BAB 5. KESIMPULAN DAN SARAN

5.1. Kesimpulan

Hasil penelitian ini berupa pengembangan metode evaluasi kapasitas seismik struktur gedung eksisting beton bertulang dengan memperhitungkan pengaruh dinding pengisi interior. Evaluasi kapasitas seismik dilakukan terhadap kolom lantai dasar. Kolom tanpa dinding pengisi dihitung berdasarkan *Standard for Seismic Evaluation of Existing Reinforced Concrete Buildings*. Kolom dengan pengaruh dinding pengisi pada kolom eksterior dihitung berdasarkan metode yang dikembangkan oleh Maidiawati. Kolom dengan pengaruh dinding pengisi pada kolom interior dihitung berdasarkan metode yang dikembangkan pada disertasi ini. Metode evaluasi kapasitas seismik ini terbukti dapat digunakan untuk mengevaluasi tiga gedung eksisting beton bertulang bertingkat rendah pasca gempa bumi yang terjadi. Berdasarkan *Standard for Seismic Evaluation of Existing Reinforced Concrete Buildings*, satu dari tiga gedung dinyatakan aman karena memiliki seismik indeks 0,59 (mendekati 0,6).

5.2. Saran

Untuk penentuan kriteria hasil evaluasi kapasitas seismik yang sesuai dengan kondisi gedung di Indonesia, perlu diteliti lebih lanjut dengan melakukan evaluasi kapasitas seismik struktur terhadap banyak gedung eksisting. Selain itu perlu dilakukan penyesuaian terhadap pembebanan yang bekerja pada gedung.

DAFTAR PUSTAKA

Applied Technology Council. (2015). FEMA P-154, Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook. ATC, Virginia. https://www.fema.gov/media-library-data/1426210695633-d9a280e72b32872161efab26a602283b/FEMAP-154_508.pdf

Badan Standardisasi Nasional. (2019). SNI 2847:2019, Persyaratan Beton Struktural Untuk Bangunan Gedung. BSN, Jakarta. http://staffnew.uny.ac.id/upload/132256207/pendidikan/sni-2847-2019.pdf

Choi, H., Sanada, Y., & Nakano, Y. (2017). Diagonal Strut Mechanism of URM Wall Infilled RC Frame for Multi Bays. Procedia Engineering Proceedings, of the 6th International Workshop on Performance, Protection & Strengthening of Structures under Extreme Loading, Protect 2017, Guangzhou (Canton), China. 210, 409-416. https://doi.org/10.1016/j.proeng.2017.11.095

Dautaj, A. D., Kadiri, Q., & Kabashi, N. (2018). Experimental Study on the Contribution of Masonry Infill in the Behavior of RC Frame Under Seismic Loading. Journal of Engineering Structures, 165, 27-37. https://doi.org/10.1016/j.engstruct.2018.03.013

El-Dakhakhni, W. W., Elgaaly, M., & Hamid, A. A. (2003). Three-Strut Model For Concrete Masonry-Infilled Steel Frames. Journal of Structural Engineering. 129 (2), 177-185. DOI: 10.1061/(ASCE)0733-9445(2003)129:2(177). https://www.researchgate.net/publication/275188077_Three-Strut_Model_for_Concrete_Masonry-Infilled_Steel_Frames

Gavin, P. Hayes, et al. (2017). Tectonic Summaries of Magnitude 7 and Greater Earthquakes from 2000 to 2015. U.S. Geological Survey. Virginia. https://pubs.usgs.gov/of/2016/1192/ofr20161192.pdf

Holmes, M. (1961). Steel Frames With Brickwork and Concrete Infilling. Proceedings of the Institution of Civil Engineers. 19(4), 473-478. https://doi.org/10.1680/iicep.1961.11305

https://earthquake.usgs.gov/earthquakes/browse/significant.php?year=2018 [diakses 13 Nopember 2018]

https://en.wikipedia.org/wiki/List_of_earthquakes_in_Indonesia [diakses 14 Nopember 2019]

Kurniawandy, A & Nakazawa, S. (2019). Seismic Performance Evaluation of Existing Building Using Seismic Index Method. MATEC Web of Conferences, 276, 01015. https://doi.org/10.1051/matecconf/201927601015

Kurniawandy, A & Nakazawa, S. (2020). A Proposal of Seismic Index for Existing Buildings in Indonesia using Pushover Analysis. J. Eng. Technol. Sci. 52(3), 310-330. https://doi.org/10.5614/j.eng.technol.sci.2020.52.3.2

Kurniawandy, A & Nakazawa, S. (2022). A Study of the Dynamic Seismic Performance Index of Building in Indonesia. Journal of Asian Architecture and Building Engineering. 21(6), 2388-2398. https://doi.org/10.1080/13467581.2021.1972806

Kwon, J., & Ghannoum, W. M. (2016). Assessment of International Standard Provisions on Stiffness of Reinforced Concrete Moment Frame and Shear Wall Buildings. Journal of Engineering Structures, 128, 149-160. http://dx.doi.org/10.1016/j.engstruct.2016.09.025.

