



$T$  is tension in the anchor bolts

$C$  is the net compression which acts at  $x/3$  from end of plate

$C = P + T$  for equilibrium

Calculate  $x$  when  $C = P$ , i.e.  $T = 0$  and  $x = 2P/B \cdot f_p n$

If  $P$  is directly above  $C$  (blue arrow) then  $T = 0$  and concrete stress is maximum, namely  $f_p n$

If  $P$  is left of  $C$  (red arrow) then  $T$  would be negative if it could take compression, which we assume it cannot.

If  $P$  is to the right of  $C$  (green arrow) then  $T$  is positive and  $x$  must increase which means  $C$  must increase and move left.

The AISC Guide states that  $T$  becomes positive when  $P$  is applied outside the kern. Actually,  $T$  does not become positive until  $P$  has an eccentricity of  $N/2 - x/3$ .

$$x = 2P/(B \cdot f_p n)$$