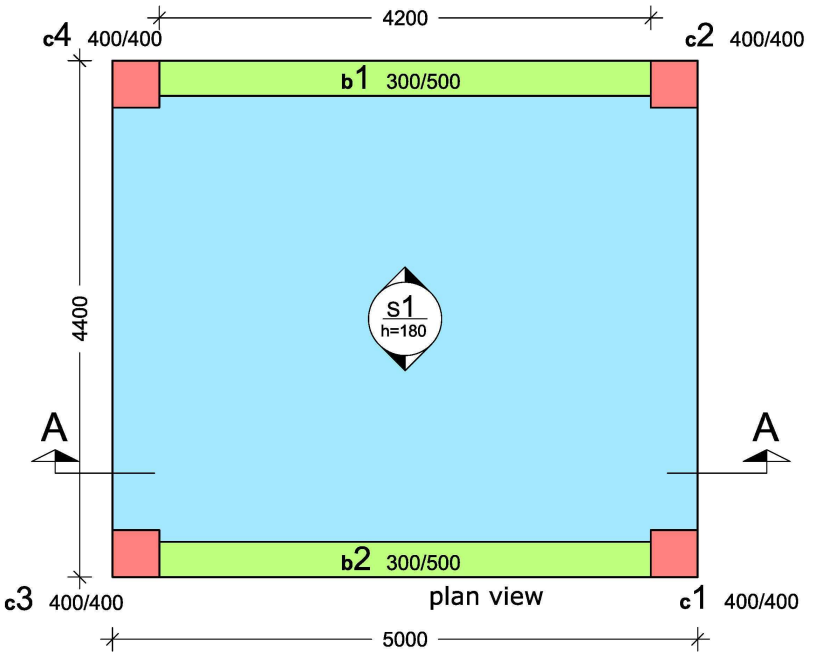
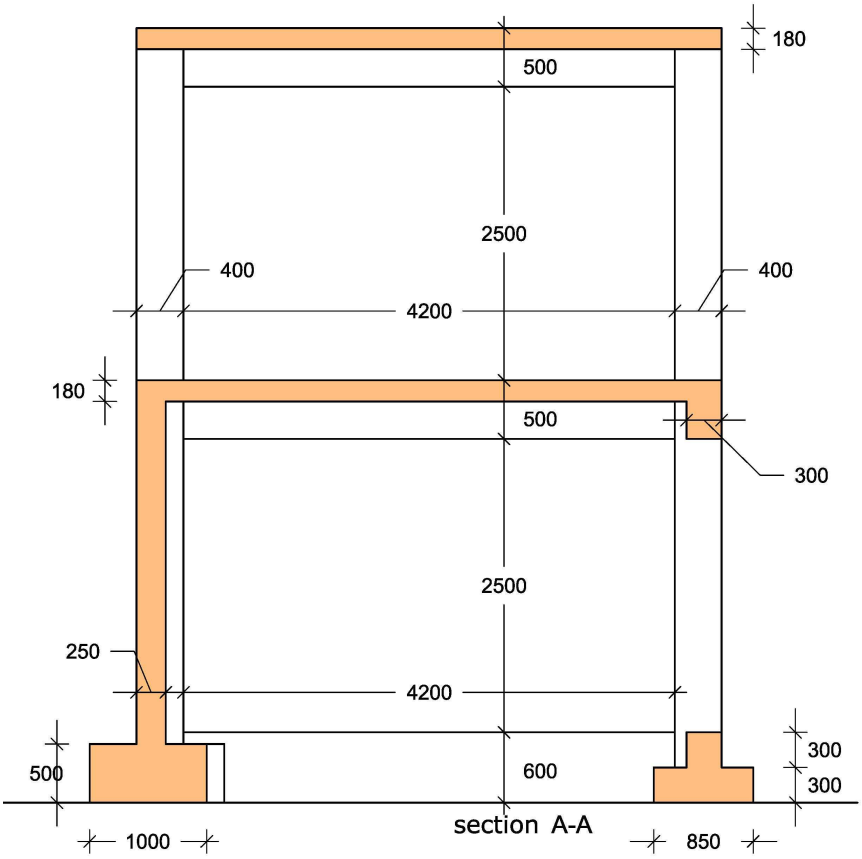
