

DAFTAR PUSTAKA

- Aji, P., & Purwono, R. (2010). Pengendalian mutu beton : sesuai SNI, ACI dan ASTM. ITSPress.
- American Society for Testing And Materials. (2003). ASTM C33-03 Standard Specification for Concrete Aggregates.
- American Society for Testing And Materials. (2004). ASTM E8-04 Standard Test Methods for Tension Testing of Metallic Materials.
- American Society for Testing And Materials. (2022). ASTM D2654-22 Standard Test Methods for Moisture in Textiles.
- American Standard Testing and Material. (2022). Standards Test Methods for Moisture in Textiles (ASTM D2654). <https://doi.org/10.1520/D2654-22>
- Azizinamini, A., Stark, M., Roller, J. J., & Ghosh, S. K. (1993). Bond Performance of Reinforcing Bars Embedded in High-Strength Concrete. *ACI Structural Journal*, 90(5). <https://doi.org/10.14359/3951>
- Badan Standardisasi Nasional. (n.d.). SNI 1969:2016 Metode uji berat jenis dan penyerapan air agregat kasar.
- Badan Standardisasi Nasional. (2015). SNI 2049:2015 Semen Portland.
- Badan Standardisasi Nasional. (2017). SNI 2052:2017 Baja Tulangan Beton.
- Badan Standarisasi Nasional. (2014). SNI 7064:2014 Semen portland komposit .
- Badan Standarisasi Nasional. (2019). SNI 2847:2019 Persyaratan beton struktural untuk bangunan gedung dan penjelasan.
- Batham, G. (2008). Performance of Concrete Reinforced with Human Hair. *International Research Journal of Engineering and Technology*, 06(07), 1530–1532. www.irjet.net
- Bheel, N., Awoyera, P., Aluko, O., Mahro, S., Viloria, A., & Sierra, C. A. S. (2020). Sustainable composite development: Novel use of human hair as fiber in concrete. *Case Studies in Construction Materials*, 13, e00412. <https://doi.org/10.1016/j.cscm.2020.e00412>



- Danso, H. (2017). Properties of Coconut, Oil Palm and Bagasse Fibres: As Potential Building Materials. *Procedia Engineering*, 200(October), 1–9. <https://doi.org/10.1016/j.proeng.2017.07.002>
- Ferguson, Phil. M. (1986). *Dasar-Dasar Beton Bertulang* (4th ed.). Erlangga.
- Gere, J. M., & Timoshenko, S. P. (2000). *Mekanika Bahan* (4th ed., Vol. 1). Penerbit Erlangga.
- Hamdi, F., Lapihan, F. E., Tumpu, M., Mansur, Irianto, Mabui, D. S. S., Rайдyarto, A., Sila, A. A., Masdiana, Rangan, P. R., & Hamkah. (2022). *TEKNOLOGI BETON* (Irianto, M. Tumpu, Mansyur, & Mahyudin, Eds.; 1st ed., Vol. 1). CV. Tohar Media. <https://toharmedia.co.id>
- Iqbal, M. (2022). Studi Potensi Pemanfaatan Limbah Rambut Manusia Sebagai Serat Pada Beton. *Journal of Applied Civil and Environmental Engineering*, 2(1), 31–36.
- Kanwal, H., Aslam, M. S., Mughal, T. L., Asim, M., & Memon, R. M. (2020). Human Hair as Fiber Reinforced Concrete for Enhancement of Tensile Strength of Concrete. *Mehran University Research Journal of Engineering and Technology*, 39(1), 63–70. <https://doi.org/10.22581/muet1982.2001.07>
- Kathiresan, S., & Meenakshisundaram, O. (2022). Effect of alkali treated and untreated cellulose fibers and human hair on FTIR and tensile properties for composite material applications. *SN Applied Sciences*, 4(3), 74. <https://doi.org/10.1007/s42452-022-04946-9>
- Kemp, E. L., & Wang, J.-C. (1981). Behavior and Design Criteria for Bond in Reinforced Concrete. Program in the History of Science & Technology, West Virginia University.
- Kumar, Tn., Goutami, K., Aditya, J., Kavya, K., Mahendar, Vr., kaushik, S., & Professor, A. (2015). An Experimental Study on Mechanical Properties of Human Hair Fibre Reinforced Concrete (M-40 Grade). *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)* e-ISSN, 12(4), 65–75. <https://doi.org/10.9790/1684-12466575>
- Lumingkewas, R. H. (2023). *BETON SERAT: Inovasi dalam Konstruksi Modern*. Penerbit NEM.



