Sharp crested weir is a weir with a short sill with no hydrostatic flow on the weir. There are several measurement tool using sharp crested weir such as: Thompson, Rehboch, Cipoletti, and distinguished by the shape such as triangular (V-notch), rectangular, trapezium (Cipoletti). Weir shape will affect the water level above the weir crest. The triangular shape is generally used to measure small discharge. V-notch weir is a measuring tool that is designed with a triangular shaped notch shape like the letter V. This instrument produces accurate measurements for small discharge compared to other measurement tools. While for large discharge, water level for triangular shape is greater than the other forms. Weir with rectangular shape has the ability to measure greater discharge than the triangular weir. For small discharge, height of water above rectangular weir crest is to small so that measurement water becomes inaccurate. Compound weir which is a combination of triangular weir and rectangular expected to accommodate the weakness of rectangular weir and a triangular weir in measuring discharge both for small and large discharge. The authors conducted a study of flow through sharp crested weir has a compound cross section consisting of a triangular cross-section and rectangular cross-section. The study was conducted by measuring the flow at the weir with thin triangles and compound shaped weir in a laboratory flume. The flow velocity was measured by using a micro ADV and surface water level in spillway upstream and velocity measuring point is measured using Ultrasonic Water Level Recorder. Flow velocity measurement data and water levels were analyzed with descriptive statistical methods to obtain an average value and deviation. This experiment resulted a comparison between the weir flow profile for thin triangles weir and compound weir, changes in the flow behavior of triangular weir to the combined weir, non-continuity relationship between flow rate and water level above the compound weir section, and coefficients for compound section weir discharge of a certain size.