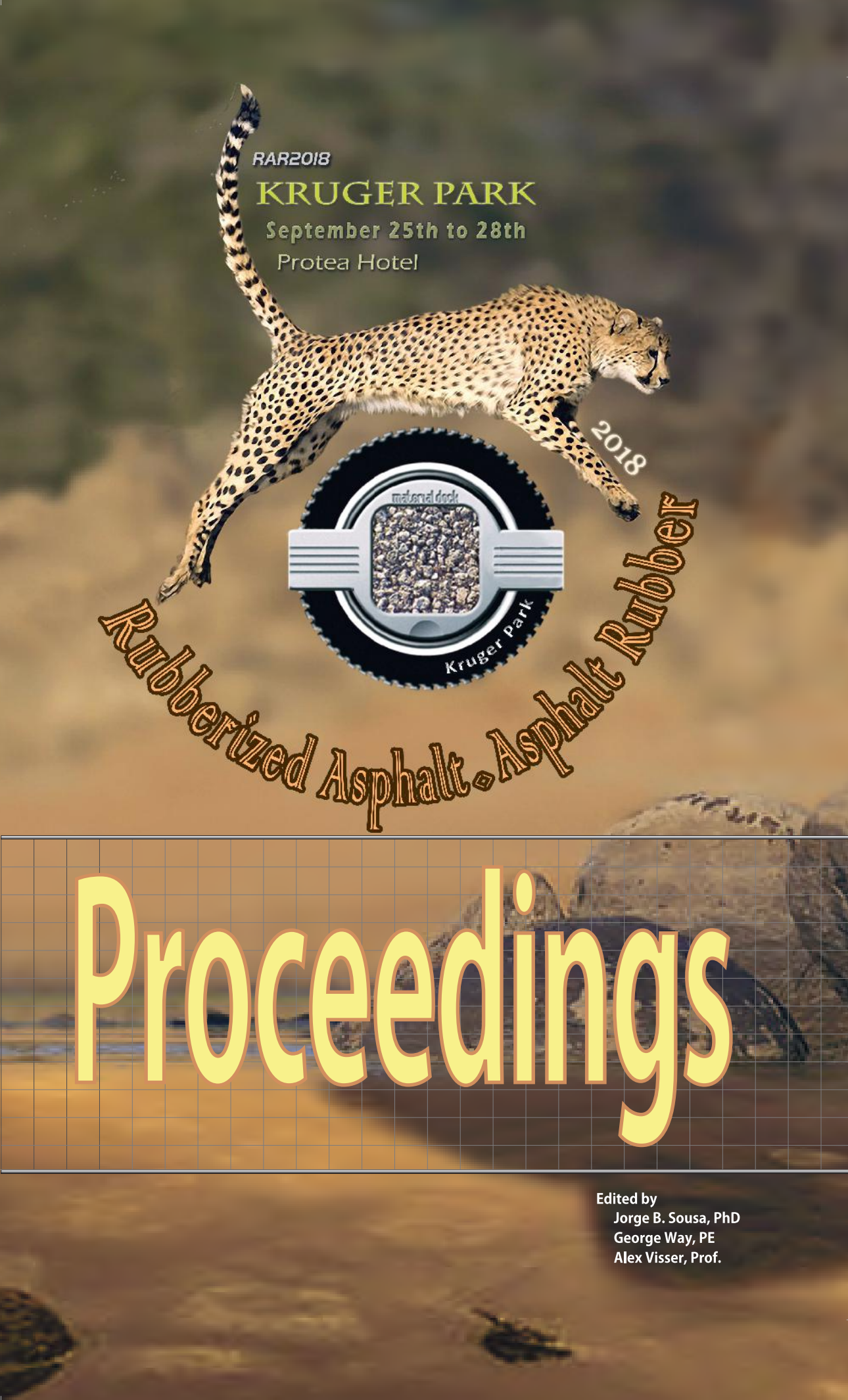

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RAR: Superpave Mix Design and Performance Testing

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ABSTRACT: Pre-treated crumb rubber technologies are emerging as a new method to produce asphalt rubber mixtures in the field. A new crumb rubber modifier industrially known as Reacted and Activated Rubber (RAR) is one such technology. RAR acts like an enhanced elastomeric asphalt extender to improve the engineering properties of the binder and mixtures. It is intended to be used in a dry mixing process with the purpose of simplifying mixing and final production at the asphalt plant.

The objective of this research study was to perform a Superpave mix design for determination of optimum asphalt content with 35% RAR by weight of binder, and analyze the performance of RAR modified mixtures by conducting various laboratory tests. Performance Grade (PG) 64-22 binder was used for this study. Laboratory performance tests included: Dynamic Modulus, E Stiffness Ratio (ESR), C* Fracture Test (CFT) and the Flow Number test.*

Observations from test results indicated that the RAR modified mixture can perform equivalent or better than traditional wet process asphalt rubber mixtures. The Dynamic modulus test results showed generally lower stiffness values at lower temperatures and higher stiffness at higher temperatures. The ESR test result showed adequate stiffness retention and good moisture resistance. The CFT showed that the RAR mixture would perform well in resistance to cracking. The Flow Number test results also showed that the RAR mixture would have good resistance to rutting.

KEYWORDS: Asphalt, RAR, Reacted and Activated Rubber, Superpave Mix Design, Performance Tests