SURVEY OF HIGHWAY CONSTRUCTION MATERIALS
IN THE TOWN OF ROYALTON, WINDSOR 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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Acknowledgments

The work of this project was greatly implemented by the cooperation and assistance of many groups and individuals. The following were particularly helpful in carrying out the project's objectives:

1. Various departments and individuals of the Vermont State Department of Highways, notably the Planning and Mapping Division 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 was to compile an inventory of highway construction materials in the State of Vermont. Prior to the efforts of the personnel of the Survey as described in this and other reports, searches for highway construction materials were conducted only as the immediate situation required. Thus, only limited areas were surveyed and no over-all picture of material resources was available. Highway contractors or resident engineers are usually required to locate the materials for their respective projects and have samples tested by the Highway Testing Laboratory. The additional cost of exploration for construction material is 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 of locations of suitable material is an important factor in planning 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, keeping in mind their intended use. 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.

Inclosures

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 quadrangles of the United States Geological Survey enlarged 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, since 1956, has been mapping the glacial features of the State of Vermont during the summer months. 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. It was readily apparent that 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 in the cards varied widely in completeness. Transfer of information from the cards to the Data Sheets was made without elaboration or verification. The locations of the deposits listed in the card files have also been plotted on the maps. However, caution should be exercised wherever this information appears incomplete. Some cards in the file were not used because the information on the location of the deposit was incomplete or unidentifiable. This project does not assume responsibility for the information taken from the card files.

Work Sheets containing more detailed information of each test including a detailed sketch of each Identification Number Area are on file in the office headquarters of this Project, together with the respective Laboratory Reports.

Location

The Town of Royalton is located in the central portion of the state, approximately 70 miles north of the Massachusetts border. It is bounded on the north by Tunbridge, on the west by Bethel, on the south by Barnard, and on the east by Sharon. The town is in the Vermont Piedmont Physiographic Subdivision, a region described as a

dissected and glaciated uplifted peneplain and characterized by narrow and V-shaped stream valleys and somewhat flattened ridge tops.

The physiography of the town is dominated by the valley of the White River which flows in an easterly direction across the town. Drainage is generally into this stream and thence into the Connecticut River.

Elevations range from 500 feet near the eastern edge of the town to 1700 feet on Broad Brook Mountain in the southeast corner of the town.

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.

There are only two rock formations in the town of Royalton: the Waits River which underlies the eastern and western portions, and the Gile Mountain which divides the Waits River by underlying the central portion of the town. The western part of the Waits River is known as the Barton River member of the Waits River. The rock type does not vary sufficiently here to make any difference within the formation, as far as crushed rock is concerned. In neither of the formations did outcrops occur which appeared to have good potential for producing crushed rock. The only outcrop sampled (see Rock Data Sheet) was within the proposed right-of-way

of I 89 in what appeared to be a cut area. This sample was taken to indicate the poor quality of these rocks. While it is possible that rock meeting the requirements for sub-base of crushed rock, Item 204, could be found within the town; it is the opinion of the Engineering Geology Section that the extraction of a uniform product from these rocks would be extremely difficult.

Anyone desiring additional information concerning possible rock sources is invited to contact the Egnineering 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 Stated 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 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 (AASHO T-4-35).

Discussion of Sand and Gravel Sources

The granular deposits of the town of Royalton are generally glacio-fluvial in origin consisting principally of Kame Terrace structure. Several river bars, strictly fluvial in origin, may prove to be dependable sources of material. These may be found at Ident. Nos. 15, 22, 29, 30, 44, and 45.

The Kame Terrace are limited strictly to the larger stream valleys no acceptable material having been located on the higher elevations.

It is possible that additional sources of acceptable material may be found other than those tested by the survey.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF ROYALTON

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.

Barton River Member of the Waits River Formation - (description is the same as for the Waits River above).

Gile Mountain Formation - Gray quartz-muscovite phyllite or schist, interbedded and intergradational with gray micaceous quartzite, calcareous mica schist, and, locally, quartzose and micaceous crystalline limestone like that of the Waits River formation.

Glossary of Selected Geologic Terms

Biotite - The mineral commonly known as black mica.

Calcareous - Consisting of or containing calcium carbonate. As combined with rock names indicates a considerable proportion, say 50 percent, of calcium carbonate together with an equal or predominant amount of the material indicated by the rock name.

Crystalline - Of or pertaining to the nature of a crystal; having a regular molecular structure.

Dike - A sheet-like body of igneous rock that fills a fissure in older rocks which it entered while in a molten condition. Varies from less than an inch in width and a few yards in length to thousands of feet in width and many miles in length. May radiate in groups from a center, or occur singly and isolated from other igneous bodies.

Fluvial - Pertaining to streams or stream action.

Granite - A granular, crystalline rock of predominantly interlocking texture, composed essentially of alkalic feldspars and quartz. Accessory minerals (chiefly micas, hornblende, or more rarely pyroxene) are commonly present.

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.

Igneous Rocks - Rocks formed by solidification of hot mobile rock material.

Kame Terrace - An accumulation of stratified drift laid down chiefly by streams between a glacier and an adjacent valley wall.

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 98 percent. Common impurities are clay and sand.

Metamorphic Rocks - Rocks that owe their distinctive characters to the transformation of pre-existing rocks, either through intense heat or pressure or both.

Phyllite - A fine grained foliated metamorphic rock intermediate between the mica schists and slates, into which it may grade. It is usually light in color, but various darker shades, even black, are found.

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.

Quartz-Monzonite - A rock of granitic texture, intermediate in composition between

granite and quartz diorite, which contains quartz and about equal amounts of the alkoli and soda-lime feldspars.

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.

