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

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

2nd 37

✓
Cooperative Geologic Project

File Report

Geologic Interpretation of Seismic Data

Along Proposed Relocation of Route 138

Stations 59+00 to 83+00

in Brockton, Mass.



by

Robert M. Hazlewood, Geophysicist, U. S. Geological Survey
and
Robert O. Castle, Geologist, U. S. Geological Survey

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

2 pages of text
3 plates ✓

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This report has been prepared for open file
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Robert M. Haslewood, Geophysicist, U. S. Geological Survey
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General Statement

This investigation was made to determine the surface and subsurface geological conditions along the proposed relocation of Route 138 in the vicinity of the Torrey Street crossing in Brockton, Mass. The field work was done in April 1952 as part of a cooperative program of the Commonwealth of Massachusetts, Department of Public Works, and the United States Department of the Interior, Geological Survey.

Surface Geology

This segment of the proposed centerline crosses an area of ground moraine in which are several bedrock exposures. The till of the moraine is quite clayey and is characterized by a pronounced concentration of boulders, especially between stations 76+00 and 80+00.

Four areas of bedrock outcrops occur near the proposed centerline. In two of these areas, located 100 to 200 feet east of station 77+00, and about 150 feet east of station 78+50, beds of relatively hard quartzite and of schist are exposed. In areas near and 20 - 50 feet west of station 62+20, 60 feet west of station 65+00, and 30 - 90 feet west of station 70+50 granitic rocks (Dedham granodiorite) are exposed; this is a coarse-grained granitic rock and generally relatively hard and resistant.

Seismic Traverses

Twelve consecutive traverses were made along the base line between stations 59+10 and 73+40, and seven consecutive traverses were also made along the base line between stations 74+70 to 82+40 as is shown on the accompanying plate one.

Depths to Bedrock

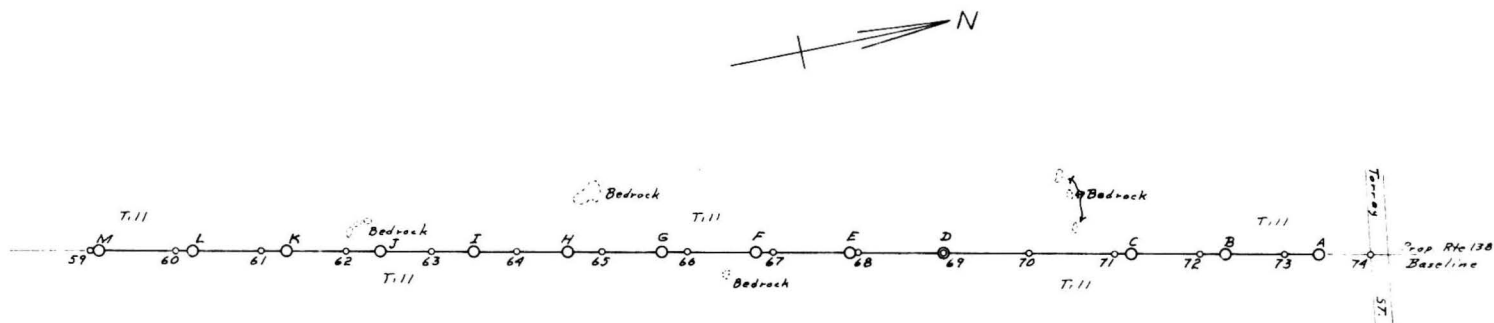
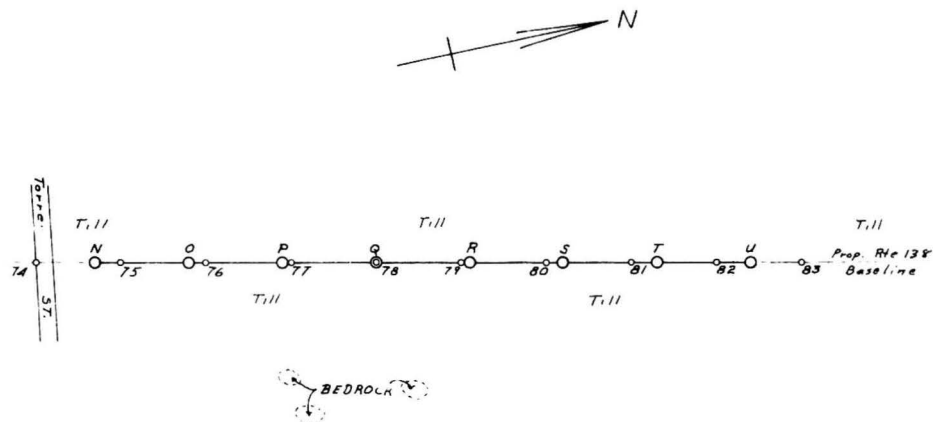
The calculated depths to bedrock at the shot points are:

