

ANALISIS REMBESAN TERHADAP PERBAIKAN PONDASI METODE *GROUTING* PADA BENDUNGAN BENER PURWOREJO

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ABSTRAK

Bendungan bener terletak di Desa Guntur, Kecamatan Bener, Kabupaten Purworejo, Provinsi Jawa Tengah, memiliki tipe *Concrete Membrane Rockfill Dam (CRFD)*, dengan elevasi puncak +356,00 m. Pekerjaan bendungan utama diawali dengan pekerjaan pondasi sebagai dasar penopang bangunan.

Rembesan pada pondasi atau tubuh bendungan memiliki batas tertentu untuk mengalir melewati pondasi dan tubuh bendungan karena berisiko menyebabkan *piping*, hingga keruntuhan bendungan. Untuk itu dilakukan analisis perhitungan debit rembesan untuk mengetahui rembesan terhadap pondasi. Grouting salah satu metode perbaikan dengan penyuntikan semen pada rongga tanah untuk mengurangi permeabilitas air. Metode analisis penelitian ini dengan menggunakan program SEEP/W pada aplikasi *Geostudio 2025 trial version* menggunakan data *properties* tanah, data hidrologi, Muka Air Banjir (MAB) dan Muka Air Normal (MAN), *Detail Engineering Design (DED)* Bendungan Bener, denah pekerjaan *grouting*, dan data pelaksanaan *grouting*.

Berdasarkan analisis yang dilakukan dengan SEEP/W *Geostudio* pada kondisi Muka Air Normal, laju rembesan di area pondasi sebelum *grouting* adalah $8,67\text{E-}04 \text{ m}^3/\text{sec}/\text{m}$ dan laju rembesan setelah *grouting* adalah $7,50\text{E-}04 \text{ m}^3/\text{sec}/\text{m}$. Pada kondisi Muka Air Banjir, laju rembesan di area pondasi sebelum *grouting* adalah $9,11\text{E-}04 \text{ m}^3/\text{sec}/\text{m}$ dan laju rembesan setelah *grouting* adalah $7,93\text{E-}04 \text{ m}^3/\text{sec}/\text{m}$.

Kata kunci: Pondasi, Rembesan, Grouting, Geostudio

ANALISYS SEEPAGE ON FOUNDATION REAPIR USING THE GROUTING METHODE ON THE BENER DAM IN PURWOREJO

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ABSTRACT

The Bener Dam, located in Guntur Village, Bener District, Purworejo Regency, Central Java Province, is a Concrete Membrane Rockfill Dam (CRFD) with a peak elevation of +356.00 m. The main dam construction began with foundation construction to support the structure.

Seepage from the foundation or dam body has a certain limit on how much it can flow through the dam body, as it risks pipping and even collapse. Therefore, a seepage discharge analysis was conducted to determine the safety of the foundation. Grouting is one repair method that involves injecting cement into cavities to reduce water permeability. The analysis method for this research, using the SEEP/W program in Geostudio 2025, utilizes soil properties (random, clay filter), hydrology data, flood water levels (FWL) and normal water levels (NWL), as well as Detailed Engineering Design (DED) data, including grouting data and grouting plans.

Based on the analysis conducted with SEEP/W Geostudio under Normal Water Table conditions, the seepage rate in the foundation area before grouting was $8.67E-04$ m³/sec/m and the seepage rate after grouting was $7.50E-04$ m³/sec/m. Under Flood Water Table conditions, the seepage rate in the foundation area before grouting was $9.11E-04$ m³/sec/m and the seepage rate after grouting was $7.93E-04$ m³/sec/m.

Keywords: *Fondation, Seepage, Grouting, Geostudio*