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Behaviour of Marine Water on Bridge Structure

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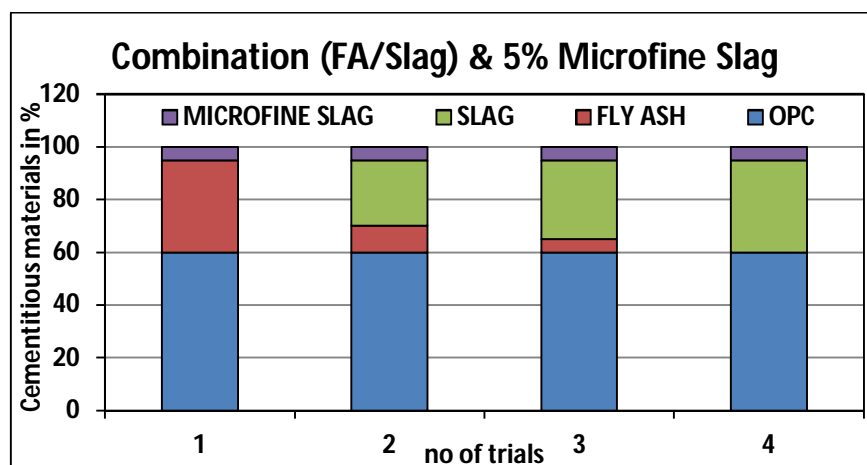
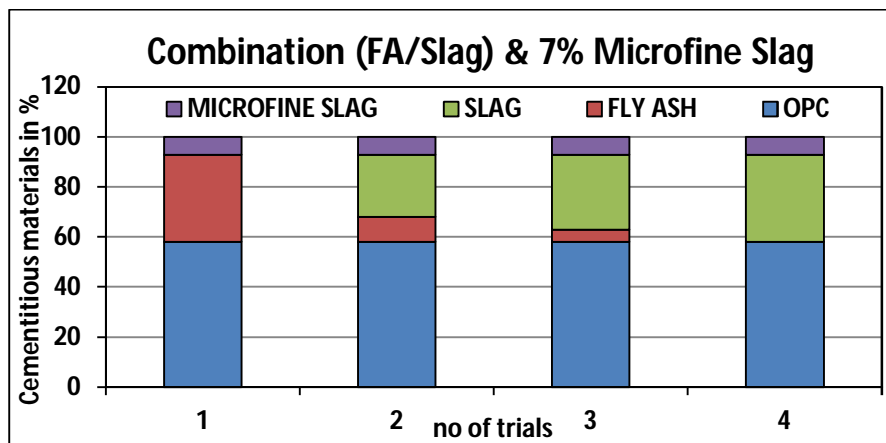
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Abstract: Now –a-days due to increasing impurities in marine water degradation of bridge structures takes place at early stage which results in reduction of strength and durability of concrete structures .So to increase the strength of the bridges structures microfine as a byproduct can be substituted in concrete to acquire proper strength and durability.. Concrete specimens were cast from M50 grades and plain water was used as mixing water and replacing cement OPC by 35% of flyash and slag combination and 3%, 5% and 7% combination slag / Microfine Slag in making the test specimens. Test specimens were cured under marine water upto 28 days. Specimens were tested for compressive strength, flexural strength, split tensile test, considering the durability parameter.

