

PROJECT DESCRIPTION

Mt. Barron Rock Reinforcement Condition Assessment

**Location:**

Woodstock, NH
I-93, Mt. Barron Rock Cut

Client:

New Hampshire
Department of
Transportation
Bureau of Materials and
Research
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Client Contact:

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Mt. Barron Rock Cut Along I-93 Near Woodstock, NH

The New Hampshire Department of Transportation retained McMahon & Mann Consulting Engineers, P.C. (MMCE) to evaluate the condition of 30-year old rock reinforcements supporting the Mt. Barron Rock cut along I-93 near Woodstock, NH. MMCE applied a recently developed recommended practice for evaluation of metal tensioned systems in geotechnical applications (NCHRP Project 24-13) that employs nondestructive testing (NDT), supplemented with results from invasive testing, to evaluate the elements and perform a condition assessment. MMCE performed the condition assessment in two phases during the summer and fall of 2003 and 2004.

Two types of rock reinforcements are installed at Barron Mountain including: (1) partially bonded, polyester resin grouted, prestressed rock bolts, and (2) fully bonded, Portland cement grouted, rock nails. MMCE's condition assessment revealed that rock nails protected by Portland cement grout are in very good condition compared to the resin grouted rock bolts. Approximately 30% of the rock bolts have suffered significant loss of prestress, and locations of increased corrosion activity were documented including a zone near the backside of the bearing plates. Observed section loss of 20% is consistent with expectations based on site conditions, installation details, date of installation, and existing mathematical models of service life. These results provide a sound technical basis for planning future maintenance and rehabilitation activities at the site, ultimately resulting in a cost savings to the NHDOT. For further details see <http://www.nh.gov/dot/materialsandresearch/research/projects/137331.htm>.