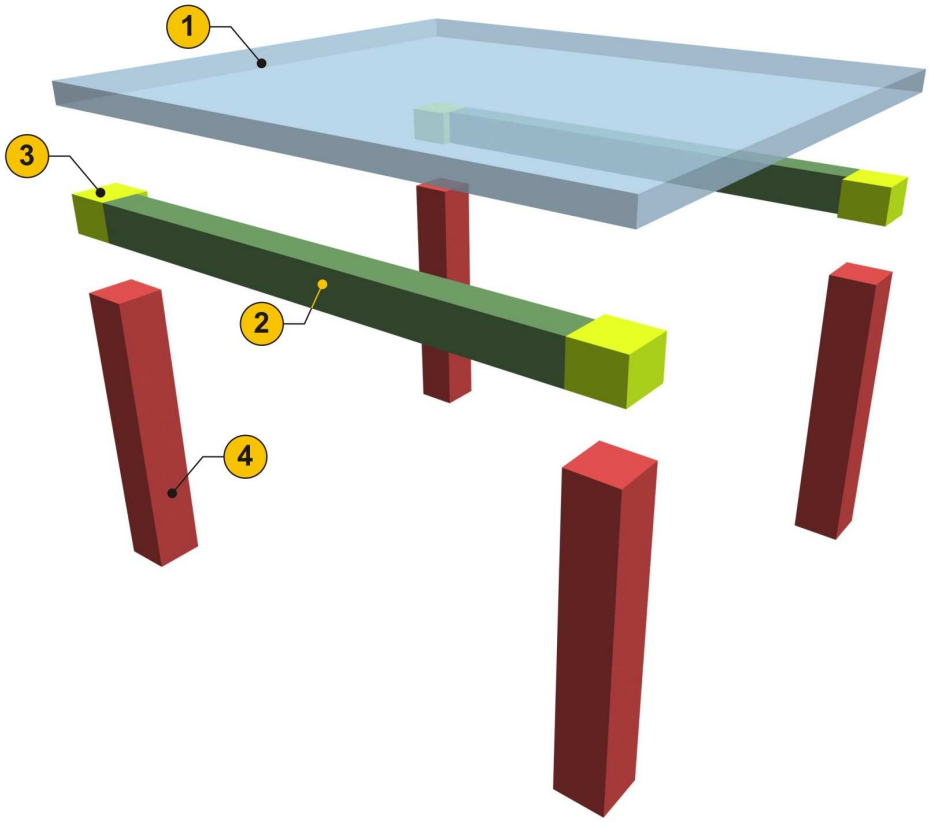
4.1. Estimation of the concrete's quantity

