
**Examining the relationship between geological properties
of mafic intrusive rocks and construction aggregate
durability in New Brunswick**

HOLLY J. STEWART

*Department of Geology, University of New Brunswick,
PO Box 4400, Fredericton, New Brunswick, E3B 5A3*

Physical testing of bedrock materials used for road building and related construction applications is standard engineering practice. Micro Deval and Los Angeles Abrasion are two of the most common tests used to determine the durability of coarse aggregate materials. These tests are time consuming and expensive. Mineralogical and textural properties of a rock are among the main geological factors that directly influence its mechanical durability and its structural integrity as a reliable construction material. Despite this generally recognized connection, correlation between selected geological properties and standard aggregate engineering tests for road surfacing materials has not been examined in New Brunswick.

This study is examining the relationship between measured mechanical properties of a proposed aggregate material, its textural characteristics, and its mineralogical composition as calculated from available rock chemistries. Available petrographic and rock chemistries from a suite of plutonic and volcanic rocks in northern New Brunswick is being analyzed to determine the link between quantifiable geological data and durability values of these materials established through standard engineering tests. Such an investigation could set the groundwork where applied geological technology could serve as an accurate and reliable means of pre-screening the physical integrity of aggregate materials. This could limit the necessity for extensive engineering mechanical tests resulting in considerable savings of time and money.

The prepared document, in cooperation with New Brunswick Department of Natural Resources, will describe the study including a summary of available literature, a description of methodology, and a discussion of results ending with conclusions and recommendations.