

DAFTAR PUSTAKA

- Abusharar, S. W. & Han, J., 2011. Two-dimensional deep-seated slope stability analysis of embankments over stone column-improved soft clay. *Engineering Geology*, pp. 103-110.
- Al-Khalidi, E. E., Ahmed, M. D., Sheikha, A. A. & Jahanger, Z. K., 2024. Effect of Length to Diameter Ratio on Column Bearing Capacity Stabilized with Sodium Silicate. *AIP Conference Proceedings*, p. 030024.
- Almeida, M., Filho, M., Babaei, I. & Alexiew, D., 2019. *Geosynthetic Encased Columns for Soft Soil Improvement*. London: CRC Press.
- Ashadi, A., Harmoko, U., Yuliyanto, G. & Kaka, S., 2015. Probabilistic Seismic-Hazard Analysis for Central Java Province, Indonesia. *Bulletin of the Seismological Society of America*, 105(3), p. 1711–1720.
- Black, J., Sivakumar, V. & Bell, A., 2011. The settlement performance of stone column foundation. *Geotechnique*, 61(11), pp. 909-922.
- Brinkgreve, R., Kumarswamy, S. & Swolfs, W. M., 2016. *PLAXIS 2016*. Delft: Plaxis bv.
- Brinkgreve, S. B. J., 2007. *PLAXIS Version 8 Reference Manual*. Delft: Bentley.
- BSN, 2017. *SNI 8460:2017 Persyaratan perancangan geoteknik*. Jakarta: Badan Standardisasi Nasional.
- BSN, 2019. *SNI 1726:2019 Tata cara perencanaan ketahanan gempa untuk struktur bangunan gedung dan nongedung*. Jakarta: Badan Standardisasi Nasional .
- Burland, J. B., 2012. Settlement and stress distributions. In: J. Burland, T. Chapman, S. Hilary & M. Brown, eds. *ICE manual of geotechnical engineering*. London: ICE Publishing, pp. 207-220.
- Burland, J. B., 2012. Strength and deformation behaviour of soils. In: J. Burland, T. Chapman, H. Skinner & M. Brown, eds. *ICE manual of geotechnical engineering*. London: ICE Publishing, pp. 175-193.
- Castro, J., 2017. Modelling stone column. *Materials*, Issue 10, p. 782.
- Castro, J. et al., 2019. *Critical length of stone column*. Reykjavik, ECSMGE.
- Chai, J.-C. et al., 2015. 2D and 3D analyses of an embankment on clay improved by soil-cement columns. *Computers and Geotechnics*, Volume 68, pp. 28-37.
- Dar, L. A. & Shah, M. Y., 2022. Accuracy analysis of 2D numerical method of deep-seated failure analysis in embankments on stone column reinforced ground. *Innovative Infrastructure Solutions*, 7(86), pp. 1-14.

- Das, A. K. & Deb, K., 2018. Experimental and 3D Numerical Study on Time-Dependent Behavior of Stone Column-Supported Embankment. *International Journal of Geomechanics*, 18(4).
- Das, B. M. & Sobhan, K., 2014. *Principles of Geotechnical Engineering*. 8th ed. Stamford: Cengage Learning.
- David, T. K. & Krishnamoorthy, R. R., 2022. *Load-Displacement Behavior of Soil-Pile Interaction Under Lateral Action*. Singapore, Springer Nature Singapore, pp. 957-972.
- Deb, K. & Behera, A., 2017. Rate of consolidation of stone column-improved ground considering change in permeability and compressibility during consolidation. *Applied Mathematical Modelling*, Volume 48, pp. 548-566.
- di Fonzo, G. et al., 2009. *Numerical investigation on the factors affecting pullout resistance of driven nails in pyroclastic silty sand*. Glasgow, CRC Press, pp. 123-130.
- Duc, T. N., Vo, P. & Thi, T. T., 2019. Determination of Unloading – Reloading Modulus and Exponent Parameters (m) for Hardening Soil Model of Soft Soil in Ho Chi Minh City. *Proceedings of the International Conference on Sustainable Civil Engineering and Architecture 2019*, pp. 677-683.
- Elia, G. & Mohamed, R., 2013. Seismic Performance of Earth Embankment Using Simple and Advanced Numerical Approaches. *Journal of Geotechnical and Geoenvironmental Engineering*, 139(7), pp. 1115-1129.
- ESDM, 2022. *GeoMap*. [Online] Available at: <https://geologi.esdm.go.id/geomap/pages/preview/peta-geologi-lembar-kebumen-jawa>
- Fattah, M. Y. M. Q. G., 2012. Finite Element Analysis of Geogrid Encased Stone Columns. *Geotechnical and Geological Engineering Journal*, 30(4), pp. 713-726.
- Fattah, M. Z. B. H. H., 2016. Experimental Analysis of Embankment on Ordinary and Encased Stone Columns. *International Journal of Geomechanics*, 16(4), pp. 1-13.
- Fayed, A. L., Sorour, T. M. & Shehata, H. F., 2018. Study of the Behavior of Floating Stone Columns in Soft Clay Formations Using Numerical Modelling. *Soil Testing, Soil Stability and Ground Improvement*, pp. 236-251.
- FHWA, 2017. *Ground Modification Methods Reference Manual - Volume I*. Washington DC: National Highway Institute.
- Frikha, W. & Bouassida, M., 2014. Prediction of stone column ultimate bearing capacity using expansion cavity model. *Proceedings of the Institution of Civil Engineers - Ground Improvement*, 168(GI2), pp. 106-115.

