Example-1: Section views, normal floor column and ceiling plans of a building project are given in Figures 4.1 to 4.5. Determine the quantities of following items:

1) Formwork for slab D302, beam K302 (between S2 and S3), and column S2 (between +3.70 to +6.50).
2) Support for ceiling formwork for Bedroom 1 and Bedroom 2 (including K301, K313, K312, K308, K314, K305 and, K315 but, excluding roof extensions)
3) Reinforcement for column S2 between +3.70 to +6.50, excluding reinforcement extensions from previous floor (For Φ8 rebars unit weight is 0.395 kg/m and for Φ16 rebars unit weight is 1.578 kg/m)
4) Concrete (C20) for slab D302, beam K302, and column S2 (between +3.70 to +6.50).
5) Exterior walls between +3.70 to +6.50 (masonry block-Gazbeton)
6) Interior walls for the normal floor. (Lintel length is 1.3 m.)
7) Interior plastering for the bedrooms and bathrooms (1.2 cm thickness).
8) Scaffolding for interior plastering of ceiling for the gallery opening.
9) Exterior plastering of wall in A1-D1 direction (between +3.70 to +6.38, excluding roof extensions)
10) Scaffolding for exterior plastering for the wall in A1-D1 direction between – 0.80 to +6.38 (Assume that the site in A1-D1 direction has been graded to -0.80 level)
11) Interior painting for the bedrooms
12) Flooring for the bedrooms (hardwood parquet 3 cm. thickness, thickness of the door frame is 3 cm, cornice 10 cm)
13) Baseboard for the flooring in the bedrooms (10 cm.)
14) Polishing of parquet and baseboard for the bedrooms
15) Window frames for the bedrooms and bathrooms (pine with no cornices)
16) Heat insulation of roof (glass wool, including roof extensions)

