

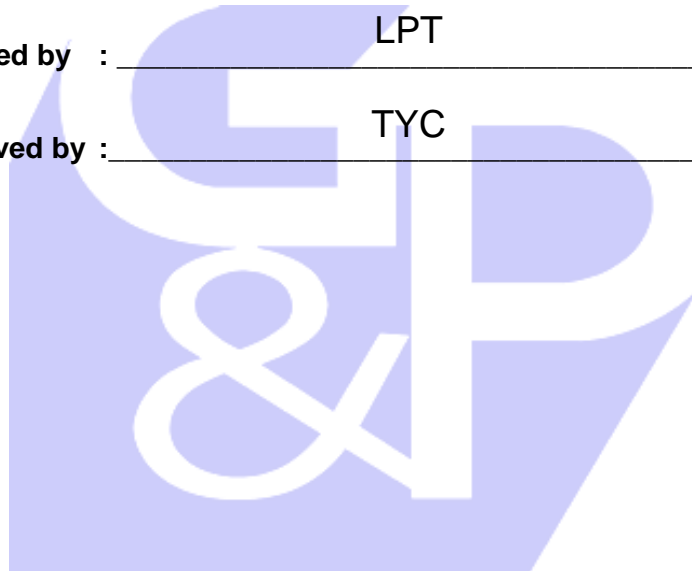


WORK INSTRUCTIONS FOR ENGINEERS

Compiled by : _____ KCM

Checked by : _____ LPT

Approved by : _____ TYC



**OP-3-72. CHECKLIST FOR DRAFT
SUBSURFACE INVESTIGATION
FACTUAL REPORT**

CHECKLIST FOR DRAFT S.I. FACTUAL REPORT

No.	CHECKLIST ITEMS	CHECKED BY G&P GEOTECHNICS	Remarks
	<p>Project No. : _____</p> <p>Project : _____</p> <p>S.I. Contractor : _____</p> <p>Checked by : _____</p> <p>Date : _____</p> <p>Note:</p> <ul style="list-style-type: none"> • This checklist is meant for common S.I. works carried out. • Any amendment made to the draft report shall use PENCIL. • Comments on the draft report shall be extended to the S.I. Contractor within one week from the date of receipt. 	<p>Tick (✓) if done, or else mark cross (X) if not available.</p>	
1.0	GENERAL / INTRODUCTION		
1.1	<p>Title page shall generally consists of the following:</p> <p>(a) S.I. Contractor's company name and contact</p> <p>(b) Title of the report (inclusive of project title)</p> <p>(c) Client's company name and contact</p> <p>(d) Consultant(s)'s company name and contact</p> <p>(e) Report no. and volume (if any)</p> <p>(f) Date of issue</p> <p>(g) Other _____</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	
1.2	The contents of each volume of report shall be listed in the main text for ease of reference.	<input type="checkbox"/>	
1.3	The scope of works including types and quantities of field / laboratory tests shall be in accordance to the scope of works specified by the Consultant.	<input type="checkbox"/>	
1.4	The dates of commencement and completion of the S.I. field works shall be stated herein.	<input type="checkbox"/>	
1.5	Summary of laboratory test schedule (e.g. schedule no., date issued/received, types of test, etc.) shall be checked accordingly (if any).	<input type="checkbox"/>	
1.6	The S.I. works shall be carried out in accordance to BS 5930: 1981 and BS 1377:1999. Make sure that the method of testing, sequence of testing, size of equipment/sampler, etc. as elaborated in the report are as the condition executed at the site and laboratory (Engineer to check with Supervising Geologists/Engineers or refer to the site report).	<input type="checkbox"/>	
2.0	RECORD OF BORING		
2.1	<p>The following information shall be made available and reported correctly in every borelog (<i>check the specified quantities</i>):</p> <p>(a) Borehole no./ref.</p> <p>(b) Location / chainage & offset (if applicable)</p> <p>(c) Reduced level (RL)</p> <p>(d) Coordinates (northing and easting)</p> <p>(e) Measured groundwater level (daily records)</p> <p>(f) Date of testing</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	
2.2	The soil description shall be according to "British Soil Classification System" from the laboratory soil classification tests (i.e. Particle size distribution and Atterberg limits).	<input type="checkbox"/>	

