Jemursari Underpass Retaining Wall Construction
Planning

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Abstract
The number of private and public transportation vehicle was up 3,526,471 unit based on Polwiltabes data. Until June 2009, the number of vehicle have reached 3,610,029 unit, which shows vehicle growth up to 83,798 unit. Monthly vehicle growth on Surabaya reaches 14000 unit, but the increase on number of vehicle doesn’t work side by side with the growth of road infrastructure.

Dolog Roundabout area located on Ahmad Yani road is one of the main arterial road which support the economic matters in East Java, specially Surabaya city. Theres a lot of traffic jam caused by massive usage of road by a high number of vehicle. To solve the problem, there are a lot of solution that can be used, which is Road Usage Survey, or a new road infrastructure which can solve traffic problem in this area. A construction plan which chosen to solve this problem is construction of crossing on different lane level, such as overpass or underpass. But based on survey on feasibility of the structure plan, we pick underpass as the viable solution for this project.

Underpass planning divided into two part, which is open section and closed section. The underpass will be build for 700 m, in which 245 m are closed underpass and 455 m as open underpass. The road is planned for 9,5 m width, which will be used for 2 lane. There will be around 10 m underpass located under a river. Existing river made a dugout around -9 m needed to
fulfill this plan, giving 5.5 m free space. The Jemursari Underpass plan by three option, using secant pile, diaphragm wall or sheet pile.

With three alternative plan, we can conclude that using combination of secant pile and diafragm wall design will give us the best result, where from economic point of view giving us better solution on the material consumption point of view. From the calculation we get around Rp 42.481.920.085,78 for expense using secant pile for closed underpass and diafragma wall for open underpass.

**Keyword**: underpass, sheet pile, secant pile, diaphragm wall, Surabaya.