

BAB VI

KESIMPULAN DAN SARAN

6.1 Kesimpulan

Setelah melakukan analisis dan perancangan pada struktur Gedung *Quest Hotel*, dapat diambil beberapa kesimpulan seperti yang tercantum di bawah ini.

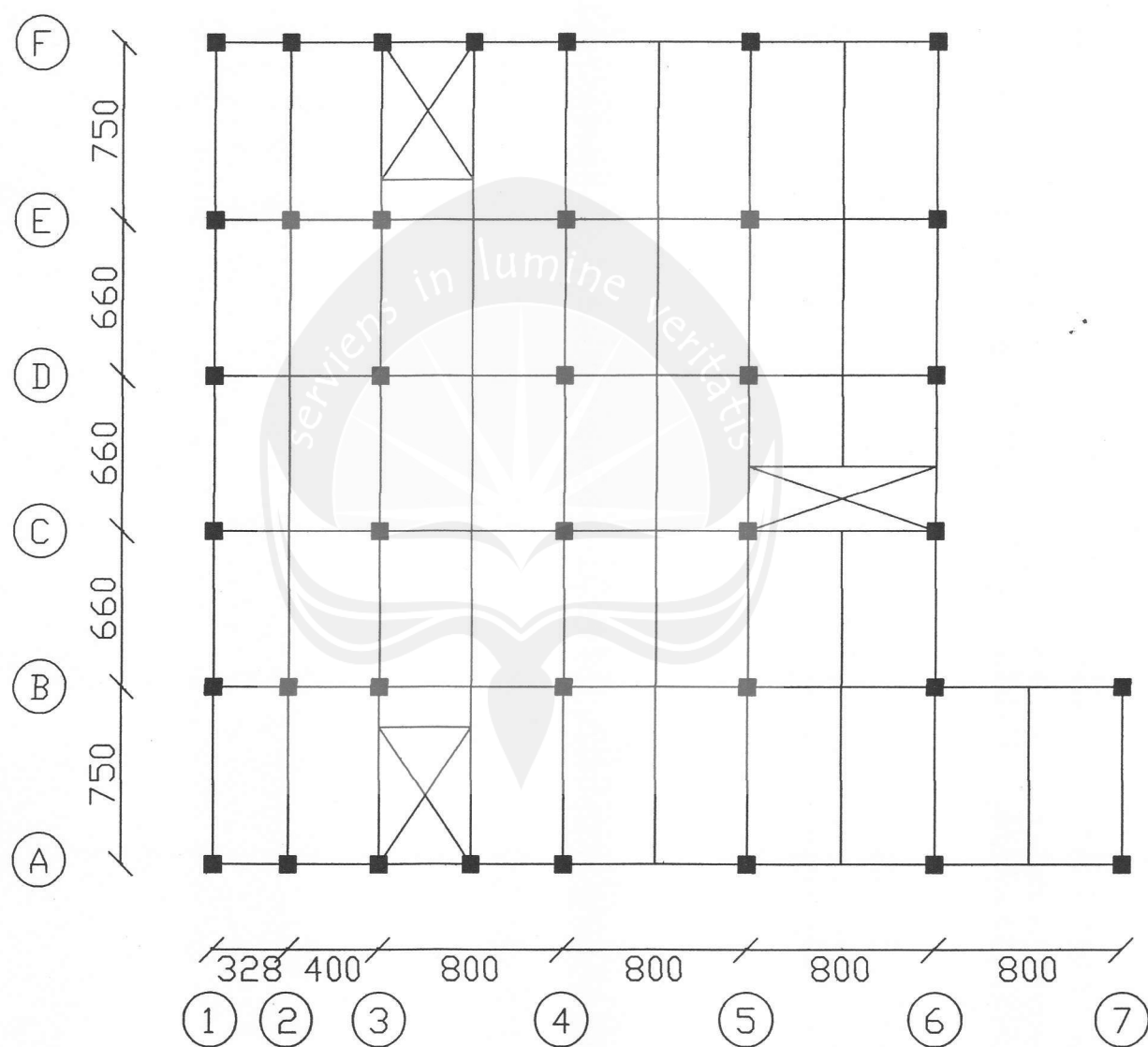
1. Pelat tangga tipe digunakan tebal 120 mm dengan tulangan D13-150 pada tumpuan dan P10-200 pada lapangan. Balok bordes digunakan dimensi 200 mm x 400 mm dengan 3D16 untuk tulangan tarik dan 2D16 untuk tulangan tekan.
2. Pelat lantai dan atap digunakan tebal 120 mm. Pelat atap dua arah dengan tulangan P10-200 untuk arah X dan tulangan P10-200 untuk arah Y. Pelat lantai dua arah dengan tulangan P10-100 untuk arah X dan tulangan P10-100 untuk arah Y. Dan tulangan susut P8-150.
3. Dalam perencanaan balok , digunakan dimensi yaitu 400 mm x 600 mm, 300 mm x 600 mm, dan 200 mm x 400 mm. Balok – balok tersebut direncanakan dengan tulangan lentur dan geser yang berbeda-beda.
4. Dalam perencanaan kolom, dimensi yang digunakan untuk kolom *basement* – lantai 3 sebesar 800 mm x 800 mm, dimensi yang digunakan untuk kolom lantai 4 hingga lantai 6 sebesar 700 mm x 700 mm, sedangkan dimensi 600 mm x 600 mm digunakan untuk kolom lantai 7 – *Top Floor*. Kolom – kolom tersebut direncanakan dengan jumlah tulangan longitudinal dan transversal yang berbeda-beda pula.

5. Dinding geser ketebalan 250 mm yang memerlukan 2 lapis tulangan geser D16-100 dan tulangan arah vertikal D16-200.
6. Dalam perencanaan pondasi, dimensi poer yang digunakan adalah 4 m x 4 m, dengan tebal poer 1 m. Tulangan yang digunakan untuk bagian poer adalah D22-150 untuk arah memanjang dan D16-175 arah lebar. Jumlah tiang yang digunakan 4 buah dengan tulangan 8D19 .
7. Dinding penahan tanah menggunakan tulangan utama D16-200 pada bagian dinding dan pelat dasar, dengan lebar dasar pelat 3,4 m, panjang kaki depan 1,3 m. Tebal dasar plat dan dinding digunakan 0,4 m.

6.2 Saran

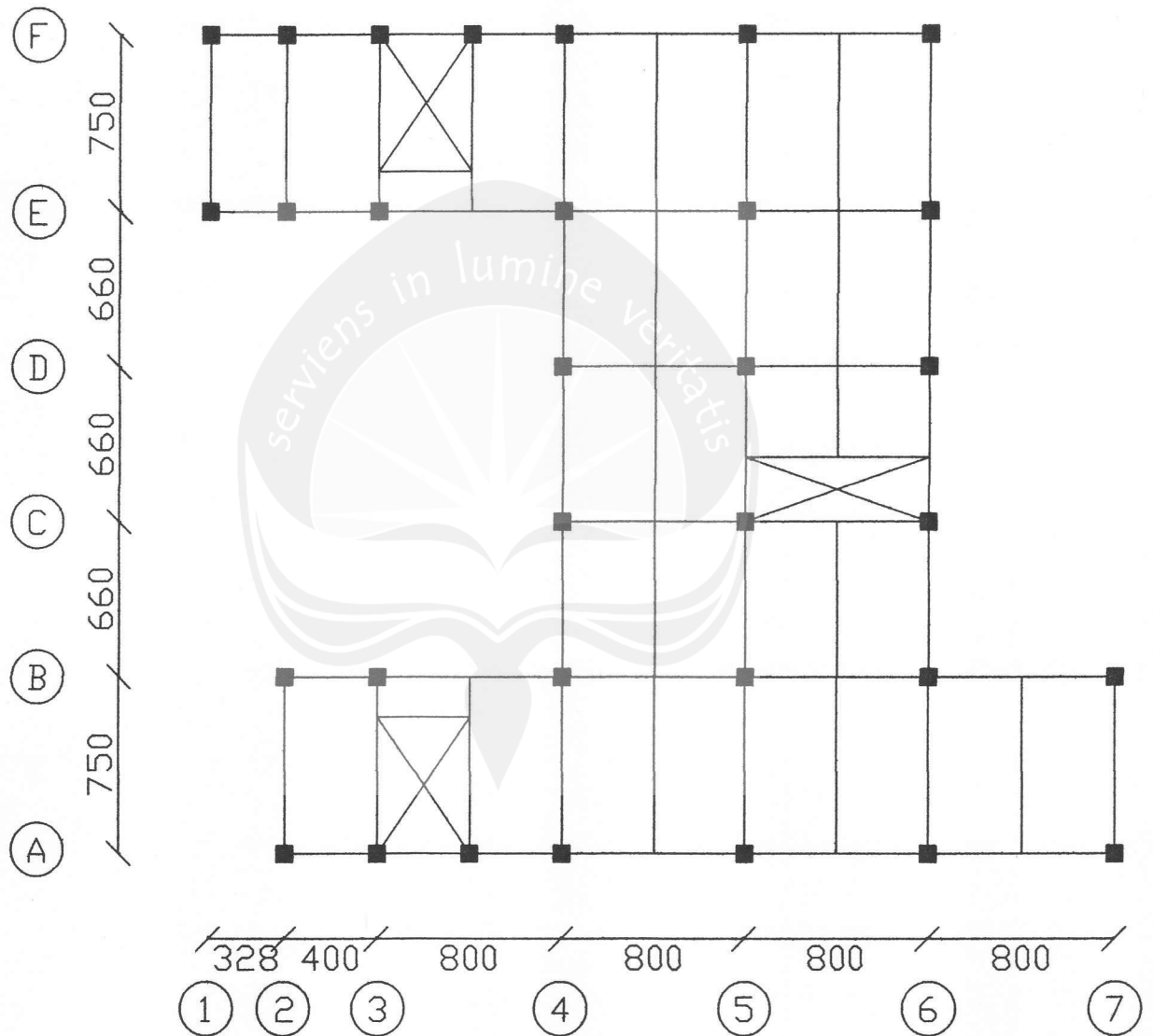
Saran-saran yang dapat diberikan penulis dari hasil Tugas Akhir yang disusun tercantum seperti di bawah ini.

1. Sebelum perencanaan struktur sebaiknya dilakukan estimasi awal pada ukuran elemen struktur, sehingga tidak terjadi penentuan elemen struktur berulang-ulang.
2. Untuk kemudahan dalam melaksanakan analisis struktur terutama dalam pembuatan model struktur gedung akan lebih mudah jika memakai program analisis struktur ETABS dan SAP2000 beserta program-program bantu lainnya.



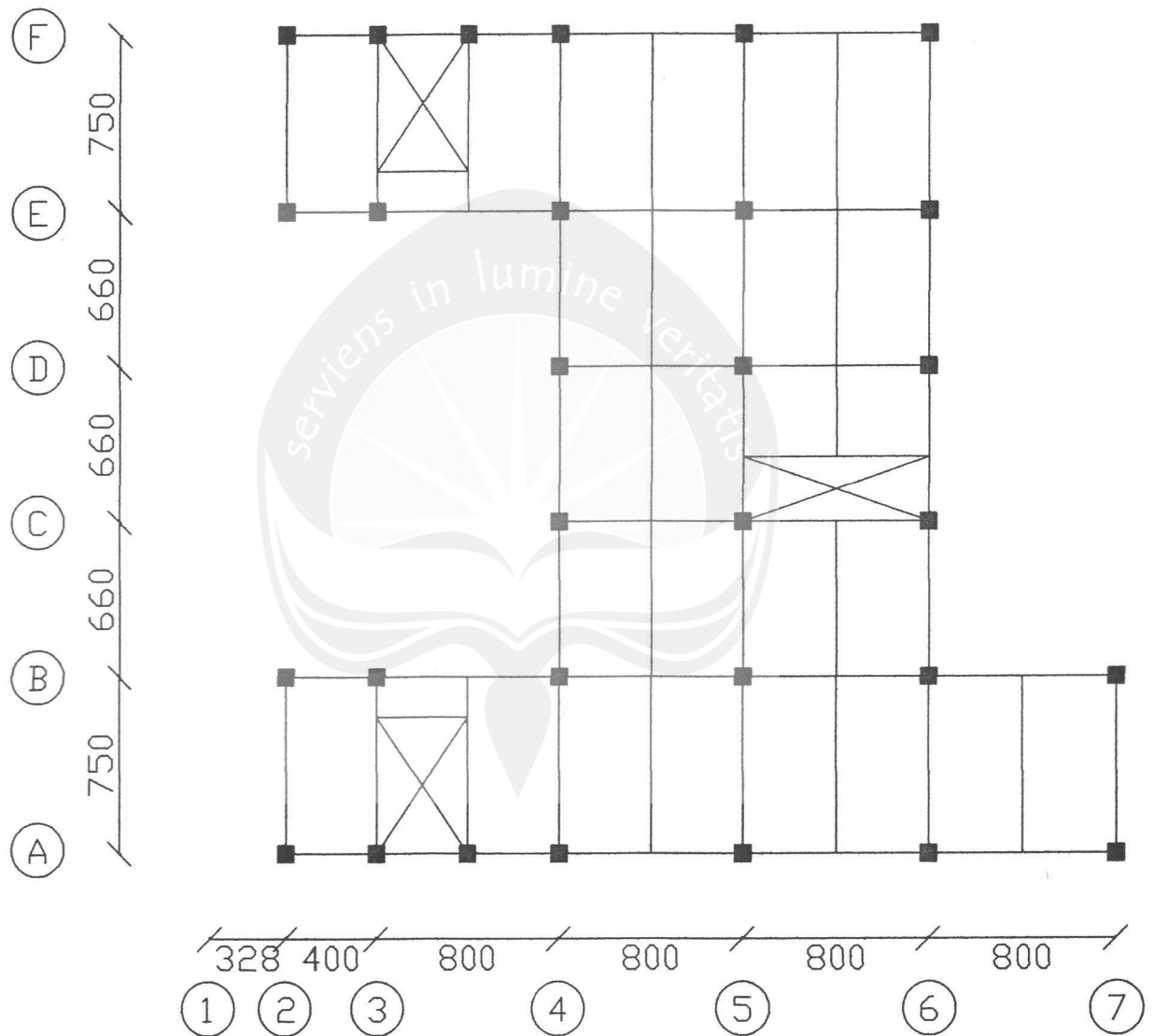
DENAH LANTAI DASAR

SKALA 1:300



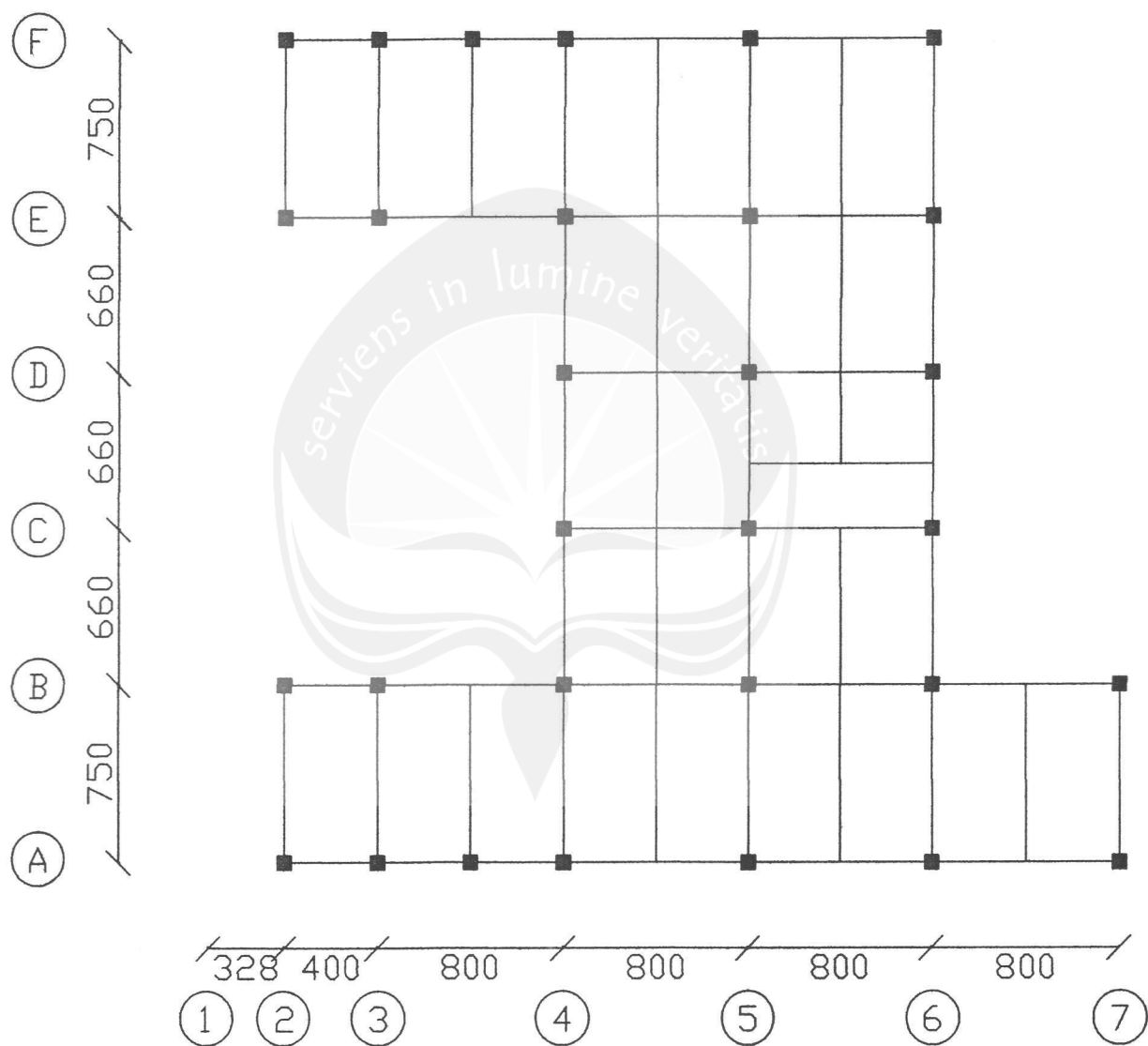
DENAH LANTAI 2

SKALA 1:300



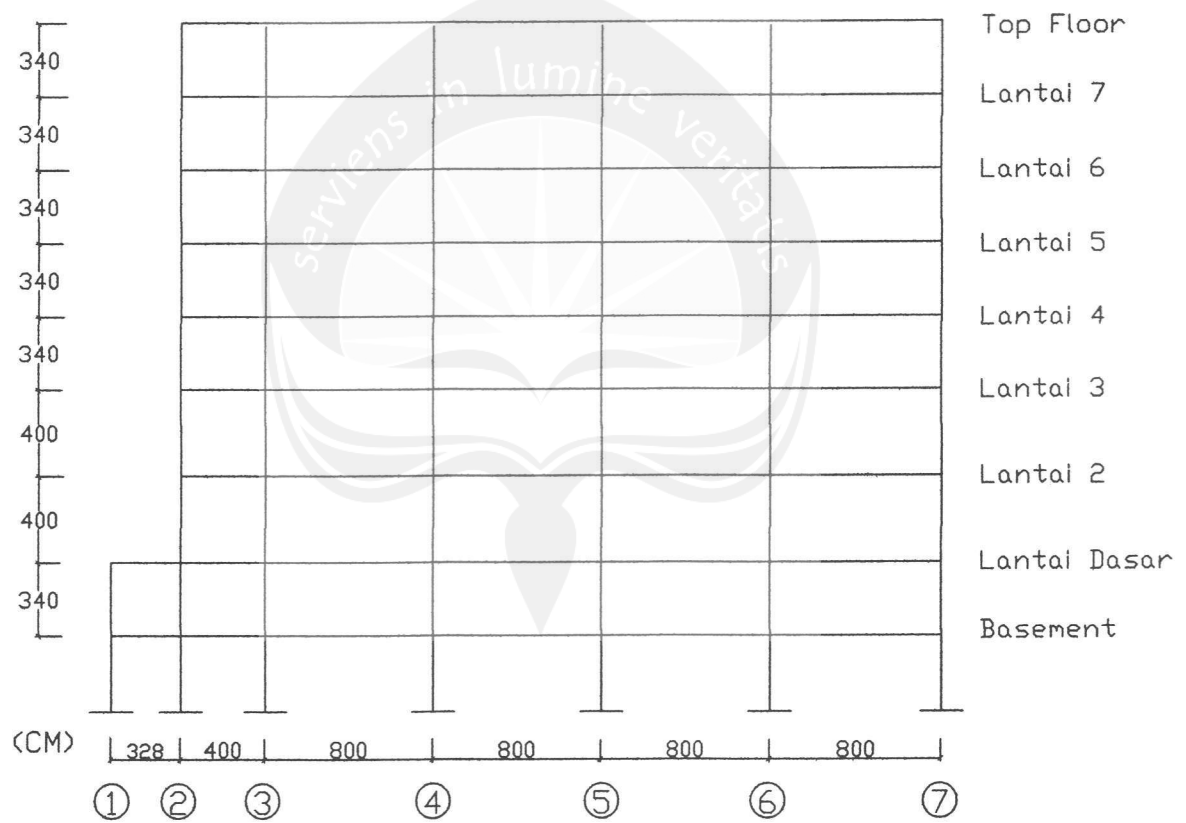
DENAH LANTAI 3-7

SKALA 1:300



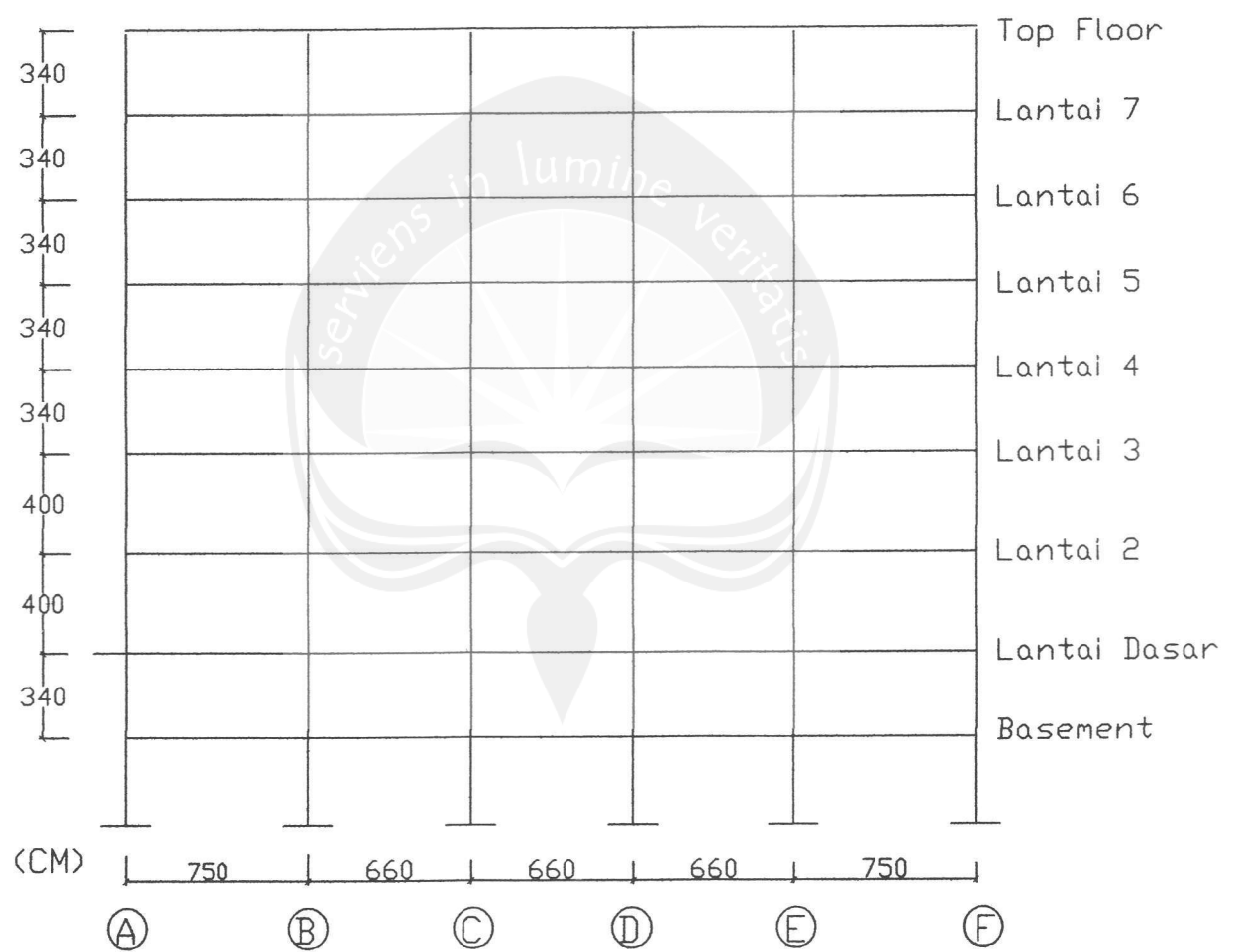
DENAH TOP FLOOR

SKALA 1:300



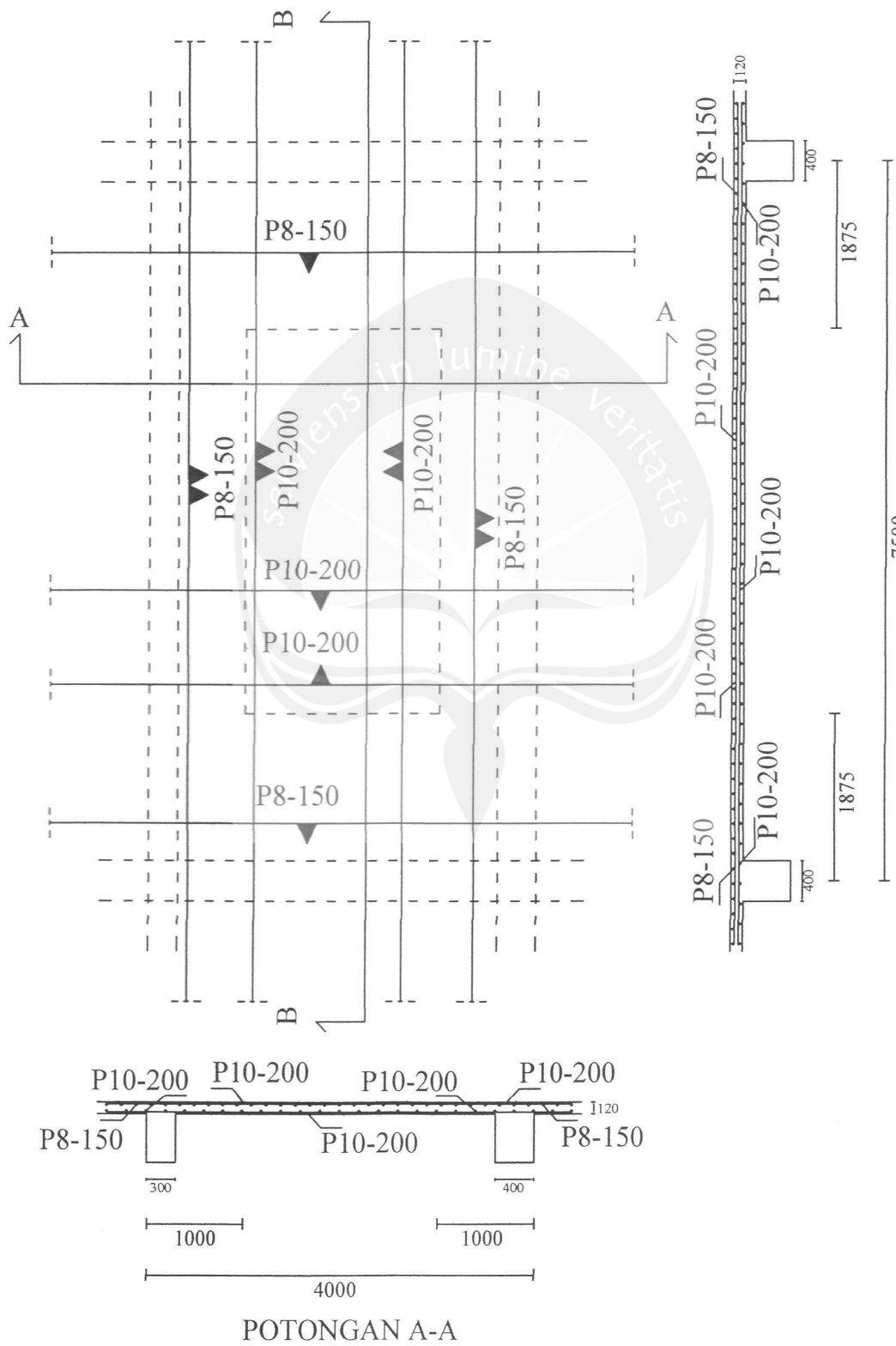
PORTAL B

SKALA 1:350



PORTAL 4

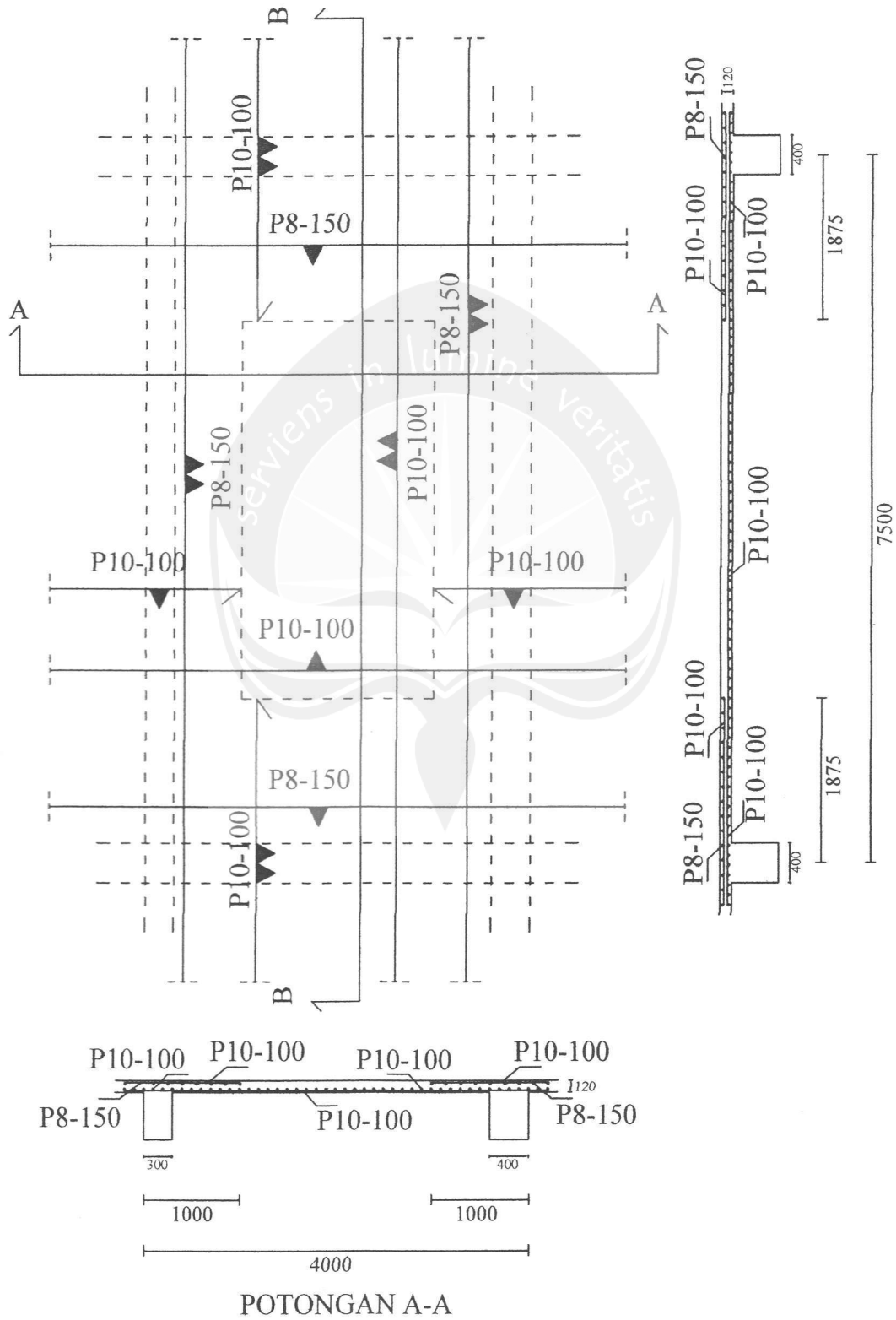
SKALA 1:300



POTONGAN B-B

PENULANGAN PELAT ATAP

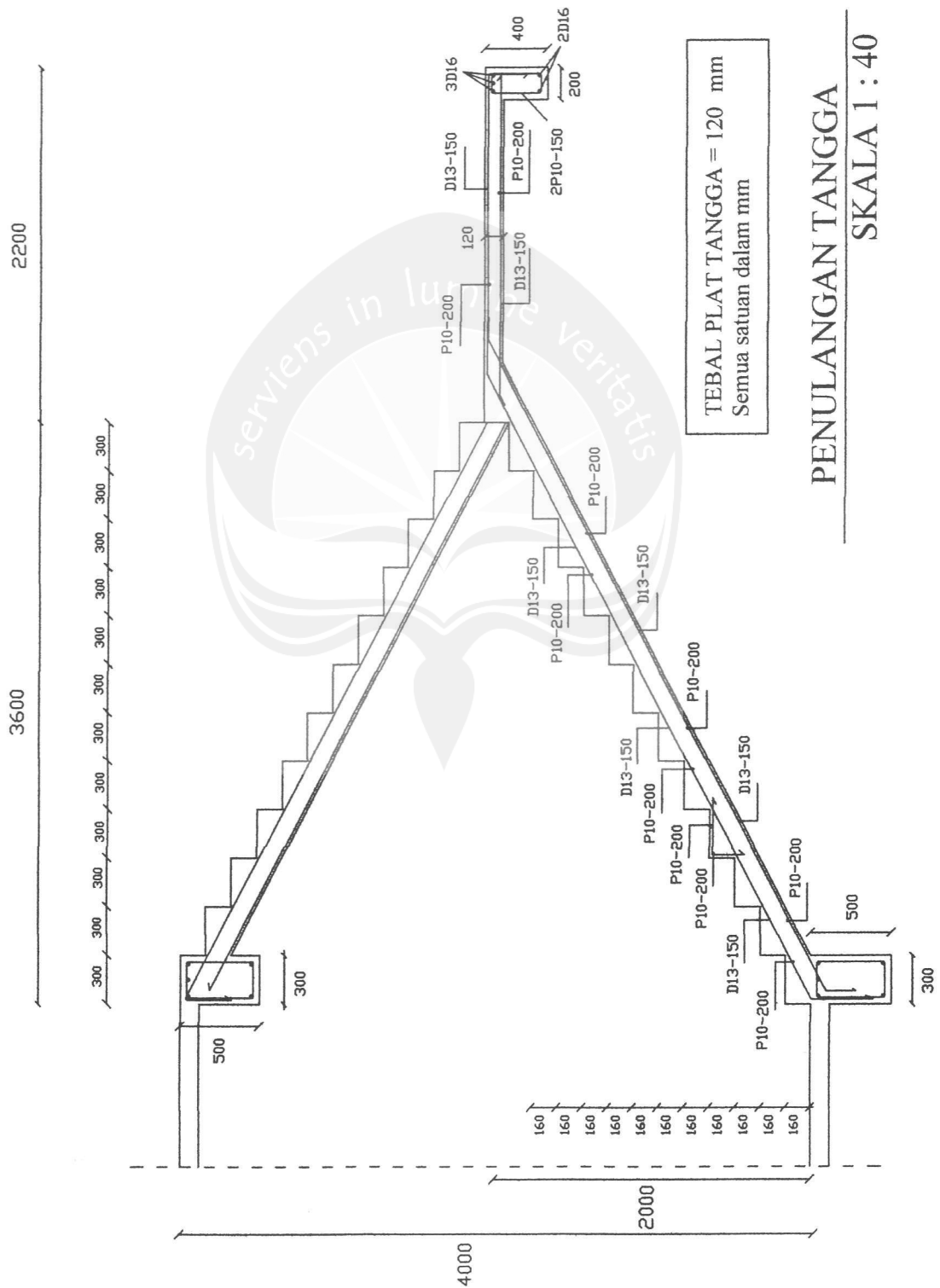
Skala 1:65



POTONGAN B-B

PENULANGAN PELAT LANTAI

Skala 1:65



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PROJECT INFORMATION

Company Name = iwan pramata

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S T O R Y D A T A

STORY	SIMILAR TO	HEIGHT	ELEVATION
TOP FLOOR	None	3,400	31,800
LT7	TOP FLOOR	3,400	28,400
LT6	TOP FLOOR	3,400	25,000
LT5	TOP FLOOR	3,400	21,600
LT4	TOP FLOOR	3,400	18,200
LT3	DASAR	4,000	14,800
LT2	DASAR	4,000	10,800
DASAR	None	3,400	6,800
BASEMENT	DASAR	3,400	3,400
BASE	None		0,000

