

Lampiran

Tabel 1. Analisa gempa statik Struktur 5A

$$\begin{aligned}
 T_x & : 0.972 \\
 C & \\
 =0.75/T_x & = 0.7500 \\
 I & = 1 \\
 R & = 8.5 \\
 C I / R & = 0.088 \\
 W_t & = 10563 \text{ kN} \\
 \\
 V=CIW_t/R & = 932 \text{ kN}
 \end{aligned}$$

| LANTAI | Elevation (h _i) | Comulative Mass | Mass / Floor | Weight / Floor | W _i x h _i |
|----------|--------------------------------|--------------------|-----------------|-------------------|---------------------------------|
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 5 | 18.00 | 203.23 | 203.23 | 1991.63 | 35849.38 |
| LANTAI 4 | 14.40 | 417.26 | 214.03 | 2097.47 | 30203.60 |
| LANTAI 3 | 10.80 | 634.15 | 216.89 | 2125.55 | 22955.96 |
| LANTAI 2 | 7.20 | 854.35 | 220.20 | 2157.95 | 15537.25 |
| LANTAI 1 | 3.60 | 1077.85 | 223.51 | 2190.35 | 7885.27 |
| | | | | Σ =10562.96 | Σ =112431.46 |

| Fix (Static) | V staticx |
|-----------------|-----------|
| (kNf) | (kN) |
| 297.18 | 297.18 |
| 250.38 | 547.56 |
| 190.30 | 737.86 |
| 128.80 | 866.66 |
| 65.37 | 932.03 |
| 932.03 | |

Tabel 2. Analisa gempa statik Struktur 5B

$$\begin{aligned}
 T_x & : 1.138 \\
 C = 0.75/T_x & = 0.7500 \\
 I & = 1 \\
 R & = 8.5 \\
 C I / R & = 0.088 \\
 W_t & = 10250 \\
 V = C I W_t / R & = 904
 \end{aligned}$$

| FLOOR | Elevation (hi) | Comulative Mass | Mass / Floor | Weight / Floor | Wi x hi |
|----------|----------------|-----------------|--------------|---------------------|----------------------|
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 5 | 18.00 | 200.80 | 200.80 | 1967.87 | 35421.70 |
| LANTAI 4 | 14.40 | 409.54 | 208.74 | 2045.63 | 29457.10 |
| LANTAI 3 | 10.80 | 620.70 | 211.16 | 2069.39 | 22349.43 |
| LANTAI 2 | 7.20 | 831.87 | 211.16 | 2069.39 | 14899.62 |
| LANTAI 1 | 3.60 | 1045.89 | 214.03 | 2097.47 | 7550.90 |
| | | | | $\Sigma = 10249.76$ | $\Sigma = 109678.75$ |

| Fix (Static) | V staticx |
|--------------|-----------|
| (kNf) | (kN) |
| 292.08 | 292.08 |
| 242.90 | 534.98 |
| 184.29 | 719.27 |
| 122.86 | 842.13 |
| 62.26 | 904.39 |
| 904.39 | |

Tabel 3. Analisa batas simpangan struktur 5A SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|----------|--------|-----------------------|-----------------------------|-----------------|-------------|-------|
| Lantai 5 | 3.6 | 0.033583 | 0.004854 | 0.001348 | 0.00353 | Ok!! |
| Lantai 4 | 3.6 | 0.028729 | 0.007216 | 0.002004 | 0.00353 | Ok!! |
| Lantai 3 | 3.6 | 0.021513 | 0.008958 | 0.002488 | 0.00353 | Ok!! |

| | | | | | | |
|----------|-----|----------|----------|----------|---------|------|
| Lantai 2 | 3.6 | 0.012555 | 0.008176 | 0.002271 | 0.00353 | Ok!! |
| Lantai 1 | 3.6 | 0.004379 | 0.004379 | 0.001216 | 0.00353 | Ok!! |

Tabel. 4 Analisa Kinerja batas ultimate struktur 5A SNI 1726 – 2002

| Lantai | Tinggi (m) | simpangan (m) | ξ | ξ Displ (m) | batas izin (m) | check |
|----------|-----------------|--------------------|-------|----------------------|---------------------|-------|
| Lantai 5 | 18 | 0.03358 | 5.95 | 0.200 | 0.36 | Ok!!! |
| Lantai 4 | 14.4 | 0.02873 | 5.95 | 0.171 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.02151 | 5.95 | 0.128 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.01256 | 5.95 | 0.075 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.00438 | 5.95 | 0.026 | 0.072 | Ok!!! |

Tabel 5. Analisa batas simpangan struktur 5B SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|----------|--------|-------------------------------|--|--------------------|----------------|-------|
| Lantai 5 | 3.6 | 0.045511 | 0.00661 | 0.0018 | 0.0035 | Ok!! |
| Lantai 4 | 3.6 | 0.038901 | 0.009172 | 0.0025 | 0.0035 | Ok!! |
| Lantai 3 | 3.6 | 0.029729 | 0.011763 | 0.0033 | 0.0035 | Ok!! |
| Lantai 2 | 3.6 | 0.017966 | 0.012071 | 0.0033 | 0.0035 | Ok!! |
| Lantai 1 | 3.6 | 0.005895 | 0.005895 | 0.0016 | 0.0035 | Ok!! |

Tabel 6 Analisa Kinerja batas ultimate struktur 5B SNI 1726 – 2002

| Lantai | Tinggi (m) | simpangan (m) | ξ | ξ Displ (m) | batas Izin (m) | check |
|----------|-----------------|--------------------|-------|----------------------|---------------------|-------|
| Lantai 5 | 18 | 0.04551 | 5.95 | 0.271 | 0.36 | Ok!!! |
| Lantai 4 | 14.4 | 0.0389 | 5.95 | 0.231 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.02973 | 5.95 | 0.177 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.01797 | 5.95 | 0.107 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.0059 | 5.95 | 0.035 | 0.072 | Ok!!! |

Tabel 7. Analisa gempa statik Struktur 10A

$$\begin{aligned}
 T_x & : 1.795 \\
 C & \\
 =0.75/T_x & = 0.4178 \\
 I & = 1 \\
 R & = 8.5
 \end{aligned}$$

$$\begin{aligned}
 C I / R &= 0.049 \\
 Wt &= 22417.6 \\
 V=CIWt/R &= 1101.96
 \end{aligned}$$

| Lantai | Elevation (hi) | Comulative Mass | Mass / Floor | Weight / Floor | Wi x hi |
|-----------|-------------------|--------------------|-----------------|------------------------|----------------------|
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 10 | 36.00 | 200.80 | 200.80 | 1967.87 | 70843.39 |
| LANTAI 9 | 32.40 | 407.12 | 206.31 | 2021.87 | 65508.65 |
| LANTAI 8 | 28.80 | 615.85 | 208.74 | 2045.63 | 58914.20 |
| LANTAI 7 | 25.20 | 829.88 | 214.03 | 2097.47 | 52856.29 |
| LANTAI 6 | 21.60 | 1050.08 | 220.20 | 2157.95 | 46611.76 |
| LANTAI 5 | 18.00 | 1281.52 | 231.44 | 2268.11 | 40826.02 |
| LANTAI 4 | 14.40 | 1520.90 | 239.37 | 2345.87 | 33780.56 |
| LANTAI 3 | 10.80 | 1769.97 | 249.07 | 2440.91 | 26361.85 |
| LANTAI 2 | 7.20 | 2028.74 | 258.77 | 2535.95 | 18258.85 |
| LANTAI 1 | 3.60 | 2287.51 | 258.77 | 2535.95 | 9129.43 |
| | | | | $\Sigma =$ 22417.60 | $\Sigma =$ 423091.01 |

| Fix (Static) | V staticx |
|--------------------|-----------|
| (kNf) | (kN) |
| 184.52 | 184.52 |
| 170.62 | 355.14 |
| 153.45 | 508.58 |
| 137.67 | 646.25 |
| 121.40 | 767.65 |
| 106.33 | 873.98 |
| 87.98 | 961.97 |
| 68.66 | 1030.63 |
| 47.56 | 1078.18 |
| 23.78 | 1101.96 |
| $\Sigma =$ 1101.96 | |

Tabel 8. Analisa gempa statik Struktur 10B

$$\begin{aligned}
 T_x & : 1.8 \\
 C = 0.75/T_x & = 0.4167 \\
 I & = 1 \\
 R & = 8.5 \\
 C I / R & = 0.049 \\
 W_t & = 21112.96 \\
 V = C I W_t / R & = 1034.95
 \end{aligned}$$

| LANTAI | Elevation (hi) | Comulative Mass | Mass / Floor | Weight / Floor | Wi x hi |
|-----------|-------------------|--------------------|-----------------|---------------------|----------------------|
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 10 | 36.00 | 200.80 | 200.80 | 1967.87 | 70843.39 |
| LANTAI 9 | 32.40 | 407.12 | 206.31 | 2021.87 | 65508.65 |
| LANTAI 8 | 28.80 | 615.85 | 208.74 | 2045.63 | 58914.20 |
| LANTAI 7 | 25.20 | 829.88 | 214.03 | 2097.47 | 52856.29 |
| LANTAI 6 | 21.60 | 1046.78 | 216.89 | 2125.55 | 45911.92 |
| LANTAI 5 | 18.00 | 1263.67 | 216.89 | 2125.55 | 38259.94 |
| LANTAI 4 | 14.40 | 1483.87 | 220.20 | 2157.95 | 31074.51 |
| LANTAI 3 | 10.80 | 1707.37 | 223.51 | 2190.35 | 23655.80 |
| LANTAI 2 | 7.20 | 1930.88 | 223.51 | 2190.35 | 15770.53 |
| LANTAI 1 | 3.60 | 2154.38 | 223.51 | 2190.35 | 7885.27 |
| | | | | $\Sigma = 21112.96$ | $\Sigma = 410680.51$ |

| Fix (Static) | V staticx |
|--------------------|-----------|
| (kNf) | (kN) |
| 178.53 | 178.53 |
| 165.09 | 343.62 |
| 148.47 | 492.09 |
| 133.20 | 625.29 |
| 115.70 | 740.99 |
| 96.42 | 837.41 |
| 78.31 | 915.72 |
| 59.61 | 975.33 |
| 39.74 | 1015.08 |
| 19.87 | 1034.95 |
| $\Sigma = 1034.95$ | |

