

SURVEY OF HIGHWAY CONSTRUCTION MATERIALS  
IN THE TOWN OF BRADFORD, ORANGE COUNTY, VERMONT

prepared by  
Engineering Geology Section  
Materials Division  
Vermont Department of Highways

in cooperation with

United States Department of Commerce  
Bureau of Public Roads

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1. Various departments and individuals of the Vermont State Department of Highways, notably the Planning and Mapping Divisions and the Highway Testing Laboratory.
2. Professor D. P. Stewart of Miami University, Oxford, Ohio.
3. Professor Charles G. Doll, Vermont State Geologist, University of Vermont, Burlington, Vermont.
4. The United States Department of Commerce, Bureau of Public Roads.

### History

The Materials Survey Project was formed in 1957 by the Vermont State Department of Highways with the assistance of the United States Bureau of Public Roads. Its prime objective is to compile an inventory of highway construction materials in the State of Vermont. Prior to the efforts of the survey personnel, as described in this and other reports, investigations for highway construction materials were conducted only as the immediate situation required. Thus, only limited areas were surveyed, and the over-all picture of material resources was not available. Highway contractors or resident engineers were usually required to locate the materials for projects and have samples tested by the Highway Testing Laboratory. The additional cost of repeated exploration for construction material was passed on to the state in the form of higher construction costs. The Materials Survey Project was established to minimize or eliminate this factor by enabling the state and its contractors to proceed with information on material sources available beforehand. Prior

knowledge about locations of suitable material is an important factor in the planning of future highways.

The sources of construction materials are located by this project through ground reconnaissance, study of maps and aerial photographs, and geological and physiographic interpretation. Maps, data sheets, and work sheets for reporting the findings of the project were designed. These maps and data sheets were devised to furnish information of particular use to the contractor or construction man. For maximum benefit, the maps, data sheets, and this report should be studied simultaneously.

#### Incllosures

Included in this folder are two surface-geology maps; one defining the location of tests conducted on bedrock sources, the other defining the location of tests conducted on granular materials. These maps are derived from 15 minute or 7½ minute quadrangles of the United States Geological Survey enlarged or reduced to 1:31250 or 1" = 2604'. Delineated on the Bedrock Map are the various rock types of the area. This information was obtained from numerous sources; i.e. Vermont Geological Survey Bulletins, Vermont State Geologist Reports, United States Geological Survey Bedrock Maps, Centennial Geological Map of Vermont, as well as other references.

The granular materials map depicts areas covered by various types of glacial deposits ( outwash, moraines, kames, kame terraces, etc.) by which potential sources of gravel and sand may be recognized. This information was obtained primarily from a survey being conducted by Professor D. P. Stewart of Miami University, Oxford, Ohio, who has been mapping the glacial features of the State of Vermont during the summer months since 1956.

Further information was obtained from the Soil Survey (Reconnaissance) of Vermont, conducted by the Bureau of Chemistry and Soils of the United States Department of Agriculture, and from Vermont Geological Survey Bulletins, United States Geological Survey Quadrangles, aerial photographs, and other sources. On both maps the areas tested are represented by Identification Numbers. Several tests are usually conducted in each area represented by an Identification Number, the number of such tests being more or less arbitrarily determined either by the character of the material tested or by the topography.

Also included in this folder are Data Sheets for both the Bedrock and Granular Materials Survey which contain detailed information for each test conducted by the project as well as information obtained from other sources, including an active card file compiled by the Highway Testing Laboratory. The latter information was gathered over a period of years by many persons and consequently lacks the organized approach and detail required for effective use. The information on the cards varied widely in completeness. Transfer of information from the cards to the Data Sheets was made without elaboration of verification. When possible, locations of deposits listed in the card files have also been plotted on the maps; however, some cards in the file were not used because the information on the location of the deposit was incomplete or unidentifiable. Caution should be exercised whenever this information appears incomplete. This project does not assume responsibility for the information taken from the card files.

Work sheets contain more detailed information on each test and a detailed sketch of each Identification Number Area. The Work Sheets and Laboratory Reports are on file in the office headquarters of this project.

Location

The Town of Bradford is located in Orange County in the eastern portion of the State. It is bounded on the north by the Town of Newbury, on the west by the Town of Corinth, and on the south by the Towns of Fairlee and West Fairlee. It is in the Vermont Piedmont, a "plateau-like region" often described as an area of uplifted surface that has been dissected and glaciated similar to a peneplain.

Elevations vary greatly, from around 400' along the Connecticut River to 1836' on Wrights Mountain in the northwest part of town. Drainage is into streams and brooks leading into the Waits River and the Connecticut River.

Procedure for Rock Survey

The routine employed by the Project in the survey of possible sources of rock for highway construction is divided into two main stages; the office investigation and field investigation. The first is conducted primarily during the winter months and comprises the mapping of rock types as indicated in various reference sources. Many different sources of information were utilized, as indicated in the Bibliography. These references differ considerably in dependability due to new developments and studies contributing to the obsolescence of a number of reports. In addition, the results of samples taken by other individuals are analyzed and the location in which these samples were taken is mapped when possible. In other words, as complete a correlation as possible is made of all the information available concerning the geology of the area under consideration.

The second stage of the investigation is begun in the field by making a cursory preliminary survey over the entire area. The information obtained in this survey, together with the information assimilated in the first stage of the investigation

is employed to determine the areas in which the testing and sampling will be concentrated. When a promising source is encountered as determined not only by rock type but also by volume, accessibility, and the existence of a good working face, chip samples are taken with a hammer and submitted to the Highway Testing Laboratory for testing by the Deval Method (AASHO T-3). It is kept in mind that samples taken by the chip method are often in the weathered zone of the outcrop and consequently may show a less satisfactory test result than the fresh material deeper in the body of the rock structure. When deemed necessary, further samples are taken by drilling to a depth of approximately 3 feet and blasting across the strike or trend of the outcrop. When the material is uniform and satisfactory tests result from the chip samples, no further drilling, blasting, or sampling is done and the material source is included as being satisfactory.

#### Discussion of Rock and Rock Sources

It will be observed that the information on the surface-geology bedrock map in regard to rock type is simplified. For a more detailed description of the respective rock formations, a summary is included in this report. It is apparent from this summary that each formation may not be composed of one distinct rock type, but may be a complex mixture of rock types blending into one another. For this reason, the data sheets may describe the rock tested as differing from the designation on the map.

The rocks of the Town of Bradford are mainly metamorphic, consisting of quartzites, schists, phyllites, slates, greenstones and limestones. These belong to various formations which generally strike north-south. Because of their general unsuitability for highway usage and their distance from the proposed Interstate Route 91, these rocks were not tested.

There is an area of Fairlee Quartz Monzonite in the southeast corner of the town, in close proximity to the proposed Interstate Route 91 (See Plate 2). Two tests were taken there; in both cases the rock met abrasion requirements for highway usage as Item 204, Sub-base of Crushed Rock. Abrasions ranged from 1.2%-4.4%. The rock is coarse-grained and greenish gray with local pink tinges, more or less crushed and foliated. It appears to offer the greatest potential for a quarrying site or operation.

More detailed information is available at the office of the Engineering Geology Section, Materials Division, Vermont Department of Highways.

#### Procedure for Sand and Gravel Survey

The method employed by the Project in the survey of possible sources of sand and gravel for highway construction is divided into two main stages: office investigation and field investigation. The office investigation is conducted primarily during the winter months and comprises the mapping of possible potentially productive areas as indicated from various references. Of these references, the survey of glacial deposits mapped by Professor Stewart proves to be valuable, particularly when used in conjunction with other references such as soil type maps, aerial photographs and United States Geological Survey quadrangles. The last two are used in recognizing and locating physiographic features indicating glacial deposits, and in studying drainage patterns. In addition, the location of existing pits, when known, are mapped. The locations in which samples were taken by other individuals are noted and mapped when possible.

The second stage of the investigation is begun in the field by making a cursory preliminary survey over the entire area noting areas which show physiographic features giving evidence of glacial or fluvial deposits. These locations are later examined by digging test pits with a backhoe to a depth of approximately

11 feet and again sampling the material. The samples are submitted to the Highway Testing Laboratory where they are tested for gradation and stone wear, the latter by the Deval Method (MSHO T-4-35).

Discussion of Sand and Gravel Deposits

The granular materials of the Town of Bradford are chiefly of alluvial, marine, and lacustrine origin. They occur as delta gravels and sands, beach gravels and lake sands. Throughout the town, there are numerous pits dotting these features, mainly along U. S. Route 5 and Vt. Route 25 (See Plate 1). Generally speaking, the delta gravel deposits are sand with stones, and the delta sands are pebbly. The beach gravels are also sandy gravels, to a depth of about 8 to 9 feet. The lake sand deposits are sandy gravels to sands.

There are a number of pits and areas in these features containing material acceptable for highway usage. It is possible that further testing may disclose other sources of acceptable material in the town.

