

Table of Contents

Table of Contents	i
1. INTRODUCTION	2
2. MATERIAL INVESTIGATIONS	2
2.1 Existing Pavement	2
2.1.1 Investigations carried out	2
2.1.2 Results of existing pavement Investigation	3
2.2 Investigations for Alignment Soils	3
2.2.1 Investigations carried out	3
2.2.2 Results of Alignment Soils Investigation	3
2.3 Gravel Sources	4
2.3.1 Investigations carried out.	4
2.4 Hard Stone Sources	5
2.5 Sand for Concrete Work	5
2.6 Water for Construction	5
3. CONCLUSION	5
APPENDICES	7

Appendix A1 : DCP Tests for the existing pavement

Appendix A2 : Alignment Soils test results

Appendix B1 : Existing pavement Trial pit logs

Appendix B2 : Alignment Trial pit logs

Appendix C1 : Material site test results

Appendix D : Material sites Trial Pit Logs

Appendix E : Material Sites Location Maps

1. INTRODUCTION

This factual materials report provides information on the site investigation, sampling and testing carried out to establish the properties of the existing pavement and alignment soils, to locate suitable sources of gravel for pavement construction, to locate sources of sand and aggregates for road works and finally to determine sources for water for construction. The report also contains the results obtained from the investigations and testing

2. MATERIAL INVESTIGATIONS

The materials investigations for Project Road were carried out as follows:-

Investigations relating to: -

- Existing pavement
- Alignment soils;
- Natural gravel sources;
- Hard stone sources
- Sand for concrete works;
- Testing and analysing the sampled materials.

2.1 Existing Pavement

2.1.1 Investigations carried out

During field investigations, rapid dynamic Cone penetration (DCP) was carried out along the existing bitumen surfaced section at an interval of one (1) Km for upto to a depth of 1.2 metre below the surface, the results of the DCP were analysed and the converted to equivalent CBR values. Further trenches were excavated at the edge of the road up to a depth of 0.7m to establish the type of existing pavement layers a representative sample was obtained from each trench and each pavement layer were taken for testing.

The samples obtained, were subjected to the following tests: -

- Field moisture content
- Atterberg Limits;
- Linear shrinkage;

- Particle size distribution;
- Compaction test(AASHTO T99);
- CBR after 4 days soak and swell on samples compacted to 100% of the MDD at OMC.

2.1.2 Results of existing pavement Investigation

The in situ layer CBR and pavement strength characteristics were calculated from the DCP test results and are contained in Appendix A1 of this report while the laboratory test results are contained in Appendix A2 of this report. The logs of the trenches are contained in appendix B2 of this report

2.2 Investigations for Alignment Soils

2.2.1 Investigations carried out

During field investigations, trial pits were excavated along the alignment at intervals of 1000m to a depth of 1.0 - 1.5m below the ground level but lower intervals was adopted where special features were encountered. Each different soil type encountered was visually identified and the sequence and thickness of strata in each trial pit recorded. A representative sample was obtained from each trial pit and taken for tests in the laboratory.

The samples obtained, were subjected to the following tests: -

- Atterberg Limits;
- Linear shrinkage;
- Particle size distribution;
- Compaction test(AASHTO T99);
- CBR after 4 days soak and swell on samples compacted to 100% of the MDD at OMC.

2.2.2 Results of Alignment Soils Investigation

Alignment soil CBR results are presented in detail in Appendix A2. The trial pit logs are in Appendix B2 of this report.

2.3 Gravel Sources

2.3.1 Investigations carried out.

Five material sites have been identified along the road, with all the borrow pit logged showing the materials consist of mainly lateritic gravel with varying clay and silt content.

Trial pits were excavated for gravel sites at grids of 30m. The pits were dug to a depth of between 1.0m – 1.70m to establish availability of material for construction of sub-base and base for the whole road.

Samples of soils obtained from these trial pits were transported to the laboratory and subjected to the following tests: -

- Atterberg limits
- Linear shrinkage
- Particle size distribution
- Compaction test (AASHTO T180)
- CBR and Swell after 4 days soak on samples compacted to 95%MDD and at Optimum Moisture Content.

The samples from each borrow pit were combined into a large samples and tested for the following;

- Sieve analysis to 75 micron test sieve
- Atterberg Limits
- Compaction AASHTO T180
- CBR and swell at 4 day soak on specimen moulded at 95% MDD and 100% OMC.
- Compaction test AASHTO T180 on specimen mixed with 4% cement
- CBR and UCS after 7 days curing followed by 7 days soaking on specimen mixed with 2%, 4% and 5% cement
- Atterberg limits of treated specimens after testing.

Laboratory tests on the materials for base and sub base are contained in Appendix C1 of this Report while the trial pit logs and location maps are contained in appendices D and E respectively.

2.4 Hard Stone Sources

No suitable hard stone sources were identified along the road during materials investigations and aggregates for road works will have to be obtained from commercial quarries. The aggregates from potential quarries should meet the requirements stipulated in the Road Design Manual part III and standard specifications.

2.5 Sand for Concrete Work

Sand for construction is not available in the project area and the same will have to be sourced from commercial quarries and also the use of quarry dust will be explored for concrete works

2.6 Water for Construction

Water for construction is available from the rivers and streams traversing/ neighbouring the project road.

3. CONCLUSION

This report is a guideline and intends solely to inform the bidder on the possible type and sources of materials available around the project area. It shall not be part of the contract document and the bidder is expected to familiarize and satisfy itself with the project area, it will be the responsibility of the contractor to source for suitable construction material meeting the specifications as set out in the bidding documents.

APPENDICES

Appendix A1 : DCP Tests for the existing pavement

Appendix A2 : Alignment Soils test results

Appendix B1 : Existing pavement Trial pit logs

Appendix B2 : Alignment Trial pit logs

Appendix C : Material site test results

Appendix D : Material sites Trial Pit Logs

Appendix E : Material Sites Location Maps

Appendix A1 : DCP Tests for the existing pavement

Appendix A2 : Alignment Soils test results

Appendix B1 : Existing pavement Trial pit logs

Appendix B2 : Alignment Trial pit logs

Appendix C1 : Material Site Test Results

Appendix D : Material sites Trial Pit Logs

Appendix E : Material Sites Location Maps