

ABSTRAK

Material Timbunan Bendungan Ameroro yang bertipe urugan batu zonal dengan inti tegak tersusun mulai dari yang paling halus, yaitu material inti (Zona-1), Filter Halus (Zona-2), Filter Kasar/Transisi (Zona-3), dan Urugan Batu (Zona-5). Elevasi muka air Bendungan Ameroro pada kondisi waduk penuh ditetapkan berdasarkan ketersediaan air (potensi aliran masuk/*inflow*) serta kapasitas tampungan bendungan. Dalam desain ini, dilakukan kajian terhadap stabilitas bendungan Ameroro yang meliputi stabilitas struktural dan stabilitas bendungan terhadap aliran filtrasi (*Piping*). Perhitungan analisis stabilitas dilakukan dengan program GeoStudio 2018, Analisis stabilitas struktural Bendungan Ameroro dilakukan dengan mengikuti bagan air dalam Pedoman Analisis Stabilitas Bendungan Tipe Urugan Akibat Beban Gempa. Analisis stabilitas struktural bendungan Ameroro dilakukan dengan Cara Koefisien Gempa Cara Statik dan Cara Koefisien Gempa Termodifikasi. Kapasitas tampungan total bendungan Ameroro adalah 43,44 juta m³, dengan tinggi bendungan 82,00 m. Berdasarkan kelas resiko, Bendungan Ameroro termasuk bendungan dengan kelas resiko Tinggi, sehingga metode analisa gempa baik pada kondisi OBE maupun MDE harus menggunakan cara koefisien gempa termodifikasi. Perhitungan nilai Faktor Keamanan (FK) dilakukan pada tiga kondisi yaitu kondisi selesai konstruksi, Muka Air Langgeng dan Oeprasional. Dari hasil perhitungan pada kondisi tanpa gempa dan gempa *Operation Base Earthquake* (OBE) nilai FK telah memenuhi syarat minimum, namun kondisi gempa *Maximum Design Earthquake* MDE tidak memenuhi FK minimum standar SNI 8064:2016

Kata kunci : Bendungan, Material Bendungan, Gempa, Analisis Stabilitas Bendungan, GeoStudio

ABSTRACT

The Ameroro Dam embankment material, which is a zonal stone backfill type with an upright core, is arranged starting from the finest, namely core material (Zone-1), Fine Filter (Zone-2), Coarse/Transitional Filter (Zone-3), and Stone Backfill (Zone-5). The water level of Ameroro Dam under full reservoir conditions was determined based on the availability of water (potential inflow) and the storage capacity of the dam. In this design, the stability of Ameroro Dam was assessed, including structural stability and stability of the dam against filtration flow (piping). The structural stability analysis of Ameroro Dam was carried out by following the water chart in the Guidelines for Stability Analysis of Backfill Type Dams Due to Earthquake Loads. The structural stability analysis of Ameroro Dam was conducted using the Static Earthquake Coefficient Method and the Modified Earthquake Coefficient Method. The total storage capacity of Ameroro Dam is 43.44 million m³, with a dam height of 82.00m. Based on the risk class, Ameroro Dam belongs to a dam with a high risk class, so the earthquake analysis method for both OBE and MDE conditions must use the modified earthquake coefficient method. The calculation of the Safety Factor (FK) value is carried out in three conditions, namely the condition of completed construction, normal / lasting water level and Operational. From the results of calculations on conditions without earthquakes and Operation Base Earthquake (OBE) earthquakes, the FK value has met the minimum requirements, but the Maximum Design Earthquake MDE earthquake conditions do not meet the minimum FK standard of SNI 8064: 2016.

Keywords: Dam, Dam Material, Earthquake, Dam Stability Analysis, GeoStudio