

A Result Paper on Experimental Study of Demolished Concrete use in Rigid Pavement Construction

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ABSTRACT

India is developing country and for developing country lot of construction is required. In this study we used the demolished aggregates in the newly construction at different proportion and strength are check for that proportions. In the mix0 all normal aggregate are taken. In the mix1 12% of natural aggregates replace by demolished aggregates. In the mix2 25% of natural aggregate replace by demolished aggregates, mix3 replace by 35% and mix4 replace by 45% natural aggregates by demolished aggregates. Recycled aggregate are show low value of specific gravity and bulk density. But the water absorption of demolished aggregates is high in comparison of normal aggregate. Economical and environmental point of view demolished aggregate are the alternate source of fresh aggregates.

Keywords: Compressive strength, Flexural strength, Demolished aggregates, Natural aggregate

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I. INTRODUCTION

Modified behavior of demolish concrete use in rigid pavement construction for main purpose of this ideas is that to minimized and proper use of construction waste like coarse aggregate and fine aggregate. Also avoid the problem of land filling and makes the environment eco friendly. . Demolished concrete increasing very faster rate and there is a deficiency in dumping space and further more increment in expense of dumping Rather than dumping this pulverized solid, utilization of wrecked as reused cement would decrease the expense as well as will moderate the non sustainable power sources

II. REVIEW OF LITERATURE

Many examinations have been accomplished for utilization of wrecked cement and it was discovered that the utilization of reused total is a fitting answer for the issue of dumping and transportation of devastated concrete. It was discovered that the reused totals are profitable structure material in natural, prudent and specialized viewpoints. At first reused totals were utilized as landfills however at this point multi day they are additionally utilized for developments for structure and streets. Reused totals have been utilized as solid kerb and canal blend in Australia. In the task of Lenthall Street in Sydney, 10 mm reused totals and mixed reused sand are utilized for solid kerb and drain blend.

Krushal Koshiya et al 2018:- In this study demolished aggregates replace by natural aggregates and this replace is carried out different proportion. Compressive strength and flexural strength check for different mix.

Veeraselvam and Dhanalaxmi et.al 2018:- in this study used the demolished concrete in newly construction and utilized the waste material that are produced from the old construction. By this work use save the fresh aggregates used in construction.

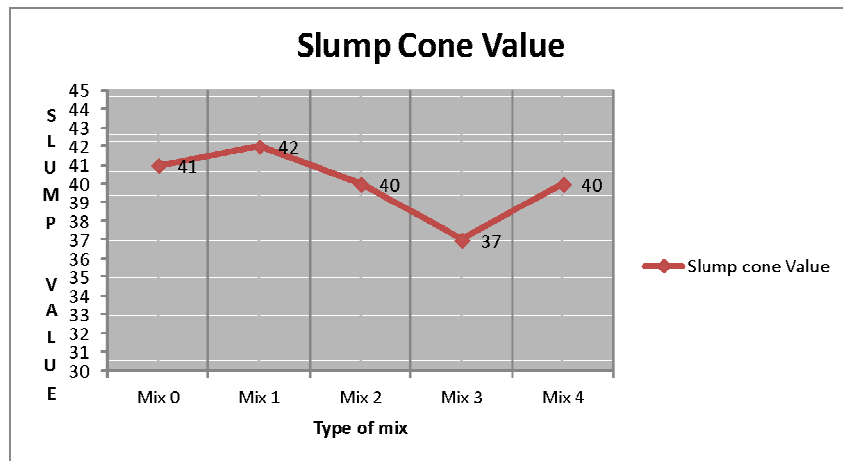
K.Ramadevi and R.Chitura et.al 2017:- The demolished concrete waste generate in cities of the country. In the big cities the 1 billion tonnes of solid waste generate per year. The recent government order to reduce mining of materials. and need to recycle, reuse the demolished concrete as coarse aggregates.

Aiyewalehinmi et al 2016:- Main aims to used the recycled aggregates to avoid the problem of land filling and utilized the waste material.

