

DAFTAR PUSTAKA

- Agwa, T. C., & Celik, T. (2025). From Barriers to Breakthroughs: A Deep Dive into BIM Integration Challenges. *Buildings*, 15(7), Article 1116. <https://doi.org/10.3390/buildings15071116>
- Alviani, E., Putra, A. D., Siregar, A. M., & Usman, K. (2023). Manajemen Penjadwalan Menggunakan Microsoft Project dan Analisis Risiko Pada Proyek Pembangunan RSPTN Universitas Lampung. *Jurnal Rekayasa Sipil dan Desain*, 6(11), 951–952., 2(2), 255–264. <https://doi.org/10.13140/RG.2.2.11860.62084>
- American Concrete Institute. (2014). Building code requirements for structural concrete (ACI 318-14) and commentary (ACI 318R-14). American Concrete Institute.
- American Society of Civil Engineers. (2017). Minimum design loads and associated criteria for buildings and other structures (ASCE/SEI 7-16). American Society of Civil Engineers. <https://doi.org/10.1061/9780784414248>
- Arifin, M. L. N., Hendrawangsa, P., & Sari, N. K. (2024). Bandingan Analisis Cost Budget Plan Menggunakan Metode Konvensional dan Metode Building Information Modeling (BIM) 5D Dalam Pekerjaan Struktural (Studi kasus: Proyek Pembangunan Gedung Laboratorium Terpadu Politeknik Negeri Indramayu). *Akselerasi: Jurnal Ilmiah Teknik Sipil*, 5(2), 1–8. <https://doi.org/10.37058/aks.v5i2.10160>
- Ariono, B., Wasesa, M., & Dhewanto, W. (2022). The Drivers, Barriers, and Enablers of Building Information Modeling (BIM) Innovation in Developing Countries: Insights from Systematic Literature Review and Comparative Analysis. *Buildings*, 12(11). <https://doi.org/10.3390/buildings12111912>
- Badan Standardisasi Nasional. (2017). Persyaratan perancangan geoteknik (SNI 8460:2017). Badan Standardisasi Nasional.
- Badan Standardisasi Nasional. (2019). Persyaratan beton struktural untuk bangunan gedung dan penjelasan (SNI 2847:2019). Badan Standardisasi Nasional.

- Badan Standardisasi Nasional. (2019). Tata cara perencanaan ketahanan gempa untuk struktur bangunan gedung dan nongedung (SNI 1726:2019). Badan Standardisasi Nasional.
- Badan Standardisasi Nasional. (2020). Beban desain minimum dan kriteria terkait untuk bangunan gedung dan struktur lain (SNI 1727:2020). Badan Standardisasi Nasional.
- Building Transparency. (n.d.). *Embodied Carbon in Construction Calculator (EC3)*. <https://www.buildingtransparency.org/tools/ec3/>
- Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen. (n.d.). *ÖKOBAUDAT: Datenbank für die Ökobilanzierung von Gebäuden*. <https://www.oekobaudat.de/>
- Departemen Pekerjaan Umum. (1987). Pedoman perencanaan pembebanan untuk rumah dan gedung (PPURG 1987; SKBI-1.3.53.1987). Yayasan Badan Penerbit Pekerjaan Umum.
- Direktorat Jenderal Bina Konstruksi. (2026). Surat Edaran Direktur Jenderal Bina Konstruksi Nomor 47/SE/Dk/2026 tentang tata cara penyusunan perkiraan biaya pekerjaan konstruksi bidang pekerjaan umum: Lampiran VI, Analisis Harga Satuan Pekerjaan (AHSP) bidang Cipta Karya. Kementerian Pekerjaan Umum. <https://binakonstruksi.pu.go.id/produk/produk-hukum/surat-edaran-direktur-jenderal-bina-konstruksi-nomor-47-se-dk-2026/>
- ecoinvent Association. (2025). *ecoinvent database version 3.12*. <https://ecoinvent.org/database/>
- EPD International AB. (n.d.). *The International EPD System*. <https://www.environdec.com/>
- European Committee for Standardization. (2011). Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method (EN 15978:2011). CEN.
- European Committee for Standardization. (2017). Sustainability of construction works - Environmental product declarations - Product category rules for concrete and concrete elements (EN 16757:2017). CEN.

