

REFERENCES

- Afentoulis, V., Rivemale, J., & Battesti, J.-Y. (2023, October 30). Performance-Based Design of Berthing/Mooring Dolphin Structure Considering Geotechnical and Structural Constraints Under Offshore Load Conditions. *PIANC Mediterranean Days*. <https://hal.science/hal-04264290>
- Afin, A. P., & Kiono, B. F. T. (2021). Potensi Energi Batubara serta Pemanfaatan dan Teknologinya di Indonesia Tahun 2020 – 2050 : Gasifikasi Batubara. *Jurnal Energi Baru Dan Terbarukan*, 2(2), 144–122. <https://doi.org/10.14710/jebt.2021.11429>
- Ameratunga, J., Sivakugan, N., & Das, B. M. (2016). *Developments in Geotechnical Engineering Correlations of Soil and Rock Properties in Geotechnical Engineering*. <https://doi.org/http://doi.org/10.1007/978-81-322-2629-1>
- American Society of Civil Engineer. (2017). Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16). In *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. American Society of Civil Engineers (ASCE). <https://doi.org/10.1061/9780784414248>
- Andersen, F., & Lodahl, M. R. (2023). *Modelling of soldier pile walls in Plaxis 2D*. <https://doi.org/10.53243/NUMGE2023-25>
- Anugraha, R. B., D., S. M., R, I. P., A., S., Noor, N., & Rahman, Y. (2020). Evaluasi Struktur Dermaga Akibat Korosi Berdasarkan SNI 2833-2016 dan SNI 1725-2016. *Jurnal Aplikasi Teknik Sipil*, 18(2), 261–276.
- ASTM A252-10. (2018). *Standard Specification for Welded and Seamless Steel Pipe Piles*. ASTM International. <https://doi.org/10.1520/A0252-10R18>
- Azizi, F. (1991). *Applied Analyses in Geotechnics*. E & FN Spon.
- Badan Standardisasi Nasional. (2017). *Standar Nasional Indonesia 8460: 2017 “Persyaratan Perancangan Geoteknik.”* www.bsn.go.id
- Basu, D., Salgado, R., & Prezzi, M. (2008). *Analysis of Laterally Loaded Piles in Multilayered Soil Deposits*. <https://doi.org/10.5703/1288284313454>
- Bentley. (2022). *PLAXIS 2D-Reference Manual (V22.02)*. Bentley.
- Bildik, S. (2023). Numerical Modeling of the Geotechnical and Structural Strengthening of Quay Structures with a Case Study. *Applied Sciences (Switzerland)*, 13(21). <https://doi.org/10.3390/app132111868>
- BMKG. (2023, February). Buletin Cuaca dan Iklim Februari 2023. *Stasiun Meteorologi Aji Pangeran Tumenggung Pranoto*.
- Bowles, J. E. (1979). *Physical and Geotechnical Properties of Soil* (2nd ed.). McGraw-Hill.
- Bowles, J. E. (1991). *Analisa dan Disain Pondasi Jilid 2*. Penerbit Erlangga.