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S T A T I C L O A D C A S E S

STATIC CASE	CASE TYPE	AUTO LAT LOAD	SELF WT MULTIPLIER
DEAD	DEAD	N/A	1,0000
LIVE	LIVE	N/A	0,0000
SDEAD	SUPER DEAD	N/A	0,0000
EX	QUAKE	USER_COEFF	0,0000
EY	QUAKE	USER_COEFF	0,0000

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R E S P O N S E S P E C T R U M C A S E S

RESP SPEC CASE: SNI2002

BASIC RESPONSE SPECTRUM DATA

MODAL COMBO	DIRECTION COMBO	MODAL DAMPING	SPECTRUM ANGLE	TYPICAL ECCEN
CQC	SRSS	0,0500	0,0000	0,0000

RESPONSE SPECTRUM FUNCTION ASSIGNMENT DATA

DIRECTION	FUNCTION	SCALE FACT
U1	W3LUNAK	9,8100
U2	W3LUNAK	9,8100
UZ	W3LUNAK	9,8100

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A U T O S E I S M I C U S E R C O E F F I C I E N T

Case: EX

AUTO SEISMIC INPUT DATA

Direction: X
 Typical Eccentricity = 5%
 Eccentricity Overrides: No

Period Calculation: Program Calculated
Ct = 0,035 (in feet units)

Top Story: TOP FLOOR
Bottom Story: BASE

C = 0,0712
K = 1

AUTO SEISMIC CALCULATION FORMULAS

$$V = C W$$

AUTO SEISMIC CALCULATION RESULTS

W Used = 156169,51

V Used = 0,0712W = 11119,27

AUTO SEISMIC STORY FORCES

STORY	FX	FY	FZ	MX	MY	MZ
TOP FLOOR	1631,77	0,00	0,00	0,000	0,000	0,000
LT7	1953,88	0,00	0,00	0,000	0,000	0,000
LT6	1752,48	0,00	0,00	0,000	0,000	0,000
LT5	1544,06	0,00	0,00	0,000	0,000	0,000
LT4	1301,01	0,00	0,00	0,000	0,000	0,000
LT3	1099,92	0,00	0,00	0,000	0,000	0,000
LT2	841,29	0,00	0,00	0,000	0,000	0,000
DASAR	668,32	0,00	0,00	0,000	0,000	0,000
BASEMENT	326,53	0,00	0,00	0,000	0,000	0,000

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A U T O S E I S M I C U S E R C O E F F I C I E N T
Case: EY

AUTO SEISMIC INPUT DATA

Direction: Y
Typical Eccentricity = 5%
Eccentricity Overrides: No

Period Calculation: Program Calculated
Ct = 0,035 (in feet units)

Top Story: TOP FLOOR
Bottom Story: BASE

C = 0,05027
K = 1

AUTO SEISMIC CALCULATION FORMULAS

$$V = C W$$

AUTO SEISMIC CALCULATION RESULTS

W Used = 156169,51

V Used = 0,0503W = 7850,64

AUTO SEISMIC STORY FORCES

STORY	FX	FY	FZ	MX	MY	MZ
TOP FLOOR	0,00	1152,09	0,00	0,000	0,000	0,000
LT7	0,00	1379,52	0,00	0,000	0,000	0,000
LT6	0,00	1237,32	0,00	0,000	0,000	0,000
LT5	0,00	1090,17	0,00	0,000	0,000	0,000
LT4	0,00	918,57	0,00	0,000	0,000	0,000
LT3	0,00	776,59	0,00	0,000	0,000	0,000
LT2	0,00	593,98	0,00	0,000	0,000	0,000
DASAR	0,00	471,86	0,00	0,000	0,000	0,000
BASEMENT	0,00	230,55	0,00	0,000	0,000	0,000

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M A S S S O U R C E D A T A

MASS LATERAL LUMP MASS
FROM MASS ONLY AT STORIES

Masses & LoaYes Yes

M A S S S O U R C E L O A D S

LOAD MULTIPLIER
DEAD 1,0000
LIVE 0,5000
SDEAD 1,0000

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D I A P H R A G M M A S S D A T A

STORY	DIAPHRAGM	MASS-X	MASS-Y	MMI	X-M	Y-M
TOP FLOOR	DT	1202,2017	1202,2017	262047,5854	21,057	16,311
LT7	D7	1611,8561	1611,8561	353477,8903	21,022	16,322
LT6	D6	1642,3281	1642,3281	362585,5579	20,959	16,327
LT5	D5	1674,7774	1674,7774	372076,6776	20,916	16,331
LT4	D4	1674,7774	1674,7774	372076,6776	20,916	16,331
LT3	D3	1741,1860	1741,1860	390501,1433	20,853	16,332
LT2	D2	1825,0262	1825,0262	442330,6625	20,163	16,738
DASAR	DD	2302,6340	2302,6340	555290,6489	17,011	16,650
BASEMENT	DB	2250,0713	2250,0713	546136,8307	16,693	16,598

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A S S E M B L E D P O I N T M A S S E S

STORY	UX	UY	UZ	RX	RY	RZ
TOP FLOOR	1202,201726	1202,201726	0,000000	0,000000	0,000000262047,58542	
LT7	1611,856064	1611,856064	0,000000	0,000000	0,000000 353477,8903	
LT6	1642,328093	1642,328093	0,000000	0,000000	0,000000 362585,5579	
LT5	1674,777427	1674,777427	0,000000	0,000000	0,000000 372076,6776	
LT4	1674,777427	1674,777427	0,000000	0,000000	0,000000 372076,6776	
LT3	1741,185992	1741,185992	0,000000	0,000000	0,000000 390501,1433	
LT2	1825,026167	1825,026167	0,000000	0,000000	0,000000 442330,6625	
DASAR	2302,633994	2302,633994	0,000000	0,000000	0,000000 555290,6489	
BASEMENT	2250,071302	2250,071302	0,000000	0,000000	0,000000 546136,8307	
BASE	234,924858	234,924858	0,000000	0,000000	0,000000 0,000000	
Totals	16159,783050	16159,783050	0,000000	0,000000	0,000000 3656523,674	

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CENTERS OF CUMULATIVE MASS & CENTERS OF RIGIDITY

STORY LEVEL	DIAPHRAGM NAME	/-----CENTER OF MASS-----//			--CENTER OF RIGIDITY--/	
		MASS	ORDINATE-X	ORDINATE-Y	ORDINATE-X	ORDINATE-Y
TOP FLOOR	DT	1202,2017	21,057	16,311	21,646	14,273
LT7	D7	1611,8561	21,022	16,322	21,800	14,229
LT6	D6	1642,3281	20,959	16,327	21,884	14,171
LT5	D5	1674,7774	20,916	16,331	21,930	14,123
LT4	D4	1674,7774	20,916	16,331	21,942	14,090
LT3	D3	1741,1860	20,853	16,332	21,816	14,093
LT2	D2	1825,0262	20,163	16,738	21,481	14,163
DASAR	DD	2302,6340	17,011	16,650	21,129	14,404
BASEMENT	DB	2250,0713	16,693	16,598	20,603	14,899

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MODAL PERIODS AND FREQUENCIES

MODE NUMBER	PERIOD (TIME)	FREQUENCY (CYCLES/TIME)	CIRCULAR FREQ (RADIAN/TIME)
Mode 1	1,52749	0,65467	4,11341
Mode 2	1,45283	0,68831	4,32478
Mode 3	0,97864	1,02182	6,42030
Mode 4	0,49201	2,03246	12,77033
Mode 5	0,40987	2,43978	15,32956
Mode 6	0,27967	3,57564	22,46641
Mode 7	0,26445	3,78145	23,75953
Mode 8	0,20007	4,99828	31,40512
Mode 9	0,18397	5,43572	34,15363
Mode 10	0,13720	7,28881	45,79693
Mode 11	0,12713	7,86612	49,42431
Mode 12	0,12299	8,13076	51,08710

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MODAL PARTICIPATING MASS RATIOS

MODE NUMBER	X-TRANS %MASS <SUM>	Y-TRANS %MASS <SUM>	Z-TRANS %MASS <SUM>	RX-ROTN %MASS <SUM>	RY-ROTN %MASS <SUM>	RZ-ROTN %MASS <SUM>
Mode 1	2,94 < 3>	20,95 < 21>	0,00 < 0>	29,09 < 29>	4,14 < 4>	40,95 < 41>
Mode 2	1,42 < 4>	48,43 < 69>	0,00 < 0>	70,19 < 99>	1,97 < 6>	23,42 < 64>
Mode 3	63,56 < 68>	0,00 < 69>	0,00 < 0>	0,01 < 99>	92,99 < 99>	4,42 < 69>
Mode 4	0,63 < 69>	3,70 < 73>	0,00 < 0>	0,06 < 99>	0,02 < 99>	9,78 < 79>
Mode 5	0,26 < 69>	10,15 < 83>	0,00 < 0>	0,08 < 99>	0,01 < 99>	2,56 < 81>
Mode 6	0,01 < 69>	2,58 < 86>	0,00 < 0>	0,19 <100>	0,00 < 99>	6,85 < 88>
Mode 7	19,06 < 88>	0,01 < 86>	0,00 < 0>	0,00 <100>	0,68 <100>	0,56 < 89>
Mode 8	0,08 < 88>	5,90 < 92>	0,00 < 0>	0,30 <100>	0,00 <100>	0,86 < 89>
Mode 9	0,09 < 88>	0,70 < 92>	0,00 < 0>	0,01 <100>	0,00 <100>	3,50 < 93>
Mode 10	6,62 < 95>	0,01 < 92>	0,00 < 0>	0,00 <100>	0,16 <100>	0,23 < 93>
Mode 11	0,05 < 95>	1,40 < 94>	0,00 < 0>	0,02 <100>	0,00 <100>	0,94 < 94>
Mode 12	0,01 < 95>	1,78 < 96>	0,00 < 0>	0,02 <100>	0,00 <100>	1,47 < 96>

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MODAL LOAD PARTICIPATION RATIOS
(STATIC AND DYNAMIC RATIOS ARE IN PERCENT)

TYPE	NAME	STATIC	DYNAMIC
Load	DEAD	0,1863	0,0000
Load	LIVE	0,1885	0,0000
Load	SDEAD	0,1371	0,0000
Load	EX	99,9999	99,9764
Load	EY	99,9999	99,9648
Acce1	UX	99,9594	94,7533
Acce1	UY	99,9854	95,6075
Acce1			



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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB19	ENVE	COMB1	Combo	1,0000
		COMB2	Combo	1,0000
		COMB3	Combo	1,0000
		COMB4	Combo	1,0000
		COMB5	Combo	1,0000
		COMB6	Combo	1,0000
		COMB7	Combo	1,0000
		COMB8	Combo	1,0000
		COMB9	Combo	1,0000
		COMB10	Combo	1,0000
		COMB11	Combo	1,0000
		COMB12	Combo	1,0000
		COMB13	Combo	1,0000
		COMB14	Combo	1,0000
		COMB15	Combo	1,0000
		COMB16	Combo	1,0000
		COMB17	Combo	1,0000
		COMB18	Combo	1,0000

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BEAM FORCES

STORY	BEAM	LOAD	LOC	P	V2	V3	T	M2	M3
TOP FLOOR	B11	COMB19 MAX							
			0,3000	0,00	0,94	0,00	0,182	0,000	18,055
			2,2429	0,00	17,15	0,00	0,182	0,000	11,115
			3,7000	0,00	34,65	0,00	0,182	0,000	22,527
TOP FLOOR	B11	COMB19 MIN							
			0,3000	0,00	-43,06	0,00	0,018	0,000	-50,735
			2,2429	0,00	-16,62	0,00	0,018	0,000	2,545
			3,7000	0,00	-5,42	0,00	0,018	0,000	-33,284
TOP FLOOR	B166	COMB19 MAX							
			0,3000	0,00	-40,87	0,00	20,237	0,000	0,463
			4,0000	0,00	55,17	0,00	4,392	0,000	123,984
			7,7000	0,00	118,15	0,00	4,392	0,000	4,036
TOP FLOOR	B166	COMB19 MIN							
			0,3000	0,00	-122,22	0,00	-9,269	0,000	-226,371
			4,0000	0,00	-63,19	0,00	-9,269	0,000	63,057
			7,7000	0,00	36,98	0,00	-19,440	0,000	-197,926
TOP FLOOR	B167	COMB19 MAX							
			0,3000	0,00	-73,59	0,00	23,101	0,000	-48,434
			4,0000	0,00	-25,15	0,00	23,101	0,000	266,972
			7,7000	0,00	185,83	0,00	6,095	0,000	-61,777
TOP FLOOR	B167	COMB19 MIN							
			0,3000	0,00	-197,58	0,00	-6,790	0,000	-329,638
			4,0000	0,00	-117,18	0,00	-6,790	0,000	130,461
			7,7000	0,00	82,61	0,00	-18,090	0,000	-305,055
TOP FLOOR	B168	COMB19 MAX							
			0,3000	0,00	-81,66	0,00	25,832	0,000	-73,833
			4,0000	0,00	108,42	0,00	6,549	0,000	266,559
			7,7000	0,00	189,48	0,00	6,549	0,000	-61,898
TOP FLOOR	B168	COMB19 MIN							
			0,3000	0,00	-192,80	0,00	-5,200	0,000	-317,735
			4,0000	0,00	-112,40	0,00	-5,200	0,000	132,527
			7,7000	0,00	77,90	0,00	-23,729	0,000	-300,659
TOP FLOOR	B169	COMB19 MAX							
			0,3000	0,00	-42,90	0,00	37,409	0,000	0,303
			4,0000	0,00	74,50	0,00	-5,716	0,000	159,783
			7,7000	0,00	137,48	0,00	-5,716	0,000	3,658

TOP FLOOR	B169	COMB19 MIN	0,3000	0,00	-134,89	0,00	11,989	0,000	-230,508
			4,0000	0,00	3,30	0,00	-47,583	0,000	80,910
			7,7000	0,00	44,60	0,00	-47,583	0,000	-248,068
LT7	B11	COMB19 MAX	0,3000	0,00	-6,53	0,00	0,096	0,000	17,575
			2,2429	0,00	22,52	0,00	0,096	0,000	21,511
			3,7000	0,00	56,05	0,00	0,096	0,000	26,606
LT7	B11	COMB19 MIN	0,3000	0,00	-66,91	0,00	-0,297	0,000	-66,662
			2,2429	0,00	-19,36	0,00	-0,297	0,000	5,574
			3,7000	0,00	0,17	0,00	-0,297	0,000	-46,429
LT7	B166	COMB19 MAX	0,3000	0,00	-47,52	0,00	23,570	0,000	6,954
			4,0000	0,00	10,27	0,00	23,570	0,000	157,685
			7,7000	0,00	157,31	0,00	13,848	0,000	49,971
LT7	B166	COMB19 MIN	0,3000	0,00	-161,32	0,00	-19,694	0,000	-292,708
			4,0000	0,00	-77,68	0,00	-19,694	0,000	63,977
			7,7000	0,00	27,31	0,00	-17,440	0,000	-257,552
LT7	B167	COMB19 MAX	0,3000	0,00	-83,37	0,00	26,970	0,000	-49,683
			4,0000	0,00	-33,22	0,00	26,970	0,000	436,177
			7,7000	0,00	298,85	0,00	16,920	0,000	-57,692
LT7	B167	COMB19 MIN	0,3000	0,00	-306,31	0,00	-16,743	0,000	-483,422
			4,0000	0,00	-178,87	0,00	-16,743	0,000	161,990
			7,7000	0,00	90,14	0,00	-24,198	0,000	-454,999
LT7	B168	COMB19 MAX	0,3000	0,00	-104,18	0,00	37,736	0,000	-78,248
			4,0000	0,00	155,82	0,00	10,293	0,000	429,520
			7,7000	0,00	323,70	0,00	10,293	0,000	-70,896
LT7	B168	COMB19 MIN	0,3000	0,00	-326,61	0,00	-10,398	0,000	-479,153
			4,0000	0,00	-158,73	0,00	-10,398	0,000	156,774
			7,7000	0,00	101,77	0,00	-36,172	0,000	-467,658
LT7	B169	COMB19 MAX	0,3000	0,00	-54,37	0,00	59,283	0,000	13,752
			4,0000	0,00	102,82	0,00	-3,729	0,000	245,123
			7,7000	0,00	206,55	0,00	-3,729	0,000	-7,739
LT7	B169	COMB19 MIN	0,3000	0,00	-199,74	0,00	8,639	0,000	-331,913
			4,0000	0,00	-0,22	0,00	-65,841	0,000	94,660
			7,7000	0,00	62,75	0,00	-65,841	0,000	-364,864
LT6	B11	COMB19 MAX	0,3500	0,00	-4,82	0,00	0,098	0,000	19,954
			2,2357	0,00	23,30	0,00	0,098	0,000	22,222
			3,6500	0,00	56,27	0,00	0,098	0,000	29,149
LT6	B11	COMB19 MIN	0,3500	0,00	-67,66	0,00	-0,126	0,000	-65,393
			2,2357	0,00	-20,84	0,00	-0,126	0,000	5,577
			3,6500	0,00	-1,73	0,00	-0,126	0,000	-44,989
LT6	B166	COMB19 MAX	0,3500	0,00	-42,20	0,00	28,371	0,000	18,731
			4,0000	0,00	14,89	0,00	28,371	0,000	170,174
			7,6500	0,00	163,24	0,00	17,454	0,000	63,779
LT6	B166	COMB19 MIN	0,3500	0,00	-167,72	0,00	-23,507	0,000	-303,886
			4,0000	0,00	-85,07	0,00	-23,507	0,000	51,787
			7,6500	0,00	21,52	0,00	-23,275	0,000	-259,799

LT6	B167	COMB19 MAX	0,3500	0,00	-81,62	0,00	33,152	0,000	-40,457
			4,0000	0,00	-31,86	0,00	33,152	0,000	434,190
			7,6500	0,00	296,89	0,00	21,555	0,000	-44,626
LT6	B167	COMB19 MIN	0,3500	0,00	-307,28	0,00	-22,824	0,000	-482,394
			4,0000	0,00	-182,05	0,00	-22,824	0,000	162,097
			7,6500	0,00	86,88	0,00	-29,772	0,000	-447,458
LT6	B168	COMB19 MAX	0,3500	0,00	-101,21	0,00	43,052	0,000	-65,339
			4,0000	0,00	157,50	0,00	14,996	0,000	428,695
			7,6500	0,00	323,78	0,00	14,996	0,000	-56,662
LT6	B168	COMB19 MIN	0,3500	0,00	-324,96	0,00	-15,398	0,000	-472,301
			4,0000	0,00	-158,36	0,00	-15,398	0,000	156,349
			7,6500	0,00	98,38	0,00	-41,352	0,000	-467,885
LT6	B169	COMB19 MAX	0,3500	0,00	-50,36	0,00	63,103	0,000	27,479
			4,0000	0,00	105,86	0,00	-0,852	0,000	244,420
			7,6500	0,00	208,58	0,00	-0,852	0,000	1,290
LT6	B169	COMB19 MIN	0,3500	0,00	-200,24	0,00	5,326	0,000	-327,336
			4,0000	0,00	-1,59	0,00	-69,229	0,000	92,532
			7,6500	0,00	60,67	0,00	-69,229	0,000	-367,487
LT5	B11	COMB19 MAX	0,3500	0,00	-4,00	0,00	0,172	0,000	21,259
			2,2357	0,00	24,13	0,00	0,172	0,000	22,874
			3,6500	0,00	57,10	0,00	0,172	0,000	30,831
LT5	B11	COMB19 MIN	0,3500	0,00	-68,45	0,00	-0,179	0,000	-66,229
			2,2357	0,00	-21,64	0,00	-0,179	0,000	5,338
			3,6500	0,00	-2,53	0,00	-0,179	0,000	-46,300
LT5	B166	COMB19 MAX	0,3500	0,00	-40,40	0,00	33,607	0,000	24,971
			4,0000	0,00	16,68	0,00	33,607	0,000	174,304
			7,6500	0,00	165,63	0,00	21,938	0,000	73,789
LT5	B166	COMB19 MIN	0,3500	0,00	-170,84	0,00	-27,894	0,000	-314,122
			4,0000	0,00	-88,18	0,00	-27,894	0,000	48,481
			7,6500	0,00	18,34	0,00	-28,455	0,000	-266,431
LT5	B167	COMB19 MAX	0,3500	0,00	-80,25	0,00	38,421	0,000	-34,066
			4,0000	0,00	-30,48	0,00	38,421	0,000	433,320
			7,6500	0,00	296,69	0,00	26,104	0,000	-36,438
LT5	B167	COMB19 MIN	0,3500	0,00	-308,36	0,00	-28,090	0,000	-494,297
			4,0000	0,00	-184,69	0,00	-28,090	0,000	162,400
			7,6500	0,00	84,50	0,00	-35,040	0,000	-455,210
LT5	B168	COMB19 MAX	0,3500	0,00	-99,13	0,00	47,998	0,000	-57,289
			4,0000	0,00	161,02	0,00	19,727	0,000	428,608
			7,6500	0,00	324,93	0,00	19,727	0,000	-49,195
LT5	B168	COMB19 MIN	0,3500	0,00	-325,05	0,00	-20,204	0,000	-480,837
			4,0000	0,00	-160,31	0,00	-20,204	0,000	156,004
			7,6500	0,00	96,30	0,00	-46,620	0,000	-480,580
LT5	B169	COMB19 MAX	0,3500	0,00	-47,51	0,00	67,719	0,000	36,828
			4,0000	0,00	108,37	0,00	1,870	0,000	243,569
			7,6500	0,00	211,09	0,00	1,870	0,000	4,645
LT5	B169	COMB19 MIN	0,3500	0,00	-201,65	0,00	1,718	0,000	-332,719
			4,0000	0,00	-2,71	0,00	-72,533	0,000	90,338
			7,6500	0,00	59,55	0,00	-72,533	0,000	-377,282

LT4	B11	COMB19 MAX	0,3500	0,00	-3,62	0,00	0,236	0,000	21,944
			2,2357	0,00	24,89	0,00	0,236	0,000	22,502
			3,6500	0,00	57,86	0,00	0,236	0,000	29,512
LT4	B11	COMB19 MIN	0,3500	0,00	-67,33	0,00	-0,255	0,000	-64,495
			2,2357	0,00	-20,90	0,00	-0,255	0,000	5,305
			3,6500	0,00	-1,79	0,00	-0,255	0,000	-47,503
LT4	B166	COMB19 MAX	0,3500	0,00	-38,57	0,00	37,716	0,000	29,059
			4,0000	0,00	18,52	0,00	37,716	0,000	173,851
			7,6500	0,00	165,89	0,00	24,931	0,000	68,402
LT4	B166	COMB19 MIN	0,3500	0,00	-167,24	0,00	-32,237	0,000	-303,964
			4,0000	0,00	-84,58	0,00	-32,237	0,000	43,331
			7,6500	0,00	19,29	0,00	-31,338	0,000	-268,735
LT4	B167	COMB19 MAX	0,3500	0,00	-81,04	0,00	41,561	0,000	-35,894
			4,0000	0,00	-31,28	0,00	41,561	0,000	435,763
			7,6500	0,00	299,27	0,00	29,243	0,000	-40,864
LT4	B167	COMB19 MIN	0,3500	0,00	-308,06	0,00	-32,132	0,000	-489,054
			4,0000	0,00	-183,78	0,00	-32,132	0,000	163,652
			7,6500	0,00	85,97	0,00	-37,322	0,000	-458,109
LT4	B168	COMB19 MAX	0,3500	0,00	-100,34	0,00	50,399	0,000	-59,368
			4,0000	0,00	161,36	0,00	23,046	0,000	431,020
			7,6500	0,00	325,57	0,00	23,046	0,000	-50,738
LT4	B168	COMB19 MIN	0,3500	0,00	-326,63	0,00	-23,850	0,000	-482,023
			4,0000	0,00	-160,87	0,00	-23,850	0,000	156,617
			7,6500	0,00	96,96	0,00	-48,595	0,000	-479,654
LT4	B169	COMB19 MAX	0,3500	0,00	-48,70	0,00	69,845	0,000	31,728
			4,0000	0,00	105,63	0,00	4,470	0,000	243,848
			7,6500	0,00	208,34	0,00	4,470	0,000	5,670
LT4	B169	COMB19 MIN	0,3500	0,00	-203,33	0,00	-0,357	0,000	-337,474
			4,0000	0,00	-2,75	0,00	-74,923	0,000	88,988
			7,6500	0,00	59,51	0,00	-74,923	0,000	-367,709
LT3	B11	COMB19 MAX	0,4000	0,00	-3,50	0,00	0,316	0,000	21,370
			2,2286	0,00	24,57	0,00	0,316	0,000	22,362
			3,6000	0,00	56,93	0,00	0,316	0,000	27,703
LT3	B11	COMB19 MIN	0,4000	0,00	-64,96	0,00	-0,292	0,000	-58,302
			2,2286	0,00	-19,78	0,00	-0,292	0,000	5,496
			3,6000	0,00	-1,09	0,00	-0,292	0,000	-44,463
LT3	B166	COMB19 MAX	0,4000	0,00	-37,10	0,00	41,207	0,000	31,766
			4,0000	0,00	19,27	0,00	41,207	0,000	169,082
			7,6000	0,00	162,11	0,00	28,851	0,000	65,468
LT3	B166	COMB19 MIN	0,4000	0,00	-162,36	0,00	-35,738	0,000	-286,611
			4,0000	0,00	-80,71	0,00	-35,738	0,000	41,266
			7,6000	0,00	19,56	0,00	-35,071	0,000	-256,247
LT3	B167	COMB19 MAX	0,4000	0,00	-81,97	0,00	44,734	0,000	-35,439
			4,0000	0,00	-32,61	0,00	44,734	0,000	436,760
			7,6000	0,00	299,97	0,00	32,594	0,000	-39,802

LT3	B167	COMB19 MIN	0,4000	0,00	-307,96	0,00	-36,060	0,000	-473,065
			4,0000	0,00	-183,47	0,00	-36,060	0,000	165,174
			7,6000	0,00	86,47	0,00	-40,412	0,000	-445,054
LT3	B168	COMB19 MAX	0,4000	0,00	-100,69	0,00	53,099	0,000	-56,466
			4,0000	0,00	162,25	0,00	26,669	0,000	432,463
			7,6000	0,00	325,65	0,00	26,669	0,000	-48,475
LT3	B168	COMB19 MIN	0,4000	0,00	-326,45	0,00	-27,524	0,000	-467,958
			4,0000	0,00	-161,20	0,00	-27,524	0,000	157,391
			7,6000	0,00	97,13	0,00	-51,454	0,000	-466,665
LT3	B169	COMB19 MAX	0,4000	0,00	-48,90	0,00	73,102	0,000	30,287
			4,0000	0,00	104,03	0,00	6,232	0,000	243,257
			7,6000	0,00	205,70	0,00	6,232	0,000	4,380
LT3	B169	COMB19 MIN	0,4000	0,00	-201,98	0,00	-3,098	0,000	-326,379
			4,0000	0,00	-1,77	0,00	-77,194	0,000	87,499
			7,6000	0,00	59,78	0,00	-77,194	0,000	-351,768
LT2	B11	COMB19 MAX	0,4000	0,00	-6,87	0,00	0,260	0,000	18,678
			2,2286	0,00	24,08	0,00	0,260	0,000	23,252
			3,6000	0,00	58,92	0,00	0,260	0,000	23,603
LT2	B11	COMB19 MIN	0,4000	0,00	-65,36	0,00	-0,321	0,000	-55,133
			2,2286	0,00	-17,30	0,00	-0,321	0,000	6,709
			3,6000	0,00	3,24	0,00	-0,321	0,000	-43,953
LT2	B166	COMB19 MAX	0,4000	0,00	-38,73	0,00	37,970	0,000	28,191
			4,0000	0,00	22,51	0,00	37,970	0,000	151,739
			7,6000	0,00	155,45	0,00	29,914	0,000	57,878
LT2	B166	COMB19 MIN	0,4000	0,00	-156,05	0,00	-36,418	0,000	-266,447
			4,0000	0,00	-67,92	0,00	-36,418	0,000	37,923
			7,6000	0,00	23,20	0,00	-32,946	0,000	-241,189
LT2	B167	COMB19 MAX	0,4000	0,00	-72,23	0,00	49,871	0,000	-25,074
			4,0000	0,00	-22,87	0,00	49,871	0,000	403,595
			7,6000	0,00	285,65	0,00	27,226	0,000	-30,530
LT2	B167	COMB19 MIN	0,4000	0,00	-290,78	0,00	-30,276	0,000	-435,256
			4,0000	0,00	-163,39	0,00	-30,276	0,000	140,734
			7,6000	0,00	76,48	0,00	-46,450	0,000	-415,992
LT2	B168	COMB19 MAX	0,4000	0,00	-107,46	0,00	52,371	0,000	-67,977
			4,0000	0,00	161,87	0,00	26,687	0,000	439,475
			7,6000	0,00	333,60	0,00	26,687	0,000	-62,936
LT2	B168	COMB19 MIN	0,4000	0,00	-333,75	0,00	-27,142	0,000	-467,327
			4,0000	0,00	-162,03	0,00	-27,142	0,000	162,603
			7,6000	0,00	105,05	0,00	-51,498	0,000	-468,779
LT2	B169	COMB19 MAX	0,4000	0,00	-57,25	0,00	74,337	0,000	12,812
			4,0000	0,00	100,50	0,00	6,505	0,000	247,825
			7,6000	0,00	208,64	0,00	6,505	0,000	-8,798
LT2	B169	COMB19 MIN	0,4000	0,00	-206,96	0,00	-2,986	0,000	-328,184
			4,0000	0,00	-0,25	0,00	-77,169	0,000	91,019
			7,6000	0,00	66,16	0,00	-77,169	0,000	-343,726

DASAR	B5	COMB19 MAX	0,4000	0,00	-3,68	0,00	0,973	0,000	17,344
			1,8880	0,00	28,34	0,00	0,973	0,000	24,151
			2,8800	0,00	60,70	0,00	0,973	0,000	26,373
DASAR	B5	COMB19 MIN	0,4000	0,00	-71,96	0,00	-1,182	0,000	-46,918
			1,8880	0,00	-20,34	0,00	-1,182	0,000	3,210
			2,8800	0,00	-2,74	0,00	-1,182	0,000	-34,025
DASAR	B11	COMB19 MAX	0,4000	0,00	-17,29	0,00	0,259	0,000	10,189
			2,2286	0,00	26,51	0,00	0,259	0,000	33,771
			3,6000	0,00	76,56	0,00	0,259	0,000	12,601
DASAR	B11	COMB19 MIN	0,4000	0,00	-79,21	0,00	-0,258	0,000	-54,888
			2,2286	0,00	-10,77	0,00	-0,258	0,000	10,679
			3,6000	0,00	15,60	0,00	-0,258	0,000	-50,351
DASAR	B166	COMB19 MAX	0,4000	0,00	-65,33	0,00	18,385	0,000	-13,409
			4,0000	0,00	11,25	0,00	18,385	0,000	217,926
			7,6000	0,00	206,76	0,00	51,508	0,000	4,171
DASAR	B166	COMB19 MIN	0,4000	0,00	-205,32	0,00	-52,296	0,000	-305,881
			4,0000	0,00	-77,13	0,00	-52,296	0,000	77,219
			7,6000	0,00	56,39	0,00	-17,898	0,000	-293,762
DASAR	B167	COMB19 MAX	0,4000	0,00	-78,87	0,00	42,041	0,000	-47,715
			4,0000	0,00	-29,51	0,00	42,041	0,000	403,923
			7,6000	0,00	287,71	0,00	21,251	0,000	-51,910
DASAR	B167	COMB19 MIN	0,4000	0,00	-291,77	0,00	-22,192	0,000	-416,553
			4,0000	0,00	-163,24	0,00	-22,192	0,000	142,326
			7,6000	0,00	82,14	0,00	-39,436	0,000	-401,345
DASAR	B168	COMB19 MAX	0,4000	0,00	-112,39	0,00	44,474	0,000	-85,595
			4,0000	0,00	163,64	0,00	21,815	0,000	442,626
			7,6000	0,00	335,37	0,00	21,815	0,000	-83,886
DASAR	B168	COMB19 MIN	0,4000	0,00	-335,48	0,00	-21,247	0,000	-452,467
			4,0000	0,00	-163,75	0,00	-21,247	0,000	165,392
			7,6000	0,00	111,63	0,00	-44,871	0,000	-452,584
DASAR	B169	COMB19 MAX	0,4000	0,00	-64,77	0,00	70,585	0,000	-12,771
			4,0000	0,00	94,10	0,00	3,098	0,000	247,732
			7,6000	0,00	204,26	0,00	3,098	0,000	-23,585
DASAR	B169	COMB19 MIN	0,4000	0,00	-202,25	0,00	0,876	0,000	-312,458
			4,0000	0,00	3,29	0,00	-73,729	0,000	93,205
			7,6000	0,00	69,69	0,00	-73,729	0,000	-318,715
BASEMENT	B5	COMB19 MAX	0,4000	0,00	5,30	0,00	0,156	0,000	18,119
			1,8880	0,00	24,26	0,00	0,156	0,000	16,437
			2,8800	0,00	44,72	0,00	0,156	0,000	21,915
BASEMENT	B5	COMB19 MIN	0,4000	0,00	-50,88	0,00	-0,170	0,000	-36,552
			1,8880	0,00	-17,46	0,00	-0,170	0,000	0,588
			2,8800	0,00	-8,78	0,00	-0,170	0,000	-28,389
BASEMENT	B11	COMB19 MAX	0,4000	0,00	-5,62	0,00	0,122	0,000	11,435
			2,2286	0,00	21,46	0,00	0,122	0,000	26,040
			3,6000	0,00	55,05	0,00	0,122	0,000	11,959
BASEMENT	B11	COMB19 MIN	0,4000	0,00	-55,68	0,00	-0,241	0,000	-40,410
			2,2286	0,00	-8,92	0,00	-0,241	0,000	5,646
			3,6000	0,00	5,10	0,00	-0,241	0,000	-39,107

BASEMENT	B166	COMB19 MAX	0,4000	0,00	-39,78	0,00	8,620	0,000	2,026
			4,0000	0,00	4,40	0,00	8,620	0,000	175,389
			7,6000	0,00	158,15	0,00	42,019	0,000	8,452
BASEMENT	B166	COMB19 MIN	0,4000	0,00	-153,76	0,00	-40,984	0,000	-227,974
			4,0000	0,00	-66,02	0,00	-40,984	0,000	61,690
			7,6000	0,00	33,90	0,00	-8,111	0,000	-234,069
BASEMENT	B167	COMB19 MAX	0,4000	0,00	-84,95	0,00	30,262	0,000	-65,763
			4,0000	0,00	-35,60	0,00	30,262	0,000	408,716
			7,6000	0,00	291,56	0,00	12,493	0,000	-71,037
BASEMENT	B167	COMB19 MIN	0,4000	0,00	-290,76	0,00	-12,843	0,000	-389,622
			4,0000	0,00	-162,24	0,00	-12,843	0,000	146,033
			7,6000	0,00	87,49	0,00	-29,496	0,000	-393,301
BASEMENT	B168	COMB19 MAX	0,4000	0,00	-87,70	0,00	33,262	0,000	-74,236
			4,0000	0,00	165,90	0,00	13,650	0,000	416,694
			7,6000	0,00	294,43	0,00	13,650	0,000	-70,790
BASEMENT	B168	COMB19 MIN	0,4000	0,00	-296,80	0,00	-12,336	0,000	-403,391
			4,0000	0,00	-168,28	0,00	-12,336	0,000	147,046
			7,6000	0,00	86,61	0,00	-33,084	0,000	-394,823
BASEMENT	B169	COMB19 MAX	0,4000	0,00	-40,31	0,00	64,859	0,000	-4,943
			4,0000	0,00	87,29	0,00	-5,241	0,000	215,482
			7,6000	0,00	159,05	0,00	-5,241	0,000	-6,145
BASEMENT	B169	COMB19 MIN	0,4000	0,00	-160,16	0,00	8,069	0,000	-252,208
			4,0000	0,00	7,99	0,00	-67,601	0,000	72,874
			7,6000	0,00	42,00	0,00	-67,601	0,000	-248,921

