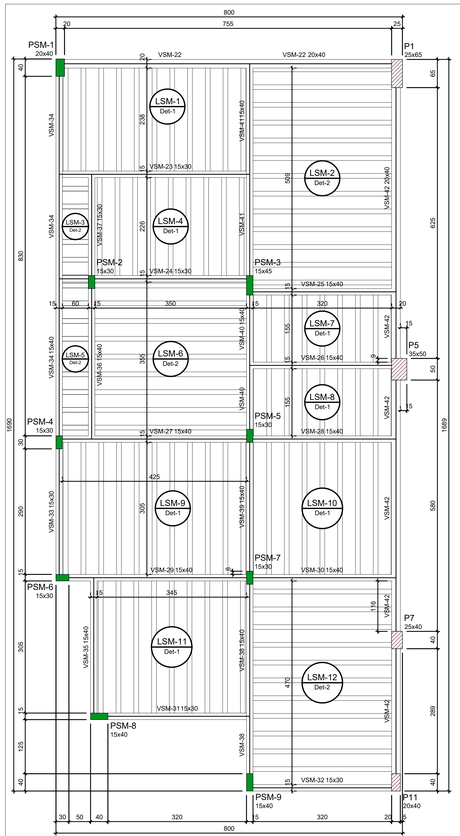


Forma de Cobertura Samu (Nível 180)

escala 1:50

Vigas			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
VSM-22	20x40	0	180
VSM-23	15x30	0	180
VSM-24	15x30	0	180
VSM-25	15x40	0	180
VSM-26	15x40	0	180
VSM-27	15x40	0	180
VSM-28	15x40	0	180
VSM-29	15x40	0	180
VSM-30	15x40	0	180
VSM-31	15x30	0	180
VSM-32	15x30	0	180
VSM-33	15x30	0	180
VSM-34	15x40	0	180
VSM-35	15x40	0	180
VSM-36	15x40	0	180
VSM-37	15x30	0	180
VSM-38	15x40	0	180
VSM-39	15x40	0	180
VSM-40	15x40	0	180
VSM-41	15x40	0	180
VSM-42	20x40	0	180

Pilares			
Nome	Seção (cm)	Elevação (cm)	Nível (cm)
P1	25x65	0	180
P5	35x50	0	180
P7	25x40	0	180
P11	20x40	0	180
PSM-1	20x40	0	180
PSM-2	15x30	0	180
PSM-3	15x45	0	180
PSM-4	15x30	0	180
PSM-5	15x30	0	180
PSM-6	15x30	0	180
PSM-7	15x30	0	180
PSM-8	15x40	0	180
PSM-9	15x40	0	180

Lajes						
Dados					Sobrecarga (kgf/m²)	
Nome	Tipo	Altura (cm)	Elevação (cm)	Nível (cm)	Peso próprio (kgf/m²)	Adicional	Acidental	Localizada
LSM-1	Treliçada 1D	13	0	180	162	101	150	-
LSM-2	Treliçada 1D	13	0	180	162	101	150	-
LSM-3	Treliçada 1D	13	0	180	162	101	150	-
LSM-4	Treliçada 1D	13	0	180	162	101	150	-
LSM-5	Treliçada 1D	13	0	180	162	101	150	-
LSM-6	Treliçada 1D	13	0	180	162	101	150	-
LSM-7	Treliçada 1D	13	0	180	162	101	150	-
LSM-8	Treliçada 1D	13	0	180	162	101	150	-
LSM-9	Treliçada 1D	13	0	180	162	101	150	-
LSM-10	Treliçada 1D	13	0	180	162	101	150	-
LSM-11	Treliçada 1D	13	0	180	162	101	150	-
LSM-12	Treliçada 1D	13	0	180	162	101	150	-

Blocos de enchimento							Características dos materiais
Detalhe	Tipo	Nome	Dimensões(cm)			Quantidade	fck (kgf/cm²)
			hb	bx	by		Eca (kgf/cm²)
1/2	EPS Unidirecional	B8/30/125	8	30	125	242	300
							268384

