

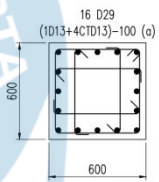
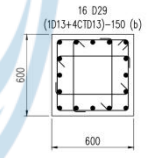
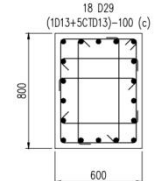
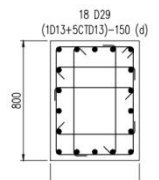
CHAPTER V

RESULT

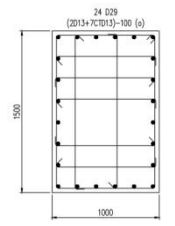
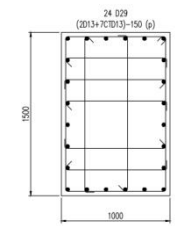
5.1. Column Design

The result of column plan and column schedules are attached in the attachment, while the reinforcements details as below:

Table 5. 1 Column Reinforcement Detail

CODE	AREA	DIMENSION	LONGITUDINAL	CONFINEMENT	DRAWING
K3.1	Support	600 x 600	16D29	(1D13+4CTD 13)-100	
	Field			(1D13+4CTD 13)-150	
K3.2	Support	600 x 800	18D29	(1D13+5CTD 13)-100	
	Field			(1D13+5CTD 13)-150	

K3.3	Support	600 x 1100	28D29	(1D13+6CTD 13)-100	
	Field			(1D13+6CTD 13)-150	
K3.4 (1)	Support	600 x 1200	28D29	(1D13+7CTD 13)-100	
	Field			(1D13+7CTD 13)-150	
K3.4(2)	Support	600 x 1200	14D29	(2D13+4CTD 13)-100	
	Field			(2D13+4CTD 13)-150	

K3.5	Support	1000 x 1500	24D29	(2D13+7CTD 13)-100	
	Field			(2D13+7CTD 13)-150	

5.2. Beam Design

Beam plan and beam details are attached in the attachment.

5.3. Slab Design

Slab reinforcement is designed with these requirements as bottom extra reinforcements are installed at the middle of the slab and stop in $L_x/10$ boundaries, while the top extra reinforcements are installed at the end of the slab with length $1/4L_x$. In this building, there are 5 types of slab as below:

