REFERÊNCIAS BIBLIOGRÁFICAS

BESCOND, B.; BOTTERO, A.; TOUZOT, G. (1974). **Tables de calcul des tassements**. Montreal: Les Presses de L'Université du Quebec; Paris: Eyrolles Editeur, 332 p.

BJERRUM, L. (1963). Allowable settlement of structures. **Proc. European Conf. on Soil Mech. and Found. Eng**., Wiesbaden, Alemanha, v. 3, 135-137.

BOUSSINESQ, J. (1885). Équilibre d'elasticité d'un solide isotrope sans pesanteur, supportant différents poids. **Compte Rendus à l'Académie des Sciences**, v. 86, 1260-1263.

BROWN, P. T. (1969). Numerical analyses of uniformly loaded circular rafts on elastic layers of finite depth. **Géotechnique**, v. 19, n. 2, 301-306.

BROWN, P. T.; GIBSON, R. E. (1972). Surface settlement of a deep elastic stratum whose modulus increases linearly with depth. **Canadian Geotechnical Journal**, v. 9, 467-476.

BURLAND, J. B.; BROMS, B. B.; MELLO, V. F. B. (1977). Behaviour of foundations and structures. **Proc. 9th Int. Conf. on Soil Mech. and Found. Eng**., Tóquio, v. 2, 495-546.

BUTTERFIELD, R.; BANERJEE, P. K. (1971). The problem of pile group – pile cap interaction. **Géotechnique**, v. 21, n. 2, 135-142.

CLANCY, P.; RANDOLPH, M. F. (1992). Analysis and design of piled raft foundations. Perth: UNIVERSITY OF WESTERN AUSTRALIA. Research report G1062.

COOKE, R. W. (1986). Piled raft foundations on stiff clays – a contribution to design philosophy. **Géotechnique**, v. 36, n. 2, 169-203.

COOKE, R. W. *et al*. (1981). Some observations of the foundation loading and settlement of a multi-storey building on a piled raft foundation in London Clay. **Proc. Instn. Civ. Engrs**., Part 1, v. 70, 433-460.

COOKE, R. W.; PRICE, G.; TARR, K. (1980). Jacked piles in London Clay: interaction and group behaviour under working conditions. **Géotechnique**, v. 30, n. 2, 97-136.

DESAI, C.S. *et al*. (1984). Thin element for interfaces and joints. **Int. J. Num. and Anal. Methods in Geomechanics**, v. 8, 19-43.

FLEMING, W. G. K. *et al*. (1992). **Piling Engineering**. Glasgow: Blackie and Son, 390pp.

FLETCHER, R. A. (1971). A general quadratic programming algorithm. **Journal of Institute of Mathematics and its Applications**, n. 7, 76-91. (apud Kim *et al*., 2001)

GIFFITHS, D. V.; CLANCY, P.; RANDOLPH, M. F. (1991). Piled raft foundation analysis by finite elements. **Computer Methods and Advances in Geomechanics**, Balkema, Rotterdam, 1153-1157.

GOLUB, G. H.; VAN LOAN, C. F. (1996). **Matrix Computations**. 3ª ed. Baltimore: The Johns Hopkins University Press.

HACHICH, W. *et al*. (1996) **Fundações – Teoria e Prática**. São Paulo: PINI.

HAIN, S. J. (1977). **A rational analysis of raft foundation**. PhD Thesis University of New South Wales. (apud Hain & Lee, 1978)

HAIN, S. J.; LEE, I. K. (1978). The analysis of flexible raft-pile systems. **Géotechnique**, v. 28, n. 1, 65-83.

HANSBO, S. (1993). Interaction problems related to the installation of pile groups. **Proc. 2nd Int. Geot. Sem. on Deep Foundations on Bored and Auger Piles**, Ghent, 59-66. (apud Randolph, 1994)

HORIKOSHI, K.; RANDOLPH, M. F. (1996). Centrifuge modeling of piled raft foundation on clay. **Géotechnique**, v. 46, n. 4, 741-752.

HORIKOSHI, K.; RANDOLPH, M. F. (1998). A contribution to optimum design of piled rafts. **Géotechnique**, v. 48, n. 3, 301-317.

KATZENBACH, R.; ARSLAN, U.; GUTWALD, J. (1994). A numerical study on pile foundation of the 300m high Commerzbank tower in Frankfurt Main. **Numerical Methods in Geotechnical Engineering**, Balkema, Rotterdam, 271-277.

KIM, K. N. *et al*. (2001) Optimal pile arrangement for minimizing differential settlements in piled raft foundations. **Computers and Geotechnics**, v. 28, 235-253.

KUWABARA, F. (1989). An elastic analysis for piled raft foundations in a homogeneous soil. **Soils and Foundations**, v. 29, n. 1, 82-92.

MENDONÇA, A. V.; DE PAIVA, J. B. (2000). A boundary element method for the static analysis of raft foundations on piles. **Engineering Analysis with Boundary Elements**, v. 24, 237-247.

MILOVIC, D. M. (1970). Contraintes et déplacement dan une couche élastique d'epaisseur limitée produite par une fondation circulaire. **La Génie Civil**, v. 147, n.5, 281-285.

MINDLIN, R. D. (1936). Force at a point in the interior of a semi-infinite solid. **Physics**, n. 7, 195-202.

NAJJAR, Y. M. (1994). Pile group foundation: A parametric study. **Computer Methods and Advances in Geomechanics**, Balkema, Rotterdam, 2373-2378.

OTTAVIANNI, M. (1975). Three-dimensional finite element analysis of vetically loaded pile groups. **Géotechnique**, v. 25, n. 2, 159-174.

PADFIELD, C. J.; SHARROCK, M. J. (1983). Settlement of structures on clay soils. **CIRIA 27**. (apud Fleming *et al*., 1992)

PHUNG, D. L. (1993). **Footings with settlement-reducing piles in non-cohesive soil**. Dissertation, Department of Geotechnical Engineering, Chalmers University of Technology, Gothenburg. (apud Randolph, 1994)

POULOS, H. G. (1968). Analysis of the settlement of pile groups. **Géotechnique**, v. 18, n. 4, 449-471.

POULOS, H. G. (1972). Load settlement prediction for piles and piers. **J. Soil Mech. Fdns. Div**., ASCE, v. 98, SM9, 379-397.

POULOS, H. G. (1979). Settlement of single piles in nonhomogeneous soil. **J. Geot. Eng. Div**., ASCE, v. 105, n.5, 627-641.

POULOS, H. G. (1991). Analysis of piled strip foundations. **Computer Methods and Advances in Geomechanics**, Balkema, Rotterdam, 183-191.

POULOS, H. G. (1994). An approximate numerical analysis of pile-raft interaction. **Int. J. Numer. Anal. Meth. Geomech**., v. 18, 73-92.

POULOS, H. G.; DAVIS, E. H. (1980). **Pile Foundation Analysis and Design**. New York: John Wiley and Sons, 397 p.

RANDOLPH, M. F. (1983). Design of piled raft foundations. **Proc. Int. Symp. On Recent Developments in Laboratory and Field Tests and Analysis of Geotechnical Problems**, Bangkok, 525-537 . (apud Randolph, 1994)

RANDOLPH, M. F. (1994). Design methods for pile groups and piled rafts. **XIII ICSMFE**, New Delhi, Índia, 61-82.

RANDOLPH, M. F.; CLANCY, P. (1993). Efficient design of piled rafts. **Proc. of 2nd Int. Geot. Sem. on Deep Foundations on Bored and Auger Piles**, Ghent, 119-130.

RANDOLPH, M. F.; WROTH, C. P. (1978). Analysis of deformation of vertically loaded piles. **J. Geot. Eng. Div**., ASCE, v. 104, n. 12, 1465-1488.

RANDOLPH, M. F.; WROTH, C. P. (1979). Analysis of deformation of vertcally loaded pile groups. **Géotechnique**, v. 29, n. 4, 423-439.

ROWE, R. K. (1982). The determination of rock mass modulus variation with depth for weathered or jointed rock. **Canadian Geotechnical Journal**, v. 19, 29-43.

RUSSO, G. (1998). Numerical analysis of piled rafts. **Int. J. Numer. Anal. Meth. Geomech**., v. 22, 477-493.

SALES, M. M.; CUNHA, R. P.; FARIAS, M. M. (2000). Método alternativo para a simulação numérica do comportamento de estacas totalmente mobilizadas em fundações mistas. **INFOGEO**, Universidade Federal do Paraná, Curitiba, Paraná.

SMALL, J. C.; POULOS, H. G. (1998). **User's manual of GARP6**. Centre for Geotechnical Researches, University of Sydney, Australia. (apud Sales *et al*., 2000)

SMITH, I. M.; WANG, A. (1998). Analysis of piled rafts. **Int. J. Numer. Anal. Meth. Geomech.**, v. 22, 777-790.

SOMMER, H.; TAMARO, G.; DEBENEDICTTIS, C. (1991). Messe Turm, foudations for the tallest building in Europe. **4th International DFI Conference**, Balkema, Rotterdam, 139-145.

SOMMER, H.; WITTMANN, P.; RIPPER, P. (1985). Piled raft foundation of a tall building in Frankfurt clay. **ICSMFE**, v. 11, n. 4, 2253-2257.

STEINBRENNER, W. (1934) Tafeln zur Setzungberechnung. **Die Strasse**, v. 1, n. 221.

TA, L. D.; SMALL, J. C. (1996). Analysis of piled raft systems in layered soils. **Int. J. Numer. Anal. Meth. Geomech**., v. 20, 57-72.

TA, L. D.; SMALL, J. C. (1997a). Efficient methods for calculating the behaviour of piled raft foundations on layered soils. **Computer Methods and Advances in Geomechanics**, Balkema, Rotterdam, 2171-2176.

TA, L. D.; SMALL, J. C. (1997b). An approximation for analysis of raft and piled raft foundations. **Computers and Geotechnics**, v. 20, n. 2, 105-123.

TA, L. D.; SMALL, J. C. (1998). Analysis and performance of piled raft foundations on layered soils – case studies. **Soils and Foundations**, v. 38, n. 4, 145-150.

TOMONO, M.; KAKURAI, M.; YAMASHITA, K. (1987). Analysis of settlement behavior of piled raft foundations. TAKENAKA TECHNICAL RESEARCH REPORT, v. 37, 115-125. (apud Yamashita & Kakurai, 1991)

WIESNER, T. J. (1991). Various applications of piled raft analysis. **Computer Methods and Advances in Geomechanics**, Balkema, Rotterdam, 1035-1039.

YAMASHITA, K.; KAKURAI, M. (1991). Settlement behaviour of a raft foundation with friction piles. **4th International DFI Conference**, Balkema, Rotterdam, 461-466.

YAMASHITA, K.; TOMONO, M.; KAKURAI, M. (1987). A method for estimating immediate settlement of piles and pile groups. **Soils and Foundations**, v. 27, n. 1, 61-76..

ZHANG, H. H.; SMALL, J. C. (2000). Analysis of capped pile groups subjected to horizontal and vertical loads. **Computers and Geotechnics**, v. 26, 1-21.

APÊNDICE 1

GRÁFICOS FATOR DE INFLUÊNCIA I_z *vs.* x/R

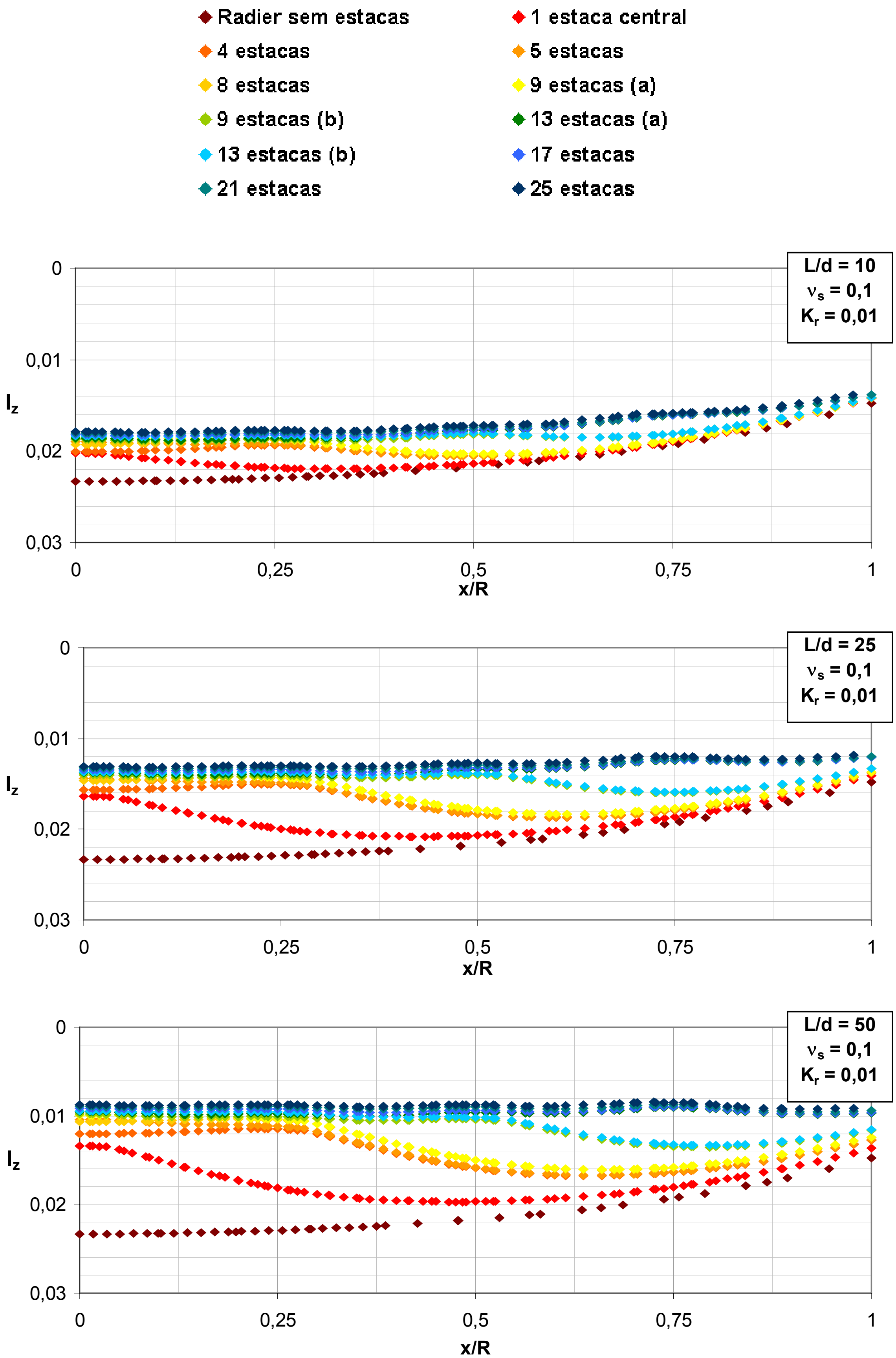


Figura A1. 1 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,01, seção A-A).

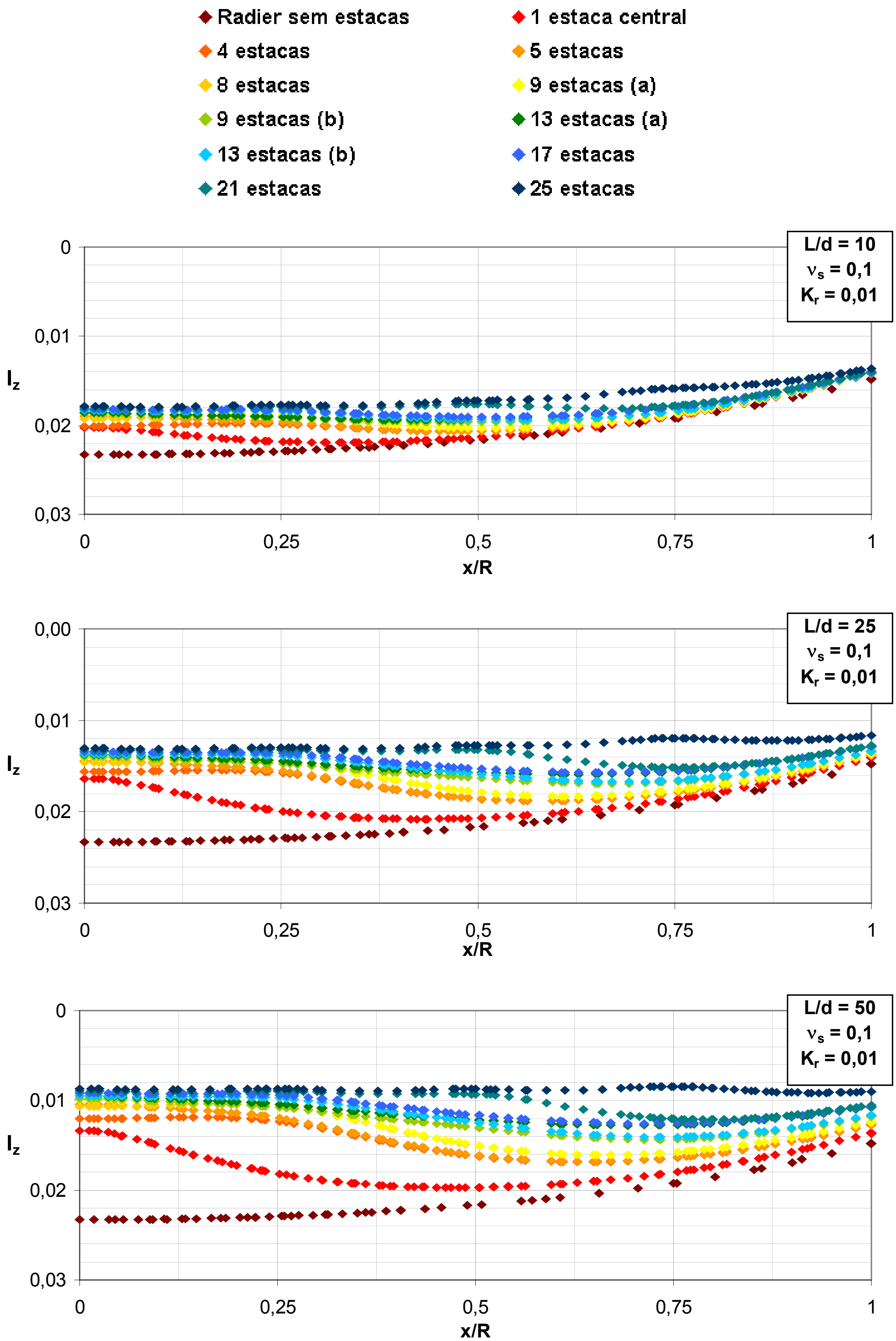


Figura A1. 2 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,01, seção B-B).

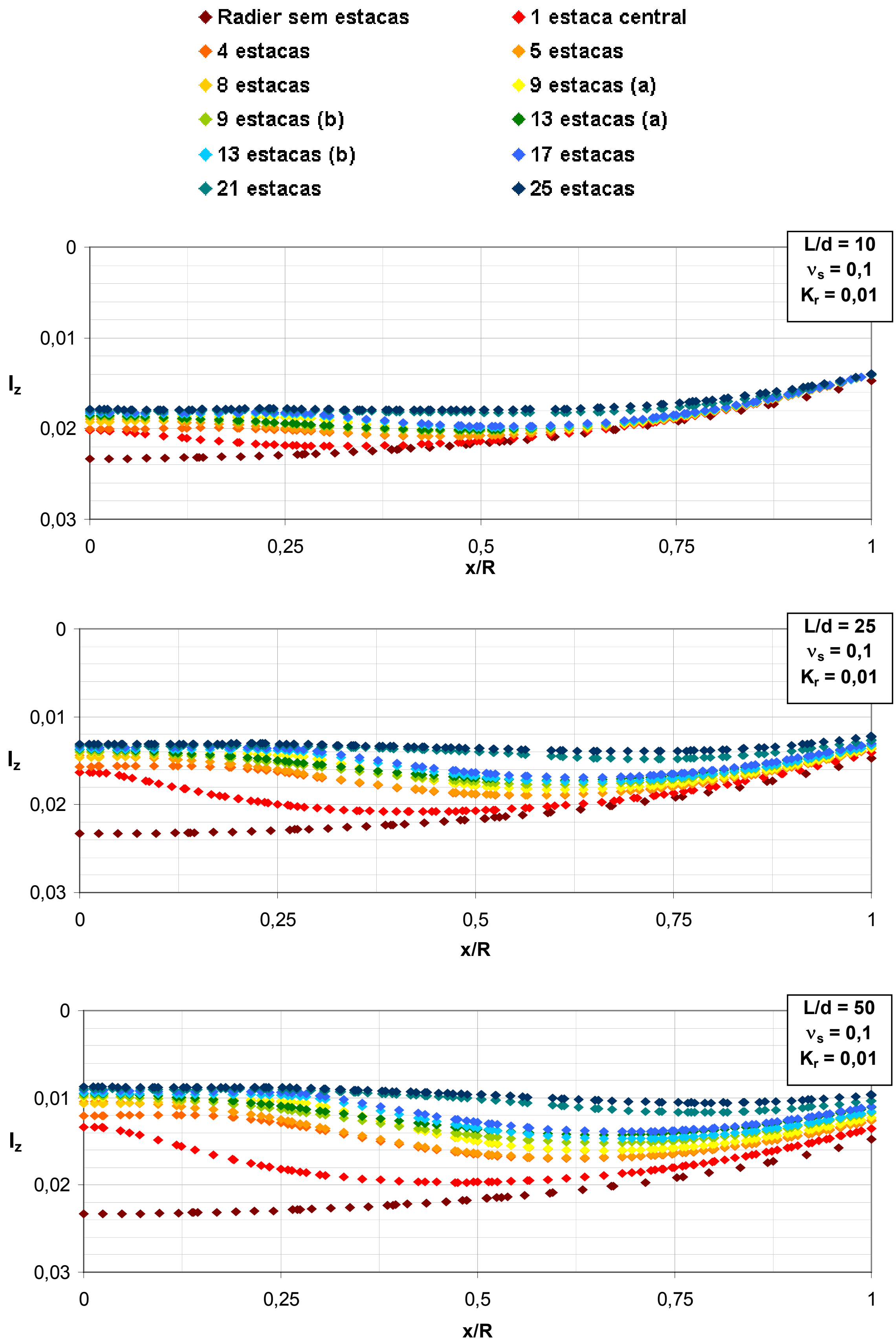


Figura A1. 3 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,01, seção C-C).

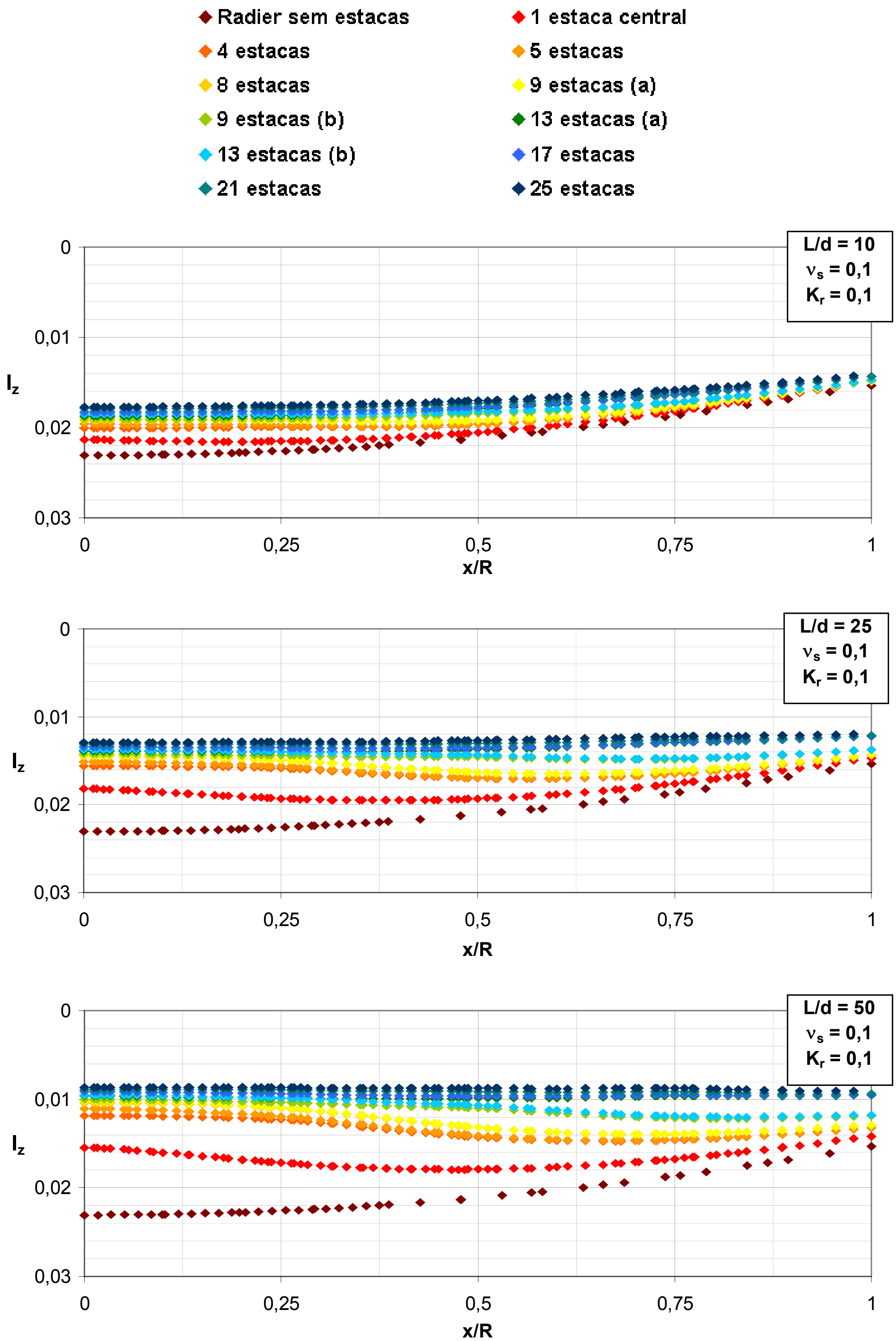


Figura A1. 4 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,1, seção A-A).