Dimensão máxima do agregado = 19 mm

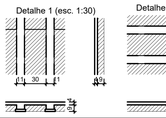
Legenda dos pilares

- Pilar que morre
- Pilar que passa

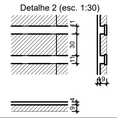
Legenda das vigas e paredes

- Viga

Detalhe 1 (esc. 1:30)

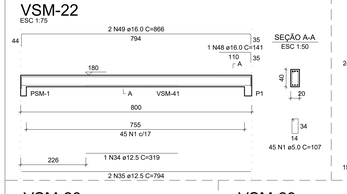


Detalhe 2 (esc. 1:30)



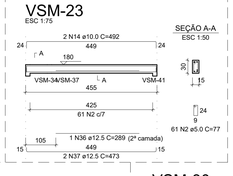
VSM-22

ESC 1:75



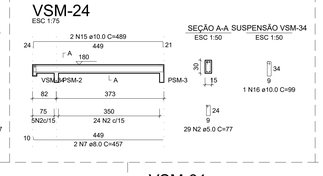
VSM-23

ESC 1:75



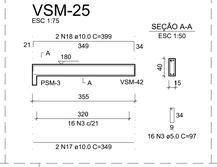
VSM-24

ESC 1:75



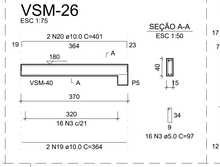
VSM-25

ESC 1:75



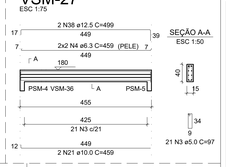
VSM-26

ESC 1:75



VSM-27

ESC 1:75



VSM-28

ESC 1:75



VSM-29

ESC 1:75



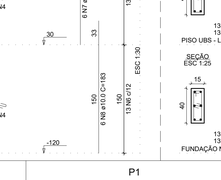
VSM-30

ESC 1:75



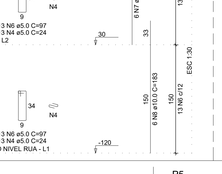
VSM-31

ESC 1:75



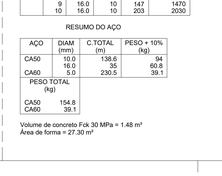
VSM-32

ESC 1:75



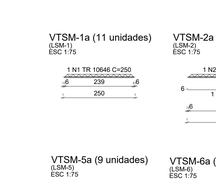
VSM-33

ESC 1:75



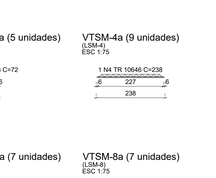
VSM-34

ESC 1:75



VSM-35

ESC 1:75



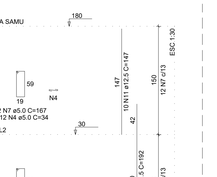
VSM-36

ESC 1:75



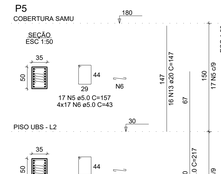
VSM-37

ESC 1:75



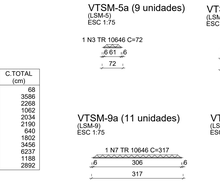
VSM-38

ESC 1:75



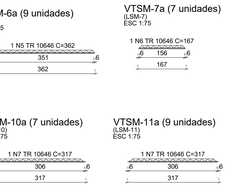
VSM-39

ESC 1:75



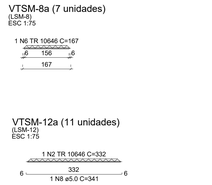
VSM-40

ESC 1:75



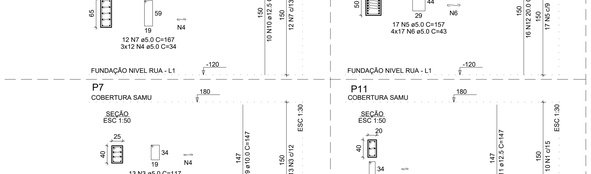
VSM-41

ESC 1:75



VSM-42

ESC 1:75



AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	134	107	14338
	2	5.0	171	77	13167
	3	5.0	267	97	25899
CA50	4	6.3	4	459	1836
	5	6.3	4	509	2036
	6	6.3	4	544	2176
	7	8.0	2	457	914
	8	8.0	2	369	738
	9	8.0	2	357	714
	10	8.0	2	382	764
	11	8.0	2	329	658
	12	8.0	2	361	722
	13	8.0	2	273	546
	14	10.0	2	492	984
	15	10.0	2	489	978
	16	10.0	1	99	99
	17	10.0	4	349	1396
	18	10.0	2	399	798
	19	10.0	2	364	728
	20	10.0	2	401	802
	21	10.0	4	459	1836
	22	10.0	2	359	718
	23	10.0	2	405	810
	24	10.0	2	902	1804
	25	10.0	2	955	1910
	26	10.0	2	339	678
	27	10.0	2	377	754
	28	10.0	4	379	1516
	29	10.0	2	502	1004
	30	10.0	2	360	720
	31	10.0	2	400	800
	32	10.0	2	956	1912
	33	10.0	2	697	1394
	34	12.5	1	319	319
	35	12.5	2	794	1588
	36	12.5	1	289	289
