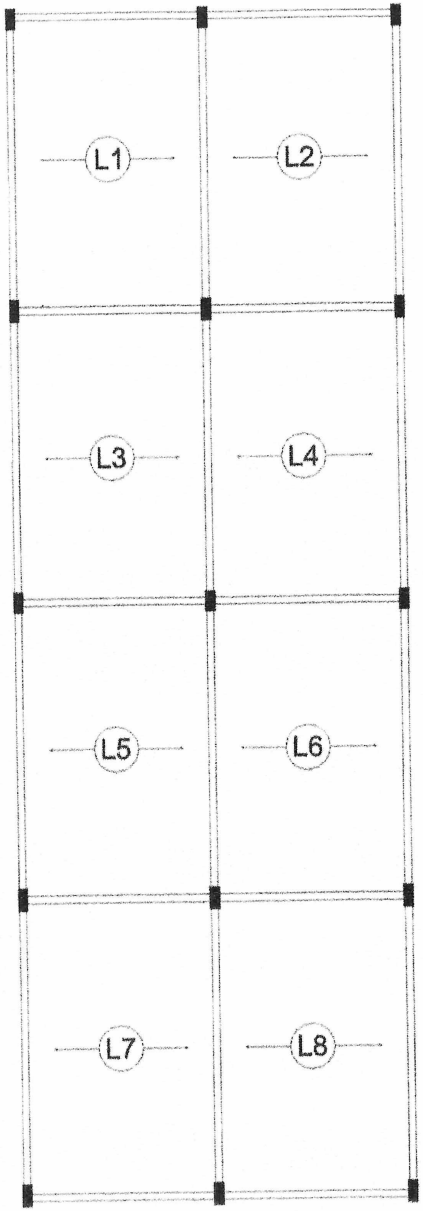
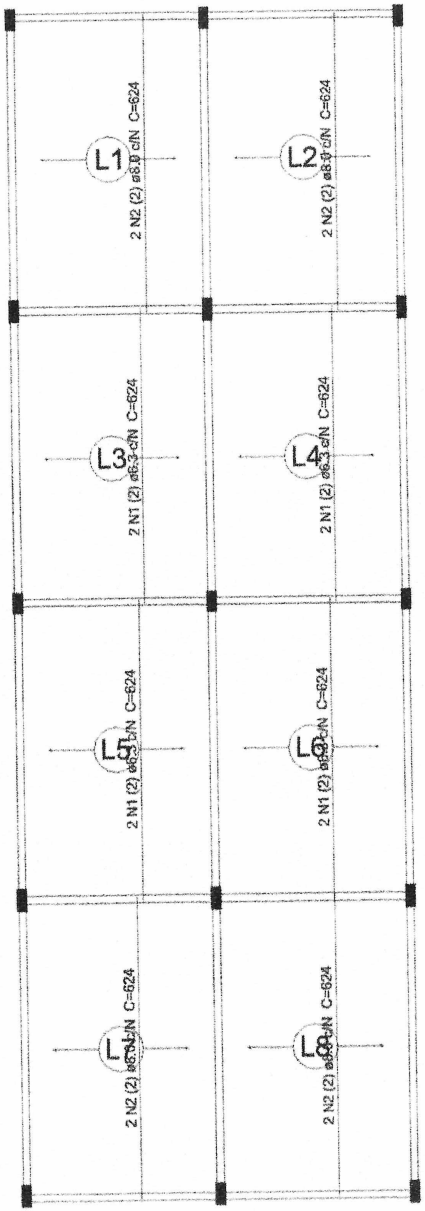
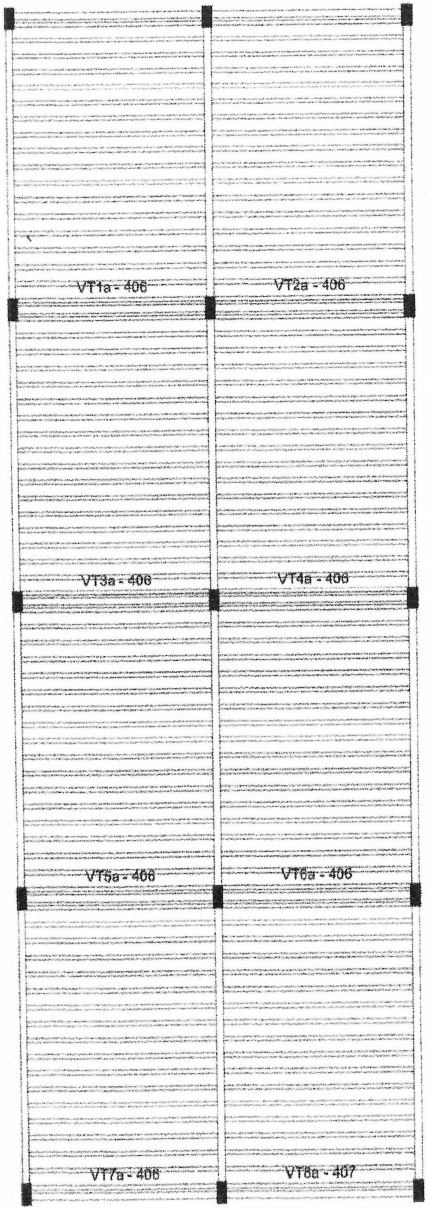


Armação positiva das lajes do pavimento TERREO (Eixo X)
escala 1:50



Armação positiva das lajes do pavimento TERREO (Eixo Y)



Planta de vigotas pré-moldadas

Relação do aço

Positivos Y

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA50	1	6,3	8	624	4992
	2	8,0	8	624	4992

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10 % (kg)
CA50	6,3	50	13,4
	8,0	50	21,7
PESO TOTAL (kg)			
CA50	35,1		

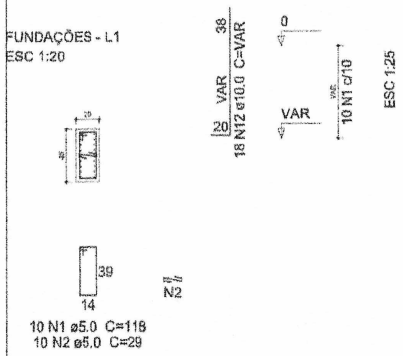
COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE
FLS. 793

LAESTE L.M. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

OBRA	REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARAÚNA
PROJETO	PROJETO ESTRUTURAL
ENDEREÇO	RUA JOÃO DARAPINA, S/N, DISTRITO DE PARAÚNA, URUOCA/CE
MUNICÍPIO	GOVERNO MUNICIPAL DE URUOCA
AUTOR DO PROJETO	LAESTE LUA MOREIRA FREIRE
RESPONSÁVEL TÉCNICO	LAESTE LUA MOREIRA FREIRE
CONTEÚDO	PLANTA DE FORMA/ARMAÇÃO AS
DATA 04/08/2010	ESCALA INDICADA
DESENHISTA LAESTE LUA	PRANCHA 02/10

P9

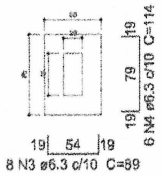
FUNDAÇÕES - L1
ESC 1:20



10 N1 ø5.0 C=118
10 N2 ø5.0 C=29

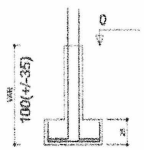
S9

PLANTA
ESC 1:25



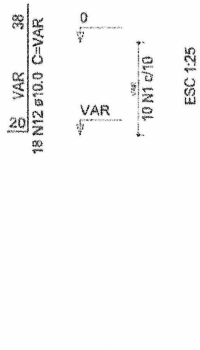
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

CORTE
ESC 1:25



P1

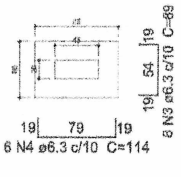
FUNDAÇÕES - L1
ESC 1:20



10 N1 ø5.0 C=118
10 N2 ø5.0 C=29

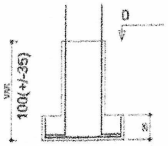
S1

PLANTA
ESC 1:25



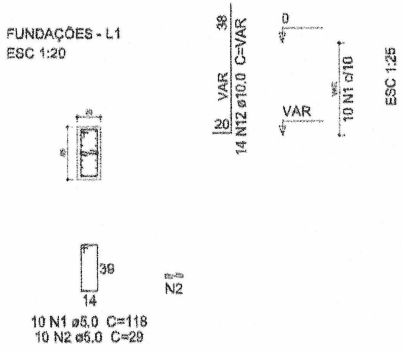
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

CORTE
ESC 1:25



P3

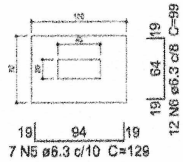
FUNDAÇÕES - L1
ESC 1:20



10 N1 ø5.0 C=118
10 N2 ø5.0 C=29

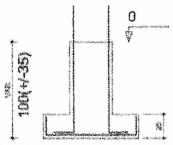
S2=S3

PLANTA
ESC 1:25



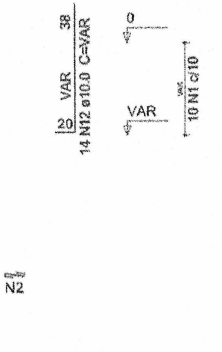
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

