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Design and Construction of Gazebo Febriane Paulina Makalew1/\_ , Rilya Rumbayan1/\_ , Helen Grace Mantiri and Deyke Yunita Femely Mandang1/\_ 1Manado State Polytechnic, Department of Civil Engineering, Manado, Indonesia febriane.makalew@polimdo.ac.id, Rilya.rumbayan@gmail.com, helen.mantiri@sipil.polimdo.ac.id, mandangdeyke22@gmail.com Keywords: Gazebo, Coconut Timber, Construction, Small Building Abstract: Gazebo is functioning as a temporary place for the user to do the different activities as well as enjoy the outdoor area.

The location of the gazebo is including a public park, campus, school, tourism area, private areas such as a house, restaurant, and other public areas. Define the characteristic of the gazebo through its type, function, and material is **the aim of this** research. Data is collected by and literature study. Results show that type and function of the gazebo is vary as well as material use. Further research needs to develop local material and local design.

1 INTRODUCTION The gazebo is the facility for a temporary place to rest and do activities in an open area. Design and construction of gazebo are varied with mostly consideration of using local material including different types of wood such as coconut timber. Research on timber as a construction material has been done in terms of the development of coconut timber and other types of timber and its design (Makalew et al, 2015, 2020., Runtunuwu et al, 2015, Rumbayan et al, 2019).

Gazebo as a small-scale building with direct intact to the outdoor area such as garden park requires adequate construction system as well as comfortable and interesting design for user. It also needs to protect the user from the impact of bad weather. The material used should be resistant to the natural condition. The texture of the material can improve the quality of the design gazebo. The pattern of timber construction can also enrich the appearance of the gazebo.

To improve the use of local material, local design, and local wisdom there is a need to research the design and construction of the gazebo. 2 LITERATURE REVIEW Research relates to the production of coconut timber considering rules and industry coordination (Sodangi et al, 2020). The adaptation of using coconut timber as green environmentally friendly material should be considered in the management of its quality (ibid).

The type of timber for gazebo including jati wood, coconut timber, trembesi wood, and merbau wood (Hafif, 2016). Moreover, nonstructural parts such as columns, floor, and walls can use coconut timber (Kusyanto, 2015). The location of gazebo based on standards are in the area such as playing park, urban settlement and business area (BSN, 2004).

Infrastructure for a housing area, urban settlement, and public area need to consider standards available including standard of neighborhood planning on housing in the urban area (BSN, 2004). The facility of the gazebo should be accessed easily by the public. Criteria in providing facility are related to connection, access, safety, comfortable and clearness (Permen PR, 2012).

Pedestrian movement, the space need, and facility for housing areas and urban settlement areas should be a priority in places with a large number of the user (Makalew et al, 2017., 2018., 2019, Makalew 2020). The example of Planning and design of gazebo is a gazebo for a university student activity to study. The materials used for a gazebo are concrete and natural stone (Dewi, 2017).

Research on seating area for a gazebo is considered ergonomic aspect due to factor of comfortable in using it (Putri et al, 2021). Design for small-scale buildings with coconut

timber is considered the design of railing (Makalew et al, 2015). The type of railing including cross railing, perpendicular railing, railing with 5 cm wide wood and combine railing (Makalew et al, 2015).

The use of polyurethane in the finishing of coconut timber can improve the texture (Phebryanti, 2015). 3 RESULT AND DISCUSSION The gazebo can be divided into different types based on its function and place such as park gazebo, campus gazebo, and village gazebo. The design concept of the gazebo based on the literature review can be seen in Table 1.

Table 1: Design Concept of Gazebo Type of Gazebo \_Design Concept \_Source \_Park Gazebo \_Anthropometry Dimension based on human movement and space average distance Material Natural material Shape Semiotic traditional Sunda house called Djulang Ngapak \_Pahlawan et al (2020) \_Campus Gazebo \_Design gazebo Structure concrete K-225 Reinforce D10 and dia 14 Stone ornament \_Dewi (2017) \_Type of Gazebo \_Design Concept \_Source \_Village Gazebo \_Observation and Community service approach Farming rest area \_Rahmawati et al (2020) \_Restaurant gazebo \_Local material coconut timber \_Makalew et al (2015) \_Survey on places with the facility of gazebo show different type, function, design and material use. The area with a gazebo including public places such as beaches, streets, and public buildings.

The gazebo can also be found in the front area of the restaurant, hotel, and private house. The function and design of the gazebo can be seen in Table 2 Table 2: Function and Design of Gazebo Picture \_Function \_Material & Design Concept \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Lobby Elevated floor Highly used and well maintenance \_Wood Traditional design \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Lobby Seating area with a set of quest chair Highly used and well maintenance \_Wood and concrete Different color use Traditional design \_Picture \_Function \_Material & Design Concept \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Lobby Elevated floor Highly used and well maintenance \_Wood and concrete Traditional design \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Elevated floor Highly used and well maintenance \_Wood and concrete Traditional design \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Elevated floor New construction at the gazebo production factory \_Wood Traditional design \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Entrance of place Elevated floor Highly used and well maintenance \_Wood Traditional design \_Location: Denpasar, Bali (2021) \_Rest area for the visitor at the beach Highly used and well maintenance \_Wood Traditional design Floorplan: square \_Picture \_Function \_Material & Design Concept \_Location: Denpasar, Bali (2021) \_Waiting area for visitor Elevated floor New construction at the gazebo production factory \_Wood Develop Traditional and modern

