

Commonwealth of Massachusetts
Department of Public Works
John A. Volpe, Commissioner

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

Cooperative Geologic Project

File Report

Geologic and Seismic Investigations

Relocation of Route 3

Grade Separation at Route 62, Southeast Ramp

in Bedford, Mass.

by

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

2 pages of text
2 plates

Boston, Massachusetts
June 1954.

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U. S. GEOLOGICAL SURVEY MASS. DEPT. OF PUBLIC WORKS
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OPEN FILE REPORT

Seismic Series # _____

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Geologic and Seismic Investigations
Relocation of Route 3
Grade Separation at Route 62, Southeast Ramp
in Bedford, Mass.

by

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

General Statement

The relocation of Route 3 in Bedford, Mass. requires extensive cuts for a grade separation at Route 62. This report contains only the results of the geologic and seismic studies that were made for the purpose of obtaining information that would aid in the construction of the inner and outer loops of the southeast ramp. The studies represent part of a cooperative program of the Massachusetts Department of Public Works and the United States Geological Survey. The work was performed in July 1953.

The site is located in the Wilmington and Lexington 7-1/2-minute quadrangle maps of the United States Geological Survey. Mr. M. E. Chandler and Mr. W. L. Carney, Massachusetts Department of Public Works' Engineers, performed all pertinent survey work required for this project, and prepared the essential plans and profiles. Mr. Chandler also operated the seismic equipment and assisted in the preparation of the seismic velocity data.

Surface Geology

This site occupies a segment of a till-bedrock hill. Numerous exposures of bedrock (granite) occur on the top of the hill within the limits of the site; these exposures are located on the engineering plan, sheet 1.

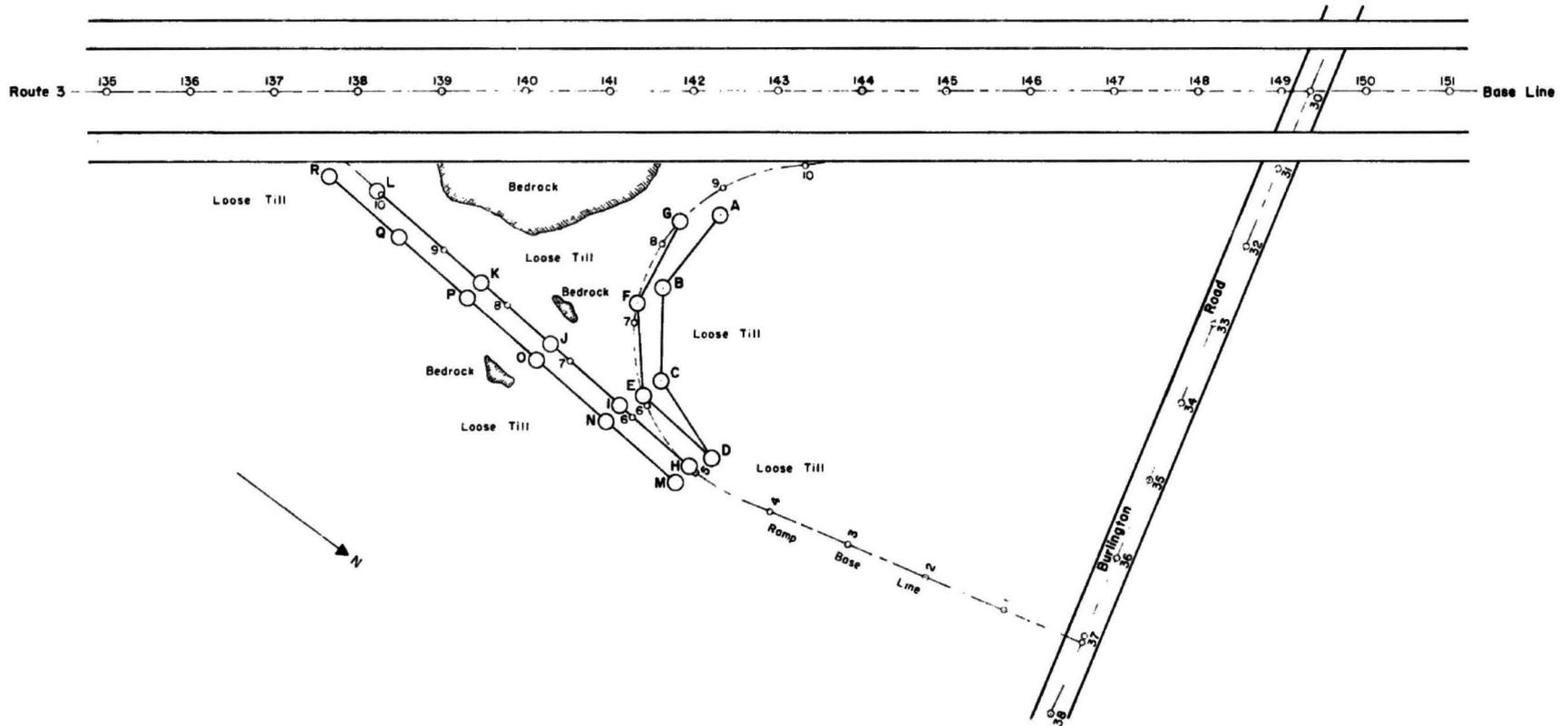
The till in the hill is loose, rather high in content of sand and silt size materials, and contains less than the usual quantities of cobbles and boulders. A surface layer of fine sand and silt, in general, a few inches to one or two feet in thickness, covers most of this site.

