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ANE PRESENTATION

VARIATION IN OTTA SEAL APLICATION FOR DIFFERENT SCENARIOS (MANICA AND ZAMBEZIA PROVINCES, MOZAMBIQUE)

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INTRODUCTION

- Mozambique has serious shortage of road building materials
- Materials for the construction of bases are very poor in most areas, e.g. fine coastal sands covering most of eastern Mozambique
- It is even more difficult to find surfacing aggregate
- It has become apparent that it is necessary to develop alternative solutions
- In some areas in the southern part of Mozambique deposits of calcrete can also be found, which the RRIP and the AFCAP project is using for construction of Otta seal surfacing



OTTA SEAL SURFACING

• WHAT IS OTTA SEAL?

 An Otta seal is an asphalt surface treatment constructed by placing a 5-30mm graded local natural gravel aggregate on top of a thick application of relatively soft bituminous binding agent, e.g. MC3000.

Otta seal is a low-cost type of road surface.



FUNCTIONS OF OTTA SEAL

- Provides an impermeable surfacing for gravel roads with low bearing capacity.
- Is flexible and withstands relatively large deflections without exhibiting significant distress.
- Can provide a high quality road surfacing, for example in Inhacufera -Machaze road in Manica Province and Zero-Mopeia road in Zambeze Province.





WHY CHOOSE OTTA SEAL?

- Uses locally-available aggregates
- Cheaper than conventional surfacing
- It is also thick and durable compared to single spray &chip, and sand seals





INHACUFERA – MACHAZE ROAD

• Phase I: 0+000 to 5+000

- Section is generally good
- Double Otta seal, 1¹/₂ Otta seal and Single Otta seal with sand seal performing well.
- Stripping noticed on a few areas with single Otta seal.

• Phase 2 section: 5+000 – 11+000

- I.2km with no new base; surfacing on existing layer
- 4.8km with 150mm imported base
- MC30 prime applied 0.6L/m2
- Different trials MC3000 binder application rates 2.0, 1.9, 1.8, 1.7, 1.6, 1.4L/m2.
- Section is looking good and aggregate (-19mm to +5mm, P0.075 <10% and ~13%) is holding very well
- All sections performing equally well so far







Double Otta seal, $1\frac{1}{2}$ Otta seal and Single Otta seal with sand seal performing well







Section with 1,6L/m2 binder & beginning of section with 1,4L/m2



Zambezia: Zero - Mopeia Road

- Phase 2 section: 0+000 6+000
 - Construction is complete and section is open to traffic
 - Aggregate is fine: -9mm and -13mm, P0.075~13%
 - MC30 prime applied at 0.6 0.8L/m2
 - MC3000 binder applied at 1.8, 1.7, 1.6, 1.5, 1.3, 1.2L/m2
 - All sections curing rapidly and turning black even with low traffic ~ 50vpd



Zambezia: Zero Mopeia Road



Otta seal surfacing with 1,2L/m2 binder





Zambezia: Zero Mopeia Road



Otta seal surfacing in curing process





CONCLUSION

- Otta seal is a viable surfacing solution for low-volume roads in Mozambique
- It provides adequate impermeable and flexible surfacing for gravel roads
- It also has advantages
 - use of local materials
 - relatively cheap





Thank You!