

KAJIAN TEKNIS BANGUNAN PELIMPAH (*SPILLWAY*) BENDUNGAN RANDUGUNTING KABUPATEN BLORA

Oleh:

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ABSTRAK

Perubahan tata guna lahan di masa depan diperkirakan menyebabkan penambahan nilai potensi erosi dan sedimentasi yang telah direncanakan, hal ini menyebabkan umur layan Bendungan Randugunting berkurang. Selain sedimentasi dan erosi faktor lain yang memperpendek umur layanan bendungan adalah curah hujan yang tidak terduga. Apabila curah hujan yang melimpah berlebihan diperparah dengan terjadinya kenaikan nilai erosi dan sedimentasi di wilayah DAS Randugunting, besar peluang terjadi *overtopping*. Berdasarkan uraian tersebut, maka perlu dilakukan analisa teknis terhadap bangunan pelimpah (*spillway*) Bendungan Randugunting.

Kajian teknis *spillway* di Proyek Pembangunan Bendungan Randugunting dilakukan dengan menganalisa berbagai aspek. Pertama melakukan analisa data hidrologi terbaru dengan jangkauan dari 2010 hingga 2020. Analisa hidrologi dilakukan untuk mendapatkan besarnya debit banjir yang mungkin melimpas. Kemudian dilakukan analisa hidrolika untuk mendapat dimensi pelimpah dan aliran air yang terkontrol kecepatannya. Setelah dimensi dan luasan pelimpah didapatkan perlu dilakukan analisa stabilitas agar didapatkan *output* pelimpah yang aman dari segala aspek perencanaan teknis.

Berdasarkan hasil analisa didapat analisa hidrologi periode ulang 1000 tahunan sebesar 254,09 m³/dt. Analisa topografi area DAS didapatkan volume tampungan kapasitas waduk 10,4 Juta m³, luasan 1,46 Juta m², dan elevasi genangan setinggi ± 94,27 m. Analisa hidrolika didapat lebar pelimpah 40 m, kedalaman saluran pengarah 3 m, desain pelimpah tipe pelimpah samping, dan mercu tipe *ogee* I. Selanjutnya analisa stabilitas bangunan pelimpah dilakukan simulasi keadaan air normal dan keadaan air banjir, didapati bahwa *spillway* aman terhadap bahaya guling, geser, *uplift*, eksentrisitas, *piping*, dan memenuhi dari segala aspek pengujian terhadap daya dukung tanah.

Kata kunci: Pelimpah Bendungan Randugunting; Hidrolika; Hidrologi; Stabilitas

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**TECHNICAL STUDY OF SPILLWAY
DAM RANDUGUNTING BLORA REGENCY**

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ABSTRACT

Future land use transformation is estimated to result in additional value for the planned erosion and sedimentation potential, this transformation reduces the service life of the Randugunting Dam. Besides sedimentation and erosion another factor that shortens the service life of the dam is unpredictable rainfall. If the abundant rainfall is excessive, exacerbated by an increase in the value of erosion and sedimentation in the Randugunting watershed, its highly likely that overtopping will occur. Based on this description, Randugunting Dam spillway technical analysis needs to be done.

Redesign of the technical aspect of the spillway is carried out by analyzing various aspects. The first is to analyze the latest hydrological data with a time span of 2010 to 2020, this is carried out to determine possible flood discharges. Then a hydraulic analysis to obtain the dimensions of the spillway and the speed of the water flow which was controlled for its speed. After the dimensions and area are known from the previous analysis, it is necessary to carry out a stability analysis in order to obtain a safe spillway output from all aspects of technical planning.

Based on the previous analysis, a hydrological analysis of the 1000 year return period of 254.09 m³/sec. The topographical analysis of the watershed area shows that the reservoir volume is 10.4 Million m³, the area is 1.46 Million m², and the inundation elevation is ± 94.27 m. Analysis hydraulics obtained the spillway width of 40 m, the depth of the guide channel 3 m, the design of the side spillway type, and the ogee type I. Furthermore, the stability analysis of the spillway was carried out simulating normal and flood water conditions, it was found that the spillway was safe against the danger of rolling, sliding, uplift, eccentricity, piping, and safe for the bearing capacity.

Keywords: *Randugunting Dam Spillway; Hydraulics; Hydrology; Stability*

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