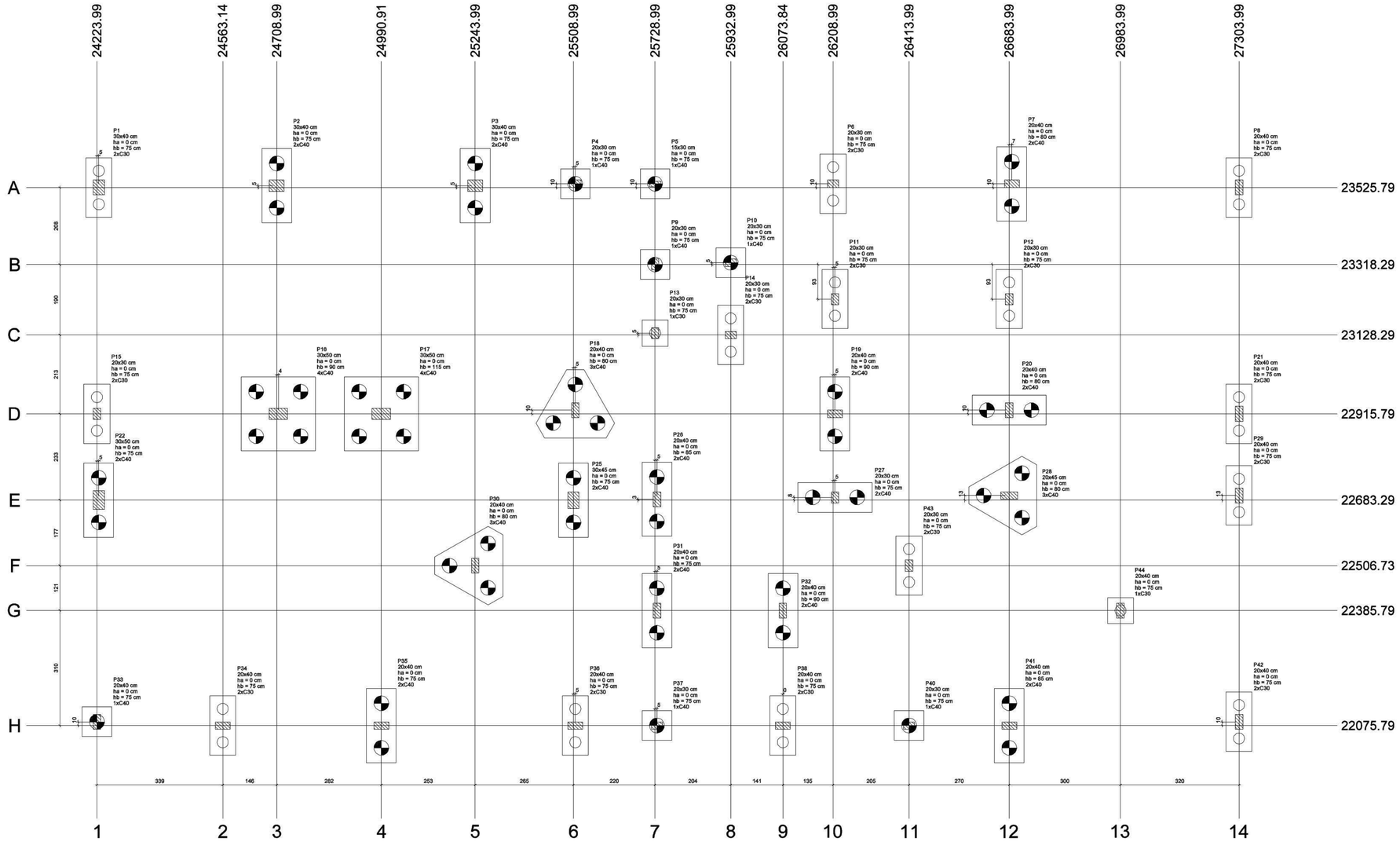
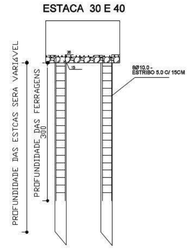


Planta de locação

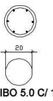
escala 1:50

ESTACAS DIMENSIONADAS PARA ESTACA PROFUNDA HÉLICE CONTÍNUA DIAMETRO DE 30,40CM

A profundidade será em 13 metros concordÂncia com a sondagem realizada no local.

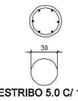


ESTRIBO ESTACA 30
ESTRIBO 5.0 C/ 15CM



ESTRIBO 5.0 C/ 15CM

ESTRIBO ESTACA 40
ESTRIBO 5.0 C/ 15CM



ESTRIBO 5.0 C/ 15CM

RESUMO DE FERRAGENS DAS ARMAÇÕES DAS ESTACAS

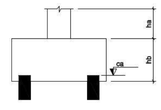
ø 10.0 – 10 DIAM X 3,0 METROS = (30metros/12metros)x10%=2,75

ø 10.0 –2,75 ML BARRA POR ESTACA X 80 +10% = 242 BARRAS

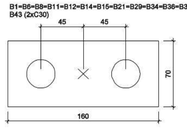
ESTRIBO ESTACA DE 30 cm
ø 5.0 –2x3,14x0,12=0,75
ø 5.0 –3,00/0,15=20 estribos por estaca x 0,75 x 1,10%= 17 metros
ø 5.0 –17 ML BARRA POR ESTACA X 30 ESTACAS/12 = 45 BARRAS

ESTRIBO ESTACA DE 40 cm
ø 5.0 –2x3,14x0,22=1,38
ø 5.0 –3,00/0,15=20 estribos por estaca x 1,38 x 1,10%= 30 metros
ø 5.0 –30 ML BARRA POR ESTACA X 50 ESTACAS/12 = 125 BARRAS

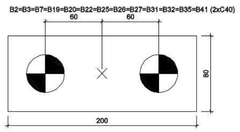
Estacas			
Simbologia	Nome	d (cm)	Quantidade
○	C30	30.00	30
◔	C40	40.00	50



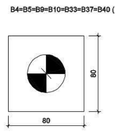
B1=B6=B8=B11=B12=B14=B15=B21=B29=B34=B36=B38=B42
B43 (2xC30)



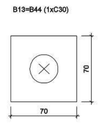
B2=B3=B7=B19=B20=B22=B25=B26=B27=B31=B32=B35=B41 (2xC40)



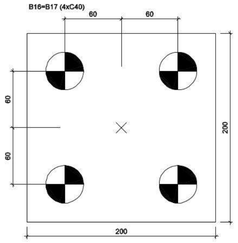
B4=B5=B9=B10=B33=B37=B40 (1xC40)



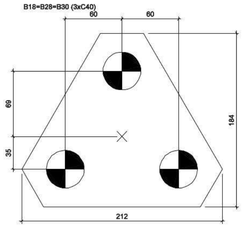
B13=B44 (1xC30)



B16=B17 (4xC40)



B18=B28=B30 (3xC40)



Legenda dos blocos

escala 1:25

Nome	Seção (cm)	X (cm)	Y (cm)	Pilar								Fundação				Bloco			
				Carga Máx. (tf)	Carga Mín. (tf)	Mx Máximo (kgf.m)		My Máximo (kgf.m)		Fx Máximo (tf)		Fy Máximo (tf)		Lado B (cm)	Lado H (cm)	h0 / ha (cm)	h1 / hb (cm)	ne	Estaca	ca (cm)	Base tub. (cm)
						Positivo	Negativo	Positivo	Negativo	Positivo	Negativo	Positivo	Negativo								
P1	30x40	24228.99	23525.79	39.5	33.7	100	-500	0	-500	0.0	-1.5	2.1	0.0	160	70	0	75	2	C30	-60	-
P2	30x40	24708.99	23530.79	69.0	49.3	0	-2100	0	-700	0.0	-2.0	5.4	0.0	200	80	0	75	2	C40	-60	-
P3	30x40	25243.99	23530.79	59.2	49.5	200	-400	1200	0	3.3	0.0	2.3	0.0	200	80	0	75	2	C40	-60	-
P4	20x30	25513.99	23535.79	35.1	30.4	0	-700	100	-200	0.2	-0.5	1.8	0.0	80	80	0	75	1	C40	-60	-
P5	15x30	25728.99	23535.80	32.6	27.8	100	0	0	-600	0.0	-1.2	0.0	-0.1	80	80	0	75	1	C40	-60	-
P6	20x30	26208.99	23535.79	44.0	38.3	0	-200	200	-200	0.4	0.0	0.7	0.0	160	70	0	75	2	C30	-60	-
P7	20x40	26660.99	23535.79	56.5	47.8	0	-200	0	-900	0.0	-1.6	0.6	0.0	200	80	0	80	2	C40	-65	-
P8	20x40	27303.99	23525.79	45.8	38.8	0	-800	700	0	2.0	0.0	2.1	0.0	160	70	0	75	2	C30	-60	-
P9	20x30	25728.99	23318.29	31.4	25.3	300	-200	100	0	0.1	-0.2	0.2	-0.3	80	80	0	75	1	C40	-210	-
P10	20x30	25932.99	23323.29	38.0	30.2	100	0	200	0	0.0	-0.3	0.0	-0.4	80	80	0	75	1	C40	-210	-
P11	20x30	26213.99	23225.27	53.3	42.9	200	0	0	-400	0.0	-1.3	0.0	-0.5	160	70	0	75	2	C30	-60	-
P12	20x30	26683.99	23225.27	52.3	42.0	200	-200	500	0	1.3	0.0	0.1	-0.4	160	70	0	75	2	C30	-60	-
P13	20x30	25728.99	23133.29	26.9	21.0	400	0	0	-200	0.0	-0.4	0.0	-0.7	70	70	0	75	1	C30	-210	-
P14	20x30	25932.99	23128.29	37.5	30.1	0	-100	200	0	0.4	0.0	0.2	0.0	160	70	0	75	2	C30	-210	-
P15	20x30	24223.99	22915.79	43.6	36.5	900	0	0	-500	0.0	-1.1	0.0	-2.1	160	70	0	75	2	C30	-60	-
P16	30x50	24713.11	22915.79	115.5	90.2	700	-100	1700	0	2.6	0.0	0.0	-3.9	200	200	0	90	4	C40	-75	-
P17	30x50	24990.91	22915.79	119.4	94.6	0	-3100	0	-1500	0.0	-3.8	0.0	-0.7	200	200	0	115	4	C40	-100	-
P18	20x40	25513.99	22925.79	87.6	72.5	1300	0	300	0	0.5	0.0	0.0	-2.8	212	184	0	80	3	C40	-65	-
P19	20x40	26213.99	22915.79	66.1	52.0	200	0	400	-200	1.0	0.0	0.0	-0.5	200	80	0	90	2	C40	-75	-
P20	20x40	26683.99	22925.79	59.2	48.6	200	-200	0	-600	0.0	-1.3	0.3	-0.1	200	80	0	80	2	C40	-65	-
P21	20x40	27303.99	22915.79	52.1	42.8	700	0	700	0	2.3	0.0	0.0	-2.0	160	70	0	75	2	C30	-60	-
P22	30x50	24228.99	22683.29	63.0	51.8	700	-700	0	-3300	0.0	-2.0	2.1	0.0	200	80	0	75	2	C40	-60	-
P25	30x45	25508.99	22683.29	62.5	51.5	800	-300	600	0	1.1	0.0	0.8	0.0	200	80	0	75	2	C40	-60	-
P26	20x40	25733.99	22685.79	86.1	44.4	0	-600	0	-500	0.0	-1.2	1.7	0.0	200	80	0	85	2	C40	-70	-
P27	20x30	26213.99	22690.79	62.7	46.1	100	-200	200	0	0.4	0.0	0.7	0.0	200	80	0	75	2	C40	-60	-
P28	20x45	26683.99	22685.79	89.1	72.3	0	-600	0	-1000	0.0	-2.1	1.7	0.0	212	184	0	80	3	C40	-65	-
P29	20x40	27303.99	22685.79	48.0	40.2	0	-1100	800	0	2.4	0.0	2.7	0.0	160	70	0	75	2	C30	-60	-
P30	20x40	25243.99	22506.73	79.6	64.2	1300	0	0	-300	0.0	-1.0	0.0	-1.5	212	184	0	80	3	C40	-65	-
P31	20x40	25733.99	22385.79	57.5	40.8	800	0	200	0	0.1	0.0	0.0	-1.9	200	80	0	75	2	C40	-60	-
P32	20x40	26073.84	22385.79	68.2	45.9	300	-300	100	0	0.0	0.0	0.0	-1.7	200	80	0	90	2	C40	-75	-
P33	20x40	24223.99	22085.79	31.5	27.1	1000	0	100	-100	0.0	-0.4	0.0	-2.1	80	80	0	75	1	C40	-60	-
P34	20x40	24563.14	22075.79	45.2	37.0	200	0	600	0	0.6	0.0	0.0	0.0	160	70	0	75	2	C30	-60	-
P35	20x40	24990.91	22075.79	54.1	45.0	200	0	0	-400	0.0	-1.6	0.0	0.0	200	80	0	75	2	C40	-60	-
P36	20x40	25513.99	22075.79	47.6	39.5	500	0	1200	0	2.7	0.0	0.0	-0.4	160	70	0	75	2	C30	-60	-
P37	20x30	25733.99	22075.79	28.6	24.4	200	0	200	-300	0.1	-0.6	0.0	-0.5	80	80	0	75	1	C40	-60	-
P38	20x40	26073.99	22075.79	37.6	32.1	0	-400	400	0	0.3	0.0	0.4	0.0	160	70	0	75	2	C30	-60	-
P40	20x30	26413.99	22075.79	31.5	28.9	300	0	400	0	0.8	0.0	0.0	-0.7	80	80	0	75	1	C40	-60	-
P41	20x40	26683.99	22075.79	61.4	50.9	700	0	0	-900	0.0	-3.0	0.0	-2.3	200	80	0	85	2	C40	-70	-
P42	20x40	27303.99	22085.79	43.0	38.9	700	0	900	0	2.7	0.0	0.0	-2.3	160	70	0	75	2	C30	-60	-
P43	20x30	26413.99	22506.73	39.0	30.5	0	-400	500	0	1.2	0.0	0.5	0.0	160	70	0	75	2	C30	-60	-
P44	20x40	26983.99	22385.79	23.7	19.0	300	-200	300	0	0.0	-0.4	0.2	-0.2	70	70	0	75	1	C30	-60	-

Os esforços indicados nesta tabela são os valores máximos obtidos pela envoltória de todas as combinações definidas para as fundações. Para análises complementares, deve-se consultar o relatório de esforços na fundação, que apresenta os valores calculados para cada combinação.

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

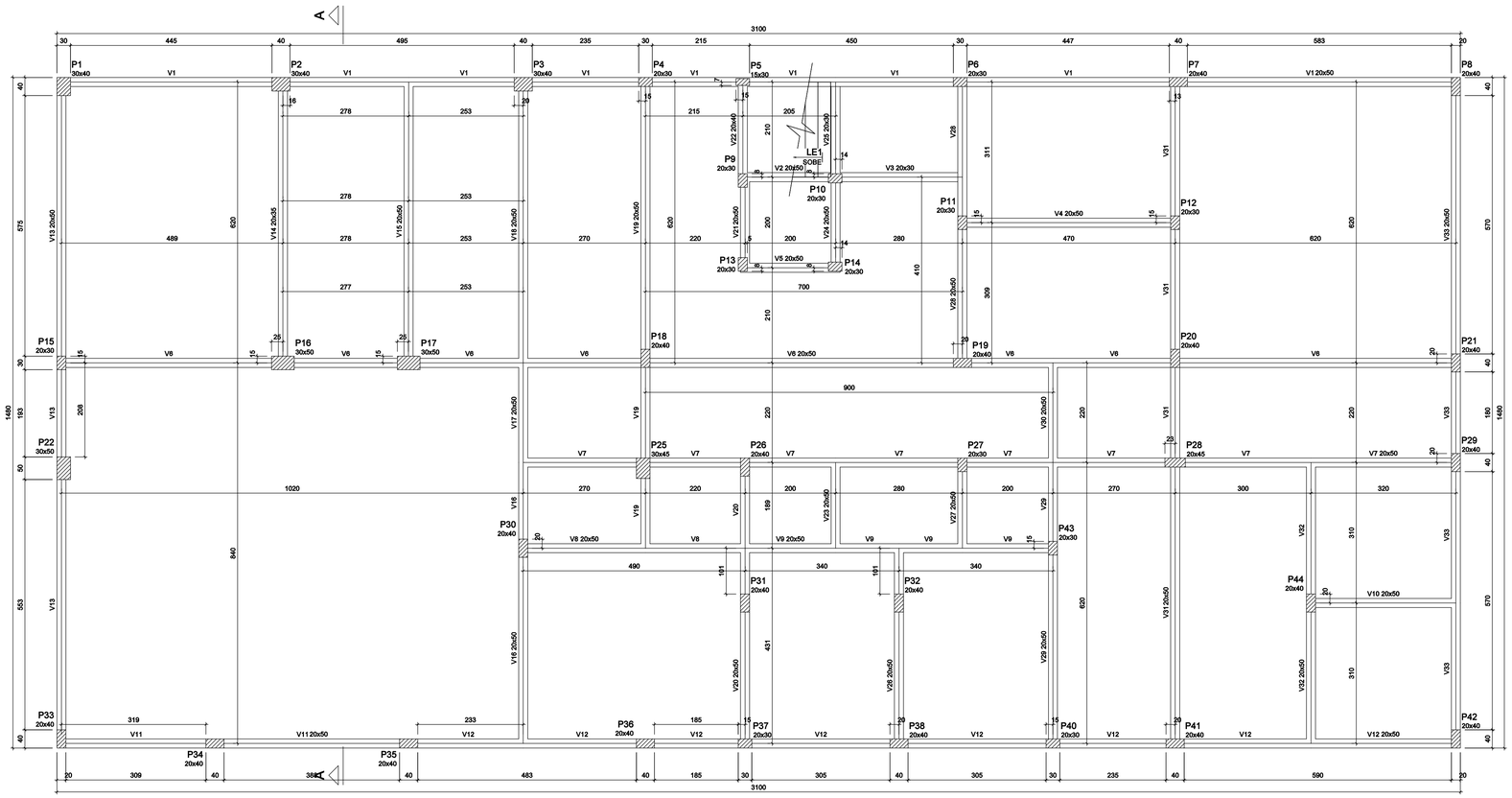
PLANTA DE LOCAÇÃO

REVISÃO 01

DAM – PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	01/39



Forma do pavimento BALDRAME (Nível 0)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x50	0	0
V2	20x50	0	0
V3	20x30	0	0
V4	20x50	0	0
V5	20x50	0	0
V6	20x50	0	0
V7	20x50	0	0
V8	20x50	0	0
V9	20x50	0	0
V10	20x50	0	0
V11	20x50	0	0
V12	20x50	0	0
V13	20x50	0	0
V14	20x35	0	0
V15	20x50	0	0
V16	20x50	0	0
V17	20x50	0	0
V18	20x50	0	0
V19	20x50	0	0
V20	20x50	0	0
V21	20x50	0	0
V22	20x40	0	0
V23	20x50	0	0
V24	20x50	0	0
V25	20x30	0	0
V26	20x50	0	0
V27	20x50	0	0
V28	20x50	0	0
V29	20x50	0	0
V30	20x50	0	0
V31	20x50	0	0
V32	20x50	0	0
V33	20x50	0	0

Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
300	268384

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	30x40	0	0
P2	30x40	0	0
P3	30x40	0	0
P4	20x30	0	0
P5	15x30	0	0
P6	20x30	0	0
P7	20x40	0	0
P8	20x40	0	0
P9	20x30	-150	-150
P10	20x30	-150	-150
P11	20x30	0	0
P12	20x30	0	0
P13	20x30	-150	-150
P14	20x30	-150	-150
P15	20x30	0	0
P16	30x50	0	0
P17	30x50	0	0
P18	20x40	0	0
P19	20x40	0	0
P20	20x40	0	0
P21	20x40	0	0
P22	30x50	0	0
P25	30x45	0	0
P26	20x40	0	0
P27	20x30	0	0
P28	20x45	0	0
P29	20x40	0	0
P30	20x40	0	0
P31	20x40	0	0
P32	20x40	0	0
P33	20x40	0	0
P34	20x40	0	0
P35	20x40	0	0
P36	20x40	0	0
P37	20x30	0	0
P38	20x40	0	0
P40	20x30	0	0
P41	20x40	0	0
P42	20x40	0	0
P43	20x30	0	0
P44	20x40	0	0

Legenda dos pilares
Pilar que passa

Legenda das vigas e paredes
Viga

Locação no eixo X	
Coordenadas (cm)	Nome
24223.99	P15, P33
24228.99	P1, P22
24563.14	P34
24708.99	P2
24713.11	P16
24960.91	P17, P35
25243.99	P3, P30
25508.99	P25
25513.99	P4, P18, P36
25728.99	P5, P9, P13
25733.99	P26, P31, P37
25932.99	P10, P14
26073.84	P32
26073.99	P38
26208.99	P6
26213.99	P11, P19, P27
26413.99	P43, P40
26683.99	P12, P20, P28, P41
26690.99	P7
26983.99	P44
27303.99	P8, P21, P29, P42

Locação no eixo Y	
Coordenadas (cm)	Nome
23535.79	P4
23535.80	P5
23535.79	P6, P7
23530.79	P2, P3
23525.79	P1, P8
23323.29	P10
23318.29	P9
23225.17	P11, P12
23133.29	P13
23128.29	P14
22925.79	P18, P20
22915.79	P15, P16, P17, P19, P21
22695.79	P28, P29
22690.79	P27
22685.79	P26
22683.29	P22, P25
22506.73	P30, P43
22385.79	P31, P32, P44
22085.79	P33, P42
22075.79	P34, P35, P36, P37, P38, P40, P41

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO BALDRAME (Nível 0)

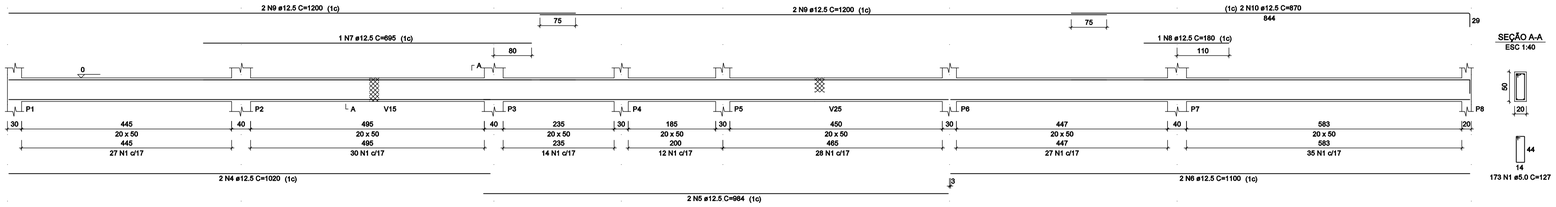
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

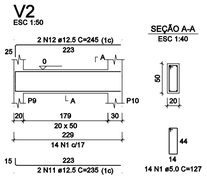
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	02/39

V1
ESC 1:50

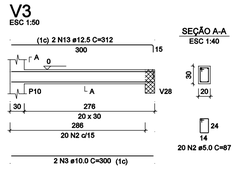


V2
ESC 1:50



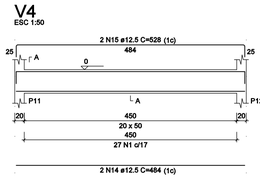
SEÇÃO A-A
ESC 1:40

V3
ESC 1:50

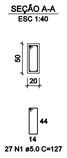


SEÇÃO A-A
ESC 1:40

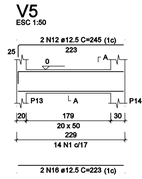
V4
ESC 1:50



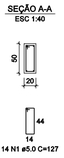
SEÇÃO A-A
ESC 1:40



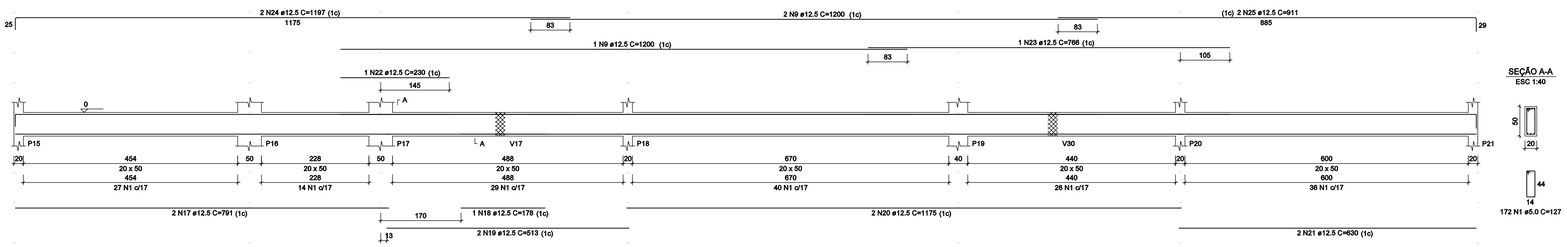
V5
ESC 1:50



SEÇÃO A-A
ESC 1:40

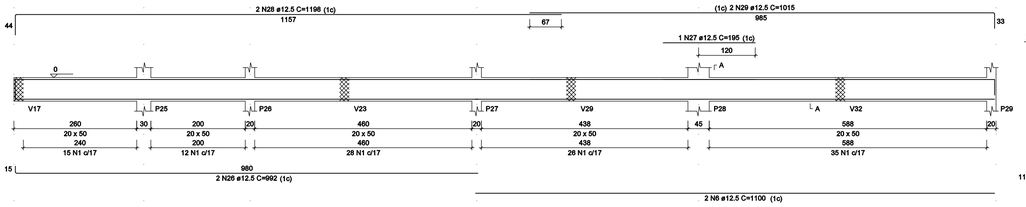


V6
ESC 1:50

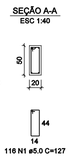


SEÇÃO A-A
ESC 1:40

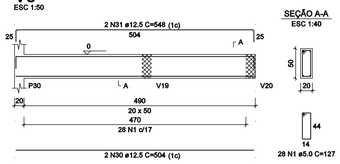
V7
ESC 1:50



SEÇÃO A-A
ESC 1:40

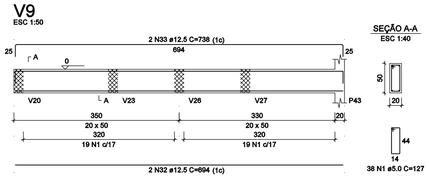


V8
ESC 1:50



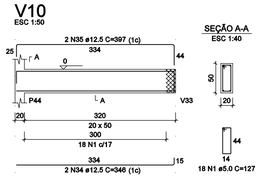
SEÇÃO A-A
ESC 1:40

V9
ESC 1:50



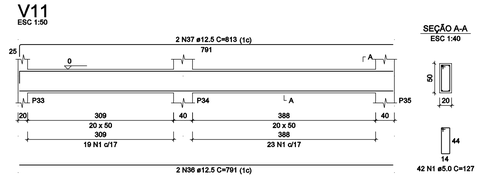
SEÇÃO A-A
ESC 1:40

V10
ESC 1:50



SEÇÃO A-A
ESC 1:40

V11
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V1 V2 V3
V4 V5 V6
V7 V8 V9
V10 V11

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	642	127	81534
	2	5.0	20	87	1740
CA50	3	10.0	2	300	600
	4	12.5	2	1020	2040
	5	12.5	2	984	1968
	6	12.5	4	1100	4400
	7	12.5	1	695	695
	8	12.5	1	180	180
	9	12.5	7	1200	8400
	10	12.5	2	870	1740
	11	12.5	2	235	470
	12	12.5	4	245	980
	13	12.5	2	312	624
	14	12.5	2	484	968
	15	12.5	2	528	1056
	16	12.5	2	223	446
	17	12.5	2	791	1582
	18	12.5	1	178	178
	19	12.5	2	513	1026
	20	12.5	2	1175	2350
	21	12.5	2	630	1260
	22	12.5	1	230	230
	23	12.5	1	766	766
	24	12.5	2	1197	2394
	25	12.5	2	911	1822
	26	12.5	2	992	1984
	27	12.5	1	195	195
	28	12.5	2	1198	2396
	29	12.5	2	1015	2030
	30	12.5	2	504	1008
	31	12.5	2	548	1096
	32	12.5	2	694	1388
	33	12.5	2	738	1476
	34	12.5	2	346	692
	35	12.5	2	397	794
	36	12.5	2	791	1582
	37	12.5	2	813	1626

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	6	4.1
	12.5	518.4	549.4
CA60	5.0	632.7	141.2

PESO TOTAL (kg)	
CA50	553.4
CA60	141.2

Volume de concreto (C-30) = 10.81 m³
Área de forma = 129.81 m²

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MARIUS OLIVEIRA COSTA
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MINISTÉRIO DA EDUCAÇÃO
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VICE - REITOR: PROF. JACKSON ANTÔNIO BARBOSA
PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PLANTA DE LOCAÇÃO DA FUNDAÇÃO (Nível 0)

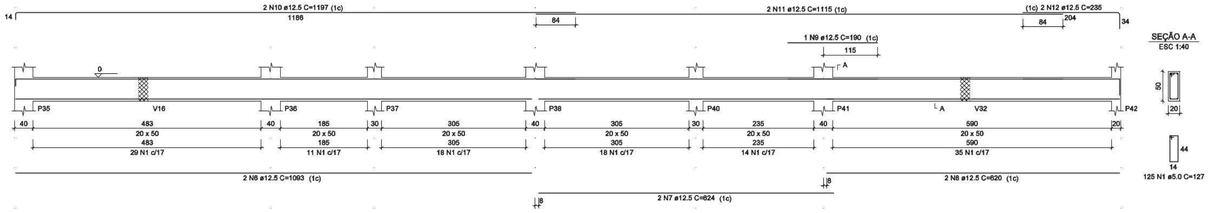
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

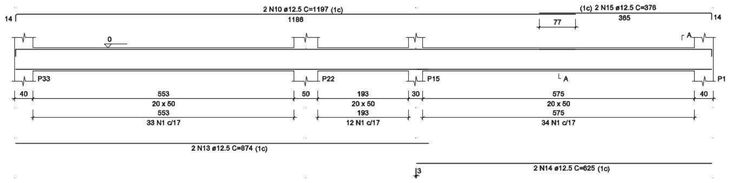
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	03/39

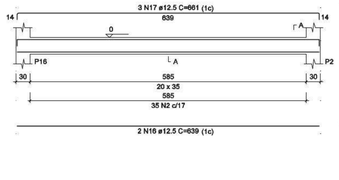
V12
ESC 1:50



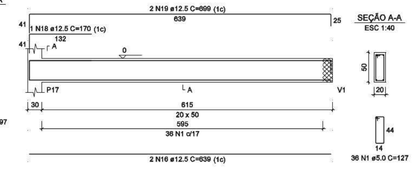
V13
ESC 1:50



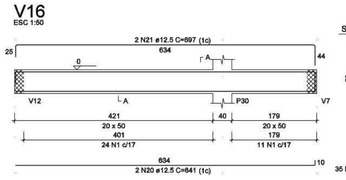
V14
ESC 1:50



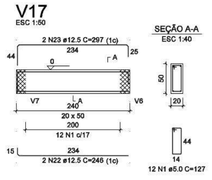
V15
ESC 1:50



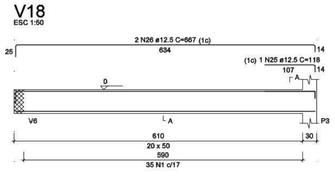
V16
ESC 1:50



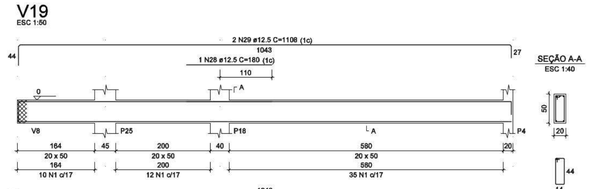
V17
ESC 1:50



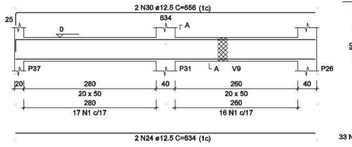
V18
ESC 1:50



V19
ESC 1:50



V20
ESC 1:50



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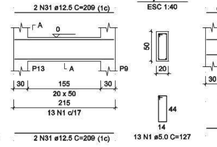
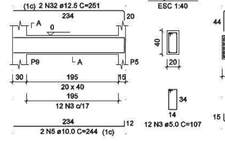
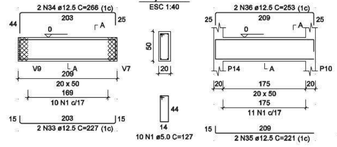
ESC 1:50



V22
ESC 1:50

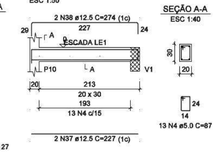


V23
ESC 1:50

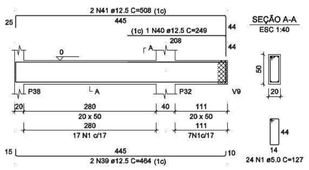


V24
ESC 1:50

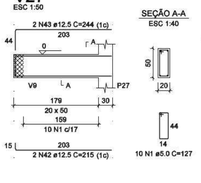
V25
ESC 1:50



V26
ESC 1:50



V27
ESC 1:50



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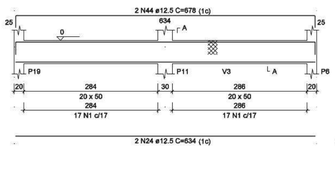

V29
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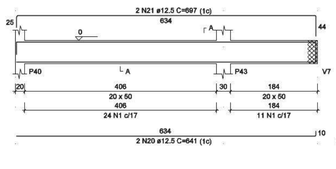
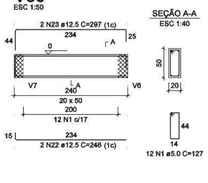


V30
ESC 1:50



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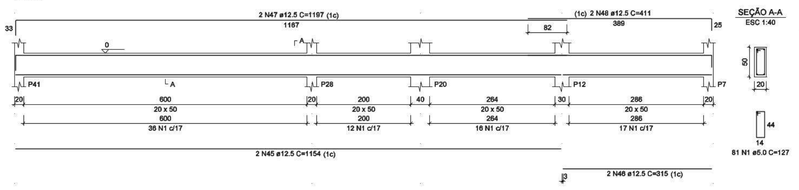

V32
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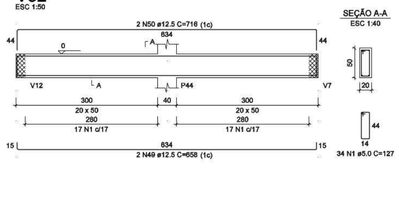

V33
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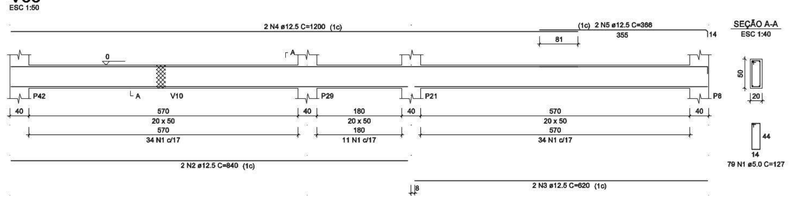