CORTE
ESC 1:25



P7=P10=P12=P14

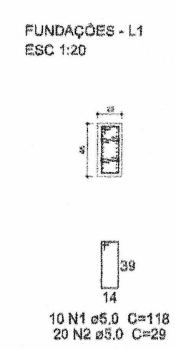
FUNDAÇÕES - L1
ESC 1:20



10 N1 ø5.0 C=118
10 N2 ø5.0 C=29

P8

FUNDAÇÕES - L1
ESC 1:20



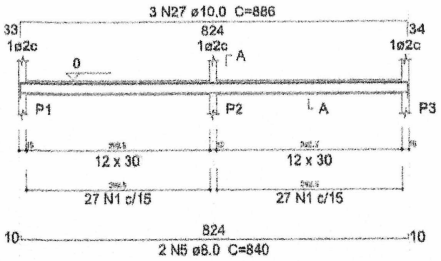
10 N1 ø5.0 C=118
20 N2 ø5.0 C=29

COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE
FLS. 194

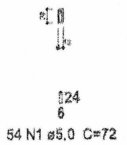
LAESTE L.M. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

TÍTULO	REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARAQUA
PROJETO	PROJETO ESTRUTURAL
ENDEREÇO	RUA JOÃO CARAPINA, S/N, DISTRITO DE PARAQUA, URUOCA/CE
PROPRIETÁRIO	GOVERNO MUNICIPAL DE URUOCA
AUTOR DO PROJETO	LAESTE LUÃ MOREIRA FREIRE
RESPONSÁVEL TÉCNICO	LAESTE LUÃ MOREIRA FREIRE
CONTEÚDO	PROJETO ESTRUTURAL(LAJES 01)
DATA	16/06/2020
ESCALA	DIVERSAS
DESENHISTA	LUANDA LUÃ
PRANCHA	01/13

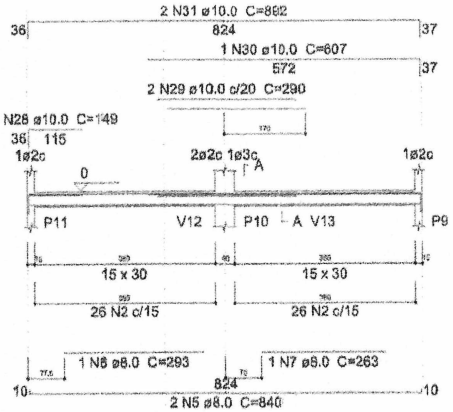
V1
ESC 1:50



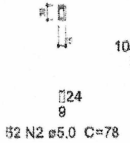
SEÇÃO A-A
ESC 1:50



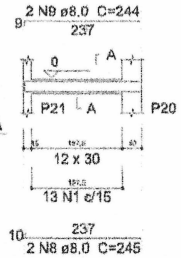
V3
ESC 1:50



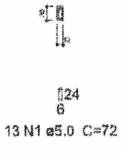
SEÇÃO A-A
ESC 1.50



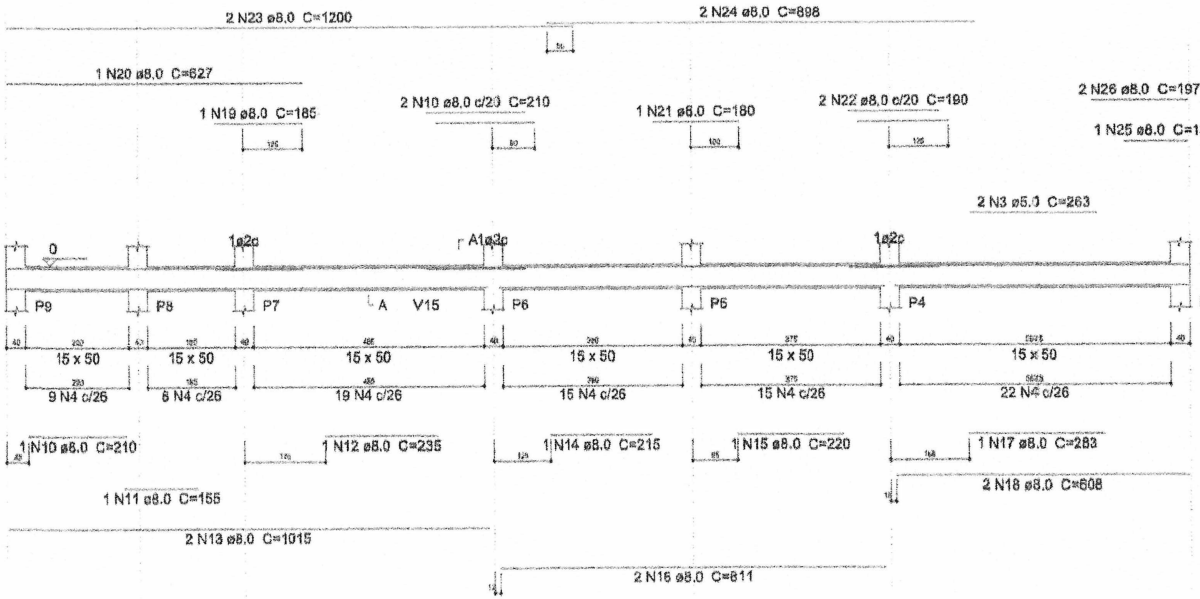
V11
ESC 1:50



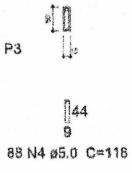
SEÇÃO A-A
ESC 1:50



V2
ESC 1:50



SEÇÃO A-A
ESC 1:50



Relação do aço

V1 V2 V3
V11

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	67	72	4824
	2	5.0	52	78	4056
	3	5.0	2	263	526
	4	5.0	88	118	10384
CA50	5	8.0	4	840	3360
	6	8.0	1	293	293
	7	8.0	1	263	263
	8	8.0	2	245	490
	9	8.0	2	244	488
	10	8.0	3	210	630
	11	8.0	1	155	155
	12	8.0	1	235	235
	13	8.0	2	1015	2030
	14	8.0	1	215	215
	15	8.0	1	220	220
	16	8.0	2	811	1622
	17	8.0	1	283	283
	18	8.0	2	608	1216
	19	8.0	1	185	185
	20	8.0	1	627	627
	21	8.0	1	180	180
	22	8.0	2	190	380
	23	8.0	2	1200	2400
	24	8.0	2	898	1796
	25	8.0	1	132	132
	26	8.0	2	197	394
	27	10.0	3	886	2658
	28	10.0	1	149	149
	29	10.0	2	290	580
	30	10.0	1	607	607
	31	10.0	2	892	1784

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	8.0	176	69.4
	10.0	57.8	35.6
CA60	5.0	197.9	30.5

PESO TOTAL (kg)	
CA50	105
CA60	30.5

Volume de concreto (C-25) = 2.63 m³
Área de forma = 42.55 m²

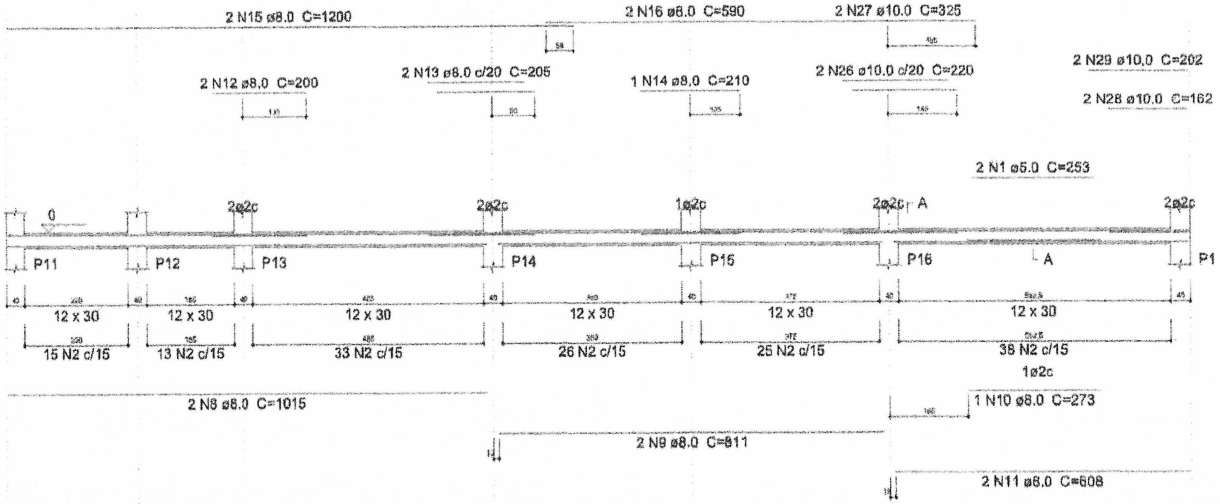
LAESTE LIA. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