Jitender Sharma And Sandeep Singla et al 2014 :- In this study recycled coarse aggregate are used in experiment and find that recycled coarse aggregate give normally same strength as that give fresh aggregates after adding some admixture.

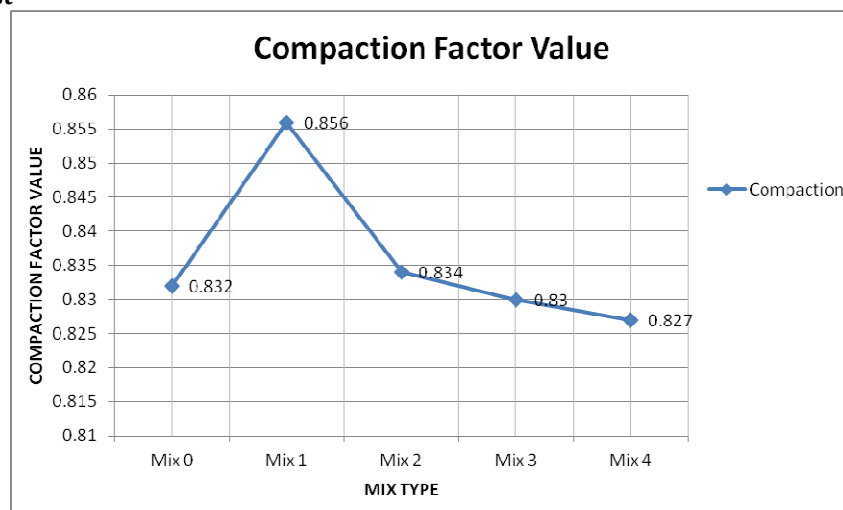
III. EXPERIMENTAL PROGRAMME

1. Slump Test



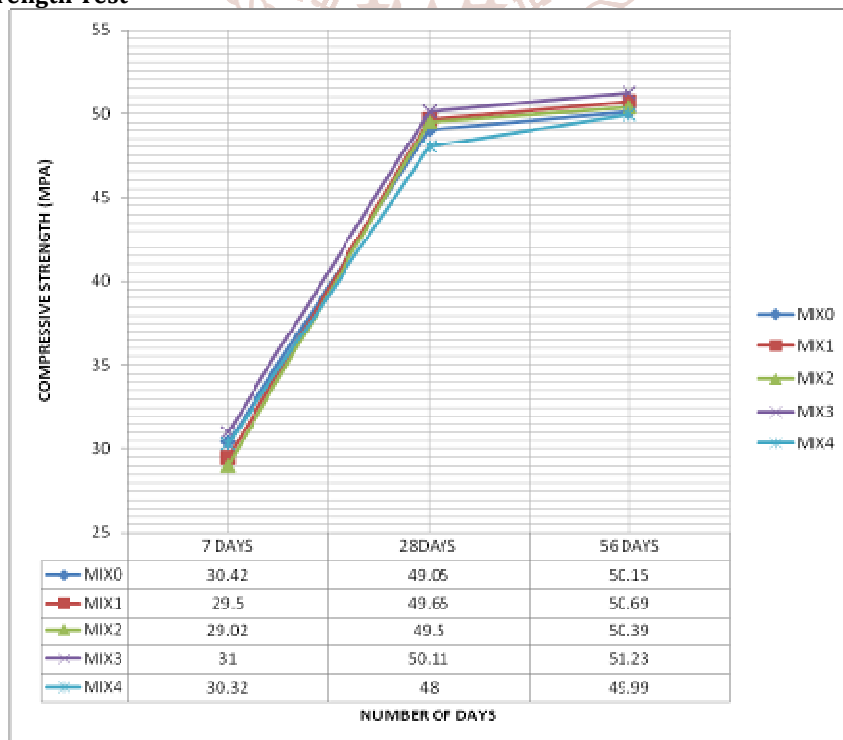
Graph:-Slump Values with Type of Mix Used