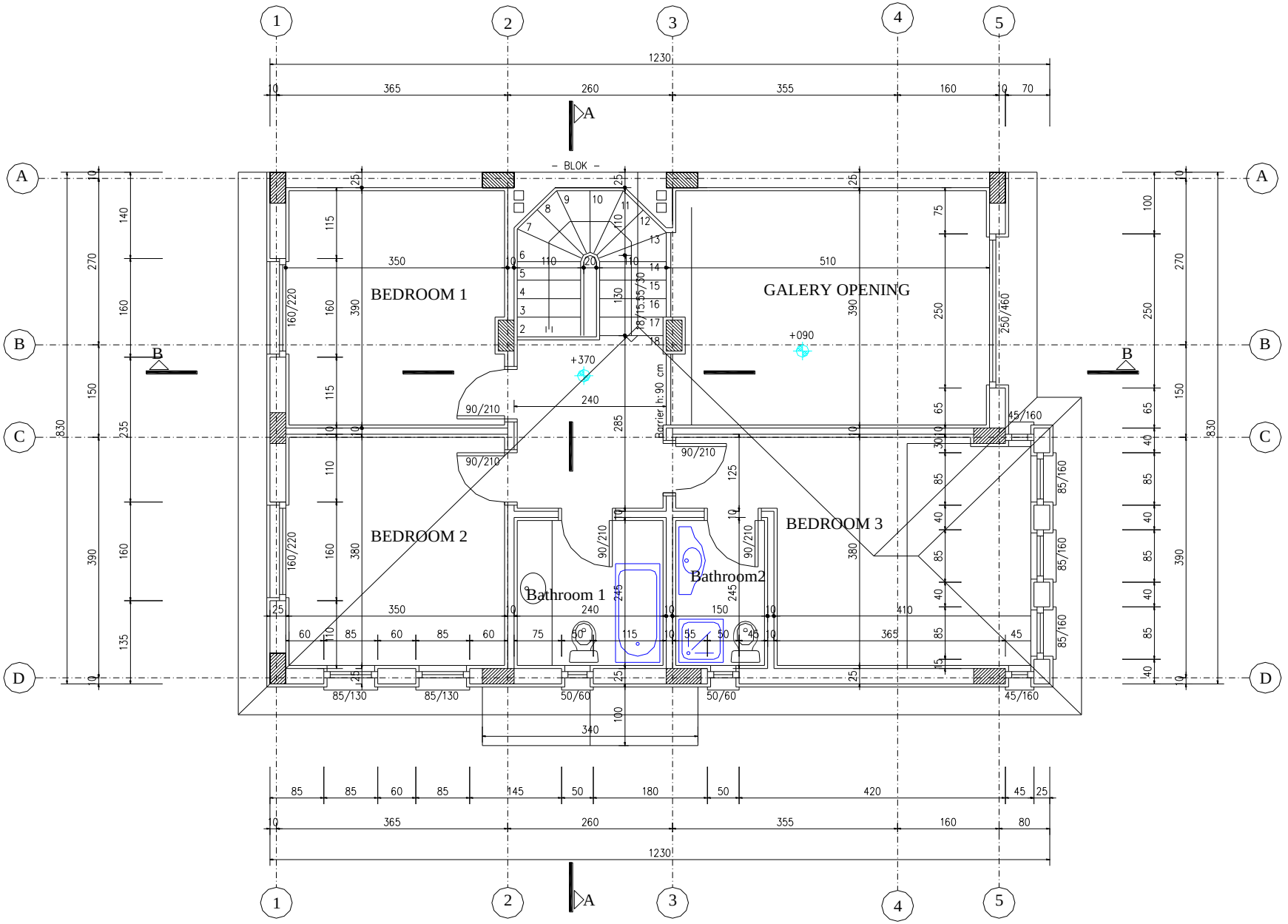


Figure 4.1: Normal Floor Plan

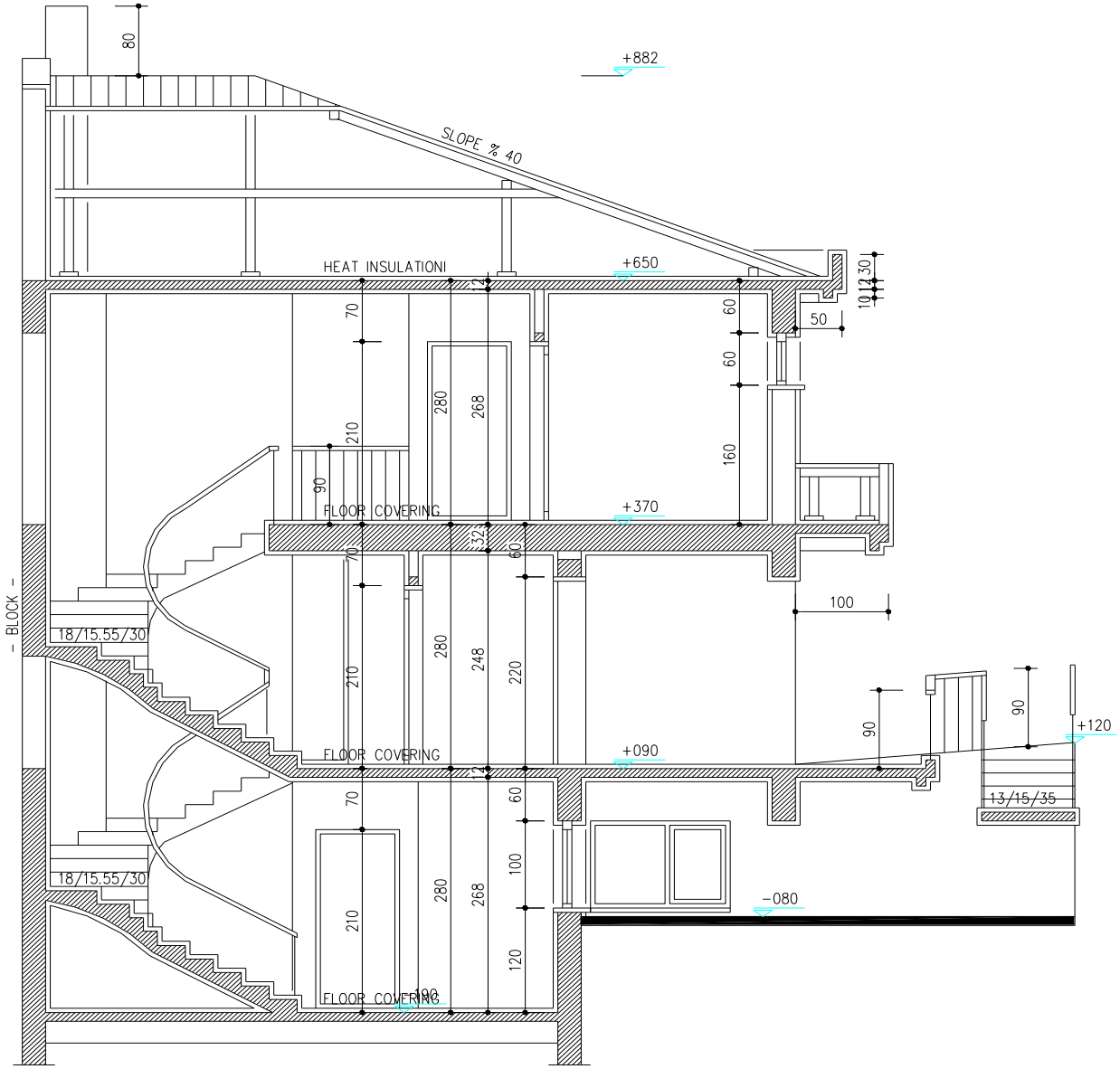


Figure 4.2: Section A-A

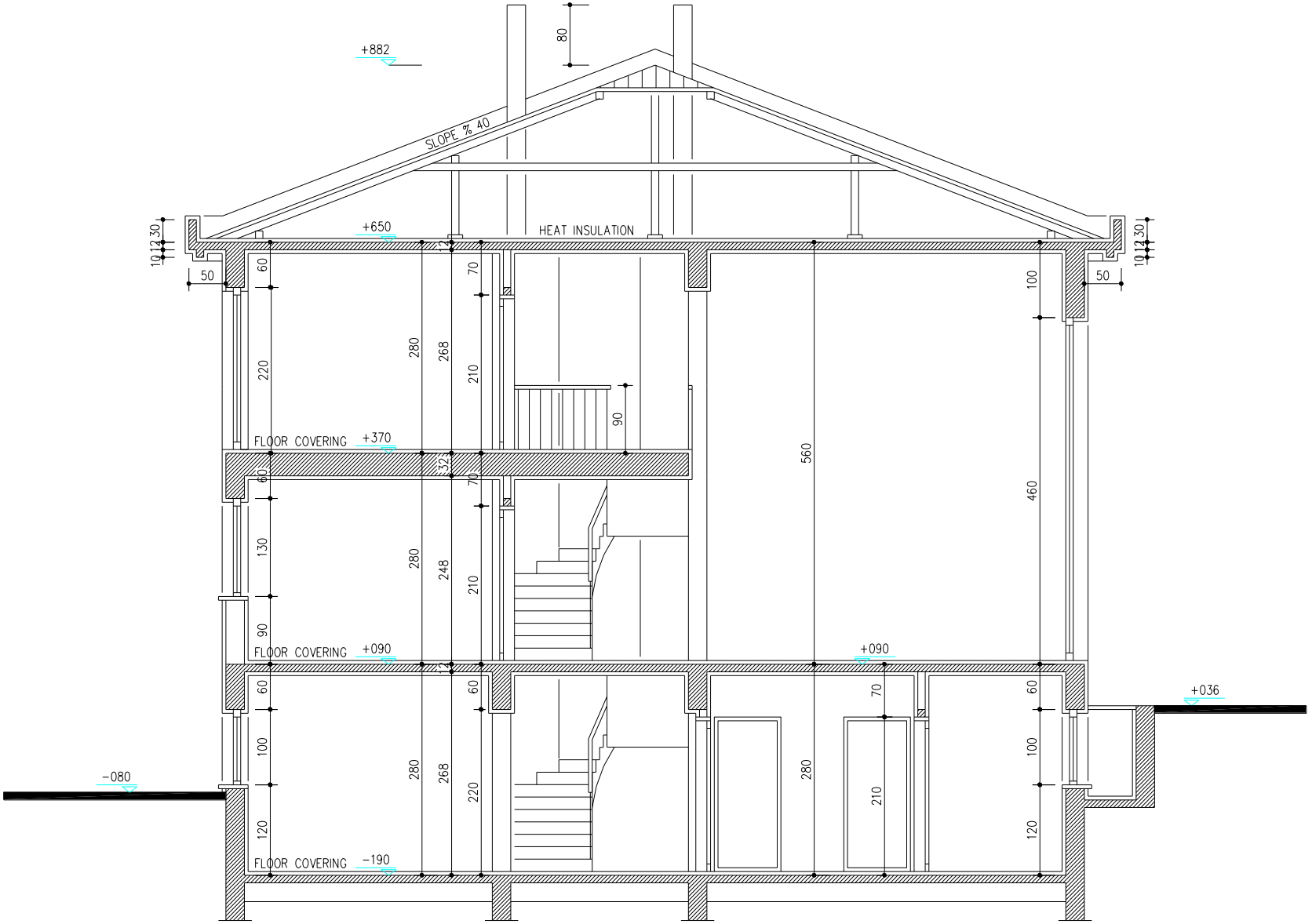


Figure 4.3: Section B-B

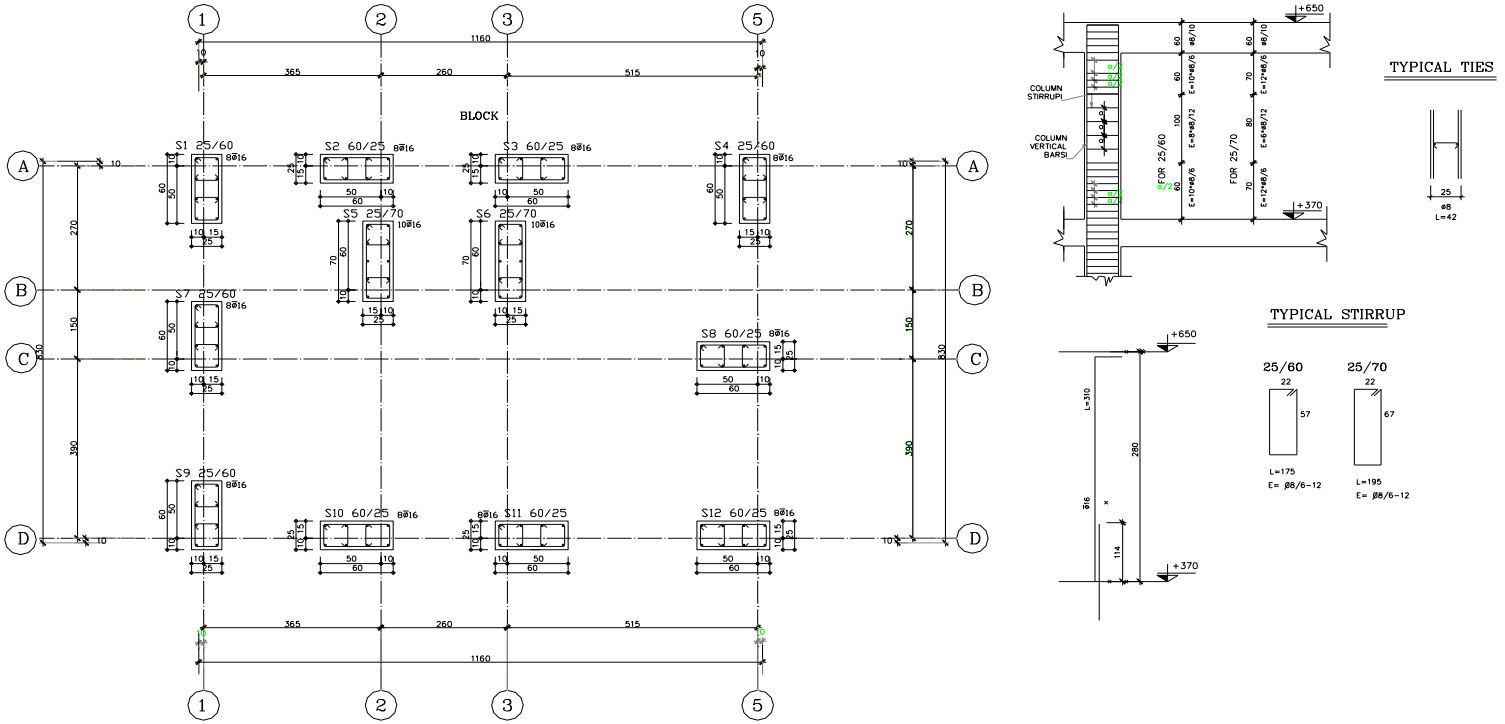


Figure 4.4: Normal Floor Column Plan

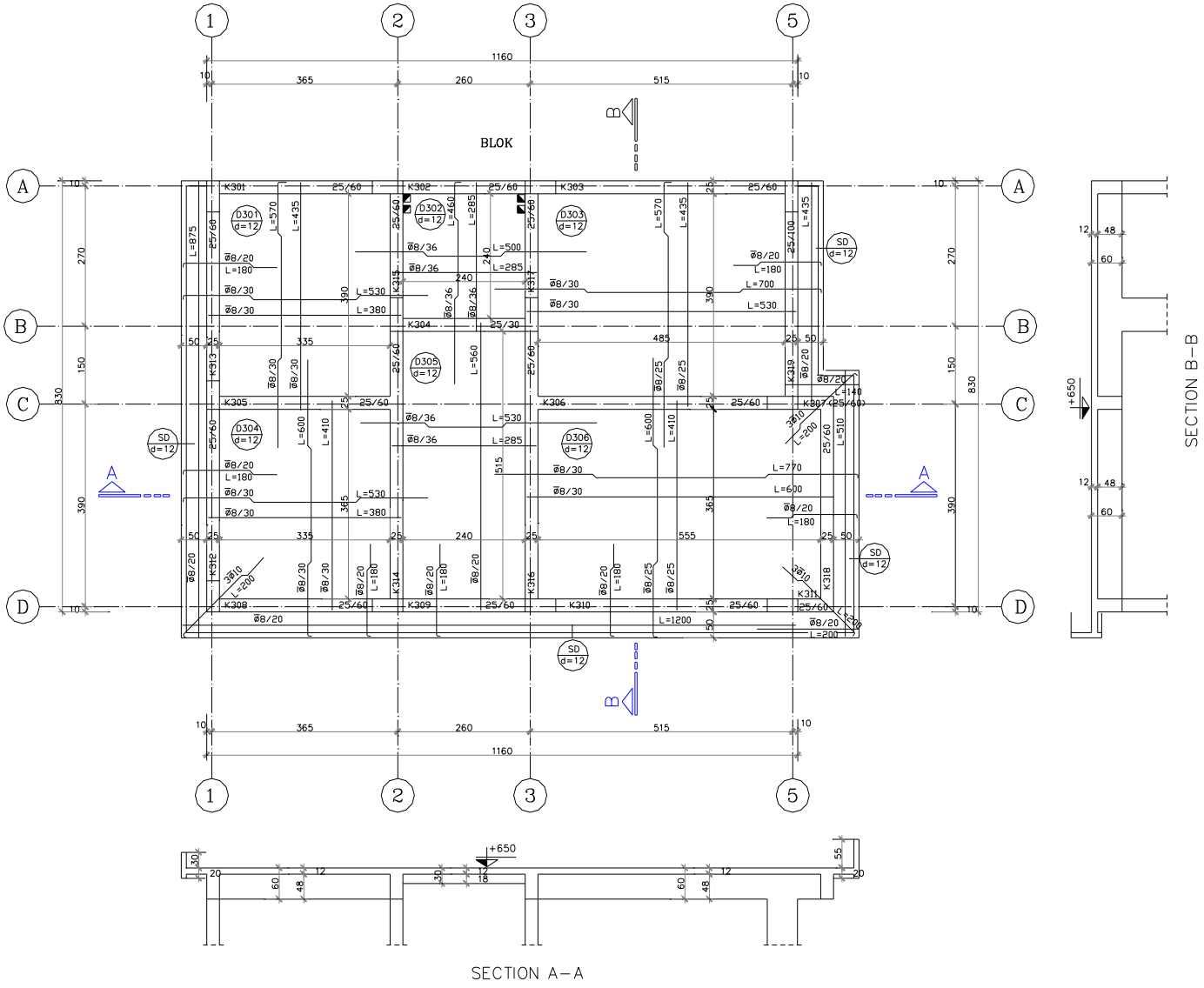


Figure 4.5: Normal Floor Ceiling Plan

NO	TYPE OF JOB	Location	Width(m)	Length(m)	Height(m)	Void	Qty.	Cum Qty.	Unit
1a	Formwork for Slab D302	D302	2.40	2.40			5.76	5.76	m^2
