PERENCANAAN ULANG GROUNDSILL KELOK 9 BATANG SANIPAN, HARAU KAB. LIMA PULUH KOTA

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Abstrak

Groundsill Kelok 9 Batang Sanipan terdapat di Kabupaten Tanah Datar Provinsi Sumatera Barat di bangun untuk untuk mengamankan pondasi Kelok 9 atau bangunan yang ada di hulu *groundsill* dari gerusan, sehingga struktur bangunan yang berada di bagian hulu sungai seperti jembatan atau bangunan air lainya aman terhadap erosi. Hancurnya bagian bangunan sayap *groundsill* di sungai Batang Sanipan Kelok 9 Kabupaten Lima Puluh Kota pada saat ini mengakibatkan fungsi bangunan *groundsill* tidak dapat bekerja dengan baik untuk menahan sedimen, akibat kerusakan ini di khawatirkan pondasi jembatan Kelok 9 akan turun dan jembatan Kelok 9 bisa mengalami kerusakan yang berat. Oleh sebab itu di perlukan perencanaan ulang *Groundsill* Kelok 9 Batang Sanipan. *Groundsill* Kelok 9 Batang Sanipan yang direncanakan dengan menggunakan mercu tipe bulat dan peredam energi tipe bak tenggelam karena kondisi daerah sungai yang materialnya berupa bebatuan alam. Pada perencanaan *Groundsill* Kelok 9 Batang Sanipan ini dilakukan perhitungan analisa hidrologi, perhitungan hidrolis *Groundsill*, dan perhitungan stabilitas *Groundsill*. Untuk data-data yang diperlukan antara lain peta topografi dan data curah hujan selama 10 tahun pengamatan. Dari data yang didapat : luas *catchment area* seluas 47 Km^2 , debit 85 tahun (Q25) 85,48 m^3/dtk, lebar *Groundsill* 11,4 m, tinggi mercu bendung 1 m, dan tinggi energi (H1) 2,31 m. Pada perhitungan stabilitas bendung dalam keadaan air normal didapat angka keamanan terhadap guling 1,80 , geser 1,63, *eksentrisasi* 0,54<1,58 dan daya dukung tanah terhadap tegangan yang di izinkan aman. Pada saat air keadaan banjir didapat angka keamanan terhadap guling 1,68 , geser 1,52, *eksentrisasi* 1,56<1,59 dan daya dukung tanah terhadap tegangan yang di izinkan aman. Maka didapat konstruksi bendung stabil.

Kata Kunci : *Groundsill*, Gerusan, Hidrologi, Tipe Mercu, Stabilitas

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REDESIGNING GROUNDSILL KELOK 9 BATANG SANIPAN, HARAU KAB. LIMA PULUH KOTA

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Abstract

Groundsill Kelok 9 Batang Sanipan, located in Tanah Datar Regency, West Sumatra Province, was built to secure the Kelok 9 foundation or buildings in the upstream groundsill from scouring, so that building structures in the upstream part of the river such as bridges or other water structures are safe against erosion. . The destruction of part of thewing building groundsill in the Batang Sanipan Kelok 9 river in the Fifty Cities Regency at this time resulted in the function of thebuilding groundsillbeing unable to work properly to hold sediment, due to this damage it was feared that the foundation of the Kelok 9 bridge would drop and the Kelok 9 bridge could suffer serious damage. weight. Therefore, it is necessary to re-plan Groundsill Kelok 9 Batang Sanipan. Groundsill Kelok 9 Batang Sanipan which is planned to use a round type lighthouse and a sink type energy damper due to the condition of the river area whose material is natural rocks. In this Groundsill Kelok 9 Batang Sanipan plan, hydrological analysis,hydraulic calculations Groundsill, andstability calculations are Groundsillperformed. The required data include topographic maps and rainfall data for 10 years of observation. From the data obtained: the area of the catchment area is 47 km^2 , Discharge 85 years (Q25) 85.48 m^3/ sec,width groundsill 11.4 m, height lighthouse weir 1 m, and high energy (H1) 2.31 m. In calculating the stability of the weir in normal water conditions, the safety figure against rolling is 1.80, shear is 1.63, eccentrization is 0.54 <1.58 and the bearing capacity of the soil against the stress is allowed to be safe. When the water is in a flood condition, the safety number against rolling is 1.68, sliding 1.52, eccentrization 1.56 <1.59 and the carrying capacity of the soil against the allowed stress is safe. Then we get stable weir construction.

Keywords: *Groundsill*, Scour, Hydrology, Mercu Type, Stability

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