RELAÇÃO DO AÇO

V12	V13	V14
V15	V18	V17
V18	V19	V20
V21	V22	V23
V24	V25	V26
V27	V28	V29
V30	V31	V32

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	676	127	85852
	2	5.0	35	97	3395
	3	5.0	12	107	1284
	4	5.0	13	87	1131
CA50	5	10.0	2	244	488
	6	12.5	2	1093	2186
	7	12.5	2	624	1248
	8	12.5	2	620	1240
	9	12.5	1	190	190
	10	12.5	4	1197	4788
	11	12.5	2	1115	2230
	12	12.5	2	235	470
	13	12.5	2	874	1748
	14	12.5	2	625	1250
	15	12.5	2	376	752
	16	12.5	4	639	2556
	17	12.5	3	681	1963
	18	12.5	1	170	170
	19	12.5	2	699	1398
	20	12.5	4	641	2564
	21	12.5	4	697	2788
	22	12.5	4	246	984
	23	12.5	4	297	1188
	24	12.5	6	634	3804
	25	12.5	1	118	118
	26	12.5	2	667	1334
	27	12.5	2	1050	2100
	28	12.5	1	180	180
	29	12.5	2	1106	2210
	30	12.5	2	656	1312
	31	12.5	4	209	836
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	33	12.5	2	227	454
	34	12.5	2	266	532
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	37	12.5	2	227	454
	38	12.5	2	274	548
	39	12.5	2	464	928
	40	12.5	1	249	249
	41	12.5	2	508	1016
	42	12.5	2	215	430
	43	12.5	2	244	488
	44	12.5	2	678	1356
	45	12.5	2	1154	2308
	46	12.5	2	315	630
	47	12.5	2	1197	2394
	48	12.5	2	411	822
	49	12.5	2	658	1316
	50	12.5	2	716	1432

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	4.9	3.3
	12.5	584.4	819.3
CA60	5.0	916.6	155.4
PESO TOTAL (kg)			
CA50	822.6		
CA60	155.4		

Volume de concreto (C-30) = 12.00 m³
Área de forma = 144.39 m²

RELAÇÃO DO AÇO

V33

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	79	127	10033
CA50	2	12.5	2	840	1680
	3	12.5	2	620	1240
	4	12.5	2	1200	2400
	5	12.5	2	366	732

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	60.5	64.1
CA60	5.0	100.3	17
PESO TOTAL (kg)			
CA50	64.1		
CA60	17		

Volume de concreto (C-30) = 1.32 m³
Área de forma = 15.84 m²

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VICE - REITOR: PROF. JACKSON ANTÔNIO BARBOSA
PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO BALDRAME (Nível 0)

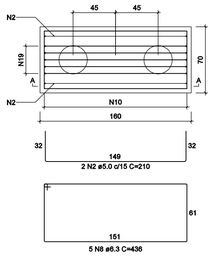
REVISÃO 01

DAM – PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

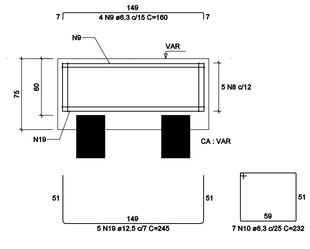
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	04/39

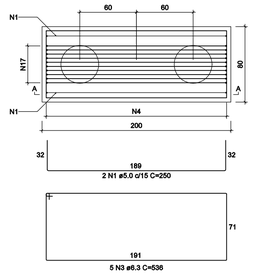
B1=B6=B8=B14=B15=B34=B38=B42=B43
2xC30
PLANTA
ESC 1:25



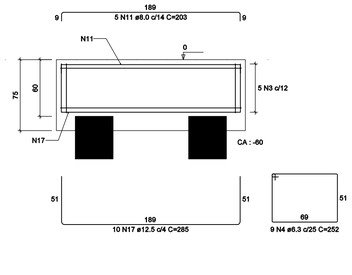
CORTE A-A
ESC 1:25



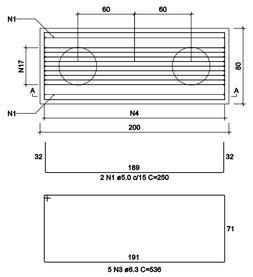
B2
2xC40
PLANTA
ESC 1:25



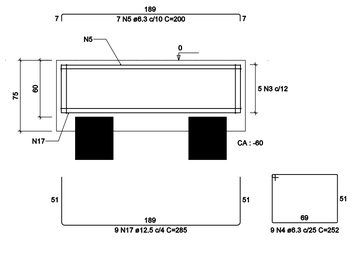
CORTE A-A
ESC 1:25



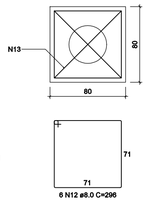
B3=B22=B25=B27
2xC40
PLANTA
ESC 1:25



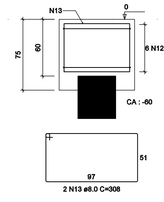
CORTE A-A
ESC 1:25



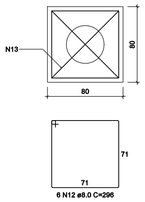
B4
1xC40
PLANTA
ESC 1:25



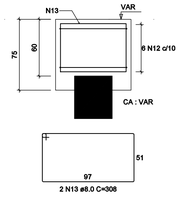
CORTE
ESC 1:25



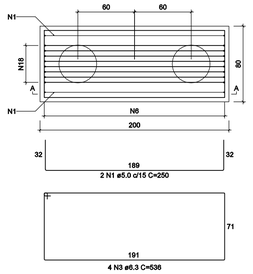
B5=B10
1xC40
PLANTA
ESC 1:25



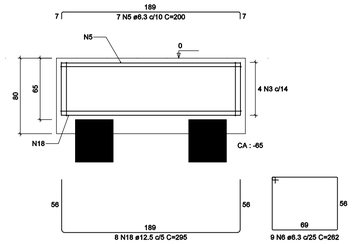
CORTE
ESC 1:25



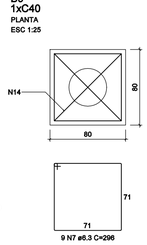
B7
2xC40
PLANTA
ESC 1:25



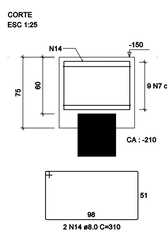
CORTE A-A
ESC 1:25



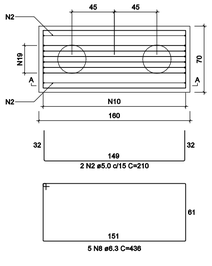
B9
1xC40
PLANTA
ESC 1:25



CORTE
ESC 1:25



B11=B12=B29=B36
2xC30
PLANTA
ESC 1:25



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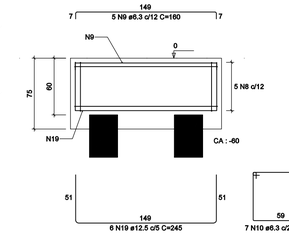
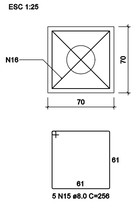
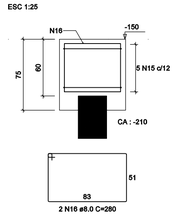
ESC 1:25



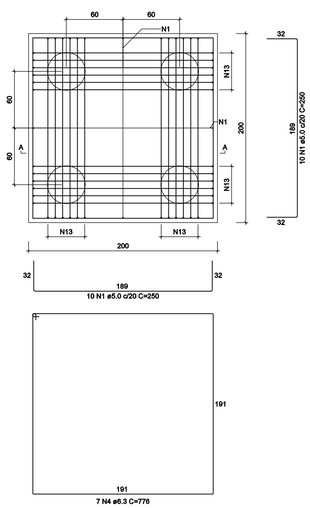
B13
1xC30
PLANTA
ESC 1:25



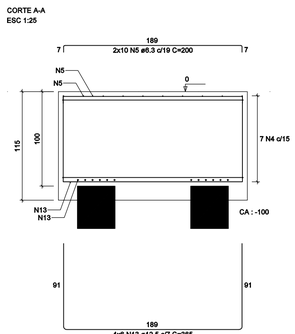
CORTE
ESC 1:25



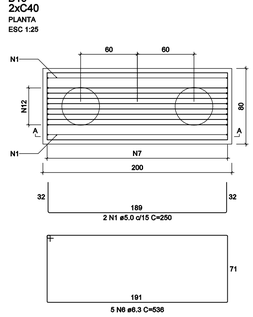
B17
4xC40
PLANTA
ESC 1:25



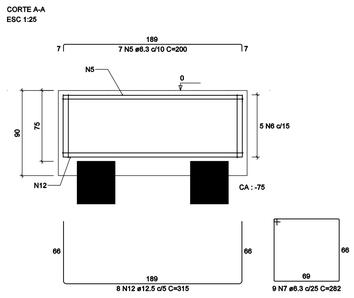
CORTE A-A
ESC 1:25



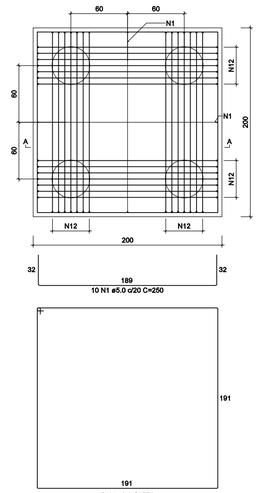
B18
2xC40
PLANTA
ESC 1:25



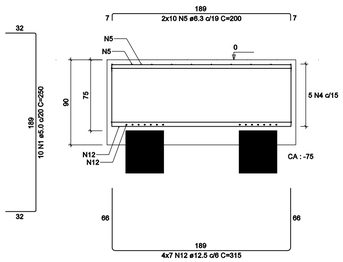
CORTE A-A
ESC 1:25



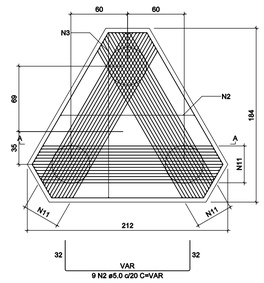
B16
4xC40
PLANTA
ESC 1:25



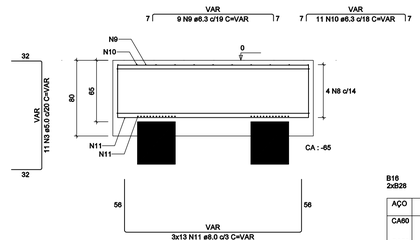
CORTE A-A
ESC 1:25



B18=B28
3xC40
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



RELAÇÃO DO AÇO

B16 2xB28 | B17 | B19

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	42	250	10500
	2	5.0	18	VAR	VAR
	3	5.0	22	VAR	VAR
CA50	4	6.3	12	778	9312
	5	6.3	47	200	9400
	6	6.3	5	536	2680
	7	6.3	9	282	2538
	8	6.3	8	619	4952
	9	6.3	18	VAR	VAR
	10	6.3	22	VAR	VAR
	11	8.0	78	VAR	VAR
	12	12.5	36	315	11340
	13	12.5	24	385	8760

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	339.4	91.3
	8.0	230.1	99.9
	12.5	201	213
CA60	5.0	178.5	30.3

PESO TOTAL (kg)	
CA50	404.2
CA60	30.3

Volume de concreto (C-30) = 13.53 m³
Área de forma = 31.63 m²

RELAÇÃO DO AÇO

B2 B9 4xB27 | B4 2xB10 4xB38 | B7 B13 9xB43

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	12	250	3000
	2	5.0	28	210	5460
CA50	3	6.3	29	536	15544
	4	6.3	45	252	11340
	5	6.3	35	200	7000
	6	6.3	9	282	2538
	7	6.3	9	296	2664
	8	6.3	65	436	28340
	9	6.3	56	160	8960
	10	6.3	91	232	21112
	11	8.0	5	203	1015
	12	8.0	18	296	5328
	13	8.0	6	308	1848
	14	8.0	2	310	620
	15	8.0	5	256	1280
	16	8.0	2	280	560
	17	12.5	46	285	13110
	18	12.5	8	295	2360
	19	12.5	69	245	16905

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	973.2	282
	8.0	106.5	46.2
	12.5	323.8	343.1
CA60	5.0	84.6	14.3

PESO TOTAL (kg)	
CA50	651.3
CA60	14.3

Volume de concreto (C-30) = 19.90 m³
Área de forma = 82.03 m²

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO BALDRAME (Nível 0)

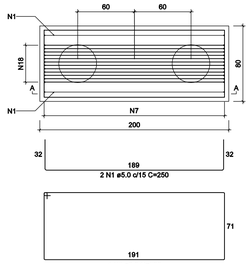
REVISÃO 01

DAM – PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

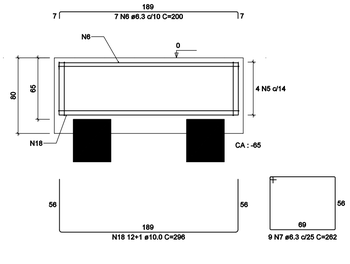
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	05/39

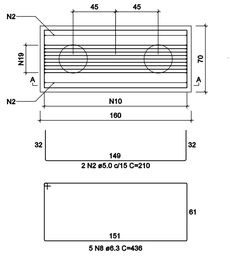
B20
2xC40
PLANTA
ESC 1:25



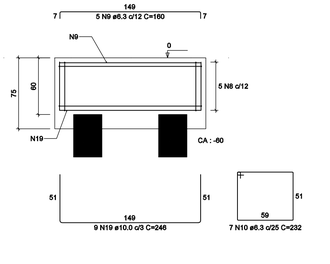
CORTE A-A
ESC 1:25



B21
2xC30
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



RELAÇÃO DO AÇO

B20
B30

B21
B31

B28
B32

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	8	250	2000
	2	5.0	2	210	420
	3	5.0	9	VAR	VAR
	4	5.0	11	VAR	VAR
	5	6.3	19	536	10184
	6	6.3	21	200	4200
	7	6.3	9	262	2358
	8	6.3	5	436	2180
	9	6.3	5	160	800
	10	6.3	7	232	1624
	11	6.3	9	272	2448
	12	6.3	4	619	2478
	13	6.3	9	VAR	VAR
	14	6.3	11	VAR	VAR
	15	6.3	9	252	2268
	16	6.3	9	282	2538
	17	8.0	4	203	812
	18	10.0	13	296	3848
	19	10.0	9	246	2214
	20	12.5	8	305	2440
	21	12.5	15	VAR	VAR
	22	12.5	8	285	2280
	23	12.5	8	315	2520

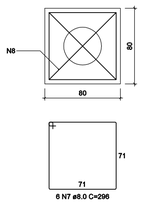
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	336	90.5
	8.0	8.1	3.5
	10.0	60.6	41.1
	12.5	116.2	123.1
CA60	5.0	60.9	10.3

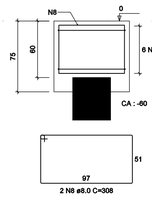
PESO TOTAL (kg)	
CA50	258.2
CA60	10.3

Volume de concreto (C-30) = 7.99 m³
Área de forma = 27.03 m²

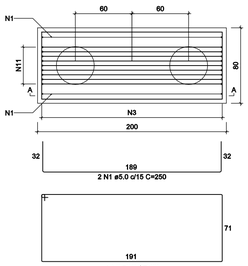
B33=B40
1xC40
PLANTA
ESC 1:25



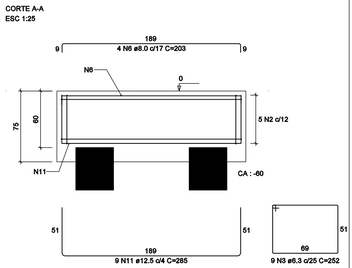
CORTE
ESC 1:25



B35
2xC40
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



B26
2xC40
PLANTA
ESC 1:25

CORTE A-A
ESC 1:25

B30
3xC40
PLANTA
ESC 1:25

CORTE A-A
ESC 1:25

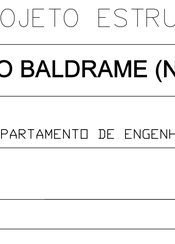
B41
2xC40
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



B44
1xC30
PLANTA
ESC 1:25



CORTE
ESC 1:25



B37
1xC40
PLANTA
ESC 1:25

CORTE
ESC 1:25

RELAÇÃO DO AÇO

B35
B41

B37
B44

2xB40

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	4	250	1000
CA50	2	6.3	10	536	5360
	3	6.3	9	252	2268
	4	6.3	7	200	1400
	5	6.3	9	272	2448
	6	8.0	4	203	812
	7	8.0	17	296	5032
	8	8.0	6	308	1848
	9	8.0	5	256	1280
	10	8.0	2	280	560
	11	12.5	9	285	2565
	12	12.5	9	305	2745

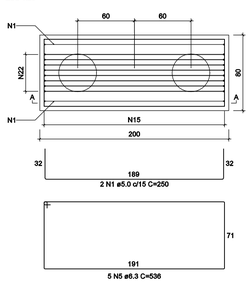
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	114.8	30.9
	8.0	95.3	41.4
	12.5	53.1	56.3
CA60	5.0	10	1.7

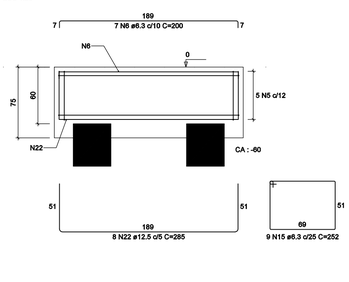
PESO TOTAL (kg)	
CA50	128.5
CA60	1.7

Volume de concreto (C-30) = 4.22 m³
Área de forma = 18.26 m²

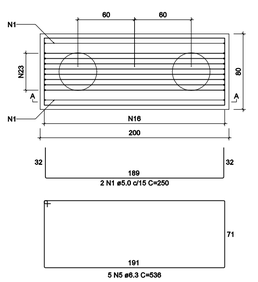
B31
2xC40
PLANTA
ESC 1:25



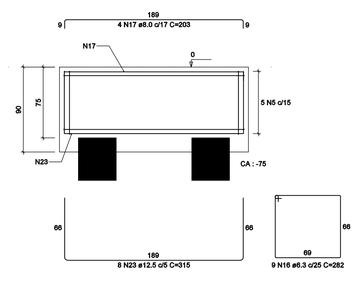
CORTE A-A
ESC 1:25



B32
2xC40
PLANTA
ESC 1:25



CORTE A-A
ESC 1:25



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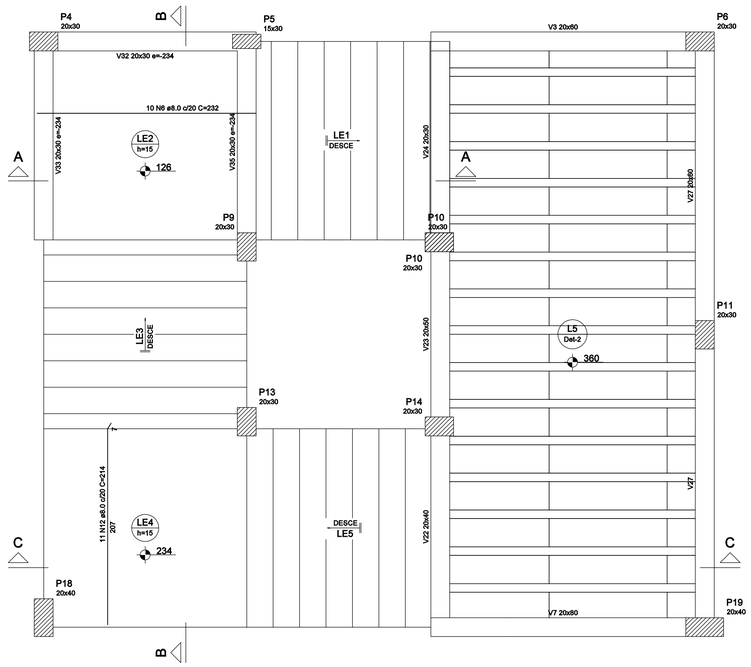
PAVIMENTO BALDRAME (Nível 0)

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

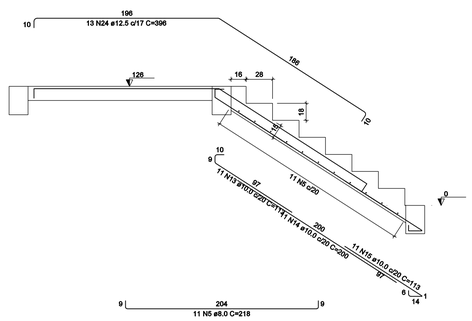
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	06/39



Armação positiva da escada E1

ESC 1:25



Corte A-A (LE1)

ESC 1:25

RELAÇÃO DO AÇO

LE1 LE4 | LE2 LE5 | LE3 Negativos

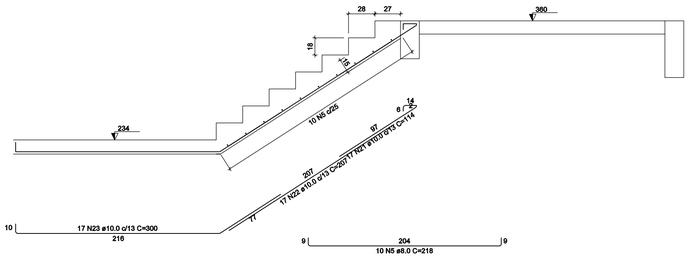
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	7	54	378
	2	4.2	7	53	371
CA50	3	6.3	4	93	372
	4	6.3	17	109	1853
	5	8.0	21	218	4578
	6	8.0	10	232	2320
	7	8.0	11	138	1518
	8	8.0	11	161	1771
	9	8.0	11	336	3696
	10	8.0	13	309	4017
	11	8.0	10	223	2230
	12	8.0	11	214	2354
	13	10.0	11	113	1243
	14	10.0	11	200	2200
	15	10.0	11	113	1243
	16	10.0	2	VAR	VAR
	17	10.0	4	95	380
	18	10.0	2	VAR	VAR
	19	10.0	1	109	109
	20	10.0	2	89	178
	21	10.0	17	114	1938
	22	10.0	17	207	3519
	23	10.0	17	300	5100
	24	12.5	13	396	5148

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	22.3	6
	8.0	224.8	97.5
	10.0	162.4	110.1
	12.5	51.5	54.6
CA60	4.2	7.5	0.9

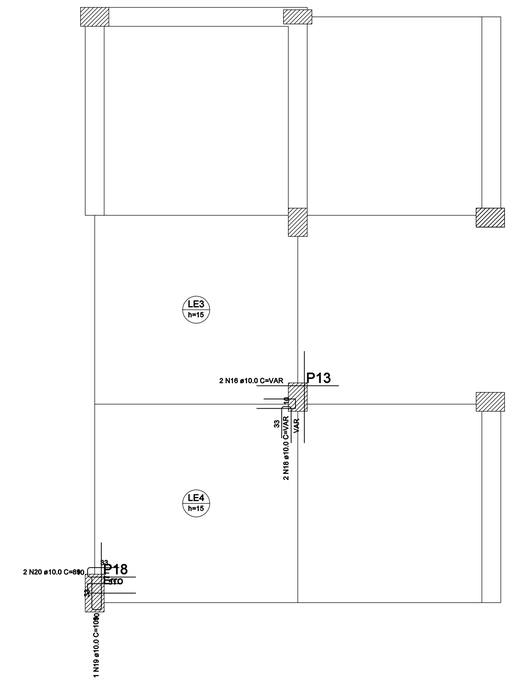
PESO TOTAL (kg)	
CA50	268.2
CA60	0.9

Volume de concreto (C-30) = 4.55 m³
Área de forma = 37.68 m²



Corte C-C (LE5)

ESC 1:25

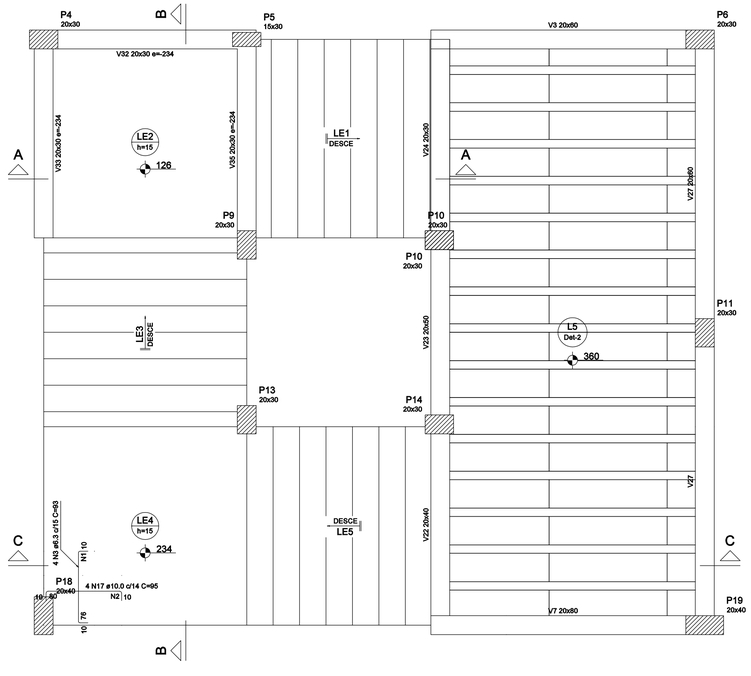


Armaduras de distribuição

Armadura	Armadura de distribuição
N3	7 N1 ø4.2 c/12 C=54
N17	7 N2 ø4.2 c/12 C=53

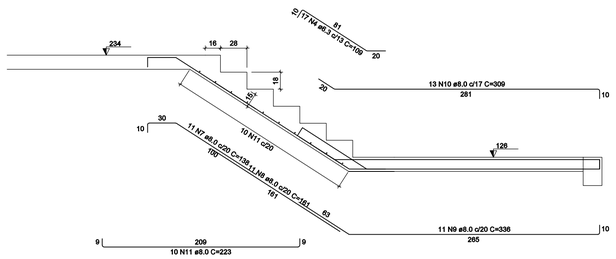
Detalhamento de punção e cisalhamento das lajes do pavimento SEGUNDO PAVIMENTO (Nível 234)

escala 1:25



Armação negativa da escada E1

ESC 1:25



Corte B-B (LE3)

ESC 1:25

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Data: 04/11/2025 10:56:29 -0300
Verifique em https://validar.iti.gov.br

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PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

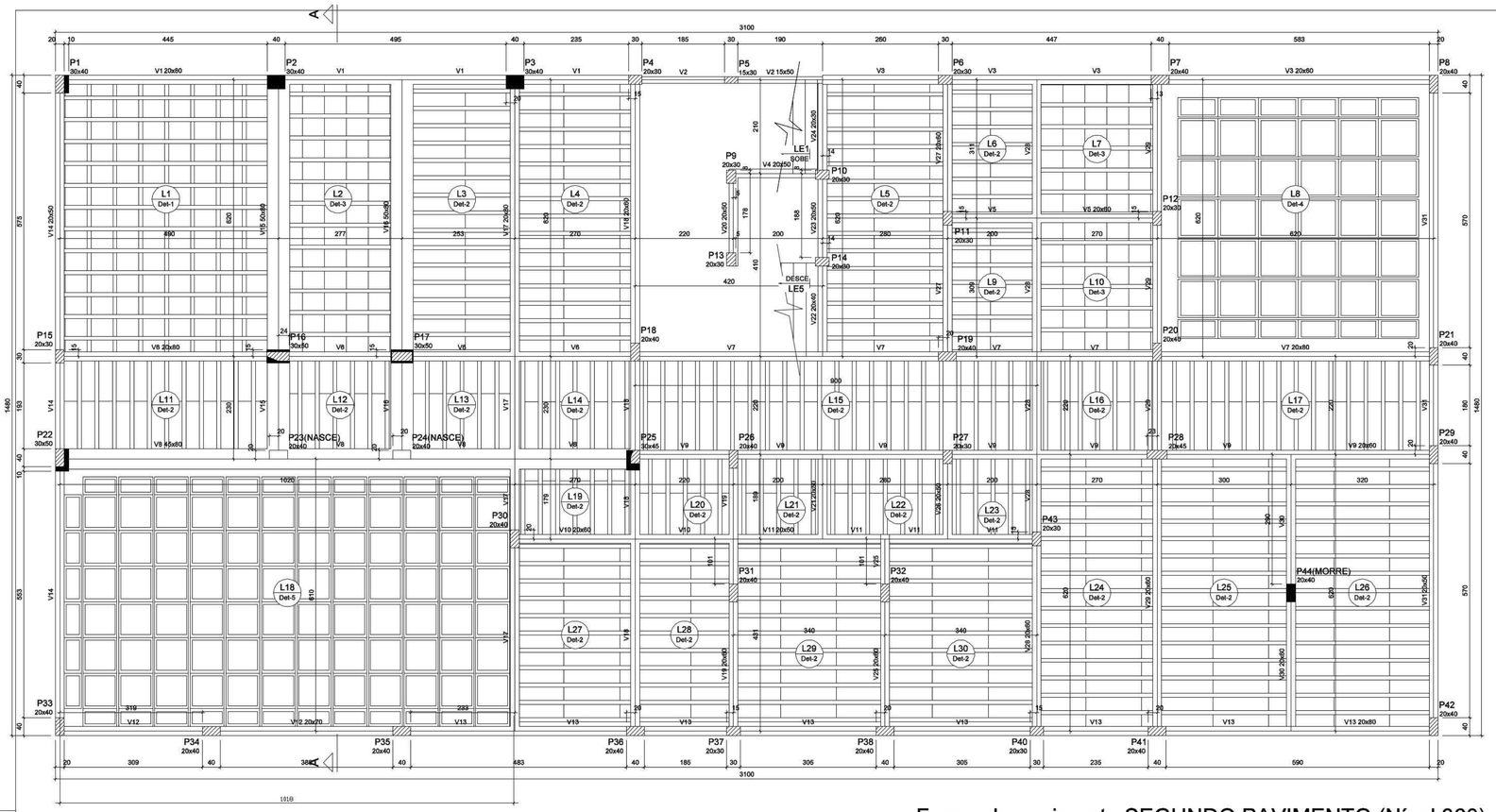
ESCADA 1° LANCE

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	07/39



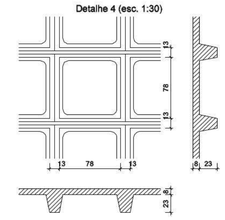
Forma do pavimento SEGUNDO PAVIMENTO (Nível 360)

escala 1:50

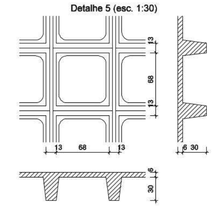
Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x80	0	360
V2	15x50	0	360
V3	20x60	0	360
V4	20x50	0	360
V5	20x80	0	360
V6	20x80	0	360
V7	20x80	0	360
V8	45x80	0	360
V9	20x50	0	360
V10	20x60	0	360
V11	20x50	0	360
V12	20x70	0	360
V13	20x80	0	360
V14	20x50	0	360
V15	50x80	0	360
V16	50x80	0	360
V17	20x80	0	360
V18	20x60	0	360
V19	20x80	0	360
V20	20x50	0	360
V21	20x50	0	360
V22	20x40	0	360
V23	20x50	0	360
V24	20x30	0	360
V25	20x80	0	360
V26	20x50	0	360
V27	20x80	0	360
V28	20x80	0	360
V29	20x80	0	360
V30	20x80	0	360
V31	20x50	0	360

Blocos de enchimento						
Detalhe	Tipo	Nome	Dimensões(cm)			Quantidade
			hb	bx	by	
1	EPS Bidirecional	B12/40/49	12	40	49	104
2	EPS Unidirecional	B8/80/125	8	80	125	608
3	EPS Unidirecional	B12/40/49	12	40	49	126
4	Cubetas	B22.5/90/90	22,5	90	90	30
		B22.5/90/45	22,5	90	45	12
5	Cubetas	B30/80/80	30	80	80	72
		B30/40/80	30	40	80	24
		B30/80/40	30	80	40	6

Detalhe 4 (esc. 1:30)



Detalhe 5 (esc. 1:30)



Lajes								
Dados						Sobrecarga (kgf/m²)		
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
L1	Treliçada 2D	20	0	360	295	154	300	-
L2	Treliçada 1D	20	0	360	257	154	300	-
L3	Treliçada 1D	14	0	360	197	154	300	-
L4	Treliçada 1D	14	0	360	197	154	300	-
L5	Treliçada 1D	14	0	360	197	155	300	-
L6	Treliçada 1D	14	0	360	197	154	300	-
L7	Treliçada 1D	20	0	360	257	154	300	-
L8	Nervurada	31	0	360	392	154	300	-
L9	Treliçada 1D	14	0	360	197	154	300	-
L10	Treliçada 1D	20	0	360	257	154	300	-
L11	Treliçada 1D	14	0	360	197	155	300	-
L12	Treliçada 1D	14	0	360	197	155	300	-
L13	Treliçada 1D	14	0	360	197	155	300	-
L14	Treliçada 1D	14	0	360	197	155	300	-
L15	Treliçada 1D	14	0	360	197	154	300	-
L16	Treliçada 1D	14	0	360	197	154	300	-
L17	Treliçada 1D	14	0	360	197	0	0	-
L18	Nervurada	36	0	360	423	155	300	-
L19	Treliçada 1D	14	0	360	197	155	300	-
L20	Treliçada 1D	14	0	360	197	154	300	-
L21	Treliçada 1D	14	0	360	197	154	300	-
L22	Treliçada 1D	14	0	360	197	154	300	-
L23	Treliçada 1D	14	0	360	197	154	300	-
L24	Treliçada 1D	14	0	360	197	154	300	-
L25	Treliçada 1D	14	0	360	197	154	300	-
L26	Treliçada 1D	14	0	360	197	154	300	-
L27	Treliçada 1D	14	0	360	197	155	300	-
L28	Treliçada 1D	14	0	360	197	155	300	-
L29	Treliçada 1D	14	0	360	197	154	300	-
L30	Treliçada 1D	14	0	360	197	154	300	-
LE5	Medja	15	0	360	682	171	300	-

Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
300	266384

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	30x40	0	360
P2	30x40	0	360
P3	30x40	0	360
P4	20x30	0	360
P5	15x30	0	360
P6	20x30	0	360
P7	20x40	0	360
P8	20x40	0	360
P9	20x30	0	360
P10	20x30	0	360
P11	20x30	0	360
P12	20x30	0	360
P13	20x30	0	360
P14	20x30	0	360
P15	20x30	0	360
P16	30x50	0	360
P17	30x50	0	360
P18	20x40	0	360
P19	20x40	0	360
P20	20x40	0	360
P21	20x40	0	360
P22	30x50	0	360
P23	20x40	0	360
P24	20x40	0	360
P25	30x45	0	360
P26	20x40	0	360
P27	20x30	0	360
P28	20x45	0	360
P29	20x40	0	360
P30	20x40	0	360
P31	20x40	0	360
P32	20x40	0	360
P33	20x40	0	360
P34	20x40	0	360
P35	20x40	0	360
P36	20x40	0	360
P37	20x30	0	360
P38	20x40	0	360
P40	20x30	0	360
P41	20x40	0	360
P42	20x40	0	360
P43	20x30	0	360
P44	20x40	0	360

