

Socialization and Technical Guidance of Road Specifications to Glodog Village Appliances, Palang District, Tuban Regency in the Framework of Village Road Development

Sugiyanto¹, Liadira Kusuma Widya¹, Syariah Nur Octavia¹, and Harry Susanto¹

¹ Universitas Sunan Bonang, Indonesia

ARTICLE INFO

Article history:

Received: 27th August 2022

Accepted: 22nd June 2023

Published: 1st July 2023

Keywords:

Aparatus, Facilitate Access, OPD, Road

ABSTRACT

Roads are an indispensable infrastructure in supporting community economic activities, both in urban and rural areas. This community service activity was carried out with the aim of providing socialization and technical guidance on road specifications to the Glodog Village Government apparatus, Palang, Tuban East Java, in the context of village road construction. This theme was chosen because of the problem of proposing village roads to Regional Apparatus Organization (OPD) who do not have the authority to handle them. The method used is to hold a face-to-face meeting followed by participants consisting of village government officials, the head of the BPD and community leaders in Glodog Village, Palang District, Tuban East Java. The results of the implementation of this community activity went quite smoothly, followed quite enthusiastically, and received a warm welcome because it provided very useful knowledge in the construction of village roads. To get more optimal benefits, it is recommended that further socialization activities involve elements of OPD and contractors so that all problems encountered can be solved in a directed and integrated manner.

How to cite: Sugiyanto, Widya, L. K., Octavia, S. N., & Susanto, H. (2023). Socialization Socialization and Technical Guidance of Road Specifications to Glodog Village Appliances, Palang District, Tuban Regency in the Framework of Village Road Development. *Jurnal Pemberdayaan Masyarakat Madani (JPMM)*, 7(1), 51-65. <https://doi.org/10.21009/JPMM.007.1.06>.

* Corresponding Author.
irsugianto6@gmail.com (Sugiyanto)

INTRODUCTION

Roads are land transportation infrastructure that includes all parts of the road, including complementary buildings and equipment intended for traffic (President of the Republic of Indonesia, 2009). In accordance with the Law of the Republic of Indonesia Number 38 of 2004 concerning Roads and Government Regulation Number 34 of 2006 concerning Roads, then according to the authority/status, public roads are grouped into national roads, provincial roads, district roads, city roads and village roads (Public Works Department, 2018).

Yudaningrum & Ikhwanudin (2017) stated that the road is one type of land transportation that plays an important role for the development of an area. The development of an area cannot be separated from the role of the community to the local government. In the era of reform and regional autonomy that is now running in our country, it is hoped that it will be able to provide a better life for people in various sectors of life with the existence of an economy and decentralization of power from the center to the regions to manage and regulate the government in their respective regions (Haromin & Widaningsih, 2022). Local government according to democratic principles is carried out based on the principles of accountability, transparency, law and people's participation (Dewi & Putra, 2015). Regarding people's participation, local governments have an important role as a reservoir for community aspirations, especially regarding proposals for improvement, maintenance, and repair of damaged roads. Road damage that occurs will certainly affect the level of security, service functions and the comfort of road users (Nugraheni et al., 2018).

Base on the Department of Public Works and Spatial Planning (2020) it is stated that the factors causing road damage to consist of non-functioning drainage / lack of drainage, poor quality asphalt hot mix, vehicle overtonage (excess tonnage load), planning errors of road pavement thickness, foundation layer not dense aggregate, unstable subgrade construction conditions, natural disaster factors, poor implementation of asphalt work, and not carrying out regular road maintenance. For this reason, it is necessary to have appropriate road management from the government so that road damage does not occur before the pavement life ends (remaining life).

