

BAB V

RINGKASAN DAN KESIMPULAN

5.1. Ringkasan studi yang dilakukan

Suatu ukuran keamanan telah dipelajari dan dikembangkan yang merupakan dasar untuk menentukan taraf keamanan atau taraf keandalan dari hasil perancangan berdasarkan prosedur dan peraturan yang berlaku di Indonesia pada waktu ini.

Ukuran keamanan ini disebut sebagai indeks keamanan yang diperoleh berdasarkan aplikasi teori peluang pada perancangan struktur. Untuk mencari indeks keamanan ini digunakan metoda orde pertama momen kedua lanjut yang telah dijelaskan pada Bab II. Untuk dapat menggunakan metode tersebut diperlukan informasi statistik dari semua peubah-peubah yang terlibat, termasuk informasi tentang distribusi peluang dari peubah-peubah acak, yang dalam studi ini adalah peubah tahanan dan peubah-peubah beban.

Anggapan dari metode di atas kemudian diterapkan pada suatu bangunan perkantoran beton bertulang di Jakarta yang dirancang sebagai bangunan tahan gempa, untuk dicari nilai indeks keamanannya. Hasil utama dari analisa ini terlihat pada Tabel V.1 dan V.2

DAFTAR PUSTAKA

1. ACI Committee 318, "Building Code Requirements for Reinforced Concrete (ACI 318-83)", American Concrete Institute, Detroit, 1983.
2. ACI Committee 318, "Commentary on Building Code Requirements for Reinforced Concrete (ACI 318-83)", American Concrete Institute, Detroit, 1983.
3. Ang, A.H.S., "Structural Risk Analysis and Reliability Based Design", *Journal of Structural Division*, ASCE, Vol. 99, No. ST9, Sept, 1973, 1891-1910.
4. Ang, A.H.S., "Concept of Probability Design", *Lecture note Seminar on Structural Design of High Rise Building*, Jakarta, Indonesia, 1984.
5. Ang, A.H.S. and Amin, M., "Safety Factors and Probability in Structural Design", *Journal of Structural Division*, ASCE, Vol. 95, No. ST7, July, 1969, 1389-1405.
6. Ang, A.H.S. and Cornell, AC., "Reliability Bases of Structural Safety and Design", *Journal of Structural Division*, ASCE, Vol. 100, No. ST9, September, 1974, 1755-1769.
7. Ang, A.H.S. and Tang, W.H., "Probability Concept in Engineering Planning and Design", Vol. 1, John Willey and Sons, 1975.
8. Ang, A.H.S. and Tang, W.H., "Probability Concept in Engineering Planning and Design", Vol. 2, John Willey and Sons, 1984.
9. Austin, M.A., "A Methodology for Incorporating Uncertainties and Multiple Objectives in The Computer-Aided Design of Seismic-Resistant Steel Structures", PH.D Thesis, University of California, Berkeley, 1985.
10. Beca Carter Hollings & Ferner., "Earthquake Risk in Indonesia Collation of Seismological and Geological Data", *Indonesian Earthquake Study*, Vol.2, 1979.
11. Beca Carter Hollings & Ferner., "Seismic Zones for Building Construction In Indonesia", *Indonesia Earthquake Study*, Vol.3, 1979.

12. Beca Carter Hollings & Ferner., "Lateral Loadings for Earthquake Resistant Design of Building Construction in Indonesia", *Indonesia Earthquake Study*, Vol.4, 1979.
13. Chalk, P.L. and Corrotis, R.B., "Probability Model for Design Live Loads", *Journal of Structural Division*, ASCE, Vol. 106, No. ST10, Oct., 1980, 2017-2033.
14. Christensen, P.T., M.J. Baker., "Structural Reliability Theory and Its Applications", Springer-verlag, 1982.
15. Cornel, C.A., "A Probability Based Structural Code", *ACI Journal*, Dec., 1969, 974-985.
16. Corrotis, R.B. and Wen Yang Tsai., "Probabilistic Load Duration Model for Live Loads", *Journal of Structural Division*, ASCE, Vol. 109, No. 4, April, 1983, 859-873.
17. Culver, C.G., "Live Load Survey Results for Office Buildings", *Journal of Structural Division*, ASCE, Vol. 102, No.ST12, Dec., 1976, 2269-2284.
18. DPMB., "Buku Pedoman Perencanaan Tahan Gempa Indonesia untuk Gedung 1983", Yayasan Lembaga Penyelidikan Masalah Bangunan, Bandung, 1983.
19. DPMB., "Peraturan Perencanaan Tahan Gempa Indonesia untuk Gedung 1983", Yayasan Lembaga Penyelidikan Masalah Bangunan, Bandung, 1983.
20. Ellingwood, B. and Ang.A.H.S., "Risk-Based Evaluation of Design Criteria", *Journal of Structural Division*, ASCE, Vol. 100, No.ST 9, Sept., 1974, 1771-1788.
21. Ellingwood, B. and Culver, C.G., "Analysis of Live Loads in Office Buildings", *Journal of Structural Division, Proceeding of ASCE*, Vol. 103, No.ST 8, August, 1977, 1551-1560.
22. Ellingwood, B., Mc. Gregor, Galambos T.V., Cornell A.C., "Probability-Based Load Criteria II: Load Factor and Load Combination", *Journal of Structural Division*, ASCE, Vol. 108, No. ST5, May, 1982, 978-997.
23. Ellingwood, B., Galambos, T.V., MacGregor, J.G. and Cornell, A.C., "Development of a Probability Based Load Criterion for American National Standard A58 Building Code Requirements for Minimum Design Loads in Buildings and Other Structures" U.S. Dept. of Commerce, National Bureau of Standards NBS Special Publication SP577, Washington D.C., June, 1980.

