

WORK INSTRUCTIONS FOR ENGINEERS

Compiled by : _____ LCH/LPT/TCN _____

Checked by : _____ KYW _____

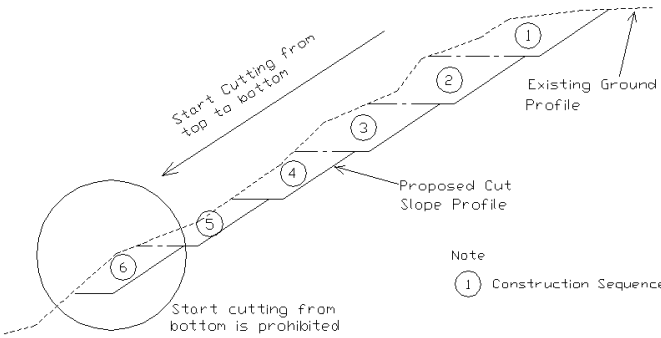
Approved by : _____ TYC _____

**CH-026. CHECKLIST FOR SUPERVISION OF
EARTHWORKS**

~~CHECKLIST FOR EARTHWORKS SUPERVISION WORKS~~

No.	CHECKLIST ITEMS	CHECKED BY GUE & PARTNERS	Remarks
	Project No. : _____ Project : _____ Earthwork Contractor : _____ Checked by : _____ Date : _____	Tick (✓) if done, or else mark cross (X) if not available.	
1.0	SURVEY/SETTING UP		
1.1	The initial survey and as-built survey shall be carried out by a licensed surveyor and witnessed by the Engineer's representative. As-built drawings with the endorsement by Licensed Surveyor shall be submitted to Engineer for approval.	•	
1.2	At least three (3) Temporary Bench Marks on solid, permanent structure shall be established, subjected to the approval of the Engineer.	•	
1.3	All survey pegs shall be properly labelled and shown in the survey drawings. All pegs shall be properly barricaded.	•	
1.4	All surveys shall be jointly carried out and verified with the Engineer's representative.	•	
1.5	All survey plans and the relevant cross sections must be submitted to the Engineer's office within 48 hours after the survey is carried out. The Engineer reserves the right to reject any survey plans and sections should the drawings be submitted later than the stipulated time period.	•	
1.6	The Engineer may instruct part or whole of the survey works to be redone if he has any doubts on the survey drawings. The Engineer may also instruct that works to be re-excavated and uncovered to check the actual levels where all the reinstatement works shall be carried out by the Contractor at his own cost and time.	•	
2.0	EXCAVATION/ REMOVAL OF UNSUITABLE MATERIAL		
2.1	The Contractor shall carry out Mackintosh Probe (MP) before removal of unsuitable material witnessed by the Engineer's representative. The MP results shall be submitted to the Engineer to confirm the extent and depth of the excavation. Trial pits with proper logging shall be carried out and witnessed by the Engineer's representative.	•	
2.2	During the excavation works, type of material encountered shall be recorded and photographed in the site daily report.	•	
2.3	During the excavation works, the depth of excavation shall be recorded in the site daily report.	•	
2.4	Where cutting/trimming of slope is involved, the Contractor shall excavate from the top of the slope and work his way down. In whatever case, the Contractor is not allowed to excavate at the slope toe and cause collapse of soil mass. The Contractor should ensure the slope gradient at any time to be maintained at not steeper than design profile as per drawings and specification, unless otherwise approved by Engineer. The contractors shall ensure that the excavation is maintained in a safe and stable condition at all time.	•	

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	The contractors shall construct temporary compacted earth bund (min 0.5m height) to channel surface runoff water to prevent from flowing into the cut/fill slopes.  Note ① Construction Sequence		
2.5	The slope cutting works shall only proceed to the subsequent berm upon completion of the previous berm.	•	
2.6	The Contractor SHALL NOT over-excavate or over-cut the slope, ground or etc. Any over-cutting shall be rectified by the Contractor using concrete, shotcrete or other means as approved by the Engineer at the Contractor's own cost and time.	•	
2.7	All excavated material shall be removed to the approved dump site. No material/machineries shall be place or stockpiled at the slopes.	•	
2.8	After the cut slope was formed, supervising staff shall carry out inspection and mapping immediately for the cut slope, and shall be focused on: - Any clear relict joint observed on the surface of cut slopes. Map the dip angle and dip direction of the relict joint and the persistence of joint. - Any water seepage flowing out from the slopes. - Any relict joint with clayey material at the joint. - The cut slope has small landslips in the past. If any of the above features is observed from the cut slopes, supervising staff shall informed project engineer immediately to review the stability of the slope and the slope might need to be re-designed to prevent landslide.	• • • •	
3.0	FILLING/ COMPACTION		
3.1	The source of fill material shall be approved by the Engineer. The Contractor shall submit the sample of fill material for the Engineer's record. Engineer or representative to witness the borrow pit materials and select soil samples for the tests as mentioned in following section (Section 3.2)	•	
3.2	The Contractor shall carry out the following tests as requested by the Engineer: (specify number/ frequency of test) - Natural moisture content tests - Atterberg Limits - Soil classification tests (sieve analysis and hydrometer tests) - laboratory compaction test (standard proctor/ modified proctor) - Organic content - pH - sulphate content - Other tests (such as Clay Mineralogical tests, Linear Shrinkage and Swelling Tests if the backfill materials are of cohesive soil).	•	
3.3	The Contractor shall place the fill in approximate horizontal loose lift of maximum 300mm and uniformly compacted to at least 95% of maximum dry density or as per specifications. (Standard Proctor / Modified Proctor tests as per specification) Trial run using different passes of compaction shall be carried out at site to determine the effective compaction effort for this project site.	•	