The President of Republic of Indonesia (2004) stated that the musrenbang (development planning deliberation) was held to formulate a long-term development plan and was followed by elements of state administrators by involving the community. This statement is stated in Law No. 25 of the Republic of Indonesia Year 2004 with the understanding that development planning deliberation is a forum between actors in the framework of formulating national development plans and regional development plans. Musrenbang is carried out starting from the village/kelurahan level, district/city level and ends at the provincial level musrenbang. Some of the problems in rural areas that cannot be resolved are the lack of infrastructure that can support the accessibility and productivity of the distri-

bution of commodities from the region, this is an obstacle to economic growth in rural areas (Korpiyoni, 2021).

Musrenbang is an appropriate means as a channel for community aspirations in road repair proposals. The community can handle roads, namely by submitting proposals related to roads that will be repaired through village or kelurahan officials. After that, village officials can submit proposals through the sub-district to be raised to the district government or related regional apparatus organizations (OPD) regarding road repairs. However, the proposed road repairs may occur not in accordance with the terms and conditions contained in government regulations. This is obtained from the identification results in Glodog Village, Palang District, Tuban Regency, where in 2022 based on the musrenbang proposal submitted to the Public Works and Spatial Planning, Public Housing and Settlement Areas Office, it is proposed to build a road for fishing boats at the fish auction place (TPI). This is not in accordance with the road qualifications according to their authority, which should be owned by the Department of Fisheries and Livestock of Tuban Regency. Based on the imbalance in authority over the proposed road construction that has occurred, it is very necessary to hold outreach activities and technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of developing village roads.

In this community service activity, it can be formulated the problem of how the availability of technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency is in the context of village road construction. This activity aims to provide an understanding of road specifications to support infrastructure needs for distribution of commodities, especially fish caught by fishermen and other commodities for local village officials, so that there is a smooth flow of the community's economy. The expected benefit for the local village apparatus is that there are no mistakes in making suggestions for appropriate road handling in accordance with road qualifications according to their authority and in accordance with the Tuban Regency Regional Government agencies that handle them.

LITERATURE REVIEW

Road infrastructure development is an absolute necessity for the development of an area to achieve sustainability and equitable development in each region and to form a spatial structure in order to realize national development facilities (Rahman et al., 2022). Bina Marga (1989) stated that infrastructure development activities in the form of roads must meet the technical requirements for road planning and road planning technical criteria. The technical requirements for road planning are related to parameters consisting of design speed, road width, road capacity, driveways, intersections of plots and turning facilities, road complementary buildings, road equipment, road use functions and road inconsistencies. The technical criteria for road planning are related to aspects of road planning stages,

road functions, road classes, road sections, road dimensions, heaviest axis loads, traffic volume, capacity, road geometric requirements, road construction, construction of road complementary buildings, road equipment, environmental sustainability, and road free space. Suriyatno et al. (2015) added that roads are infrastructure supporting the economy that must be developed and maintained. To ensure that there are no obstacles in the movement of goods and people, the condition of road infrastructure must be maintained in a stable condition when there is traffic movement through it.

To support the achievement of a stable road infrastructure condition, adequate road pavement is needed to obtain an optimal service function. Nugraheni et al. (2018) stated that the value of road flatness (international roughness index) is one of the service functions (functional performance) of a pavement which greatly influences driver comfort (riding quality). In addition, Padang et al. (2020) revealed that a road construction is said to be good if it has a strong pavement to carry the traffic load on it and has complementary buildings and other supporting facilities that have their respective functions in supporting the performance of the road construction.

A road is a land transportation infrastructure that serves as a liaison from one place to another. The road has three basic functions of pavement covering comfort, safety, and service efficiency. Damage to roads must be minimized to fulfill the three basic functions of pavement. Road pavement evaluation which consists of structural evaluation and functional evaluation must be carried out regularly to determine the performance of the pavement (Sari et al., 2018). Furthermore, the types of road damage according to the Research and Development Center for Transportation Infrastructure (2005) in Widodo (2018) are as follows.

1. Structural damage

Structural damage is damage to the road segment, partially or completely, which causes the road pavement to no longer be able to support traffic loads. For this reason, it is necessary to strengthen the structure of the pavement by means of overlaying or repairing the existing layer.