Legenda das vigas e paredes

Viga

Legenda dos pilares

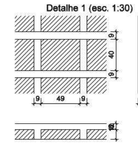
Pilar que morre

Pilar que passa

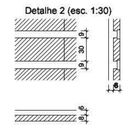
Pilar que nasce

Pilar com mudança de seção

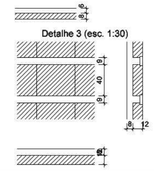
Detalhe 1 (esc. 1:30)



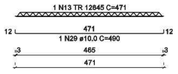
Detalhe 2 (esc. 1:30)



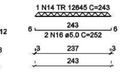
Detalhe 3 (esc. 1:30)



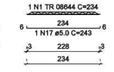
VT1a (12 unidades)
(L1)
ESC 1:75



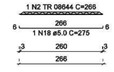
VT2a (12 unidades)
(L2)
ESC 1:75



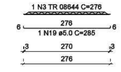
VT3a (15 unidades)
(L3)
ESC 1:75



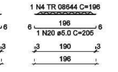
VT4a (15 unidades)
(L4)
ESC 1:75



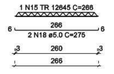
VT5a (15 unidades)
(L5)
ESC 1:75



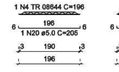
VT6a (7 unidades)
(L6)
ESC 1:75



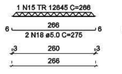
VT7a (5 unidades)
(L7)
ESC 1:75



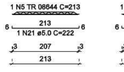
VT9a (7 unidades)
(L9)
ESC 1:75



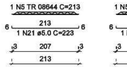
VT10a (5 unidades)
(L10)
ESC 1:75



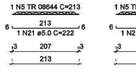
VT11a (11 unidades)
(L11)
ESC 1:75



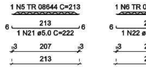
VT12a (6 unidades)
(L12)
ESC 1:75



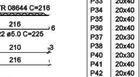
VT13a (5 unidades)
(L13)
ESC 1:75



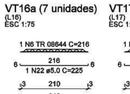
VT14a (7 unidades)
(L14)
ESC 1:75



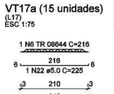
VT15a (23 unidades)
(L15)
ESC 1:75



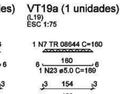
VT16a (7 unidades)
(L16)
ESC 1:75



VT17a (15 unidades)
(L17)
ESC 1:75



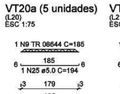
VT19a (1 unidades)
(L19)
ESC 1:75



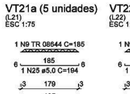
VT19b (6 unidades)
(L19)
ESC 1:75



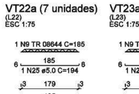
VT20a (5 unidades)
(L20)
ESC 1:75



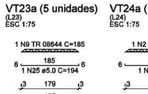
VT21a (5 unidades)
(L21)
ESC 1:75



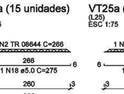
VT22a (7 unidades)
(L22)
ESC 1:75



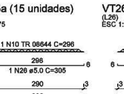
VT23a (5 unidades)
(L23)
ESC 1:75



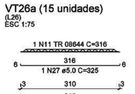
VT24a (15 unidades)
(L24)
ESC 1:75



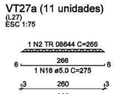
VT25a (15 unidades)
(L25)
ESC 1:75



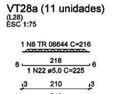
VT26a (15 unidades)
(L26)
ESC 1:75



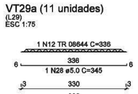
VT27a (11 unidades)
(L27)
ESC 1:75



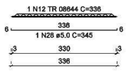
VT28a (11 unidades)
(L28)
ESC 1:75



VT29a (11 unidades)
(L29)
ESC 1:75



VT30a (11 unidades)
(L30)
ESC 1:75



RELAÇÃO DO AÇO

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15xVT4a	15xVT5a	7xVT6a
5xVT7a	7xVT9a	5xVT10a
11xVT11a	6xVT12a	5xVT13a
7xVT14a	23xVT15a	7xVT16a
15xVT17a	VT19a	6xVT19b
5xVT20a	5xVT21a	7xVT22a
5xVT23a	15xVT24a	15xVT25a
15xVT26a	11xVT27a	11xVT28a
11xVT29a	11xVT30a	

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	TR 08644	15	234	3510
	2	TR 08644	41	266	10906
	3	TR 08644	15	276	4140
	4	TR 08644	14	196	2744
	5	TR 08644	29	213	6177
	6	TR 08644	56	216	12096
	7	TR 08644	1	160	160
	8	TR 08644	6	163	978
	9	TR 08644	22	185	4070
	10	TR 08644	15	296	4440
	11	TR 08644	15	316	4740
	12	TR 08644	22	336	7392
	13	TR 12545	12	471	5652
	14	TR 12545	12	243	2916
	15	TR 12545	10	266	2660
	16	5.0	24	252	6048
	17	5.0	15	243	3645
	18	5.0	61	275	16775
	19	5.0	15	285	4275
	20	5.0	14	205	2870
	21	5.0	29	222	6438
	22	5.0	56	225	12600
	23	5.0	1	169	169
	24	5.0	6	172	1032
	25	5.0	22	194	4268
	26	5.0	15	305	4575
	27	5.0	15	325	4875
	28	5.0	22	345	7590
CA50	29	10.0	12	490	5880

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	58.8	39.9
CA60	5.0	701.7	127.4
	TR 08644	613.5	496
	TR 12545	112.3	109.9
PESO TOTAL (kg)			
CA50	39.9		
CA60	733.4		

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

Documento assinado digitalmente
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MARIUS OLIVEIRA COSTA
Data: 04/11/2026 10:06:23-0300
Verifique em https://validar.iti.gov.br

MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE LAVRAS

REITOR: PROF. JOSÉ ROBERTO SOARES SCOLFORO

VICE - REITOR: PROF. JACKSON ANTÔNIO BARBOSA

PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA

DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO SEGUNDO PAVIMENTO (NÍVEL 360)

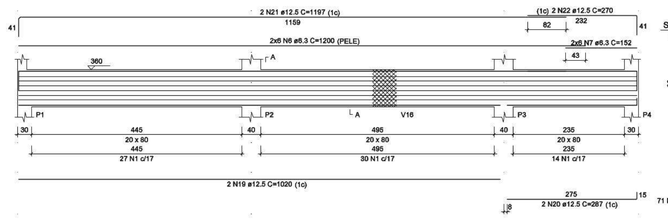
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	08/39

V1
ESC 1:50



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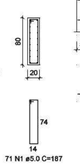

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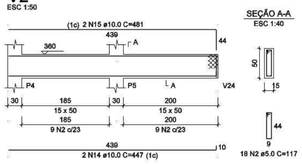
ESC 1:50



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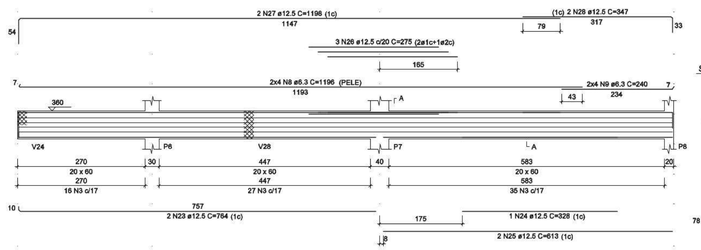
ESC 1:40

V3
ESC 1:50



SEÇÃO A-A
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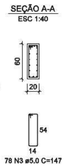

V4
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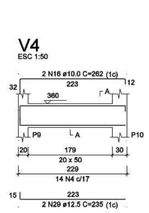
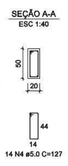
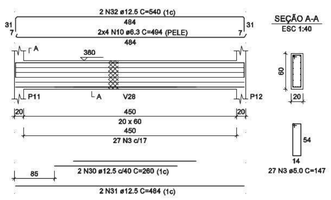


SEÇÃO A-A
ESC 1:40

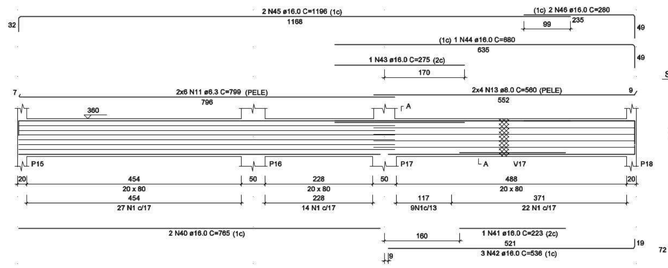


V5
ESC 1:50



SEÇÃO A-A
ESC 1:40

V6
ESC 1:50



SEÇÃO A-A
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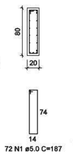
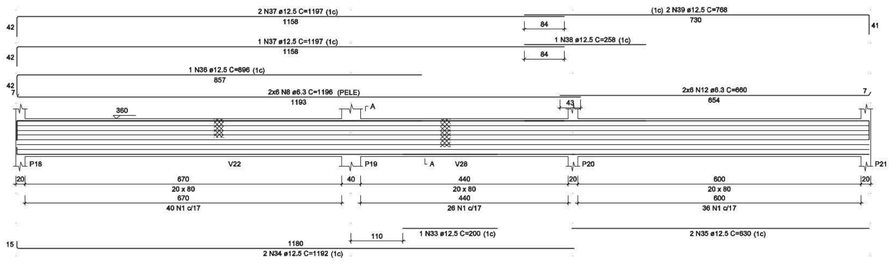
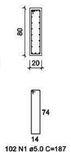


V7
ESC 1:50



SEÇÃO A-A
ESC 1:40



RELAÇÃO DO AÇO

V1 V2 V3
V4 V5 V6
V7 V8

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	245	187	45815
	2	5.0	18	117	2106
	3	5.0	105	147	15435
	4	5.0	14	127	1778
	5	5.0	237	237	56169
CA50	6	6.3	12	1200	14400
	7	6.3	12	152	1824
	8	6.3	20	1196	23920
	9	6.3	8	240	1920
	10	6.3	8	494	3952
	11	6.3	12	799	9588
	12	6.3	12	660	7920
	13	8.0	8	560	4480
	14	10.0	2	447	894
	15	10.0	2	481	962
	16	10.0	2	262	524
	17	10.0	10	1195	11950
	18	10.0	10	194	1940
	19	12.5	2	1020	2040
	20	12.5	2	287	574
	21	12.5	2	1197	2394
	22	12.5	2	270	540
	23	12.5	2	764	1528
	24	12.5	1	328	328
	25	12.5	2	613	1226
	26	12.5	3	275	825
	27	12.5	2	1198	2396
	28	12.5	2	347	694
	29	12.5	2	235	470
	30	12.5	2	260	520
	31	12.5	2	484	968
	32	12.5	2	540	1080
	33	12.5	1	200	200
	34	12.5	2	1192	2384
	35	12.5	2	630	1260
	36	12.5	1	696	696
	37	12.5	3	1197	3591
	38	12.5	1	258	258
	39	12.5	2	768	1536
	40	16.0	2	765	1530
	41	16.0	1	223	223
	42	16.0	3	536	1608
	43	16.0	1	275	275
	44	16.0	1	680	680
	45	16.0	2	1196	2392
	46	16.0	2	280	560
	47	16.0	3	675	2025
	48	16.0	2	1048	2096
	49	16.0	3	283	849
	50	16.0	1	320	320
	51	16.0	1	1097	1097
	52	16.0	1	215	215
	53	16.0	3	1196	3588
	54	16.0	3	288	864

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	635.2	171
	8.0	44.8	19.4
	10.0	162.7	110.3
	12.5	257.1	272.4
	16.0	183.2	318.1
CA60	5.0	1213	205.7

PESO TOTAL (kg)	
CA50	891.3
CA60	205.7

Volume de concreto (C-30) = 13.54 m³
Área de forma = 106.79 m²

RELAÇÃO DO AÇO

V16 V17 V18
V19 V20 V21
V22 V23 V24
V25 V26 V27
V28 V29

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	103	187	19261
	2	5.0	338	147	49686
	3	5.0	44	127	5588
	4	5.0	2	203	406
	5	5.0	17	107	1819
	6	5.0	17	87	1479
CA50	7	6.3	116	218	25288
	8	6.3	12	458	5496
	9	6.3	12	634	7608
	10	6.3	24	1196	28704
	11	6.3	24	330	7920
	12	6.3	6	637	5096
	13	6.3	1	86	86
	14	6.3	8	455	3640
	15	6.3	8	644	5152
	16	8.0	16	885	14160
	17	8.0	8	433	3464
	18	10.0	2	246	492
	19	10.0	3	275	825
	20	12.5	4	212	848
	21	12.5	2	442	884
	22	12.5	1	645	645
	23	12.5	1	625	625
	24	12.5	1	649	649
	25	12.5	3	1198	3594
	26	12.5	4	463	1389
	27	12.5	1	318	318
	28	12.5	2	911	1822
	29	12.5	2	659	1318
	30	12.5	1	225	225
	31	12.5	1	548	548
	32	12.5	2	1197	2394
	33	12.5	2	418	836
	34	12.5	4	634	2536
	35	12.5	1	210	210
	36	12.5	2	662	1324
	37	12.5	6	209	1254
	38	12.5	2	227	454
	39	12.5	2	297	594
	40	12.5	2	253	506
	41	12.5	2	227	454
	42	12.5	2	452	904
	43	12.5	1	195	195
	44	12.5	1	284	284
	45	12.5	2	524	1048
	46	12.5	2	215	430
	47	12.5	2	244	488
	48	12.5	2	690	1380
	49	12.5	2	850	1700
	50	12.5	2	630	1260
	51	12.5	3	230	690
	52	12.5	2	1197	2394
	53	12.5	2	410	820
	54	12.5	1	345	345
	55	12.5	2	1166	2332
	56	12.5	2	315	630
	57	12.5	2	1197	2394
	58	12.5	2	428	856
	59	16.0	2	219	438
	60	16.0	2	1032	2064
	61	20.0	4	901	3604
	62	20.0	1	880	880
	63	20.0	1	900	900
	64	20.0	1	920	920
	65	20.0	4	1013	4052

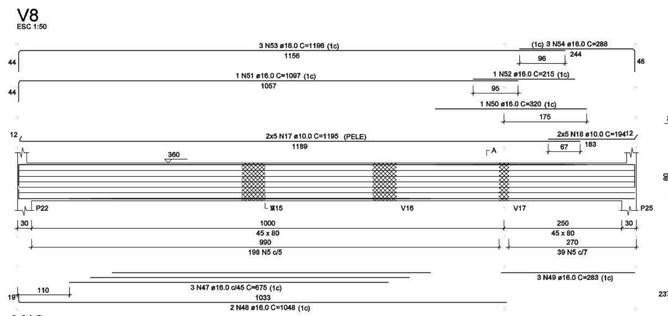
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	889.9	239.5
	8.0	176.2	76.5
	10.0	13.2	8.9
	12.5	415.8	440.8
	16.0	25	43.4
	20.0	103.6	280.9
CA60	5.0	782.4	132.7

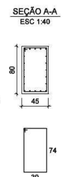
PESO TOTAL (kg)	
CA50	1089.9
CA60	132.7

Volume de concreto (C-30) = 13.40 m³
Área de forma = 107.51 m²

V8
ESC 1:50



SEÇÃO A-A
ESC 1:40



V28
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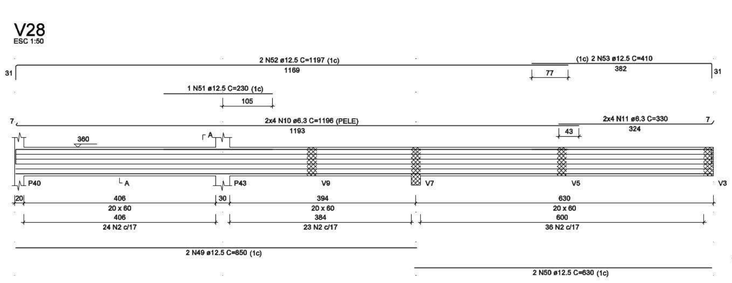
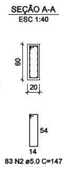


SEÇÃO A-A
ESC 1:40



V29
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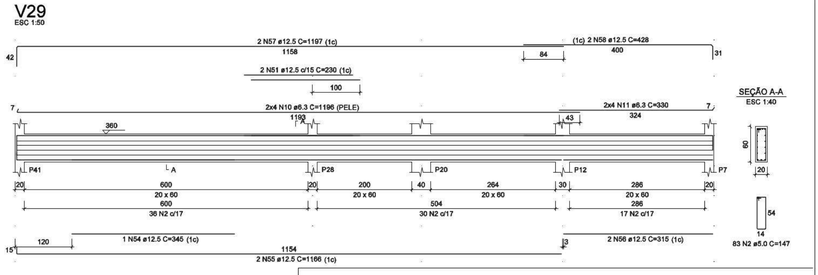
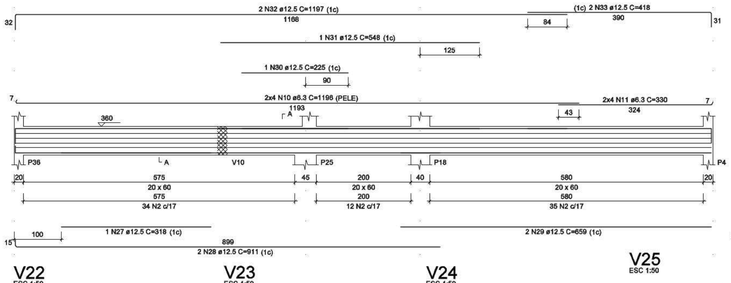


SEÇÃO A-A
ESC 1:40

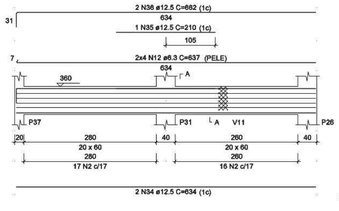
V18
ESC 1:50



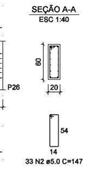
SEÇÃO A-A
ESC 1:40



V19
ESC 1:50



SEÇÃO A-A
ESC 1:40



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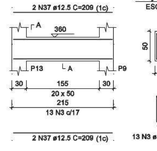

SEÇÃO A-A
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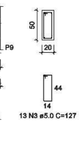

V21
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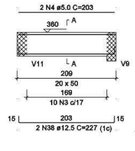
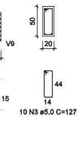


SEÇÃO A-A
ESC 1:40



V22
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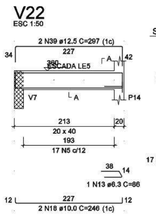

SEÇÃO A-A
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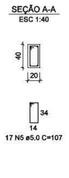

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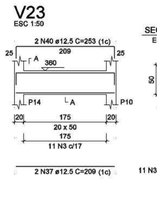
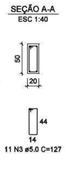
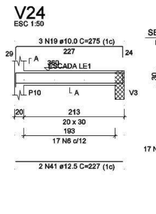


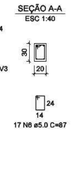
SEÇÃO A-A
ESC 1:40



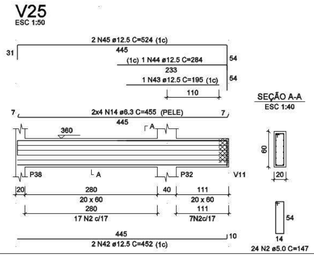
V24
ESC 1:50



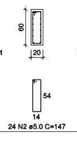
SEÇÃO A-A
ESC 1:40



V25
ESC 1:50



SEÇÃO A-A
ESC 1:40



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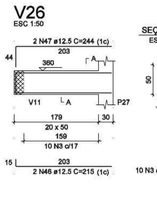
ESC 1:50



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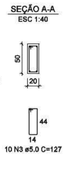

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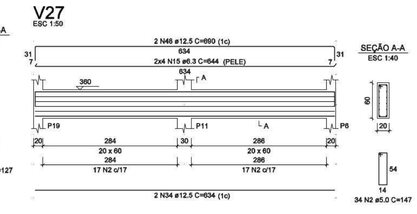
ESC 1:50



SEÇÃO A-A
ESC 1:40

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PROJETO ESTRUTURAL

PAVIMENTO SEGUNDO PAVIMENTO (NÍVEL 360)

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MARIUS OLIVEIRA COSTA = 90786/D

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INDICADA	MARIUS	OUTUBRO/25	09/39

V9
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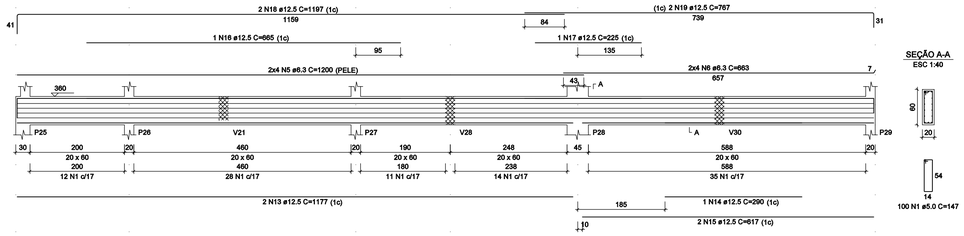

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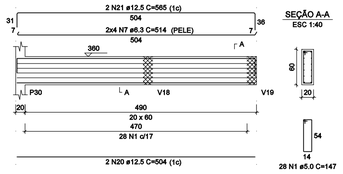

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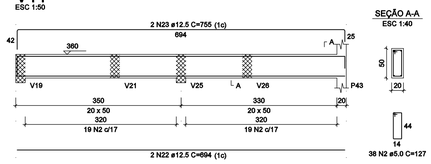

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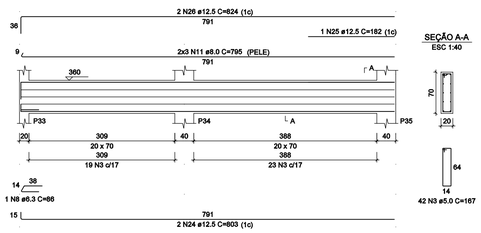

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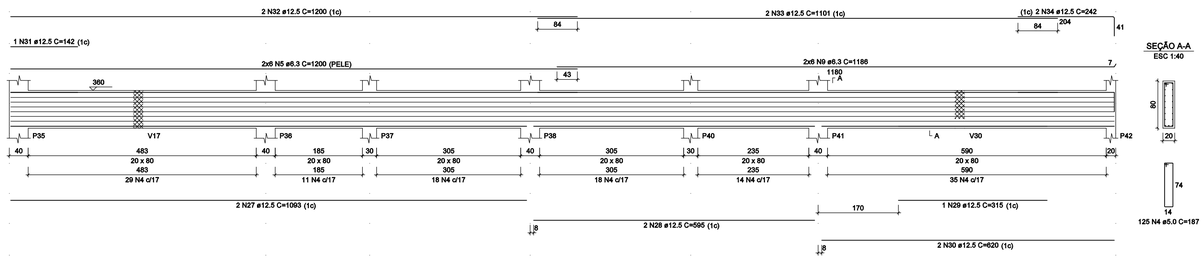
ESC 1:50



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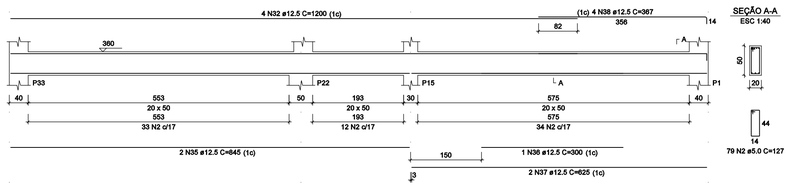
ESC 1:50



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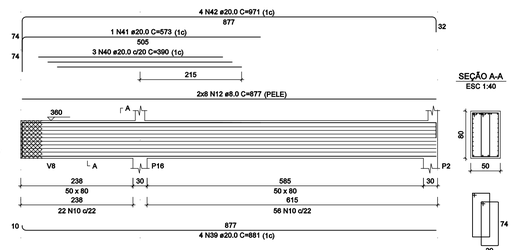
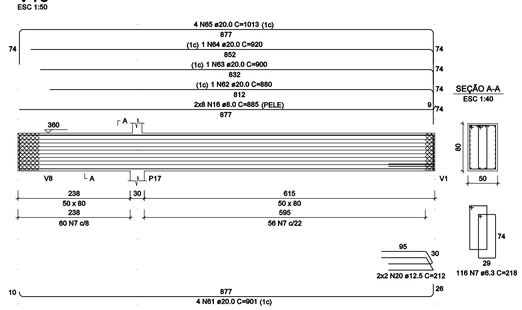
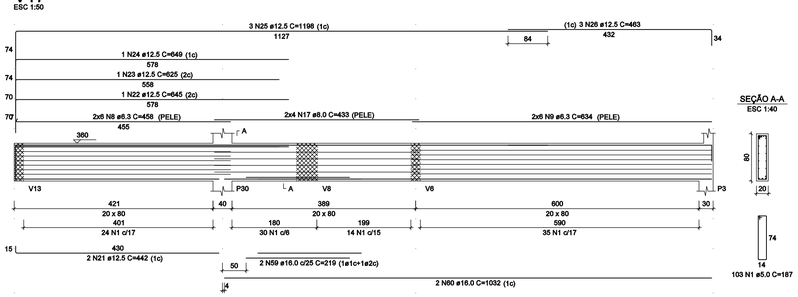
ESC 1:50



V16
ESC 1:50



V17
ESC 1:50



RELAÇÃO DO AÇO

V9
V10
V11
V12
V13
V14
V15

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	128	147	18816
	2	5.0	117	127	14859
	3	5.0	42	167	7014
	4	5.0	125	187	23375
CA50	5	6.3	20	1200	24000
	6	6.3	8	663	5304
	7	6.3	8	514	4112
	8	6.3	1	86	86
	9	6.3	12	1186	14232
	10	6.3	78	218	17004
	11	8.0	6	795	4770
	12	8.0	16	877	14032
	13	12.5	2	1177	2354
	14	12.5	1	290	290
	15	12.5	2	617	1234
	16	12.5	1	665	665
	17	12.5	1	225	225
	18	12.5	2	1197	2394
	19	12.5	2	767	1534
	20	12.5	2	504	1008
	21	12.5	2	565	1130
	22	12.5	2	694	1388
	23	12.5	2	755	1510
	24	12.5	2	803	1606
	25	12.5	1	182	182
	26	12.5	2	824	1648
	27	12.5	2	1093	2186
	28	12.5	2	595	1190
	29	12.5	1	315	315
	30	12.5	2	620	1240
	31	12.5	1	142	142
	32	12.5	6	1200	7200
	33	12.5	2	1101	2202
	34	12.5	2	242	484
	35	12.5	2	845	1690
	36	12.5	1	300	300
	37	12.5	2	625	1250
	38	12.5	4	367	1468
	39	20.0	4	881	3524
	40	20.0	3	390	1170
	41	20.0	1	573	573
	42	20.0	4	971	3884

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	647.4	174.3
	8.0	186	81.8
	12.5	368.4	390.3
	20.0	91.5	248.2
CA60	5.0	640.6	108.6

PESO TOTAL (kg)	
CA50	894.4
CA60	108.6

Volume de concreto (C-30) = 12.34 m³
Área de forma = 100.66 m²

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PROJETO ESTRUTURAL

PAVIMENTO SEGUNDO PAVIMENTO (NÍVEL 360)

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MARIUS OLIVEIRA COSTA = 90786/D

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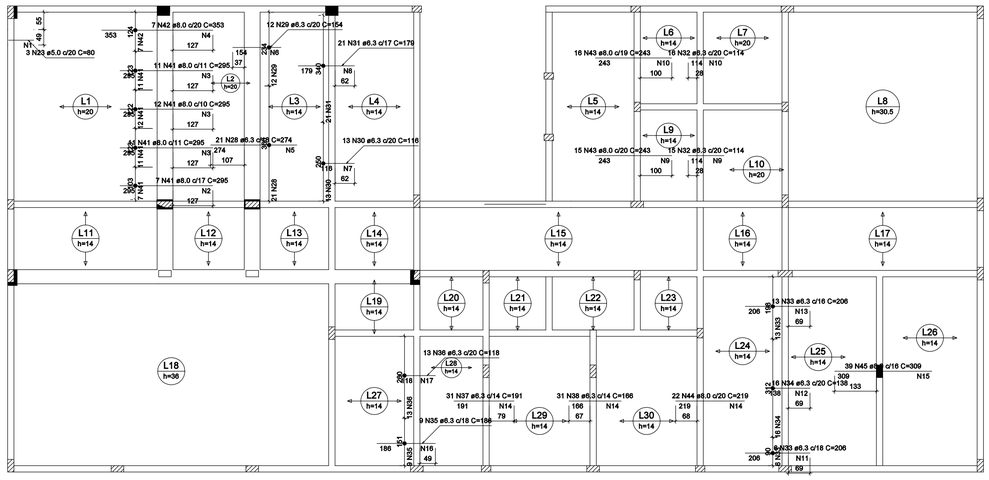
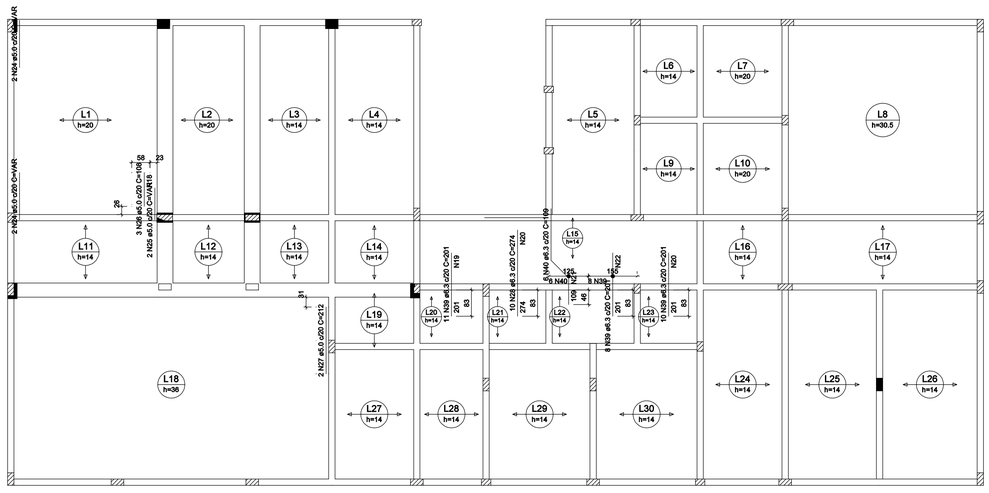


Armaduras de distribuição	
Armadura	Armadura de distribuição
N23	6 N1 ⌀4.2 c/15 C=49
N41	20 N2 ⌀4.2 c/15 C=118
N41	20 N3 ⌀4.2 c/15 C=123
N41	23 N3 ⌀4.2 c/13 C=123
N41	20 N3 ⌀4.2 c/15 C=123
N42	24 N4 ⌀4.2 c/15 C=134
N28	19 N5 ⌀4.2 c/15 C=377
N29	11 N6 ⌀4.2 c/15 C=244
N30	8 N7 ⌀4.2 c/15 C=280
N31	12 N8 ⌀4.2 c/15 C=350
N43	17 N9 ⌀4.2 c/15 C=309
N43	17 N10 ⌀4.2 c/15 C=311
N32	8 N10 ⌀4.2 c/15 C=311
N32	8 N9 ⌀4.2 c/15 C=309
N33	14 N11 ⌀4.2 c/15 C=100
N34	10 N12 ⌀4.2 c/15 C=312
N33	14 N13 ⌀4.2 c/15 C=208
N44	15 N14 ⌀4.2 c/15 C=431
N45	21 N15 ⌀4.2 c/15 C=620
N35	13 N16 ⌀4.2 c/15 C=161
N36	8 N17 ⌀4.2 c/15 C=269
N37	13 N14 ⌀4.2 c/15 C=431
N38	11 N14 ⌀4.2 c/15 C=431

Armação negativa das lajes do pavimento SEGUNDO PAVIMENTO (Eixo X)

escala 1:75



Armaduras de distribuição	
Armadura	Armadura de distribuição
N26	8 N18 ⌀4.2 c/15 C=58
N39	14 N19 ⌀4.2 c/15 C=220
N28	19 N20 ⌀4.2 c/15 C=200
N40	8 N21 ⌀4.2 c/15 C=125
N39	14 N22 ⌀4.2 c/15 C=155
N39	14 N20 ⌀4.2 c/15 C=200

Armação negativa das lajes do pavimento SEGUNDO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Negativos X Negativos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	6	49	294
	2	4.2	20	118	2360
	3	4.2	63	123	7749
	4	4.2	24	134	3216
	5	4.2	19	377	7163
	6	4.2	11	244	2684
	7	4.2	8	260	2080
	8	4.2	12	360	4320
	9	4.2	25	309	7725
	10	4.2	25	311	7775
	11	4.2	14	100	1400
	12	4.2	10	312	3120
	13	4.2	14	208	2912
	14	4.2	30	431	12930
	15	4.2	21	620	13020
	16	4.2	13	161	2093
	17	4.2	8	269	2152
	18	4.2	8	58	464
	19	4.2	14	220	3080
	20	4.2	33	200	6600
	21	4.2	8	125	1000
	22	4.2	14	155	2170
	23	5.0	3	80	240
	24	5.0	4	VAR	VAR
	25	5.0	2	VAR	VAR
	26	5.0	3	108	324
	27	5.0	2	212	424
CA50	28	6.3	31	274	8494
	29	6.3	12	154	1848
	30	6.3	13	116	1508
	31	6.3	21	179	3759
	32	6.3	31	114	3534
	33	6.3	19	206	3914
	34	6.3	16	138	2208
	35	6.3	9	186	1674
	36	6.3	13	118	1534
	37	6.3	31	191	5921
	38	6.3	31	166	5146
	39	6.3	29	201	5829
	40	6.3	6	109	654
	41	8.0	41	295	12095
	42	8.0	7	353	2471
	43	8.0	31	243	7533
	44	8.0	22	219	4818
	45	8.0	39	309	12051

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	460.2	123.9
	8.0	389.7	169.1
CA60	4.2	1001.9	119.0
	5.0	17.9	3

PESO TOTAL (kg)	
CA50	293
CA60	122.9

Volume de concreto (C-30) = 0.00 m³

Área de forma = 0.00 m²

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PROJETO ESTRUTURAL

PAVIMENTO SEGUNDO PAVIMENTO (NÍVEL 360)