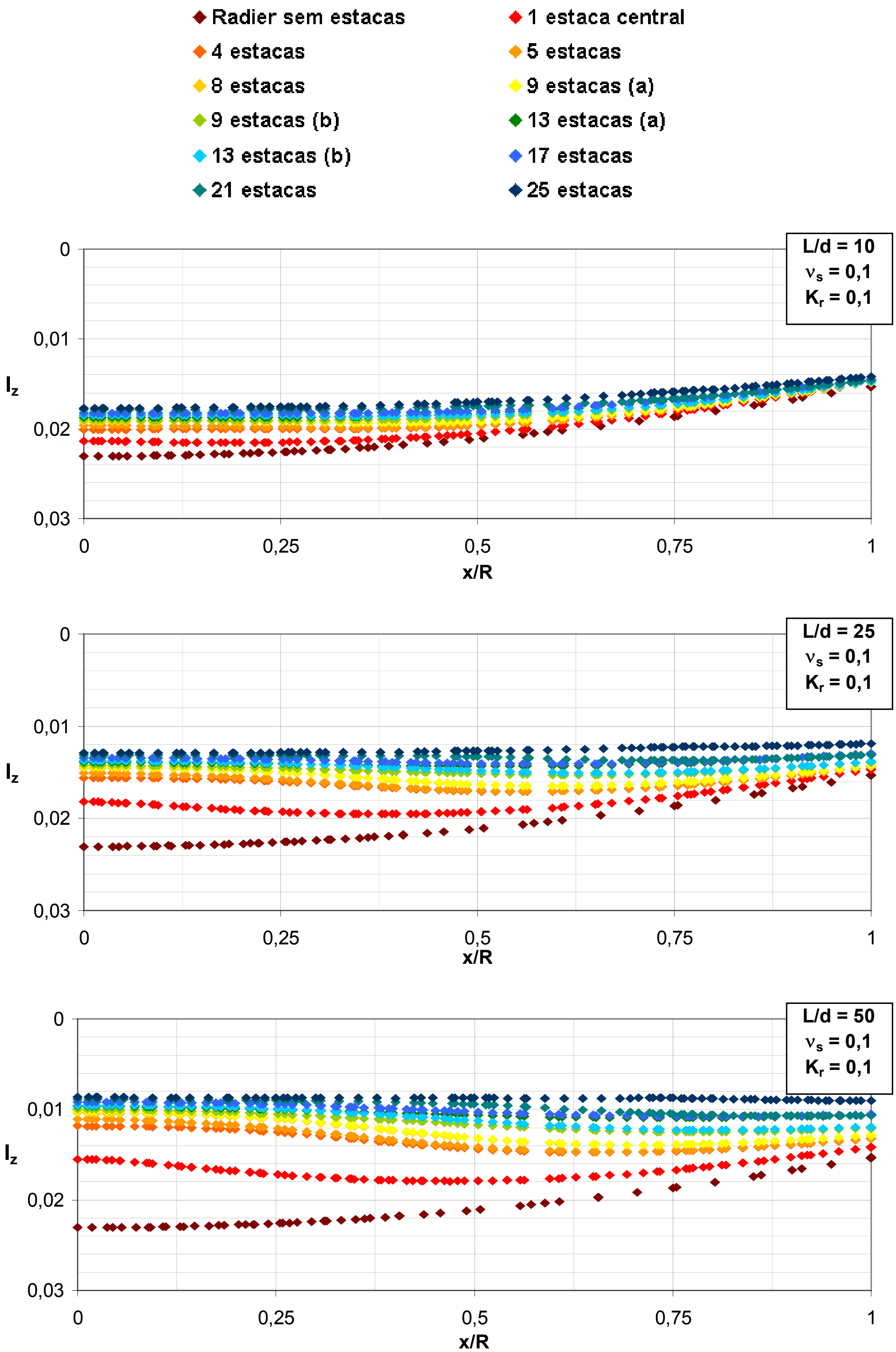


Figura A1. 5 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,1, seção B-B).

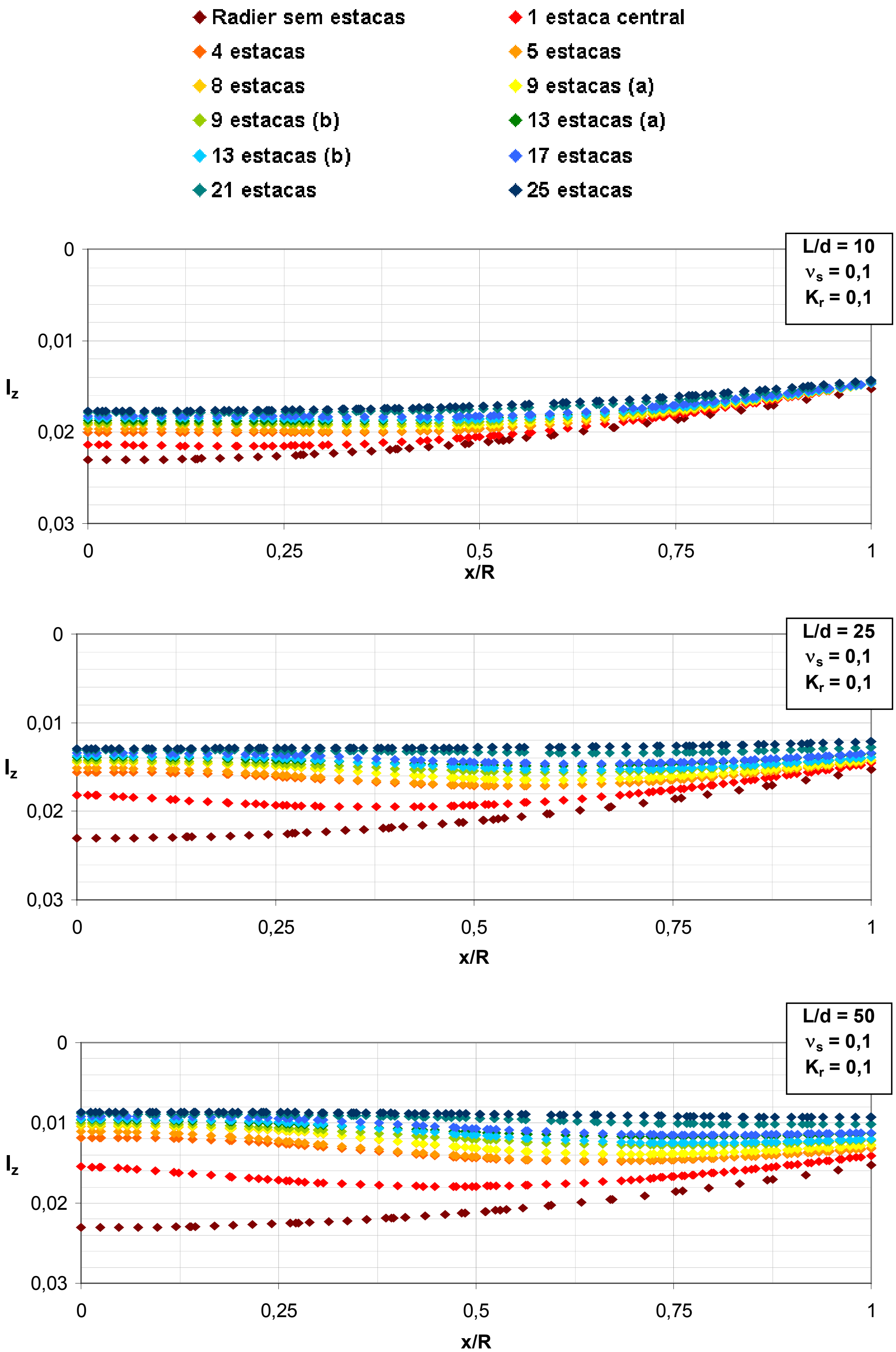


Figura A1. 6 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 0,1, seção C-C).

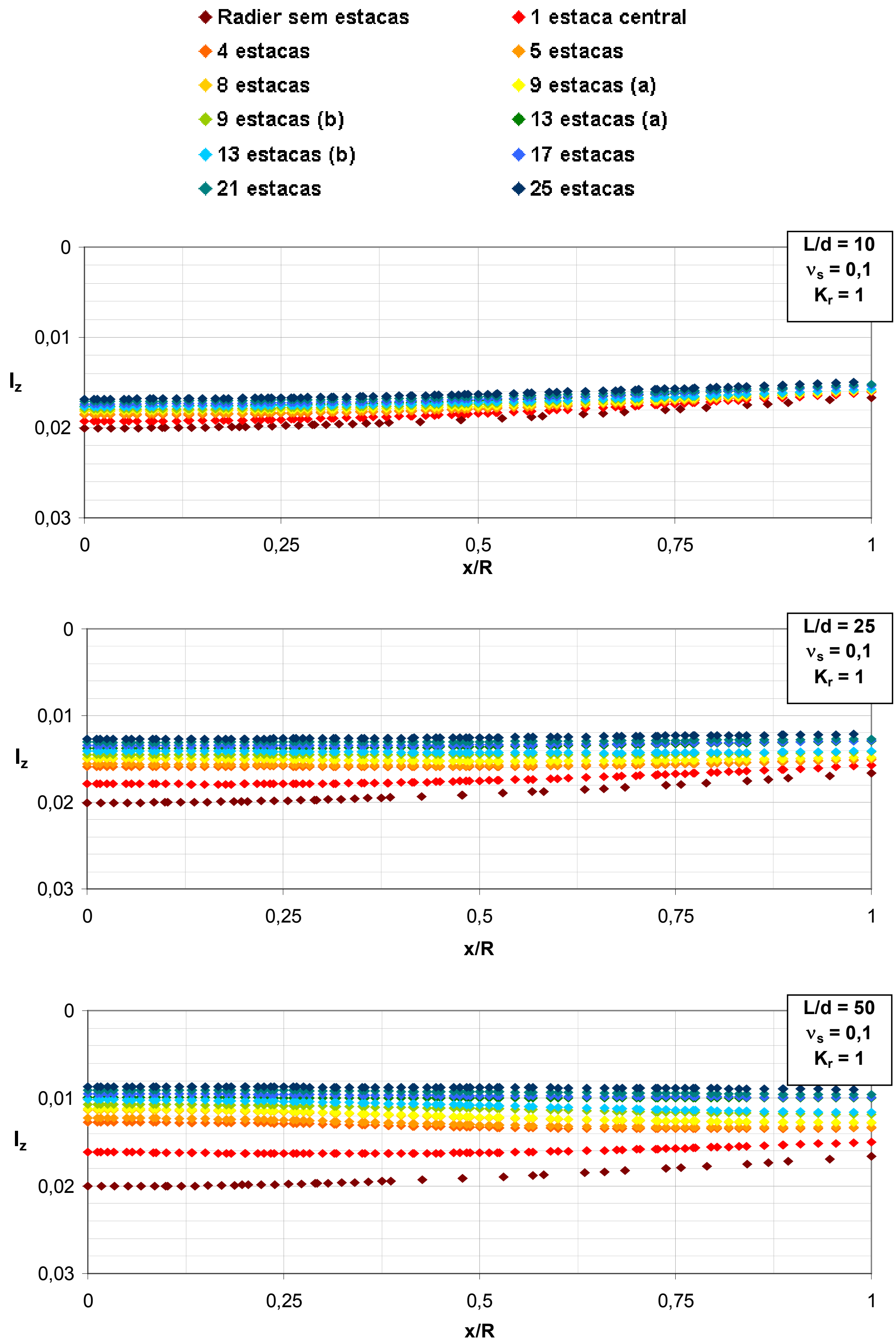


Figura A1. 7 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 1, seção A-A).

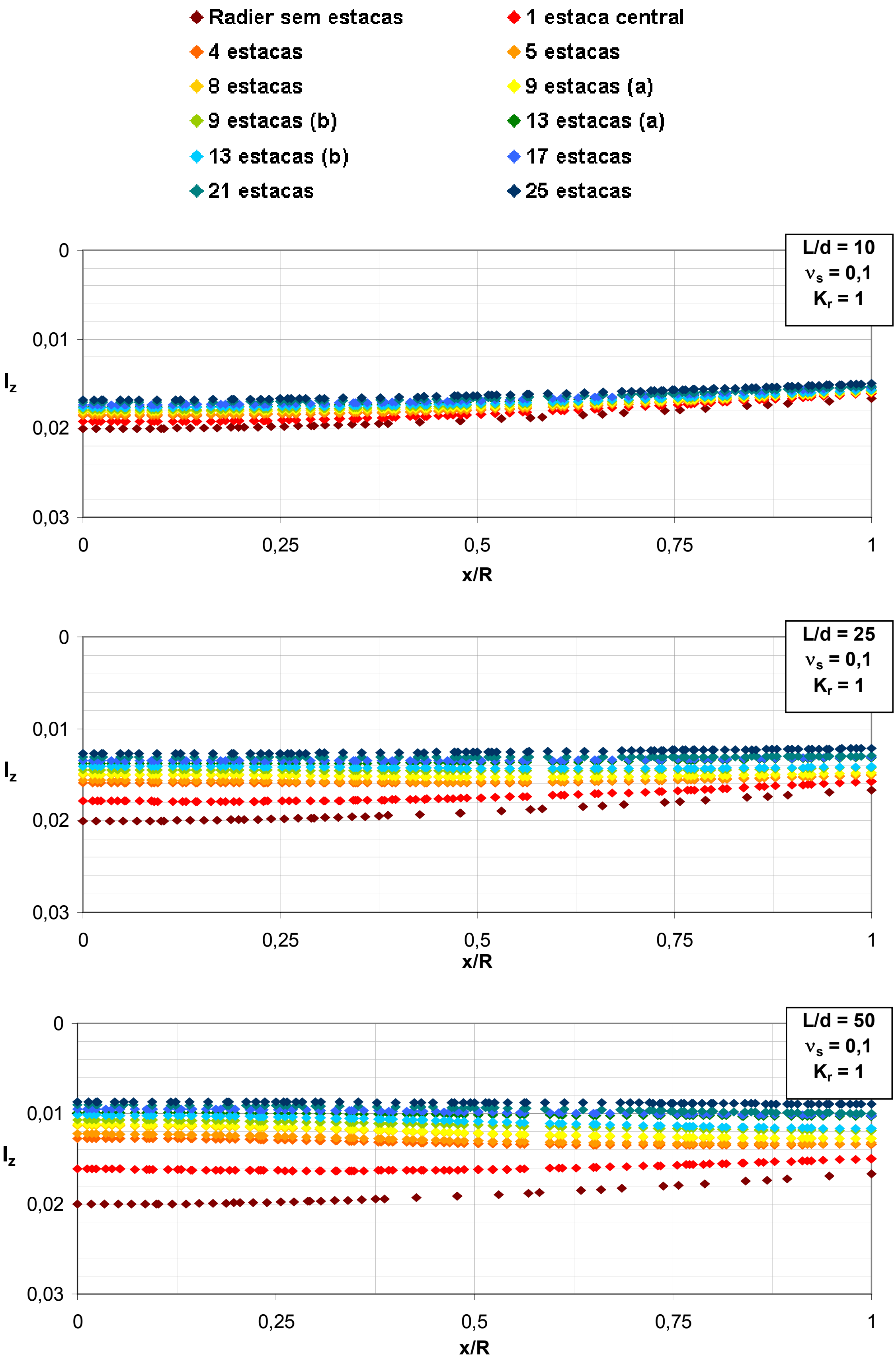


Figura A1. 8 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 1, seção B-B).

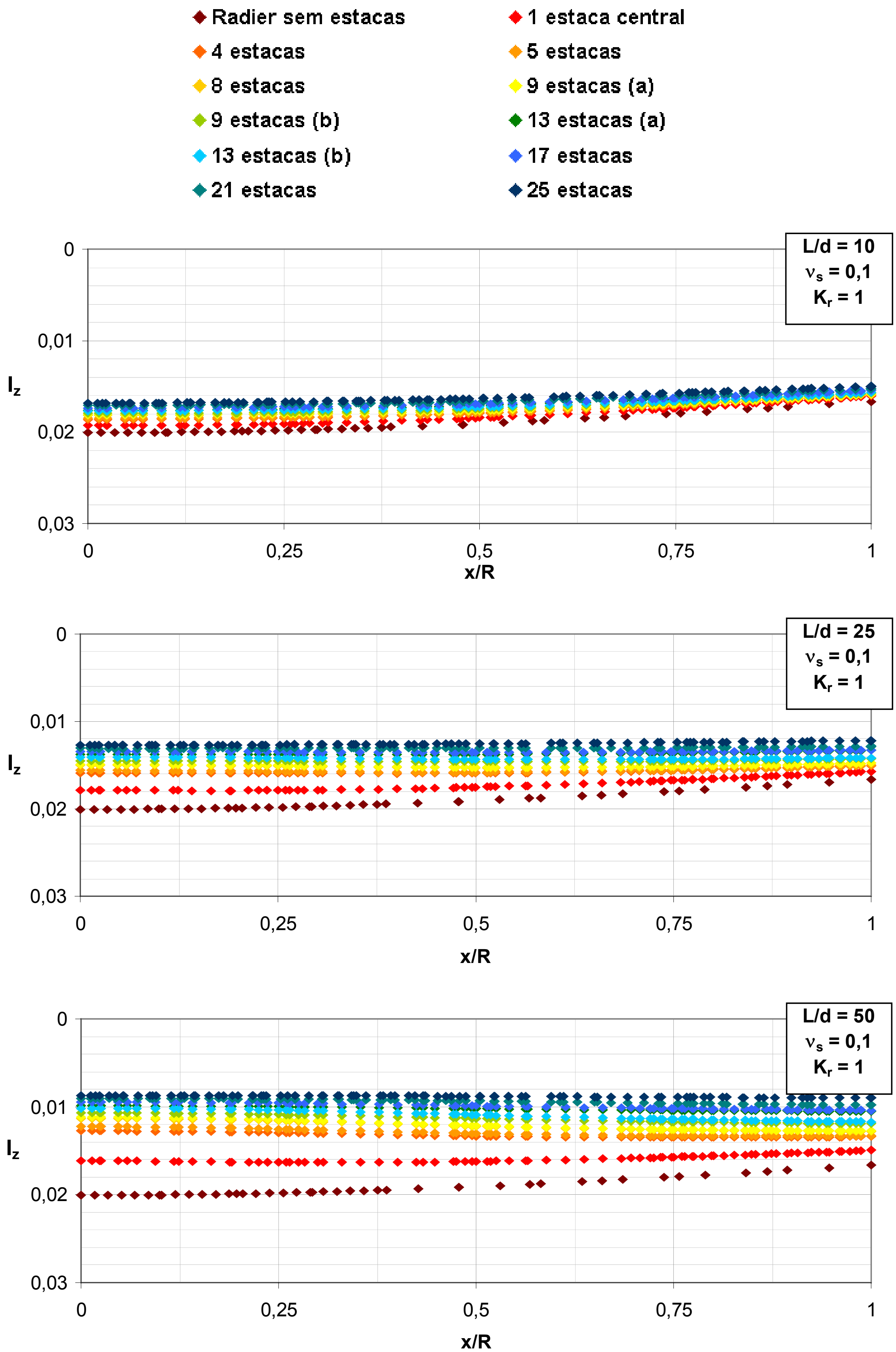


Figura A1. 9 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,1, K_r = 1, seção C-C).

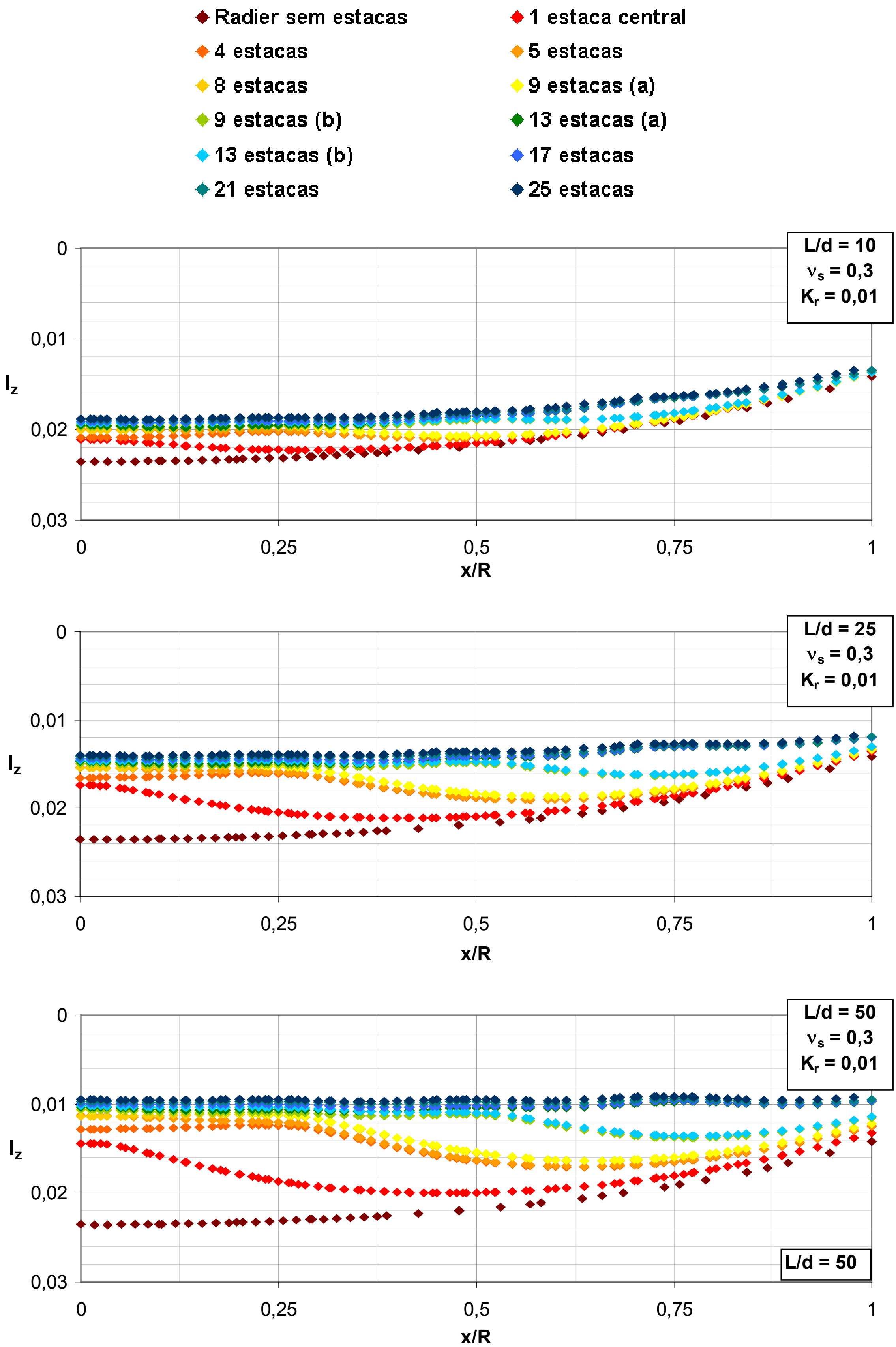


Figura A1. 10 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,01, seção A-A).

