Project Name

METHOD OF STATEMENT FOR SITE PREPARATION
EXCAVATION AND BACKFILLING
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### 1.0 Scope

The scope of this method of statement is outline the methodology of earthwork excavation and backfilling generally QCS section 6 &12 will be followed unless specifically amended by the project specification and noted here under.

### 2.0 References

2.1 QCS section 6 & 12 earthworks.
2.2 Contractor HSE Guidelines
2.3 Project specification
2.4 Inspection and testing plan-civil works
2.5 British standard –BS1377:testing on soil
2.6 References drawings
3.0 *Site organization*

The site preparation organization chart consists of the following personnel’s:

- Project Manager: No
- Construction Manager: No
- Civil Engineer: No
- Site Supervisor: No
- Surveyors: No
- QC engineer: No.
- Safety Officer: No.

Prequalification required for all staff members prior for approval.
In addition to the above site staff, an independent laboratory will be assigned with the approval of the engineer to act as a third party testing facilities.

4.0 *Submittals*

Please refer to document/drawing for status of submittals:

4.1 Existing site topography drawing
4.2 Proposed site grading plan drawing
4.3 Proposed site grading plan (cut areas) drawing
4.4 Engineering fill material submittal
4.5 Independent laboratory testing submittal ref. (to be submitted)
4.6 Existing service letter
4.7 Extensive condition survey report of adjacent building submittal ref
4.8 Survey report on temporary bench mark

5.0 *Safety*

Please to be refer in project safety plan

5.1 Excavation shall be inspected daily by the section engineer/supervisor/safety officer and QA/QC Engineer.
5.2 Excavation shall be re-inspected after rainstorm, earthquake or any hazard increasing occurrences also against underground water if available.
5.3 A convenient and safe means of access such as stair ways. Ladder or ramp shall be provided for employees to enter and leave the excavated area.
5.4 Safe crossing shall be provided over trench excavation.
5.5 No existing wall or other structure will be made by reason of an excavation as a retaining wall.
5.6 Before opening any excavation, all underground services shall be identified and supervisor shall explain to the employees all the necessary precaution that need to be taken in work preparation.
5.7 In no excavated material shall be placed closer than 600mm from the edge of excavation.
5.8 Excavation shall be provided with warning barricades, warning signs and flash light and also protected the perimeter of excavation by concrete barrier.
5.9 The side of excavation shall be sloped in order to avoid sliding of sig/earth for trench less than 1.2 meters deep.
5.10 Personal protective equipment PPE shall be used at all the times.

6.0 **Definitions of technical terms:**

Sub-grade: existing ground upon which fill will be placed.

Formation: level upon which granular sub-base for roads will be placed.

Engineering fill: selected fill material modified to meet the project specification from Criteria section....

Fill: General filling activity

Back fill: fill for excavation trenches/utilities.

7.0 **Resources:**

- Graders
- Vibrating Drum rollers 10 to 18 tons.
- Dozers
- Truck 6 wheels 19m³
- Wheel loaders
- JCB (mini excavators)
- Water tanker
- Excavator
- Blusterer equipment
8.0 Sequence of work

General sequence of work for site filling is as follows:

- Surveying and setting out.
- Cleaning and grubbing
- Topsoil removal.
- Unsuitable material removal
- Scarify to 150 mm and compact.
- Regulating fill layer for control of fill layer thickness
- Filling of low areas to proposed grading level
- Fill building platforms
- Excavation cut area.

Sequence of work for site cutting:

- Excavation of soft materials
- Remove soft excavation to stockpile
- Excavation rock
- Removal rock material off site.

9.0 Methodology:

9.1 Survey and setting out.

Survey and setting out shall be done with calibrated instruments. Bench mark/control points shall be established at suitable locations and checked by traversing prior to use in the work. The control points shall be marked with its coordinates and elevation. These shall be protected to avoid disturbances. Pre-inspection checking will be carried out prior any activity. Also the main reference coordinates should be coordinated in government survey mark.

The entire site will be divided into 50 meters grid lines with wooden level marked at the corners of each square identifying the cut or fill level. These levels will be calculated from topo drawing, finished road level and building as a slab.
9.2 **Clearing and grubbing:**

The bulldozer/grader will blade off any unsuitable surface material in the entire cut or fill areas. Where rock is encountered surface will be left as it is. Shrubs/trees will be dug out by using JCB excavator to uproot the same. After clearing and grubbing and removal of the unsuitable material, subgrade shall be scarified to identify any leftover roots of soft area shall be removed. The area will then be leveled watered and compacted to 90% of MDD or 95% of MDD depending on depth below finishing level.

