

Esforços e armaduras de pilares, paredes e muros

Nome da Obra: Águas de Santo André
Edifício e câmaras adjacentes

Data:19/10/12

1. Verificação da resistência ao esforço transversal em pilares de betão

- PI: Número de piso.
- Tramo: Nível inicial / nível final do tramo entre pisos.
- Armaduras:
 - Primeira armadura: Armadura de canto (perfil se é pilar metálico).
 - Segunda armadura: Armadura da face X.
 - Terceira armadura: Armadura da face Y.
- Estribos: Indica-se apenas o estribo perimetral disposto. Se existirem outros estribos e ramos deve consultar o desenho do quadro de pilares. Podem existir distintas separações na cabeça, pé e nó, que pode consultar em opções e pormenorização de pilares. A separação está indicada em centímetros.
- Desfavoráveis: Esforços transversos (majorados) correspondentes à combinação que produz o estado de tensões tangenciais mais desfavorável.
 - Nsd: Axial de cálculo [(+) compressão, (-) tracção] (KN)
 - Qxsd, Qysd: Esforço transversal de cálculo em cada direcção (KN)
 - Qxrd, Qyrd: Esforço transversal resistido em cada direcção (KN)
 - Verificação da interacção nas duas direcções (CC):
$$\sqrt{(Q_{xsd}/Q_{xrd})^2 + (Q_{ysd}/Q_{yrd})^2}$$
 - Origem das solicitações desfavoráveis:
 - G: Apenas permanentes
 - GV: Verticais + vento
 - GSis: Verticais + sismo
 - GVSis: Verticais + vento + sismo
- Verifica:
 - Sim: $CC \leq 1$
 - Não: $CC > 1$
- Nota:
 - Os esforços referem-se aos eixos locais do pilar.

Pilar	PI	Dimensão	Tramo	Armaduras	Estribos	Desfavoráveis						Origem	Verifica
						Nsd	Qxsd	Qxrd	Qysd	Qyrd	CC		
PA1	3	0.25x0.25	0.00/3.00	4Ø16+ 2Ø12	Ø6c/15	122.01	-6.35	105.03	23.80	82.31	0.30	GV	Sim
PA2	3	0.25x0.25	-0.50/3.00	4Ø12+ 2Ø12+2Ø12	Ø6c/15	79.38	-17.74	81.63	0.97	118.88	0.22	GSis	Sim
PB1	3	0.25x0.25	0.00/3.00	4Ø16+ 2Ø12	Ø6c/15	121.59	6.12	106.93	23.56	82.34	0.29	GV	Sim
PB2	3	0.25x0.25	-0.50/3.00	4Ø12+ 2Ø12+2Ø12	Ø6c/15	79.55	17.85	81.62	1.02	117.48	0.22	GSis	Sim

2. Esforços de pilares, paredes e muros por acção

- PI: Número de piso.
- Tramo: Nível inicial / nível final do tramo entre pisos.
- Nota:
 - Os esforços referem-se aos eixos locais do pilar.
 - O sistema de unidades utilizado é N,Qx,Qy: (KN) Mx,My,T: (KNm)

