

## ABSTRAK

### ANALISIS PERBANDINGAN PENINGKATAN KESTABILAN LERENG DENGAN *GRAVITY WALL* DAN *MECHANICALLY STABILIZED EARTH RETAINING WALL*

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Peristiwa longsor yang terjadi akibat intensitas hujan yang tinggi disaat musim hujan terjadi pada KM 43 Ruas Jalan Nasional Kota Kupang-Atambua, Jl Oesao – Bokong, Kab. Kupang, NTT mengakibatkan terhambatnya mobilitas masyarakat kota Kupang dan sekitarnya menuju kota Atambua dan juga mempengaruhi kelancaran logistik masyarakat. Oleh sebab itu, diperlukan proyek pengembalian bahu jalan dan kestabilan lereng dan timbunan jalan dengan menggunakan Dinding Penahan Tanah yang dibangun dan di desain berdasarkan perhitungan kestabilan dan faktor keselamatan. Penelitian ini dimaksudkan untuk menentukan solusi penanganan dengan menggunakan jenis dinding penahan yang aman dari segi kestabilan dan ekonomis dengan membandingkan *Gravity Retaining Wall* dengan *Mechanically Stabilized Earth Retaining Wall*. Metode penelitian yang digunakan dalam penelitian ini terdiri dari pengumpulan data dan perhitungan analisis kestabilan lereng menggunakan *software Rocscience Slide 6.0* dan melakukan perhitungan rancangan anggaran biaya untuk kedua penanganan. Analisis kestabilan dilakukan pada lereng eksisting dalam kondisi adanya aliran permukaan, lereng dengan perkuatan *gravity retaining wall* dalam kondisi statis dan seismic, serta lereng dengan perkuatan *mechanically stabilized earth* dalam kondisi statis dan seismic. Hasil dari analisis menunjukkan bahwa kedua jenis dinding penahan tanah aman digunakan sebab dinding penahan *Gravity Wall* memiliki  $FK = 1,65 > 1,5$  sedangkan dalam kondisi gempa  $FK = 1,134 > 1,1$  dan *MSE Wall* memiliki  $FK = 1,687 > 1,5$  sedangkan dalam kondisi gempa  $FK = 1,177 > 1,1$ . Dari segi biaya material, total biaya pekerjaan untuk solusi penanganan longsor menggunakan *Gravity Wall* sebesar Rp.3.710.427.550,68, sedangkan solusi penanganan menggunakan *MSE Wall* senilai Rp. 3.102.088.323,56.

Kata Kunci: Longsor, Kestabilan Lereng, Dinding Penahan Tanah, Rocscience Slide 6.0

## **ABSTRACT**

### **COMPARISON ANALYSIS OF GRAVITY RETAINING WALL WITH MECHANICALLY STABILIZED EARTH RETAINING WALL IN INCREASING SLOPE STABILITY CLAUDIA GRACIA HOTANTO/22170009**

*The landslide that occurred at KM 43 of the Kupang-Atambua City National Road Section, Jl Oesao - Bokong, Kab. Kupang, NTT was caused by high rainfall intensity during the rainy season and has negatively affected hampered the mobility of the people of Kupang city and its surroundings to the city of Atambua, and the movement logistics. Therefore, a road shoulder restoration project to stabilize slope and road embankment was needed. The solution is to use a retaining wall that is built and designed based on slope stability analysis for satisfying safety factor requirements of 1,5 and 1,1 for static and seismic conditions, respectively. This research is intended to offer an alternative solution for handling unstable slope using a retaining wall that is safe in terms of stability and economicly efficient by comparing the Gravity Retaining Wall the Mechanically Stabilized Earth Retaining Wall. The research method used in this study consisted of collecting data and calculating slope stability analysis using Rocscience Slide 6.0 software, and calculating the budget for both treatments. Stability analysis was carried out on existing slopes under surface runoff conditions, slopes with gravity retaining walls in static and seismic conditions, and slopes with mechanically stabilized earth in static and seismic conditions. The results of the analysis show that both types of retaining walls are safe to be used because the retaining wall Gravity Wall has Safety Factor (SF) = 1.65 > 1.5 while in earthquake conditions SF = 1.134 > 1.1 and MSE Wall has SF = 1.687 > 1.5 while in earthquake conditions SF = 1.177 > 1.1. For the material costs, the total work for the solution using Gravity Wall is Rp. 3.710.427.550,68, while the solution using MSE Wall is RP. 3.102.088.0323,56.*

*Keywords: Landslide, Slope Stability, Retaining Wall, Rocscience Slide 6.0*