REVISÃO 01

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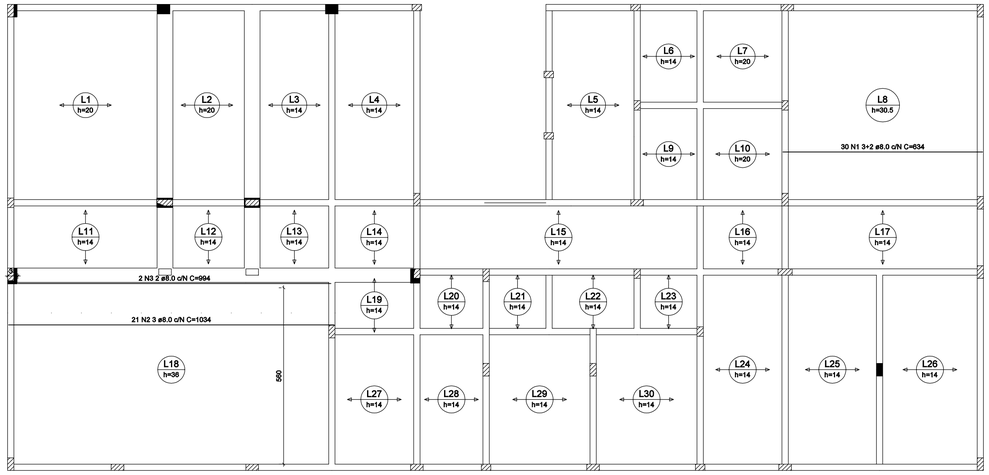
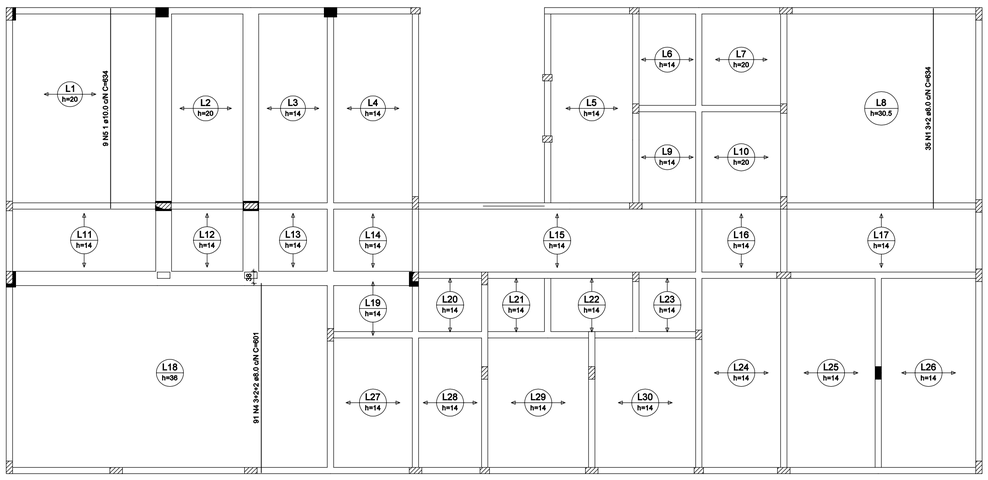


Armação positiva das lajes do pavimento SEGUNDO PAVIMENTO (Eixo X)

escala 1:75



Armação positiva das lajes do pavimento SEGUNDO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Positivos X Positivos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	8.0	65	634	41210
	2	8.0	21	1034	21714
	3	8.0	2	994	1988
	4	8.0	91	601	54691
	5	10.0	9	634	5706

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	1196	519.1
	10.0	57.1	38.7
PESO TOTAL (kg)			
CA50	557.8		

Volume de concreto (C-30) = 36.98 m³

Área de forma = 0.00 m²



Planta de vigotas pré-moldadas

escala 1:75

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PAVIMENTO SEGUNDO PAVIMENTO (NÍVEL 360)

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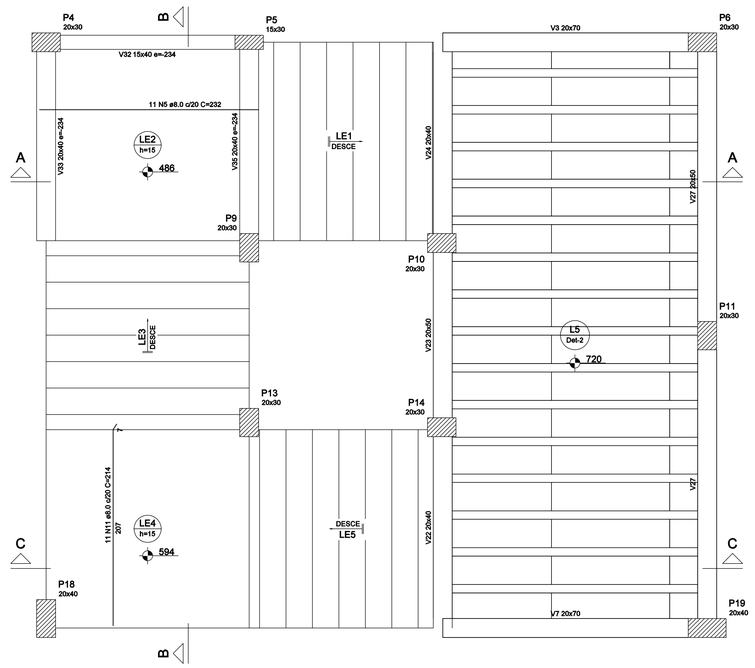
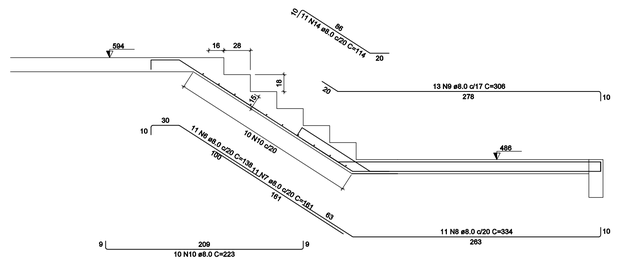


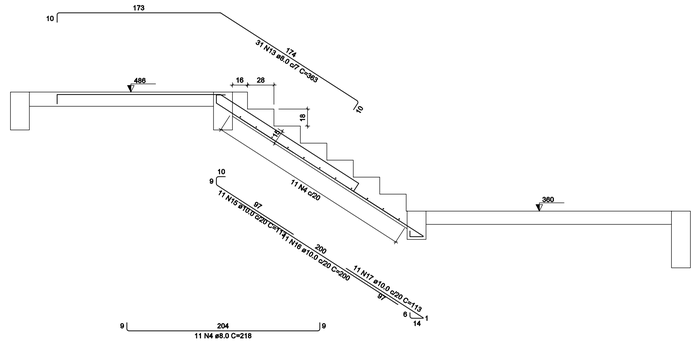
Armação positiva da escada E1

ESC 1:25



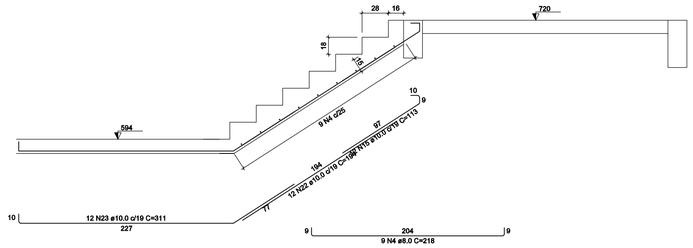
Corte B-B (LE3)

ESC 1:25



Corte A-A (LE1)

ESC 1:25



Corte C-C (LE5)

ESC 1:25

RELAÇÃO DO AÇO

LE1
LE4

LE2
LE5

LE3
Negativos

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	7	54	378
	2	4.2	7	53	371
CA50	3	6.3	4	93	372
	4	8.0	20	218	4360
	5	8.0	11	232	2552
	6	8.0	11	138	1518
	7	8.0	11	161	1771
	8	8.0	11	334	3674
	9	8.0	13	306	3978
	10	8.0	10	223	2230
	11	8.0	11	214	2354
	12	8.0	5	94	470
	13	8.0	31	363	11253
	14	8.0	11	114	1254
	15	10.0	23	113	2599
	16	10.0	11	200	2200
	17	10.0	11	113	1243
	18	10.0	2	VAR	VAR
	19	10.0	2	VAR	VAR
	20	10.0	1	109	109
	21	10.0	2	89	178
	22	10.0	12	194	2328
	23	10.0	12	311	3732

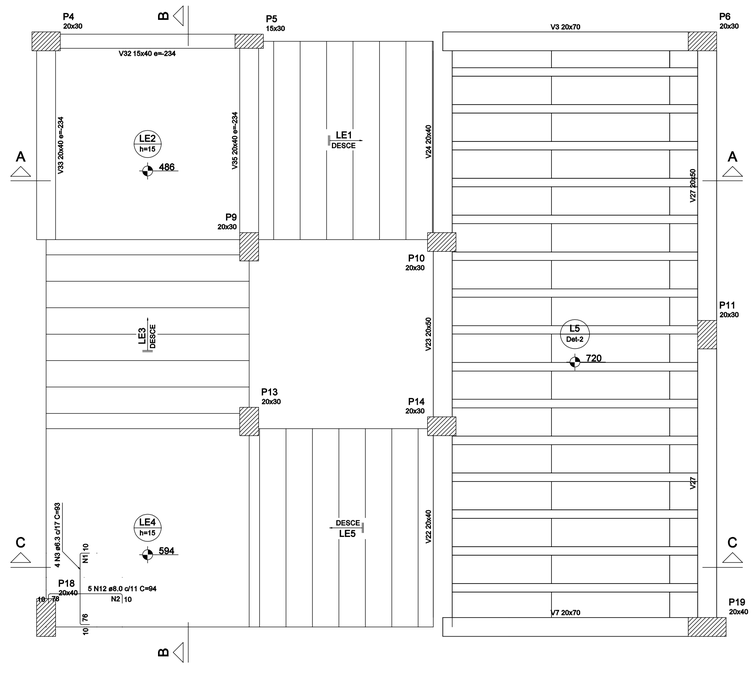
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	3.7	1
	8.0	354.1	153.7
	10.0	127.2	86.2
CA60	4.2	7.5	0.9

PESO TOTAL (kg)	
CA50	240.9
CA60	0.9

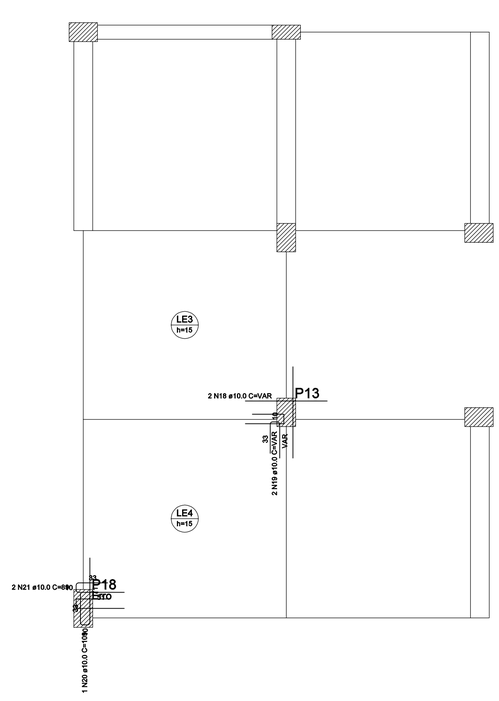
Volume de concreto (C-30) = 4.56 m³
Área de forma = 37.71 m²

Armaduras de distribuição	
Armadura	Armadura de distribuição
N3	7 N1 ø4.2 c/12 C=54
N12	7 N2 ø4.2 c/12 C=53



Armação negativa da escada E1

ESC 1:25



Detalhamento de punção e cisalhamento das lajes do pavimento TERCEIRO PAVIMENTO (Nível 594)

escala 1:25

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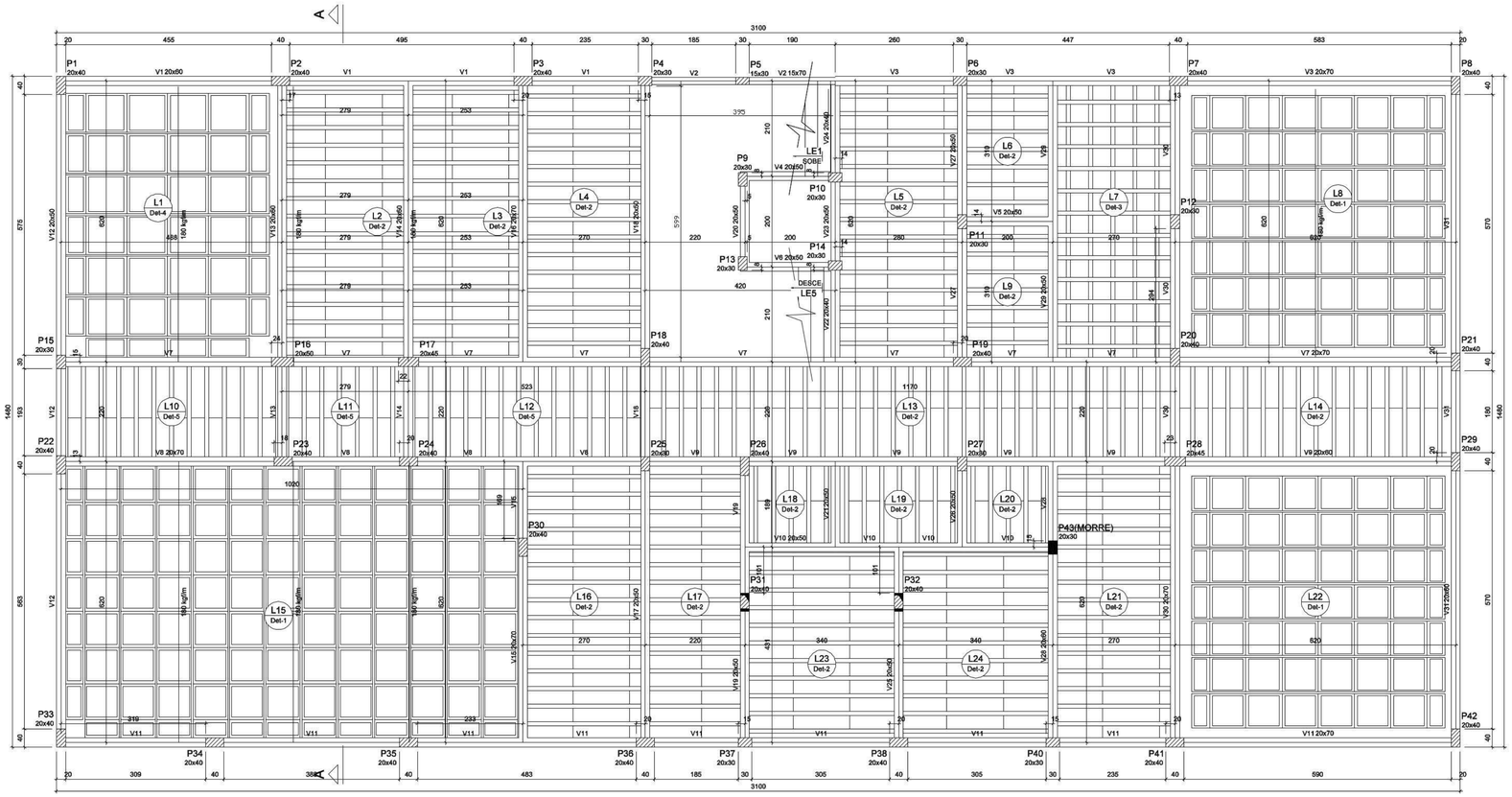
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	13/39



Forma do pavimento TERCEIRO PAVIMENTO (Nível 720)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x60	0	720
V2	15x70	0	720
V3	20x70	0	720
V4	20x50	0	720
V5	20x50	0	720
V6	20x50	0	720
V7	20x70	0	720
V8	20x70	0	720
V9	20x60	0	720
V10	20x50	0	720
V11	20x70	0	720
V12	20x50	0	720
V13	20x60	0	720
V14	20x60	0	720
V15	20x70	0	720
V16	20x70	0	720
V17	20x50	0	720
V18	20x50	0	720
V19	20x50	0	720
V20	20x50	0	720
V21	20x50	0	720
V22	20x40	0	720
V23	20x50	0	720
V24	20x40	0	720
V25	20x50	0	720
V28	20x50	0	720
V27	20x50	0	720
V28	20x60	0	720
V29	20x50	0	720
V30	20x70	0	720
V31	20x60	0	720

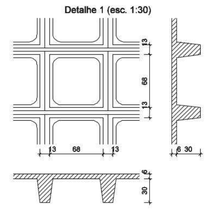
Lajes								
	Dados					Sobracarga (kgf/m²)		
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
L1	Nervurada	29	0	720	342	155	300	sim
L2	Treliçada 1D	14	0	720	197	155	300	sim
L3	Treliçada 1D	14	0	720	197	155	300	-
L4	Treliçada 1D	14	0	720	197	154	300	-
L5	Treliçada 1D	14	0	720	197	155	300	-
L6	Treliçada 1D	14	0	720	197	154	300	-
L7	Treliçada 2D	14	0	720	218	154	300	-
L8	Nervurada	36	0	720	423	154	300	sim
L9	Treliçada 1D	14	0	720	197	154	300	-
L10	Treliçada 1D	16	0	720	247	155	300	-
L11	Treliçada 1D	16	0	720	247	155	300	-
L12	Treliçada 1D	16	0	720	247	155	300	-
L13	Treliçada 1D	14	0	720	197	154	300	-
L14	Treliçada 1D	14	0	720	197	154	300	-
L15	Nervurada	36	0	720	423	155	300	sim
L16	Treliçada 1D	14	0	720	197	155	300	-
L17	Treliçada 1D	14	0	720	197	155	300	-
L18	Treliçada 1D	14	0	720	197	154	300	-
L19	Treliçada 1D	14	0	720	197	154	300	-
L20	Treliçada 1D	14	0	720	197	154	300	-
L21	Treliçada 1D	14	0	720	197	154	300	-
L22	Nervurada	36	0	720	423	154	300	-
L23	Treliçada 1D	14	0	720	197	154	300	-
L24	Treliçada 1D	14	0	720	197	154	300	-
LE5	Maciça	15	0	720	662	171	300	-

Características dos materiais	
fck (kgf/cm²)	Eca (kgf/cm²)
300	268384

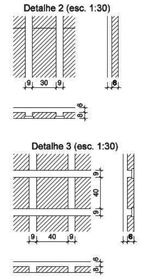
Pilares			
Nome	Seção (cm)	Elevação (cms)	Nível (cm)
P1	20x40	0	720
P2	20x40	0	720
P3	20x40	0	720
P4	20x30	0	720
P5	15x30	0	720
P6	20x30	0	720
P7	20x40	0	720
P8	20x40	0	720
P9	20x30	0	720
P10	20x30	0	720
P11	20x30	0	720
P12	20x30	0	720
P13	20x30	0	720
P14	20x30	0	720
P15	20x30	0	720
P16	20x50	0	720
P17	20x45	0	720
P18	20x40	0	720
P19	20x40	0	720
P20	20x40	0	720
P21	20x40	0	720
P22	20x40	0	720
P23	20x40	0	720
P24	20x40	0	720
P25	20x30	0	720
P26	20x40	0	720
P27	20x30	0	720
P28	20x45	0	720
P29	20x40	0	720
P30	20x40	0	720
P31	20x40	0	720
P32	20x40	0	720
P33	20x40	0	720
P34	20x40	0	720
P35	20x40	0	720
P36	20x40	0	720
P37	20x30	0	720
P38	20x40	0	720
P40	20x30	0	720
P41	20x40	0	720
P42	20x40	0	720
P43	20x30	0	720

Blocos de enchimento					
Detalhe	Tipo	Nome	Dimensões(cm)		Quantidade
			hb	bx	by	
1	Cubetas	B30/60/80	30	80	80	168
		B30/40/80	30	40	80	40
		B30/80/40	30	80	40	7
2/5	EPS Unidirecional	B8/30/125	8	30	125	590
3	EPS Bidirecional	B8/40/40	8	40	40	78
4	Cubetas	B22.5/90/90	22.5	90	90	24
		B22.5/45/90	22.5	45	90	12
		B22.5/90/45	22.5	90	45	4

Detalhe 1 (esc. 1:30)

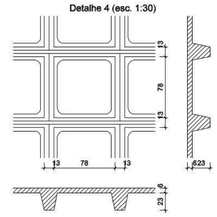


Detalhe 2 (esc. 1:30)

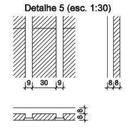


Detalhe 3 (esc. 1:30)

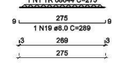
Detalhe 4 (esc. 1:30)



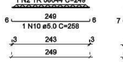
Detalhe 5 (esc. 1:30)



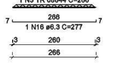
VT2a (15 unidades) (L2) ESC 1:75



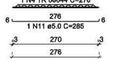
VT3a (15 unidades) (L3) ESC 1:75



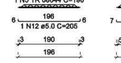
VT4a (15 unidades) (L4) ESC 1:75



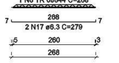
VT5a (15 unidades) (L5) ESC 1:75



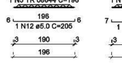
VT6a (7 unidades) (L6) ESC 1:75



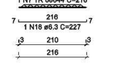
VT7a (12 unidades) (L7) ESC 1:75



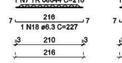
VT9a (7 unidades) (L9) ESC 1:75



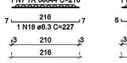
VT10a (11 unidades) (L10) ESC 1:75



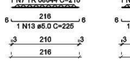
VT11a (6 unidades) (L11) ESC 1:75



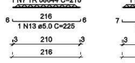
VT12a (12 unidades) (L12) ESC 1:75



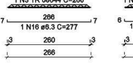
VT13a (29 unidades) (L13) ESC 1:75



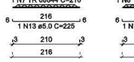
VT14a (15 unidades) (L14) ESC 1:75



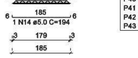
VT16a (15 unidades) (L16) ESC 1:75



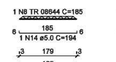
VT17a (15 unidades) (L17) ESC 1:75



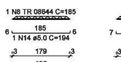
VT18a (5 unidades) (L18) ESC 1:75



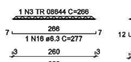
VT19a (7 unidades) (L19) ESC 1:75



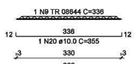
VT20a (5 unidades) (L20) ESC 1:75



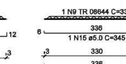
VT21a (15 unidades) (L21) ESC 1:75



VT23a (11 unidades) (L23) ESC 1:75



VT24a (11 unidades) (L24) ESC 1:75



RELAÇÃO DO AÇO

15xVT2a	15xVT3a	15xVT4a
15xVT5a	7xVT6a	12xVT7a
7xVT9a	11xVT10a	6xVT11a
12xVT12a	29xVT13a	15xVT14a
15xVT16a	15xVT17a	5xVT18a
7xVT19a	5xVT20a	15xVT21a
11xVT23a	11xVT24a	

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	TR 08644	15	275	4125
	2	TR 08644	15	249	3735
	3	TR 08644	45	266	11970
	4	TR 08644	15	276	4140
	5	TR 08644	14	196	2744
	6	TR 08644	12	268	3216
	7	TR 08644	88	216	19008
	8	TR 08644	17	185	3145
	9	TR 08644	22	336	7392
	10	5.0	15	258	3870
	11	5.0	15	285	4275
	12	5.0	14	205	2870
	13	5.0	59	225	13275
	14	5.0	17	194	3298
	15	5.0	11	345	3795
CA50	16	6.3	45	277	12465
	17	6.3	24	279	6696
	18	6.3	29	227	6583
	19	8.0	15	289	4335
	20	10.0	11	355	3905

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	257.4	69.3
	8.0	43.4	18.8
	10.0	39.1	26.5
CA60	5.0	313.9	53.2
	TR 08644	594.8	480.9

PESO TOTAL (kg)	
CA50	114.6
CA60	534.1

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

Legenda dos pilares
Pilar que morre
Pilar que passa
Pilar com mudança de seção

Legenda das vigas e paredes
Viga

gov.br — Documento assinado digitalmente
MARIUS OLIVEIRA COSTA
Data: 04/11/2025 10:06:14-0300
Verifique em https://validar.iti.gov.br

MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE LAVRAS

REITOR: PROF. JOSÉ ROBERTO SOARES SCOLFORO
VICE - REITOR: PROF. JACKSON ANTÔNIO BARBOSA
PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO TERCEIRO PAVIMENTO (NÍVEL 720)

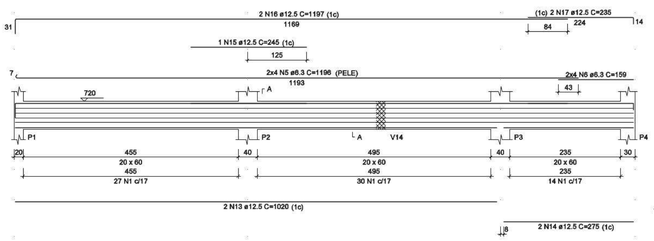
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

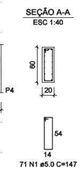
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	14/39

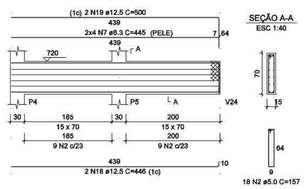
V1
ESC 1:50



SEÇÃO A-A
ESC 1:40



V2
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V1 V2 V3
V4 V5 V6
V7 V8

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	71	147	10437
	2	5.0	18	157	2826
	3	5.0	331	167	55277
	4	5.0	40	127	5080
CA50	5	6.3	6	1196	9568
	6	6.3	6	159	1272
	7	6.3	8	445	3560
	8	8.0	18	1195	21510
	9	8.0	6	255	1530
	10	8.0	6	1200	7200
	11	8.0	6	819	4914
	12	8.0	9	175	1050
	13	12.5	2	1020	2040
	14	12.5	2	275	550
	15	12.5	1	245	245
	16	12.5	2	1197	2394
	17	12.5	2	235	470
	18	12.5	2	446	892
	19	12.5	2	500	1000
	20	12.5	2	764	1528
	21	12.5	1	348	348
	22	12.5	2	613	1226
	23	12.5	4	223	892
	24	12.5	4	245	980
	25	12.5	2	221	442
	26	12.5	1	147	147
	27	12.5	2	290	580
	28	12.5	2	764	1528
	29	12.5	1	208	208
	30	12.5	2	518	1032
	31	12.5	2	1175	2350
	32	12.5	1	355	355
	33	12.5	2	642	1284
	34	12.5	1	305	305
	35	12.5	4	1200	4800
	36	12.5	1	349	349
	37	12.5	1	1115	1115
	38	12.5	2	1197	2394
	39	12.5	2	931	1862
	40	12.5	1	307	307
	41	12.5	1	818	818
	42	12.5	2	1030	2060
	43	12.5	2	280	560
	44	12.5	1	838	838
	45	12.5	1	140	140
	46	12.5	2	1197	2394
	47	12.5	2	251	502
	48	16.0	1	260	260
	49	16.0	2	1197	2394
	50	16.0	2	367	734

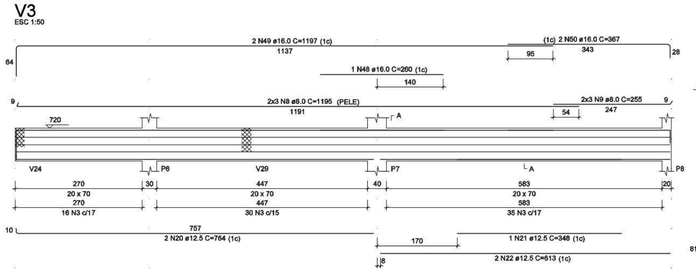
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	144	38.8
	8.0	392	157.1
	12.5	380.3	412.6
	16.0	33.9	58.8
CA60	5.0	736.2	124.8

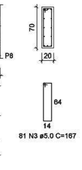
PESO TOTAL (kg)	
CA50	667.3
CA60	124.8

Volume de concreto (C-30) = 9.88 m³
Área de forma = 93.53 m²

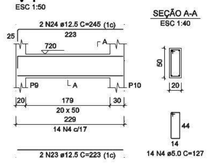
V3
ESC 1:50



SEÇÃO A-A
ESC 1:40

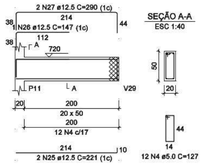


V4
ESC 1:50



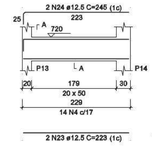
SEÇÃO A-A
ESC 1:40

V5
ESC 1:50

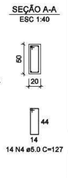


SEÇÃO A-A
ESC 1:40

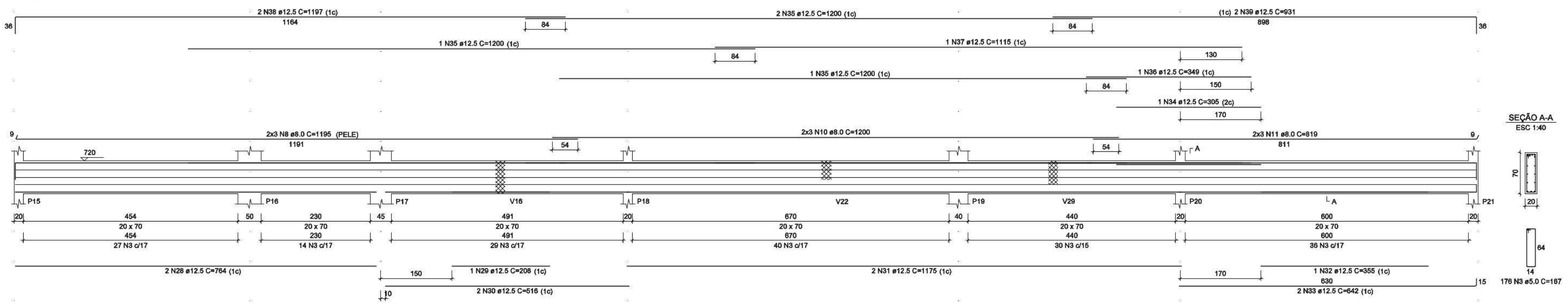
V6
ESC 1:50



SEÇÃO A-A
ESC 1:40

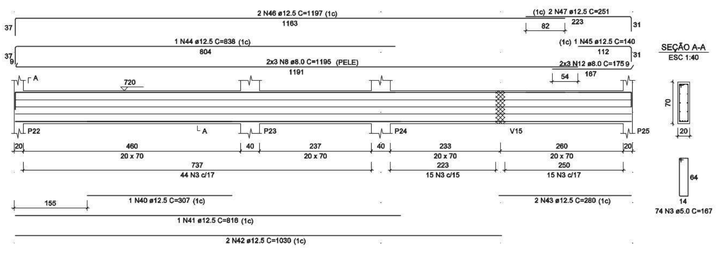


V7
ESC 1:50



SEÇÃO A-A
ESC 1:40

V8
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V20 V21 V22
V23 V24 V25
V26 V27 V28
V29 V30 V31
V32 V33 V34
V35

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	143	127	18161
	2	5.0	81	107	8667
	3	5.0	114	147	16758
	4	5.0	83	167	13861
	5	5.0	9	97	873
CA50	6	6.3	8	644	5152
	7	6.3	8	1200	9600
	8	6.3	8	317	2536
	9	8.0	4	647	2588
	10	8.0	8	1195	7170
	11	8.0	6	345	2070
	12	10.0	2	246	492
	13	10.0	2	237	474
	14	10.0	4	239	956
	15	10.0	2	634	1268
	16	10.0	2	209	418
	17	10.0	2	244	488
	18	12.5	8	209	1672
	19	12.5	2	215	430
	20	12.5	2	266	532
	21	12.5	2	296	592
	22	12.5	2	253	506
	23	12.5	2	269	538
	24	12.5	2	452	904
	25	12.5	1	165	165
	26	12.5	1	274	274
	27	12.5	2	508	1018
	28	12.5	2	210	420
	29	12.5	2	244	488
	30	12.5	4	634	2536
	31	12.5	2	678	1356
	32	12.5	2	641	1282
	33	12.5	1	250	250
	34	12.5	2	713	1426
	35	12.5	2	460	920
	36	12.5	2	686	1372
	37	12.5	1	355	355
	38	12.5	2	1166	2332
	39	12.5	3	315	945
	40	12.5	2	235	470
	41	12.5	2	1197	2394
	42	12.5	2	420	840
	43	12.5	2	840	1680
	44	12.5	2	620	1240
	45	12.5	1	987	987
	46	12.5	3	1197	3591
	47	12.5	3	366	1098
	48	12.5	2	659	1318
	49	12.5	2	251	502

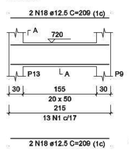
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	172.9	46.5
	8.0	118.3	51.3
	10.0	41	27.8
	12.5	344.6	365.2
CA60	5.0	563.2	98.9

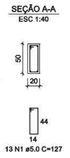
PESO TOTAL (kg)	
CA50	490.8
CA60	98.9

Volume de concreto (C-30) = 7.65 m³
Área de forma = 70.44 m²

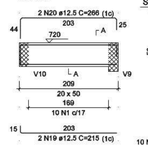
V20
ESC 1:50



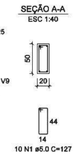
SEÇÃO A-A
ESC 1:40



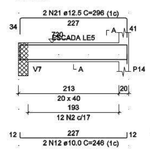
V21
ESC 1:50



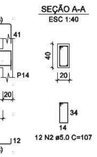
SEÇÃO A-A
ESC 1:40



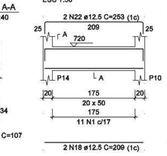
V22
ESC 1:50



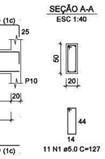
SEÇÃO A-A
ESC 1:40



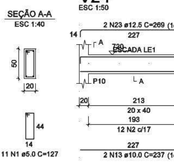
V23
ESC 1:50



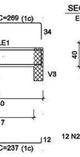
SEÇÃO A-A
ESC 1:40



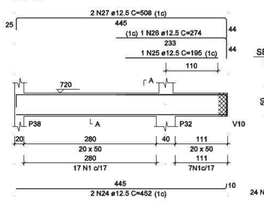
V24
ESC 1:50



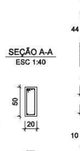
SEÇÃO A-A
ESC 1:40



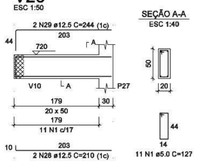
V25
ESC 1:50



SEÇÃO A-A
ESC 1:40

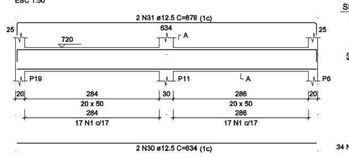


V26
ESC 1:50

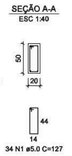


SEÇÃO A-A
ESC 1:40

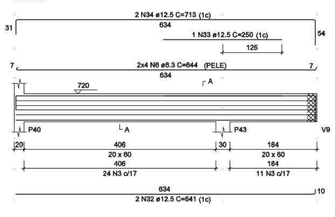
V27
ESC 1:50



SEÇÃO A-A
ESC 1:40



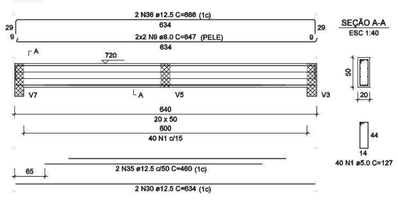
V28
ESC 1:50



SEÇÃO A-A
ESC 1:40



V29
ESC 1:50



SEÇÃO A-A
ESC 1:40

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO TERCEIRO PAVIMENTO (NÍVEL 720)

