EVALUATION OF WATER SUITABILITY FOR CONCRETE MIXING IN ACCORDANCE WITH CONCRETE WORK SPECIFICATIONS FOR ROADS AND BRIDGES (PD-07-2005-B) IN THE BENGKALIS ISLAND REGION

Student Name : **Putri Dui Wardana**

NIM : **4204221539**

Thesis Supervisor : **Ir. Armada, S.T., MT**

ABSTRACT

The construction of road and bridge infrastructure relies heavily on the quality of concrete as the primary material. A crucial factor influencing concrete quality is the quality of the water used in the mix. On Bengkalis Island, the availability of clean water is limited; consequently, local water sources—such as river water, reservoir water, dug well water, and borehole water—are frequently used without adequate testing. This study aims to identify the types of water available on Bengkalis Island, determine their impact on mortar compressive strength, and assess their suitability as concrete mixing ingredients based on the Pd T-07-2005-B standard. The study employed laboratory experimental methods using water samples from the Bengkalis, Bantan Timur, and Perapat Tunggal districts. The results indicate that all mortar constituent materials met standard requirements. Identification revealed that borehole water is the source most commonly used by the community for mixing concrete. Physical observations showed that dug well water possessed the best visual quality, whereas river and reservoir waters exhibited higher turbidity levels and organic matter content. Compressive strength tests demonstrated that all specimens increased in strength as the mortar aged; the highest compressive strengths at 28 days were achieved by mortar mixed with Bengkalis reservoir water (211.89 kg/cm²) and Perapat Tunggal dug well water (192.19 kg/cm²).

Keywords **:** *Mixing Water, Mortar, Compressive Strength, Water Quality, Bengkalis Island*