

## **Performance Measures Report for the Development of a ¾-inch Minus Base Course Type A Specification for Montana**

For some construction projects in Montana, obtaining materials that meet the current specifications for crushed base course aggregates having a maximum nominal size of 2 in. (CBC-5A) and 1½ in. (CBC-6A) is becoming more difficult due to declining natural resources. There are also issues with the clean, larger size materials raveling once they have been placed and then exposed to traffic. This research project was initiated to examine multiple sources of crushed base course aggregates from around Montana to determine whether gradations having a smaller maximum particle size would perform at least as well as Montana CBC-6A and CBC-5A materials. Information from this research allowed a new standard specification to be suggested for ¾-inch minus crushed base course aggregates (CBC-7A) for the Montana Department of Transportation.

One of the primary products of this research was a suggested gradation specification for ¾-in. minus crushed base courses for the state of Montana. Implementation of this specification will allow crushed aggregate mixes to be produced using smaller particle sizes, thereby expanding the availability of resources in many of the privately-operated gravel pits located throughout the state of Montana. Although this change in the specifications is expected to primarily benefit the producers by allowing them to more effectively utilize limited natural resources, it is unknown what impact that will have on the price of these commodities, making it difficult to conduct a meaningful cost-benefit analysis to quantitatively determine the monetary impact of this research. Nevertheless, by expanding the potential for greater use of available natural resources for road construction, improved environmental stewardship and resource conservation remains a qualitative benefit.

The introduction of a ¾-in. minus gradation specification may also allow the simultaneous use of materials for crushed base course aggregates and as shoulder gravel since the requirements are similar for the two materials. Furthermore, cement treated base course mixes may also be able to utilize the ¾-in. minus base course specification. The simultaneous use of ¾-in. minus gradation will allow contractors to specify a single material for multiple uses thereby simplifying their material acquisition and construction processes.