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Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
PA1	3	0.00/3.00	Permanente	68.2	5.1	2.1	3.7	1.5	-0.0	63.6	-6.1	-2.5	3.7	1.5	-0.0
			Sobrecarga	7.4	0.8	0.4	0.6	0.2	-0.0	7.4	-1.0	-0.2	0.6	0.2	-0.0
			Vento +X	-3.4	-13.4	-1.5	-6.4	-0.7	0.0	-3.4	5.9	0.7	-6.4	-0.7	0.0
			Vento -X	3.4	13.4	1.5	6.4	0.7	-0.0	3.4	-5.9	-0.7	6.4	0.7	-0.0
			Vento +Y	-7.2	0.0	-29.5	0.0	-14.2	-0.0	-7.2	-0.0	13.0	0.0	-14.2	-0.0
			Vento -Y	7.2	-0.0	29.5	-0.0	14.2	0.0	7.2	0.0	-13.0	-0.0	14.2	0.0
			Sismo X 1 Modo 1	-6.3	-23.5	-4.2	-11.3	-2.0	0.1	-6.3	10.3	1.8	-11.3	-2.0	0.1
			Sismo X 1 Modo 2	0.1	0.0	0.4	0.0	0.2	-0.0	0.1	-0.0	-0.2	0.0	0.2	-0.0
			Sismo X 1 Modo 3	0.1	-2.3	2.5	-1.1	1.2	-0.1	0.1	1.0	-1.1	-1.1	1.2	-0.1
			Sismo X 2 Modo 1	-5.1	-18.8	-3.3	-9.0	-1.6	0.1	-5.1	8.3	1.5	-9.0	-1.6	0.1
			Sismo X 2 Modo 2	0.1	0.0	0.3	0.0	0.2	-0.0	0.1	-0.0	-0.1	0.0	0.2	-0.0
			Sismo X 2 Modo 3	0.0	-1.5	1.5	-0.7	0.7	-0.0	0.0	0.6	-0.7	-0.7	0.7	-0.0
			Sismo Y 1 Modo 1	-0.1	-0.5	-0.1	-0.2	-0.0	0.0	-0.1	0.2	0.0	-0.2	-0.0	0.0
			Sismo Y 1 Modo 2	6.7	0.5	27.2	0.2	13.1	-0.0	6.7	-0.2	-12.0	0.2	13.1	-0.0
			Sismo Y 1 Modo 3	0.0	-0.9	1.0	-0.4	0.5	-0.0	0.0	0.4	-0.4	-0.4	0.5	-0.0
			Sismo Y 2 Modo 1	-2.1	-7.9	-1.4	-3.8	-0.7	0.0	-2.1	3.5	0.6	-3.8	-0.7	0.0
			Sismo Y 2 Modo 2	5.3	0.4	21.6	0.2	10.4	-0.0	5.3	-0.2	-9.5	0.2	10.4	-0.0
			Sismo Y 2 Modo 3	0.0	-0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0	-0.0
PA2	3	-0.50/3.00	Permanente	69.0	4.0	-2.2	2.6	-1.5	-0.0	63.7	-5.2	2.9	2.6	-1.5	-0.0
			Sobrecarga	7.3	0.6	-0.1	0.4	-0.2	-0.0	7.3	-0.8	0.4	0.4	-0.2	-0.0
			Vento +X	-2.2	-11.9	-1.1	-4.9	-0.5	0.0	-2.2	5.3	0.5	-4.9	-0.5	0.0
			Vento -X	2.2	11.9	1.1	4.9	0.5	-0.0	2.2	-5.3	-0.5	4.9	0.5	-0.0
			Vento +Y	7.2	0.0	-22.4	0.0	-9.3	-0.0	7.2	-0.0	10.1	0.0	-9.3	-0.0
			Vento -Y	-7.2	-0.0	22.4	-0.0	9.3	0.0	-7.2	0.0	-10.1	-0.0	9.3	0.0
			Sismo X 1 Modo 1	-4.1	-23.3	-3.2	-9.6	-1.3	0.1	-4.1	10.3	1.4	-9.6	-1.3	0.1
			Sismo X 1 Modo 2	-0.1	0.0	0.3	0.0	0.1	-0.0	-0.1	-0.0	-0.1	0.0	0.1	-0.0
			Sismo X 1 Modo 3	-0.3	1.3	1.9	0.5	0.8	-0.1	-0.3	-0.6	-0.8	0.5	0.8	-0.1
			Sismo X 2 Modo 1	-3.3	-18.7	-2.5	-7.7	-1.1	0.1	-3.3	8.3	1.1	-7.7	-1.1	0.1
			Sismo X 2 Modo 2	-0.1	0.0	0.3	0.0	0.1	-0.0	-0.1	-0.0	-0.1	0.0	0.1	-0.0
			Sismo X 2 Modo 3	-0.2	0.8	1.2	0.3	0.5	-0.0	-0.2	-0.4	-0.5	0.3	0.5	-0.0
			Sismo Y 1 Modo 1	-0.1	-0.5	-0.1	-0.2	-0.0	0.0	-0.1	0.2	0.0	-0.2	-0.0	0.0
			Sismo Y 1 Modo 2	-6.5	0.4	20.7	0.2	8.6	-0.0	-6.5	-0.2	-9.3	0.2	8.6	-0.0
			Sismo Y 1 Modo 3	-0.1	0.5	0.7	0.2	0.3	-0.0	-0.1	-0.2	-0.3	0.2	0.3	-0.0
			Sismo Y 2 Modo 1	-1.4	-7.9	-1.1	-3.3	-0.4	0.0	-1.4	3.5	0.5	-3.3	-0.4	0.0
			Sismo Y 2 Modo 2	-5.2	0.3	16.4	0.1	6.8	-0.0	-5.2	-0.1	-7.4	0.1	6.8	-0.0
			Sismo Y 2 Modo 3	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	-0.0
PB1	3	0.00/3.00	Permanente	68.1	-4.9	1.9	-3.6	1.4	-0.0	63.5	6.1	-2.4	-3.6	1.4	-0.0
			Sobrecarga	7.3	-0.7	0.3	-0.6	0.1	-0.0	7.3	1.0	-0.2	-0.6	0.1	-0.0
			Vento +X	3.4	-13.2	1.5	-6.4	0.7	0.0	3.4	5.9	-0.7	-6.4	0.7	0.0
			Vento -X	-3.4	13.2	-1.5	6.4	-0.7	-0.0	-3.4	-5.9	0.7	6.4	-0.7	-0.0
			Vento +Y	-7.2	-0.0	-29.4	-0.0	-14.2	-0.0	-7.2	0.0	13.0	-0.0	-14.2	-0.0
			Vento -Y	7.2	0.0	29.4	0.0	14.2	0.0	7.2	-0.0	-13.0	0.0	14.2	0.0
			Sismo X 1 Modo 1	6.6	-23.2	5.2	-11.2	2.5	0.1	6.6	10.3	-2.3	-11.2	2.5	0.1
			Sismo X 1 Modo 2	0.1	0.0	0.4	0.0	0.2	-0.0	0.1	-0.0	-0.2	0.0	0.2	-0.0
			Sismo X 1 Modo 3	-0.1	-2.3	-2.5	-1.1	-1.2	-0.1	-0.1	1.0	1.1	-1.1	-1.2	-0.1
			Sismo X 2 Modo 1	5.3	-18.6	4.2	-9.0	2.0	0.1	5.3	8.3	-1.8	-9.0	2.0	0.1
			Sismo X 2 Modo 2	0.1	0.0	0.3	0.0	0.2	-0.0	0.1	-0.0	-0.1	0.0	0.2	-0.0
			Sismo X 2 Modo 3	-0.0	-1.4	-1.5	-0.7	-0.7	-0.0	-0.0	0.6	0.7	-0.7	-0.7	-0.0
			Sismo Y 1 Modo 1	0.1	-0.5	0.1	-0.2	0.1	0.0	0.1	0.2	-0.0	-0.2	0.1	0.0
			Sismo Y 1 Modo 2	6.5	0.5	27.0	0.2	13.0	-0.0	6.5	-0.2	-11.9	0.2	13.0	-0.0
			Sismo Y 1 Modo 3	-0.0	-0.9	-1.0	-0.4	-0.5	-0.0	-0.0	0.4	0.4	-0.4	-0.5	-0.0
			Sismo Y 2 Modo 1	2.2	-7.9	1.8	-3.8	0.8	0.0	2.2	3.5	-0.8	-3.8	0.8	0.0
			Sismo Y 2 Modo 2	5.1	0.4	21.4	0.2	10.3	-0.0	5.1	-0.2	-9.5	0.2	10.3	-0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0
PB2	3	-0.50/3.00	Permanente	69.2	-4.3	-2.3	-2.7	-1.5	-0.0	63.9	5.3	3.0	-2.7	-1.5	-0.0
			Sobrecarga	7.4	-0.7	-0.2	-0.5	-0.2	-0.0	7.4	0.9	0.5	-0.5	-0.2	-0.0
			Vento +X	2.2	-11.9	1.2	-4.9	0.5	0.0	2.2	5.3	-0.5	-4.9	0.5	0.0
			Vento -X	-2.2	11.9	-1.2	4.9	-0.5	-0.0	-2.2	-5.3	0.5	4.9	-0.5	-0.0
			Vento +Y	7.2	-0.0	-22.4	-0.0	-9.3	-0.0	7.2	0.0	10.1	-0.0	-9.3	-0.0
			Vento -Y	-7.2	0.0	22.4	0.0	9.3	0.0	-7.2	-0.0	-10.1	0.0	9.3	0.0
			Sismo X 1 Modo 1	3.9	-23.3	4.0	-9.6	1.6	0.1	3.9	10.3	-1.8	-9.6	1.6	0.1
			Sismo X 1 Modo 2	-0.1	0.0	0.3	0.0	0.1	-0.0	-0.1	-0.0	-0.1	0.0	0.1	-0.0
			Sismo X 1 Modo 3	0.3	1.3	-1.9	0.5	-0.8	-0.1	0.3	-0.6	0.8	0.5	-0.8	-0.1
			Sismo X 2 Modo 1	3.1	-18.7	3.2	-7.7	1.3	0.1	3.1	8.3	-1.4	-7.7	1.3	0.1
			Sismo X 2 Modo 2	-0.1	0.0	0.3	0.0	0.1	-0.0	-0.1	-0.0	-0.1	0.0	0.1	-0.0
			Sismo X 2 Modo 3	0.2	0.8	-1.2	0.3	-0.5	-0.0	0.2	-0.4	0.5	0.3	-0.5	-0.0
			Sismo Y 1 Modo 1	0.1	-0.5	0.1	-0.2	0.0	0.0	0.1	0.2	-0.0	-0.2	0.0	0.0
			Sismo Y 1 Modo 2	-6.7	0.5	20.6	0.2	8.5	-0.0	-6.7	-0.2	-9.2	0.2	8.5	-0.0
			Sismo Y 1 Modo 3	0.1	0.5	-0.7	0.2	-0.3	-0.0	0.1	-0.2	0.3	0.2	-0.3	-0.0
			Sismo Y 2 Modo 1	1.3	-7.9	1.3	-3.3	0.6	0.0	1.3	3.5	-0.6	-3.3	0.6	0.0
			Sismo Y 2 Modo 2	-5.3	0.4	16.3	0.2	6.7	-0.0	-5.3	-0.2	-7.3	0.2	6.7	-0.0
			Sismo Y 2 Modo 3	0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0