## SUMMARY OF ROCK FORMATIONS IN THE TOWN OF BRADFORD

Albee Formation: Massive, gray, white-weathered quartzite and feldspathic quartzite interbedded with greenish-gray slate, phyllite, feldspathic phyllite and quartzose argillaceous phyllite, micaceous quartzite, quartz-mica schist, mica schist, and hornfels containing porphyroblasts of biotite, garnet, staurolite and sillimanite in the vicinity of granitic plutons. Soda-rhyolite tuff occurs locally. Micaceous quartzite characterized by thin schistose "pinstripe" partings is common in many areas.

Gile Mountain Formation: Gray quartz-muscovite phyllite or schist, interbedded and intergradational with gray micaceous quartzite (graywacke northeast of Nulhegar River), calcareous mica schist, and locally, quartzose and micaceous crystalline limestone like that of the Waits River Formation. The phyllite and schist commonly contain porphyroblasts of biotite, garnet or staurolite, and locally kyanite, andalusite, or sillimanite.

Meetinghouse slate member of the Gile Mtn. Formation: Chiefly gray slate or phyllite characterized by beds of gray schistose quartzite 1/8" to 3" thick.

Orfordville Formation: Carbonaceous phyllite; minor quartzite.

Sunday Mountain volcanics member of the Orfordville Formation: Greenstone, chloritic schist, felsite, and quartz-feldspar-sericite schist.

Undifferentiated Granitic Rock: Coarse-grained, greenish gray quartz monzonite, with local pink tinges. Essential minerals are bluish-gray quartz, perthitic microcline, and saussuritized oligoclase or andesine, accompanied by chlorite, sericite, and green saenitic biotite. Generally crushed and foliated. (Jarvis B. Hadley, Vermont Geological Survey Bulletin No. 1, 1950).

Waits River Formation: Gray quartzose and micaceous crystalline limestone weathered to distinctive brown earthy crust; interbedded and intergradational with gray quartz-muscovite phyllite or schist. Where more metamorphosed the limestones contain actinolite, hornblende, zoisite, diopside, wollastonite, and garnet, and the phyllite and schist biotite, garnet, and locally, andalusite, kyanite or sillimanite.

## GLOSSARY OF SELECTED GEOLOGIC TERMS

- Alluvial                   Pertaining to material carried or laid down by running water.
- Delta                     A predominantly alluvial deposit built out by a stream into the sea or other body of water. Usually having the typical form of the Greek letter Delta.
- Fluvial                   Pertaining to streams or stream action.
- Greenstone               A field name for rocks that have been so metamorphosed or otherwise so altered that they have assumed a distinctive color owing to the presence of chlorite, epidote, or actinolite.
- Kame                     A conical hill of stratified drift, deposited at a glacial terminus by glacial streams flowing in or on the ice.
- Kame Terrace            An accumulation of stratified drift laid down chiefly by streams between a glacier and an adjacent valley wall.
- Lacustrine              Of or pertaining to lakes.
- Limestone              A bedded sedimentary deposit consisting chiefly of calcium carbonate. The most important and widely distributed of the carbonate rocks. The percentage of calcium carbonate ranges from 40 percent to more than 90 percent. Common impurities are clay and sand.
- Marine Deposits         Sedimentary deposits laid down in the sea, usually beyond the seaward edge of the littoral belt.
- Metamorphic Rocks     Rocks that owe their distinctive characters to the transformation of pre-existing rocks, either through intense heat or pressure or both.
- Monzonite                An igneous rock of granular, interlocking texture composed mainly of plagioclase and orthoclase feldspar and one or more dark minerals. The two types of feldspar occur in approximately equal amounts and the monzonites may be regarded as forming connecting links between the diorites and syenites. Quartz is typically absent; when it is present the rock is called quartz-monzonite.
- Phyllite                 A fine-grained foliated metamorphic rock intermediate between the mica schists and slates, into which it may grade. The cleavage is made possible by the development of a large amount of potash mica, sericite, which also gives the rock a distinctive silvery appearance.

Physiography

A description of nature or natural phenomena in general. Broadly it designates the study of the physical divisions of the globe-lands, seas and atmosphere; but most writers restrict it to the study of the surface features of the land.

Quartzite

A firm, compact rock composed of grains of quartz so firmly united that fracture takes place across the grains instead of around them. A metamorphosed sandstone.

Schist

A crystalline rock with a secondary foliation or lamination based on parallelism of platy or needle-like grains. The name refers to the tendency to split along the foliation.

Siliceous

Containing or pertaining to silica (Silicon dioxide,  $SiO_2$ ) or partaking of its nature.

Slate

A homogeneous, metamorphic rock, so fine-grained that no mineral grains can be seen. Most slates are blue-black, but many are red, green, gray or black. Slate splits with a foliation so perfect that it yields slabs having plane surfaces almost as smooth as the cleavage planes of minerals. Slates grade on the one hand, into phyllites, and on the other, into shales.

Strike

The direction of a line formed by the intersection of a bedding plane, vein, fault, slaty cleavage, schistosity, or similar geologic structure, with a horizontal plane. It is at right angles to the dip.

## BIBLIOGRAPHY

1. A survey of the glacial geology of Vermont being conducted by D. P. Stewart, the partial results of which are published in Vermont Geological Survey Bulletin No. 19, 1961.
2. "Soil Survey (Reconnaissance) of Vermont" by W. J. Latimer, 1930. United States Department of Agriculture, Bureau of Chemistry and Soils.
3. "Soil Exploration and Mapping", Highway Research Board, Bulletin 28, 1950.
4. "Survey of Highway Aggregate Materials in West Virginia", Engineering Station, West Virginia University, Morgantown, West Virginia. December, 1959.
5. "Materials Inventory, Bangor Quadrangle, South Half, September, 1959", University of Maine.
6. "Glacial Geology and the Pleistocene Epoch", Richard F. Flint, John Wiley and Sons, 1947.
7. Report of Vermont State Geologist, Vol. 10, 1915-1916. "Post Glacial Marine Waters in Vermont", H. L. Fairchild.
8. "A Handbook of Rocks", J. F. Kemp, D. VanNostrand Company, Inc. June, 1946.
9. "Rock and Rock Minerals", L. V. Pirson, John Wiley and Sons, Inc. June, 1949.
10. "Glossary of Selected Geologic Terms", W. L. Stokes and D. J. Varnes, Colorado Scientific Proceedings, Vol. 16, 1955.
11. "Centennial Geologic Map of Vermont", by C. G. Doll.
12. United States Department of the Interior, Geological Survey, Mt. Cube Quadrangle, New Hampshire-Vermont.
13. United States Department of the Interior, Geological Survey, Woodsville Quadrangle, New Hampshire-Vermont.
14. "Geology of the Bradford-Thetford Area, Orange County, Vermont", Jarvis B. Hadley, Vermont Geological Survey Bulletin No. 1, 1950.

## PARTIAL SPECIFICATIONS FOR HIGHWAY CONSTRUCTION MATERIALS

Listed below are partial specifications for Highway Construction Materials as they apply to this report at date of publication. For complete list of specifications see "Standard Specifications for Highway and Bridge Construction" approved and adopted by the Vermont Department of Highways April, 1964.

Item 105, Granular Borrow:

"Article 105.02 Materials. The granular borrow shall be obtained from approved sources and shall consist of satisfactorily graded, free draining, hard, durable stone and coarse sand practically free from loam, silt, clay, and organic matter.

"The sand portion (material passing the No. 4 screen) shall have not more than ten percent (10%) passing the No. 270 mesh sieve and shall show a color of not more than three and one-half ( $3\frac{1}{2}$ ) as determined by the colorimetric test described in AASHO Method of Test, Designation T-21.

"When used in connection with fine grading or in fills where piling is to be driven, the granular material shall all pass the nine (9) inch square opening screen."

Item 201, Sub-base of Gravel.

"Article 201.02 Materials. The gravel shall consist of material reasonably free from silt, loam, clay or organic matter. It shall be obtained from approved sources and meet the following requirements:

"Not less than forty (40) percent stone shall be retained on No. 4 sieve.

"The percent of wear shall be not more than twenty-five (25) when tested by laboratory methods, using Method AASHO T-4, or more than

forty (40) when tested by AASHO Method T-96.

"The stone portion of the gravel shall be uniformly graded from coarse to fine and the maximum size particles shall not exceed two-thirds (2/3) of the layer being spread.