Tabel 9. Analisa batas simpangan struktur 10A SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|-----------|--------|-------------------------|-------------------------------|-----------------|-------------|-------|
| Lantai 10 | 3.6 | 0.074018 | 0.004252 | 0.001181 | 0.00353 | Ok!! |
| Lantai 9 | 3.6 | 0.069766 | 0.007819 | 0.002172 | 0.00353 | Ok!! |
| Lantai 8 | 3.6 | 0.061947 | 0.008905 | 0.002474 | 0.00353 | Ok!! |
| Lantai 7 | 3.6 | 0.053042 | 0.009692 | 0.002692 | 0.00353 | Ok!! |
| Lantai 6 | 3.6 | 0.04335 | 0.009921 | 0.002756 | 0.00353 | Ok!! |
| Lantai 5 | 3.6 | 0.033429 | 0.009287 | 0.002580 | 0.00353 | Ok!! |
| Lantai 4 | 3.6 | 0.024142 | 0.008744 | 0.002429 | 0.00353 | Ok!! |
| Lantai 3 | 3.6 | 0.015398 | 0.007428 | 0.002063 | 0.00353 | Ok!! |
| Lantai 2 | 3.6 | 0.00797 | 0.005621 | 0.001561 | 0.00353 | Ok!! |
| Lantai 1 | 3.6 | 0.002349 | 0.002349 | 0.000653 | 0.00353 | Ok!! |

Tabel 10. Analisa Kinerja batas ultimate struktur 10A SNI 1726 – 2002

| Lantai | Tinggi (m) | simpangan (m) | ξ | ξ Displ (m) | batas izin (m) | check |
|-----------|--------------|-----------------|-------|-------------------|------------------|-------|
| Lantai 10 | 36 | 0.07402 | 5.95 | 0.440 | 0.72 | Ok!!! |
| Lantai 9 | 32.4 | 0.06977 | 5.95 | 0.415 | 0.648 | Ok!!! |
| Lantai 8 | 28.8 | 0.06195 | 5.95 | 0.369 | 0.576 | Ok!!! |
| Lantai 7 | 25.2 | 0.05304 | 5.95 | 0.316 | 0.504 | Ok!!! |
| Lantai 6 | 21.6 | 0.04335 | 5.95 | 0.258 | 0.432 | Ok!!! |
| Lantai 5 | 18 | 0.03343 | 5.95 | 0.199 | 0.36 | Ok!!! |
| Lantai 4 | 14.4 | 0.02414 | 5.95 | 0.144 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.0154 | 5.95 | 0.092 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.00797 | 5.95 | 0.047 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.00235 | 5.95 | 0.014 | 0.072 | Ok!!! |

Tabel 11. Analisa batas simpangan struktur 10B SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|-----------|--------|-------------------------|-------------------------------|-----------------|-------------|-------|
| Lantai 10 | 3.6 | 0.092003 | 0.00419 | 0.001164 | 0.00353 | Ok!! |
| Lantai 9 | 3.6 | 0.087813 | 0.007652 | 0.002126 | 0.00353 | Ok!! |
| Lantai 8 | 3.6 | 0.080161 | 0.008763 | 0.002434 | 0.00353 | Ok!! |
| Lantai 7 | 3.6 | 0.071398 | 0.009733 | 0.002704 | 0.00353 | Ok!! |

| | | | | | | |
|----------|-----|----------|----------|----------|---------|------|
| Lantai 6 | 3.6 | 0.061665 | 0.01134 | 0.003150 | 0.00353 | Ok!! |
| Lantai 5 | 3.6 | 0.050325 | 0.012494 | 0.003471 | 0.00353 | Ok!! |
| Lantai 4 | 3.6 | 0.037831 | 0.01199 | 0.003331 | 0.00353 | Ok!! |
| Lantai 3 | 3.6 | 0.025841 | 0.01131 | 0.003142 | 0.00353 | Ok!! |
| Lantai 2 | 3.6 | 0.014531 | 0.009715 | 0.002699 | 0.00353 | Ok!! |
| Lantai 1 | 3.6 | 0.004816 | 0.004816 | 0.001338 | 0.00353 | Ok!! |

Tabel 12. Analisa Kinerja batas ultimate struktur 10B SNI 1726 – 2002

| Lantai | Tinggi (m) | Displ (m) | ξ | ξ Displ (m) | batas Izin (m) | check |
|-----------|-----------------|----------------|-------|----------------------|---------------------|-------|
| Lantai 10 | 36 | 0.092 | 5.95 | 0.547 | 0.72 | Ok!!! |
| Lantai 9 | 32.4 | 0.08781 | 5.95 | 0.522 | 0.648 | Ok!!! |
| Lantai 8 | 28.8 | 0.08016 | 5.95 | 0.477 | 0.576 | Ok!!! |
| Lantai 7 | 25.2 | 0.0714 | 5.95 | 0.425 | 0.504 | Ok!!! |
| Lantai 6 | 21.6 | 0.06167 | 5.95 | 0.367 | 0.432 | Ok!!! |
| Lantai 5 | 18 | 0.05033 | 5.95 | 0.299 | 0.36 | Ok!!! |
| Lantai 4 | 14.4 | 0.03783 | 5.95 | 0.225 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.02584 | 5.95 | 0.154 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.01453 | 5.95 | 0.086 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.00482 | 5.95 | 0.029 | 0.072 | Ok!!! |

Tabel 13. Analisa gempa dinamik Struktur 15A

$$\begin{aligned}
 T_x & : 2.694 \\
 C = 0.75/T_x & = 0.2784 \\
 I & = 1 \\
 R & = 8.5 \\
 C I / R & = 0.033 \\
 W_t & = 34473.12 \\
 V = C I W_t / R & = 1129.08 \\
 0.8 \times V & = 903
 \end{aligned}$$

| FLOOR | Elevation (hi) | Comulative Mass | Mass / Floor | Weight / Floor | Wi x hi |
|-----------|-------------------|--------------------|-----------------|-------------------|-----------|
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 15 | 54.00 | 200.80 | 200.80 | 1967.87 | 106265.09 |
| LANTAI 14 | 50.40 | 407.12 | 206.31 | 2021.87 | 101902.35 |
| LANTAI 13 | 46.80 | 615.85 | 208.74 | 2045.63 | 95735.58 |
| LANTAI 12 | 43.20 | 829.88 | 214.03 | 2097.47 | 90610.79 |
| LANTAI 11 | 39.60 | 1046.78 | 216.89 | 2125.55 | 84171.86 |
| LANTAI 10 | 36.00 | 1266.97 | 220.20 | 2157.95 | 77686.27 |

| | | | | | | |
|----------|--|-------|---------|--------|---------------------|----------------------|
| LANTAI 9 | | 32.40 | 1490.48 | 223.51 | 2190.35 | 70967.40 |
| LANTAI 8 | | 28.80 | 1713.99 | 223.51 | 2190.35 | 63082.14 |
| LANTAI 7 | | 25.20 | 1941.24 | 227.25 | 2227.07 | 56122.21 |
| LANTAI 6 | | 21.60 | 2176.42 | 235.19 | 2304.83 | 49784.37 |
| LANTAI 5 | | 18.00 | 2415.80 | 239.37 | 2345.87 | 42225.70 |
| LANTAI 4 | | 14.40 | 2664.87 | 249.07 | 2440.91 | 35149.13 |
| LANTAI 3 | | 10.80 | 2935.10 | 270.23 | 2648.27 | 28601.34 |
| LANTAI 2 | | 7.20 | 3223.19 | 288.08 | 2823.23 | 20327.27 |
| LANTAI 1 | | 3.60 | 3517.67 | 294.48 | 2885.87 | 10389.14 |
| | | | | | $\Sigma = 34473.12$ | $\Sigma = 933020.64$ |