Leuchars, J. M., & Scrivener, J. C. (1976). Masonry Infill Panels Subjected to Cyclic In-Plane Loading. Bulletin of the New Zealand National Society for Earthquake Engineering. 9(2), 122-131. https://www.nzsee.org.nz/db/Bulletin/Archive/09(2)0122.pdf

Maidiawati, Sanada, Y., Konishi, D., & Tanjung, J. (2011). Seismic Performance of Nonstructural Brick Walls Used in Indonesian R/C Buildings. Journal of Asian Architecture and Building Engineering, 10(1), 203-210. https://www.jstage.jst.go.jp/article/jaabe/10/1/10_1_203/_pdf

Maidiawati, & Agus. (2016). Metoda Evaluasi Kapasitas Seismik Gedung Beton Bertulang Eksisting dengan Aplikasi Model Dinding Bata. Jurnal Teknik Sipil ITB. 23(1), 19-30. https://multisite.itb.ac.id/ftsl/wp-content/uploads/sites/8/2016/09/3.-Maidiawati-dkk-Vol.23-No.1-Hal-19-30.pdf

Maidiawati & Sanada, Y. (2017). R/C Frame-Infill Interaction Model and Its Application to Indonesian Buildings. Earthquake Engineering and Structural Dynamics. 46(2), 221-241. https://doi.org/10.1002/eqe.2787

Mainstone, R. J. (1971). On the Stiffness and Strength of Infilled Frames. Proceedings of the Institution of Civil Engineers. 49(2) : 230. https://doi.org/10.1680/iicep.1971.6267

New Zealand Society for Earthquake Engineering. (2016). The Seismic Assessment of Existing Buildings, Part C8: Seismic Assessment of Unreinforced Masonry Buildings. New Zealand Society for Earthquake Engineering, New Zealand. http://www.eq-assess.org.nz/wp-content/uploads/2018/11/c8-unreinforced-masonry-buildings.pdf

Paulay, T., & Priestley, M. J. N. (1992). Seismic Design of Reinforced Concrete and Masonry Buildings. John Wiley & Sons Inc, Canada. https://www.academia.edu/31645700/SEISMIC_DESIGN_OF_REINFORCED_CONCRETE_AND_MASONRY_BUILDINGS_A_WILEY_INTERSCIENCE_PUBLICATION

Priestley, M. J. N., Verma, R., & Xiao, Y. (1994). Seismic Shear Strength of Reinforced Concrete Columns. Journal of Structural Engineering Structures, 120 (8), 2310–2329. DOI:10.1061/(ASCE)0733-9445(1994)120:8(2310)

Smith, B. S., & Carter C. (1969). A Method of Analysis for Infilled Frames, Proceedings of the Institution of Civil Engineers. 44(1), 31-48. https://doi.org/10.1680/iicep.1969.7290

Tamara, M. (2011). Evaluasi Kerusakan Bangunan Akibat Gempa Besar. Jurnal Ilmiah Media Engineering, 1(1), 1–9. https://ejournal.unsrat.ac.id/index.php/jime/article/view/4203/3732

Tanjung, J., & Maidiawati. (2017). The Experimental Investigation on Beneficial Effects of The Local Brick Masonry Infills to Seismic Performance of R/C Frame Structures in West Sumatera. International Journal of Civil Engineering and Technology, 8(10), 687-691.

http://www.iaeme.com/MasterAdmin/UploadFolder/IJCIET_08_10_072/IJCIET_08_10_072.pdf

The Japan Building Disaster Prevention Association (JBDPA). (2005). English Version, 1st, Standard for Seismic Evaluation of Existing Reinforced Concrete Buildings, 2001. JBDPA, Japan. ftp://128.46.154.21/ayhan/Rabab/BRI_Japan_Seismic Evaluation of Existing RC Buildings_2001.pdf

Zovkic, J., Sigmund, V., & Gulkas, I. (2012). Cyclic Testing of a Single Bay Reinforced Concrete Frames With Various Types of Masonry Infill. Earthquake Engng Struct. Dyn. 2013; 42: 1131-1149. https://doi.org/10.1002/eqe.2263