I., Keya, K. N., Sarker, B., Nahiun, K. M., & Khan, R. A. (2019). A brief review on natural fiber used as a replacement of synthetic fiber in polymer

- composites. Materials Engineering Research, 1(2), 88–99. <https://doi.org/10.25082/mer.2019.02.007>
- Mulyono, T. (2004). TEKNOLOGI BETON (Vol. 2). CV. Andi Offset.
- Nanda, B. P., & Satapathy, A. (2020). Processing and thermal characteristics of human hair fiber-reinforced polymer composites. Polymers and Polymer Composites, 28(4), 252–264. <https://doi.org/10.1177/0967391119872399>
- Nawy, E. G. (2010). BETON BERTULANG - Suatu Pendekatan Dasar (Cetakan 4). Refika Aditama.
- Nugraha, P., & Antoni. (2007). Teknologi Beton dari Material Pembuatan ke Beton Kinerja Tinggi (F. S. Suryantoro, Ed.; 1st ed.). CV. Andi Offset.
- Pamungkas, N. B. (2013). PENGARUH PANJANG PENYALURAN BAJA TULANGAN PADA BETON TERHADAP KUAT LEKATNYA. Jurnal Kajian Pendidikan Teknik Bangunan, Vol 3 No 1/JKPTB/13 (2013): Wisuda ke-78 Periode 3 Tahun 2013.
- Park, R., & Paulay, T. (1975). Reinforced Concrete Structures. Wiley. <https://doi.org/10.1002/9780470172834>
- Pragst, F., & Balikova, M. A. (2006). State of the art in hair analysis for detection of drug and alcohol abuse. Clinica Chimica Acta, 370(1–2), 17–49. <https://doi.org/10.1016/j.cca.2006.02.019>
- Putra, H. (2021). BETON SEBAGAI MATERIAL KONSTRUKSI. Gre Publishing.
- Rao, P. D., Kiran, C. U., & Prasad, K. E. (2018). Tensile Studies on Random Oriented Human Hair Fiber Reinforced Polyester Composites. Journal of Mechanical Engineering, 47(1), 37–44. <https://doi.org/10.3329/jme.v47i1.35357>
- Robbins, C. R. (1994). Chemical and Physical Behavior of Human Hair. Springer New York. <https://doi.org/10.1007/978-1-4757-3898-8>
- Rusyadi, S. (2014). PENGARUH MUTU BETON TERHADAP KUAT LEKAT ANTARA BETON DAN BAJA TULANGAN. Rekayasa Teknik Sipil, 3(3), 82–90.
- S., Budiman, A. A., & Anshariah, A. (2018). Analisis Dampak positif stri terhadap lingkungan masyarakat. Jurnal Geomine, 6(2).



- Shigu, B. R., Amatya, I. M., & Motra, G. B. (2023). Analysing the optimum effect of the human hair waste as fiber reinforcement in M20 grade concrete. *Journal of Innovations in Engineering Education*, 6(1), 1–4. <https://doi.org/10.3126/jiee.v6i1.39208>
- Srivastava, S. K., Verma, N., & Singh, K. (2023). A Comparative Study of Mechanical Characteristics of Normal Concrete with Human Hair Fiber Fabricated Concrete. *IOP Conference Series: Earth and Environmental Science*, 1110(1), 012057. <https://doi.org/10.1088/1755-1315/1110/1/012057>
- Supartono, F. X. (2001). Beton Bahan Dasar dan Unsur Kekuatannya. In *Trend Teknik Sipil Era Milenium Baru*. John Hi-Tech Idetama.
- Tjokrodimuljo, K. (1996). *Teknologi Beton*. Nafiri.
- Velasco, M. V. R., Dias, T. C. de S., Freitas, A. Z. de, Júnior, N. D. V., Pinto, C. A. S. de O., Kaneko, T. M., & Baby, A. R. (2009). Hair fiber characteristics and methods to evaluate hair physical and mechanical properties. *Brazilian Journal of Pharmaceutical Sciences*, 45(1), 153–162. <https://doi.org/10.1590/S1984-82502009000100019>
- Wang, C. K., & Salmon, C. G. (1993). *Desain beton bertulang* (4th ed., Vol. 1). Erlangga.
- Winter, G., & Nilson, A. H. (1993). *Perencanaan Struktur Beton Bertulang*. Pradnya Paramita.



LAMPIRAN

Lampiran 1. Pengambilan Limbah Rambut

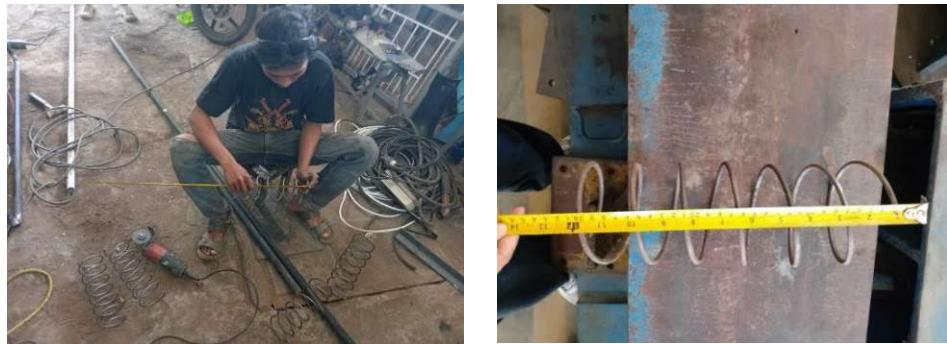


Lampiran 2. Perawatan Limbah Rambut Menjadi HHF



Lampiran 3. Pembuatan Tulangan Baja dan Persiapan Tulangan Spiral





Lampiran 4. Persiapan Material Pengecoran





Lampiran 5. Proses Pengcoran dan Pengujian Nilai Slump



Optimization Software:
www.balesio.com

Lampiran 6. Proses Pengujian *Pull-out***Lampiran 7.** Kondisi Benda Uji Setelah Diuji