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B E A M F O R C E S

STORY	BEAM	LOAD	LOC	P	V2	V3	T	M2	M3
TOP FLOOR	B11	DEAD	0,3000	0,00	-17,89	0,00	0,069	0,000	-13,814
			3,7000	0,00	12,36	0,00	0,069	0,000	-4,412
TOP FLOOR	B11	LIVE	0,3000	0,00	-5,13	0,00	-0,019	0,000	-4,518
			3,7000	0,00	2,69	0,00	-0,019	0,000	-0,375
TOP FLOOR	B11	SDEAD	0,3000	0,00	0,28	0,00	0,035	0,000	0,403
			3,7000	0,00	0,28	0,00	0,035	0,000	-0,532
TOP FLOOR	B166	DEAD	0,3000	0,00	-70,85	0,00	5,739	0,000	-90,559
			7,7000	0,00	72,05	0,00	-7,779	0,000	-96,392
TOP FLOOR	B166	LIVE	0,3000	0,00	-11,57	0,00	0,332	0,000	-24,734
			7,7000	0,00	7,67	0,00	0,023	0,000	-4,037
TOP FLOOR	B166	SDEAD	0,3000	0,00	-1,30	0,00	-0,675	0,000	-5,238
			7,7000	0,00	-1,83	0,00	0,602	0,000	5,986
TOP FLOOR	B167	DEAD	0,3000	0,00	-113,07	0,00	5,517	0,000	-158,713
			7,7000	0,00	110,85	0,00	-4,478	0,000	-152,645
TOP FLOOR	B167	LIVE	0,3000	0,00	-37,07	0,00	2,838	0,000	-55,174
			7,7000	0,00	32,70	0,00	-1,863	0,000	-40,727
TOP FLOOR	B167	SDEAD	0,3000	0,00	1,59	0,00	0,898	0,000	4,952
			7,7000	0,00	0,41	0,00	-0,347	0,000	-2,642
TOP FLOOR	B168	DEAD	0,3000	0,00	-113,50	0,00	7,384	0,000	-160,268
			7,7000	0,00	112,14	0,00	-6,152	0,000	-154,762
TOP FLOOR	B168	LIVE	0,3000	0,00	-34,76	0,00	3,187	0,000	-47,185
			7,7000	0,00	36,04	0,00	-2,676	0,000	-51,233
TOP FLOOR	B168	SDEAD	0,3000	0,00	-0,65	0,00	0,923	0,000	-3,724
			7,7000	0,00	-2,29	0,00	-0,754	0,000	6,513
TOP FLOOR	B169	DEAD	0,3000	0,00	-78,48	0,00	20,794	0,000	-106,522
			7,7000	0,00	75,00	0,00	-20,973	0,000	-93,177
TOP FLOOR	B169	LIVE	0,3000	0,00	-17,20	0,00	7,014	0,000	-21,342
			7,7000	0,00	20,52	0,00	-8,335	0,000	-33,205
TOP FLOOR	B169	SDEAD	0,3000	0,00	2,01	0,00	-0,611	0,000	7,064
			7,7000	0,00	1,93	0,00	-0,439	0,000	-7,397
LT7	B11	DEAD	0,3000	0,00	-16,19	0,00	0,053	0,000	-14,465
			3,7000	0,00	7,35	0,00	0,053	0,000	0,555

LT7	B11	LIVE	0,3000	0,00	-10,97	0,00	-0,009	0,000	-7,714
			3,7000	0,00	8,58	0,00	-0,009	0,000	-3,661
LT7	B11	SDEAD	0,3000	0,00	-13,56	0,00	-0,144	0,000	-5,236
			3,7000	0,00	15,34	0,00	-0,144	0,000	-8,251
LT7	B166	DEAD	0,3000	0,00	-62,17	0,00	4,486	0,000	-88,723
			7,7000	0,00	52,97	0,00	-4,848	0,000	-66,129
LT7	B166	LIVE	0,3000	0,00	-21,64	0,00	1,317	0,000	-38,530
			7,7000	0,00	21,35	0,00	-0,926	0,000	-24,023
LT7	B166	SDEAD	0,3000	0,00	-26,97	0,00	-3,267	0,000	-29,003
			7,7000	0,00	24,78	0,00	3,579	0,000	-21,279
LT7	B167	DEAD	0,3000	0,00	-117,69	0,00	6,473	0,000	-168,936
			7,7000	0,00	113,40	0,00	-6,218	0,000	-154,870
LT7	B167	LIVE	0,3000	0,00	-93,00	0,00	4,939	0,000	-134,385
			7,7000	0,00	89,83	0,00	-4,914	0,000	-124,376
LT7	B167	SDEAD	0,3000	0,00	-13,57	0,00	-3,955	0,000	-20,930
			7,7000	0,00	15,87	0,00	5,092	0,000	-30,042
LT7	B168	DEAD	0,3000	0,00	-117,12	0,00	8,743	0,000	-165,471
			7,7000	0,00	116,83	0,00	-7,943	0,000	-163,816
LT7	B168	LIVE	0,3000	0,00	-92,94	0,00	6,624	0,000	-133,425
			7,7000	0,00	92,85	0,00	-5,625	0,000	-132,513
LT7	B168	SDEAD	0,3000	0,00	-31,14	0,00	1,120	0,000	-36,422
			7,7000	0,00	29,12	0,00	-1,702	0,000	-29,537
LT7	B169	DEAD	0,3000	0,00	-68,13	0,00	22,707	0,000	-88,844
			7,7000	0,00	73,10	0,00	-23,803	0,000	-106,672
LT7	B169	LIVE	0,3000	0,00	-46,65	0,00	20,108	0,000	-66,690
			7,7000	0,00	47,95	0,00	-20,881	0,000	-71,166
LT7	B169	SDEAD	0,3000	0,00	-30,66	0,00	-0,114	0,000	-30,904
			7,7000	0,00	32,31	0,00	0,618	0,000	-36,870
LT6	B11	DEAD	0,3500	0,00	-15,88	0,00	0,058	0,000	-13,240
			3,6500	0,00	7,32	0,00	0,058	0,000	0,878
LT6	B11	LIVE	0,3500	0,00	-11,02	0,00	0,004	0,000	-7,279
			3,6500	0,00	8,36	0,00	0,004	0,000	-2,892
LT6	B11	SDEAD	0,3500	0,00	-13,38	0,00	-0,073	0,000	-4,932
			3,6500	0,00	14,67	0,00	-0,073	0,000	-7,044
LT6	B166	DEAD	0,3500	0,00	-62,66	0,00	4,715	0,000	-88,333
			7,6500	0,00	54,11	0,00	-5,411	0,000	-64,416

LT6	B166	LIVE	0,3500	0,00	-22,41	0,00	1,437	0,000	-39,975
			7,6500	0,00	20,75	0,00	-1,244	0,000	-19,514
LT6	B166	SDEAD	0,3500	0,00	-26,63	0,00	-3,084	0,000	-28,420
			7,6500	0,00	23,99	0,00	3,231	0,000	-19,634
LT6	B167	DEAD	0,3500	0,00	-117,88	0,00	6,388	0,000	-165,342
			7,6500	0,00	113,03	0,00	-6,175	0,000	-149,359
LT6	B167	LIVE	0,3500	0,00	-93,52	0,00	5,196	0,000	-133,328
			7,6500	0,00	89,07	0,00	-5,088	0,000	-118,738
LT6	B167	SDEAD	0,3500	0,00	-13,49	0,00	-3,944	0,000	-20,145
			7,6500	0,00	15,62	0,00	4,685	0,000	-28,425
LT6	B168	DEAD	0,3500	0,00	-116,73	0,00	8,591	0,000	-159,706
			7,6500	0,00	116,98	0,00	-7,949	0,000	-160,022
LT6	B168	LIVE	0,3500	0,00	-92,45	0,00	6,671	0,000	-128,102
			7,6500	0,00	93,20	0,00	-5,995	0,000	-130,230
LT6	B168	SDEAD	0,3500	0,00	-30,80	0,00	1,401	0,000	-35,312
			7,6500	0,00	28,57	0,00	-1,746	0,000	-27,748
LT6	B169	DEAD	0,3500	0,00	-67,82	0,00	23,002	0,000	-85,090
			7,6500	0,00	72,70	0,00	-23,596	0,000	-102,391
LT6	B169	LIVE	0,3500	0,00	-45,66	0,00	20,402	0,000	-61,249
			7,6500	0,00	48,72	0,00	-21,051	0,000	-72,047
LT6	B169	SDEAD	0,3500	0,00	-29,77	0,00	-0,132	0,000	-28,533
			7,6500	0,00	32,31	0,00	0,249	0,000	-37,681
LT5	B11	DEAD	0,3500	0,00	-15,79	0,00	0,052	0,000	-12,943
			3,6500	0,00	7,41	0,00	0,052	0,000	0,892
LT5	B11	LIVE	0,3500	0,00	-11,02	0,00	0,004	0,000	-7,217
			3,6500	0,00	8,37	0,00	0,004	0,000	-2,854
LT5	B11	SDEAD	0,3500	0,00	-13,46	0,00	-0,058	0,000	-5,035
			3,6500	0,00	14,59	0,00	-0,058	0,000	-6,900
LT5	B166	DEAD	0,3500	0,00	-63,21	0,00	5,065	0,000	-90,072
			7,6500	0,00	53,73	0,00	-5,628	0,000	-63,015
LT5	B166	LIVE	0,3500	0,00	-22,50	0,00	1,496	0,000	-40,175
			7,6500	0,00	20,39	0,00	-1,357	0,000	-18,041
LT5	B166	SDEAD	0,3500	0,00	-26,67	0,00	-3,057	0,000	-28,488
			7,6500	0,00	24,17	0,00	3,171	0,000	-20,128
LT5	B167	DEAD	0,3500	0,00	-166,93	0,00	6,442	0,000	-181,253
			7,6500	0,00	158,03	0,00	-6,348	0,000	-164,527

LT5	B167	LIVE	0,3500	0,00	-134,95	0,00	5,236	0,000	-151,233
			7,6500	0,00	119,01	0,00	-5,198	0,000	-128,743
LT5	B167	SDEAD	0,3500	0,00	-23,57	0,00	-4,016	0,000	-30,403
			7,6500	0,00	28,05	0,00	4,568	0,000	-48,046
LT5	B168	DEAD	0,3500	0,00	-116,79	0,00	8,597	0,000	-159,872
			7,6500	0,00	117,43	0,00	-8,135	0,000	-161,661
LT5	B168	LIVE	0,3500	0,00	-92,47	0,00	6,679	0,000	-128,256
			7,6500	0,00	93,52	0,00	-6,157	0,000	-131,495
LT5	B168	SDEAD	0,3500	0,00	-30,80	0,00	1,458	0,000	-35,305
			7,6500	0,00	28,65	0,00	-1,739	0,000	-27,996
LT5	B169	DEAD	0,3500	0,00	-67,32	0,00	23,306	0,000	-83,675
			7,6500	0,00	73,18	0,00	-23,788	0,000	-104,555
LT5	B169	LIVE	0,3500	0,00	-45,32	0,00	20,645	0,000	-60,091
			7,6500	0,00	49,04	0,00	-21,109	0,000	-73,290
LT5	B169	SDEAD	0,3500	0,00	-29,74	0,00	-0,071	0,000	-28,611
			7,6500	0,00	32,35	0,00	0,191	0,000	-37,991
LT4	B11	DEAD	0,3500	0,00	-15,16	0,00	0,053	0,000	-11,915
			3,6500	0,00	8,04	0,00	0,053	0,000	-0,178
LT4	B11	LIVE	0,3500	0,00	-10,82	0,00	0,003	0,000	-6,902
			3,6500	0,00	8,56	0,00	0,003	0,000	-3,171
LT4	B11	SDEAD	0,3500	0,00	-13,47	0,00	-0,063	0,000	-5,061
			3,6500	0,00	14,58	0,00	-0,063	0,000	-6,879
LT4	B166	DEAD	0,3500	0,00	-61,23	0,00	4,872	0,000	-85,235
			7,6500	0,00	53,75	0,00	-5,484	0,000	-64,797
LT4	B166	LIVE	0,3500	0,00	-21,64	0,00	1,583	0,000	-37,612
			7,6500	0,00	21,11	0,00	-1,422	0,000	-20,689
LT4	B166	SDEAD	0,3500	0,00	-26,46	0,00	-3,017	0,000	-27,762
			7,6500	0,00	24,38	0,00	3,111	0,000	-20,748
LT4	B167	DEAD	0,3500	0,00	-118,15	0,00	6,146	0,000	-165,567
			7,6500	0,00	114,07	0,00	-6,087	0,000	-152,081
LT4	B167	LIVE	0,3500	0,00	-93,64	0,00	5,042	0,000	-133,426
			7,6500	0,00	89,85	0,00	-5,040	0,000	-120,958
LT4	B167	SDEAD	0,3500	0,00	-13,71	0,00	-4,057	0,000	-20,872
			7,6500	0,00	15,52	0,00	4,640	0,000	-27,926
LT4	B168	DEAD	0,3500	0,00	-117,45	0,00	8,243	0,000	-161,276
			7,6500	0,00	117,65	0,00	-7,729	0,000	-161,527

LT4	B168	LIVE	0,3500	0,00	-93,01	0,00	6,457	0,000	-129,487
			7,6500	0,00	93,59	0,00	-5,888	0,000	-131,092
LT4	B168	SDEAD	0,3500	0,00	-30,73	0,00	1,325	0,000	-34,869
			7,6500	0,00	28,88	0,00	-1,634	0,000	-28,616
LT4	B169	DEAD	0,3500	0,00	-68,18	0,00	23,308	0,000	-86,633
			7,6500	0,00	72,34	0,00	-23,735	0,000	-101,390
LT4	B169	LIVE	0,3500	0,00	-45,91	0,00	20,640	0,000	-62,149
			7,6500	0,00	48,48	0,00	-21,106	0,000	-71,214
LT4	B169	SDEAD	0,3500	0,00	-29,97	0,00	-0,047	0,000	-29,365
			7,6500	0,00	32,12	0,00	0,236	0,000	-37,098
LT3	B11	DEAD	0,4000	0,00	-14,41	0,00	0,050	0,000	-10,145
			3,6000	0,00	8,44	0,00	0,050	0,000	-0,592
LT3	B11	LIVE	0,4000	0,00	-10,55	0,00	0,005	0,000	-6,046
			3,6000	0,00	8,65	0,00	0,005	0,000	-2,990
LT3	B11	SDEAD	0,4000	0,00	-13,16	0,00	-0,041	0,000	-4,563
			3,6000	0,00	14,04	0,00	-0,041	0,000	-5,965
LT3	B166	DEAD	0,4000	0,00	-59,11	0,00	4,736	0,000	-78,853
			7,6000	0,00	52,05	0,00	-5,304	0,000	-60,422
LT3	B166	LIVE	0,4000	0,00	-20,87	0,00	1,626	0,000	-34,582
			7,6000	0,00	21,02	0,00	-1,524	0,000	-19,716
LT3	B166	SDEAD	0,4000	0,00	-25,93	0,00	-2,906	0,000	-26,034
			7,6000	0,00	24,45	0,00	3,068	0,000	-21,037
LT3	B167	DEAD	0,4000	0,00	-117,93	0,00	6,016	0,000	-160,101
			7,6000	0,00	114,32	0,00	-6,016	0,000	-148,281
LT3	B167	LIVE	0,4000	0,00	-93,60	0,00	4,992	0,000	-129,227
			7,6000	0,00	90,17	0,00	-5,012	0,000	-118,016
LT3	B167	SDEAD	0,4000	0,00	-13,90	0,00	-4,262	0,000	-20,507
			7,6000	0,00	15,43	0,00	4,679	0,000	-26,405
LT3	B168	DEAD	0,4000	0,00	-117,43	0,00	7,977	0,000	-156,295
			7,6000	0,00	117,74	0,00	-7,584	0,000	-157,004
LT3	B168	LIVE	0,4000	0,00	-93,16	0,00	6,291	0,000	-125,635
			7,6000	0,00	93,77	0,00	-5,843	0,000	-127,369
LT3	B168	SDEAD	0,4000	0,00	-30,39	0,00	1,206	0,000	-33,604
			7,6000	0,00	28,62	0,00	-1,436	0,000	-27,649
LT3	B169	DEAD	0,4000	0,00	-67,97	0,00	23,526	0,000	-83,932
			7,6000	0,00	71,82	0,00	-23,832	0,000	-97,416

LT3	B169	LIVE	0,4000	0,00	-45,88	0,00	20,831	0,000	-60,094
			7,6000	0,00	48,33	0,00	-21,173	0,000	-68,636
LT3	B169	SDEAD	0,4000	0,00	-29,65	0,00	-0,110	0,000	-28,447
			7,6000	0,00	31,59	0,00	0,123	0,000	-35,324
LT2	B11	DEAD	0,4000	0,00	-13,83	0,00	0,028	0,000	-9,084
			3,6000	0,00	9,02	0,00	0,028	0,000	-1,377
LT2	B11	LIVE	0,4000	0,00	-10,40	0,00	0,004	0,000	-5,740
			3,6000	0,00	8,80	0,00	0,004	0,000	-3,173
LT2	B11	SDEAD	0,4000	0,00	-15,61	0,00	-0,059	0,000	-5,542
			3,6000	0,00	16,39	0,00	-0,059	0,000	-6,803
LT2	B166	DEAD	0,4000	0,00	-53,92	0,00	3,803	0,000	-70,020
			7,6000	0,00	47,76	0,00	-4,213	0,000	-55,186
LT2	B166	LIVE	0,4000	0,00	-19,31	0,00	1,451	0,000	-30,784
			7,6000	0,00	19,66	0,00	-1,378	0,000	-19,150
LT2	B166	SDEAD	0,4000	0,00	-29,64	0,00	-3,755	0,000	-28,776
			7,6000	0,00	27,95	0,00	3,425	0,000	-22,986
LT2	B167	DEAD	0,4000	0,00	-117,86	0,00	5,666	0,000	-158,842
			7,6000	0,00	115,44	0,00	-5,800	0,000	-151,098
LT2	B167	LIVE	0,4000	0,00	-93,47	0,00	4,739	0,000	-128,109
			7,6000	0,00	91,10	0,00	-4,890	0,000	-120,476
LT2	B167	SDEAD	0,4000	0,00	0,16	0,00	1,408	0,000	0,642
			7,6000	0,00	1,14	0,00	-1,026	0,000	-4,162
LT2	B168	DEAD	0,4000	0,00	-118,06	0,00	7,610	0,000	-157,673
			7,6000	0,00	118,18	0,00	-7,288	0,000	-157,802
LT2	B168	LIVE	0,4000	0,00	-93,69	0,00	6,054	0,000	-126,899
			7,6000	0,00	94,05	0,00	-5,681	0,000	-127,828
LT2	B168	SDEAD	0,4000	0,00	-35,15	0,00	1,521	0,000	-36,806
			7,6000	0,00	34,43	0,00	-1,822	0,000	-34,525
LT2	B169	DEAD	0,4000	0,00	-68,46	0,00	23,645	0,000	-85,758
			7,6000	0,00	71,31	0,00	-23,853	0,000	-95,709
LT2	B169	LIVE	0,4000	0,00	-46,21	0,00	20,959	0,000	-61,266
			7,6000	0,00	48,00	0,00	-21,213	0,000	-67,487
LT2	B169	SDEAD	0,4000	0,00	-35,35	0,00	0,351	0,000	-35,244
			7,6000	0,00	36,69	0,00	0,305	0,000	-40,023
DASAR	B5	DEAD	0,4000	0,00	-16,45	0,00	-0,047	0,000	-7,716
			2,8800	0,00	10,32	0,00	-0,047	0,000	-0,113

DASAR	B5	LIVE	0,4000	0,00	-14,00	0,00	-0,032	0,000	-5,508
			2,8800	0,00	11,29	0,00	-0,032	0,000	-2,148
DASAR	B5	SDEAD	0,4000	0,00	-12,90	0,00	-0,037	0,000	-3,744
			2,8800	0,00	11,90	0,00	-0,037	0,000	-2,508
DASAR	B11	DEAD	0,4000	0,00	-20,95	0,00	0,005	0,000	-11,048
			3,6000	0,00	18,60	0,00	0,005	0,000	-7,279
DASAR	B11	LIVE	0,4000	0,00	-19,40	0,00	-0,023	0,000	-9,311
			3,6000	0,00	19,00	0,00	-0,023	0,000	-8,668
DASAR	B11	SDEAD	0,4000	0,00	-15,76	0,00	0,006	0,000	-5,803
			3,6000	0,00	16,24	0,00	0,006	0,000	-6,570
DASAR	B166	DEAD	0,4000	0,00	-79,64	0,00	-9,456	0,000	-98,871
			7,6000	0,00	75,89	0,00	9,476	0,000	-90,864
DASAR	B166	LIVE	0,4000	0,00	-48,76	0,00	-9,594	0,000	-64,155
			7,6000	0,00	51,20	0,00	9,940	0,000	-58,698
DASAR	B166	SDEAD	0,4000	0,00	-26,02	0,00	-2,124	0,000	-22,622
			7,6000	0,00	25,04	0,00	1,796	0,000	-19,085
DASAR	B167	DEAD	0,4000	0,00	-118,18	0,00	5,821	0,000	-159,877
			7,6000	0,00	116,27	0,00	-5,559	0,000	-153,592
DASAR	B167	LIVE	0,4000	0,00	-93,69	0,00	5,036	0,000	-129,057
			7,6000	0,00	91,75	0,00	-4,762	0,000	-122,642
DASAR	B167	SDEAD	0,4000	0,00	-0,04	0,00	1,232	0,000	0,253
			7,6000	0,00	1,15	0,00	-0,833	0,000	-3,843
DASAR	B168	DEAD	0,4000	0,00	-118,76	0,00	7,091	0,000	-158,934
			7,6000	0,00	118,76	0,00	-6,799	0,000	-158,764
DASAR	B168	LIVE	0,4000	0,00	-94,31	0,00	5,726	0,000	-128,149
			7,6000	0,00	94,42	0,00	-5,387	0,000	-128,319
DASAR	B168	SDEAD	0,4000	0,00	-35,06	0,00	1,243	0,000	-36,263
			7,6000	0,00	34,82	0,00	-1,615	0,000	-35,594
DASAR	B169	DEAD	0,4000	0,00	-69,16	0,00	23,687	0,000	-88,266
			7,6000	0,00	70,59	0,00	-23,821	0,000	-93,255
DASAR	B169	LIVE	0,4000	0,00	-46,71	0,00	21,042	0,000	-63,035
			7,6000	0,00	47,51	0,00	-21,241	0,000	-65,759
DASAR	B169	SDEAD	0,4000	0,00	-35,75	0,00	0,323	0,000	-36,589
			7,6000	0,00	36,28	0,00	0,302	0,000	-38,432
BASEMENT	B5	DEAD	0,4000	0,00	-15,01	0,00	-0,001	0,000	-6,058
			2,8800	0,00	11,76	0,00	-0,001	0,000	-2,027

BASEMENT	B5	LIVE	0,4000	0,00	-13,41	0,00	-0,004	0,000	-4,877
			2,8800	0,00	11,88	0,00	-0,004	0,000	-2,983
BASEMENT	B5	SDEAD	0,4000	0,00	-0,31	0,00	-0,003	0,000	-0,397
			2,8800	0,00	-0,31	0,00	-0,003	0,000	0,365
BASEMENT	B11	DEAD	0,4000	0,00	-20,13	0,00	-0,035	0,000	-9,678
			3,6000	0,00	19,42	0,00	-0,035	0,000	-8,551
BASEMENT	B11	LIVE	0,4000	0,00	-19,16	0,00	-0,041	0,000	-8,875
			3,6000	0,00	19,24	0,00	-0,041	0,000	-8,990
BASEMENT	B11	SDEAD	0,4000	0,00	0,06	0,00	-0,003	0,000	0,106
			3,6000	0,00	0,06	0,00	-0,003	0,000	-0,096
BASEMENT	B166	DEAD	0,4000	0,00	-69,30	0,00	-10,894	0,000	-79,985
			7,6000	0,00	66,60	0,00	11,310	0,000	-79,773
BASEMENT	B166	LIVE	0,4000	0,00	-43,49	0,00	-9,944	0,000	-54,251
			7,6000	0,00	48,50	0,00	10,489	0,000	-56,879
BASEMENT	B166	SDEAD	0,4000	0,00	-0,85	0,00	0,218	0,000	-1,775
			7,6000	0,00	0,52	0,00	-0,158	0,000	-0,578
BASEMENT	B167	DEAD	0,4000	0,00	-117,73	0,00	5,367	0,000	-156,581
			7,6000	0,00	118,02	0,00	-5,199	0,000	-157,912
BASEMENT	B167	LIVE	0,4000	0,00	-93,22	0,00	4,714	0,000	-126,144
			7,6000	0,00	93,23	0,00	-4,555	0,000	-126,459
BASEMENT	B167	SDEAD	0,4000	0,00	-0,28	0,00	0,683	0,000	0,088
			7,6000	0,00	0,63	0,00	-0,729	0,000	-1,226
BASEMENT	B168	DEAD	0,4000	0,00	-119,70	0,00	6,558	0,000	-160,876
			7,6000	0,00	119,14	0,00	-6,200	0,000	-158,808
BASEMENT	B168	LIVE	0,4000	0,00	-95,13	0,00	5,390	0,000	-129,938
			7,6000	0,00	94,63	0,00	-4,995	0,000	-128,035
BASEMENT	B168	SDEAD	0,4000	0,00	-0,79	0,00	0,840	0,000	-2,033
			7,6000	0,00	0,05	0,00	-0,675	0,000	0,503
BASEMENT	B169	DEAD	0,4000	0,00	-70,25	0,00	23,682	0,000	-92,093
			7,6000	0,00	69,50	0,00	-23,706	0,000	-89,308
BASEMENT	B169	LIVE	0,4000	0,00	-47,53	0,00	21,075	0,000	-65,891
			7,6000	0,00	46,72	0,00	-21,236	0,000	-62,934
BASEMENT	B169	SDEAD	0,4000	0,00	0,16	0,00	1,010	0,000	1,016
			7,6000	0,00	0,74	0,00	-0,868	0,000	-2,183

Tabel Penulangan Lentur Balok Induk Arah X

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ _{min}	ρ _{maks}	As _{min} (mm ²)	As (mm ²)	As _{max} (mm ²)	As _{perlu} (mm ²)	As _{pasang} (mm ²)	Dipasang Tulangan
		b	h	d												
Top Floor	B11	400	600	535,5	Tumpuan (-)	64,5	0,55	0,0014	0,0035	0,0244	749,70	299,35	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (+)	64,5	0,28	0,0007	0,0035	0,0244	749,70	148,85	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,14	0,0003	0,0035	0,0244	749,70	74,22	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,14	0,0003	0,0035	0,0244	749,70	74,22	5223,13	749,70	981,75	2 D 25
	B166	400	600	535,5	Tumpuan (-)	64,5	2,47	0,0065	0,0035	0,0244	749,70	1391,97	5223,13	1391,97	1472,62	3 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,23	0,0032	0,0035	0,0244	749,70	677,31	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	1,35	0,0035	0,0035	0,0244	749,70	743,79	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,62	0,0016	0,0035	0,0244	749,70	334,35	5223,13	749,70	981,75	2 D 25
	B167	400	600	535,5	Tumpuan (-)	64,5	3,59	0,0097	0,0035	0,0244	749,70	2082,45	5223,13	2082,45	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,80	0,0047	0,0035	0,0244	749,70	998,32	5223,13	998,32	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,85	0,0076	0,0035	0,0244	749,70	1621,78	5223,13	1621,78	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,90	0,0023	0,0035	0,0244	749,70	489,69	5223,13	749,70	981,75	2 D 25
B168	400	600	535,5	Tumpuan (-)	64,5	3,46	0,0093	0,0035	0,0244	749,70	2000,77	5223,13	2000,77	2454,37	5 D 25	
	400	600	535,5	Tumpuan (+)	64,5	1,73	0,0045	0,0035	0,0244	749,70	960,91	5223,13	960,91	1472,62	3 D 25	
	400	600	535,5	Lapangan (+)	64,5	2,90	0,0077	0,0035	0,0244	749,70	1655,96	5223,13	1655,96	1963,50	4 D 25	
	400	600	535,5	Lapangan (-)	64,5	0,87	0,0022	0,0035	0,0244	749,70	471,70	5223,13	749,70	981,75	2 D 25	
B169	400	600	535,5	Tumpuan (-)	64,5	2,51	0,0066	0,0035	0,0244	749,70	1418,88	5223,13	1418,88	1963,50	4 D 25	
	400	600	535,5	Tumpuan (+)	64,5	1,26	0,0032	0,0035	0,0244	749,70	690,02	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Lapangan (+)	64,5	1,74	0,0045	0,0035	0,0244	749,70	966,66	5223,13	966,66	1472,62	3 D 25	
	400	600	535,5	Lapangan (-)	64,5	0,63	0,0016	0,0035	0,0244	749,70	340,54	5223,13	749,70	981,75	2 D 25	
B11	400	600	535,5	Tumpuan (-)	64,5	0,73	0,0018	0,0035	0,0244	749,70	394,72	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Tumpuan (+)	64,5	0,36	0,0009	0,0035	0,0244	749,70	195,91	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Lapangan (+)	64,5	0,23	0,0006	0,0035	0,0244	749,70	121,03	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Lapangan (-)	64,5	0,18	0,0005	0,0035	0,0244	749,70	97,60	5223,13	749,70	981,75	2 D 25	
Lantai 7	B166	400	600	535,5	Tumpuan (-)	64,5	3,19	0,0085	0,0035	0,0244	749,70	1830,89	5223,13	1830,89	1963,50	4 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,59	0,0041	0,0035	0,0244	749,70	882,60	5223,13	882,60	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	1,42	0,0037	0,0035	0,0244	749,70	782,31	5223,13	782,31	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,80	0,0020	0,0035	0,0244	749,70	433,93	5223,13	749,70	981,75	2 D 25

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ_{min}	ρ_{maks}	A_{smin} (mm ²)	As (mm ²)	As _{max} (mm ²)	As _{perlu} (mm ²)	As _{pasang} (mm ²)	Dipasang Tulangan
		b	h	d												
Lantai 7	B167	400	600	535,5	Tumpuan (-)	64,5	5,27	0,0149	0,0035	0,0244	749,70	3194,83	5223,13	3194,83	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,63	0,0070	0,0035	0,0244	749,70	1492,06	5223,13	1492,06	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,69	0,0131	0,0035	0,0244	749,70	2799,30	5223,13	2799,30	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,32	0,0034	0,0035	0,0244	749,70	724,49	5223,13	749,70	1963,50	4 D 25
	B168	400	600	535,5	Tumpuan (-)	64,5	5,22	0,0148	0,0035	0,0244	749,70	3162,36	5223,13	3162,36	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,61	0,0069	0,0035	0,0244	749,70	1478,08	5223,13	1478,08	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,68	0,0130	0,0035	0,0244	749,70	2791,96	5223,13	2791,96	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,31	0,0034	0,0035	0,0244	749,70	717,92	5223,13	749,70	1963,50	4 D 25
	B169	400	600	535,5	Tumpuan (-)	64,5	3,62	0,0098	0,0035	0,0244	749,70	2098,12	5223,13	2098,12	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,81	0,0047	0,0035	0,0244	749,70	1005,49	5223,13	1005,49	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,67	0,0071	0,0035	0,0244	749,70	1514,44	5223,13	1514,44	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,90	0,0023	0,0035	0,0244	749,70	493,14	5223,13	749,70	981,75	2 D 25
Lantai 6	B11	400	600	535,5	Tumpuan (-)	64,5	0,71	0,0018	0,0035	0,0244	749,70	387,10	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (+)	64,5	0,36	0,0009	0,0035	0,0244	749,70	192,16	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,23	0,0006	0,0035	0,0244	749,70	123,97	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,18	0,0004	0,0035	0,0244	749,70	95,74	5223,13	749,70	981,75	2 D 25
	B166	400	600	535,5	Tumpuan (-)	64,5	3,42	0,0092	0,0035	0,0244	749,70	1976,10	5223,13	1976,10	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,71	0,0044	0,0035	0,0244	749,70	949,57	5223,13	949,57	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	1,90	0,0049	0,0035	0,0244	749,70	1058,18	5223,13	1058,18	1472,62	3 D 25
		400	600	535,5	Lapangan (-)	64,5	0,86	0,0022	0,0035	0,0244	749,70	466,24	5223,13	749,70	981,75	2 D 25
	B167	400	600	535,5	Tumpuan (-)	64,5	5,39	0,0153	0,0035	0,0244	749,70	3278,00	5223,13	3278,00	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,69	0,0071	0,0035	0,0244	749,70	1527,74	5223,13	1527,74	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,72	0,0132	0,0035	0,0244	749,70	2819,87	5223,13	2819,87	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,35	0,0035	0,0035	0,0244	749,70	741,26	5223,13	749,70	1963,50	4 D 25
B168		400	600	535,5	Tumpuan (-)	64,5	5,24	0,0148	0,0035	0,0244	749,70	3175,15	5223,13	3175,15	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,62	0,0069	0,0035	0,0244	749,70	1483,60	5223,13	1483,60	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,67	0,0130	0,0035	0,0244	749,70	2785,27	5223,13	2785,27	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,31	0,0034	0,0035	0,0244	749,70	720,51	5223,13	749,70	1963,50	4 D 25

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ_{min}	ρ_{maks}	A_s^{ada} (mm ²)	A_s (mm ²)	A_s^{perlu} (mm ²)	A_s^{pasang} (mm ²)	Dipasang Tulangan
		b	h	d											
Lantai 6	B169	400	600	535,5	Tumpuan (-)	64,5	3,63	0,0098	0,0035	0,0244	749,70	2103,68	2103,68	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,81	0,0047	0,0035	0,0244	749,70	1008,02	1008,02	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,65	0,0070	0,0035	0,0244	749,70	1504,24	1504,24	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,91	0,0023	0,0035	0,0244	749,70	494,36	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (-)	64,5	0,72	0,0018	0,0035	0,0244	749,70	392,12	749,70	981,75	2 D 25
	B11	400	600	535,5	Tumpuan (+)	64,5	0,36	0,0009	0,0035	0,0244	749,70	194,63	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,23	0,0006	0,0035	0,0244	749,70	125,46	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,18	0,0005	0,0035	0,0244	749,70	96,97	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (-)	64,5	3,42	0,0092	0,0035	0,0244	749,70	1976,10	1976,10	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,71	0,0044	0,0035	0,0244	749,70	949,57	949,57	1472,62	3 D 25
	B166	400	600	535,5	Lapangan (+)	64,5	1,90	0,0049	0,0035	0,0244	749,70	1058,18	1058,18	1472,62	3 D 25
		400	600	535,5	Lapangan (-)	64,5	0,86	0,0022	0,0035	0,0244	749,70	466,24	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (-)	64,5	5,39	0,0153	0,0035	0,0244	749,70	3278,00	3278,00	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,69	0,0071	0,0035	0,0244	749,70	1527,74	1527,74	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,72	0,0132	0,0035	0,0244	749,70	2819,87	2819,87	2945,24	6 D 25
	B167	400	600	535,5	Lapangan (-)	64,5	1,35	0,0035	0,0035	0,0244	749,70	741,26	749,70	1963,50	4 D 25
		400	600	535,5	Tumpuan (-)	64,5	5,24	0,0148	0,0035	0,0244	749,70	3175,15	3175,15	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,62	0,0069	0,0035	0,0244	749,70	1483,60	1483,60	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,67	0,0130	0,0035	0,0244	749,70	2785,27	2785,27	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,31	0,0034	0,0035	0,0244	749,70	720,51	749,70	1963,50	4 D 25
	B168	400	600	535,5	Tumpuan (-)	64,5	3,63	0,0098	0,0035	0,0244	749,70	2103,68	2103,68	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,81	0,0047	0,0035	0,0244	749,70	1008,02	1008,02	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,65	0,0070	0,0035	0,0244	749,70	1504,24	1504,24	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,91	0,0023	0,0035	0,0244	749,70	494,36	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (-)	64,5	0,70	0,0018	0,0035	0,0244	749,70	381,71	749,70	981,75	2 D 25
	B11	400	600	535,5	Tumpuan (+)	64,5	0,35	0,0009	0,0035	0,0244	749,70	189,50	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,24	0,0006	0,0035	0,0244	749,70	126,80	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,18	0,0004	0,0035	0,0244	749,70	94,42	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,18	0,0004	0,0035	0,0244	749,70	94,42	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,18	0,0004	0,0035	0,0244	749,70	94,42	749,70	981,75	2 D 25