COMISSÃO PERMANENTE DE LICITAÇÃO
FLS. 795

PROTOCOLO
FLS. 127

OBRA:	REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARAÚNA
PROJETO:	PROJETO ESTRUTURAL
ENDEREÇO:	RUA JOÃO CARAPINA, S/N, DISTRITO DE PARAÚNA, URUOCA/CE
PROPRIETÁRIO:	GOVERNO MUNICIPAL DE URUOCA
ÁREA DO PROJETO:	LAESTE LIA MOREIRA FREIRE
RESPONSÁVEL TÉCNICO:	LAESTE LIA MOREIRA FREIRE
	DESENHO: PROJETO ESTRUTURAL DO AÇO
DATA:	ESCALA: / RESPONSÁVEL: / PRANCHA:

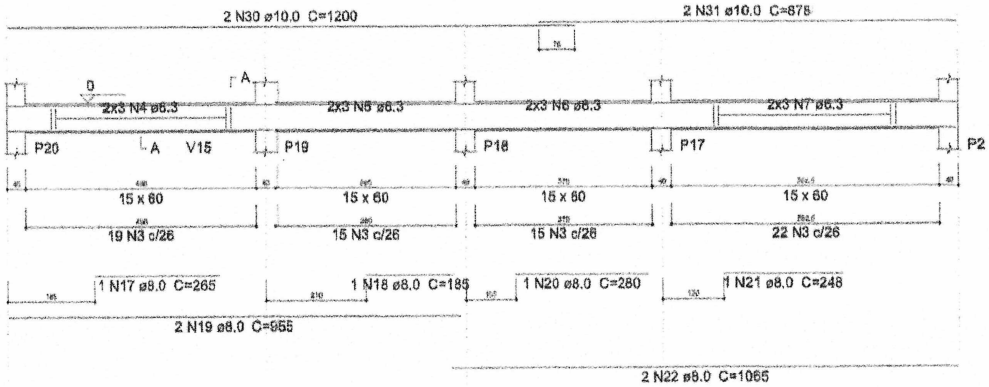
V4
ESC 1:50



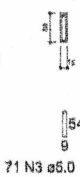
SEÇÃO A-A
ESC 1:50

150 N2 ø5.0 C=72

V5
ESC 1:50

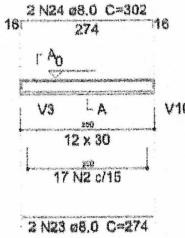


SEÇÃO A-A
ESC 1:50



71 N3 ø5.0 C=138

V12
ESC 1:50



SEÇÃO A-A
ESC 1:50

17 N2 ø5.0 C=72

Relação do aço

V4 V7 V5 V12 V6 V13

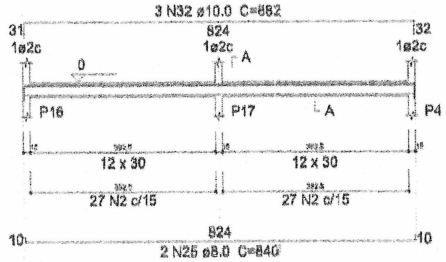
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	2	253	506
	2	5.0	292	72	21024
	3	5.0	71	138	9799
CA60	4	6.3	6	CORR	3364
	5	6.3	6	CORR	2724
	6	6.3	6	CORR	2664
	7	6.3	6	CORR	3822
	8	8.0	2	1015	2030
	9	8.0	2	811	1622
	10	8.0	1	273	273
	11	8.0	2	608	1216
	12	8.0	2	200	400
	13	8.0	2	205	410
	14	8.0	1	210	210
	15	8.0	2	1200	2400
	16	8.0	2	590	1180
	17	8.0	1	265	265
	18	8.0	1	185	185
	19	8.0	2	955	1910
	20	8.0	1	280	280
	21	8.0	1	248	248
	22	8.0	2	1065	2130
	23	8.0	4	274	1096
	24	8.0	4	302	1208
	25	8.0	4	840	3360
	26	10.0	2	220	440
	27	10.0	2	325	650
	28	10.0	2	162	324
	29	10.0	2	202	404
	30	10.0	2	1200	2400
	31	10.0	2	878	1756
	32	10.0	3	882	2646
	33	10.0	3	880	2640

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	128.3	30.9
	8.0	204.3	80.6
	10.0	112.6	69.4
CA60	5.0	313.3	48.3
PESO TOTAL (kg)			
CA50	180.9		
CA60	48.3		

Volume de concreto (C-25) = 3.5 m³
Área de forma = 61 m²

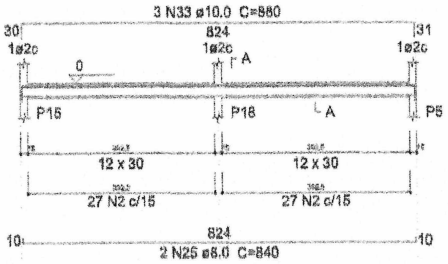
V6
ESC 1:50



SEÇÃO A-A
ESC 1:50

54 N2 ø5.0 C=72

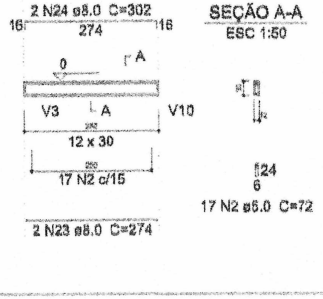
V7
ESC 1:50



SEÇÃO A-A
ESC 1:50

54 N2 ø5.0 C=72

V13
ESC 1:50



LAESTE LIM. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

PROJETO ESTRUTURAL

RUA JOÃO CARAPINA, S/N, DISTRITO DE PARAGUIÁ, URUOCA/CE

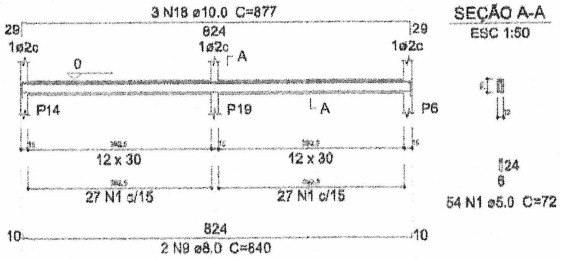
GOVERNO MUNICIPAL DE URUOCA

LAESTE LIM MOREIRA FREIRE

LAESTE LIM MOREIRA FREIRE

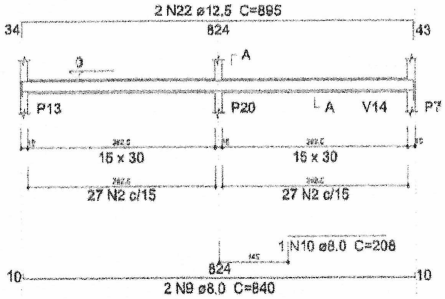
COMISSÃO PERMANENTE DE LICITAÇÃO
FLS. 796

V8
ESC 1:50

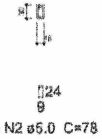


SEÇÃO A-A
ESC 1:50

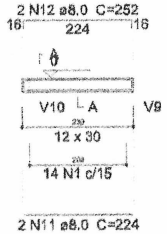
V9
ESC 1:50



SEÇÃO A-A
ESC 1:50



V14
ESC 1:50



SEÇÃO A-A
ESC 1:50

Relação do aço

P8	P11	P12
S9	V8	V9
V10	V14	V15

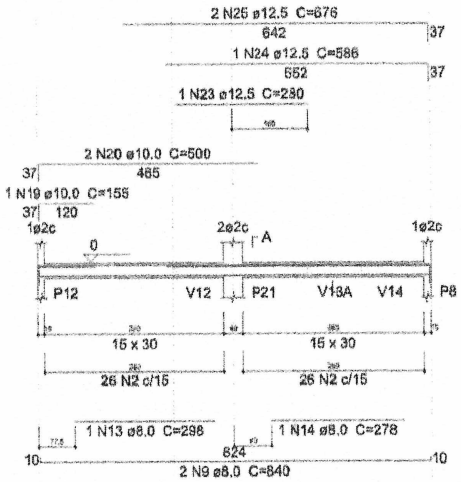
AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5,0	68	72	4896
	2	5,0	106	78	8268
	3	5,0	2	298	596
	4	5,0	22	82	1804
	5	5,0	30	98	2940
	6	5,0	30	24	720
CA50	7	6,3	8	89	712
	8	6,3	6	109	654
	9	8,0	6	840	5040
	10	8,0	1	208	208
	11	8,0	2	224	448
	12	8,0	2	252	504
	13	8,0	1	298	298
	14	8,0	1	278	278
	15	8,0	1	288	288
	16	8,0	2	417	834
	17	8,0	4	87	348
	18	10,0	3	877	2631
	19	10,0	1	155	155
	20	10,0	2	500	1000
	21	10,0	40	VAR	VAR
	22	12,5	2	895	1790
	23	12,5	1	280	280
	24	12,5	1	595	595
	25	12,5	2	878	1756

Resumo do aço

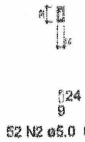
AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6,3	13,7	3,3
	8,0	62,5	32,5
	10,0	100,3	61,8
	12,5	40,1	38,6
CA60	5,0	192,3	29,6
PESO TOTAL (kg)			
CA50	136,3		
CA60	29,6		