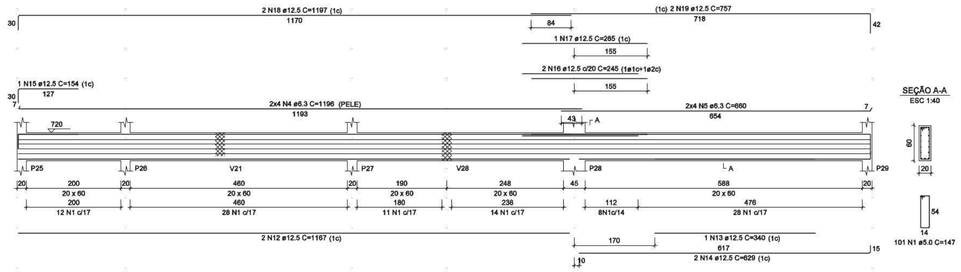
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

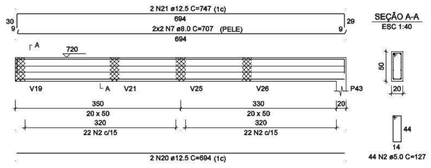
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	15/39

V9
ESC 1:50



V10
ESC 1:50



RELAÇÃO DO AÇO

V9 V10 V11
V12 V13 V14
V15 V16 V17
V18 V19

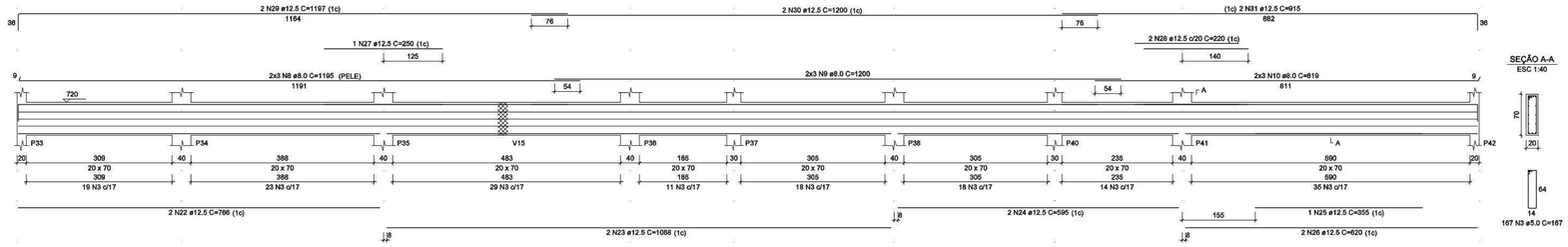
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	202	147	29694
	2	5.0	241	127	30607
	3	5.0	239	167	39913
CA50	4	6.3	8	1196	9568
	5	6.3	8	660	5280
	6	6.3	16	864	13824
	7	8.0	4	707	2828
	8	8.0	6	1195	7170
	9	8.0	6	1200	7200
	10	8.0	6	819	4914
	11	8.0	12	647	7764
	12	12.5	2	1167	2334
	13	12.5	1	340	340
	14	12.5	2	629	1258
	15	12.5	1	154	154
	16	12.5	2	245	490
	17	12.5	1	285	285
	18	12.5	2	1197	2394
	19	12.5	2	757	1514
	20	12.5	2	694	1388
	21	12.5	2	747	1494
	22	12.5	2	766	1532
	23	12.5	2	1068	2136
	24	12.5	2	595	1190
	25	12.5	1	355	355
	26	12.5	2	620	1240
	27	12.5	1	250	250
	28	12.5	2	220	440
	29	12.5	2	1197	2394
	30	12.5	2	1200	2400
	31	12.5	2	915	1830
	32	12.5	2	845	1690
	33	12.5	1	300	300
	34	12.5	2	625	1250
	35	12.5	1	708	708
	36	12.5	3	1197	3591
	37	12.5	3	383	1149
	38	12.5	2	425	850
	39	12.5	2	659	1318
	40	12.5	2	704	1408
	41	12.5	1	310	310
	42	12.5	2	646	1292
	43	12.5	1	196	196
	44	12.5	3	705	2115
	45	12.5	2	864	1728
	46	12.5	2	634	1268
	47	12.5	2	656	1312
	48	16.0	2	860	1720
	49	16.0	3	350	1050
	50	16.0	1	482	482
	51	16.0	2	919	1838
	52	16.0	2	876	1752
	53	16.0	1	813	813
	54	16.0	1	853	853
	55	16.0	3	955	2865
	56	16.0	2	656	1312
	57	16.0	1	679	679
	58	16.0	1	643	643
	59	16.0	2	755	1510
	60	16.0	2	932	1864

RESUMO DO AÇO

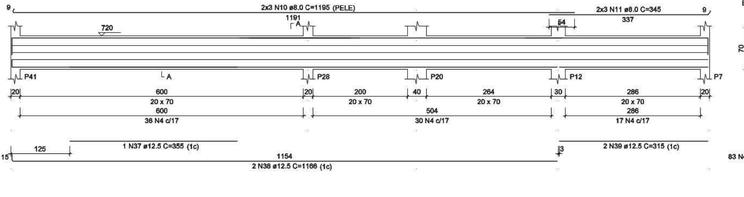
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	286.7	77.2
	8.0	296.8	129.7
	12.5	458.8	486.2
	16.0	173.8	301.8
CA60	5.0	1002.1	169.9
PESO TOTAL (kg)			
CA50	994.8		
CA60	169.9		

Volume de concreto (C-30) = 13.46 m³
Área de forma = 123.14 m²

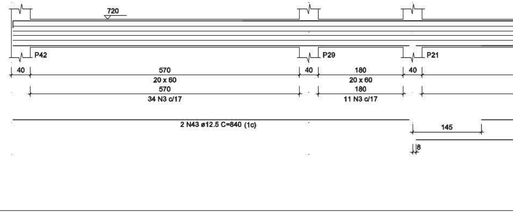
V11
ESC 1:50



V12
ESC 1:50



V13
ESC 1:50



V32
ESC 1:50

V33
ESC 1:50

V34
ESC 1:50

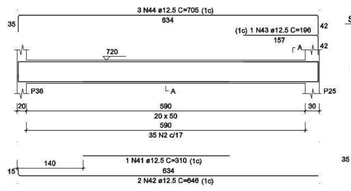
V35
ESC 1:50

V14
ESC 1:50

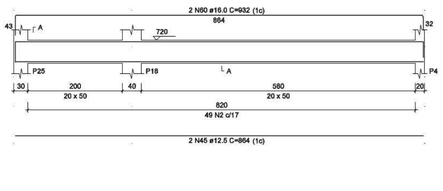
V15
ESC 1:50

V16
ESC 1:50

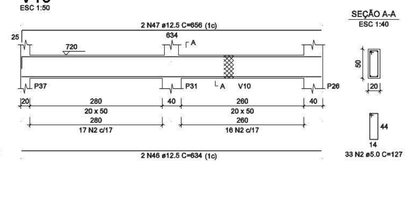
V17
ESC 1:50



V18
ESC 1:50



V19
ESC 1:50



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V30
ESC 1:50

V31
ESC 1:50

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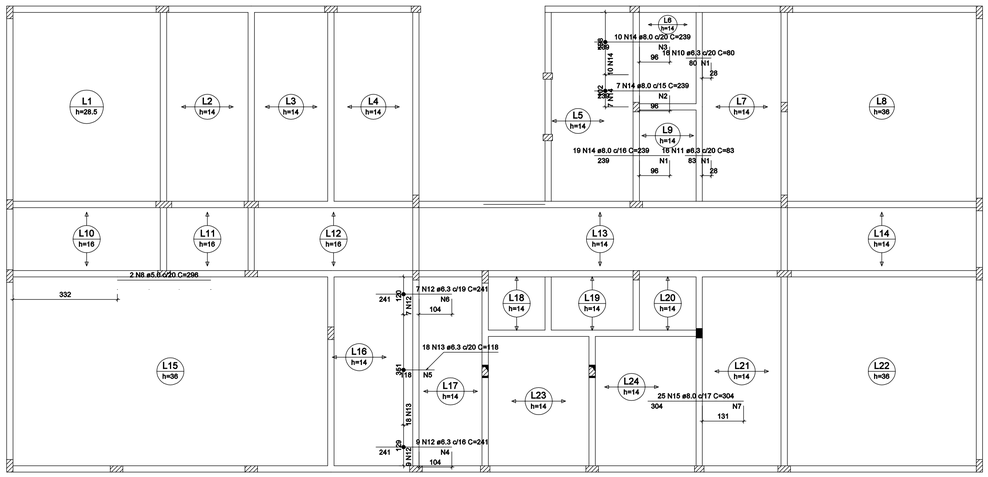
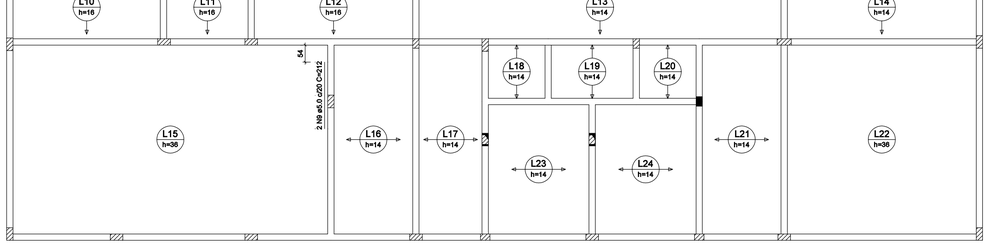


Armaduras de distribuição	
Armadura	Armadura de distribuição
N14	16 N1 ø4.2 c/15 C=310
N14	16 N2 ø4.2 c/15 C=102
N14	16 N3 ø4.2 c/15 C=209
N10	6 N1 ø4.2 c/15 C=310
N11	6 N1 ø4.2 c/15 C=310
N12	18 N4 ø4.2 c/15 C=139
N13	8 N5 ø4.2 c/15 C=351
N12	16 N6 ø4.2 c/15 C=130
N15	21 N7 ø4.2 c/15 C=431

Armação negativa das lajes do pavimento TERCEIRO PAVIMENTO (Eixo X)

escala 1:75



Armação negativa das lajes do pavimento TERCEIRO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Negativos X Negativos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	28	310	8680
	2	4.2	16	102	1632
	3	4.2	16	209	3344
	4	4.2	16	139	2224
	5	4.2	8	351	2808
	6	4.2	16	130	2080
	7	4.2	21	431	9051
	8	5.0	2	296	592
	9	5.0	2	212	424
CA50	10	6.3	16	80	1280
	11	6.3	16	83	1328
	12	6.3	16	241	3856
	13	6.3	18	118	2124
	14	8.0	36	239	8604
	15	8.0	25	304	7600

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	85.9	23.1
	8.0	162	70.3
CA60	4.2	298.2	35.7
	5.0	10.2	1.7

PESO TOTAL (kg)	
CA50	93.4
CA60	37.4

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO TERCEIRO PAVIMENTO (NÍVEL 720)

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

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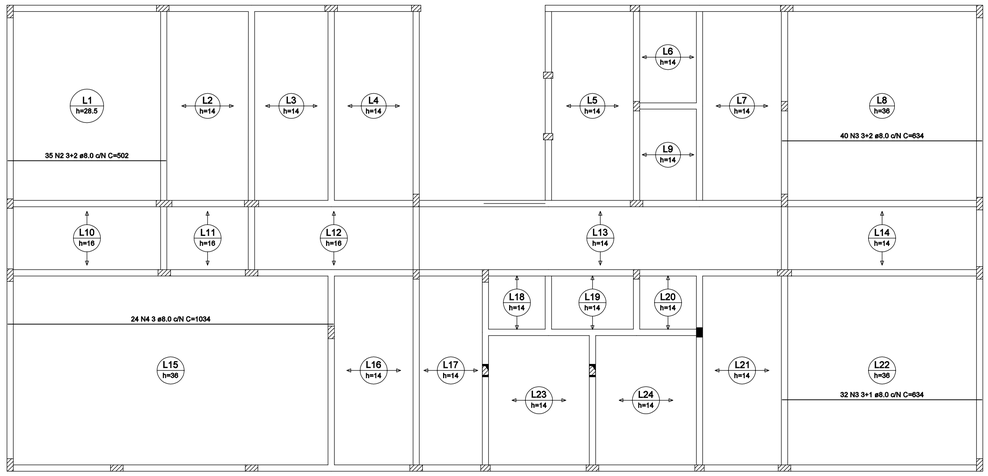
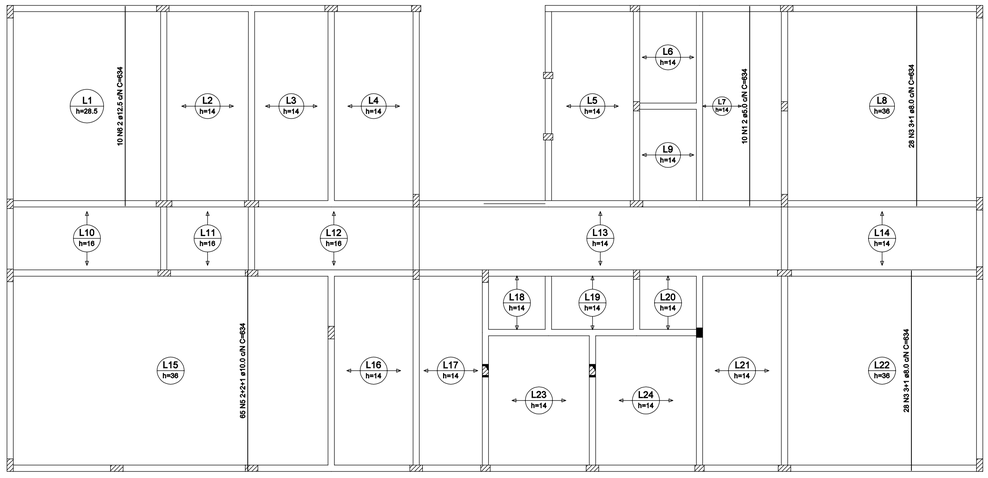


Armação positiva das lajes do pavimento TERCEIRO PAVIMENTO (Eixo X)

escala 1:75



Armação positiva das lajes do pavimento TERCEIRO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Positivos X Positivos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	10	634	6340
CA50	2	8.0	35	502	17570
	3	8.0	128	634	81152
	4	8.0	24	1034	24816
	5	10.0	65	634	41210
	6	12.5	10	634	6340

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	1235.4	536.2
	10.0	412.1	279.5
	12.5	63.4	67.2
CA60	5.0	63.4	10.7

PESO TOTAL (kg)	
CA50	882.9
CA60	10.7

Volume de concreto (C-30) = 42.66 m³
Área de forma = 0.00 m²

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PROJETO ESTRUTURAL

PAVIMENTO TERCEIRO PAVIMENTO (NÍVEL 720)

REVISÃO 01

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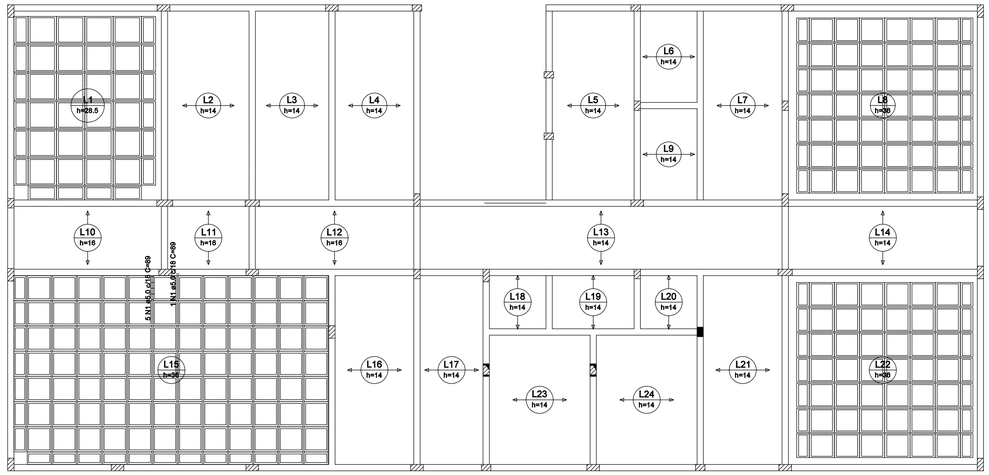
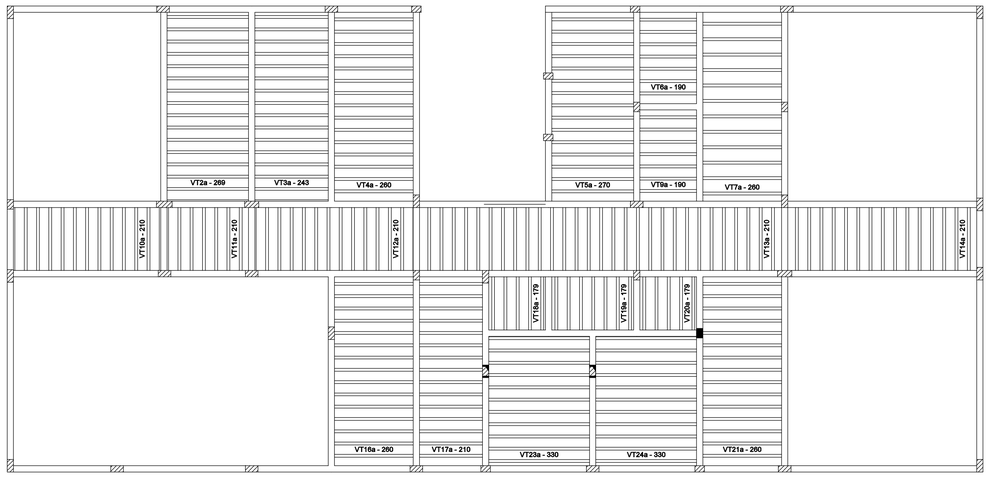


Detalhamento de punção e cisalhamento das lajes do pavimento TERCEIRO PAVIMENTO (Nível 720)

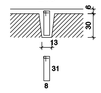
escala 1:75



Planta de vigotas pré-moldadas

escala 1:75

Detalhe dos estribos (esc.1:30)
L15



RELAÇÃO DO AÇO

Punção

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	6	89	534

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA60	5.0	5.3	0.9
PESO TOTAL (kg)			
CA60	0.9		

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

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PAVIMENTO TERCEIRO PAVIMENTO (NÍVEL 720)

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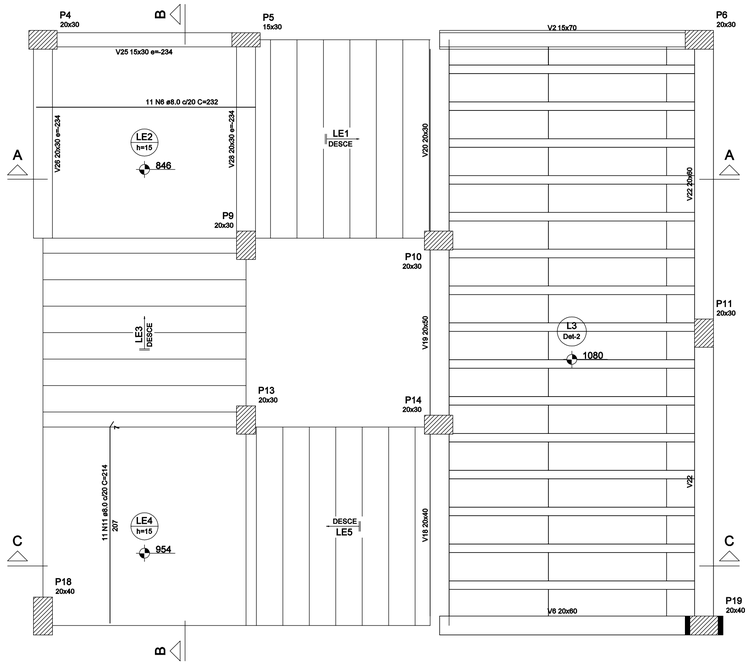
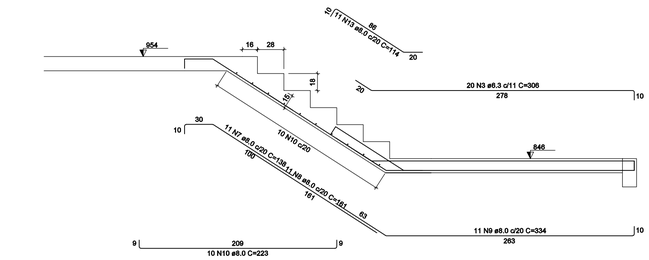


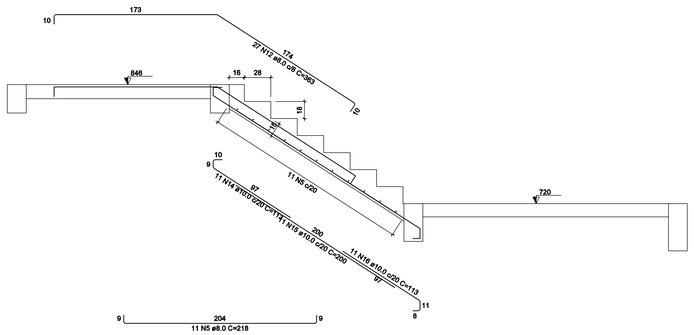
Armação positiva da escada E1

ESC 1:25



Corte B-B (LE3)

ESC 1:25



Corte A-A (LE1)

ESC 1:25

RELAÇÃO DO AÇO

LE1
LE4

LE2
LE5

LE3
Negativos

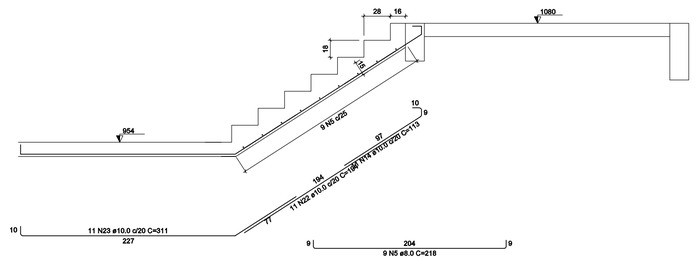
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	7	54	378
	2	4.2	7	53	371
CA50	3	6.3	20	306	6120
	4	6.3	4	93	372
	5	8.0	20	218	4360
	6	8.0	11	232	2552
	7	8.0	11	138	1518
	8	8.0	11	161	1771
	9	8.0	11	334	3674
	10	8.0	10	223	2230
	11	8.0	11	214	2354
	12	8.0	27	363	9801
	13	8.0	11	114	1254
	14	10.0	22	113	2486
	15	10.0	11	200	2200
	16	10.0	11	113	1243
	17	10.0	2	VAR	VAR
	18	10.0	3	95	285
	19	10.0	2	VAR	VAR
	20	10.0	1	109	109
	21	10.0	2	89	178
	22	10.0	11	194	2134
	23	10.0	11	311	3421

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	64.9	17.5
	8.0	295.1	126.1
	10.0	123.8	84
CA60	4.2	7.5	0.9
PESO TOTAL (kg)			
CA50	229.6		
CA60	0.9		

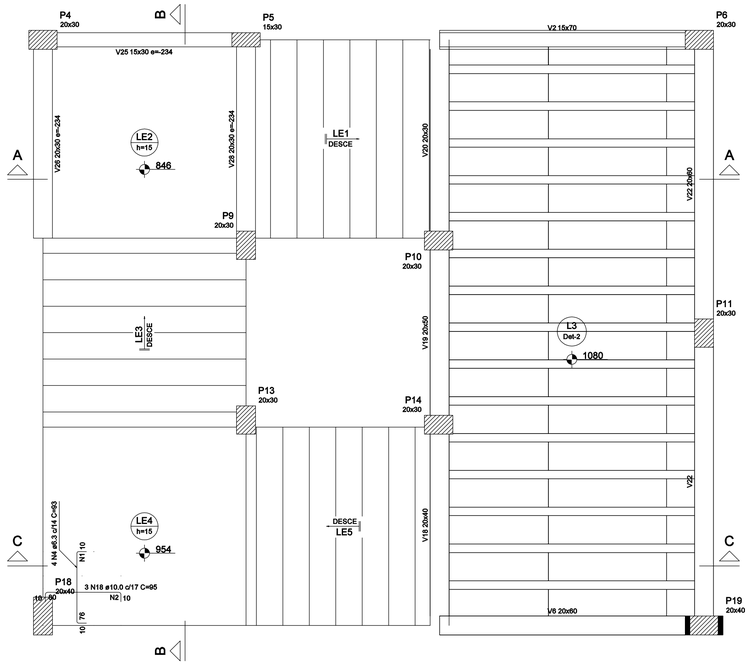
Volume de concreto (C-30) = 4.56 m³
Área de forma = 37.72 m²

Armaduras de distribuição	
Armadura	Armadura de distribuição
N4	7 N1 ø4.2 c/12 C=54
N18	7 N2 ø4.2 c/12 C=53



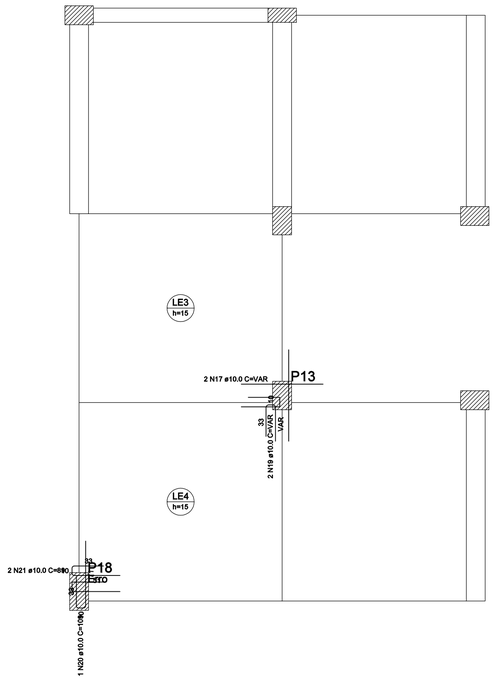
Corte C-C (LE5)

ESC 1:25



Armação negativa da escada E1

ESC 1:25



Detalhamento de punção e cisalhamento das lajes do pavimento QUARTO PAVIMENTO (Nível 954)

escala 1:25

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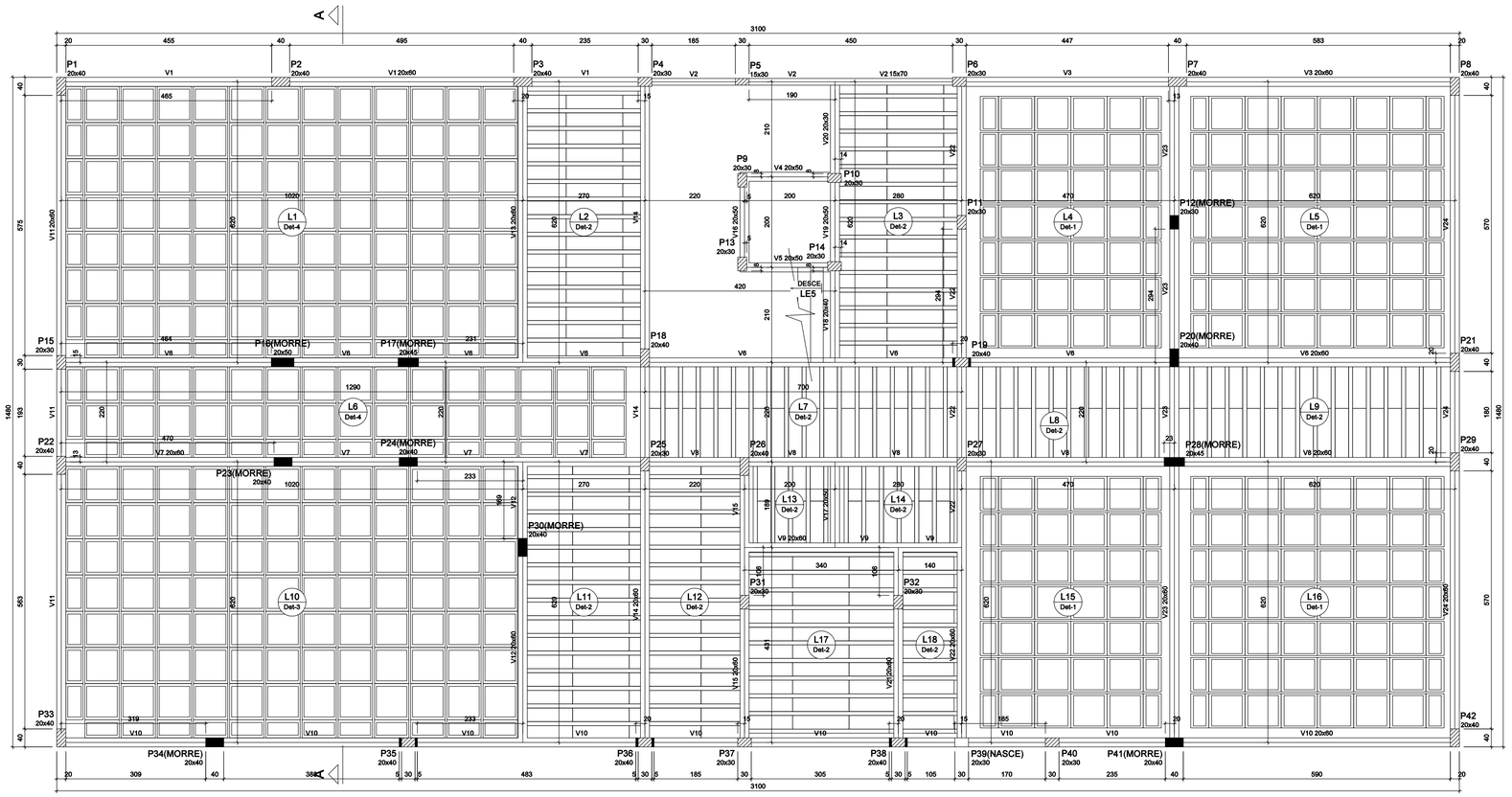


Forma do pavimento QUARTO PAVIMENTO (Nível 1080)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x60	0	1080
V2	15x70	0	1080
V3	20x60	0	1080
V4	20x50	0	1080
V5	20x50	0	1080
V6	20x60	0	1080
V7	20x60	0	1080
V8	20x60	0	1080
V9	20x60	0	1080
V10	20x60	0	1080
V11	20x60	0	1080
V12	20x60	0	1080
V13	20x60	0	1080
V14	20x60	0	1080
V15	20x60	0	1080
V16	20x50	0	1080
V17	20x50	0	1080
V18	20x40	0	1080
V19	20x50	0	1080
V20	20x30	0	1080
V21	20x60	0	1080
V22	20x60	0	1080
V23	20x60	0	1080
V24	20x60	0	1080

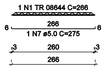
Blocos de enchimento						
Detalhe	Tipo	Nome	Dimensões(cm)			Quantidade
			hb	bx	by	
1	Cubetas	B25/80/80	25	80	80	140
		B25/40/80	25	40	80	56
2	EPS Unidirecional	B8/30/125	8	30	125	325
3	Cubetas	B30/80/80	30	80	80	84
		B30/40/80	30	40	80	12
		B30/80/40	30	80	40	7
4	Cubetas	B35/80/80	35	80	80	114
		B35/40/80	35	40	80	27
		B35/80/40	35	80	40	9

Lajes								
Nome	Tipo	Dados				Sobrecarga (kgf/m²)		
		Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
L1	Nervurada	41	0	1080	490	182	150	-
L2	Treliçada 1D	14	0	1080	197	182	150	-
L3	Treliçada 1D	14	0	1080	197	182	150	-
L4	Nervurada	31	0	1080	366	182	150	-
L5	Nervurada	31	0	1080	366	182	150	-
L6	Nervurada	41	0	1080	490	182	150	-
L7	Treliçada 1D	14	0	1080	197	155	300	-
L8	Treliçada 1D	14	0	1080	197	182	150	-
L9	Treliçada 1D	14	0	1080	197	182	150	-
L10	Nervurada	36	0	1080	423	182	150	-
L11	Treliçada 1D	14	0	1080	197	182	150	-
L12	Treliçada 1D	14	0	1080	197	182	150	-
L13	Treliçada 1D	14	0	1080	197	182	150	-
L14	Treliçada 1D	14	0	1080	197	182	150	-
L15	Nervurada	31	0	1080	366	182	150	-
L16	Nervurada	31	0	1080	366	182	150	-
L17	Treliçada 1D	14	0	1080	197	182	150	-
L18	Treliçada 1D	14	0	1080	197	182	150	-
LE5	Maciça	15	0	1080	662	171	300	-

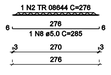
Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
300	2953864

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20x40	0	1080
P2	20x40	0	1080
P3	20x40	0	1080
P4	20x30	0	1080
P5	15x30	0	1080
P6	20x30	0	1080
P7	20x40	0	1080
P8	20x40	0	1080
P9	20x30	0	1080
P10	20x30	0	1080
P11	20x30	0	1080
P12	20x30	0	1080
P13	20x30	0	1080
P14	20x30	0	1080
P15	20x30	0	1080
P16	20x50	0	1080
P17	20x45	0	1080
P18	20x40	0	1080
P19	20x40	0	1080
P20	20x40	0	1080
P21	20x40	0	1080
P22	20x40	0	1080
P23	20x40	0	1080
P24	20x40	0	1080
P25	20x30	0	1080
P26	20x40	0	1080
P27	20x30	0	1080
P28	20x45	0	1080
P29	20x40	0	1080
P30	20x40	0	1080
P31	20x30	0	1080
P32	20x30	0	1080
P33	20x40	0	1080
P34	20x40	0	1080
P35	20x40	0	1080
P36	20x40	0	1080
P37	20x30	0	1080
P38	20x40	0	1080
P39	20x30	0	1080
P40	20x30	0	1080
P41	20x40	0	1080
P42	20x40	0	1080

VT2a (15 unidades) (L2) ESC 1:75



VT3a (15 unidades) (L3) ESC 1:75



VT7a (17 unidades) (L7) ESC 1:75



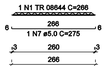
VT8a (11 unidades) (L8) ESC 1:75



VT9a (15 unidades) (L9) ESC 1:75



VT11a (15 unidades) (L11) ESC 1:75



VT12a (15 unidades) (L12) ESC 1:75



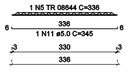
VT13a (5 unidades) (L13) ESC 1:75



VT14a (7 unidades) (L14) ESC 1:75



VT17a (11 unidades) (L17) ESC 1:75



VT18a (11 unidades) (L18) ESC 1:75



RELAÇÃO DO AÇO

15xVT2a
11xVT8a
15xVT12a
11xVT17a
15xVT3a
15xVT9a
5xVT13a
11xVT18a
17xVT7a
15xVT11a
7xVT14a