2. Functional malfunction

Functional damage is damage to the road surface that can cause dependence on the function of the road. This damage may or may not be related to structural damage. In functional damage, the road pavement is still able to withstand the working load but does not provide the desired level of comfort and safety. For this reason, the surface layer of the pavement must be treated so that the surface returns to good.

The existence of roads is an infrastructure that is under the authority of the government to be held for the benefit of the community, one of which is owned by the village government. Based on Pandey & Lalamentik (2014) it is stated that quality road infrastructure facilitates the distribution of goods and services leading to increased accessibility and mobility of goods and services which in turn can improve people's welfare and competitiveness. Thus, village government is a subsystem of the regional government administration system so that the village has the authority to regulate and manage the in-

terests of the community in the context of village autonomy (Tumangkeng, 2015).

In Presidential Decree No. 72 of 2005 concerning the village, it is stated that the village is a legal community unit that has territorial boundaries that are authorized to regulate and manage the interests of the local community, based on local origins and customs that are recognized and respected in the government system of the Unitary State of the Republic of Indonesia (Nawawi, 2018). Based on Pahlavi (2015) it is stated that one of the sources of village income comes from the allocation of village funds which are part of the balancing fund received by the district/city. With these provisions, it is hoped that the village can develop more optimally and be able to develop its territory according to the needs of each program held. Article 1 paragraph 16 of the Law of the Republic of Indonesia in 2004 states that a program is a policy instrument that contains one or more activities carried out by government agencies/institutions to achieve goals and objectives and obtain budget allocations, or community activities coordinated by government agencies (President of the Republic of Indonesia, 2004).

Sendhikasari (2012) states that village officials are an inseparable part of the state apparatus who carry out their main duties and functions as public servants. To realize various village programs effectively, optimal synergy and cooperation are needed between village officials and the BPD. Furthermore, Sakti (2018) states that the village apparatus is a staff element that assists the village head in policy formulation and coordination which is accommodated in the village secretariat, and a supporting element of the village head's duties in implementing policies that are accommodated in the form of technical implementers and regional elements. The Village Consultative Body (BPD) is an institution that carries out government functions whose members are representatives of the village population based on regional representation and are determined democratically.

MATERIAL AND METHOD

Socialization activities and technical guidance on road specifications for Glodog Village Government officials, Palang District, Tuban Regency were carried out using the face-to-face lecture method. To support the smooth achievement of targets in these activities, participants are invited to follow the following framework of thinking in problem solving as shown in Figure 1.

The implementation of socialization activities and technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of village road construction is expected to meet a series of targets as follows:

1. Improve the ability of the Glodog Village Government apparatus, Palang District, Tuban Regency in making plans for submitting road repair funding so that they are in accordance with their designation.
2. Improving the ability of the Glodog Village Government apparatus, Palang District, Tuban Regency as the person in charge of the village fund budget in analyzing the types of roads in the

- 4) In the implementation of the presentation, the activities are carried out with a duration of about 30 minutes/material/presenter. It is planned that there will be at least 3 (three) materials delivered by 3 different presenters.
- 5) There is a room/question and answer session (discussion) from the activity participants. In this activity, it is very important to pay attention to the communication component of the speaker or presenter which consists of the sender of the message (sender), the message that is sent (message), how the message is sent (delivery channel), the recipient of the message (receiver) and feedback (Sugiyanto, 2022). Thus, in the delivery of material there is a discussion room (two-way communication) so that the targets and targets in this socialization activity get optimal results.

RESULT AND DISCUSSION

A. General Conditions of Implementation of Activities

The implementation of socialization activities and technical guidance on road specifications was carried out in the meeting room on the 2nd floor of the Glodog Village Hall, Palang District, Tuban Regency. The activity begins with the arrival of participants by first filling out the attendance list before occupying the available seats. In accordance with the target of the activity participants, the participants who attended included all Glodog Village officials, the Head of the BPD and community leaders. As an illustration of the general conditions for the implementation of activities at the event session, it can be shown in Figure 1.

