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SHAH ALAM

SELANGOR

A LABORATORY CALIBRATION

OF A MODEL

HELLEY-SMITH

BEDLOAD SAMPLER

BY

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CHAPTER ONE

1.0   INTRODUCTION.

It is a common knowledge that water flow-
ing in natural or artificial channels often has the
ability to scour sand, gravel or even large boulders
from the bed or banks and sweep them downstream.This
phenomenon is usually termed as "sediment trans-
port" and the sediment that has been transported by
rolling on or near the streambed is termed as
"bedload".

By definition, sediment transport in
streams is divided into two main categories :

    i)   suspended load

   ii)   bedload

While various types of different
samplers such as Arnhem and Helley - Smith bed load
sampler have been developed and many theoretical
approaches through mathematical means have been put
forward it is found that results are frequently
disapointing and often far from satisfactory.

1.1   Objective.

The objective of this study is to calibrate the model of a Helley Smith bedload sampler using a hydraulic flume as a natural channel.

The term calibration here means that the ability of the model used, i.e Helley - Smith bedload sampler to caught or intercept sediment transport over a small incremental width of streambed and accumulates the sediment in a chamber within the sampler within an acceptable efficiency, prferably a 100 percent.

Efficiency is defined as the ratio of the weight of bedload collected during a sampling time to the weight of bedload that would have passed through the sampler width in the same time had the sampler not been there. Ideally, the ratio as mentioned above is 1.0, and the weight of every particle - size fraction in the collected sample is in the sample proportion as in the true bedload discharge.