- European Committee for Standardization. (2019). Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products (EN 15804:2012+A2:2019). CEN.
- Farhana, A., Abma, V., & Artikel, I. (2022). Implementasi Konsep BIM 5D Pada Pekerjaan Struktur Proyek Gedung, *RACIC: Rab Construction Research*, 7(2), 116–127. <https://doi.org/10.36341/racic.v7i2.3004>
- Fauziah, T., Aziz, M., & Sukartini, M. (2025). Pengaruh Carbon Emission Disclosure. *Measurement: Jurnal Akuntansi*, 19(2), 233–246. <https://doi.org/10.5281/zenodo.7951766>
- Gibbons O.P., J J Orr, C Archer-Jones, W Arnold, & D Green. (2022). How to calculate embodied carbon, Second Edition. The Institution of Structural Engineers.
- Hagras, A., Piyasena, T. P. A. L., Nawarathna, A., Leon, M., Silverio, A. K., & Prabhakaran, A. (2026). Developing a BIM-Integrated Framework for Embodied Carbon Assessment in Developing Countries : A Systematic Review and Expert Validation Study for Sri Lanka. . *Buildings*, 16(4), Article 814. <https://doi.org/10.3390/buildings16040814>
- Hammond, G., & Jones, C. (2011). Inventory of Carbon and Energy (ICE) version 2.0 (BSRIA BG 10/2011). University of Bath & BSRIA.
- Hardianto, Y., Islam, I. M., Setiabudi, B., & Nurdiana, A. (2024). Perencanaan Ulang Rumah Susun Tenaga Pendidik Universitas Gadjah Mada Dengan Konsep Building Information Modeling (BIM) 5D. *Jurnal Sipil dan Arsitektur*, 2(1), 33–47.
- Huang, B., Xing, K., & Rameezdeen, R. (2023). Exploring Embodied Carbon Comparison in Lightweight Building Structure Frames : A Case Study. *Sustainability*, 15(20), Article 15167. <https://doi.org/10.3390/su152015167>
- International Organization for Standardization. (2006). Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006). ISO.
- International Organization for Standardization. (2006). Environmental management - Life cycle assessment - Requirements and guidelines (ISO

14044:2006). ISO.

International Organization for Standardization. (2018). Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 1: Concepts and principles (ISO 19650-1:2018). ISO.

Jonathan, R., & Anondho, B. (2021). Perbandingan Perhitungan Volume Pekerjaan Dak Beton Bertulang Antara Metode BIM dengan Konvensional. *JMTS: Jurnal Mitra Teknik Sipil*, 4(1), 271. <https://doi.org/10.24912/jmts.v0i0.10473>

Jones, C., & Hammond, G. (2025). Inventory of Carbon and Energy (ICE) database version 4.1. Circular Ecology. <https://circularecology.com/embodied-carbon-footprint-database.html>

Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional. (2025). Strategi nasional net zero emission 2060. Kementerian PPN/Bappenas.