design \_ Location: Denpasar, Bali (2021) \_ Waiting area for visitor Can be used as a private space Elevated floor New construction at the gazebo production factory \_ Wood Develop Traditional and modern design \_ Location: Denpasar, Bali (2021) \_ Waiting area for visitor \_ Metal Modern design Floorplan: square \_ Location: Denpasar, Bali (2021) \_ Seating and leisure place for visitor Highly use and well maintenance \_ Metal with traditional material for roof Floorplan: circle \_ Location: Private house, Manado (2021) \_ Rest and home activity Well maintenance \_ Wood Traditional design Floorplan: square Short wall with part of the railing \_ Picture \_ Function \_ Material & Design Concept \_ Location: Private house, Manado (2021) \_ Rest and home activity Well maintenance \_ Wood Traditional design Floorplan: hexagon Railing with pattern \_ Location: Tasik Ria Resort Minahasa (2019) \_ Visitor rest area Well maintenance \_ Coconut Timber for structure and rumbia roof Traditional design \_ Gazebo as a small-scale building is a potential area for user activity in the open area.

The design and construction have been developed with many of them are highly used. The standard for the small-scale building is limited. The exploration of the character of **design and construction of** gazebo based on a literature study and the survey on different public and private places. Define its characteristic can help **improve the quality of** design and construction. The evaluation of the gazebo in terms of its characters can be seen in Table 3.

Table 3: Characteristic of Gazebo Characteristics \_ Potential Design \_ Potential Construction \_ Multi-function \_ With or without boundary, facility for any activity Adequate space for user \_ Construction with or without wall or railing \_ Facility seating area \_ Comfortable and adequate space \_ Separate or part of the main structure \_ Traditional and modern design \_ Different design, mix design, different floorplan shape \_ The pattern in-wall and railing \_ Characteristics \_ Potential Design \_ Potential Construction \_ Strong material \_ Compact design \_ Material resistance for the impact of excessive weather \_ Local material \_ Texture and color from a natural material \_ Coconut timber \_ The proposed design and construction for the gazebo is developed in considering the type, function, material use, and detail design.

The proposed gazebo design and construction can be seen in table 4. Table 4: Propose **Design and construction of** Gazebo Design \_ Construction \_ Floorplan Shape Square \_ Material: Wood or Coconut timber Detail construction: Railing full or partly \_ Floorplan Shape Hexagon \_ Material: Wood or Coconut timber Detail construction: Railing full or partly \_ Traditional design Local house design or other local design Traditional Minahasa house design concept Traditional Bali design concept \_ Local material: coconut timber or other timber Detail design railing, roof material using local material \_ Design \_ Construction \_ Modern design \_ Material: metal, plastic, and aluminum \_ 4

CONCLUSIONS Based on the preliminary study on the design and construction of a gazebo, there are different types of gazebo including a gazebo for the garden park, campus gazebo, village gazebo, private gazebo, entrance gazebo, and lobby gazebo. The material used for the gazebo is varied such as wood, coconut timber, metal.

The design approach for gazebo including modern design and traditional design. Development of gazebo in design and construction should be a further study in considering of local potential . ACKNOWLEDGEMENTS This research is funded by the Center for Research and Community Service Unit Manado State Polytechnic under the scheme of Study Program Priority Research 2021 REFERENCES American Planning Association (APA) (2007), Planning and Urban Design Standard, John Willey and Sons Inc, New Jersey.

Badan Standarisasi Nasional (BSN). 2004. SNI 03-1733-2004 Tata Cara Perencanaan Lingkungan Perumahan Di Perkotaan. Badan Standarisasi Nasional (BSN). 2004. SNI 7945-2014 Kayu kelapa Badan Standarisasi Nasional (BSN). 2004. SNI 7973-2013 Spesifikasi desain untuk konstruksi kayu Dewi, Sari Utama (2017) Perencanaan Bangunan Infrastruktur Pendidikan (Gazebo) Fakultas Teknik Universitas Muhammadiyah Metro, Tapak Vol. 6 No. 2 MEI 2017, e-ISSN; 2548-6209p-ISSN ; 2089-2098 Hafif, (2016), Berbagai Jenis Kayu Untuk Gazebo, JADITAU.NET Kusyanto, Mohamad (2015), Kajian Material Kayu Glugu Sebagai Bahan Bangunan, Jurnal Teknik - UNISFAT, Vol. 10 No.

2, Maret 2015 Hal 33- 44 Makalew, Febriane Paulina, Sengkey, Sandry dan Senduk, Novatus (2015), Identifikasi Penggunaan Kayu Kelapa Dan Alternatif Disainnya Pada Bangunan Berukuran Kecil, Prosiding Seminar Nasional Teknik Infrastruktur dan Lingkungan 2015, Vol 1 Oktober, ISSN- 24609218 Makalew, Febriane Paulina., Adisasmita, Sakti Adji., Wunas. Shirly and Aly, Sumarni Hamid.,2018 Pedestrian Space Capacity and Movement Pattern for Elementary Students in Urban And Rural Area, International Journal of GEOMATE Vol.15 Issue 50, pp. 63 – 69.