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Data:19/10/12

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Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
M2	2	-3.40/0.00	Permanente	270.6	230.4	-8.6	108.7	-7.4	1.9	91.7	-23.9	5.4	82.4	-4.3	10.2
			Sobrecarga	28.8	122.0	134.9	39.9	304.0	15.3	26.6	-54.7	17.7	104.5	-77.7	3.6
			Vento +X	1.9	9.5	0.0	-0.6	0.0	0.1	-3.1	-85.1	-0.3	17.1	0.4	3.9
			Vento -X	-1.9	-9.5	-0.0	0.6	-0.0	-0.1	3.1	85.1	0.3	-17.1	-0.4	-3.9
			Vento +Y	-46.6	-18.0	2.3	8.4	2.5	-2.1	-40.3	2.0	11.7	2.0	-17.8	-19.9
			Vento -Y	46.6	18.0	-2.3	-8.4	-2.5	2.1	40.3	-2.0	-11.7	-2.0	17.8	19.9
			Sismo X 1 Modo 1	4.4	17.8	0.0	-1.7	0.0	0.3	-4.8	-142.1	-1.0	29.2	1.5	10.9
			Sismo X 1 Modo 2	0.7	0.3	-0.0	-0.1	-0.0	0.0	0.6	0.0	-0.2	-0.0	0.3	0.3
			Sismo X 1 Modo 3	0.1	0.9	0.0	0.9	0.0	-0.1	-0.3	-24.5	0.2	4.3	-0.5	-4.4
			Sismo X 2 Modo 1	3.6	14.2	0.0	-1.4	0.0	0.2	-3.8	-113.8	-0.8	23.4	1.2	8.7
			Sismo X 2 Modo 2	0.5	0.2	-0.0	-0.1	-0.0	0.0	0.5	0.0	-0.1	-0.0	0.2	0.2
			Sismo X 2 Modo 3	0.1	0.6	0.0	0.5	0.0	-0.1	-0.2	-15.4	0.1	2.7	-0.3	-2.7
			Sismo Y 1 Modo 1	0.1	0.4	0.0	-0.0	0.0	0.0	-0.1	-2.9	-0.0	0.6	0.0	0.2
			Sismo Y 1 Modo 2	43.2	16.3	-2.1	-7.6	-2.4	1.9	37.2	1.0	-10.7	-2.3	16.3	18.1
			Sismo Y 1 Modo 3	0.0	0.3	0.0	0.3	0.0	-0.0	-0.1	-9.5	0.1	1.7	-0.2	-1.7
			Sismo Y 2 Modo 1	1.5	6.0	0.0	-0.6	0.0	0.1	-1.6	-48.1	-0.3	9.9	0.5	3.7
			Sismo Y 2 Modo 2	34.2	12.9	-1.7	-6.0	-1.9	1.5	29.5	0.8	-8.5	-1.8	12.9	14.3
			Sismo Y 2 Modo 3	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.3	0.0	0.0	-0.0	-0.0
	1	-5.30/-3.40	Permanente	289.2	-23.7	36.4	-288.7	34.1	-8.3	261.3	260.3	-7.2	-280.1	18.1	5.3
			Sobrecarga	8.6	-29.7	39.4	-165.1	291.7	-22.9	22.1	143.7	135.2	-107.3	-357.4	-2.1
			Vento +X	1.4	-1.0	0.1	-12.5	0.1	-0.3	1.6	10.9	0.0	-12.3	0.0	-0.1
			Vento -X	-1.4	1.0	-0.1	12.5	-0.1	0.3	-1.6	-10.9	-0.0	12.3	-0.0	0.1
			Vento +Y	-11.0	-1.3	-2.8	4.2	-3.4	-0.0	-44.1	-18.8	1.6	4.6	-2.4	-2.2
			Vento -Y	11.0	1.3	2.8	-4.2	3.4	0.0	44.1	18.8	-1.6	-4.6	2.4	2.2
			Sismo X 1 Modo 1	2.7	-1.8	0.3	-22.7	0.3	-0.5	3.8	20.3	0.0	-22.4	0.1	-0.2
			Sismo X 1 Modo 2	0.2	0.0	0.0	-0.1	0.0	0.0	0.6	0.3	-0.0	-0.1	0.0	0.0
			Sismo X 1 Modo 3	0.2	-0.1	0.0	-1.5	0.0	-0.0	0.1	1.1	0.0	-1.5	-0.0	0.0
			Sismo X 2 Modo 1	2.2	-1.5	0.2	-18.2	0.2	-0.4	3.0	16.2	0.0	-18.0	0.1	-0.1
			Sismo X 2 Modo 2	0.1	0.0	0.0	-0.0	0.0	0.0	0.5	0.2	-0.0	-0.0	0.0	0.0
			Sismo X 2 Modo 3	0.1	-0.1	0.0	-0.9	0.0	-0.0	0.1	0.7	0.0	-0.9	-0.0	0.0
			Sismo Y 1 Modo 1	0.1	-0.0	0.0	-0.5	0.0	-0.0	0.1	0.4	0.0	-0.5	0.0	-0.0
			Sismo Y 1 Modo 2	10.1	1.2	2.6	-3.4	3.2	0.0	40.9	16.9	-1.5	-3.8	2.2	2.1
			Sismo Y 1 Modo 3	0.1	-0.1	0.0	-0.6	0.0	-0.0	0.0	0.4	0.0	-0.6	-0.0	0.0
			Sismo Y 2 Modo 1	0.9	-0.6	0.1	-7.7	0.1	-0.2	1.3	6.9	0.0	-7.6	0.0	-0.1
			Sismo Y 2 Modo 2	8.0	0.9	2.1	-2.7	2.5	0.0	32.3	13.4	-1.2	-3.0	1.8	1.6
