

PCI-Analyzed Administrative Way Damage

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ABSTRAK

The Army Military Academy melatih petugas masa depan untuk menjadi pasukan pertahanan berbasis intelijen lokal dan diakui secara global pada tahun 2025. Kerusakan jalan di lingkungan dan masalah restorasi dari lebih dari 10 tahun yang lalu. Penelitian kondisi jalan di Akademi Militer dapat digunakan untuk memperbaiki jalan dan mempromosikan Akmil sebagai pusat keunggulan. Untuk memperbaiki kerusakan objek penelitian, metodologi kuantitatif dan kualitatif digunakan untuk memaksimalkan pengamatan lapangan dan wawancara. Studi ini menemukan bahwa pendekatan Pavement Conditional Index (PCI) dapat menunjukkan kondisi jalan di Akademi Militer dengan menemukan nilai yang adil, baik, sangat baik, dan luar biasa untuk mengidentifikasi perbaikan kerusakan jalan dan manajemen.

ABSTRACT

The Army Military Academy trains future officers to be local intelligence-based and globally acknowledged defensive forces by 2025. Damaged roads in the neighbourhood and restoration problems from more than 10 years ago. Research on the Military Academy's roadway condition may be utilised to improve the road and promote Akmil as a centre of excellence. To fix research object damage, quantitative and qualitative methodologies are used to maximise field observations and interviews. The study found that the Pavement Conditional Index (PCI) approach may indicate street condition at the Military Academy by discovering fair, good, very good, and exceptional values to identify road damage repair and management.

INTRODUCTION

The Military Academy is one of the Ministry of National Defence of Indonesia's disciplinary education schools that trains Indonesian National Army officers. The military school develops the Internal Quality Assurance System (SPMI) via research programmes to implement, regulate, and enhance taruna teaching in a planned and sustainable way. Ground forces' Zeni knowledge is based on construction engineering, particularly civil engineering. Building, destruction, research, samara, resistance, water and electricity supply, explosive detonation, and passive nubika employ zen abilities. (Triwibowo et al., 2019). Civil engineering requires good soil and material. Still, project realisation is hard. 2020 Sari & Tambunan. Infrastructure is crucial for colleges that aim to increase quality and save time. Law of the Republic of Indonesia No. 2 of 2022 on the second amendment to Law No. 38 of 2004 defines a road as a land transportation facility that includes connector buildings, complementary buildings, and their traffic-related equipment on the ground, above ground, below ground, and/or under water, except railways, truck roads, and cable roads. Sekretariat Negara, 2022.

Akmil's 2025 quality standards include creating local intelligence-based and internationally recognised defence troops via the Military Academy. Some Military Academy roadways are severely damaged. Due to unsafe truck loads, insufficient maintenance, and sporadic monitoring. The Tidar hill's rapid water flow caused the road structure to shift and split into holes. Damage reduces road condition, making it safe and unpleasant. Thus, road damage needs quick repair. Longer road damage management diminishes roads and raises costs (Taufikurrahman, 2021).

Pavement Conditional Index (PCI) is used to analyse road degradation. Using the visual condition survey results, PCI is the level of solid surface condition and utility function measurement, which ranges from 0 (damaged) to 100 (perfect). 2022 (Harnawansyah et al.) PCI approaches may be used to determine road damage type and severity, as well as how to gather data using library research, surveys, and field observations efficiently and quickly (Prapsetyo et al., 2020).

The Optimisation of Road Repair Damage research follows the preceding description. Satrian Academy Military Method PCI (Pavement Condition Index) should be used. According to the priority scale values of fair, good, very good, and exceptional, we may determine policy guidance for road damage management.

METHOD

We employ qualitative and quantitative research approaches. According to Bogdan and Taylor, qualitative research produces descriptive data in the form of written or oral words of people and behaviour that can be observed holistically by exploring real life, contemporary limited systems (cases), or diverse limited systems (various cases) through data collection involving sources of information. Quantitative methods are systematic, planned, and structured from the start to the research design, using numbers and values to collect and interpret data and present results in images, tables, graphs, and other formats. 2020 (Adha et al.). This research uses the qualitative method to strengthen the interpretation and quantitative analysis of the interview results to the competent party, while the quantitative method analyses conditions and suggests solutions using quantitatives.

