

## **ABSTRACT**

The initiation of sediment motion is one of the most critical parameters in the sedimentation process. In this paper, sediment incipient motion was investigated in a laboratory of rectangular flume cross-section smooth channels using two different types of sands, irrigation and sewer types. The experiment was conducted at five different slopes (0.001, 0.0015, 0.002, 0.0025, and 0.003) for irrigation channels and (0.005, 0.01, 0.015, 0.02, and 0.025) for sewer channel. The methods of shear stress and velocity are used to evaluate experimental results. The results are compared with the corresponding models available for Shields, Novak and Nalluri. The resulting data from velocity approaches in this study are found in an acceptable agreement with existing models, while the resulting data from the shear stress method provided an overestimation value for each type. Channel bed slope has a negative relationship to the incipient motion of the sediment, while positive to the specific gravity of the sediment.