			Sismo Y 2 Modo 3	0.0	-0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	-0.0	-0.0	0.0
M4	2	-3.40/0.00	Permanente	148.6	3.3	-23.8	5.7	-1.5	-0.3	43.3	2.7	-24.7	-3.1	-13.0	-0.2
			Sobrecarga	54.2	-15.0	-7.9	-53.7	-2.6	-2.7	12.5	2.9	-4.7	-1.6	-7.1	2.2
			Vento +X	4.1	0.1	1.6	0.2	1.5	-0.1	14.7	2.5	-16.0	-3.3	-3.6	-3.2
			Vento -X	-4.1	-0.1	-1.6	-0.2	-1.5	0.1	-14.7	-2.5	16.0	3.3	3.6	3.2
			Vento +Y	-3.2	-0.1	20.6	-0.2	11.8	0.2	3.4	-1.1	5.3	1.6	63.3	-0.1
			Vento -Y	3.2	0.1	-20.6	0.2	-11.8	-0.2	-3.4	1.1	-5.3	-1.6	-63.3	0.1
			Sismo X 1 Modo 1	7.5	0.2	2.6	0.3	2.8	-0.1	25.6	4.5	-28.8	-5.8	-10.5	-5.7
			Sismo X 1 Modo 2	0.0	0.0	-0.3	0.0	-0.2	-0.0	-0.1	0.0	-0.1	-0.0	-0.9	0.0
			Sismo X 1 Modo 3	0.5	0.0	0.2	0.0	-0.3	-0.0	2.9	0.4	-2.0	-0.5	3.4	-0.5
			Sismo X 2 Modo 1	6.0	0.1	2.0	0.3	2.3	-0.1	20.5	3.6	-23.0	-4.7	-8.4	-4.5
			Sismo X 2 Modo 2	0.0	0.0	-0.2	0.0	-0.1	-0.0	-0.0	0.0	-0.1	-0.0	-0.7	0.0
			Sismo X 2 Modo 3	0.3	0.0	0.1	0.0	-0.2	-0.0	1.8	0.2	-1.3	-0.3	2.2	-0.3
			Sismo Y 1 Modo 1	0.2	0.0	0.1	0.0	0.1	-0.0	0.5	0.1	-0.6	-0.1	-0.2	-0.1
			Sismo Y 1 Modo 2	2.8	0.1	-19.2	0.1	-11.0	-0.2	-3.6	0.9	-4.3	-1.4	-58.1	0.2
			Sismo Y 1 Modo 3	0.2	0.0	0.1	0.0	-0.1	-0.0	1.1	0.1	-0.8	-0.2	1.3	-0.2
			Sismo Y 2 Modo 1	2.5	0.1	0.9	0.1	1.0	-0.0	8.7	1.5	-9.7	-2.0	-3.6	-1.9
			Sismo Y 2 Modo 2	2.2	0.1	-15.2	0.1	-8.7	-0.2	-2.9	0.7	-3.4	-1.1	-46.0	0.1
			Sismo Y 2 Modo 3	0.0	0.0	0.0	0.0	-0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0	-0.0
	1	-5.30/-3.40	Permanente	87.2	-11.3	6.8	-17.5	49.3	1.0	143.6	3.3	-29.2	-7.0	49.8	0.1
			Sobrecarga	20.3	-5.9	2.1	-64.9	15.4	0.1	51.8	-15.0	-10.4	67.9	16.5	3.1
			Vento +X	0.9	-0.1	-0.1	-0.2	-1.3	-0.0	4.0	0.1	1.6	-0.2	-1.2	0.0
			Vento -X	-0.9	0.1	0.1	0.2	1.3	0.0	-4.0	-0.1	-1.6	0.2	1.2	-0.0
			Vento +Y	-1.3	0.2	-4.8	0.3	-36.1	-0.6	-2.9	-0.1	23.4	0.2	-36.1	-0.2
			Vento -Y	1.3	-0.2	4.8	-0.3	36.1	0.6	2.9	0.1	-23.4	-0.2	36.1	0.2
			Sismo X 1 Modo 1	1.6	-0.2	-0.1	-0.4	-1.6	0.0	7.3	0.2	2.5	-0.4	-1.5	0.1
			Sismo X 1 Modo 2	0.0	-0.0	0.1	-0.0	0.5	0.0	0.0	0.0	-0.3	-0.0	0.5	0.0
			Sismo X 1 Modo 3	0.1	-0.0	-0.0	-0.0	-0.3	-0.0	0.5	0.0	0.3	-0.0	-0.3	0.0
			Sismo X 2 Modo 1	1.3	-0.2	-0.0	-0.3	-1.2	0.0	5.9	0.1	2.0	-0.3	-1.2	0.1
			Sismo X 2 Modo 2	0.0	-0.0	0.1	-0.0	0.4	0.0	0.0	0.0	-0.3	-0.0	0.4	0.0
			Sismo X 2 Modo 3	0.1	-0.0	-0.0	-0.0	-0.2	-0.0	0.3	0.0	0.2	-0.0	-0.2	0.0
			Sismo Y 1 Modo 1	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.1	0.0	0.1	-0.0	-0.0	0.0
			Sismo Y 1 Modo 2	1.2	-0.2	4.5	-0.3	33.5	0.6	2.6	0.1	-21.8	-0.2	33.6	0.2
			Sismo Y 1 Modo 3	0.0	-0.0	-0.0	-0.0	-0.1	-0.0	0.2	0.0	0.1	-0.0	-0.1	0.0
			Sismo Y 2 Modo 1	0.6	-0.1	-0.0	-0.1	-0.5	0.0	2.5	0.1	0.8	-0.1	-0.5	0.0
			Sismo Y 2 Modo 2	0.9	-0.1	3.5	-0.2	26.5	0.5	2.0	0.1	-17.2	-0.1	26.6	0.2
			Sismo Y 2 Modo 3	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	-0.0	-0.0	0.0