- Bowles, J. E. (1997). *Foundation Analysis and Design* (5th ed.). McGraw-Hill.
- Budhu, M. (2010). *Soil Mechanics and Foundations* (3rd ed.). John Wiley & Sons, Inc.
- Carioti, B. M., Elms, D. G., & Peace, R. G. (1961). Dolphin Design. In *NPS ARCHIVE*.
- Chin, C. Y., Arefi, J., & Young, R. (2022). *Ground displacement at Lyttelton Port; A comparison between Plaxis 2D models and monitored movements*. <https://www.researchgate.net/publication/378940496>
- Chopra, H. B., & Patel, P. G. (2015). Application of Forces Acting on Jetty Structure. *IJSTE-International Journal of Science Technology & Engineering* |, 1(11). www.ijste.org
- Craig, V., & Hartman, G. (2012). Dredging Practices and Environmental Considerations. In R. A. Meyers (Ed.), *Encyclopedia of Sustainability Science and Technology* (pp. 3028–3052). Springer New York. https://doi.org/10.1007/978-1-4419-0851-3_438
- Datanesia. (2022, August 27). *Surga Batu Bara di Kalimantan*. <https://datanesia.id/surga-batu-bara-di-kalimantan/>
- Datcheva, M., Tom Schanz, & Xiang Li. (2018). Fully Coupled Hydro-Mechanical Modelling of a Conceptual Slope Considering River- Level Fluctuations. *7th International Conference on Unsaturated Soils*. <https://www.issmge.org/publications/online-library>
- Department of Defense USA. (2017). *Unified Facilities Criteria (UFC): Piers And Wharves*. <http://www.wbdg.org/ffc/dod>.
- Digvijay, M., Salunkhe, P., & Guruprasd Chvan, A. (2017). An Overview on Methods for Slope Stability Analysis. *International Journal of Engineering Research & Technology (IJERT)*, 6(3). www.ijert.org
- Directorate General of Sea Communications. (1984). *Standard Design Criteria for Port in Indonesia*.
- Djoko Setiarto. (2010). *Modul Praktikum (SAP2000)*.
- Dmochowski, G., Berkowski, P., Szołomicki, J., Gronostajska, B., & Krążelewski, J. (2021). Modelling And Analysis of the Stability of a Harbour Wharf's Embankment with Regards to Its Failure. *Archives of Civil and Mechanical Engineering*, 21(4). <https://doi.org/10.1007/s43452-021-00293-5>
- Doherty, P., & Gavin, K. (2011). The Shaft Capacity of Displacement Piles in Clay: A State of the Art Review. *Geotechnical and Geological Engineering*, 29(4), 389–410. <https://doi.org/10.1007/s10706-010-9389-2>
- Elgamal, A. (2022). Guidelines for Geotechnical Finite-Element Modeling. *The Open Civil Engineering Journal*, 15(1), 424–440. <https://doi.org/10.2174/1874149502115010424>

- Friederich, M. C., & van Leeuwen, T. (2017). A Review of the History of Coal Exploration, Discovery and Production in Indonesia: The Interplay of Legal Framework, Coal Geology and Exploration Strategy. *International Journal of Coal Geology*, 178, 56–73. <https://doi.org/10.1016/j.coal.2017.04.007>
- Galli, A., Maiorano, R. M. S., Di Prisco, C., & Aversa, S. (2017). Design of Slope-Stabilizing Piles: From Ultimate Limit State Approaches to Displacement Based Methods. *Rivista Italiana Di Geotecnica*, 51(3), 77–93. <https://doi.org/10.19199/2017.3.0557-1405.077>
- Geotechnical Control Office. (1982). *Guide To Retaining Wall Design*. Civil Engineering Development Department.
- Google Earth. (2025). *Pengandan, Karangas Sub-district, Indonesia*. <https://earth.google.com>
- Gutiérrez, F., & Gutiérrez, M. (2016). Slope Movements. In *Landforms of the Earth: An Illustrated Guide* (pp. 127–154). Springer International Publishing. https://doi.org/10.1007/978-3-319-26947-4_8
- Hakiki, I. A., Ariviana, V., Afifah, I. N., & Sembiring, L. E. (2019). Beban Gelombang Pada Tiang Pancang Penahan Ponton Yang Diletakan di Depan Dinding Vertikal. *Jurnal Teknik Hidraulik*, 10(2). <https://doi.org/10.32679/jth.v10i2.615>
- Hardiyatmo, H. C. (2023a). *Analisis dan Perancangan Fondasi II*. Gadjah Mada University Press.
- Hardiyatmo, H. C. (2023b). *Tanah Longsor & Erosi (Kejadian dan Penanganan)* (2nd ed.). Gadjah Mada University Press.
- Harsha, P., & Rameesha, T. V. (2024). Study of the Effect of Slope, Location and Loading Direction of Single Pile on the Lateral Load Capacity. In B. T. Jose, D. K. Sahoo, E. C. Shin, D. Choudhury, A. Joseph, & R. R. Pai (Eds.), *Proceedings of the Indian Geotechnical Conference 2022 Volume 1* (pp. 105–116). Springer Nature Singapore.
- Haskell, J. J. M., Cubrinovski, M., & Bradley, B. A. (2019). Sensitivity Analysis of Simplified Methods for the Design of Piles in Laterally Spreading Soils. *New Zealand Society for Earthquake Engineering*. <https://www.researchgate.net/publication/29489138>
- International Code Council. (2016). *California Building Code: Chapter 31F—Marine Oil Terminals*. <https://codes.iccsafe.org/content/CBC2018V2/chapter-31f-slc-marine-oil-terminals>
- International Energy Agency. (2021). *Coal Information: Overview*. <https://www.iea.org/reports/coal-information-overview>
- Jensen, J., Kastrup, P., & Hodder, M. (2017). Briefing: Maritime Structures – The Design of Challenging Vertical Pile Dolphin Solution. *Maritime Engineering*, 170(3+4), 83–95. <https://doi.org/10.1680/jmaen.2015.24>

