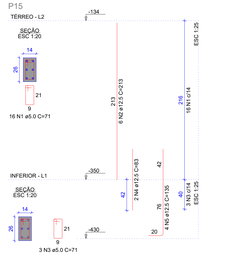
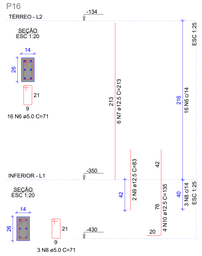
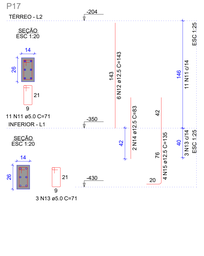
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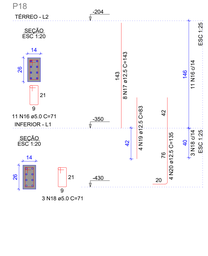
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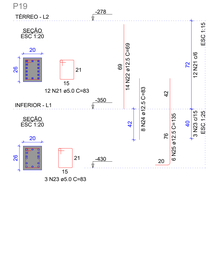
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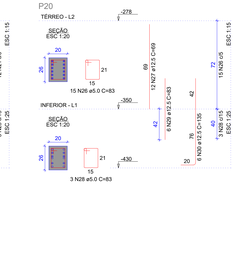
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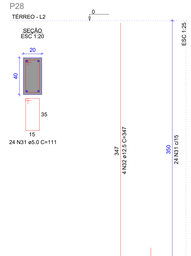
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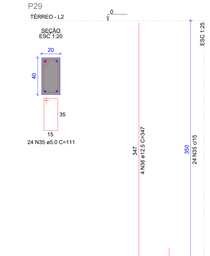
P20



P28



P29



RELAÇÃO DO AÇO

ELEMENTO	AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
P15-L2	CA60	1	5.0	16	71	1136
	CA50	2	12.5	6	213	1278
P15-L1	CA60	3	5.0	3	71	213
	CA50	4	12.5	2	83	166
	CA50	5	12.5	4	135	540
P16-L2	CA60	6	5.0	16	71	1136
	CA50	7	12.5	6	213	1278
P16-L1	CA60	8	5.0	3	71	213
	CA50	9	12.5	2	83	166
	CA50	10	12.5	4	135	540
P17-L2	CA60	11	5.0	11	71	781
	CA50	12	12.5	8	143	1144
P17-L1	CA60	13	5.0	3	71	213
	CA50	14	12.5	2	83	166
	CA50	15	12.5	4	135	540
P18-L2	CA60	16	5.0	11	71	781
	CA50	17	12.5	8	143	1144
P18-L1	CA60	18	5.0	3	71	213
	CA50	19	12.5	2	83	166
	CA50	20	12.5	4	135	540
P19-L2	CA60	21	5.0	12	83	996
	CA50	22	12.5	14	69	966
P19-L1	CA60	23	5.0	3	83	249
	CA50	24	12.5	8	135	858
	CA50	25	12.5	6	130	975
P20-L2	CA60	26	5.0	15	83	1245
	CA50	27	12.5	12	69	828
P20-L1	CA60	28	5.0	3	83	249
	CA50	29	12.5	6	83	498
	CA50	30	12.5	6	135	810
P28-L2	CA60	31	5.0	24	111	2664
	CA50	32	12.5	4	347	1388
P28-L1	CA60	33	5.0	3	111	333
	CA50	34	12.5	4	135	540
P29-L2	CA60	35	5.0	24	111	2664
	CA50	36	12.5	4	347	1388
P29-L1	CA60	37	5.0	3	111	333
	CA50	38	12.5	4	130	520

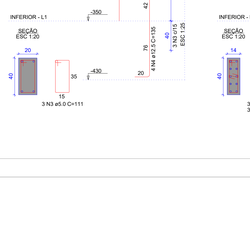
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	QUANT + 10% (Barras)	PESO + 10% (kg)
CA50	12.5	1596.6	15	169.1
CA60	5.0	134.2	-	22.8