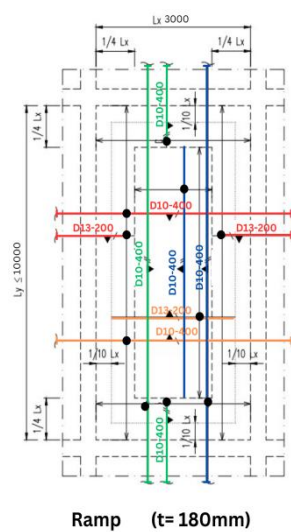


Figure 5. 1 Ramp Reinforcement Design

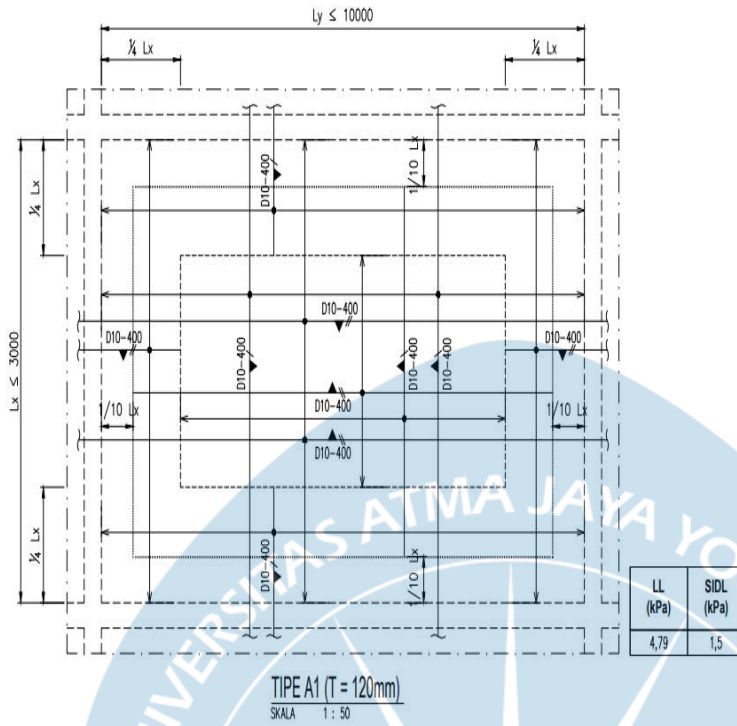


Figure 5. 2 Slab reinforcement Design

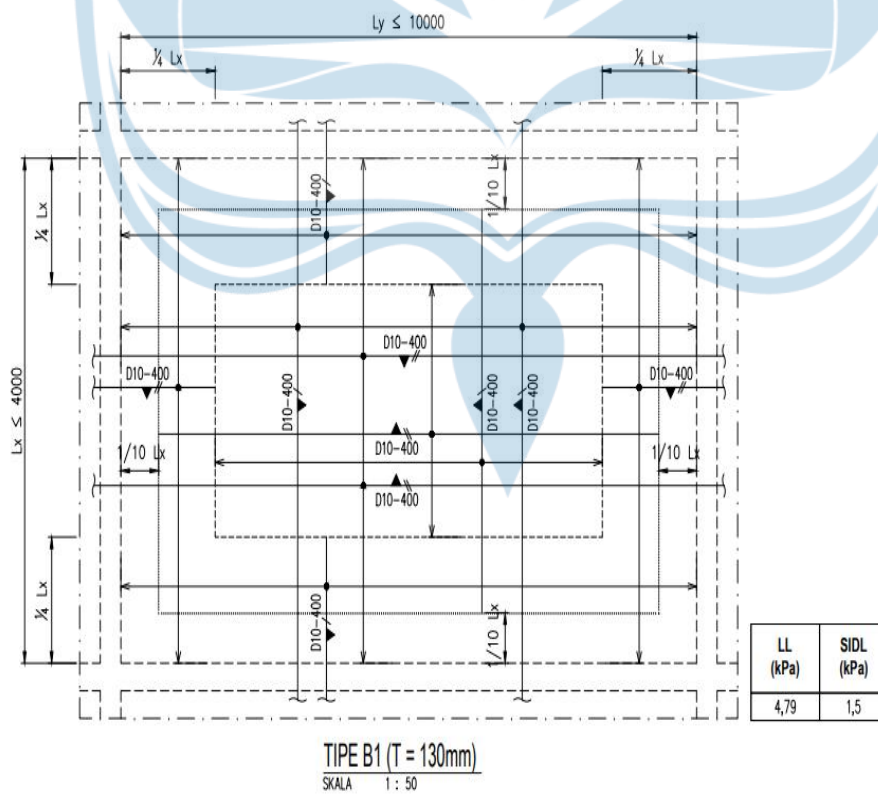


Figure 5. 3 Slab reinforcement Design

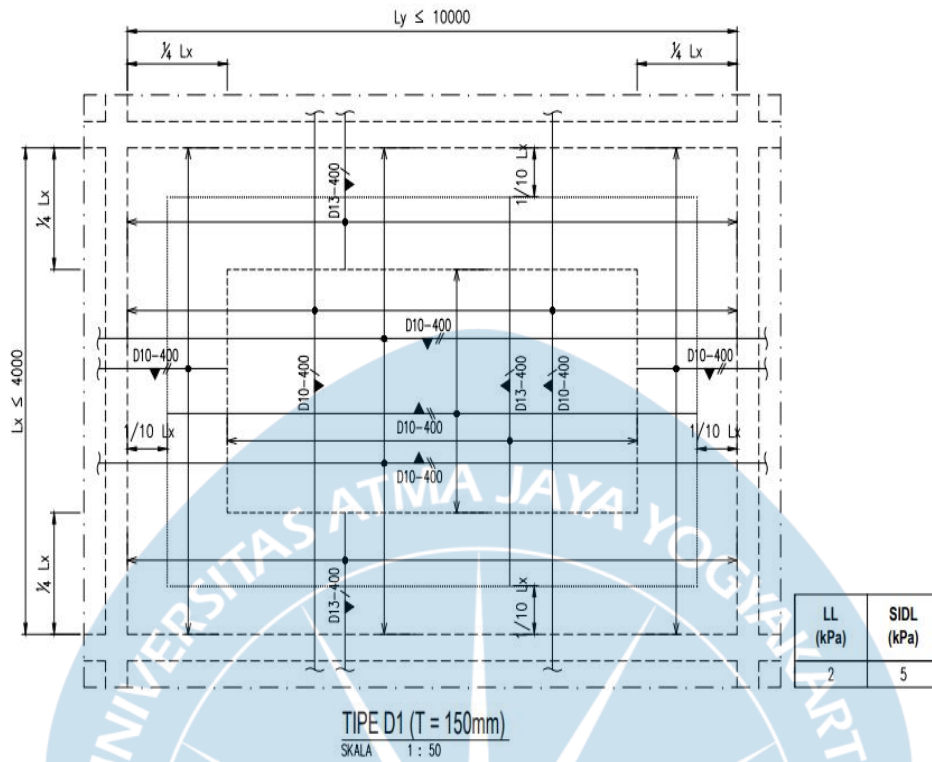


Figure 5. 4 Slab reinforcement Design

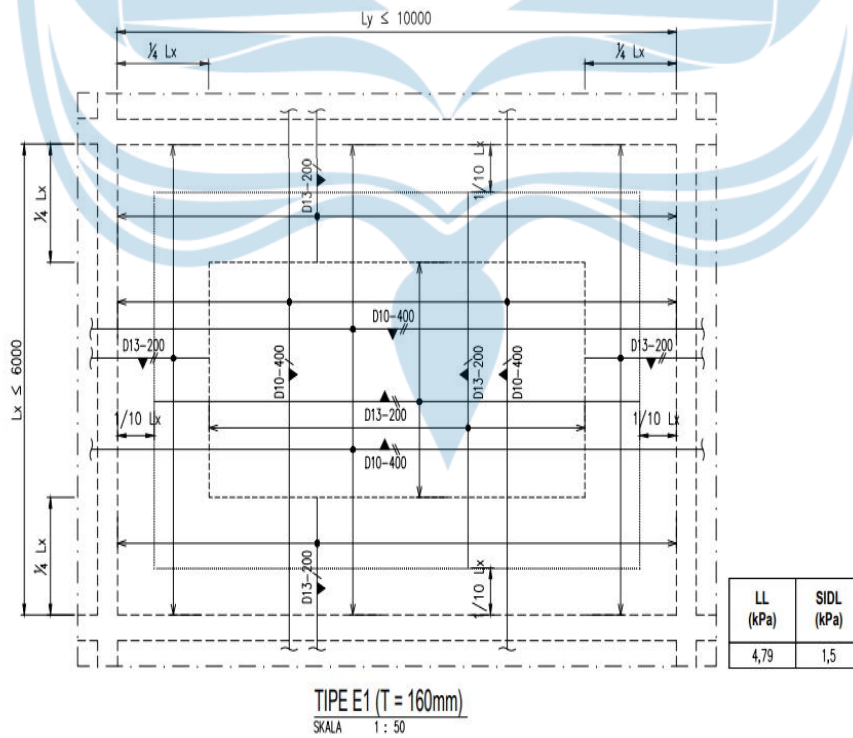


Figure 5. 5 Slab reinforcement Design