24. Ellingwood, B.R., and A.H.S. Ang., "A Probabilistic Study of Safety Criteria for Design", Civil Engineering Studies Structural Research Series, No. 387, University of Illinois At Urbana-Champaign, Illinois, June, 1972.
25. Ellingwood, B.R., "Reliability Basis of Load and Resistance Factors for Reinforced Concrete Design", NBS Building Sciences Series 110, National Bureau of Standards, Washington, D.C., 1978.
26. Galambos, T.V., Bruce E., Mc.Gregor, Cornel A.C., "Probability-Based Load Criteria I: Assessment of Current Design Practice", *Journal of Structural Division*, ASCE, Vol. 108, No. ST5, May 1982, 959-977.
27. Gallo, M.P., A.H.S. Ang., "Evaluation of Safety of Reinforced Concrete Buildings to Earthquakes", Civil Engineering Studies Structural Research Series, No. 433, University of Illinois At Urbana-Champaign, Oct., 1976.
28. Gunadi, B., T.B. Tonny H., Seno S., "Perencanaan Portal Beton Bertulang Daktail Tahan Gempa dengan Bantuan Komputer Mikro", Skripsi, Unpar, Bandung, September, 1986.
29. Gunadi, B., Djoni Simanta., "MICRO EQ-RCBS86 : A Micro Computer Program for the Design of Earthquake Resistant Multistorey RC Buildings (Enhanced ver.87.05)", User's Manual, September, 1987.
30. Habibullah, Ashraf., "ETABS84 Three Dimensional Analysis of Building Systems", Computers and Structures, Inc., Berkeley, California.
31. Kuwamura, Hitoshi., "Reliability Analysis of Steel Building Structures under Earthquakes", PH.D. Thesis, University of Minnesota, 1986.
32. Madsen, H.O., S. Krenk, N.C. Lind., "Methods of Structural Safety", Prentice-Hall, Inc., Englewood Cliffs, NJ 07632, 1986.
33. Mc.Guire, R.K., Cornel A., "Live Load Effect in Office Buildings", *Journal of Structural Division*, ASCE, Vol. 100, No. ST7, July, 1974, 1351-1974.
34. Najoran, T.F., "Peta resiko Gempa dan Penggunaannya untuk Perencanaan Pengairan Tahan Gempa di Indonesia", Puslitbang Pengairan Dept.PU, Nop., 1985.

35. Neuss, C.F., Maison B.F., "SUPER-ETABS, An Enhanced Version of the ETABS Program (Version Jan. 1987)", Technical Report to the National Science Foundation, J.G. Bouwkamp, Inc., Berkeley, Jan., 1983.
36. Neuss, C.F., Bruce F.M., J.G. Bouwkamp., "A Study of Computer Modeling Formulation and Special Analytical Procedures for Earthquake Response of Multistory Buildings", A Report to National Science Foundation, J.G. Bouwkamp, Inc., Berkeley, California, Jan., 1983.
37. Neville, G.B., "Notes on ACI 318-83", Portland Cement Association, Illinois, 1983.
38. New Zealand Standard NZS 3101, "Commentary on The Design of Concrete Structures", Standard Association of New Zealand, 1982.
39. New Zealand Standard NZS 3101, "Code of Practice for the Design of Concrete Structures", Standard Association of New Zealand, 1982.
40. New Zealand Concrete Society Inc., "Applications of New Zealand Standard Code of Practice for The Design of Concrete Structures (NZS 3101:1982)", New Zealand Concrete Society Technical Report No.2, August, 1983.
41. Park, R., and Paulay T., "Reinforced Concrete Structures", John Wiley and Sons, New York, 1975.
42. Paulay, T., "An Application of Capacity Design Philosophy to Gravity Load Dominated Ductile Reinforced Concrete Frames", *Bulletin of the New Zealand National Society for Earthquake Engineering*, Vol. 11, No.1, March, 1978.
43. Ravindra, M.K., "Illustration of Reliability Based Design", *Journal of Structural Division*, ASCE, Vol. 100, No. ST9, Sept., 1974, 1789-1811.
44. Smith, G.N., "Probability and Statistics In Civil Engineering", Collins, 1986.
45. Surahman, A., Rojiani KB., "Reliability Based Optimum Design of Concrete Structure", *Journal of Structural Division*, ASCE, Vol. 109, No. 3, March, 1983, 741-757.
46. Theodore F. Najooan., "Effect of Soil Conditions on Ground Response in The Jakarta Area" Master Thesis, Asian Institute of Technology, Bangkok, Thailand, April, 1978.

47. Wangsadinata, W., Najoan, T.F., "Seismic Risk Analysis for West Java with Particular Reference to Jakarta", *Seminar on Structural Safety*, Jakarta, 1979.
48. Wen, Y.K., "Statistical Combination of Extreme Loads", *Journal of Structural Division*, ASCE, Vol. 103, No.ST5, May, 1977.
49. Yayasan Dana Normalisasi Indonesia, "*Peraturan Pembebanan Indonesia Untuk Gedung 1983*", Direktorat Penyelidikan Masalah Bangunan, Bandung, 1983.
50. Yayasan Dana Normalisasi Indonesia, "*Peraturan Beton Bertulang Indonesia NI-2 1971*", Direktorat Penyelidikan Masalah Bangunan, Bandung, 1977.