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Applications of Recycled Aggregate

NEETU RANI
Master of Technology, (Highway Safety and Engineering),
Department of Civil Engineering, DCRUST, Haryana

Abstract: Road infrastructure is an essential requirement of economical growth. It provides the facility for man and material, links industries, help in trade. In addition, road system provides last miles connectivity to all other modes of transport such as railways, airways etc. therefore the properties of aggregate are considerable significance to the highway engineers. The aggregate are of categorized based on their size, shape, texture and gradation. Recycling of aggregate is the process in which used aggregate is reused for new construction.
Keyword: recycled aggregate, advantage of recycled aggregate, disadvantage of aggregate, application of recycled aggregate.

INTRODUCTION

Recycling of aggregate is a process in which used aggregate is reused for new construction. Use of recycled aggregate in not very common in India and other developing countries. There is huge requirement of the aggregate because of fast development in infrastructure area.

Scope of the Study: The study has been conducted on recycled and fresh aggregated used in the construction of GSB and WMM. The material used for the study is of 10mm, 20mm, and 40mm.

Objective of the study: the purpose of the study is to assess the suitability of the material for road construction. The purpose of the study is to assess the suitability of the recycled material for road construction work.

Recycling as a option

The eighth five-year plan envisages a shortage of aggregates in infrastructure sector. Further, for achieving the target for road development million of coarse aggregate . Recycled aggregates can fill part of this demand- supply gap.

Poor Acceptability of recycled material

Acceptability of recycled material is hampered due to a poor image associated with recycling activity in India. Customer specifications do not permit use of materials recycled from waste. Cost of disposal of waste from construction industry to landfill has a direct bearing on recycling operations.

Applications of recycled aggregate

Traditionally, the application of recycled aggregate is used as landfill. Now days, the applications of recycled aggregate in construction areas are wide. The applications are different from country to country.

Concrete kerb and gutter mix

Recycled aggregate have been as concrete kerb and gutter mix Australia. According to building innovation and construction technology (1999), stone says that the 10mm recycled aggregate and blended recycled

Sand are used for concrete kerb and gutter mix in Lent hall street project in Sydney.

Granular base course materials

According to market development study for recycled Aggregate product (2001), recycled aggregate are used as granular base course in road construction.

Embankment fill materials

Market development study for recycled Aggregate Products (2001) stated that recycled aggregate can be used in embankment fill.

Back fill materials

Recycled aggregate can be used as back fill materials. Menus and Littestol found that Norwegian Building research institute mentioned that recycled aggregate can be used as backfill materials.

Advantage of recycled aggregate

The advantage that occurs through usage of recycled aggregate are listed below.

- Environmental gain
- Save energy
- Cost
- Job opportunities
- Sustainability
- Market wide

Environment gain: construction and demolition waste makes up to around 40% of total waste each year going to land fill. Through recycling this material, it can keep diminishing the recourse of urban aggregate.

Save energy: This can save energy to transport the recycled materials to recycling plants.

Cost: recycled aggregate can be used at lower prices that primary aggregate in the construction works.

Job opportunities: this program will provide 150 new jobs in the Scottish industry.

Sustainability: The amount of waste materials used for landfill will be reducing through usage of recycled aggregate.

Market is wide: The markets for recycled aggregate are wide.

Disadvantages

Lack of specification and guidelines: There is no specification or any guideline when using recycled aggregate in road or any other construction.

Water pollution: according to Building Green (1993), the alkalinity level of wash water from the recycling plants is PH12. This water is toxic to the fish and other aquatic life.

Comparison of recycled aggregate and fresh aggregate

1. Texture
2. Quality
3. Location

The desirable property of the aggregate may be summarized as follows:

- Resistance to crushing
- Resistance to abrasion
- Resistance to impact or toughness.

Conclusions

Recycling aggregate from the demolition projects can save the cost of transporting the material to the land-fill, and of disposal. So, the option considering both strength and cost parameters is recycled aggregate. It satisfies the strength requirements specified by the code and also it costs less when compared to fresh aggregate.

Future Scope of the study: An economical analysis may also be useful in quantifying the financial benefits of using recycled aggregates over fresh one. Filed performance on the test section could also be the part of future studies.

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