Esforços e armaduras de pilares, paredes e muros

Nome da Obra: Águas de Santo André

Data:19/10/12

Edifício e câmaras adjacentes

Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
M7	2	-3.40/0.00	Permanente	312.6	91.4	31.6	-96.3	25.4	-21.7	128.1	142.3	10.6	-63.4	-6.5	4.8
			Sobrecarga	131.2	1.4	126.1	70.2	390.9	212.7	85.6	65.3	61.7	-79.2	-131.4	-141.3
			Vento +X	-1.6	-1.3	-0.1	2.2	-0.1	0.3	-15.8	-72.4	0.1	11.8	-0.1	-0.7
			Vento -X	1.6	1.3	0.1	-2.2	0.1	-0.3	15.8	72.4	-0.1	-11.8	0.1	0.7
			Vento +Y	-10.3	-23.5	-0.1	2.4	0.5	3.6	-16.7	-76.5	2.6	7.4	-3.6	-16.9
			Vento -Y	10.3	23.5	0.1	-2.4	-0.5	-3.6	16.7	76.5	-2.6	-7.4	3.6	16.9
			Sismo X 1 Modo 1	-2.8	-2.1	-0.2	2.9	-0.3	0.5	-28.5	-130.4	0.3	20.0	-0.4	-2.1
			Sismo X 1 Modo 2	0.1	0.3	0.0	-0.0	-0.0	-0.1	0.2	1.1	-0.0	-0.1	0.1	0.2
			Sismo X 1 Modo 3	-0.1	0.2	0.0	1.8	-0.0	0.2	-1.3	-6.5	-0.2	3.0	0.3	1.5
			Sismo X 2 Modo 1	-2.2	-1.7	-0.2	2.3	-0.2	0.4	-22.8	-104.4	0.2	16.0	-0.3	-1.7
			Sismo X 2 Modo 2	0.1	0.3	0.0	-0.0	-0.0	-0.0	0.2	0.9	-0.0	-0.1	0.0	0.2
			Sismo X 2 Modo 3	-0.1	0.1	0.0	1.2	-0.0	0.1	-0.8	-4.1	-0.2	1.9	0.2	1.0
			Sismo Y 1 Modo 1	-0.1	-0.0	-0.0	0.1	-0.0	0.0	-0.6	-2.6	0.0	0.4	-0.0	-0.0
			Sismo Y 1 Modo 2	9.6	22.0	0.0	-1.9	-0.5	-3.4	16.0	72.9	-2.4	-6.9	3.3	15.6
			Sismo Y 1 Modo 3	-0.0	0.1	0.0	0.7	-0.0	0.1	-0.5	-2.5	-0.1	1.2	0.1	0.6
			Sismo Y 2 Modo 1	-0.9	-0.7	-0.1	1.0	-0.1	0.2	-9.6	-44.1	0.1	6.8	-0.1	-0.7
			Sismo Y 2 Modo 2	7.6	17.4	0.0	-1.5	-0.4	-2.7	12.7	57.7	-1.9	-5.5	2.6	12.4
			Sismo Y 2 Modo 3	-0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	-0.1	-0.0	0.0	0.0	0.0
M8	2	-3.40/0.00	Permanente	52.9	6.4	0.0	9.0	1.7	0.1	18.3	2.3	-1.8	-3.2	2.7	-0.1
			Sobrecarga	12.5	2.0	-0.1	36.5	-4.3	-0.0	17.2	0.2	5.0	-2.3	-4.5	-0.9
			Vento +X	-0.5	-0.1	-0.1	-0.1	-0.4	0.0	-0.1	0.0	0.2	0.0	-0.4	-0.0
			Vento -X	0.5	0.1	0.1	0.1	0.4	-0.0	0.1	-0.0	-0.2	-0.0	0.4	0.0
			Vento +Y	-0.5	-0.1	-0.0	-0.1	-0.8	0.0	-0.0	-0.0	0.3	0.0	-0.8	-0.0
			Vento -Y	0.5	0.1	0.0	0.1	0.8	-0.0	0.0	0.0	-0.3	-0.0	0.8	0.0
			Sismo X 1 Modo 1	-0.8	-0.1	-0.1	-0.1	-0.5	0.0	-0.1	0.0	0.2	0.0	-0.5	-0.0
			Sismo X 1 Modo 2	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0	0.0
			Sismo X 1 Modo 3	-0.1	-0.0	-0.1	-0.0	-0.3	0.0	-0.0	-0.0	0.1	0.0	-0.3	-0.0
			Sismo X 2 Modo 1	-0.7	-0.1	-0.1	-0.1	-0.4	0.0	-0.1	0.0	0.2	0.0	-0.4	-0.0
			Sismo X 2 Modo 2	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0	0.0
			Sismo X 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.2	0.0	-0.0	-0.0	0.1	0.0	-0.2	-0.0
			Sismo Y 1 Modo 1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	-0.0	-0.0
			Sismo Y 1 Modo 2	0.5	0.1	0.0	0.1	0.7	-0.0	0.0	0.0	-0.3	-0.0	0.7	0.0
			Sismo Y 1 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.0	0.1	0.0	-0.1	-0.0
			Sismo Y 2 Modo 1	-0.3	-0.0	-0.0	-0.0	-0.2	0.0	-0.0	0.0	0.1	0.0	-0.2	-0.0
			Sismo Y 2 Modo 2	0.4	0.0	0.0	0.1	0.5	-0.0	0.0	0.0	-0.2	-0.0	0.6	0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0	-0.0	-0.0
M9	2	-3.40/0.00	Permanente	63.2	-1.5	-7.3	-7.8	-10.3	-0.5	21.4	-5.8	-0.8	15.3	1.4	0.2
			Sobrecarga	23.3	12.6	-10.2	72.9	-58.2	-3.4	8.6	24.8	-3.1	-58.3	9.9	1.3
			Vento +X	-0.5	0.0	0.1	-0.0	0.1	0.0	-0.1	0.0	-0.0	0.0	0.0	-0.0
			Vento -X	0.5	-0.0	-0.1	0.0	-0.1	-0.0	0.1	-0.0	0.0	-0.0	-0.0	0.0
			Vento +Y	-0.1	-0.2	0.1	-0.9	0.1	0.1	-0.0	0.3	-0.0	-0.5	0.0	-0.0
			Vento -Y	0.1	0.2	-0.1	0.9	-0.1	-0.1	0.0	-0.3	0.0	0.5	-0.0	0.0
			Sismo X 1 Modo 1	-0.9	0.1	0.1	0.2	0.1	-0.0	-0.1	-0.1	-0.0	0.2	0.0	-0.0
			Sismo X 1 Modo 2	0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	0.0
			Sismo X 1 Modo 3	-0.1	-0.0	0.0	-0.3	0.0	0.0	-0.0	0.1	-0.0	-0.3	0.0	0.0
			Sismo X 2 Modo 1	-0.7	0.1	0.1	0.2	0.1	-0.0	-0.1	-0.1	-0.0	0.2	0.0	-0.0
			Sismo X 2 Modo 2	0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	0.0
			Sismo X 2 Modo 3	-0.0	-0.0	0.0	-0.2	0.0	0.0	-0.0	0.1	-0.0	-0.2	0.0	0.0
			Sismo Y 1 Modo 1	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	-0.0
			Sismo Y 1 Modo 2	0.1	0.1	-0.1	0.7	-0.1	-0.1	0.0	-0.2	0.0	0.4	-0.0	0.0
			Sismo Y 1 Modo 3	-0.0	-0.0	0.0	-0.1	0.0	0.0	-0.0	0.1	-0.0	-0.1	0.0	0.0
			Sismo Y 2 Modo 1	-0.3	0.0	0.0	0.1	0.0	-0.0	-0.0	-0.0	-0.0	0.1	0.0	-0.0
			Sismo Y 2 Modo 2	0.1	0.1	-0.1	0.6	-0.1	-0.0	0.0	-0.2	0.0	0.3	-0.0	0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0
M10	2	-3.40/0.00	Permanente	92.2	14.6	-2.3	18.3	2.1	-0.1	36.3	5.1	2.8	-5.9	-12.5	0.2
			Sobrecarga	26.9	11.7	-7.5	69.7	-39.7	4.4	14.6	7.3	-10.5	-15.4	32.3	-0.3
			Vento +X	-0.4	-0.1	-0.1	-0.1	-0.6	0.0	-0.0	-0.0	0.2	0.0	-0.5	0.0
			Vento -X	0.4	0.1	0.1	0.1	0.6	-0.0	0.0	0.0	-0.2	-0.0	0.5	-0.0
			Vento +Y	1.8	0.3	0.3	0.4	-0.1	0.0	0.2	-0.0	0.2	0.0	0.1	0.0
			Vento -Y	-1.8	-0.3	-0.3	-0.4	0.1	-0.0	-0.2	0.0	-0.2	-0.0	-0.1	-0.0
			Sismo X 1 Modo 1	-0.8	-0.1	-0.1	-0.1	-0.7	0.0	-0.1	-0.0	0.2	0.0	-0.6	0.0
			Sismo X 1 Modo 2	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0
			Sismo X 1 Modo 3	-0.1	-0.0	-0.1	-0.0	-0.6	0.0	0.0	-0.0	0.2	0.0	-0.6	-0.0
			Sismo X 2 Modo 1	-0.6	-0.1	-0.1	-0.1	-0.6	0.0	-0.1	-0.0	0.2	0.0	-0.5	0.0
			Sismo X 2 Modo 2	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0
			Sismo X 2 Modo 3	-0.1	-0.0	-0.1	-0.0	-0.4	0.0	0.0	-0.0	0.1	0.0	-0.4	-0.0
			Sismo Y 1 Modo 1	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0	-0.0	0.0
			Sismo Y 1 Modo 2	-1.7	-0.3	-0.3	-0.4	0.0	-0.0	-0.2	0.0	-0.1	-0.0	-0.2	-0.0
			Sismo Y 1 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.2	0.0	0.0	-0.0	0.1	0.0	-0.2	-0.0
			Sismo Y 2 Modo 1	-0.3	-0.0	-0.0	-0.0	-0.2	0.0	-0.0	-0.0	0.1	0.0	-0.2	0.0
			Sismo Y 2 Modo 2	-1.3	-0.2	-0.2	-0.3	0.0	-0.0	-0.1	0.0	-0.1	-0.0	-0.1	-0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0

