

# Method Statement for Road Building Materials Stockpiles

## 1. Purpose

This method statement has been prepared in consultation with George Municipality to define the establishment and management of designated stockpile areas for road construction materials in proximity to the Rand Street Extension project.

The stockpile areas are to be developed in advance of the construction works to accommodate the immediate stockpiling of suitable surplus road-building materials sourced from other roadworks or general construction activities. In addition, these areas are intended to serve as operational stockpile sites for use by the appointed Contractor during the execution of the Rand Street and Rosedale Main Extension project (herein after referred to as the Project).

All materials will be temporarily stored until required and will be utilised during the construction phase of the Rand Street Extension works.

## 2. General Responsibilities

The responsibility of maintaining the stockpile areas will be as follow:

- Before commencement of the Rand Street Extension project, the George Municipality (Employer) will be responsible for the preparation, and ongoing maintenance of the stockpile area(s). In this instance the George Municipality will need to appoint a contractor to fulfil these duties.
- During the Construction Phase of the Rand Street Extension project, the appointed Contractor will be responsible for maintaining the stockpile area(s), including all associated drainage, fencing, and security. The final closure of the stockpile site will also form part of the appointed contractor's scope including the rehabilitation thereof.

## 3. Work Tasks

### 3.1. Preparation of the stockpile site(s)

Stockpile site(s) shall be prepared as indicated on the stockpile area, construction camp(s), and haul road drawing (refer to drawing number C1990-SMEC-ALL-CV-ENV-DRG-1000001, and as jointly aligned with the Environmental Authorisation (EA) and Environmental Management Programme (EMPr).

Before any stockpiling may be done the area shall be cleared and grubbed as indicated on the drawing. The area to be cleared and grubbed shall be 2,0 m wider than the footprint of the stockpile or to 2,0m beyond the outer edge of temporary banks and dykes, as applicable. Trees and tree stumps shall be removed to 75 mm below the cleared surface. This shall be done under the supervision of the Employer or Employer's Agent, pending during what stage the stockpiling takes place.

Topsoil and overburden material can remain in place, except when it has insufficient bearing strength for the height of the stockpiled material or where a platform of fill material must be constructed. The topsoil shall then be removed and stockpiled in an area that will not be affected by construction activities nor impede the natural flow of water. The stockpile area shall be kept free of all undesirable vegetation as specified by the EA and EMPr.

Stockpile areas shall be constructed with a minimum slope of 2 % to ensure proper drainage. The surface (floor) shall be scarified to a depth of 150 mm, watered, and compacted to a minimum density of 90 % of MDD. Further instructions will be given for the treatment of soft in situ material with low bearing strength, in accordance with the roadbed treatments specified.

On steep sloping landforms, a platform shall be constructed so that the cross fall does not exceed 5 %. The platform shall be constructed of fill material in layers compacted to a minimum density of 90 % of MDD. The compacted surface for stockpiling shall be firm and clean of loose material.

Different types of material will not be mixed and each type will be stockpiled on a dedicated area within the Stockpile site area. The Employer and / or Contractor, respectively, shall ensure that stockpiled material does not wash away during normal rainfall events. Temporary banks must be constructed on the high side of stockpiles to divert surface runoff water. Care must also be taken to prevent runoff water from damming up against the stockpiles. On the lower side of the material stockpile, temporary banks with open earth drains (temporary measures) and silt traps, to contain any stockpile material that is washed down, shall be constructed. The top of the stockpile must be shaped so that stormwater is prevented, as far as practically possible, from running down the stockpile slope. The Contractor should install a pipe below the slope face of the lower side of the stockpile to convey water from the top. This proposed pipe shall be at least 300 mm Ø and of a suitable material.

The Employer and/or Contractor shall only commence the stockpiling activities after the areas have been prepared and approved by the Environmental Assessment Practitioner (EAP).

#### **3.1.1. Additional notes:**

- As part of the Environmental Process the EAP and/or Environmental Specialists will advise on the search and rescue requirements of important plant species before site clearing commence. The vegetation (identified in consultation with the ECO) will be removed from site by an approved contractor or sub-contractor and stockpiled in an area approved by the EA for relocation or replanting.
- Alien species will be identified in consultation with the ECO and removed from the stockpile areas prior to site clearing.
- All litter and inorganic material will also be removed from the stockpile area(s) prior to site clearing.
- Vegetation other than grass must be processed into chips and left with the topsoil. No vegetation shall be burned.
- Windrowed topsoil will be placed along the perimeter of each stockpile area to clearly demarcate the stockpile boundaries. Appropriate signage will be erected at all entrances to the stockpile area(s) as well as around the perimeter of the stockpile area. This is to ensure the public is well informed to prevent any damage to the stockpile areas.

