Abstrak

Surabaya is second biggest city in Indonesia. In 2012 the population of Surabaya exceeding 3,110,187 people, with population growth around 1.62% each year, giving a tremendous impact to Surabaya city growth. The sheer size of population in Surabaya makes the traffic a real problem in people daily lives.

The intensity of traffic activity in Surabaya causes traffic jam at peak hour, also with yearly increase on motorcycle usage that unbalanced with existing road segment. PTC roundabout located between business area and school district, causing major traffic problem at peak hour.

With feasibility analysis used to tackle congestion at the PTC roundabout, underpasses is concluded as a feasible solution. The underpass is planned for about 100 meters long, with a length of road to be excavated about 600 meters. The road width will be dug 28 meters wide, intended for 2 lane 4 section. There are three retaining wall plan option for PTC underpass, namely the secant Pile, Diaphragm Wall, and Sheet Pile. Data from surrounding land indicating soft ground problem on the construction of the underpass PTC.
Alternative planning done on a retaining wall Underpass PTC can be done by the method of diaphragm wall, secant pile and sheet pile. The total cost obtained around Rp. 46.496.648.640,00 using the combination of secant pile and sheet pile design, and Rp. 52.746.657.840,00 using the combination of sheet pile and wall diaphragm design.

With this alternative planned, it was concluded that project manager advised to use the combination of sheet pile and secant pile design. The combination of this design is the most effective and economical, so the other project with similar problems can be solved quickly and efficiently.

*Kata Kunci: Underpass, Dinding Penahan Tanah, Diaphragm Wall, Secant Pile, Sheet Pile*