Esforços e armaduras de pilares, paredes e muros

Nome da Obra: Águas de Santo André

Data:19/10/12

Edifício e câmaras adjacentes

Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
M11	2	-3.40/0.00	Permanente	89.5	2.2	-14.9	-1.6	-19.0	-2.1	29.3	-0.8	-4.8	-0.8	5.8	-0.4
			Sobrecarga	23.3	1.0	-10.0	-1.9	-67.9	-0.4	24.7	8.5	-4.4	1.2	10.8	1.3
			Vento +X	-0.3	0.0	0.1	-0.2	0.1	0.0	-0.0	0.1	-0.0	-0.2	0.0	-0.0
			Vento -X	0.3	-0.0	-0.1	0.2	-0.1	-0.0	0.0	-0.1	0.0	0.2	-0.0	0.0
			Vento +Y	2.6	-0.3	-0.3	-2.1	-0.4	0.0	0.3	0.9	0.0	-2.2	0.0	0.0
			Vento -Y	-2.6	0.3	0.3	2.1	0.4	-0.0	-0.3	-0.9	-0.0	2.2	-0.0	-0.0
			Sismo X 1 Modo 1	-0.5	0.1	0.1	0.0	0.1	0.0	-0.1	-0.0	-0.0	0.0	-0.0	0.0
			Sismo X 1 Modo 2	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0
			Sismo X 1 Modo 3	-0.1	-0.1	0.0	-0.5	0.0	0.0	-0.0	0.2	-0.0	-0.5	0.0	-0.0
			Sismo X 2 Modo 1	-0.4	0.1	0.1	0.0	0.1	0.0	-0.1	-0.0	-0.0	0.0	-0.0	0.0
			Sismo X 2 Modo 2	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0
			Sismo X 2 Modo 3	-0.1	-0.0	0.0	-0.3	0.0	0.0	-0.0	0.1	-0.0	-0.3	0.0	-0.0
			Sismo Y 1 Modo 1	-0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.0
			Sismo Y 1 Modo 2	-2.4	0.2	0.3	1.9	0.4	-0.0	-0.3	-0.8	-0.0	1.9	-0.0	-0.0
			Sismo Y 1 Modo 3	-0.0	-0.0	0.0	-0.2	0.0	0.0	-0.0	0.1	-0.0	-0.2	0.0	-0.0
			Sismo Y 2 Modo 1	-0.2	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.0
			Sismo Y 2 Modo 2	-1.9	0.2	0.2	1.5	0.3	-0.0	-0.2	-0.6	-0.0	1.5	-0.0	-0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0
M12	2	-3.40/0.00	Permanente	85.9	-12.3	5.1	-18.2	35.7	2.7	31.3	-3.1	-0.1	4.4	-15.1	1.3
			Sobrecarga	41.1	-15.2	-19.8	-72.2	-129.6	-5.4	16.4	-5.8	-38.4	11.3	124.5	2.6
			Vento +X	-0.2	0.0	0.0	0.1	-0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0
			Vento -X	0.2	-0.0	-0.0	-0.1	0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0
			Vento +Y	1.6	-0.3	0.7	-0.4	3.8	0.2	0.0	-0.0	-1.6	0.0	4.2	0.0
			Vento -Y	-1.6	0.3	-0.7	0.4	-3.8	-0.2	-0.0	0.0	1.6	-0.0	-4.2	-0.0
			Sismo X 1 Modo 1	-0.3	0.1	-0.0	0.1	-0.5	0.0	0.0	0.0	0.1	-0.0	-0.4	0.0
			Sismo X 1 Modo 2	-0.0	0.0	-0.0	0.0	-0.1	-0.0	-0.0	0.0	0.0	-0.0	-0.1	-0.0
			Sismo X 1 Modo 3	-0.1	0.0	0.0	0.0	0.4	0.0	-0.0	-0.0	-0.2	0.0	0.4	0.0
			Sismo X 2 Modo 1	-0.2	0.1	-0.0	0.1	-0.4	0.0	0.0	0.0	0.1	-0.0	-0.3	0.0
			Sismo X 2 Modo 2	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo X 2 Modo 3	-0.0	0.0	0.0	0.0	0.2	0.0	-0.0	-0.0	-0.1	0.0	0.3	0.0
			Sismo Y 1 Modo 1	-0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	0.0
			Sismo Y 1 Modo 2	-1.5	0.2	-0.6	0.4	-3.4	-0.1	-0.0	0.0	1.4	-0.0	-3.8	-0.0
			Sismo Y 1 Modo 3	-0.0	0.0	0.0	0.0	0.2	0.0	-0.0	-0.0	-0.1	0.0	0.2	0.0
			Sismo Y 2 Modo 1	-0.1	0.0	-0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.0	-0.1	0.0
			Sismo Y 2 Modo 2	-1.2	0.2	-0.5	0.3	-2.7	-0.1	-0.0	0.0	1.1	-0.0	-3.0	-0.0
			Sismo Y 2 Modo 3	-0.0	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0
M14	2	-3.40/0.00	Permanente	209.8	38.6	-1.3	0.8	-5.4	-12.3	66.1	11.7	-1.6	-7.5	2.7	4.8
			Sobrecarga	-60.1	-24.5	3.1	10.9	10.5	6.8	-15.3	2.4	4.6	-38.7	-8.9	-3.0
			Vento +X	-0.7	0.1	-0.0	1.0	-0.0	0.0	-0.1	-0.4	0.0	1.1	-0.0	0.0
			Vento -X	0.7	-0.1	0.0	-1.0	0.0	-0.0	0.1	0.4	-0.0	-1.1	0.0	-0.0
			Vento +Y	-0.4	-0.4	0.3	2.3	0.6	0.3	-0.1	-0.9	-0.1	2.4	0.1	0.1
			Vento -Y	0.4	0.4	-0.3	-2.3	-0.6	-0.3	0.1	0.9	0.1	-2.4	-0.1	-0.1
			Sismo X 1 Modo 1	-1.2	0.2	-0.0	1.7	-0.0	0.0	-0.1	-0.7	0.0	2.1	-0.0	0.0
			Sismo X 1 Modo 2	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo X 1 Modo 3	-0.1	0.0	-0.0	0.1	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
			Sismo X 2 Modo 1	-0.9	0.2	-0.0	1.4	-0.0	0.0	-0.1	-0.6	0.0	1.7	-0.0	0.0
			Sismo X 2 Modo 2	0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo X 2 Modo 3	-0.1	0.0	-0.0	0.1	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
			Sismo Y 1 Modo 1	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0	-0.0	0.0
			Sismo Y 1 Modo 2	0.4	0.3	-0.3	-2.2	-0.5	-0.3	0.1	0.9	0.1	-2.3	-0.1	-0.1
			Sismo Y 1 Modo 3	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
			Sismo Y 2 Modo 1	-0.4	0.1	-0.0	0.6	-0.0	0.0	-0.0	-0.2	0.0	0.7	-0.0	0.0
			Sismo Y 2 Modo 2	0.3	0.3	-0.2	-1.7	-0.4	-0.2	0.1	0.7	0.0	-1.8	-0.1	-0.1
			Sismo Y 2 Modo 3	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0
M15	2	-3.40/0.00	Permanente	106.4	-0.1	-1.7	0.4	0.4	-0.1	29.9	-0.3	-4.0	0.1	16.2	1.0
			Sobrecarga	-27.2	13.9	7.2	55.0	40.3	-1.9	-2.9	3.0	16.7	-8.0	-44.4	2.2
			Vento +X	-0.6	0.0	-0.0	0.1	-0.2	0.0	-0.0	0.0	0.1	-0.0	-0.3	-0.0
			Vento -X	0.6	-0.0	0.0	-0.1	0.2	-0.0	0.0	-0.0	-0.1	0.0	0.3	0.0
			Vento +Y	-1.3	-0.0	0.5	0.0	2.7	0.0	-0.0	-0.0	-0.9	0.0	2.4	0.0
			Vento -Y	1.3	0.0	-0.5	-0.0	-2.7	-0.0	0.0	0.0	0.9	-0.0	-2.4	-0.0
			Sismo X 1 Modo 1	-1.0	0.0	-0.0	0.1	-0.3	0.0	-0.0	0.0	0.1	-0.1	-0.4	-0.1
			Sismo X 1 Modo 2	0.0	0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo X 1 Modo 3	-0.0	0.0	-0.0	0.0	-0.2	0.0	0.0	0.0	0.1	-0.0	-0.2	-0.0
			Sismo X 2 Modo 1	-0.8	0.0	-0.0	0.1	-0.2	0.0	-0.0	0.0	0.1	-0.1	-0.4	-0.1
			Sismo X 2 Modo 2	0.0	0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo X 2 Modo 3	-0.0	0.0	-0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.0	-0.1	-0.0
			Sismo Y 1 Modo 1	-0.0	0.0	-0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0
			Sismo Y 1 Modo 2	1.2	0.0	-0.5	-0.0	-2.5	0.0	0.0	0.0	0.8	-0.0	-2.3	-0.0
			Sismo Y 1 Modo 3	-0.0	0.0	-0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.0	-0.1	-0.0
			Sismo Y 2 Modo 1	-0.3	0.0	-0.0	0.0	-0.1	0.0	-0.0	0.0	0.0	-0.0	-0.1	-0.0
			Sismo Y 2 Modo 2	1.0	0.0	-0.4	-0.0	-2.0	0.0	0.0	0.0	0.6	-0.0	-1.8	-0.0
			Sismo Y 2 Modo 3	-0.0	0.0	-0.0	0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0

