FORMAT FOR THE GEOTECHNICAL DESIGN REPORT

(To be prepared by the Submitting Engineer for submission to the Accredited Checker)

1. The title page should contain the following information:

   Name of the Project:

   Name of the Client:

   Address of the Client

   Name and Address of the Submitting Engineer:

   BEM Registration No. of the Submitting Engineer:

   Approving Authority and its Address:

   Approved Building Plan Approval No.

   Date on which construction work is due to commence:

2. The geotechnical design report should include but not limited to the following information:-

(a) Site history

(b) Geology which includes general geology, structural geology (discontinuities) & hydrogeology.

(c) Subsurface Investigation (S.I.) results and subsoil profile plotted in cross-sections for different area of the sites. They are to be superimposed on proposed roads network, and platforms.

(d) Slope terrain classification with zoning of the slopes at the site and adjacent areas (if there is an influence on the site) into different class in accordance with DOE requirements.

(e) Design soil parameters (shall be plotted in figures together with selected values where relevant) and may include:-

i) Basic soil properties, e.g., unit weight, soil classifications and etc.
ii) Chemical properties of subsoil and its effect to the foundation and structures
iii) Consolidation parameters include OCR profile, compression and recompression indices, drainage path, coefficient of consolidation (Cv and Ch) of subsoil and etc.
iv) Shear strength parameters include effective (c' and ϕ') and total stress strength (Su).
v) Groundwater level / regime and prediction after excavation or filling of slopes
vi) Stiffness of soil (for prediction of deformation of the walls and piles)

(f) Slope stability analyses of existing, natural and engineered cut & fill slopes. Various failure modes (both circular and non-circular or wedge) shall be checked including relevant surcharge, loads and forces.

(g) Analyses & designs of retaining works including the options considered and the various stability checks such as global, external & internal stabilities.

(h) Settlement analyses including assessments of total and differential settlements of the proposed fill, and other buildings imposed loads.

(i) For exposed rock slopes, detailed rock mapping and kinematic analyses shall be carried out.

(j) Analyses and designs of slope strengthening and stabilization if used.

(k) Ground treatment measures including its analyses and designs as well as summaries. This should include design of temporary surcharge if required.

(l) Foundation designs for walls, structures, bridges and culverts should include the following calculations and designs (both piers and abutments), where applicable :-

i) Assessment of bearing capacity of piles (both single and group)
ii) Prediction of settlements
iii) Assessment of negative skin friction on piles and prediction of downdrag.
iv) Pile group analyses shall include checking on combined bending moment and axial load on piles.
v) Detailing of pile head to pilecap for the assumption of free head or fixed head analyses.

(m) Analyses on the influence of the proposed development on the safety and serviceability of the adjacent properties and services including movements and induced structural forces (e.g. dewatering, excavation, rock blasting, etc.). If there are potential impacts, mitigation measures shall be proposed.

(n) Analyses & Designs of both the surface & subsurface drainage.

(o) Design/ construction drawings related to drainage & geotechnical works.

(p) Construction sequence for the geotechnical works.

(q) Specifications for all geotechnical works including construction control measures. Recommendations on instrumentations monitoring and validation tests.

(r) Propose supervision programme including organisation chart, number of full-time supervising staff, supervising staff's qualifications and experiences.

(s) Long term maintenance programme for the slopes, retaining walls and etc.

(t) Engineering softwares used for the analysis and design.