"The sand portion, when tested by laboratory methods, using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Minimum Percent of Stone	Percent Passing Square Openings No. 100	Percent Passing Square Openings No. 270
40	0-15	0-3
50	0-15	0-4
60	0-15	0-5
70	0-15	0-6

"The sand shall show a color of not more than three and one-half (3½) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

Item 202, Sub-base of Sand

"Article 202.02 Materials. The sand shall consist of material reasonably free from silt, loam, clay or organic matter. It shall be obtained from approved sources and meet the following requirements:

"The sand, when tested by laboratory methods, using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
1½"	95-100
5/8"	80-100
No. 4	70-100
No. 100	0-18
No. 270	0-5

"The sand shall show a color of not more than three and one-half ( $3\frac{1}{2}$ ) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

Item 204, Sub-base of Crushed Rock

"Article 204.02 Materials. The materials for sub-base, filler and sand cushion shall be obtained from approved sources and meet the following requirements:

"A - Crushed Rock. The crushed rock shall be uniformly graded, crusher-run material, free from dirt. The ledge from which this material is obtained shall be stripped and cleaned before blasting. Conical stockpiling or any other method of stockpiling, which causes segregation of aggregates will not be permitted.

"The crushed rock, when tested by laboratory methods using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
4"	95-100
1 $\frac{1}{2}$ "	25-50
No. 4	0-15

"The percent of wear shall not be more than eight (8) when tested by laboratory methods, using Method AASHO T-3, or more than forty (40), when tested by AASHO Method T-96."

Item 205, Sub-base of Crushed Gravel

"Article 205.02 Materials.

A - Crushed Gravel. The crushed gravel shall consist of material reasonably free from silt, loam, clay or organic matter. It shall be obtained from approved sources and produced by a crusher adjusted to deliver

a product uniformly graded from coarse to fine.

"When tested by laboratory methods, using Method AASHO T-27, it shall meet the grading requirements as set forth below:

		Square Openings	Percent Passing
Sub-base of Crushed Gravel	Coarse Graded	4"	100
	Item 205-A	No. 4	25-50
	Fine Graded	1½"	95-100
	Item 205-B	No. 4	30-60

"At least thirty (30) percent by weight of the stone content of the crushed gravel, that is, the material retained on the Number 4 screen, shall have a minimum of one (1) fractured face as determined by actual count from the sample submitted to the laboratory.

"The percent of wear shall not be more than twenty (20) when tested by laboratory methods, using Method AASHO T-4, or more than thirty-five (35), when tested by AASHO Method T-96.

"B - Sand. The sand content of the crushed gravel, that is, the material passing the No. 4 screen, when tested by laboratory methods, using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
No. 100	0-18
No. 270	0-8

"The sand shall show a color of not more than three and one-half (3½) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested (Ft.)	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color MSHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
1	1	1964	1-8	0-1	No	100	100	96.3	19.0 18.3*	3.0 2.9*	1	----	Gran. Borrow (Sand)	Owner: Hayward Erwin A small hole at side of road below barn. Feature was supposed to be delta. Not much evidence of granular material in deposit. Test #1 was in small hole where farmer had removed sand for concrete. Material was sand with silty layers. Rejected for Item 202. Has excess passing No. 100 sieve. Acceptable for Item 105.
2	1	1964	3-12	0-1	Yes	100	91.8	78.0	5.0 3.9*	2.0 1.6*	1 1/2	----	Sand	Owner: Paul Gallerani A pit at edge of Vt. Route 25, and pasture, close to Bradford town line. Test #1 taken at southeast end of pit. Pit approximately 255' long, height of face 25'. Material is clean sand with layers of pebbly sand and sandy gravel. Acceptable for Items 202 and 105.
	2	1964	2-25	0-2	Yes	95.1	92.9	87.8	2.0 1.8*	1.0 0.9*	1	----	Sand	Test #2 taken at north end of pit face. Acceptable for Items 202 and 105.
	3	1964	0-9	--	Yes	100	99	95.1	5.0 4.8*	1.0 0.95*	1	----	Sand	Test #3 taken beside Test No.1, slightly closer to Vt. Route 25. Acceptable for Items 202 and 105.
3	1	1964	2-3	0-2	Yes	...	..	43.1	8.0	1.75	1	21.0%	Gravel	Owner: Liva Sinclair Pits are located on either side

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VMD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	4-12	0-2	Yes	100	100	98.2	37.0 36.3*	3.5 3.4*	1	----	Gran. Borrow (Sand)	<p>of Meadow Brook Road, just past Craft School. Test #1 taken on east side of road in floor of pit. Material is sandy gravel in a thin layer over fine sandy silt. Could not check for possible extension of material due to restrictions from owner. Material acceptable for Items 201 and 105.</p> <p>Test #2 taken in northwest end of pit on west side of road. Log of Hole:  0-2' Overburden  2'-4' Sandy gravel  4'-12' Sand (fine to medium).  Acceptable for Item 105.</p>
4	1	1964	1.5-6.5	0-1.5	Yes			50.3	19.0	6.0	3 1/2	34.2%	Gran. Borrow (Grav.)	<p>Owner: Liva Sinclair  A large pit on Wrights Mtn. Road. Test #1 taken 125' north of pit to check for extension of material. Material is layered. (Sand-fine sand, gravel very thin layers.) Stones are not very well rounded. There are many granite boulders along side of pit. Material rejected for Item 201. Has excess material passing 100 and 270 mesh sieves. Also percent wear too high. Acceptable for Item 105.</p>

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Sample Tested (Ft.)	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AAS:10 T-21	Abrasion AAS:10 T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	0-8	--	Yes	100	100	71.9	27.0	5.0	1	----	Gran. Borrow (Sand)	Test #2 dug in floor of pit. Material is found at beds with some slumping. Rejected for Item 202. Excess material passing 100 mesh sieve. Acceptable for Item 105.
5	1	1964	1-8	0-1	Yes	--	--	41.4	7.0	1.75	3	18.8%	Gravel	Owner: Ralph Pierson. A pit north of Vt. Route 25 just east of Wrights Mtn. Road. Test #1 taken 10' north of the north face of pit. Material in Test No. 1 had many stones over 6". Maximum height of face at upper level is 12'. Material meets requirements for Items 201 and 105.
	2	1964	0-12	--	Yes	100	100	100	26.0	3.0	1	----	Gran. Borrow (Sand)	Test #2 taken in floor of upper level of pit. Material is mostly sand with stones; not acceptable for Item 202; excess material passing the No. 100 mesh sieve. Acceptable for Item 105.
6	1	1964	2-9	0.2	No	--	--	49.3	20.0	6.0	3 1/2	----	Gran. Borrow (Grav.)	Owner: Alfred Hackett. A small wooded area opposite the junction of paved and gravel roads. Test #1 taken in small clearing. Material looks like ablation till. Well rounded and polished stones in a matrix of sand. Several stones over 2" in diameter. Material is acceptable for Item 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 4

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1 1/2"	5/8"	#4	#100	#270				
7	1	1964	1-5	0-1	No	100	100	74.6	36.0	15.0	1 1/2	-----	----	Owner: Alfred Hackett. Small area on east side of Hackett Hill Road. Test #1 was taken along roadway bank. Material is medium to fine sand with stones. Rejected for Item 1105. Excess material passing 270 mesh sieve.
8	1	1964	1-7	0-1	No	100	100	90.5	25.0	6.0	3	-----	Gran. Borrow (Sand)	Owner: Town of Bradford- R.O.M. Adjacent to Kendall Sanborn Meadow. Test #1 was taken at side of road. Material is sub-angular, water-born stones, cobbles and boulders in a matrix of sand, also some silt. Most stones over 1" diameter. Acceptable for Item 105.
9	1	1964	3-11	0-1.5	No	85.9	85.9	84.5	35.0 29.6*	1.75 1.47*	1	-----	Gran. Borrow (Sand)	Owner: Charles Kenyon Area is along private road off Wt. Route 25. Test taken in cleared area, 160' south of former Gilman property line. Overburden varies as area was recently cleared from wooded area. Log of hole: 0-1.5' overburden 1.5-3' gravel with pieces of broken ledge. 3-11' fine to medium sand. Rejected for Item 202. Excess material on 1 1/2" and No. 100 screens. Acceptable for Item 1105.

\*Percentage of Total Sample

TABLE 1

BRADFORD GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	5-13	0-1.5	No	100	100	100	12.0 12.0*	1.25 1.25*	1	----	Sand	Test #2 taken 100' south of Test #1. Log of #2: 0-15' overburden 1.5-5' sand with stones 5-13' Sand  Acceptable for Item 202 and 105.
10	1	1964	0.5-4.5	0-0.5	Yes	--	--	33.6	11.0	2.5	2	15.4%	Gravel	Owner: Harold J. Bush A small pit just to east of Vt. Route 25 and north of Harold Bush house. Test no. 1 is taken on south edge of pit. Material here is gravelly, also very limited, probably not over 100 cubic yards. Material acceptable for Items 201 and 105.
	2	1964	0.5-5	0-0.5	Yes	100	100	93.7	4.0 3.94*	1.0 0.98*	1	----	Sand	Test #2 taken 130' south of Test #1. Area is sandy with bed rock close to surface. Material is acceptable for Items 202 and 105.
11	1	1964	1-13	0-4	Yes	100	100	100	72.0 72.0*	7.5 7.5*	1	----	Gran. Borrow (Sand)	Owner: Charles A. Kenyon A group of old pits west of Vt. Route 25. Test #1 taken in floor of old pit about 5'-6' deep. Log of Test #1: 0-1' overburden 1'-13' fine sand Material not acceptable for Item 202. Excess material passing 100 and 270 mesh sieves. Acceptable for Item 105.