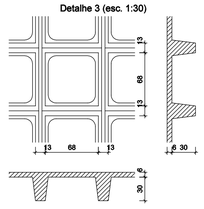
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	TR 08544	30	266	7980
	2	TR 08544	15	276	4140
	3	TR 08544	58	216	12528
	4	TR 08544	12	185	2220
	5	TR 08544	11	336	3696
	6	TR 08544	11	136	1496
	7	5.0	30	275	8250
	8	5.0	15	285	4275
	9	5.0	58	225	13050
	10	5.0	12	194	2328
	11	5.0	11	345	3795
	12	5.0	11	145	1595

RESUMO DO AÇO

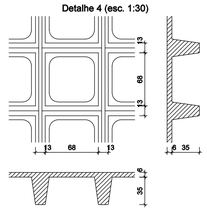
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA60	5.0	332.9	56.4
	TR 08544	320.6	259.2
PESO TOTAL (kg)			
CA60	315.7		

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

Detalhe 3 (esc. 1:30)



Detalhe 4 (esc. 1:30)



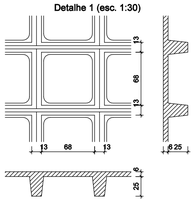
Legenda dos pilares

- Pilar que morre
- Pilar que passa
- Pilar que nasce
- Pilar com mudança de seção

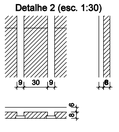
Legenda das vigas e paredes

- Viga

Detalhe 1 (esc. 1:30)



Detalhe 2 (esc. 1:30)



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PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO QUARTO PAVIMENTO (NÍVEL 1080)

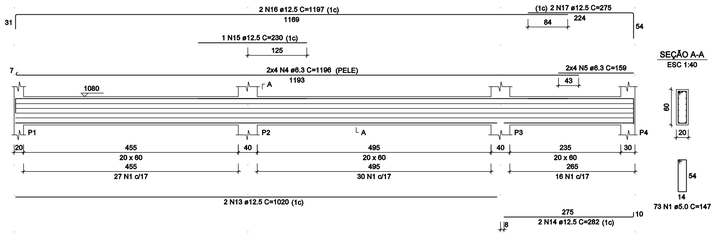
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

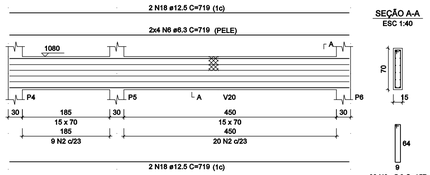
Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	21/39

V1
ESC 1:50



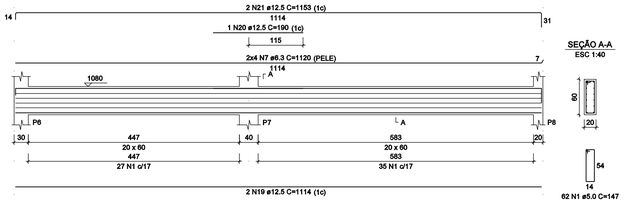
SEÇÃO A-A
ESC 1:40

V2
ESC 1:50



SEÇÃO A-A
ESC 1:40

V3
ESC 1:50



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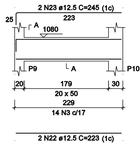
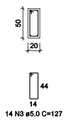
ESC 1:40

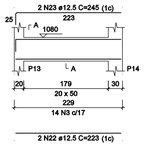
V4
ESC 1:50



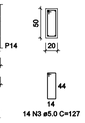
SEÇÃO A-A
ESC 1:40



V5
ESC 1:50



SEÇÃO A-A
ESC 1:40



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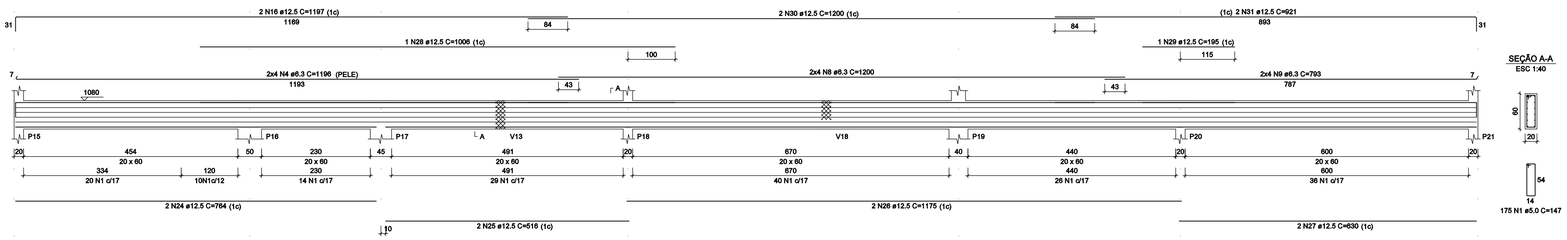
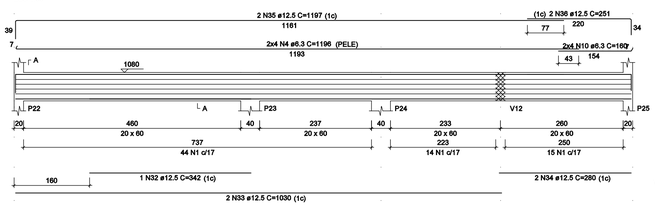
ESC 1:50



SEÇÃO A-A
ESC 1:40

V7
ESC 1:50



SEÇÃO A-A
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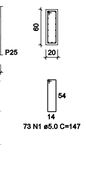
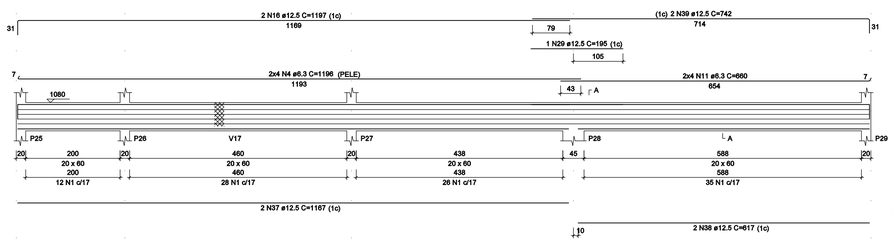
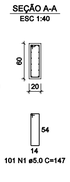


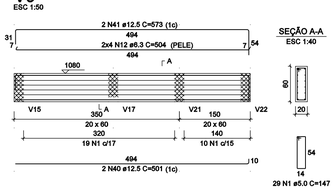
V8
ESC 1:50



SEÇÃO A-A
ESC 1:40



V9
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V1 V2 V3
V4 V5 V8
V7 V9

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	513	147	75411
	2	5.0	29	157	4553
	3	5.0	28	127	3556
CA50	4	6.3	32	1196	38272
	5	6.3	8	159	1272
	6	6.3	8	719	5752
	7	6.3	8	1120	8960
	8	6.3	8	1200	9600
	9	6.3	8	793	6344
	10	6.3	8	160	1280
	11	6.3	8	660	5280
	12	6.3	8	504	4032
	13	12.5	2	1020	2040
	14	12.5	2	282	564
	15	12.5	1	230	230
	16	12.5	6	1197	7182
	17	12.5	2	275	550
	18	12.5	4	719	2876
	19	12.5	2	1114	2228
	20	12.5	1	190	190
	21	12.5	2	1153	2306
	22	12.5	4	223	892
	23	12.5	4	245	980
	24	12.5	2	764	1528
	25	12.5	2	516	1032
	26	12.5	2	1175	2350
	27	12.5	2	630	1260
	28	12.5	1	1006	1006
	29	12.5	2	195	390
	30	12.5	2	1200	2400
	31	12.5	2	921	1842
	32	12.5	1	342	342
	33	12.5	2	1030	2060
	34	12.5	2	280	560
	35	12.5	2	1197	2394
	36	12.5	2	251	502
	37	12.5	2	1167	2334
	38	12.5	2	617	1234
	39	12.5	2	742	1484
	40	12.5	2	501	1002
	41	12.5	2	573	1146

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	807.9	217.5
	12.5	449	475.8
CA60	5.0	835.2	141.6

PESO TOTAL (kg)	
CA50	693.3
CA60	141.6

Volume de concreto (C-30) = 11.18 m³
Área de forma = 93.35 m²

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MARIUS OLIVEIRA COSTA
Data: 04/11/2026 10:12:48-0300
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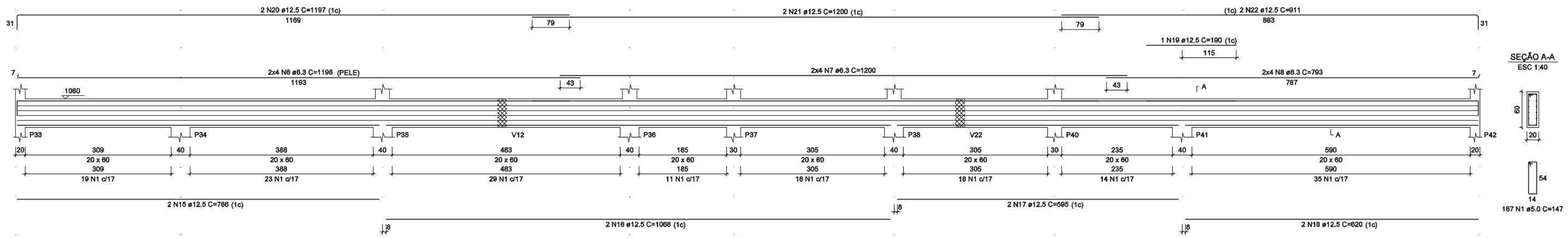
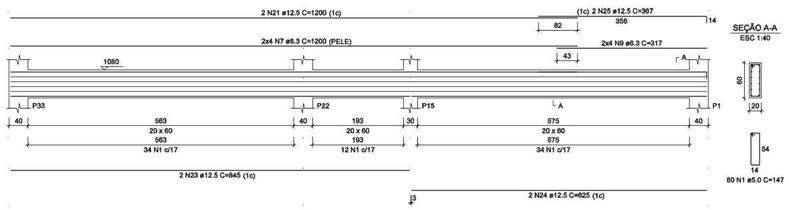
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	22/39

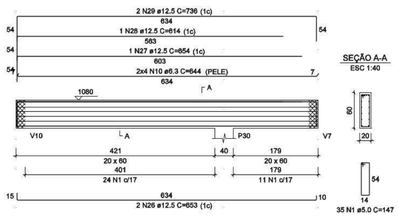
V10
ESC 1:50



V11
ESC 1:50



V12
ESC 1:50



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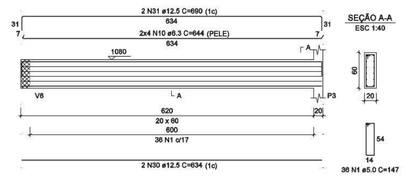
ESC 1:50



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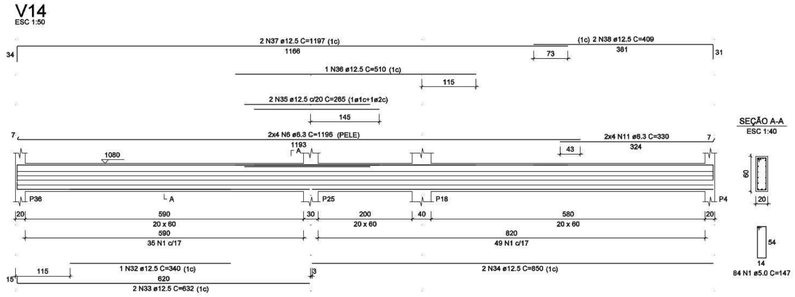
ESC 1:50



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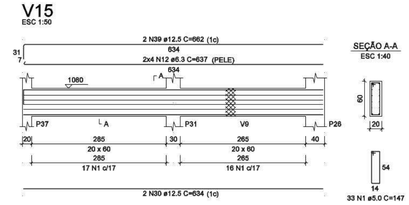
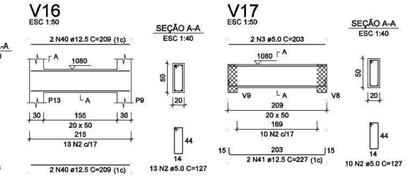
ESC 1:50

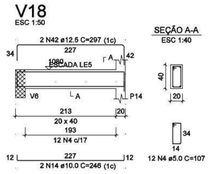


V16
ESC 1:50

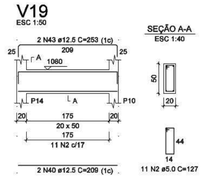


V17
ESC 1:50

V18
ESC 1:50



V19
ESC 1:50



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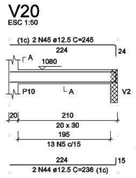
ESC 1:50



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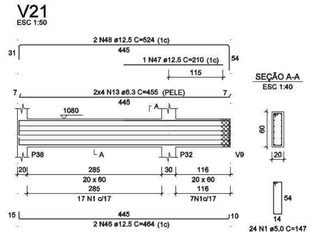
ESC 1:50



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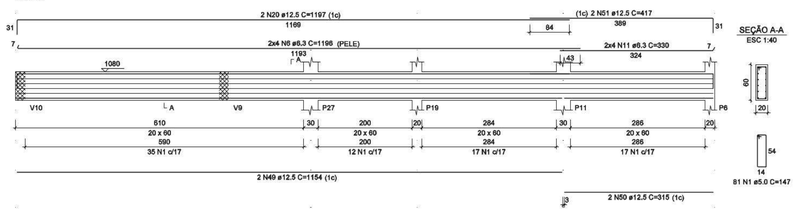
ESC 1:50



RELAÇÃO DO AÇO

V10 V11 V12
V13 V14 V15
V16 V17 V18
V19 V20 V21
V22

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	540	147	79380
	2	5.0	34	127	4318
	3	5.0	2	203	406
	4	5.0	12	107	1284
	5	5.0	13	87	1131
CA50	6	6.3	24	1196	28704
	7	6.3	16	1200	19200
	8	6.3	8	793	6344
	9	6.3	8	317	2536
	10	6.3	16	644	10304
	11	6.3	16	330	5280
	12	6.3	8	637	5096
	13	6.3	8	455	3640
	14	10.0	2	246	492
	15	12.5	2	766	1532
	16	12.5	2	1068	2136
	17	12.5	2	595	1190
	18	12.5	2	620	1240
	19	12.5	1	190	190
	20	12.5	4	1197	4788
	21	12.5	4	1200	4800
	22	12.5	2	911	1822
	23	12.5	2	845	1690
	24	12.5	2	625	1250
	25	12.5	2	367	734
	26	12.5	2	653	1306
	27	12.5	1	654	654
	28	12.5	1	614	614
	29	12.5	2	736	1472
	30	12.5	4	634	2536
	31	12.5	2	690	1380
	32	12.5	1	340	340
	33	12.5	2	632	1264
	34	12.5	2	850	1700
	35	12.5	1	265	530
	36	12.5	1	510	510
	37	12.5	2	1197	2394
	38	12.5	2	409	818
	39	12.5	2	662	1324
	40	12.5	6	209	1254
	41	12.5	2	227	454
	42	12.5	2	297	594
	43	12.5	2	253	506
	44	12.5	2	236	472
	45	12.5	2	245	490
	46	12.5	2	464	928
	47	12.5	1	210	210
	48	12.5	2	524	1048
	49	12.5	2	1154	2308
	50	12.5	2	315	630
	51	12.5	2	417	834

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	811	218.3
	10.0	4.9	3.3
	12.5	479.4	508
CA60	5.0	865.2	146.7

PESO TOTAL (kg)
CA50 729.7
CA60 146.7

Volume de concreto (C-30) = 11.68 m³
Área de forma = 103.65 m²

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Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	23/39

V23
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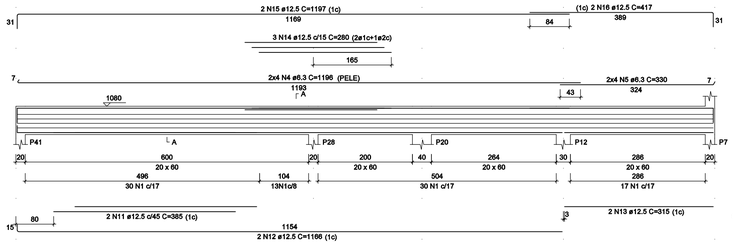
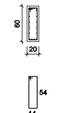
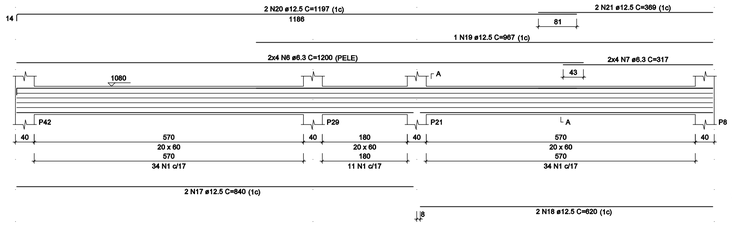


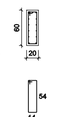
SEÇÃO A-A
ESC 1:40



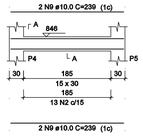
V24
ESC 1:50



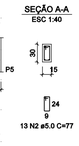
SEÇÃO A-A
ESC 1:40



V25
ESC 1:50



SEÇÃO A-A
ESC 1:40



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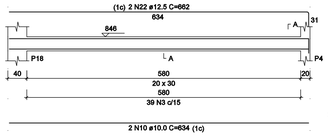
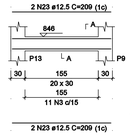
ESC 1:50



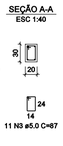
SEÇÃO A-A
ESC 1:40



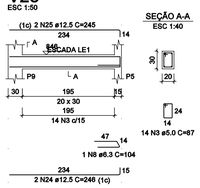
V27
ESC 1:50



SEÇÃO A-A
ESC 1:40



V28
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V23
V26

V24
V27

V25
V28

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	169	147	24843
	2	5.0	13	77	1001
	3	5.0	64	87	5568
CA50	4	6.3	8	1196	9568
	5	6.3	8	330	2640
	6	6.3	8	1200	9600
	7	6.3	8	317	2536
	8	6.3	1	104	104
	9	10.0	4	239	956
	10	10.0	2	634	1268
	11	12.5	2	385	770
	12	12.5	2	1166	2332
	13	12.5	2	315	630
	14	12.5	3	280	840
	15	12.5	2	1197	2394
	16	12.5	2	417	834
	17	12.5	2	840	1680
	18	12.5	2	620	1240
	19	12.5	1	967	967
	20	12.5	2	1197	2394
	21	12.5	2	369	738
	22	12.5	2	662	1324
	23	12.5	4	209	836
	24	12.5	2	246	492
	25	12.5	2	245	490

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	244.5	65.8
	10.0	22.2	15.1
	12.5	170.6	190.3
CA50	5.0	314.1	53.3

PESO TOTAL (kg)	
CA50	271.2
CA60	53.3

Volume de concreto (C-30) = 3.85 m³
Área de forma = 33.57 m²

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

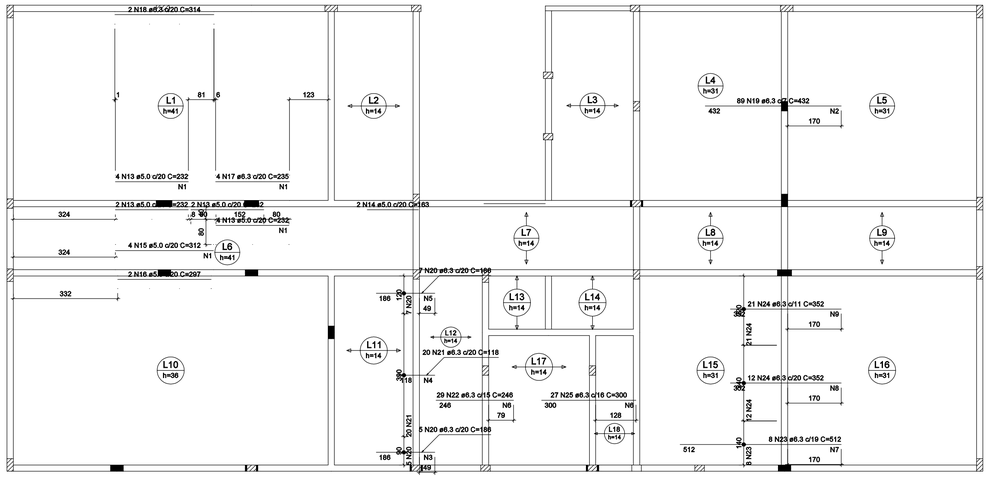
PAVIMENTO QUARTO PAVIMENTO (NÍVEL 1080)

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

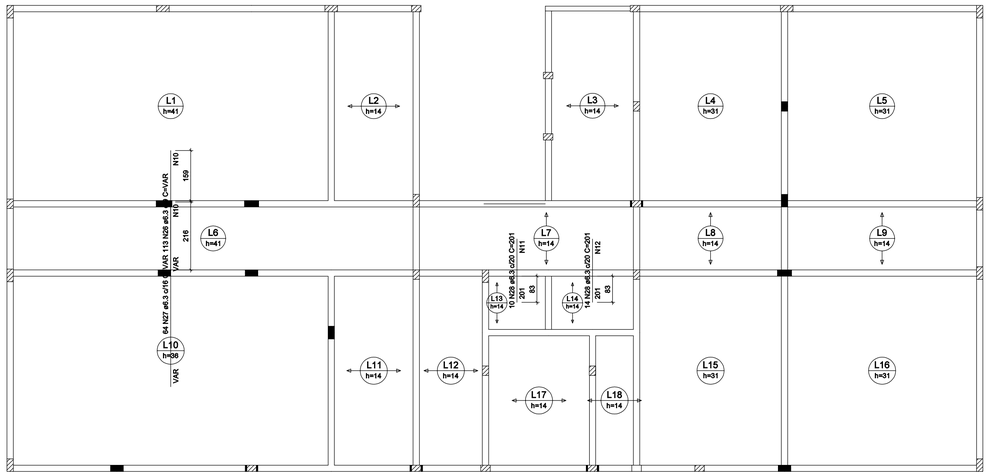
Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	24/39



Armaduras de distribuição	
Armadura	Armadura de distribuição
N17	16 N1 ø4.2 c/15 C=80
N13	16 N1 ø4.2 c/15 C=80
N13	16 N1 ø4.2 c/15 C=80
N15	21 N1 ø4.2 c/15 C=80
N19	29 N2 ø4.2 c/15 C=620
N20	13 N3 ø4.2 c/15 C=100
N21	8 N4 ø4.2 c/15 C=390
N20	13 N5 ø4.2 c/15 C=130
N22	17 N6 ø4.2 c/15 C=431
N23	35 N7 ø4.2 c/15 C=150
N24	24 N8 ø4.2 c/15 C=240
N24	24 N9 ø4.2 c/15 C=230
N25	20 N6 ø4.2 c/15 C=431

Armação negativa das lajes do pavimento QUARTO PAVIMENTO (Eixo X)

escala 1:75



Armaduras de distribuição	
Armadura	Armadura de distribuição
N26	27 N10 ø4.2 c/15 C=VAR
N27	40 N10 ø4.2 c/15 C=VAR
N28	14 N11 ø4.2 c/15 C=200
N28	14 N12 ø4.2 c/15 C=280

Armação negativa das lajes do pavimento QUARTO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Negativos X Negativos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	69	80	5520
	2	4.2	29	620	17980
	3	4.2	13	100	1300
	4	4.2	8	390	3120
	5	4.2	13	130	1690
	6	4.2	37	431	15947
	7	4.2	35	150	5250
	8	4.2	24	240	5760
	9	4.2	24	230	5520
	10	4.2	67	VAR	VAR
	11	4.2	14	200	2800
	12	4.2	14	280	3920
	13	5.0	12	232	2784
	14	5.0	2	163	326
	15	5.0	4	312	1248
	16	5.0	2	297	594
CA50	17	6.3	4	235	940
	18	6.3	2	314	628
	19	6.3	89	432	38448
	20	6.3	12	186	2232
	21	6.3	20	118	2360
	22	6.3	29	246	7134
	23	6.3	8	512	4096
	24	6.3	33	352	11616
	25	6.3	27	300	8100
	26	6.3	113	VAR	VAR
	27	6.3	64	VAR	VAR
	28	6.3	24	201	4824

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	1525.8	437.6
CA60	4.2	1371.5	164.1
	5.0	49.5	8.4
PESO TOTAL (kg)			
CA50	437.6		
CA60	172.5		

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

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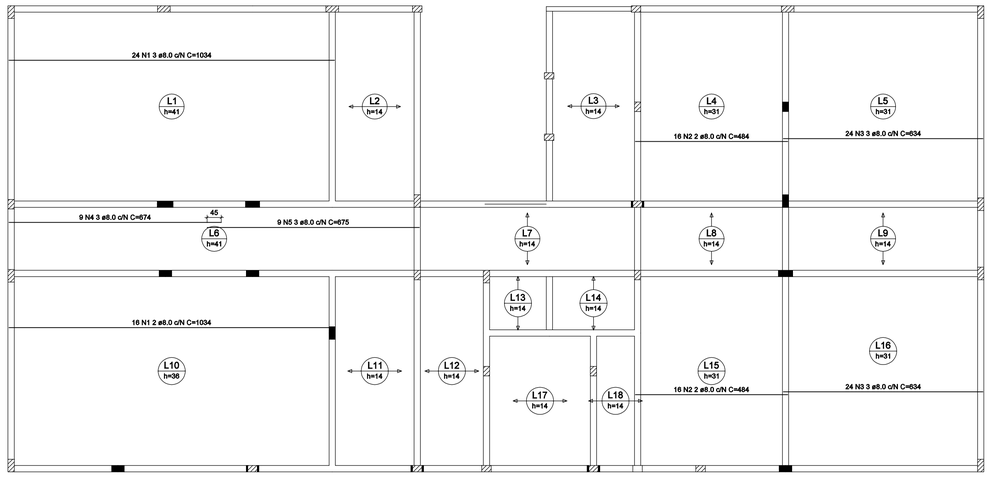
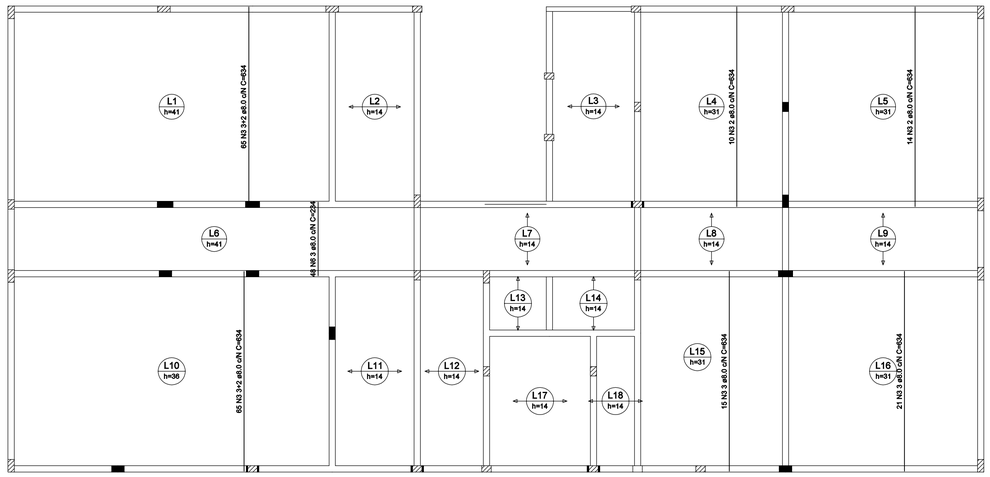


Armação positiva das lajes do pavimento QUARTO PAVIMENTO (Eixo X)

escala 1:75



Armação positiva das lajes do pavimento QUARTO PAVIMENTO (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Positivos X Positivos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	8.0	40	1034	41360
	2	8.0	32	484	15488
	3	8.0	238	634	150892
	4	8.0	9	674	6066
	5	8.0	9	675	6075
	6	8.0	48	234	11232

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	2311.1	1003.1
PESO TOTAL (kg)			
CA50	1003.1		

Volume de concreto (C-30) = 53.58 m³
Área de forma = 0.00 m²

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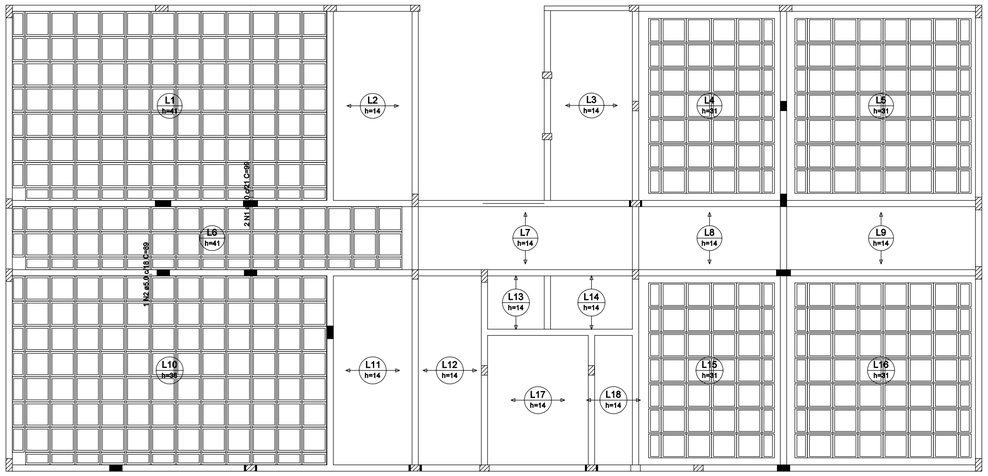


Detalhamento de punção e cisalhamento das lajes do pavimento QUARTO PAVIMENTO (Nível 1080)

escala 1:75

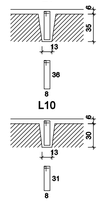


Planta de vigotas pré-moldadas

escala 1:75

Detalhe dos estribos (esc.1:30)

L1



L10

RELAÇÃO DO AÇO

Punção

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	2	99	198
	2	5.0	1	89	89

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA60	5.0	2.9	0.5

PESO TOTAL (kg)
CA60 0.5

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

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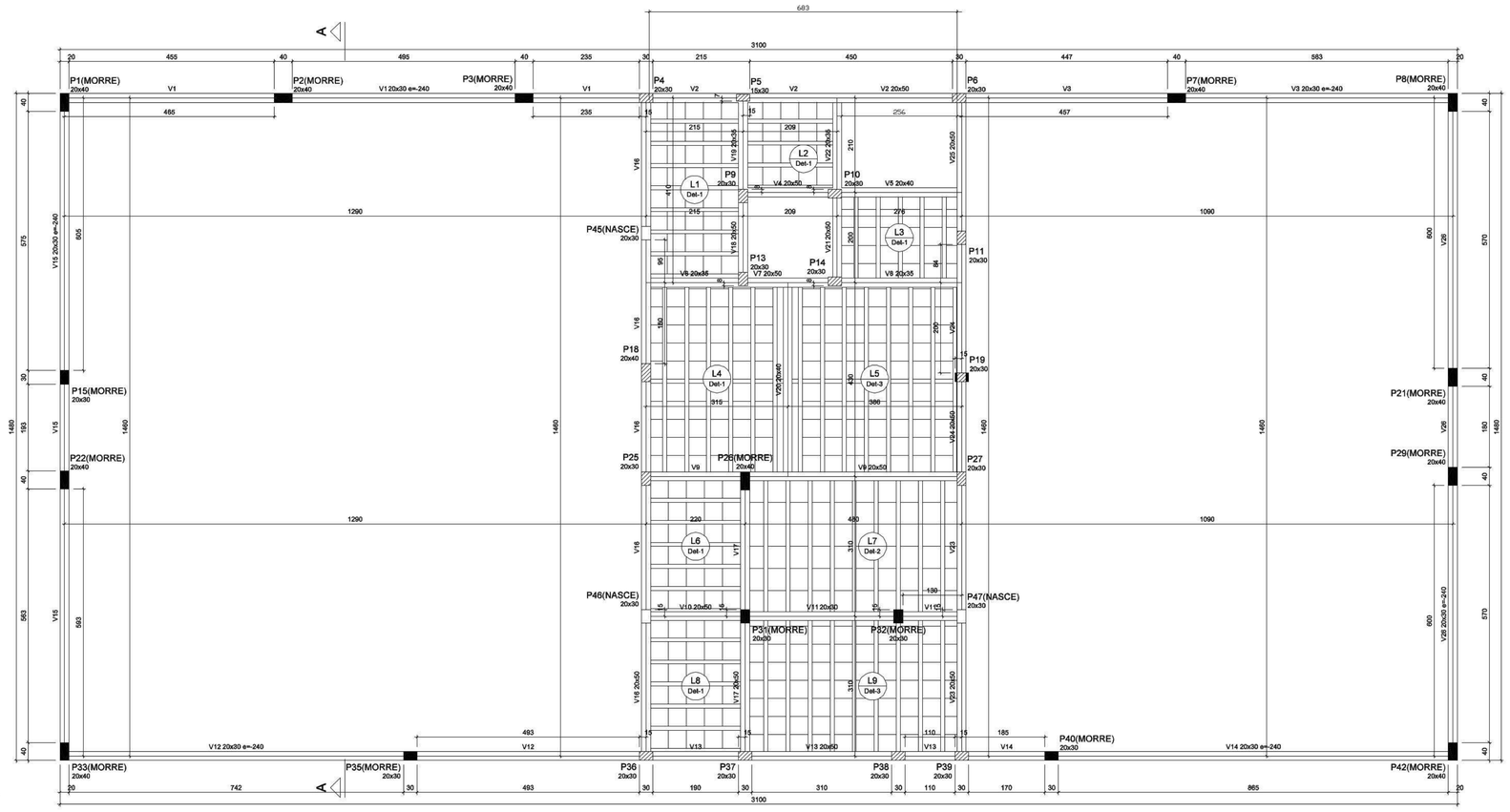


Forma do pavimento COBERTURA (Nível 1440)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x30	-240	1200
V2	20x50	0	1440
V3	20x30	-240	1200
V4	20x50	0	1440
V5	20x40	0	1440
V6	20x35	0	1440
V7	20x50	0	1440
V8	20x35	0	1440
V9	20x50	0	1440
V10	20x50	0	1440
V11	20x30	0	1440
V12	20x30	-240	1200
V13	20x50	0	1440
V14	20x30	-240	1200
V15	20x30	-240	1200
V16	20x50	0	1440
V17	20x50	0	1440
V18	20x50	0	1440
V19	20x35	0	1440
V20	20x40	0	1440
V21	20x50	0	1440
V22	20x35	0	1440
V23	20x50	0	1440
V24	20x50	0	1440
V25	20x50	0	1440
V26	20x30	-240	1200

Blocos de enchimento						
Detalhe	Tipo	Nome	Dimensões(cm)			Quantidade
			hb	bx	by	
1	EPS Unidirecional	B12/40/40	12	40	40	210
2	EPS Unidirecional	B16/40/49	16	40	49	60
3	EPS Unidirecional	B16/40/40	16	40	40	140