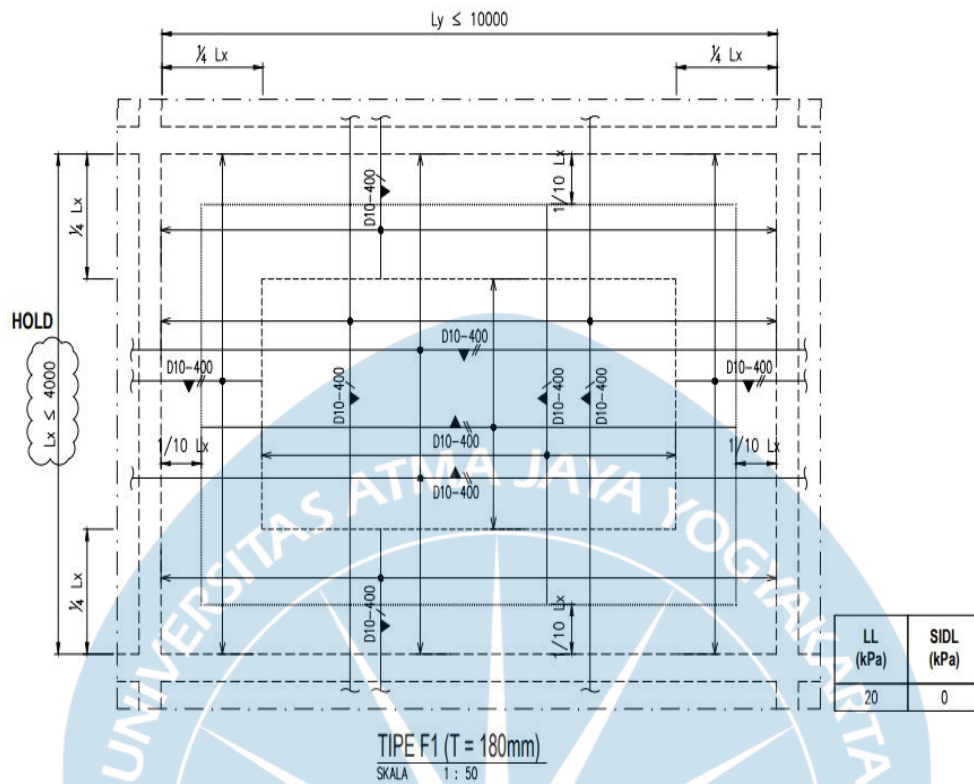


Figure 5. 6 Slab reinforcement Design

5.4. Stairs Design

Stairs designed and details are attached in the attachment, while the column and beam for bordes as below:

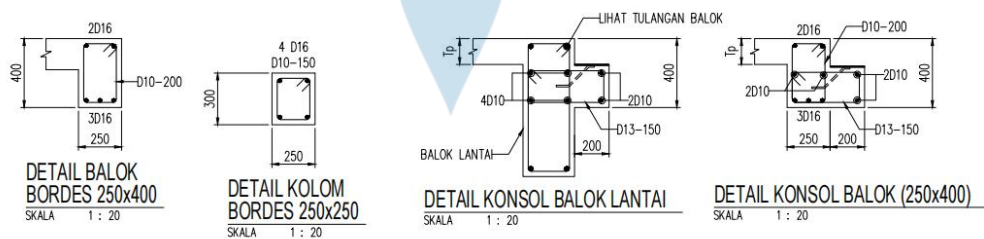


Figure 5. 7 Column and Beam for stairs

5.5. Wall Design

Wall design is using D13-100 for top reinforcement and bottom reinforcement.