\*Percentage of Total Sample

TABLE 1

BRADFORD GRANULAR DATA SHEET NO. 6

Map Ident. No.	Field Test No.	Year	Depth of Field Sample Tested (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color MASHO T-21	Abrasion MASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1 1/2"	5/8"	#4	#100	#270				
12	1	1964	4-13	0-4	Yes	---	--	29.4	10.0	3	1	22.6%	Gravel	Owner: Charles A. Kenyon Pit is located west of Vt. Route 25, along old pit road. Test #1 taken on west side of pit near old junk cars. Material is coarse, sandy gravel. Acceptable for Items 201 and 105.
	2	1964	0.5'-10	0-0.5	Yes	--	--	33.9	15.0	4.75	1	29.0%	Gran. Borrow (Grav.)	Test #2 taken 110' north of stone fireplace. Material is coarse gravel with rich brown color. Some rotten stones. Rejected for Item 201. Abrasion is high. Acceptable for Item 105.
13	1	1964	1-5	0-1	Yes	100	90.3	82.5	6.0	1.0	2	----	Sand	Owner: Oliver Rodgers A large pit in Bradford Center on west side of Vt. Route 25. Test #1 taken in old meadow in a bulldozer trench. Log of Test #1: 0-1' overburden 1'-2' fine to medium sand 1'-4.5' coarse, clean sand, 4.5'-5' sand with stones.
	2	1964	1-5	0-1'	Yes	100	100	100	73.0	9.0	2	----	Gran. Borrow (Sand)	Test #2 taken 75'. South west of Test #1. Rejected for Item 202. Excess material on 100 and 270 sieves. Accepted Item 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	3	1964	1-6	0-1	Yes	--	--	48.1	19.0	2.0	2 1/2	----	Gran. Test #3 taken 215' southeast of Borrow Test #1. Log of hole: (Grav.) 0-1' overburden 1'-2' yellow sand, 4'-4.5' sand with stone. Rejected for Item 202; Excess material passing 1/2" screen. Acceptable for Item 105.	
	4	1964	1-10	0-1	Yes	100	100	69.7	4.0 2.8*	1.5 1.0*	1	----	Gran. Test #4 taken in floor of pit. Borrow Log of hole: 0-1' overburden (Sand) 1'-7' pebbly sand with stones. 7'-10' sandy gravel with many stones. Rejected for Item 202. Not enough material passing No. 4 screen. Acceptable for Item 105.	
	5	1964	3-12	0-3	Yes	--	--	28.0	6.0	2.5	1	29.0%	Gran. Test #5 taken in floor of pit. Borrow Material is coarse sandy gravel, (Grav.) some stones over 6". Rejected for Item 201. Abrasion is too high. Acceptable for Item 105.	
14	1	1964	15-30	0-11	Yes	100	82.5	78.6	5.0 3.9*	0.75 0.59*	1	----	Sand Owner: William A. Clark A small pit on steep bank just off the R.O.W. of Vt. Route 25. Test #1 dug in face of pit just south of store. There are many large boulders showing in bank. Material is mostly sand with some layers of stone. Acceptable for Items 202 and 105.	
	2	1964	1-8	0-1	Yes	100	98.7	93.2	4.0 3.7*	0.75 0.69*	1	----	Sand Test #2 taken in floor of pit south of Test #1. Material is acceptable for Items 202 and 105.	

\*Percentage of Total Sample

TABLE 1

BRADFORD GRANULAR DATA SHEET NO. 8

Map Ident. No.	Field Test No.	Year	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color T 21	Abrasion T-4-35	Passes VID Spec.	Remarks
						% Passing								
						1 1/2"	5/8"	#4	#100	#270				
15	1	1964	1.5-50	0-1.5	Yes	100	95.4	81.5	3.0 2.4*	1.25 1.0*	1	---	Sand	Owner: Mildred Smith A pit along the west side of Vt. Route 25. Test #1 taken in slumped material at toe of face. Material is mostly sand with a few stones and pieces of broken ledge up to 3'-4'. Face of pit is grown in with sparse vegetation. Material acceptable for Items 202 and 105.
	2	1964	1.5-50	0-1.5	Yes	100	100	98.7	3.0 3.0*	2.0 2.0*	2	---	Sand	Test #2 taken at toe of face approximately 100' north of Test #1. Material is similar to test #1. Acceptable for Items 202 and 105.
	3	1964	0-3	--	Yes	--	--	33.3	5.0	1.0	1	28.9%	Gran. Borrow	Test #3 taken in floor of pit. Material is gravel with some (Grav.) stones over 6". Rejected for Item 201. Abrasion too high. Acceptable for Item 105.
16	1	1964	0-6	--	No	--	--	16.4	3.0	1.0	1	18.0%	Gravel	Owner: Richard Shearer Area is small island in Waits River. Material is river gravel has many stones over 6" which are not included in sample. Test #1 taken at north end of island, opposite the Smith house. Acceptable for Items 201 and 105.
17	1	1964	0-4.5	--	No	--	--	25.6	2.0	1.0	1	18.4%	Gravel	Owner: Richard Shearer A gravel bar at water level in Waits River, opposite the Bedell house. Material has

\*Percentage of Total Sample

TABLE 1

BRADFORD GRANULAR DATA SHEET NO. 9

Map Ident. No.	Field Test No.	Year	Depth of Field Sample Tested (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing				Color AASHTO T-21	Abrasion AASHTO T-4	
						1 1/2"	5/8"	#4	#100			#270
18	1	1964	3.5		No							
	2	1964	6.5-11	0-0.5	No	--	--	16.0	10.0	3.0	1	16.5%
19	1	1964	1.5-7.5	0-1.5	Yes	100	100	96.2	25.0	3.0	3	-----

\*Percentage of Total Sample

zone 6" not included in rock along side indicates shallow material. Material for Items 201 and 105.

Test #1 taken in bank of old river channel. Material is gravel of #1: 0.5-3.5' fine sand and silt.

except- for Items 201 and 105. Test #2 taken 200' north of Test #1. Material is coarse gravel of #2: 0' overburden 0' 5' fine sand 1' coarse gravel, max. s over 6". Water at acceptable for Items 201 and 105.

Gran. Borrow (Sand) Owned by Lloyd Kidder A pit abandoned town road off Route 25. Test #1 taken south end of pit; face here is only 12' high. Area is heavily wooded; face

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 10

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis				Color, Abrasion		Passes VHD Spec.	Remarks
						1 1/4"	5/8"	#4	% Passing #100	% Passing #270	MS10 T-21		
	2A	1964	1.5-7.5	0-1.5	Yes	--	--	53.5	5.0	1.0	1	30.3%	Gran. Borrow (Grav.) of pit covered with slash, small trees and bushes. Maximum height of face is 30'; the slope of face is not very steep. Material is rejected for Item 202. Excess material passing the No. 100 mesh sieve Acceptable for Item 105. Test #2A dug in floor of pit directly adjacent to Test #1. Log of #2: 0-1.5' overburden 1.5'-5' pebbly sand and gravel, 5'-8' clean sand with a few boulders. Rejected for Item 201. Abrasion too high. Acceptable for Item 105. Test #2B taken in same hole as Test #2A. Depth of sample was 5'-8'. Acceptable for Items 202 and 105.
	2B	1964	5-8	--	Yes	100	100	99.3	2.0 2.0*	0.5 0.49*	1	----	Sand
20	1	1964	0.5-10	0.05	No	100	100	100	75.0	20.0	1	----	Owner: John Gibbs Area is located across Waits River from the Gallerani Slaughter house. Test #1 was taken along road to meadow and pasture. Material was fine sand and silt. Rejected for Item 105. Excess material passing the 270 mesh sieve.
21	1	1964	1-7.5	0-1	No	--	--	59.2	19.0	5.0	1 1/2	----	Gran. Borrow (Grav.) Owner: Lloyd Kidder Area is pasture behind Kidder house and across Vt. Route 25

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 11

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AAS:10 T-21	Abrasion AAS:10 T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2A	1964	1.5--6	0-1.5	No.	--	--	46.6	7.0	2.5	2	19.6%	Gravel	Test #1 is 75' from corner of barn. Material is gravel, sand with some stone. Material for Test #1 appeared to be poorly sorted, too many stones for sand. Rejected for Item 201. Excess material passing No. 100 and No. 270 mesh sieve. Acceptable for Item 105.
	2B	1964	6-11	--	No	100	98.7	93.9	24.0	1.5 22.5*1.4*	1	--	Gran. Borrow (Sand)	Test #2A taken in the side of open cellar hole. Material is in terrace which extends southeast to slaughter house. Material is acceptable for Items 201 and 105. Test #2B taken in same hole as Test #2A. Depth of sample is 6'-11'. Material is sand. Rejected for Item 202. Excess material passing No. 100 sieve. Acceptable for Item 105.
22	1	1964	3-9	0-0.5	No	--	--	61.6	4.0	1.25	1	----	Gran. Borrow (Grav.)	Owner: John Gibbs Area is a sloping pasture east of Waits River, on Mink Hill Road. Pasture levels off to a terrace just above the river. Test #1 taken on point of terrace with steep slope to river. Material is sand with some stones. Log of Test #1: 0-0.5' Overburden. 3'-9' Sand with stones. 9' Ledge or bed-

