

2027141
10/27/49
Commonwealth of Massachusetts
Department of Public Works
W. F. Callahan, Commissioner

U. S. Department of the Interior
Geological Survey
W. B. Bratner, Director

(Topsfield)
stations 74-80
[no. 13]

✓
Cooperative Geologic Project

File Report

Geologic Interpretation of Seismic Data

Alteration of Route 1

TOPSFIELD

Projected Cut, Stations 74-80



by

James L. Maynard, geologist, U. S. Geological Survey

and

Rev. Daniel Linehan, S. J., seismologist, Weston College

2 pages of text
1 plate

U. S. GEOLOGICAL SURVEY MASS. DEPT. OF PUBLIC WORKS
COOPERATIVE GEOLOGIC PROJECT

OPEN FILE REPORT

Copies of this report have been placed in open files for public inspection at the following offices:

U. S. GEOLOGICAL SURVEY, GENERAL GEOLOGY BRANCH, and
LIBRARY, FEDERAL WORKS B'LD'G, WASHINGTON, D. C.

U. S. GEOLOGICAL SURVEY, 100 NASHUA ST., ROOM 802, BOSTON
MASSACHUSETTS

MASSACHUSETTS DEPT. of PUBLIC WORKS, PROJECT ENGINEER
100 NASHUA ST., BOSTON, MASSACHUSETTS 4/15/49

Seismic Series # _____

Geologic Interpretation of Seismic Data

Alteration of Route 1

TOPSFIELD

Projected Cut, Stations 74-80

by

James E. Maynard, geologist, U. S. Geological Survey

and

Rev. Daniel Linenan, S. J., seismologist, Weston College

General Statement

The proposed improvement of Route 1 (Newburyport Turnpike) may require a cut between stations 74 and 80 (Topsfield). Surface geology suggests that this cut will be largely in compact till that is overlain by a layer (~~up to~~ ^{thick or less} 4 feet) of fine wind blown silt and sand.

The site was investigated seismically in July 1945. The basis of this present report is a restudy of the seismic velocity data that were obtained at that time. The work was performed as a part of a cooperative program of the Massachusetts Department of Public Works and the United States Geological Survey.

Seismic Traverses

One seismic traverse, P-Q, 542 feet long was run at this location. Shot point P was located approximately 47 feet to the right (E.) of station 74+23 and shot point Q approximately 42 feet to the right (E.) of station 79+57. The detectors for this traverse were not placed in a straight line between P and Q, so that the actual distance between the shot points was

approximately 538 feet. The approximate layout of this traverse is shown on the plan, sheet one.

Depths to Bedrock and Geologic Interpretation of Seismic Data

No bedrock was detected along this traverse. The data indicate that it is at least 150 feet deep below the surface. The velocity of the subsurface material, 6600 feet per second, indicates that it is rather compact till. The geologic section is shown on sheet one.