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

Project no. CC0398 **Project name** VIVA ULSG **Date** **Approved by** Ari Birch

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

					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 INSTALLSection 12.1.12 SUN_ENG_PRO_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_PRO_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_PRO_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_PRO_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_PRO_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									
5.1	Sand Backfill	239529-MG1668-15740-0400-SD-000010-NOV Bondstrand pipe installation guide - GRE	Has Sand Back fill been placed to 300mm above Pipe? No compaction equipment to be used until 300mm above pipe.	☐ Yes ☐ No ☐ N/A	S		S		
5.2	Select Fill Backfill	239529-MG1668-15740-0400-SD-000010-NOV Bondstrand pipe installation guide - GRE	Has select backfill been placed in layers not exceeding 150mm loose thickness? No compaction equipment has been used between 0-300mm above top of pipe, light compaction equipment has only been used from 300-600mm above pipe.	☐ Yes ☐ No ☐ N/A					

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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