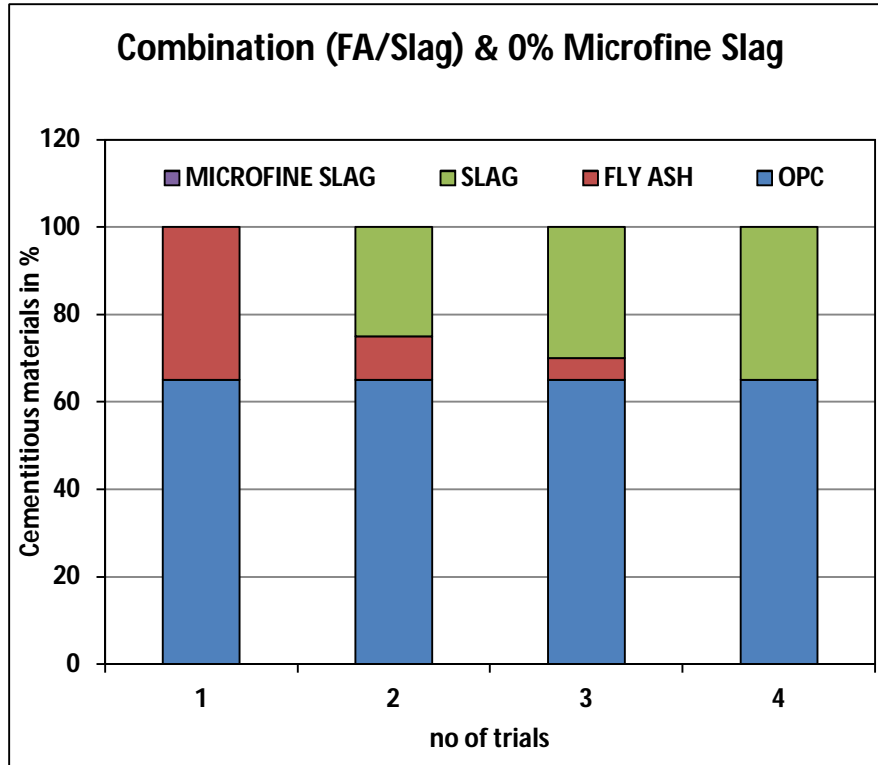
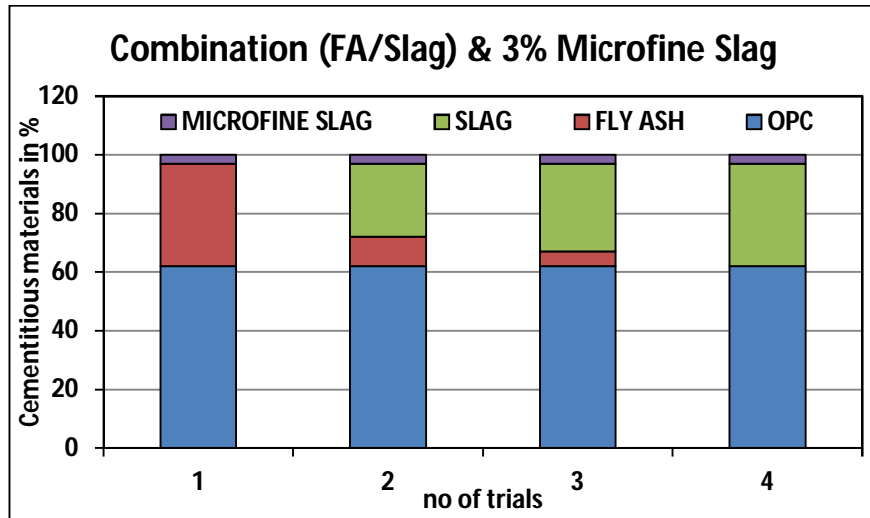
I. METHODOLOGY

A. In this Study Total 16 Nos of Trails will be Conducted.

- 1) Replacing OPC by 35% of Flyash + Slag (at every 5 % interval)
- 2) Replacing OPC by 35% of flyash + Slag (at every 5 % interval) + 3% Microfine slag.
- 3) Replacing OPC by 35% of flyash + Slag (at every 5 % interval) + 5% Microfine slag.
- 4) Replacing OPC by 35% of flyash + Slag (at every 5 % interval) + 7% Microfine slag.



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Materials used: OPC, Flyash, Microfine Slag, Slag.

