

## EVALUATION OF PG PLUS TEST RESULTS FOR POLYMER AND MODIFIED BINDERS

**Luis Gaitan\***

Graduate Research Assistant, Rowan University, lgaita01@gmail.com

**Eileen Batten\***

Graduate Research Assistant, Rowan University, batten26@students.rowan.edu

**Aaron Nolan\***

Research Associate, Rowan University, Glassboro, NJ, Nolan@rowan.edu.

**Dr. Yusuf Mehta\***

Associate Professor, Rowan University, mehta@rowan.edu

**Dr. Kevin Dahm\*\***

Associate Professor, Rowan University, dahm@rowan.edu

**Dr. Ralph Dusseau\***

Professor, Rowan University, mehta@rowan.edu

\*Civil and Environmental Engineering, Glassboro, NJ, USA

\*\*Chemical Engineering, Glassboro, NJ, USA

### *ABSTRACT*

The purpose of this paper is to present how PG plus results of binder such as elastic recovery and peak ratio relate to each other and how elastic recovery and peak ratio compare with low temperature laboratory performance of asphalt concrete mixtures. Binders with various types of modification (SBS, PPA, Crumb, etc.) were used as another parameter for comparison. In the first part of the study, fifteen different polymer modified binders and two base binders are tested. Binders of the same grade binders typically showed different values in elastic recovery, peak ratio, and Bending Beam Rheometer. A positive correlation when peak ratio increased, so elastic recovery also increased. In the second part of the study, one modified and one unmodified binders of the same PG grade (PG70-22) were selected and PG plus tests were conducted. The disc shaped compaction test was conducted on the mixtures made from these two binders while keeping every other parameter controlled. The performance tests showed significant difference in fracture energy of same graded binders at low temperatures. A positive correlation appears to exist with increases in peak ratio, elastic recovery, and binder stiffness and increases in fracture energy.

*KEY WORDS:* Elastic recovery, ductility, fracture energy.