1b	Formwork for Beam K302	K302 (outer face)		2.40	0.60		1.44		m^2
		K302 (inner face)		2.40	0.48		1.152		m^2
		K302 (bottom)	0.25	2.40			0.60		m^2
	Total							3.192	m^2
1c	Formwork for Column S2	S2 (sides)		(2*0.25)	2.20		1.10		m^2
		S2 (outer face)		0.60	2.80		1.68		m^2
		S2 (inner face)		0.60	2.68		1.608		m^2
		K315		0.25	0.48	0.12	-0.12		m^2
	Total							4.268	m^2
2	Support for Ceiling Formwork for Bedrooms 1 & 2	A1-A2-D1-D2	8.30	3.85	2.68			85.639	m^3
3	Reinforcement of Column S2	S2	number	length	mass(kg/m)				
	Φ8	Stirrup	34	1.75	0.395		23.503		Kg
	Φ16	Vertical Bars	8	3.10	1.578		39.134		Kg
	Φ8	Ties	68	0.42	0.395		11.281		Kg
	Total (Φ8)							34.784	Kg
	Total (Φ16)							39.134	Kg
			Width(m)	Length(m)	Height(m)				
4a	Concrete for Slab D302	D302	2.40	2.40	0.12			0.691	m^3
4b	Concrete for Beam K302	K302	0.25	2.40	0.60			0.36	m^3
4c	Concrete for Column S2	S2	0.25	0.60	2.80			0.42	m^3
5	Exterior Walls	D1-D2	0.25	3.50	2.20		1.925		m^3