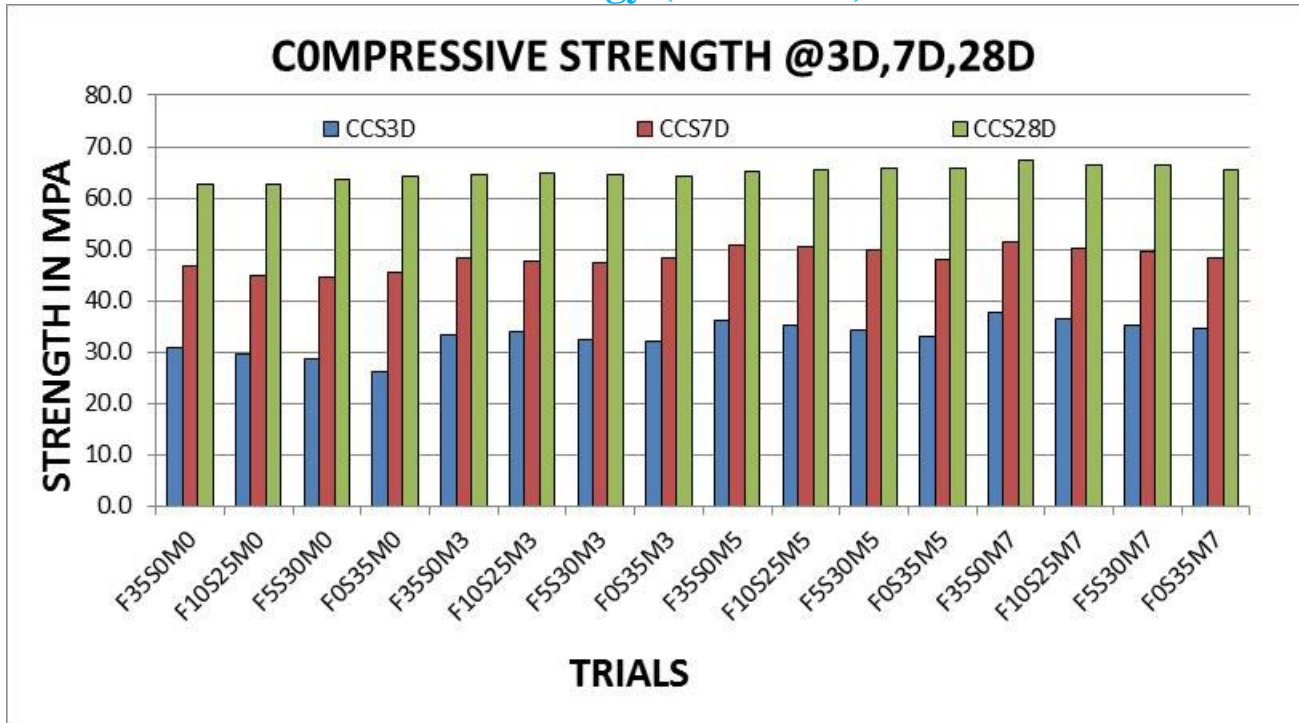
Material Testing:

Aggregates: Sieve analysis, DLBD

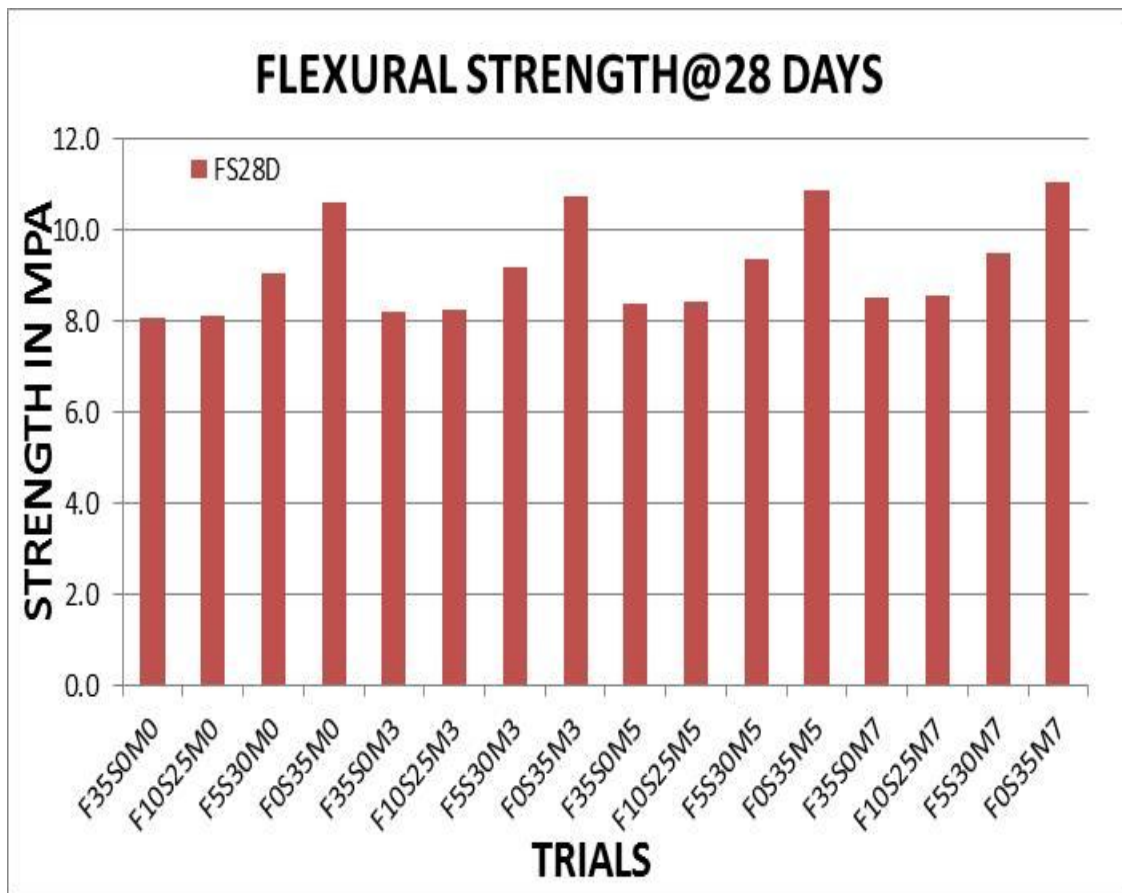
B. Concrete Testing

- 1) Compressive Strength : 3D, 7D, 28D
- 2) Flexural Test : 28D
- 3) Split tensile Test : 28D