Khatimi, H., & Pardosi, K. F. (2022). Implementasi Building Information Modeling 4D (Studi Kasus : Proyek Lanjutan Pembangunan Gedung Kantor Sekretariat Daerah Kabupaten Tapin). *Construction and Material Journal*, 4(1), 1–10. <https://doi.org/10.32722/cmj.v4i1.4427>

Kineber, A. F., Othman, I., Famakin, I. O., Oke, A. E., Hamed, M. M., & Olayemi, T. M. (2023). Challenges to the Implementation of Building Information Modeling (BIM) for Sustainable Construction Projects. *Applied Sciences*, 13(6). <https://doi.org/10.3390/app13063426>

Latupeirissa, J. E., Arrang, H., & Wong, I. L. K. (2024). The Challenges of Implementing Building Information Modeling in Indonesia Construction Projects. *Engineering and Technology Journal*, 09(04), 3863–3871. <https://doi.org/10.47191/etj/v9i04.28>

Li, X., Lin, M., Jiang, M., Jim, C. Y., Liu, K., & Tserng, H. (2024). BIM And Orthogonal Test Methods To Optimize The Energy Consumption Of Green Buildings. *Journal of Civil Engineering and Management*, 30(8), 670–690. <https://doi.org/10.3846/jcem.2024.21745>

- Meng, G., Hu, H., & Chen, L. (2024). The Application Obstacles Of BIM Technology In Green Building Project And Its Key Role Path Analysis. *Scientific Reports*, 14(1), 1–23. <https://doi.org/10.1038/s41598-024-81360-8>
- Menteri Pekerjaan Umum dan Perumahan Rakyat. (2021). Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 21 Tahun 2021 tentang penilaian kinerja bangunan gedung hijau. Kementerian Pekerjaan Umum dan Perumahan Rakyat.
- Menteri Pekerjaan Umum dan Perumahan Rakyat. (2023). Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 8 Tahun 2023 tentang pedoman penyusunan perkiraan biaya pekerjaan konstruksi bidang pekerjaan umum dan perumahan rakyat. Kementerian Pekerjaan Umum dan Perumahan Rakyat.
- Meyerhof, G. G. (1976). Bearing Capacity And Settlement Of Pile Foundations. *Journal of the Geotechnical Engineering Division*, 102(3), 197–228. <https://doi.org/10.1061/AJGEB6.0000243>
- Myint, N. N., & Shafique, M. (2024). Embodied carbon emissions of buildings : Taking a step towards net zero buildings. *Case Studies in Construction Materials*, 20, Article e03024. <https://doi.org/10.1016/j.cscm.2024.e03024>
- Nukah, P. D., Abbey, S. J., Booth, C. A., & Nounu, G. (2022). Optimisation of Embodied Carbon and Compressive Strength in Low Carbon Concrete. *Materials*, 15(23), Article 8673. <https://doi.org/10.3390/ma15238673>
- Paikun, Rozandi, A., Budiman, D., Ramdani, I., & Vladimirovna, K. E. (2022). Implementasi Building Information Modeling (BIM) Pada Proyek Perumahan. *Jurnal TESLINK: Teknik Sipil Dan Lingkungan*, 4(1), 1–15. <https://doi.org/10.52005/teslink.v4i1.105>
- Paknahad, C., Tohidi, M., Bahadori-jahromi, A., & Room, S (2025). A Comparative Study of Optimised Embodied Carbon and Cost in RC Slab Structures. *Sustainability*, 17(19), Article 8662. <https://doi.org/10.3390/su17198662>

