

Dam is considered safe from any ground settlement caused by soil liquefaction.

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REFERENCES

- [1] R. Hall, and H.T. Breiffeld, "Nature and Demise of the Proto-South China Sea". *Bulletin of Geological Society of Malaysia*, 63(63) pp. 61-87, 2017
- [2] R. McCaffrey, "The Tectonic Framework of the Sumatran Subduction Zone," *Annu. Rev. Earth Planet. Sci.*, vol. 37 pp. 345-366, 2009.
- [3] A. E. Khalil, I. A. Abir, H. Ginsos, H. E. A. Hafiez, and S. Khan, "Probabilistic seismic hazard assessments of Sabah, east Malaysia: accounting for local earthquake activity near Ranau," *Journal of Geophysics and Engineering*, vol.15, pp. 13–25, 2017.
- [4] A. A. Shah, M. N. Zhafri, J. Delson, and M. B. Navakanesh, "Major Strike-Slip Faults Identified Using Satellite Data in Central Borneo, SE Asia." *Geosciences*, vol. 8(5):156 May. 2018.
- [5] A. S. W. Yan, "Geological Assessment of the Earthquake Sources & Hazard in Malaysia." Seminar Teknikal Gempabumi, JMM, Dec. 2011.
- [6] M. Syifa, P. R. Kadavi, and C.W. Lee, "An Artificial Intelligence Application for Post-Earthquake Damage Mapping in Palu, Central Sulawesi, Indonesia." *Sensors*, vol. 19, 542, 2019.
- [7] L. J. Hill, R. S. J. Sparks, and J. C. Rougier, *Risk and Uncertainty Assessment for Natural Hazards*, Cambridge: Cambridge University Press, 2013.
- [8] D. T. W. Looi, J. C. L. Chiang, H. H. Tsang, and N. T. K. Lam, "Potential Issues Faced on Reservoir-Triggered Earthquakes in Malaysia". Proceedings of the 1st International Conference on Dam Safety Management and Engineering. ICDSME 2019
- [9] R. Vicente, S. Parodi, S. Lagomarsino, H. Varum, and J. A. R. M. Silva, "Seismic Vulnerability Assessment, Damage Scenarios and Loss Estimation: Case Study of The Old City Centre of Coimbra, Portugal." The 14th World Conference on Earthquake Engineering. 2008.
- [10] L. Roslan, R. Ahmadi, K.K.F. Lau, L.T. Trinh and M. Rosyadi "Risk-assessment of hydropower plant susceptible to seismic hazard by 3D spectrum analysis." 3rd International Conference on Civil Engineering and Architecture (ICCEA 2020) IOP Proceeding. 2020.
- [11] F. Mulargia, P. B. Stark, and R. J. Geller, "Why is Probabilistic Seismic Hazard Analysis (PSHA) still used?" *Physics of the Earth and Planetary Interiors*, vol. 264, pp. 63–75, 2017.
- [12] S. Firat, N. S. Isik, H. Arman, M. Demir, and I. Vural, "Investigation of the soil amplification factor in the Adapazari region." *Bulletin of Engineering Geology and the Environment*, vol.75, pp. 141-152, 2016.
- [13] J. W. Pappin, P. H. I. Yim, and C. H. R. Koo, "An approach for seismic design in Malaysia following the principles of Eurocode 8." *Bulletin Jurutera*, pp. 22–28, 2011.
- [14] *Malaysia National Annex to MS EN 1998-1: 2015, Eurocode 8: Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings*. Department of Standard Malaysia, 2017.
- [15] F. M. Nazri, C. G. Tan, and M.A. Rashid, "Investigation of Shear Wave Velocity by using Multi-Channel Analysis of Surface Wave Method for Microzonation Map Development and its Application to Industrial Frame Structures". *Soil Mechanics and Foundation Engineering*, 55(2), 110–114, 2018
- [16] A. Marto, C. S. Tan, F. Kassim, and N.Z. Yunus, "Seismic impact in Peninsular Malaysia." *The 5th International Geotechnical Symposium-Incheon, 2013*. pp. 237–242.
- [17] R. B. Ahmadi, I.A. Najar, A. F. Abdullahi, N. M. Sa'don, H. Hamza, and N. A. Najar, "Computational Investigation of Soil Liquefaction Susceptibility Based on Standard Penetration Test Value of Miri district (Sarawak, Malaysia)". *International Journal of Advanced Science and Technology*, 29(7), pp. 2732-2742, 2020
- [18] D. Basu, and A. Dey "1D Nonlinear Ground Response Analysis of Soils in IIT Guwahati and Liquefaction potential Identification." *16th World Conference on Earthquake Engineering, January 2017*, pp. 1–12, 2017
- [19] H. Sana, S.K. Nath, and K.S. Gujral, "Site Response Analysis of the Kashmir valley during the 8 October 2005 Kashmir Earthquake (Mw 7.6) using a Geotechnical Dataset". *Bulletin of Engineering Geology and the Environment*, 78(4), pp. 2551–2563, 2019
