



**MINISTRE DE L'AMENAGEMENT DU TERRITOIRE, URBANISME, HABITAT,  
INFRASTRUCTURES, TRAVAUX PUBLICS ET RECONSTRUCTION**

**Cellule Infrastructures**



**AFCAP/DRC/107/B**

**CONTRACT FOR CONSULTANCY SERVICES  
FOR COORDINATION OF SITE INVESTIGATIONS  
AND PROVISION OF DESIGN SUPPORTS  
SERVICES**

**SITE SELECTION REPORT**

**August 2013**

**Developing Design Standards for Low Volume Surfaced Roads in the Democratic Republic of Congo:  
Design and Construction of Demonstration Sites**

**SITE SELECTION REPORT FOR ROAD KALEMIE-UVIRA**

**INTRODUCTION**

The objective of the AFCAP project in DRC is to carry out pavement design on the two roads sections recommended by the Scoping Study report in July 2012. The design will use the DCP Design Methodology and identification of locally available materials for the road pavement layers and various surfacing options which optimise the use of locally-available materials and resources..

The design will be carried out in the below two possible locations on the two recommended roads :

- South Kivu Province: Burhale - Shabunda Road (0+000 – 5+000 or 16+000 – 21+000)
- Katanga Province: Kalemie - Uvira Road (19+000 – 26+000 or 38+000 – 43+000)

The first step of the program consisted on the selection of the site for the road Kalemie-Uvira. The selection of the site was to be done after the joint site visit under coordination of Cellule Infrastructures with participation of experts from Crown Agents, the Design Consultant (Aurecon Group) and Ministry of Infrastructures and Public Roads (Cellule Infrastructures, Office des Routes, General Secretariat of Infrastructures, Direction in charge of feeder roads). The field visit was organized during the mission in DRC of Crown Agents and Aurecon team from 8 to 15 July 2013.

**1. SITE SELECTION VISIT**

**1.1. Organization of the mission**

a) Program of the mission :

Before the coming of the delegates, the program of the mission was finalized jointly by Cellule Infrastructures, DFID/Kinshasa and Crown Agents. This program was set according to the flights schedule from Kinshasa to Kalemie and considering the organization of flight for Crown Agents and Aurecon team by Monusco service.

The schedule of activities was as follows :

- 8 July 2013 : arrival of Crown Agents – Aurecon delegation
- 9 July 2013 : meetings at DFID/Kinshasa and Cellule Infrastructures
- 10 July 2013 : meetings at Cellule Infrastructures and Office des Routes
- 11 July 2013 : flight to Kalemie and first site visit
- 12 July 2013 : second site visit and DCP material demonstration and testings
- 15 July 2013 : departure of Crown Agents – Aurecon delegation

b) Logistical organization :

For the smooth running of the program, Cellule Infrastructures and DFID/Kinshasa have provided the following logistical arrangements :

- Hotel booking in Kinshasa and Kalemie for all the delegation;
- Welcoming delegations in Kinshasa and Kalemie airports ;
- Transports accomodation ;
- Organization of appointments ;
- Organization of meetings.

c) Mission Participants :

The following persons have participated to the different activities organized during the site selection mission :

On behalf of Crown Agents :

- Mr Nkululeko Leta, Technical Officer AFCAP/DRC

On behalf of Aurecon :

- Mr Estimé Mukandila
- Mr Anton Hartman

On behalf Cellule Infrastructures :

- Mr Théophile NTELA, Coordinateur ai
- Mr Billy Tshibambe, Chief of Trunk Roads Division
- Mr Jean Pierre Mutamba, Chief of Urban Roads Division
- Mr Oscar BADEO, Project Assistant

On behalf of Office des Routes :

- Mr Herman Mutima, General Manager
- Mr Kibongo, Chief of new construction Division
- Mr Samy Ndengani, Deputy Director of laboratory
- Mr Pathy BADEO, Chief of Laboratory antenna/Lubumbashi

On behalf of General Secretariat of Infrastructures :

- Mr Ingwala, Director of Roads and Bridges

On behalf of Feeder Roads Division :

- Mr Dieudonné Bamba, Roads projects manager

## 1.2. Site visit

The site visit was organized from 11 to 12 July 2013 on the relevant section of the N5 trunk road Kalemie-Uvira. During the visit, the activities below were fulfilled :

- Visit of the two sections initially proposed (pk 20 - pk 25 et pk 38 –pk 43) ;
- Training on DCP testing by Aurecon experts ;
- Collection of soil samples and conducting the first DCP tests;
- Setting of the methodology and the testing program ;

## **2. SITE SELECTION**

### **2.1. Elements considered in the site selection**

The ToR of the contract provided the elements to be taken into consideration for the selection of the most suitable site for the demonstration :

- In situ soil types ;
- rainfall ;
- presence of villages ;
- maintenance cost ;
- field slopes.

### **2.2. Choice of the site**

After visiting the two proposed sites (pk 20 - pk 25 et pk 38 –pk 43) on July 11, 2013, the team selected the section PK 22 – PK 27. This section is the first section with a slight shift of 1 km in the direction of Uvira. This section has the following characteristics:

- It is located in an area with slopes with high maintenance cost;
- There are many villages along the road;
- There is 210 raining days per year with a total rainfall of 1,200 mm per year.

### **2.3. Soil testing program**

A testing program has been set for the first 800 m long section from the beginning (PK 22). This program has to be extended to the entire section of 5 km.

On the 800 m long section, the testings below have been fulfilled :

- a) 3 staggered wellbore of 1m x 0,50 m x 0,80 m with 400 m distance between including sampling materials .

With these material, the following tests are performed :

- Analyse granulométrique,
- Atterberg limits
- Modified Proctor,
- Californian Bearing Ratio (CBR),
- DCP on the material into the CBR mold, kept on the open air from 96 hours (4 days),
- DCP on the material into the CBR mold, after 96 hours (4 days) of immersion,

- b) 8 staggered DCP tests with 50 m distance between (from 50 m to 400 m) ;

c) 8 augers to 0,50 m deep next to the DCP tests, to measure the humidity of the tested materials.

It was agreed that Office des Routes will finalize the tests and send the results to Cellule Infrastructures for checking and submission to Aurecon within one month.

## **CONCLUSION**

The first site visit conducted on the first of the two proposed roads has led to the following results:

- The site selection was fulfilled ;
- The DRC staff has been trained in DCP testing and road design using the DCP results;
- Determination of the tests to be carried out by Office des Routes and development of the schedule for their implementation ;
- Discuss with Office des Routes and Cellule Infrastructures on the recovery of the road research in DRC.

## **APPENDICES**

## **PICTURES**



DCP test demonstration by Aurecon team



Auger



Sampling



Measurement of different layers



Sampling labeling



Handling of auger