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2.3	The depths of testing (e.g. SPT, vane shear tests, permeability tests, etc) and sampling (i.e. disturbed and undisturbed sampling) are as the depths executed at site.	<input type="checkbox"/>	
2.4	SPT'N' values SPT'N' plot are in order.	<input type="checkbox"/> <input type="checkbox"/>	
2.5	Borehole terminated depth is recorded. Installation of instrumentation (standpipe, inclinometer, etc.) is recorded.	<input type="checkbox"/>	
2.6	Measured groundwater levels according to borehole depths and casing depths are recorded.	<input type="checkbox"/>	
3.0	FIELD TEST RESULTS		
3.1	<p><u>Piezocone (CPT/CPTU)</u> The following information shall be made available and reported correctly in every test result (<i>check the specified quantities</i>):</p> <ul style="list-style-type: none"> (a) Piezocone no./ref. <input type="checkbox"/> (b) Location / chainage & offset (if applicable) <input type="checkbox"/> (c) Raw data of piezocone results (inclusive of depth, q_c, f_s, FR, p_w and soil description, etc.) <input type="checkbox"/> (d) Graphical plots for depth vs q_c / f_s / FR / p_w <input type="checkbox"/> (e) Raw data (e.g. depth, time, dissipation of pore pressure) and graphical plot for dissipation test (if any) <input type="checkbox"/> (f) Calibration Chart and certificates + checklists for Piezocones (G&P Form) 		
3.2	<p><u>Field Vane Shear Test</u> The following information shall be made available and reported correctly in every test result (<i>check the specified quantities</i>):</p> <ul style="list-style-type: none"> (a) Field vane test no./ref. <input type="checkbox"/> (b) Location / chainage & offset (if applicable) <input type="checkbox"/> (c) Depth of test <input type="checkbox"/> (d) Dimension of vane <input type="checkbox"/> (e) Raw data inclusive of degree, gauge reading and vane shear strength for both undisturbed and remoulded conditions <input type="checkbox"/> (f) Graphical plot for vane shear strength vs angle of shearing (if any) <input type="checkbox"/> (g) Summary of results (i.e. maximum vane shear strength (for disturbed and remoulded) and sensitivity) <input type="checkbox"/> (h) Calibration chart <input type="checkbox"/> 		
3.3	<p><u>Mackintosh / JKR Probe</u> The following information shall be made available and reported correctly in every test result (<i>check the specified quantities</i>):</p> <ul style="list-style-type: none"> (a) MP no./ref. <input type="checkbox"/> (b) Location / chainage & offset (if applicable) <input type="checkbox"/> (c) Raw data (i.e. depth, nos. of blows) and graphical plot for MP <input type="checkbox"/> (d) Details of Probes e.g., dimension of probes and rod, etc. 		
3.4	<p><u>Permeability Test</u> The following information shall be made available and reported correctly in every test result (<i>check the specified quantities</i>):</p> <ul style="list-style-type: none"> (a) Borehole no./ref. <input type="checkbox"/> (b) Method of testing (e.g. falling head, rising head) <input type="checkbox"/> (c) Depth of testing <input type="checkbox"/> (d) Description of soil at tested depth (if any) <input type="checkbox"/> (e) Groundwater level (m b.e.g.l.) <input type="checkbox"/> (f) Diameter of casing <input type="checkbox"/> (g) Length of test area <input type="checkbox"/> (h) Length of casing above e.g.l. <input type="checkbox"/> (i) Raw data (e.g. elapsed time, reading/water head) and interpreted data (e.g. $\log_e (H_1/H_2)$ and permeability) <input type="checkbox"/> (j) Graphical plot <input type="checkbox"/> <p>Items (c), (e), (f), (g) and (h) are preferably indicated in figure.</p>		