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRAHULAR DATA SHEET NO. 12

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AAS:10 T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
2	1964	2-7	0-0.5	No	100	100	98.5	6.0	1.0	1	----	Sand	rock. Rejected for Item 201, insufficient stone. Acceptable for Item 105. Test #2 taken at top of bank, north of pigpen, 500'-600' south of Test #1. Material is sandy. Acceptable for Items 202 and 105.	
3	1964	4-8.5	0-0.5	No	--	--	30.4	10.0	1.75	1	17.4%	Gravel	Test #3 taken in west side of pasture. Log of Test #3: 0-0.5' overburden, 0.5'-2' fine sand, 2'-4' sand, 4'-8.5' gravel, 8.5'-12' fine yellow sand. Material is acceptable for Items 201 and 105.	
4	1964	0.5-7	0-0.5	No	--	--	44.4	8.0	2.5	1	23.8%	Gravel	Test #4 taken across Waits River from slaughter house, approximately 100' north of Test # 3. Log of Test #4: 0-0.5' overburden, 0.5'-7' sandy gravel, 7'-11' fine sand. Material is acceptable for Items 201 and 105.	
5	1964	7-10	0-0.5	No	--	--	29.4	10.0	2.5	3 1/2	25.0%	Gravel	Test #5 taken in pasture along river. Log of Test #5: 0-0.5' overburden, 0.5-7' fine sand, silt, clay, 7'-10' fluvial gravel, water at 7'. Material is acceptable for Items 201 and 105.	

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 12 A

Map Ident. No.	Field Test No.	Year	Depth of Field Sample Tested (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color T-21	Abrasion T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1/2"	5/8"	#4	#100	#270				
	6	1964	3.5-8	0-0.5	No	--	--	15.1	9.0	1.75	1	20.0%	Gravel	Test #6 taken near bank of Waits River approximately 400' north of Test #5. Log of hole: 0-0.5' overburden, 0.5'-3.5' fine sand, some silt, 3.5'-8' gravel. Water at 5'. Acceptable for Items 201 and 105.
	7	1964	6-9.5	0-0.5	No	--	--	26.9	11.0	2.5	1	17.0%	Gravel	Test #7 taken near bank of river, approximately 400' north of Test #6. Material is fluvial gravel. Log of Test #7: 0-0.5' overburden, 0.5'-6', fine sand and silt, 6'-9.5' gravel, water at 6'. Material is acceptable for Items 201 and 105.
23	1	1964	4.5-9	0-1	Yes	--	--	36.9	12.0	2.0	1	15.0%	Gravel	Owner: Peter Gallerani The area is behind the slaughter house. At the time of sampling, the area was not a pit. Has since been opened up by W. B. Martin. Test #1 taken in pasture. Material is gravel and sand with many large stones. Stones over 6" were not included in sample. Log of Test #1: 0-1' overburden, 1'-4.5' fine sand, 4.5'-9' coarse gravel.  Could not dig deeper due to so many large stones and cobbles. Material is acceptable for Items 201 and 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	0.5-12	0-0.5	Yes	--	--	36.0	15.0	3.0	1	23.2	Gravel	Test #2 taken 265' north of Test #1 in pasture. Material is same as Test #1 but without fine sand covering. Material is acceptable for Items 201 and 105.
24	1	1964	2-12	0-2	No	80.2	67.1	55.4	15.0 8.3*	3.5 1.9*	1	----	Gran. Borrow (Sand)	Owner: Violet Totas Area is a field north of house. Test #1 taken 275' north of house. Material is sand with stones. There is much white granite; well rounded stones showing on surface. There is a good stream of water in the bottom of Test Hole at 12". Material rejected for Item 202. Has excess material retained on the 1 1/2" screen. Acceptable for Item 105.
25	1	1964	1-4	0-1	No	100	85.0	71.9	13.0 9.3*	2.25 1.6*	2	---	Sand	Owner: Philip Hood Area just south of Rowell Brook, in field on Philip Hood property. Test #1 was taken at north edge of field, 12" from fence. Log of Hole: 0-1' overburden, 1'-4' sand, with stones, 4'-10' silt to clay. Material is acceptable for Items 202 and 105.
26	1	1964	0-5		Yes	100	100	99.0	56.0 55.4*	24.0 23.7*	1	----	----	Owner: Ethel Reynolds Many shallow pits past gate on Lewis property. Test #1 taken in floor of pit on

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis				Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1/2"	5/8"	#4	% Passing #100, #270				
2A	1964	1-8	0-1	Yes	--	--	38.4	5.0	2.0	1	35.4%	Gran. Borrow (Sand)	west side of road. Log of Test #1: 0-5' silt to clay with some sand pockets. 5'-9' glacial till, mostly stones. Most of extension appears to be west and north. Most stones showing in face of pit are flat and soft looking. Material is rejected for Items 202 and 105. Excess of material passing the No. 100 and No. 270 mesh sieves. Test #2 taken in west side of pit face. Log of Testhole #2: (Grav.) 0-1' overburden, 1'-2' flat stones with silty gravel, 2'-8" sandy gravel, 3'-11' coarse and fine sand layers, 11'-13' silt. Test #2A represents upper portion. Material is gravel. Not acceptable for Item 201. Abrasion too high. Acceptable for Item 105.
2B	1964	8-11	--	Yes	94.7	94.7	85.5	15.0	3.0	1	--	Gran. Borrow (Sand)	Test #2B represents 8'-11' depth of sampling. Material not acceptable for Item 202. Has excess material 1/2" screen. Acceptable for Item 105.
3A	1964	1-6	0-1	Yes	--	--	31.1	6.0	1.5	1	47.6%	Gran. Borrow (Grav.)	Test #3A taken in south face of small pit on east side of road. Material is sandy gravel with angular stones over sand with silt layers. 11'-13' is silt to clay. Material is not acceptable

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Over- burden (Ft.)	Exist- ing Pit	Sieve Analysis					Color /AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1 1/2"	5/8"	#4	#100	#270				
	3B	1964	6-11	----	Yes	92.0	89.1	86.5	19.0 16.4*	2.25 1.9*	1	----	Gran. Borrow (Sand)	for Item 201. Abrasion too high. Acceptable for Item 105. Test # 3B taken in test hole #3, represents 6'-11'. Material rejected for Item 202. Has excess material retained on the 1 1/2" screen. Accepted for Item 105.
27	1	1964	1-4.5	0-1	No	100	100	98.6	4.0 3.9*	1.0 1.0*	2 1/2	----	Sand	Owner: Town of Bradford Area is along town road on town R.O.W. adjacent to George Pratt property. Test #1 taken 3' south of road. Material is "flake sand". Acceptable for Item 202 and 105.
28	1	1964	1-12	0-1	No	100	100	97.3	12.0 11.7*	1.25 1.2*	1	----	Sand	Owner: Harold Dexter A large sand area along old R.O.W., past Dexter house. Test #1 taken under powerline at top of bank. Log of Test #1: 0-1' overburden, 1'-3' fine sand, yellow. 3'-12' coarse white sand. Material is acceptable for Items 202 and 105.
	2	1964	0.5-10	0-0.5	No	95.7	95.7	88.6	4.0 3.5*	1.0 0.9*	1	----	Sand	Test #2 taken along woods road 385' west of Test #1. Material appears coarse (without fine material on top as in Test #1). Material is acceptable for Items 202 and 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 16

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color MASHO T-21	Abrasion MASHO T-4-35	Passes VMD Spec.	Remarks
						1/2"	5/8"	#4	#100	#270				
	3	1964	1-10	0-1	No	100	100	96.5	3.0 2.9*	1.0 0.9*	1	----	Sand	Test #3 taken 45' right of Sta. 5169 + 50 Base Line of proposed Interstate Route 91. Material is sand, acceptable for Items 202 and 105.
29	1	1964	1-80	0-1	Yes	100	100	97.4	2.0 1.9*	0.5 0.49*	1	----	Sand	Owner: Richard W. Mallory A pit located where former town road intersects Vt. Route 25. Test #1 taken at toe of slope from slumped material and represents the entire face. Overburden is very thin in relation to height of face. Some thin bands of sand and silt visible in upper third of face. Maximum height of face 75'-80'. Acceptable for Items 202 and 105.
	2	1964	1-80	0-1	Yes	100	100	96.1	2.0 1.9*	1.0 0.9*	1 1/2	----	Sand	Test #2 taken in north portion of face of pit. Material was from toe of slope in "slumped" material. Represents the entire face, similar to Test #1. Acceptable for Items 202 and 105.
	3	1964	0-12	----	Yes	100	100	99.4	10.0 9.9*	1.0 0.9*	1	----	Sand	Test #3 was dug in the floor of pit on the east side. Material is sands, meets requirements for Items 202 and 105.
30	1	1964	1-8.5	0-1	Yes	100	100	94.3	74.0 69.8*	29.0 27.3*	3 1/2	----	----	Owner: Kenneth Appleton (formerly Spiece property). A small pit in terrace south of brook. Sides of pit covered with vegetation.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 17

