

**Research Problem Statement**

<b>Date:</b> 10/18/2021	<b>Project Area:</b> Construction
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**Title:** Investigating concrete parapet wall construction techniques

**Problem Statement:**

Concrete parapet walls are constructed along the outmost edge of the roadway of a bridge to protect vehicles and pedestrians. Highway departments often use a similar mix design for the bridge deck and parapet walls with the expectation that the concrete in the parapet walls will last as long as the concrete in the bridge deck. Concrete parapet walls constructed before 1990 were primarily constructed with cast in place concrete with a maximum 4" slump using forms to contain the concrete which is similar for the construction of the bridge decks. Since 1990 the use of slip forming concrete parapet walls using 1" or less slump concrete has gained popularity with contractors due to production efficiencies reducing man hours per linear feet of parapet wall during the construction process. Observations and documentation during routine NBIS in-service bridge inspections indicate that the parapet walls constructed using the slip form method of construction appear to be showing signs of deterioration at a greater rate than the concrete in the bridge decks of the same structures. Reference is given to ArDOT Job # BB0409 - Pay Item # 0041 - SP Silane Protective Surface Treatment.

**Potential Solution to Problem:**

Do research and examine existing barrier walls on roadways and parapet walls on bridges to determine if there is a lack of consolidation in the concrete allowing the absorption of moisture and chlorides or other reasons that would explain the accelerated deterioration of finished concrete products (excluding curb and gutter) that were constructed using the slip form method of construction. Monitor the structures treated under ArDOT Job # BB0409 - Pay Item # 0041 - SP Silane Protective Surface Treatment to determine the effectiveness of the treatment. Compare the results with cast in place concrete with a 4" slump using traditional methods. Perform a cost analysis to determine the long term impact based upon the construction process.

<b>Estimated Project Duration:</b> 24 Months
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Standing Subcommittee Ranking

1/1

Advisory Council Ranking

8/14

Statement Combined with Statement Number(s)