<u>Shot Points:</u>	<u>Depth:</u>	<u>Shot Points:</u>	<u>Depth:</u>
A	8 ft.	L	12 ft.
B	15 "	M	6 "
C	9 "	N	8 "
D	6 "	O	5 "
E	8 "	P	7 "
F	10 "	Q	13 "
G	8 "	R	13 "
H	11 "	S	12 "
I	7 "	T	12 "
J	5 "	U	9 "
K	14 "		

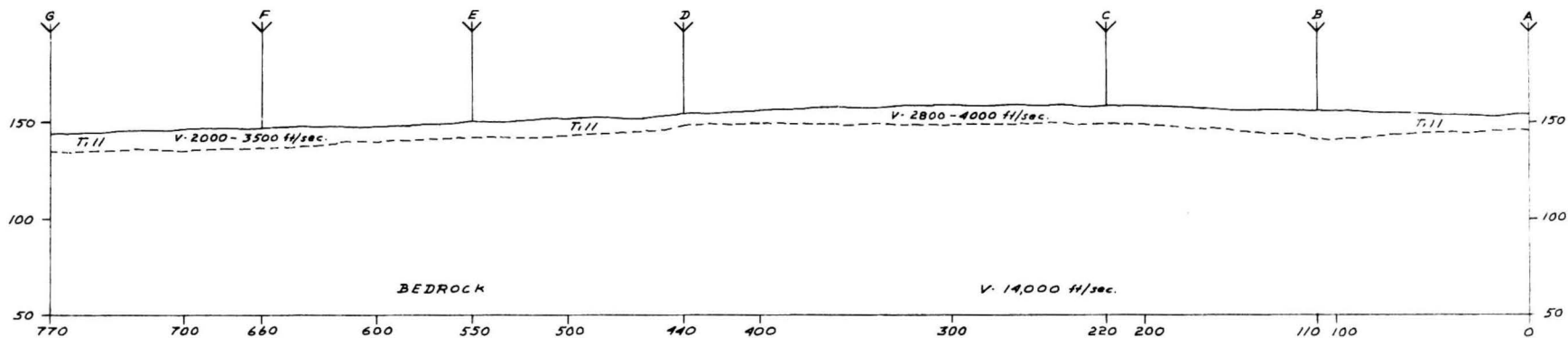
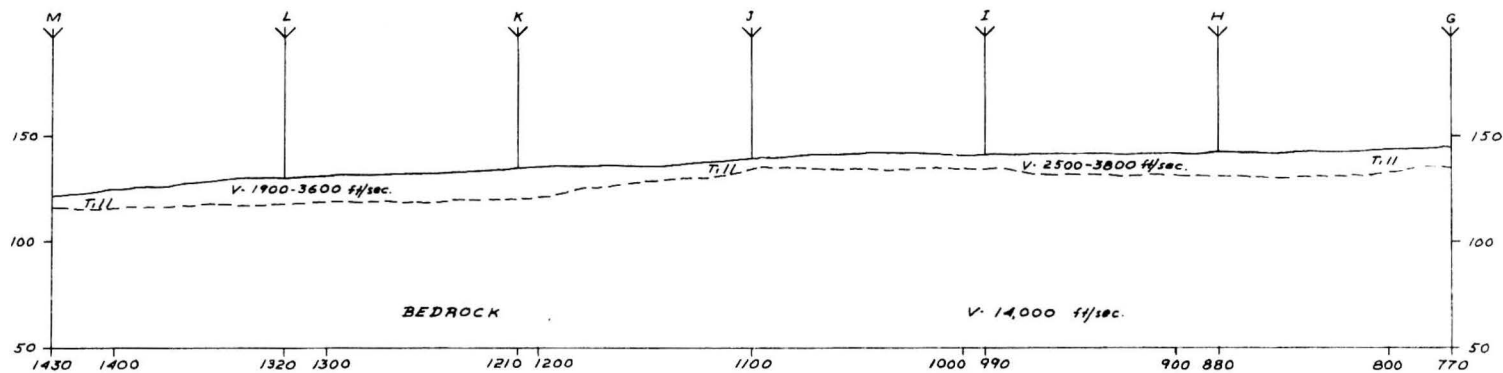
Interpretation of Seismic Data

Geologic cross sections, constructed from data obtained in this survey, are shown on accompanying plates two and three.

