Approved by the client? | * Yes ☐ No ☐ N/A | W |  | W |  |  |
| **1.3** | GRE pipe confirmation | Drawings  QF-108-01  Material Receipt Initial Inspection | Has the correct class & type of GRE pipe been supplied and free of defects?  Verification of material tag (heat) number | * Yes ☐ No ☐ N/A | H |  | W |  | * Material Inspection Checklist |
| **1.4** | Permits | Symal Safety Procedure | Have the below permits been created as required.  -GPP  -Working at Heights  -Hot Works  -Confined Space | * Yes ☐ No ☐ N/A | H |  | W |  |  |
| **1.5** | Determine Lot Size |  | What is the lot size? | * Yes ☐ No ☐ N/A | S |  | W |  | * Lot Map |
| **1.6** | Joint Pre-Qualifications | Qualified technician | Technician qualifications submitted to client for approval | * Yes ☐ No ☐ N/A | H |  | H |  | * Certifications provided to client |

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|  |  | qualifications and this ITP | - Welding Qualifications Equipment Calibrations |  |  |  |  |  |  |
| **1.7** | Material Approval |  | Have all materials been approved for use Bedding/Haunching Material Backfill Material |  |  |  |  |  | Material Approval Reference |
| **2.0 Excavation and Bedding** | | | | | | | | | |
| **2.1** | Service Locating | DBYD &  Services marked on current IFC drawings (if  applicable) | Current DBYD documents received and works executed by qualified service locator | * Yes ☐ No ☐ N/A | H |  | S |  |  |
| **2.2** | Excavation | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALLSect ion 12.1.12  SUN\_ENG\_P RO\_015  Bondstrand Piping UG Installation Procedure Section 3 | Excavation shall be to depth adequate to provide full specified bedding depth.  Width of excavation to be 1.25 \* OD + 300mm Pipe Diameter  Earthworks for trenches shall be done in accordance with standard drawing, has this been completed?  Trenches to be benched and battered as required (if trench >1m deep). Benches/batters to be 1:1. No material/plant to be placed within zone of influence. | * Yes ☐ No ☐ N/A | W |  | W |  |  |

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| **2.3** | Bedding | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL  Section 12.1.8.  239529- MG1668- 15740-0400- SD-000010- NOV  Bondstrand pipe installation guide - GRE  SUN\_ENG\_P RO\_015  Bondstrand Piping UG Installation Procedure  Section 3 | 150mm Bedding to be placed & compacted at the base of the trench. | * Yes ☐ No ☐ N/A | S |  | S |  | * Delivery docket |
| **3.0 Bonding & Laying** | | | | | | | | | |
| **3.1** | Above ground fabrication | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL | Has works been conducted as per Sunrise ITP SUN\_23\_003? | * Yes ☐ No ☐ N/A | W |  | S |  | * QF-068-18 –   GRE Bonding Joint Record |
| **3.2** | Lifting into trench | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL  Section 12.2.1 | Before lowering in, caps shall be placed on open ends, flanges, etc., which shall remain in place until piping connection can be made. Particular attention shall be given to the need to protect pipes from damage due to loads from heavy plant, has this been completed? | Yes ☐ No ☐ N/A | W |  | S |  |  |

