

ABSTRACT

Fine limestone aggregate is abundant in several areas of the state. The aggregate is a by-product from the production of concrete stone. Roller compacted concrete (RCC) is a portland cement concrete mixture that can be produced with small size aggregate. The objective of the research was to evaluate limestone screenings in RCC mixes.

Acceptable strength and freeze/thaw durability were obtained with 300 pounds of portland cement and 260 pounds of Class C fly ash. The amount of aggregate passing the number 200 sieve ranged from 4.6 to 11 percent. Field experience in Iowa indicates that the aggregate gradation is more critical to placeability and compactibility than laboratory strength and durability.

CONCLUSIONS

The following conclusions can be made based on this study:

1. With the aggregates studied, about 300 pounds of cement and 260 pounds of fly ash per cubic yard of mix was needed to obtain satisfactory strength and durability.
2. Class 2 or better limestone screening of various gradations blended with concrete sand appear to be suitable for RCC mixes.
3. The freeze/thaw durability of the RCC mixes without air entraining was much better than what is normally obtained for regular concrete mixes without air entraining.

RECOMMENDATIONS

The following recommendations can be made:

1. The minimum cement and fly ash factor for RCC should be established at 300 pounds of cement and 260 pounds of Class C fly ash.
2. The aggregate gradation should be established to meet placeability and compactability demands for the project. Mix