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4.0	LABORATORY TEST RESULTS		
4.1	Summary of Laboratory Test Results Check the availability of test results in according to the specified quantities at particular borehole and depth.	<input type="checkbox"/>	
4.2	Soil Classification Tests (i.e. Moisture Content, Specific Gravity, Atterberg Limits and Particle Size Distribution) Check the tabulated test results against the results in attachments.	<input type="checkbox"/>	
4.3	Strength Tests (i.e. UU, CIU, UCT, Direct Shear Box Test) <ul style="list-style-type: none"> • Check the description of soil sample. • Check the tested normal stresses are of the range of in-situ stress. (e.g. $0.5\sigma'$, σ', $2\sigma'$). • Check the interpreted c_u, c' and ϕ' values and compare with typical values of the particular subsoil condition. • Graphical plots should include t-s plot, Dev. Stress and excess PWP vs. ε, vol. Change and PWP vs. Sq. Root time, • Sketches of Form of Failure / Shearing, etc. 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4.4	Compressibility Tests (i.e. Oedometer Test, Secondary Compression Test, Collapsible Test) <ul style="list-style-type: none"> • Check the description of soil sample. • Check the tabulated values for initial and final stages. • Check the interpreted c_c, c_v and p_c values and compare with typical values of the particular subsoil condition. • Graphical plots should include e vs $\log P$, C_v vs. $\log P$, M_v vs. $\log P$, C_α vs. $\log P$, Stress/Pressure vs. strain. 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
4.5	Soil Chemical Test (i.e. Organic Matter, pH value, SO_3, Cl_2) <ul style="list-style-type: none"> • Check the tabulated test results against the results attachments. • Compare the results with typical values of the particular subsoil condition. (e.g. normal subsoil usually should not of acidic condition, in which $pH > 5.5$ for normal soil) 	<input type="checkbox"/> <input type="checkbox"/>	
4.6	Rock Test (i.e. UCT, PLT) <ul style="list-style-type: none"> • Check the tabulated test results against the result attachments. • Sketches of form of Failure 	<input type="checkbox"/> <input type="checkbox"/>	
5.0	S.I. LAYOUT AND AS-BUILT		
5.1	Check the executed quantities of SI works.	<input type="checkbox"/>	
5.2	Ensure the as-built location (e.g. reduced level, coordinates, chainage, offset) is correct. If possible, overlying the as-built to the original designated location. The reduced level shall not deviate too far from the contour survey of topography plan.	<input type="checkbox"/>	
5.3	The symbols used are in accordance to the legend.	<input type="checkbox"/>	
5.4	The as-built inclusive of borehole no., location/offset, reduced level and coordinates are preferable in table form.	<input type="checkbox"/>	
6.0	PHOTOGRAPHS		
6.1	The photographs showing the following shall be made available for every test (if necessary): <ul style="list-style-type: none"> (a) Field testing (b) Undisturbed sample extruded in the laboratory (c) Rock core sample Ensure the relevant information (e.g. borehole no., depth) is clearly indicated.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
7.0	ELECTRONIC COPY		
7.1	The electronic copies in AGS format shall be submitted.	<input type="checkbox"/>	
7.1.1	Ensure all the data for both field and laboratory tests are included.	<input type="checkbox"/>	



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7.1.2	Ensure the AGS data is checked and is the same as the hard copy.	<input type="checkbox"/>	
7.2	Photos in soft copy shall be included as well (if necessary).	<input type="checkbox"/>	
7.3	The soft copy for CPT/CPTU is required for ease of interpretation.	<input type="checkbox"/>	
7.4	Digital data for CIU test (confining stress, deviator stress, porewater response, axial strain and volumetric changes in consolidating and shearing stages)	<input type="checkbox"/>	
Signature by Project Engineer :-		G&P	Date