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|  |  | Item 12.2.7 | Have pipes been laid to true line and level?  Has MDR been notified before the laying of pipework? |  |  |  |  |  |  |
| **3.3** | In ground fabrication | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL | Has works been conducted as per Sunrise ITP SUN\_23\_003? | Yes ☐ No ☐ N/A | W |  | S |  | * QF-068-18 –   GRE Bonding Joint Record |
| **3.4** | Haunching | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL | Has the pipe been haunched?  Have voids been removed from haunching material? | Yes ☐ No ☐ N/A | W |  | S |  |  |
| **3.5** | Survey Pickup |  | Has the pipe been picked up by the surveyor? Tolerances in alignments shall be limited to +/- 25 mm vertically or horizontally, unless otherwise specified on engineering drawing, has this been  completed? | Yes ☐ No ☐ N/A | H |  | S |  | * Survey as-built report |
| **4.0 Testing and Conformance Check** | | | | | | | | | |
| **4.1** | Test Pack | SUN\_ENG\_P RO\_010 R0 GRE  Hydrotesting procedure | Has the test pack been reviewed and accepted prior to Hydrostatic Testing?  Test Pack to include:   * Pipe Runs/Location of testing * Materials initial inspection * Joint Inspections * GRE Bonding Joint Record Form * Flange Record Sheet | * Yes ☐ No ☐ N/A | H |  | H |  | * Test Pack |
| **4.2** | Hydrostatic Testing | 235929-000- CV-SP-00006  UG PIPE  FAB and INSTALL  Section 13.2  SUN\_ENG\_P RO\_010 R0 | Has the pipework been tested as per the manufacturer’s specification for the required duration?  **Integrity Test**  2-hour test –1.5 x design pressure for 2 hour hold (Refer to Hold Point in Subcontactor ITP below). Visual Inspection required of joints upon  completion. | * Yes ☐ No ☐ N/A | H |  | H |  | * QF-129-01 –   Hydrostatic Test Log Sheet |

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|  |  | GRE  Hydrotesting procedure | **Leak Test**  1.1x design pressure. |  |  |  |  |  |  |
|  | * 2-hour test – Visual Inspection required of joints |
|  | upon completion to verify no leaks. |
|  | Has the pipework passed the testing requirements with no leaks? |
|  | If no, proceed to item 4.2. |
| **4.3** | Repair | SUN\_ENG\_P RO\_012 Re-  condition of Adhesive Bonding Socket - Joint repair | Has the leak been identified?  Has the leak been repaired as per the manufacturer’s specification/approved methodology?  Has the pipework passed subsequent testing requirements? | ☒ Yes ☐ No ☐ N/A | H |  | H |  |  |
| **5.0 Backfill** | | | | | | | | | |
|  |  | 239529- |  |  |  |  |  |  |  |
|  |  | MG1668- |  |  |  |  |
|  |  | 15740-0400- |  |  |  |  |
|  |  | SD-000010- | Has Sand Back fill been placed to 300mm above |  |  |  |
| **5.1** | Sand Backfill | NOV  Bondstrand | Pipe?  No compaction equipment to be used until 300mm | * Yes ☐ No ☐ N/A | S | S |
|  |  | pipe  installation | above pipe. |  |  |  |
|  |  | guide - GRE |  |  |  |  |
|  |  | 239529- MG1668- | Has select backfill been placed in layers not |  |  |  |  |  |  |
|  |  | 15740-0400- | exceeding 150mm loose thickness? |  |
|  |  | SD-000010- |  |  |
| **5.2** | Select Fill Backfill | NOV | No compaction equipment has been used between | * Yes ☐ No ☐ N/A |
|  |  | Bondstrand | 0-300mm above top of pipe, light compaction |  |
|  |  | pipe | equipment has only been used from 300-600mm |  |
|  |  | installation  guide - GRE | above pipe. |  |

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|  |  | 235929-000- CV-SP- 00002 –  Earthworks |  |  |  |  |  |  |  |
| **5.3** | Compaction Testing | 235929-000- CV-SP- 00002 –  Specification for Earthworks | Sand Fill - not less than 90% of maximum density or 70% of relative density, except that under paved areas the entire depth shall be compacted in 150mm layers to not less than 95% of maximum density or 80% relative density  Select Fill - Backfill under pavements shall be compacted to a dry density ratio of no less than 98% modified comp active effort.  Testing Frequency: Minimum 2 field density tests for each 185 m2 of each  compacted fill layer, but no less than 3 tests for total area | * Yes ☐ No ☐ N/A | W |  | S |  | * Geotechnical Test Report |
| **5.0 Documentation Submission** | | | | | | | | | |
| **5.1** | Subcontractor ITP |  | Has the subcontractor ITP been signed off and accepted by relevant parties? | * Yes ☐ No ☐ N/A | W |  | W |  | * ITP\_SUN\_23\_ 003 |
| **Comments**: | | | | | | | | | |

# Lot acceptance:

Symal Infrastructure representative name MDR representative name

Symal Infrastructure representative signature MDR representative signature

**Inspection key: W –** Witness, **H –** Hold Point, **S –** Surveillance