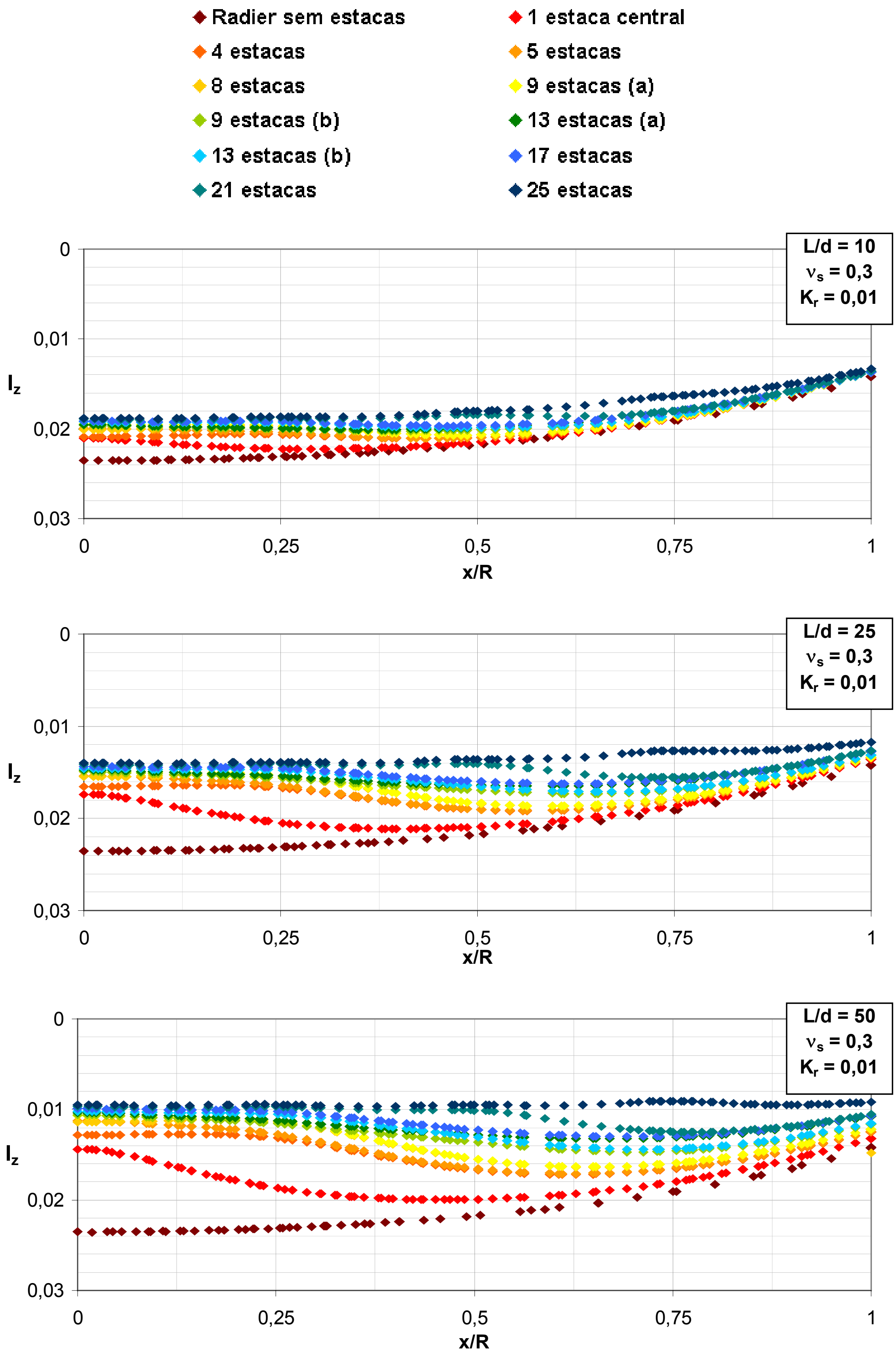


Figura A1. 11 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,01, seção B-B).

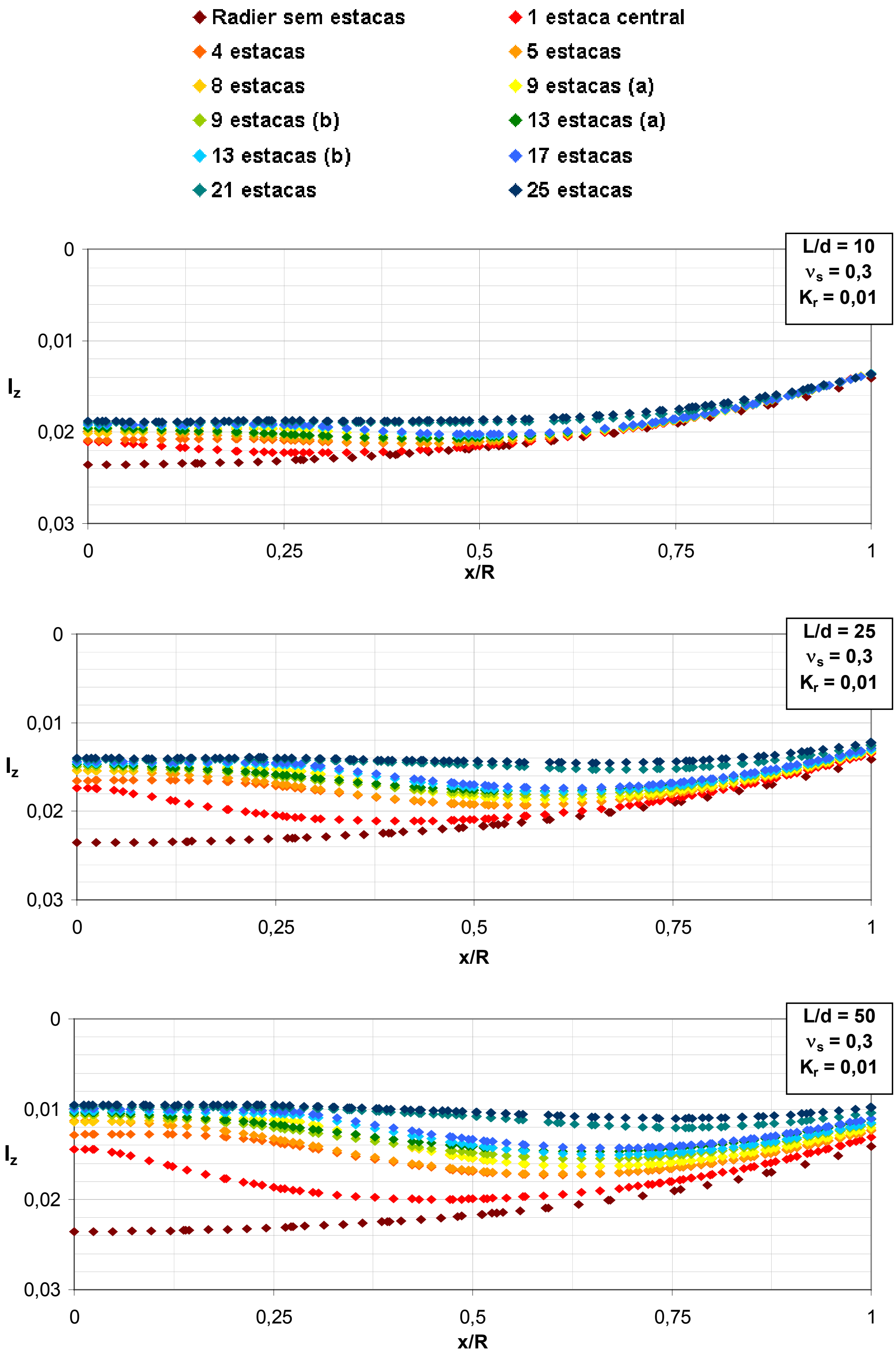


Figura A1. 12 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,01, seção C-C).

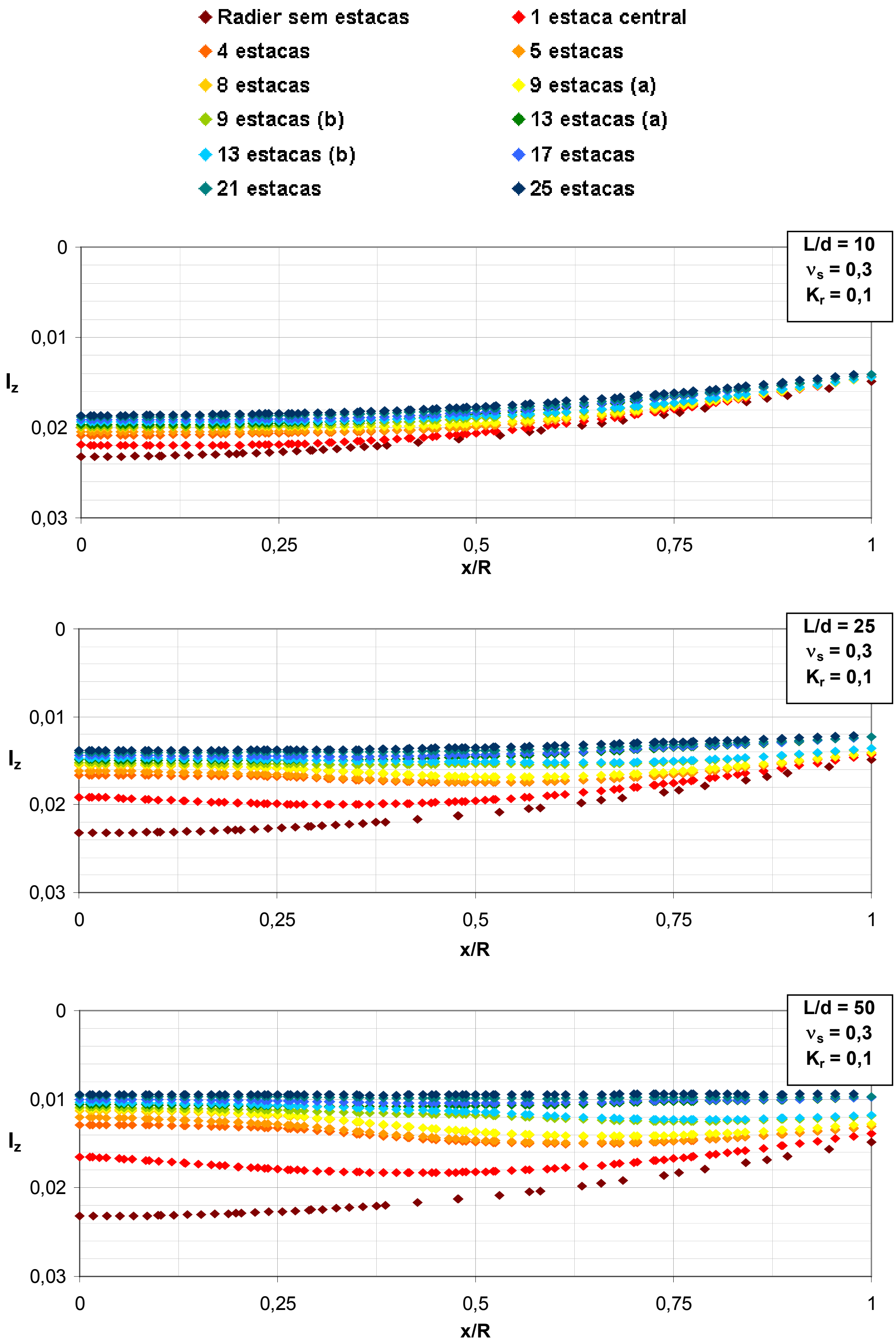


Figura A1. 13 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,1, seção A-A).

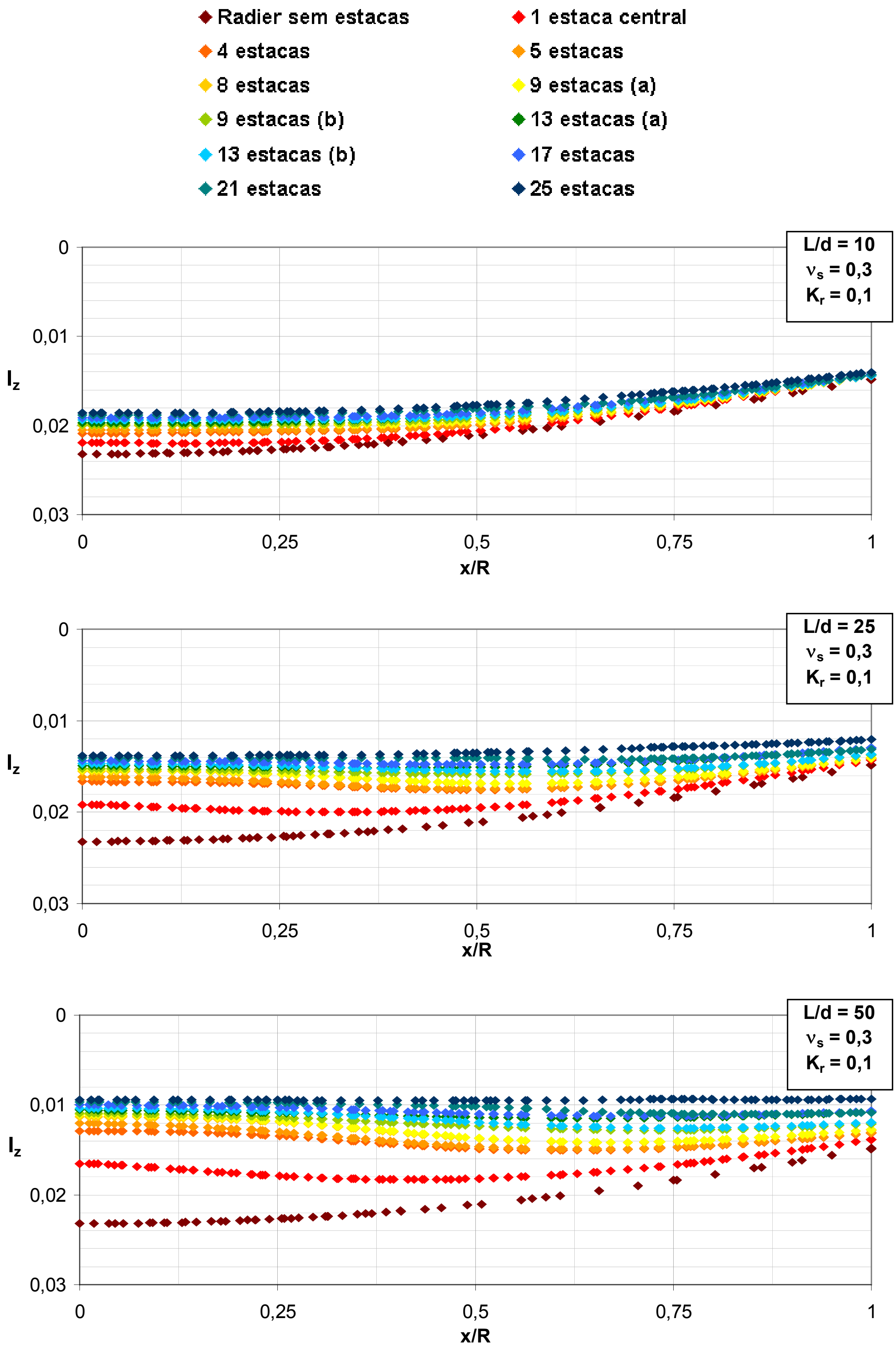


Figura A1. 14 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,1, seção B-B).

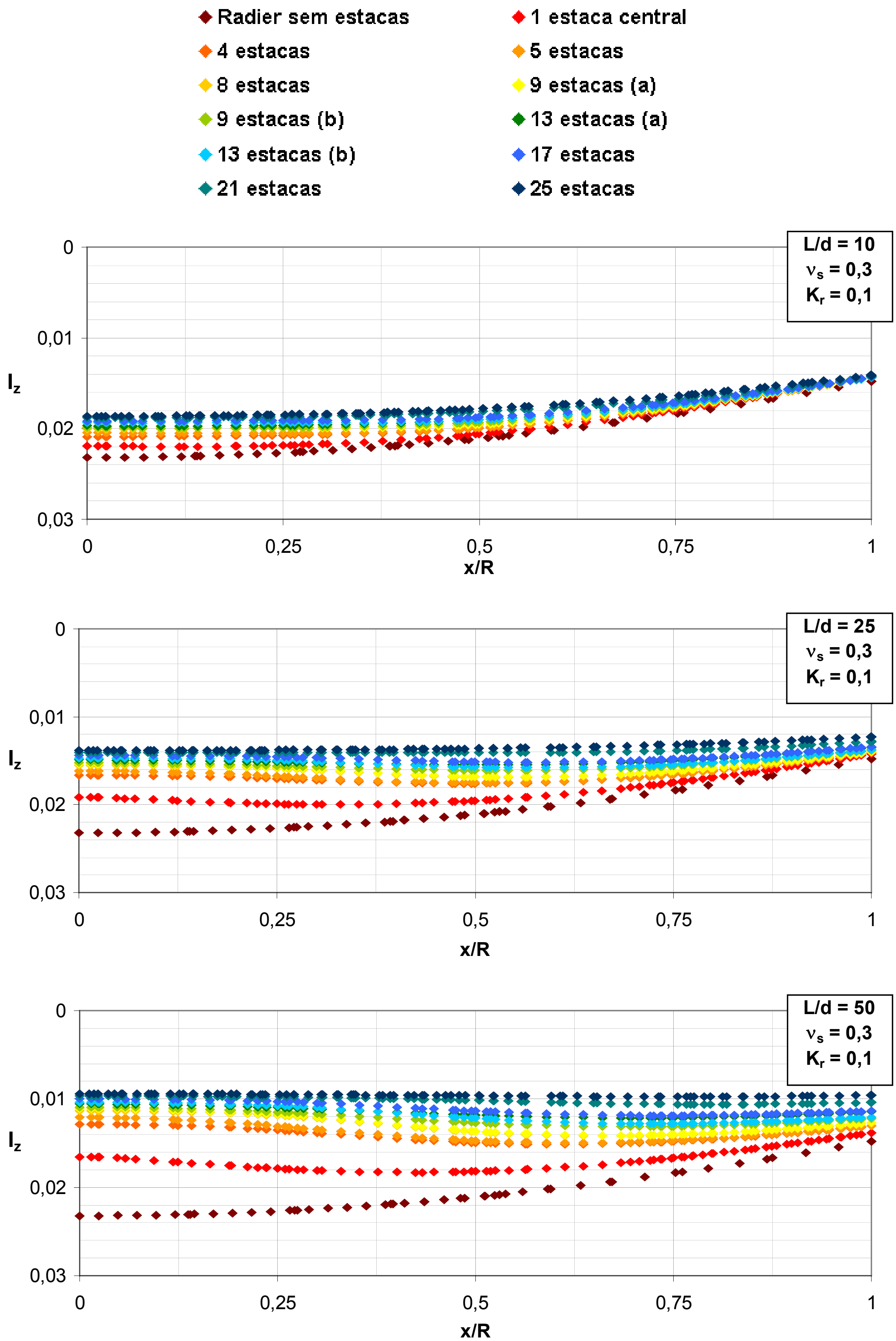


Figura A1. 15 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 0,1, seção C-C).

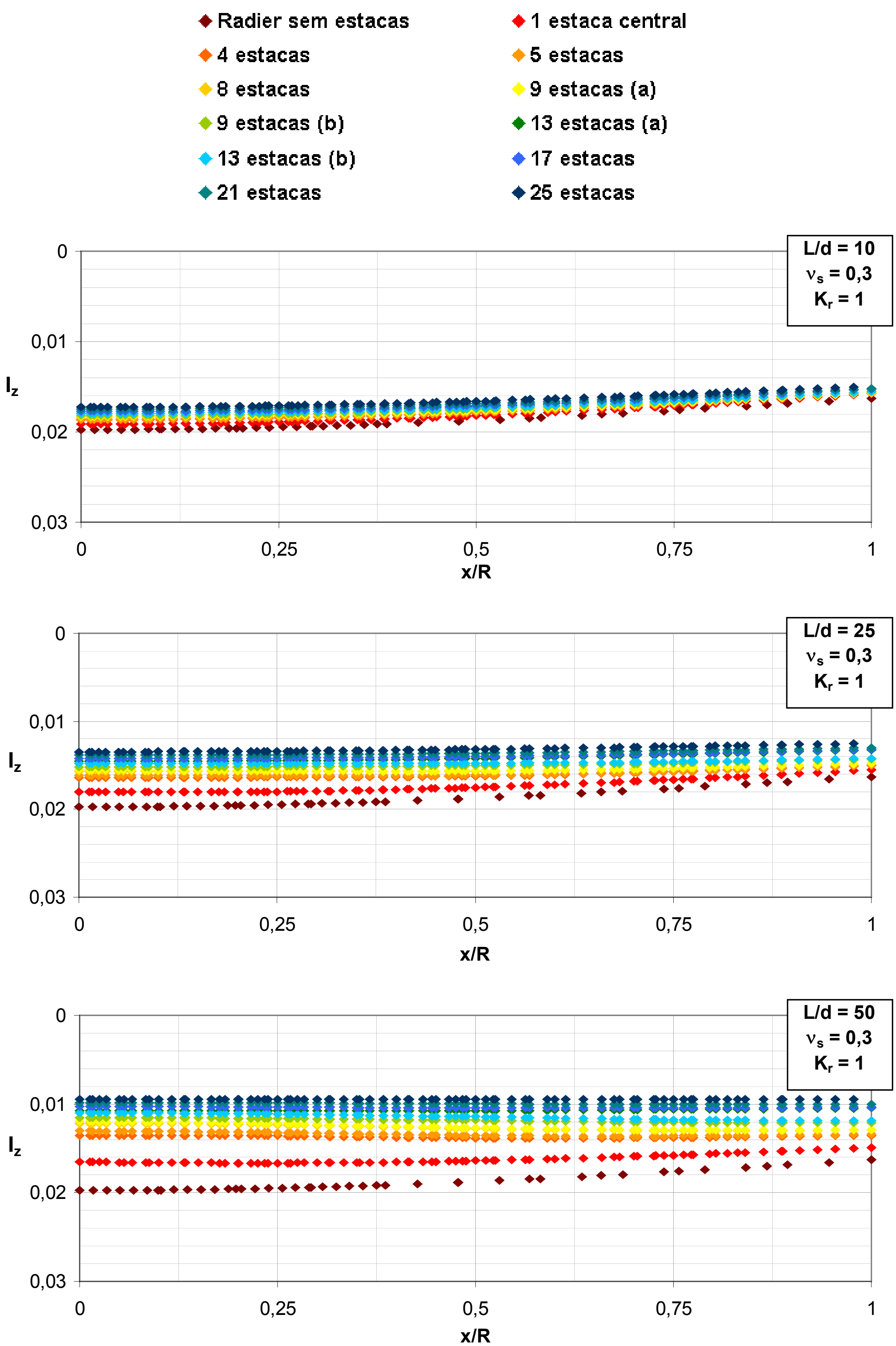


Figura A1. 16 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 1, seção A-A).

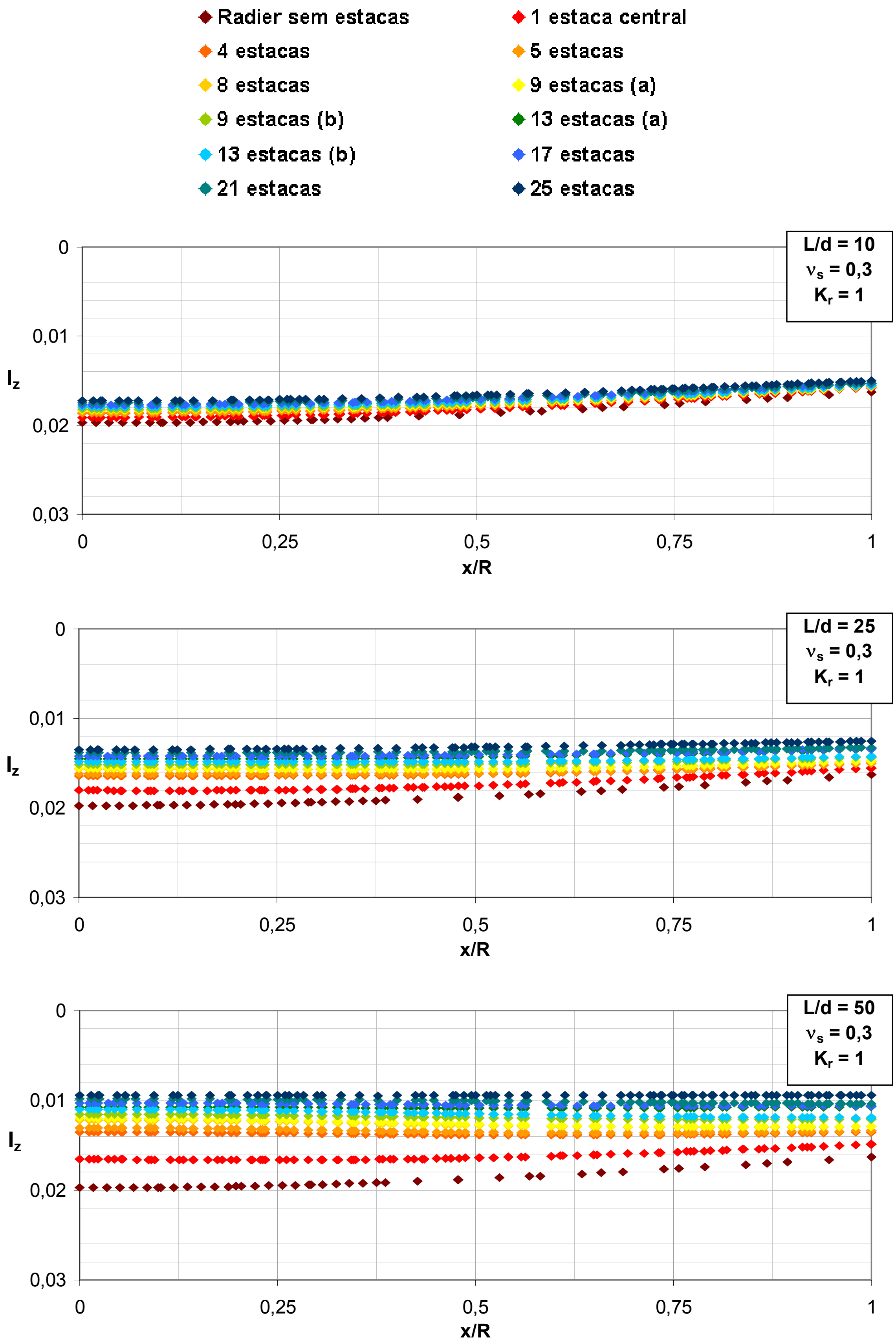


Figura A1. 17 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 1, seção B-B).

