WORK INSTRUCTIONS FOR ENGINEERS

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CH-028. CHECKLIST FOR SUPERVISION OF REINFORCED SOIL WALL

28.0 CHECKLIST FOR SUPERVISION OF REINFORCED SOIL WALL

No.	CHECKLIST ITEMS	ACKNOWLEDGED BY	CHECKED BY	
		CONTRACTOR	GUE & PARTNERS SDN BHD (G&P)	
1.0	**SURVEY/SETTING UP**	**SIGNATURE**	**YES**	**NO**
1.1	The initial survey and setting out of the wall alignment survey shall be carried out by a licensed surveyor with the presence of Engineer's representative.			
1.2	The initial survey drawings showing the levels and alignment of wall shall be endorsed by licensed surveyor before submitted for Engineer's approval.			
1.3	The wall alignment shall be pegged at every 10m intervals at site.			
1.4	Wherever there are curves or cornering of the wall, the wall alignment shall be pegged at every 2m intervals or closer at site.			
2.0	**EXCAVATION/ REMOVAL OF UNSUITABLE MATERIAL**	**SIGNATURE**	**YES**	**NO**
2.1	Carry out Mackintosh Probe (MP) at the foundation of the wall at every 5m intervals or as directed by the Engineer.			
2.2	Submit Mackintosh Probe results to the Engineer no longer than 24 hours after the MP tests.			
2.3	Engineer to issue instruction on depth of excavation and removal of unsuitable material based on MP results.			
2.4	Carry out soil replacement with approved material after removal of unsuitable material.			
2.5	Cover base of wall foundation with plastic sheets to avoid softening if soil replacement is not carried out immediately after excavation. If the contractor fails to provide the plastic sheet at site, the soft material should be stripped out prior to the placement of suitable material or quarry dust.			
3.0	**WALL ERECTION**	**SIGNATURE**	**YES**	**NO**
3.1	Brace externally the initial row of panels.			
3.2	Connect steel reinforcements to panels, backfill and compact before next row of panels are erected.			
3.3	Insert joint fillers into all the joints between the panels with the help of a wooden edge.			
3.4	Place cushion pads at the slots on the top edge of each panel before the installation of subsequent rows of panel.			
3.5	Check alignment and verticality of wall during erection using a plumb bob.			
3.6	Check the reinforcement size and anchor block size (if applicable) at site before backfilling works.			
4.0	**BACKFILL AND COMPACTION**	**SIGNATURE**	**YES**	**NO**
4.1	Level backfill before placing of and bolting of reinforcement strips.			
4.2	Maximum loose thickness of every fill layer shall not exceed 375mm before compaction. Trial run should be carried out at site to determine the number of passes to achieve the required degree of compaction.			
4.3	Keep trucks and heavy vehicles 1.5m away from the back of the wall panel.			
4.4	Use hand-operated compacting machine (plate compactor etc.) with weight < 1 ton within 1.5m from the wall face for compaction.			

4.5	Carry out field density tests at site as instructed by the Engineer.			
4.6	Collect bulk sample of backfilling material and send for direct shear box test.			
5.0	**TEMPORARY DRAINAGE**	**SIGNATURE**	**YES**	**NO**
5.1	Provide and maintain the temporary drainage/pipes for effective drainage to divert any surface run-off away from the reinforced soil wall.			
5.2	Level any surplus backfill behind the reinforced soil wall at the end of each day at a gentle gradient so that any surface runoff could flow into temporary drainage.			
6.0	**DOCUMENTS FOR SUBMISSION**	**SIGNATURE**	**YES**	**NO**
6.1	The following documents **MUST** be submitted to the Engineer for approval **2 weeks** before the commencement of any works at site: • Method Statement for reinforced soil wall works. • Construction drawings (plan and elevation view) of the reinforced soil wall **endorsed by a Professional Engineer**. • Detailed calculations of reinforced soil wall endorsed by a Professional Engineer. (including maximum threshold on total and differential settlement of reinforced soil wall) • Certificate of galvanising works for steel reinforcement from factory. (At least 5% of steel reinforcements shall be tested according to BS729. At least 6 points shall be taken at the tested reinforcement to measure the galvanised coat thickness. Average coat thickness**>86μm**.) • Steel reinforcement mill certificate from factory indicating the ultimate tensile stress of the reinforcement. • Mix proportion, minimum cement content, water-cement ratio of concrete for pre-cast wall facing panels, anchor blocks, etc. • Concrete cube test results for the pre-cast wall facing panels. • Sample of geotextile, slotted PVC pipe (300mm length) for subsoil pipe/drain. • Source and type of material used for soil replacement at the wall base and backfilling behind the wall. • Particle size distribution curve for material used for soil replacement and backfilling. • Shear box tests results (at least 3 sets of results) for the backfilling material. • Chemical test results showing the pH value, sulphate and chloride content of the backfilling material. • Setup details for pull out test. • Specifications and calibration certificates for hydraulic jacks, pressure gauge, load cell, dial gauges and strain gauges for pull out test. • Machineries records (empty forms to be provided by G&P). • Manpower records (empty forms to be provided by G&P).			

	No physical works shall be allowed to commence at site unless all above documents have been approved by the Engineer.			
	NOTE: **Once this copy is signed, the above guidelines have been clearly defined and understood by the contractor. Therefore, there shall be no problems in repeating the construction procedures for the soil nailing works without the presence of G&P representative.**			