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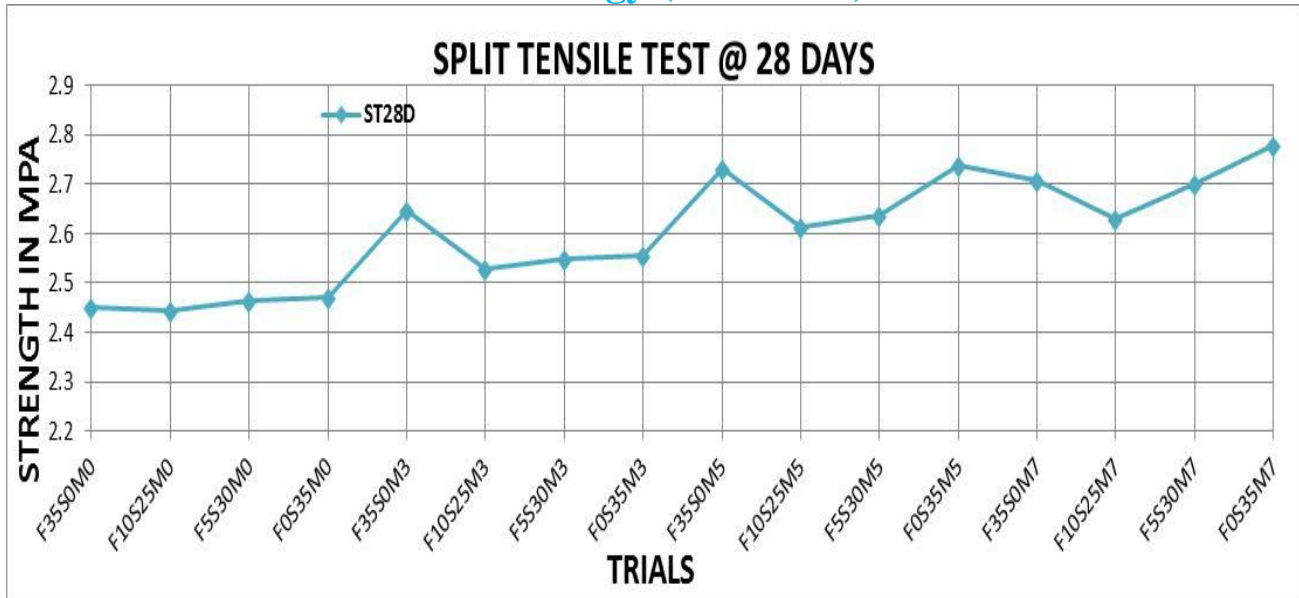