Ground floor







Beams – Slabs

①	S1: 4,40 x 5,00 x 0,18	= 3,96
②	b1,b2: 2 x [(5,00-2 x 0,40) x 0,30 x 0,32]	= 0,81
③	C1,2,3,4 (part of the joint area): 4 x (0,40 x 0,40 x 0,32)	= 0,20
	Total	= **4,97 m^3**

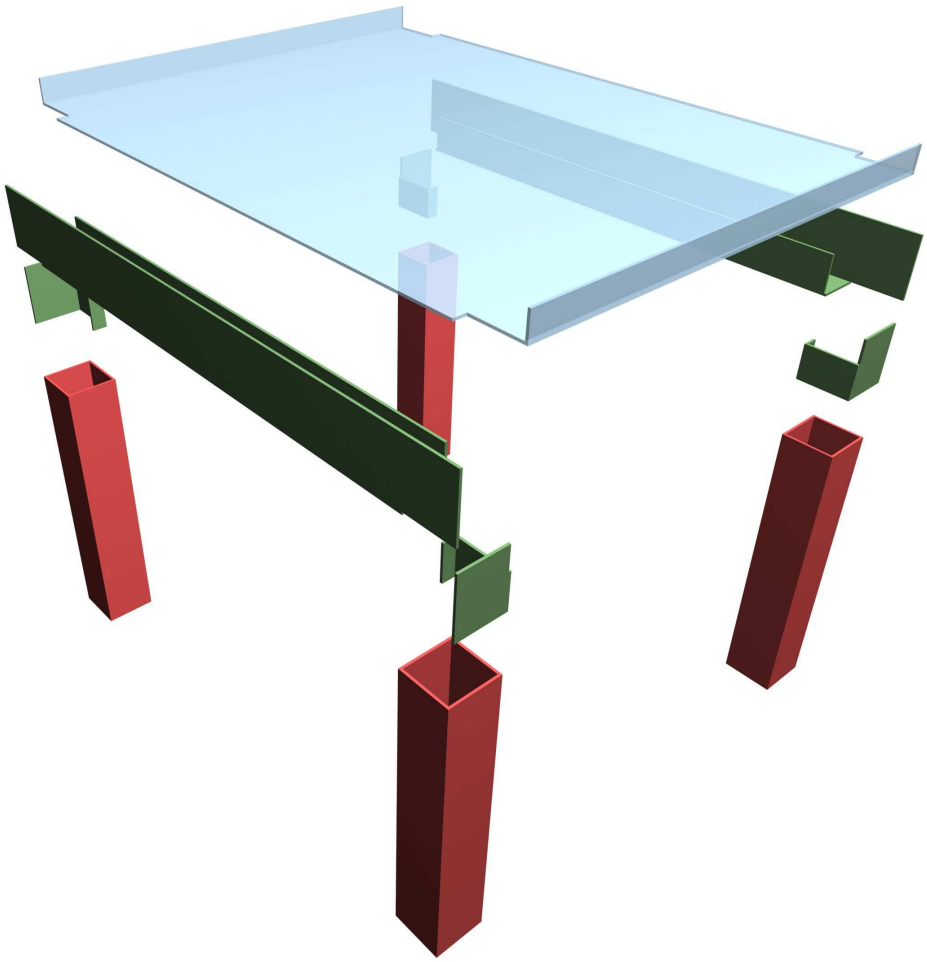
Columns

④	C1,2,3,4: 4 x (0,40 x 0,40 x 2,50)	= **1,60 m^3**

4.2. Estimation of the formworks' quantity

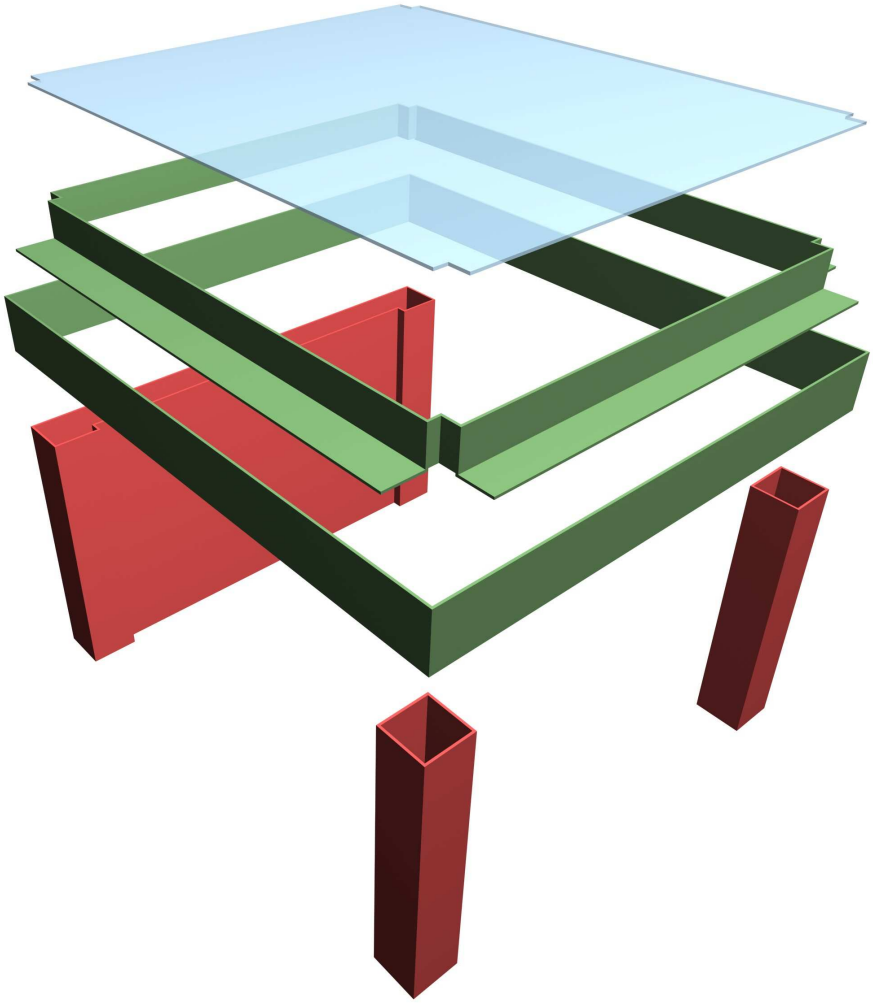
In constructional works, it is common practice to pay the technicians responsible for the formwork implementation, based upon the quantity (in m^3) of casted concrete. However, the most proper way is to separate those two things therefore, the following pages regard the estimation of the required moulds.