Tabel 14. Analisa gempa dinamik Struktur 15B

$$\begin{aligned}
 T_x & : 2.7 \\
 C = 0.75/T_x & = 0.2778 \\
 I & = 1 \\
 R & = 8.5 \\
 C I / R & = 0.033 \\
 W_t & = 33097.20 \\
 V = C I W_t / R & = 1081.61 \\
 0.8 \times V & = 865.29
 \end{aligned}$$

| Lantai | Elevation | Comulative | Mass | Weight | Wi x hi |
|-----------|-----------|------------|---------|---------------------|----------------------|
| | (hi) | Mass | / Floor | / Floor | |
| | (m) | (kN) | (kN) | (kN) | (kNm) |
| LANTAI 15 | 54.00 | 200.80 | 200.80 | 1967.87 | 106265.09 |
| LANTAI 14 | 50.40 | 407.12 | 206.31 | 2021.87 | 101902.35 |
| LANTAI 13 | 46.80 | 615.85 | 208.74 | 2045.63 | 95735.58 |
| LANTAI 12 | 43.20 | 832.75 | 216.89 | 2125.55 | 91823.85 |
| LANTAI 11 | 39.60 | 1049.64 | 216.89 | 2125.55 | 84171.86 |
| LANTAI 10 | 36.00 | 1269.84 | 220.20 | 2157.95 | 77686.27 |
| LANTAI 9 | 32.40 | 1493.35 | 223.51 | 2190.35 | 70967.40 |
| LANTAI 8 | 28.80 | 1716.85 | 223.51 | 2190.35 | 63082.14 |
| LANTAI 7 | 25.20 | 1944.10 | 227.25 | 2227.07 | 56122.21 |
| LANTAI 6 | 21.60 | 2175.10 | 231.00 | 2263.79 | 48897.91 |
| LANTAI 5 | 18.00 | 2406.10 | 231.00 | 2263.79 | 40748.26 |
| LANTAI 4 | 14.40 | 2659.14 | 253.04 | 2479.79 | 35709.00 |
| LANTAI 3 | 10.80 | 2898.52 | 239.37 | 2345.87 | 25335.42 |
| LANTAI 2 | 7.20 | 3137.89 | 239.37 | 2345.87 | 16890.28 |
| LANTAI 1 | 3.60 | 3377.27 | 239.37 | 2345.87 | 8445.14 |
| | | | | | |
| | | | | $\Sigma = 33097.20$ | $\Sigma = 923782.75$ |

| | | |
|--------|-------|--------|
| 853.48 | 15.82 | 857.38 |
| 865.62 | 8.24 | 865.62 |
| | | |

Tabel 15. Analisa batas simpangan struktur 15A SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|-----------|--------|-------------------------|-------------------------------|-----------------|-------------|-------|
| Lantai 15 | 3.6 | 0.093852 | 0.003908 | 0.001086 | 0.00353 | Ok!! |
| Lantai 14 | 3.6 | 0.089944 | 0.006486 | 0.001802 | 0.00353 | Ok!! |
| Lantai 13 | 3.6 | 0.083458 | 0.006819 | 0.001894 | 0.00353 | Ok!! |
| Lantai 12 | 3.6 | 0.076639 | 0.007034 | 0.001954 | 0.00353 | Ok!! |
| Lantai 11 | 3.6 | 0.069605 | 0.007529 | 0.002091 | 0.00353 | Ok!! |
| Lantai 10 | 3.6 | 0.062076 | 0.007335 | 0.002038 | 0.00353 | Ok!! |
| Lantai 9 | 3.6 | 0.054741 | 0.007813 | 0.002170 | 0.00353 | Ok!! |
| Lantai 8 | 3.6 | 0.046928 | 0.008312 | 0.002309 | 0.00353 | Ok!! |
| Lantai 7 | 3.6 | 0.038616 | 0.008291 | 0.002303 | 0.00353 | Ok!! |
| Lantai 6 | 3.6 | 0.030325 | 0.007987 | 0.002219 | 0.00353 | Ok!! |
| Lantai 5 | 3.6 | 0.022338 | 0.007293 | 0.002026 | 0.00353 | Ok!! |
| Lantai 4 | 3.6 | 0.015045 | 0.005977 | 0.001660 | 0.00353 | Ok!! |
| Lantai 3 | 3.6 | 0.009068 | 0.004711 | 0.001309 | 0.00353 | Ok!! |
| Lantai 2 | 3.6 | 0.004357 | 0.003192 | 0.000887 | 0.00353 | Ok!! |
| Lantai 1 | 3.6 | 0.001165 | 0.001165 | 0.000324 | 0.00353 | Ok!! |

Tabel 16. Analisa Kinerja batas ultimate struktur 15A SNI 1726 – 2002

| Lantai | Tinggi (m) | simpangan (m) | ξ | ξ Displ (m) | batas izin (m) | check |
|-----------|--------------|-----------------|-------|-------------------|------------------|-------|
| Lantai 15 | 54 | 0.09385 | 5.95 | 0.558 | 1.08 | Ok!!! |
| Lantai 14 | 50.4 | 0.08994 | 5.95 | 0.535 | 1.008 | Ok!!! |
| Lantai 13 | 46.8 | 0.08346 | 5.95 | 0.497 | 0.936 | Ok!!! |
| Lantai 12 | 43.2 | 0.07664 | 5.95 | 0.456 | 0.864 | Ok!!! |
| Lantai 11 | 39.6 | 0.06961 | 5.95 | 0.414 | 0.792 | Ok!!! |
| Lantai 10 | 36 | 0.06208 | 5.95 | 0.369 | 0.72 | Ok!!! |
| Lantai 9 | 32.4 | 0.05474 | 5.95 | 0.326 | 0.648 | Ok!!! |
| Lantai 8 | 28.8 | 0.04693 | 5.95 | 0.279 | 0.576 | Ok!!! |
| Lantai 7 | 25.2 | 0.03862 | 5.95 | 0.230 | 0.504 | Ok!!! |
| Lantai 6 | 21.6 | 0.03033 | 5.95 | 0.180 | 0.432 | Ok!!! |
| Lantai 5 | 18 | 0.02234 | 5.95 | 0.133 | 0.36 | Ok!!! |

| | | | | | | |
|----------|------|---------|------|-------|-------|-------|
| Lantai 4 | 14.4 | 0.01505 | 5.95 | 0.090 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.00907 | 5.95 | 0.054 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.00436 | 5.95 | 0.026 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.00117 | 5.95 | 0.007 | 0.072 | Ok!!! |

Tabel 17. Analisa batas simpangan struktur 15B SNI 1726 – 2002

| Lantai | Tinggi | Simpangan tingkat (m) | Simpangan Antar tingkat (m) | Ratio simpangan | batas ratio | check |
|-----------|--------|-------------------------|-------------------------------|-----------------|-------------|-------|
| Lantai 15 | 3.6 | 0.115761 | 0.003438 | 0.000955 | 0.00353 | Ok!! |
| Lantai 14 | 3.6 | 0.112323 | 0.005764 | 0.001601 | 0.00353 | Ok!! |
| Lantai 13 | 3.6 | 0.106559 | 0.006224 | 0.001729 | 0.00353 | Ok!! |
| Lantai 12 | 3.6 | 0.100335 | 0.006637 | 0.001844 | 0.00353 | Ok!! |
| Lantai 11 | 3.6 | 0.093698 | 0.00756 | 0.002100 | 0.00353 | Ok!! |
| Lantai 10 | 3.6 | 0.086138 | 0.007972 | 0.002214 | 0.00353 | Ok!! |
| Lantai 9 | 3.6 | 0.078166 | 0.008757 | 0.002433 | 0.00353 | Ok!! |
| Lantai 8 | 3.6 | 0.069409 | 0.009555 | 0.002654 | 0.00353 | Ok!! |
| Lantai 7 | 3.6 | 0.059854 | 0.009862 | 0.002739 | 0.00353 | Ok!! |
| Lantai 6 | 3.6 | 0.049992 | 0.01025 | 0.002847 | 0.00353 | Ok!! |
| Lantai 5 | 3.6 | 0.039742 | 0.010394 | 0.002887 | 0.00353 | Ok!! |
| Lantai 4 | 3.6 | 0.029348 | 0.009944 | 0.002762 | 0.00353 | Ok!! |
| Lantai 3 | 3.6 | 0.019404 | 0.009103 | 0.002529 | 0.00353 | Ok!! |
| Lantai 2 | 3.6 | 0.010301 | 0.007152 | 0.001987 | 0.00353 | Ok!! |
| Lantai 1 | 3.6 | 0.003149 | 0.003149 | 0.000875 | 0.00353 | Ok!! |

Tabel 18. Analisa Kinerja batas ultimate struktur 15B SNI 1726 – 2002

| Lantai | Tinggi (m) | Simpangan (m) | ξ | ξ Displ (m) | batas izin (m) | check |
|-----------|--------------|-----------------|-------|-------------------|------------------|-------|
| Lantai 15 | 54 | 0.11576 | 5.95 | 0.689 | 1.08 | Ok!!! |
| Lantai 14 | 50.4 | 0.11232 | 5.95 | 0.668 | 1.008 | Ok!!! |
| Lantai 13 | 46.8 | 0.10656 | 5.95 | 0.634 | 0.936 | Ok!!! |
| Lantai 12 | 43.2 | 0.10034 | 5.95 | 0.597 | 0.864 | Ok!!! |
| Lantai 11 | 39.6 | 0.0937 | 5.95 | 0.558 | 0.792 | Ok!!! |
| Lantai 10 | 36 | 0.08614 | 5.95 | 0.513 | 0.72 | Ok!!! |
| Lantai 9 | 32.4 | 0.07817 | 5.95 | 0.465 | 0.648 | Ok!!! |
| Lantai 8 | 28.8 | 0.06941 | 5.95 | 0.413 | 0.576 | Ok!!! |
| Lantai 7 | 25.2 | 0.05985 | 5.95 | 0.356 | 0.504 | Ok!!! |
| Lantai 6 | 21.6 | 0.04999 | 5.95 | 0.297 | 0.432 | Ok!!! |

| | | | | | | |
|----------|------|---------|------|-------|-------|-------|
| Lantai 5 | 18 | 0.03974 | 5.95 | 0.236 | 0.36 | Ok!!! |
| Lantai 4 | 14.4 | 0.02935 | 5.95 | 0.175 | 0.288 | Ok!!! |
| Lantai 3 | 10.8 | 0.0194 | 5.95 | 0.115 | 0.216 | Ok!!! |
| Lantai 2 | 7.2 | 0.0103 | 5.95 | 0.061 | 0.144 | Ok!!! |
| Lantai 1 | 3.6 | 0.00315 | 5.95 | 0.019 | 0.072 | Ok!!! |

