

**GEOLOGIC INTERPRETATION OF SEISMIC DATA
BRIDGE SITE OVER DEERFIELD RIVER ON RELOCATION OF ROUTE 2
MOHAWK TRAIL - SHELBURNE-BUCKLAND**

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This report is based upon field work performed under a cooperative geologic program of the Massachusetts Department of Public Works and the U.S. Department of the Interior, Geological Survey.

A proposed relocation of the Mohawk Trail crosses Deerfield River about 0.55 mi. north of Shelburne Falls, near station 671 (Buckland) and station 417 + 57 (Shelburne). The site of the proposed crossing was investigated geologically and seismically. A series of seismic traverses was run on each side of Deerfield River, parallel with and near the banks, and one traverse was run along the centerline of the proposed highway on the west side of the river, between station 668 + 40 and station 670 + 90 (profile A-B 250 ft. long). Profile C-F, 400 ft. long, was run as two overlapping segments, each 250 ft. long, making the overlap 100 ft., the center of the overlap being at point A, on the centerline of the proposed highway. Profile G-H is nearly parallel with profile C-F, and crosses the centerline at station 670 + 35, or 60 ft. west of C-F. Profiles A-B, C-F, and G-H are on the west side of the river.

Profiles I-L and M-P were run on the east side of the river, parallel with it, and 66 ft. apart, I-L being along the river bank. Each was run as two overlapping segments, each segment 250 ft. long, the overlap being 100 ft. The center of I-L crosses the centerline at station 417 + 66, and the center of M-P crosses the centerline at sta-

tion 417.

West Side of Deerfield River, Near Station 671 The seismic profiles indicate that the bedrock surface is 35 to 40 ft. below the surface of the ground, or near altitude 365 ft., along the west bank of Deerfield River. To the west, bedrock surface rises under the terrace so that at a point 250 ft. from the river it is at a depth of 46 ft. (altitude 381 ft. above sea level).

Glacial till extends from bedrock up to river level, approximately, altitude about 405 ft.; sand overlies the till and forms a terrace 20 ft. high.

East Side of Deerfield River, Near Station 417 + 57 The two seismic profiles parallel with the bank of the river and on the east side show bedrock to be more than 75 ft. below the surface, but the full depth to bedrock was not determinable from these lines.

Most of the unconsolidated material under this site is compact and firm, and is probably glacial till; however, this till is channelled to a depth of 15 to 20 ft. and for a width of about 100 ft., the channel being filled with sand. Apparently this sand-filled channel crosses the base-line at a rather sharp angle, being entirely south of the base-line along the profile nearest the river (I-L), and under the base-line along profile M-P, 60 ft. to the east. Some gravel may be expected in this sand. The existence of this sand-filled channel was interpreted from lower velocities along the profiles; the

delineation of the interpreted channel is not clear, but it would seem wise to test the area to determine if footings should be extended to the deeper and more firm underlying material.