The characteristics of aggregates used in hot-mix asphalt, hydraulic cement concrete, and aggregate pavement layers affect the structural integrity and durability of pavement systems and the skid resistance of pavement surfaces. Those characteristics include shape, (such as round or flat); angularity, (the sharpness of the corners of the aggregate particles); and texture, (the smoothness or roughness of the particle surface). Manual methods now used to measure aggregate characteristics can produce inconsistencies in measurement, quality assurance, and mix design.

Project Overview
Pine Instrument Company refined and developed the Aggregate Image Measurement System (AIMS2) to analyze aggregate properties using digital imaging technology. The AIMS2 combines hardware that captures real-time digital images of paving material samples and the proprietary software that analyzes aggregate characteristics that affect pavement quality and improves the speed and accuracy of testing. In the Inter-Laboratory study, 32 university, commercial, and highway agency laboratories evaluated the reproducibility of the AIMS2 equipment and procedures.

Project Status
The ruggedness testing and Inter-Laboratory Study resulted in procedures and specifications for aggregate shape characterizations using digital imagery. Two AASHTO provisional specifications have been adopted as a result of this work:
TP81 - Standard Method of Test for Determining Aggregate Shape Properties by Means of Digital Image Analysis and PP64 - Standard Practice for Determining Aggregate Source Shape Values from Digital Image Analysis Shape Properties. These standard procedures position the platform to standardize the aggregate testing procedure utilizing the imaging technology. The final report and a video is available at www.fhwa.dot.gov/hfl/partnerships/aims.cfm

Contact Information
FHWA, Highways for Life Technology Partnerships Program
Julie Zirlin, 202-366-9105
www.fhwa.dot.gov/hfl

Pine Instrument Company
Dave Savage, 724-458-6391
www.pineinst.com

Project Team
Pine Instrument Company
Texas A & M University
32 laboratories