Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Document # ITP-012 Revision : 1 19/07/2024

Client: DTP **Project:** Hyland Hwy Ch 32.5km Landslip Remediation **Contract No:** 7AG50026	**Construction Process:** *Ground Anchor Installation & Testing* **Specifications:** VicRoads Standard Specification Section 705 **Structure / Component:** Retaining Wall **Location:**	Prepared by: Name: **Justin Barnes** Signed : Date : 19/07/2024	Reviewed by: Name: **Cameron Beattie** Signed : Date : 19/07/2024	Approved by : Name: **Cameron Beattie** Signed : Date : 19/07/2024	

Lot No:	**Lot Details:**	**Lot Size/ Quantity:**

Item No.	Task/Activity Description	Inspection / Controls and Verification Detail					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility (Project Engineer, Site Engineer, Superintendent, Surveyor, Foreman)	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection / Test Method	Record of conformity			Client	Fulton Hogan	FH's Sub-contractor	Date
1.0	**Design and Submissions**											
1.1	Hot Dip Galvanised certification of DYWIDAG threadbar	Prior to commencement	Galvanising achieved as per drawings	Drawings	Current revision of Drawings	Certificate	Verify	Site Engineer				
1.2	Approved grout product	Prior to commencement	Proposed grout product approved prior to commencement of works	Drawings	Approval	This ITP Signed	AP	Geotechnical Engineer Site Engineer				
1.3	Acceptable individual bar length	Prior to commencement	Bar Lengths conform with minimal length of 3000mm as per drawings	Drawings	Verify	This ITP Signed		Site Engineer				
1.4	Acceptable internal duct diameter	Prior to commencement	Internal duct diameter to allow 5mm grout annulus around bar circumference	Drawings	Verify	This ITP Signed		Site Engineer				
1.5	Supplier of materials to supply product certification	Prior to commencement	Certification of threadbar and al other ground anchor material to be certified	Drawings	Verify	Manufacturers Certificate	HP*	Site Engineer				
2.0	**Ground Anchors - Installation**											
2.1	Records of ground anchor drilling and grouting taken for each hole	Each Anchor	Logs to be taken during drilling	Borelogs	Verify	Checklist / Form	IP	Site Engineer				
2.2	Appropriate placement of spacers along anchor	Each Anchor	Spacers placed at a maximum of 1000mm	Drawings	Verify	This ITP Signed	WP	Site Engineer				
2.3	Inspection of Ground Anchor Drilling	First 4 Anchors	First 4 x Ground Anchors to be witnessed by, and borelogs taken by Geotechnical Engineer,	Borelogs	Verify	Checklist / Form	IP	Geotechnical Engineer				

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2.4	External grout tubes to reach distal end of anchor hole and not withdrawn until completion of grouting	Each Anchor	Grout inserted at the end of the anchor hole to ensure desired grouting location	Drawings	Verify	This ITP Signed	WP	Site Engineer				
2.5	Anchor location	Each Anchor	All anchors drilled at the location and to the minimum diameter specified	Drawings Survey setout	Survey	Survey Report	HP	Site Engineer Superintendent				
2.6	Acceptable hole	Each Anchor	Acceptance that the hole is clean with minimal smearing	Drawings	Verify	This ITP Signed	HP	Site Engineer Superintendent				
2.7	Anchor assembly supports	Each Anchor	Ensure adequate supports are in place to minimise likelihood of damage / bending to anchor assembly	Drawings	Verify	This ITP Signed	WP	Site Engineer				
2.8	Corrosion Inhibiting Compound	Each Anchor	CIC has filled the entire trumpet and protective cap	Drawings	Verify	This ITP Signed	WP	Site Engineer				
2.9	Protective Caps	Each Anchor	Protective Caps are watertight, allow for inspection and refilling of CIC	Drawings	Verify	This ITP Signed	WP	Site Engineer				
2.10	Fluidity Testing	Each Anchor	Fluidity of emerging grout to be within 20% of inserted grout to ensure all low quality ground is displaced	Drawings	Verify	Test	TP	Site Engineer				
2.11	Threadbar - post stress	Each Anchor	Following stressing, all bars to be cut to allow for a minimum of 150mm to stick out from the bearing plate	Drawings	Verify	This ITP Signed	WP	Site Engineer				
3.0	**Ground Anchors - Testing**											
3.1	7 Day Grout Strength	3 x 75mm cubes per anchor or batch (lesser) tested	32MPa achieved	TfNSW	Test	Strength result	TP	Site Engineer				
3.2	28 Day Grout Strength	3 x 75mm cubes per anchor or batch (lesser) tested	40MPa achieved	TfNSW	Test	Strength result	TP	Site Engineer				
3.3	Bleed Test	One Test / Once per 4 hours	Final bleeding < 0.5%	ASTM C940	Test	Bleed test result	TP	Site Engineer				
3.4	Fluidity Test - <20s after mixing	Once per batch	Grout to pass through cone test in <20s	ASTM C939	Test	Fluidity Test Result	TP	Site Engineer				
3.5	Fluidity Test - 45m after mixing	Once per batch	Grount to pass through cone test within 3s of first test	ASTM C939	Test	Fluidity Test Result	TP	Site Engineer				
3.6	Proof Testing	3 x Anchors Prior to Production Anchors	Proof Testing undertaken in accordance with drawings to determine characteristics of ultimate resistance	Drawings	Verify	This ITP Signed	HP	Geotechnical Engineer Site Engineer Superintendent				

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3.7	Suitability Testing	3 x Anchors Prior to Production Anchors	Suitability Testing undertaken in accordance with drawings to confirm anchor design, drilling method and installation will be adequate in existing ground conditions	Drawings	Verify	This ITP Signed	HP	Geotechnical Engineer Site Engineer Superintendent				
3.8	Acceptance Testing	Each Anchor	Acceptance testing undertaken in accordance with drawings to confirm adequate bond strength and conform with acceptance criteria	Drawings	Verify	This ITP Signed	HP	Geotechnical Engineer Site Engineer Superintendent				

Final Inspection

The signature below verifies that this ITP has been completed in accordance with the FH's Quality system Procedures and verifies lot compliance with specifications.

Print Name: Position: Signature: Date: / /

Legend

HP	Hold Point	Work shall not proceed past the HP until released by the Superintendent	**IP**	Inspection point	Formal Inspection to be done and recorded
HP*	FH Hold Point	Work shall not proceed past the HP* until released by FH	**TP**	Test Point	Product compliance test to be undertaken and recorded/reported
WP	Witness Point	An inspection which must be witnessed by the Superintendent	**SCP**	Survey conformance point	A qualified surveyor to check product/section/structure and report
AP	Approval Point	Written or verbal approval given by the Superintendent			