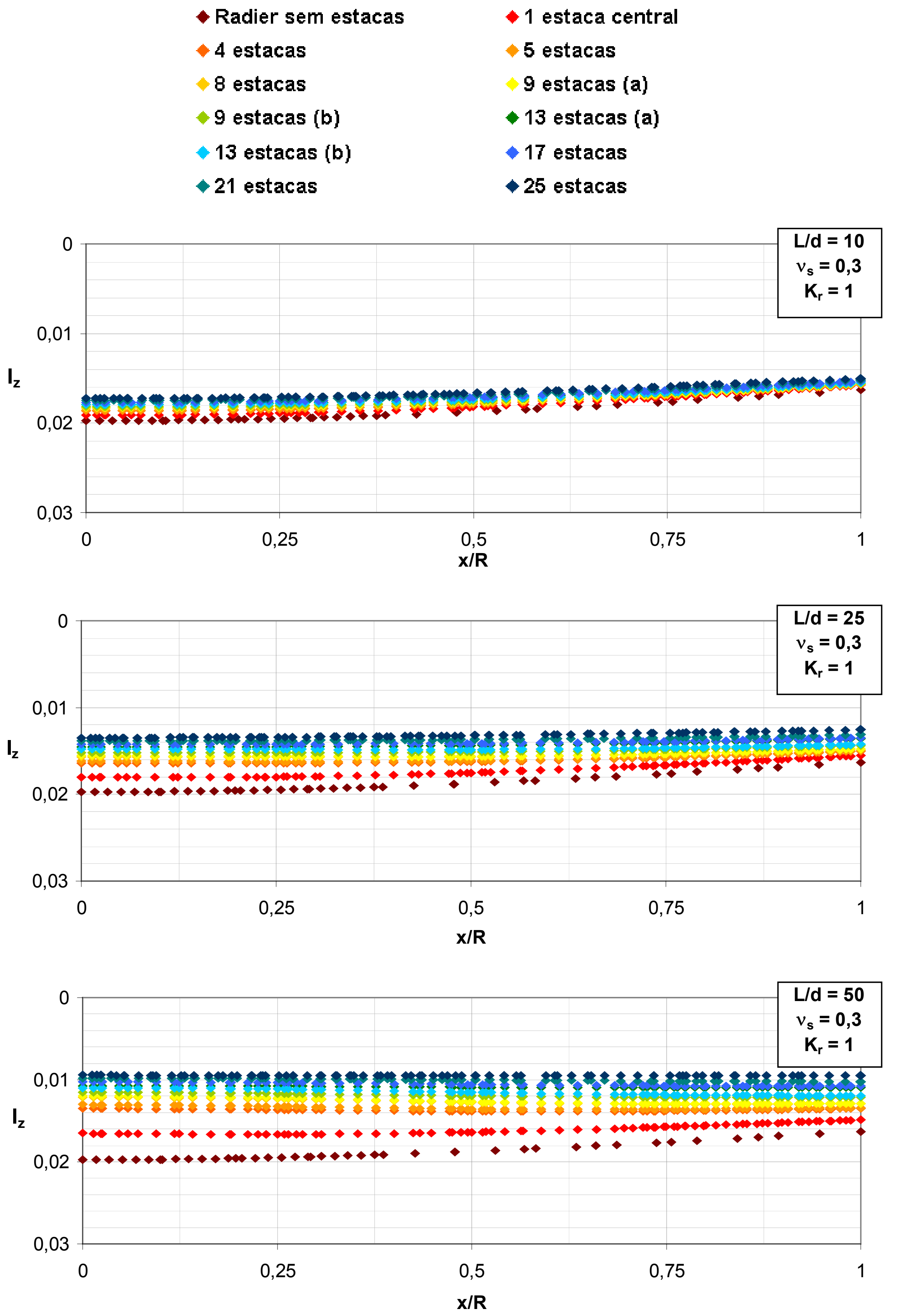


Figura A1. 18 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,3, K_r = 1, seção C-C).

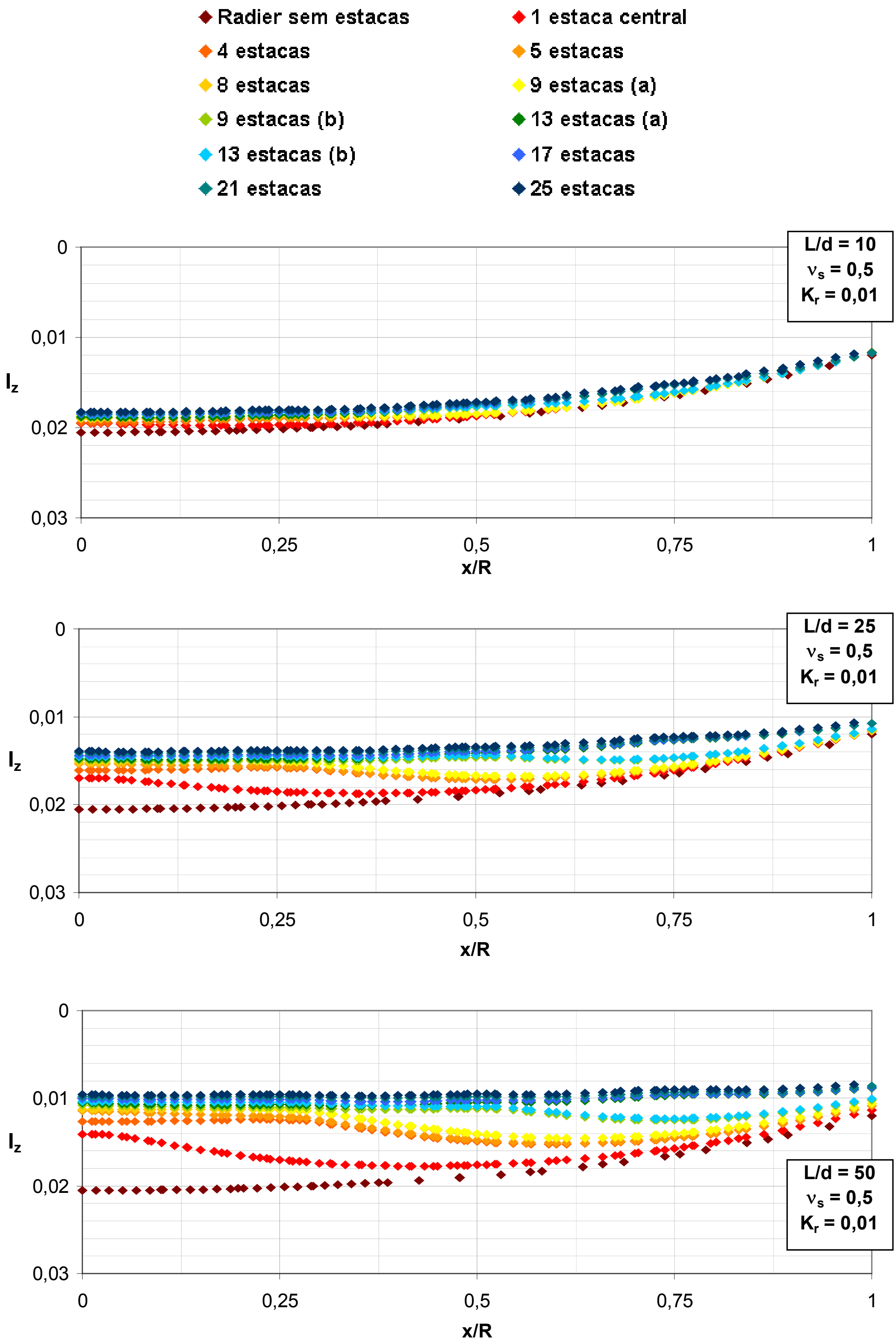


Figura A1. 19 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,01, seção A-A).

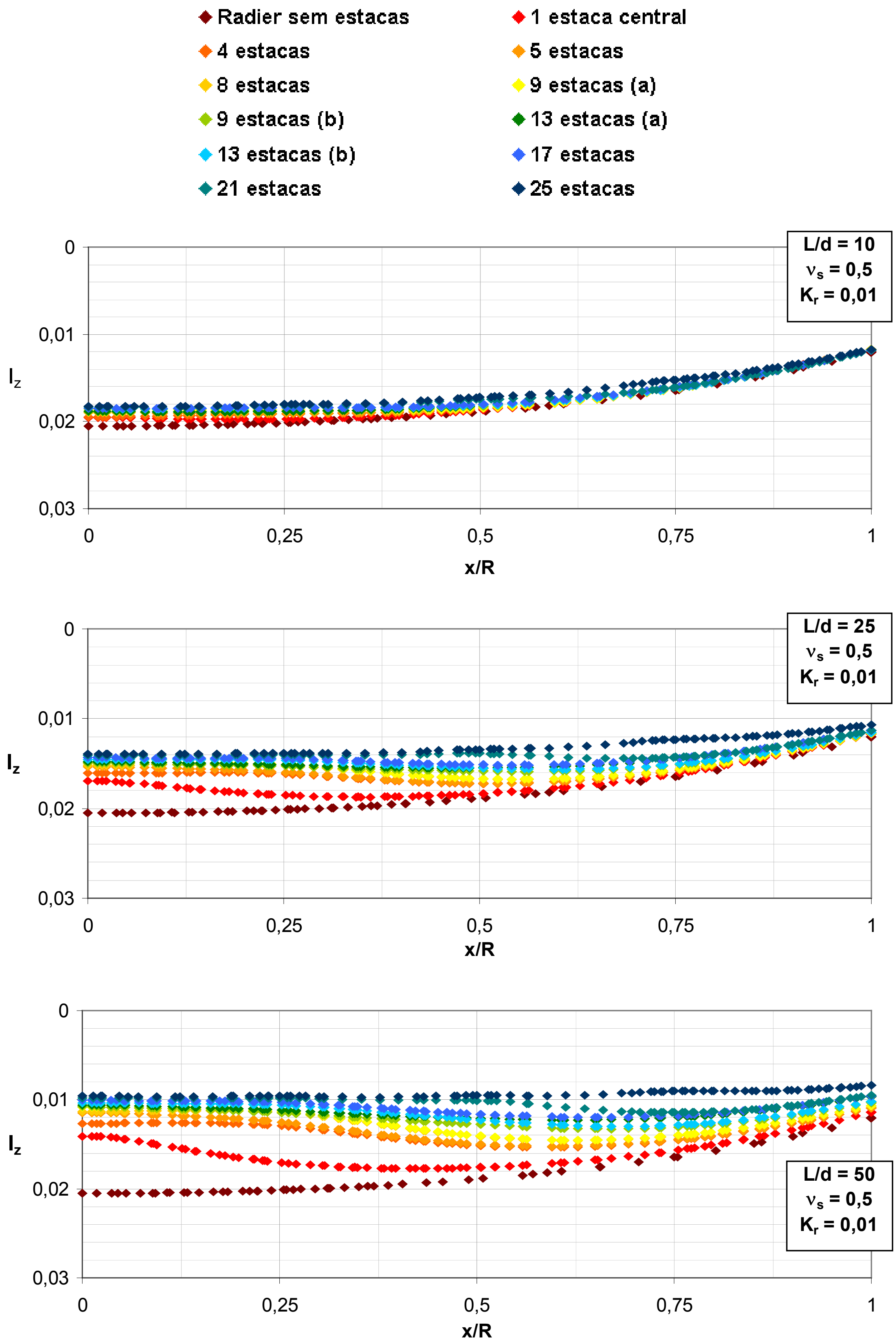


Figura A1. 20 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,01, seção B-B).

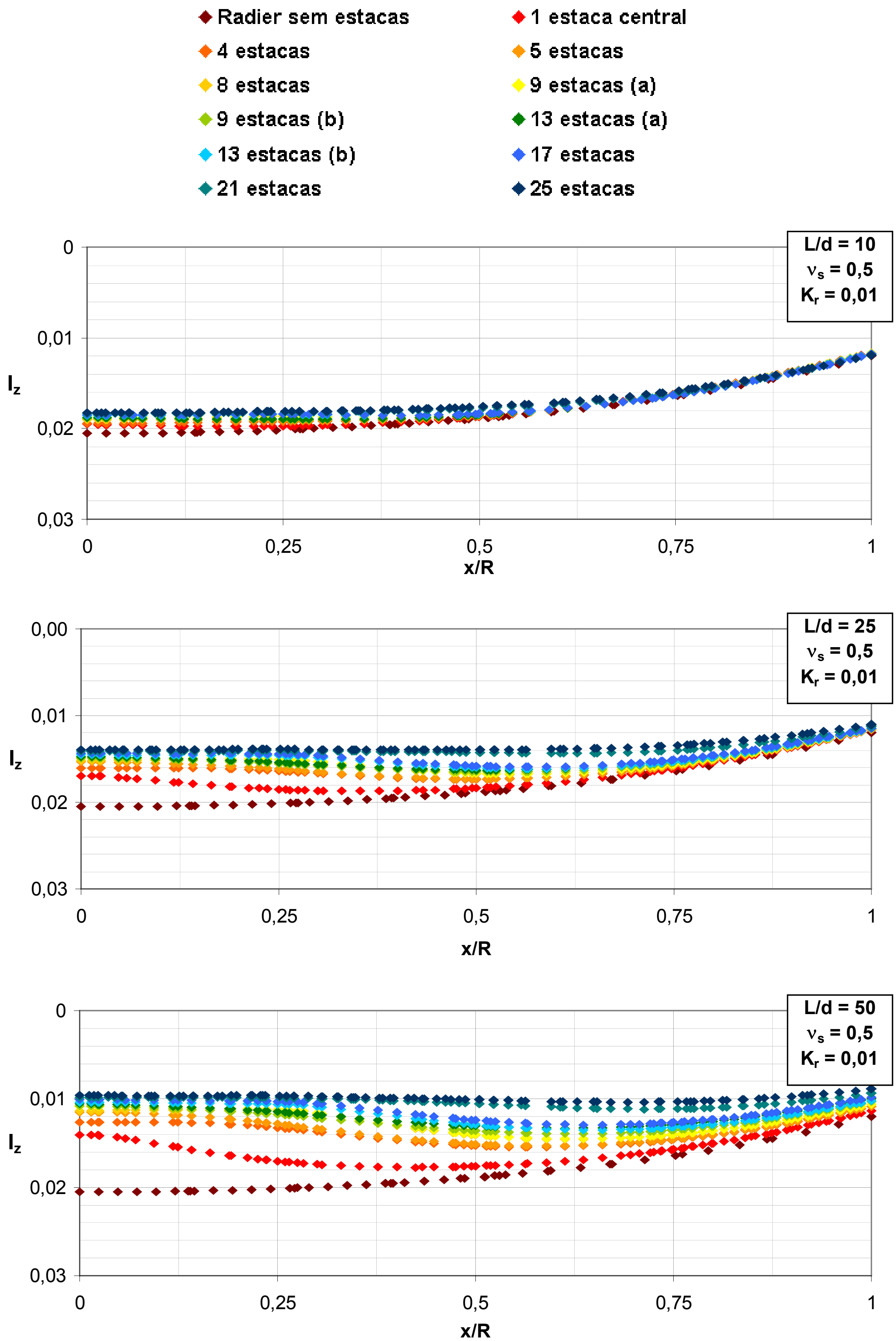


Figura A1. 21 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,01, seção C-C)

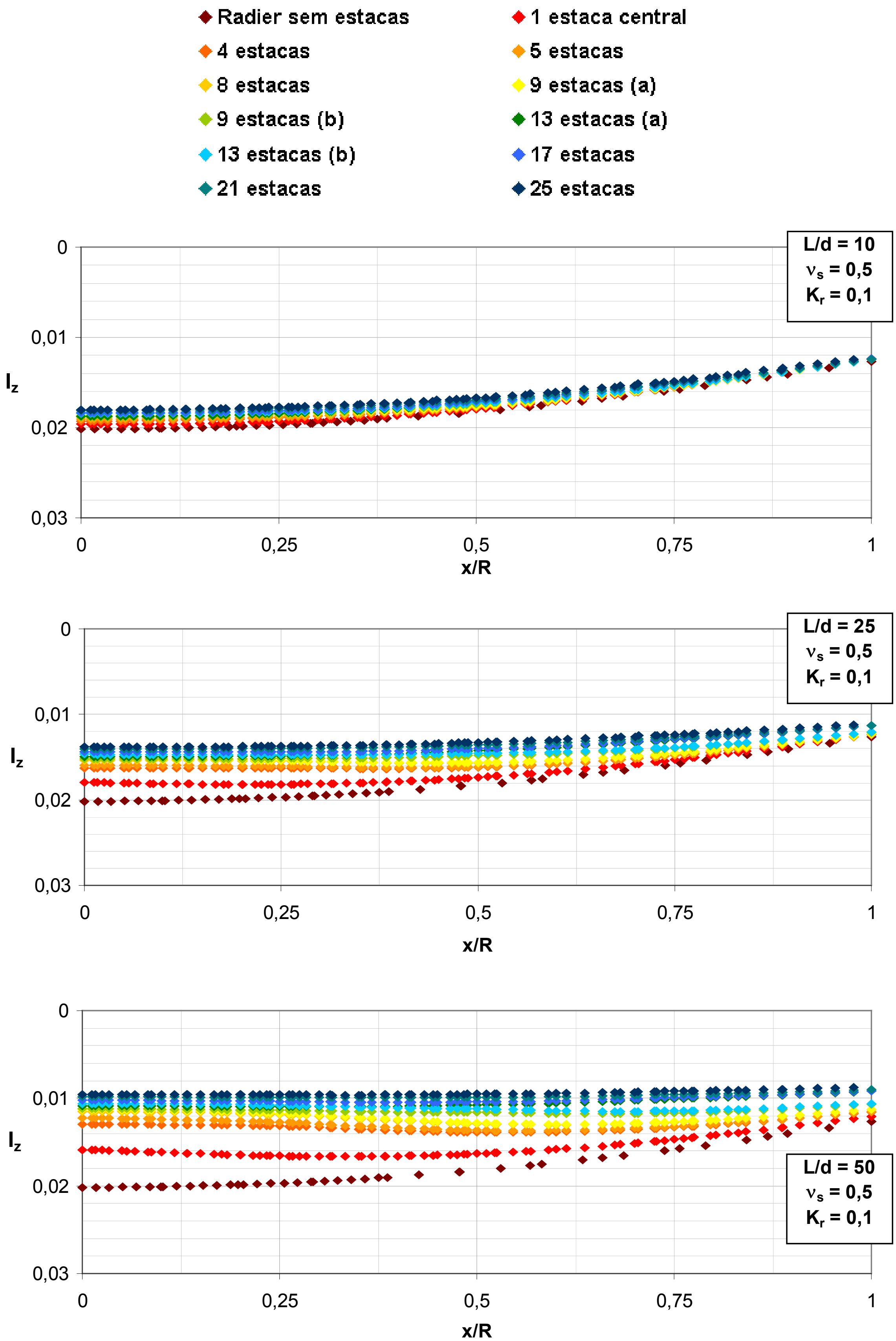


Figura A1. 22 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,1, seção A-A).

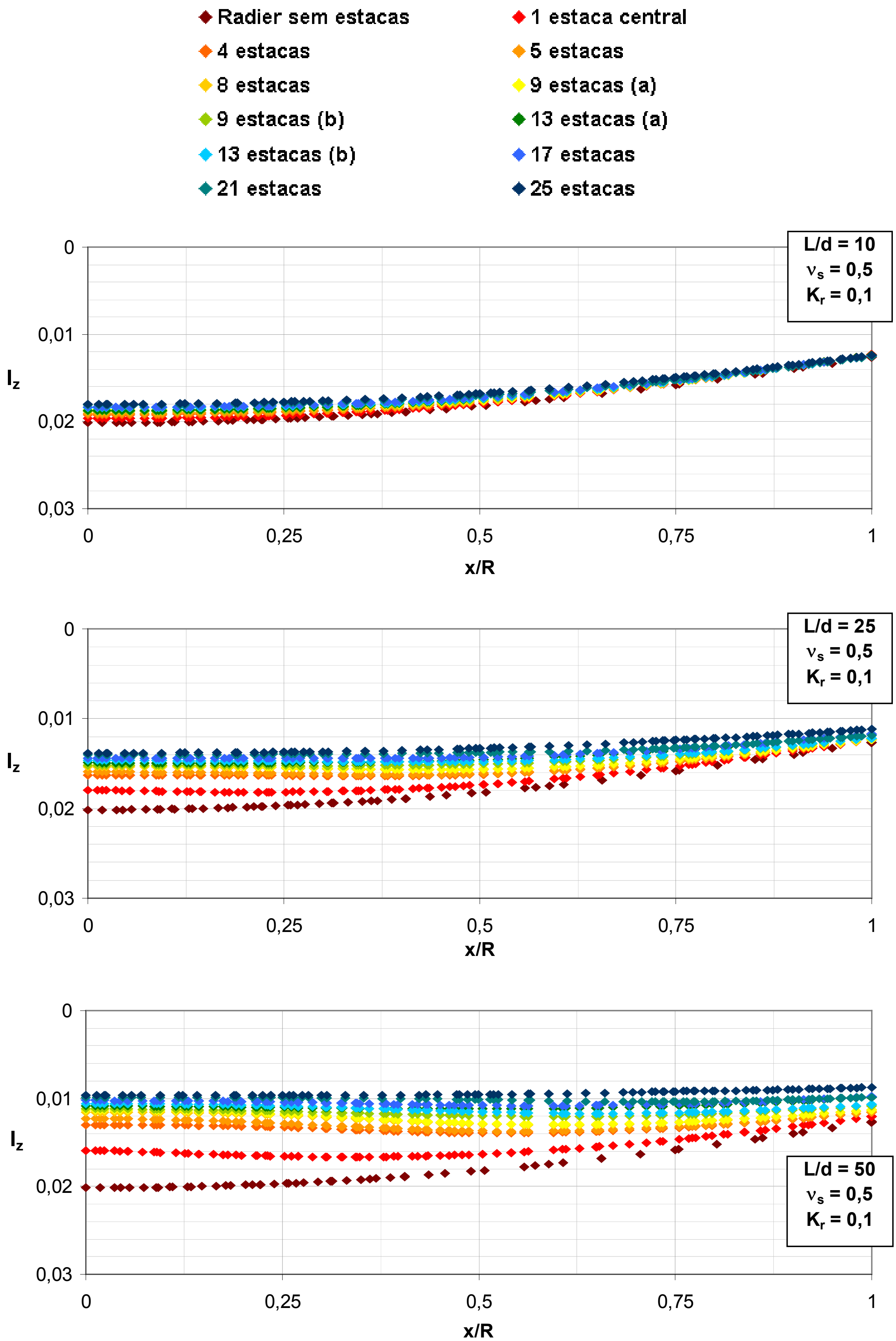


Figura A1. 23 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,1, seção B-B).

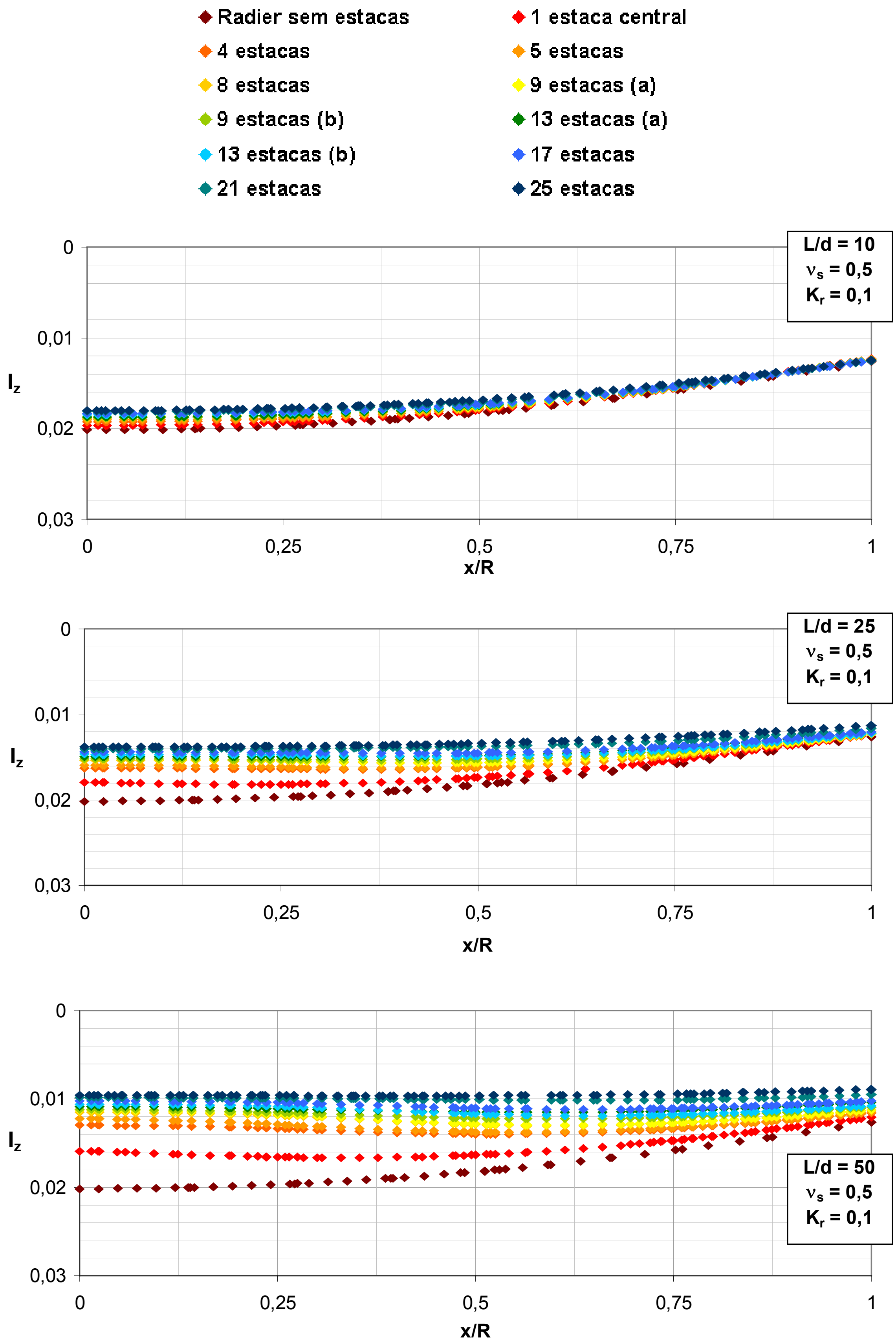


Figura A1. 24 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 0,1, seção C-C).

