

# Numerical Investigation on Load-carrying Capacity of High-strength Concrete-encased Steel Angle Columns

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composite columns by maximizing the contribution of high-





are defined as a function of the equivalent uniform lateral  
confining pressure

local buckling behavior can be described by the effective



$s_{bl}$  = local buckling length (assumed to be the vertical spacing  $s_t$ )



=

correspond to  $b_s \ t_s = 120 \ 15$ ,  $150 \ 12$ , and  $175 \ 10$  mm) of steel angles, yield strength ( $f_{yt} = 315, 450$ , and  $650$  MPa), thickness ( $b_t \ t_t = 100 \ 10$ ,  $100 \ 12$ , and  $100 \ 15$  mm), and spacing ( $s_t/b_c = 0.3, 0.5$ , and  $1$





comparing with



Eq. (7), and  $f_{bs} \approx f_{ys}$  in Eq. (5) can be rewritten as Eq. (13):  $e_{bs} \approx e_{bs1}$  if  $e_{bs1} \approx e_{ys}$ , or  $e_{bs} \approx e_{bs2}$  if  $e_{bs1} \ll e_{ys}$ .

$$e_{bs1} \approx \frac{k_b p^2}{12 \delta_1} \frac{t_s}{0.3^2 p}$$



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