Makalew, F.P (2019), Child Pedestrian Friendly Design Principle for the Settlement and Housing Area, IOP Conference Series: Earth and Environmental Science 328 (1) (2019), 012018 Scopus. Makalew, Febriane Paulina (2019) Studi Pilihan Moda Transportasi Anak Sekolah Dasar, Jurnal Teknik Sipil Terapan (JTST) 1 (01), 1-6 (2019). Makalew, F.P.,

Adisasmita, S.A., Wunas, Shirly dan Aly, S.H (2020), Influence of elementary students walking speed to children pedestrian pathway planning. IOP Conf. Series: Earth and Environmental Science IOP Publishing 419 (2020) 012096 Scopus doi:10.1088/1755-1315/419/1/012096 1. Makalew, Febriane Paulina, Waney, Estrellita V. Y., Runtunuwu, Sherley & Deyke J. F.

Mandang (2020), Ketersediaan Infrastruktur Kawasan Perumahan Sederhana (Studi Kasus: Perumahan Politeknik Indah), Jurnal Manajemen Aset Infrastruktur & Fasilitas, (e) ISSN 2615-1847, (p) ISSN 2615-1839, ongoing publikasi Makalew, F P., Supit S W M and Senduk, N (2020), Design Concept for Child Pedestrian-Friendly Prototype, 5th International Symposium on Infrastructure Development ISID, 2020 Makalew, F.P., Adisasmita, S.A., Wunas, Shirly dan Aly, S.H (2020), Influence of elementary students walking speed to children pedestrian pathway planning. IOP Conf.

Series: **Earth and Environmental Science** IOP Publishing 419 (2020) 012096 Scopus doi:10.1088/1755-1315/419/1/012096 1. Makalew, Febriane Paulina, Supit, Steve Wilben Macquarie dan Senduk, Novatus (2020), Construction System of Building Block for Child Pedestrian-Friendly Prototype, 3rd **International Conference on Applied Science and Technology** ICAST 2020 Makalew, Febriane Paulina.,

Rumbayan, Rilya and Senduk, Novatus, Identification Characteristic of Energy Efficient Timber House, The 5th International Conference on Sustainable Civil Engineering Structures and Construction Materials (SCECM) 2020 Phebryanti, Sarah (2015), Kayu Kelapa Sebagai Bahan Alternatif Untuk Mebel di Area Public Rumah Tinggal, JURNAL INTRA Vol.3, No.1, (2015) 53-56 Putri Silvia, Trias.,

Solichin dan Fanan, Erianto (2021) Pengaruh Redesain Kursi Gazebo Fik Yang Ergonomis Terhadap Musculoskeletal Disorder, Rahmawati A, Evi., Zenata Sis Albiandi, Irfan Azis Baharsya, Ari Carizky Navabella, Abditya Wijaya, Uais Sabilah Muhammad, Satria Fibri Ramadhan, Nur Khafidin, Moch Thufail Islam, Feri Andi Pratama, Galuh Widia Rohman, Nur Sulthaniah Diah E.W, Brenda Stephanie O.

K, Agita Wahyu Puspitasari (2020), Pembangunan Gazebo Desa Untuk Meningkatkan Sektor Pertanian Desa Selotapak Kecamatan Trawas, Kabupaten Mojokerto, Jurnal Abdi Bhayangkara UBHARA Surabaya, ISSN : 2722-578X, <http://ejournal.lppm.ubhara.id>, Vol:2.No:1 , 2020 Rumbayan, Rilya., Taju, Donny and Mait, Rudolf (2019), An investigation on Coconut-timber waste as construction material for earthquake resistant wooden house in North Sulawesi, Indonesia, Toward the future of Asia: My Proposal, Volume 4, pp 185-190, ISBN: 9784789017213, Tahun 2019 The Japan Times, Ltd, <http://www.aisf.or.jp/images/published/AFCbook4.pdf> Runtunuwu, Sherley, Kandijoh, Geertje E.

dan Tenda, Julius (2014), Tinjauan Ketersediaan Bahan Baku Industri Kayu Kelapa di Provinsi Sulawesi Utara, Penelitian Internal Dosen Pemula Politeknik Negeri Manado Sodangi, Mahmoud and Kazmi, Zaheer Abbas (2020), **Integrated Evaluation of the**

Impediments to the Adoption of Coconut Palm Wood as a Sustainable Material for Building Construction, Sustainability 2020,12, 7676; doi:10.3390/su12187676 Pahlawan, Reza Rizki.,

Pambudi, Terbit Setya and Syarif, Edwin Buyung (2020), Perancangan Gazebo di Taman Ir.H.Djuanda, e-Proceeding of Art & Design : Vol.7, No.1 April 2020 | Page 443ISSN : 2355-9349 e-Proceeding

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