Volume de concreto (C-25) = 1,49 m³
Volume de concreto (C-20) = 0,12 m³
Área de forma = 27,55 m²

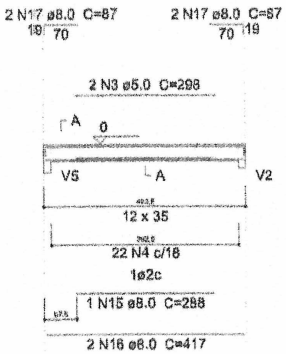
V10
ESC 1:50



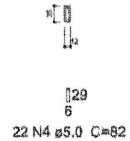
SEÇÃO A-A
ESC 1:50



V15
ESC 1:50

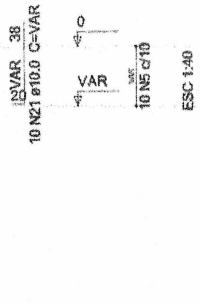


SEÇÃO A-A
ESC 1:50



P9

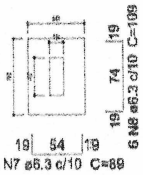
FUNDAÇÃO - L1
ESC 1:30



S9

PLANTA
ESC 1:25

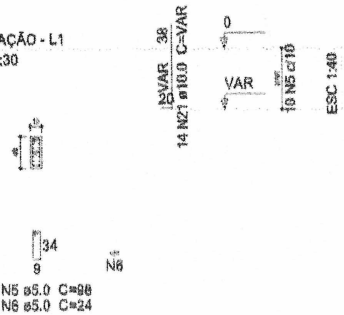
CORTE
ESC 1:25



Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m²

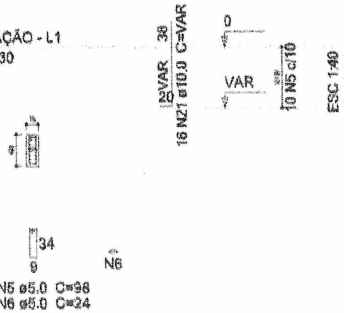
P11

FUNDAÇÃO - L1
ESC 1:30



P12

FUNDAÇÃO - L1
ESC 1:30



COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE
FLS. 797

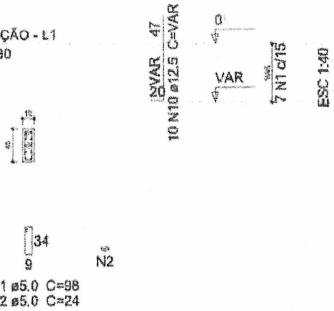
LAESTE L.M. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322393

PROTOCOLO
FLS. 124

OBRA: PEDREIRA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACUÚ
PROJETO: PROJETO ESTRUTURAL
ENDEREÇO: RUA JOÃO CARAPINA, S/N, DISTRITO DE PARACUÚ, URUOCA/CE
PROPRIETÁRIO: GOVERNO MUNICIPAL DE URUOCA
AUTOR DO PROJETO: LAESTE LUA MOREIRA FREIRE
RESPONSÁVEL TÉCNICO: LAESTE LUA MOREIRA FREIRE
DATA: 06/07/2010

P3

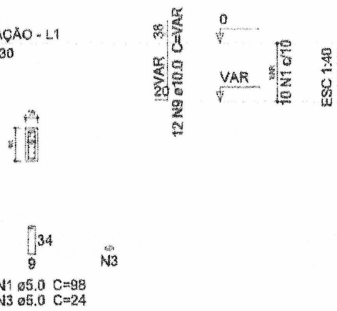
FUNDAÇÃO - L1
ESC 1:30



7 N1 ø5.0 C=98
7 N2 ø5.0 C=24

P8

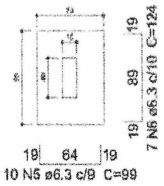
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N3 ø5.0 C=24

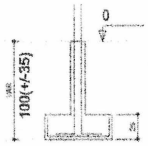
S3=S8=S11=S12

PLANTA
ESC 1:25



10 N5 ø6.3 c/9 C=99

CORTE
ESC 1:25



Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

Relação do aço

P1	P2	P3
P8	P10	P13
P21	S10	4xS12

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	61	98	5978
	2	5.0	7	24	168
	3	5.0	40	24	960
	4	5.0	21	24	504
CA50	5	6.3	40	99	3960
	6	6.3	28	124	3472
	7	6.3	12	104	1248
	8	6.3	7	129	903
	9	10.0	40	VAR	VAR
	10	12.5	10	VAR	VAR
	11	16.0	18	VAR	VAR

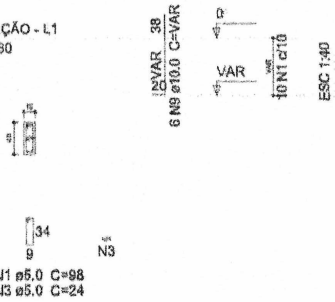
Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	95.9	23.4
	10.0	62.4	38.5
	12.5	16.4	15.8
	16.0	31.7	50
CA60	5.0	76.1	11.7
PESO TOTAL (kg)			
CA50	127.7		
CA60	11.7		

Volume de concreto (C-25) = 0.42 m³
Volume de concreto (C-20) = 0.85 m³
Área de forma = 11.88 m²

P10

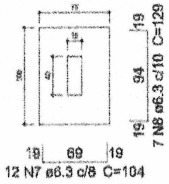
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N3 ø5.0 C=24

S10

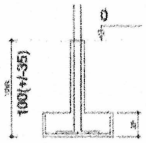
PLANTA
ESC 1:25



12 N7 ø6.3 c/8 C=104

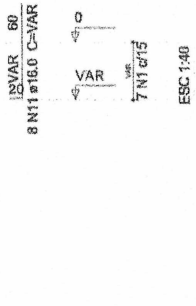
Solo compactado sobre a sapata
peso específico > 1600.00 kgf/m³

CORTE
ESC 1:25



P1

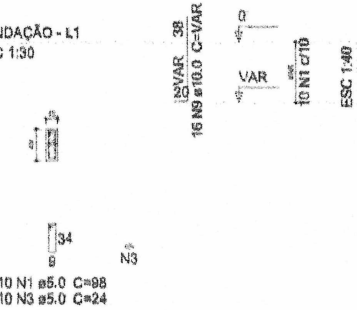
FUNDAÇÃO - L1
ESC 1:30



7 N1 ø5.0 C=98
14 N4 ø5.0 C=24

P13

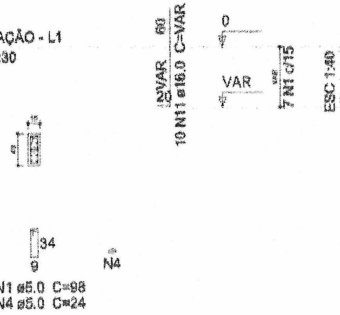
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N3 ø5.0 C=24

P2

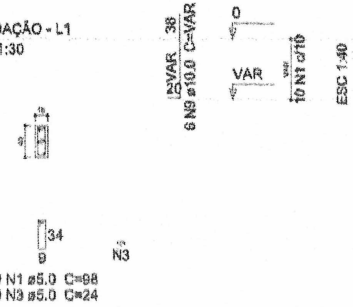
FUNDAÇÃO - L1
ESC 1:30



7 N1 ø5.0 C=98
7 N4 ø5.0 C=24

P21

FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N3 ø5.0 C=24

COMISSÃO PERMANENTE DE LICITAÇÃO
Nº 198

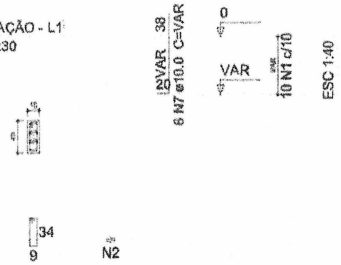
LAESTE LUA. FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

PREFEITURA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARAQUAÇÁ
PROJETO ESTRUTURAL
RUA JOÃO CARAPINA, S/N, DISTRITO DE PARAQUÁ, URUOCA/CE
UCHEPINO MUNICIPAL DE URUOCA
LAESTE LUA MOREIRA FREIRE
LAESTE LUA MOREIRA FREIRE

PMLF - PROTOCOLO
Nº 135

P5

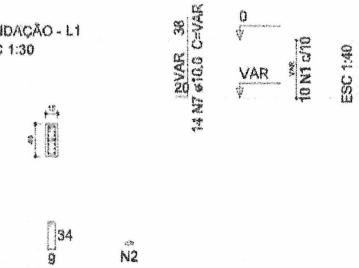
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
20 N2 ø5.0 C=24

P7

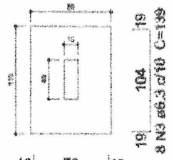
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