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ _{min}	ρ _{maks}	As _{min} (mm ²)	As (mm ²)	As _{max} (mm ²)	As _{perlu} (mm ²)	As _{pasang} (mm ²)	Dipasang Tulangan	
		b	h	d													
Lantai 4	B166	400	600	535,5	Tumpuan	(-)	64,5	3,31	0,0089	0,0035	0,0244	749,70	1906,99	5223,13	1906,99	2454,37	5 D 25
		400	600	535,5	Tumpuan	(+)	64,5	1,66	0,0043	0,0035	0,0244	749,70	917,76	5223,13	917,76	1472,62	3 D 25
		400	600	535,5	Lapangan	(+)	64,5	1,65	0,0043	0,0035	0,0244	749,70	916,74	5223,13	916,74	1472,62	3 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,83	0,0021	0,0035	0,0244	749,70	450,90	5223,13	749,70	981,75	2 D 25
	B167	400	600	535,5	Tumpuan	(-)	64,5	5,33	0,0151	0,0035	0,0244	749,70	3237,82	5223,13	3237,82	3436,12	7 D 25
		400	600	535,5	Tumpuan	(+)	64,5	2,66	0,0071	0,0035	0,0244	749,70	1510,52	5223,13	1510,52	1963,50	4 D 25
		400	600	535,5	Lapangan	(+)	64,5	4,70	0,0131	0,0035	0,0244	749,70	2805,39	5223,13	2805,39	2945,24	6 D 25
		400	600	535,5	Lapangan	(-)	64,5	1,33	0,0034	0,0035	0,0244	749,70	733,17	5223,13	749,70	1963,50	4 D 25
	B168	400	600	535,5	Tumpuan	(-)	64,5	5,25	0,0149	0,0035	0,0244	749,70	3184,17	5223,13	3184,17	3436,12	7 D 25
		400	600	535,5	Tumpuan	(+)	64,5	2,63	0,0069	0,0035	0,0244	749,70	1487,48	5223,13	1487,48	1963,50	4 D 25
		400	600	535,5	Lapangan	(+)	64,5	4,70	0,0131	0,0035	0,0244	749,70	2802,97	5223,13	2802,97	2945,24	6 D 25
		400	600	535,5	Lapangan	(-)	64,5	1,31	0,0034	0,0035	0,0244	749,70	722,34	5223,13	749,70	1963,50	4 D 25
B169	400	600	535,5	Tumpuan	(-)	64,5	3,68	0,0100	0,0035	0,0244	749,70	2136,53	5223,13	2136,53	2454,37	5 D 25	
	400	600	535,5	Tumpuan	(+)	64,5	1,84	0,0048	0,0035	0,0244	749,70	1023,01	5223,13	1023,01	1472,62	3 D 25	
	400	600	535,5	Lapangan	(+)	64,5	2,66	0,0070	0,0035	0,0244	749,70	1506,07	5223,13	1506,07	1963,50	4 D 25	
	400	600	535,5	Lapangan	(-)	64,5	0,92	0,0023	0,0035	0,0244	749,70	501,56	5223,13	749,70	981,75	2 D 25	
B11	400	600	535,5	Tumpuan	(-)	64,5	0,64	0,0016	0,0035	0,0244	749,70	344,58	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Tumpuan	(+)	64,5	0,32	0,0008	0,0035	0,0244	749,70	171,19	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Lapangan	(+)	64,5	0,23	0,0006	0,0035	0,0244	749,70	126,23	5223,13	749,70	981,75	2 D 25	
	400	600	535,5	Lapangan	(-)	64,5	0,16	0,0004	0,0035	0,0244	749,70	85,32	5223,13	749,70	981,75	2 D 25	
B166	400	600	535,5	Tumpuan	(-)	64,5	3,12	0,0084	0,0035	0,0244	749,70	1789,87	5223,13	1789,87	1963,50	4 D 25	
	400	600	535,5	Tumpuan	(+)	64,5	1,56	0,0040	0,0035	0,0244	749,70	863,59	5223,13	863,59	1472,62	3 D 25	
	400	600	535,5	Lapangan	(+)	64,5	1,60	0,0041	0,0035	0,0244	749,70	884,03	5223,13	884,03	1472,62	3 D 25	
	400	600	535,5	Lapangan	(-)	64,5	0,78	0,0020	0,0035	0,0244	749,70	424,75	5223,13	749,70	981,75	2 D 25	
B167	400	600	535,5	Tumpuan	(-)	64,5	5,16	0,0145	0,0035	0,0244	749,70	3116,22	5223,13	3116,22	3436,12	7 D 25	
	400	600	535,5	Tumpuan	(+)	64,5	2,58	0,0068	0,0035	0,0244	749,70	1458,18	5223,13	1458,18	1963,50	4 D 25	
	400	600	535,5	Lapangan	(+)	64,5	4,72	0,0132	0,0035	0,0244	749,70	2817,78	5223,13	2817,78	2945,24	6 D 25	
	400	600	535,5	Lapangan	(-)	64,5	1,29	0,0033	0,0035	0,0244	749,70	708,55	5223,13	749,70	1963,50	4 D 25	

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ_{min}	ρ_{maks}	As _{min} (mm ²)	As (mm ²)	As _{max} (mm ²)	As _{perlu} (mm ²)	As _{pasang} (mm ²)	Dipasang Tulangan
		b	h	d												
Lantai 3	B168	400	600	535,5	Tumpuan (-)	64,5	5,10	0,0144	0,0035	0,0244	749,70	3077,68	5223,13	3077,68	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,55	0,0067	0,0035	0,0244	749,70	1441,51	5223,13	1441,51	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,71	0,0131	0,0035	0,0244	749,70	2813,57	5223,13	2813,57	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,27	0,0033	0,0035	0,0244	749,70	700,69	5223,13	749,70	1963,50	4 D 25
	B169	400	600	535,5	Tumpuan (-)	64,5	3,56	0,0096	0,0035	0,0244	749,70	2060,03	5223,13	2060,03	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,78	0,0046	0,0035	0,0244	749,70	988,07	5223,13	988,07	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,65	0,0070	0,0035	0,0244	749,70	1502,19	5223,13	1502,19	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,89	0,0023	0,0035	0,0244	749,70	484,76	5223,13	749,70	981,75	2 D 25
	B11	400	600	535,5	Tumpuan (-)	64,5	0,60	0,0015	0,0035	0,0244	749,70	325,62	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (+)	64,5	0,30	0,0008	0,0035	0,0244	749,70	161,83	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,25	0,0006	0,0035	0,0244	749,70	132,87	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,15	0,0004	0,0035	0,0244	749,70	80,67	5223,13	749,70	981,75	2 D 25
Lantai 2	B166	400	600	535,5	Tumpuan (-)	64,5	2,90	0,0077	0,0035	0,0244	749,70	1655,21	5223,13	1655,21	1963,50	4 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,45	0,0037	0,0035	0,0244	749,70	800,94	5223,13	800,94	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	1,36	0,0035	0,0035	0,0244	749,70	751,14	5223,13	751,14	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,73	0,0018	0,0035	0,0244	749,70	394,42	5223,13	749,70	981,75	2 D 25
	B167	400	600	535,5	Tumpuan (-)	64,5	4,74	0,0132	0,0035	0,0244	749,70	2834,12	5223,13	2834,12	2945,24	6 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,37	0,0062	0,0035	0,0244	749,70	1335,29	5223,13	1335,29	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,37	0,0121	0,0035	0,0244	749,70	2583,79	5223,13	2583,79	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,19	0,0030	0,0035	0,0244	749,70	650,50	5223,13	749,70	1963,50	4 D 25
	B168	400	600	535,5	Tumpuan (-)	64,5	5,09	0,0143	0,0035	0,0244	749,70	3072,92	5223,13	3072,92	3436,12	7 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,55	0,0067	0,0035	0,0244	749,70	1439,45	5223,13	1439,45	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,79	0,0134	0,0035	0,0244	749,70	2865,23	5223,13	2865,23	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,27	0,0033	0,0035	0,0244	749,70	699,72	5223,13	749,70	1963,50	4 D 25
B169		400	600	535,5	Tumpuan (-)	64,5	3,58	0,0097	0,0035	0,0244	749,70	2072,44	5223,13	2072,44	2454,37	5 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,79	0,0046	0,0035	0,0244	749,70	993,75	5223,13	993,75	1472,62	3 D 25
		400	600	535,5	Lapangan (+)	64,5	2,70	0,0072	0,0035	0,0244	749,70	1532,18	5223,13	1532,18	1963,50	4 D 25
		400	600	535,5	Lapangan (-)	64,5	0,89	0,0023	0,0035	0,0244	749,70	487,50	5223,13	749,70	981,75	2 D 25

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ_{min}	ρ_{maks}	As _{min} (mm ²)	As (mm ²)	As _{perlu} (mm ²)	As _{pasang} (mm ²)	Dipasang Tulangan
		b	h	d											
Dasar	B5	400	600	535,5	Tumpuan	(-)	64,5	0,0013	0,0035	0,0244	749,70	276,60	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0006	0,0035	0,0244	749,70	137,59	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0006	0,0035	0,0244	749,70	118,88	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0003	0,0035	0,0244	749,70	68,62	749,70	981,75	2 D 25
	B11	400	600	535,5	Tumpuan	(-)	64,5	0,0015	0,0035	0,0244	749,70	324,16	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0008	0,0035	0,0244	749,70	161,10	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0009	0,0035	0,0244	749,70	194,60	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0004	0,0035	0,0244	749,70	80,31	749,70	981,75	2 D 25
	B166	400	600	535,5	Tumpuan	(-)	64,5	0,0090	0,0035	0,0244	749,70	1920,00	1920,00	2454,37	5 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0043	0,0035	0,0244	749,70	923,76	923,76	1472,62	3 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0051	0,0035	0,0244	749,70	1087,34	1087,34	1472,62	3 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0021	0,0035	0,0244	749,70	453,80	749,70	981,75	2 D 25
Dasar	B167	400	600	535,5	Tumpuan	(-)	64,5	0,0126	0,0035	0,0244	749,70	2697,25	2697,25	2945,24	6 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0060	0,0035	0,0244	749,70	1274,95	1274,95	1963,50	4 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0121	0,0035	0,0244	749,70	2593,22	2593,22	2945,24	6 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0029	0,0035	0,0244	749,70	621,88	749,70	1963,50	4 D 25
	B168	400	600	535,5	Tumpuan	(-)	64,5	0,0138	0,0035	0,0244	749,70	2961,61	2961,61	3436,12	7 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0065	0,0035	0,0244	749,70	1391,08	1391,08	1963,50	4 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0135	0,0035	0,0244	749,70	2888,53	2888,53	2945,24	6 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0032	0,0035	0,0244	749,70	676,89	749,70	1963,50	4 D 25
Basement	B169	400	600	535,5	Tumpuan	(-)	64,5	0,0092	0,0035	0,0244	749,70	1964,75	1964,75	2454,37	5 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0044	0,0035	0,0244	749,70	944,35	944,35	1472,62	3 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0072	0,0035	0,0244	749,70	1531,57	1531,57	1963,50	4 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0022	0,0035	0,0244	749,70	463,72	749,70	981,75	2 D 25
	B5	400	600	535,5	Tumpuan	(-)	64,5	0,0010	0,0035	0,0244	749,70	215,00	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan	(+)	64,5	0,0005	0,0035	0,0244	749,70	107,07	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(+)	64,5	0,0004	0,0035	0,0244	749,70	90,32	749,70	981,75	2 D 25
		400	600	535,5	Lapangan	(-)	64,5	0,0002	0,0035	0,0244	749,70	53,43	749,70	981,75	2 D 25

Tabel Penulangan Lentur Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Lokasi	d'	Rn	ρ	ρ _{min}	ρ _{max}	A _s ^{min} (mm ²)	A _s ^{max} (mm ²)	A _s ^{perlu} (mm ²)	A _s ^{pasang} (mm ²)	Dipasang Tulangan	
		b	h	d												
B11		400	600	535,5	Tumpuan (-)	64,5	0,44	0,0011	0,0035	0,0244	749,70	237,89	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Tumpuan (+)	64,5	0,22	0,0006	0,0035	0,0244	749,70	118,42	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	0,28	0,0007	0,0035	0,0244	749,70	152,04	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,11	0,0003	0,0035	0,0244	749,70	59,08	5223,13	749,70	981,75	2 D 25
B166		400	600	535,5	Tumpuan (-)	64,5	2,48	0,0065	0,0035	0,0244	749,70	1402,39	5223,13	1402,39	1472,62	3 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,24	0,0032	0,0035	0,0244	749,70	682,23	5223,13	749,70	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	1,45	0,0037	0,0035	0,0244	749,70	802,55	5223,13	802,55	981,75	2 D 25
		400	600	535,5	Lapangan (-)	64,5	0,62	0,0016	0,0035	0,0244	749,70	336,75	5223,13	749,70	981,75	2 D 25
B167		400	600	535,5	Tumpuan (-)	64,5	4,25	0,0117	0,0035	0,0244	749,70	2503,13	5223,13	2503,13	2945,24	6 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,12	0,0055	0,0035	0,0244	749,70	1188,58	5223,13	1188,58	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,44	0,0123	0,0035	0,0244	749,70	2634,39	5223,13	2634,39	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,06	0,0027	0,0035	0,0244	749,70	580,78	5223,13	749,70	1963,50	4 D 25
B168		400	600	535,5	Tumpuan (-)	64,5	4,40	0,0121	0,0035	0,0244	749,70	2601,95	5223,13	2601,95	2945,24	6 D 25
		400	600	535,5	Tumpuan (+)	64,5	2,20	0,0058	0,0035	0,0244	749,70	1232,66	5223,13	1232,66	1963,50	4 D 25
		400	600	535,5	Lapangan (+)	64,5	4,54	0,0126	0,0035	0,0244	749,70	2698,28	5223,13	2698,28	2945,24	6 D 25
		400	600	535,5	Lapangan (-)	64,5	1,10	0,0028	0,0035	0,0244	749,70	601,77	5223,13	749,70	1963,50	4 D 25
B169		400	600	535,5	Tumpuan (-)	64,5	2,75	0,0073	0,0035	0,0244	749,70	1561,03	5223,13	1561,03	1963,50	4 D 25
		400	600	535,5	Tumpuan (+)	64,5	1,37	0,0035	0,0035	0,0244	749,70	756,88	5223,13	756,88	981,75	2 D 25
		400	600	535,5	Lapangan (+)	64,5	2,35	0,0062	0,0035	0,0244	749,70	1321,42	5223,13	1321,42	1472,62	3 D 25
		400	600	535,5	Lapangan (-)	64,5	0,69	0,0017	0,0035	0,0244	749,70	373,05	5223,13	749,70	981,75	2 D 25

Tabel Perhitungan Momen Kapasitas Positif Balok Induk Arah X

Lantai	Balok	dimensi (mm)			Tul. Atas Pelat Luas (mm ²)	Tul. Bawah Pelat mm ²	Tul. Atas Balok mm ²	Tul. Bawah Balok mm ²	As mm ²	As' mm ²	be mm	bf mm	Mn kNm	M _{kap} ⁺ kNm
		b	h	d										
Top Floor	B11	400	600	535,5	353,4292	353,4292	981,7477	981,7477	1688,6061	1688,6061	850	450	221,40	268,71
	B166	400	600	535,5	753,9822	753,9822	1472,6216	981,7477	2980,5860	2980,5860	1360	960	240,93	288,22
	B167	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	480	353,62	422,80
	B168	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	480	353,62	422,80
	B169	400	600	535,5	753,9822	753,9822	1963,4954	981,7477	3471,4599	3471,4599	1360	960	242,40	289,58
Lantai 7	B11	400	600	535,5	353,4292	353,4292	981,7477	981,7477	1688,6061	1688,6061	850	450	221,40	268,71
	B166	400	600	535,5	753,9822	753,9822	1963,4954	1472,6216	3471,4599	3471,4599	1360	960	336,76	407,52
	B167	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
Lantai 6	B11	400	600	535,5	333,7942	333,7942	981,7477	981,7477	1649,3361	1649,3361	825	425	220,51	267,81
	B166	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
	B167	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
Lantai 5	B11	400	600	535,5	333,7942	333,7942	981,7477	981,7477	1649,3361	1649,3361	825	425	220,51	267,81
	B166	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
	B167	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
Lantai 4	B11	400	600	535,5	333,7942	333,7942	981,7477	981,7477	1649,3361	1649,3361	825	425	220,51	267,81
	B166	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80
	B167	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	4944,0814	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	3962,3337	3962,3337	1360	960	353,62	422,80

Tabel Perhitungan Momen Kapasitas Positif Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Tul. Atas Pelat	Tul. Bawah Pelat	Tul. Atas Balok	Tul. Bawah Balok	As	As'	be	bf	Mn	M _{kap} ⁺
		b	h	d										
Lantai 3	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	981,7477	1610,0662	800	400	219,63	266,91
	B166	400	600	535,5	753,9822	753,9822	1963,4954	1472,6216	1472,6216	3471,4599	1360	960	336,76	407,52
	B167	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	1963,4954	4944,0814	1360	480	444,80	537,08
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	1963,4954	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	1472,6216	3962,3337	1360	960	353,62	422,80
Lantai 2	B11	400	600	535,5	314,1593	628,3185	981,7477	981,7477	981,7477	1924,2255	800	400	223,59	270,38
	B166	400	600	535,5	753,9822	1507,9645	1963,4954	1472,6216	1472,6216	4225,4421	1360	960	344,93	414,85
	B167	400	600	535,5	753,9822	753,9822	2945,2431	1963,4954	1963,4954	4453,2076	1360	480	445,27	537,53
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	1963,4954	4944,0814	1360	480	444,80	537,08
	B169	400	600	535,5	753,9822	1507,9645	2454,3693	1472,6216	1472,6216	4716,3160	1360	960	359,94	428,58
Dasar	B5	400	600	535,5	172,7876	172,7876	981,7477	981,7477	981,7477	1327,3229	620	110	213,13	260,31
	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	981,7477	1610,0662	800	200	219,63	266,91
	B166	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	1472,6216	3962,3337	1360	480	353,62	422,80
	B167	400	600	535,5	753,9822	753,9822	2945,2431	1963,4954	1963,4954	4453,2076	1360	480	445,27	537,53
	B168	400	600	535,5	753,9822	753,9822	3436,1170	1963,4954	1963,4954	4944,0814	1360	480	444,80	537,08
Basement	B169	400	600	535,5	753,9822	753,9822	2454,3693	1472,6216	1472,6216	3962,3337	1360	960	353,62	422,80
	B5	400	600	535,5	172,7876	172,7876	981,7477	981,7477	981,7477	1327,3229	620	110	213,13	260,31
	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	981,7477	1610,0662	800	200	219,63	266,91
	B166	400	600	535,5	753,9822	753,9822	1472,6216	981,7477	981,7477	2980,5860	1360	480	240,93	288,22
	B167	400	600	535,5	753,9822	753,9822	2945,2431	1963,4954	1963,4954	4453,2076	1360	480	445,27	537,53
	B168	400	600	535,5	753,9822	753,9822	2945,2431	1963,4954	1963,4954	4453,2076	1360	480	445,27	537,53
	B169	400	600	535,5	753,9822	753,9822	1963,4954	981,7477	981,7477	3471,4599	1360	960	242,40	289,58

Tabel Perhitungan Momen Kapasitas Negatif Balok Induk Arah X

Lantai	Balok	dimensi (mm)			Tul. Atas Pelat		Tul. Bawah Pelat	Tul. Atas Balok	Tul. Bawah Balok	As	As'	be	bf	Mn	M _{kap}
		b	h	d	Luas (mm ²)	mm ²									
Top Floor	B11	400	600	535,5	353,4292	353,4292	353,4292	981,7477	981,7477	1688,6061	981,7477	850	450	340,63	420,61
	B166	400	600	535,5	753,9822	753,9822	753,9822	981,7477	1472,6216	2980,5860	981,7477	1360	960	582,12	714,29
	B167	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	480	732,84	894,34
	B168	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	480	732,84	894,34
	B169	400	600	535,5	753,9822	753,9822	753,9822	981,7477	1963,4954	3471,4599	981,7477	1360	960	669,30	817,39
Lantai 7	B11	400	600	535,5	353,4292	353,4292	353,4292	981,7477	981,7477	1688,6061	981,7477	850	450	340,63	420,61
	B166	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	1963,4954	3471,4599	1472,6216	1360	960	673,35	826,56
	B167	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B168	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
Lantai 6	B11	400	600	535,5	333,7942	333,7942	333,7942	981,7477	981,7477	1649,3361	981,7477	825	425	333,11	411,30
	B166	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
	B167	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B168	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
Lantai 5	B11	400	600	535,5	333,7942	333,7942	333,7942	981,7477	981,7477	1649,3361	981,7477	825	425	333,11	411,30
	B166	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
	B167	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B168	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
Lantai 4	B11	400	600	535,5	333,7942	333,7942	333,7942	981,7477	981,7477	1649,3361	981,7477	825	425	333,11	411,30
	B166	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
	B167	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B168	400	600	535,5	753,9822	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34

Tabel Perhitungan Momen Kapasitas Negatif Balok Induk Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)			Tul. Atas Pelat Luas (mm ²)	Tul. Bawah Pelat mm ²	Tul. Atas Balok mm ²	Tul. Bawah Balok mm ²	As mm ²	As' mm ²	be mm	bf mm	Mn kNm	M _{lap} kNm
		b	h	d										
Lantai 3	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	1610,0662	981,7477	800	400	325,57	401,98
	B166	400	600	535,5	753,9822	753,9822	1472,6216	1963,4954	3471,4599	1472,6216	1360	960	673,35	826,56
	B167	400	600	535,5	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B168	400	600	535,5	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
Lantai 2	B11	400	600	535,5	314,1593	628,3185	981,7477	981,7477	1924,2255	981,7477	800	400	380,71	469,39
	B166	400	600	535,5	753,9822	1507,9645	1472,6216	1963,4954	4225,4421	1472,6216	1360	960	792,91	965,86
	B167	400	600	535,5	753,9822	753,9822	1963,4954	2945,2431	4453,2076	1963,4954	1360	480	822,38	1004,17
	B168	400	600	535,5	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
	B169	400	600	535,5	753,9822	1507,9645	1472,6216	2454,3693	4716,3160	1472,6216	1360	960	848,46	1026,93
Dasar	B5	400	600	535,5	172,7876	172,7876	981,7477	981,7477	1327,3229	981,7477	620	110	271,22	334,52
	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	1610,0662	981,7477	800	200	325,57	401,98
	B166	400	600	535,5	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	480	732,84	894,34
	B167	400	600	535,5	753,9822	753,9822	1963,4954	2945,2431	4453,2076	1963,4954	1360	480	822,38	1004,17
	B168	400	600	535,5	753,9822	753,9822	1963,4954	3436,1170	4944,0814	1963,4954	1360	480	906,82	1102,07
Basement	B169	400	600	535,5	753,9822	753,9822	1472,6216	2454,3693	3962,3337	1472,6216	1360	960	732,84	894,34
	B5	400	600	535,5	172,7876	172,7876	981,7477	981,7477	1327,3229	981,7477	620	110	271,22	334,52
	B11	400	600	535,5	314,1593	314,1593	981,7477	981,7477	1610,0662	981,7477	800	200	325,57	401,98
	B166	400	600	535,5	753,9822	753,9822	981,7477	1472,6216	2980,5860	981,7477	1360	480	582,12	714,29
	B167	400	600	535,5	753,9822	753,9822	1963,4954	2945,2431	4453,2076	1963,4954	1360	480	822,38	1004,17
	B168	400	600	535,5	753,9822	753,9822	1963,4954	2945,2431	4453,2076	1963,4954	1360	480	822,38	1004,17
	B169	400	600	535,5	753,9822	753,9822	981,7477	1963,4954	3471,4599	981,7477	1360	960	669,30	817,39

Tabel Perhitungan Tulangan Geser Arah X (Lanjutan)

Lantai	Balok	dimensi (mm)		Ln m	V _a kNm	Mpr ⁺ kNm	Mpr ⁻ kNm	Ve ₁ kNm	Ve ₂ kNm	Sendi Plastis			Luar Sendi Plastis		
		b	h							Ve	V _s	dipasang	Ve	V _c	V _s
Lantai 3	B11	400	600	3,2	155,63	266,91	401,98	364,66	-53,40	294,70	197,40	2 P 12 - 150	207,89	195,54	81,65
	B166	400	600	7,2	160,45	407,52	826,56	331,85	-10,95	306,35	212,93	3 P 12 - 150	274,71	195,54	170,75
	B167	400	600	7,2	345,96	537,08	1102,07	573,62	118,30	539,75	524,13	4 P 12 - 100	497,73	195,54	468,10
	B168	400	600	7,2	353,51	537,08	1102,07	581,17	125,85	547,31	534,21	4 P 12 - 100	505,29	195,54	478,18
	B169	400	600	7,2	194,95	422,80	894,34	377,89	12,01	350,67	272,03	3 P 12 - 150	316,91	195,54	227,01
Lantai 2	B11	400	600	3,2	145,73	270,38	469,39	376,90	-85,45	299,53	203,84	3 P 12 - 150	203,52	195,54	75,83
	B166	400	600	7,2	149,34	414,85	965,86	341,10	-42,43	312,58	221,24	3 P 12 - 150	277,18	195,54	174,04
	B167	400	600	7,2	319,49	537,53	1004,17	533,61	105,37	501,76	473,48	4 P 12 - 100	462,24	195,54	420,78
	B168	400	600	7,2	360,27	537,08	1102,07	587,93	132,61	554,07	543,22	4 P 12 - 100	512,05	195,54	487,19
	B169	400	600	7,2	206,47	428,58	1026,93	408,62	4,31	378,55	309,20	4 P 12 - 150	341,24	195,54	259,45
Dasar	B5	400	600	2,48	185,76	260,31	334,52	425,61	-54,09	322,03	233,84	3 P 12 - 150	193,50	195,54	62,46
	B11	400	600	3,2	145,45	266,91	401,98	354,48	-63,58	284,52	183,83	2 P 12 - 150	197,71	195,54	68,08
	B166	400	600	7,2	209,95	422,80	894,34	392,88	27,01	365,67	292,03	4 P 12 - 150	331,90	195,54	247,00
	B167	400	600	7,2	340,41	537,53	1004,17	554,54	126,29	522,69	501,38	4 P 12 - 100	483,16	195,54	448,68
	B168	400	600	7,2	362,39	537,08	1102,07	590,04	134,73	556,18	546,04	4 P 12 - 100	514,16	195,54	490,01
Basement	B169	400	600	7,2	212,86	422,80	894,34	395,80	29,92	368,59	295,91	4 P 12 - 150	334,82	195,54	250,89
	B5	400	600	2,48	183,79	260,31	334,52	423,64	-56,06	320,06	231,21	3 P 12 - 150	191,53	195,54	59,84
	B11	400	600	3,2	154,59	266,91	401,98	363,62	-54,44	293,66	196,01	3 P 12 - 150	206,85	195,54	80,26
	B166	400	600	7,2	152,36	288,22	714,29	291,60	13,13	270,89	165,65	2 P 12 - 150	245,19	195,54	131,38
	B167	400	600	7,2	315,51	537,53	1004,17	529,64	101,39	497,79	468,18	4 P 12 - 100	458,26	195,54	415,48
	B168	400	600	7,2	325,43	537,53	1004,17	539,55	111,30	507,70	481,40	4 P 12 - 100	468,18	195,54	428,70
	B169	400	600	7,2	177,62	289,58	817,39	331,37	23,88	308,50	215,79	3 P 12 - 150	280,12	195,54	177,95

Tabel Perhitungan Tulangan Geser Arah X

Lantai	Balok	dimensi (mm)		Ln m	V _g kNm	Mpr ⁺ kNm	Mpr ⁻ kNm	Ve ₁ kNm	Ve ₂ kNm	Sendi Plastis			Luar Sendi Plastis			
		b	h							Ve	Vs	dipasang	Ve	Vc	Vs	dipasang
Top Floor	B11	400	600	3,4	146,82	268,71	420,61	349,56	-55,92	285,70	185,40	2 P 12 - 150	206,45	195,54	79,73	2 P 12 - 200
	B166	400	600	7,4	139,69	288,22	714,29	275,16	4,22	255,56	145,21	2 P 12 - 150	231,23	195,54	112,77	2 P 12 - 200
	B167	400	600	7,4	251,57	422,80	894,34	429,56	73,58	403,80	342,87	4 P 12 - 150	371,84	195,54	300,25	4 P 12 - 150
	B168	400	600	7,4	243,98	422,80	894,34	421,97	65,98	396,21	332,74	4 P 12 - 150	364,24	195,54	290,12	4 P 12 - 150
	B169	400	600	7,4	160,5	289,58	817,39	310,09	10,91	288,44	189,05	2 P 12 - 150	261,58	195,54	153,23	3 P 12 - 200
Lantai 7	B11	400	600	3,4	150,67	268,71	420,61	353,41	-52,07	289,55	190,53	2 P 12 - 150	210,30	195,54	84,86	2 P 12 - 200
	B166	400	600	7,4	179,8	407,52	826,56	346,57	13,03	322,43	234,37	3 P 12 - 150	292,48	195,54	194,44	4 P 12 - 200
	B167	400	600	7,4	362,22	537,08	1102,07	583,73	140,72	551,67	540,03	4 P 12 - 100	511,89	195,54	486,98	4 P 12 - 100
	B168	400	600	7,4	375,7	537,08	1102,07	597,20	154,19	565,14	557,99	4 P 12 - 100	525,36	195,54	504,95	4 P 12 - 100
	B169	400	600	7,4	210,39	422,80	894,34	388,38	32,39	362,62	287,96	4 P 12 - 150	330,65	195,54	245,33	3 P 12 - 150
Lantai 6	B11	400	600	3,3	158,13	267,81	411,30	363,92	-47,66	297,14	200,64	3 P 12 - 150	214,26	195,54	90,14	2 P 12 - 200
	B166	400	600	7,3	180,08	422,80	894,34	360,51	-0,35	334,04	249,85	3 P 12 - 150	301,19	195,54	206,05	4 P 12 - 200
	B167	400	600	7,3	355,91	537,08	1102,07	580,45	131,37	547,51	534,48	4 P 12 - 100	506,63	195,54	479,97	4 P 12 - 100
	B168	400	600	7,3	362,12	537,08	1102,07	586,66	137,58	553,72	542,76	4 P 12 - 100	512,84	195,54	488,25	4 P 12 - 100
	B169	400	600	7,3	197,6	422,80	894,34	378,03	17,17	351,56	273,20	4 P 12 - 150	318,71	195,54	229,41	4 P 12 - 200
Lantai 5	B11	400	600	3,3	158,12	267,81	411,30	363,91	-47,67	297,12	200,63	3 P 12 - 150	214,25	195,54	90,12	2 P 12 - 200
	B166	400	600	7,3	182,45	422,80	894,34	362,88	2,02	336,41	253,01	3 P 12 - 150	303,56	195,54	209,21	4 P 12 - 200
	B167	400	600	7,3	368,93	537,08	1102,07	593,47	144,39	560,53	551,83	4 P 12 - 100	519,65	195,54	497,33	4 P 12 - 100
	B168	400	600	7,3	362,47	537,08	1102,07	587,01	137,93	554,07	543,22	4 P 12 - 100	513,19	195,54	488,71	4 P 12 - 100
	B169	400	600	7,3	194,83	422,80	894,34	375,27	14,40	348,79	269,52	3 P 12 - 150	315,95	195,54	225,72	4 P 12 - 200
Lantai 4	B11	400	600	3,3	145,18	267,81	411,30	350,97	-60,62	284,18	183,37	2 P 12 - 150	201,30	195,54	72,86	2 P 12 - 200
	B166	400	600	7,3	173,21	422,80	894,34	353,64	-7,22	327,17	240,69	3 P 12 - 150	294,32	195,54	196,89	4 P 12 - 200
	B167	400	600	7,3	357,15	537,08	1102,07	581,69	132,61	548,75	536,13	4 P 12 - 100	507,87	195,54	481,63	4 P 12 - 100
	B168	400	600	7,3	364,86	537,08	1102,07	589,40	140,32	556,46	546,41	4 P 12 - 100	515,58	195,54	491,90	4 P 12 - 100
	B169	400	600	7,3	201,35	422,80	894,34	381,78	20,92	355,31	278,20	3 P 12 - 150	322,46	195,54	234,41	3 P 12 - 150

Tabel Perhitungan Torsi Balok Arah X

Lantai	Balok	b _w mm	h mm	h _r mm	h _w mm	be mm	b _r mm	pcp mm	Acp mm ²	Tu kNm	Syarat Tu kNm	Keterangan
Top Floor	B11	400	600	120	480	850	450	3350	294000	0,182	8,8326	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	4,392	8,8505	diabaikan
	B167	400	600	120	480	1360	480	3920	355200	6,095	11,0179	diabaikan
	B168	400	600	120	480	1360	480	3920	355200	6,549	11,0179	diabaikan
	B169	400	600	120	480	1360	960	4880	355200	5,716	8,8505	diabaikan
Lantai 7	B11	400	600	120	480	850	450	3350	294000	0,297	8,8326	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	13,848	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	16,743	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	10,398	11,0179	diabaikan
	B169	400	600	120	480	1360	960	4880	355200	8,639	8,8505	diabaikan
Lantai 6	B11	400	600	120	480	825	425	3275	291000	0,126	8,8515	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	17,454	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	21,555	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	14,996	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	5,326	8,8505	diabaikan
Lantai 5	B11	400	600	120	480	825	425	3275	291000	0,179	8,8515	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	21,938	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	26,104	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	19,727	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	1,87	8,8505	diabaikan
Lantai 4	B11	400	600	120	480	825	425	3275	291000	0,255	8,8515	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	24,931	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	29,243	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	23,046	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	4,47	8,8505	diabaikan

Tabel Perhitungan Torsi Balok Arah X (Lanjutan)

Lantai	Balok	b _w mm	h mm	h _f mm	h _w mm	be mm	b _r mm	pep mm	Acp mm ²	Tu kNm	Syarat Tu kNm	Keterangan
Lantai 3	B11	400	600	120	480	800	400	3200	288000	0,316	8,8731	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	28,851	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	32,594	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	26,669	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	6,232	8,8505	diabaikan
Lantai 2	B11	400	600	120	480	800	400	3200	288000	0,321	8,8731	diabaikan
	B166	400	600	120	480	1360	960	4880	355200	29,914	8,8505	dihitung
	B167	400	600	120	480	1360	480	3920	355200	27,226	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	26,687	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	6,505	8,8505	diabaikan
Dasar	B5	400	600	120	480	620	110	2440	266400	1,182	9,9568	diabaikan
	B11	400	600	120	480	800	200	2800	288000	0,259	10,1407	diabaikan
	B166	400	600	120	480	1360	480	3920	355200	17,898	11,0179	dihitung
	B167	400	600	120	480	1360	480	3920	355200	21,251	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	21,247	11,0179	dihitung
Basement	B169	400	600	120	480	1360	960	4880	355200	3,098	8,8505	diabaikan
	B5	400	600	120	480	620	110	2440	266400	0,17	9,9568	diabaikan
	B11	400	600	120	480	800	200	2800	288000	0,241	10,1407	diabaikan
	B166	400	600	120	480	1360	480	3920	355200	8,111	11,0179	diabaikan
	B167	400	600	120	480	1360	480	3920	355200	12,843	11,0179	dihitung
	B168	400	600	120	480	1360	480	3920	355200	12,336	11,0179	dihitung
	B169	400	600	120	480	1360	960	4880	355200	8,069	8,8505	diabaikan