	(+3.70 to +6.50)	Window	0.25	0.85	1.30	0.2763	-0.27625		m^3
		Window	0.25	0.85	1.30	0.2763	-0.27625		m^3
		Column S10	0.25	0.50	2.20	0.275	-0.275	1.0975	m^3
		D2-D3	0.25	2.40	2.20		1.32		m^3
		Window	0.25	0.50	0.60	0.075	-0.075	1.245	m^3
		D3-D5	0.25	(1.50+4.45)	2.20		3.2725		m^3
		Column S11	0.25	0.50	2.20	0.275	-0.275		m^3
		Column S12	0.25	0.60	2.20	0.33	-0.33		m^3
		Window	0.25	0.50	0.60	0.075	-0.075		m^3
		Window	0.25	0.45	1.60	0.18	-0.18	2.4125	m^3
		A1-A5	0.25	11.60	2.20		6.38		m^3
		Column S1	0.25	0.25	2.20	0.1375	-0.1375		m^3
		Column S2	0.25	0.60	2.20	0.33	-0.33		m^3
		Column S3	0.25	0.60	2.20	0.33	-0.33		m^3
		Column S4	0.25	0.25	2.20	0.1375	-0.1375	5.445	m^3
		A1-D1	0.25	8.30	2.20		4.565		m^3
		Column S1	0.25	0.60	2.20	0.33	-0.33		m^3
		Column S7	0.25	0.60	2.20	0.33	-0.33		m^3
		Column S9	0.25	0.60	2.20	0.33	-0.33		m^3
		Window	0.25	1.60	2.20	0.88	-0.88		m^3
		Window	0.25	1.60	2.20	0.88	-0.88	1.815	m^3
		A5-C5	0.25	3.90	1.80		1.755		m^3

