

## REQUIREMENTS OF TORONTO BY-LAW

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## Minimum Width of Stem of T- or L-Beams

No provision.

(84)

 $\frac{1}{3}$  depth of rib below slab.

## Minimum Width of Rectangular Beams

No limit.

(85)

L/B not greater than 20.

## Reinforcement in Flange of T-Beams

(109 Sub 9) An effective metallic bond to be provided between beam and slab, also transverse bars in tops of flange of girders.

(86)

Slab steel must cross full width of flange.

## Columns

(110 Sub 6) Effective diameter = distance outside to outside of longitudinal reinforcement.

(99)

Same as Toronto.

## Least Diameter

(110 Sub 10) Least effective diameter to be 8" and area 64 square inches.

No minimum given.

## Rectangular Columns

(110 Sub 9) Four rods required.

(101)

Same as Toronto.

## Round Columns

Not mentioned.

(102)

Six rods required.

## Minimum Diameter of Rectangular Hoops

(110 Sub 8)  $\frac{1}{4}$ " diameter.

(103)

 $\frac{3}{16}$ " diameter.

## Circular Hoops

(110 Sub 8)  $\frac{1}{4}$ " diameter.

(104)

 $\frac{1}{8}$ " diameter.

## Spacing of Bands

(110 Sub 8) Not greater than 12" or effective diameter.

(105 a, b)

Not greater than  $\frac{6}{10}$  effective diameter or 16 times diameter of vertical rod.(110 Sub 7) Spiral reinforcement spaced not greater than  $\frac{1}{6}$  of effective diameter and not greater than 3" and volume to be 1% of core.Not greater than  $\frac{3}{10}$  effective diameter at ends.Volume to be  $\frac{1}{2}\%$  of core.

## Size of Vertical Rods

(110 Sub 9) Not less than  $\frac{9}{16}$ " round or  $\frac{1}{2}$ " square.

(108)

Not less than  $\frac{1}{2}$ " round and not greater than 2" square.

## Area of Vertical Reinforcement

(110 Sub 9) Not less than 1% hooped core.

(109)

Same as Toronto.

## Joints

(110 Sub 13) At floor levels or laterally supported points.

(110)

Same as Toronto.

## Rectangular Pillars

No provision.

(112)

Cross ties required where  $d = 1\frac{1}{2}b$ .

## Column Formulae

(110 Sub 3i)  $P = 450 (A_c + 15 A_s)$  for banded columns with 1% to 4% vertical reinforcement.  
 $P = 650 (A_c + 15 A_s)$  for spirally hooped columns with 1% longitudinal steel and 1% spiral steel.

(115)

Stress varies with percentage of lateral reinforcement.

Stress varies with percentage of spiral reinforcement.