Lajes								
Nome	Tipo	Dados				Sobrecarga (kgf/m²)		
		Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada	Água
L1	Treliçada 1D	20	0	1440	257	182	150	-	0
L2	Treliçada 1D	20	0	1440	257	182	150	-	0
L3	Treliçada 1D	20	0	1440	257	155	300	-	0
L4	Treliçada 1D	20	0	1440	262	182	150	-	0
L5	Treliçada 1D	24	0	1440	283	182	150	-	0
L6	Treliçada 1D	20	0	1440	257	182	150	-	0
L7	Treliçada 1D	24	0	1440	276	182	150	-	2500
L8	Treliçada 1D	20	0	1440	257	182	150	-	0
L9	Treliçada 1D	24	0	1440	276	182	150	-	0

Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
300	266364

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	20x40	-240	1200
P2	20x40	-240	1200
P3	20x40	-240	1200
P4	20x30	0	1440
P5	15x30	0	1440
P6	20x30	0	1440
P7	20x40	-240	1200
P8	20x40	-240	1200
P9	20x30	0	1440
P10	20x30	0	1440
P11	20x30	0	1440
P13	20x30	0	1440
P14	20x30	0	1440
P15	20x30	-240	1200
P18	20x40	0	1440
P19	20x30	0	1440
P21	20x40	-240	1200
P22	20x40	-240	1200
P25	20x30	0	1440
P26	20x40	0	1440
P27	20x30	0	1440
P29	20x40	-240	1200
P31	20x30	0	1440
P32	20x30	0	1440
P33	20x40	-240	1200
P35	20x30	-240	1200
P36	20x30	0	1440
P37	20x30	0	1440
P38	20x30	0	1440
P39	20x30	0	1440
P40	20x30	-240	1200
P42	20x40	-240	1200
P45	20x30	0	1440
P46	20x30	0	1440
P47	20x30	0	1440

Legenda dos pilares

- Pilar que morre
- Pilar que passa
- Pilar que nasce
- Pilar com mudança de seção

Legenda das vigas e paredes

- Viga

VT1a (8 unidades) (L1) ESC 1:75



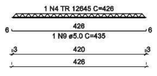
VT2a (3 unidades) (L2) ESC 1:75



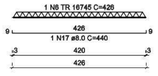
VT3a (5 unidades) (L3) ESC 1:75



VT4a (6 unidades) (L4) ESC 1:75



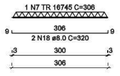
VT5a (8 unidades) (L5) ESC 1:75



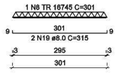
VT6a (5 unidades) (L6) ESC 1:75



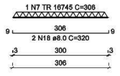
VT7a (2 unidades) (L7) ESC 1:75



VT7b (1 unidades) (L7) ESC 1:75



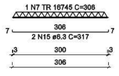
VT7c (6 unidades) (L7) ESC 1:75



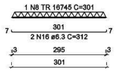
VT8a (5 unidades) (L8) ESC 1:75



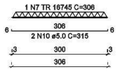
VT9a (2 unidades) (L9) ESC 1:75



VT9b (1 unidades) (L9) ESC 1:75



VT9c (6 unidades) (L9) ESC 1:75



RELAÇÃO DO AÇO

8xVT1a
6xVT4a
2xVT7a
5xVT8a
6xVT9c

3xVT2a
8xVT5a
VT7b
2xVT9a

5xVT3a
5xVT6a
6xVT7c
VT9b

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	TR 12645	8	211	1688
	2	TR 12645	3	205	615
	3	TR 12645	5	196	980
	4	TR 12645	6	426	2556
	5	TR 12645	10	216	2160
	6	TR 16745	8	426	3408
	7	TR 16745	16	306	4896
	8	TR 16745	2	301	602
	9	5.0	6	435	2610
	10	5.0	12	315	3780
CA50	11	6.3	16	222	3552
	12	6.3	6	216	1296
	13	6.3	10	207	2070
	14	6.3	20	227	4540
	15	6.3	4	317	1268
	16	6.3	2	312	624
	17	8.0	8	440	3520
	18	8.0	16	320	5120
	19	8.0	2	315	630

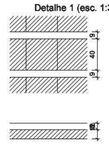
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	133.5	35.9
	8.0	92.7	40.2
CA60	5.0	63.9	10.8
	TR 12645	80	78.3
	TR 16745	89.1	101.1

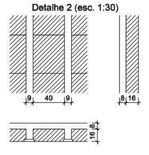
PESO TOTAL (kg)	
CA50	76.2
CA60	190.2

Volume de concreto (C-30) = 0.00 m³
Área de forma = 0.00 m²

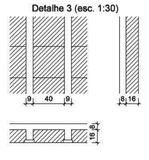
Detalhe 1 (esc. 1:30)



Detalhe 2 (esc. 1:30)



Detalhe 3 (esc. 1:30)



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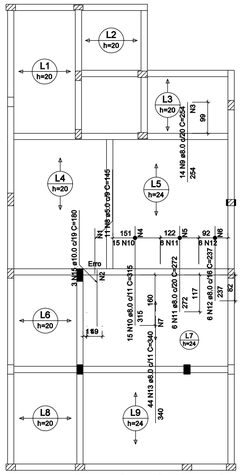
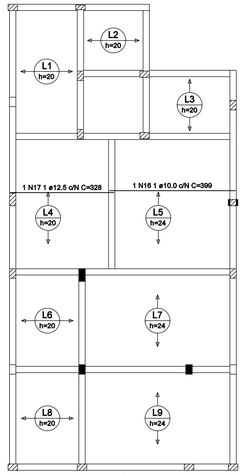


Armaduras de distribuição	
Armadura	Armadura de distribuição
N8	10 N1 ø4.2 c/15 C=62
N15	12 N2 ø4.2 c/15 C=49
N9	17 N3 ø4.2 c/15 C=276
N10	21 N4 ø4.2 c/15 C=161
N11	19 N5 ø4.2 c/15 C=123
N12	18 N6 ø4.2 c/15 C=102
N13	23 N7 ø4.2 c/15 C=480

Armação negativa das lajes do pavimento COBERTURA (Eixo Y)

escala 1:75



Armação positiva das lajes do pavimento COBERTURA (Eixo X)

escala 1:75

RELAÇÃO DO AÇO

Negativos Y Positivos X Positivos Y

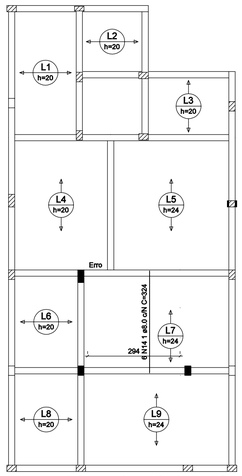
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	4.2	10	92	920
	2	4.2	12	49	588
	3	4.2	17	276	4692
	4	4.2	21	161	3381
	5	4.2	19	123	2337
	6	4.2	16	102	1632
	7	4.2	23	480	11040
	8	5.0	11	145	1595
CA50	9	8.0	14	254	3556
	10	8.0	15	315	4725
	11	8.0	6	272	1632
	12	8.0	6	237	1422
	13	8.0	44	340	14960
	14	8.0	6	324	1944
	15	10.0	3	180	540
	16	10.0	1	399	399
	17	12.5	1	328	328

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	282.4	122.6
	10.0	9.4	5.4
	12.5	3.3	3.5
CA60	4.2	245.9	29.4
	5.0	16	2.7

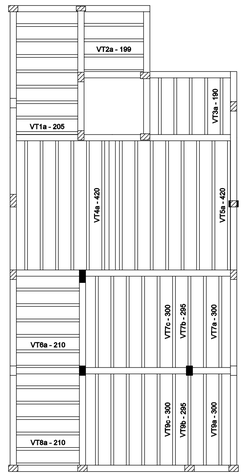
PESO TOTAL (kg)	
CA50	132.4
CA60	32.1

Volume de concreto (C-30) = 8.15 m³
Área de forma = 0.00 m²



Armação positiva das lajes do pavimento COBERTURA (Eixo Y)

escala 1:75



Planta de vigotas pré-moldadas

escala 1:75

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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO QUARTO PAVIMENTO (NÍVEL 1080)

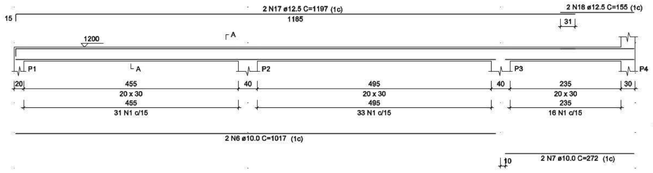
REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

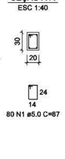
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	29/39

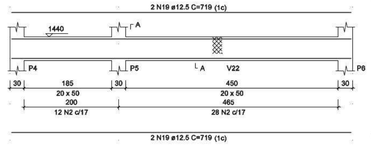
V1
ESC 1:50



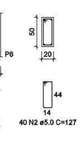
SEÇÃO A-A
ESC 1:40



V2
ESC 1:50



SEÇÃO A-A
ESC 1:40



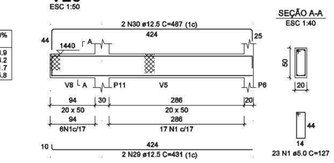
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	9.1	3.9
	10.0	122.7	83.2
	12.5	379.1	401.7
CA60	5.0	742	125.8

PESO TOTAL (kg)	
CA50	488.8
CA60	125.8

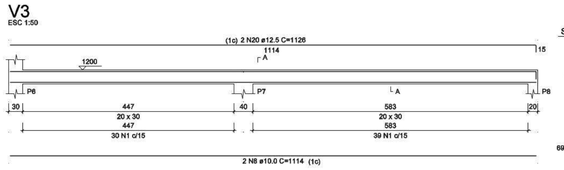
Volume de concreto (C-30) = 6.82 m³
Área de forma = 75.71 m²

V25
ESC 1:50

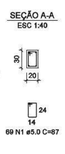


SEÇÃO A-A
ESC 1:40

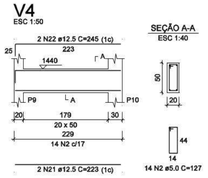
V3
ESC 1:50



SEÇÃO A-A
ESC 1:40

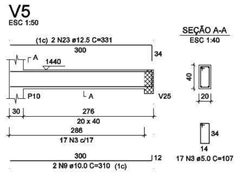


V4
ESC 1:50



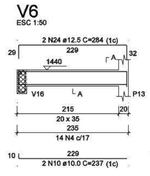
SEÇÃO A-A
ESC 1:40

V5
ESC 1:50

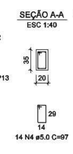


SEÇÃO A-A
ESC 1:40

V6
ESC 1:50



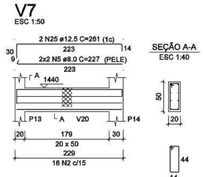
SEÇÃO A-A
ESC 1:40



SUSPENSÃO V16
ESC 1:40

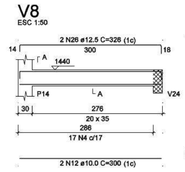


V7
ESC 1:50

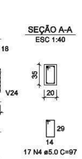


SEÇÃO A-A
ESC 1:40

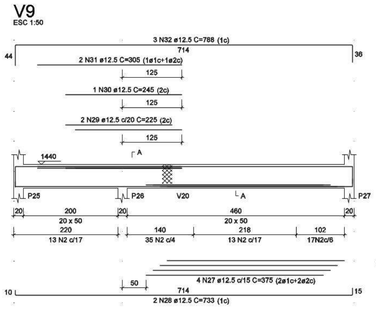
V8
ESC 1:50



SEÇÃO A-A
ESC 1:40



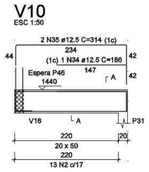
V9
ESC 1:50



SEÇÃO A-A
ESC 1:40



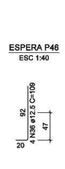
V10
ESC 1:50



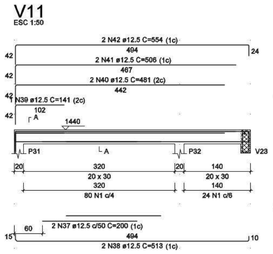
SEÇÃO A-A
ESC 1:40



ESPERA P46
ESC 1:40



V11
ESC 1:50



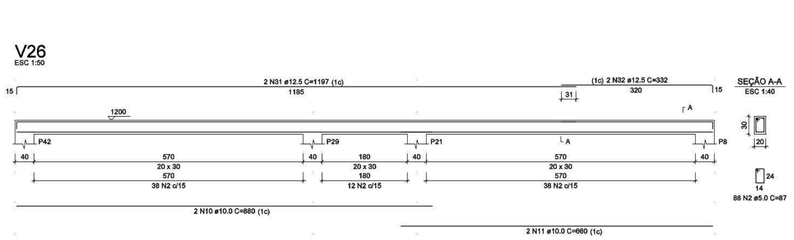
SEÇÃO A-A
ESC 1:40



SUSPENSÃO V23
ESC 1:40



V26
ESC 1:50



SEÇÃO A-A
ESC 1:40

RELAÇÃO DO AÇO

V16 V17 V18
V19 V20 V21
V22 V23 V24
V25 V26

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	228	127	28956
	2	5.0	92	87	8004
	3	5.0	4	29	116
	4	5.0	24	97	2328
	5	5.0	25	107	2675
CA50	6	8.0	4	638	2552
	7	8.0	4	244	976
	8	10.0	2	234	468
	9	10.0	2	237	474
	10	10.0	2	880	1760
	11	10.0	2	660	1320
	12	12.5	2	899	1798
	13	12.5	2	659	1318
	14	12.5	2	1197	2394
	15	12.5	2	380	760
	16	12.5	6	109	654
	17	12.5	4	634	2536
	18	12.5	2	678	1356
	19	12.5	4	209	836
	20	12.5	2	249	498
	21	12.5	2	456	912
	22	12.5	2	478	956
	23	12.5	2	221	442
	24	12.5	2	253	506
	25	12.5	2	264	528
	26	12.5	2	671	1342
	27	12.5	2	468	936
	28	12.5	2	536	1072
	29	12.5	2	431	862
	30	12.5	2	487	974
	31	12.5	2	1197	2394
	32	12.5	2	332	664

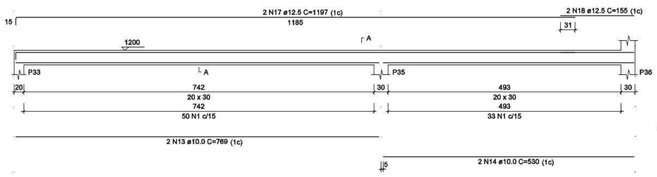
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	8.0	35.3	15.3
	10.0	40.2	27.3
	12.5	237.4	251.5
CA60	5.0	420.8	71.3

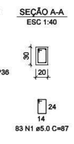
PESO TOTAL (kg)	
CA50	294.1
CA60	71.3

Volume de concreto (C-30) = 5.02 m³
Área de forma = 50.04 m²

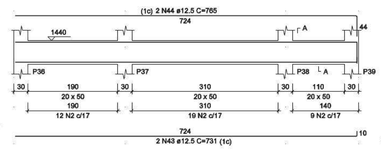
V12
ESC 1:50



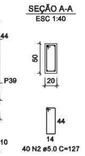
SEÇÃO A-A
ESC 1:40



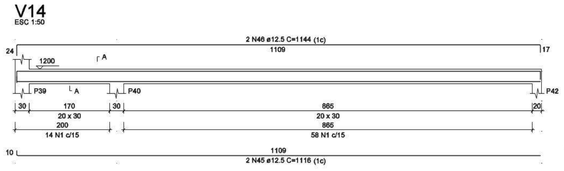
V13
ESC 1:50



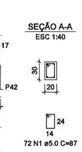
SEÇÃO A-A
ESC 1:40



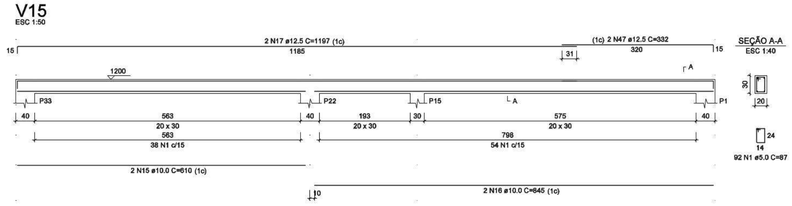
V14
ESC 1:50



SEÇÃO A-A
ESC 1:40

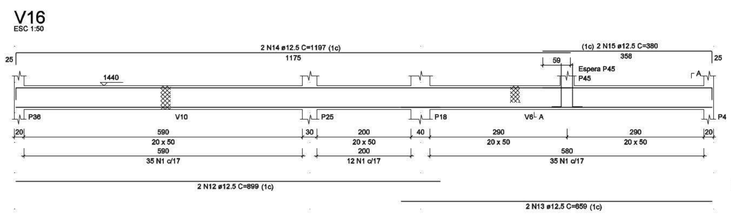


V15
ESC 1:50

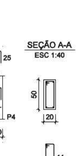


SEÇÃO A-A
ESC 1:40

V16
ESC 1:50



SEÇÃO A-A
ESC 1:40



ESPERA P45
ESC 1:40



V17
ESC 1:50

SEÇÃO A-A
ESC 1:40

V18
ESC 1:50

SEÇÃO A-A
ESC 1:40

V19
ESC 1:50

SEÇÃO A-A
ESC 1:40

V20
ESC 1:50

SEÇÃO A-A
ESC 1:40

V21
ESC 1:50

SEÇÃO A-A
ESC 1:40

V22
ESC 1:50

SEÇÃO A-A
ESC 1:40

V23
ESC 1:50

SEÇÃO A-A
ESC 1:40

V24
ESC 1:50

SEÇÃO A-A
ESC 1:40

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PROJETO ESTRUTURAL

PAVIMENTO QUARTO PAVIMENTO (NÍVEL 1080)

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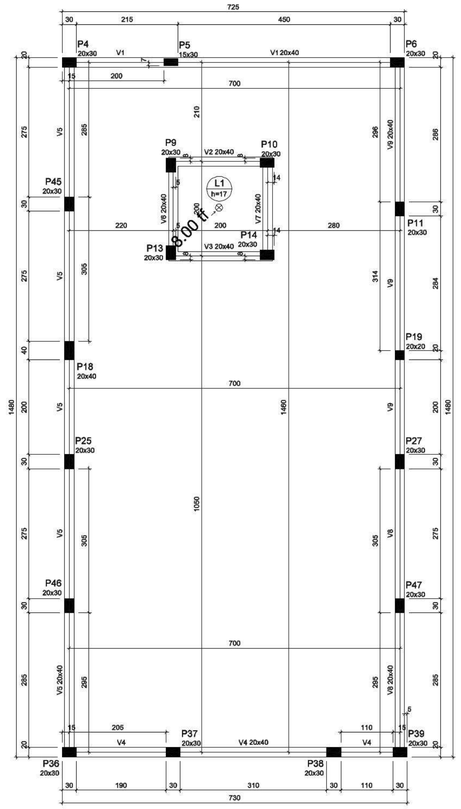
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	30/39



Forma do pavimento RESPALDO COBERTURA (Nível 1640)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
V1	20x40	0	1640
V2	20x40	0	1640
V3	20x40	0	1640
V4	20x40	0	1640
V5	20x40	0	1640
V6	20x40	0	1640
V7	20x40	0	1640
V8	20x40	0	1640
V9	20x40	0	1640

Lajes								
						Sobrecarga (kgf/m²)		
Dados								
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
L1	Maciça	17	0	1640	425	155	300	sim

Características dos materiais	
fck (kgf/cm²)	Ecs (kgf/cm²)
900	268384

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P4	20x30	0	1640
P5	15x30	0	1640
P6	20x30	0	1640
P9	20x30	0	1640
P10	20x30	0	1640
P11	20x30	0	1640
P13	20x30	0	1640
P14	20x30	0	1640
P18	20x40	0	1640
P19	20x20	0	1640
P25	20x30	0	1640
P27	20x30	0	1640
P36	20x30	0	1640
P37	20x30	0	1640
P38	20x30	0	1640
P39	20x30	0	1640
P45	20x30	0	1640
P46	20x30	0	1640
P47	20x30	0	1640

Legenda dos pilares	Legenda das vigas e paredes
Pilar que morre	Viga



Armação positiva das lajes do pavimento RESPALDO COBERTURA (Eixo X)

escala 1:75



Armação positiva das lajes do pavimento RESPALDO COBERTURA (Eixo Y)

escala 1:75

RELAÇÃO DO AÇO

Positivos X Positivos Y

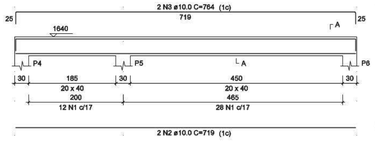
AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	10.0	28	214	5992

RESUMO DO AÇO

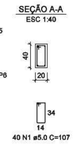
AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	59.9	40.6
PESO TOTAL (kg)			
CA50	40.6		

Volume de concreto (C-30) = 0.54 m³
Área de forma = 3.20 m²

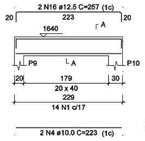
V1
ESC 1:50



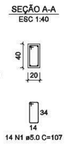
SEÇÃO A-A
ESC 1:40



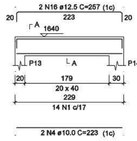
V2
ESC 1:50



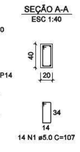
SEÇÃO A-A
ESC 1:40



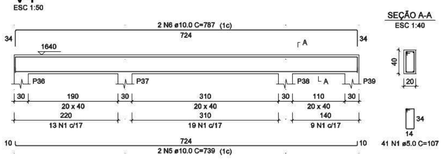
V3
ESC 1:50



SEÇÃO A-A
ESC 1:40

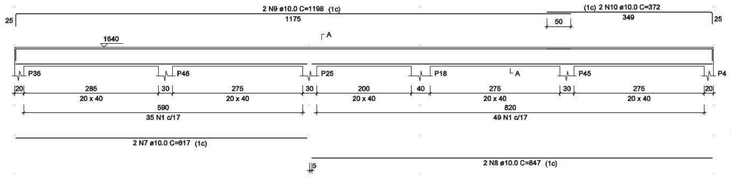


V4
ESC 1:50

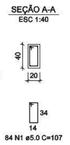


SEÇÃO A-A
ESC 1:40

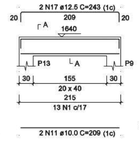
V5
ESC 1:50



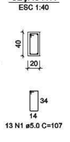
SEÇÃO A-A
ESC 1:40



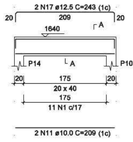
V6
ESC 1:50



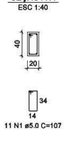
SEÇÃO A-A
ESC 1:40



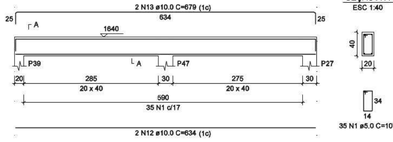
V7
ESC 1:50



SEÇÃO A-A
ESC 1:40

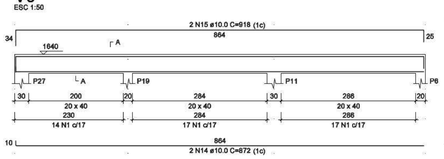


V8
ESC 1:50

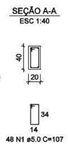


SEÇÃO A-A
ESC 1:40

V9
ESC 1:50



SEÇÃO A-A
ESC 1:40



RELAÇÃO DO AÇO

V1 V2 V3
V4 V5 V6
V7 V8 V9

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	300	107	32100
CA50	2	10.0	2	719	1438
	3	10.0	2	764	1528
	4	10.0	4	223	892
	5	10.0	2	739	1478
	6	10.0	2	787	1574
	7	10.0	2	617	1234
	8	10.0	2	847	1694
	9	10.0	2	1198	2396
	10	10.0	2	372	744
	11	10.0	4	209	836
	12	10.0	2	634	1268
	13	10.0	2	679	1358
	14	10.0	2	872	1744
	15	10.0	2	918	1836
	16	12.5	4	257	1028
	17	12.5	4	243	972

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	200.2	135.8
	12.5	20	21.2
CA60	5.0	321	54.4
PESO TOTAL (kg)			
CA50	157		
CA60	54.4		

Volume de concreto (C-30) = 3.68 m³
Área de forma = 44.86 m²

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MARIUS OLIVEIRA COSTA
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DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

PAVIMENTO QUARTO PAVIMENTO (NÍVEL 1080)

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

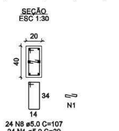
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	31/39

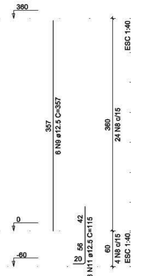
P44

SEGUNDO PAVIMENTO - L2

SEÇÃO ESC 1:30

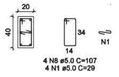


24 N8 ø5.0 C=107
24 N1 ø5.0 C=29



PRIMEIRO PAVIMENTO - L1

SEÇÃO ESC 1:30



4 N8 ø5.0 C=107
4 N1 ø5.0 C=29

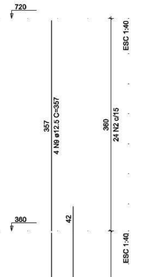
P43

TERCEIRO PAVIMENTO - L3

SEÇÃO ESC 1:30



24 N2 ø5.0 C=87



SEGUNDO PAVIMENTO - L2

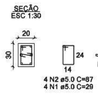
SEÇÃO ESC 1:30



24 N2 ø5.0 C=87
24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO ESC 1:30



4 N2 ø5.0 C=87
4 N1 ø5.0 C=29

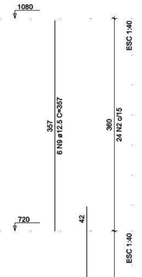
P12

QUARTO PAVIMENTO - L4

SEÇÃO ESC 1:30



24 N2 ø5.0 C=87
24 N1 ø5.0 C=29



TERCEIRO PAVIMENTO - L3

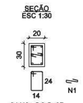
SEÇÃO ESC 1:30



24 N2 ø5.0 C=87
24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

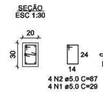
SEÇÃO ESC 1:30



24 N2 ø5.0 C=87
24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO ESC 1:30

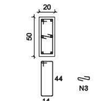


4 N2 ø5.0 C=87
4 N1 ø5.0 C=29

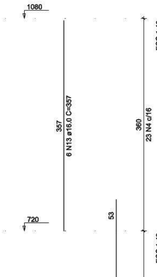
P16

QUARTO PAVIMENTO - L4

SEÇÃO ESC 1:30

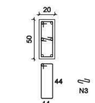


23 N4 ø5.0 C=127
23 N3 ø5.0 C=29

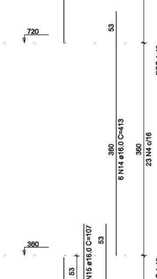


TERCEIRO PAVIMENTO - L3

SEÇÃO ESC 1:30

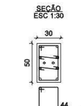


23 N4 ø5.0 C=127
23 N3 ø5.0 C=29

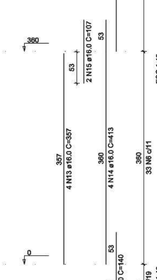


SEGUNDO PAVIMENTO - L2

SEÇÃO ESC 1:30

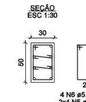


33 N6 ø5.0 C=147
2x33 N5 ø5.0 C=39

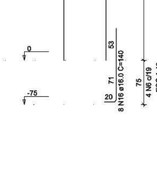


PRIMEIRO PAVIMENTO - L1

SEÇÃO ESC 1:30



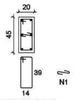
4 N6 ø5.0 C=147
2x4 N5 ø5.0 C=39



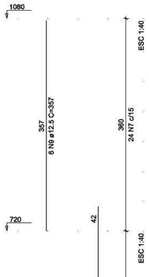
P17

QUARTO PAVIMENTO - L4

SEÇÃO ESC 1:30



24 N7 ø5.0 C=117
24 N1 ø5.0 C=29

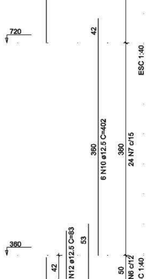


TERCEIRO PAVIMENTO - L3

SEÇÃO ESC 1:30

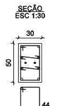


24 N7 ø5.0 C=117
24 N1 ø5.0 C=29

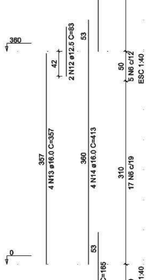


SEGUNDO PAVIMENTO - L2

SEÇÃO ESC 1:30

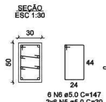


22 N6 ø5.0 C=147
2x17 N5 ø5.0 C=39
2x5 N5 ø5.0 C=39

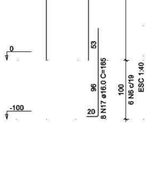


PRIMEIRO PAVIMENTO - L1

SEÇÃO ESC 1:30



6 N5 ø5.0 C=147
2x6 N5 ø5.0 C=39



RELAÇÃO DO AÇO

P12-L4	P12-L3	P12-L2
P12-L1	P16-L4	P16-L3
P16-L2	P16-L1	P17-L4
P17-L3	P17-L2	P17-L1
P43-L3	P43-L2	P43-L1
P44-L2	P44-L1	

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	180	29	5220
	2	5.0	128	87	11136
	3	5.0	46	29	1334
	4	5.0	46	127	5842
	5	5.0	130	39	5070
	6	5.0	65	147	9555
	7	5.0	48	117	5616
	8	5.0	28	107	2996
CA50	9	12.5	24	357	8568
	10	12.5	22	402	8844
	11	12.5	18	115	2070
	12	12.5	2	83	166
	13	16.0	14	357	4998
	14	16.0	14	413	5782
	15	16.0	2	107	214
	16	16.0	8	140	1120
	17	16.0	8	165	1320

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	199.5	208.2
	16.0	134.3	233.2
CA60	5.0	487.7	79.3

PESO TOTAL (kg)	
CA50	441.4
CA60	79.3

Volume de concreto (C-30) = 3.82 m³
Área de forma = 53.28 m²

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MARIUS OLIVEIRA COSTA
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PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA
DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

DETALHE DOS PILARES

REVISÃO 01

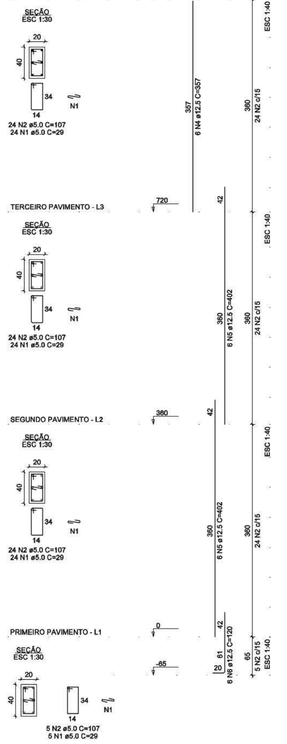
DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	32/39

P20

QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

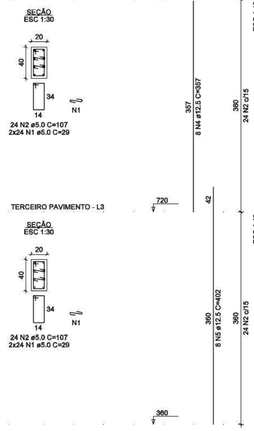
SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

5 N2 ø5.0 C=107
5 N1 ø5.0 C=29

P23

QUARTO PAVIMENTO - L4

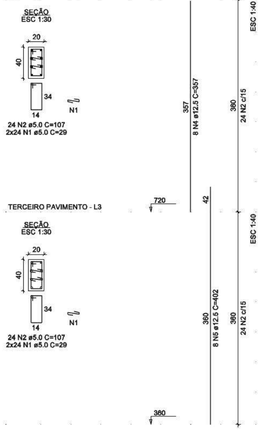


TERCEIRO PAVIMENTO - L3

24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

P24

QUARTO PAVIMENTO - L4

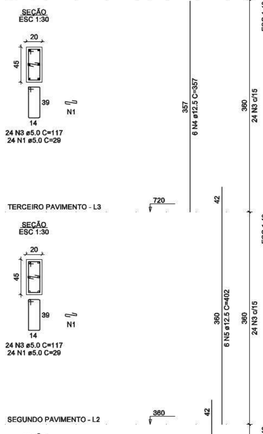


TERCEIRO PAVIMENTO - L3

24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

P28

QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

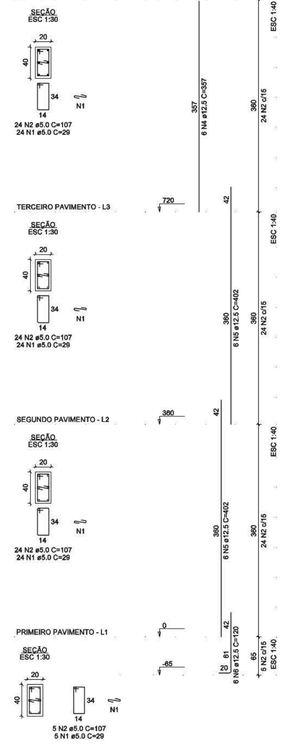
SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

5 N3 ø5.0 C=117
5 N1 ø5.0 C=29

P30

QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

5 N2 ø5.0 C=107
5 N1 ø5.0 C=29

RELAÇÃO DO AÇO

P20-L4	P20-L3	P20-L2
P20-L1	P23-L4	P23-L3
P24-L4	P24-L3	P28-L4
P28-L3	P28-L2	P28-L1
P30-L4	P30-L3	P30-L2
P30-L1		

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	423	29	12267
	2	5.0	250	107	26750
	3	5.0	77	117	9009
CA50	4	12.5	34	357	12138
	5	12.5	52	402	20904
	6	12.5	18	120	2160

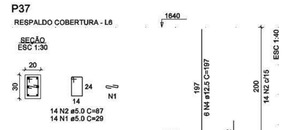
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	352	373
CA60	5.0	480.3	81.4
PESO TOTAL (kg)			
CA50	373		
CA60	81.4		

Volume de concreto (C-30) = 3.85 m³
Área de forma = 57.24 m²

P37

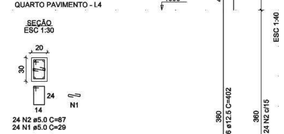
RESPALDO COBERTURA - L6



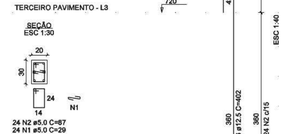
COBERTURA - L5



QUARTO PAVIMENTO - L4



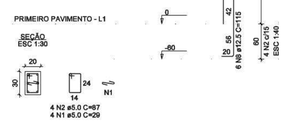
TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2



PRIMEIRO PAVIMENTO - L1



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REVISÃO 01

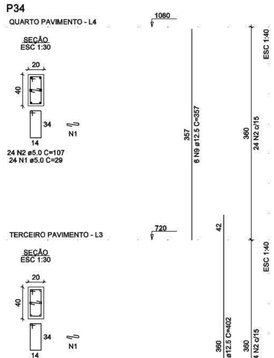
DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