NO	TYPE OF JOB	Location	Width(m)	Length(m)	Height(m)	Void	Qty.	Cum. Qty.	Unit
5	Exterior Walls	Window	0.25	2.50	1.8	1.125	-1.125		m^3
	Continued	Column S4	0.25	0.35	1.8	0.1575	-0.1575	0.4725	m^3
		C5-D5	0.25	(4.15–0.25*)	2.2		2.145		m^3
		*The portion of 0.25m is already included in D3-D5 Section.							
		C5 Extension	0.25	0.45	2.2		0.2475		m^3
		Window	0.25	0.45	1.6	0.18	-0.18		m^3
		Window	0.25	0.85	1.6	0.34	-0.34		m^3
		Window	0.25	0.85	1.6	0.34	-0.34		m^3
		Window	0.25	0.85	1.6	0.34	-0.34	1.1925	m^3
	Total							13.68	m^3
6	Internal Wall	A2-C2		3.90	2.20		8.58		m^2
	(Normal Floor)	Column S5		0.70	2.20	1.54	-1.54		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		Lintel		1.30	0.10	0.13	-0.13	5.02	m^2
		C2-D2		3.80	2.20		8.36		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		Lintel		1.30	0.10	0.13	-0.13	6.34	m^2
		C3-D3		3.80	2.20		8.36		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		Lintel		1.30	0.10	0.13	-0.13	6.34	m^2
		C1-C2		3.60	2.20		7.92	7.92	m^2
		C3-C5		(5.10–0.35)	2.20		10.45	10.45	
		2--3 (BR 1)		2.40	2.68		6.432		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		Lintel		1.30	0.25	0.325	-0.325	4.217	m^2
		3--4 (BR 2 a)		1.50	2.68		4.02		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		Lintel		1.30	0.25	0.325	-0.325	1.805	m^2
		C--D (BR 2 b)		(3.80–1.25)	2.68		6.834	6.834	m^2
	Total							48.926	m^2
7a	Interior Plastering of Bedroom 1	A1-A2		3.50	2.68		9.38		m^2
		C1-C2		3.50	2.68		9.38		m^2
		A1-C1		3.90	2.68		10.452		m^2
		Window		1.60	2.20	3.52	-3.52		m^2
		A2-C2		3.90	2.68		10.452		m^2
		S5 Extension		(2*0.15)	2.20		0.66		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
	Interior Plastering of Ceiling	A1-A2-C1-C2	3.90	3.50			13.65		m^2
		Column S5	0.15	0.70		0.105	-0.105		m^2
	Total							48.459	m^2
7b	Interior Plastering of Bedroom 2	C1-C2		3.50	2.68		9.38		m^2
		D1-D2		3.50	2.68		9.38		m^2
		Window		(2*0.85)	1.30	2.21	-2.21		
		C1-D1		3.80	2.68		10.184		m^2
		Window		1.60	2.20	3.52	-3.52		
		C2-D2		3.80	2.68		10.184		m^2
		Door		0.90	2.10	1.89	-1.89		
	Interior Plastering of Ceiling	C1-C2-D1-D2	3.80	3.50			13.30		m^2
	Total							44.808	m^2