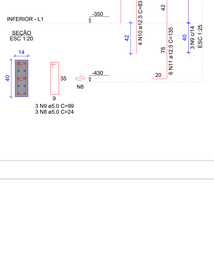
PESO TOTAL (kg)	
CA50	169.1
CA60	22.8

Volume de concreto (C-30) = 1.06 m³
Área de forma = 18.49 m²

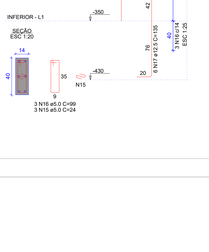
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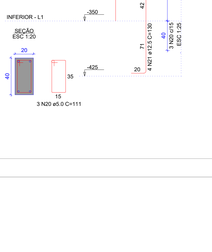
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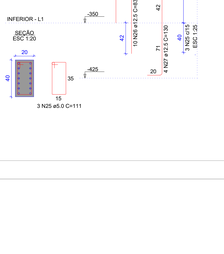
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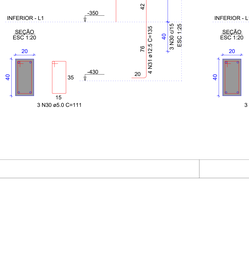
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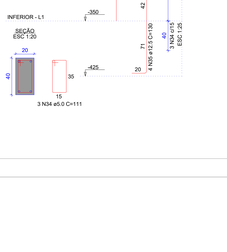
P37



P38



P39



P40



RELAÇÃO DO AÇO

ELEMENTO	AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
P30-L2	CA60	1	5.0	24	111	2664
	CA50	2	12.5	4	347	1388
P30-L1	CA60	3	5.0	3	111	333
	CA50	4	12.5	4	130	520
P31-L2	CA60	5	5.0	24	30	720
	CA60	6	5.0	24	111	2664
P31-L1	CA60	7	5.0	10	347	3470
	CA60	8	5.0	3	111	333
	CA50	9	12.5	6	83	498
	CA50	10	12.5	4	130	520
P33-L2	CA60	11	5.0	25	24	600
	CA60	12	5.0	25	99	2475
P33-L1	CA50	13	12.5	10	347	3470
	CA60	14	5.0	3	99	297
	CA50	15	5.0	3	83	249
	CA50	16	12.5	4	83	332
	CA50	17	12.5	6	135	810
P34-L2	CA60	18	5.0	25	24	600
	CA60	19	5.0	25	99	2475
P34-L1	CA60	20	12.5	6	347	2082
	CA60	21	5.0	3	99	297
	CA50	22	5.0	3	99	297
	CA50	23	12.5	6	90	540
	CA50	24	12.5	6	135	810
P37-L2	CA60	25	5.0	24	111	2664
	CA50	26	12.5	4	347	1388
P37-L1	CA60	27	5.0	3	111	333
	CA50	28	12.5	4	130	520
P38-L2	CA60	29	5.0	24	111	2664
	CA50	30	12.5	4	347	1388
P38-L1	CA60	31	5.0	3	111	333
	CA50	32	12.5	4	130	520
P39-L2	CA60	33	5.0	24	111	2664
	CA50	34	12.5	4	347	1388
P39-L1	CA60	35	5.0	3	111	333
	CA50	36	12.5	4	130	520
P40-L2	CA60	37	5.0	24	111	2664
	CA50	38	12.5	4	347	1388
P40-L1	CA60	39	5.0	3	111	333
	CA50	40	12.5	4	130	520

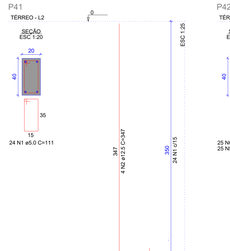
RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	QUANT + 10% (Barras)	PESO + 10% (kg)
CA50	12.5	220.7	21	233.9
CA60	5.0	256.6	-	43.5

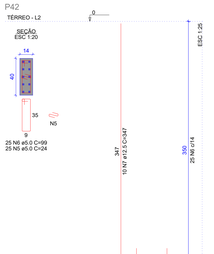
PESO TOTAL (kg)	
CA50	233.9
CA60	43.5

Volume de concreto (C-30) = 2.31 m³
Área de forma = 36.50 m²

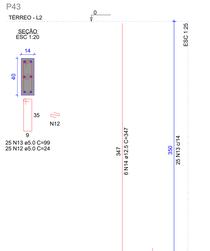
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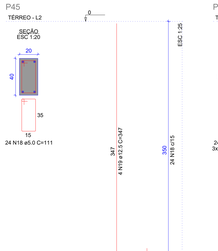
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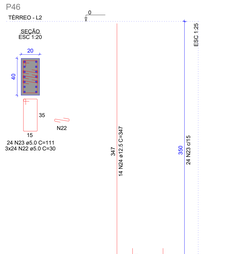
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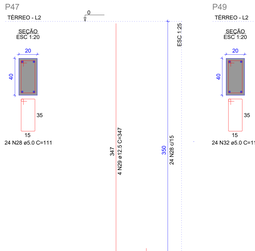
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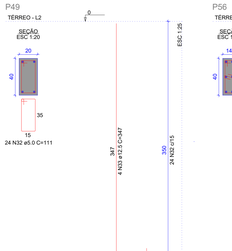
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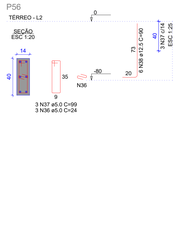
P47



