

## **Service Level Tensile Stress Classification of Pretensioned Concrete Beams**

***Christina O'Neill, Grad. Research Asst., Univ. of Florida***  
***H. R. Hamilton III, Assoc. Prof., Univ of Florida***

University of Florida  
Civil and Coastal Engineering  
365 Weil Hall  
P.O. Box 116580  
Gainesville, FL 32611  
Telephone: 813.205.0348  
Fax: 352.392.3394  
Email: coneill@ufl.edu

*Abstract:*

ACI Design Specifications classify prestressed concrete beams based on calculated stresses in the extreme tension fiber under service loads (i.e. Class U, T, or C). Similarly, AASHTO Design Specifications limit these stresses for fully prestressed beams, but allow cracking in partially prestressed members. This paper will cover experimental research aimed at exploring the nature of the damage to the precompressed tensile zone under service loads. Four-point bending tests will be conducted on eight prestressed beams. Beams will be loaded to service loads necessary to cause cracking. Strain, crack width and spacing, and deflection will be monitored to determine the stress level at which cracking occurred. Acoustic emission data will be used in conjunction with the strain data to quantify the damage at each ACI classification stress.