

MATERIALS & RESEARCH

Alkali-silica Reactivity Project

Abstract:



Petrographic Microscope with Kodak DC-290
Digital camera mounted on phototube

Alkali-silica reactivity (ASR) is of concern world wide and has gained more attention in recent years as a problem to concrete durability. Throughout the State of Vermont, many of our transportation structures show signs of potential ASR activity. Vermont's neighboring states have or are currently investigating ASR and finding it to be wide spread. Given the results of our neighboring states investigations, we suspected that much of the cracking that we are seeing in our structures could be attributed to ASR. The goals of this research were to: 1) Evaluate aggregate from select existing sources for ASR potential in Portland cement concrete. 2) Investigate existing structures for presence of ASR. 3) Determine appropriate mitigation or remediation options to prevent further ASR distress in both new and existing structures. This report presents the results of the first phase of study. Eleven coarse aggregate sources were selected for the initial part of this research. Of those selected, five were found to be at or above the suggested percent expansion limit threshold for ASR potential. Petrographic analysis was performed to assess for cracking and gel formations that are characteristic of ASR activity. Based on petrographic analysis, it was found that seven of the eleven sources showed signs of ASR development. Based on conclusions reached in the Phase I study recommendations were made that included further screening and initiation of Phase II of the study.

CAUTION! These reports are large files due to hi-resolution photography, and may take a while to download, depending on the speed of your connection.
Not recommended for dial-up connections.

- [For Conclusions and Recommendations - Phase I, click HERE.](#)
- [For the Text-Only Version of the ASR Phase I Report, click HERE](#)
- [For a Web-Friendly Version of the ASR Phase II Report, click HERE](#)
- For the [Full Version](#) of the Phase I report please click [HERE](#).
- [For the Full Version \(with all photos\) of the Phase II report please click HERE.](#)