Perencanaan Bangunan Pengendali Sedimen (Sabo Dam) Tipe Terbuka Kali Trising (TR-RRD Sewukan) Pada Proyek SID Sabo Kab. Magelang

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INTISARI

Gunung Merapi merupakan salah satu gunung paling aktif di Indonesia yang terletak di perbatasan Jawa Tengah dan D.I Yogyakarta. Letusan Gunung merapi cenderung lama (berlangsung dalam hitungan bulan), serta material yang dimuntahkan cukup banyak. Saat musim penghujan material-material tersebut bercampur dengan air hujan yang menyebabkan terjadinya banjir lahar dingin. Potensi lahar dingin yang besar menyebabkan pemerintah melakukan pembangunan sabo dam di sungai-sungai yang berhulu di Merapi melalui proyek Perencanaan SID Sabo Kab. Magelang dan Kab Sleman yang dilaksanakan oleh PT Indra Karya. Dalam proyek ini sabo dam dibangun pada sungai-sungai yang memiliki resiko tinggi terhadap banjir lahar dingin, salah satu sungai ialah Kali Trising. Pada Tugas Akhir ini akan direncanakan sabo dam tipe terbuka di Kali Trising TR-RRD Sewukan. Sabo dam dibangun bertujuan untuk menahan sedimen yang berasal dari banjir debris dengan debit rencana kala ulang 100 tahun.

Dalam perencanaan sabo dam dilakukan analisis curah hujan yang menghasilkan curah hujan rencana dengan periode kala ulang 100 tahun. Curah hujan rencana digunakan untuk mencari debit banjir maksimum kala ulang 100 tahun yang nantinya digunakan untuk mengetahui debit banjir aliran debris. Tubuh sabo dam dihitung melalui perencanaan bangunan utama (*main dam*), lantai lindung (apron), sub dam, dan dinding tepi. Sabo dam direncanakan memiliki tinggi efektif 9 m, kedalaman pondasi 3 m, serta kemiringan bagan hulu dan hilir sabo dam masing-masing 1:07 serta 1:03. Sabo dam memiliki kapasitas tampungan total sebesar 189517.204 m^3 dan tubuh bangunan sabo aman terhadap gaya-gaya yang bekerja baik dalam kondisi normal maupun banjir.

Kata Kunci : Sabo dam, Aliran Debris, Kali Trising, Gunung Merapi

Design Sediment Control Structures

(*Sabo Dam*) *Open-Type*

***Trising River* (*TR-RRD Sewukan*)**

At SID Sabo Project Magelang District.

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ABSTRACT

Mount Merapi is one of the most active mountains in Indonesia, located on the borderland of Central Java and D.I Yogyakarta. Merapi eruption tends for a long time and spits out a lot of materials. During rainy season, those materials are mixed by rainwater that cause cold lava flood. The large potential of cold lava flood to occur has caused the government to build sabo dams on rivers that disgorge at Merapi through the SID Sabo Planning project in Magelang and Sleman Regency which is conducted by PT Indra Karya. In this project, the sabo dam will be built on rivers that have a high risk of cold lava flood to occur, one of those rivers is Trising River. This final task is made to plan sabo an open-typed sabo dam in Trising River TR-RRD Sewukan. The construction of Sabo dam is aim to hold the sediment that comes from the flood debris with discharge flood planned within 100 years.

In the sabo dam planning, there is a rainfall analysis that produces rainfall plans within 100 years. Rainfall plans are used to find a maximum flood discharge within 100 years which will be used to determine the discharge of flood debris flows. The body of sabo dam is calculated through the planning of the main dam, apron, sub dam, and edge wall. Sabo dam is planned to have an effective height of 9 m, a foundation depth of 3 m, as well as the slope of each upstream and downstream charts of sabo dam is 1:07 and 1:03. Total landfill capacity of sabo building is 189517.204 m^3 and sabo building body is safe against forces that works out either in normal conditions or floods.

Keywords: Sabo dam, Debris Flow, Trising River, Mount Merapi