In Figure 1, the presenters consist of 4 lecturers from the technical faculty of Bonang University accompanied by the Head of Glodog Village, Palang District, ready to deliver the material. Furthermore, the participants have occupied their respective seats that have been provided in the activity. The event was packaged in such a way that it was arranged in several sessions consisting of opening by the village head, delivery of village axis road infrastructure material, discussions about village road problems faced, socialization and technical guidance in village road proposals and closed with a group photo session.

B. Submission of Technical Guidance Materials and Road Specifications

Roads are an indispensable infrastructure in supporting community economic activities, both in urban and rural areas. This is also needed by the Glodog Village Government to develop the economy and welfare of its people through the construction of village roads. In relation to this, the material provided is sourced from the problems faced by the Glodog Village apparatus in proposing the construction of village roads. Based on the results of the identification in 2022 in the proposed musrenbang, Glodog Village, Palang Sub-district, which is included in the Tuban Regency Public Works and Spatial Planning Service, it proposes the construction of a road for fishponds anchoring fishing

village needed by the community.

3. The creation of the Glodog Village Government apparatus, Palang District, Tuban Regency who has basic and technical knowledge and understanding in village road construction work.

Socialization activities and technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of developing village roads are expected to meet the following targets:

A. A review based on the elements involved in the implementation of activities may consist of:

- 1) Tuban Regency Government officials from agencies related to community service activities in Glodog Village, Palang District, Tuban Regency.
- 2) Glodog Village Government Apparatus, Palang District, Tuban Regency.
- 3) Representatives of the Village Consultative Body (BPD) of Glodog Village, Palang District, Tuban Regency.
- 4) Community leaders and representatives from Glodog Village, Palang District, Tuban Regency.

B. The review based on the main objectives of the activity consists of the following:

- 1) Provide technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of village road construction.
- 2) It is hoped that the Glodog Village Government apparatus, Palang District, Tuban Regency can adjust the proposal for submitting village funds according to its designation, especially in the construction of village roads.

Socialization activities and technical guidance on road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of village road construction, are carried out with the following methods:

- 1) The activity is carried out using the face-to-face lecture method (offline method) with a limitation on the number of participants to around 20 people according to the priority scale and following the rules of the COVID-19 task force. The application of this rule is in order to actively participate in supporting the government of the Republic of Indonesia program to break the chain of spread of COVID-19.
- 2) Submission of material is done by presenting the material in front of all participants by using an overhead projector. In the presentation, the material is equipped with illustrations that are relevant to the material presented so that it becomes more interesting, not monotonous, and not boring.
- 3) To optimize the transfer of knowledge in this socialization activity, participants are expected to follow the activity in an orderly manner, fill out the attendance list, sit at a distance from other participants, and listen carefully to the presentation of the material.



Figure 1.
General condition of implementation of activities.

boats at the fish auction place (TPI). This is not in accordance with the road qualification according to its authority, which should be owned by the Department of Fisheries and Livestock of Tuban Regency.

Thus, in following up on these problems, the apparatus, the head of the BPD and community leaders are provided with knowledge of the procedures and procedures for proposing the required village roads. In the presentation of the technical guidance materials and road specifications, it was seen that the participants followed quite enthusiastically as can be seen in Figure 2

In Figure 2, it appears that the participants were quite attentive and concentrated on each material presented. Based on observations, the material presented was new so that it became interesting to follow until it was finished. In the ongoing activity of delivering the material, some participants were quite active by asking questions which a deepening of the material were presented. In the presentation, it has been arranged by alternating lecturers who convey the distribution of material including introduction, main material and closing. Finally, 2 (two) way communication occurs, and the atmosphere is quite dynamic and does not seem monotonous. On this occasion, the participants seemed to quite enjoy the atmosphere and a sense of intimacy was established. The socialization of technical guidance and road specifications was closed with a group photo session as can be seen in Figure 3.

