VII CONCLUSION AND RECOMMENDATIONS

VII.1 Conclusions

1. The Marshall analysis results in an optimum binder content of 5.5% for the ATB mix and 8.2% for the HRS mix. The ATB mix at optimum is somewhat 'stiffer' than the HRS mix at optimum. In both cases flow value are comparable but the ATB mix possesses higher stability.
2. For both mixes, 'stiffness' values, as indicated by Marshall quotient, are outside the upper limit recommended for a wearing course material. These high values may to some extent be attributed to the presence of a high percentage of crushed stone fine in the mixes.
3. At optimum binder content, the ATB mix has a void content in excess of that considered desirable for a wearing course material. Again this may be attributable in part to the high percentage of crushed stone fines present in the mix.
4. Both mixes possess acceptable resistance to the detrimental effect of water as indicated by retained Marshall stability.
5. Tensile strength values recorded for both mixes at 60°C are comparable, the value obtained for the HRS being approximately 12% higher.
6. Skid resistance measurements made on laboratory prepared slabs of both materials indicated compliance with requirements based on BPN. However field measurements of BPN gave results for both materials that were below the minimum recommended for 'critical' sites.

7. With regard to texture depth, both laboratory and field measurements showed ATB to possess greater texture depth than HRS by a factor of approximately 2.
8. In the wheel tracking test, ATB performance was slightly superior to that of HRS at 26°C and 40°C. At 60°C ATB showed a significant superiority over HRS in its resistance to rut formation.

VII.2 Recommendations

In terms of strength measurements, it appears from the results of this investigation that HRS has no advantage over ATB. Both mixes offer satisfactory resistance to the effects of water but the higher air voids content of the ATB combined with lower optimum binder content may present a longer term durability problem in relation to hardening in service. A more complete study of the comparative performance of these of those mixes would include the following:

1. Investigation of level of compaction.
2. Investigation of the influence of fine aggregate type on 'stiffness' and air voids content using the gradation employed in this studies.
3. A study of current methods of aggregate production; it was apparent in this investigation that a satisfactory gradation could not be obtained using only aggregates available from site.

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