NO	TYPE OF JOB	Location	Width(m)	Length(m)	Height(m)	Void	Qty.	Cum. Qty.	Unit
7c	Interior Plastering of Bathroom 1	C2-C3		2.40	2.68		6.432		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		D2-D3		2.40	2.68		6.432		m^2
		Window		0.50	0.60	0.30	-0.30		m^2
		C2-D2		2.45	2.68		6.566		m^2
		C3-D3		2.45	2.68		6.566		m^2
	Interior Plastering of Ceiling	C2-C3-D2-D3	2.45	2.40			5.88		m^2
	Total							29.686	m^2
7d	Interior Plastering of Bedroom 3	C3-C5		5.70	2.68		15.276		m^2
		S8 Extension		(2*0.15)	2.20		0.66		
		Window		0.45	1.60	0.72	-0.72		m^2
		D3-D5		4.10	2.68		10.988		m^2
				1.60	2.68		4.288		m^2
		Window		0.45	1.60	0.72	-0.72		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		C3-D3		1.25	2.68		3.35		m^2
				(3.80 – 1.25)	2.68		6.834		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		C5-D5		3.80	2.68		10.184		m^2
		Window		(3*0.85)	1.60	4.08	-4.08		m^2
	Interior Plastering of Ceiling	C3-C5-D3-D5	4.10	3.80			15.58		m^2
			1.60	1.25			2.00		
		Column S8	0.15	0.60		0.09	-0.09		
	Total							59.77	m^2
7e	Interior Plastering of Bathroom 2	C3-C4		1.50	2.68		4.02		m^2
		Door		0.90	2.10	1.89	-1.89		m^2
		D3-D4		1.50	2.68		4.02		m^2
		Window		0.50	0.60	0.30	-0.30		m^2
		C3-D3		2.45	2.68		6.566		m^2
		C4-D4		2.45	2.68		6.566		m^2
	Interior Plastering of Ceiling		1.50	2.45			3.675		m^2
	Total							22.657	m^2
8	Scaffolding for Gallery Opening	A3-A5-C3-C5	3.90	5.00	(5.48-1.50*)		77.61		m^3
			*1.50m is reserved for worker on scaffolding.						
		Column S6	0.15	0.70	(5.48-1.50*)	0.418	-0.418		m^3
		K316 & K317	0.15	(3.90-0.70)	0.48	0.2304	-0.230		m^3
	Total							76.962	m^3
9	Exterior Plastering of the Wall A1-D1 for Normal Floor	A1-D1		8.30	2.68		22.244		m^2
		Window		1.60	2.20	3.52	-3.52		m^2
		Window		1.60	2.20	3.52	-3.52		m^2
	Total							15.204	m^2
10	Scaffolding for Exterior Plastering for the Wall A1-D1 (-0.8 to +6.38)	A1-D1		8.30	7.18			59.594	m^2

NO	TYPE OF JOB	Location	Width(m)	Length(m)	Height(m)	Void	Qty.	Cum. Qty.	Unit
11a	Painting of Bedroom 1	Same as Plastering						48.603	m^2
11b	Painting of Bedroom 2	Same as Plastering						44.808	m^2
11a	Painting of Bedroom 3	Same as Plastering						55.558	m^2
12	Flooring for Bedroom 1	A1-A2-C1-C2	3.90	3.50			13.65		m^2
		Door	0.10	0.84			0.084		m^2
		Column S5	0.15	0.70		0.109	-0.109	13.625	m^2
	Flooring for Bedroom 2	C1-C2-D1-D2	3.80	3.50			13.30		m^2
		Door	0.10	0.84			0.084	13.384	m^2
	Flooring for Bedroom 3	C3-C5-D3-D5	4.10	3.80			15.58		m^2
			1.60	1.25			2.00		m^2
		Door	0.10	0.84			0.084		m^2
		Column S8	0.15	0.60		0.09	-0.09	17.574	m^2
	Total							44.583	m^2
13	Baseboard for Bedroom 1	A1-A2-C1-C2		14.80			14.80		m
		Door				1.04	-1.04		m
		Column S5		2*0.15			0.30	14.06	m
	Baseboard for Bedroom 2	C1-C2-D1-D2		14.60			14.60		m
		Door				1.04	-1.04	13.56	m
	Baseboard for Bedroom 3	C3-C5-D3-D5		19.00			19.00		m
		Door				1.04	-1.04		m
		Door				1.04	-1.04	16.92	m
	Total							44.54	m
14	Polishing Parquet						44.583		m^2
	Baseboard		0.10	44.54			4.454		m^2
								49.037	m^2
15	Window Frames Bedroom 1	A1-C1	1.60	2.20			3.52	3.52	m^2
	Bedroom 2	A1-C1	1.60	2.20			3.52		m^2
		D1-D2	2*0.85	1.30			2.21	5.73	m^2
	Bathroom 1	D2-D3	0.50	0.60			0.30	0.30	m^2
	Bathroom 2	D3-D4	0.50	0.60			0.30	0.30	m^2
	Bedroom 3	D5	0.45	1.60			0.72		m^2
		C5-D5	3*0.85	1.60			4.08	4.80	m^2
	Total							14.65	m^2
16	Heat Insulation	A1-A5-C1-C5	12.60	3.40			42.84		m^2
		C1-C5-D1-D5	13.30	5.15			68.495		m^2
	Total							111.335	m^2