Gaber, M., Kasa, A., Abdul-Rahman, N. & Alsharef, J., 2018. Simulation of stone column ground improvement (comparison between axisymmetric and plane strain). *American Journal of Engineering and Applied Science*, pp. 129-137.

Geocipta Bangun Optima, 2021. *Laporan Faktual Geologi*, Jakarta: PT Cipta Strada KSO.

Ghorbani, A., Hosseinpour, I. & Shormage, M., 2021. Deformation and Stability Analysis of Embankment over Stone Column-Strengthened Soft Ground. *KSCE Journal of Civil Engineering*, 25(2), pp. 404-416.

Gu, X., Yang, J. & Huang, M., 2013. Laboratory measurements of small strain properties of dry sands by bender element. *Soils and Foundations*, 53(5), pp. 735-745.

Gäb, M., Schweiger, H. F., Kamrat-Pietraszewska, D. & Karstunen, M., 2008. *Numerical analysis of a floating stone column foundation using different constitutive models*. Glasgow, CRC Press, pp. 137-142.

Han, J., 2015. *Principles and Practice of Ground Improvement*. New Jersey: Hoboken.

Han, J., Sheth, A., Porbaha, A. & Shen, S., 2004. *Numerical analysis of embankment stability over deep mixed foundations*. Los Angeles, ASCE, pp. 1385-1394.

Han, J. & Ye, S.-L., 2001. Simplified method for consolidation rate of stone column reinforced foundation. *Journal of Geotechnical and Geoenvironmental Engineering*, 127(7), pp. 597 - 603.

Hartono, N., 2021. *Pemetaan Potensi Likuefaksi dan Optimasi Perbaikan Tanah dengan Metode Stone Column di Kawasan Yogyakarta International Airport*. Yogyakarta: Universitas Gadjah Mada.

Imam, R., Zarei, M. & Ghafarian, D., 2021. Relative contribution of various deformation mechanisms in the settlement of floating stone column-supported foundations. *Computers and Geotechnics*, Volume 134, p. 104109.

Ishibashi, I. & Hazarika, H., 2015. *Soil Mechanics Fundamental and Applications*. 2nd ed. Boca Raton: CRC Press.

Jasamarga Jogja Bawen, 2022. *Rencana Teknik Akhir Jalan Tol Yogyakarta - Bawen Seksi 3*, Yogyakarta: JJB.

Kadhim, S. T. & Fouad, Z. B., 2018. Stability analysis of roadway embankments supported by stone columns with the presence of water table under short-term and long-term conditions. *MATEC Web of Conferences*, Volume 162.

Karim, M. R. & Gnanendran, C., 2014. Review of constitutive models for describing the time dependent behaviour of soft clays. *Geomechanics and Geoengineering*, 9(1), pp. 36-51.

Kementerian PUPR, 2018. *Surat Edaran Nomor 12/SE/M/2018 tentang Pemberlakuan Pedoman Inventarisasi Lereng Jalan dan Pedoman Inspeksi Lereng Jalan*. Jakarta: JDIH Kementerian PUPR.

Kementerian PUPR, 2021. *Desain Spektra Indonesia*. [Online]
Available at: <https://rsa.ciptakarya.pu.go.id/2021/>
[Accessed 10 May 2023].

Killeena, M. M. & McCabe, B. A., 2014. Settlement performance of pad footings on soft clay supported by stone columns: A numerical study. *Soils and Foundations*, 54(4), pp. 760-776.

Kim, B., 2012. *Seismic Hazard Analysis and Seismic Slope Stability Evaluation Using Discrete Faults in Northwestern Pakistan*. Dissertation ed. Urbana: University of Illinois at Urbana-Champaign.

Look, B., 2007. *Handbook of Geotechnical Investigation and Design Table*. London: Taylor & Francis.

Maming, M., Jamaluddin, A., Harianto, T. & Muhiddin, A., 2021. Unfluence Depth of the Tensile Capacity of Ground Anchors Folding Type in Cohesive Soils. *earth and Enviromental Science*, Issue 841, p. 012005.

Menard, 2021. *Menard*. [Online]
Available at: <https://www.menard-asia.com/2021/07/12/soils-that-we-treat-using-stone-column/>
[Accessed 22 May 2023].

Meyerhof, G. G., 1956. Penetration Tests and Bearing Capacity of Cohesionless Soils. *Journal of the Soil Mechanics and Foundations Division*, 82(1), pp. 1-19.