- Jiren, L., Bo, S., & Jianyu, C. (2015). Seismic Dynamic Damage Characteristics of Vertical and Batter Pile-supported Wharf Structure Systems. *Journal of Engineering Science and Technology*, 8, 180–189. <https://doi.org/10.25103/jestr.085.23>
- Kardoğan, P. S. Ö., & Bhattacharya, S. (2018). Review of Liquefaction Around Marine and Pile-Supported Wharf Structures. *Lecture Notes in Civil Engineering*, 6, 893–903. https://doi.org/10.1007/978-3-319-63709-9_68
- Kementerian PUPR. (2021). *Aplikasi Spektrum Respons Desain Indonesia*. Direktorat Bina Teknik . rsa.ciptakarya.pu.go.id
- Khaled, A., Eltoukhy, M. A. R., & Samy, A. (2024). Evaluation of Mooring Forces on Berths Bollards. *Engineering Research Journal (ERJ)*, 53(1), 150–157. <https://erjsh.journals.ekb.eg>
- Kinde, M., Getahun, E., & Jothimani, M. (2024). Geotechnical And Slope Stability Analysis in the Landslide-Prone Area: A Case Study in Sawla – Laska Road Sector, Southern Ethiopia. *Scientific African*, 23. <https://doi.org/10.1016/j.sciaf.2024.e02071>
- Leman, S. (2023). *Hasil Review: Pekerjaan Studi Kelayakan Teknis Pelabuhan Bahan Kimia dan Bahan Bakar Minyak Kab. Morowali, Sulawesi Tengah*.
- Look, B. G. (2007). *Handbook of Geotechnical Investigation and Design Tables*. Taylor & Francis/Balkema.
- Mohr, A. W. (1974). Development and Future of Dredging. *Journal of the Waterways, Harbors and Coastal Engineering Division*, 100(2). <https://doi.org/10.1061/AWHCAR.0000240>
- Muthukkumaran, K., & Sundaravadivelu, R. (2007). Numerical Modeling of Dredging Effect on Berthing Structure. *Acta Geotechnica*, 2(4), 249–259. <https://doi.org/10.1007/s11440-007-0040-1>
- National Standardization Agency of Indonesia. (2019). *National Standard for Designing Earthquake Resistance Building (SNI 1726:2019)*. www.bsn.go.id
- Octaviarini, I. S., Fathani, T. F., Hardiyatmo, H. C., Amalina, A. N., & Erzagian, E. (2023). The Mechanism of Rainfall-Induced Landslide Around Railway Tracks in Central Java Province, Indonesia. *INERSIA Informasi Dan Ekspose Hasil Riset Teknik Sipil Dan Arsitektur*, 19(2), 212–222. <https://doi.org/10.21831/inersia.v19i2.66835>
- Paulauskas, V., Paulauskas, D., Plačienė, B., & Barzdžiukas, R. (2018). Ship Mooring to Jetties Under the Crosscurrent. *Transport*, 33(2), 454–460. <https://doi.org/10.3846/16484142.2017.1354069>
- PileLAT. (2017, February 2). *API p-y curve models for laterally loaded piles*. <https://www.pilegroups.com/single-post/api-p-y-curves>
- Ports and Harbours Bureau MLIT / National Institute for Land and Infrastructure Management MLIT / Port and Airport Research Institute. (2020). *Technical Standards and Commentaries for Port and Harbour Facilities in Japan* (Working Group in the

Committee for Propagating Japanese Technical Standards Abroad, Ed.). The Overseas Coastal Area Development Institute of Japan.