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color Abrasion		Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270	AASHO T-21	AASHO T-4-35		
	2	1964	1-10	0-1	Yes	100	100	63.4	32.0 20.3*	3.5 5.4*	1 1/2	----	Gran. Borrow (Sand)	Test #1 taken in floor of pit. Material is very fine and wet. (some boulders). Rejected for 202 and 105. Test #2 taken at southwest end off cornfield on terrace just above pit. Material exposed here looks like sandy gravel. Log of Test hole #2: 0-1' overburden, 1'-3' gravel, 3'-8' sand with some silt layers, 8'-10' gravel (fluvial), 10'-11' silt to clay. Sample rejected for Item 202; has excess passing Nos. 100 and 270 mesh sieves, also excess retained on No. 4 screen. Acceptable for Item 105.
31	1	1964	2-11	0-2	No	100	97.7	94.0	5.0 4.7*	1.25 1.2*	1	----	Sand	Owner: Kenneth Appleton (formerly Spiece property). Area is an old lake sand deposit, recently re-cleared and planted to alfalfa. Material is a nice clean sand with a few stones (mostly in the overburden). Test #1 taken in scrub growth northwest of the southern corner of field. Acceptable for Items 202 and 105. Material evidently extends east to edge of terrace.
32	1	1964	2-11	0-2	No	39.9	82.3	64.8	3.0 1.9*	1.0 0.6*	1 1/2	----	Gran. Borrow (Sand)	Owner: Kenneth Appleton (formerly Spiece property).

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VMD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	2-9.5	0-2	No	100	95.8	76.5	3.0 2.3*	1.0 0.8*	1	----	Sand	A small lake sand terrace, north-west of barn. Area is traversed by line of survey stakes with 'AR' and Sta. numbers. Area is meadow or pasture growing up to scotch pine. Test #1 taken 50' left (east) of Sta. AR.33 + 50. Material is sand with stones. Rejected for Item 202, has too much stone on 1 1/2" and #4 screens. Acceptable for Item 105. Test #2 taken 50' left (east) of Sta. AR.40+50, 25' west of edge of terrace. Bottom of hole (9.5'-11") is fine sand (not sampled). Acceptable for Items 202 and 105.
33	1	1964	0-3.5	---	No	--	--	21.2	4.0	0.5	1	14.8%	Gravel	Owner: Wanda Huntington A river bar in the Waits River. Test #1 taken near north end of small bar. Water level at collar off hole. Bottom (3.5'-5') is sand. Some stones over 6" not included in sample. Acceptable for Items 201 and 105. It seems probable that there must be a large quantity of gravel in the stream bed between this point and the natural dam down stream, near the plywood mill.
34	1	1964	1-3.5	0-1	No	100	100	67.8	37.0	11.5	2	----	----	Owner: Peter Gallerani A sloping meadow on side hill near bedrock outcrops. Soil appears very stony. Feature is

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test Nos.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis				Color Abrasion		Passes VMD Spec.	Remarks
						% Passing				AASHTO T-21	AASHTO T-4-35		
						1/2"	5/8"	#4	#100	#270			
													supposed to be a 'beach' gravel. Material is dense, hard-packed. Test #1 taken near piles of debris below reservoir, 410' left (west) of south-bound Sta. 5208 + 50. Rejected for Item 105; has excess passing No. 270 mesh sieve.
35	----	----	No Testing Done	---	PIT	DEPLETED	---	---	---	---	---	---	Owner: Peters A former gravel pit, now depleted. Area grassed over.
36	1A	1964	1-5.5	0-1	No	--	--	55.8	12.0	1.75	1	28.0%	Gran. Borrow (Grav.) Owner: Bradford Academy Southwest end of a large "beach gravel" deposit. Cover is mixed trees. Test #1 taken in bank dug for log crib. Log of hole: 0-1' overburden 1'-5.5' sandy beach gravel 5.5'-12' bands of sand with stones and silt. Took two samples from hole (Test #1A and Test #1B). Results of Test #1A (1'-5.5'): Rejected for Item 201. (Grading OK, but abrasion too high). Acceptable for Item 105.
	1B	1964	5.5-12	--	No	100	90.2	73.0	26.0	5.5	1	----	Gran. Borrow (Sand) Test #1B represents lower section of Test hole #1 (5.5'-12'). Rejected for Item 202; has excess passing No. 100 mesh sieve. Acceptable for Item 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 20

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1/2"	5/8"	#4	#100	#270				
37	1	1964	1-3.5	0-1	No	--	--	37.6	21.0	4.25	1	18.0%	Gran. Borrow (Grav.)	Owner: Bradford Academy Large "beach gravel" deposit off limited depth. Test #1 taken west of corrugated metal building adjacent to B. A. picnic area. Log of Test Hole: 0-1' overburden, 1'-3.5' "beach gravel" (poorly sorted with angular to sub-angular stones), 3.5' - 7.5' silt with stones (no strata visible). Rejected for Item 201; has excess passing No. 100 mesh sieve. Acceptable for Item 105.
38	1	1964	1-9	0-1	No	100	100	64.2	40.0	15.75	1	----	----	Owner: Frank Peters An eastward sloping side hill pasture now growing up to mixed trees and bushes. Feature is supposed to be a "beach gravel". Test #1 taken near upper edge of clearing, 100' left of B.L. Sta. 5254 + 50 of proposed Interstate Route 91. Material appeared to be glacial till. Rejected for Item 105; has excess passing No. 270 mesh sieve.
	2	1964	0.5-8.5	0-0.5	No	100	100	100	67.0	26.0	2	----	----	Test #2 taken at edge of knoll inside hill pasture, 85' east of powerline. Material is fine sand with silt to clay particles. Rejected for Item 105, too fine.
39	1	1964	0-11	--	Yes	100	100	76.9	20.0	4.0	1	----	Sand	Owner: Almon Burgess A large terraced pit on side hill "beach gravel" deposit. Cover is

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 21

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis				Color. Abrasion		Passes VHD Spec.	Remarks
						% Passing				AASHO T-21	AASHO T-4-35		
						1 1/2"	5/8"	#4	#100	#270			
	2	1964	1-9	0-1	Yes	--	--	66.7	16.0	2.75	1 1/2	----	Gran. Borrow (Grav.)
	3	1964	1-9	0-1	Yes	100	98.5	87.0	21.0	2.75	1	----	Gran. Borrow (Sand)
	4	1964	0.5-3	0-0.5	Yes	--	--	19.8	28.0	8.67	3 1/2	24.3%	Gran. Borrow (Grav.)

\*Percentage of Total Sample

mostly open pasture. Much of material has been removed. Test #1 taken in floor of uppermost level of pit, 215' left of B.L. Sta. 5272 + 50 of proposed Interstate Route 91. Log of Hole: 0-5' silt to clay with thin layers of sand, 5'-9' sand with stones, 9'-11' glacial till (clayey with boulders). Sample was supposed to include 9'-11' and 0-5' but apparently did not. Test #2 taken in west face of Borrow pit adjacent to Test #1. Log of (Grav.) #2: 0-1' overburden, 1'-9' layers of sand and sandy gravel, 9'-12.5' silt to clay, 12.5'-14' till. Sample (1'-9') rejected for Item 201, has only 33.3% stone. (not enough proper-sized stone for abrasion test.) Has excess passing No. 100 mesh sieve. Acceptable for Item 105.

Test #3 taken near cabin; 415' west from western edge of pit near Test #2. Log of Test #3: 0-1' overburden, 1'-9' layers of sand, and silt, 9'-10.5' silt to clay. Rejected for Item 202; has excess passing No. 100 mesh sieve. Acceptable for Item 105.

