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Department of Public Works
W. P. Callahan, Commissioner

U. S. Department of the Interior
Geological Survey
W. E. Brather, Director

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Cooperative Geologic Project

File Report

Geologic Interpretation of Seismic Data

SUTTON

Worcester-Providence Road

Proposed Cut at Stations 317 to 324

by



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

and

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

2 pages of text
1 plate

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Seismic Series

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General Statement

Construction of the Worcester-Providence Road will require a cut between stations 317 and 324. At station 321 the cut may be as much as 35 feet in depth. The surface geology of the site suggests that most of this cut will be in coarse sand and gravel. In order to check this conclusion two seismic traverses were made at the only segment of the proposed cut that was accessible to the seismic equipment.

The work was done in November, 1948, as a part of a cooperative program of the United States Geological Survey and the Massachusetts Department of Public Works.

Seismic Traverses

The plan of the seismic traverses is shown on sheet one. Traverse A-B, 218 feet long, was run along the base-line between stations 317+70 and 319+88. Traverse C-D, 220 feet long, intersected the base line at station 319+30 with shot point C 108 feet to the right (E.) of station 319+18 and shot point D 103 feet to the left (W.) of station 319+47. This traverse made an angle of 82° with the base-line.

Depths to Bedrock and Interpretation of Seismic Data

The calculated depths to bedrock at the shot points are:

A,	42	feet
B,	52	"
C,	47	"
D,	43	"

The geologic sections along the seismic traverses as interpreted from the surface geology and the seismic data are shown on sheet one. These sections suggest an undulatory bedrock surface that is everywhere at least 30 feet below the surface. If segments of the projected cut are to be as much as 35 feet in depth, small knobs, ridges, or pinnacles of bedrock may extend into the excavation.

It is not expected that bedrock will be found within 30 feet of the surface of the ground in that segment of the cut between stations 320 and 324, but this segment was not tested seismically.