	37	12.5	2	946	946
	38	12.5	2	499	998
	39	12.5	2	389	778
	40	12.5	2	498	996
	41	12.5	2	385	770
	42	12.5	2	425	850
	43	12.5	2	552	1104
	44	12.5	2	538	1076
	45	12.5	1	189	189
	46	12.5	2	1197	2394
	47	12.5	1	613	1226
	48	16.0	1	141	141
	49	16.0	2	866	1732
	50	16.0	2	324	648
	51	16.0	2	423	846
	52	16.0	1	258	258
	53	16.0	2	600	1200

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	6.3	60.5	16.3
	8.0	50.6	21.9
	10.0	216.4	146.8
	12.5	135.2	143.3
	16.0	48.3	83.8
CA60	5.0	534	90.5
PESO TOTAL (kg)			
CA50	412.1		
CA60	90.5		

Volume de concreto Fck30 MPa = 5.81 m³
Área de forma = 68.17 m²

PSM-1

COBERTURA SAMU - L3

PSM-2

COBERTURA SAMU - L3

PSM-3

COBERTURA SAMU - L3

PSM-4

COBERTURA SAMU - L3

PSM-5

COBERTURA SAMU - L3

PSM-6

COBERTURA SAMU - L3

PSM-7

COBERTURA SAMU - L3

PSM-8

COBERTURA SAMU - L3

PSM-9

COBERTURA SAMU - L3

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	20	29	580
	2	5.0	20	107	2140
	3	5.0	130	77	10010
	4	5.0	104	24	2496
	5	5.0	26	107	2782
CA50	6	5.0	52	97	5044
	7	10.0	42	147	6174
	8	10.0	42	183	7686
	9	16.0	10	147	1470
	10	16.0	10	203	2030

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	138.6	94
	16.0	35	60.8
CA60	5.0	230.5	39.1
PESO TOTAL (kg)			
CA50	154.8		
CA60	39.1		

Volume de concreto Fck 30 MPa = 1.48 m³
Área de forma = 27.30 m²

Dobramento da folha conforme NBR 6492/21

Forma e Armação das lajes pré-moldadas do Samu

escala 1:75

Armaduras de distribuição eixo x	
Armadura	Armadura de distribuição
N2	9 N3 ø5.0 c/20 C=252
N2	9 N4 ø5.0 c/20 C=118

Armaduras de distribuição eixo y	
Armadura	Armadura de distribuição
N5	6 N6 ø5.0 c/20 C=365
N7	7 N8 ø5.0 c/20 C=106
N9	15 N10 ø5.0 c/20 C=231
N11	10 N8 ø5.0 c/20 C=106
N12	12 N10 ø5.0 c/20 C=231

RELAÇÃO DO AÇO

Negativos X Negativos Y

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	2	34	68
	2	5.0	22	163	3586
	3	5.0	9	252	2268
	4	5.0	9	118	1062
	5	5.0	18	113	2034
	6	5.0	6	365	2190
	7	5.0	5	128	640
	8	5.0	17	106	1802
	9	5.0	12	288	3456
	10	5.0	27	231	6237
	11	5.0	6	198	1188
	12	5.0	12	241	2892

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA60	5.0	274.2	46.5
PESO TOTAL (kg)			
CA60	46.5		

