



CHECKLIST FOR INFORMATION REQUIRED BEFORE CPT/CPTU TESTS

WORK INSTRUCTIONS FOR ENGINEERS

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**OP-3-27. CHECKLIST FOR INFORMATION
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27.0 CHECKLIST FOR INFORMATION REQUIRED BEFORE CPT/CPTU TESTS

27.1. INTRODUCTION

A checklist for supervision of acquiring critical information for the interpretation of CPT/CPTU tests before testing.

27.2. DESK STUDY

Clarify the items as stipulated in the attached checklist with the testing specialist before the field tests. If different CPT/CPTU probes are used in the project, each probe required the clarification on the items as in the checklist.



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CHECKLIST FOR INFORMATION REQUIRED BEFORE CPT/CPTU TESTS TO ENSURE AND CHECK DATA QUALITY

Question	Answer	Note
1. Type of cone penetrometer		Manufacturer, capacity, type ISSMFE standard.
2. Adhering to international standard (i.e. $A_c=10\text{cm}^2$, $\alpha=60^\circ$, $A_s=150\text{cm}^2$ etc.)		Compare with requirements in ISSMFE IRTP.
3. If answer to 2 is no, what is difference.	$A_c =$ $\alpha =$ $A_s =$	If $A_c = 15\text{cm}^2$, $\alpha = 60^\circ$ and $A_s = 202\text{cm}^2$; ok. Refer to Fig 1.
4. Site Measurement		
4.1 Cone dimensions (Refer Fig 2): <ul style="list-style-type: none"> Cone shoulder diameter, D_{cone} (35.3mm ~ 36.0mm) Cone depth, H_{cone} (24.0mm ~ 31.2mm) 	$D_{\text{cone}} =$ _____ mm $H_{\text{cone}} =$ _____ mm	For measuring cone shoulder diameter, the cone shall be rotated to obtain the maximum and minimum diameter of the measuring section.
4.2 Sectional diameter of rod sleeve (Refer Fig 2): <ul style="list-style-type: none"> Lowest level of rod sleeve, $D_{\text{sleeve,L}}$ Middle level of rod sleeve, $D_{\text{sleeve,m}}$ Uppest level of rod sleeve, $D_{\text{sleeve,u}}$ 	$D_{\text{sleeve,L}} =$ _____ mm $D_{\text{sleeve,m}} =$ _____ mm $D_{\text{sleeve,u}} =$ _____ mm	For measuring sleeve sectional diameter, the sleeve shall be rotated to obtain the maximum and minimum diameter of the measuring section.
4.3 Porous stone diameter (D_{filter}) and thickness (t_{filter}). $t_{\text{filter}} = 2.0\text{mm} \sim 5.0\text{mm}$	$D_{\text{filter}} =$ _____ mm $t_{\text{filter}} =$ _____ mm	For measuring porous stone sectional diameter, the porous stone shall be rotated to obtain the maximum and minimum diameter of the measuring section.
Wear limit shall strictly complied with the ISSMFE standard		<p>*Note :</p> <p>In any cases, the dimension of the early penetrating component shall not be larger than the subsequent following penetrating components of the cone to prevent de-bonding or enlargement of displaced soil surface.</p> <p>If such condition exists, than the test shall not be allowed and replacement of cone component shall be carried out.</p>
5. Location of filter(s) for measuring pore pressure and type of fluid.		Preferably u_2 Cone. Refer to Fig 2.
6. Area ratio of cone tip ($a = A_n/A_c$).		Normally in range $a=0.59 - 0.89$. Refer to Fig 1.
7. End areas of friction sleeve (A_{st} , A_{sb}).		Best if they are equal. Refer to Fig 1.
8. Is q_c corrected for pore pressure effects?		$q_t = q_c + u_2 (1-a)$.
9. Is f_s corrected for pore pressure effects?		$f_t = f_s - (u_2 A_{sb} - u_3 A_{st}) / A_s$