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3.4	The Contractor to remove at least the top 100mm (depend on site condition, to be determined by Engineer) fill after exposure to rain. The scrapped materials (of suitable fill) shall be dried (expose to sun) first before use for subsequent filling.	•	
3.5	The Contractor shall carry out field density test (FDT) at every compaction layers as per the drawings and specification. The locations of FDT shall be determined at site by the Engineer. The field density test results shall be submitted within 48 hours after the test samples are collected.	•	
3.6	If the field density tests are found to be less than the specific requirements, then the Contractor shall remove all the filled material at the respective layers and recompact the layers at his own cost and time. The recompact fill shall be then confirm with the FDT with witness by engineer's representative at site.	•	
3.7	The Contractor shall over-fill and compact the filled platform / embankment by 500mm horizontally beyond the final embankment profile with gentle slope gradient (usually 1V:2H), and then trim back to the final profile.	•	
4.0	TEMPORARY DRAINAGE		
4.1	The Contractor shall provide and maintain the temporary drainage/pipes for effective drainage until the construction of permanent drainage.	•	
4.2	All filled ground shall be levelled to a gradient to facilitate discharge of surface runoff to the temporary/permanent drainage.	•	
5.0	TURFING		
5.1	The Contractor shall apply turfing to all exposed cut and filled slopes within 2 weeks after formation of slopes. If the Contractor fails to comply to this requirement, the employer shall appoint another contractor to carry out the turfing works where the cost of the works shall be deducted from Contractor's claim.	•	
5.2	All expose cut and filled slopes shall be covered using plastic/canvas sheets before the turfing works are carried out. The plastic/canvas sheets shall be properly anchored at the crest and toe of the slope to ensure that the slope is fully covered. The plastic/canvas sheet shall be properly overlapped so that surface runoff could not infiltrate into the slope. All broken plastic/canvas sheets shall be replaced immediately. All gullies/erosion formed due to unprotected slope surface shall be repaired by the Contractor at his own cost and time to the Engineer's satisfaction. Turf shall be delivered to site within 24 hours after being cut and should be rejected after a period of more than 48 hours, unless approved by the engineer/rep.	•	
6.0	UTILITIES		
6.1	The Contractor shall protect all underground/overhead utilities during the earthworks operation. The Contractor shall ensure that all excavation areas (by refer on underground utilities drawing) are free of any existing utilities or adequate support measures are provided to prevent damage to the utility.	•	
6.2	The Contractor shall bear the cost and time of repair for any construction related damage to utilities as well as any consequential costs arising from such damage.	•	
7.0	TREATMENT OF DUMP SITE AND BORROW PIT		
7.1	The Contractor shall submit method statement on earthwork and protection at the borrow pit or dump site.	•	

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CHECKLIST FOR EARTHWORKS SUPERVISION WORKS					
Modifications subjects of this revision concern the following pages : 3					
Document consists of page : 1 to 4 (including Appendices)					No unauthorised copying is allowed.
1	16/05/2019	YHY	LPT	TYC	Item 2.8: After the cut slope was formed, supervising staff shall carry out inspection and mapping immediately for the cut slope, and shall be focused on: i. Any clear relict joint observed on the surface of cut slopes. Map the dip angle and dip direction of the relict joint and the persistence of joint. ii. Any water seepage flowing out from the slopes. iii. Any relict joint with clayey material at the joint. iv. The cut slope has small landslips in the past. If any of the above features is observed from the cut slopes, supervising staff shall informed project engineer immediately to review the stability of the slope and the slope might need to be re-designed to prevent landslide.
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Rev.	DATE	WRITTEN BY	CHECKED BY	APPROVED BY	STATUS
DOCUMENT REVISIONS					
Sections changed in last version are identified by tracked changes					