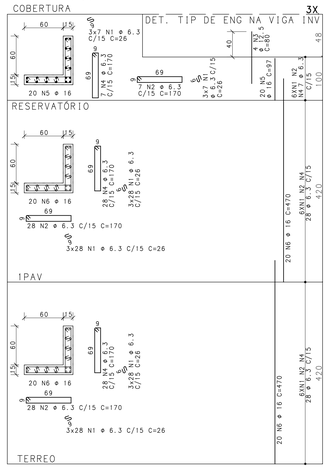
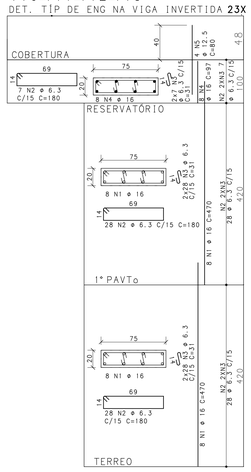
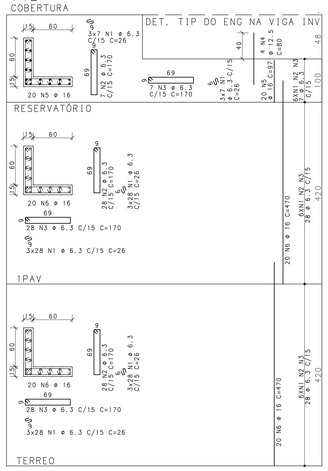
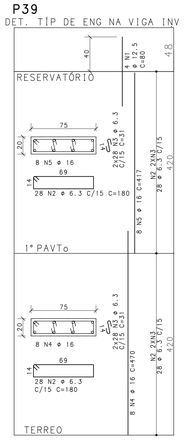
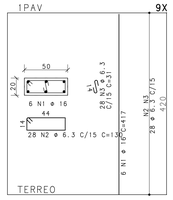
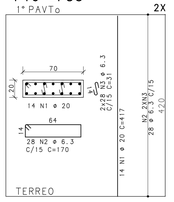