Tabel Perhitungan Kebutuhan Sengkang Balok Arah X Akibat Torsi

Lantai	Balok	Lokasi	b _w (mm)	h (mm)	Tu (KNm)	Tu maks (KNm)	b _h (mm)	h _h (mm)	Ph (mm)	A _{oh} (mm ²)	A _o (mm ²)	A _t /s	Av/s	Av/s gabungan	Dipasang sengkang	Av gabungan	s gabungan
Lantai 7	B166	SP	400	600	13,848	35,40	308	508	1632	156464	132994	0,74	1,824	3,302	4 P 12	452,389	137
	B167	Luar SP	400	600	16,743	44,07	308	508	1632	156464	132994	0,92	1,513	2,992	3 P 12	339,292	113
Lantai 6	B166	SP	400	600	17,454	35,40	308	508	1632	156464	132994	0,74	2,646	4,487	5 P 12	565,487	126
	B167	Luar SP	400	600	21,555	44,07	308	508	1632	156464	132994	0,92	2,233	4,074	5 P 12	565,487	139
Lantai 5	B166	SP	400	600	14,996	44,07	308	508	1632	156464	132994	0,92	1,944	3,423	4 P 12	452,389	132
	B167	Luar SP	400	600	21,938	35,40	308	508	1632	156464	132994	0,74	1,603	3,082	4 P 12	452,389	147
Lantai 4	B166	SP	400	600	26,104	44,07	308	508	1632	156464	132994	0,92	2,603	4,444	5 P 12	565,487	127
	B167	Luar SP	400	600	19,727	44,07	308	508	1632	156464	132994	0,92	2,178	4,019	5 P 12	565,487	141
Lantai 3	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	2,667	4,508	5 P 12	565,487	125
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	2,243	4,084	5 P 12	565,487	138
Lantai 2	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	1,969	3,447	4 P 12	452,389	131
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	1,628	3,107	4 P 12	452,389	146
Lantai 1	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	2,738	4,579	5 P 12	565,487	124
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	2,313	4,154	5 P 12	565,487	136
Lantai 0	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	2,671	4,512	5 P 12	565,487	125
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	2,246	4,087	5 P 12	565,487	138
Lantai -1	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	1,873	3,352	4 P 12	452,389	135
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	1,532	3,011	4 P 12	452,389	150
Lantai -2	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	2,615	4,456	5 P 12	565,487	127
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	2,191	4,032	5 P 12	565,487	140
Lantai -3	B166	SP	400	600	23,046	44,07	308	508	1632	156464	132994	0,92	2,695	4,536	5 P 12	565,487	125
	B167	Luar SP	400	600	29,243	44,07	308	508	1632	156464	132994	0,92	2,271	4,112	5 P 12	565,487	138

Tabel Perhitungan Kebutuhan Sengkang Balok Arah X Akibat Torsi (Lanjutan)

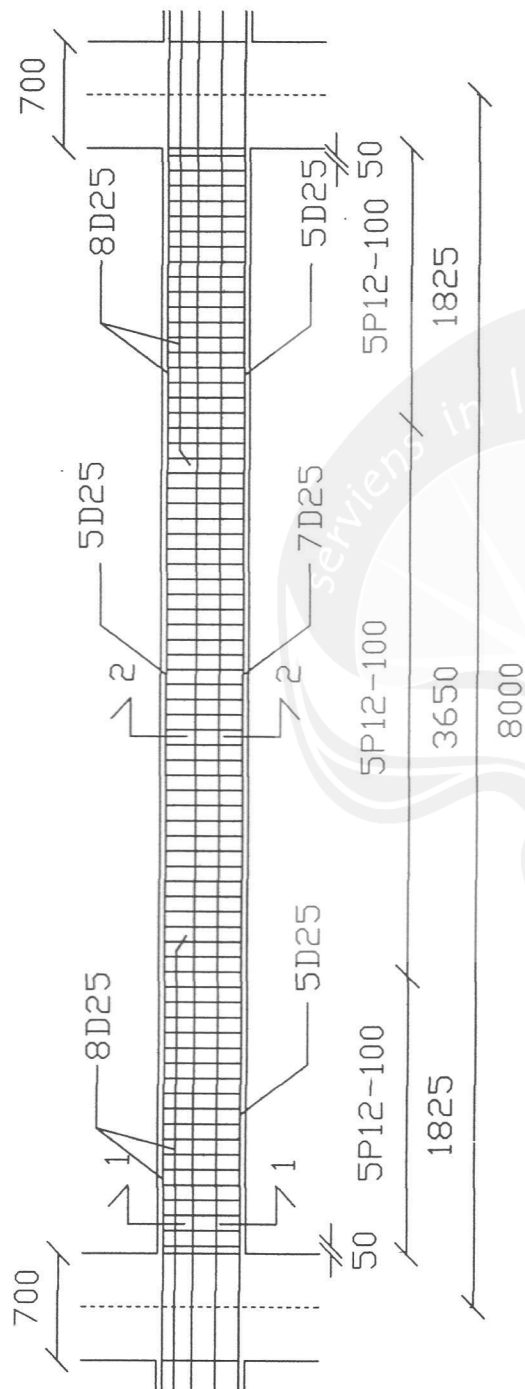
Lantai	Balok	Lokasi	b _w (mm)	h (mm)	Tu (kNm)	Tu maks (kNm)	b _h (mm)	h _h (mm)	Ph (mm)	Ä _{oh} (mm ²)	A ₀ (mm ²)	At/s	Av/s	Av/s gabungan	Dipasang sengkang	Av gabungan	s gabungan
Lantai 3	B166	SP Luar SP	400	600	28.851	35.40	308	508	1632	156464	132994	0.74	1.657	3.136	4 P 12 -	452.389	144
	B167	SP Luar SP	400	600	32.594	44.07	308	508	1632	156464	132994	0.92	1.329	2.807	3 P 12 -	339.292	121
	B168	SP Luar SP	400	600	26.669	44.07	308	508	1632	156464	132994	0.92	2.522	4.363	5 P 12 -	565.487	130
Lantai 2	B166	SP Luar SP	400	600	29.914	35.40	308	508	1632	156464	132994	0.74	2.086	3.927	4 P 12 -	452.389	115
	B167	SP Luar SP	400	600	27.226	44.07	308	508	1632	156464	132994	0.92	2.600	4.441	5 P 12 -	565.487	127
	B168	SP Luar SP	400	600	26.687	44.07	308	508	1632	156464	132994	0.92	2.164	4.005	5 P 12 -	565.487	141
Dasar	B166	SP Luar SP	400	600	17.898	44.07	308	508	1632	156464	132994	0.92	1.721	3.200	4 P 12 -	452.389	141
	B167	SP Luar SP	400	600	21.251	44.07	308	508	1632	156464	132994	0.92	1.354	2.833	3 P 12 -	339.292	120
	B168	SP Luar SP	400	600	12.843	44.07	308	508	1632	156464	132994	0.92	2.128	3.969	4 P 12 -	452.389	114
Basement	B166	SP Luar SP	400	600	12.336	44.07	308	508	1632	156464	132994	0.92	1.718	3.559	4 P 12 -	452.389	127
	B167	SP Luar SP	400	600	12.843	44.07	308	508	1632	156464	132994	0.92	2.671	4.512	5 P 12 -	565.487	125
	B168	SP Luar SP	400	600	12.336	44.07	308	508	1632	156464	132994	0.92	2.235	4.076	5 P 12 -	565.487	139

Tabel Perhitungan Penulangan Longitudinal Tambahan Balok Arah X Akibat Torsi

Lantai	Balok	Lokasi	bw (mm)	h (mm)	Ph (mm)	At/s (mm ²)	Acp (mm ²)	Luas min. tul. torsi mm ²	Al dipakai mm ²	At (mm ²)	Tul Lentur Yang Dibutuhkan			Kebutuhan Tulangan Torsi			Tulangan Torsi Dipasang		
											As atas mm ²	As bawah mm ²	mm ²	As atas mm ²	As bawah mm ²	mm ²	As atas	As bawah	As samping
Lantai 7	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	3D25	2D16
Lantai 6	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16
Lantai 5	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16
Lantai 4	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16
Lantai 3	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16
Lantai 2	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16
Lantai 1	B166	Tumpuan	400	600	1632	0,74	355200	1302,53	1302,53	325,63	1963,50	1472,62	2289,13	1798,26	325,63	325,63	5D25	4D25	2D16
	B167	Lapangan	400	600	1632	0,92	355200	1125,22	1125,22	281,30	981,75	981,75	1307,38	1307,38	325,63	325,63	3D25	4D25	2D16

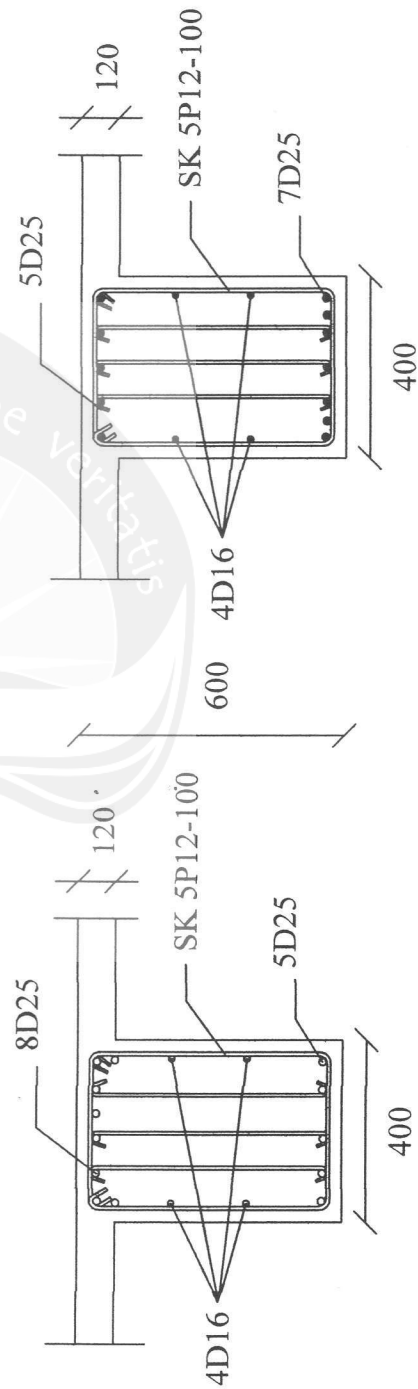
Tabel Perhitungan Penulangan Longitudinal Tambahan Balok Arah X Akibat Torsi (Lanjutan)

Lantai	Balok	Lokasi	bw (mm)	h (mm)	Ph (mm)	Acp (mm ²)	Luas min. tul. torsi mm ²	Al dipakai mm ²	At (mm ²)	Tul Lentur Yang Dibutuhkan			Kebutuhan Tulangan Torsi			Tulangan Torsi Dipasang		
										As atas mm ²	As bawah mm ²		As atas mm ²	As bawah mm ²	As samping mm ²	As atas	As bawah	As samping
Lantai 3	B166	Tumpuan	400	600	1632	355200	1302.53	1302.53	325.63	1963.50	1472.62	2289.13	1798.26	325.63	5D25	4D25	2D16	
		Lapangan								981.75	1472.62	1307.38	1798.26	325.63	3D25	4D25	2D16	
	B167	Tumpuan	400	600	1632	355200	1125.22	1125.22	281.30	3436.12	1963.50	3717.42	2244.80	281.30	8D25	5D25	2D16	
Lantai 2	B168	Lapangan								1963.50	2945.24	2244.80	3226.55	281.30	5D25	7D25	2D16	
		Tumpuan	400	600	1632	355200	1125.22	1125.22	281.30	3436.12	1963.50	3717.42	2244.80	281.30	8D25	5D25	2D16	
	B166	Lapangan								981.75	1472.62	1263.05	1753.93	281.30	3D25	4D25	2D16	
Dasar	B167	Tumpuan	400	600	1632	355200	1125.22	1125.22	281.30	2945.24	1963.50	3226.55	2244.80	281.30	7D25	5D25	2D16	
		Lapangan								1963.50	2945.24	2244.80	3226.55	281.30	5D25	7D25	2D16	
	B168	Tumpuan	400	600	1632	355200	1125.22	1125.22	281.30	3436.12	1963.50	3717.42	2244.80	281.30	8D25	5D25	2D16	
Basement	B167	Lapangan								1963.50	2945.24	2244.80	3226.55	281.30	5D25	7D25	2D16	
		Tumpuan	400	600	1632	355200	1125.22	1125.22	281.30	2945.24	1963.50	3226.55	2244.80	281.30	7D25	5D25	2D16	
	B168	Lapangan								1963.50	2945.24	2244.80	3226.55	281.30	5D25	7D25	2D16	



GAMBAR PENULANGAN BALOK INDUK

SKALA 1:50 (Semua satuan dalam mm)



POTONGAN 1-1
SKALA 1:16

POTONGAN 2-2
SKALA 1:16

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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB1	ADD	DEAD	Static	1,4000
		SDEAD	Static	1,4000
COMB2	ADD	DEAD	Static	1,2000
		LIVE	Static	1,6000
		SDEAD	Static	1,2000
COMB3	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	0,3000
COMB4	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	-0,3000
COMB5	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	0,3000
COMB6	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	-0,3000
COMB7	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	1,0000
COMB8	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	-1,0000
COMB9	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
		EY	Static	1,0000
COMB10	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
		EY	Static	-1,0000
COMB11	ADD	SDEAD	Static	1,2000
		DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	0,3000
COMB12	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	-0,3000
COMB13	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	0,3000
COMB14	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	-0,3000
COMB15	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	0,3000
		EY	Static	1,0000

COMB16	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	0,3000
		EY	Static	-1,0000
COMB17	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-0,3000
		EY	Static	1,0000
COMB18	ADD	SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-0,3000
		EY	Static	-1,0000
		SDEAD	Static	0,9000

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C O L U M N F O R C E E N V E L O P E S

STORY	COLUMN	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	C20	Min Value	-508,06	-60,04	-240,09	-2,799	-378,695	-116,727
		Min Case	COMB5	COMB13	COMB8	COMB11	COMB8	COMB4
		Max Value	-109,29	91,85	119,51	3,006	293,564	140,463
		Max Case	COMB12	COMB4	COMB17	COMB6	COMB8	COMB4
LT7	C20	Min Value	-1273,77	-83,16	-299,73	-1,656	-458,230	-128,073
		Min Case	COMB5	COMB13	COMB8	COMB12	COMB8	COMB4
		Max Value	-306,86	102,30	132,57	1,915	381,006	158,362
		Max Case	COMB12	COMB4	COMB17	COMB5	COMB8	COMB4
LT6	C20	Min Value	-2097,33	-90,28	-371,22	-7,593	-576,151	-161,793
		Min Case	COMB9	COMB13	COMB8	COMB11	COMB8	COMB4
		Max Value	-465,12	128,22	208,29	7,942	463,272	197,211
		Max Case	COMB16	COMB4	COMB17	COMB6	COMB8	COMB4
LT5	C20	Min Value	-2975,93	-92,45	-375,77	-10,098	-620,576	-153,241
		Min Case	COMB9	COMB13	COMB8	COMB11	COMB8	COMB13
		Max Value	-580,58	126,52	238,72	10,434	431,571	210,374
		Max Case	COMB16	COMB4	COMB17	COMB6	COMB8	COMB4
LT4	C20	Min Value	-3908,84	-91,75	-376,42	-12,351	-698,144	-152,731
		Min Case	COMB9	COMB13	COMB8	COMB11	COMB8	COMB13
		Max Value	-663,18	124,45	257,70	12,710	455,819	224,844
		Max Case	COMB16	COMB4	COMB17	COMB6	COMB8	COMB4
LT3	C20	Min Value	-4914,74	-95,87	-386,80	-22,082	-751,720	-211,317
		Min Case	COMB9	COMB13	COMB8	COMB11	COMB8	COMB13
		Max Value	-721,72	120,04	287,40	22,705	577,809	245,816
		Max Case	COMB16	COMB4	COMB17	COMB6	COMB17	COMB4
LT2	C20	Min Value	-5818,27	-86,79	-318,68	-18,635	-693,309	-221,594
		Min Case	COMB9	COMB13	COMB8	COMB11	COMB8	COMB14
		Max Value	-718,01	94,08	249,99	19,219	567,698	230,685
		Max Case	COMB16	COMB4	COMB17	COMB6	COMB17	COMB3
DASAR	C20	Min Value	-6669,90	-77,65	-294,02	-12,481	-604,159	-201,942
		Min Case	COMB9	COMB13	COMB8	COMB12	COMB8	COMB13
		Max Value	-776,97	95,24	217,05	12,924	485,604	227,258
		Max Case	COMB16	COMB4	COMB17	COMB5	COMB17	COMB4
BASEMENT	C20	Min Value	-7443,24	-122,32	-197,11	-5,314	-545,836	-408,298
		Min Case	COMB9	COMB13	COMB8	COMB12	COMB8	COMB13
		Max Value	-930,20	129,63	161,90	5,487	518,718	411,342
		Max Case	COMB16	COMB4	COMB17	COMB5	COMB17	COMB4

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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB3	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	0,3000
		SDEAD	Static	1,2000
COMB4	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	-0,3000
		SDEAD	Static	1,2000
COMB11	ADD	DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	0,3000
		SDEAD	Static	0,9000
COMB12	ADD	DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	-0,3000
		SDEAD	Static	0,9000

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COLUMN FORCE ENVELOPES

STORY	COLUMN	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	C20	Min Value	-321,70	76,91	-175,99	-2,799	-283,469	-116,727
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-109,29	91,85	-48,44	-2,660	209,314	140,463
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB4
LT7	C20	Min Value	-882,04	84,56	-241,16	-1,656	-373,199	-128,073
		Min Case	COMB3	COMB11	COMB4	COMB12	COMB4	COMB4
		Max Value	-306,86	102,30	-87,28	-0,970	302,044	158,362
		Max Case	COMB12	COMB4	COMB11	COMB3	COMB4	COMB4
LT6	C20	Min Value	-1467,41	108,91	-256,56	-7,593	-404,997	-161,793
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-492,17	128,22	-57,15	-6,465	313,364	197,211
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB4
LT5	C20	Min Value	-2066,79	110,24	-237,62	-10,098	-398,764	-143,882
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-670,90	126,52	-32,09	-8,125	266,561	210,374
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB4
LT4	C20	Min Value	-2694,50	110,75	-223,22	-12,351	-355,807	-143,623
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-846,78	124,45	-15,05	-9,563	269,222	224,844
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB4
LT3	C20	Min Value	-3374,96	108,62	-213,53	-22,082	-402,039	-162,324
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-1024,73	120,04	4,21	-17,272	323,978	245,816
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB4
LT2	C20	Min Value	-3968,79	85,15	-165,84	-18,635	-336,304	-90,204
		Min Case	COMB3	COMB11	COMB4	COMB11	COMB4	COMB4
		Max Value	-1153,25	94,08	16,52	-16,231	227,557	230,685
		Max Case	COMB12	COMB4	COMB11	COMB4	COMB4	COMB3
DASAR	C20	Min Value	-4573,82	76,76	-161,69	-12,481	-296,707	-39,425
		Min Case	COMB3	COMB11	COMB4	COMB12	COMB4	COMB4
		Max Value	-1326,19	95,24	6,03	-11,628	156,015	227,258
		Max Case	COMB12	COMB4	COMB11	COMB3	COMB4	COMB4

BASEMENT	C20	Min Value	-5200,46	123,20	-88,72	-5,314	-201,207	48,378
		Min Case	COMB3	COMB11	COMB4	COMB12	COMB4	COMB4
		Max Value	-1554,80	129,63	26,64	-4,901	122,333	411,342
		Max Case	COMB12	COMB4	COMB11	COMB3	COMB11	COMB4

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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB5	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	0,3000
		SDEAD	Static	1,2000
COMB6	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	-0,3000
		SDEAD	Static	1,2000
COMB13	ADD	DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	0,3000
		SDEAD	Static	0,9000
COMB14	ADD	DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	-0,3000
		SDEAD	Static	0,9000

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COLUMN FORCE ENVELOPES

STORY	COLUMN	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	C20	Min Value	-508,06	-60,04	-72,15	2,867	-111,169	-92,914
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB13
		Max Value	-295,65	-45,09	55,41	3,006	90,844	75,184
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB6	COMB13
LT7	C20	Min Value	-1273,77	-83,16	-79,88	1,228	-127,919	-112,524
		Min Case	COMB5	COMB13	COMB6	COMB14	COMB6	COMB13
		Max Value	-698,59	-65,43	74,00	1,915	107,542	120,335
		Max Case	COMB14	COMB6	COMB13	COMB5	COMB13	COMB13
LT6	C20	Min Value	-2070,28	-90,28	-105,78	6,813	-162,439	-136,958
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB13
		Max Value	-1095,03	-70,98	93,62	7,942	146,058	115,836
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB13	COMB13
LT5	C20	Min Value	-2885,62	-92,45	-104,96	8,461	-170,961	-153,241
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB13
		Max Value	-1489,72	-76,16	100,57	10,434	167,575	105,605
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB13	COMB13
LT4	C20	Min Value	-3725,24	-91,75	-103,67	9,922	-162,610	-152,731
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB13
		Max Value	-1877,52	-78,05	104,51	12,710	167,992	104,162
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB13	COMB13
LT3	C20	Min Value	-4611,73	-95,87	-103,61	17,895	-198,620	-211,317
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB13
		Max Value	-2261,50	-84,44	114,13	22,705	228,128	114,626
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB13	COMB13

LT2	C20	Min Value	-5383,04	-86,79	-85,21	16,815	-189,692	-221,594
		Min Case	COMB5	COMB13	COMB6	COMB13	COMB6	COMB14
		Max Value	-2567,49	-77,86	97,15	19,219	210,693	74,506
		Max Case	COMB14	COMB6	COMB13	COMB6	COMB13	COMB13
DASAR	C20	Min Value	-6120,68	-77,65	-83,00	12,072	-171,730	-201,942
		Min Case	COMB5	COMB13	COMB6	COMB14	COMB6	COMB13
		Max Value	-2873,05	-59,17	84,71	12,924	178,152	15,488
		Max Case	COMB14	COMB6	COMB13	COMB5	COMB13	COMB13
BASEMENT	C20	Min Value	-6818,65	-122,32	-61,85	5,073	-149,451	-408,298
		Min Case	COMB5	COMB13	COMB6	COMB14	COMB6	COMB13
		Max Value	-3172,98	-115,89	53,51	5,487	174,089	-65,803
		Max Case	COMB14	COMB6	COMB13	COMB5	COMB13	COMB13

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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB7	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	1,0000
COMB9	ADD	SDEAD	Static	1,2000
		DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
COMB15	ADD	EY	Static	1,0000
		SDEAD	Static	1,2000
		DEAD	Static	0,9000
		EX	Static	0,3000
COMB17	ADD	EY	Static	1,0000
		SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-0,3000
		EY	Static	1,0000
		SDEAD	Static	0,9000

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COLUMN FORCE ENVELOPES

STORY	COLUMN	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	C20	Min Value	-497,06	-17,65	46,89	-0,954	-150,382	-47,521
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB7
		Max Value	-275,23	33,63	119,51	0,766	184,241	46,655
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
LT7	C20	Min Value	-1267,63	-37,17	28,89	0,777	-178,615	-49,570
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB17
		Max Value	-687,18	19,98	132,57	1,672	192,573	54,517
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB17
LT6	C20	Min Value	-2097,33	-28,53	107,17	-3,829	-265,996	-58,629
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB7
		Max Value	-1145,27	43,70	208,29	0,526	317,212	63,723
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
LT5	C20	Min Value	-2975,93	-27,36	151,60	-5,865	-279,024	-55,357
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB7
		Max Value	-1657,46	44,72	238,72	-0,264	389,387	69,857
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7

LT4	C20	Min Value	-3908,84	-24,61	180,83	-7,755	-311,240	-56,794
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB7
		Max Value	-2218,49	46,63	257,70	-1,028	410,329	73,780
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
LT3	C20	Min Value	-4914,74	-26,39	218,17	-13,593	-399,345	-60,943
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB7
		Max Value	-2824,24	44,58	287,40	-1,508	577,809	90,632
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
LT2	C20	Min Value	-5818,27	-30,36	198,63	-8,912	-282,256	-64,561
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB17
		Max Value	-3375,78	26,95	249,99	1,826	567,698	76,988
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
DASAR	C20	Min Value	-6669,90	-33,82	162,77	-2,216	-122,129	-73,432
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB17
		Max Value	-3893,04	22,24	217,05	5,231	485,604	62,516
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7
BASEMENT	C20	Min Value	-7443,24	-38,69	139,46	-0,854	65,391	-128,686
		Min Case	COMB9	COMB17	COMB7	COMB15	COMB17	COMB17
		Max Value	-4332,94	39,42	161,90	2,295	518,718	117,922
		Max Case	COMB15	COMB7	COMB17	COMB9	COMB17	COMB7

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LOADING COMBINATIONS

COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB8	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	-1,0000
		SDEAD	Static	1,2000
COMB10	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
		EY	Static	-1,0000
		SDEAD	Static	1,2000
COMB16	ADD	DEAD	Static	0,9000
		EX	Static	0,3000
		EY	Static	-1,0000
		SDEAD	Static	0,9000
COMB18	ADD	DEAD	Static	0,9000
		EX	Static	-0,3000
		EY	Static	-1,0000
		SDEAD	Static	0,9000

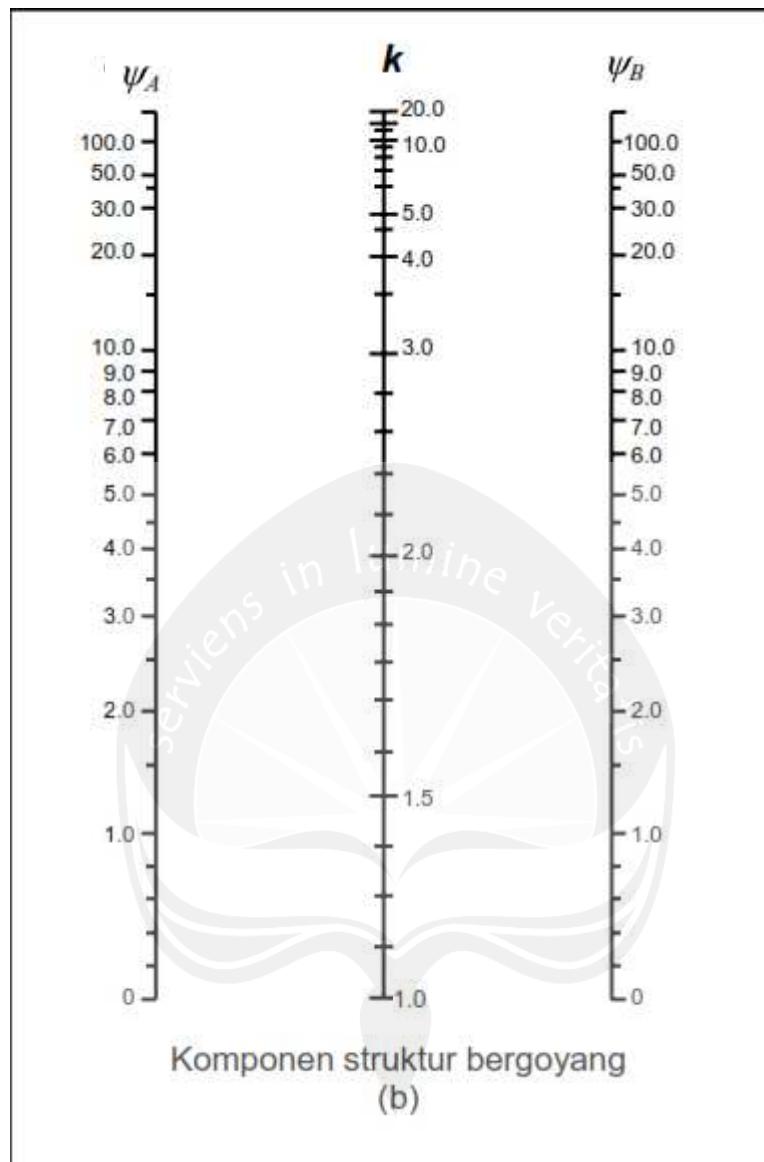
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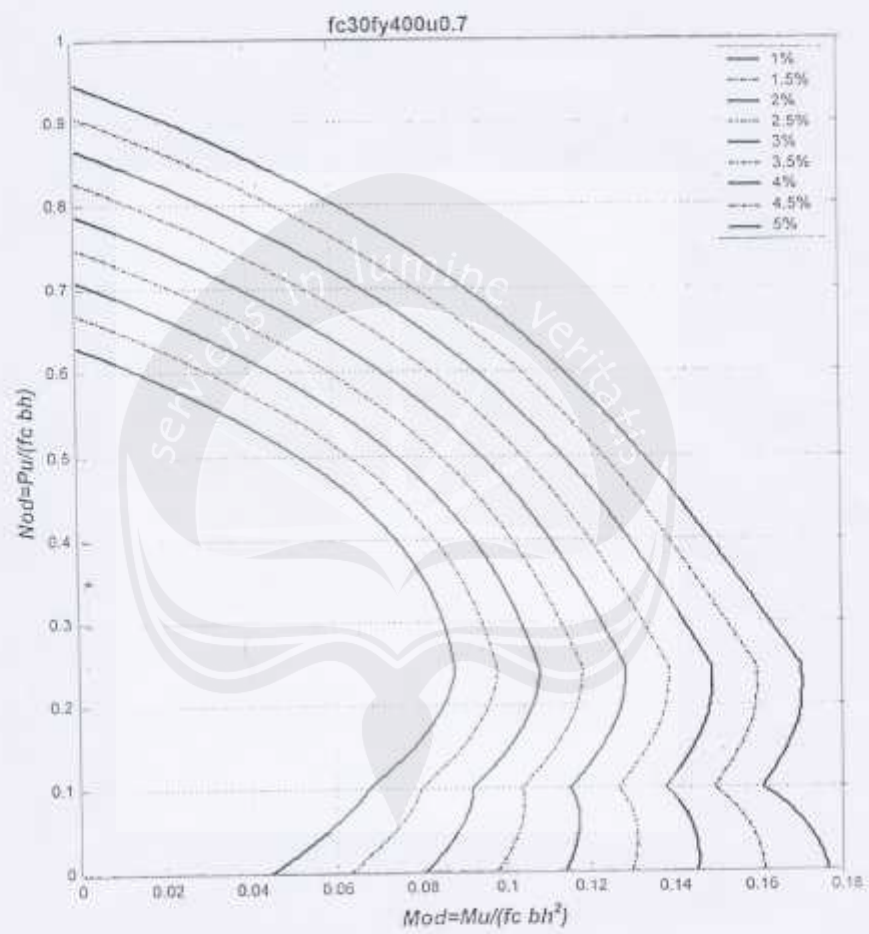
COLUMN FORCE ENVELOPES

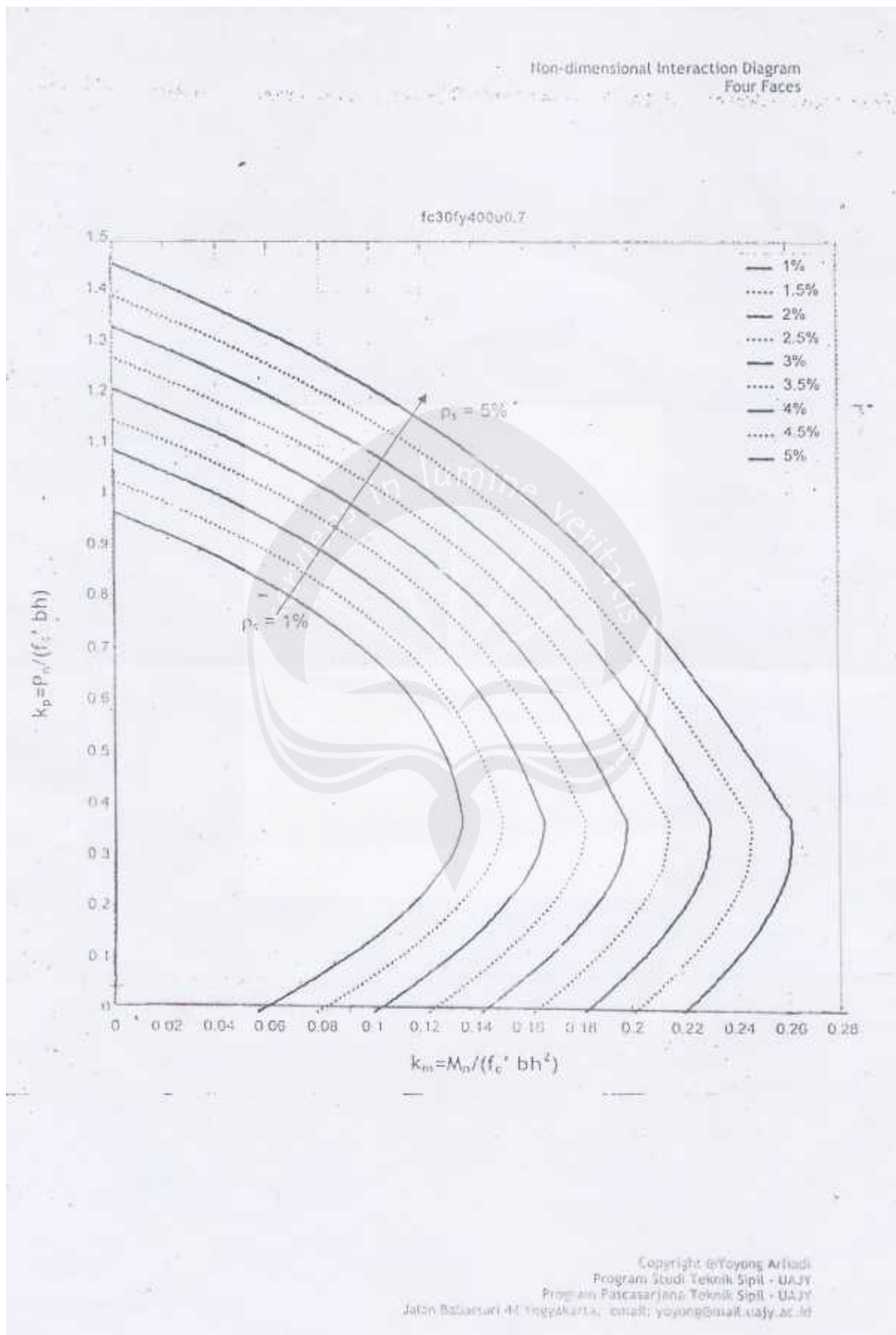
STORY	COLUMN	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	C20	Min Value	-342,11	-1,82	-240,09	-0,558	-378,695	-59,721
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-120,28	49,46	-167,48	1,162	293,564	78,781
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
LT7	C20	Min Value	-893,45	-0,85	-299,73	-1,413	-458,230	-62,256
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-313,00	56,31	-196,05	-0,518	381,006	95,408
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8

LT6	C20	Min Value	-1417,18	-5,76	-371,22	-0,177	-576,151	-79,378
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-465,12	66,47	-270,10	4,178	463,272	106,726
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
LT5	C20	Min Value	-1899,06	-10,64	-375,77	0,600	-620,576	-65,659
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-580,58	61,43	-288,65	6,201	431,571	106,344
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
LT4	C20	Min Value	-2353,53	-13,93	-376,42	1,387	-698,144	-65,394
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-663,18	57,32	-299,54	8,114	455,819	95,091
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
LT3	C20	Min Value	-2812,22	-20,41	-386,80	2,131	-751,720	-79,602
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-721,72	50,57	-317,57	14,217	563,401	92,323
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
LT2	C20	Min Value	-3160,50	-19,66	-318,68	-1,242	-693,309	-67,897
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB18
		Max Value	-718,01	37,65	-267,32	9,496	390,188	73,652
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
DASAR	C20	Min Value	-3553,83	-4,65	-294,02	-4,787	-604,159	-45,199
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB8
		Max Value	-776,97	51,41	-239,74	2,660	219,108	98,748
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8
BASEMENT	C20	Min Value	-4040,50	-32,11	-197,11	-2,122	-545,836	-114,878
		Min Case	COMB10	COMB18	COMB8	COMB16	COMB8	COMB18
		Max Value	-930,20	46,00	-174,67	1,027	6,082	131,730
		Max Case	COMB16	COMB8	COMB18	COMB10	COMB8	COMB8