2. Compaction Test



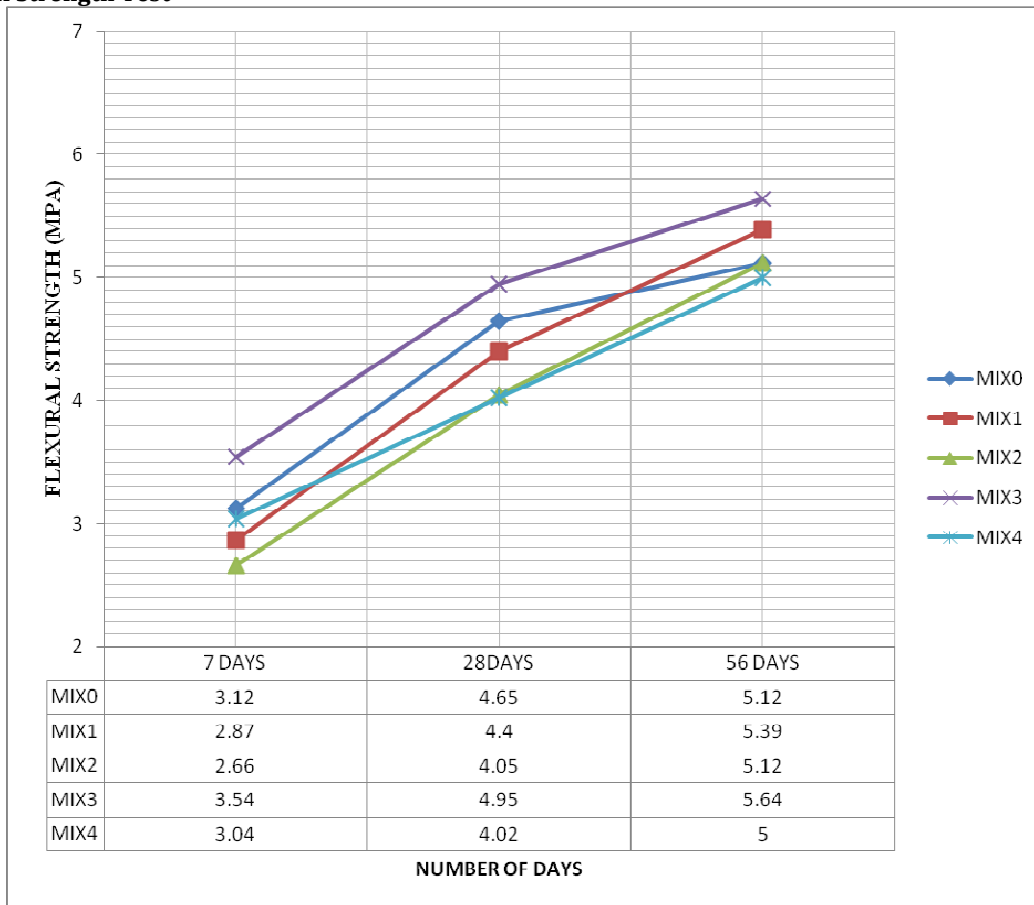
Graph:- Compaction Factor Value

3. Compressive Strength Test



