

ROAD ENLARGEMENT DESIGN AND CONSIDERATION

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INTRODUCTION

Generally, a road is an infrastructure that provides services and utilities both above and below ground. A road is a route used to convey traffic from one place to another that is primarily designed with a smoothed or paved surface for vehicle usage. There are many classifications of roads such as expressways, federal roads and state roads. Some of the main design components of a road are a carriageway, median, marginal strip and shoulder [1]. Subsequently, the growth of economic and new developments has resulted in increases in population size. Hence, the demand for efficient transportation systems significantly increases which leads to the implementation of road upgradation and enlargement to accommodate the growth of traffic volume and congestion. However, to ensure its efficiency, road enlargement necessitates conscientious planning and consideration of several aspects.

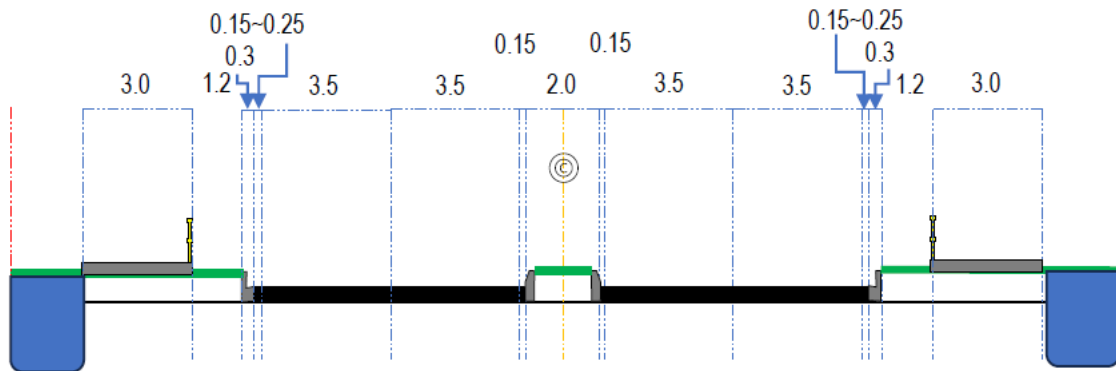


Figure 1: Typical Road Cross Section [2]

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1. Data Study and Analysis

Any road enlargement project should first undergo a thorough data study and analysis. Hence, before designing any road enlargement, the designer must have an as-built survey and underground utility mapping of the existing road. This data is essential in the first stage as the designer could foresee any possible clashing utilities and necessary relocation due to the road enlargement. Besides, the study should be widened into analysing current traffic trends, anticipated future growth, peak traffic hours, and the types of vehicles that constitute the traffic (e.g., automobiles, motorcycles, buses, trucks). In addition, public engagement is also important as they could address any concerns and gather feedback [3]. Accordingly, designers can comply with the present and future traffic demands by having a solid comprehension of these aspects to determine adequate road enlargement design requirements.

2. Right-of-Way Acquisition:

Right-of-way (ROW) is the total area acquired for road construction including the carriageways, any utilities and future enlargement. Road enlargement space is frequently limited in some areas especially urban areas as there are often constraints due to the existing development and densely populated community. Any encroachment of other property such as a house into the ROW should be highlighted and coordinated accordingly with related authorization such as Local Government (*Pihak Berkuasa*

Tempatan) to relocate it. However, dealing with such encroachment of other property can be challenging especially when involving with public sensitivity and historic preservation. Thus, to reduce the opposition and secure efficient project execution, extensive consideration must be provided to land acquisition procedures, legislative guidelines and community involvement.

3. Utility Relocation:

Additionally, the existing utilities for both above and underground such as water or sewer pipeline, drainage, electrical and telecom cable and street light might probably need to be relocated before any road enlargements ^[3]. It requires meticulous planning and design with close and efficient cooperation between multiple related utility companies such as water or power supply company accordingly to the project's location and state. It is crucial to avoid any possible disruption by including the provision of temporary services as necessary.

4. Safety Considerations

Every project involving the enlargement of a road must prioritize road safety. To improve safety for all road users, features including pedestrian walkways, pedestrian crossings, sufficient lighting, signage, and road markings should be properly incorporated into the design. The standard design varies depending on the area's authorities' standard. Commonly, the road design is based on Jabatan Kerja Raya (JKR) standards and guidelines. Besides, in order to protect both workers and drivers, additional precautions against construction-related accidents must be taken, such as imposing speed limits and traffic diversions ^[3].

CONCLUSION

In conclusion, road enlargement projects play a vital role in facilitating population growth, economic expansion, and improving the transportation infrastructure. However successful implementation and execution require meticulous design principles and considerations such as data study and analysis, right-of-way (ROW) acquisition, utility relocation, and safety considerations. Through careful consideration of these elements, road enlargements can be well-planned and executed, which contribute to the enhancement of overall transportation infrastructure and quality of life within communities.

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References:

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- [3] Bhatti, M. (2023, September 25). *Upgradation of Urban Roads – Issues & Design Considerations*. Retrieved on 29th September 2024 from <https://www.linkedin.com/pulse/upgradation-urban-roads-issues-design-considerations-muhammad-bhatti/>