C. Solutions in Village Axis Road Development Planning

During the socialization of technical guidance and road specifications, in addition to the main issues that became issues in this activity, several problems related to road construction practices in Glodog Village were also found. For example, one of the participants complained about the closure of potholes, the cover should be removed first before the pavement is carried out. However, in reality, the pavement is immediately carried out so that the effectiveness of the pavement in closing the holes made cannot last long. In another case, the road damage that occurred in Glodog Village was felt to be very slow and adrift in its handling so that it greatly disturbed the comfort of road users.

In the current development, road infrastructure is a basic need needed in every human movement from one place to another. Therefore, the need for roads is very necessary, especially for the people of Glodog Village, Palang District, Tuban Regency. Therefore, the solution given in the village axis road proposal can be described in Figure 4.



Figure 2.
Socialization of Technical Guidance and Road Specifications.



Figure 3.
Photo Session Together.

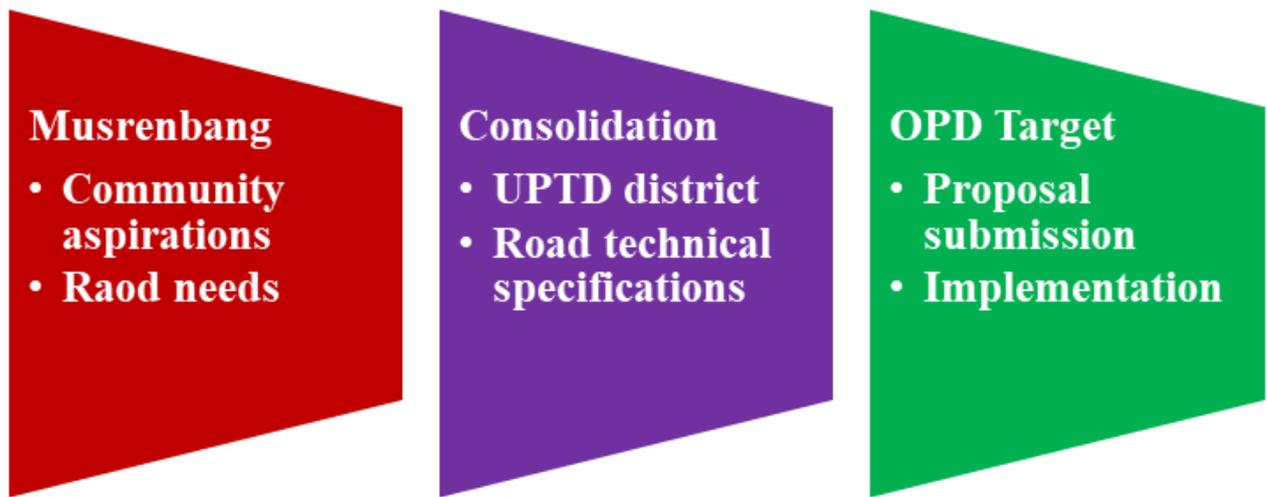


Figure 4.
Village Axis Road Proposal Mechanism..

In Figure 4, the mechanism for the proposed village axis road submitted to community service participants in Glodog Village, Palang District, Tuban Regency can be explained as follows:

1. Musrenbang

Based on Law no. 25 of the Republic of Indonesia Year 2004 it is stated that the development planning deliberation is a forum between actors in the context of formulating national development plans and regional development plans. In this case, the village axis road is included so that it has a big role in the national development process. This is based on the aspirations of the people who have the most impact in the national development program on the needs of road infrastructure in their respective regions. Thus, road construction by the government is right on target because it is really needed by the community.

2. Consolidation

To make a proposed village axis road, it must be consolidated with the Regional Integrated Service Unit (UPTD) in each sub-district. Thus, the proposed road can be a priority that can be recommended to the relevant OPD. In this case, it can be consolidated about the specifications of the road that best suits the location, including the type of pavement that is considered the most suitable.