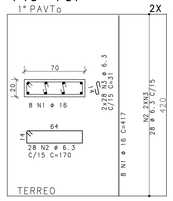






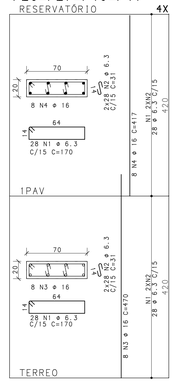


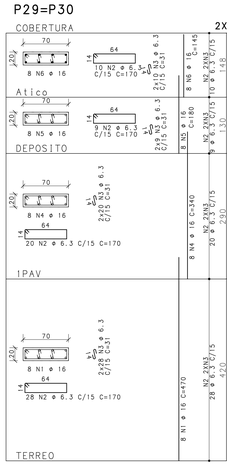


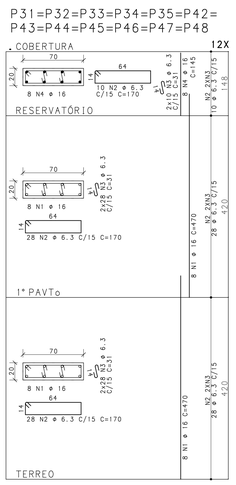


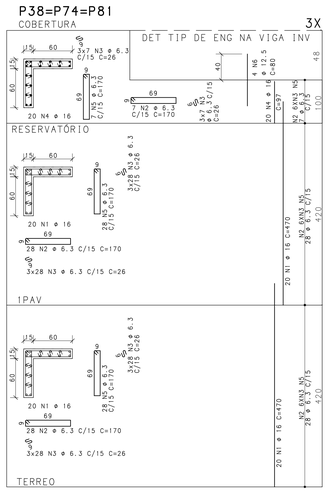
AÇO	POS	BIT (mm)	QUANT	COMPRIMENTO UNIT (cm)	COMPRIMENTO TOTAL (cm)
P1=P37=P67	(X3)				
50A	1	6.3	1134	26	29484
50A	2	6.3	189	170	32130
50A	3	12.5	12	80	960
50A	4	6.3	189	170	32130
50A	5	16	60	97	5820
50A	6	16	120	470	56400
P2=P3=P4=	(X23)				
50A	1	16	368	470	172960
50A	2	6.3	1449	180	260820
50A	3	6.3	2898	31	89838
50A	4	16	184	97	17848
50A	5	12.5	92	80	7360
P5=P6	(X2)				
50A	1	6.3	134	180	24120
50A	2	6.3	268	31	8308
50A	3	12.5	8	80	640
50A	4	16	16	100	1600
50A	5	16	16	180	2880
50A	6	16	16	470	7520
50A	7	16	16	340	5440
P12					
50A	1	6.3	378	26	9828
50A	2	6.3	63	170	10710
50A	3	6.3	63	170	10710
50A	4	12.5	4	80	320
50A	5	16	20	97	1940
50A	6	16	40	470	18800
P15 =P57	(X2)				
50A	1	16	16	417	6672
50A	2	6.3	56	170	9520
50A	3	6.3	112	31	3472
P16					
50A	1	16	8	470	3760
50A	2	6.3	48	170	8160
50A	3	6.3	96	31	2976
50A	4	16	8	287	2296
P19 =P58	(X2)				
50A	1	20	28	417	11676
50A	2	6.3	56	170	9520
50A	3	6.3	112	31	3472
P23=P54=P55=P56	(X9)				
50A	1	16	54	417	22518
50A	2	6.3	252	130	32760
50A	3	6.3	252	31	7812
P26=P27=P40=P41	(X4)				
50A	1	6.3	224	170	38080
50A	2	6.3	448	31	13888
50A	3	16	32	470	15040
50A	4	16	32	417	13344
P29=P30	(X2)				
50A	1	16	16	470	7520
50A	2	6.3	134	170	22780
50A	3	6.3	268	31	8308
50A	4	16	16	340	5440
50A	5	16	16	180	2880
50A	6	16	16	145	2320
P31=P32=P33=...	(X12)				
50A	1	16	192	470	90240
50A	2	6.3	792	170	134640
50A	3	6.3	1584	31	49104
50A	4	16	96	145	13920
P38=P74=P81	(X3)				
50A	1	16	120	470	56400
50A	2	6.3	189	170	32130
50A	3	6.3	134	26	29484
50A	4	16	60	97	5820
50A	5	6.3	189	170	32130
50A	6	12.5	12	80	960
P39					
50A	1	12.5	4	80	320
50A	2	6.3	56	180	10080
50A	3	6.3	112	31	3472
50A	4	16	8	470	3760
50A	5	16	8	417	3336
P50=P53=P62=P64=P66	(X5)				
50A	1	6.3	280	170	47600
50A	2	6.3	560	31	17360
50A	3	16	40	470	18800
50A	4	16	40	417	16680
50A	5	12.5	20	80	1600
P52=P63=...	(X7)				
50A	1	16	112	470	52640
50A	2	6.3	441	170	74970
50A	3	6.3	882	31	27342
50A	4	16	56	97	5432
50A	5	12.5	28	80	2240
P60					
50A	1	20	14	480	6720
50A	2	6.3	56	170	9520
50A	3	6.3	112	31	3472
50A	4	20	14	417	5838
P65					
50A	1	16	8	470	3760
50A	2	6.3	56	150	8400
50A	3	6.3	112	31	3472
50A	4	16	8	417	3336
50A	5	12.5	4	80	320
P76					
50A	1	16	40	470	18800
50A	2	6.3	63	170	10710
50A	3	6.3	378	26	9828
50A	4	16	20	97	1940
50A	5	6.3	63	170	10710
50A	6	12.5	4	80	320
P101=P104	(X2)				
50A	1	16	16	417	6672
50A	2	6.3	56	180	10080
50A	3	6.3	112	31	3472
P102					
50A	1	16	6	370	2220
50A	2	6.3	20	130	2600
50A	3	6.3	20	31	899
50A	4	16	6	127	762
50A	5	6.3	9	130	1170
P103					
50A	1	16	6	417	2502
50A	2	6.3	28	130	3640
50A	3	6.3	28	31	868
PR1=PR2	(X2)				
50A	1	16	8	149	1192
50A	2	6.3	22	130	2860
PR3					
50A	1	16	4	164	656
50A	2	6.3	4	130	1560
PR4					
50A	1	16	4	95	380
50A	2	6.3	7	130	910
PR5					
50A	1	16	4	286	1144
50A	2	6.3	20	130	2600
PR6					
50A	1	16	4	317	1268
50A	2	6.3	22	130	2860
PR7					
50A	1	16	4	358	1432
50A	2	6.3	25	130	3250
PR8					
50A	1	16	4	397	1588
50A	2	6.3	27	130	3510