Mirrashed, A. H., Hosseinpour, I. & Mirmoradi, S. H., 2022. Influence of Granular Columns on the Behavior of Reinforced-Soil Wall on Layered Soft Foundation. *Transportation Infrastructure Geotechnology*.

Ng, K. S. & Tan, S. A., 2014. Design and analyses of floating stone column. *Soils and Foundations*, 54(3), pp. 478 - 487.

PLAXIS, 2020. *PLAXIS 3D-Reference Manual*. s.l.:Bentley.

Potts, D. M. & Zdravkovic, L., 1999. *Finite element analysis in geotechnical engineering: theory*. London: Thomas Telford Publishing.

Potts, D. M. & Zdravkovic, L., 2001. *Finite element analysis in geotechnical engineering: application*. London: Thomas Telford Publishing.

Priebe, H. J., 1995. *The Design of Vibro-Replacement*, Aachen: GeTec Ingenieurgesellschaft für Informations-und Planungstechnologie mbH.

PUSGEN, 2017. *Peta Sumber dan Bahaya Gempa Indonesia Tahun 2017*. Bandung: Kementerian Pekerjaan Umum dan Perumahan Rakyat.

Rocscience, 2021. *Hardening Soil Model - PLAXIS*. [Online]
Available at: <https://static.rocscience.cloud/assets/verification-and-theory/RS3/15-Hardening-Soil-Model-PLAXIS.pdf>
[Accessed 30 April 2023].

Rollings, M. P. & Rollings, R. S., 1996. *Geotechnical Material in Construction*. New York: McGraw-Hill.

Sahoo, P. & Shukla, S., 2021. Time-History Analysis of Soil Slope Subjected to Seismic Loadings. *Soil Mechanics and Foundation Engineering*, 58(2), pp. 130-137.

Saputra, S., Putra, D. & Atmaja, R. W. W., 2016. Pemodelan aliran air tanah pada cekungan air tanah di antara beberapa gunungapi; studi kasus cekungan air tanah Magelang - Temanggung, Jawa Tengah, Indonesia. *OSF*.

Schanz, T., Vermeer, P. A. & Bonnier, P. G., 1999. The hardening soil model: Formulation and verification. *Beyond 200 in Computational Geotechnics*, pp. 281-296.

Schweiger, H. F., Gäß, M., Kamrat-Pietraszewska, D. & Karstunen, M., 2008. Numerical analysis of a floating stone column foundation using different constitutive model. *Geotechnics of soft soil: Focus on ground improvement*, pp. 137-142.

Shahraki, M., 2019. *Numerical Analysis of Soil Behavior and Stone Columns Effects on the Railway Tracks*. Dissertation ed. Weimar: Bauhaus-Universität Weimar.

Suhendro, B., 2000. *Metode Elemen Hingga dan Aplikasinya*. Yogyakarta: Jurusan Teknik Sipil.

Sunardi, B. & Sulastri, 2015. *Deagregasi Bahaya Gempa Bumi untuk Daerah Istimewa Yogyakarta*. s.l., Simposium Nasional Sains Geoinformasi IV.

Terzaghi, K., Peck, R. B. & Mesri, G., 1996. *Soil Mechanics in Engineering Practice*. 3rd ed. New York: John Wiley and Sons.

Thota, S. K., Cao, T. D. & Vahedifard, F., 2021. Poisson's Ratio Characteristic Curve of Unsaturated Soils. *Journal of Geotechnical and Geoenvironmental Engineering*, 147(1), p. 04020149.

Urciuoli, G., Picarelli, L. & Leroneil, S., 2007. Local shear failure before general slope failure. *Geotechnical and Geological Engineering*, Volume 25, pp. 103-122.

Verruijt, A., 2001. *Soil Mechanics*. Delft: Delft University of Technology.

Wang, J.-H., Desai, C. S. & Zhang, L., 2019. Soft Soil and Related Geotechnical Engineering Practice. *International Journal of Geomechanics*, 19(11).

Xiao, J., Yang, H.-p., Zhang, J.-h. & Tang, X.-y., 2018. Surficial Failure of Expansive Soil Cutting Slope and Its Flexible Support Treatment Technology. *Advances in Civil Engineering*, p. 1609608.

Xu, Z., Zhang, L. & Zhou, S., 2021. Influence of encasement length and geosynthetic stiffness on the performance of stone column: 3D DEM-FDM coupled numerical investigation. *Computers and Geotechnics*, Volume 132.



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Analisis Perilaku Tegangan-Regangan Timbunan di Atas Tanah Lunak dengan Perkuatan Stone Column Berdasarkan Simulasi Numeris 2D dan 3D (Studi Kasus: STA 50+600 Pembangunan Jalan Tol Yogyakarta - Bawen)

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Zhang, L., Xu, Z. & Zhou, S., 2020. Vertical cyclic loading response of geosynthetic-encased stone column in soft clay. *Geotextiles and Geomembranes*, 48(6), pp. 897-911.

Zhang, Z., Han, J. & Ye, G., 2014. Numerical investigation on factors for deep-seated slope stability of stone column-supported embankments over soft clay. *Engineering Geology*, Volume 168, pp. 104-113.