P49



P56



RELAÇÃO DO AÇO

ELEMENTO	AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
P41-L2	CA60	1	5.0	24	111	2664
	CA50	2	12.5	4	347	1388
P41-L1	CA60	3	5.0	3	111	333
	CA50	4	12.5	4	135	540
P42-L2	CA60	5	5.0	24	30	720
	CA60	6	5.0	25	99	2475
P42-L1	CA60	7	12.5	10	347	3470
	CA60	8	5.0	3	24	72
	CA60	9	5.0	3	99	297
	CA50	10	12.5	6	83	498
	CA50	11	12.5	6	135	810
P43-L2	CA60	12	5.0	25	24	600
	CA60	13	5.0	25	99	2475
P43-L1	CA50	14	12.5	6	347	2082
	CA60	15	5.0	3	24	72
	CA60	16	5.0	3	99	297
P45-L2	CA60	17	5.0	24	111	2664
	CA50	18	5.0	24	111	2664
P45-L1	CA60	19	12.5	4	347	1388
	CA60	20	5.0	3	111	333
P46-L2	CA60	21	12.5	4	130	520
	CA50	22	5.0	25	347	8675
	CA50	23	5.0	24	111	2664
P46-L1	CA50	24	12.5	14	347	4858
	CA50	25	5.0	3	111	333
	CA50	26	12.5	10	83	830
P47-L2	CA50	27	12.5	4	130	520
	CA60	28	5.0	24	111	2664
P47-L1	CA60	29	5.0	25	347	8675
	CA50	30	5.0	3	111	333
	CA50	31	12.5	4	135	540
P49-L2	CA60	32	5.0	24	111	2664
	CA50	33	12.5	4	347	1388
P49-L1	CA60	34	5.0	3	111	333
	CA50	35	12.5	4	130	520
P56-L2	CA60	36	5.0	3	24	72
	CA60	37	5.0	3	99	297
	CA50	38	12.5	6	90	540

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	QUANT + 10% (Barras)	PESO + 10% (kg)
CA50	12.5	219.2	21	232.3
CA60	5.0	244	-	41.4

PESO TOTAL (kg)	
CA50	232.3
CA60	41.4

Volume de concreto (C-30) = 2.02 m³
Área de forma = 32.26 m²

NOTAS IMPORTANTES

A) Em caso de dúvidas consultar o calculista.

B) Verificar a limpeza das formas ou partes da estrutura em contato com a concretagem.

C) Dobrar as barras conforme a NBR 6118:2023.

D) O C.G. dos blocos deve coincidir com o C.G. das estacas e/ou de cargas.

E) Especificações do concreto para sapatas:

fck > = 30 MPa;

Slump 12 + ou − 3 cm;

Cimento a ser empregado: CP II − F − 32.

F) Especificações do concreto para vigas de travamento:

fck > = 30 MPa;Slump 12 + ou − 3 cm;

Cimento a ser empregado: CP II − F − 32.

G) A Fundação deve ser levantada e informada à PROJEPLUS para a verificação de possíveis alterações de projeto devido a excentricidades de locação das mesmas.

H) As medidas apresentadas no projeto estão em cm, exceto quando especificado.

I) Profundidade das estacas: Conforme projeto de Locação.

J) Espaçamento entre os estribos: Conforme Projeto de Locação

K) Cobrimento da armadura= Conforme Projeto.

L) Na fabricação dos pilares pré moldados, verificar comprimento de embutimento em cálice, e sua devida rugosidade

REVISÕES DE PROJETO

REV.	DATA	ASSUNTO
1	16/12/2025	EMISSÃO DE PROJETO EXECUTIVO

PROJEPLUS
engenharia

PROJETO ESTRUTURAL

OBRA: **CMEI SAPOPEMA**

PROPRIETÁRIO: PREFEITURA MUNICIPAL DE SAPOPEMA

CONTEUDO:

- **DETALHAMENTO DE FUNDAÇÃO**
- **DETALHAMENTO DE PILARES**

RESPONSÁVEL TÉCNICO: **ANDRÉ DE MOURA RODRIGUES**
CREA-PR: 166714-D

FOLHA NÚMERO: **03**

TOTAL FOLHAS: **11**

PROPRIETÁRIO: **PREFEITURA MUNICIPAL DE SAPOPEMA**

DESENHO: ANDRÉ RODRIGUES

ESCALA: COMO INDICADO