- Potts, D. M., & Zdravković, Lidija. (2001). *Finite Element Analysis in Geotechnical Engineering Application*. Thomas Telford.
- Priyono, Triatmojo, S., & Rahayu. (2023). Mitigation Of Landslide Prone Areas in Anticipation of Climate Change Impacts. *Journal Of Multidisciplinary Research*, 32–46. <https://doi.org/10.56943/jmr.v2i1.277>
- Propika, J., Lestari, L. L., & Puspasari, A. D. (2021). Lateral Bearing Capacity Analysis of Pile Foundation Using a Spring Modelling System. *IOP Conference Series: Materials Science and Engineering*, 1010(1). <https://doi.org/10.1088/1757-899X/1010/1/012007>
- Pusat Penelitian dan Pengembangan Geologi. (1995). *Peta Geologi Bersistem Indonesia, Lembar Muara Lasa, Skala 1:250.000*.
- Pusat Pengembangan Infrastruktur Informasi Geospasial. (2024, September 11). *Batas Administrasi Provinsi Berdasarkan Data Batas Kabupaten Kota*. <https://geoservices.big.go.id/portal/home/item.html?id=c03442a068e848dc80838646800f4c33>
- Rahman, R. A., Amalia, A. R., Riandhis, J. A., & Hidayah, H. (2017). Peningkatan Kualitas Air Baku Sungai Mahakam Dengan Teknologi Moci (Moringa Oleifera and Cellulose Installation). *Prosiding Seminar Nasional Teknologi IV*, 7–14. <https://e-journals.unmul.ac.id/index.php/SEMNASTEK/article/view/983/888>
- Riyanto, R. D., Syahroni, N., & Mulyadi, Y. (2021). Strength Analysis and Repair Strategy of Aged Steel Jetty Pile. *Ilmu Pengetahuan Dan Teknologi Kelautan*, 18(1), 28–40. <http://ejournal.undip.ac.id/index.php/kapal>
- Rocscience. (2022). *RSPile Theory Manual: Laterally Loaded Piles*.
- Rouholamin, M., Bhattacharya, S., & Lombardi, D. (2015). Winkler Springs (p-y curves) for Liquefied Soil from Element Tests. *Geomechanics from Micro to Macro - Proceedings of the TC105 ISSMGE International Symposium on Geomechanics from Micro to Macro, IS-Cambridge 2014*, 2, 951–956. <https://doi.org/10.1201/b17395-170>
- RSA Ciptakarya. (2021). *Desain Spektra Indonesia*. Aplikasi Spektrum Respons Desain Indonesia 2021
- Saha, B. K. (2017). *A Comparative Study Between Large Deformation Finite Element and Limit Equilibrium Methods of Slope Stability Analysis*.
- Sahara, S., & Pradana, A. R. (2021). Optimalisasi Penggunaan Forklift Terhadap Kelancaran Proses Bongkar Steel Coil Di Pt. Daisy Mutiara Samudra. *Logistik*, 14.
- Sandirasegaran, K., & Manap, N. (2016). Impacts Of Dredging and Reclamation Projects. *Jurnal Teknologi*, 78(7–3), 139–143. <https://doi.org/10.11113/jt.v78.9506>