5.6. Project Cost

Table 5. 2 Table of Project Costs

Upper Structural Work					
Nu m	Description	volume	unit	Unit price	Total Price
1	Column Work				
	Bekisting installation	7.512,00	m2	Rp251.628,89	Rp1.890.236.193,89
	Reinforcement installation	701.680,20	kg	Rp13.523,55	Rp9.489.205.753,08
	Concrete Casting fc 45 Mpa	2,76	m3	Rp2.290.883,10	Rp6.322.837,36
2	Wall Work				
	Bekisting installation	2.876,18	m2	Rp251.628,89	Rp723.729.970,20
	Reinforcement installation	100.630,40	kg	Rp13.523,55	Rp1.360.880.028,56
	Concrete Casting fc 45 Mpa	801,00	m3	Rp2.290.883,10	Rp1.834.997.363,10
3	Beam Work				
A	Main Beam				
	Bekisting installation	16,77	m2	Rp251.628,89	Rp4.218.809,91
	Reinforcement installation	276.576,95	kg	Rp13.523,55	Rp3.740.301.614,77
	Concrete Casting fc 35 Mpa	4,67	m3	Rp2.172.714,06	Rp10.142.229,23
B	Support Beam				
	Bekisting installation	9,13	m2	Rp251.628,89	Rp2.297.623,36
	Reinforcement installation	135.735,38	kg	Rp13.523,55	Rp1.835.623.905,01
	Concrete Casting fc 35 Mpa	1,99	m3	Rp2.172.714,06	Rp4.332.391,84
4	Slab Work				
	Bekisting installation	39,49	m2	Rp392.428,89	Rp15.497.801,58
	Reinforcement installation	423.435,92	kg	Rp11.889,95	Rp5.034.632.171,07
	Concrete Casting fc 35 Mpa	5,82	m3	Rp2.172.714,06	Rp12.647.368,54
5	Stairs Work				
	Bekisting installation	588,00	m2	Rp392.428,89	Rp230.748.185,14
	Reinforcement installation	11.864,37	kg	Rp11.889,95	Rp141.066.773,20
	Concrete Casting fc 35 Mpa	93,00	m3	Rp2.172.714,06	Rp202.062.407,58

6	Ramp Work				
	Bekisting installation	1.576,00	m2	Rp392.428,89	Rp618.467.924,81
	Reinforcement installation	347.664,00	kg	Rp11.889,95	Rp4.133.707.785,40
	Concrete Casting fc 35 Mpa	324,00	m3	Rp2.172.714,06	Rp703.959.355,44
7	Reinforcement transportation by crawler crane				
	Transportation	605.818,50	kg	Rp22.843,56	Rp13.839.054.214,28
TOTAL PROJECT COST					Rp45.834.132.707,33



REFERENCES

American concrete institute, 2014. Building Code Requirements for Structural

American concrete institute, 2014. Building Code Requirements for Structural

Badan Standar Nasional, 2019. Standar Nasional Indonesia Persyaratan Beton Struktural Untuk Bangunan Gedung dan Penjelasan

Kementerian pekerjaan umum dan perumahan rakyat, 2023. Analisis Harga Satuan Pekerjaan

Gubernur Provinsi DKI Jakarta, 2020. Upah minimum sektoral provinsi tahun 2020

Kementerian pekerjaan umum dan perumahan rakyat, 2012. Analisis Harga Satuan Pekerjaan Bidang Pekerjaan Umum

Badan Standar Nasional, 2012. Standar Nasional Indonesia Tata cara pemilihan campuran untuk beton normal , beton berat dan beton massa

The logo of Universitas Atma Jaya Yogyakarta is a light blue emblem. It features a central circular design with a compass rose or starburst pattern. The text "UNIVERSITAS ATMA JAYA YOGYAKARTA" is written in a semi-circle above the central design. Below the circle are stylized, flowing lines that resemble a book or a flame.

ATTACHMENTS



UNIT PRICE

Concrete casting 1m3 using ready mixed fc'35 Mpa with concrete pump					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,4	40.000,00	Rp100.000,00
	Bricklayer	OH	0,1	18.383,40	Rp183.834,00
	Foreman	OH	0,01	1.997,82	Rp199.782,00
	Overseer	OH	0,04	8.455,16	Rp211.379,00
			TOTAL PRICE OF WORKERS	68.836,38	
B	MATERIALS				
	Ready mixed concrete fc'35 Mpa	m3	1,02	1.887.739,50	Rp1.850.725,00
			TOTAL PRICE OF MATERIALS	1.887.739,50	
C	EQUIPMENT				
	Pompa beton 2,5", 20 KW, 20 bar, T = 18m'	hari	0,12	18.618,72	Rp155.156,00
			TOTAL PRICE OF TOOLS	18.618,72	
D	Total (A+B+C)			1.975.194,60	
E	Profit (Max 15%)			197.519,46	10%
F	Unit Price			2.172.714,06	

Concrete casting 1m3 using ready mixed fc'45 Mpa with concrete pump					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,4	40.000,00	Rp100.000,00
	Bricklayer	OH	0,1	18.383,40	Rp183.834,00
	Foreman	OH	0,01	1.997,82	Rp199.782,00
	Overseer	OH	0,04	8.455,16	Rp211.379,00
			TOTAL PRICE OF WORKERS	68.836,38	
B	MATERIALS				
	Ready mixed concrete fc'45 Mpa	m3	1,02	1.995.165,90	1.956.045,00
			TOTAL PRICE OF MATERIALS	1.995.165,90	
C	EQUIPMENT				
	Pompa beton 2,5", 20 KW, 20 bar, T = 18m'	hari	0,12	18.618,72	155.156,00
			TOTAL PRICE OF EQUIPMENT	18.618,72	
D	Total (A+B+C)			2.082.621,00	
E	Profit (Max 15%)			208.262,10	10%
F	Unit Price			2.290.883,10	