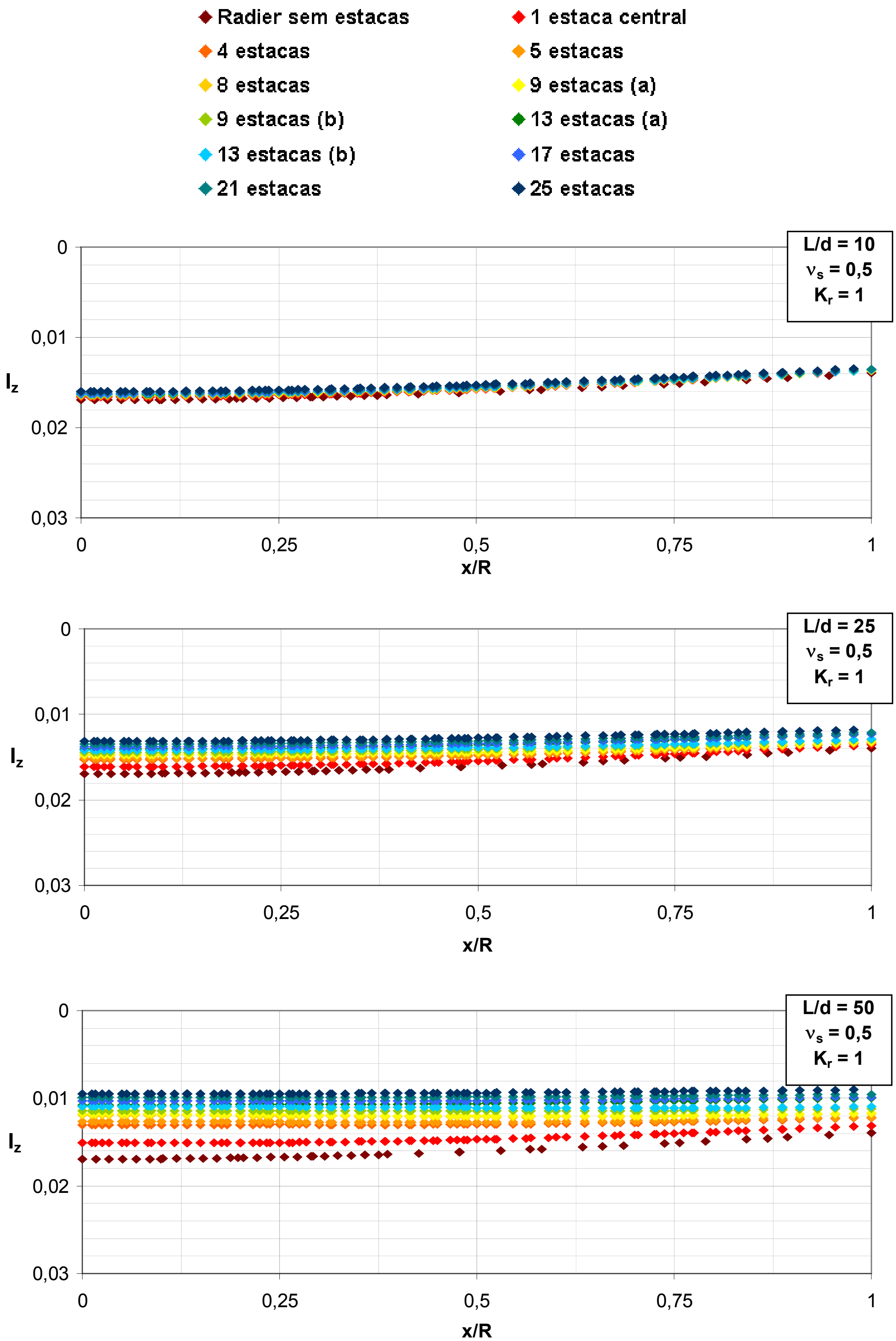


Figura A1. 25 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 1, seção A-A).

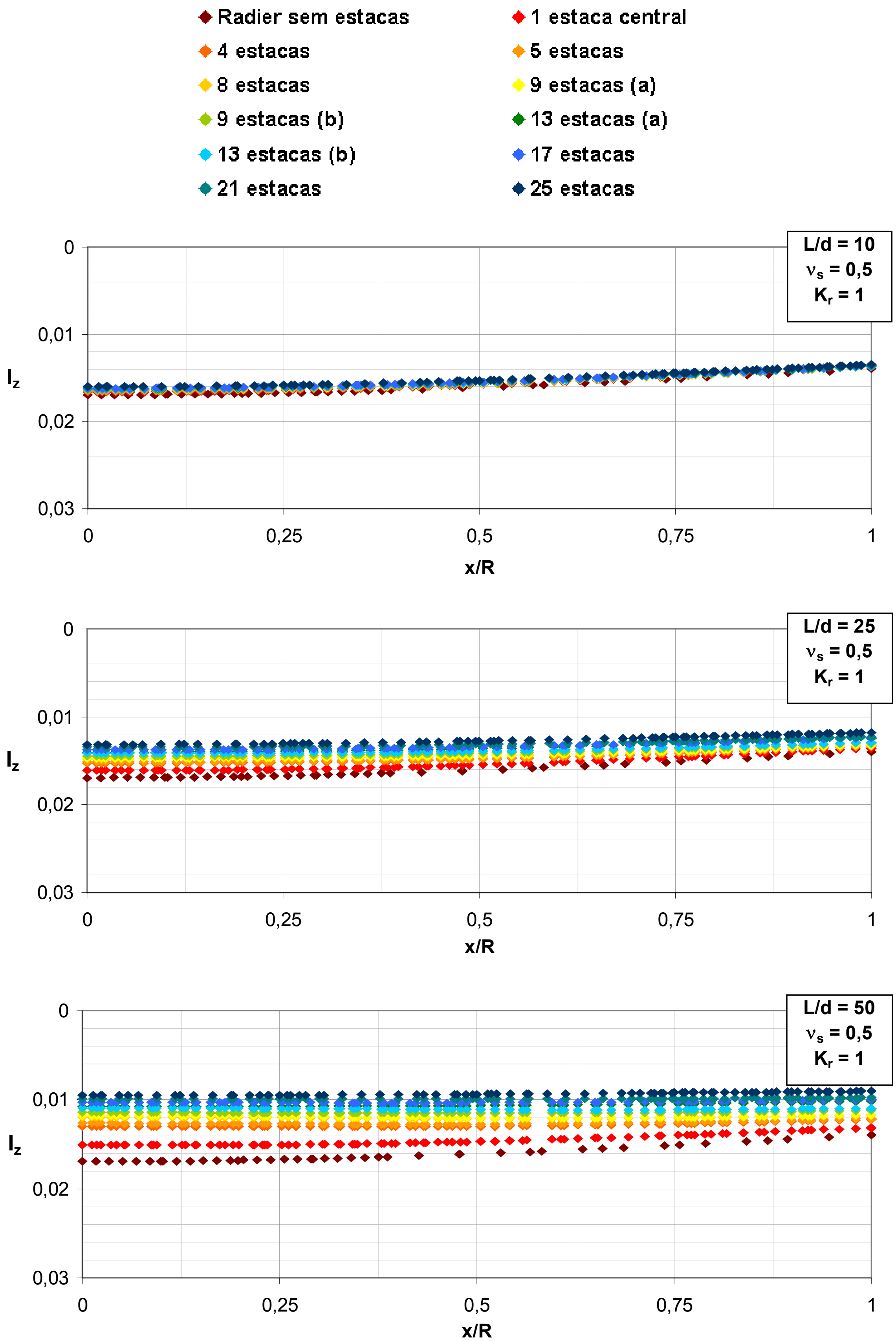


Figura A1. 26 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 1, seção B-B).

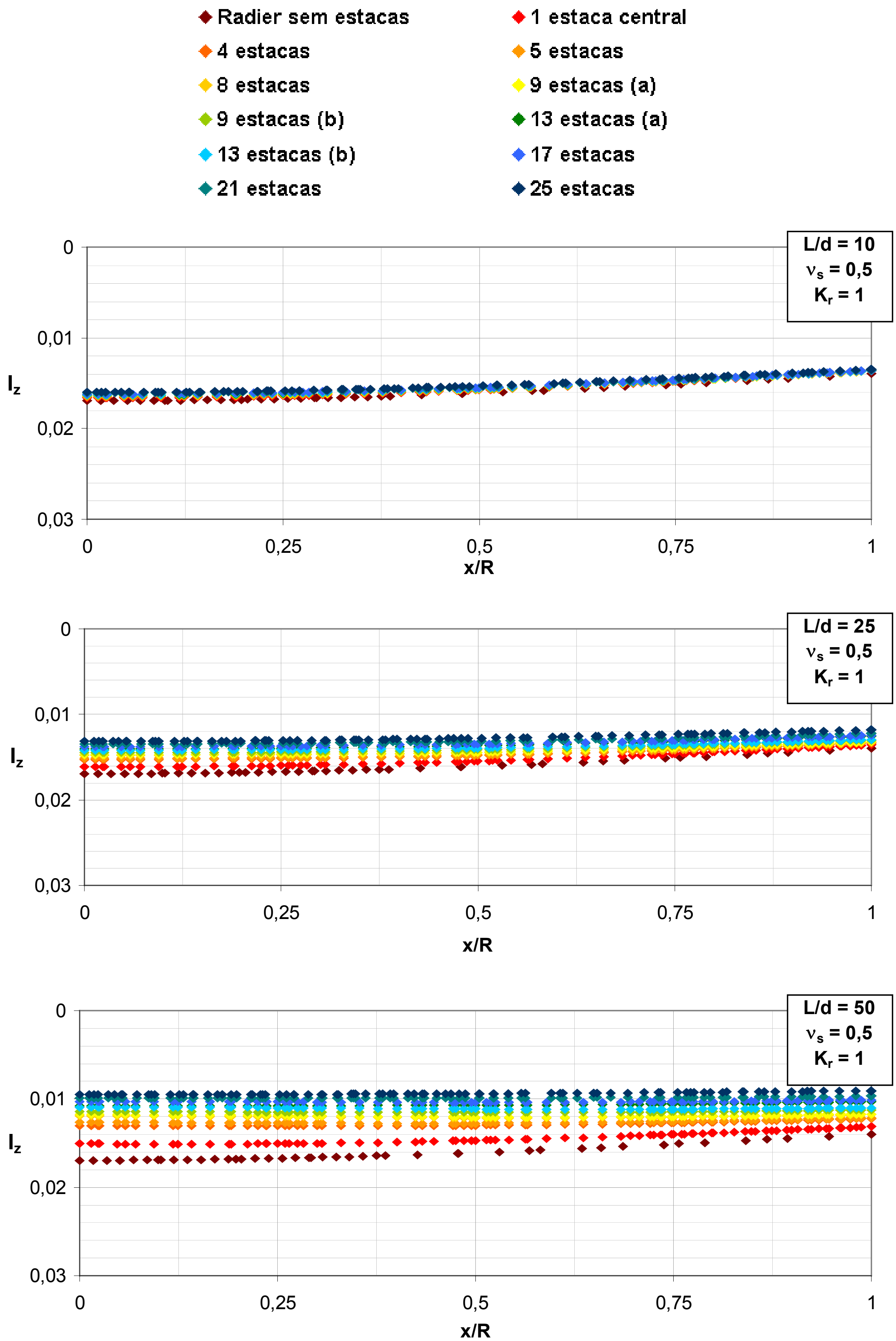


Figura A1. 27 – Efeito do arranjo das estacas e L/d na deflexão do radier (ν_s = 0,5, K_r = 1, seção C-C).

APÊNDICE 2

GRÁFICOS

RECALQUE IMEDIATO ρ_i *vs.* RECALQUE FINAL ρ_F

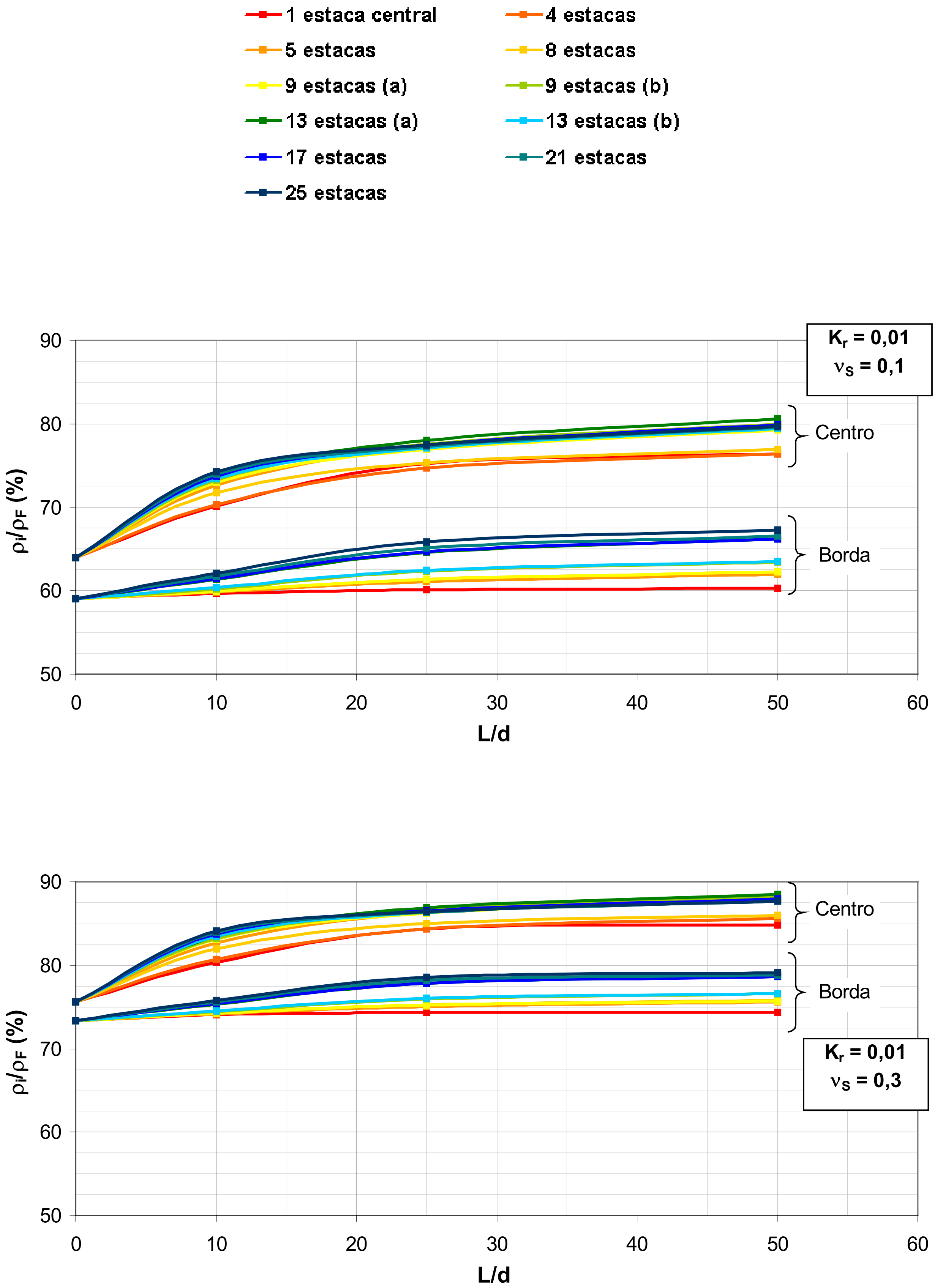
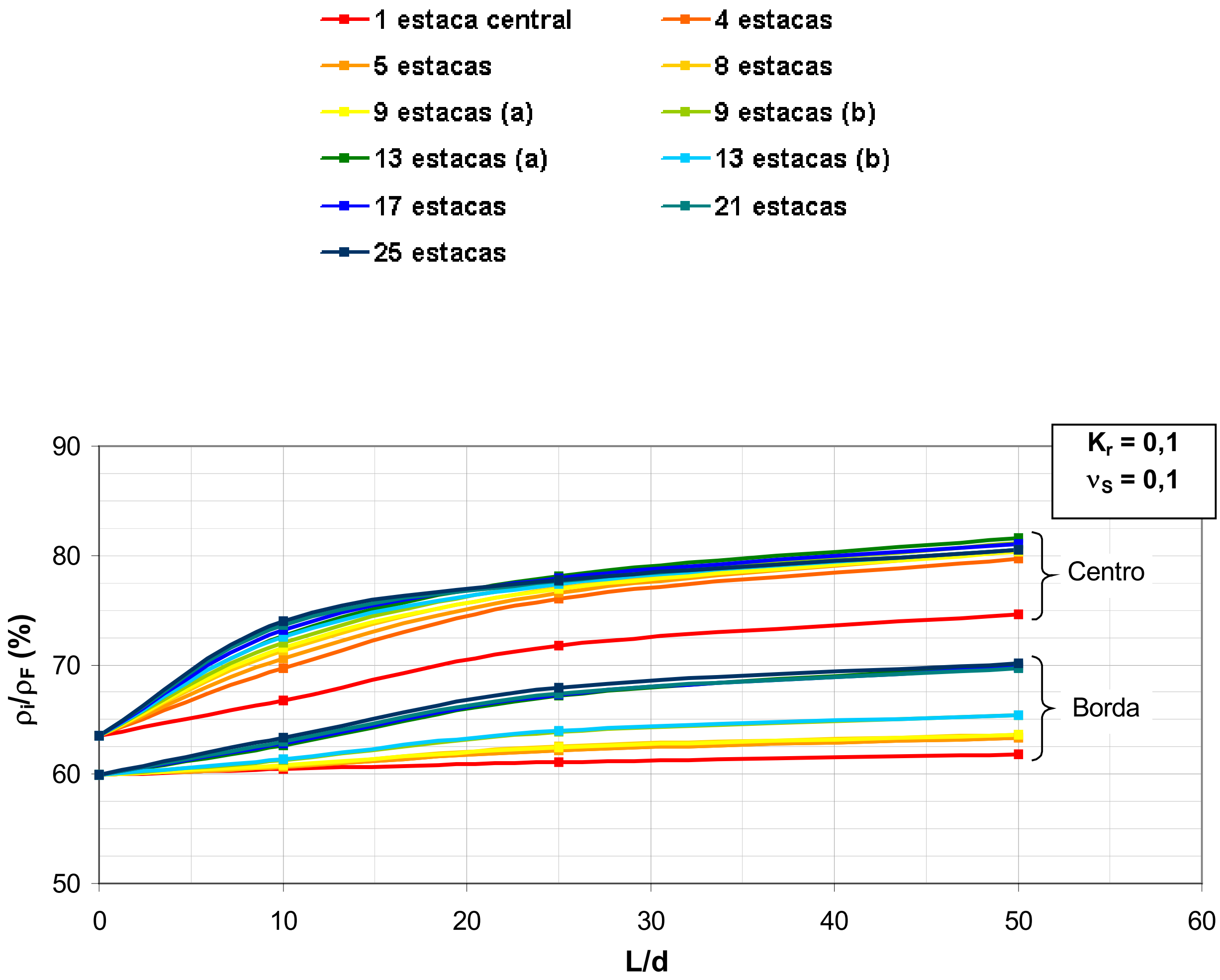


Figura A2. 1 – Recalque imediato ρ_i *vs*. recalque final ρ_F para K_r = 0,01.



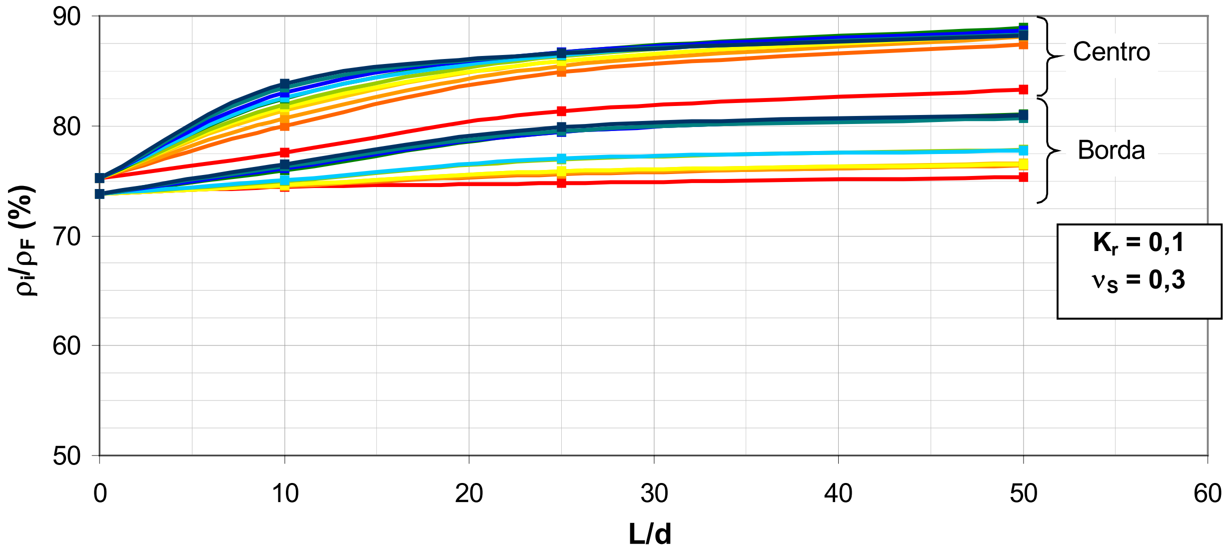


Figura A2. 2 – Recalque imediato ρ_i *vs*. recalque final ρ_F para K_r = 0,1.

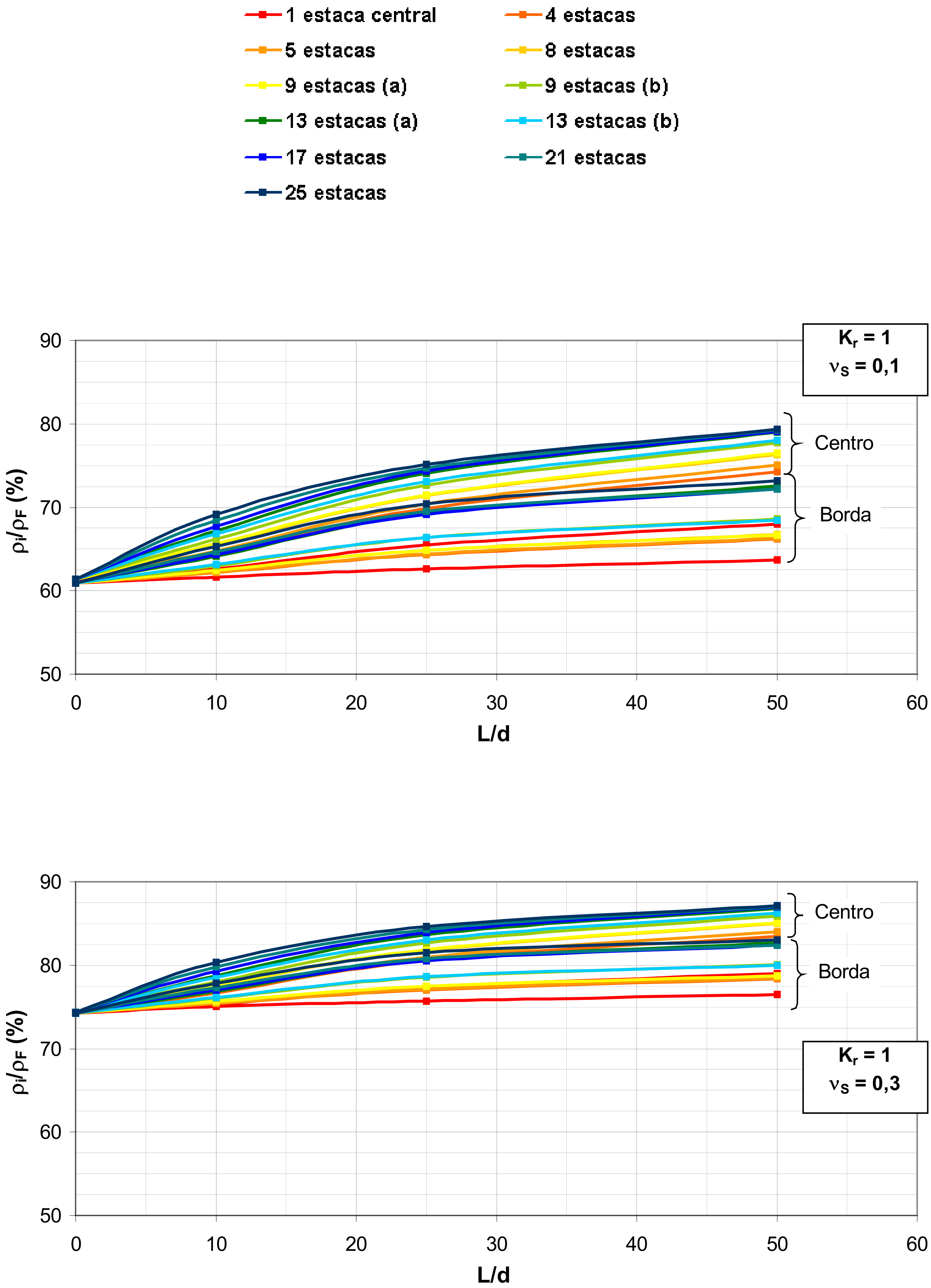


Figura A2. 3 – Recalque imediato ρ_i *vs*. recalque final ρ_F para K_r = 1.