RESULT AND DISCUSSION

1. General

Research use quantitative methods to gather descriptive data on written, oral, and behavioral phenomena. The report covers Military Academy road conditions related to personnel and vehicle mobilization. Existing circumstances are converted into data and facts that span the study topic and external and internal influencing elements.

2. Statistics

Research materials acquire data by looking for primary or secondary descriptions.

General research area conditions

The research site is the Ksatrian Military Academy in Gatot Subroto No. 1, Banyurojo, Mertoyudan district, Magelang City, Central Java Province. Military Academy Educational Institute situated on the high plains.

a. Research site road conditions

The study site at Ksatrian Military Academy, Banyurejo Village, Mertoyudan Prefecture, Magelang District, Central Java Province, has 10 streets. The damage included pot holes, crocodile cracks, sinking, edge cracking, amblas, joint cracks, thickening, and pushing.

The Pavement Condition Index approach optimizes road damage restoration at the Ksatrian Military Academy based on internal and external variables. (PCI).

- 1) Internal elements include road conditions, damage rate, road life, and repair and handling methods to maximize road damage repair.
- 2) Weather, waterway drainage, and budget allocation for repairs or maintenance are external elements that optimize road damage maintenance.

3. Discourse Analysis a. Road Damage Level

Kastrian Military Academy An first survey was done to confirm the street on the survey satisfies the requirements and gives an idea of the field's state. Continued with a field survey to assess field conditions and determine damage kind and magnitude per road section. With lengthy recordings, segment division marks each STA. Field surveys provided road damage type and volume data. Pavement Condition Index (PCI) will be mapped. PCI will need main data on each road segment's damage kinds, length, breadth, depth, and degree of damage (H for high, M for moderate, and L for low). PCI values indicate four road conditions. The analysis found 8 extremely bad road conditions with PCI 25. Road conditions are 9 decent with PCI 52. PCi values of 58, 56, 68, and 64 indicate favorable roadway conditions 2, 4b, 6, and 7. Streets 1, 3, and 4a have excellent PCI scores of 78, 82, and 86. Street 5 with a PCI of 92 is the best.

Road Repair and Damage Treatment We address damage based on the kind of damage discovered at the study site. Damage like holes, crocodile cracks, abrasions, amblas, side craters, connective crack, rutting, thickening. Only temporary damage may be repaired to save the road clamping construction plan.

Road Damage Repair Optimization Maintenance, restoration, and road improvement optimize roads. Road performance may be improved with regular maintenance and repairs. Maintenance of the Drainase system may optimize regular maintenance. Drainage system flows water that may interfere with road users to keep the road dry.

4. Expected Conditions

The Military Academy's existing roads should be classified as secondary environmental roads because they have access to organic material that is funneled in the Academy, so no road has suffered low, moderate, or high damage for road users' safety.

5. Military Academy road damage treatment efforts are classed by PCI as low, moderate, or high:

a. Road damage treatment 8 with a PCI rating of 25 includes:

- 1) partial or full fastening for hole damage with moderate and high degree;
- 2) edge crack fastening on the cracked part;
- 3) partial fastening for crocodile damage with average and high levels; and
- 4) crack closure for block damage with moderately high degree.

b. Street 9 damage classified as 52 PCI is treated by:

- 1) Double-layer asphalt discharge may repair mild to severe crocodile skin fractures.
- 2) High-level damage may be repaired by adding a layer above the grain-released layer.
- 3) Filling the space with liquid asphal and sand might cause medium-level connection damage.

CONCLUSION

After analyzing the roadway condition of Ksatrian Military Academy using PCI (Pavement Condition Index), the following may be concluded:

- a. Street 9 had Fair/Sedang, 2.5, 7, and 8 had Good/Good, and 1,3,4,9 had Very Good/Very Good, while street 5 had the lowest damage with exceptional condition. For Very Good and Good roads, regular maintenance such road cleaning and drainage, vehicle tuning correction, and grass and dirt cleaning must be optimized. The akmil zen, denma akmil, and road users do periodic maintenance.

- b. PCI values affect road repair and damage control. Routine maintenance is performed on streets 1, 2, 3, 4a, 5, 6, and 7 with PCI values between 58-100. Rehabilitation maintenance occurs on streets 4b and 9 with PCI values of 40–57. Street 8 reconstruction maintenance uses a PCI of 0-39.
- c. Optimizing road damage maintenance Ksatrian Military Academy based on damage and drainage system maintenance to prevent congestive water.

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