Tabel 19 . FEMA 356

Table 3-1 Values for Effective Mass Factor C_m ¹

| No. of Stories | Concrete Moment Frame | Concrete Shear Wall | Concrete Pier-Spandrel | Steel Moment Frame | Steel Concentric Braced Frame | Steel Eccentric Braced Frame | Other |
|----------------|-----------------------|---------------------|------------------------|--------------------|-------------------------------|------------------------------|-------|
| 1-2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 3 or more | 0.9 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 1.0 |

1. C_m shall be taken as 1.0 if the fundamental period, T_1 is greater than 1.0 second.

Table 3-2 Values for Modification Factor C_0 ¹

| Number of Stories | Shear Buildings ² | | Other Buildings |
|-------------------|---|----------------------------|------------------|
| | Triangular Load Pattern (1.1, 1.2, 1.3) | Uniform Load Pattern (2.1) | Any Load Pattern |
| 1 | 1.0 | 1.0 | 1.0 |
| 2 | 1.2 | 1.15 | 1.2 |
| 3 | 1.2 | 1.2 | 1.3 |
| 5 | 1.3 | 1.2 | 1.4 |
| 10+ | 1.3 | 1.2 | 1.5 |

- Linear interpolation shall be used to calculate intermediate values.
- Buildings in which, for all stories, interstory drift decreases with increasing height.

Table 3-3 Values for Modification Factor C_2

| Structural Performance Level | $T \leq 0.1$ second ³ | | $T \geq T_S$ second ³ | |
|------------------------------|----------------------------------|-----------------------------|----------------------------------|-----------------------------|
| | Framing Type 1 ¹ | Framing Type 2 ² | Framing Type 1 ¹ | Framing Type 2 ² |
| Immediate Occupancy | 1.0 | 1.0 | 1.0 | 1.0 |
| Life Safety | 1.3 | 1.0 | 1.1 | 1.0 |
| Collapse Prevention | 1.5 | 1.0 | 1.2 | 1.0 |

- Structures in which more than 30% of the story shear at any level is resisted by any combination of the following components, elements, or frames: ordinary moment-resisting frames, concentrically-braced frames, frames with partially-restrained connections, tension-only braces, unreinforced masonry walls, shear-critical, piers, and spandrels of reinforced concrete or masonry.
- All frames not assigned to Framing Type 1.
- Linear interpolation shall be used for intermediate values of T .

Gambar Ratio Kolom balok

| | | | | | |
|---------------|-------|-------|-------|-------|--------|
| T.O.C LT.5 | 0.797 | 0.556 | 0.556 | 0.556 | 0.797 |
| T.O.C LT.4 | 2.06 | 1.448 | 1.448 | 1.448 | 2.06 |
| T.O.C LT.3 | 2.682 | 1.935 | 1.935 | 1.935 | 2.682 |
| T.O.C LT.2 | 3.983 | 2.896 | 2.896 | 2.896 | 3.983 |
| T.O.C LT.1 | 5.188 | 3.823 | 3.823 | 3.823 | 5.188 |
| | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

Ratio Momen Kolom – Balok Struktur 5A Disain

| | | | | | |
|---------------|-------|-------|-------|-------|--------|
| T.O.C LT.5 | 0.819 | 0.792 | 0.792 | 0.792 | 0.819 |
| T.O.C LT.4 | 2.035 | 1.407 | 1.407 | 1.407 | 2.035 |
| T.O.C LT.3 | 2.117 | 1.697 | 1.697 | 1.697 | 2.117 |
| T.O.C LT.2 | 2.236 | 1.84 | 1.84 | 1.84 | 2.236 |
| T.O.C LT.1 | 2.612 | 2.284 | 2.284 | 2.284 | 2.612 |
| | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

Ratio Momen Kolom – Balok Struktur 5B Disain

| | | | | | |
|------------|-------|-------|-------|-------|--------|
| T.O.C LT.5 | 1.263 | 0.811 | 0.811 | 0.811 | 1.263 |
| T.O.C LT.4 | 3.867 | 2.514 | 2.514 | 2.514 | 3.867 |
| T.O.C LT.3 | 5.285 | 3.411 | 3.411 | 3.411 | 5.285 |
| T.O.C LT.2 | 5.985 | 4.055 | 4.055 | 4.055 | 5.985 |
| T.O.C LT.1 | 6.607 | 4.634 | 4.634 | 4.634 | 6.607 |
| | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

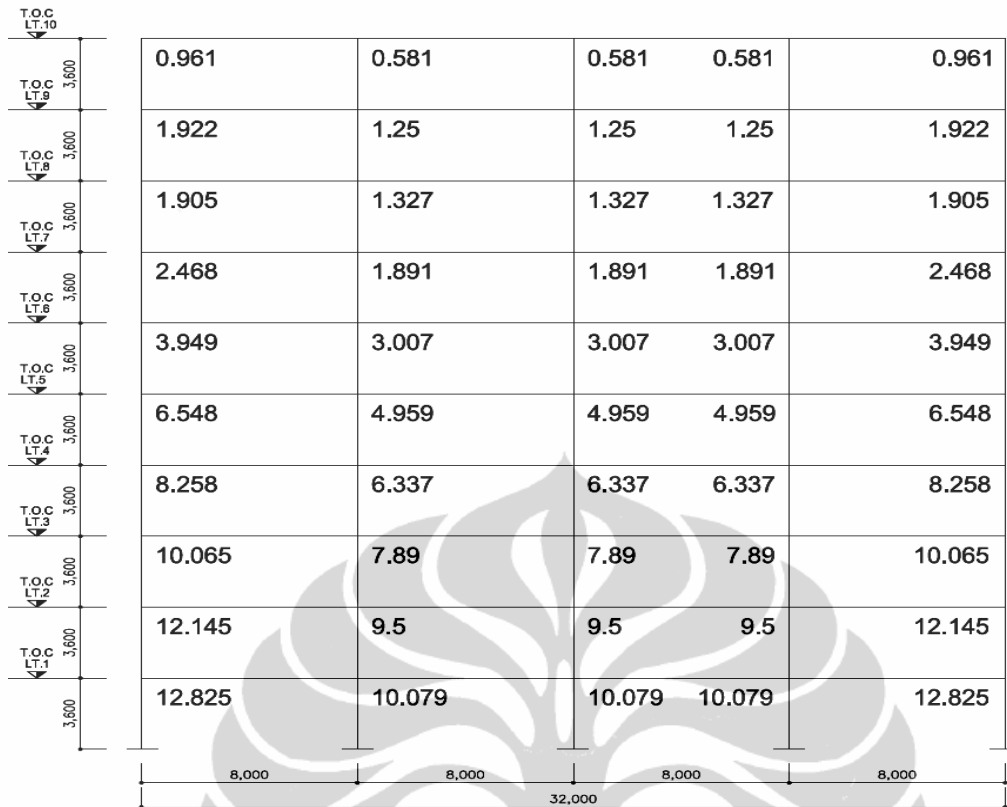
Ratio Momen Kolom – Balok Struktur 5A Setelah Menambah
Kuat Momen Kolom (FEMA 356)

| | | | | | |
|------------|-------|-------|-------|-------|--------|
| T.O.C LT.5 | 1.45 | 0.792 | 0.792 | 0.792 | 1.45 |
| T.O.C LT.4 | 3.602 | 2.35 | 2.35 | 2.35 | 3.602 |
| T.O.C LT.3 | 3.70 | 2.61 | 2.61 | 2.61 | 3.70 |
| T.O.C LT.2 | 3.799 | 2.584 | 2.584 | 2.584 | 3.799 |
| T.O.C LT.1 | 4.67 | 3.498 | 3.498 | 3.498 | 4.67 |
| | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