S1=S2=S5=S7=S13=S21

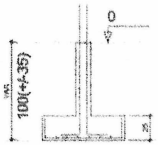
PLANTA
ESC 1:25



19 | 79 | 19
9 N5 ø8.0 c/12 C=113

Solo compactado sobre a sapata
peso especifico > 1600.00 kgf/m³

CORTE
ESC 1:25



Relação do aço

P4	P5	P6
P7	2xP14	P15
P18	6xS13	3xS15

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	80	98	7840
	2	5.0	110	24	2640
CA50	3	6.3	48	139	6672
	4	6.3	30	144	4320
	5	8.0	54	113	6102
	6	8.0	30	118	3540
	7	10.0	96	VAR	VAR

Resumo do aço

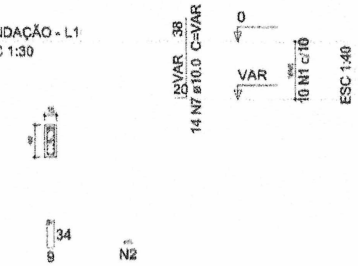
AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	110	26.9
	8.0	96.5	38
	10.0	149.8	92.3
CA60	5.0	104.8	16.2

PESO TOTAL (kg)	
CA50	157.3
CA60	16.2

Volume de concreto (C-25) = 0.48 m³
Volume de concreto (C-20) = 2.18 m³
Área de forma = 17.73 m²

P15

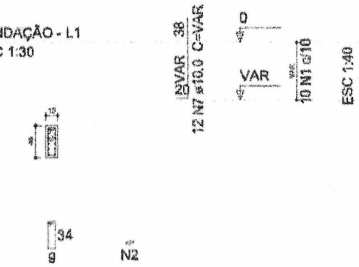
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

P4

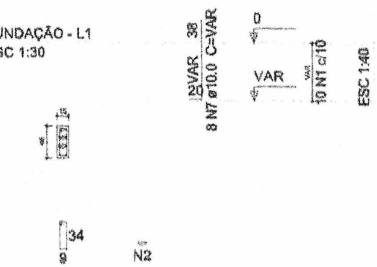
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

P6

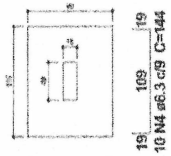
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
20 N2 ø5.0 C=24

S4=S6=S15

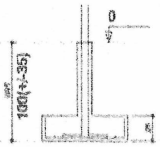
PLANTA
ESC 1:25



19 | 84 | 19
10 N6 ø8.0 c/12 C=118

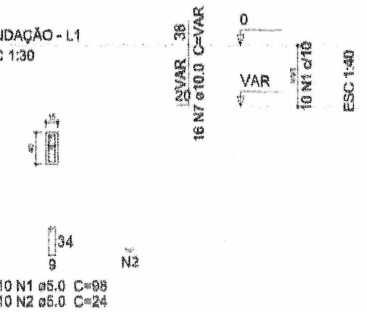
Solo compactado sobre a sapata
peso especifico > 1600.00 kgf/m³

CORTE
ESC 1:25



P14=P16

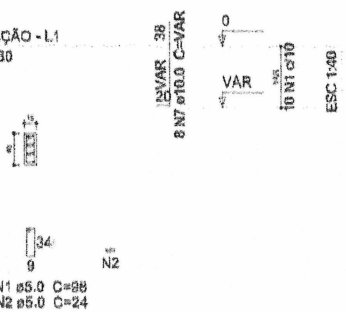
FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

P18

FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
20 N2 ø5.0 C=24

COMISSÃO PERMANENTE DE LICITAÇÃO DE UBUOCA-CE
FLS. 799

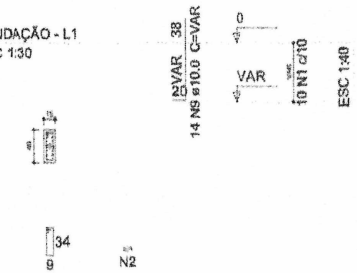
LAESTE LUA MOREIRA FREIRE
ENGENHEIRO CIVIL
CREA-CE 322383

PREFEITURA MUNICIPAL DE UBUOCA
FLS. 136

PROJETO ESTRUTURAL
RUA JOÃO CARAPINA, S/N, DISTRITO DE PARACUA, UBUOCA/CE
GOVERNO MUNICIPAL DE UBUOCA
LAESTE LUA MOREIRA FREIRE

P20

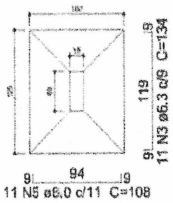
FUNDAÇÃO - L1
ESC 1:30



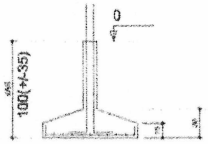
10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

S14=S16=S18=S20

PLANTA
ESC 1:25



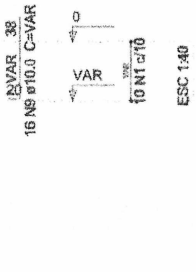
CORTE
ESC 1:25



Solo compactado sobre a sapata
peso específico > 1600,00 kgf/m³

P17

FUNDAÇÃO - L1
ESC 1:30



10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

Relação do aço

P17 P19 P20
S17 S19 4xS20

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	30	98	2940
	2	5.0	30	24	720
CA50	3	6.3	44	134	5896
	4	6.3	13	139	1807
	5	8.0	44	108	4752
	6	8.0	13	113	1469
	7	8.0	15	118	1770
	8	8.0	9	143	1287
	9	10.0	40	VAR	VAR

Resumo do aço

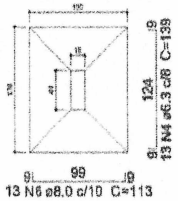
AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	77.1	18.8
	8.0	92.8	36.6
	10.0	62.4	38.5
CA60	5.0	36.6	5.6

PESO TOTAL (kg)	
CA50	93.9
CA60	5.6

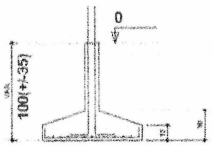
Volume de concreto (C-25) = 0,18 m³
Volume de concreto (C-20) = 1,7 m³
Área de forma = 7,44 m³

S17

PLANTA
ESC 1:25



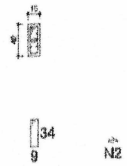
CORTE
ESC 1:25



Solo compactado sobre a sapata
peso específico > 1600,00 kgf/m³

P19

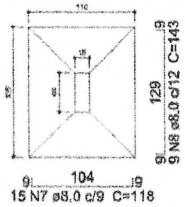
FUNDAÇÃO - L1
ESC 1:30



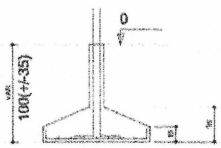
10 N1 ø5.0 C=98
10 N2 ø5.0 C=24

S19

PLANTA
ESC 1:25



CORTE
ESC 1:25



Solo compactado sobre a sapata
peso específico > 1600,00 kgf/m³

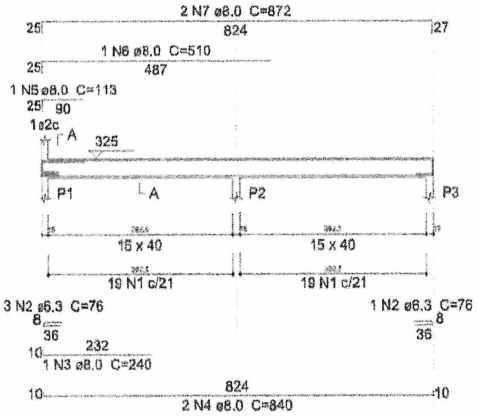
COMISSÃO PERMANENTE DE LICITAÇÃO DE UBUÇOCA-CE
FLS. 100

LAESTE LUA FREIRE
ENGENHEIRO CIVIL
CREA-CE 32293

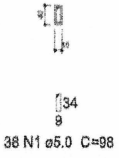
FLS. 137

OBRA:	REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACURU
PROJETO:	PROJETO ESTRUTURAL
ENDEREÇO:	RUA JOÃO CARAPINA, S/N, DISTRITO DE PARACURU, UBUÇOCA/CE
PROPRIETÁRIO:	GOVERNO MUNICIPAL DE UBUÇOCA
AUTOR DO PROJETO:	LAESTE LUA MOREIRA FREIRE
RESPONSÁVEL TÉCNICO:	LAESTE LUA MOREIRA FREIRE
CONTEÚDO:	PLANTA ESTRUTURAL DE
DATA:	
ESCALA:	
RESPONSÁVEL:	
PRANCHA:	