Nomogram SNI 03-2847-2002







Tabel Penulangan Longitudinal Kolom

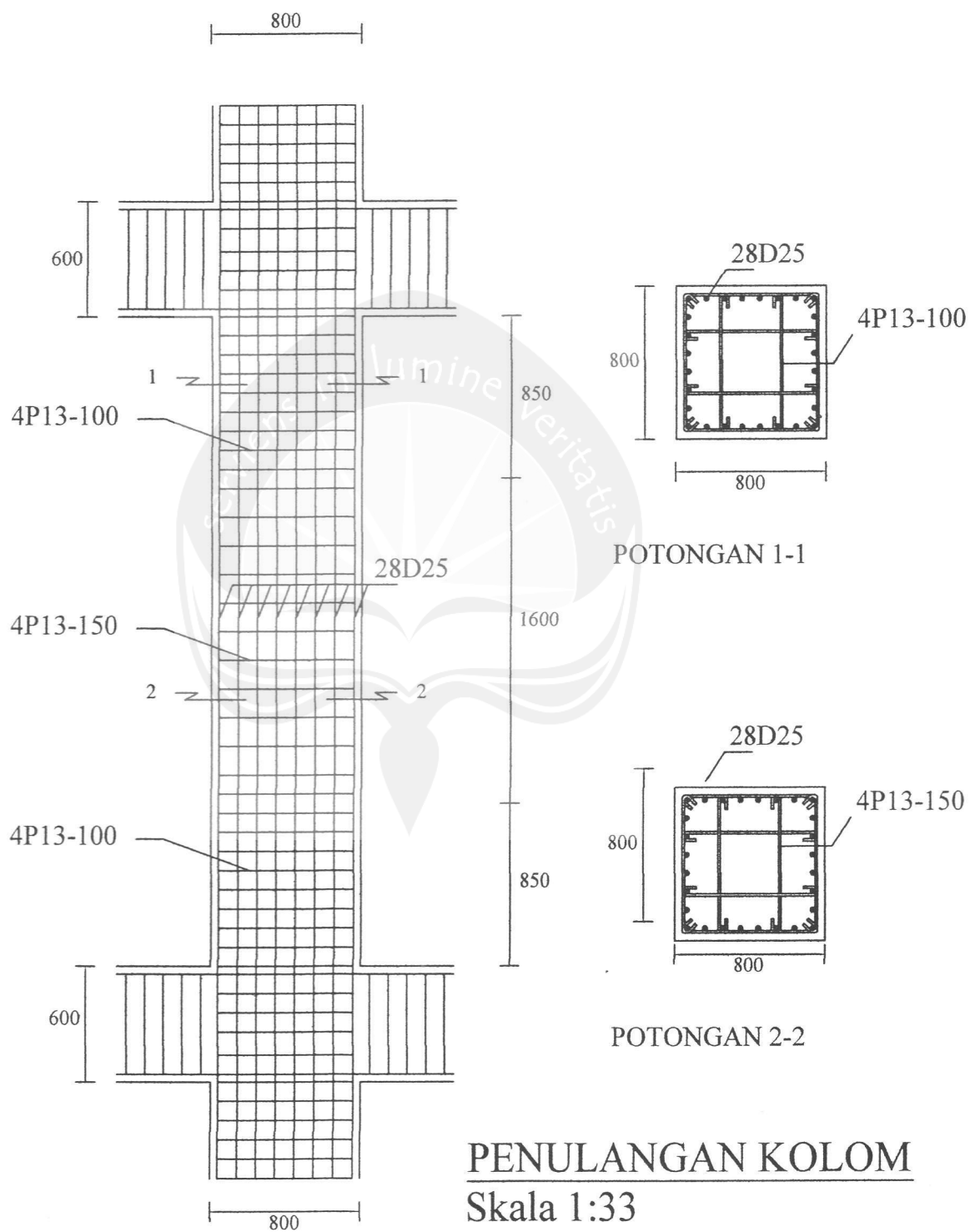
Lantai	b = h (mm)	M_x (KNm)	M_y (KNm)	P_u (KNm)	ρ	A_s (mm ²)	n	Tul Digunakan
Top Floor	600	378.695	140.463	508.06	0.02	7200	14,6618	16D25
Lantai 7	600	458.23	158.362	1273.77	0.02	7200	14,6618	16D25
Lantai 6	700	576.151	197.211	2097.33	0.02	7200	19,9564	20D25
Lantai 5	700	620.576	210.374	2975.93	0.02	9800	19,9564	20D25
Lantai 4	700	698.144	224.844	3908.84	0.02	9800	19,9564	20D25
Lantai 3	800	751.72	245.816	4914.74	0.02	12800	26,0654	28D25
Lantai 2	800	693.309	230.685	5818.27	0.02	12800	26,0654	28D25
Dasar	800	604.159	227.258	6669.9	0.02	12800	26,0654	28D25
Basement	800	545.836	411.342	7443.24	0.02	12800	26,0654	28D25

Tabel Penulangan Transversal Kolom Sepanjang λ_0

Lantai	$b = h$ (mm)	V_{e1} (kN)	V_{e2} (kN)	V_{e3} (kN)	V_e (kN)	λ_0 (mm)	S (mm)	h_c (mm)	A_{ch} (mm ²)	A_g (mm ²)	A_{sh1} (mm ²)	A_{sh2} (mm ²)	A_s (mm ²)	n	$V_{terpakat}$ (mm ²)	V_s (kN)	Tul Digunakan
Top Floor	600	645,714	549,6107	240,09	549,6107	600	100	471	270400	360000	351,1598	317,925	351,16	4	969,018	732,8143	4P12-100
Lantai 7	600	720,989	575,6220	299,73	575,6220	600	100	471	270400	360000	351,1598	317,925	351,16	4	969,018	767,4960	4P12-100
Lantai 6	700	1243,846	587,7015	371,22	587,7015	700	100	571	384400	490000	352,9386	385,425	385,425	4	1149,974	783,6020	4P12-100
Lantai 5	700	1342,788	511,3018	375,77	511,3018	700	100	571	384400	490000	352,9386	385,425	385,425	4	1149,974	681,7357	4P12-100
Lantai 4	700	1371,058	562,7477	376,42	562,7477	700	100	571	384400	490000	352,9386	385,425	385,425	4	1149,974	750,3303	4P12-100
Lantai 3	800	1552,347	473,9396	386,8	473,9396	800	100	699	518400	640000	353,0833	451,575	451,575	4	1559,870	631,9195	4P13-100
Lantai 2	800	1557,257	453,8563	318,65	453,8563	800	100	669	518400	640000	353,0833	451,575	451,575	4	1559,8699	605,1417	4P13-100
Lantai 1	800	1563,801	494,5941	294,02	394,5941	800	100	669	518400	640000	353,0833	451,575	451,575	4	1559,8699	526,1255	4P13-100
Ground	800	1756,456	423,538	197,11	423,538	800	100	669	518400	640000	353,0833	451,575	451,575	4	1559,8699	564,7173	4P13-100

Tabel Penulangan Transversal Kolom Diluar λ_0

Lantai	$b=h$ (mm)	V_{e1} (kN)	V_{e2} (kN)	V_{e3} (kN)	V_e (kN)	S (mm)	N_u (mm)	V_c (kN)	Tul Digunakan
Top Floor	600	645,714	549,6107	240,09	549,6107	150	109,29	299,6656	4P12-150
Lantai 7	600	720,989	575,6220	299,73	575,6220	150	306,86	311,1633	4P12-150
Lantai 6	700	1243,846	587,7015	371,22	587,7015	150	465,12	433,6243	4P12-150
Lantai 5	700	1342,788	511,3018	375,77	511,3018	150	580,58	440,4592	4P12-150
Lantai 4	700	1371,058	562,7477	376,42	562,7477	150	663,18	445,3488	4P12-150
Lantai 3	800	1552,347	473,9396	386,8	473,9396	150	721,72	579,6097	4P13-150
Lantai 2	800	1557,257	453,8563	318,65	453,8563	150	718,01	579,3876	4P13-150
Lantai 1	800	1563,801	494,5941	294,02	394,5941	150	776,97	582,9174	4P13-150
Ground	800	1756,456	423,538	197,11	423,538	150	930,2	592,0907	4P13-150



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LOADING COMBINATIONS

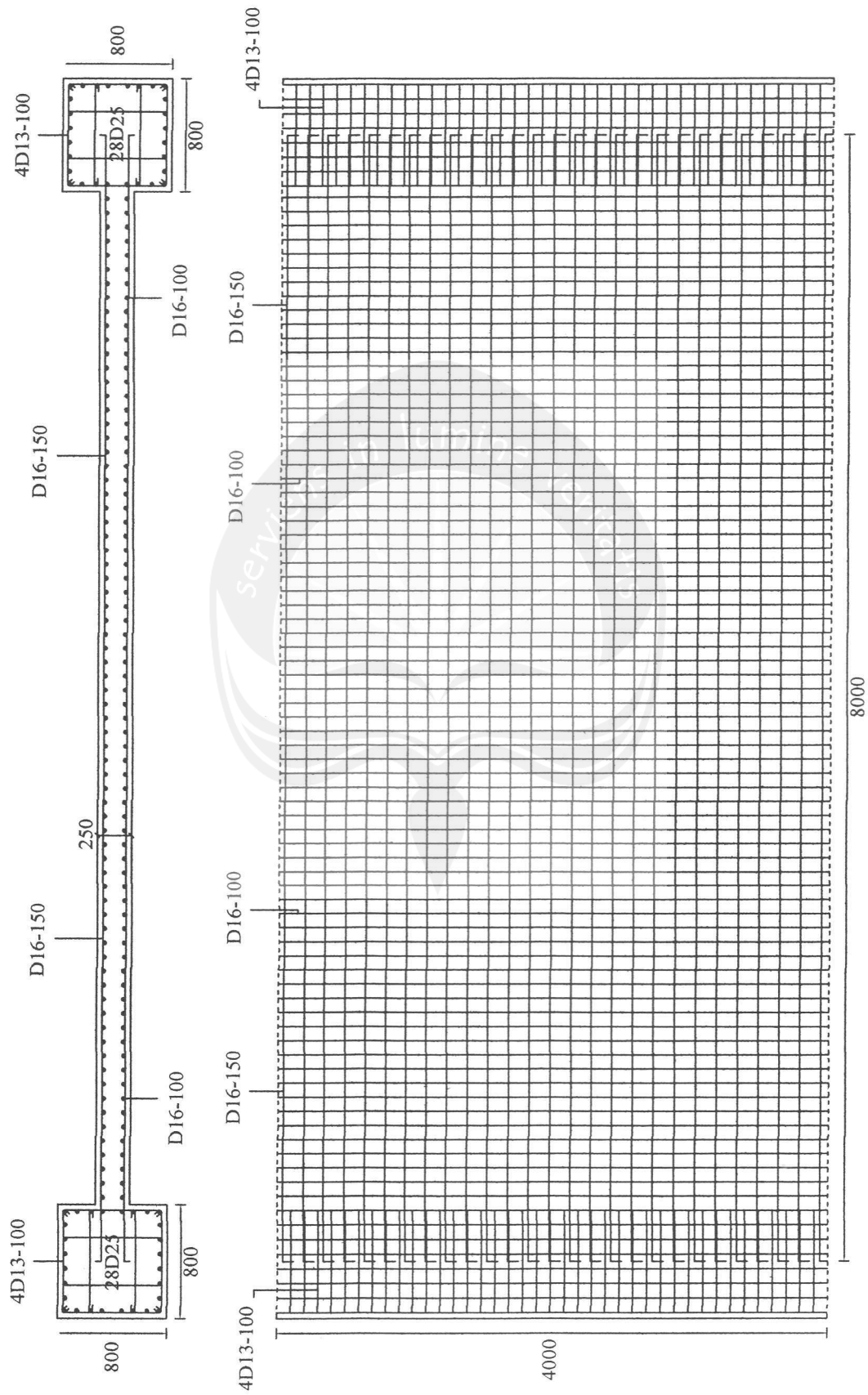
COMBO	COMBO TYPE	CASE	CASE TYPE	SCALE FACTOR
COMB1	ADD	DEAD	Static	1,4000
		SDEAD	Static	1,4000
COMB2	ADD	DEAD	Static	1,2000
		LIVE	Static	1,6000
		SDEAD	Static	1,2000
COMB3	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	0,3000
		SDEAD	Static	1,2000
COMB4	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	1,0000
		EY	Static	-0,3000
		SDEAD	Static	1,2000
COMB5	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	0,3000
		SDEAD	Static	1,2000
COMB6	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-1,0000
		EY	Static	-0,3000
		SDEAD	Static	1,2000
COMB7	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	1,0000
		SDEAD	Static	1,2000
COMB8	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	0,3000
		EY	Static	-1,0000
		SDEAD	Static	1,2000
COMB9	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
		EY	Static	1,0000
		SDEAD	Static	1,2000
COMB10	ADD	DEAD	Static	1,2000
		LIVE	Static	1,0000
		EX	Static	-0,3000
		EY	Static	-1,0000
		SDEAD	Static	1,2000
COMB11	ADD	DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	0,3000
		SDEAD	Static	0,9000
COMB12	ADD	DEAD	Static	0,9000
		EX	Static	1,0000
		EY	Static	-0,3000
		SDEAD	Static	0,9000
COMB13	ADD	DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	0,3000
		SDEAD	Static	0,9000
COMB14	ADD	DEAD	Static	0,9000
		EX	Static	-1,0000
		EY	Static	-0,3000
		SDEAD	Static	0,9000
COMB15	ADD	DEAD	Static	0,9000
		EX	Static	0,3000

COMB16	ADD	EY	Static	1,0000
		SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	0,3000
COMB17	ADD	EY	Static	-1,0000
		SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-0,3000
COMB18	ADD	EY	Static	1,0000
		SDEAD	Static	0,9000
		DEAD	Static	0,9000
		EX	Static	-0,3000
		EY	Static	-1,0000
		SDEAD	Static	0,9000

ETABS v9.0.0 File:QUEST HOTEL1 Units:KN-m June 5, 2013 15:11 PAGE 2

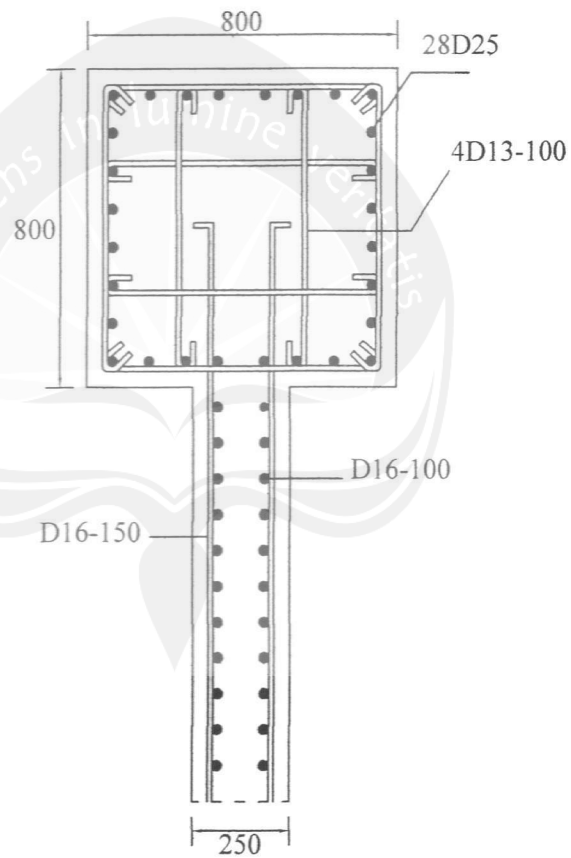
P I E R F O R C E E N V E L O P E S

STORY	PIER	ITEM	P	V2	V3	T	M2	M3
TOP FLOOR	P1	Min Value	-1354,32	-181,22	-944,18	-1466,255	-3610,979	-2010,757
		Min Case	COMB8	COMB12	COMB9	COMB14	COMB9	COMB12
		Max Value	-402,63	718,81	762,42	2058,664	3471,218	1859,981
		Max Case	COMB17	COMB5	COMB16	COMB3	COMB16	COMB5
LT7	P1	Min Value	-2903,89	-1789,61	-667,34	-2677,525	-4737,913	-5441,214
		Min Case	COMB8	COMB14	COMB8	COMB13	COMB17	COMB4
		Max Value	-1003,89	2271,85	550,29	3183,686	5045,081	2775,567
		Max Case	COMB17	COMB3	COMB17	COMB4	COMB8	COMB11
LT6	P1	Min Value	-4451,18	-2813,69	-861,52	-4280,833	-5030,778	-10737,582
		Min Case	COMB8	COMB14	COMB8	COMB13	COMB17	COMB6
		Max Value	-1285,69	3385,96	711,66	4851,550	5519,007	9164,384
		Max Case	COMB17	COMB3	COMB17	COMB4	COMB8	COMB11
LT5	P1	Min Value	-6016,46	-4343,00	-1464,72	-5921,022	-5665,610	-21241,560
		Min Case	COMB8	COMB13	COMB8	COMB13	COMB17	COMB6
		Max Value	-1756,69	4847,79	1341,10	6403,496	6128,909	18874,910
		Max Case	COMB17	COMB4	COMB17	COMB4	COMB8	COMB11
LT4	P1	Min Value	-7552,80	-5678,76	-2086,66	-6966,906	-5116,653	-34464,156
		Min Case	COMB8	COMB13	COMB8	COMB13	COMB17	COMB5
		Max Value	-2218,40	6130,00	1965,48	7413,978	5579,897	31239,956
		Max Case	COMB17	COMB4	COMB17	COMB4	COMB8	COMB12
LT3	P1	Min Value	-8542,37	-6761,50	-2495,10	-8041,356	-5959,829	-50378,600
		Min Case	COMB8	COMB13	COMB8	COMB13	COMB16	COMB5
		Max Value	-2594,97	7145,46	2394,39	8416,293	6283,975	46753,249
		Max Case	COMB17	COMB4	COMB17	COMB4	COMB9	COMB12
LT2	P1	Min Value	-9671,91	-7767,85	-3031,60	-9017,818	-11883,545	-69752,852
		Min Case	COMB8	COMB13	COMB8	COMB13	COMB16	COMB5
		Max Value	-3367,13	7997,74	2964,53	9239,319	12304,742	65281,873
		Max Case	COMB17	COMB4	COMB17	COMB4	COMB9	COMB12
DASAR	P1	Min Value	-10578,96	-8072,80	-3094,51	-9096,766	-16658,542	-85146,176
		Min Case	COMB8	COMB14	COMB8	COMB14	COMB16	COMB5
		Max Value	-4257,76	8500,17	3053,60	9374,089	17236,037	80445,349
		Max Case	COMB17	COMB3	COMB17	COMB3	COMB9	COMB12
BASEMENT	P1	Min Value	-11701,06	-6806,30	-3333,24	-5560,970	-23248,578	-98148,294
		Min Case	COMB2	COMB14	COMB16	COMB14	COMB16	COMB5
		Max Value	-5260,17	6946,92	3322,28	5642,050	24017,460	92347,811
		Max Case	COMB17	COMB3	COMB9	COMB3	COMB9	COMB12



PENULANGAN DINDING GESER

Skala 1:44



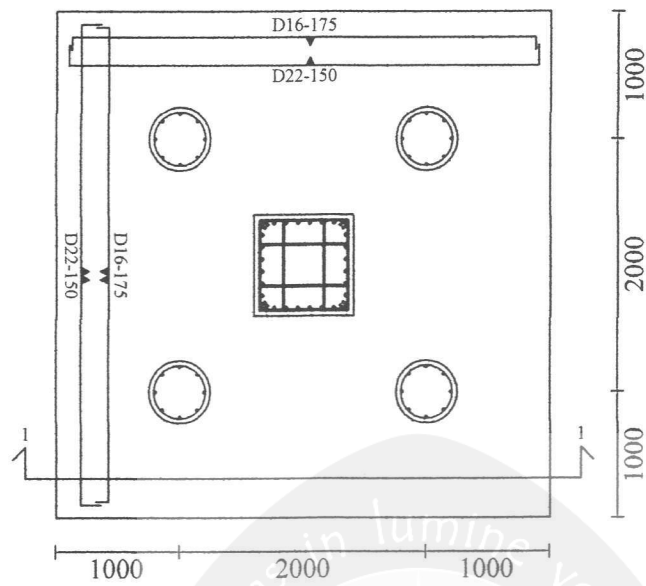
PENULANGAN ELEMEN BATAS
Skala 1:19

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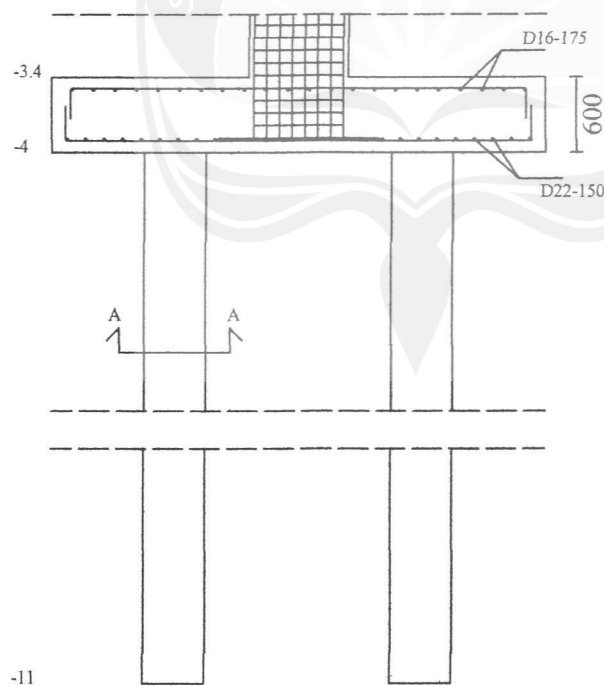
S U P P O R T R E A C T I O N S

STORY	POINT	LOAD	FX	FY	FZ	MX	MY	MZ
BASE	38	DEAD	1,10	4,81	3653,10	-1,655	3,443	-0,062
BASE	38	LIVE	1,06	4,57	2361,38	-3,590	2,550	-0,010
BASE	38	SDEAD	-1,83	0,31	626,14	0,334	-2,260	-0,016
BASE	38	EX	-130,78	3,67	-19,38	-15,688	-443,350	5,194
BASE	38	EY	-0,07	-135,51	156,86	484,015	6,900	-0,634
Summation	0, 0, Base	DEAD	1,10	4,81	3653,10	99727,965	-85040,716	81,753
Summation	0, 0, Base	LIVE	1,06	4,57	2361,38	64462,065	-54970,359	77,502
Summation	0, 0, Base	SDEAD	-1,83	0,31	626,14	17093,999	-14578,835	57,204
Summation	0, 0, Base	EX	-130,78	3,67	-19,38	-544,741	7,799	3660,790
Summation	0, 0, Base	EY	-0,07	-135,51	156,86	4766,158	-3644,686	-3153,411

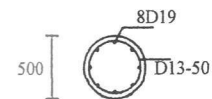




DENAH PONDASI

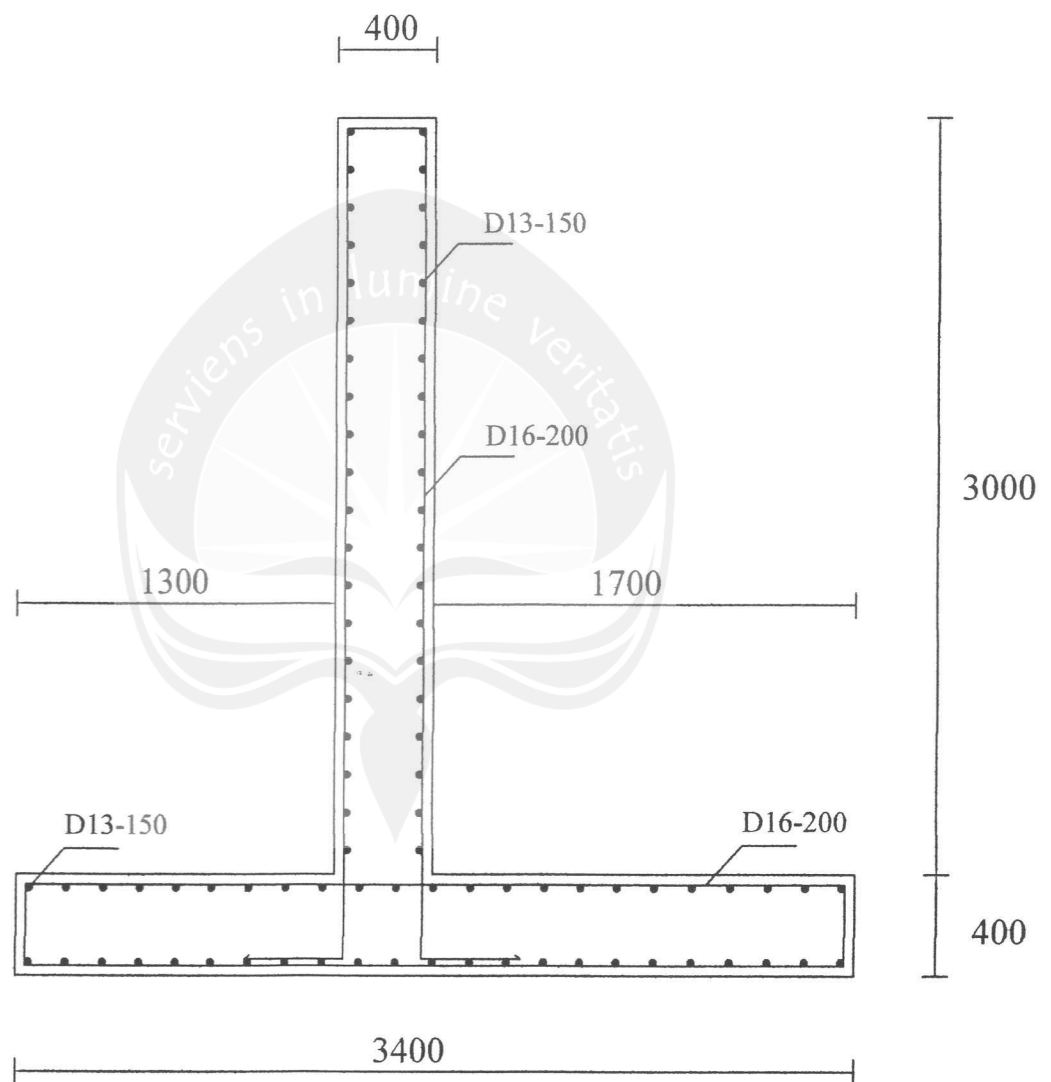


POTONGAN 1-1



POTONGAN A-A

DETAIL PONDASI
Skala 1:60



PENULANGAN DINDING PENAHAN TANAH
Skala 1:30

Table: Combination Definitions

ComboName Text	ComboType Text	AutoDesign Yes/No	CaseType Text	CaseName Text	ScaleFactor Unitless	SteelDesign Yes/No
COMB1	Linear Add	No	Linear Static	DEAD	1,200000	No
COMB1			Linear Static	LIVE	1,600000	

Table: Connectivity – Frame

Frame Text	JointI Text	JointJ Text	IsCurved Yes/No	Length m	CentroidX m	CentroidY m	CentroidZ m
1	1	2	No	5,38145	1,80000	0,00000	2,00000
2	2	3	No	2,20000	4,70000	0,00000	4,00000

Table: Element Forces - Frames, Part 1 of 2

Frame Text	Station m	OutputCase Text	CaseType Text	P KN	V2 KN	V3 KN	T KN-m	M2 KN-m
1	0,00000	COMB1	Combination	-105,492	-19,682	0,000	0,0000	0,0000
1	2,69072	COMB1	Combination	-79,236	3,948	0,000	0,0000	0,0000
1	5,38145	COMB1	Combination	-52,980	27,579	0,000	0,0000	0,0000
2	0,00000	COMB1	Combination	-55,941	-20,931	0,000	0,0000	0,0000
2	0,44000	COMB1	Combination	-55,941	-16,421	0,000	0,0000	0,0000
2	0,88000	COMB1	Combination	-55,941	-11,912	0,000	0,0000	0,0000
2	1,32000	COMB1	Combination	-55,941	-7,403	0,000	0,0000	0,0000
2	1,76000	COMB1	Combination	-55,941	-2,894	0,000	0,0000	0,0000
2	2,20000	COMB1	Combination	-55,941	1,615	0,000	0,0000	0,0000

Table: Element Forces - Frames, Part 2 of 2

Frame Text	Station m	OutputCase Text	M3 KN-m	FrameElem Text	ElemStation m
1	0,00000	COMB1	-2,487E-15	1-1	0,00000
1	2,69072	COMB1	21,1679	1-1	2,69072
1	5,38145	COMB1	-21,2472	1-1	5,38145
2	0,00000	COMB1	-21,2472	2-1	0,00000
2	0,44000	COMB1	-13,0297	2-1	0,44000
2	0,88000	COMB1	-6,7963	2-1	0,88000
2	1,32000	COMB1	-2,5468	2-1	1,32000
2	1,76000	COMB1	-0,2814	2-1	1,76000
2	2,20000	COMB1	2,642E-15	2-1	2,20000

Table: Frame Loads - Distributed, Part 1 of 2

Frame Text	LoadCase Text	CoordSys Text	Type Text	Dir Text	DistType Text	RelDistA Unitless
1	DEAD	GLOBAL	Force	Gravity	RelDist	0,0000
1	LIVE	GLOBAL	Force	Gravity	RelDist	0,0000
2	DEAD	GLOBAL	Force	Gravity	RelDist	0,0000
2	LIVE	GLOBAL	Force	Gravity	RelDist	0,0000

Table: Frame Loads - Distributed, Part 2 of 2

Frame Text	LoadCase Text	RelDistB Unitless	AbsDistA m	AbsDistB m	FOverLA KN/m	FOverLB KN/m
1	DEAD	1,0000	0,00000	5,38145	6,94	6,94
1	LIVE	1,0000	0,00000	5,38145	3,00	3,00
2	DEAD	1,0000	0,00000	2,20000	4,54	4,54
2	LIVE	1,0000	0,00000	2,20000	3,00	3,00

Table: Grid Lines

CoordSys Text	AxisDir Text	GridID Text	XRYZCoord m	LineType Text	LineColor Text	Visible Yes/No	BubbleLoc Text
GLOBAL	X	x1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	X	x2	3,60000	Primary	Gray8Dark	Yes	End
GLOBAL	X	x3	5,80000	Primary	Gray8Dark	Yes	End
GLOBAL	Y	y1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	Z	z1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	Z	z2	4,00000	Primary	Gray8Dark	Yes	End

Table: Joint Restraint Assignments

Joint Text	U1 Yes/No	U2 Yes/No	U3 Yes/No	R1 Yes/No	R2 Yes/No	R3 Yes/No
1	Yes	Yes	Yes	No	No	No
3	Yes	Yes	Yes	No	No	No

Table: Load Case Definitions

LoadCase Text	DesignType Text	SelfWtMult Unitless	AutoLoad Text	GUID Text	Notes Text
DEAD	DEAD	0,000000			
LIVE	LIVE	0,000000			

Analysis Model



Table: Combination Definitions

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor	SteelDesign
Text	Text	Yes/No	Text	Text	Unitless	Yes/No
COMB1	Linear Add	No	Linear Static	DEAD	1,200000	No
COMB1			Linear Static	LIVE	1,600000	

Table: Connectivity - Frame

Frame	JointI	JointJ	IsCurved	Length	CentroidX	CentroidY	CentroidZ
Text	Text	Text	Yes/No	m	m	m	m
1	1	2	No	4,10824	1,87000	0,00000	0,85000
2	2	3	No	2,06000	4,77000	0,00000	1,70000

Table: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	CaseType	P	V2	V3	T	M2
Text	m	Text	Text	KN	KN	KN	KN-m	KN-m
1	0,00000	COMB1	Combination	-117,687	-22,291	0,000	0,0000	0,0000
1	2,05412	COMB1	Combination	-106,529	2,258	0,000	0,0000	0,0000
1	4,10824	COMB1	Combination	-95,370	26,808	0,000	0,0000	0,0000
2	0,00000	COMB1	Combination	-97,915	-15,059	0,000	0,0000	0,0000
2	0,41200	COMB1	Combination	-97,915	-10,837	0,000	0,0000	0,0000
2	0,82400	COMB1	Combination	-97,915	-6,615	0,000	0,0000	0,0000
2	1,23600	COMB1	Combination	-97,915	-2,393	0,000	0,0000	0,0000
2	1,64800	COMB1	Combination	-97,915	1,829	0,000	0,0000	0,0000
2	2,06000	COMB1	Combination	-97,915	6,051	0,000	0,0000	0,0000

Table: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	M3	FrameElem	ElemStation
Text	m	Text	KN-m	Text	m
1	0,00000	COMB1	-3,553E-15	1-1	0,00000
1	2,05412	COMB1	20,5746	1-1	2,05412
1	4,10824	COMB1	-9,2782	1-1	4,10824
2	0,00000	COMB1	-9,2782	2-1	0,00000
2	0,41200	COMB1	-3,9434	2-1	0,41200
2	0,82400	COMB1	-0,3483	2-1	0,82400
2	1,23600	COMB1	1,5073	2-1	1,23600
2	1,64800	COMB1	1,6234	2-1	1,64800
2	2,06000	COMB1	-1,157E-14	2-1	2,06000

Table: Frame Loads - Distributed, Part 1 of 2

Frame	LoadCase	CoordSys	Type	Dir	DistType	RelDistA
Text	Text	Text	Text	Text	Text	Unitless
1	DEAD	GLOBAL	Force	Gravity	RelDist	0,0000
1	LIVE	GLOBAL	Force	Gravity	RelDist	0,0000
2	DEAD	GLOBAL	Force	Gravity	RelDist	0,0000
2	LIVE	GLOBAL	Force	Gravity	RelDist	0,0000

Table: Frame Loads - Distributed, Part 2 of 2

Frame Text	LoadCase Text	RelDistB Unitless	AbsDistA m	AbsDistB m	FOverLA KN/m	FOverLB KN/m
1	DEAD	1,0000	0,00000	4,10824	6,94	6,94
1	LIVE	1,0000	0,00000	4,10824	3,00	3,00
2	DEAD	1,0000	0,00000	2,06000	4,54	4,54
2	LIVE	1,0000	0,00000	2,06000	3,00	3,00

Table: Grid Lines

CoordSys Text	AxisDir Text	GridID Text	XRYZCoord m	LineType Text	LineColor Text	Visible Yes/No	BubbleLoc Text
GLOBAL	X	x1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	X	x2	3,74000	Primary	Gray8Dark	Yes	End
GLOBAL	X	x3	5,80000	Primary	Gray8Dark	Yes	End
GLOBAL	Y	y1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	Z	z1	0,00000	Primary	Gray8Dark	Yes	End
GLOBAL	Z	z2	1,70000	Primary	Gray8Dark	Yes	End

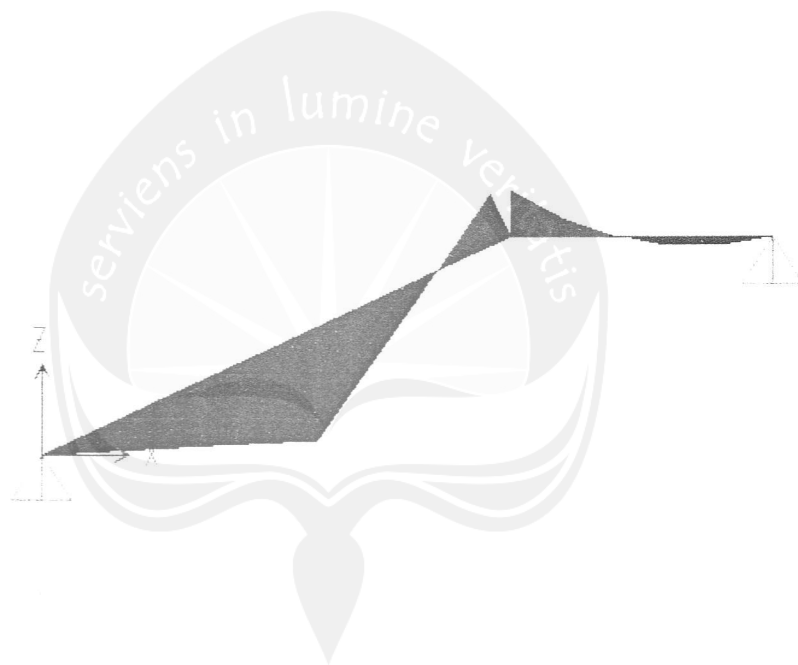
Table: Joint Restraint Assignments

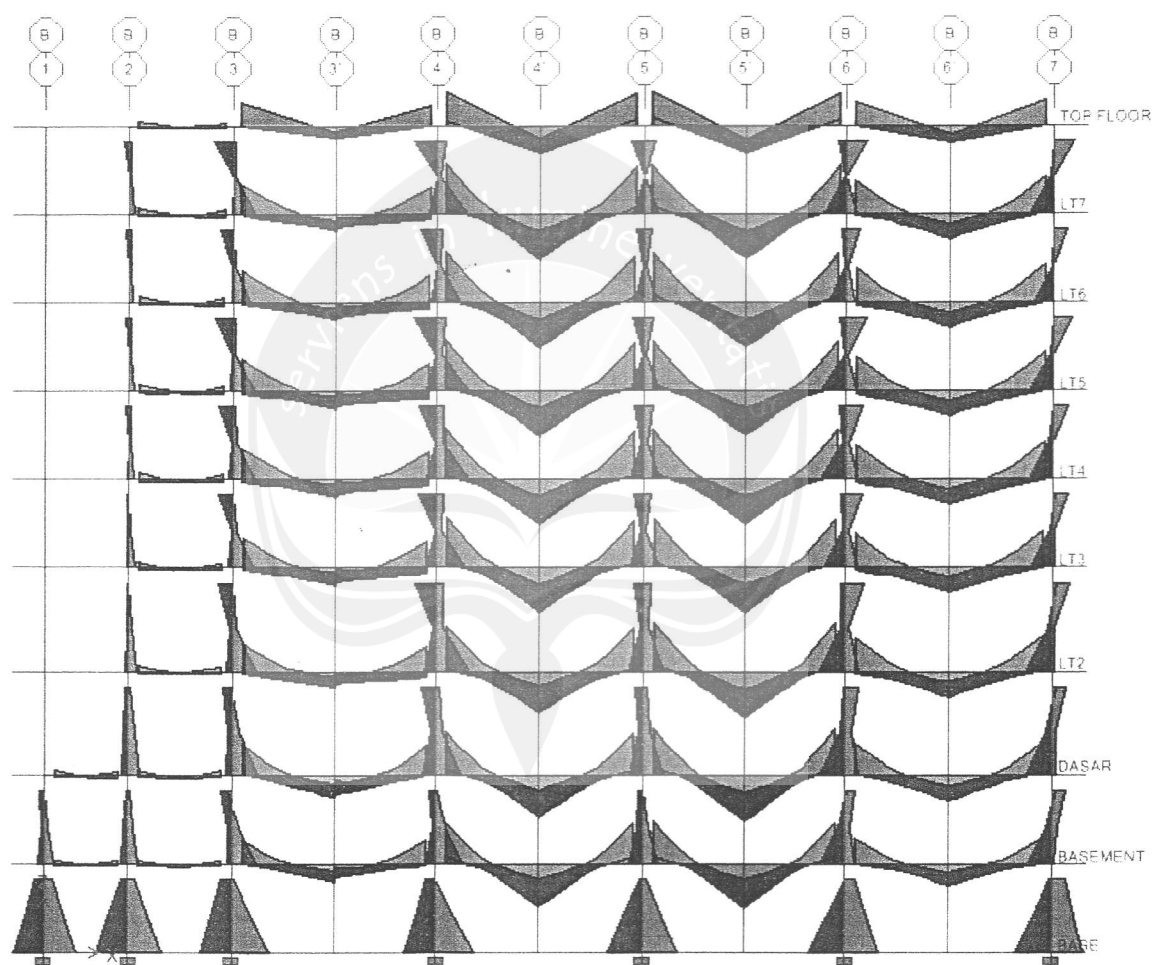
Joint Text	U1 Yes/No	U2 Yes/No	U3 Yes/No	R1 Yes/No	R2 Yes/No	R3 Yes/No
1	Yes	Yes	Yes	No	No	No
3	Yes	Yes	Yes	No	No	No

Table: Load Case Definitions

LoadCase Text	DesignType Text	SelfWtMult Unitless	AutoLoad Text	GUID Text	Notes Text
DEAD	DEAD	0,000000			
LIVE	LIVE	0,000000			

Analysis Model





PORTAL B

LAPORAN PENYELIDIKAN TANAH
PROYEK “THE QUEST HOTEL”
JL. MANGKUBUMI
YOGYAKARTA



UNIVERSITAS ATMA JAYA YOGYAKARTA
FAKULTAS TEKNIK

PPKT

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KATA PENGANTAR

Bersama ini disampaikan Laporan sebanyak 1 (satu) eksemplar hasil penyelidikan tanah "The Quest Hotel". Lokasi proyek di JL. Mangkubumi Yogyakarta. Penyelidikan tanah yang dilakukan oleh Laboratorium Mekanika Tanah Program Studi Teknik Sipil Fakultas Teknik Universitas Atma Jaya Yogyakarta, berdasarkan kesepakatan kontrak penyelidikan tanah atas permintaan Bp. Heri Susanto tertanggal 29 Nopember 2011.

