

**GROUTING CONCRETE REINFORCING STEEL:
REVIEW OF WSDOT'S SPECIFICATIONS AND PROPOSED MODIFICATIONS**

Introduction. Improving the conditions of existing bridges often requires the addition of new portions to the in-place structures. This may be done by drilling and grouting reinforcing bars to join the new portion to the existing structure. An example is bridge widening.

Recently, fast-curing resins have been developed that expedite the grouting of reinforcing bars. On the other hand, epoxy-coated bars are specified in certain bridge components to prevent bars' corrosion. Resin grouting of epoxy-coated bars has cast doubt on the bond of the resin grout to the epoxy coating.

Research Approach. The Washington State Department of Transportation (WSDOT) initiated this investigation to review its current procedure of resin grouting epoxy-coated bars and to recommend modifications to that procedure, if necessary, to ensure an adequate bond.

After information from relevant investigations was assimilated and analyzed, the results were compared to the Department's resin grouting procedure. Accordingly, recommendations were made for modification of the currently specified reinforcing bar embedment lengths and drilling and grouting procedures. Finally, a second phase of research consisting of laboratory tests was suggested to verify and/or modify the recommended procedures.

Conclusions and Recommendations. Presently, the embedment lengths required by WSDOT for resin grouting of epoxy-coated bars follow the embedment lengths required for cement grouting of uncoated bars. This study recommends a 50 percent increase in WSDOT's embedment lengths for resin grouting of anchor epoxy-coated bars, and a 30 percent to 40 percent reduction in WSDOT's embedment lengths for resin grouting of epoxy-coated stress transfer bars. Large drill hole diameters were found detrimental to the bond of resin grout to the adjacent concrete because of shrinkage of the grout. Also, core drilling can affect the bond adversely, unless the sides of the core are roughened. Although this study was specifically conducted to evaluate resin grouting of epoxy-coated bars, the findings can be made applicable to cement or resin grouting of uncoated bars.

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