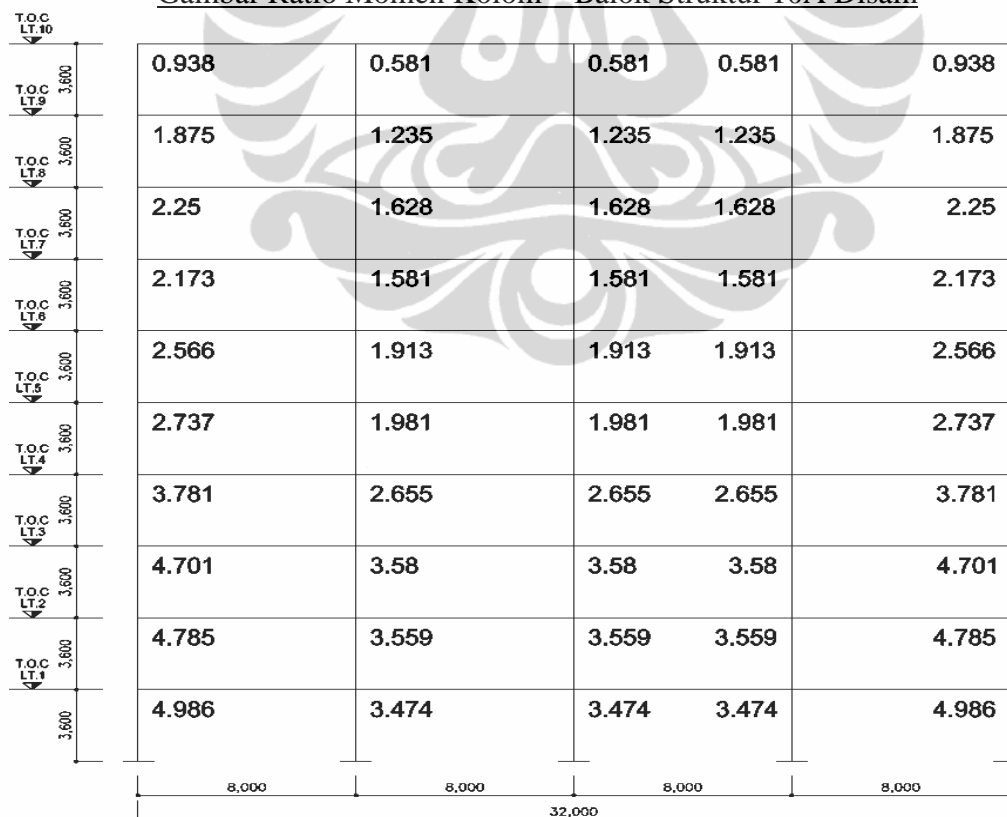
Ratio Momen Kolom – Balok Struktur 5B Setelah Menambah
Kuat Momen Kolom (FEMA 356)

| | | ELCENTRO | | | | | | | | | |
|--|--|-----------|--------------------------------|-------|-------|-------|--------------------------------|-------|-------|-------|-------|
| | | 5A | | | | | 5B | | | | |
| | | 0.797 | 0.556 | 0.556 | 0.556 | 0.797 | 0.819 | 0.792 | 0.792 | 0.792 | 0.819 |
| | | 2.06 | 1.830 | 1.830 | 1.830 | 2.06 | 2.035 | 1.407 | 1.407 | 1.407 | 2.035 |
| | | 2.682 | 2.317 | 2.317 | 2.317 | 2.682 | 2.117 | 2.271 | 2.271 | 2.271 | 2.117 |
| | | 4.43 | 3.244 | 3.244 | 3.244 | 4.43 | 3.265 | 2.897 | 2.897 | 2.897 | 3.265 |
| | | 5.635 | 4.171 | 4.171 | 4.171 | 5.635 | 3.641 | 2.767 | 2.767 | 2.767 | 3.641 |
| | | | 8,000 8,000 8,000 8,000 32,000 | | | | 8,000 8,000 8,000 8,000 32,000 | | | | |
| | | ITALY | | | | | | | | | |
| | | 5A | | | | | 5B | | | | |
| | | 0.797 | 0.556 | 0.556 | 0.556 | 0.797 | 0.819 | 0.792 | 0.792 | 0.792 | 0.819 |
| | | 2.06 | 2.004 | 2.004 | 2.004 | 2.06 | 2.69 | 1.958 | 1.958 | 1.958 | 2.69 |
| | | 2.682 | 2.491 | 2.491 | 2.491 | 2.682 | 3.205 | 2.506 | 2.506 | 2.506 | 3.205 |
| | | 3.983 | 2.896 | 2.896 | 2.896 | 3.983 | 3.502 | 2.506 | 2.506 | 2.506 | 3.502 |
| | | 5.188 | 3.823 | 3.823 | 3.823 | 5.188 | 3.344 | 2.636 | 2.636 | 2.636 | 3.344 |
| | | | 8,000 8,000 8,000 8,000 32,000 | | | | 8,000 8,000 8,000 8,000 32,000 | | | | |
| | | KOBE | | | | | | | | | |
| | | 5A | | | | | 5B | | | | |
| | | 0.797 | 0.556 | 0.556 | 0.556 | 0.797 | 0.936 | 0.792 | 0.792 | 0.792 | 0.936 |
| | | 3.323 | 2.178 | 2.178 | 2.178 | 3.323 | 2.807 | 1.813 | 1.813 | 1.813 | 2.807 |
| | | 5.149 | 3.302 | 3.302 | 3.302 | 5.149 | 3.205 | 2.284 | 2.284 | 2.284 | 3.205 |
| | | 5.344 | 3.649 | 3.649 | 3.649 | 5.344 | 3.759 | 2.584 | 2.584 | 2.584 | 3.759 |
| | | 5.538 | 4.055 | 4.055 | 4.055 | 5.538 | 4.511 | 3.211 | 3.211 | 3.211 | 4.511 |
| | | | 8,000 8,000 8,000 8,000 32,000 | | | | 8,000 8,000 8,000 8,000 32,000 | | | | |
| | | PARKFIELD | | | | | | | | | |
| | | 5A | | | | | 5B | | | | |
| | | 0.797 | 0.556 | 0.556 | 0.556 | 0.797 | 0.819 | 0.792 | 0.792 | 0.792 | 0.819 |
| | | 3.323 | 2.178 | 2.178 | 2.178 | 3.323 | 2.69 | 1.741 | 1.741 | 1.741 | 2.69 |
| | | 5.246 | 3.36 | 3.36 | 3.36 | 5.246 | 3.166 | 2.284 | 2.284 | 2.284 | 3.166 |
| | | 5.285 | 3.591 | 3.591 | 3.591 | 5.285 | 3.265 | 2.375 | 2.375 | 2.375 | 3.265 |
| | | 5.188 | 3.823 | 3.823 | 3.823 | 5.188 | 3.146 | 2.532 | 2.532 | 2.532 | 3.146 |
| | | | 8,000 8,000 8,000 8,000 32,000 | | | | 8,000 8,000 8,000 8,000 32,000 | | | | |

Ratio Momen Kolom – Balok Struktur 5 NonLinear Timehistory



Gambar Ratio Momen Kolom – Balok Struktur 10A Disain



Gambar Ratio Momen Kolom – Balok Struktur 10B Disain

| | | | | | |
|----------------|--------|--------|--------|--------|--------|
| T.O.C LT.15 | 1.805 | 1.119 | 1.119 | 1.119 | 1.805 |
| T.O.C LT.16 | 3,61 | 2,238 | 2,238 | 2,238 | 3,61 |
| T.O.C LT.17 | 3.633 | 2.196 | 2.196 | 2.196 | 3.633 |
| T.O.C LT.18 | 3.495 | 2.408 | 2.408 | 2.408 | 3.495 |
| T.O.C LT.19 | 3.949 | 3.019 | 3.019 | 3.019 | 3.949 |
| T.O.C LT.20 | 7.578 | 5.584 | 5.584 | 5.584 | 7.578 |
| T.O.C LT.21 | 10.104 | 7.415 | 7.415 | 7.415 | 10.104 |
| T.O.C LT.22 | 14.768 | 10.311 | 10.311 | 10.311 | 14.768 |
| T.O.C LT.23 | 19.431 | 13.207 | 13.207 | 13.207 | 19.431 |
| T.O.C LT.24 | 19.431 | 13.439 | 13.439 | 13.439 | 19.431 |
| 3.000 | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

Ratio Momen Kolom – Balok Struktur 10A Setelah Menambah
Kuat Momen Kolom (FEMA 356)

| | | | | | |
|----------------|-------|-------|-------|-------|--------|
| T.O.C LT.10 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 |
| T.O.C LT.11 | 1,875 | 1,235 | 1,235 | 1,235 | 1,875 |
| T.O.C LT.12 | 2.25 | 1.642 | 1.642 | 1.642 | 2.25 |
| T.O.C LT.13 | 2.771 | 1.874 | 1.874 | 1.874 | 2.771 |
| T.O.C LT.14 | 3.678 | 2.460 | 2.460 | 2.460 | 3.678 |
| T.O.C LT.15 | 3.815 | 2.479 | 2.479 | 2.479 | 3.815 |
| T.O.C LT.16 | 4.311 | 2.889 | 2.889 | 2.889 | 4.311 |
| T.O.C LT.17 | 5.339 | 4.237 | 4.237 | 4.237 | 5.339 |
| T.O.C LT.18 | 6.044 | 4.872 | 4.872 | 4.872 | 6.044 |
| T.O.C LT.19 | 6,128 | 4,872 | 4,872 | 4,872 | 6,128 |
| 3.000 | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