3. Target OPD

In the construction of road infrastructure, of course there is a budget requirement that is needed to be realized in its construction. Therefore, each OPD has its own target based on its authority. Thus, the proposal for the village axis road must be submitted to the relevant OPD which has the authority to handle it.

CONCLUSION AND RECOMMENDATION

The community service activity entitled "Socialization and technical guidance of road specifications to the Glodog Village Government apparatus, Palang District, Tuban Regency in the context of village road construction" can be concluded that it went quite smoothly, followed quite enthusiastically, and received a warm welcome from the activity participants.

In order to get optimal benefits, it can be recommended that further community service activities, especially those related to socialization and technical guidance, road specifications can be involved between OPD elements and contractors so that all problems faced can be solved in a directed and integrated manner.

REFERENCES

- Bina Marga. (1989). Perencanaan Tebal Perkerasan Lentur Dengan Metode Analisa Komponen. *Perencanaan Teknik Perkerasan Jalan 1 Diklat Desain Tebal Perkerasan Jalan Lentur*, 1–25.
- Dewi, I. G. A. O. P., & Putra, I. B. W. (2015). Peran Masyarakat Dalam Penyelenggaraan Pemerintahan Daerah Yang Demokratis. *Jurnal Kerta Negara*, 03, 1–5.
- Dinas Pekerjaan Umum. (2018). *Klasifikasi Jalan Berdasarkan Status dan Kelas Jalan*. <https://dpu.kulonprogokab.go.id/detil/49/klasifikasi-jalan-berdasarkan-status-dan-kelas-jalan>
- Dinas Pekerjaan Umum dan Penataan Ruang. (2020). *Beberapa Faktor Yang Menjadi Penyebab Terjadinya Kerusakan Jalan Raya*. <https://dinaspupr.bandaacehkota.go.id/2020/06/28/beberapa-faktor-yang-menjadi-penyebab-terjadinya-kerusakan-jalan-raya/>
- Haromin, & Widaningsih, F. (2022). Peran Dewan Perwakilan Rakyat Daerah Dalam Membangun Partisipasi Melalui Pola Penyerapan aspirasi Masyarakat di Kabupaten bandung Barat. *Jurnal Fisipol Ilmu Pemeiintahan Universitas Bale Bandung*, 6(1), 70–87.
- Korpiyoni, D. P. (2021). Pemanfaatan Infrastruktur dan Ruang Pasca Pembangunan Infrastruktur Di Desa Kerta, Payangan, Gianyar. *PADURAKSA: Jurnal Teknik Sipil Universitas Warmadewa*, 10(2), 297–316. <https://doi.org/10.22225/pd.10.2.2895.297-316>
- Nawawi, M. (2018). Pentingnya Kualitas Aparat Pemerintah Desa Dalam Pembangunan Di Desa Bedilan Kecamatan Belitang Kabupaten Oku Timur. *Jurnal Aktual STIE Trisna Negara*, 16(1), 28–38. <https://doi.org/10.47232/aktual.v16i1.4>
- Nugraheni, Novia, A., Suryoto, & Setyawan, A. (2018). Analisis Kondisi Fungsional Jalan Dengan Metode PSI Dan RCI Serta Prediksi Sisa Umur Perkerasan Jalan Studi Kasus : Jalan Batas Kota Wates–Milir. *E-Jurnal Matriks Teknik Sipil*, 105–119.
- Padang, A. R., Agung, I. Bagus, & Sutrisno, W. (2020). Evaluasi Kondisi Perkerasan Dan Prediksi Sisa Umur Perkerasan Lentur Dengan Metode Pavement Condition Index Dan Binamarga 2011. *Rekayasa Dan Konstruksi Jalan*, 31–42. <https://jurnal.ustjogja.ac.id/index.php/renovasi/article/view/8220>
- Pahlevi, I. (2015). Dana Desa dan Permasalahannya. *Jurnal Info Singkat Pemeintah Dalam Negeri*, 7 (17), 1–4.
- Pandey, S. V, & Lalamentik, L. (2014). Kelas Jalan Daerah Untuk Angkutan Barang *Jurnal Tekno Sipil*, 12(60), 27–37.