- Pamungkas, A. P. (2022). Analisis Optimalisasi Perhitungan RAB Menggunakan Revit (Studi Kasus Pembangunan Gedung Bank BRI. Analisis Optimalisasi Perhitungan Rab Menggunakan Revit (Studi Kasus Pembangunan Gedung Bank Bri Jl. Sisingamangaraja – Medan Kota), 28–29.
- PT Wijaya Karya Beton Tbk. (2024). Environmental product declaration: PC spun pile (No. registrasi S-P-13859; EPD-IES-0013859:001). EPD International.
- Pusat Studi Gempa Nasional & Direktorat Bina Teknik Permukiman dan Perumahan. (2021). Desain spektra Indonesia 2021 [Aplikasi web]. Direktorat Jenderal Cipta Karya, Kementerian Pekerjaan Umum dan Perumahan Rakyat. <https://rsa.ciptakarya.pu.go.id/2021/>
- Reese, L. C., & Matlock, H. (1956). Non-dimensional solutions for laterally loaded piles with soil modulus assumed proportional to depth. *Proceedings of the Eighth Texas Conference on Soil Mechanics and Foundation Engineering* (Special Publication No. 29). Bureau of Engineering Research, The University of Texas.
- Reista, I. A., Annisa, A., & Ilham, I. (2022). Implementasi Building Information Modelling (BIM) dalam Estimasi Volume Pekerjaan Struktural dan Arsitektural. *Journal of Sustainable Construction*, 2(1), 13–22. <https://doi.org/10.26593/josc.v2i1.6135>
- Saka, A. ., & Chan, D. W. M. (2021). Adoption and Implementation of Building Information Modelling (BIM) in Small and Medium-Sized Enterprises (SMEs): A Review and Conceptualization. *Engineering, Construction and Architectural Management*, 28(7), 1829–1862. <https://doi.org/10.1108/ECAM-06-2019-0332>
- Salma, A., Fridasari, A., Aditama, S., Nurdiana, A., & Setiabudi, B. (2024). Perencanaan Ulang Bangunan Gedung Dormitory Kawasan Sains Dan Teknologi (KST) Nuklir Yogyakarta Berbasis Building Information Modelling. *Jurnal Sipil dan Arsitektur*, 2(3), 8–21.

- Seo, S., Kim, T., Chae, C. U., & Park, J. (2025). Key Construction Materials for a Streamlined Building Life Cycle Assessment : A Meta-Analysis of 100 G-SEED Projects. *Buildings*, 15(17), Article 3039. <https://doi.org/10.3390/buildings15173039>
- Standards Australia. (2002). Design wind speeds for the Asia-Pacific region (HB 212-2002). Standards Australia.
- Strelets, K., Zaborova, D., Kokaya, D., Petrochenko, M., & Melekhin, E. (2025). Building Information Modeling (BIM)-Based Building Life Cycle Assessment (LCA) Using Industry Foundation Classes (IFC) File Format. *Sustainability*, 17(7). <https://doi.org/10.3390/su17072848>
- Supriadi, E., Kampai, E., Prasetyo, J., Sari, Y. W., Ardiyati, T., Mauliva, A., & Putri, H. (2026). Enhanced CO₂ Adsorption Using Activated Carbon From Tea Stem Waste Via Activation " Carbonization Strategy. *Jurnal Sains Materi Indonesia*, 27(1), 98–106. <https://doi.org/10.55981/jsmi.2026.12227>
- Tim Penjamin Keandalan Bangunan Gedung Provinsi DKI Jakarta. (2015). Hasil konsensus faktor keamanan daya dukung fondasi (Pasal 15 dan Pasal 17), 6 Mei 2015. TPKB Provinsi DKI Jakarta.
- Wicaksono, A., & Bayuaji, R. (2025). Evaluasi Efisiensi Embodied Carbon dari Spesifikasi Material Bangunan Hijau. *Jurnal Profesi Insinyur*, 6(1). <https://doi.org/10.23960/jpi.v6n1.153>
- Wisdianti, D., Lase, T. S., & Aulia, F. (2024). Penggunaan Software Sketchup dan BIM dalam Proses Perancangan Bangunan Bentang Lebar Studi Kasus : Masjid Agung Medan. *Jurnal Teknik dan Teknologi Indonesia*, 2(1), 1–18.
- World Commission on Environment and Development. (1987). Our common future. Oxford University Press.
- Yuniarti, P. I., Fauzi, A., Intan, E., Putri, K., & Sambodo, M. T. (2025). Bibliometric and Narrative Literature Review on Carbon Pricing for Forestry and Land Use. *Jurnal Ekonomi dan Pembangunan*, 33(1), 24–50. <https://doi.org/10.55981/jep.2025.11375>