Ratio Momen Kolom – Balok Struktur 10B Setelah Menambah
Kuat Momen Kolom (FEMA 356)

| ELCENTRO | | | | | | | | | | | |
|----------|-------------------------|--------|--------|--------|--------|-------|-------------------------|-------|-------|-------|--------|
| | 10A | | | | | 10B | | | | | |
| | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | |
| | 2.696 | 1.672 | 1.672 | 1.672 | 2.696 | 1.875 | 1.235 | 1.235 | 1.235 | 1.875 | |
| | 2.567 | 2.173 | 2.173 | 2.173 | 2.567 | 2.25 | 1.628 | 1.628 | 1.628 | 2.25 | |
| | 3.06 | 2.701 | 2.701 | 2.701 | 3.06 | 2.173 | 1.581 | 1.581 | 1.581 | 2.173 | |
| | 4.451 | 3.312 | 3.312 | 3.312 | 4.451 | 2.566 | 1.913 | 1.913 | 1.913 | 2.566 | |
| | 6.548 | 4.959 | 4.959 | 4.959 | 6.548 | 2.737 | 1.981 | 1.981 | 1.981 | 2.737 | |
| | 8.258 | 6.337 | 6.337 | 6.337 | 8.258 | 3.781 | 2.655 | 2.655 | 2.655 | 3.781 | |
| | 10.065 | 7.89 | 7.89 | 7.89 | 10.065 | 4.701 | 3.58 | 3.58 | 3.58 | 4.701 | |
| | 13.408 | 9.5 | 9.5 | 9.5 | 13.408 | 4.869 | 3.559 | 3.559 | 3.559 | 4.785 | |
| | 15.156 | 10.079 | 10.079 | 10.079 | 15.156 | 5.07 | 3.474 | 3.474 | 3.474 | 4.966 | |
| | 8,000 8,000 8,000 8,000 | | | | 32,000 | | 8,000 8,000 8,000 8,000 | | | | 32,000 |
| ITALY | | | | | | | | | | | |
| | 10A | | | | | 10B | | | | | |
| | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | |
| | 2.696 | 1.672 | 1.672 | 1.672 | 2.696 | 1.875 | 1.235 | 1.235 | 1.235 | 1.875 | |
| | 3.06 | 1.938 | 2.173 | 2.173 | 3.554 | 2.25 | 1.628 | 1.628 | 1.628 | 2.25 | |
| | 2.962 | 2.161 | 2.396 | 2.396 | 3.455 | 2.173 | 1.581 | 1.581 | 1.581 | 2.173 | |
| | 3.949 | 3.007 | 3.007 | 3.007 | 3.949 | 2.566 | 1.913 | 1.913 | 1.913 | 2.566 | |
| | 6.548 | 4.959 | 4.959 | 4.959 | 6.548 | 2.737 | 1.981 | 1.981 | 1.981 | 2.737 | |
| | 8.258 | 6.337 | 6.337 | 6.337 | 8.258 | 3.781 | 2.655 | 2.655 | 2.655 | 3.781 | |
| | 10.065 | 7.89 | 7.89 | 7.89 | 10.066 | 4.701 | 3.58 | 3.58 | 3.58 | 4.701 | |
| | 12.145 | 9.5 | 9.5 | 9.5 | 12.145 | 4.785 | 3.559 | 3.559 | 3.559 | 4.785 | |
| | 12.825 | 10.079 | 10.079 | 10.079 | 12.825 | 4.986 | 3.474 | 3.474 | 3.474 | 4.986 | |
| | 8,000 8,000 8,000 8,000 | | | | 32,000 | | 8,000 8,000 8,000 8,000 | | | | 32,000 |

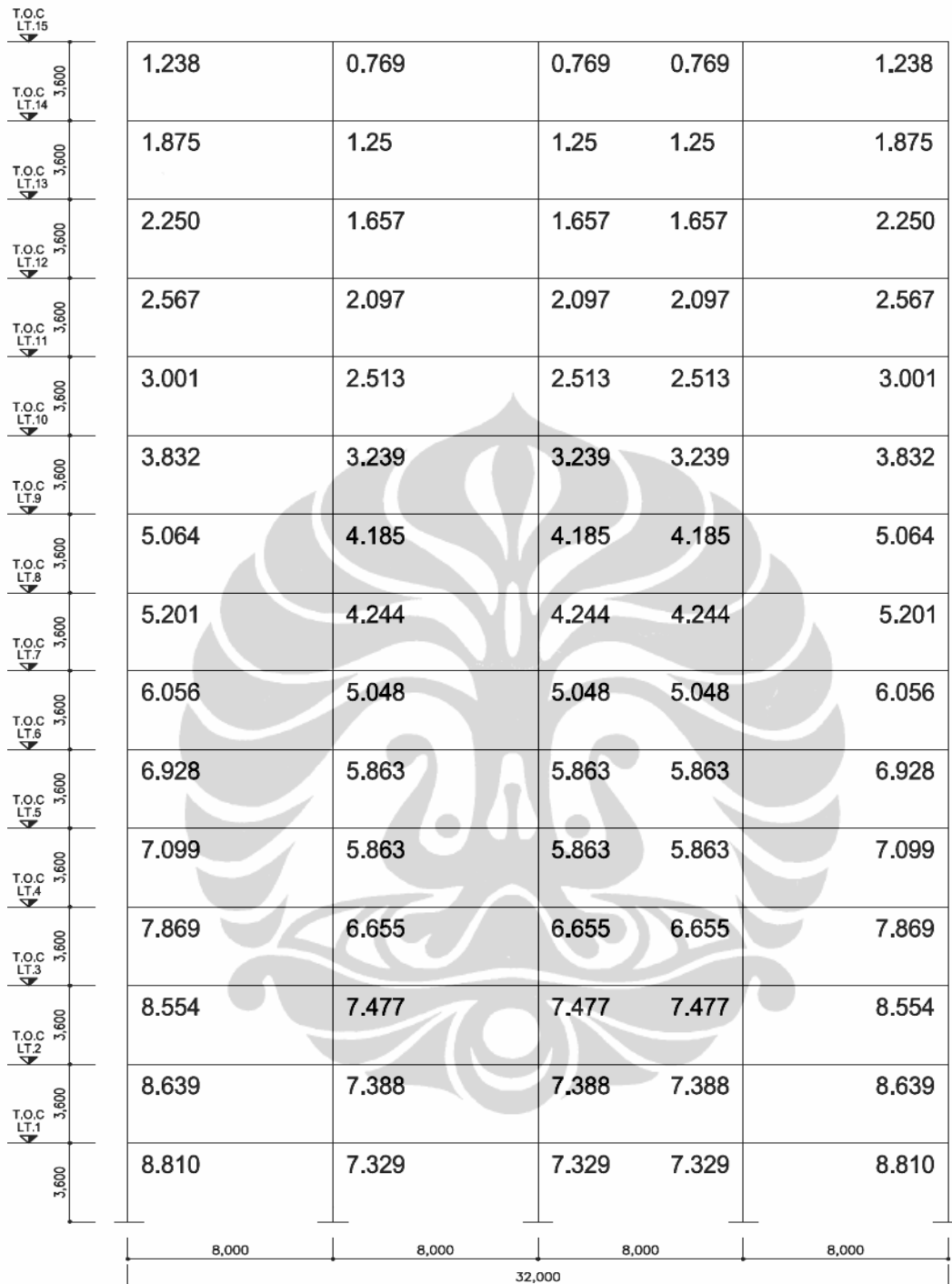
| | | KOBE | | | | | | | | | |
|--|--|--------|-----------|--------|--------|--------|-------|-------|-------|-------|-------|
| | | 10A | | | | | 10B | | | | |
| | | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 |
| | | 2.696 | 1.672 | 1.672 | 1.672 | 2.696 | 1.875 | 1.599 | 1.599 | 1.599 | 1.875 |
| | | 3.317 | 2.079 | 2.079 | 2.079 | 3.317 | 2.25 | 1.991 | 1.991 | 1.991 | 2.25 |
| | | 3.909 | 2.608 | 2.608 | 2.608 | 3.909 | 2.173 | 1.581 | 1.581 | 1.581 | 2.173 |
| | | 4.64 | 3.312 | 3.312 | 3.312 | 4.64 | 2.566 | 1.913 | 1.913 | 1.913 | 2.566 |
| | | 6.548 | 4.959 | 4.959 | 4.959 | 6.548 | 2.703 | 2.206 | 2.206 | 2.206 | 2.703 |
| | | 9.074 | 6.337 | 6.337 | 6.337 | 9.074 | 3.746 | 2.880 | 2.880 | 2.880 | 3.746 |
| | | 10.882 | 7.89 | 7.89 | 7.89 | 10.882 | 4.701 | 3.58 | 3.58 | 3.58 | 4.701 |
| | | 14.088 | 9.5 | 9.5 | 9.5 | 14.088 | 4.785 | 3.559 | 3.559 | 3.559 | 4.785 |
| | | 16.517 | 10.079 | 10.079 | 10.079 | 16.517 | 4.986 | 3.474 | 3.474 | 3.474 | 4.986 |
| | | | | | | | | | | | |
| | | | PARKFIELD | | | | | | | | |
| | | 10A | | | | | 10B | | | | |
| | | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 |
| | | 1.899 | 1.672 | 1.686 | 1.686 | 1.922 | 1.875 | 1.235 | 1.235 | 1.235 | 1.875 |
| | | 2.784 | 2.196 | 2.196 | 2.196 | 2.784 | 2.25 | 1.628 | 1.628 | 1.628 | 2.25 |
| | | 3.356 | 2.42 | 2.608 | 2.608 | 3.593 | 2.173 | 1.581 | 1.581 | 1.581 | 2.173 |
| | | 3.949 | 3.007 | 3.195 | 3.195 | 4.186 | 2.566 | 1.913 | 1.913 | 1.913 | 2.566 |
| | | 6.548 | 4.959 | 4.959 | 4.959 | 6.548 | 2.737 | 1.981 | 1.981 | 1.981 | 2.737 |
| | | 8.258 | 6.337 | 6.337 | 6.337 | 8.258 | 3.781 | 2.655 | 2.655 | 2.655 | 3.781 |
| | | 10.065 | 7.89 | 7.89 | 7.89 | 10.065 | 4.701 | 3.58 | 3.58 | 3.58 | 4.701 |
| | | 12.145 | 9.5 | 9.5 | 9.5 | 13.408 | 4.869 | 3.559 | 3.559 | 3.559 | 4.869 |
| | | 12.825 | 10.079 | 10.079 | 10.079 | 15.156 | 5.07 | 3.580 | 3.580 | 3.580 | 5.07 |
| | | | | | | | | | | | |