- Presiden Republik Indonesia. (2004). UU No. 25 Tahun 2004 tentang Sistem Perencanaan Pembangunan Nasional. *Sekretaris Negara Republik Indonesia, Jakarta*, 1–32.
- Presiden Republik Indonesia. (2009). Undang-undang Republik Indonesia Nomor 22 Tahun 2009 Tentang Lalu Lintas dan Angkutan Jalan. *Sekretaris Negara Republik Indonesia, Jakarta*, 123 (10), 2176–2181.
- Rahman, M. A., Arifin, H., & Sowolino, B. O. (2022). Perbandingan Metode International Roughness Index Dengan Pavement Condition Index Untuk Penentuan Kondisi Jalan Nasional di Kota Wamena (Studi Kasus : Ruas Jalan Wamena –Habema). *Rang Teknik Journal*, 5(1), 1–7.
- Sakti, I. (2018). Peraturan Daerah Kota Pariaman Nomor 2 Tahun 2018 Tentang Perangkat Desa. *Lembaran Daerah Kota Pariaman Tahun 2018 No. 2 Peraturan Daerah Kota Pariaman Provinsi Sumatera Barat: (2/57/2018)*.
- Sari, D. K., Setyawan, A., & Suryoto, S. (2018). Analisis Kondisi Fungsional Jalan Dengan Metode PSI Dan RCI Serta Prediksi Sisa Umur Perkerasan Jalan (Studi Kasus : Jalan Milir - Sentolo). *E-Jurnal Matriks Teknik Sipil*, 6(1), 120–132. <https://doi.org/10.20961/mateksi.v6i1.36603>
- Sendhikasari, D. (2012). Status Kepegawaian Perangkat Desa. *Jurnal Info Singkat Pemerintah Dalam Negeri*, IV(24), 17–20.
- Sugiyanto. (2022). *Kewirausahaan* (Sugiyanto (Edisi 1). Scopindo Media Pustaka, Surabaya.
- Suriyatno, Purnawan, & Putri, E. E. (2015). Analisis Tebal Lapis Tambah dan Umur Sisa Perkerasan Akibat Beban Berlebih Kendaraan (Studi Kasus Ruas Jalan Nasional di Provinsi Sumatera Barat). *Annual Civil Engineering Seminar 2015, Pekanbaru*, 169–176.
- Tumangkeng, M. R. (2015). Profesionalisme Aparatur Desa dalam Pelaksanaan Pemerintahan di Desa Wolaang Kecamatan Langowan Timur Kabupaten Minahasa. *Politico: Jurnal Ilmu Politik*, 1 (7), 110–124.
- Widodo, A. D. (2018). Evaluasi Kondisi Perkerasan dan Prediksi Sisa Umur Perkerasan Lentur Dengan Metode Pavement Condition Index, Bina Marga dan Metode Mekanistik- Empirik Dengan Program Kenpave (Studi kasus Ruas Jalan Magelang – Yogyakarta Sta 11±000 – Sta 12±000). *Tesis Fakultas Teknik Sipil Dan Perencanaan Universitas Islam Indonesia, Yogyakarta*. <http://link.springer.com/10.1007/978-3-319-59379-1%0Ahttp://dx.doi.org/10.1016/B978-0-12-420070-8.00002-7%0Ahttp://dx.doi.org/10.1016/j.ab.2015.03.024%0Ahttps://doi.org/10.1080/0735-2689.2018.1441103%0Ahttp://www.chile.bmw-motorrad.cl/sync/showroom/lam/es/>
- Yudaningrum, F., & Ikhwanudin. (2017). Identifikasi Jenis Kerusakan Jalan (Studi Kasus Ruas Jalan Kedungmundu-Meteseh). *Jurnal Teknika*, XII(2), 16–23.