APÊNDICE 3

DISTORÇÕES ANGULARES MÁXIMAS

Tabela A3. 1 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,01, seção A-A).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0472	-	0.0472	-	0.0472	-
1	0.0448	94.88	0.0405	85.74	0.0469	99.26
4	0.0632	133.84	0.0696	147.40	0.0720	152.48
5	0.0620	131.30	0.0680	144.01	0.0671	142.10
8	0.0588	124.52	0.0680	144.01	0.0567	120.08
9 (a)	0.0601	127.28	0.0508	107.58	0.0575	121.77
9 (b)	0.0391	82.75	0.0310	65.71	0.0305	64.54
13 (a)	0.0452	95.72	0.0253	53.58	0.0168	35.58
13 (b)	0.0418	88.51	0.0268	56.77	0.0285	60.36
17	0.0445	94.24	0.0259	54.85	0.0166	35.15
21	0.0445	94.24	0.0272	57.60	0.0155	32.83
25	0.0613	129.82	0.0397	84.07	0.0265	56.12

Tabela A3. 2 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,01, seção B-B).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0472	-	0.0472	-	0.0472	-
1	0.0448	94.88	0.0405	85.74	0.0469	99.26
4	0.0504	106.73	0.0547	115.84	0.0494	104.62
5	0.0508	107.58	0.0516	109.28	0.0520	110.12
8	0.0596	126.22	0.0500	105.89	0.0537	113.72
9 (a)	0.0548	116.05	0.0561	118.81	0.0491	103.98
9 (b)	0.0443	93.82	0.0365	77.30	0.0316	66.92
13 (a)	0.0432	91.49	0.0345	73.06	0.0283	59.93
13 (b)	0.0468	99.11	0.0391	82.80	0.0330	69.89
17	0.0460	97.42	0.0372	78.78	0.0308	65.23
21	0.0418	88.62	0.0283	59.93	0.0259	54.94
25	0.0470	99.53	0.0319	67.56	0.0191	40.45

Tabela A3. 3 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,01, seção C-C).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0472	-	0.0472	-	0.0472	-
1	0.0448	94.88	0.0405	85.74	0.0469	99.26
4	0.0534	113.09	0.0720	152.48	0.0550	116.48
5	0.0521	110.33	0.0513	108.64	0.0523	110.76
8	0.0588	124.52	0.0680	144.01	0.0567	120.08
9 (a)	0.0601	127.28	0.0508	107.58	0.0575	121.77
9 (b)	0.0491	103.98	0.0431	91.27	0.0393	83.23
13 (a)	0.0485	102.71	0.0434	91.91	0.0381	80.69
13 (b)	0.0540	114.36	0.0593	125.58	0.0514	108.85
17	0.0549	116.26	0.0529	112.03	0.0473	100.17
21	0.0389	82.38	0.0271	57.39	0.0210	44.47
25	0.0613	129.82	0.0397	84.07	0.0265	56.12

Tabela A3. 4 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,1, seção A-A).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0289	-	0.0289	-	0.0289	-
1	0.0283	98.01	0.0247	85.53	0.0224	77.55
4	0.0285	98.62	0.0234	80.97	0.0226	78.20
5	0.0286	98.96	0.0237	82.01	0.0188	64.88
8	0.0270	93.43	0.0208	71.97	0.0191	66.18
9 (a)	0.0273	94.46	0.0204	70.59	0.0193	66.72
9 (b)	0.0215	74.42	0.0113	39.21	0.0094	32.43
13 (a)	0.0218	75.43	0.0110	38.06	0.0056	19.38
13 (b)	0.0217	74.97	0.0104	35.83	0.0105	36.38
17	0.0222	76.82	0.0104	35.99	0.0046	15.92
21	0.0195	67.47	0.0088	30.45	**0.0027**	9.34
25	0.0218	75.43	0.0097	33.56	0.0036	12.42

Tabela A3. 5 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,1, seção B-B).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0289	-	0.0289	-	0.0289	-
1	0.0283	98.01	0.0247	85.53	0.0224	77.55
4	0.0276	95.50	0.0213	73.70	0.0160	55.52
5	0.0270	93.43	0.0206	71.28	0.0179	61.89
8	0.0266	92.04	0.0199	68.86	0.0186	64.28
9 (a)	0.0262	90.66	0.0207	71.63	0.0189	65.39
9 (b)	0.0221	76.61	0.0122	42.34	0.0102	35.39
13 (a)	0.0206	71.28	0.0109	37.72	0.0053	18.46
13 (b)	0.0222	76.82	0.0115	39.86	0.0121	41.74
17	0.0208	71.97	0.0106	36.68	0.0072	24.94
21	0.0181	62.63	0.0065	22.53	0.0089	30.67
25	0.0188	65.05	0.0074	25.61	**0.0029**	10.03

Tabela A3. 6 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 0,1, seção C-C).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0289	-	0.0289	-	0.0289	-
1	0.0283	98.01	0.0247	85.53	0.0224	77.55
4	0.0280	96.89	0.0222	76.82	0.0162	56.02
5	0.0276	95.50	0.0207	71.63	0.0179	61.93
8	0.0270	93.43	0.0208	71.97	0.0191	66.18
9 (a)	0.0273	94.46	0.0204	70.59	0.0193	66.72
9 (b)	0.0243	84.08	0.0141	48.79	0.0123	42.66
13 (a)	0.0222	76.82	0.0115	39.79	0.0088	30.53
13 (b)	0.0244	84.43	0.0143	49.48	0.0144	49.66
17	0.0222	76.82	0.0122	42.21	0.0112	38.67
21	0.0179	61.94	0.0069	23.88	0.0056	19.40
25	0.0218	75.43	0.0097	33.56	0.0036	12.42

Tabela A3. 7 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 1, seção A-A).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0109	-	0.0109	-	0.0109	-
1	0.0102	93.84	0.0081	74.34	0.0060	55.39
4	0.0100	91.58	0.0058	53.11	0.0037	33.85
5	0.0098	89.74	0.0059	54.03	0.0045	41.36
8	0.0088	80.59	0.0048	43.96	0.0053	48.77
9 (a)	0.0090	82.42	0.0035	32.05	0.0056	51.09
9 (b)	0.0077	70.51	0.0020	18.09	0.0035	31.63
13 (a)	0.0078	71.43	0.0042	38.46	**0.0010**	9.16
13 (b)	0.0071	64.66	**0.0019**	17.50	0.0043	39.29
17	0.0074	67.77	0.0033	30.22	**0.0015**	13.28
21	0.0061	55.86	**0.0023**	21.06	**0.0016**	14.30
25	0.0079	71.98	**0.0032**	29.30	**0.0009**	8.36

Tabela A3. 8 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 1, seção B-B).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0109	-	0.0109	-	0.0109	-
1	0.0102	93.84	0.0081	74.34	0.0060	55.39
4	0.0092	84.17	0.0051	46.70	0.0034	31.45
5	0.0092	84.25	0.0044	40.29	0.0043	39.46
8	0.0088	80.68	0.0040	36.63	0.0052	47.79
9 (a)	0.0083	76.01	0.0036	32.97	0.0055	50.05
9 (b)	0.0076	70.00	**0.0026**	23.81	0.0035	31.82
13 (a)	0.0073	66.85	**0.0029**	26.56	**0.0013**	11.89
13 (b)	0.0069	63.19	**0.0018**	16.48	0.0044	40.48
17	0.0076	69.60	**0.0024**	21.98	**0.0021**	19.67
21	0.0062	56.93	**0.0011**	10.50	**0.0030**	27.65
25	0.0064	58.61	**0.0025**	22.89	**0.0011**	10.28

Tabela A3. 9 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,1, K_r = 1, seção C-C).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0109	-	0.0109	-	0.0109	-
1	0.0102	93.84	0.0081	74.34	0.0060	55.39
4	0.0097	88.74	0.0055	50.37	0.0034	30.94
5	0.0092	84.25	0.0049	44.87	0.0043	39.41
8	0.0088	80.59	0.0048	43.96	0.0053	48.77
9 (a)	0.0090	82.42	0.0035	32.05	0.0056	51.09
9 (b)	0.0084	76.92	**0.0030**	27.47	0.0037	34.08
13 (a)	0.0076	69.60	**0.0023**	21.06	**0.0019**	17.26
13 (b)	0.0077	70.51	**0.0027**	24.73	0.0047	43.47
17	0.0074	67.77	**0.0019**	17.40	**0.0029**	26.27
21	0.0061	56.01	**0.0015**	13.74	**0.0022**	19.91
25	0.0079	71.98	**0.0032**	29.30	**0.0009**	8.36

Tabela A3. 10 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,01, seção A-A).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0516	-	0.0516	-	0.0516	-
1	0.0504	97.73	0.0453	87.79	0.0419	81.24
4	0.0677	131.28	0.0753	146.02	0.0652	126.43
5	0.0616	119.45	0.0657	127.40	0.0688	133.41
8	0.0634	122.94	0.0631	122.36	0.0606	117.51
9 (a)	0.0654	126.82	0.0610	118.29	0.0540	104.71
9 (b)	0.0462	89.56	0.0388	75.18	0.0307	59.61
13 (a)	0.0508	98.51	0.0338	65.54	0.0188	36.46
13 (b)	0.0441	85.49	0.0355	68.86	0.0362	70.19
17	0.0527	102.19	0.0363	70.39	0.0196	38.01
21	0.0506	98.12	0.0313	60.69	0.0229	44.41
25	0.0645	125.07	0.0433	83.96	0.0278	53.91

Tabela A3. 11 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,01, seção B-B).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0516	-	0.0516	-	0.0516	-
1	0.0504	97.73	0.0453	87.79	0.0419	81.24
4	0.0556	107.81	0.0526	102.00	0.0622	120.61
5	0.0546	105.88	0.0547	106.07	0.0517	100.25
8	0.0598	115.96	0.0622	120.61	0.0381	73.88
9 (a)	0.0555	107.62	0.0622	120.61	0.0482	93.47
9 (b)	0.0479	92.88	0.0408	79.12	0.0346	67.09
13 (a)	0.0469	90.94	0.0389	75.43	0.0316	61.28
13 (b)	0.0518	100.45	0.0419	81.25	0.0350	67.87
17	0.0502	97.34	0.0400	77.56	0.0340	65.93
21	0.0435	84.33	0.0348	67.50	0.0280	54.28
25	0.0511	99.09	0.0332	64.38	0.0265	51.39

Tabela A3. 12 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,01, seção C-C).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0516	-	0.0516	-	0.0516	-
1	0.0504	97.73	0.0453	87.79	0.0419	81.24
4	0.0563	109.17	0.0582	112.86	0.0570	110.53
5	0.0546	105.88	0.0533	103.35	0.0508	98.51
8	0.0634	122.94	0.0631	122.36	0.0606	117.51
9 (a)	0.0654	126.82	0.0610	118.29	0.0540	104.71
9 (b)	0.0523	101.42	0.0471	91.33	0.0422	81.79
13 (a)	0.0519	100.64	0.0452	87.65	0.0387	75.04
13 (b)	0.0590	114.41	0.0517	100.25	0.0553	107.23
17	0.0617	119.64	0.0496	96.18	0.0447	86.68
21	0.0439	85.13	0.0309	59.92	0.0238	46.15
25	0.0645	125.07	0.0433	83.96	0.0278	53.91

Tabela A3. 13 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,1, seção A-A).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0311	-	0.0311	-	0.0311	-
1	0.0300	96.55	0.0275	88.57	0.0238	76.64
4	0.0310	99.68	0.0252	81.03	0.0221	71.06
5	0.0313	100.64	0.0255	81.99	0.0194	62.38
8	0.0290	93.25	0.0244	78.46	0.0174	55.95
9 (a)	0.0297	95.50	0.0227	72.99	0.0166	53.38
9 (b)	0.0249	80.14	0.0145	46.53	0.0072	23.01
13 (a)	0.0253	81.35	0.0153	49.20	0.0076	24.44
13 (b)	0.0246	79.03	0.0136	43.78	0.0079	25.53
17	0.0246	79.10	0.0146	46.95	0.0082	26.37
21	0.0231	74.28	0.0125	40.19	0.0042	13.50
25	0.0266	85.53	0.0134	43.09	0.0063	20.26

Tabela A3. 14 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,1, seção B-B).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0311	-	0.0311	-	0.0311	-
1	0.0300	96.55	0.0275	88.57	0.0238	76.64
4	0.0290	93.25	0.0238	76.53	0.0175	56.27
5	0.0291	93.57	0.0237	76.21	0.0171	54.98
8	0.0304	97.75	0.0208	66.88	0.0163	52.41
9 (a)	0.0289	92.93	0.0214	68.81	0.0161	51.90
9 (b)	0.0257	82.78	0.0158	50.73	0.0082	26.53
13 (a)	0.0239	76.85	0.0134	43.09	0.0071	22.83
13 (b)	0.0254	81.67	0.0149	47.91	0.0103	33.04
17	0.0239	76.85	0.0138	44.37	0.0070	22.51
21	0.0219	70.55	0.0108	34.84	0.0067	21.51
25	0.0223	71.70	0.0116	37.30	0.0045	14.47

Tabela A3. 15 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 0,1, seção C-C).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0311	-	0.0311	-	0.0311	-
1	0.0300	96.55	0.0275	88.57	0.0238	76.64
4	0.0301	96.78	0.0240	77.17	0.0182	58.52
5	0.0300	96.46	0.0229	73.63	0.0178	57.23
8	0.0290	93.25	0.0244	78.46	0.0174	55.95
9 (a)	0.0297	95.50	0.0227	72.99	0.0166	53.38
9 (b)	0.0269	86.50	0.0165	53.05	0.0102	32.81
13 (a)	0.0249	80.06	0.0145	46.62	0.0076	24.44
13 (b)	0.0276	88.75	0.0162	52.09	0.0123	39.71
17	0.0255	81.99	0.0146	46.95	0.0096	30.73
21	0.0212	68.17	0.0104	33.56	0.0042	13.54
25	0.0266	85.53	0.0134	43.09	0.0063	20.26

Tabela A3. 16 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 1, seção A-A).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0117	-	0.0117	-	0.0117	-
1	0.0106	90.66	0.0089	76.13	0.0074	63.19
4	0.0102	87.11	0.0074	63.19	0.0040	34.16
5	0.0100	85.40	0.0062	52.95	0.0030	25.54
8	0.0098	83.77	0.0056	47.82	0.0038	32.26
9 (a)	0.0096	81.98	0.0052	44.41	0.0040	34.29
9 (b)	0.0093	79.81	0.0039	33.27	**0.0020**	16.98
13 (a)	0.0087	74.30	0.0050	42.70	**0.0025**	21.35
13 (b)	0.0082	69.63	0.0035	29.61	**0.0030**	25.25
17	0.0085	72.59	0.0044	37.57	**0.0014**	11.96
21	0.0079	67.46	0.0035	29.89	**0.0009**	7.53
25	0.0092	78.57	0.0045	38.43	**0.0011**	9.39

Tabela A3. 17 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 1, seção B-B).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0117	-	0.0117	-	0.0117	-
1	0.0106	90.66	0.0089	76.13	0.0074	63.19
4	0.0102	87.09	0.0063	53.97	0.0034	29.04
5	0.0101	86.25	0.0066	56.36	0.0028	23.72
8	0.0091	77.97	0.0056	47.91	0.0036	30.97
9 (a)	0.0098	83.69	0.0052	44.41	0.0040	34.14
9 (b)	0.0091	77.71	0.0044	37.57	**0.0021**	18.07
13 (a)	0.0080	68.25	0.0042	35.87	**0.0016**	13.66
13 (b)	0.0086	73.44	0.0038	32.45	**0.0031**	26.77
17	0.0089	76.00	0.0035	29.89	**0.0013**	11.35
21	0.0077	65.55	**0.0030**	25.76	**0.0018**	15.77
25	0.0077	65.76	0.0036	30.74	**0.0008**	6.83

Tabela A3. 18 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,3, K_r = 1, seção C-C).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0117	-	0.0117	-	0.0117	-
1	0.0106	90.66	0.0089	76.13	0.0074	63.19
4	0.0096	81.64	0.0068	58.07	0.0028	23.91
5	0.0100	85.40	0.0061	52.09	0.0028	24.02
8	0.0098	83.77	0.0056	47.82	0.0038	32.26
9 (a)	0.0096	81.98	0.0052	44.41	0.0040	34.29
9 (b)	0.0088	75.15	0.0046	39.28	**0.0005**	4.29
13 (a)	0.0089	76.00	0.0041	35.01	**0.0009**	7.89
13 (b)	0.0090	76.86	0.0040	34.16	0.0035	29.52
17	0.0082	70.03	0.0035	29.89	**0.0020**	16.87
21	0.0073	62.66	**0.0028**	23.91	**0.0012**	10.64
25	0.0092	78.57	0.0045	38.43	**0.0011**	9.39

Tabela A3. 19 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,01, seção A-A).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0459	-	0.0459	-	0.0459	-
1	0.0443	96.49	0.0416	90.55	0.0387	84.21
4	0.0504	109.78	0.0525	114.35	0.0490	106.73
5	0.0487	106.08	0.0515	112.18	0.0493	107.38
8	0.0511	111.30	0.0517	112.61	0.0408	88.87
9 (a)	0.0503	109.56	0.0466	101.50	0.0407	88.65
9 (b)	0.0415	90.35	0.0371	80.78	0.0294	64.09
13 (a)	0.0446	97.15	0.0317	69.05	0.0201	43.78
13 (b)	0.0411	89.56	0.0371	80.88	0.0263	57.27
17	0.0458	99.76	0.0329	71.66	0.0220	47.92
21	0.0464	101.07	0.0320	69.70	0.0194	42.26
25	0.0578	125.90	0.0423	92.14	0.0289	62.95

Tabela A3. 20 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,01, seção B-B).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0459	-	0.0459	-	0.0459	-
1	0.0443	96.49	0.0416	90.55	0.0387	84.21
4	0.0450	97.93	0.0467	101.72	0.0445	96.93
5	0.0434	94.53	0.0449	97.80	0.0378	82.34
8	0.0457	99.54	0.0448	97.58	0.0421	91.70
9 (a)	0.0452	98.45	0.0431	93.88	0.0388	84.51
9 (b)	0.0420	91.48	0.0370	80.59	0.0308	67.09
13 (a)	0.0414	90.18	0.0345	75.15	0.0274	59.68
13 (b)	0.0431	93.88	0.0376	81.90	0.0312	67.96
17	0.0438	95.40	0.0362	78.85	0.0297	64.69
21	0.0395	85.96	0.0286	62.27	0.0228	49.58
25	0.0457	99.54	0.0310	67.52	0.0214	46.61

Tabela A3. 21 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,01, seção C-C).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0459	-	0.0459	-	0.0459	-
1	0.0443	96.49	0.0416	90.55	0.0387	84.21
4	0.0448	97.58	0.0453	98.67	0.0447	97.36
5	0.0443	96.49	0.0444	96.71	0.0418	91.05
8	0.0457	99.54	0.0517	112.61	0.0408	88.87
9 (a)	0.0503	109.56	0.0466	101.50	0.0407	88.65
9 (b)	0.0438	95.40	0.0403	87.78	0.0357	77.76
13 (a)	0.0440	95.84	0.0396	86.26	0.0340	74.06
13 (b)	0.0471	102.59	0.0413	89.96	0.0370	80.59
17	0.0466	101.50	0.0390	84.95	0.0375	81.68
21	0.0410	89.31	0.0302	65.78	0.0222	48.36
25	0.0578	125.90	0.0423	92.14	0.0289	62.95

Tabela A3. 22 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,1, seção A-A).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0272	-	0.0272	-	0.0272	-
1	0.0267	98.24	0.0248	91.31	0.0226	83.04
4	0.0279	102.57	0.0243	89.34	0.0207	76.10
5	0.0270	99.26	0.0232	85.29	0.0185	68.01
8	0.0272	100.00	0.0214	78.68	0.0158	58.09
9 (a)	0.0271	99.63	0.0211	77.57	0.0159	58.46
9 (b)	0.0251	92.11	0.0176	64.65	0.0100	36.61
13 (a)	0.0250	91.91	0.0171	62.87	0.0108	39.71
13 (b)	0.0244	89.81	0.0161	59.24	0.0092	33.65
17	0.0248	91.18	0.0167	61.40	0.0095	34.93
21	0.0239	87.87	0.0146	53.68	0.0080	29.41
25	0.0272	100.00	0.0164	60.29	0.0082	30.15

Tabela A3. 23 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,1, seção B-B).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0272	-	0.0272	-	0.0272	-
1	0.0267	98.24	0.0248	91.31	0.0226	83.04
4	0.0263	96.76	0.0214	78.68	0.0176	64.71
5	0.0260	95.59	0.0219	80.51	0.0168	61.76
8	0.0268	98.53	0.0204	75.00	0.0141	51.84
9 (a)	0.0258	94.85	0.0210	77.21	0.0135	49.63
9 (b)	0.0246	90.36	0.0173	63.60	0.0102	37.61
13 (a)	0.0242	88.97	0.0162	59.56	0.0097	35.66
13 (b)	0.0244	89.71	0.0162	59.56	0.0094	34.56
17	0.0246	90.44	0.0159	58.46	0.0092	33.82
21	0.0227	83.54	0.0127	46.66	0.0057	20.80
25	0.0232	85.29	0.0133	48.90	0.0065	23.90

Tabela A3. 24 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 0,1, seção C-C).

Nº Estacas	L/d = 10	β/β_0 (%)	L/d = 25	β/β_0 (%)	L/d = 50	β/β_0 (%)
0	0.0272	-	0.0272	-	0.0272	-
1	0.0267	98.24	0.0248	91.31	0.0226	83.04
4	0.0269	98.90	0.0228	83.82	0.0178	65.44
5	0.0263	96.69	0.0220	80.88	0.0168	61.76
8	0.0272	100.00	0.0214	78.68	0.0158	58.09
9 (a)	0.0271	99.63	0.0211	77.57	0.0159	58.46
9 (b)	0.0257	94.49	0.0180	66.18	0.0111	40.81
13 (a)	0.0247	90.81	0.0161	59.19	0.0095	34.93
13 (b)	0.0261	95.96	0.0166	61.03	0.0115	42.28
17	0.0249	91.54	0.0171	62.87	0.0098	36.03
21	0.0230	84.56	0.0123	45.26	0.0059	21.81
25	0.0272	100.00	0.0164	60.29	0.0082	30.15

Tabela A3. 25 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 1, seção A-A).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0103	-	0.0103	-	0.0103	-
1	0.0098	95.05	0.0085	82.27	0.0072	69.84
4	0.0090	87.29	0.0067	64.99	0.0047	45.59
5	0.0085	82.47	0.0067	64.99	0.0041	39.77
8	0.0093	89.91	0.0065	63.05	**0.0029**	28.13
9 (a)	0.0091	88.26	0.0065	63.05	**0.0030**	29.10
9 (b)	0.0086	83.43	0.0058	55.78	**0.0020**	19.09
13 (a)	0.0090	87.29	0.0060	58.20	**0.0032**	31.04
13 (b)	0.0084	81.06	0.0047	45.65	**0.0015**	14.30
17	0.0083	80.50	0.0055	53.35	**0.0023**	22.31
21	0.0082	79.53	0.0044	42.68	**0.0009**	9.07
25	0.0095	92.14	0.0056	54.03	**0.0019**	18.43

Tabela A3. 26 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 1, seção B-B).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0103	-	0.0103	-	0.0103	-
1	0.0098	95.05	0.0085	82.27	0.0072	69.84
4	0.0090	87.26	0.0070	68.38	0.0040	38.80
5	0.0088	85.50	0.0072	69.84	0.0038	36.86
8	0.0085	82.71	0.0064	62.46	**0.0025**	24.25
9 (a)	0.0090	87.49	0.0059	57.23	**0.0025**	24.25
9 (b)	0.0087	84.58	0.0055	53.35	**0.0022**	21.34
13 (a)	0.0081	78.46	0.0053	51.41	**0.0027**	26.19
13 (b)	0.0081	78.14	0.0050	48.50	**0.0015**	14.55
17	0.0082	79.67	0.0054	52.38	**0.0019**	18.43
21	0.0082	79.37	0.0042	41.00	**0.0009**	9.07
25	0.0078	75.65	0.0047	45.59	**0.0021**	20.37

Tabela A3. 27 – Distorções angulares máximas em função do comprimento relativo L/d (ν_s = 0,5, K_r = 1, seção C-C).

