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| 14. Supplementary Notes | | | |
| 15. Abstract <u>Purpose and Need</u> Dowel bar retrofit is a rehabilitation method used by Department of Transportation's across the United States to restore load transfer across joints in portland cement concrete pavement. While this rehabilitation method is effective in restoring load transfer, the concrete mixes that are used are a commercially available mixes that suffer from durability problems and high costs. There is a need to produce a concrete patch mix that can be used in dowel bar retrofits that are durable and low cost. <u>Objective</u> The objective of this research was to develop a high-performance concrete patch mix that uses local materials for dowel bar retrofit projects. The concrete patch mix should exhibit high early strength, good workability, low shrinkage, and good durability. <u>Scope</u> In order to achieve the objective, a literature review was conducted, field engineers and concrete manufactures were contacted, field visits to dowel bar retrofit projects were conducted, and various concrete mixes were made in the laboratory. <u>Summary</u> Trial concrete mixes were made using local aggregates, an air entraining admixture, a water reducing (superpasticizer) admixture, and an accelerating admixture. The final mix design had high early strength (greater than 4,000 psi in 6-hours), 9-inch slump, and 5.75% air content. The final mix design was placed in Styrofoam molds that had the same dimensions as the dowel bar slots in the field. The final mix design showed no signs of debonding or shrinkage. The estimated cost for materials (concrete patch mix only and no labor costs) per slot is approximately \$1.83 to \$2.06. These costs will vary depending on the supplier or manufacturer of each material used. | | | |
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