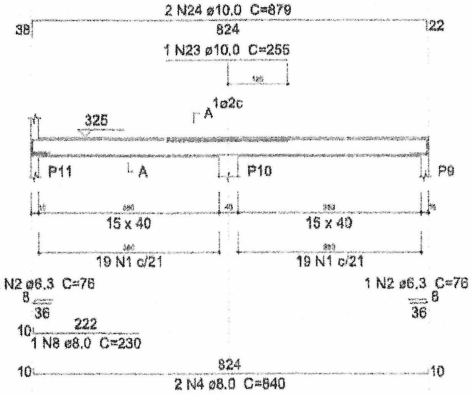
V1
ESC 1:50



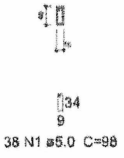
SEÇÃO A-A
ESC 1:50



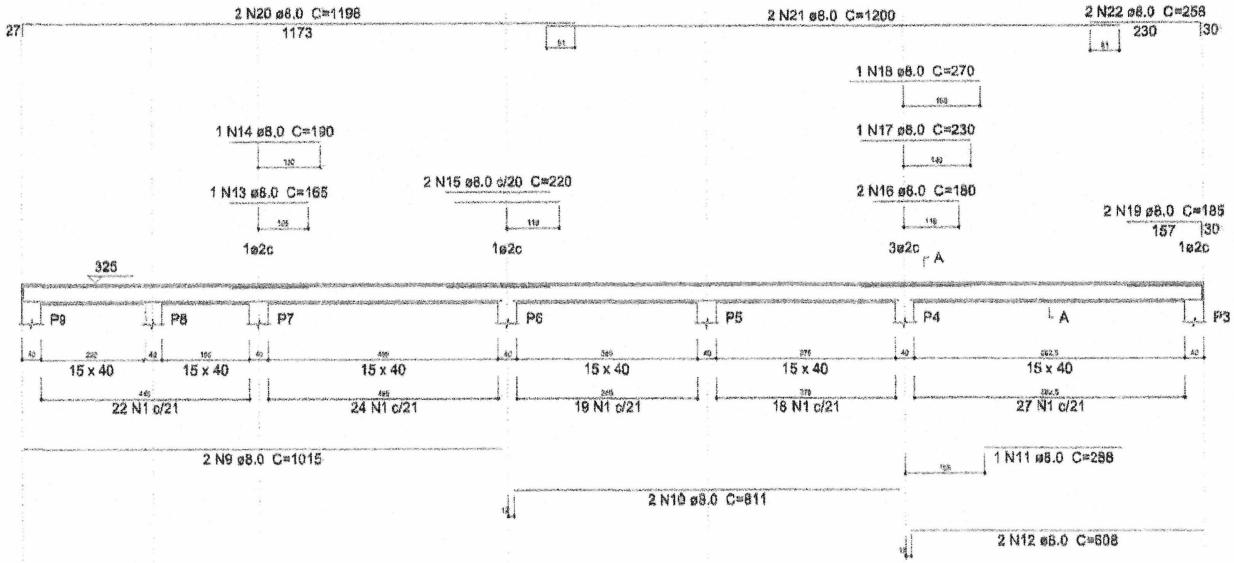
V3
ESC 1:50



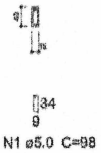
SEÇÃO A-A
ESC 1:50



V2
ESC 1:50



SEÇÃO A-A
ESC 1:50



Relação do aço

V1 V2 V3

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	186	98	18228
CA50	2	6.3	7	76	532
	3	8.0	1	240	240
	4	8.0	4	840	3360
	5	8.0	1	113	113
	6	8.0	1	510	510
	7	8.0	2	872	1744
	8	8.0	1	230	230
	9	8.0	2	1015	2030
	10	8.0	2	811	1622
	11	8.0	1	288	288
	12	8.0	2	608	1216
	13	8.0	1	165	165
	14	8.0	1	190	190
	15	8.0	2	220	440
	16	8.0	2	180	360
	17	8.0	1	230	230
	18	8.0	1	270	270
	19	8.0	2	185	370
	20	8.0	2	1198	2396
	21	8.0	2	1200	2400
	22	8.0	2	258	516
	23	10.0	1	255	255
	24	10.0	2	879	1758

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	5.4	1.3
	8.0	186.9	73.7
	10.0	20.2	12.4
CA60	5.0	182.3	28.1

PESO TOTAL (kg)	
CA50	87.5
CA60	28.1

Volume de concreto (C-25) = 2.49 m³
Área de forma = 39.4 m²

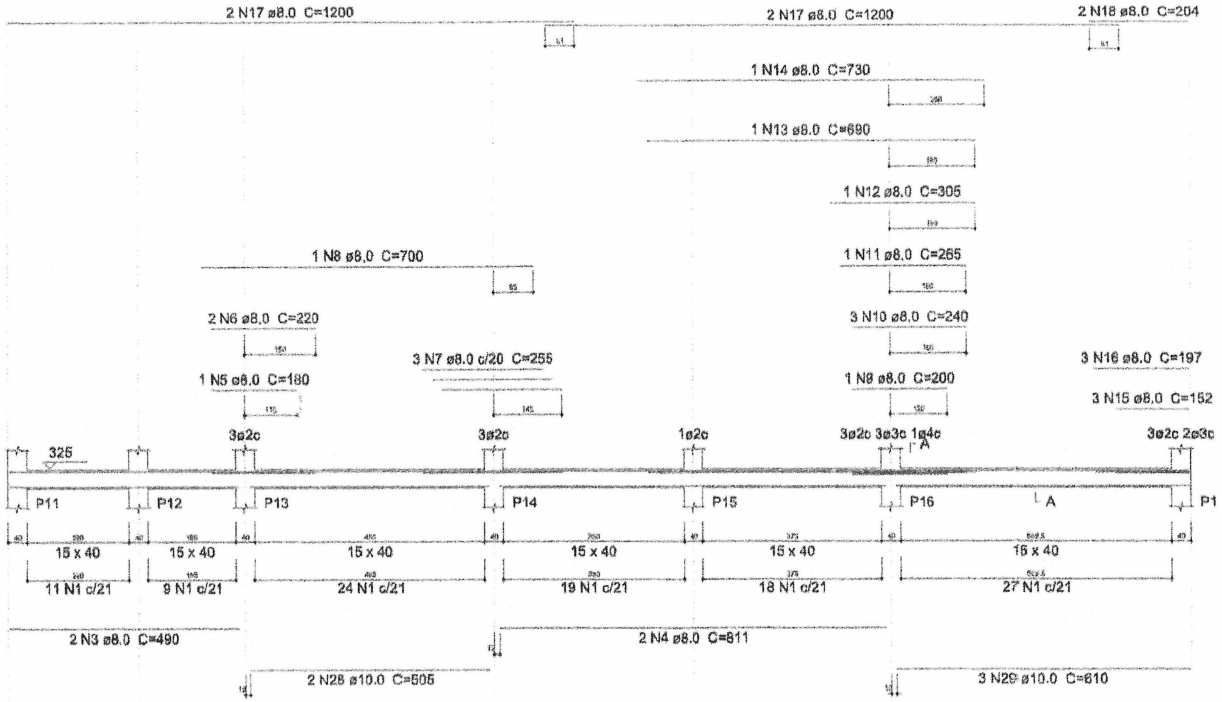
COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE
FLS. 107

LAESTE LUA MOREIRA FREIRE
ENGENHEIRO CIVIL
CREA-CE 322253

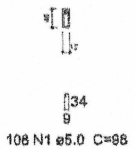
OBRA:	REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACUIA
PROJETO:	PROJETO ESTRUTURAL
ENDEREÇO:	RUA JOÃO CARAPINA, S/N, DISTRITO DE PARACUIA, URUOCA/CE
PROPRIETÁRIO:	GOVERNO MUNICIPAL DE URUOCA
ACERVO DO PROJETO:	LAESTE LUA MOREIRA FREIRE
RESPONSÁVEL TÉCNICO:	LAESTE LUA MOREIRA FREIRE
	PRANCHA: NOVAS ESTRUTURAS (PÓRTICO 45)

138

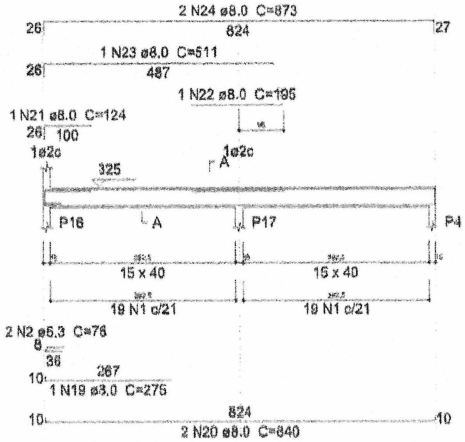
V4
ESC 1:50



SEÇÃO A-A
ESC 1:50

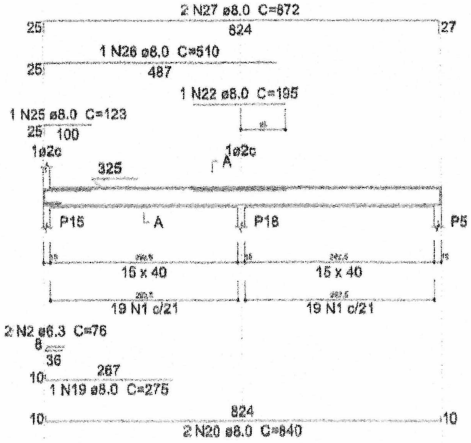


V6
ESC 1:50



SEÇÃO A-A
ESC 1:50

V7
ESC 1:50



SEÇÃO A-A
ESC 1:50

Relação do aço

V4 V6 V7

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	184	98	18032
CA50	2	6.3	4	76	304
	3	8.0	2	490	980
	4	8.0	2	811	1622
	5	8.0	1	180	180
	6	8.0	2	220	440
	7	8.0	3	255	765
	8	8.0	1	700	700
	9	8.0	1	200	200
	10	8.0	3	240	720
	11	8.0	1	265	265
	12	8.0	1	305	305
	13	8.0	1	690	690
	14	8.0	1	730	730
	15	8.0	3	152	456
	16	8.0	3	197	591
	17	8.0	4	1200	4800
	18	8.0	2	204	408
	19	8.0	2	275	550
	20	8.0	4	840	3360
	21	8.0	1	124	124
	22	8.0	2	195	390
	23	8.0	1	511	511
	24	8.0	2	873	1746
	25	8.0	1	123	123
	26	8.0	1	510	510
	27	8.0	2	872	1744
	28	10.0	2	505	1010
	29	10.0	3	610	1830