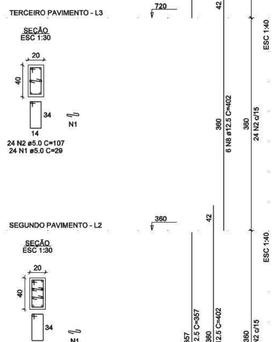
Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	33/39

P34

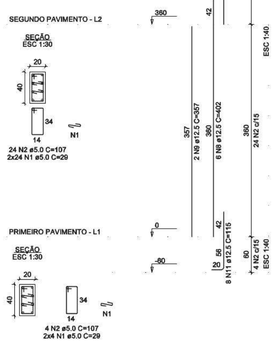
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3



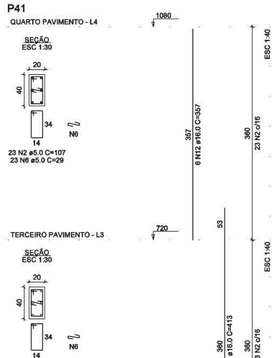
SEGUNDO PAVIMENTO - L2



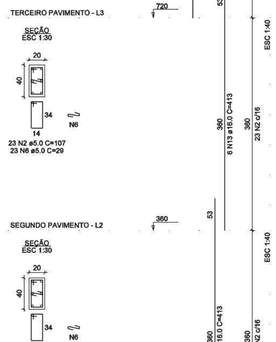
PRIMEIRO PAVIMENTO - L1

P41

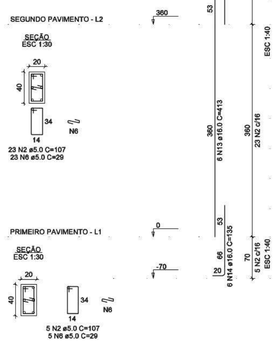
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3



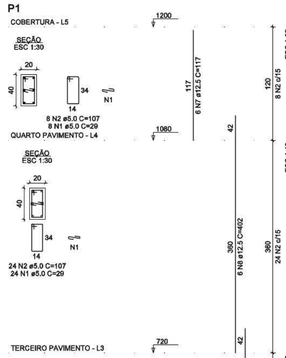
SEGUNDO PAVIMENTO - L2



PRIMEIRO PAVIMENTO - L1

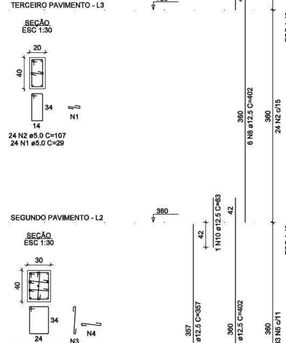
P1

COBERTURA - L5



QUARTO PAVIMENTO - L4

TERCEIRO PAVIMENTO - L3

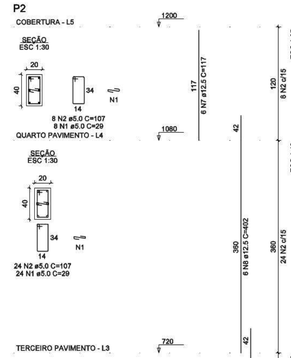


SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

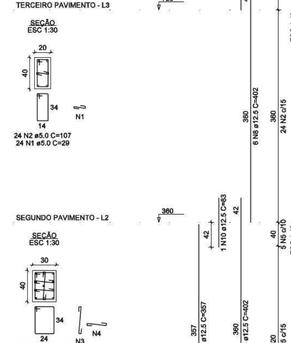
P2

COBERTURA - L5



QUARTO PAVIMENTO - L4

TERCEIRO PAVIMENTO - L3

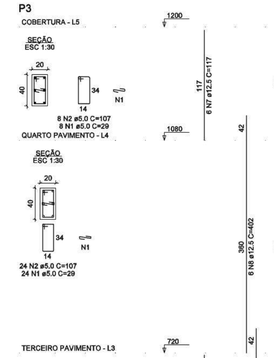


SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

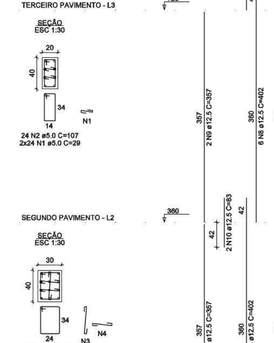
P3

COBERTURA - L5



QUARTO PAVIMENTO - L4

TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

RELAÇÃO DO AÇO

P1-L5	P1-L4	P1-L3
P1-L2	P1-L1	P2-L5
P2-L4	P2-L3	P2-L2
P2-L1	P3-L5	P3-L4
P3-L3	P3-L2	P3-L1
P34-L4	P34-L3	P34-L2
P34-L1	P41-L4	P41-L3
P41-L2	P41-L1	

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	296	29	8584
	2	5.0	318	107	34028
	3	5.0	109	49	5341
	4	5.0	218	39	8502
	5	5.0	109	127	13843
	6	5.0	74	29	2146
CA50	7	12.5	18	117	2106
	8	12.5	64	402	25728
	9	12.5	24	357	8568
	10	12.5	4	83	332
	11	12.5	38	115	4370
	12	16.0	6	357	2142
	13	16.0	12	413	4956
	14	16.0	6	135	810

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	411	435.6
CA60	16.0	79.1	137.3
CA60	5.0	724.4	122.8

PESO TOTAL (kg)	
CA50	572.9
CA60	122.8

Volume de concreto (C-30) = 5.04 m³
Área de forma = 71.28 m²

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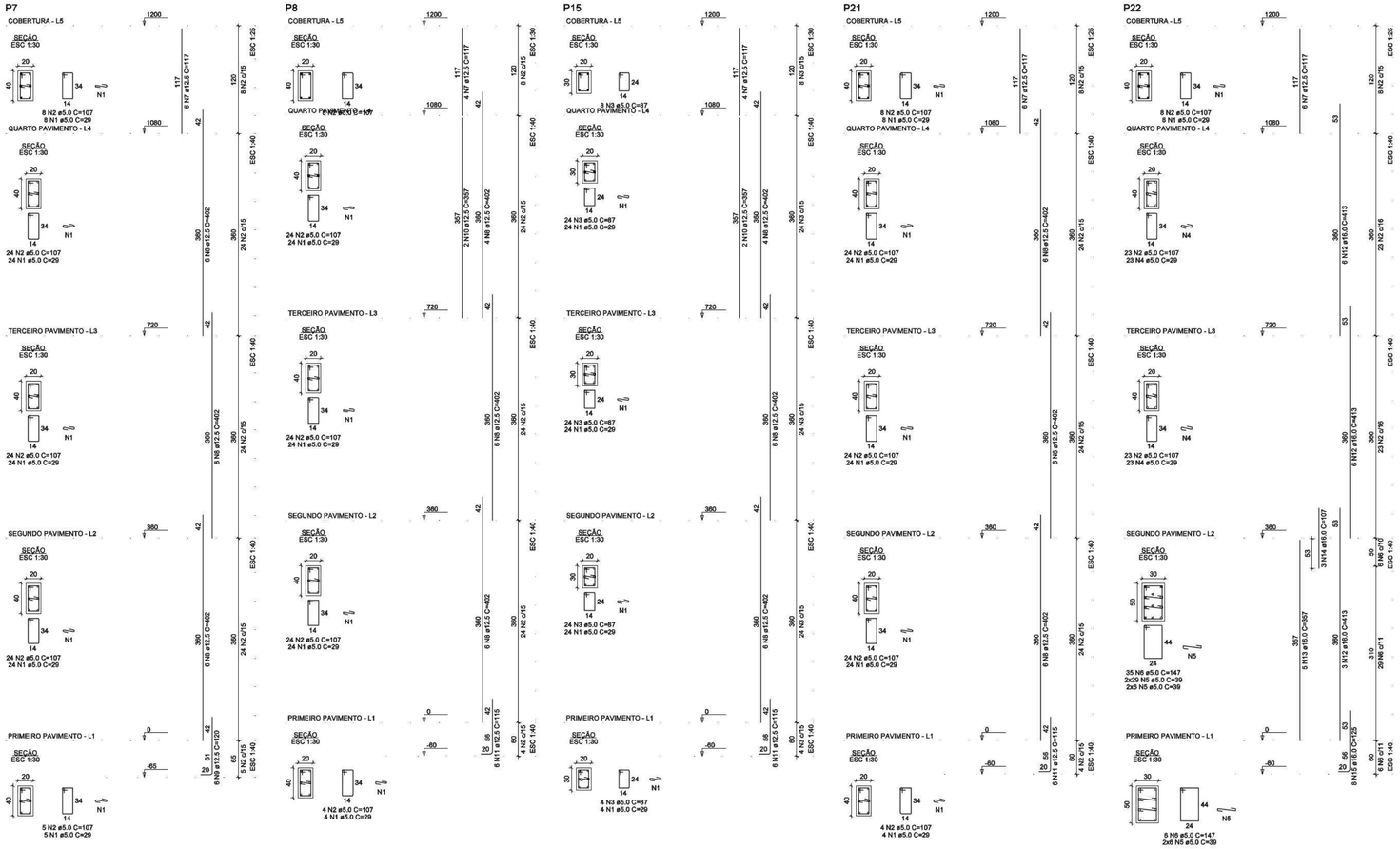
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	34/39



RELAÇÃO DO AÇO

P7-L5	P7-L4	P7-L3
P7-L2	P7-L1	P8-L5
P8-L4	P8-L3	P8-L2
P8-L1	P15-L5	P15-L4
P15-L3	P15-L2	P15-L1
P21-L5	P21-L4	P21-L3
P21-L2	P21-L1	P22-L5
P22-L4	P22-L3	P22-L2
P22-L1		

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	329	29	9541
	2	5.0	307	107	32849
	3	5.0	84	87	7308
	4	5.0	45	29	1334
	5	5.0	82	39	3198
	6	5.0	41	147	6027
CA50	7	12.5	26	117	3042
	8	12.5	68	402	27336
	9	12.5	6	120	720
	10	12.5	4	357	1428
	11	12.5	18	115	2070
	12	16.0	15	413	6195
	13	16.0	5	357	1785
	14	16.0	3	107	321
	15	16.0	8	125	1000

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	346	366.6
	16.0	93	181.5
CA60	5.0	502.6	102.2

PESO TOTAL (kg)	
CA50	528.1
CA60	102.2

Volume de concreto (C-30) = 4.81 m³
Área de forma = 71.04 m²

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DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	35/39

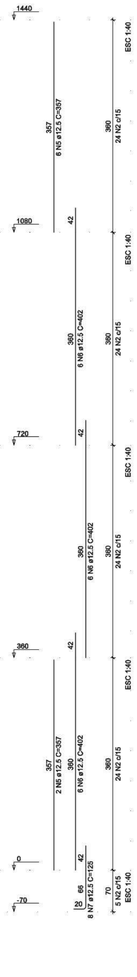
P26

COBERTURA - L5

SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29



QUARTO PAVIMENTO - L4

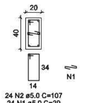
SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

TERCEIRO PAVIMENTO - L3

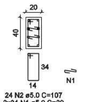
SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

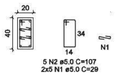
SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO
ESC 1:30

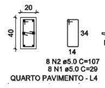


5 N2 ø5.0 C=107
2x5 N1 ø5.0 C=29

P29

COBERTURA - L5

SEÇÃO
ESC 1:30



8 N2 ø5.0 C=107
8 N1 ø5.0 C=29

QUARTO PAVIMENTO - L4

SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

TERCEIRO PAVIMENTO - L3

SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

SEÇÃO
ESC 1:30



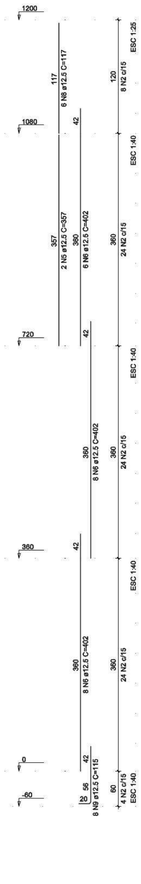
24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO
ESC 1:30



4 N2 ø5.0 C=107
2x4 N1 ø5.0 C=29



P31

COBERTURA - L5

SEÇÃO
ESC 1:30



24 N3 ø5.0 C=87
24 N1 ø5.0 C=29

QUARTO PAVIMENTO - L4

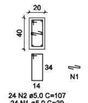
SEÇÃO
ESC 1:30



24 N3 ø5.0 C=87
24 N1 ø5.0 C=29

TERCEIRO PAVIMENTO - L3

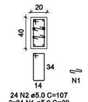
SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

SEÇÃO
ESC 1:30



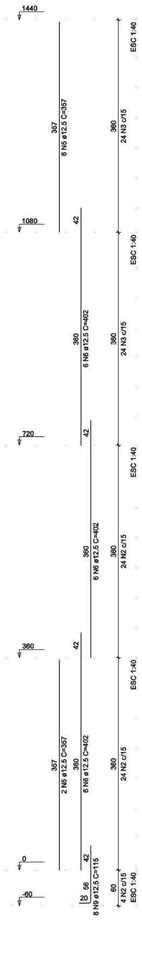
24 N2 ø5.0 C=107
2x24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO
ESC 1:30



4 N2 ø5.0 C=107
2x4 N1 ø5.0 C=29



P32

COBERTURA - L5

SEÇÃO
ESC 1:30



24 N3 ø5.0 C=87
24 N1 ø5.0 C=29

QUARTO PAVIMENTO - L4

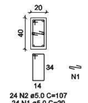
SEÇÃO
ESC 1:30



24 N3 ø5.0 C=87
24 N1 ø5.0 C=29

TERCEIRO PAVIMENTO - L3

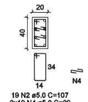
SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

SEÇÃO
ESC 1:30



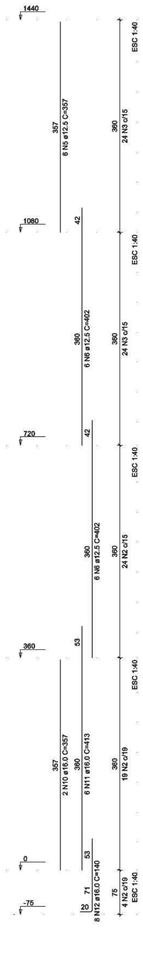
19 N2 ø5.0 C=107
2x19 N4 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO
ESC 1:30



4 N2 ø5.0 C=107
2x4 N4 ø5.0 C=29



P33

COBERTURA - L5

SEÇÃO
ESC 1:30



8 N2 ø5.0 C=107
8 N1 ø5.0 C=29

QUARTO PAVIMENTO - L4

SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

TERCEIRO PAVIMENTO - L3

SEÇÃO
ESC 1:30



24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

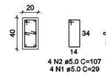
SEÇÃO
ESC 1:30



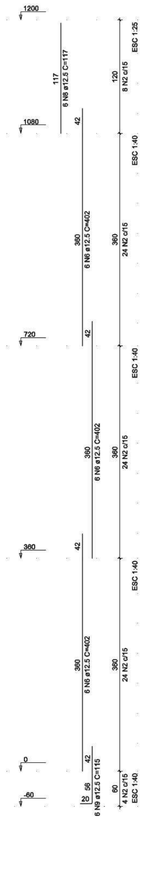
24 N2 ø5.0 C=107
24 N1 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

SEÇÃO
ESC 1:30



4 N2 ø5.0 C=107
4 N1 ø5.0 C=29



RELAÇÃO DO AÇO

P26-L5	P26-L4	P26-L3
P26-L2	P26-L1	P29-L5
P29-L4	P29-L3	P29-L2
P29-L1	P31-L5	P31-L4
P31-L3	P31-L2	P31-L1
P32-L5	P32-L4	P32-L3
P32-L2	P32-L1	P33-L5
P33-L4	P33-L3	P33-L2
P33-L1		

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	574	29	16646
	2	5.0	368	107	39376
	3	5.0	95	87	8352
	4	5.0	46	29	1334
CA50	5	12.5	24	357	8568
	6	12.5	88	402	35376
	7	12.5	8	125	1000
	8	12.5	12	117	1404
	9	12.5	22	115	2530
	10	16.0	2	357	714
	11	16.0	6	413	2478
	12	16.0	8	140	1120

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	488.8	517.9
	16.0	43.1	74.9
CA60	5.0	657.1	111.4

PESO TOTAL (kg)	
CA50	592.8
CA60	111.4

Volume de concreto (C-30) = 5.09 m³
Área de forma = 77.76 m²

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MARIUS OLIVEIRA COSTA
Data: 04/11/2026 10:17:15-0300
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MINISTÉRIO DA EDUCAÇÃO
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PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA

DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

DETALHE DOS PILARES

REVISÃO 01

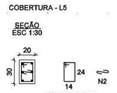
DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	36/39

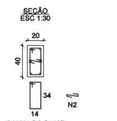
P35

COBERTURA - L5



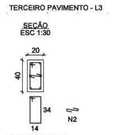
8 N1 ø5.0 C=87

QUARTO PAVIMENTO - L4



24 N4 ø5.0 C=107
24 N2 ø5.0 C=29

TERCEIRO PAVIMENTO - L3



24 N4 ø5.0 C=107
24 N2 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

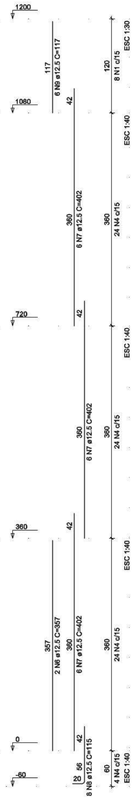


24 N4 ø5.0 C=107
2x24 N2 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1



4 N4 ø5.0 C=107
2x4 N2 ø5.0 C=29



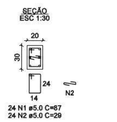
P40

COBERTURA - L5



8 N1 ø5.0 C=87

QUARTO PAVIMENTO - L4



24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

TERCEIRO PAVIMENTO - L3



24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

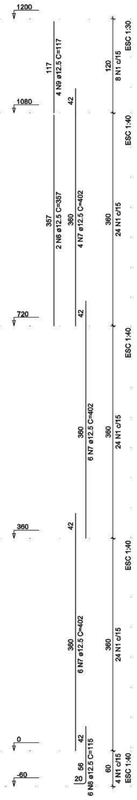


24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1

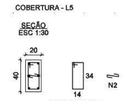


4 N1 ø5.0 C=87
4 N2 ø5.0 C=29



P42

COBERTURA - L5



8 N4 ø5.0 C=107
8 N2 ø5.0 C=29

QUARTO PAVIMENTO - L4



24 N4 ø5.0 C=107
24 N2 ø5.0 C=29

TERCEIRO PAVIMENTO - L3



24 N4 ø5.0 C=107
24 N2 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

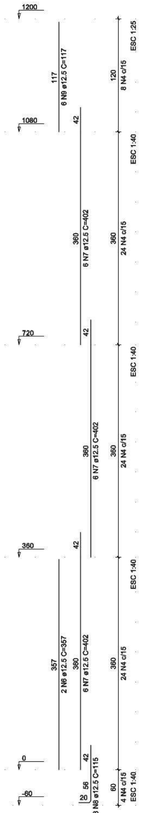


24 N4 ø5.0 C=107
2x24 N2 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1



4 N4 ø5.0 C=107
2x4 N2 ø5.0 C=29



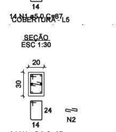
P4

RESPALDO COBERTURA - L6



14 N3 ø5.0 C=77

COBERTURA - L5



24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

QUARTO PAVIMENTO - L4



24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

TERCEIRO PAVIMENTO - L3



24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

SEGUNDO PAVIMENTO - L2

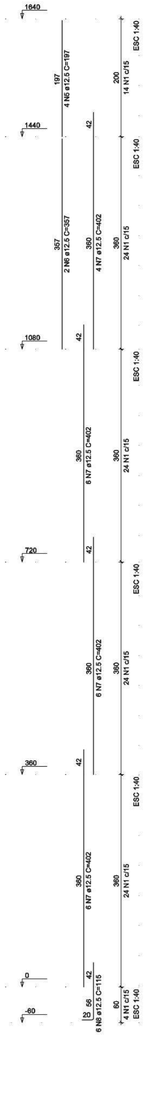


24 N1 ø5.0 C=87
24 N2 ø5.0 C=29

PRIMEIRO PAVIMENTO - L1



4 N1 ø5.0 C=87
4 N2 ø5.0 C=29



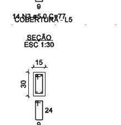
P5

RESPALDO COBERTURA - L6



14 N3 ø5.0 C=77

COBERTURA - L5



24 N3 ø5.0 C=77

QUARTO PAVIMENTO - L4



24 N3 ø5.0 C=77

TERCEIRO PAVIMENTO - L3



24 N3 ø5.0 C=77

SEGUNDO PAVIMENTO - L2

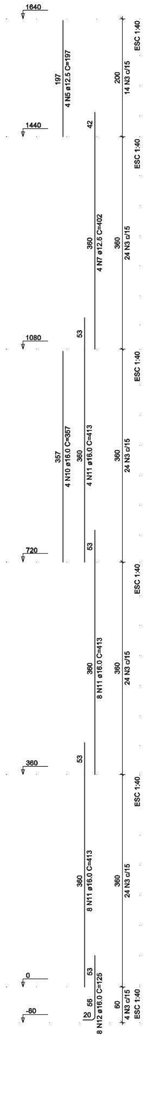


24 N3 ø5.0 C=77

PRIMEIRO PAVIMENTO - L1



4 N3 ø5.0 C=77



RELAÇÃO DO AÇO

P4-L6	P4-L5	P4-L4
P4-L3	P4-L2	P4-L1
P5-L6	P5-L5	P5-L4
P5-L3	P5-L2	P5-L1
P35-L5	P35-L4	P35-L3
P35-L2	P35-L1	P40-L6
P40-L4	P40-L3	P40-L2
P40-L1	P42-L5	P42-L4
P42-L3	P42-L2	P42-L1

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA50	1	5.0	206	87	17922
	2	5.0	400	29	11600
	3	5.0	114	77	8778
	4	5.0	160	107	17120
	5	12.5	8	197	1576
	6	12.5	8	357	2856
	7	12.5	78	402	31356
	8	12.5	28	115	3220
	9	12.5	10	117	1072
	10	16.0	4	357	1428
	11	16.0	20	413	8260
	12	16.0	8	125	1000

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	408.8	433.2
	16.0	106.9	185.6
CA60	5.0	554.2	94

PESO TOTAL (kg)	
CA50	618.8
CA60	94

Volume de concreto (C-30) = 4.34 m³
Área de forma = 71.72 m²

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MARIUS OLIVEIRA COSTA
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DETALHE DOS PILARES

REVISÃO 01

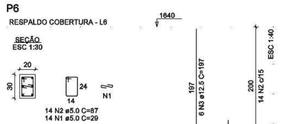
DAM – PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

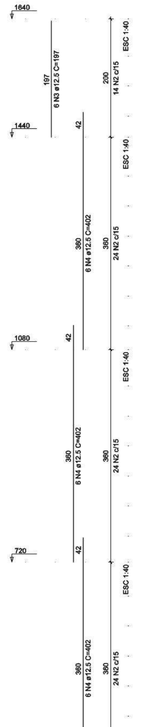
MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	37/39

P6

RESPALDO COBERTURA - L6





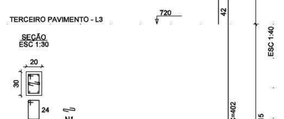
COBERTURA - L5



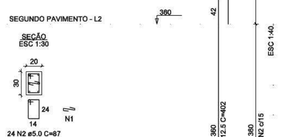
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

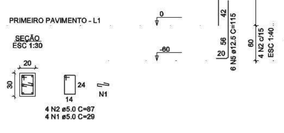


SEGUNDO PAVIMENTO - L2



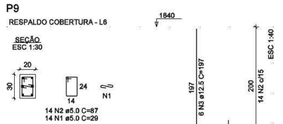


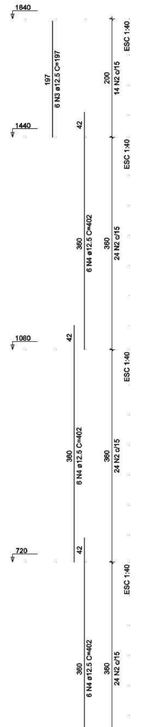
PRIMEIRO PAVIMENTO - L1



P9

RESPALDO COBERTURA - L6





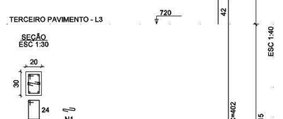
COBERTURA - L5



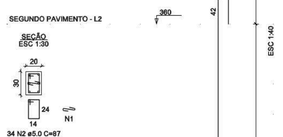
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

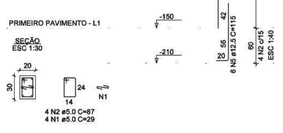


SEGUNDO PAVIMENTO - L2



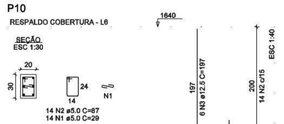


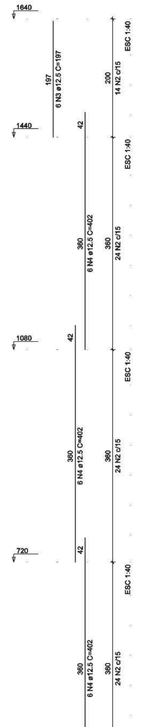
PRIMEIRO PAVIMENTO - L1



P10

RESPALDO COBERTURA - L6





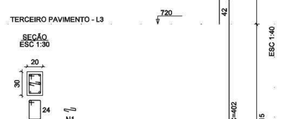
COBERTURA - L5



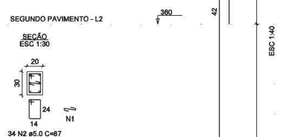
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3

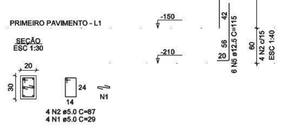


SEGUNDO PAVIMENTO - L2



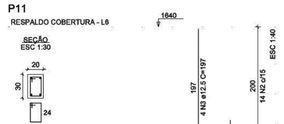


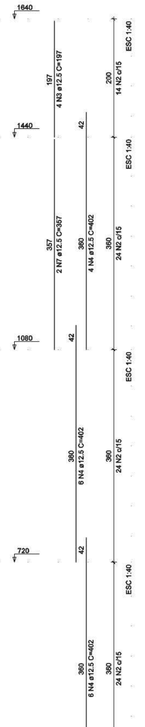
PRIMEIRO PAVIMENTO - L1



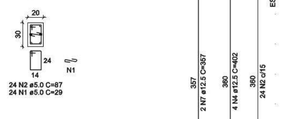
P11

RESPALDO COBERTURA - L6





COBERTURA - L5



QUARTO PAVIMENTO - L4

TERCEIRO PAVIMENTO - L3

SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

RELAÇÃO DO AÇO

P6-L6	P6-L5	P6-L4
P6-L3	P6-L2	P6-L1
P9-L6	P9-L5	P9-L4
P9-L3	P9-L2	P9-L1
P10-L6	P10-L5	P10-L4
P10-L3	P10-L2	P10-L1
P11-L6	P11-L5	P11-L4
P11-L3	P11-L2	P11-L1

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	462	29	13398
	2	5.0	476	87	41412
CA50	3	12.5	22	197	4334
	4	12.5	82	402	32964
	5	12.5	24	115	2760
	6	12.5	12	552	6624
	7	12.5	2	357	714

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	474	502.2
CA60	5.0	548.1	92.9

PESO TOTAL (kg)	
CA50	502.2
CA60	92.9

Volume de concreto (C-30) = 4.12 m³
Área de forma = 68.60 m²

P38

RESPALDO COBERTURA - L6

COBERTURA - L5

QUARTO PAVIMENTO - L4

TERCEIRO PAVIMENTO - L3

SEGUNDO PAVIMENTO - L2

PRIMEIRO PAVIMENTO - L1

P39

RESPALDO COBERTURA - L6

COBERTURA - L5

RELAÇÃO DO AÇO

P27-L6	P27-L5	P27-L4
P27-L3	P27-L2	P27-L1
P36-L6	P36-L5	P36-L4
P36-L3	P36-L2	P36-L1
P37-L6	P37-L5	P37-L4
P37-L3	P37-L2	P37-L1
P38-L6	P38-L5	P38-L4
P38-L3	P38-L2	P38-L1
P39-L6	P39-L5	

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	560	29	16240
	2	5.0	342	87	29754
	3	5.0	152	107	16264
CA50	4	12.5	28	197	5516
	5	12.5	8	357	2856
	6	12.5	104	402	41808
	7	12.5	2	83	166
	8	12.5	28	115	3220

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	535.7	567.8
CA60	5.0	622.6	105.8

PESO TOTAL (kg)	
CA50	567.8
CA60	105.8

Volume de concreto (C-30) = 4.70 m³
Área de forma = 75.52 m²

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PRÓ - REITOR DE PLANEJAMENTO: ELIZIANE DENIZE DE CASTRO PENHA

DIRETOR DE PROJETOS: ANDERSON BERNARDO

PROJETO ESTRUTURAL

DETALHE DOS PILARES

REVISÃO 01

DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	38/39

P14

RESPALDO COBERTURA - L6



COBERTURA - L5



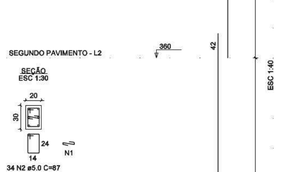
QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

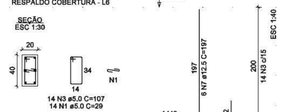


PRIMEIRO PAVIMENTO - L1



P18

RESPALDO COBERTURA - L6



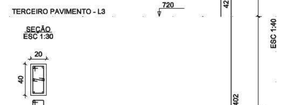
COBERTURA - L5



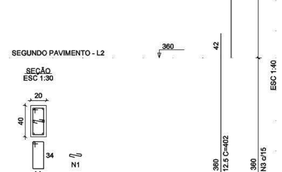
QUARTO PAVIMENTO - L4



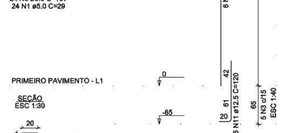
TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2



PRIMEIRO PAVIMENTO - L1



P19

RESPALDO COBERTURA - L6



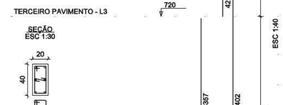
COBERTURA - L5



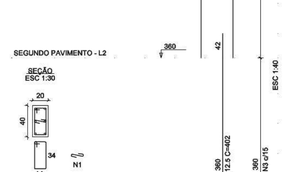
QUARTO PAVIMENTO - L4



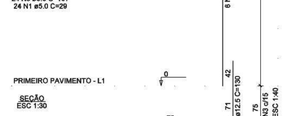
TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

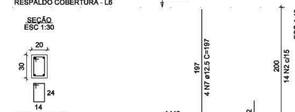


PRIMEIRO PAVIMENTO - L1

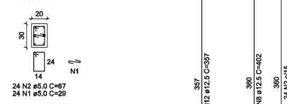


P25

RESPALDO COBERTURA - L6



COBERTURA - L5



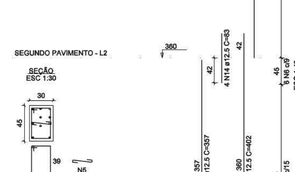
QUARTO PAVIMENTO - L4



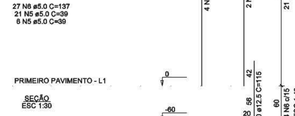
TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

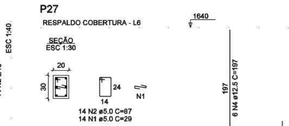


PRIMEIRO PAVIMENTO - L1



P27

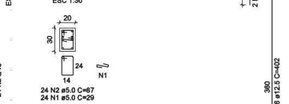
RESPALDO COBERTURA - L6



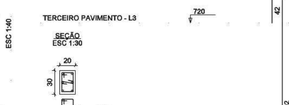
COBERTURA - L5



QUARTO PAVIMENTO - L4



TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

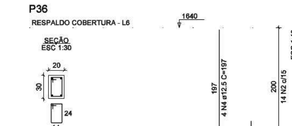


PRIMEIRO PAVIMENTO - L1



P36

RESPALDO COBERTURA - L6



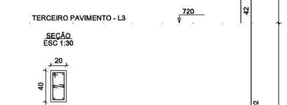
COBERTURA - L5



QUARTO PAVIMENTO - L4



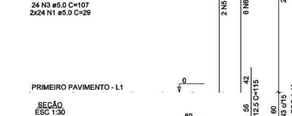
TERCEIRO PAVIMENTO - L3



SEGUNDO PAVIMENTO - L2

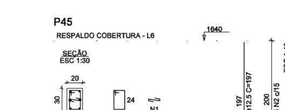


PRIMEIRO PAVIMENTO - L1



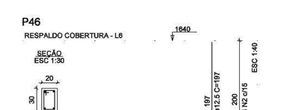
P45

RESPALDO COBERTURA - L6



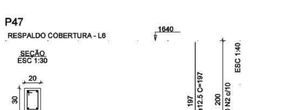
P46

RESPALDO COBERTURA - L6



P47

RESPALDO COBERTURA - L6



RELAÇÃO DO AÇO

P14-L6	P14-L5	P14-L4
P14-L3	P14-L2	P14-L1
P18-L6	P18-L5	P18-L4
P18-L3	P18-L2	P18-L1
P19-L6	P19-L5	P19-L4
P19-L3	P19-L2	P19-L1
P25-L6	P25-L5	P25-L4
P25-L3	P25-L2	P25-L1

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	384	29	10558
	2	5.0	234	87	20358
	3	5.0	192	107	20544
	4	5.0	20	67	1340
	5	5.0	31	39	1209
	6	5.0	31	137	4247
CA50	7	12.5	20	197	3940
	8	12.5	78	402	31356
	9	12.5	6	552	3312
	10	12.5	12	115	1380
	11	12.5	6	120	720
	12	12.5	8	357	2856
	13	12.5	6	130	780
	14	12.5	4	83	332

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	448.8	473.4
CA50	5.0	582.5	98.8
PESO TOTAL (kg)			
CA50	473.4		
CA60	98.8		

Volume de concreto (C-30) = 4.80 m³
Área de forma = 73.94 m²

RELAÇÃO DO AÇO

P45 P46 P47

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	14	29	406
	2	5.0	48	87	4176
CA50	3	12.5	14	197	2758

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	12.5	27.6	29.2
CA60	5.0	45.8	7.8
PESO TOTAL (kg)			
CA50	29.2		
CA60	7.8		

Volume de concreto (C-30) = 0.36 m³
Área de forma = 8.00 m²

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DETALHE DOS PILARES

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DAM - PRÉDIO DEPARTAMENTO DE ENGENHARIA AMBIENTAL

MARIUS OLIVEIRA COSTA = 90786/D

Escala:	Desenho:	Data:	Prancha:
INDICADA	MARIUS	OUTUBRO/25	39/39