Ratio Re disain Momen Kolom – Balok Struktur 10

NonLinear Timehistory

| | | | | | |
|-------------------------|--------|--------|--------|--------|--------|
| T.O.C LT.15 3,600 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 |
| T.O.C LT.14 3,600 | 1.899 | 1.25 | 1.25 | 1.25 | 1.899 |
| T.O.C LT.13 3,600 | 1.935 | 1.478 | 1.478 | 1.478 | 1.935 |
| T.O.C LT.12 3,600 | 2.606 | 2.077 | 2.077 | 2.077 | 2.606 |
| T.O.C LT.11 3,600 | 3.021 | 2.513 | 2.513 | 2.513 | 3.021 |
| T.O.C LT.10 3,600 | 4.236 | 3.14 | 3.14 | 3.14 | 4.236 |
| T.O.C LT.9 3,600 | 5.538 | 4.043 | 4.043 | 4.043 | 5.538 |
| T.O.C LT.8 3,600 | 5.674 | 4.165 | 4.165 | 4.165 | 5.674 |
| T.O.C LT.7 3,600 | 6.782 | 5.184 | 5.184 | 5.184 | 6.782 |
| T.O.C LT.6 3,600 | 8.589 | 6.824 | 6.824 | 6.824 | 8.589 |
| T.O.C LT.5 3,600 | 9.521 | 7.565 | 7.565 | 7.565 | 9.521 |
| T.O.C LT.4 3,600 | 17.933 | 13.661 | 13.661 | 13.661 | 17.933 |
| T.O.C LT.3 3,600 | 27.975 | 20.508 | 20.508 | 20.508 | 27.975 |
| T.O.C LT.2 3,600 | 35.866 | 24.92 | 24.92 | 24.92 | 35.866 |
| T.O.C LT.1 3,600 | 38.735 | 27.698 | 27.698 | 27.698 | 38.735 |
| | 8,000 | 8,000 | 8,000 | 8,000 | |
| | 32,000 | | | | |

Gambar Ratio Momen Kolom – Balok Struktur 15A Disain



Gambar Ratio Momen Kolom – Balok Struktur 15B Disain

| | | | | | |
|----------------------|--------|--------|--------|--------|--------|
| T.O.C L.T.C 15 | 0.938 | 0.581 | 0.581 | 0.581 | 0.938 |
| T.O.C L.T.C 14 | 2.719 | 1.686 | 1.686 | 1.686 | 2.719 |
| T.O.C L.T.C 13 | 2.784 | 1.966 | 1.966 | 1.966 | 2.784 |
| T.O.C L.T.C 12 | 4.048 | 2.93 | 2.93 | 2.93 | 4.048 |
| T.O.C L.T.C 11 | 5.528 | 3.907 | 3.907 | 3.907 | 5.528 |
| T.O.C L.T.C 10 | 5.441 | 3.742 | 3.742 | 3.742 | 5.441 |
| T.O.C L.T.C 9 | 5.557 | 4.066 | 4.066 | 4.066 | 5.557 |
| T.O.C L.T.C 8 | 5.713 | 4.136 | 4.136 | 4.136 | 5.713 |
| T.O.C L.T.C 7 | 6.762 | 5.179 | 5.179 | 5.179 | 6.762 |
| T.O.C L.T.C 6 | 9.327 | 7.391 | 7.391 | 7.391 | 9.327 |
| T.O.C L.T.C 5 | 10.882 | 8.573 | 8.573 | 8.573 | 10.882 |
| T.O.C L.T.C 4 | 18.794 | 14.298 | 14.298 | 14.298 | 18.794 |
| T.O.C L.T.C 3 | 27.975 | 20.508 | 20.508 | 20.508 | 27.975 |
| T.O.C L.T.C 2 | 35.866 | 24.92 | 24.92 | 24.92 | 35.866 |
| T.O.C L.T.C 1 | 38.735 | 27.698 | 27.698 | 27.698 | 38.735 |
| 3,600 | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

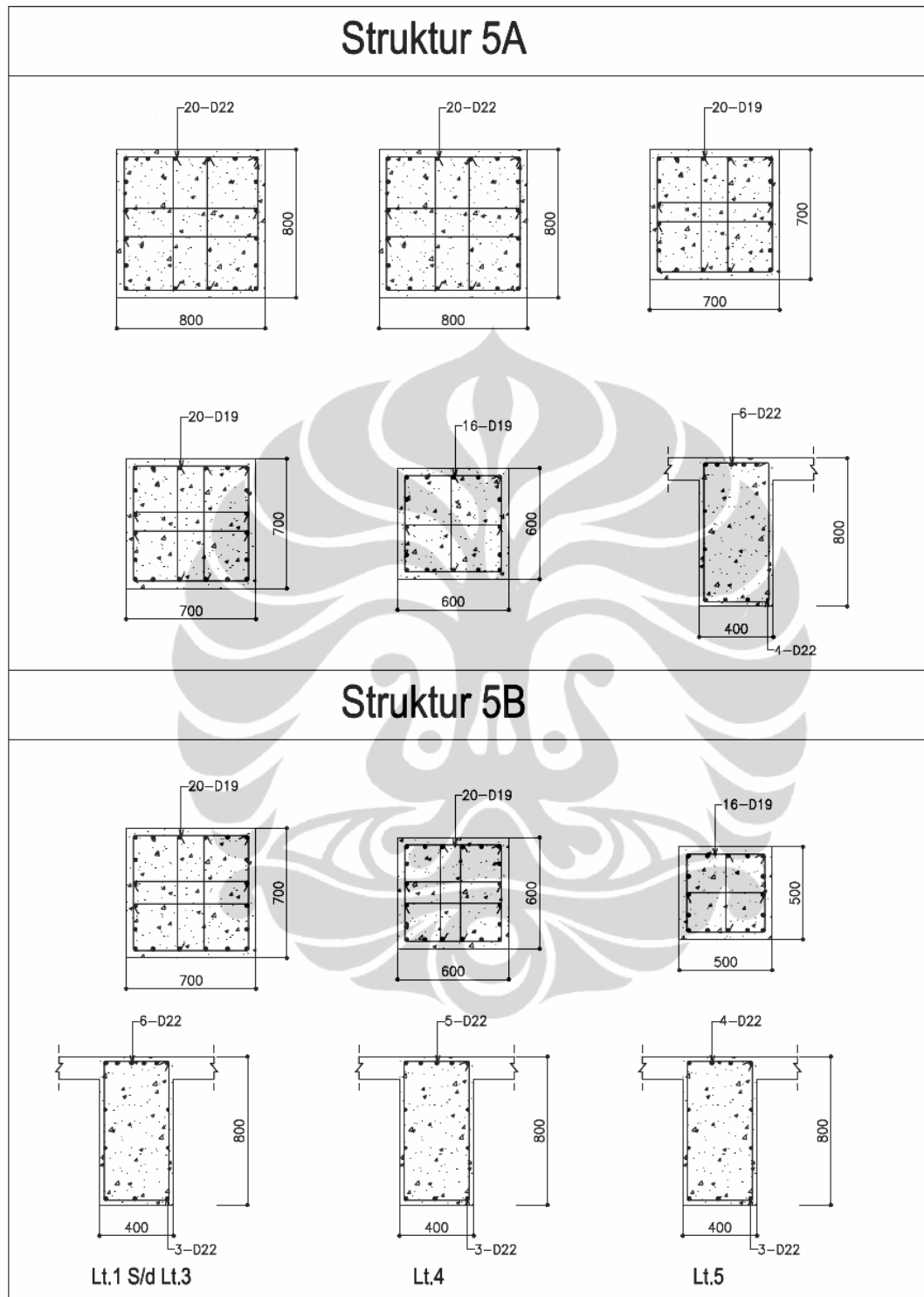
Ratio Momen Kolom – Balok Struktur 15A Setelah Menambah
Kuat Momen Kolom (FEMA 356)

| | | | | | |
|-------------------------|-------|-------|-------|-------|--------|
| T.O.C LT.15 3,600 | 1.238 | 0.769 | 0.769 | 0.769 | 1.238 |
| T.O.C LT.14 3,600 | 2.719 | 1.686 | 1.686 | 1.686 | 2.719 |
| T.O.C LT.13 3,600 | 3.751 | 2.456 | 2.456 | 2.456 | 3.751 |
| T.O.C LT.12 3,600 | 3.337 | 2.513 | 2.513 | 2.513 | 3.337 |
| T.O.C LT.11 3,600 | 3.396 | 2.67 | 2.67 | 2.67 | 3.396 |
| T.O.C LT.10 3,600 | 3.9 | 3.251 | 3.251 | 3.251 | 3.9 |
| T.O.C LT.9 3,600 | 4.893 | 4.019 | 4.019 | 4.019 | 4.893 |
| T.O.C LT.8 3,600 | 5.047 | 4.019 | 4.019 | 4.019 | 5.047 |
| T.O.C LT.7 3,600 | 5.987 | 4.941 | 4.941 | 4.941 | 5.987 |
| T.O.C LT.6 3,600 | 6.928 | 5.863 | 5.863 | 5.863 | 6.928 |
| T.O.C LT.5 3,600 | 7.099 | 5.863 | 5.863 | 5.863 | 7.099 |
| T.O.C LT.4 3,600 | 7.869 | 6.655 | 6.655 | 6.655 | 7.869 |
| T.O.C LT.3 3,600 | 8.554 | 7.477 | 7.477 | 7.477 | 8.554 |
| T.O.C LT.2 3,600 | 9.751 | 7.388 | 7.388 | 7.388 | 9.751 |
| T.O.C LT.1 3,600 | 11.12 | 7.329 | 7.329 | 7.329 | 11.12 |
| | 8,000 | 8,000 | 8,000 | 8,000 | 32,000 |