Ground floor



Beams – Slabs			**m^2**
S1:	3,80 x 5,00 – 4 x 0,40 x 0,10 + 2 x 3,60 x 0,18	=	20,136
b1,b2:	2 x 5,00 x 0,50 + 2 x (5,00-2 x 0,40) x 0,32 + + 2 x 4,20 x 0.30	=	10,208
columns (joints):	4 x 0,40 x 0,50 + 4 x 0,40 x 0,32 + 4 x 0,10 x 0,32	=	1,440
	Total	=	**31,784**
Columns:			
	4 x (0,40 x 0,40 x 2,50)	=	**16,000**

Basement

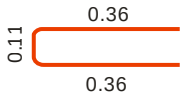


Beams – Slabs			m^2
S1:	4,50 x 3,90 - 4 x (0,15 x 0,15)	=	17,460
b1,b2:	2 x [5,00 x 0,50 +4,20 x 0,32] + 4,20 x 0,25	=	9,788
b3:	4,40 x 0,50 + 3,60 x 0,32 + 3,60 x 0,25	=	4,252
sw5:	4,40 x 0,50 + 3,60 x 0,32	=	3,352
internal column sides	4 x 2 x 0,15 x 0,32)	=	0,384
	Total	=	**35,236**

Columns:	4 x (0,40 x 0,40 x 2,50) – 2 x (0,25 x 2,50)	=	14,750
Shear wall sw5:	2 x (3,60 x 2,50)	=	18,000
	Total	=	**32,750**

4.4 Estimation of the reinforcements' quantity

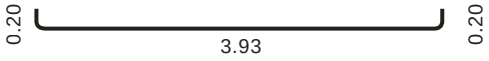
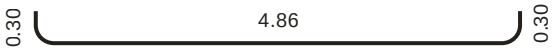
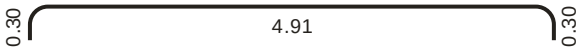
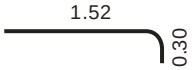
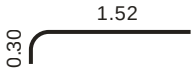
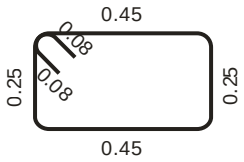
4.4.1 Ground floor - Slabs

Elem.	Descrip scrip-tion	Sketch	L (m)	Quant. (v)	Length (L*v)	D. Ø
S1	upper x		4.42	24	105.98	10
	lower x		4.33	25	108.25	10
	lower y		4.93	16	78.88	8
	addi-tional		0.81	15	12.14	8
	addi-tional		0.81	15	12.14	8

ESTIMATION OF REBARS

Diam. Ø	Mass/m (Kg)	Quantity n	Total length L*n (m)	Additional Mass b (Kg)	Total Mass L*n*sw + b (Kg)
8	0.395	46	103.16	0.0	40.7
10	0.617	49	214.23	0.0	132.1
Sum	-	95	-	0.0	172.8

4.4.2 Ground floor – Beams

Ele-ment	Descrip-tion	Sketch	L (m)	Quant. (v)	Length (L*v)	Diam. Ø
0b1	lower		4.28	1	4.28	14
	lower		5.33	3	16.00	14
	upper		5.37	2	10.75	14
	additional upper		1.75	1	1.75	14
	additional upper		1.75	1	1.75	14
	stirrups		1.61	31	49.85	8
0b2	Same as 0b1					

ESTIMATION OF REBARS

Diam. Ø	Mass/m (Kg)	Quantity n	Total length L*n (m)	Additional mass b (Kg)	Total mass L*n*sw + b (Kg)
14	1.210	16	69.07	0.0	83.6
Sum	-	16	-	0.0	83.6

ESTIMATION OF STIRRUPS

Diam. Ø	Mass/m (Kg)	Quantity n	Total length L*n (m)	Additional mass b (Kg)	Total mass L*n*sw + b (Kg)
8	0.395	62	99.70	0.0	39.3
Sum	-	62	-	0.0	39.3