Esforços e armaduras de pilares, paredes e muros

Nome da Obra: Águas de Santo André

Data:19/10/12

Edifício e câmaras adjacentes

Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
M3	2	-3.40/0.00	Permanente	2.0	-4.0	-23.7	-4.7	3.7	0.1	34.2	-1.2	-9.6	2.2	-3.8	1.6
			Sobrecarga	-42.4	6.0	-9.8	10.6	-10.7	0.4	-13.5	0.1	7.5	-0.1	-6.8	-1.0
			Vento +X	-3.8	0.2	0.1	0.3	-0.4	-0.1	0.3	1.5	-0.4	-2.4	1.1	-2.3
			Vento -X	3.8	-0.2	-0.1	-0.3	0.4	0.1	-0.3	-1.5	0.4	2.4	-1.1	2.3
			Vento +Y	-0.3	0.0	14.9	0.0	3.9	0.1	41.8	0.1	-41.0	-0.2	39.4	-0.2
			Vento -Y	0.3	-0.0	-14.9	-0.0	-3.9	-0.1	-41.8	-0.1	41.0	0.2	-39.4	0.2
			Sismo X 1 Modo 1	-6.9	0.3	-0.2	0.6	-1.6	-0.1	2.6	2.7	-2.4	-4.3	2.7	-4.1
			Sismo X 1 Modo 2	0.0	-0.0	-0.2	-0.0	-0.1	-0.0	-0.6	-0.0	0.6	0.0	-0.6	0.0
			Sismo X 1 Modo 3	-0.4	0.0	0.2	0.0	0.9	-0.0	-3.7	0.2	3.1	-0.4	-1.7	-0.4
			Sismo X 2 Modo 1	-5.5	0.2	-0.1	0.5	-1.2	-0.1	2.1	2.1	-1.9	-3.4	2.1	-3.3
			Sismo X 2 Modo 2	0.0	-0.0	-0.2	-0.0	-0.0	-0.0	-0.5	-0.0	0.5	0.0	-0.4	0.0
			Sismo X 2 Modo 3	-0.2	0.0	0.1	0.0	0.6	-0.0	-2.3	0.2	2.0	-0.2	-1.1	-0.2
			Sismo Y 1 Modo 1	-0.1	0.0	-0.0	0.0	-0.0	-0.0	0.1	0.1	-0.0	-0.1	0.1	-0.1
			Sismo Y 1 Modo 2	0.5	-0.0	-13.9	-0.1	-3.7	-0.1	-38.6	-0.1	37.8	0.2	-36.5	0.3
			Sismo Y 1 Modo 3	-0.2	0.0	0.1	0.0	0.3	-0.0	-1.4	0.1	1.2	-0.2	-0.7	-0.2
			Sismo Y 2 Modo 1	-2.3	0.1	-0.1	0.2	-0.5	-0.0	0.9	0.9	-0.8	-1.4	0.9	-1.4
			Sismo Y 2 Modo 2	0.4	-0.0	-11.0	-0.0	-2.9	-0.0	-30.5	-0.1	30.0	0.2	-28.9	0.2
			Sismo Y 2 Modo 3	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0
	1	-5.30/-3.40	Permanente	57.3	4.9	5.7	5.7	54.7	-0.8	-53.9	17.2	-55.0	-19.9	57.9	0.2
			Sobrecarga	-11.3	-11.9	1.7	-25.9	17.4	-0.3	-29.6	-9.9	-17.5	15.1	17.9	-0.1
			Vento +X	-0.3	-0.1	-0.0	-0.2	-0.3	0.0	-4.0	0.3	0.3	-0.3	-0.3	0.0
			Vento -X	0.3	0.1	0.0	0.2	0.3	-0.0	4.0	-0.3	-0.3	0.3	0.3	-0.0
			Vento +Y	-0.8	-0.1	-3.5	-0.1	-33.2	0.5	0.7	-0.3	32.5	0.3	-35.1	0.0
			Vento -Y	0.8	0.1	3.5	0.1	33.2	-0.5	-0.7	0.3	-32.5	-0.3	35.1	-0.0
			Sismo X 1 Modo 1	-0.5	-0.1	0.0	-0.3	0.1	-0.0	-7.3	0.5	-0.1	-0.6	0.1	0.0
			Sismo X 1 Modo 2	0.0	0.0	0.1	0.0	0.5	-0.0	-0.0	0.0	-0.5	-0.0	0.5	-0.0
			Sismo X 1 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.1	0.0	-0.5	0.0	0.1	-0.0	-0.1	0.0
			Sismo X 2 Modo 1	-0.4	-0.1	0.0	-0.3	0.1	-0.0	-5.8	0.4	-0.1	-0.5	0.1	0.0
			Sismo X 2 Modo 2	0.0	0.0	0.0	0.0	0.4	-0.0	-0.0	0.0	-0.4	-0.0	0.4	-0.0
			Sismo X 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.1	0.0	-0.3	0.0	0.1	-0.0	-0.1	0.0
			Sismo Y 1 Modo 1	-0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.1	0.0	-0.0	-0.0	0.0	0.0
			Sismo Y 1 Modo 2	0.7	0.1	3.3	0.1	30.9	-0.5	-0.5	0.2	-30.2	-0.3	32.6	-0.0
			Sismo Y 1 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.1	0.0	-0.2	0.0	0.1	-0.0	-0.0	0.0
			Sismo Y 2 Modo 1	-0.2	-0.1	0.0	-0.1	0.0	-0.0	-2.5	0.2	-0.0	-0.2	0.0	0.0
			Sismo Y 2 Modo 2	0.6	0.0	2.6	0.1	24.5	-0.4	-0.4	0.2	-23.9	-0.2	25.8	-0.0
			Sismo Y 2 Modo 3	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	0.0
M5	2	-3.40/0.00	Permanente	142.9	225.2	2.3	107.5	0.4	6.4	52.0	-32.4	-6.4	57.6	4.9	-8.7
			Sobrecarga	-10.1	114.9	-136.9	18.5	-306.1	-13.4	20.4	-44.0	-14.8	92.5	71.1	-5.4
			Vento +X	3.0	13.1	0.1	8.3	0.1	0.3	0.1	-3.6	-0.1	8.3	0.0	-0.3
			Vento -X	-3.0	-13.1	-0.1	-8.3	-0.1	-0.3	-0.1	3.6	0.1	-8.3	-0.0	0.3
			Vento +Y	38.5	7.6	2.4	-12.3	2.6	-1.8	8.2	6.1	-0.4	-8.0	1.0	-0.8
			Vento -Y	-38.5	-7.6	-2.4	12.3	-2.6	1.8	-8.2	-6.1	0.4	8.0	-1.0	0.8
			Sismo X 1 Modo 1	4.6	23.1	0.1	15.5	0.2	0.6	0.0	-7.4	-0.1	15.5	0.1	-0.7
			Sismo X 1 Modo 2	-0.6	-0.1	-0.0	0.2	-0.0	0.0	-0.1	-0.1	0.0	0.1	-0.0	0.0
			Sismo X 1 Modo 3	0.6	2.1	0.0	0.7	0.0	-0.1	0.0	0.7	-0.0	0.5	-0.0	0.1
			Sismo X 2 Modo 1	3.7	18.5	0.1	12.4	0.1	0.5	0.0	-6.0	-0.1	12.4	0.1	-0.5
			Sismo X 2 Modo 2	-0.4	-0.1	-0.0	0.1	-0.0	0.0	-0.1	-0.1	0.0	0.1	-0.0	0.0
			Sismo X 2 Modo 3	0.4	1.3	0.0	0.5	0.0	-0.0	0.0	0.4	-0.0	0.3	-0.0	0.1
			Sismo Y 1 Modo 1	0.1	0.5	0.0	0.3	0.0	0.0	0.0	-0.2	-0.0	0.3	0.0	-0.0
			Sismo Y 1 Modo 2	-35.8	-7.4	-2.2	11.0	-2.4	1.6	-7.6	-5.4	0.4	7.0	-0.9	0.8
			Sismo Y 1 Modo 3	0.2	0.8	0.0	0.3	0.0	-0.0	0.0	0.3	-0.0	0.2	-0.0	0.0
			Sismo Y 2 Modo 1	1.5	7.8	0.0	5.2	0.1	0.2	0.0	-2.5	-0.0	5.3	0.0	-0.2
			Sismo Y 2 Modo 2	-28.4	-5.9	-1.7	8.7	-1.9	1.3	-6.0	-4.3	0.3	5.6	-0.7	0.6
			Sismo Y 2 Modo 3	0.0	0.0	0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	0.0
	1	-5.30/-3.40	Permanente	268.4	-25.6	-29.5	-305.3	-25.2	7.4	141.4	261.5	3.1	-294.4	-12.2	0.1
			Sobrecarga	1.5	-29.4	-36.5	-170.6	-288.3	21.6	-15.0	144.6	-136.5	-108.7	359.4	-0.5
			Vento +X	1.6	-0.8	-0.2	-13.4	-0.2	0.1	2.8	14.1	0.1	-13.2	-0.2	-0.2
			Vento -X	-1.6	0.8	0.2	13.4	0.2	-0.1	-2.8	-14.1	-0.1	13.2	0.2	0.2
			Vento +Y	2.9	2.1	-1.9	7.9	-2.7	-0.3	35.9	6.8	1.7	7.1	-2.2	-2.2
			Vento -Y	-2.9	-2.1	1.9	-7.9	2.7	0.3	-35.9	-6.8	-1.7	-7.1	2.2	2.2
			Sismo X 1 Modo 1	2.8	-1.5	-0.4	-24.4	-0.4	0.2	4.2	25.1	0.1	-24.0	-0.3	-0.4
			Sismo X 1 Modo 2	-0.0	-0.0	0.0	-0.1	0.0	0.0	-0.5	-0.1	-0.0	-0.1	0.0	0.0
			Sismo X 1 Modo 3	0.3	-0.1	-0.0	-1.7	-0.0	0.0	0.5	2.1	0.0	-1.7	-0.0	0.0
			Sismo X 2 Modo 1	2.2	-1.2	-0.3	-19.5	-0.3	0.2	3.4	20.1	0.1	-19.2	-0.2	-0.3
			Sismo X 2 Modo 2	-0.0	-0.0	0.0	-0.1	0.0	0.0	-0.4	-0.1	-0.0	-0.1	0.0	0.0
			Sismo X 2 Modo 3	0.2	-0.0	-0.0	-1.1	-0.0	0.0	0.3	1.3	0.0	-1.0	-0.0	0.0
			Sismo Y 1 Modo 1	0.1	-0.0	-0.0	-0.5	-0.0	0.0	0.1	0.5	0.0	-0.5	-0.0	-0.0
			Sismo Y 1 Modo 2	-2.8	-1.9	1.7	-6.9	2.5	0.3	-33.4	-6.7	-1.6	-6.1	2.0	2.0
			Sismo Y 1 Modo 3	0.1	-0.0	-0.0	-0.7	-0.0	0.0	0.2	0.8	0.0	-0.6	-0.0	0.0
			Sismo Y 2 Modo 1	0.9	-0.5	-0.1	-8.3	-0.1	0.1	1.4	8.5	0.0	-8.1	-0.1	-0.1
			Sismo Y 2 Modo 2	-2.2	-1.5	1.4	-5.4	2.0	0.2	-26.5	-5.3	-1.2	-4.8	1.6	1.6
			Sismo Y 2 Modo 3	0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	0.0