#### **3.2. Stockpiling of the material**

The material shall be off-loaded and spread and levelled uniformly in layers within the stockpile area to promote re-blending of any segregated material resulting from the processing operation. Segregation during the handling process shall be avoided as far as possible.

During the initial stockpiling by the Employer the different material stockpiles shall be labelled using suitable signposts which will indicate the material type where available. During the construction phase the appointed Contractor shall ensure that all stockpiles are sufficiently labelled to indicate the quality of the material and the

intended use. Material from different sources and quality shall at all times and as far as reasonably possible be stockpiled at separate areas. The mixing and contamination of materials shall be prevented as far as possible.

Should stockpiles consist of different materials the materials will be placed in layers of no more than 1 000 mm where no specific guidance exist, or as per individual material characteristics where such information exist. The height shall enable efficient mixing of the materials during loading out of material to be taken to the road construction site.

The lower 100 mm of stockpiled material shall not be loaded for construction. This material must be graded smooth and the stockpiled topsoil reinstated over the graded surface.

### **3.3. The Employer / Contractor shall carry out the following duties at every stockpile area:**

- Ensure that the stockpile area has been prepared correctly and that all banks and dykes are in place before stockpiling commences,
- Ensure that the material is placed at the correct designated stockpile,
- Manage the correct proportional placing of different materials in the specified lift heights if applicable,
- Ensure that stockpile heights are not exceeded if specified,
- Ensure that the stockpile slopes are safe and not prone to excessive segregation/ erosion at the edge,
- Regularly inspect and maintain the stormwater banks and dykes,
- Ensure that material washed from the stockpile is contained (where practically possible),
- Control the safe movement of construction equipment, vehicles and personnel on the stockpile site, and
- Comply with the requirements of the relevant legislation relating to OHS, Mining and Construction.

When specified in the Contract Documentation, or otherwise instructed by the Employer, the Contractor shall have a stockpile controller at every stockpile site to conduct and manage the above duties. The requirements for the stockpile controller, whether the person must be an assistant materials technician or a junior foreman and whether the controller is to be present full time or only part time during the stockpiling, as well as the controller's required qualifications and experience, shall then also be specified in the contract specifications.

### **3.4. Reinstatement of the stockpile site**

After the stockpiled material has been removed, the site shall be reinstated as closely as possible to its original condition as directed by the EMPr.

In the absence of any specified conditions in the stockpile areas approval, or elsewhere in the Contract Documentation the following minimum requirements shall be complied with:

- All surplus stockpiled material shall be removed and disposed of,
- Material used to construct temporary stormwater banks or silt barriers shall be removed and disposed of, unless the Contractor is instructed to leave these banks in place to prevent future erosion,
- The stockpile floor shall be graded to the original natural contours and shall be ripped 100 mm deep to break all compacted in-situ material, and
- The stockpile site shall be lightly scarified to promote growth of natural vegetation or shall be covered with a 75 mm to 150 mm thick topsoil layer and vegetated when required in terms of the statutory approvals.

#### 4. Closure

In the event of the stockpile area being closed, a Closure Certificate shall be submitted by the Employer in conjunction with an Environmental Assessment Practitioner.

# Method Statement for Geotechnical Site Investigation

## Purpose

This method statement deals with the method to be followed for test pits and rotary core drilling during geotechnical investigations undertaken for the Rand Street project.

## Scope

This method statement is applicable to test along the project area.

Should any situation arise that is not covered below, this method statement shall be revised to include such situation.

## Location

The site is in George, Western Cape Province.



## References

Site Investigation Code of Practice, 1st Edition. South African Institution of Civil Engineering (SAICE) - Geotechnical Division, (2010).

## Responsible Persons

- a) SMEC
- b) Geotechnical Contractor

## Access

The following is required for access:

- a) Access to work areas shall be via existing roads/paths.
- b) If no road/paths exist, a route to the test position must be agreed upon with the “property owner” and the Employer. Only this route must be followed to and from the test position. Due to the steep slopes on site, the selected route will generally follow the natural contours to ensure easier accessibility.
- c) All routes of proposed access tracks shall be marked with suitable stakes or stones for approval.
- d) A photographic record of the proposed route or track shall be prepared prior to the use of the route or track.
- e) Fences may not be damaged or removed. Only existing gates will be used and shall be returned as found (open or closed).
- f) Dated and referenced photographs shall be taken of all access points used.

## Procedure for Test Pitting

The following is required for excavation of test pits:

- a) The area shall be cleared of excess vegetation, and this area shall be kept to a minimum. In this instance, this will be an area of about 5 m x 5 m.
- b) The layer of topsoil shall be removed first and placed in a separate heap. The Engineering Geologist shall instruct on the depth of topsoil to be removed. (From the previous Geotechnical investigation, it was shown to be an average of 400mm - 500mm thick).
- c) The different layers of soil will be removed and placed in heaps next to the pit in manageable heights.
- d) Heaps shall not be more than 1.5 m high.
- e) Heaps will be placed no closer than 1 meter to the pit to avoid collapse.
- f) Typical test pit setup is shown in the figures below



Figure 1 Example of stockpiling topsoil



Figure 2 Example of stockpiling in-situ material



Figure 3 Example of typical test pit

- g) DCPs/DPSH will be undertaken adjacent to the test pits. The test pitting and DCPs/DPSH will not be undertaken at the same time but sequentially.

