Anais do
61º Congresso Brasileiro do Concreto
CBC2019
Outubro / 2019

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keyword: 80 characters

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Instruction

1. Papers should be written in English or Spanish. Please follow strictly international grammatical rules for both languages. Poor written papers in any of the allowed languages will be subjected to rejection by the editorial borad.
2. Papers, including illustrations, tables and bibliography, are limited to 12 pages. Pages must be white, according to this template/model, with their corresponding headers and footnotes.
3. The font, for the body of the text, must be simple "Arial", size 12. They must in compliance with the standards established by this model.

MODEL

1 Introduction

1.1 Problem Statement

1.1.1 Background

Text in Arial size 12 – write your paper down here

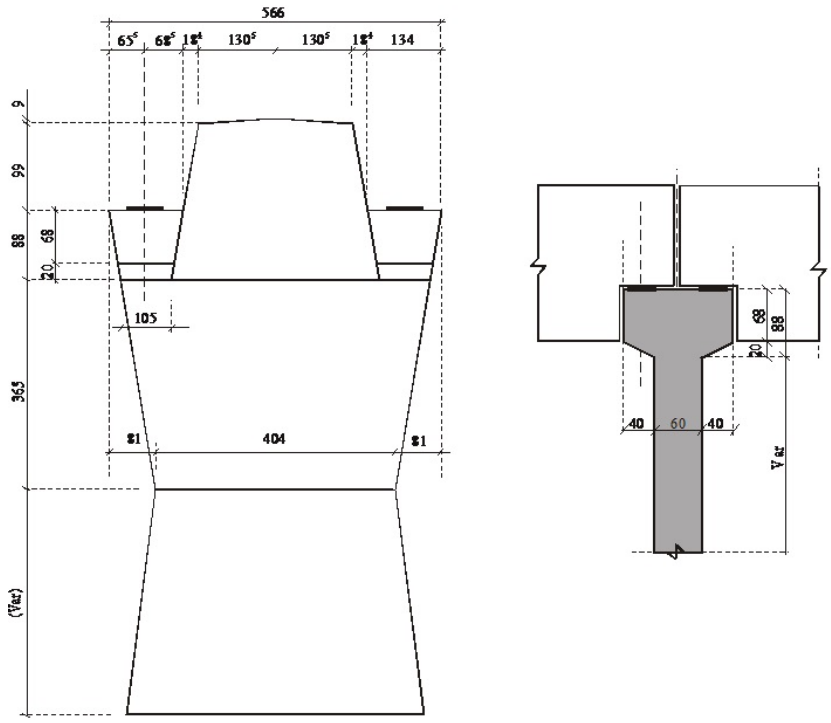

Figura 1: Title of the figure ((FERNANDES et al., 1999))

2 Distress Ocurrences

In several kinds of piles the cracks .....

2.1 Distress Modeling

2.1.1 Mazars Model

Since the superposition of the stresses intensity factor ....

$$G = \frac{K_I^2}{E} + \frac{K_I^2}{E} + \frac{(1+U)(1-2U)K_{III}^2}{vE} = \frac{K_I^2}{E} + \frac{K_{II}^2}{E} + \frac{K_{III}^2}{\mu} \qquad \text{(Equation 1)}$$

Values computed for G by using K_I and K_{II} as shown in figures 4 e 5 as reported by SHAH et al. (1995) or anticipated by CEB MC-90 (1993), or even through experimental methods like proposed by BITTENCOURT et al. (2000) ....

Tabela 1: Forces and moments in remaining section - $\gamma_f = 1,4$

Crack	Highness	Case I de Loading			Case II of Loading		
$c(cm)$	$a(cm)$	$N_k(t_f)$	$M_{kh}(T_f m)$	$M_{ka}(t_f m)$	$Nk(t_f)$	$M_{kh}(t_f m)$	$M_{ka}(t_f m)$
50	124,1	276,0	2,8	20,6	242,8	36,9	17,6
120	110,3	276,0	6,6	43,6	242,8	39,7	35,8
150	104,3	276,0	8,3	53,5	242,8	40,9	43,8
200	94,5	276,0	11,0	69,9	242,8	42,9	57,2
250	84,6	276,0	13,8	86,3	242,8	44,9	70,6
430	49,0	276,0	23,7	145,5	242,8	52,1	118,9

$c(cm)$	$a(cm)$	v_d	μ_{db}	μ_{da}	v_d	μ_{dh}	μ_{da}
50	124,1	0,36	0,01	0,03	0,31	0,09	0,02
120	110,3	0,39	0,02	0,07	0,34	0,11	0,05
150	104,3	0,41	0,02	0,09	0,36	0,11	0,07
200	94,5	0,44	0,03	0,14	0,39	0,13	0,11
250	84,6	0,49	0,04	0,21	0,43	0,14	0,17
430	49,0	0,79	0,11	1,00	0,69	0,25	0,82

3 References

BITTENCOURT, T. et al. Estudo experimental do fraturamento do concreto estrutural por meio de corpos de prova cilíndricos. **Boletim Técnico da Escola Politécnica da Universidade de São Paulo, São Paulo**, 2000.

COMITÉ EURO-INTERNACIONAL DU BÉTON. **CEB-FIP model code 1990: Design code**. [S.l.], 1993.

FERNANDES, C. et al. Reforço de pilares de elevado do metrô de são paulo, 41 º congresso brasileiro do concreto. **São Paulo, IBRACON**, 1999.

SHAH, S. P.; SWARTZ, S. E.; OUYANG, C. **Fracture mechanics of concrete: applications of fracture mechanics to concrete, rock and other quasi-brittle materials**. [S.l.]: John Wiley & Sons, 1995.