Penyelidikan tanah meliputi uji di lapangan yaitu: 5 titik uji Cone Penetration Test (CPT) dengan kapasitas 60 kNf dan 3 titik uji Standard Penetration Test (SPT) masing masing 30m. Pengambilan sampel untuk *Core Drill* pada *undisturbed soil* yang selanjutnya sampel tersebut diuji di laboratorium untuk ditentukan karakteristik fisis dan mekanisnya. Uji lapangan dan laboratorium dilakukan pada tanggal 19 – 29 Desember 2011 dan dilanjutkan dengan pembuatan laporan lengkap. Hasil penyelidikan tanah meliputi kondisi lokasi yang diinvestigasi, metode dan standar pengujian yang dilaksanakan baik di lapangan maupun di laboratorium, serta *soil classification analysis*, *allowable bearing capacity*, *N Value*, *soil properties*, pengaruh air tanah apabila dijumpai muka air tanah, dan rekomendasinya.

Semoga laporan ini dapat bermanfaat bagi semua pihak yang memerlukan, serta ucapan terima kasih kepada semua pihak yang telah banyak memberi bantuan selama pelaksanaan pekerjaan ini.

Yogyakarta, 30 Desember 2011
Laboratorium Mekanika Tanah
Program Studi Teknik Sipil
Fakultas Teknik
Universitas Atma Jaya Yogyakarta

Sumiyati Gunawan, S.T.,M.T.
Kalab. Mektan UAJY

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LAPORAN PENYELIDIKAN TANAH

PROYEK : THE QUEST HOTEL

ALAMAT : JL. MANGKUBUMI YOGYAKARTA

A. PENDAHULUAN

1. Atas permintaan :

Nama : Bp. Heri Susanto

Alamat : JL. Godean 23B KM.4 Yogyakarta

Oleh Laboratorium Mekanika Tanah Fakultas Teknik Universitas Atma Jaya Yogyakarta telah dilaksanakan penyelidikan tanah di lahan "The Quest Hotel". Lokasi proyek di JL. Mangkubumi Yogyakarta seperti yang tersebut di atas.

2. Maksud penyelidikan tanah adalah untuk mengetahui *soil classification analysis*, *allowable bearing capacity*, *N Value*, *soil properties* yang akan digunakan sebagai data perencanaan fondasi.

3. Pelaksanaan penyelidikan yang meliputi pekerjaan lapangan dan laboratorium telah dilaksanakan pada tanggal 19 – 29 Desember 2011.

B. UMUM

1. Proyek yang diselidiki adalah: penyelidikan tanah "The Quest Hotel". Bangunan direncanakan 7 (tujuh) lantai .
2. Lokasi proyek di JL. Mangkubumi Yogyakarta. Kondisi lahan proyek relatif datar dan merupakan lahan kosong. Sebelah Utara berbatasan dengan Bank Muamalat dan sebelah

Selatan proyek berbatasan dengan Prodia. Sebelah Timur proyek berbatasan dengan Rumah Warga. Sedangkan, sebelah Barat proyek berbatasan dengan JL. P.Mangkubumi.

3. Penyelidikan tanah yang telah dilaksanakan : Pengujian sondir biconus (CPT) sebanyak 5 titik, SB1, SB2, SB3, SB4 dan SB5, untuk mengukur nilai sondir lapisan-lapisan tanah yang dilaksanakan sampai kedalaman tanah padat / keras dengan kapasitas nilai sondir berat maksimum 60 kNf (lampiran).
4. SPT dan *Core drill / Boring* sebanyak 3 titik dengan kedalaman maksimal -30,00 m (Lampiran).
5. *Lay out* penyelidikan tanah CPT dan SPT dapat dilihat pada Lampiran.
6. Sebagai peil referensi (acuan) $\pm 0,00$ m dari permukaan tanah jalan (Lampiran).
7. Pekerjaan laboratorium berupa pemeriksaan contoh tanah serta sifat-sifat mekanis tanah/*soil properties* (Lampiran).

C. KLASIFIKASI TANAH

Dari data hasil *core drill (Boring)* BH1 dapat diinformasikan lapisan tanah di lokasi proyek adalah sebagai berikut :

Tabel 1. Kedalaman dan jenis tanah titik *core drill BH1, BH2 dan BH3*

Kedalaman dari permukaan tanah setempat (m)	N1	N2	N3	N _{rerata}	jenis tanah	Relative Density
0,00 s/d 1,50	24.00	21.00	20.00	21.67	Pasir	Kepadatan Sedang
1,50 s/d 3,00	20.00	20.00	20.00	20.00	Pasir	Kepadatan Sedang
3,00 s/d 4,50	16.00	16.00	14.00	15.33	Pasir	Kepadatan Sedang
4,50 s/d 6,00	15.00	18.00	13.00	15.33	Pasir	Kepadatan Sedang
6,00 s/d 7,50	24.00	23.00	22.00	23.00	Pasir	Kepadatan Sedang
7,50 s/d 9,00	30.00	24.00	30.00	28.00	Pasir	Kepadatan Sedang
9,00 s/d 10,50	33.00	30.00	30.00	31.00	Pasir	Padat
10,50 s/d 12,00	25.00	30.00	32.00	29.00	Pasir	Kepadatan Sedang
12,00 s/d 13,50	14.00	28.00	30.00	24.00	Pasir	Kepadatan Sedang
13,50 s/d 15,00	14.00	20.00	17.00	17.00	Pasir	Kepadatan Sedang
15,00 s/d 16,50	25.00	22.00	19.00	22.00	Pasir	Kepadatan Sedang
16,50 s/d 18,00	23.00	26.00	25.00	24.67	Pasir	Kepadatan Sedang
18,00 s/d 19,50	23.00	24.00	24.00	23.67	Pasir	Kepadatan Sedang
19,50 s/d 21,00	24.00	25.00	25.00	24.67	Pasir	Kepadatan Sedang
21,00 s/d 22,50	38.00	32.00	38.00	36.00	Pasir Lanau	Padat
22,50 s/d 24,00	30.00	36.00	39.00	35.00	Pasir Lanau	Padat
24,00 s/d 25,50	25.00	25.00	25.00	25.00	Pasir Kerikil	Padat
25,50 s/d 27,00	30.00	28.00	25.00	27.67	Pasir Kerikil	Padat
27,00 s/d 28,50	30.00	30.00	30.00	30.00	Pasir Kerikil	Padat
28,50 s/d 30,00	31.00	32.00	31.00	31.33	Pasir Kerikil	Padat

Note: Hubungan antara kepadatan relative dan N value (peck, Meyerhof)

D. MUKA AIR TANAH

Permukaan air tanah pada kedalaman sekitar peil -13,00 m dari peil referensi $\pm 0,00$ m dari permukaan jalan. Kondisi permukaan air tanah ini dapat merupakan suatu pertimbangan bagi perencana dalam menentukan kedalaman fondasi dan tipe fondasi yang representatif.

E. STRATIGRAFI LAPISAN TANAH

Pengujian sondir (CPT) yang dilakukan sebanyak 5 titik uji, yaitu uji sondir SB1, SB2, SB3, SB4 dan SB5. Sondir SB1~SB5 menginformasikan sebagai berikut :

Sondir SB2 : Pada kedalaman -1,00 ~ -3,00m, tahanan konus q_c rata-rata (*static cone resistance*) diantara 6,50MPa sampai dengan 18,00MPa dengan nilai *friction ratio* r rata-rata diantara 3,33% sampai dengan 1,67% dan dapat diperkirakan berupa Pasir Lanau sedikit Lempung dengan kepadatan sedang.

Pada kedalaman -4,00 ~ -6,00m, tahanan konus q_c rata-rata (*static cone resistance*) diantara 25,50MPa sampai dengan 60,00MPa dengan nilai *friction ratio* r rata-rata diantara 1,07% sampai dengan 0,00% dan dapat diperkirakan berupa Pasir Kerikil padat / keras.

Sondir SB2, SB3, SB4 dan SB5 : Pada kedalaman -1,00 ~ -9,00m, tahanan konus q_c rata-rata (*static cone resistance*) diantara 2,85MPa sampai dengan 27,03MPa dengan nilai *friction ratio* r rata-rata diantara 5,32% sampai dengan 0,75% dan dapat diperkirakan berupa Pasir Lanau Lempungsedikit Lempung dengan kepadatan berganti ganti antara Lunak , Sedang dan Keras.

Pada kedalaman -10,00 ~ -11,00m, tahanan konus q_c rata-rata (*static cone resistance*) diantara 34,88MPa sampai dengan 52,03MPa dengan nilai *friction ratio* r rata-rata diantara 0,56% sampai dengan 0,17% dan dapat diperkirakan berupa Pasir Kerikil padat / keras.

F. DAYA DUKUNG TANAH

Dari analisis data sondir dan bor selanjutnya dapat direkomendasikan nilai daya dukung ijin tanah (*allowable bearing capacity*), jenis tanah sebagai berikut ini:

Tabel 2. Daya dukung ijin tanah, *static cone resistance* **SB2**

Kedalam dari permukaan tanah setempat (m)	Daya dukung ijin rata-rata (MPa)	<i>Static cone resistance</i> (q_c mean) (MPa)
-1.00	0.300	9.000
-2.00	0.217	6.500
-3.00	0.600	18.000
-4.00	0.850	25.500
-5.00	0.900	27.000
-6.00	2.000	60.000

Note: Dengan angka aman (safety factor) = 3,00.

1MPa = 10 kg/cm².

Tabel 3. Daya dukung ijin tanah, *static cone resistance* **SB1, SB3, SB4 dan SB5**

Kedalam dari permukaan tanah setempat (m)	Daya dukung ijin rata-rata (MPa)	<i>Static cone resistance</i> (q_c mean) (MPa)
-1.00	0.095	2.850
-2.00	0.721	21.625
-3.00	0.098	2.925
-4.00	0.458	13.750
-5.00	0.139	4.175
-6.00	0.174	5.225
-7.00	0.368	11.050
-8.00	0.901	27.025
-9.00	0.408	12.250
-10.00	1.163	34.875
-11.00	1.734	52.025

Note: Dengan angka aman (safety factor) = 3,00.

1MPa = 10 kg/cm².

G. PENUTUP

Apabila ternyata dalam pelaksanaan pekerjaan atau pembuatan fondasi nantinya dijumpai hal-hal yang menyimpang/meragukan atau tidak terduga, maka perlu diadakan penyesuaian dengan keadaan tersebut dan keputusan hendaknya diambil oleh pihak-pihak yang menguasai persoalannya.

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SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Location	: Jl. Mangkubumi Yogyakarta	Date	: 19 Desember 2011
No. of CPT	: SB. 1	Weather	: Cerah
Elevation	: +0,35 meter dari muka jalan	Surveyor	: Lab.Mektan FT.UAJY
Ground Water Depth	: -20.00 meter	Project	: The Quest Hotel

Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹	Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹
0.00	0	0	0.0	0	0						
0.20	110	120	1.5	30	30	8.20	190	205	2.3	45	1131
0.40	84	93	1.4	27	57	8.40	181	190	1.4	27	1158
0.60	25	32	1.1	21	78	8.60	170	178	1.2	24	1182
0.80	24	29	0.8	15	93	8.80	136	142	0.9	18	1200
1.00	22	28	0.9	18	111	9.00	110	120	1.5	30	1230
1.20	25	32	1.1	21	132	9.20	125	137	1.8	36	1266
1.40	34	45	1.7	33	165	9.40	168	174	0.9	18	1284
1.60	40	50	1.5	30	195	9.60	210	218	1.2	24	1308
1.80	65	74	1.4	27	222	9.80	335	342	1.1	21	1329
2.00	195	210	2.3	45	267	10.00	380	394	2.1	42	1371
2.20	240	255	2.3	45	312	10.20	415	425	1.5	30	1401
2.40	88	94	0.9	18	330	10.40	418	428	1.5	30	1431
2.60	53	64	1.7	33	363	10.60	435	450	2.3	45	1476
2.80	18	23	0.8	15	378	10.80	600	600	0.0	0	1476
3.00	25	30	0.8	15	393	11.00					
3.20	31	40	1.4	27	420	11.20					
3.40	45	51	0.9	18	438	11.40					
3.60	53	64	1.7	33	471	11.60					
3.80	104	115	1.7	33	504	11.80					
4.00	125	131	0.9	18	522	12.00					
4.20	121	130	1.4	27	549	12.20					
4.40	118	125	1.1	21	570	12.40					
4.60	93	108	2.3	45	615	12.60					
4.80	63	72	1.4	27	642	12.80					
5.00	42	51	1.4	27	669	13.00					
5.20	46	53	1.1	21	690	13.20					
5.40	75	80	0.8	15	705	13.40					
5.60	78	88	1.5	30	735	13.60					
5.80	90	109	2.9	57	792	13.80					
6.00	50	60	1.5	30	822	14.00					
6.20	61	70	1.4	27	849	14.20					
6.40	78	82	0.6	12	861	14.40					
6.60	170	181	1.7	33	894	14.60					
6.80	123	130	1.1	21	915	14.80					
7.00	112	118	0.9	18	933	15.00					
7.20	110	121	1.7	33	966	15.20					
7.40	115	120	0.8	15	981	15.40					
7.60	205	220	2.3	45	1026	15.60					
7.80	265	277	1.8	36	1062	15.80					
8.00	310	318	1.2	24	1086	16.00					



SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Project : The Quest Hotel - Jl. Mangkubumi, Yogyakarta
No. of CPT : SB. 1 Elevation : +0,35 meter dari muka jalan
Date : 19 Desember 2011 Ground Water Depth : -20.00 meter





SOIL MECHANICS LABORATORY
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FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Location	: Jl. Mangkubumi Yogyakarta	Date	: 19 Desember 2011
No. of CPT	: SB. 2	Weather	: Cerah
Elevation	: +1,80 meter dari muka jalan	Surveyor	: Lab.Mektan FT.UAJY
Ground Water Depth	: -20.00 meter	Project	: The Quest Hotel

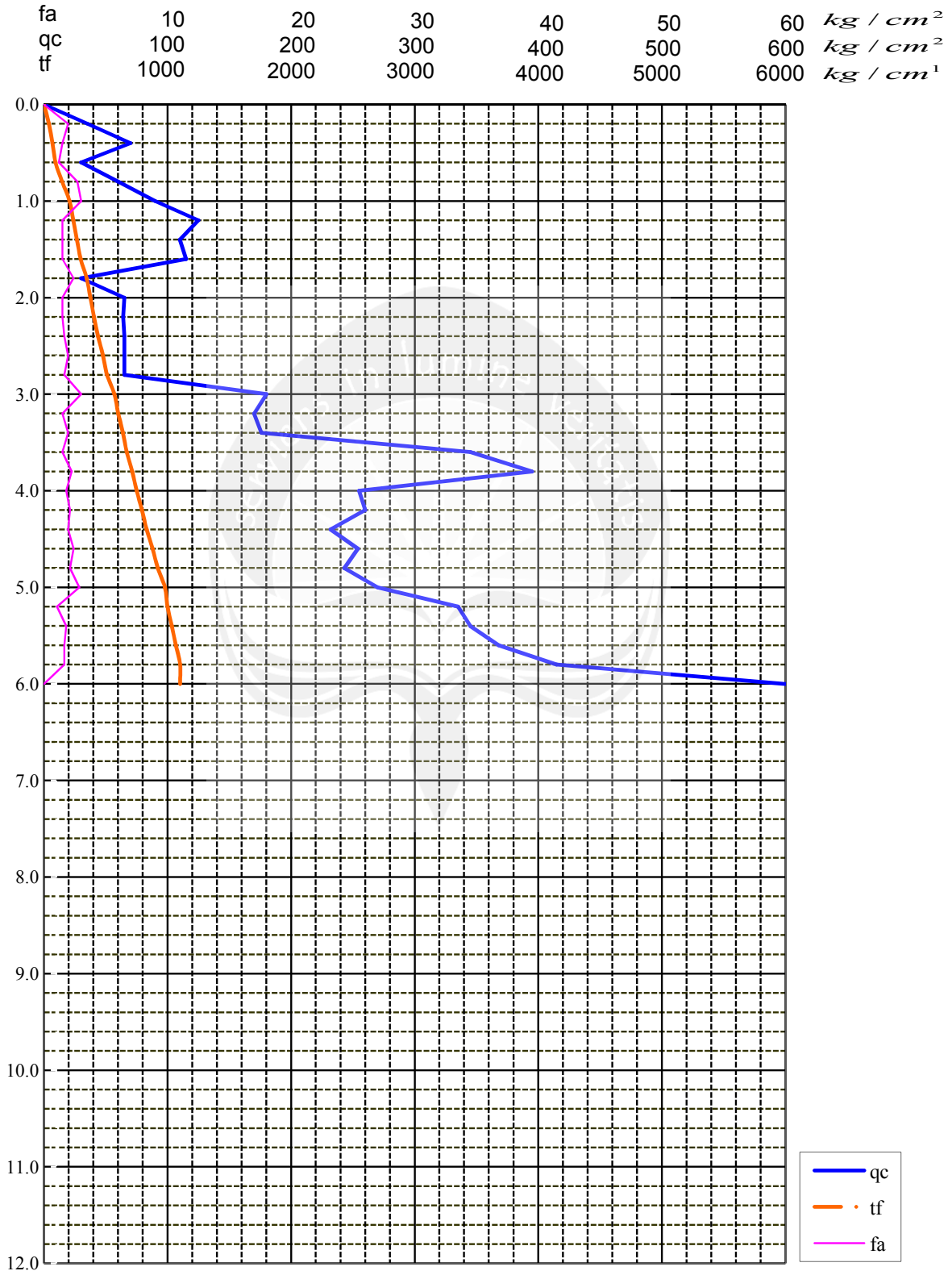
Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹	Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹
0.00	0	0	0.0	0	0						
0.20	35	48	2.0	39	39	8.20					
0.40	70	80	1.5	30	69	8.40					
0.60	30	38	1.2	24	93	8.60					
0.80	60	78	2.7	54	147	8.80					
1.00	90	110	3.0	60	207	9.00					
1.20	125	135	1.5	30	237	9.20					
1.40	110	120	1.5	30	267	9.40					
1.60	115	125	1.5	30	297	9.60					
1.80	30	46	2.4	48	345	9.80					
2.00	65	75	1.5	30	375	10.00					
2.20	64	74	1.5	30	405	10.20					
2.40	65	76	1.7	33	438	10.40					
2.60	65	78	2.0	39	477	10.60					
2.80	65	76	1.7	33	510	10.80					
3.00	180	200	3.0	60	570	11.00					
3.20	170	180	1.5	30	600	11.20					
3.40	176	189	2.0	39	639	11.40					
3.60	345	355	1.5	30	669	11.60					
3.80	395	410	2.3	45	714	11.80					
4.00	255	267	1.8	36	750	12.00					
4.20	260	274	2.1	42	792	12.20					
4.40	232	245	2.0	39	831	12.40					
4.60	254	270	2.4	48	879	12.60					
4.80	243	257	2.1	42	921	12.80					
5.00	270	289	2.9	57	978	13.00					
5.20	335	342	1.1	21	999	13.20					
5.40	345	357	1.8	36	1035	13.40					
5.60	368	379	1.7	33	1068	13.60					
5.80	415	426	1.7	33	1101	13.80					
6.00	600	600	0.0	0	1101	14.00					
6.20						14.20					
6.40						14.40					
6.60						14.60					
6.80						14.80					
7.00						15.00					
7.20						15.20					
7.40						15.40					
7.60						15.60					
7.80						15.80					
8.00						16.00					



SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Project : The Quest Hotel - Jl. Mangkubumi, Yogyakarta
No. of CPT : SB. 2 Elevation : +1,80 meter dari muka jalan
Date : 19 Desember 2011 Ground Water Depth : -20.00 meter





**SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY**

10 TON DUTCH CONE PENETRATION TEST

Location	: Jl. Mangkubumi Yogyakarta	Date	: 20 Desember 2011
No. of CPT	: SB. 3	Weather	: Cerah
Elevation	: +0,35 meter dari muka jalan	Surveyor	: Lab.Mektan FT.UAJY
Ground Water Depth	: -20.00 meter	Project	: The Quest Hotel

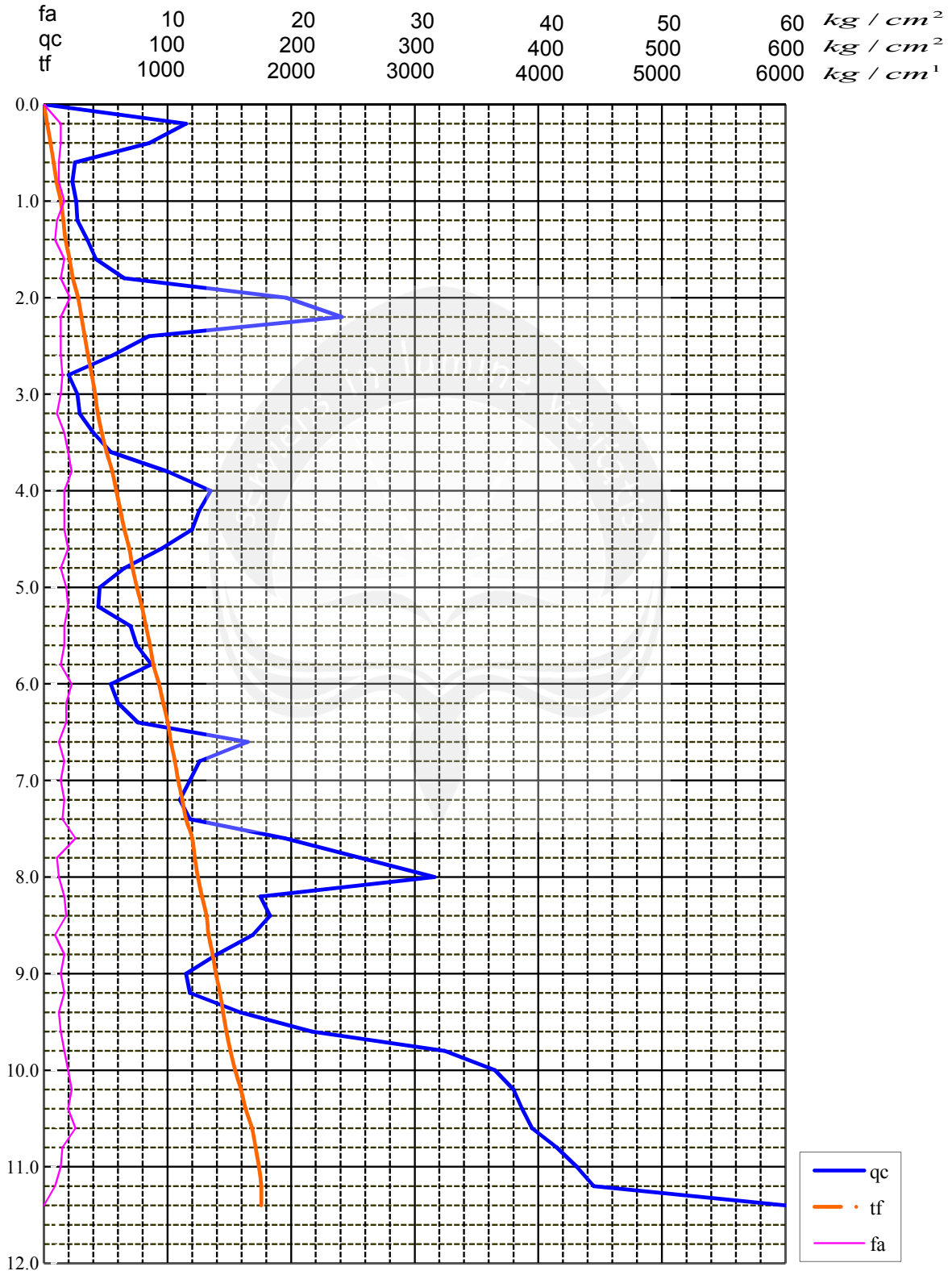
Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹	Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹
0.00	0	0	0.0	0	0						
0.20	115	124	1.4	27	27	8.20	175	186	1.7	33	1278
0.40	85	94	1.4	27	54	8.40	183	195	1.8	36	1314
0.60	25	33	1.2	24	78	8.60	169	175	0.9	18	1332
0.80	23	31	1.2	24	102	8.80	140	151	1.7	33	1365
1.00	26	37	1.7	33	135	9.00	115	124	1.4	27	1392
1.20	27	34	1.1	21	156	9.20	118	129	1.7	33	1425
1.40	35	41	0.9	18	174	9.40	159	167	1.2	24	1449
1.60	42	53	1.7	33	207	9.60	217	226	1.4	27	1476
1.80	65	74	1.4	27	234	9.80	324	335	1.7	33	1509
2.00	196	210	2.1	42	276	10.00	365	378	2.0	39	1548
2.20	241	250	1.4	27	303	10.20	380	395	2.3	45	1593
2.40	85	94	1.4	27	330	10.40	387	400	2.0	39	1632
2.60	55	64	1.4	27	357	10.60	395	412	2.6	51	1683
2.80	20	30	1.5	30	387	10.80	415	425	1.5	30	1713
3.00	27	36	1.4	27	414	11.00	431	440	1.4	27	1740
3.20	29	36	1.1	21	435	11.20	445	451	0.9	18	1758
3.40	40	51	1.7	33	468	11.40	600	600	0.0	0	1758
3.60	54	67	2.0	39	507	11.60					
3.80	100	115	2.3	45	552	11.80					
4.00	135	146	1.7	33	585	12.00					
4.20	126	137	1.7	33	618	12.20					
4.40	120	131	1.7	33	651	12.40					
4.60	95	108	2.0	39	690	12.60					
4.80	65	74	1.4	27	717	12.80					
5.00	45	57	1.8	36	753	13.00					
5.20	44	57	2.0	39	792	13.20					
5.40	70	81	1.7	33	825	13.40					
5.60	75	86	1.7	33	858	13.60					
5.80	87	96	1.4	27	885	13.80					
6.00	54	69	2.3	45	930	14.00					
6.20	60	72	1.8	36	966	14.20					
6.40	76	88	1.8	36	1002	14.40					
6.60	165	173	1.2	24	1026	14.60					
6.80	126	137	1.7	33	1059	14.80					
7.00	118	127	1.4	27	1086	15.00					
7.20	110	121	1.7	33	1119	15.20					
7.40	118	128	1.5	30	1149	15.40					
7.60	195	212	2.6	51	1200	15.60					
7.80	256	263	1.1	21	1221	15.80					
8.00	316	324	1.2	24	1245	16.00					



SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Project : The Quest Hotel - Jl. Mangkubumi, Yogyakarta
No. of CPT : SB. 3 Elevation : +0,35 meter dari muka jalan
Date : 20 Desember 2011 Ground Water Depth : -20.00 meter





**SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY**

10 TON DUTCH CONE PENETRATION TEST

Location	: Jl. Mangkubumi Yogyakarta	Date	: 20 Desember 2011
No. of CPT	: SB. 4	Weather	: Cerah
Elevation	: +0,35 meter dari muka jalan	Surveyor	: Lab.Mektan FT.UAJY
Ground Water Depth	: -20.00 meter	Project	: The Quest Hotel

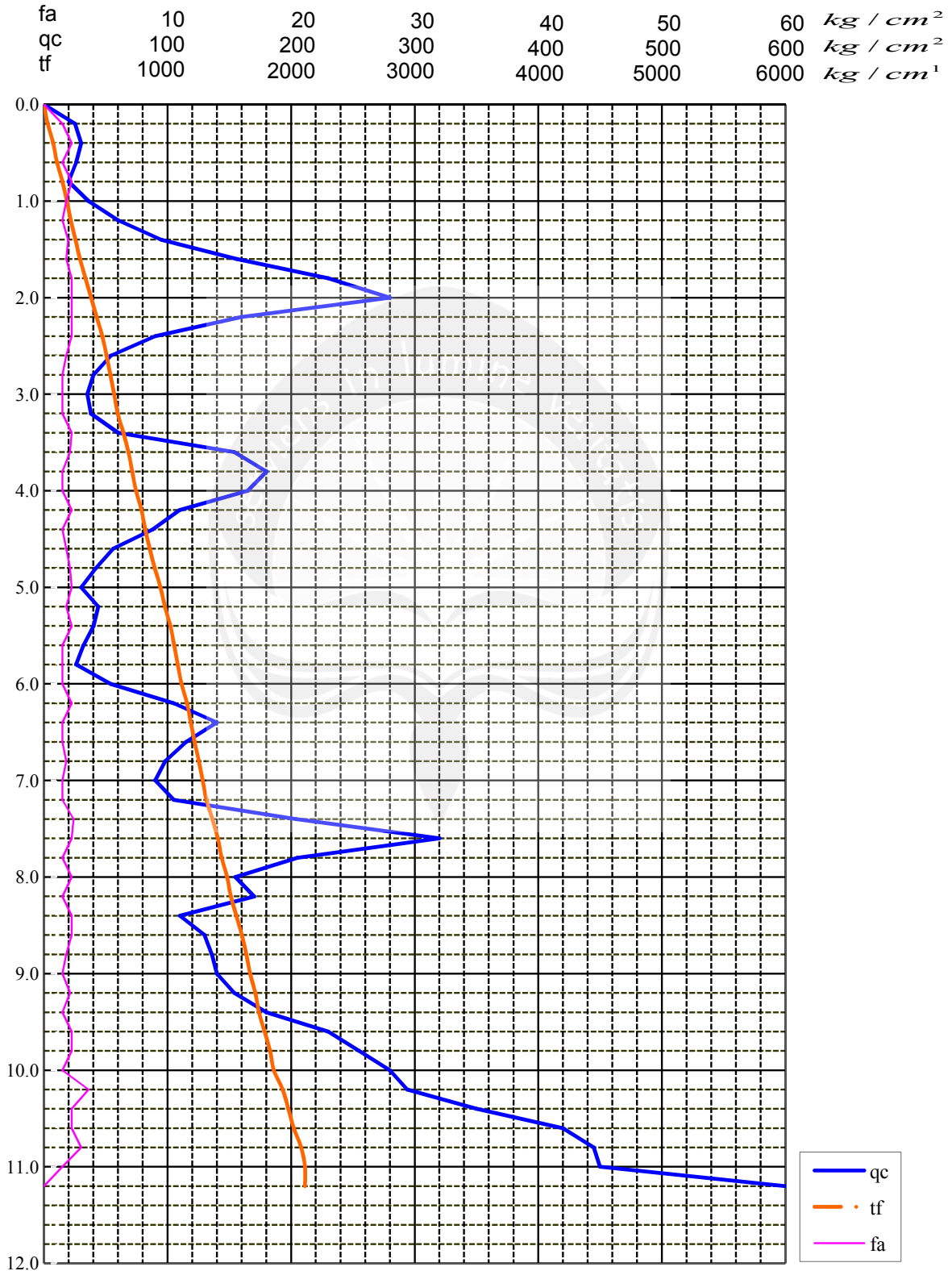
Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹	Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹
0.00	0	0	0.0	0	0						
0.20	25	35	1.5	30	30	8.20	170	180	1.5	30	1512
0.40	30	45	2.3	45	75	8.40	110	125	2.3	45	1557
0.60	26	36	1.5	30	105	8.60	130	145	2.3	45	1602
0.80	20	35	2.3	45	150	8.80	136	148	1.8	36	1638
1.00	36	48	1.8	36	186	9.00	140	150	1.5	30	1668
1.20	60	70	1.5	30	216	9.20	154	168	2.1	42	1710
1.40	95	108	2.0	39	255	9.40	180	190	1.5	30	1740
1.60	156	168	1.8	36	291	9.60	230	245	2.3	45	1785
1.80	230	245	2.3	45	336	9.80	255	270	2.3	45	1830
2.00	280	295	2.3	45	381	10.00	280	290	1.5	30	1860
2.20	160	175	2.3	45	426	10.20	294	318	3.6	72	1932
2.40	90	105	2.3	45	471	10.40	350	365	2.3	45	1977
2.60	54	66	1.8	36	507	10.60	420	435	2.3	45	2022
2.80	40	50	1.5	30	537	10.80	445	465	3.0	60	2082
3.00	35	45	1.5	30	567	11.00	450	460	1.5	30	2112
3.20	38	48	1.5	30	597	11.20	600	600	0.0	0	2112
3.40	60	75	2.3	45	642	11.40					
3.60	154	168	2.1	42	684	11.60					
3.80	180	190	1.5	30	714	11.80					
4.00	165	175	1.5	30	744	12.00					
4.20	110	125	2.3	45	789	12.20					
4.40	88	98	1.5	30	819	12.40					
4.60	56	68	1.8	36	855	12.60					
4.80	42	56	2.1	42	897	12.80					
5.00	30	45	2.3	45	942	13.00					
5.20	44	56	1.8	36	978	13.20					
5.40	40	55	2.3	45	1023	13.40					
5.60	32	42	1.5	30	1053	13.60					
5.80	26	36	1.5	30	1083	13.80					
6.00	54	64	1.5	30	1113	14.00					
6.20	105	120	2.3	45	1158	14.20					
6.40	140	150	1.5	30	1188	14.40					
6.60	115	125	1.5	30	1218	14.60					
6.80	98	110	1.8	36	1254	14.80					
7.00	90	100	1.5	30	1284	15.00					
7.20	105	115	1.5	30	1314	15.20					
7.40	204	220	2.4	48	1362	15.40					
7.60	320	335	2.3	45	1407	15.60					
7.80	205	215	1.5	30	1437	15.80					
8.00	155	170	2.3	45	1482	16.00					



SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Project : The Quest Hotel - Jl. Mangkubumi, Yogyakarta
No. of CPT : SB. 4 Elevation : +0,35 meter dari muka jalan
Date : 20 Desember 2011 Ground Water Depth : -20.00 meter





SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Location	: Jl. Mangkubumi Yogyakarta	Date	: 20 Desember 2011
No. of CPT	: SB. 5	Weather	: Cerah
Elevation	: +0,35 meter dari muka jalan	Surveyor	: Lab.Mektan FT.UAJY
Ground Water Depth	: -20.00 meter	Project	: The Quest Hotel

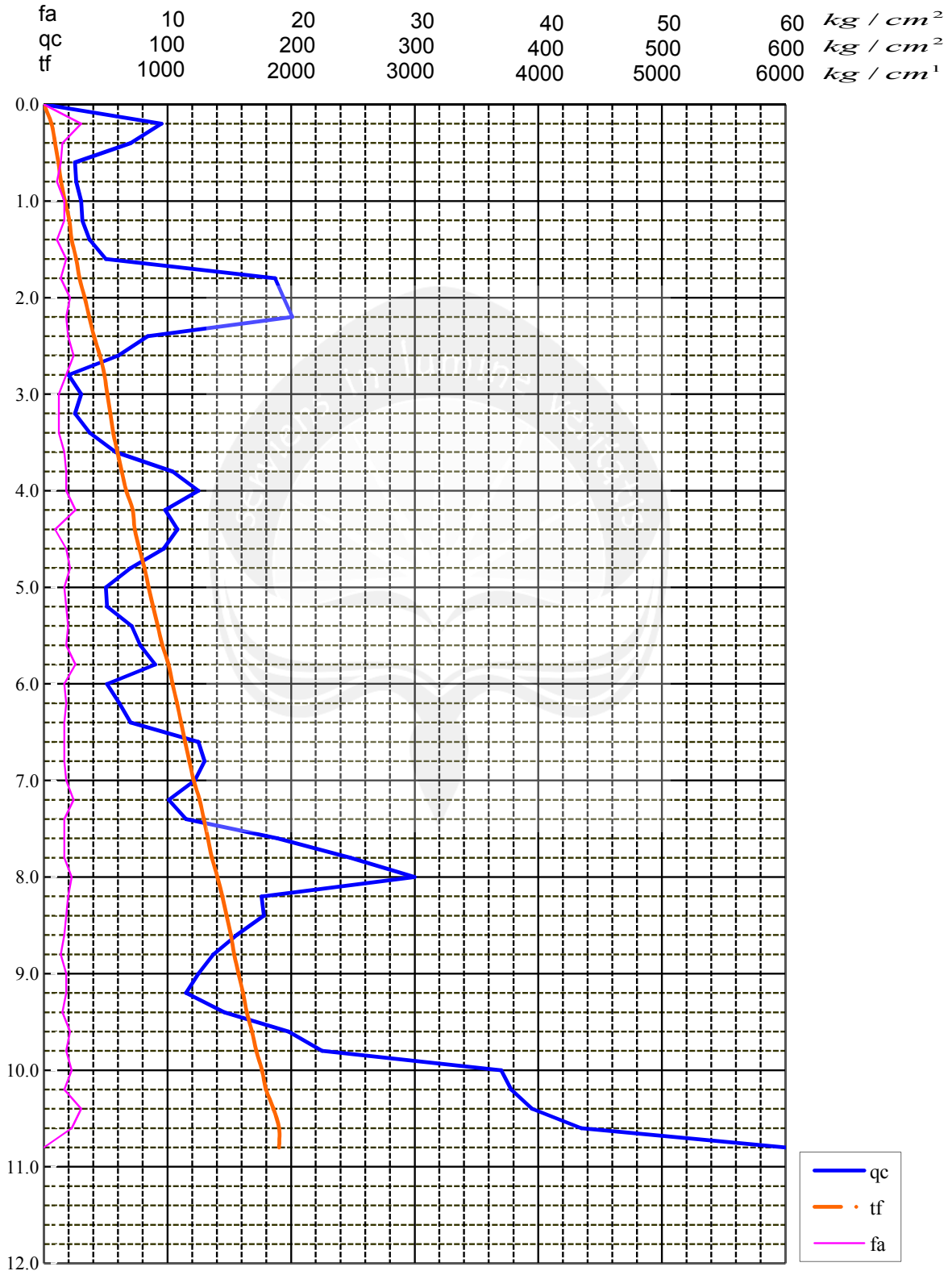
Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹	Keda-laman meter	C kg/cm ²	C + F Kg/cm ²	L F Kg/cm ²	T F Kg/cm ¹	Jumlah T F Kg/cm ¹
0.00	0	0	0.0	0	0						
0.20	95	115	3.0	60	60	8.20	176	189	2.0	39	1443
0.40	70	80	1.5	30	90	8.40	178	190	1.8	36	1479
0.60	25	34	1.4	27	117	8.60	156	167	1.7	33	1512
0.80	26	33	1.1	21	138	8.80	137	146	1.4	27	1539
1.00	30	41	1.7	33	171	9.00	125	137	1.8	36	1575
1.20	31	42	1.7	33	204	9.20	115	127	1.8	36	1611
1.40	37	44	1.1	21	225	9.40	146	156	1.5	30	1641
1.60	50	62	1.8	36	261	9.60	198	212	2.1	42	1683
1.80	187	196	1.4	27	288	9.80	225	237	1.8	36	1719
2.00	194	208	2.1	42	330	10.00	370	385	2.3	45	1764
2.20	201	213	1.8	36	366	10.20	378	389	1.7	33	1797
2.40	84	97	2.0	39	405	10.40	395	415	3.0	60	1857
2.60	60	76	2.4	48	453	10.60	435	450	2.3	45	1902
2.80	20	32	1.8	36	489	10.80	600	600	0.0	0	1902
3.00	30	38	1.2	24	513	11.00					
3.20	25	33	1.2	24	537	11.20					
3.40	37	45	1.2	24	561	11.40					
3.60	58	69	1.7	33	594	11.60					
3.80	104	116	1.8	36	630	11.80					
4.00	125	137	1.8	36	666	12.00					
4.20	98	115	2.6	51	717	12.20					
4.40	108	114	0.9	18	735	12.40					
4.60	97	109	1.8	36	771	12.60					
4.80	70	84	2.1	42	813	12.80					
5.00	50	61	1.7	33	846	13.00					
5.20	51	63	1.8	36	882	13.20					
5.40	71	84	2.0	39	921	13.40					
5.60	78	90	1.8	36	957	13.60					
5.80	90	107	2.6	51	1008	13.80					
6.00	51	62	1.7	33	1041	14.00					
6.20	61	73	1.8	36	1077	14.20					
6.40	70	81	1.7	33	1110	14.40					
6.60	125	136	1.7	33	1143	14.60					
6.80	130	141	1.7	33	1176	14.80					
7.00	122	134	1.8	36	1212	15.00					
7.20	101	117	2.4	48	1260	15.20					
7.40	115	126	1.7	33	1293	15.40					
7.60	189	200	1.7	33	1326	15.60					
7.80	248	259	1.7	33	1359	15.80					
8.00	300	315	2.3	45	1404	16.00					



SOIL MECHANICS LABORATORY
DEPARTMENT OF CIVIL ENGINEERING
FACULTY OF ENGINEERING - ATMA JAYA YOGYAKARTA UNIVERSITY

10 TON DUTCH CONE PENETRATION TEST

Project : The Quest Hotel - Jl. Mangkubumi, Yogyakarta
No. of CPT : SB. 5 Elevation : +0,35 meter dari muka jalan
Date : 20 Desember 2011 Ground Water Depth : -20.00 meter





SOIL MECHANIC LABORATORY
CIVIL ENGINEERING PROGRAM
FACULTY OF ENGINEERING, UAJY
44 BABARSARI STREET, YOGYAKARTA 55281
Tel: +62-274-487711 ext. 1055
Fax: +62-274-487748

Boring Number:

BH-1

BOR LOG

CLIENT:	PROJECT TITLE	: The Quest Hotel
PROJECT CONTRACT NUMBER:	PROJECT LOCATION	: Jl. Mangkubumi, Yogyakarta
DATE STARTED: 23 Desember 2011	GROUND ELEVATION	: + 0,35 m from road level
DATE COMPLETED : 23 Desember 2011	HOLE SIZE	: 7.295cm
DRILLING CONTRACTOR: SOIL MECH. LAB. UAJY	GROUND WATER LEVEL	: - 13,00 m
DRILLING METHOD: ROTARY SPINDLE, SKID MOUNTED TYPE	WEATHER CONDITION	: FINE
LOGGED BY: Mukarob, CS. CHECKED BY: SOIL MECH. LAB, UAJY	ESTIMATED SEASONAL HIGH : -	

Depth (m)	Graph Log	Material Description	Contact Depth (m)	Sample Number	Blow Counts (N Value)				Water Level Elevation (m)	SPT Value											
					N ₁	N ₂	N ₃	N _v		0	10	20	30	40	50	60					
1		Pasir kasar krikilan	3	I					-13.00												
2					5	12	12	24													
3					4	8	12	20													
4		Pasir halus	3																		
5					5	7	9	16													
6					4	6	9	15													
7		Pasir kasar	3																		
8					7	10	14	24													
9					7	12	18	30													
10		Pasir halus	1,5																		
11					8	15	18	33													
12					7	12	13	25													
13		Pasir sedang	3																		
14					7	4	10	14													
15					7	4	10	14													
16		Pasir lanau	3																		
17					5	12	13	25													
18					5	11	12	23													
19		Pasir krikilan	3																		
20					5	11	12	23													
21					6	12	12	24													
22		Batu pasir	3		II																
23						9	18	20		38											
24						9	15	15		30											
25		Pasir sedang	3																		
26					7	12	13	25													
27					9	15	15	30													
28		Pasir halus	3																		
29					10	13	17	30													
30					10	15	16	31													



REKAP HASIL PENGUJIAN TANAH

Proyek : The Quest Hotel
Lokasi : Jl. Mangkubumi, Yogyakarta
Tanggal : 28 Desember 2011

Titik	Kedalaman (m)	Kadar Air (%)	Berat Jenis (gr/cm ³)	γ_b (gr/cm ³)	γ_k (gr/cm ³)	Pengujian Geser Langsung	
						c (kg/cm ²)	θ°
B1	16	28,45	2,62	2,02	1,57	0,05	16,84
	22	61,83	2,52	1,66	1,03	0,08	19,61

Lab. Mekanika Tanah FT-UAJY,
Staf,

Oktoditya Ekaputra





ANALISA BUTIRAN

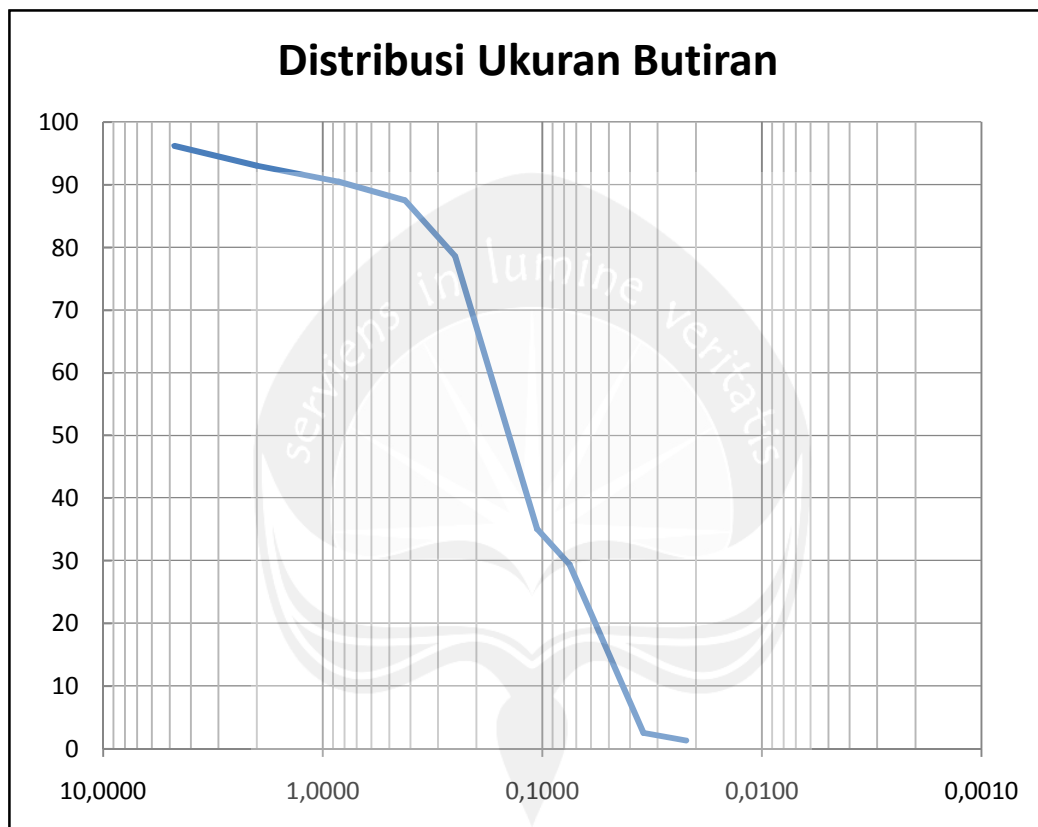
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B1

16



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	3,8	96,2	96,20
10	2,000	3,2	93,0	93,00
20	0,850	2,5	90,5	90,50
40	0,425	3,0	87,5	87,50
60	0,250	9,0	78,5	78,50
140	0,106	43,5	35	35,00
200	0,075	5,7	29,3	29,30
Pan		29,30		



ANALISA BUTIRAN

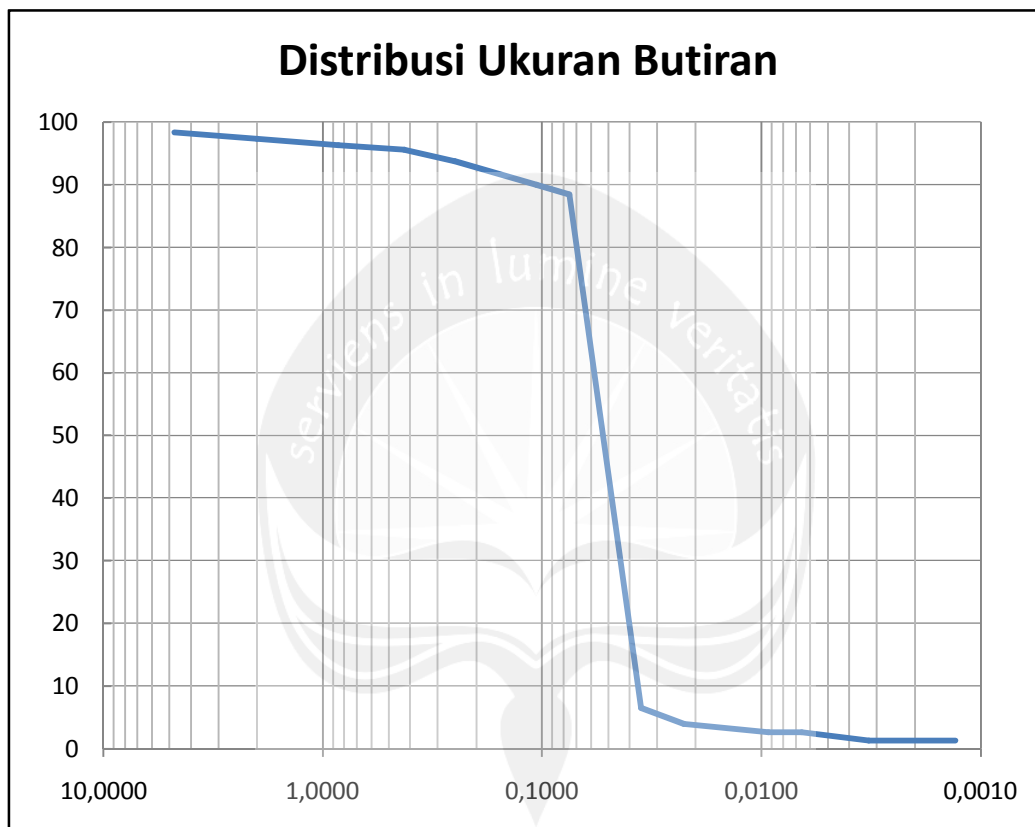
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B1

22



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	1,6	98,4	98,40
10	2,000	1,1	97,3	97,30
20	0,850	1,0	96,3	96,30
40	0,425	0,7	95,6	95,60
60	0,250	1,8	93,8	93,80
140	0,106	3,8	90	90,00
200	0,075	1,5	88,5	88,50
Pan		88,5		

BOR LOG

CLIENT:

PROJECT TITLE : The Quest Hotel

PROJECT CONTRACT NUMBER:

PROJECT LOCATION : Jl. Mangkubumi, Yogyakarta

DATE STARTED: 22 Desember 2011

GROUND ELEVATION : + 0,35 m from road level

DATE COMPLETED : 22 Desember 2011

HOLE SIZE : 7.295cm

DRILLING CONTRACTOR: SOIL MECH. LAB. UAJY

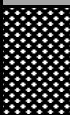
GROUND WATER LEVEL : - 13,00 m

DRILLING METHOD: ROTARY SPINDLE, SKID MOUNTED TYPE

WEATHER CONDITION : FINE

LOGGED BY: Mukarob, CS. CHECKED BY: SOIL MECH. LAB, UAJY

ESTIMATED SEASONAL HIGH : -

Depth (m)	Graph Log	Material Description	Contact Depth (m)	Sample Number	Blow Counts (N Value)				Water Level Elevation (m)	SPT Value								
					N ₁	N ₂	N ₃	N _V		0	10	20	30	40	50	60		
1		Tanah urug	1,5	I					 -13.00									
2		Pasir sedang	1,5		5	8	13	21										
3					5	8	12	20										
4		pasir halus	3															
5					4	7	9	16										
6					6	8	10	18										
7		Pasir kasar	3															
8					7	11	12	23										
9					7	12	12	24										
10		Pasir halus	1,5															
11					6	12	18	30										
12					8	15	15	30										
13		Pasir sedang	3															
14					7	14	14	28										
15					7	10	10	20										
16		Pasir lanau	3															
17					7	11	11	22										
18					9	12	14	26										
19		Pasir krikilan	1,5															
20																		
21				6	12	12	24											
22		Pasir sedang	3															
23				7	12	13	25											
24																		
25		Batu pasir	3															
26				10	17	15	32											
27				9	18	18	36											
28		Pasir sedang	3															
29				6	12	13	25											
30				5	13	15	28											
28		Pasir halus	3															
29				7	15	15	30											
30				7	15	17	32											



REKAP HASIL PENGUJIAN TANAH

Proyek : The Quest Hotel
Lokasi : Jl. Mangkubumi, Yogyakarta
Tanggal : 28 Desember 2011

Titik	Kedalaman (m)	Kadar Air (%)	Berat Jenis (gr/cm ³)	γ_b (gr/cm ³)	γ_k (gr/cm ³)	Pengujian Geser Langsung	
						c (kg/cm ²)	θ°
B2	16	29,06	2,63	1,97	1,52	0,05	20,90
	22	15,70	2,65	2,04	1,76	0,05	20,07

Lab. Mekanika Tanah FT-UAJY,
Staf,

Oktoditya Ekaputra





ANALISA BUTIRAN

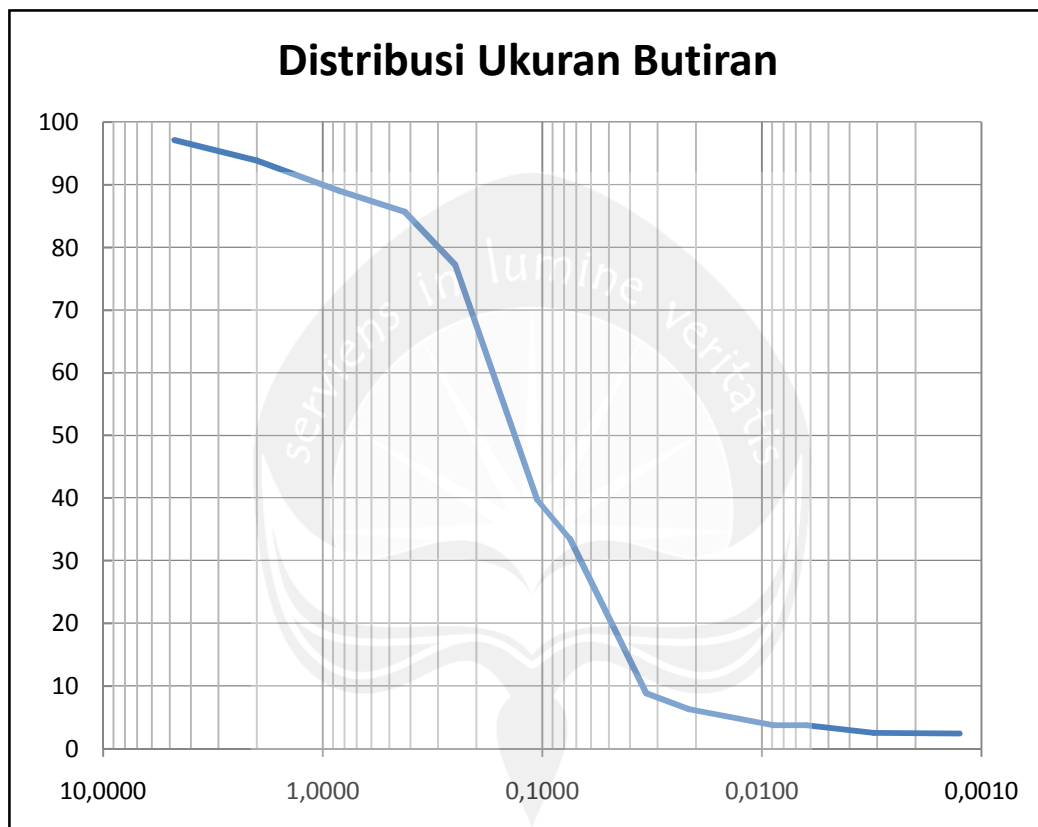
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B2

16



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	2,9	97,1	97,10
10	2,000	3,2	93,9	93,90
20	0,850	4,8	89,1	89,10
40	0,425	3,4	85,7	85,70
60	0,250	8,5	77,2	77,20
140	0,106	37,5	39,7	39,70
200	0,075	6,2	33,5	33,50
Pan		33,50		



ANALISA BUTIRAN

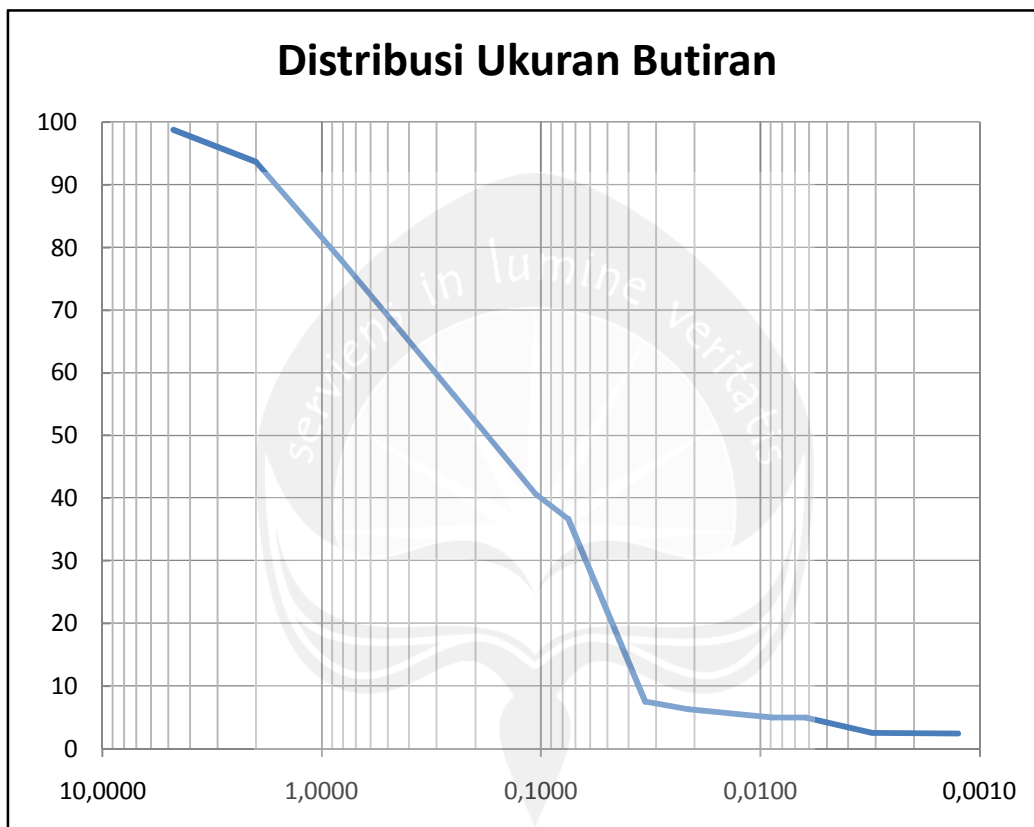
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B2

22



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	1,2	98,8	98,80
10	2,000	5,1	93,7	93,70
20	0,850	15,0	78,7	78,70
40	0,425	12,5	66,2	66,20
60	0,250	9,7	56,5	56,50
140	0,106	15,9	40,6	40,60
200	0,075	3,9	36,7	36,70
Pan		36,7		



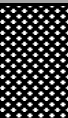
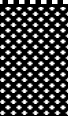
SOIL MECHANIC LABORATORY
CIVIL ENGINEERING PROGRAM
FACULTY OF ENGINEERING, UAJY
44 BABARSARI STREET, YOGYAKARTA 55281
Tel: +62-274-487711 ext. 1055
Fax: +62-274-487748

Boring Number:

BH-3

BOR LOG

CLIENT:	PROJECT TITLE : The Quest Hotel
PROJECT CONTRACT NUMBER:	PROJECT LOCATION : Jl. Mangkubumi, Yogyakarta
DATE STARTED: 21 Desember 2011	GROUND ELEVATION : + 0,35 m from road level
DATE COMPLETED : 21 Desember 2011	HOLE SIZE : 7.295cm
DRILLING CONTRACTOR: SOIL MECH. LAB. UAJY	GROUND WATER LEVEL : - 13,00 m
DRILLING METHOD: ROTARY SPINDLE, SKID MOUNTED TYPE	WEATHER CONDITION : FINE
LOGGED BY: Mukarob, CS. CHECKED BY: SOIL MECH. LAB, UAJY	ESTIMATED SEASONAL HIGH : -

Depth (m)	Graph Log	Material Description	Contact Depth (m)	Sample Number	Blow Counts (N Value)				Water Level Elevation (m)	SPT Value									
					N ₁	N ₂	N ₃	N _v		0	10	20	30	40	50	60			
1		Tanah urug	1,5	I					 -13.00										
2		Pasir kasar	1,5		5	8	12	20											
3					4	8	12	20											
4		pasir halus	3																
5					4	6	8	14											
6					4	5	8	13											
7		Pasir kasar	3																
8					2	10	12	22											
9					7	12	18	30											
10		Pasir halus	1,5																
11				6	12	18	30												
12		Pasir sedang	3																
13				8	15	17	32												
14		Pasir lanau	3																
15				7	15	15	30												
16				7	8	9	17												
17		Pasir krikilan	2,5																
18				5	12	13	25												
19		Pasir sedang	2,5																
20				7	12	12	24												
21		Batu pasir	3																
22				7	12	13	25												
23				10	18	20	38												
24		Pasir sedang	3																
25				9	20	19	39												
26				6	12	13	25												
27		Pasir halus	3																
28				5	12	13	25												
29				6	15	15	30												
30																			



REKAP HASIL PENGUJIAN TANAH

Proyek : The Quest Hotel
Lokasi : Jl. Mangkubumi, Yogyakarta
Tanggal : 28 Desember 2011

Titik	Kedalaman (m)	Kadar Air (%)	Berat Jenis (gr/cm ³)	γ_b (gr/cm ³)	γ_k (gr/cm ³)	Pengujian Geser Langsung	
						c (kg/cm ²)	θ°
B3	16	25,55	2,58	1,95	1,55	0,09	18,29
	22	74,87	2,44	1,64	0,94	0,16	14,63

Lab. Mekanika Tanah FT-UAJY,
Staf,

Oktoditya Ekaputra





ANALISA BUTIRAN

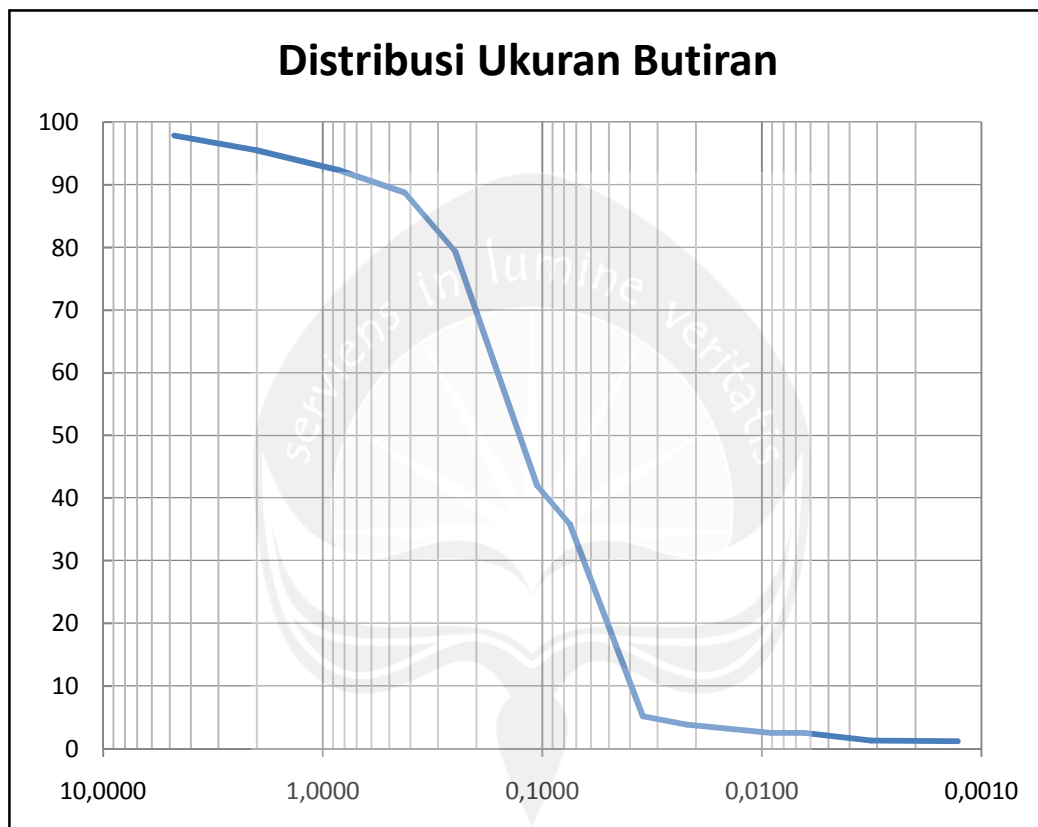
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B3

16



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	2,1	97,9	97,90
10	2,000	2,4	95,5	95,50
20	0,850	3,2	92,3	92,30
40	0,425	3,5	88,8	88,80
60	0,250	9,4	79,4	79,40
140	0,106	37,4	42	42,00
200	0,075	6,2	35,8	35,80
Pan		35,80		



ANALISA BUTIRAN

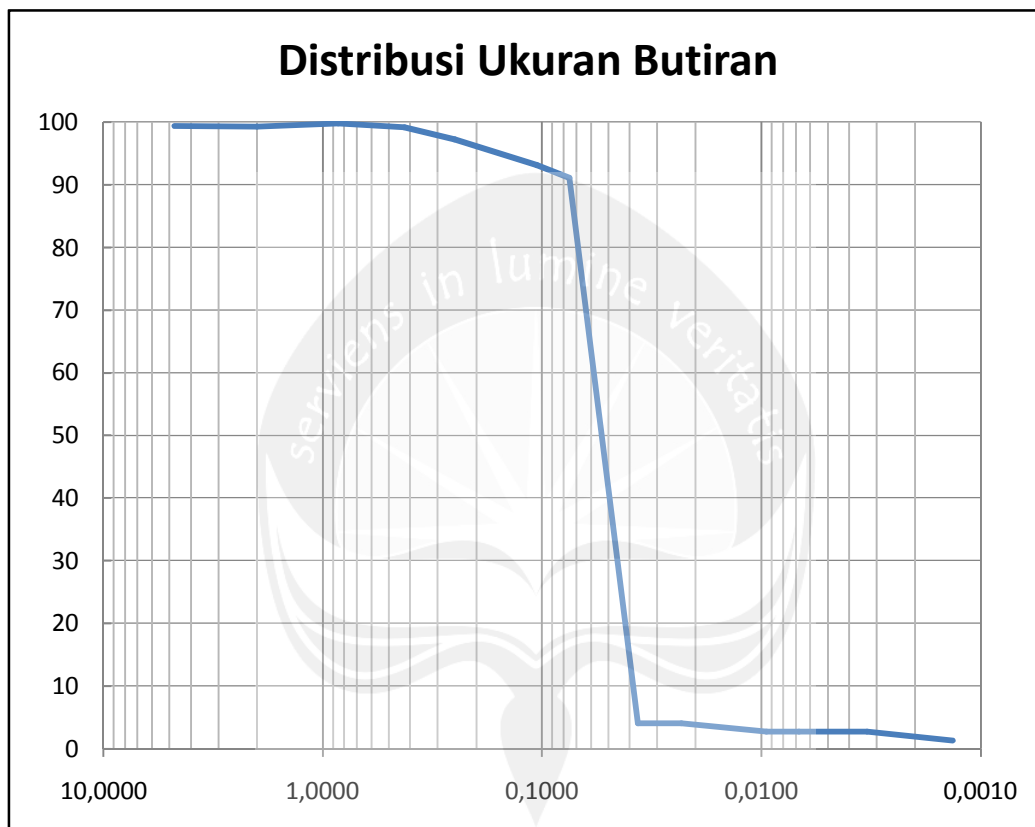
Proyek : The Quest Hotel

Lokasi : Jl. Mangkubumi, Yogyakarta

Tanggal : 28 Desember 2011

Titik : B3

22



No. Sieve	Ukuran Butiran	Berat Tertahan	Berat Lolos	Prosen
4	4,750	0,6	99,4	99,40
10	2,000	0,1	99,3	99,30
20	0,850	-0,5	99,8	99,80
40	0,425	0,6	99,2	99,20
60	0,250	2,0	97,2	97,20
140	0,106	4,0	93,2	93,20
200	0,075	2,1	91,1	91,10
Pan		91,1		