## عنوان مقاله:

APPLICATION OF FIBER REINFORCED PLASTICS FOR CONCRETE T-BEAM BRIDGE STRENGTHENING

## محل انتشار:

سومین کنفرانس بین المللی بتن و توسعه (سال: 1388)

تعداد صفحات اصل مقاله: 6

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## خلاصه مقاله:

A strengthening method using fiber reinforced plastics (FRP) has been widely applied for deteriorated reinforced concrete bridges. Advantages of this method may include that the strengthened structures do not increase dead weight and that no corrosion is concerned. From various experimental studies, behavior characteristics of the FRP strengthened structural members have been generally well evaluated. The majority of those studies, however, have been performed on laboratory sized structural members rather than actual full scale bridges. The study herein used a full scale actual deteriorated bridge to evaluate the strengthening effects with three different FRP materials, carbon fiber sheet, glass fiber reinforced plastics and aramid fiber sheet. In the field load tests, concrete weight blocks were used as a loading system instead of commonly used a live-truck load or hydraulic jacking force. The strengthening was designed as specified in ACI 440.1R which is based on the ultimate strength design concept. From the measured behaviors, it was confirmed that the strengthening using FRP materials successfully improved the flexural capacity of the aged and deteriorated concrete bridge. The strengthened girders behaved linearly up to the design moment even though the applied stress distribution mechanisms were different depending on the FRP materials. Therefore, it is concluded that the strengthening design method specified in ACI 440.1R can be successfully used for actual full scale bridges strengthened with external FRP bonding.

## کلمات کلیدی:

strengthening, CFS, FRP, T-beam bridge, USD