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10. What is basis for σ'_{vo} ?		Assumed? Based on measurement for γ on samples?
11. When were sensors (q_c , u , f_s) last calibrated? (Please submit Calibration Certificates).		Compare with requirements given in specifications.
12. Zero readings before and after test?		Important to check if results appear "non-normal". Zero load reading in each sensor channel shall not exceed 0.05% of full capacity of the cone resistance or 5kPa , whichever is larger.
13. Where were readings zeroed? (e.g. sea bottom or bottom or borehole)		Important for overwater testing.
14. Depth of any pre-drilling.		Explains any missing data.
15. What is frequency of readings? (Penetration depth/reading)		The commercial rate is one set every second, i.e. every 2cm. Decided by project requirement.
16. For dissipation testing; (a) Will the rods be clamped or unclamped? (b) frequency of readings		How well was the initial part of the dissipation curve defined – faster sampling rate to start with?
17. Calibration of tip at field to validate the tip performance.		Fully fill up the adjacent borehole with water and insert the piezocone into the borehole slowly to measure the water pressure for every 1m up to 10m. Water pressure should be equal to hydrostatic pressure. There shall be a simple calibration frame for site validation of proper functioning of the cone/sleeve by using calibrated weights.
18. Conditioning of electronic system with ground temperature.		The entire cone shall be submerged into the water bath with the temperature maintaining at 28°C (approximate ground temperature in Malaysia) confirmed by mercury thermometer. The computer data acquisition unit shall be powered on to ensure attaining thermal equilibrium of entire circuit system. Bare minimum requirement of attaining stabilised readings for all sensor channels for at least 5 minutes is necessary, otherwise maintaining at 30 min.
19. Pore pressure response during dissipation test.		MS 1056: Part 9: 2005 allows maximum time lag of 10 seconds from commencement of dissipation test to the point when pore pressure start attenuating as acceptance criteria of satisfactory saturation of piezometric sensor.

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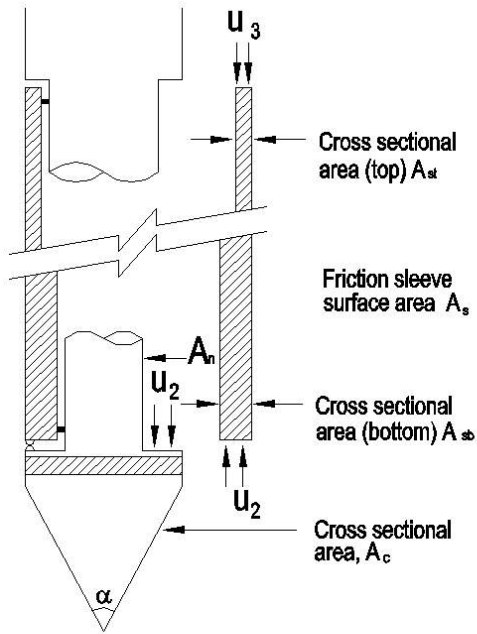


Figure 1 Pore water pressure effects on measured parameters

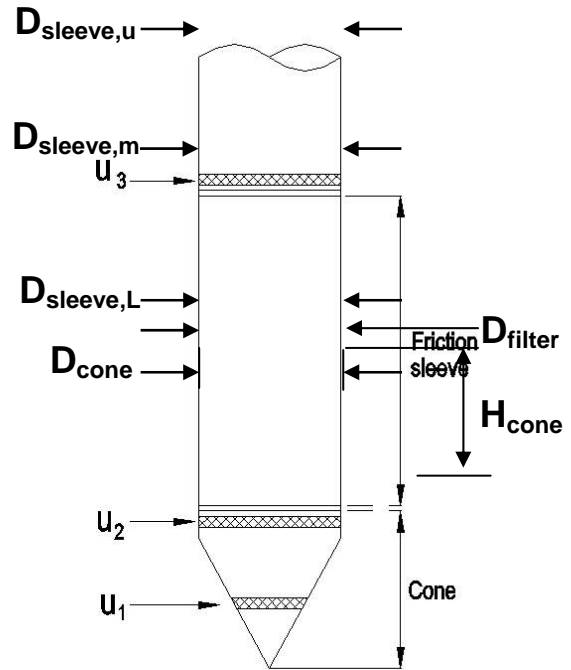


Figure 2 Pore pressure filter location

