

moreover, spiral reinforcements are compressed coincided with the compression damage of concrete.

NOMENCLATURE

f	stress	MPa
A	area	mm ²
P	axial load	tons

Greek letters

ρ	ratio of reinforcement
ϵ	strain
μ	ductility

Subscripts

c	concrete
t	transverse steel
0	initial
g	gross
Δ	displacement
u	ultimate

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