Volume de concreto Fck 30 MPa = 5.78 m³

VTSM-1a (11 unidades)

(LSM-1)
ESC 1:75

VTSM-2a (12 unidades)

(LSM-2)
ESC 1:75

VTSM-3a (5 unidades)

(LSM-4)
ESC 1:75

VTSM-4a (9 unidades)

(LSM-3)
ESC 1:75

VTSM-5a (9 unidades)

(LSM-5)
ESC 1:75

VTSM-6a (9 unidades)

(LSM-6)
ESC 1:75

VTSM-7a (7 unidades)

(LSM-7)
ESC 1:75

VTSM-8a (7 unidades)

(LSM-8)
ESC 1:75

VTSM-9a (11 unidades)

(LSM-9)
ESC 1:75

VTSM-10a (7 unidades)

(LSM-10)
ESC 1:75

VTSM-11a (9 unidades)

(LSM-11)
ESC 1:75

VTSM-12a (11 unidades)

(LSM-12)
ESC 1:75

RELAÇÃO DO AÇO

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	TR 10646	11	250	2750
	2	TR 10646	23	332	7636
	3	TR 10646	14	72	1008
	4	TR 10646	9	238	2142
	5	TR 10646	9	362	3258
	6	TR 10646	14	167	2338
	7	TR 10646	27	317	8559
	8	5.0	23	341	7843

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA60	5.0	78.4	13.3
	TR 10646	276.9	301.3
PESO TOTAL (kg)			
CA60	314.5		

P1

COBERTURA SAMU

P5

COBERTURA SAMU

P7

COBERTURA SAMU

P11

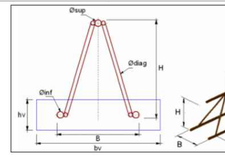
COBERTURA SAMU

Volume de concreto Fck 30 MPa = 1.40 m³
Área de forma = 16.2 m²

AÇO	N	DIAM (mm)	QUANT	C.UNIT (cm)	C.TOTAL (cm)
CA60	1	5.0	20	107	2140
	2	5.0	20	29	580
	3	5.0	26	117	2340
	4	5.0	124	34	4216
	5	5.0	34	157	5338
	6	5.0	136	43	5848
	7	5.0	24	167	4008
CA50	8	10.0	8	183	1464
	9	10.0	8	147	1176
	10	12.5	16	192	3072
	11	12.5	16	147	2352
	12	20.0	16	217	3472
	13	20.0	16	147	2352

RESUMO DO AÇO

AÇO	DIAM (mm)	C.TOTAL (m)	PESO + 10% (kg)
CA50	10.0	26.4	17.9
	12.5	54.3	57.5
	20.0	58.2	157.9
CA60	5.0	244.7	41.5
PESO TOTAL (kg)			
CA50	233.3		
CA60	41.5		



Laje	hv (cm)	hv (cm)	Treliça	Altura (cm)	Base (cm)	Armaduras treliça (mm)			S (cm)
						sup	adiag	inf	
LSM-1	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-2	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-3	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-4	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-5	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-6	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-7	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-8	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-9	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-10	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-11	14	4	TR 10646	10	8	6.0	4.2	6.0	20
LSM-12	14	4	TR 10646	10	8	6.0	4.2	6.0	20

NOTAS

- A cota de assentamento das Viga de Cobertura do Samu é de 180.

- O recobrimento das Vigas são de 3 cm.

- Não fazer nenhum carregamento estrutural na laje e nem remover escoramentos antes dos 28 dias de cura.

- A capa de concreto das lajes premoldadas é de 3 cm.

- Unidade de medidas da Armação das Lajes estão em Centímentros.

- A Principais normas de Engenharia aplicada neste projeto Estrutural foram:

- ABNT NBR 12655:2006 - Concreto de cimento Portland - Preparo, controle e recebimento - Procedimento
- ABNT NBR 14432 :2001 - Exigências de resistência ao fogo de elementos construtivos de edificações - Procedimento
- ABNT NBR 14931:2004 - Execução de estruturas de concreto - Procedimento
- ABNT NBR 15200:2012 - Projeto de estruturas de concreto em situação de incênd