Bekisting installation 1m2 of column and beam

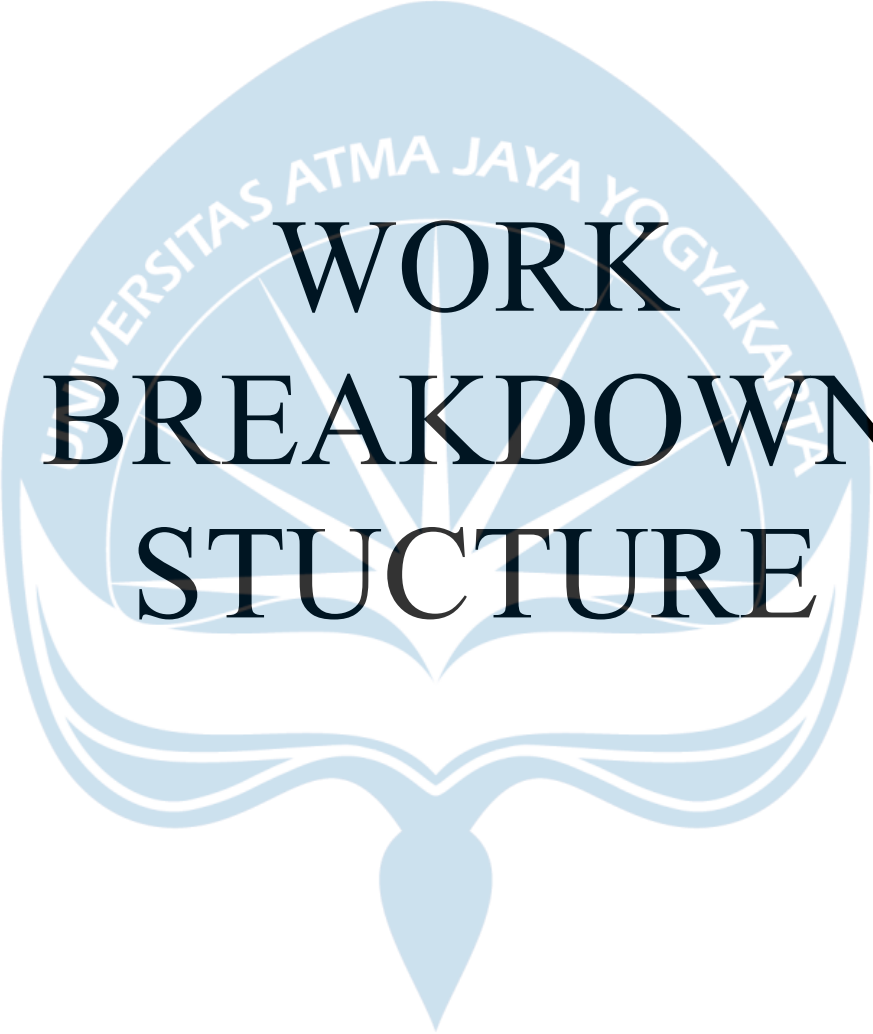
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,66	66.000,00	Rp100.000,00
	Carpenter	OH	0,33	60.665,22	Rp183.834,00
	Foreman	OH	0,033	6.592,81	Rp199.782,00
	Overseer	OH	0,033	6.975,51	Rp211.379,00
			TOTAL PRICE OF WORKERS	140.233,53	
B	BAHAN				
	Wood Class III	m3	0,04	4.410,00	Rp110.250,00
	Nail 5 cm – 12 cm	kg	0,4	3.360,00	Rp8.400,00
	Bekisting Oil	Liter	0,2	1.000,00	Rp5.000,00
	Wood Class II	m3	0,015	1.050,00	Rp70.000,00
	Plywood 9 mm	Lbr	0,35	14.700,00	Rp42.000,00
	Dolken Wood 8/10cm- 4m	stem	2	64.000,00	Rp32.000,00
			TOTAL PRICE OF MATERIALS	88.520,00	
C	EQUIPMENT				
			TOTAL PRICE OF EQUIPMENT		
D	Total (A+B+C)			228.753,53	
E	Profit (Max 15%)			22.875,35	10%
F	Unit Price			251.628,89	

Bekisting installation 1m2 of slab and stairs					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,66	66.000,00	Rp100.000,00
	Carpenter	OH	0,33	60.665,22	Rp183.834,00
	Foreman	OH	0,033	6.592,81	Rp199.782,00
	Overseer	OH	0,033	6.975,51	Rp211.379,00
			TOTAL PRICE OF WORKERS	140.233,53	
B	BAHAN				
	Wood Class III	m3	0,04	4.410,00	Rp110.250,00
	Nail 5 cm – 12 cm	kg	0,4	3.360,00	Rp8.400,00
	Bekisting Oil	Liter	0,2	1.000,00	Rp5.000,00
	Wood Class II	m3	0,015	1.050,00	Rp70.000,00
	<i>Plywood 9 mm</i>	Lbr	0,35	14.700,00	Rp42.000,00
	Dolken Wood 8/10cm- 4m	stem	6	192.000,00	Rp32.000,00
			TOTAL PRICE OF MATERIALS	216.520,00	
C	EQUIPMENT				
			TOTAL PRICE OF EQUIPMENT		
D	Total (A+B+C)			356.753,53	
E	Profit (Max 15%)			35.675,35	10%
F	Unit Price			392.428,89	