- Schweiger, H. F., Tschuchnigg, F., Mosser, C., & Torggler, N. (2017). Finite Element Modelling of Reinforced Slopes by Means of Embedded Beam Rows. *International Conference on Soil Mechanics and Geotechnical Engineering*. <https://www.issmge.org/publications/online-library>
- Siagian, G. H. M., Setyandito, O., Suwondo, R., & John Pierre, A. (2021). Effects of Pile Configuration on the Behaviour of Jetty Structure Subject to Lateral Loads. *IOP Conference Series: Earth and Environmental Science*, 794(1). <https://doi.org/10.1088/1755-1315/794/1/012036>
- Siliwangi, M., Pratomo, F. R. A., W, S. P. R., & Hardiyati, S. (2014). Perancangan Pondasi Tiang Pancang Dermaga Packing Plant Banjarmasin – Kalimantan Selatan. *Jurnal Karya Teknik Sipil*, 3(1), 270–282. <http://ejournal-s1.undip.ac.id/index.php/jkts>
- Sivapriya, S. V., & Gandhi, S. R. (2013). Experimental and Numerical Study on Pile Behaviour Under Lateral Load in Clayey Slope. *Indian Geotechnical Journal*, 43(1), 105–114. <https://doi.org/10.1007/s40098-012-0037-z>
- Skempton, A. W. (1951). *The Bearing Capacity of Clays*.
- Sluis, J. J. M., Besseling, F., & Stuurwold, P. H. H. (2014). Modelling of a pile row in a 2D plane strain FE-analysis. *Numerical Methods in Geotechnical Engineering - Proceedings of the 8th European Conference on Numerical Methods in Geotechnical Engineering, NUMGE 2014, 1*, 277–282. <https://doi.org/10.1201/b17017-51>
- Sudibyoy, A., & Pranoto, Y. (2018). Kajian Pengaruh Pencemaran Butiran Batu Bara Pada Pasir Sungai Mahakam Sebagai Bahan Konstruksi Beton. *SNITT-Politeknik Negeri Balikpapan*, 207–211.
- Tamang, R., Byle, M. J., Ozkan, S., & Singhal, V. (2023). *Risk Assessment and Avoidance for Impact of Dredging on Existing Shoreline Structures*. 387–396. <https://doi.org/10.1061/9780784484982.039>
- Tjie-Liong, G. (2014). Common Mistakes on the Application of Plaxis 2D in Analyzing Excavation Problems. *International Journal of Applied Engineering Research*, 9, 8291–8311. <http://www.ripublication.com>
- Treaty Between the Republic of Indonesia and the Republic of Singapore Relating to the Delimitation of the Territorial Seas of the Two Countries in the Eastern Part of the Strait of Singapore (2014). <https://berkas.dpr.go.id/akd/dokumen/RJ1-20170619-094342-7273.pdf>
- Triatmodjo, B. (2009). *Perencanaan Pelabuhan*. Beta Offset.
- Ubechu, B. O., & Okeke, O. C. (2017). Landslide: Causes, Effects and Control. *International Journal of Current Multidisciplinary Studies*, 3, 647–663. <http://www.journalijcms.com>
- Utami, M. P., Widodo, E. N., Raharja, R., Amroes, F., Fakhrudin, M. A., Sari, D. M., & Krisdianto, F. J. (2022). Potential Of Indonesian Coal Exports with Value Added to

Meet Global Energy Demands. *Prosiding Seminar Nasional BSKJI "Post Pandemic Economy Recovery"*, 31–39.

- Wijaya, T., Setyandito, O., & Novandy. (2022). Stability Analysis of Jetty Piles Due to Lateral Force (Case Study: Tourism Harbor). *IOP Conference Series: Earth and Environmental Science*, 998(1). <https://doi.org/10.1088/1755-1315/998/1/012022>
- Wrzesiński, G. (2020). Permeability coefficient tests in non-cohesive soils. *Scientific Review Engineering and Environmental Sciences*, 29(1), 72–80. <https://doi.org/10.22630/PNIKS.2020.29.1.7>
- Yulianingrum, A. V., Nurfadillah, M., Riziq, S. M., & Novitadiningrum, A. (2023). Implikasi Kebijakan Pengelolaan Pertambangan Batubara Terhadap Eksistensi Masyarakat Hukum Adat Di Samarinda. *AL-MANHAJ: Jurnal Hukum Dan Pranata Sosial Islam*, 5(1), 915–924. <https://doi.org/10.37680/almanhaj.v5i1.2826>
- Zakaria, M. T., Muztaza, N. M., Zabidi, H., Ahmad, F., Adeeko, T. O., Ismail, N., & Samsudin, N. (2020). Slope Instability Evaluation Using Geophysical Methods of Gua Musang-Cameron Highland Highway. *Lowland Technology International*, 22(1), 172–179.
- Zhao, S., & Deng, L. (2018). Analyses Of Embedded Piles Reinforced Landslides Using Strength Reduction Finite Element Method. *International Journal of Geotechnical Engineering*, 12(4), 389–401. <https://doi.org/10.1080/19386362.2017.1282844>