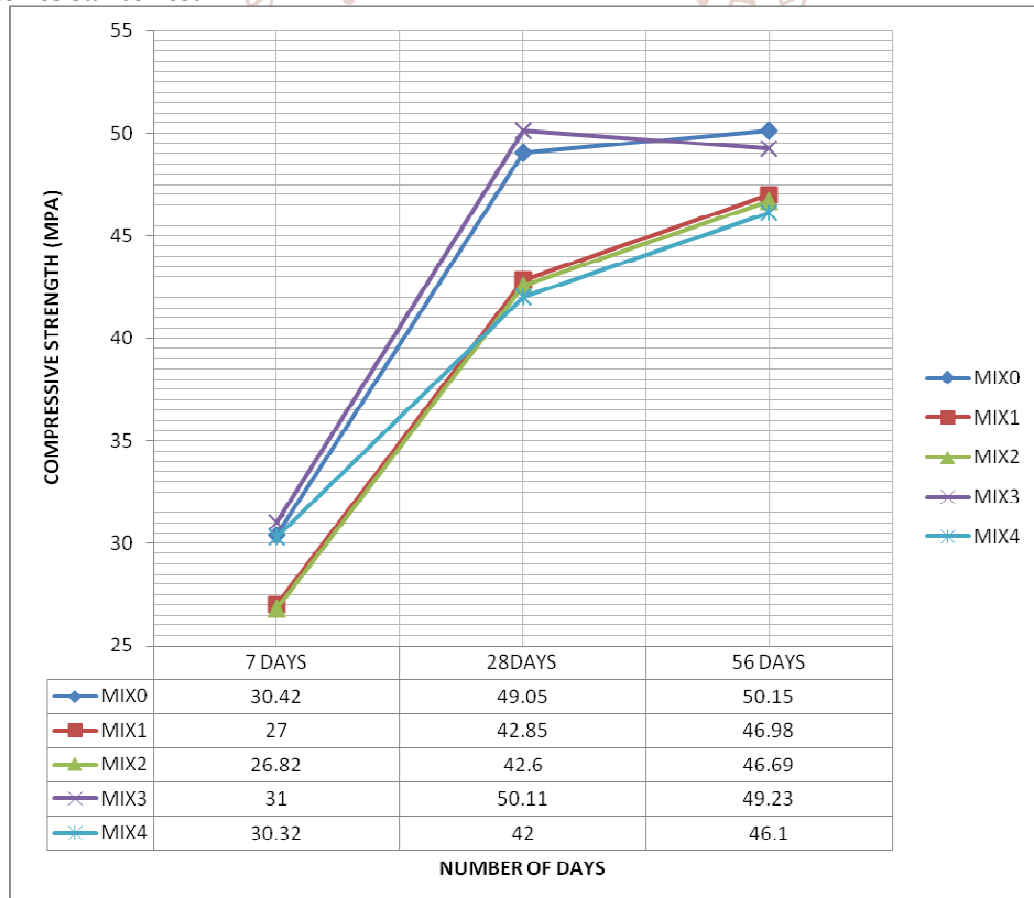
Graph:- Compressive Strength of All Mixes at 7 and 28 and 56 days.