Reinforcing 1kg reinforcement for column, beam BjTP d>12mm					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,0016	160,00	Rp100.000,00
	Hammersmith	OH	0,0016	294,13	Rp183.834,00
	Foreman	OH	0,00016	31,97	Rp199.782,00
	Overseer	OH	0,00016	33,82	Rp211.379,00
			TOTAL PRICE OF WORKERS	519,92	
B	MATERIALS				
	Reinforcement steel fy 420 Mpa	kg	1,02	9.996,00	9.800,00
	Reinforcement steel fy 520 Mpa	kg	1,02	10.098,00	9.900,00
	Wire Concrete	kg	0,028	20,62	736,40
			TOTAL PRICE OF MATERIALS	20.114,62	
C	EQUIPMENT				
	<i>Bar Cutter</i>	Day	0,04	6.000,00	150.000,00
	<i>Bar Bender</i>	Day	0,04	6.000,00	150.000,00
			TOTAL PRICE OF EQUIPMENT	12.000,00	
D	Total (A+B+C)			12.294,13	
E	Profit (Max 15%)			1.229,41	10%
F	Unit Price			13.523,55	

Reinforcing 1kg reinforcement for column, beam BjTP d<12mm					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,007	700,00	Rp100.000,00
	Hammersmith	OH	0,007	1.286,84	Rp183.834,00
	Foreman	OH	0,0007	139,85	Rp199.782,00
	Overseer	OH	0,0007	147,97	Rp211.379,00
			TOTAL PRICE OF WORKERS	2.274,65	
B	MATERIALS				
	Reinforcement steel	kg	1,02	10.098,00	9.900,00
	Wire Concrete	kg	0,015	11,05	736,40
			TOTAL PRICE OF MATERIALS	10.109,05	
C	EQUIPMENT				
			TOTAL PRICE OF EQUIPMENT		150.000,00
D	Total (A+B+C)			10.809,05	150.000,00
E	Profit (Max 15%)			1.080,90	10%
F	Unit Price			11.889,95	

Reinforcement 1kg transportation					
Num	Description	Unit	Coeff	Price (Rp)	Price Per unit (Rp)
A	WORKERS				
	Workman	OH	0,06	6.000,00	Rp100.000,00
	Operator	OH	0,06	12.682,74	Rp211.379,00
	Overseer	OH	0,003	634,14	Rp211.379,00
			TOTAL PRICE OF WORKERS	19.316,88	
B	MATERIALS				
			TOTAL PRICE OF MATERIALS		
C	EQUIPMENT				
	Crawler crane 25 ton	day	0,0025	1.450,00	Rp5.800.000,00
			TOTAL PRICE OF EQUIPMENT	1.450,00	
D	Total (A+B+C)			20.766,88	
E	Profit (Max 15%)			2.076,69	10%
F	Unit Price			22.843,56	



**WORK
BREAKDOWN
STUUCTURE**

WBS	Volume	Unit
Semi Basements		
Column reinforcing (Grid 1 - 5 semi basement)	82147,9632	kg
Column bekisting installation (Grid 1 -5 semi basement)	773,09	m2
Wall reinforcing (Grid 1 semi basement)	10315,2	kg
Concrete ready mix 45 Mpa (Column) (Grid 1-5 semi basement)	271,56	m3
Wall bekisting installation (Grid 1 semi basement)	638,09	m2
Column reinforcing Grid (6-10 semi basement)	82147,9632	kg
Concrete ready mix 45 Mpa (Wall) (Grid 1 semi basement)	150,98	m3
Column bekisting installation (Grid 6 -10 semi basement)	773,09	m2
Column reinforcing (Grid 11-16 semi basement)	82147,9632	kg
Concrete ready mix 45 Mpa (Column) (Grid 6-10 semi basement)	271,56	m3
Column bekisting installation (Grid 11 -16 semi basement)	773,09	m2
Column reinforcing (Grid 17-22 semi basement)	82147,9632	kg
Concrete ready mix 45 Mpa (Column) (Grid 11-16 semi basement)	271,56	m3
Column bekisting installation (Grid 17 -22 semi basement)	773,09	m2
Wall reinforcing (Grid D3 semi basement)	80000	kg
Concrete ready mix 45 Mpa (Column) (Grid 17-22 semi basement)	271,56	m3
Wall bekisting installation (Grid D3 semi basement)	800	m2
Wall reinforcing (Grid X3-V3 semi basement)	80000	kg
Concrete ready mix 45 Mpa (Wall) (Grid D3 semi basement)	250	m3
Wall bekisting installation (Grid X3-V3 semi basement)	800	m2
Wall reinforcing (Grid 22 semi basement)	10315,2	kg
Concrete ready mix 45 Mpa (Wall) (Grid X3-V3 semi basement)	250	m3
Wall bekisting installation (Grid 22 semi basement)	638,09	m2
Concrete ready mix 45 Mpa (Wall) (Grid 22 semi basement)	150,98	m3
Stair bekisting	11,05	m2
Stair reinforcing	2294,488419	kg
Concrete ready mix 35 Mpa (stairs)	12,12	m3
2ND FLOOR		
Beam bekisting installation (Grid 1-5 2nd Floor)	4231,0875	m2
Slab bekisting installation (Grid 1-5 2nd Floor)	6278,8425	m2
Beam reinforcing (Grid 1-5 2nd Floor)	43113,76488	kg
Slab reinforcing (Grid 1-5 2nd Floor)	58220,4645	kg
Beam bekisting installation (Grid 6-10 2nd Floor)	4231,0875	m2
Slab bekisting installation (Grid 6-10 2nd Floor)	6278,8425	m2
Concrete ready mix 35 Mpa (beam) (Grid 1-5 2nd Floor)	1113,71875	m3
Concrete ready mix 35 Mpa (slab) (Grid 1-5 2nd Floor)	947,47	m3
Beam bekisting installation (Grid 11-16 2nd Floor)	4231,0875	m2