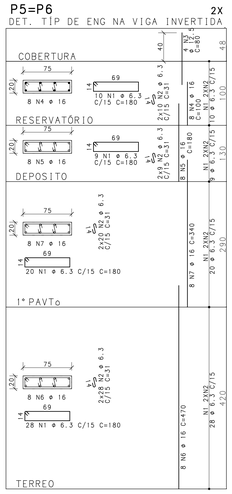
RESUMO AÇO CA 50-60			
AÇO	BIT (mm)	COMPR (m)	PESO (kg)
50A	6.3	12235	2998
50A	12.5	150	145
50A	16	6877	10852
50A	20	242	598
Peso Total	50A =		14592 kg

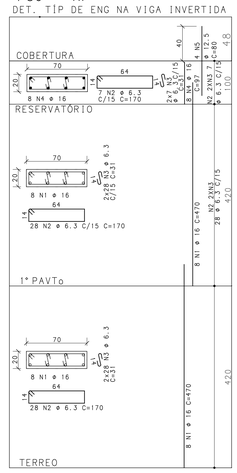


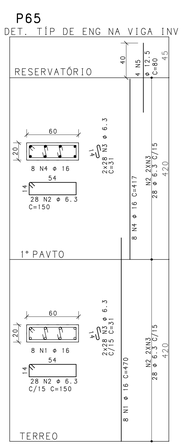


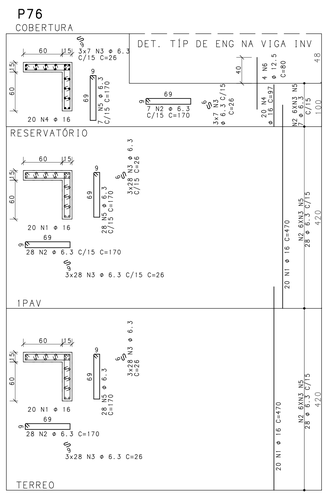


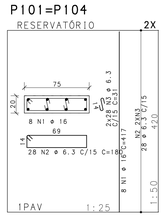


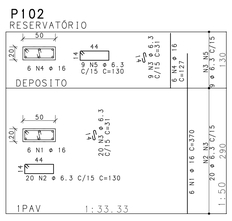


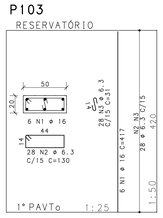


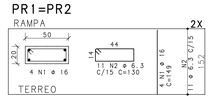


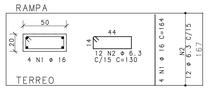


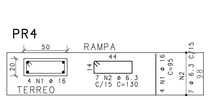


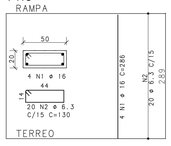


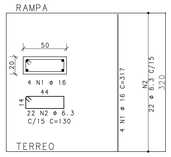


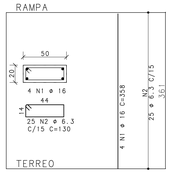


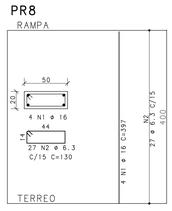


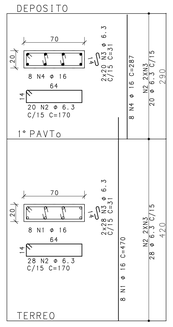


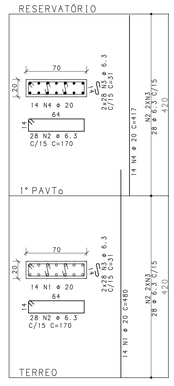


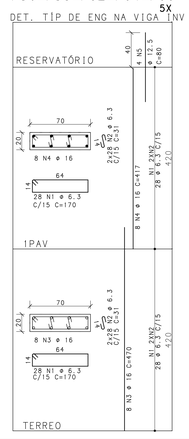












REVISÃO

REV.	DESCRIÇÃO	DATA	POR	APR.
00	EMISSÃO INICIAL	14/05/18	KFC	CAG
01	REVISÃO GERAL	21/09/21	KFC	CAG
02	REVISÃO P57, E DET ENG DOS PILARES NAS VIGAS	21/10/21	RSN	KFC

DOCUMENTOS DE REFERÊNCIA :

1 - PROJETO ARQUITETÔNICO: Plantas baixa, cortes e fachadas.