Test #4 taken in pasture south-west of pit, 230' southeast of (Grav.) Test #3, 250' southwest of Test #2

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 22

Map Ident. No.	Field Test No.	Year Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
5	1964	0.5-6	0-0.5	Yes	100	100	59.0	28.0	9.0	2	----	Gran. Borrow (Sand)	Log of Test #4: 0-0.5' overburden, 0.5-3' "beach gravel" (yellow-brown matrix with angular, soft looking stones) 3'-5' sand with stones, 5'-8' silt to clay, 3'-11' bouldery glacial till. Rejected for Item 201; has excess passing No. 100 and No. 270 mesh sieves. Acceptable for Item 105. Test #5 taken 240' southeast of Test #4 and 400' left of B.L. Sta. 5270 + 25 of proposed Interstate Route 91. Log of hole: 0-0.5' overburden, 0.5'-1.5' yellow-brown "beach gravel", 1.5-6' sand with many large pieces of angular rock as well as rounded stones, 6'-8.5' fine sand to silt and clay, 8.5'-10.5' clayey bouldery till. Acceptable for Item 105.	
6	1964	0-3.	----	Yes	--	--	13.8	27.0	11.0	5	19.2%	----	Test #6 taken 175' left of B.L. Sta. 5270 + 00 of proposed Interstate Route 91. Log of Test #6 0-3' "beach gravel" (overburden stripped), 3'-5' sand and silt to clay in layers, 5'-7' glacial till (water seeping into hole at 5'). Rejected for Items 201 and 105, has excess passing No. 100 and No. 270 mesh sieves also has color of 5.	
7	1964	0-4.5	----	Yes	--	--	59.7	18.0	2.25	1	--	Gran.	Test No. 7 taken in floor of	

\*Percentage of Total Sample

TABLE 1

BRADFORD GRANULAR DATA SHEET NO. 23

Map Ident. No.	Field Test No.	Year Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing				Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1/2"	5/8"	#4	#100				
													Borrow (Grav.) small pit at southeast corner of large pit. Log at hole: 0-4.5' sand with stones. (many stones over 6" not in sample). 4.5'-11.5' fine sand grading down to silt to clay with depth. Rejected for Item 201. Has excess passing No. 100 mesh sieve. Not enough proper-sized stone for abrasion test. Acceptable for Item 105.
40	1	1964	2-4.5	0-2	Yes	--	--	46.8	17.0	4.25	2	15.4%	Gran. Borrow (Grav.) Owner: Almon Burgess A large shallow pit in the huge lake sand deposit which covers much of the eastern portion of the town. Pit is largely depleted. Remaining material appears to extend under cultivated fields to the east. Average depth of pit: 8'-10'. Test #1 taken in southeast corner of pit. Log of Test #1: 0-2' overburden (bulldozed up in places to 4' or more), 2'-4.5' cemented fine gravel or sand with stones. (sample), 4.5'-8' sand. Rejected for Item 201, has excess material passing No. 100 and No. 270 mesh sieves. Acceptable for Item 105.
	2	1964	0-7	----	Yes	100	100	94.1	2.0	0.4	1	----	Sand Test #2 taken in floor of pit, 35' west of Test #1. Material was all sand. Depth of hole limited by slumping of sides.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 24

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color: MASHO T-21	Abrasion: AASHO T-4-35	Passes: VHD Spec.	Remarks
						% Passing								
						1/2"	5/8"	#4	#100	#270				
													Acceptable for Items 202 and 105. Available material here is limited by adjacent good farm land and buildings.	
41	1	1964	1.5-8	0-1.5	No	--	--	31.1	8.0	1.1	1	----	Gran. Borrow Area is side hill pasture (Grav.) now growing up to trees and brush. Test #1 taken 240' south of property line. Material in Test #1 is till, composed mostly of broken ledge (slightly sub-angular) also a few rounded granitic stones. Material is acceptable for Item 105.	
	2	1964	1-1.5	0-1	No	--	--	51.6	10.0	5.0	2	----	Gran. Borrow powerline and approximately (Grav.) 240' south of property line. Log of Test #2: 0-1' overburden, 1'-1.5' "beach gravel", 1.5'-5' rotten ledge rock. Material is not acceptable for Item 201. Excess material passing the 270 mesh sieve. Acceptable for Item 105.	
42	1	1964	1-2.5	0-1	No	--	--	NOT SAMPLED			----	----	Owner: C. H. Farr Test #1 taken in an overgrown pasture 225' from proposed Interstate Route 91 B.L. Log of Test #1: 0-1' overburden, 1'-2.5' till, 2.5'-5.5' rotten bedrock, shale or slate. Not sampled.	

\* Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 25

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color MASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1" 1/2"	5/8"	#4	#100	#270				
	2	1964	1-2.5	0-1	No	--	--	47.1	2.0	1.0	1	----	Gran. Borrow (Grav.)	Test #2 taken in woods along woods road, 175' left of Sta. 5284 + 75 base line of proposed Interstate Route 91. Material is "beach gravel" with a glacial till bottom. Meets grading requirements for Item 201, however, there is insufficient stone to run on abrasion test. Acceptable for Item 105.
43	1	1964	2-11	0-2	Yes	98.3	88.8	73.7	10.0	3.0 7.3*2.2*	1	----	Sand	Owner: Putnam Blodgett A large pit, now depleted, behind Blodgett house. Test #1 taken at south end of pit, Log of #1: 0-2' overburden, 2'-11' sandy gravel with layers of silt, clay, and sand. Very little gravel left in pit. Floor is silty (hard-packed). Material acceptable for Items 202 and 105.
44	1	1964	1-8	0-1	No	100	96.7	81.9	23.0	5.0 18.8*4.1*	1/2	----	Gran. Borrow (Sand)	Owner: Putnam Blodgett Area is located south of proposed new dam area. Test #1 taken southeast of dam site. Test hole was dug by soil conservation service. Limited depth of hole due to limit of backhoe and operator. Material is rejected for Item 202. Excess passing the No. 100 mesh sieve. Acceptable for Item 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 26

Map Ident. No.	Field Test No.	Year Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis % Passing					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1964	1.5-11	0-1.5	No.	--	--	61.8	10.0	2.0	1	----	Gran. Borrow (Grav.)	Test #2 taken 95' east of Test #1 in a small clearing in woods. Material is sand with stones or sandy gravel in layers with fine to medium sand. Material is rejected for Item 202. Has excess material retained on the 1 1/2" screen. Acceptable for Item 105.
45	1	1964	1-4.5	0-1	No	80.2	75.9	70.1	14.0 9.8*	1.0 0.7*	1 1/2	----	Gran. Borrow (Sand)	Owner: Town of Bradford Area is along town road R.O.W. adjacent to Putnam Blodgett property. Test #1 was taken south edge of road. Material is sand with stones. Not acceptable for Item 201. Insufficient stone. Acceptable for Item 105.
46	1	1964	1.5-5.5	0-1.5	No.	--	--	51.4	10.0	3.0	1	----	Gran. Borrow (Grav.)	Owner: Gilbert Smith A small area on west side of fairgrounds road very close to town line. Test #1 taken in small hole at edge of road. Log of Test #1: 0-1.5" overburden 1.5'-5.5' "beach gravel"-sand-rotted stones and clay or till "balls". 5.5' glacial till 7' ledge. Cover in area is mixed soft and hard woods. Depth of material considered too shallow to get extra stones for abrasion test. Material rejected for Item 201. Insufficient proper-size stone for percent wear. Acceptable for Item 105.

\*Percentage of Total Sample

TABLE 1

## BRADFORD GRANULAR DATA SHEET NO. 27

Map Ident. No.	Field Test No.	Year Tested	Depth of Sample (Ft.)	Overburden (Ft.)	Existing Pit	Sieve Analysis					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing	1/2"	5/8"	#4	#100				
47	1	1964	1-10	0-1	Yes	100	100	74.6	36.0	13.0	1	----	----	Owner: Gilbert Smith Pits just west of town road and south of town line. Test #1 taken in face of northern-most pit. Appears to be a well-compacted but somewhat sandy lodgement till. No structure evident in face of hole. Many glacially polished and striated stones in pit. Material rejected for Item 105. Has excess material passing No. 270 mesh sieve.
	2	1964	0-7	---	Yes	---	---	41.8	23.0	9.0	1	----	Gran. Borrow (Grav.)	Test #2 taken in face of lowest level of the southern pit. Log of Test #2: 0-3' partially water-worked material of sandy-stoney nature, 3'-6' yellowish-brown silty compacted till grading from above into 6'-7', gray to brown clayey till. Very dense and hard. Rejected for Item 201. Excess passing 100 and 270 mesh sieve. Acceptable for Item 105.

\* Percentage of Total Sample

TABLE I  
Supplement

BRADFORD PROPERTY OWNERS - GRANULAR

Map Ident. No.