9.3 **Material testing and approval:**

The source of engineer fill material shall be identified and samples shall be collected and tested for soil classification, Atterberg limits and CBR by an approved independent laboratory. The test report shall be submitted for conditional approval by the engineer prior to start of filling works. Once the material is approved it will be delivered in heaps by the truck to site where it will be stockpiled flat and tested by the approve independent laboratory at the frequency of one test per 2000 m³ material as per specs. The material to pre-mix prior to star spreading.

9.4 **Excavation of cut areas:**

Cut areas will be identified on the general layouts drawing with the aid of the existing topography drawing sec.

Mass excavation to reduce levels will be carried out in a traditional manner using CAT D8/D9 dozer, backhoes fitted with rocks breakers and CAT 966 front end loaders. The surplus materials (including unsuitable materials for backfilling) will be loaded by the loaders into 18m³ trucks haulage off-site to a government approved dumping site or to an approved quarry for crushing/screening and reuse in the permanent works after suitability test have been carried out.

In general building footprints areas will be marked and excavated down to 1.0 m below existing layers or rock whichever is encountered first. Cut in road waysection will be carried to formation level.

Excavation of deeper foundation and pits will be carried out using backhoes (fitted with rock breakers where required) excavation and fill will be carried out under dry condition where required the water table will be lowered by sump pumps combined with
pumping pits and drainage trenches a separated method of statement will be submitted for dewatering. Side of excavation will be cut back to safe slope. Where excavation is carried out adjacent to already constructed foundations and in case of deeper excavation temporary shoring and bracing will be installed in order to create safe working conditions and prevent subsidence of already constructed foundation. Additionally adjacent to this structure heavy use of rock breakers will be careful and avoided as much as possible.

9.5 **Filing**

Generally, site filling will be progressed in three major sub-divisions sequentially. Sub-division one will comprise the south-west quarter of the site with sub-division two being the South-East quarter of the site and sub-division three being the Northern half of the site.

Within each sub-division, it is further envisaged that filling will be progressed over the entire area up to the formation level of roads. Since the building slabs are generally 500mm higher than the road’s finished levels, the building areas will then be further filled to the required levels following the building structure programme of works. The extent of filling for buildings will include the area of house connections to avoid any exposure of the same and shall be minimum 20m away from the R.C. Edges of Rafts/Footings.

Fill will be spread and compacted to 95% of MDD under slabs, roads, parking areas and paved areas. Fill below 600mm from finish ground level and in landscaped areas to be compacted to 90% of MDD.

Engineering fill will be used in the works to make up levels. The fill will comply with QCS section 6 for the roadworks and QCS section 12 for buildings as amended by Project specification section 5.2 and 5.4. (Engineering Fill is required all over the Project site).

The fill material shall be stockpiled on the project area only as shown on the Mobilization Drawing at various locations following the sequence work, premixed with water and transported to location where it shall be laid and levelled on the subgrade in layers of 200 mm loose thickness by utilizing Graders. Compaction shall be achieved with the use of 10 – 18 Ton Vibrating Roller. Each layer shall be tested in accordance with specifications and approved by the Engineer prior to proceeding with subsequent layer. Potable water will be used for filling works 1.0 M below and around structural concrete and services.

When filling adjacent to existing structures particularly bounded walls, medium to small vibrating rollers will be employed and layer thickness will be reduced to 150 mm.
Plate bearing representative tests shall be performed on the formation level of each building rafts in accordance with specifications and approval of the Engineer.

The bearing test shall be conducted by the approved third party laboratory.

10.0 **Quality Control**

All works will be subject to quality control by means of regular inspections and testing in accordance with the requirements of the Project Quality plan documents and the relevant ITP (Inspection and Test Plan).

In general, every 2000 m³ of stockpiled fill will be tested for particle size, Atterberg limits, organic matter content, CBR, MDD & OMC.

Field density tests will be done on each layer @ the frequency of one test every 100 sqm. Tolerance on final fill levels @ ± 15 mm.

The Contractor shall notify the Engineer’s Representative 24 hours before inspection and/or tests.