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Commonwealth of Massachusetts
Department of Public Works
W. F. Callahan, Commissioner

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

[No. 104]

Cooperative Geologic Project

Geologic Interpretation of Seismic Data

WALTHAM

Northern Circumferential Highway (Route 128)

Grade Separation Routes 128 and 117

Stations 58 to 62

by

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

and

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

2 pages of text
1 plate ✓

Seismic Series #_____

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General statement

The proposed Northern Circumferential Highway (relocation of Route 128) in Waltham requires a grade separation at Main Street (Route 117). For the purpose of obtaining information on the depths to bedrock, and on the nature of the overlying surficial materials, seismic studies were made of the site in June and July 1949. The work was done as part of a cooperative program of the Massachusetts Department of Public Works, and the United States Department of the Interior, Geological Survey. Three seismic traverses were made north of the proposed intersection with Route 117. No lines were run south of the intersection because of the close proximity of two houses.

Surface geology

At this location there is a surface layer of fine sand that appears to have been deposited in water. There is a possibility, however, that it may be wind-blown material. It is probable that this fine sand is underlain by moderately compact till. Bedrock outcrops at several places on Bear Hill,

approximately 500 feet to the northwest, and in the small knobs approximately 1000 feet to the northeast. The bedrock is a massive melanite (a dark-colored, compact, crystalline rock similar in texture to granite).

Seismic traverses

Two consecutive 110 foot traverses, A-B and B-C, were run west of the base line and approximately parallel to it. Shot point A was located 29 feet to the left (west) of station 61+60; B, 15 feet to the left (west) of station 60+51; C, 10 feet to the left (west) of station 59+37.

Depths to bedrock and interpretation of seismic data

The depths to bedrock below the shot points as determined from the seismic data are as follows:

A,	12	feet
B,	21	"
C,	14	"
D,	14	"
E,	31	"

The geologic sections as interpreted from the surface geology and the seismic data are shown on sheet one. In the vicinity of the proposed bridge, bedrock is indicated on the north side of the intersection at altitudes varying between 99 and 104 feet above sea level.