4. Flexural Strength Test

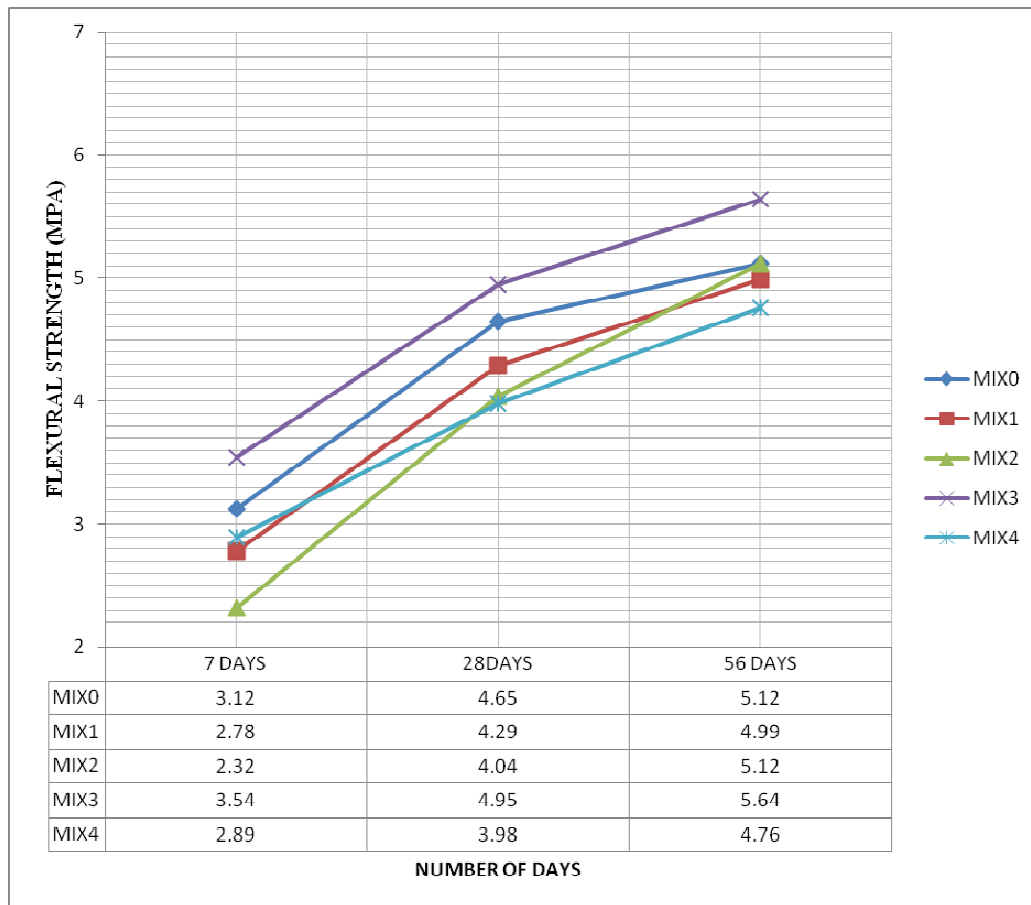


Graph:-Flexural Strength Comparison of all mixes at 7, 28 and 56 days

5. Sulphate Resistance Test



Graph:- Compressive Strength Comparison of All Mixes After Placing Magnesium Sulphate Solution At 7, 28 And 56 Days.



Graph:- Flexural Strength Comparison of All Mixes After Placing in Magnesium Sulphate Solution at 7, 28 and 56 Days.

IV. Conclusion

List of conclusion that are drawn from the research work-

- The compressive strength of all mixes exceeded at the age of 28 days. Compressive strength of control mix i.e. of Mix 0 is 49.05 MPa which is more than the target strength of 48.25 for M40 concrete. M1 mix Compressive Strength is faintly increased to 49.65. It means compressive strength 1.22% increase. For M2 mix strength decrease to M1 it becomes 49.50 MPa, so strength decrease only 0.30 %. Further mix M3 Compressive strength also increase it noted 50.11 MPa so strength increase 1.23%. But for M4 mix strength are decrease it become 48.00 MPa, it value decrease 4.21 %. So we conclude that compressive strength not increase below 28 days. So RCA aggregates are used in cement concrete pavements.
- Flexural strength also increased same as compressive strength. flexural strength after 28 days of mix 40 is 4.42MPa. We find flexural strength after 28 days of M0 is 4.65MPa When we calculate strength for mix M1 it was find 4.40MPa. So it decrease 5.37% for M1 mix. When after 28 days for the mix M2 use calculated it was 4.05MPa, it decreased 7.95% as compared to M1 mix . Flexural strength for M3 mix is calculated 4.95MPa and it was increased 22.22%. For M4 mix strength is 4.02 MPa, so for M4 it value is decreased 18.78% at 28 days. So we find from the result that RCA concrete can be compared to normal aggregates. So RCA concrete can be used by control the water cement ratio.
- When magnesium sulphate 5% solution used then compressive strength will be reduced. But for M3 mix strength not decreased and it give almost same result as natural aggregate

- When magnesium sulphate 5% solution used then flexural strength will be reduced. But for M3 mix strength not decreased and it give almost same result as natural aggregate.
- Recycled aggregate are show low value of specific gravity and bulk density. But the water absorption of demolished aggregates is high in comparison of normal aggregate.
- In this study castings were done to arrive at water content and desired workability. So it was desirable to carry out trial castings with demolished concrete aggregate proposed to be used in order to arrive at the water content and its proportion to match the workability levels and strengths requirements respectively.
- In this study demolished concrete are used in cement concrete pavements. Economical and environmental point of view demolished aggregate are the alternate source of fresh aggregates

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