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	3.1	0.7
	8.0	229.1	90.4
	10.0	28.4	17.5
CA60	5.0	180.4	27.8

PESO TOTAL (kg)	
CA50	108.7
CA60	27.8

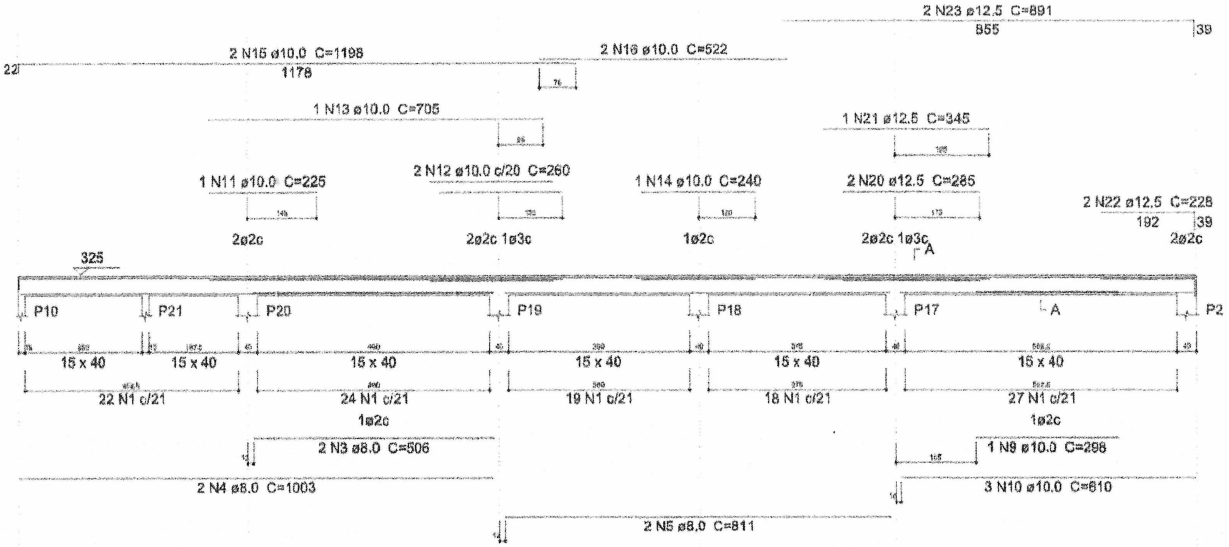
Volume de concreto (C-25) = 2.49 m³
Área de forma = 39.4 m²

COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE
FLS. 109

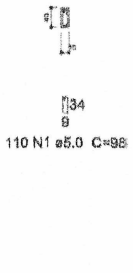
LAESTE LUA FREIRE
ENGENHEIRO CIVIL
CREA-CE 322353

PREFEITURA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACUIA
PROJETO ESTRUTURAL
RUA JOÃO CARAPIÇA, S/N, DISTRITO DE PARACUIA, URUOCA/CE
CONCRETO MUNICIPAL DE URUOCA
LAESTE LUA MOREIRA FREIRE
LAESTE LUA MOREIRA FREIRE
PLANTA ESTRUTURAL DA LAJE

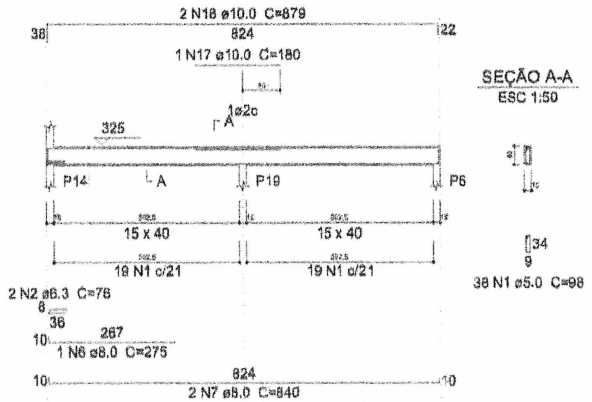
V5
ESC 1:50



SEÇÃO A-A
ESC 1:50

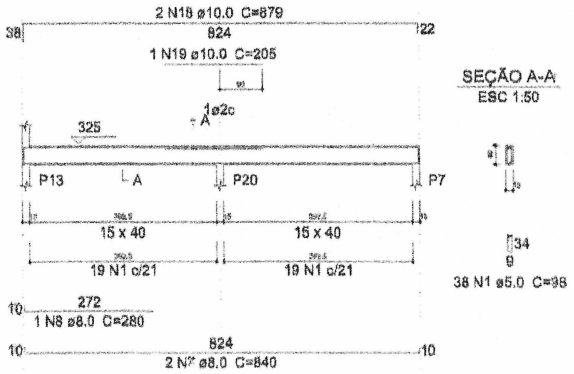


V8
ESC 1:50



SEÇÃO A-A
ESC 1:50

V9
ESC 1:50



SEÇÃO A-A
ESC 1:50

Relação do aço

V5 V8 V9

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	186	98	18228
CA50	2	6.3	2	76	152
	3	8.0	2	506	1012
	4	8.0	2	1003	2006
	5	8.0	2	811	1622
	6	8.0	1	275	275
	7	8.0	4	840	3360
	8	8.0	1	280	280
	9	10.0	1	298	298
	10	10.0	3	610	1830
	11	10.0	1	225	225
	12	10.0	2	260	520
	13	10.0	1	705	705
	14	10.0	1	240	240
	15	10.0	2	1198	2396
	16	10.0	2	522	1044
	17	10.0	1	180	180
	18	10.0	4	879	3516
	19	10.0	1	205	205
	20	12.5	2	285	570
	21	12.5	1	345	345
	22	12.5	2	228	456
	23	12.5	2	891	1782

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	6.3	1.6	0.4
	8.0	85.6	33.8
	10.0	111.6	68.8
	12.5	31.6	30.4
CA60	5.0	182.3	28.1
PESO TOTAL (kg)			
CA50	133.3		
CA60	28.1		

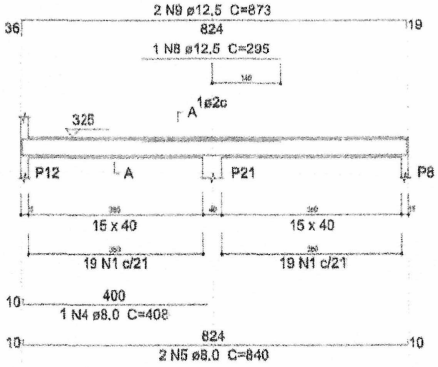
Volume de concreto (C-25) = 2.48 m³
Área de forma = 39,28 m²

COMISSÃO PERMANENTE DE LICITAÇÃO DE UBUOCA/CE
FLS 203

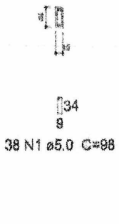
LAESTE LUA MOREIRA FREIRE
ENGENHEIRO CIVIL
CREA-CE 322363

REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACUIA
PROJETO ESTRUTURAL
RUA JOÃO CARAPINA, S/N, DISTRITO DE PARACUIA, UBUOCA/CE
GOVERNO MUNICIPAL DE UBUOCA
LAESTE LUA MOREIRA FREIRE
LAESTE LUA MOREIRA FREIRE