Seismic Traverses

Fifteen seismic traverses were made at this site. The locations of the shot points and the arrangement of the traverses are shown on sheet 1.

Subsurface Interpretation

The geologic sections as interpreted from the surface geology and the seismic data are shown on sheet 2. The sections show that bedrock is shallow at this site, from depths of one foot to a maximum depth of approximately thirteen feet. Although the sections suggest a rather smooth undulatory bedrock surface, it is probable that many small ridges, benches or knobs are present some of which are at elevations somewhat above, or below, the elevations as represented by the smooth section lines.



PLAN OF TRAVERSES

SCALE: 1 INCH = 100 FEET

Letters refer to shot points at ends of traverses.

Numbers refer to D. P. W. stations on baseline.

Y Shot point.

V - Apparent seismic velocity(ies) in feet per second.

Dotted bedrock lines indicate inconclusive seismic data.

Vertical measurements refer to elevations above mean sea level (datum 1929).

Numerals at shot points indicate depths to bedrock,

as follows:

as follows:

INTERPRETATIVE GEOLOGIC SECTIONS ALONG SEISMIC TRAVERSES

GEOLOGY BY: JAMES E. MAYNARD

SEISMIC DATA BY: JAMES E. MAYNARD

ENGINEERING BY: M. CHANDLER-W. CARNEY

BEDFORD

ROUTE NO. 3

S. E. RAMP AT ROUTE 62

SCALE: 1 INCH = 40 FEET

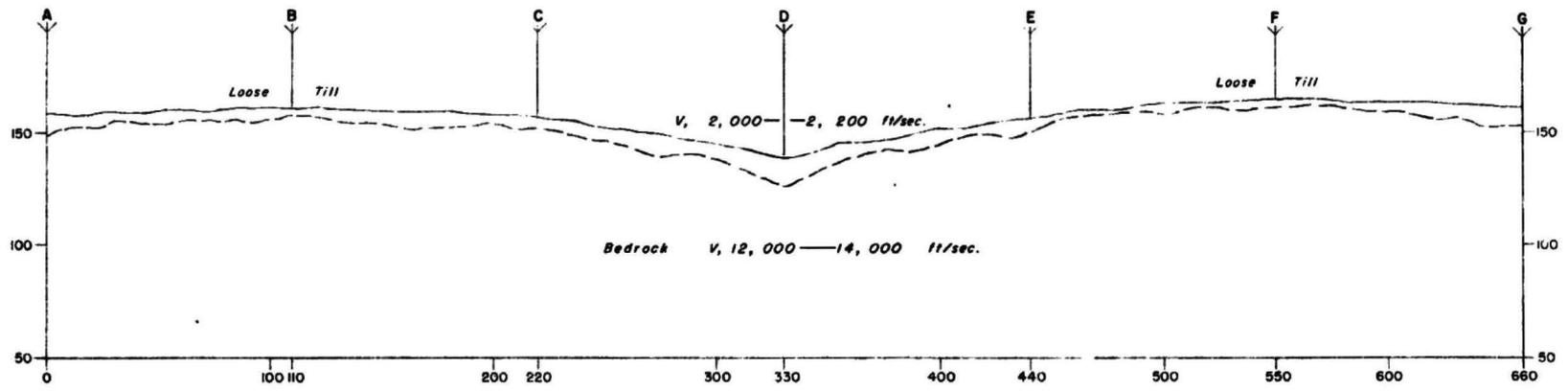
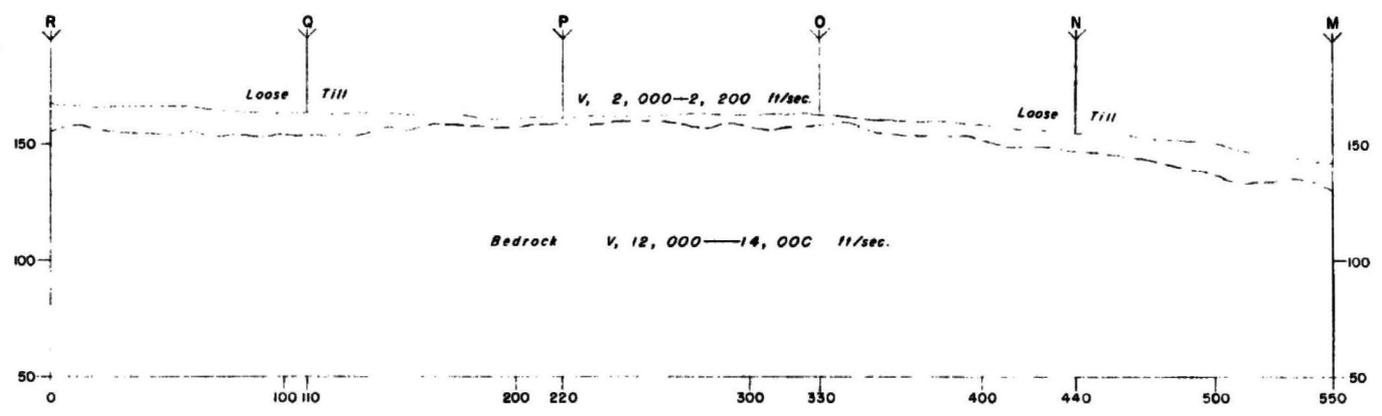
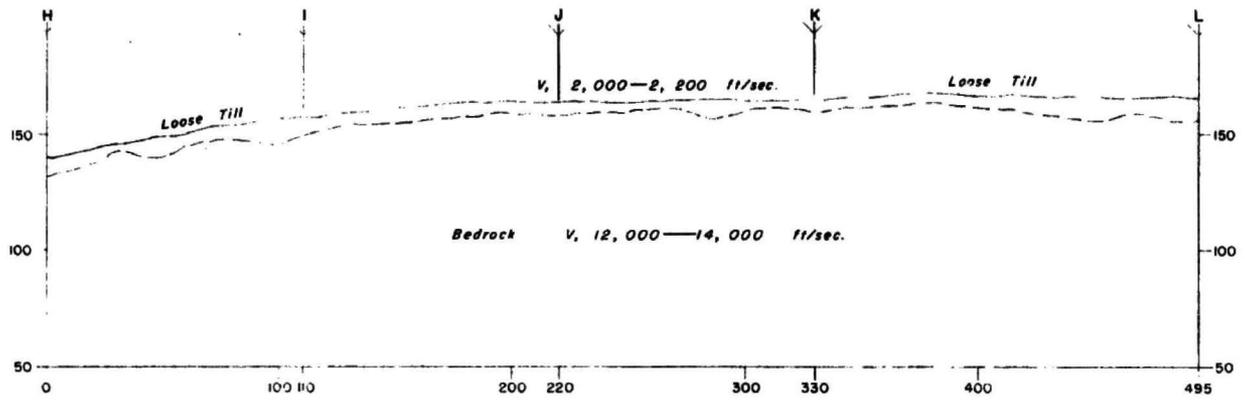
DATE: JULY 1953

SHEET 1 OF 2

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

U. S. DEPARTMENT OF THE INTERIOR
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PLAN OF TRAVERSES

SCALE: 1 INCH = 100 FEET

Letters refer to shot points of ends of traverses.

Numbers refer to D. P. W. stations on baselines.

INTERPRETATIVE GEOLOGIC SECTIONS ALONG SEISMIC TRAVERSES

Y - Shot point.
 V - Apparent seismic velocities in feet per second.
 Dotted bedrock lines indicate inconclusive seismic data.
 Vertical measurements refer to elevations above mean sea level (datum 1929).
 Numerals at shot points indicate depths to bedrock, as shown by the numbers.

GEOLOGY BY: JAMES E. MAYNARD

SEISMIC DATA BY: JAMES E. MAYNARD

ENGINEERING BY: CHANDLER-CARNEY

BEDFORD

ROUTE NO. 3

S. E. RAMP AT ROUTE 62

SCALE: 1 INCH = 40 FEET

DATE: JULY 1953 SHEET 2 OF 2

COMMONWEALTH OF MASSACHUSETTS
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