REAL-TIME SCOUR MONITORING AROUND PIERS FOR EFFECTIVE BRIDGE SCOUR COUNTERMEASURES

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In this study, a real-time bridge scour monitoring system was installed and operated to measure real scour depths and improve scour predictions in several sites having hard ground condition. Because the most scour equations don't simulate the interface problem between flow condition and bed characteristics simultaneously. A real-time scour monitoring has been performed at two bridge sites using fixed instrumentation combined with ultrasonic scourometer(UDM200), datalogger(UDM-RT300) and 2-dimensonal current meter (Argonaut-SL). So the acquired data from the monitoring system include continuous scour measurements at bridge piers as well as continuous water velocity measurements which is the main reason of scour.

The result of the monitoring, the highest peak discharge during the monitoring period was 12,109 cms, which is nearly equal the 1-year occurrence interval for these sites. During this 12,109 cms event in July of 2004, maximum water velocity was measured up to 1.33 m/s and 2.17 m/s at Mapo and Hannam grand bridge respectively as shown in Fig. 6 and 7. However, there is no significant scour that eroded over 1 m. This is the result reflected real field condition such as the complex interaction of the river flow and complicated bed characteristics so that real scour depth and scourability can be determined through the result.

Moreover, the result of real scour monitoring can present reasonable bridge scour countermeasure that will substantially reduce the expense of foundations for new bridges and avoid the costly replacement of existing bridges due to anticipated scour that is overestimated by scour equations.

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