Esforços e armaduras de pilares, paredes e muros

Nome da Obra: Águas de Santo André

Data: 19/10/12

Edifício e câmaras adjacentes

Pilar	PI	Tramo	Hipóteses	Base						Cabeça					
				N	Mx	My	Qx	Qy	T	N	Mx	My	Qx	Qy	T
M6	2	-3.40/0.00	Permanente	142.2	-103.5	-22.2	-121.9	-28.8	25.2	47.0	8.3	-6.9	-77.0	8.1	-7.7
			Sobrecarga	5.7	4.2	-30.2	-38.9	-128.1	-19.2	0.1	19.4	-5.4	-7.3	21.4	0.8
			Vento +X	-0.6	-0.9	0.0	1.5	0.0	-0.0	-0.1	-0.8	0.0	2.3	-0.0	-0.0
			Vento -X	0.6	0.9	-0.0	-1.5	-0.0	0.0	0.1	0.8	-0.0	-2.3	0.0	0.0
			Vento +Y	3.9	11.2	0.6	2.3	1.2	0.7	2.0	4.2	0.1	-3.6	-0.0	-0.4
			Vento -Y	-3.9	-11.2	-0.6	-2.3	-1.2	-0.7	-2.0	-4.2	-0.1	3.6	0.0	0.4
			Sismo X 1 Modo 1	-1.1	-1.7	0.0	3.3	0.0	-0.1	-0.1	-1.6	0.0	4.5	-0.0	-0.1
			Sismo X 1 Modo 2	-0.1	-0.2	-0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.0	0.0	0.0	0.0
			Sismo X 1 Modo 3	-0.1	-0.2	0.0	-0.5	0.0	0.0	-0.1	-0.1	-0.0	-0.1	-0.0	0.0
			Sismo X 2 Modo 1	-0.9	-1.4	0.0	2.6	0.0	-0.0	-0.1	-1.2	0.0	3.6	-0.0	-0.1
			Sismo X 2 Modo 2	-0.0	-0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0	0.0	0.0
			Sismo X 2 Modo 3	-0.1	-0.1	0.0	-0.3	0.0	0.0	-0.1	-0.1	-0.0	-0.1	-0.0	0.0
			Sismo Y 1 Modo 1	-0.0	-0.0	0.0	0.1	0.0	-0.0	-0.0	-0.0	0.0	0.1	-0.0	-0.0
			Sismo Y 1 Modo 2	-3.7	-10.4	-0.6	-2.2	-1.1	-0.7	-1.8	-3.8	-0.1	3.2	0.0	0.4
			Sismo Y 1 Modo 3	-0.0	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.0	-0.0	-0.0	-0.0	0.0
			Sismo Y 2 Modo 1	-0.4	-0.6	0.0	1.1	0.0	-0.0	-0.0	-0.5	0.0	1.5	-0.0	-0.0
			Sismo Y 2 Modo 2	-2.9	-8.2	-0.5	-1.8	-0.9	-0.5	-1.4	-3.0	-0.1	2.5	0.0	0.3
			Sismo Y 2 Modo 3	-0.0	-0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0