

# Design of Futsal Field with Floating Concrete (pontoon)

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## ABSTRACT

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In this project, floating concrete is produced by using normal cement as concrete binder, coarse aggregate and fine aggregate are replaced by mica rock and water with High Range Superplasticiser. To make the lightweight concrete in this research, the conventional aggregate must be modified due to their naturally heavy particles.

In this project, a 1:10 scaled model (0.3m X 0.2m X 0.6m) was designed to stimulate a (30m X 20m X 1m) pontoon that consisted 50% of void. There was trial mixed has been done during the project. Cubes (150mm X 150mm X 150mm) were casted and tested for the compressive strength. The compressive strength of the cubes from the test has reached 10MPa in 7<sup>th</sup> days, 12MPa in 14<sup>th</sup> days and 15MPa in 28<sup>th</sup> days. Design of the court has drawn and loadings are figured out and tabulated. Buoyancy of the pontoon are examined and calculated by using both experimental and formula.

In short, vermiculite is suitable to replace the aggregate as it can achieve 15MPa in 28<sup>th</sup> days. By using vermiculite as aggregate replacement, the floating pontoon has a load of 1503.12KN while the buoyancy is 2112KN that acting upwards. This lightweight concrete by using vermiculite is capable to support a futsal field.