

CE 890 Graduate Seminar

SPEAKER: Feraidon Ataie (Advisor: Dr. Asad Esmaily)
TOPIC: “A Comparative Study of Strength Assessment Methods for RC Columns”
DATE: March 3, 2010
TIME: 4:00 p.m. (refreshments at 3:45 p.m.)
PLACE: 2144 Fiedler Hall

ABSTRACT

Realistic strength assessment of reinforced concrete structural elements, especially columns in bridges and tall buildings is a critical need not only at design time, but also when an accurate evaluation of the strength is needed for decisions such as retrofit or replacement of an existing structure.

Assessment of the flexural strength of a column under a specific axial load level is usually done by constructing the axial force-bending moment interaction response of the section. This assessment can be done using the code procedure. However, the code does not consider the confinement effect, and based on the “stress block” assumption for a pre-assumed failure strain for concrete.

It has been shown by various experimental and analytical studies that the real performance of a reinforced concrete section can be affected by different factors such as material models, analytical methods and loading pattern.

In a comparative study of various strength assessment methods for a reinforced concrete column section, different methods were validated against the existing experimental data. The factors considered in this study, included the effect of confinement, and the method employed in assessment of the axial-force-bending moment interaction response of a column section.

It has been shown that the axial force-bending moment interaction curve, constructed based on the moment-curvature response of a section represents the most realistic response of a section.