Appleton, Kenneth	30, 31, 32
Blodgett, Putnam (Farm)	43, 44
Bradford Academy (Picnic Area)	36, 37
Bradford, Town of (Right of Way)	8, 27, 45
Burgess, Aimon	39, 40
Bush, Harold J	10
Clark, William A	14
Dexter, Harold	28
Erwin, Hayward	1
Farr, C. H.	42
Gallerani, Paul	2
Gallerani, Peter	23, 34
Gibbs, John	18, 20, 22
Hackett, Alfred	6, 7
Hood, Philip	25
Huntington, Mrs. Wanda	33
Kenyon, Charles A.	9, 11, 12
Kidder, Lloyd	19, 21
Mallary, Richard W.	29
Peters, Frank	38
Peters, Gravel Pit	35
Pierson, Ralph	5
Reynolds, Mrs. Ethel	26
Rogers, Oliver	13
Rogers, Paul K.	41
Shearer, Richard	16, 17
Sinclair, Liva	3, 4
Smith, Gilbert	46, 47
Smith, Mrs. Mildred	15
Totas, Mrs. Violet	24

TABLE II

## BRADFORD ROCK DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHTO T-3	Remarks
1	1	1964	Granitic-Undifferentiated	No	Chip	2.6	<p>Owner: Mallery Farms. This area, located in the southeast corner of the town of Bradford, is a small wooded hill of thinly covered bedrock. This rock is mapped as "Undifferentiated granitic", having the general characteristics of granite but not specifically identified as to mineral composition. The rock extends south from this hill into the town of Fairlee where it is known as "The Fairlee Granite". No evidence of former quarrying was observed on this hill. The grains are medium to large sized, giving the rock a mottled gray and white appearance on a freshly broken surface. The weathered surface is reddish brown to gray and looks very massive, especially where smoothed by glacial abrasion. This hill is easily accessible, being bordered by open meadows on the west (see Rock Ident No. 2) and a town road on the north, east and south.</p> <p>Test No. 1 was taken from an outcrop on the northeast slope of the hill where the rock is exposed as a small face about 10' high which runs east and west. The sample was chipped off at random along the face on an east-west section 25' in length, beginning at an old fence line on the west. The rock broke into angular pieces with fresh faces which met the requirements for Sub-base of Crushed Rock, Item 20<sup>1</sup>/<sub>2</sub>.</p> <p>Test No. 2 was taken along the same rock face immediately to the east of test No. 1, and extending for 40'. The rock appeared to be the same as No. 1 and also met requirements for Item 20<sup>1</sup>/<sub>2</sub>. Because of the uniform nature and hardness of this rock further testing did not seem to be necessary. The eastern slope of the hill affords the best relief for a quarrying operation, but the owner is concerned about the proximity of any such operation to his buildings. This hill would seem to be an excellent source for large quantities of Sub-base of Crushed Rock, Item 20<sup>1</sup>/<sub>2</sub>, also base courses and surface courses.</p>
	2	1964	Granitic-Undifferentiated	No	Chip	1.2	

TABLE II (cont'd.)

BRADFORD ROCK DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHTO T-3	Remarks
2	1	1964	Granitic-Undifferentiated	No	Chip	3.3	Owner: George Pratt. This area is located on the northwest corner of the hill described in Rock Ident. No. 1 above. The rock is the same "Undifferentiated granitic" but appears to have a poorly developed north-south schistosity, which may account for the higher abrasion results. This higher abrasion, however, might be due to a greater percentage of weathered rock in the samples caused by the difficulty in chipping rock from the smooth surface of the outcrop. Test No. 1 was taken along an east-west section from the western edge of the outcrop to a point 50' to the east. (This outcrop is visible from the town road.) The rock broke into angular pieces only slightly less "blocky" than that from Map Ident No. 1.
	2	1964	Granitic-Undifferentiated	No	Chip	4.4	Test No. 2 was taken some 200' to the south along a 75' section roughly parallel to that of Test No. 1. The rock here appeared to be the same as Test No. 1. Further testing might prove this rock to be equal in quality (percent of wear) to that on Mallery Farms property. All rock in this hill should be acceptable for Sub-base of Crushed Rock, Item 204.

TABLE II  
Supplement

BRADFORD PROPERTY OWNERS - ROCK

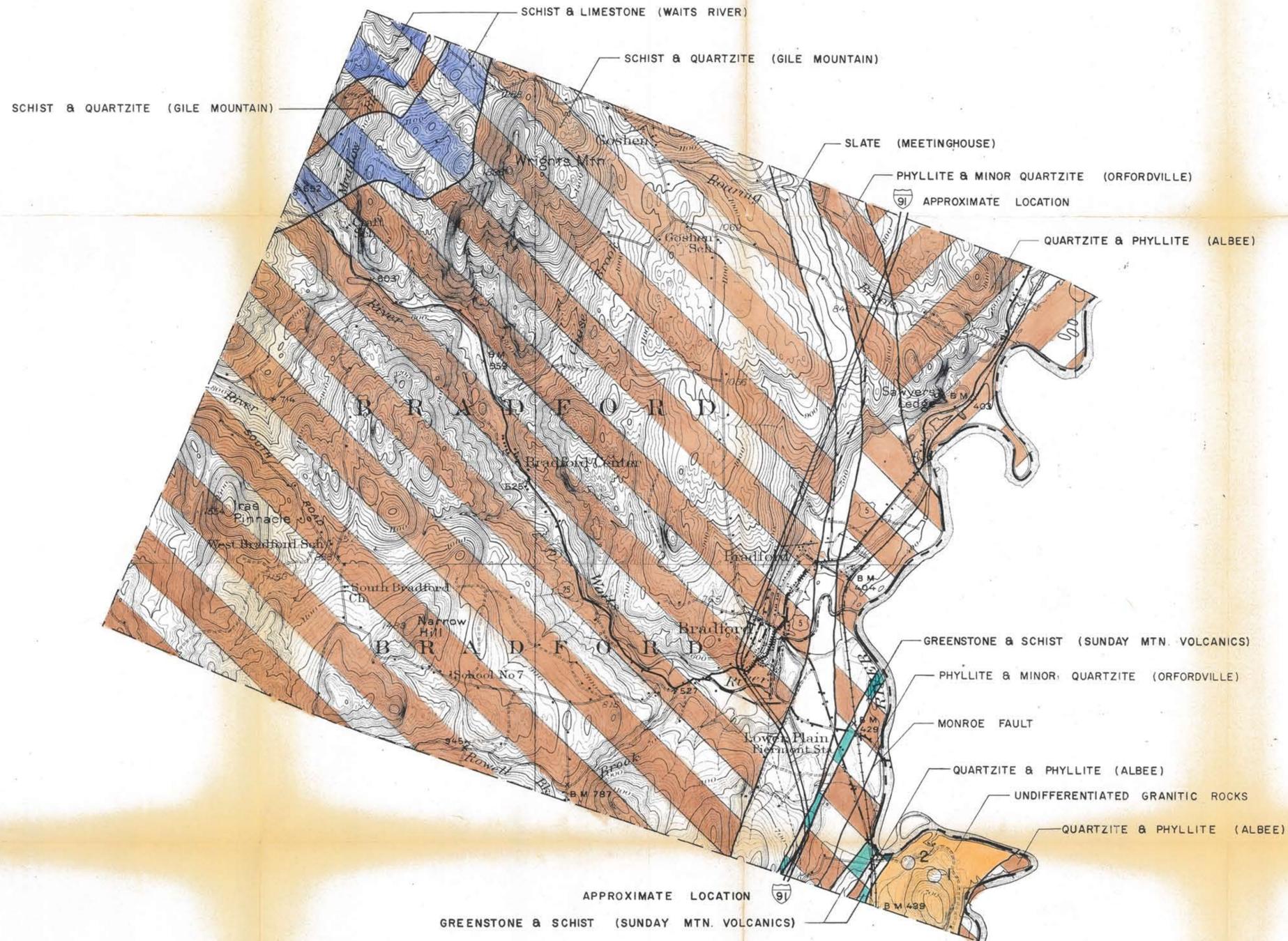
Map Ident. No.

Mallary Farms

1

Pratt, George

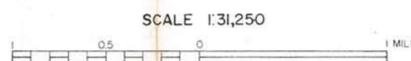
2



LEGEND

- ROCK, ACCEPTABLE FOR ITEM 204 (sub-base of crushed rock)
- ROCK, NOT ACCEPTABLE FOR ITEM 204
- ⊗ EXISTING QUARRY
- Orange box GRANITE TO DIORITE (light to intermediate igneous rocks)
- Green box AMPHIBOLITE, GABBRO, DIABASE, METADIABASE, GREENSTONE, TRAP DIKES (basic or dark igneous rocks)
- Red box PERIDOTITE, PYROXENITE, SERPENTINITE (ultra-basic igneous rocks)
- Purple box GNEISS
- Light blue box QUARTZITE
- Dark blue box DOLOMITE
- Light purple box MARBLE, LIMESTONE
- White box SCHISTS, SLATES, PHYLLITES, SHALES, CONGLOMERATES
- 3 IDENTIFICATION NUMBER (refer to data sheets)

BRADFORD



CONTOUR INTERVAL 20 FEET

1965

ROCK MATERIALS MAP

BY  
VERMONT DEPARTMENT OF HIGHWAYS  
IN COOPERATION WITH  
U.S. BUREAU OF PUBLIC ROADS

NOTE: BASED ON U.S.G.S. TOPOGRAPHIC MAPS