GHRAPICAL REPRESENTATION OF COMPRRIVE TEST

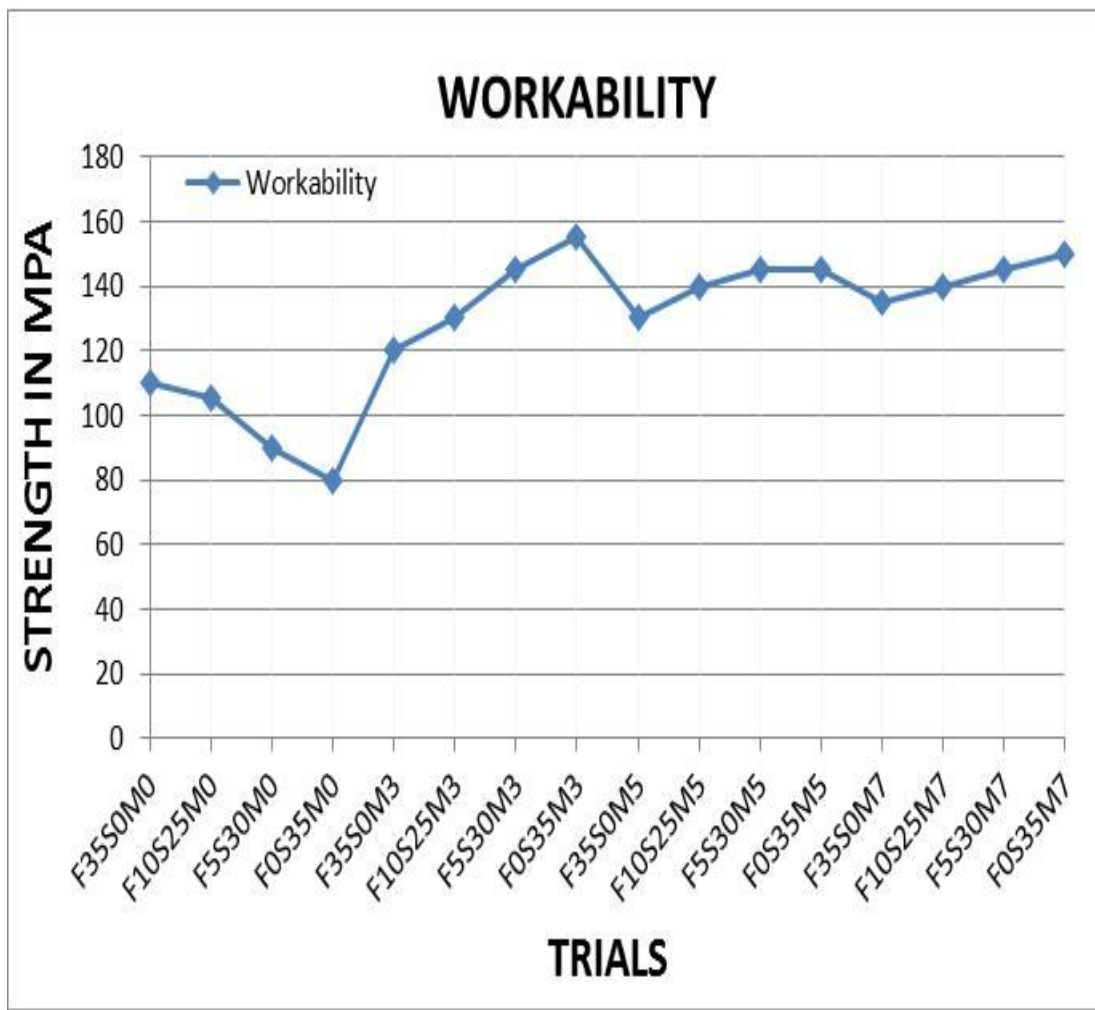


GHRAPICAL REPRESENTATION OF FLEXURE TEST

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GRAPHICAL REPRESENTATION OF SPLIT TENSILE TEST



GRAPHICAL REPRESENTATION OF WORKABILITY TEST

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II. CONCLUSION

- A. Combination of slag, flyash and microfine slag gives good strength. Flyash gives strength after 7 days whereas Slag gives initial strength i.e. after 3 days. And the main constituent is microfine gives strength from first day.
- B. The strength obtained by adding 7% of microfine is then 5%, 3% & 0%.
- C. But the cost is too high and the material is difficult to handle.

REFERENCES

- [1] Aburawi, M. and Swamy, R.N., 2008. Influence of salt weathering on the properties of concrete. *The Arabia Journal for Science and Engineering*, 33 (N 1B), 105–115.
- [2] Akinkulore, O.O., Jiang, C., and Shobola, O.M., 2007. The influence of salt water on the compressive strength of concrete. *Journal of Engineering Applied Science*, 2(2), 412–415.
- [3] ASTM C190, 2001. Annual book of ASTM standards. West Conshohocken, PA: American Society for Testing Materials. Binici, H., et al., 2008. Performance of ground blast furnace and ground basaltic pumice concrete against seawater attack. *Construction and Building Materials*, 22 (7), 1515–1526.
- [4] Building Code Requirements for Structural Concrete (318–99) and Commentary (318 R-99) (1999). Farmington Hills, MI: American Concrete Institute.
- [5] Ferraris, C.F., Stutzman, P.E., and Snyder, K.A., 2006. Sulfate resistance of concrete: a new approach and test, R&D Serial No. 2486. Skokie, IL: Portland Cement Association (PCA).
- [6] Gani, M.S.J., 1997. *Cement and concrete*. 1st ed. England: Chapman and Hills, 49–169. Hoff, G., 1991. Durability of offshore and marine concrete structures. In: 2nd international conference (ACI SP-127), Montreal, Canada. Farmington Hills, MI: American Concrete Institute, 33–64.



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