V10
ESC 1:50



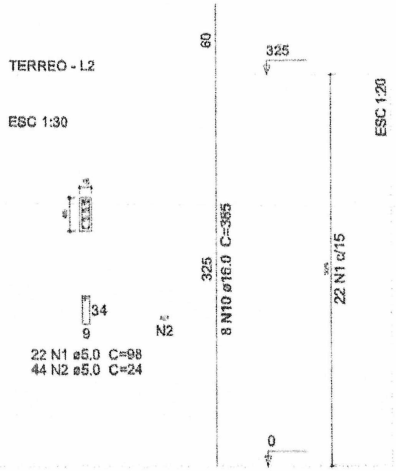
SEÇÃO A-A
ESC 1:50



P1

TERREO - L2

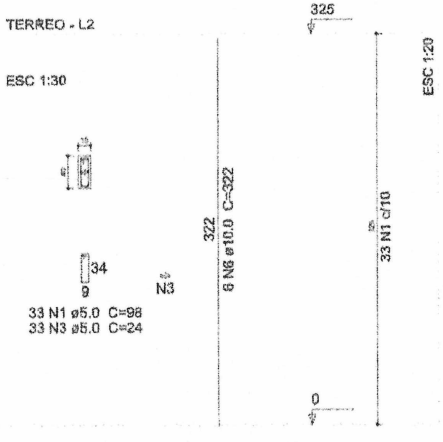
ESC 1:30



P10=P21

TERREO - L2

ESC 1:30



Relação do aço

P1 2xP10 2xP11
4xP12 P17 V10

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	357	98	34986
	2	5.0	44	24	1056
	3	5.0	297	24	7128
CA50	4	8.0	1	408	408
	5	8.0	2	840	1680
	6	10.0	28	322	9016
	7	10.0	92	363	33396
	8	12.5	1	295	295
	9	12.5	2	673	1746
	10	16.0	8	385	3080

Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	8.0	20.9	8.2
	10.0	424.2	261.5
	12.5	20.5	19.7
	16.0	30.8	48.6
CA60	5.0	431.7	66.5

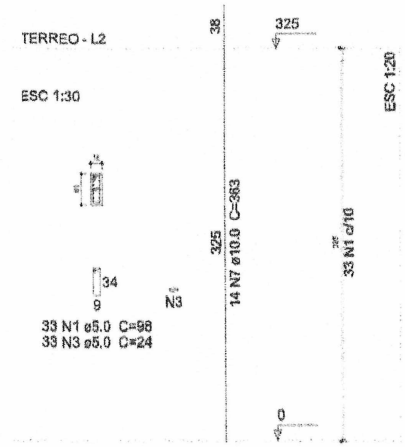
PESO TOTAL (kg)	
CA50	338
CA60	66.5

Volume de concreto (C-25) = 2.45 m³
Área de forma = 43.64 m²

P11=P15

TERREO - L2

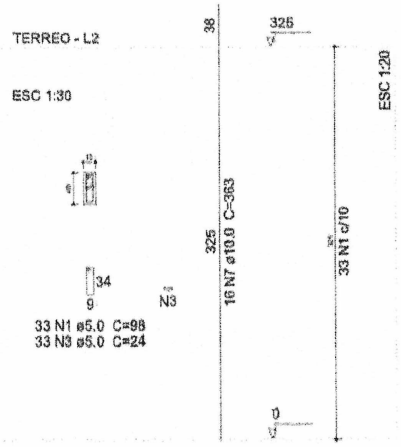
ESC 1:30



P12=P13=P14=P16

TERREO - L2

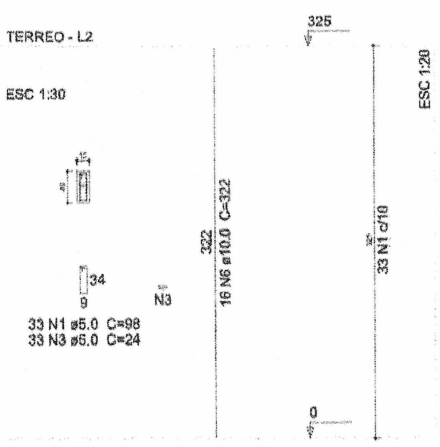
ESC 1:30



P17

TERREO - L2

ESC 1:30



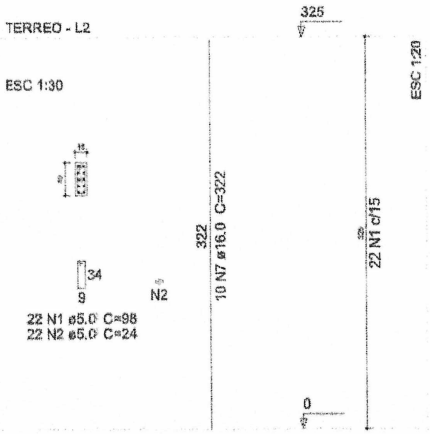
COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA - CE
FLS. 04

LACETE LIA MOREIRA FREIRE
ENGENHEIRO CIVIL
CREA-CE 22383

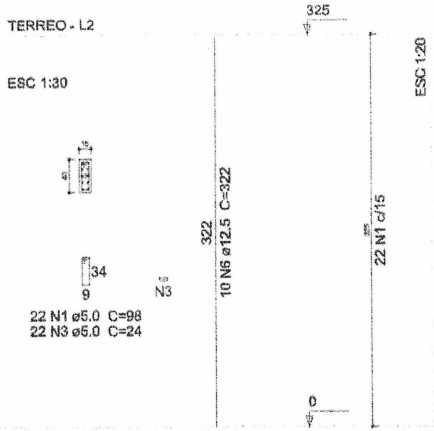
PROJETO ESTRUTURAL
RUA JOÃO CARAPINA S/N, DISTRITO DE PAPAQUA, URUOCA/CE
GOVERNO MUNICIPAL DE URUOCA
LACETE LIA MOREIRA FREIRE
LACETE LIA MOREIRA FREIRE

PROJETO ESTRUTURAL
FLS. 14

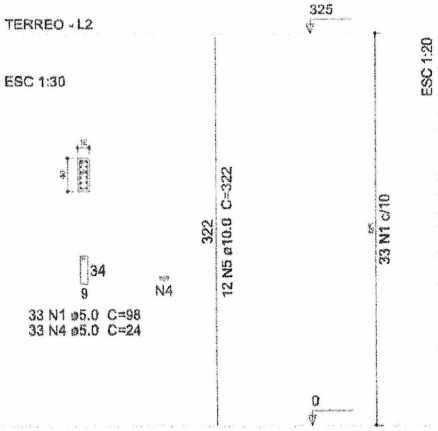
P2



P3



P4=P8



Relação do aço

P2 P3 2xP4
3xP5 2xP7 2xP9

AÇO	N	DIAM (mm)	QUANT (Barras)	UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	341	98	33418
	2	5.0	22	24	528
	3	5.0	22	24	528
	4	5.0	396	24	9504
CA50	5	10.0	96	322	30912
	6	12.5	10	322	3220
	7	16.0	10	322	3220

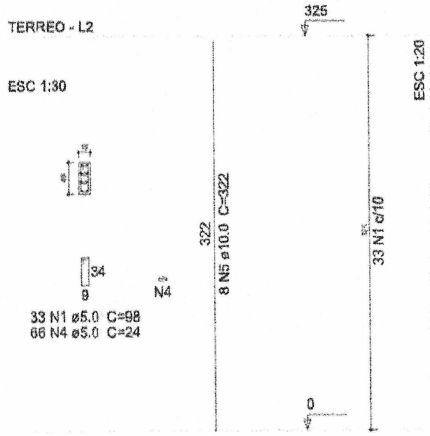
Resumo do aço

AÇO	DIAM (mm)	C.TOTAL (m)	PESO (kg)
CA50	10.0	309.2	190.6
	12.5	32.2	31
	16.0	32.2	50.8
CA60	5.0	439.8	67.8

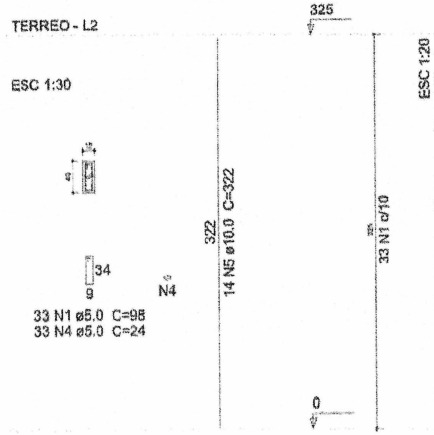
PESO TOTAL (kg)	
CA50	272.4
CA60	67.8

Volume de concreto (C-25) = 2.15 m³
Área de forma = 38.33 m²

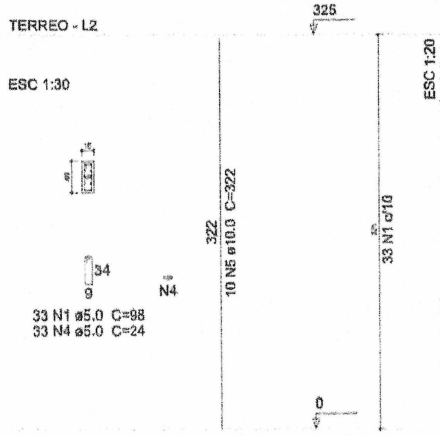
P5=P6=P18



P7=P20



P9=P19



COMISSÃO PERMANENTE DE LICITAÇÃO DE URUOCA-CE.
FLS. 505

LAESTE LUA MOREIRA FREIRE
ENGENHEIRO CIVIL
CREA-CE 322383

REFORMA DA ESCOLA DOMINGOS ALVES PEREIRA NO DISTRITO DE PARACUÍ
PROJETO ESTRUTURAL
RUA JOÃO CARPINA, S/N, DISTRITO DE PARACUÍ, URUOCA/CE
GOVERNO MUNICIPAL DE URUOCA
LAESTE LUA MOREIRA FREIRE
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