Nº Estacas	**L/d = 10**	**β/β_0 (%)**	**L/d = 25**	**β/β_0 (%)**	**L/d = 50**	**β/β_0 (%)**
0	0.0103	-	0.0103	-	0.0103	-
1	0.0098	95.05	0.0085	82.27	0.0072	69.84
4	0.0090	87.37	0.0071	68.38	0.0038	36.57
5	0.0092	89.23	0.0073	70.81	0.0039	38.22
8	0.0093	89.91	0.0064	62.46	**0.0029**	28.13
9 (a)	0.0091	88.26	0.0065	63.05	**0.0030**	29.10
9 (b)	0.0089	86.32	0.0055	53.35	**0.0018**	17.46
13 (a)	0.0089	86.32	0.0054	52.38	**0.0020**	19.61
13 (b)	0.0092	89.23	0.0051	49.47	**0.0021**	20.37
17	0.0085	82.44	0.0047	45.59	**0.0020**	19.40
21	0.0083	80.50	0.0047	45.59	**0.0015**	14.55
25	0.0095	92.14	0.0056	54.03	**0.0019**	18.43

Tabela A3. 28 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 10, seção A-A).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0472	-	0.0289	-	0.0109	-
1	0.0448	94.88	0.0283	98.01	0.0102	93.84
4	0.0632	133.84	0.0285	98.62	0.0100	91.58
5	0.0620	131.30	0.0286	98.96	0.0098	89.74
8	0.0588	124.52	0.0270	93.43	0.0088	80.59
9 (a)	0.0601	127.28	0.0273	94.46	0.0090	82.42
9 (b)	0.0391	82.75	0.0215	74.42	0.0077	70.51
13 (a)	0.0452	95.72	0.0218	75.43	0.0078	71.43
13 (b)	0.0418	88.51	0.0217	74.97	0.0071	64.66
17	0.0445	94.24	0.0222	76.82	0.0074	67.77
21	0.0445	94.24	0.0195	67.47	0.0061	55.86
25	0.0613	129.82	0.0218	75.43	0.0079	71.98

Tabela A3. 29 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 10, seção B-B).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0472	-	0.0289	-	0.0109	-
1	0.0448	94.88	0.0283	98.01	0.0102	93.84
4	0.0504	106.73	0.0276	95.50	0.0092	84.17
5	0.0508	107.58	0.0270	93.43	0.0092	84.25
8	0.0596	126.22	0.0266	92.04	0.0088	80.68
9 (a)	0.0548	116.05	0.0262	90.66	0.0083	76.01
9 (b)	0.0443	93.82	0.0221	76.61	0.0076	70.00
13 (a)	0.0432	91.49	0.0206	71.28	0.0073	66.85
13 (b)	0.0468	99.11	0.0222	76.82	0.0069	63.19
17	0.0460	97.42	0.0208	71.97	0.0076	69.60
21	0.0418	88.62	0.0181	62.63	0.0062	56.93
25	0.0470	99.53	0.0188	65.05	0.0064	58.61

Tabela A3. 30 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 10, seção C-C).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0472	-	0.0289	-	0.0109	-
1	0.0448	94.88	0.0283	98.01	0.0102	93.84
4	0.0534	113.09	0.0280	96.89	0.0097	88.74
5	0.0521	110.33	0.0276	95.50	0.0092	84.25
8	0.0588	124.52	0.0270	93.43	0.0088	80.59
9 (a)	0.0601	127.28	0.0273	94.46	0.0090	82.42
9 (b)	0.0491	103.98	0.0243	84.08	0.0084	76.92
13 (a)	0.0485	102.71	0.0222	76.82	0.0076	69.60
13 (b)	0.0540	114.36	0.0244	84.43	0.0077	70.51
17	0.0549	116.26	0.0222	76.82	0.0074	67.77
21	0.0389	82.38	0.0179	61.94	0.0061	56.01
25	0.0613	129.82	0.0218	75.43	0.0079	71.98

Tabela A3. 31 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 25, seção A-A).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0405	85.74	0.0247	85.53	0.0081	74.34
4	0.0696	147.40	0.0234	80.97	0.0058	53.11
5	0.0680	144.01	0.0237	82.01	0.0059	54.03
8	0.0680	144.01	0.0208	71.97	0.0048	43.96
9 (a)	0.0508	107.58	0.0204	70.59	0.0035	32.05
9 (b)	0.0310	65.71	0.0113	39.21	**0.0020**	18.09
13 (a)	0.0253	53.58	0.0110	38.06	0.0042	38.46
13 (b)	0.0268	56.77	0.0104	35.83	**0.0019**	17.50
17	0.0259	54.85	0.0104	35.99	0.0033	30.22
21	0.0272	57.60	0.0088	30.45	**0.0023**	21.06
25	0.0397	84.07	0.0097	33.56	**0.0032**	29.30

Tabela A3. 32 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 25, seção B-B).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0405	85.74	0.0247	85.53	0.0081	74.34
4	0.0547	115.84	0.0213	73.70	0.0051	46.70
5	0.0516	109.28	0.0206	71.28	0.0044	40.29
8	0.0500	105.89	0.0199	68.86	0.0040	36.63
9 (a)	0.0561	118.81	0.0207	71.63	0.0036	32.97
9 (b)	0.0365	77.30	0.0122	42.34	**0.0026**	23.81
13 (a)	0.0345	73.06	0.0109	37.72	**0.0029**	26.56
13 (b)	0.0391	82.80	0.0115	39.86	**0.0018**	16.48
17	0.0372	78.78	0.0106	36.68	**0.0024**	21.98
21	0.0283	59.93	0.0065	22.53	**0.0011**	10.50
25	0.0319	67.56	0.0074	25.61	**0.0025**	22.89

Tabela A3. 33 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 25, seção C-C).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0405	85.74	0.0247	85.53	0.0081	74.34
4	0.0720	152.48	0.0222	76.82	0.0055	50.37
5	0.0513	108.64	0.0207	71.63	0.0049	44.87
8	0.0680	144.01	0.0208	71.97	0.0048	43.96
9 (a)	0.0508	107.58	0.0204	70.59	0.0035	32.05
9 (b)	0.0431	91.27	0.0141	48.79	**0.0030**	27.47
13 (a)	0.0434	91.91	0.0115	39.79	**0.0023**	21.06
13 (b)	0.0593	125.58	0.0143	49.48	**0.0027**	24.73
17	0.0529	112.03	0.0122	42.21	**0.0019**	17.40
21	0.0271	57.39	0.0069	23.88	**0.0015**	13.74
25	0.0397	84.07	0.0097	33.56	**0.0032**	29.30

Tabela A3. 34 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 50, seção A-A).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0469	99.26	0.0224	77.55	0.0060	55.39
4	0.0720	152.48	0.0226	78.20	0.0037	33.85
5	0.0671	142.10	0.0188	64.88	0.0045	41.36
8	0.0567	120.08	0.0191	66.18	0.0053	48.77
9 (a)	0.0575	121.77	0.0193	66.72	0.0056	51.09
9 (b)	0.0305	64.54	0.0094	32.43	0.0035	31.63
13 (a)	0.0168	35.58	0.0056	19.38	**0.0010**	9.16
13 (b)	0.0285	60.36	0.0105	36.38	0.0043	39.29
17	0.0166	35.15	0.0046	15.92	**0.0015**	13.28
21	0.0155	32.83	**0.0027**	9.34	**0.0016**	14.30
25	0.0265	56.12	0.0036	12.42	**0.0009**	8.36

Tabela A3. 35 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 50, seção B-B).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0469	99.26	0.0224	77.55	0.0060	55.39
4	0.0494	104.62	0.0160	55.52	0.0034	31.45
5	0.0520	110.12	0.0179	61.89	0.0043	39.46
8	0.0537	113.72	0.0186	64.28	0.0052	47.79
9 (a)	0.0491	103.98	0.0189	65.39	0.0055	50.05
9 (b)	0.0316	66.92	0.0102	35.39	0.0035	31.82
13 (a)	0.0283	59.93	0.0053	18.46	**0.0013**	11.89
13 (b)	0.0330	69.89	0.0121	41.74	0.0044	40.48
17	0.0308	65.23	0.0072	24.94	**0.0021**	19.67
21	0.0259	54.94	0.0089	30.67	**0.0030**	27.65
25	0.0191	40.45	**0.0029**	10.03	**0.0011**	10.28

Tabela A3. 36 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,1, L/d = 50, seção C-C).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0472	-	0.0289	-	0.0109	-
1	0.0469	99.26	0.0224	77.55	0.0060	55.39
4	0.0550	116.48	0.0162	56.02	0.0034	30.94
5	0.0523	110.76	0.0179	61.93	0.0043	39.41
8	0.0567	120.08	0.0191	66.18	0.0053	48.77
9 (a)	0.0575	121.77	0.0193	66.72	0.0056	51.09
9 (b)	0.0393	83.23	0.0123	42.66	0.0037	34.08
13 (a)	0.0381	80.69	0.0088	30.53	**0.0019**	17.26
13 (b)	0.0514	108.85	0.0144	49.66	0.0047	43.47
17	0.0473	100.17	0.0112	38.67	**0.0029**	26.27
21	0.0210	44.47	0.0056	19.40	**0.0022**	19.91
25	0.0265	56.12	0.0036	12.42	**0.0009**	8.36

Tabela A3. 37 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 10, seção A-A).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0516	-	0.0311	-	0.0117	-
1	0.0504	97.73	0.0300	96.55	0.0106	90.66
4	0.0677	131.28	0.0310	99.68	0.0102	87.11
5	0.0616	119.45	0.0313	100.64	0.0100	85.40
8	0.0634	122.94	0.0290	93.25	0.0098	83.77
9 (a)	0.0654	126.82	0.0297	95.50	0.0096	81.98
9 (b)	0.0462	89.56	0.0249	80.14	0.0093	79.81
13 (a)	0.0508	98.51	0.0253	81.35	0.0087	74.30
13 (b)	0.0441	85.49	0.0246	79.03	0.0082	69.63
17	0.0527	102.19	0.0246	79.10	0.0085	72.59
21	0.0506	98.12	0.0231	74.28	0.0079	67.46
25	0.0645	125.07	0.0266	85.53	0.0092	78.57

Tabela A3. 38 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 10, seção B-B).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0516	-	0.0311	-	0.0117	-
1	0.0504	97.73	0.0300	96.55	0.0106	90.66
4	0.0556	107.81	0.0290	93.25	0.0102	87.09
5	0.0546	105.88	0.0291	93.57	0.0101	86.25
8	0.0598	115.96	0.0304	97.75	0.0091	77.97
9 (a)	0.0555	107.62	0.0289	92.93	0.0098	83.69
9 (b)	0.0479	92.88	0.0257	82.78	0.0091	77.71
13 (a)	0.0469	90.94	0.0239	76.85	0.0080	68.25
13 (b)	0.0518	100.45	0.0254	81.67	0.0086	73.44
17	0.0502	97.34	0.0239	76.85	0.0089	76.00
21	0.0435	84.33	0.0219	70.55	0.0077	65.55
25	0.0511	99.09	0.0223	71.70	0.0077	65.76

Tabela A3. 39 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 10, seção C-C).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0516	-	0.0311	-	0.0117	-
1	0.0504	97.73	0.0300	96.55	0.0106	90.66
4	0.0563	109.17	0.0301	96.78	0.0096	81.64
5	0.0546	105.88	0.0300	96.46	0.0100	85.40
8	0.0634	122.94	0.0290	93.25	0.0098	83.77
9 (a)	0.0654	126.82	0.0297	95.50	0.0096	81.98
9 (b)	0.0523	101.42	0.0269	86.50	0.0088	75.15
13 (a)	0.0519	100.64	0.0249	80.06	0.0089	76.00
13 (b)	0.0590	114.41	0.0276	88.75	0.0090	76.86
17	0.0617	119.64	0.0255	81.99	0.0082	70.03
21	0.0439	85.13	0.0212	68.17	0.0073	62.66
25	0.0645	125.07	0.0266	85.53	0.0092	78.57

Tabela A3. 40 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 25, seção A-A).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0453	87.79	0.0275	88.57	0.0089	76.13
4	0.0753	146.02	0.0252	81.03	0.0074	63.19
5	0.0657	127.40	0.0255	81.99	0.0062	52.95
8	0.0631	122.36	0.0244	78.46	0.0056	47.82
9 (a)	0.0610	118.29	0.0227	72.99	0.0052	44.41
9 (b)	0.0388	75.18	0.0145	46.53	0.0039	33.27
13 (a)	0.0338	65.54	0.0153	49.20	0.0050	42.70
13 (b)	0.0355	68.86	0.0136	43.78	0.0035	29.61
17	0.0363	70.39	0.0146	46.95	0.0044	37.57
21	0.0313	60.69	0.0125	40.19	0.0035	29.89
25	0.0433	83.96	0.0134	43.09	0.0045	38.43

Tabela A3. 41 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 25, seção B-B).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0453	87.79	0.0275	88.57	0.0089	76.13
4	0.0526	102.00	0.0238	76.53	0.0063	53.97
5	0.0547	106.07	0.0237	76.21	0.0066	56.36
8	0.0622	120.61	0.0208	66.88	0.0056	47.91
9 (a)	0.0622	120.61	0.0214	68.81	0.0052	44.41
9 (b)	0.0408	79.12	0.0158	50.73	0.0044	37.57
13 (a)	0.0389	75.43	0.0134	43.09	0.0042	35.87
13 (b)	0.0419	81.25	0.0149	47.91	0.0038	32.45
17	0.0400	77.56	0.0138	44.37	0.0035	29.89
21	0.0348	67.50	0.0108	34.84	**0.0030**	25.76
25	0.0332	64.38	0.0116	37.30	0.0036	30.74

Tabela A3. 42 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 25, seção C-C).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0453	87.79	0.0275	88.57	0.0089	76.13
4	0.0582	112.86	0.0240	77.17	0.0068	58.07
5	0.0533	103.35	0.0229	73.63	0.0061	52.09
8	0.0631	122.36	0.0244	78.46	0.0056	47.82
9 (a)	0.0610	118.29	0.0227	72.99	0.0052	44.41
9 (b)	0.0471	91.33	0.0165	53.05	0.0046	39.28
13 (a)	0.0452	87.65	0.0145	46.62	0.0041	35.01
13 (b)	0.0517	100.25	0.0162	52.09	0.0040	34.16
17	0.0496	96.18	0.0146	46.95	0.0035	29.89
21	0.0309	59.92	0.0104	33.56	**0.0028**	23.91
25	0.0433	83.96	0.0134	43.09	0.0045	38.43

Tabela A3. 43 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 50, seção A-A).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0419	81.24	0.0238	76.64	0.0074	63.19
4	0.0652	126.43	0.0221	71.06	0.0040	34.16
5	0.0688	133.41	0.0194	62.38	0.0030	25.54
8	0.0606	117.51	0.0174	55.95	0.0038	32.26
9 (a)	0.0540	104.71	0.0166	53.38	0.0040	34.29
9 (b)	0.0307	59.61	0.0072	23.01	**0.0020**	16.98
13 (a)	0.0188	36.46	0.0076	24.44	**0.0025**	21.35
13 (b)	0.0362	70.19	0.0079	25.53	**0.0030**	25.25
17	0.0196	38.01	0.0082	26.37	**0.0014**	11.96
21	0.0229	44.41	0.0042	13.50	**0.0009**	7.53
25	0.0278	53.91	0.0063	20.26	**0.0011**	9.39

Tabela A3. 44 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 50, seção B-B).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0419	81.24	0.0238	76.64	0.0074	63.19
4	0.0622	120.61	0.0175	56.27	0.0034	29.04
5	0.0517	100.25	0.0171	54.98	0.0028	23.72
8	0.0381	73.88	0.0163	52.41	0.0036	30.97
9 (a)	0.0482	93.47	0.0161	51.90	0.0040	34.14
9 (b)	0.0346	67.09	0.0082	26.53	**0.0021**	18.07
13 (a)	0.0316	61.28	0.0071	22.83	**0.0016**	13.66
13 (b)	0.0350	67.87	0.0103	33.04	**0.0031**	26.77
17	0.0340	65.93	0.0070	22.51	**0.0013**	11.35
21	0.0280	54.28	0.0067	21.51	**0.0018**	15.77
25	0.0265	51.39	0.0045	14.47	**0.0008**	6.83

Tabela A3. 45 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,3, L/d = 50, seção C-C).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0516	-	0.0311	-	0.0117	-
1	0.0419	81.24	0.0238	76.64	0.0074	63.19
4	0.0570	110.53	0.0182	58.52	0.0028	23.91
5	0.0508	98.51	0.0178	57.23	0.0028	24.02
8	0.0606	117.51	0.0174	55.95	0.0038	32.26
9 (a)	0.0540	104.71	0.0166	53.38	0.0040	34.29
9 (b)	0.0422	81.79	0.0102	32.81	**0.0005**	4.29
13 (a)	0.0387	75.04	0.0076	24.44	**0.0009**	7.89
13 (b)	0.0553	107.23	0.0123	39.71	0.0035	29.52
17	0.0447	86.68	0.0096	30.73	**0.0020**	16.87
21	0.0238	46.15	0.0042	13.54	**0.0012**	10.64
25	0.0278	53.91	0.0063	20.26	**0.0011**	9.39

Tabela A3. 46 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 10, seção A-A).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0443	96.49	0.0267	98.24	0.0098	95.05
4	0.0504	109.78	0.0279	102.57	0.0090	87.29
5	0.0487	106.08	0.0270	99.26	0.0085	82.47
8	0.0511	111.30	0.0272	100.00	0.0093	89.91
9 (a)	0.0503	109.56	0.0271	99.63	0.0091	88.26
9 (b)	0.0415	90.35	0.0251	92.11	0.0086	83.43
13 (a)	0.0446	97.15	0.0250	91.91	0.0090	87.29
13 (b)	0.0411	89.56	0.0244	89.81	0.0084	81.06
17	0.0458	99.76	0.0248	91.18	0.0083	80.50
21	0.0464	101.07	0.0239	87.87	0.0082	79.53
25	0.0578	125.90	0.0272	100.00	0.0095	92.14

Tabela A3. 47 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 10, seção B-B).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0443	96.49	0.0267	98.24	0.0098	95.05
4	0.0450	97.93	0.0263	96.76	0.0090	87.26
5	0.0434	94.53	0.0260	95.59	0.0088	85.50
8	0.0457	99.54	0.0268	98.53	0.0085	82.71
9 (a)	0.0452	98.45	0.0258	94.85	0.0090	87.49
9 (b)	0.0420	91.48	0.0246	90.36	0.0087	84.58
13 (a)	0.0414	90.18	0.0242	88.97	0.0081	78.46
13 (b)	0.0431	93.88	0.0244	89.71	0.0081	78.14
17	0.0438	95.40	0.0246	90.44	0.0082	79.67
21	0.0395	85.96	0.0227	83.54	0.0082	79.37
25	0.0457	99.54	0.0232	85.29	0.0078	75.65

Tabela A3. 48 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 10, seção C-C).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0443	96.49	0.0267	98.24	0.0098	95.05
4	0.0448	97.58	0.0269	98.90	0.0090	87.37
5	0.0443	96.49	0.0263	96.69	0.0092	89.23
8	0.0457	99.54	0.0272	100.00	0.0093	89.91
9 (a)	0.0503	109.56	0.0271	99.63	0.0091	88.26
9 (b)	0.0438	95.40	0.0257	94.49	0.0089	86.32
13 (a)	0.0440	95.84	0.0247	90.81	0.0089	86.32
13 (b)	0.0471	102.59	0.0261	95.96	0.0092	89.23
17	0.0466	101.50	0.0249	91.54	0.0085	82.44
21	0.0410	89.31	0.0230	84.56	0.0083	80.50
25	0.0578	125.90	0.0272	100.00	0.0095	92.14

Tabela A3. 49 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 25, seção A-A).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0416	90.55	0.0248	91.31	0.0085	82.27
4	0.0525	114.35	0.0243	89.34	0.0067	64.99
5	0.0515	112.18	0.0232	85.29	0.0067	64.99
8	0.0517	112.61	0.0214	78.68	0.0065	63.05
9 (a)	0.0466	101.50	0.0211	77.57	0.0065	63.05
9 (b)	0.0371	80.78	0.0176	64.65	0.0058	55.78
13 (a)	0.0317	69.05	0.0171	62.87	0.0060	58.20
13 (b)	0.0371	80.88	0.0161	59.24	0.0047	45.65
17	0.0329	71.66	0.0167	61.40	0.0055	53.35
21	0.0320	69.70	0.0146	53.68	0.0044	42.68
25	0.0423	92.14	0.0164	60.29	0.0056	54.03

Tabela A3. 50 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 25, seção B-B).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0416	90.55	0.0248	91.31	0.0085	82.27
4	0.0467	101.72	0.0214	78.68	0.0070	68.38
5	0.0449	97.80	0.0219	80.51	0.0072	69.84
8	0.0448	97.58	0.0204	75.00	0.0064	62.46
9 (a)	0.0431	93.88	0.0210	77.21	0.0059	57.23
9 (b)	0.0370	80.59	0.0173	63.60	0.0055	53.35
13 (a)	0.0345	75.15	0.0162	59.56	0.0053	51.41
13 (b)	0.0376	81.90	0.0162	59.56	0.0050	48.50
17	0.0362	78.85	0.0159	58.46	0.0054	52.38
21	0.0286	62.27	0.0127	46.66	0.0042	41.00
25	0.0310	67.52	0.0133	48.90	0.0047	45.59

Tabela A3. 51 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 25, seção C-C).

Nº Estacas	K_r = 0,01	β/β_0 (%)	K_r = 0,1	β/β_0 (%)	K_r = 1	β/β_0 (%)
0	0.0459	-	0.0272	-	0.0103	-
1	0.0416	90.55	0.0248	91.31	0.0085	82.27
4	0.0453	98.67	0.0228	83.82	0.0071	68.38
5	0.0444	96.71	0.0220	80.88	0.0073	70.81
8	0.0517	112.61	0.0214	78.68	0.0064	62.46
9 (a)	0.0466	101.50	0.0211	77.57	0.0065	63.05
9 (b)	0.0403	87.78	0.0180	66.18	0.0055	53.35
13 (a)	0.0396	86.26	0.0161	59.19	0.0054	52.38
13 (b)	0.0413	89.96	0.0166	61.03	0.0051	49.47
17	0.0390	84.95	0.0171	62.87	0.0047	45.59
21	0.0302	65.78	0.0123	45.26	0.0047	45.59
25	0.0423	92.14	0.0164	60.29	0.0056	54.03

Tabela A3. 52 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 50, seção A-A).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0459	-	0.0272	-	0.0103	-
1	0.0387	84.21	0.0226	83.04	0.0072	69.84
4	0.0490	106.73	0.0207	76.10	0.0047	45.59
5	0.0493	107.38	0.0185	68.01	0.0041	39.77
8	0.0408	88.87	0.0158	58.09	**0.0029**	28.13
9 (a)	0.0407	88.65	0.0159	58.46	**0.0030**	29.10
9 (b)	0.0294	64.09	0.0100	36.61	**0.0020**	19.09
13 (a)	0.0201	43.78	0.0108	39.71	**0.0032**	31.04
13 (b)	0.0263	57.27	0.0092	33.65	**0.0015**	14.30
17	0.0220	47.92	0.0095	34.93	**0.0023**	22.31
21	0.0194	42.26	0.0080	29.41	**0.0009**	9.07
25	0.0289	62.95	0.0082	30.15	**0.0019**	18.43

Tabela A3. 53 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 50, seção B-B).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0459	-	0.0272	-	0.0103	-
1	0.0387	84.21	0.0226	83.04	0.0072	69.84
4	0.0445	96.93	0.0176	64.71	0.0040	38.80
5	0.0378	82.34	0.0168	61.76	0.0038	36.86
8	0.0421	91.70	0.0141	51.84	**0.0025**	24.25
9 (a)	0.0388	84.51	0.0135	49.63	**0.0025**	24.25
9 (b)	0.0308	67.09	0.0102	37.61	**0.0022**	21.34
13 (a)	0.0274	59.68	0.0097	35.66	**0.0027**	26.19
13 (b)	0.0312	67.96	0.0094	34.56	**0.0015**	14.55
17	0.0297	64.69	0.0092	33.82	**0.0019**	18.43
21	0.0228	49.58	0.0057	20.80	**0.0009**	9.07
25	0.0214	46.61	0.0065	23.90	**0.0021**	20.37

Tabela A3. 54 – Distorções angulares máximas em função da rigidez do radier K_r (ν_s = 0,5, L/d = 50, seção C-C).