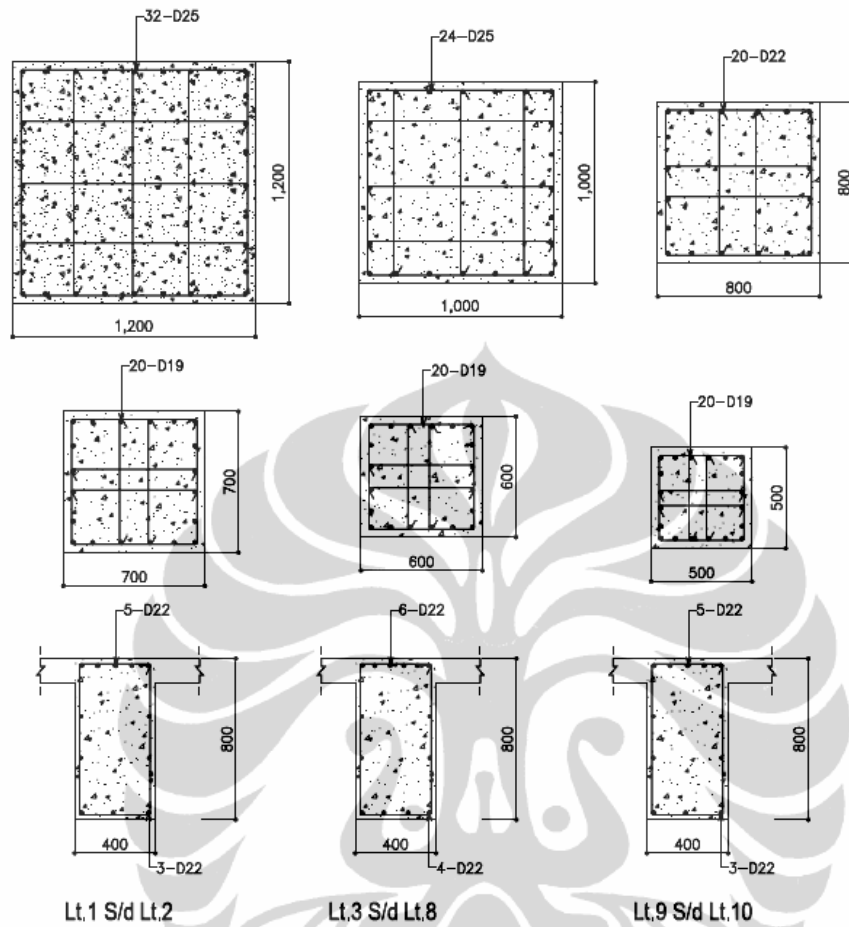
Ratio Momen Kolom – Balok Struktur 15B Setelah Menambah

Kuat Momen Kolom (FEMA 356)

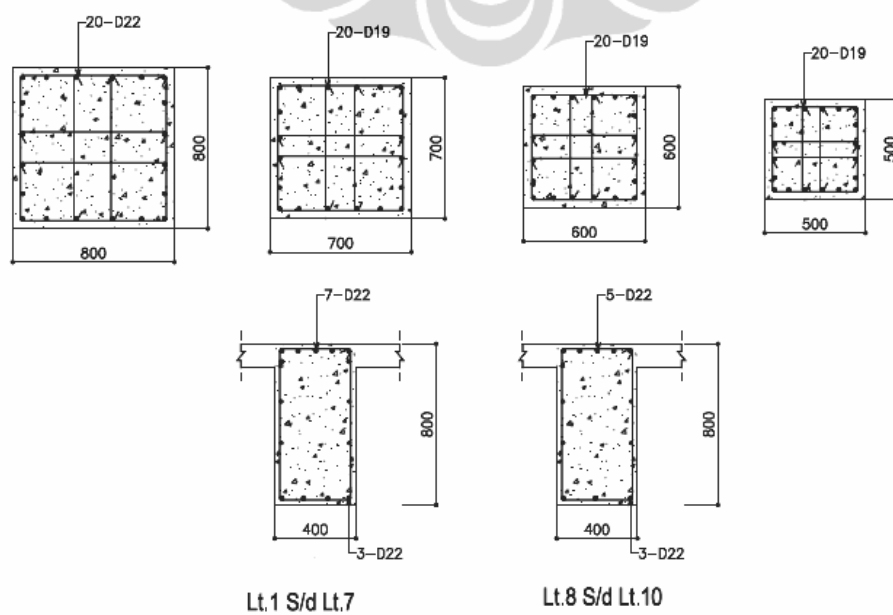
Gambar Detail Tulangan Kolom Balok Struktur



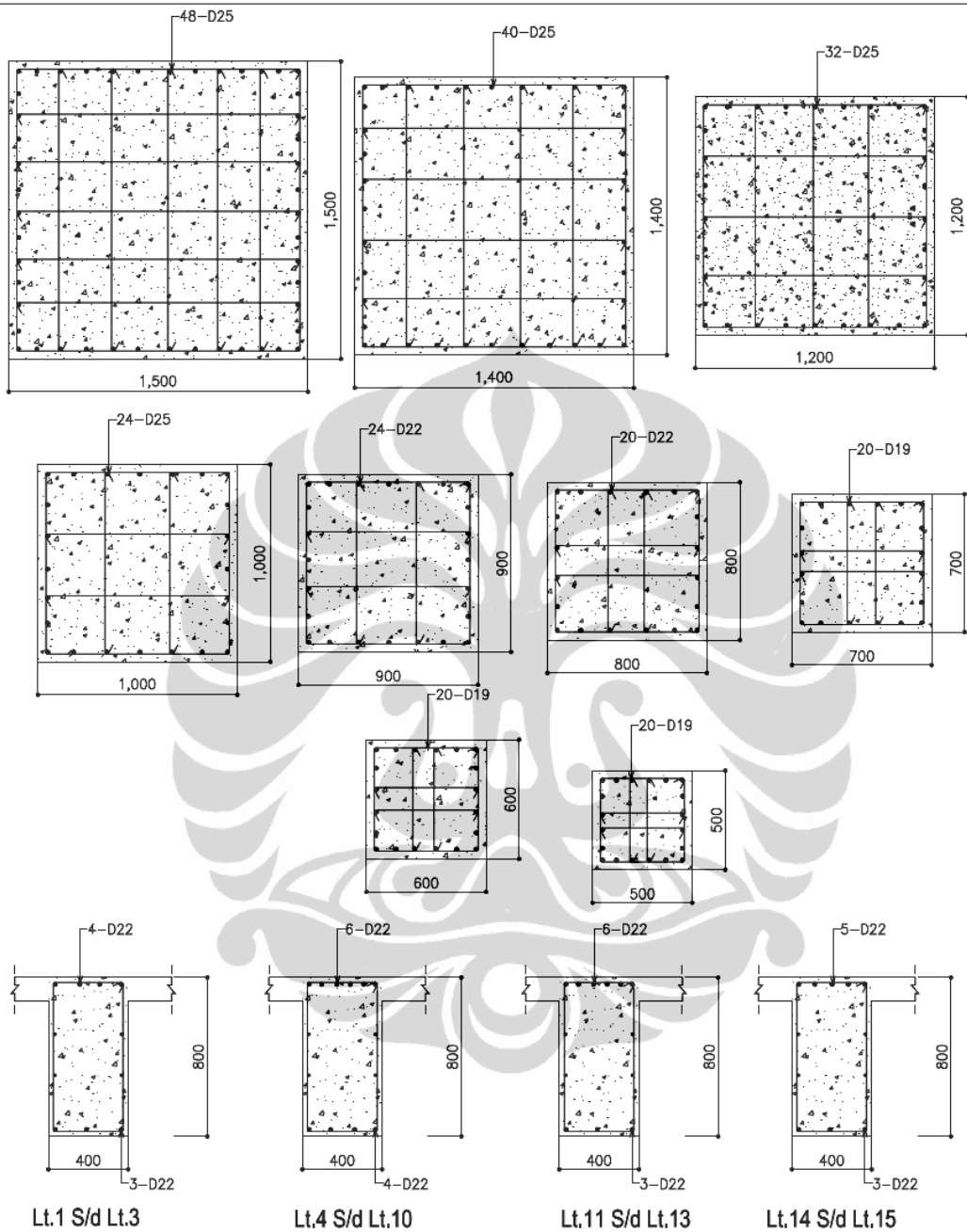
Struktur 10A



Struktur 10B



Struktur 15A



Struktur 15B

