

## INTISARI

Jalan akses ke *quarry* merupakan infrastruktur yang vital dalam pembangunan Bendungan Bener. Pada STA 0+025 terdapat timbunan dengan tinggi 19 m yang terletak di atas tanah lunak. Pelaksanaan konstruksi menggunakan metode timbunan bertahap yakni dengan membagi timbunan menjadi dua sisi dikarenakan keterbatasan lahan untuk akses sementara konstruksi. Tujuan dilakukan penelitian ini untuk mengetahui metode pelaksanaan timbunan, perilaku timbunan akibat penimbunan bertahap, faktor keamanan, besar penurunan, dan evaluasi tahapan metode konstruksi timbunan. Metode pelaksanaan timbunan bertahap meliputi pengupasan lapisan *top soil*, penghamparan material timbunan, pemadatan material timbunan, dan *finishing top* elevasi timbunan. Berdasarkan hasil analisis numeris menggunakan FEM 2D didapatkan bahwa penentuan waktu konstruksi dan waktu tunggu memberikan peranan penting terhadap penurunan tanah dasar, *excess pore pressure*, dan stabilitas timbunan. Penimbunan dengan membagi dua sisi mampu menurunkan *excess pore pressure* dan mengurangi penurunan karena beban yang diterima tanah dasar lebih kecil. Faktor keamanan pada masing-masing fase menunjukkan angka di atas 2, maka konstruksi timbunan stabil. Penurunan segera yang terjadi sebesar: 1,765 m dan konsolidasi 0,035 m selama 71 hari. Evaluasi dari hasil analisis numeris FEM 2D didapatkan kecepatan penurunan konsolidasi tidak memenuhi persyaratan, sehingga jalan akses bisa dibebani minimal 2 bulan pasca konstruksi timbunan.

**Kata kunci :** Evaluasi, metode, timbunan bertahap, stabilitas, penurunan, *excess pore pressure*.

## ABSTRACT

The access road to the quarry is a vital infrastructure in the construction of the Bener Dam. At Station 0+025, there is a 19-meter high embankment located on soft soil. The construction is carried out using a phased embankment method, dividing the embankment into two sides due to limited access land during construction. The objective of this research is to determine the phased embankment construction method, the behavior of the embankment due to phased construction, safety factors, settlement, and evaluate the construction stages of the embankment method. The phased embankment construction method includes stripping the topsoil layer, spreading embankment material, compacting embankment material, and finishing the top elevation of the embankment. Based on the results of numerical analysis using 2D FEM (Finite Element Method), it was found that the determination of construction timing and resting time plays a crucial role in the settlement of the subsoil, excess pore pressure, and embankment stability. Dividing the embankment into two sides reduces excess pore pressure and decreases settlement because the subsoil receives a smaller load. The safety factors for each phase indicate values above 2, ensuring the stability of the embankment. Immediate settlement is 1,765 meters, and consolidation settlement is 0,035 meters over 71 days. The evaluation from the 2D FEM numerical analysis shows that the consolidation settlement rate does not meet the requirements, so the access road can be loaded at a minimum of 2 months after the embankment construction.

**Keywords : evaluation, methods, staged embankment, stability, settlement, excess pore pressure.**