

ABSTRACT

The construction of highways has been on upward trend in Kenya over the past decade, especially in major towns and cities. These facilities also need constant repair and maintenance over time to correct wear and tear or when the present needs outgrow the original design due to increase in population and traffic. Highways are an expensive part of transportation facilities, as their construction and maintenance require huge amounts of materials. The increased demand for construction materials has raised concerns about the availability of natural aggregates and source of new aggregates. However, huge volumes of Construction Demolition Waste (CDW) produced annually in Kenya has been used recently as recycled concrete aggregates in place of natural aggregates being a sustainable solution that considers environmental concerns. This situation has necessitated the construction industry to begin recycling CDW as an alternative aggregate for highway works because of the environmental, economic and engineering benefits. The purpose of the study was to evaluate the properties of the recycled aggregates used in highway works. The objective of the study was to establish the performance of concrete specimen from CDW from workability and strength aspects. The tests conducted for various proportion mix of recycled aggregates were sieve analysis, flakiness and elongation index, Los Angeles abrasion, aggregate impact value, aggregate crushing value, water absorption and relative density, slump test, compaction factor, comprehensive strength, tensile splitting test and density. The tests found that the values of recycled concrete aggregate were slightly lower than the control mixes, though they still attained the specifications set out by different standards and thus can be incorporated in highway works up to a certain percentage. The materials conventionally used in highway construction if continuously used, will have detrimental effects on the environment through gradual depletion thereby limiting natural resources which will eventually affect the level of productivity in highway construction. Therefore, the use of CDW is a reasonable alternative and essential due to the various benefits associated with it. A huge potential on CDW exist, which can be exploited by employing good policies and introducing technologies that can allow the wastes to be recycled based on their quality and use