

## REUSE OF MATERIALS SCALABLE IN BASED OF HIGH EMBANKMENT

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### ABSTRACT

The section of motorway subject of this presentation connects Oued Amlil to Taza city of the Highway Fes – Oujda (320 Km)

The corridor of this section of highway is mainly characterized by: The existence of unstable materials classed R31 in GTR guide, these materials are evolving to A2, A3 or A4 (GTR guide) and they represent an important volume of the existing materials (60 % of the excavations). The virtual absence of rocky or granular materials those are insensitive and rubbing.

The project provides for the reuse of materials in accordance with GTR guide a, but for the R3 materials it allowed the reuse only in ordinary embankments under certain conditions (m water status, thin layer: 30cm,  $D_{max} < 100$  and validation test board). In consequence of this constraints:

- 50% of the excavated materials are going to the final disposal;
- Skeletal materials (CiBj) or materials classed A2 in GTR guide , available in the corridor of this section of highway , that can serve for the basis of the height embankment, purge or the higher part of earthworks, does not even cover 40% of needs.
- The remaining requirements are met from stone-pit.

Considering the elements mentioned above, expertises were initiated with the aim to widen the possibilities to reuse the evolving materials in embankment's basis while preserving the stability of the works and while limiting the risk of later deformation after construction.

The results of the expertise were conclusive and allowed to increase the opportunities to reuse evolving materials (R31 to A2 or A3 with Plasticity index that is less than 30) at the lateral sides in big height embankments while respecting some constructive settings according to the profile of the seat and height of the embankment.

This disposal allowed making important savings especially on the quantity of the materials intend for the basis of embankment which is mostly sourcing from stone-pit as well as on the quantity of the materials intended for the final deposit. So a positive impact on the environment, around the highway, has been reached.

With this arrangement we have saved over 1 million m<sup>3</sup>, of material intended to the basis of big height embankment (over 10m), from 4.5 million m<sup>3</sup> firstly planned (about 22%). In terms of cost this is reflected in a saving of an amount of 40 million loan MDH HT