Slab bekisting installation (Grid 11-16 2nd Floor)	6278,8425	m2
Beam reinforcing (Grid 6-10 2nd Floor)	43113,76488	kg
Slab reinforcing (Grid 6-10 2nd Floor)	58220,4645	kg
Concrete ready mix 35 Mpa (beam) (Grid 6-10 2nd Floor)	1113,71875	m3
Concrete ready mix 35 Mpa (slab) (Grid 6-10 2nd Floor)	947,47	m3
Beam reinforcing (Grid 11-16 2nd Floor)	43113,76488	kg
Slab reinforcing (Grid 11-16 2nd Floor)	58220,4645	kg
Beam bekisting installation (Grid 17-22 2nd Floor)	4231,0875	m2
Slab bekisting installation (Grid 17-22 2nd Floor)	6278,8425	m2
Concrete ready mix 35 Mpa (beam) (Grid 11-16 2nd Floor)	1113,71875	m3
Concrete ready mix 35 Mpa (slab) (Grid 11-16 2nd Floor)	947,47	m3
Beam reinforcing (Grid 17-22 2nd Floor)	43113,76488	kg
Slab reinforcing (Grid 17-22 2nd Floor)	58220,4645	kg
Concrete ready mix 35 Mpa (beam) (Grid 17-22 2nd Floor)	1113,71875	m3
Concrete ready mix 35 Mpa (slab) (Grid 17-22 2nd Floor)	947,47	m3
Stair bekisting (Grid F-H)	10,02996	m2
Stair bekisting (Grid S-T)	10,02996	m2
Stair reinforcing (Grid F-H)	2315,784173	kg
Stair reinforcing (Grid S-T)	2315,784173	kg
Concrete ready mix 35 Mpa (stairs) (Grid F-H)	4,545072	m3
Concrete ready mix 35 Mpa (stairs) (Grid S-T)	4,545072	m3
Column reinforcing (Grid F-H)	58840,4	kg
Column reinforcing (Grid 1-2)	40000,4	kg
Column bekisting installation (grid F-H)	500	m2
Column reinforcing (Grid 20-22)	58840,4	kg
Column bekisting installation (grid 1-2)	397	m2
Concrete ready mix 45 Mpa (Column) (Grid F-H)	200	m3
Column reinforcing (Grid S-T)	40000,4	kg
Column bekisting installation (grid 20-22)	397	m2
Concrete ready mix 45 Mpa (Column) (Grid 1-2)	142	m3
Column bekisting installation (grid S-T)	500	m2
Concrete ready mix 45 Mpa (Column) (Grid 20-22)	142	m3
Concrete ready mix 45 Mpa (Column) (Grid S-T)	200	m3
Mezz Floor		
Beam bekisting installation (Grid 1-2)	770,35	m2
Slab bekisting installation (Grid 1-2)	1233,185	m2
Beam bekisting installation (Grid F-H)	1000	m2
Slab bekisting installation (Grid F-H)	1500	m2
Transporting reinforcements (beam & slab)	25844,66688	kg
Beam reinforcing (Grid 1-2)	10490,06588	kg
Slab reinforcing (Grid 1 -2)	15354,601	kg
Beam bekisting installation (Grid S-T)	1000	m2
Slab bekisting installation (Grid S-T)	1500	m2

Transporting reinforcements (beam & slab)	48490,06588	kg
Beam reinforcing (Grid F-H)	28490,06588	kg
Slab reinforcing (Grid F -H)	20000	kg
Concrete ready mix 35 Mpa (beam) (Grid 1-2)	178,64	m3
Concrete ready mix 35 Mpa (slab) (Grid 1-2)	148,54	m3
Beam bekisting installation (Grid 20-22)	770,35	m2
Slab bekisting installation (Grid 20-22)	1233,185	m2
Transporting reinforcements (beam & slab)	44490,06588	kg
Beam reinforcing (Grid S-T)	24490,06588	kg
Slab reinforcing (Grid S -T)	20000	kg
Concrete ready mix 35 Mpa (beam) (Grid F-H)	200	m3
Concrete ready mix 35 Mpa (slab) (Grid F-H)	200	m3
Stair bekisting (F-H)	6,39489	m2
Transporting reinforcements (beam & slab)	29844,66688	kg
Beam reinforcing (Grid 20-22)	14490,06588	kg
Slab reinforcing (Grid 20 -22)	15354,601	kg
Concrete ready mix 35 Mpa (beam) (Grid S-T)	200	m3
Concrete ready mix 35 Mpa (slab) (Grid S-T)	200	m3
Stair bekisting (S-T)	6,39489	m2
Stair reinforcing (F-H)	1302,264962	kg
Concrete ready mix 35 Mpa (beam) (Grid 20-22)	178,64	m3
Concrete ready mix 35 Mpa (slab) (Grid 20-22)	148,54	m3
Stair reinforcing (S-T)	1302,264962	kg
Concrete ready mix 35 Mpa (stairs) (Grid S-T))	6,060096	m3
Concrete ready mix 35 Mpa (stairs) (Grid F-H))	6,060096	m3
Transporting reinforcements (Column)	80561,408	kg
Column reinforcing (Grid F-H)	30140,352	kg
Column reinforcing (Grid 1-2)	10140,352	kg
Column bekisting installation (grid F-H)	400	m2
Column reinforcing (Grid 20-22)	10140,352	kg
Column bekisting installation (grid 1-2)	217	m2
Concrete ready mix 45 Mpa (Column) (Grid F-H)	150	m3
Column reinforcing (Grid S-T)	30140,352	kg
Column bekisting installation (grid 20-22)	217	m2
Concrete ready mix 45 Mpa (Column) (Grid 1-2)	78	m3
Column bekisting installation (grid S-T)	400	m2
Concrete ready mix 45 Mpa (Column) (Grid 20-22)	78	m3
Concrete ready mix 45 Mpa (Column) (Grid S-T)	150	m3
3rd Floor		
Beam bekisting installation (Grid 1-2)	696,1	m2
Slab bekisting installation (Grid 1-2)	1213,87	m2
Beam bekisting installation (Grid F-H)	1000	m2
Slab bekisting installation (Grid F-H)	2500	m2