NOTAS :

1 - COTAS E DIMENSÕES EM cm.
2 - CONFIRMAR MEDIDAS NO LOCAL.
3 - AS COTAS PREVALECEM SOBRE O DESENHO.
4 - CONCRETO:

4.1 - PROPRIEDADES EXIGIDAS

ELEMENTOS ESTRUTURAIS EM GERAL				
PROPRIEDADE	VALORES			UNIDADE
			PILARES	
Resistência característica (Fck)			35 **	MPa
Módulo de deformação tangente inicial			28	GPa
Consumo mínimo de cimento			300	Kg/m3
Fator água-cimento			0.50	-

ENSAIOS DE COMPRESSÃO PARA LAJES:
* - CORPOS DE PROVA - 3 dias ,7 dias ,28 dias.

ENSAIOS DE COMPRESSÃO PARA PILARES/PAREDES:
** - CORPOS DE PROVA - 3 dias , 28 dias , 63 dias.
OBS.: (MOLDAR MÍNIMO 2 CORPOS DE PROVA PARA CADA DATA DE ENSAIO)

4.2 - EMPRESA ESPECIALIZADA EM CONTROLE TECNOLÓGICO DO CONCRETO.

4.2.1 - ESPECIFICAÇÕES DO CONCRETO:
- Massa específica - NBR 6118/14 incluir nos relatórios de ensaios (Valores desejados, entre 2300kg/m3 e 2400kg/m3)
- Agregados graúdos: utilizar brita 0 e Brita 1 (<= 19mm)
- Consistência mínima: Slump Test - Abatimento >= 14cm +- 2cm

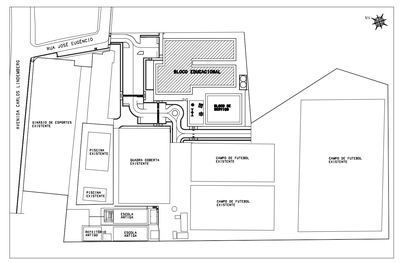
5 - AÇOS:
CA-50: Fyk = 500 MPa
CA-60: Fyk = 600 MPa

6 - COBRIMENTO DAS ARMADURAS:
Pilares: 3,0 cm
Tolerância para o cobrimento: 0.5 cm

7 - EXECUÇÃO DA ESTRUTURA:
A execução da estrutura é de responsabilidade da empresa construtora e deverá contar com a consultoria de um tecnologista de materiais.
O engenheiro responsável deverá obedecer as recomendações da NBR 14931 - Execução de Estruturas de Concreto - Procedimentos

8 - NORMAS:
NBR 6118 - Projeto de estrutura de concreto - procedimento.
NBR 6120 - Cargas para o cálculo de estruturas de edificações.
NBR 6123 - Forças devidas ao vento em edificações.
NBR 7483 - Cordoalhas de aço para concreto protendido.
NBR 12655 - Concreto de cimento Portland - Controle e recebimento - Procedimento
NBR 14432 - Exigências de resistência nas fogo de elementos construtivos de edificações
ACI 318 - Armaduras mínimas e pontuais.

IMPLANTAÇÃO :



SESC – SERVIÇO SOCIAL DO COMÉRCIO
BLOCO EDUCACIONAL (BDE)
RUA JOSÉ EUGÊNIO, 30 - BAIXO NOSSA SENHORA DA PENHA - VILA VELHA - ES

PROJETADO	DESENHADO	VERIFICADO	APROVADO	DATA	ESCALA
C.A.G.	K.F.C.	K.F.C.	C.A.G.	21/10/2021	INDICADA

MCA ESTRUTURAS
TEL. (27) 3324-5372
FAX. (27) 3325-0157
E-MAIL : mca@mca.eng.br

PROJETO EXECUTIVO DE CONCRETO ARMADO

ARMAÇÃO DOS PILARES

DESENHO PREVIO :	REV.
No. MCA : 2289-BED-1C-800	REV. 02
No. CLIENTE :	REV.
No.CAD : 2253BEDU800.DWG	FOLHA 800

DIREITOS AUTORAIS RESERVADOS.

ARQUIVO: C:\TQS\MCA2253_BLOCO EDUCACIONAL\PILARY.DWG
NÚMERO MCA: MCA2289-BED-0800-EXE-PIL-ARM-R02

LICENCIADO PARA A TECNOLOGIA DE ESTRUTURAS LTDA PIL MCA-PIL-1800-2600.PLT 21/10/2021 00:05:31