#### Expected impacts:

- Damage to vegetation.
- Loss of excavated soils

#### Impact Prevention:

- Movement around test pit area to be limited.
- Area to be cleared to be kept to a minimum.

- Excavated soils to be placed on heaps not more than 1.5 meters high.
- Soil heaps to be placed in easily reachable position from the excavation on geofabric to prevent further damage of vegetation. Topsoil shall be placed separately. During backfilling, the topsoil will be reinstated last.

## Equipment and Machinery

- TLB
- Bakkie
- DCP/DPSH apparatus
- Geofabric
- Sampling bags
- PPE

## Procedure for Rotary Core Drilling

The following is required for boreholes:

- Identify position of hole.
- Where necessary, the area shall be cleared of excess vegetation, and this area shall be kept to a minimum. In this instance, this will be an area of about 5 m x 5 m. A platform will be shaped for equipment to be level during drilling operations.
- The layer of topsoil shall be removed first and placed in a separate heap. The Engineering Geologist shall instruct on the depth of topsoil to be removed. (From the previous Geotechnical investigation, it was shown to be an average of 400mm - 500mm thick).
- Move all equipment to borehole location and set up rig over borehole position.
- Dig sump (0.5m X 0.5m X 0.5m) for return drilling water and line with plastic sheeting or use plastic baths as and when necessary.
- Commence by opening guard and attaching core barrel, close guard, start pump and commence drilling. Once the run has been completed, pull back with hydraulics until core barrel coupling is visible, loosen head with pipe wrench, lift hydraulic head up to the top, open guard and remove core barrel by hand.
- Next run, lower second core barrel into the hole and add BWY rod to the core barrel and tighten by hand, lower hydraulic head and tighten the head by rotating the head. Close the guard, start the pump and commence drilling. This format will continue until hole has reached depth required.
- Place all recovered core/ samples in core boxes. Mark depth on boxes as appropriate.
- Record all drilling observations on drillers report.
- On completion of hole flush all remaining drilling mud from hole using clean water.
- Remove temporary casing if necessary.
- Install piezometers at certain boreholes for future monitoring of groundwater.
- Backfill boreholes that will not be used for future monitoring and place concrete marker block to engineers' instructions or contract specifications.

- n) Backfill sumps, level ground surface, place the topsoil, and remove all waste from site.
- o) Typical core drill setup is shown in the figures below.



Figure 4 Example of core drill set up



Figure 5 Example of trailer mounted rigging

#### Expected impacts:

- Damage to vegetation.
- Loss of excavated soils.

#### Impact Prevention:

- Movement around the drilling position to be limited.
- Area to be cleared to be kept to a minimum.
- Excavated soils to be placed on heaps not more than 1.5 meters high.
- Soil heaps to be placed in easily reachable position from the excavation on geofabric to prevent further damage of vegetation. Topsoil shall be placed separately. During backfilling, the topsoil will be reinstated last.

#### Equipment and Machinery

- TLB
- Rotary core drilling rig and operating equipment
- Core boxes
- Water pump
- Water reservoir
- Waste water plastic baths for sump
- Bakkie (s)
- PPE

## Environmental Practice for Rotary Core Borehole Drilling within 32 m of a Watercourse

| Issues                                 | Mitigation                                                                                                                                                            |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Diversion of the stream</b>         | No drilling within the river stream is expected therefore no diversion if required. Drilling operations to be limited to the riverbanks.                              |
| <b>Disturbance of vegetation</b>       | This will be limited to the 5 m x 5 m area allocated for drilling operations. All equipment such as drill rods and tools to be placed on plastic liners or geofabric. |
| <b>Water Contamination</b>             | Ensure zero discharge of contaminants to the river. Collect and dispose of drilling mud and cuttings in a designated containment tank or drums.                       |
| <b>Oil leaks from the drilling rig</b> | Use spill trays and drip pans under all fuel/oil storage and equipment.                                                                                               |
| <b>Pumping of water from the river</b> | No water to be pumped from the river. Only use from designated water sources provided by the George Municipality such as the wastewater treatment works.              |

### Important notes:

1. A site-specific environmental method statement shall be submitted by the Geotechnical contractor on appointment for review by the environmental agent.
2. A SMEC staff shall always be on site to enforce the environmental compliances when drilling in the riverbank and all positions on site
3. The drilling works shall try to avoid use of any environmentally unfriendly drilling fluids