Nº Estacas	**K_r = 0,01**	**β/β_0 (%)**	**K_r = 0,1**	**β/β_0 (%)**	**K_r = 1**	**β/β_0 (%)**
0	0.0459	-	0.0272	-	0.0103	-
1	0.0387	84.21	0.0226	83.04	0.0072	69.84
4	0.0447	97.36	0.0178	65.44	0.0038	36.57
5	0.0418	91.05	0.0168	61.76	0.0039	38.22
8	0.0408	88.87	0.0158	58.09	**0.0029**	28.13
9 (a)	0.0407	88.65	0.0159	58.46	**0.0030**	29.10
9 (b)	0.0357	77.76	0.0111	40.81	**0.0018**	17.46
13 (a)	0.0340	74.06	0.0095	34.93	**0.0020**	19.61
13 (b)	0.0370	80.59	0.0115	42.28	**0.0021**	20.37
17	0.0375	81.68	0.0098	36.03	**0.0020**	19.40
21	0.0222	48.36	0.0059	21.81	**0.0015**	14.55
25	0.0289	62.95	0.0082	30.15	**0.0019**	18.43

Tabela A3. 55 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 10, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0448	94.88	0.0504	97.73	0.0443	96.49
4	0.0632	133.84	0.0677	131.28	0.0504	109.78
5	0.0620	131.30	0.0616	119.45	0.0487	106.08
8	0.0588	124.52	0.0634	122.94	0.0511	111.30
9 (a)	0.0601	127.28	0.0654	126.82	0.0503	109.56
9 (b)	0.0391	82.75	0.0462	89.56	0.0415	90.35
13 (a)	0.0452	95.72	0.0508	98.51	0.0446	97.15
13 (b)	0.0418	88.51	0.0441	85.49	0.0411	89.56
17	0.0445	94.24	0.0527	102.19	0.0458	99.76
21	0.0445	94.24	0.0506	98.12	0.0464	101.07
25	0.0613	129.82	0.0645	125.07	0.0578	125.90

Tabela A3. 56 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 10, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0448	94.88	0.0504	97.73	0.0443	96.49
4	0.0504	106.73	0.0556	107.81	0.0450	97.93
5	0.0508	107.58	0.0546	105.88	0.0434	94.53
8	0.0596	126.22	0.0000	0.00	0.0457	99.54
9 (a)	0.0548	116.05	0.0555	107.62	0.0452	98.45
9 (b)	0.0443	93.82	0.0479	92.88	0.0420	91.48
13 (a)	0.0432	91.49	0.0469	90.94	0.0414	90.18
13 (b)	0.0468	99.11	0.0518	100.45	0.0431	93.88
17	0.0460	97.42	0.0502	97.34	0.0438	95.40
21	0.0418	88.62	0.0435	84.33	0.0395	85.96
25	0.0470	99.53	0.0511	99.09	0.0457	99.54

Tabela A3. 57 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 10, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0448	94.88	0.0504	97.73	0.0443	96.49
4	0.0534	113.09	0.0563	109.17	0.0448	97.58
5	0.0521	110.33	0.0546	105.88	0.0443	96.49
8	0.0588	124.52	0.0634	122.94	0.0457	99.54
9 (a)	0.0601	127.28	0.0654	126.82	0.0503	109.56
9 (b)	0.0491	103.98	0.0523	101.42	0.0438	95.40
13 (a)	0.0485	102.71	0.0519	100.64	0.0440	95.84
13 (b)	0.0540	114.36	0.0590	114.41	0.0471	102.59
17	0.0549	116.26	0.0617	119.64	0.0466	101.50
21	0.0389	82.38	0.0439	85.13	0.0410	89.31
25	0.0613	129.82	0.0645	125.07	0.0578	125.90

Tabela A3. 58 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 10, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0283	98.01	0.0300	96.55	0.0267	98.24
4	0.0285	98.62	0.0310	99.68	0.0279	102.57
5	0.0286	98.96	0.0313	100.64	0.0270	99.26
8	0.0270	93.43	0.0290	93.25	0.0272	100.00
9 (a)	0.0273	94.46	0.0297	95.50	0.0271	99.63
9 (b)	0.0215	74.42	0.0249	80.14	0.0251	92.11
13 (a)	0.0218	75.43	0.0253	81.35	0.0250	91.91
13 (b)	0.0217	74.97	0.0246	79.03	0.0244	89.81
17	0.0222	76.82	0.0246	79.10	0.0248	91.18
21	0.0195	67.47	0.0231	74.28	0.0239	87.87
25	0.0218	75.43	0.0266	85.53	0.0272	100.00

Tabela A3. 59 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 10, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0283	98.01	0.0300	96.55	0.0267	98.24
4	0.0276	95.50	0.0290	93.25	0.0263	96.76
5	0.0270	93.43	0.0291	93.57	0.0260	95.59
8	0.0266	92.04	0.0304	97.75	0.0268	98.53
9 (a)	0.0262	90.66	0.0289	92.93	0.0258	94.85
9 (b)	0.0221	76.61	0.0257	82.78	0.0246	90.36
13 (a)	0.0206	71.28	0.0239	76.85	0.0242	88.97
13 (b)	0.0222	76.82	0.0254	81.67	0.0244	89.71
17	0.0208	71.97	0.0239	76.85	0.0246	90.44
21	0.0181	62.63	0.0219	70.55	0.0227	83.54
25	0.0188	65.05	0.0223	71.70	0.0232	85.29

Tabela A3. 60 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 10, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0283	98.01	0.0283	91.08	0.0267	98.24
4	0.0280	96.89	0.0280	90.03	0.0269	98.90
5	0.0276	95.50	0.0276	88.75	0.0263	96.69
8	0.0270	93.43	0.0270	86.82	0.0272	100.00
9 (a)	0.0273	94.46	0.0273	87.78	0.0271	99.63
9 (b)	0.0243	84.08	0.0243	78.14	0.0257	94.49
13 (a)	0.0222	76.82	0.0222	71.38	0.0247	90.81
13 (b)	0.0244	84.43	0.0244	78.46	0.0261	95.96
17	0.0222	76.82	0.0222	71.38	0.0249	91.54
21	0.0179	61.94	0.0179	57.56	0.0230	84.56
25	0.0218	75.43	0.0218	70.10	0.0272	100.00

Tabela A3. 61 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 10, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0102	93.84	0.0106	90.66	0.0098	95.05
4	0.0100	91.58	0.0102	87.11	0.0090	87.29
5	0.0098	89.74	0.0100	85.40	0.0085	82.47
8	0.0088	80.59	0.0098	83.77	0.0093	89.91
9 (a)	0.0090	82.42	0.0096	81.98	0.0091	88.26
9 (b)	0.0077	70.51	0.0093	79.81	0.0086	83.43
13 (a)	0.0078	71.43	0.0087	74.30	0.0090	87.29
13 (b)	0.0071	64.66	0.0082	69.63	0.0084	81.06
17	0.0074	67.77	0.0085	72.59	0.0083	80.50
21	0.0061	55.86	0.0079	67.46	0.0082	79.53
25	0.0079	71.98	0.0092	78.57	0.0095	92.14

Tabela A3. 62 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 10, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0102	93.84	0.0106	90.66	0.0098	95.05
4	0.0092	84.17	0.0102	87.09	0.0090	87.26
5	0.0092	84.25	0.0101	86.25	0.0088	85.50
8	0.0088	80.68	0.0091	77.97	0.0085	82.71
9 (a)	0.0083	76.01	0.0098	83.69	0.0090	87.49
9 (b)	0.0076	70.00	0.0091	77.71	0.0087	84.58
13 (a)	0.0073	66.85	0.0080	68.25	0.0081	78.46
13 (b)	0.0069	63.19	0.0086	73.44	0.0081	78.14
17	0.0076	69.60	0.0089	76.00	0.0082	79.67
21	0.0062	56.93	0.0077	65.55	0.0082	79.37
25	0.0064	58.61	0.0077	65.76	0.0078	75.65

Tabela A3. 63 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 10, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0102	87.51	0.0106	90.66	0.0098	95.05
4	0.0097	82.75	0.0096	81.64	0.0090	87.37
5	0.0092	78.57	0.0100	85.40	0.0092	89.23
8	0.0088	75.15	0.0098	83.77	0.0093	89.91
9 (a)	0.0090	76.86	0.0096	81.98	0.0091	88.26
9 (b)	0.0084	71.73	0.0088	75.15	0.0089	86.32
13 (a)	0.0076	64.90	0.0089	76.00	0.0089	86.32
13 (b)	0.0077	65.76	0.0090	76.86	0.0092	89.23
17	0.0074	63.19	0.0082	70.03	0.0085	82.44
21	0.0061	52.23	0.0073	62.66	0.0083	80.50
25	0.0079	67.12	0.0092	78.57	0.0095	92.14

Tabela A3. 64 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 25, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0405	85.74	0.0453	87.79	0.0416	90.55
4	0.0696	147.40	0.0753	146.02	0.0525	114.35
5	0.0680	144.01	0.0657	127.40	0.0515	112.18
8	0.0680	144.01	0.0631	122.36	0.0517	112.61
9 (a)	0.0508	107.58	0.0610	118.29	0.0466	101.50
9 (b)	0.0310	65.71	0.0388	75.18	0.0371	80.78
13 (a)	0.0253	53.58	0.0338	65.54	0.0317	69.05
13 (b)	0.0268	56.77	0.0355	68.86	0.0371	80.88
17	0.0259	54.85	0.0363	70.39	0.0329	71.66
21	0.0272	57.60	0.0313	60.69	0.0320	69.70
25	0.0397	84.07	0.0433	83.96	0.0423	92.14

Tabela A3. 65 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 25, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0405	85.74	0.0453	87.79	0.0416	90.55
4	0.0547	115.84	0.0526	102.00	0.0467	101.72
5	0.0516	109.28	0.0547	106.07	0.0449	97.80
8	0.0500	105.89	0.0000	0.00	0.0448	97.58
9 (a)	0.0561	118.81	0.0622	120.61	0.0431	93.88
9 (b)	0.0365	77.30	0.0408	79.12	0.0370	80.59
13 (a)	0.0345	73.06	0.0389	75.43	0.0345	75.15
13 (b)	0.0391	82.80	0.0419	81.25	0.0376	81.90
17	0.0372	78.78	0.0400	77.56	0.0362	78.85
21	0.0283	59.93	0.0348	67.50	0.0286	62.27
25	0.0319	67.56	0.0332	64.38	0.0310	67.52

Tabela A3. 66 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 25, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0405	85.74	0.0453	87.79	0.0416	90.55
4	0.0720	152.48	0.0582	112.86	0.0453	98.67
5	0.0513	108.64	0.0533	103.35	0.0444	96.71
8	0.0680	144.01	0.0631	122.36	0.0517	112.61
9 (a)	0.0508	107.58	0.0610	118.29	0.0466	101.50
9 (b)	0.0431	91.27	0.0471	91.33	0.0403	87.78
13 (a)	0.0434	91.91	0.0452	87.65	0.0396	86.26
13 (b)	0.0593	125.58	0.0517	100.25	0.0413	89.96
17	0.0529	112.03	0.0496	96.18	0.0390	84.95
21	0.0271	57.39	0.0309	59.92	0.0302	65.78
25	0.0397	84.07	0.0433	83.96	0.0423	92.14

Tabela A3. 67 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 25, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0247	85.53	0.0275	88.57	0.0248	91.31
4	0.0234	80.97	0.0252	81.03	0.0243	89.34
5	0.0237	82.01	0.0255	81.99	0.0232	85.29
8	0.0208	71.97	0.0244	78.46	0.0214	78.68
9 (a)	0.0204	70.59	0.0227	72.99	0.0211	77.57
9 (b)	0.0113	39.21	0.0145	46.53	0.0176	64.65
13 (a)	0.0110	38.06	0.0153	49.20	0.0171	62.87
13 (b)	0.0104	35.83	0.0136	43.78	0.0161	59.24
17	0.0104	35.99	0.0146	46.95	0.0167	61.40
21	0.0088	30.45	0.0125	40.19	0.0146	53.68
25	0.0097	33.56	0.0134	43.09	0.0164	60.29

Tabela A3. 68 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 25, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0247	85.53	0.0275	88.57	0.0248	91.31
4	0.0213	73.70	0.0238	76.53	0.0214	78.68
5	0.0206	71.28	0.0237	76.21	0.0219	80.51
8	0.0199	68.86	0.0208	66.88	0.0204	75.00
9 (a)	0.0207	71.63	0.0214	68.81	0.0210	77.21
9 (b)	0.0122	42.34	0.0158	50.73	0.0173	63.60
13 (a)	0.0109	37.72	0.0134	43.09	0.0162	59.56
13 (b)	0.0115	39.86	0.0149	47.91	0.0162	59.56
17	0.0106	36.68	0.0138	44.37	0.0159	58.46
21	0.0065	22.53	0.0108	34.84	0.0127	46.66
25	0.0074	25.61	0.0116	37.30	0.0133	48.90

Tabela A3. 69 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 25, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0289	-	0.0311	-	0.0272	-
1	0.0247	85.53	0.0247	79.48	0.0248	91.31
4	0.0222	76.82	0.0222	71.38	0.0228	83.82
5	0.0207	71.63	0.0207	66.56	0.0220	80.88
8	0.0208	71.97	0.0208	66.88	0.0214	78.68
9 (a)	0.0204	70.59	0.0204	65.59	0.0211	77.57
9 (b)	0.0141	48.79	0.0141	45.34	0.0180	66.18
13 (a)	0.0115	39.79	0.0115	36.98	0.0161	59.19
13 (b)	0.0143	49.48	0.0143	45.98	0.0166	61.03
17	0.0122	42.21	0.0122	39.23	0.0171	62.87
21	0.0069	23.88	0.0069	22.19	0.0123	45.26
25	0.0097	33.56	0.0097	31.19	0.0164	60.29

Tabela A3. 70 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 25, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0081	74.34	0.0089	76.13	0.0085	82.27
4	0.0058	53.11	0.0074	63.19	0.0067	64.99
5	0.0059	54.03	0.0062	52.95	0.0067	64.99
8	0.0048	43.96	0.0056	47.82	0.0065	63.05
9 (a)	0.0035	32.05	0.0052	44.41	0.0065	63.05
9 (b)	**0.0020**	18.09	0.0039	33.27	0.0058	55.78
13 (a)	0.0042	38.46	0.0050	42.70	0.0060	58.20
13 (b)	**0.0019**	17.50	0.0035	29.61	0.0047	45.65
17	0.0033	30.22	0.0044	37.57	0.0055	53.35
21	**0.0023**	21.06	0.0035	29.89	0.0044	42.68
25	**0.0032**	29.30	0.0045	38.43	0.0056	54.03

Tabela A3. 71 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 25, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0081	74.34	0.0089	76.13	0.0085	82.27
4	0.0051	46.70	0.0063	53.97	0.0070	68.38
5	0.0044	40.29	0.0066	56.36	0.0072	69.84
8	0.0040	36.63	0.0056	47.91	0.0064	62.46
9 (a)	0.0036	32.97	0.0052	44.41	0.0059	57.23
9 (b)	**0.0026**	23.81	0.0044	37.57	0.0055	53.35
13 (a)	**0.0029**	26.56	0.0042	35.87	0.0053	51.41
13 (b)	**0.0018**	16.48	0.0038	32.45	0.0050	48.50
17	**0.0024**	21.98	0.0035	29.89	0.0054	52.38
21	**0.0011**	10.50	**0.0030**	25.76	0.0042	41.00
25	**0.0025**	22.89	0.0036	30.74	0.0047	45.59

Tabela A3. 72 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 25, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0109	-	0.0117	-	0.0103	-
1	0.0081	74.34	0.0089	76.13	0.0085	82.27
4	0.0055	50.37	0.0068	58.07	0.0071	68.38
5	0.0049	44.87	0.0061	52.09	0.0073	70.81
8	0.0048	43.96	0.0056	47.82	0.0064	62.46
9 (a)	0.0035	32.05	0.0052	44.41	0.0065	63.05
9 (b)	**0.0030**	27.47	0.0046	39.28	0.0055	53.35
13 (a)	**0.0023**	21.06	0.0041	35.01	0.0054	52.38
13 (b)	**0.0027**	24.73	0.0040	34.16	0.0051	49.47
17	**0.0019**	17.40	0.0035	29.89	0.0047	45.59
21	**0.0015**	13.74	**0.0028**	23.91	0.0047	45.59
25	**0.0032**	29.30	0.0045	38.43	0.0056	54.03

Tabela A3. 73 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 50, seção A-A).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0469	99.26	0.0419	81.24	0.0387	84.21
4	0.0720	152.48	0.0652	126.43	0.0490	106.73
5	0.0671	142.10	0.0688	133.41	0.0493	107.38
8	0.0567	120.08	0.0606	117.51	0.0408	88.87
9 (a)	0.0575	121.77	0.0540	104.71	0.0407	88.65
9 (b)	0.0305	64.54	0.0307	59.61	0.0294	64.09
13 (a)	0.0168	35.58	0.0188	36.46	0.0201	43.78
13 (b)	0.0285	60.36	0.0362	70.19	0.0263	57.27
17	0.0166	35.15	0.0196	38.01	0.0220	47.92
21	0.0155	32.83	0.0229	44.41	0.0194	42.26
25	0.0265	56.12	0.0278	53.91	0.0289	62.95

Tabela A3. 74 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 50, seção B-B).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0469	99.26	0.0419	81.24	0.0387	84.21
4	0.0494	104.62	0.0622	120.61	0.0445	96.93
5	0.0520	110.12	0.0517	100.25	0.0378	82.34
8	0.0537	113.72	0.0000	0.00	0.0421	91.70
9 (a)	0.0491	103.98	0.0482	93.47	0.0388	84.51
9 (b)	0.0316	66.92	0.0346	67.09	0.0308	67.09
13 (a)	0.0283	59.93	0.0316	61.28	0.0274	59.68
13 (b)	0.0330	69.89	0.0350	67.87	0.0312	67.96
17	0.0308	65.23	0.0340	65.93	0.0297	64.69
21	0.0259	54.94	0.0280	54.28	0.0228	49.58
25	0.0191	40.45	0.0265	51.39	0.0214	46.61

Tabela A3. 75 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,01, L/d = 50, seção C-C).

Nº Estacas	ν_S = 0,1	β/β_0 (%)	ν_S = 0,3	β/β_0 (%)	ν_S = 0,5	β/β_0 (%)
0	0.0472	-	0.0516	-	0.0459	-
1	0.0469	99.26	0.0419	81.24	0.0387	84.21
4	0.0550	116.48	0.0570	110.53	0.0447	97.36
5	0.0523	110.76	0.0508	98.51	0.0418	91.05
8	0.0567	120.08	0.0606	117.51	0.0408	88.87
9 (a)	0.0575	121.77	0.0540	104.71	0.0407	88.65
9 (b)	0.0393	83.23	0.0422	81.79	0.0357	77.76
13 (a)	0.0381	80.69	0.0387	75.04	0.0340	74.06
13 (b)	0.0514	108.85	0.0553	107.23	0.0370	80.59
17	0.0473	100.17	0.0447	86.68	0.0375	81.68
21	0.0210	44.47	0.0238	46.15	0.0222	48.36
25	0.0265	56.12	0.0278	53.91	0.0289	62.95

Tabela A3. 76 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 50, seção A-A).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0289	-	0.0311	-	0.0272	-
1	0.0224	77.55	0.0238	76.64	0.0226	83.04
4	0.0226	78.20	0.0221	71.06	0.0207	76.10
5	0.0188	64.88	0.0194	62.38	0.0185	68.01
8	0.0191	66.18	0.0174	55.95	0.0158	58.09
9 (a)	0.0193	66.72	0.0166	53.38	0.0159	58.46
9 (b)	0.0094	32.43	0.0072	23.01	0.0100	36.61
13 (a)	0.0056	19.38	0.0076	24.44	0.0108	39.71
13 (b)	0.0105	36.38	0.0079	25.53	0.0092	33.65
17	0.0046	15.92	0.0082	26.37	0.0095	34.93
21	0.0027	9.34	0.0042	13.50	0.0080	29.41
25	0.0036	12.42	0.0063	20.26	0.0082	30.15

Tabela A3. 77 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 50, seção B-B).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0289	-	0.0311	-	0.0272	-
1	0.0224	77.55	0.0238	76.64	0.0226	83.04
4	0.0160	55.52	0.0175	56.27	0.0176	64.71
5	0.0179	61.89	0.0171	54.98	0.0168	61.76
8	0.0186	64.28	0.0163	52.41	0.0141	51.84
9 (a)	0.0189	65.39	0.0161	51.90	0.0135	49.63
9 (b)	0.0102	35.39	0.0082	26.53	0.0102	37.61
13 (a)	0.0053	18.46	0.0071	22.83	0.0097	35.66
13 (b)	0.0121	41.74	0.0103	33.04	0.0094	34.56
17	0.0072	24.94	0.0070	22.51	0.0092	33.82
21	0.0089	30.67	0.0067	21.51	0.0057	20.80
25	0.0029	10.03	0.0045	14.47	0.0065	23.90

Tabela A3. 78 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 0,1, L/d = 50, seção C-C).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0289	-	0.0311	-	0.0272	-
1	0.0224	77.55	0.0224	72.06	0.0226	83.04
4	0.0162	56.02	0.0162	52.06	0.0178	65.44
5	0.0179	61.93	0.0179	57.55	0.0168	61.76
8	0.0191	66.18	0.0191	61.50	0.0158	58.09
9 (a)	0.0193	66.72	0.0193	62.00	0.0159	58.46
9 (b)	0.0123	42.66	0.0123	39.65	0.0111	40.81
13 (a)	0.0088	30.53	0.0088	28.37	0.0095	34.93
13 (b)	0.0144	49.66	0.0144	46.14	0.0115	42.28
17	0.0112	38.67	0.0112	35.94	0.0098	36.03
21	0.0056	19.40	0.0056	18.03	0.0059	21.81
25	0.0036	12.42	0.0036	11.55	0.0082	30.15

Tabela A3. 79 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 50, seção A-A).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0109	-	0.0117	-	0.0103	-
1	0.0060	55.39	0.0074	63.19	0.0072	69.84
4	0.0037	33.85	0.0040	34.16	0.0047	45.59
5	0.0045	41.36	0.0030	25.54	0.0041	39.77
8	0.0053	48.77	0.0038	32.26	**0.0029**	28.13
9 (a)	0.0056	51.09	0.0040	34.29	**0.0030**	29.10
9 (b)	0.0035	31.63	**0.0020**	16.98	**0.0020**	19.09
13 (a)	**0.0010**	9.16	**0.0025**	21.35	**0.0032**	31.04
13 (b)	0.0043	39.29	**0.0030**	25.25	**0.0015**	14.30
17	**0.0015**	13.28	**0.0014**	11.96	**0.0023**	22.31
21	**0.0016**	14.30	**0.0009**	7.53	**0.0009**	9.07
25	**0.0009**	8.36	**0.0011**	9.39	**0.0019**	18.43

Tabela A3. 80 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 50, seção B-B).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0109	-	0.0117	-	0.0103	-
1	0.0060	55.39	0.0074	63.19	0.0072	69.84
4	0.0034	31.45	0.0034	29.04	0.0040	38.80
5	0.0043	39.46	0.0028	23.72	0.0038	36.86
8	0.0052	47.79	0.0036	30.97	**0.0025**	24.25
9 (a)	0.0055	50.05	0.0040	34.14	**0.0025**	24.25
9 (b)	0.0035	31.82	**0.0021**	18.07	**0.0022**	21.34
13 (a)	**0.0013**	11.89	**0.0016**	13.66	**0.0027**	26.19
13 (b)	0.0044	40.48	**0.0031**	26.77	**0.0015**	14.55
17	**0.0021**	19.67	**0.0013**	11.35	**0.0019**	18.43
21	**0.0030**	27.65	**0.0018**	15.77	**0.0009**	9.07
25	**0.0011**	10.28	**0.0008**	6.83	**0.0021**	20.37

Tabela A3. 81 – Distorções angulares máximas em função do coeficiente de Poisson ν_s (K_r = 1, L/d = 50, seção C-C).

Nº Estacas	**ν_S = 0,1**	**β/β_0 (%)**	**ν_S = 0,3**	**β/β_0 (%)**	**ν_S = 0,5**	**β/β_0 (%)**
0	0.0109	-	0.0117	-	0.0103	-
1	0.0060	55.39	0.0074	63.19	0.0072	69.84
4	0.0034	30.94	0.0028	23.91	0.0038	36.57
5	0.0043	39.41	0.0028	24.02	0.0039	38.22
8	0.0053	48.77	0.0038	32.26	**0.0029**	28.13
9 (a)	0.0056	51.09	0.0040	34.29	**0.0030**	29.10
9 (b)	0.0037	34.08	**0.0005**	4.29	**0.0018**	17.46
13 (a)	**0.0019**	17.26	**0.0009**	7.89	**0.0020**	19.61
13 (b)	0.0047	43.47	**0.0035**	29.52	**0.0021**	20.37
17	**0.0029**	26.27	**0.0020**	16.87	**0.0020**	19.40
21	**0.0022**	19.91	**0.0012**	10.64	**0.0015**	14.55
25	**0.0009**	8.36	**0.0011**	9.39	**0.0019**	18.43