4 CONCLUSION

Based on the results obtained from the experimental investigation, the following conclusions have been drawn.

The natural gravel extracted from Jiren quarry site was not suitable for use as sub-base and base course material for road construction because it did not satisfy the requirements as per ERA Standard Specifications. The addition of 8% molasses in the natural gravel material from Jiren quarry site indicated suitable for sub-base construction, but not suitable as a stabilizer for base course. The addition of a minimum 2% lime in the natural gravel taken from Jiren quarry site was suitable for sub-base construction. On the other hand, replacing 50% of 8% lime with 4% molasses, 6% molasses or 8% molasses (4% Lime + 4% Molasses, 4% Lime + 6% Molasses and 4% Lime + 8% Molasses) produced adequate strength for base course construction.

Molasses alone cannot be used effectively to improve the natural gravel for use in base course construction. However, molasses can be used as an additive to lime in varying amounts which can provide satisfactory results meeting the required standards.

The blending of 6% lime with natural gravel increases the CBR by 205.64% Replacing 50% of 6% lime by 6% molasses and 8% molasses; blending the soil with 3%L + 6%M and 3%L + 8%M improved the natural gravel CBR by and 146.87% and 196.16% respectively. Further analysis, showed that blending 8% lime with natural gravel increased the CBR by 228.30%. Replacing 50% of 8% lime by 4% molasses, 6% molasses and 8% molasses; blending the natural gravel with 4%L + 4%M, 4%L + 6%M and 4%L + 8%M improved the natural gravel CBR by 190.84%, 210.72% and 227.34% respectively.

Finally, it is known that the curing process plays an important role in the development of strength of molasses-lime stabilized natural gravel. The increase in CBR value corresponded to the blend of natural gravel with 4% lime plus 8% molasses after 14 days of curing found to be 347.44%. The natural gravel treated with molasses-lime achieved an average of 293.8 percent CBR after 14-days curing of the untreated CBR of 28.16%. The CBR of the molasses-lime treated natural gravel at a curing time of 3 days achieved an average CBR about 81% of the 14 days curing, and at a curing time of 7 days achieved an average CBR about 95.62% of the 14 days curing period.

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