Transporting reinforcements (beam & slab)	30410,69196	kg
Beam reinforcing (Grid 1-2)	14740,01996	kg
Slab reinforcing (Grid 1 -2)	15670,672	kg
Beam bekisting installation (Grid S-T)	1000	m2
Slab bekisting installation (Grid S-T)	1000	m2
Transporting reinforcements (beam & slab)	54740,01996	kg
Beam reinforcing (Grid F-H)	34740,01996	kg
Slab reinforcing (Grid F -H)	20000	kg
Concrete ready mix 35 Mpa (beam) (Grid 1-2)	159,14	m3
Concrete ready mix 35 Mpa (slab) (Grid 1-2)	153,7525	m3
Beam bekisting installation (Grid 20-22)	696,1	m2
Slab bekisting installation (Grid 20-22)	1213,87	m2
Transporting reinforcements (beam & slab)	52740,01996	kg
Beam reinforcing (Grid S-T)	32740,01996	kg
Slab reinforcing (Grid S -T)	20000	kg
Concrete ready mix 35 Mpa (beam) (Grid F-H)	250	m3
Concrete ready mix 35 Mpa (slab) (Grid F-H)	250	m3
Stair bekisting (F-H)	9,13146	m2
Transporting reinforcements (beam & slab)	32410,69196	kg
Beam reinforcing (Grid 20-22)	16740,01996	kg
Slab reinforcing (Grid 20 -22)	15670,672	kg
Concrete ready mix 35 Mpa (beam) (Grid S-T)	250	m3
Concrete ready mix 35 Mpa (slab) (Grid S-T)	250	m3
Stair bekisting (S-T)	9,13146	m2
Stair reinforcing (F-H)	1157,892087	kg
Concrete ready mix 35 Mpa (beam) (Grid 20-22)	159,14	m3
Concrete ready mix 35 Mpa (slab) (Grid S-T)	153,7525	m3
Stair reinforcing (S-T)	1157,892087	kg
Concrete ready mix 35 Mpa (stairs) (Grid F-H)	4,545072	m3
Concrete ready mix 35 Mpa (stairs) (Grid S-T)	4,545072	m3
Transporting reinforcements (Column)	94845,76	kg
Column reinforcing (Grid F-H)	33711,44	kg
Column reinforcing (Grid 1-2)	13711,44	kg
Column bekisting installation (grid F-H)	450	m2
Column reinforcing (Grid 20-22)	15711,44	kg
Column bekisting installation (grid 1-2)	245,4	m2
Concrete ready mix 45 Mpa (Column) (Grid F-H)	150	m3
Column reinforcing (Grid S-T)	31711,44	kg
Column bekisting installation (grid 20-22)	245,4	m2
Concrete ready mix 45 Mpa (Column) (Grid 1-2)	116,4	m3
Column bekisting installation (grid S-T)	450	m2
Concrete ready mix 45 Mpa (Column) (Grid 20-22)	116,4	m3
Concrete ready mix 45 Mpa (Column) (Grid S-T)	150	m3

Roof Floor		
Beam bekisting installation (Grid 2 , S-T)	1019,64	m2
Slab bekisting installation (Grid S-T)	1793,58	m2
Transporting reinforcements (beam & slab)	55720,2268	kg
Beam reinforcing (Grid 2, S-T)	31468,4668	kg
Slab reinforcing (Grid S-T)	24251,76	kg
Beam bekisting installation (Grid 20, F-H)	1019,64	m2
Slab bekisting installation (Grid F-H)	1793,58	m2
Transporting reinforcements (beam & slab)	55720,2268	kg
Beam reinforcing (Grid 20, F-H)	31468,4668	kg
Slab reinforcing (Grid F-H)	24251,76	kg
Concrete ready mix 35 Mpa (beam) (2, S-T)	265,24	m3
Concrete ready mix 35 Mpa (slab) (, S-T)	262,8	m3
Concrete ready mix 35 Mpa (beam) (20, F-H)	265,24	m3
Concrete ready mix 35 Mpa (slab) (F-H)	262,8	m3