In general, the overburden throughout this area is relatively thin, varying between 5 and 15 feet. Though the bedrock profile is shown between shot points as a relatively smooth surface, it should be understood that the surface may be somewhat more irregular.



COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS U.S. DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY COOPERATIVE GEOLOGIC PROJECT	PLAN OF TRAVERSES	INTERPRETATIVE GEOLOGIC SECTIONS ALONG SEISMIC TRAVERSES			
	SCALE: 1 INCH = 100 FEET	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 21, 18.	GEOLOGY BY Robert O. Castle	BROCKTON	ROUTE NO 138
	Letters refer to shot points at ends of traverses.		SEISMIC DATA BY Robert M. Haylewood	STATIONS 59+00 TO 83+00	
	Numerals refer to D.P.W. stations on baseline.		ENGINEERING BY M.E. Chandler W.L. Carney	SCALE 1 INCH = FEET	DATE April 1952 SHEET 1 OF 3



COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COOPERATIVE GEOLOGIC PROJECT

PLAN OF TRAVERSES

SCALE: 1 INCH = FEET

Letters refer to shot points
at ends of traverses.

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

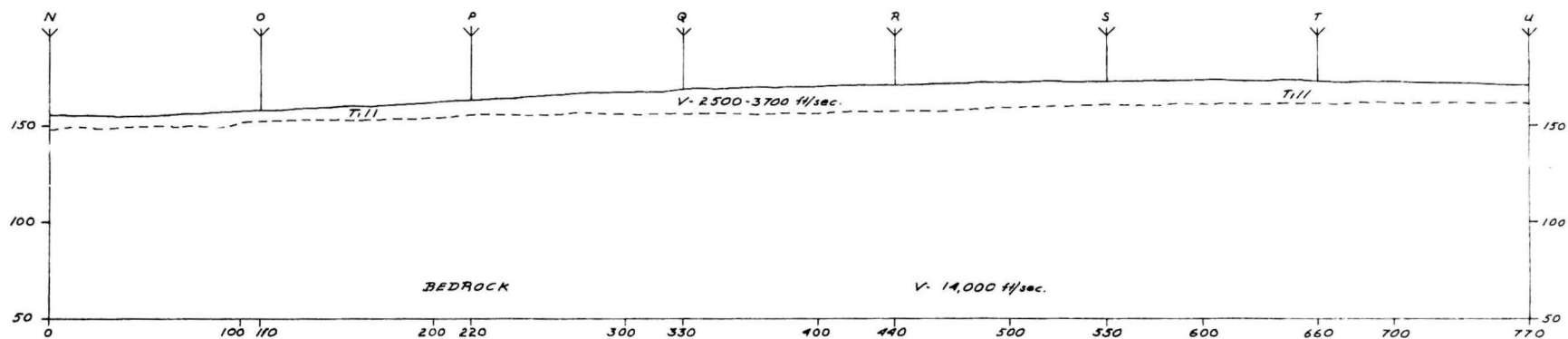
Y Shot point.

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 A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COOPERATIVE GEOLOGIC PROJECT

PLAN OF TRAVERSES

SCALE: 1 INCH = FEET

Letters refer to shot points
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Y Shot point.

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sea level (datum 1929).

Numerals at shot points indicate depths to bedrock,
as Y₂₁ 18

INTERPRETATIVE GEOLOGIC SECTIONS ALONG SEISMIC TRAVERSES

GEOLOGY BY: Robert O. Castle

SEISMIC DATA BY: Robert M. Haslewood

ENGINEERING BY: M.E. Chandler
W.L. Carney

BROCKTON

ROUTE NO. 138

STATIONS 59+00 TO 83+00

SCALE: 1 INCH = 40 FEET

DATE April 1952

SHEET 3 OF 3