- [20] S. S. Kumar, A. Dey, and A. M. Krishna, "Importance of Site-Specific Dynamic Soil Properties for Seismic Ground Response Studies." *International Journal of Geotechnical Earthquake Engineering*, vol. 9(1), pp. 78–98, 2018.
- [21] C. C. Tsai, and H.W. Liu, "Site Response Analysis of Vertical Ground Motion in Consideration of Soil Non-linearity". *Soil Dynamics and Earthquake Engineering*, 102(2), pp.124–136, 2017
- [22] K. Afshari, and J. P. Stewart, "Insights from California Vertical Arrays on the Effectiveness of Ground Response Analysis with Alternative Damping Models". *Bulletin of the Seismological Society of America*, 109(4), pp. 1250–1264, 2019.
- [23] T. D. Angheta, Y. Bozorgnia, R. Darragh, W. J. Silva, B. Chiou, J. P. Stewart, D. M. Boore, R. Graves, N. A. Abrahamson, K. W. Campbell, I. M. Idriss, R. R. Youngs, and G. M. Atkinson, "PEER NGA-West2 Database : A Database of Ground Motions Recorded in Shallow Crustal Earthquakes in Active Tectonic." *15th World Conference on Earthquake Engineering*, 2012.
- [24] N. A. Bakar, K. C. Ghee, N. A. Safiee, and N. N. N. Daud "Effect of Flexible Soil in Seismic Hazard Assessment for Structural Design in Kuala Lumpur." *International Journal of Geotechnical Earthquake Engineering*. vol. 10. pp. 30-40, 2019.
- [25] P. K. Dammala, A. M. Krishna, S. Bhattacharya, G. Nikitas, and M. Rouholamin, "Dynamic soil properties for seismic ground response studies in Northeastern India." *Soil Dynamics and Earthquake Engineering*, vol. 100, pp. 357–370, 2017.
- [26] H. H. Tsang, J. L. Wilson, N. T. K. Lam, and R. K. L. Su, "A Design Spectrum Model for Flexible Soil Sites in Regions of Low-to-Moderate Seismicity". *Soil Dynamics and Earthquake Engineering* 92: 36-45, 2017
- [27] V. W. Lee, and M. D. Trifunac, "Should average shear-wave velocity in the top 30m of soil be used to describe seismic amplification?" *Soil Dynamics and Earthquake Engineering*, vol. 30(11), pp. 1250–1258, 2010.
- [28] N. S. H. Harith, F. Tongkul, A. Adnan, and A. V. Shoushtari "Seismic hazard analysis for East Malaysia based on a proposed ground motion prediction equation" *IOP Conf. Series: Materials Science and Engineering*, 615, 2019.
- [29] S. S. Kumar, A. M. Krishna, and A. Dey, "Dynamic properties and liquefaction behaviour of cohesive soil in northeast India under staged cyclic loading." *Journal of Rock Mechanics and Geotechnical Engineering*, vol 10(5), pp. 958–967, 2018.
- [30] S. A. Esha, A. S. M. F. Hossain, M. A. Habib, M. B. Hossain, and M. A. N. Islam, "Earthquake Ground Response Analysis of Banasree Residential Area Using SHAKE 2000" Proceedings of the 4th International Conference on Civil Engineering for Sustainable Development (ICCESD 2018), 9-11 February 2018
- [31] G. Babayev, and L. Telesca, "Site specific ground motion modeling and seismic response analysis for microzonation of Baku, Azerbaijan." *Acta Geophysica*, vol. 64(6), pp. 2151–2170, 2016.
- [32] I. M. Idriss and R. W. Boulanger, "Semi-empirical procedures for evaluating liquefaction potential during earthquakes." *Soil Dyn Earthq Eng* vol. 26, pp. 115–130, 2006
- [33] H. Javdanian, "Evaluation of soil liquefaction potential using energy approach: experimental and statistical investigation". *Bulletin of Engineering Geology and the Environment*, 78(3), pp. 1697-1708, 2019
- [34] S. Sengupta and S. Kolathayar, "Evaluation of Liquefaction Potential of Soil at Power Plant Site in Chittagong, Bangladesh" *International Journal of Geotechnical Earthquake Engineering*. Vol. 11, Issue 1, January-June 2020
- [35] Z. Lamat, Y. Jamian, and M. A. A. Eskandar. "Site Specific Ground Response Spectra of Bakun." *Pertanika J. Sci. & Technol*. vol. 25 (S), pp. 23 – 28, 2017.
- [36] Y. M. A. Hashash, M. I. Musgrove, J. A. Harmon, D. R. Groholski, C. A. Philips and D. Park, "DEEPSOIL 6.1, User Manual. *Urbana, IL: Board of Trustees of University of Illinois at Urbana-Campaign*. 2016