Schistosity - The property of a foliated rock by which it can be split into thin layers or flakes. The property of splitting may be due to alternating layers of differing mineral composition or to preferred orientation and parallelism of cleavage planes of the mineral.

Sericite - A mineral very similar to, if not identical with, muscovite mica. It occurs in small flakes and scales in metamorphic rocks such as sericite schists and sericite gneisses.

Surface-Geology Map - A map showing areas of outcrop of geologic formations, both consolidated rocks and the unconsolidated sediments. Its scale is large enough that pits and quarries can be accurately shown and indexed.

Terrace - A plain, natural or artificial, from which the surface descends on one side and ascends on the other. Terraces are commonly long and narrow, and they border seas, lakes, or interior valleys. A terrace may be built by deposition of sediment from water, it may be cut by the breaking of waves on a shore or the sweeping of currents, or it may be formed by the dislocation or rocks in crustal movements. The descent from river terraces toward the river may be very abrupt, especially in arid regions, the ascent on the other side may be only that of an extensive alluvial slope.

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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 Vermont Department of Highways).

Item 102A, Granular Borrow.

"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 per cent (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 the A.A.S.H.O. 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 201A, Sub-base of Gravel.

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

"Not less than forty (40) per cent 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 A.A.S.H.O. T-4.

"The stone portion of the gravel shall be uniformly graded from coarse to fine and the maximum size particles shall not exceed six (6) inches in diameter.

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

Minimum Per Cent of stone	Per Cent Passing Square Openings No. 100	Per Cent Passing Square Openings No. 270
40%	0-15	0-3
50%	0-15	0-4
60%	0-15	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 A.A.S.H.O. Method of test, Designation T-21."

Item 202 Mod., Sub-base of Sand.

"The sand shall consist of material 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 A.A.S.H.O. T-27, shall meet the grading requirements set up in the following table:

Square Openings	Per Cent Passing
$1\frac{1}{2}$"	95-100
5/8"	85-100
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 A.A.S.H.O. Method of test, Designation T-21."

Item 204, Sub-base of Crushed Rock.

"The percent of wear shall not be more than eight (8) when tested by laboratory methods, using Method A.A.S.H.O. T-3."

ROYALTON GRANULAR DATA SHEET NO. 1

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Existing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
1	1	1963	1-10	0-1	No	100	100	97.2	58.0 *56.0	13.3 *12.9	1	-	-	**Owner:** Donald Boles. A large meadow on large knoll. Test #1 sandy till over silt and till. Finely laminated silt and sand shows evidence of water action. Ledge bottom. Fails for Item 102-A, granular borrow. Has 13.3% passing #270 mesh; maximum allowed 10%.
2	1	1963	0-10.5	-	Yes	100	100	98.0	5.0 *4.9	3.0 *2.94	1	-	Sand	Owner: Everett Benson. An isolated knoll in pasture with pit. Sand on top of silt. Floor of lowest portion of pit is close to level of sand-silt contact. Sand was used for winter sand. Test #1 in upper level of pit. 0-2.5' pebbly sand, 2.5'-10.5' medium sand with band of silt. Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	3-11	Fill 0-3	Yes	100	-	93.7	95.0 *89.0	93.3 *87.4	1	-	-	Test #2 in floor of bottom level of pit. 0-3' sand fill, 3'-11' silt. Sample processed by Soils Lab.

100% Total Sample Passing ½" mesh
93.7% " " " 3/4" "
93.7% " " " 3/8" "
93.7% " " " #4 "
92.4% " " " #10 "

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 2

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Total Sample Passing mesh 91.0% " " " #40 " 89.0% " " " #100 " 87.7% " " " #200 " 87.4% " " " #270 " Soils Type A-4. Fails for Item 102-A, granular borrow. Has 93.3% passing #270 mesh.
3	1	1963	0.5-6	0-0.5	Yes	-	-	45.2	4.0	1.5	1	31.8%	Gran. Bor. (Grav.)	Owner: Frank Gilman. A small pit in deep woods, all but one small area overgrown. Test #1 in floor of old pit. 0-0.5' overburden, 0.5'-6' sandy gravel dipping steeply away from river, 6'-7' till, till bottom. Fails for Item 201-A, sub-base of gravel. Has wear of 31.8%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	2	1963	1-9.5	0-1	No	-	-	62.2	34.0	4.0	1	-	Gran. Bor. (Grav.)	Test #2 taken 400' south along road from face of pit. Clay till, hard-packed with well-rounded hard-polished stones. Fails for Item 201-A, sub-base of gravel. Has 62.2% passing #4 mesh; maximum allowed 60%. Has 34% passing #100 mesh; maximum allowed 15%. Insufficient proper-sized

ROYALTON GRANULAR DATA SHEET NO. 3

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														stone in sample for wear test. Acceptable for Item 102-A, granular borrow.
	3	1963	0.5-5	0-0.5	Yes	100	93.8	77.1	5.0 *3.86	1.25 *0.96	3	-	Sand	Test #3 in face of pit east of Test #1. 0-0.5' overburden, 0.5'-5' pebbly sand, fewer pebbles in bottom. Acceptable for Item 202 Mod., sub-base of sand.
4	1A	1963	1-6	0-1	No	100	90.3	62.0	3.0 *1.86	1.25 *0.78	3½	25.0%	Gran. Bor. (Grav.)	Owner: Howard Benson. A small terrace "plastered" on till of valley wall. Test #1 taken 75' south of edge of river bank and 40' north of power line from a point 90' east of pole. 0-1' overburden, 1'-6' fine sandy gravel or pebbly sand, 6'-10' sand with stones, gravel or sand with stones in bottom, on top of till. Test #1A fails for Item 201-A, sub-base of gravel. Has 62% passing #4 mesh; maximum allowed 60%. Acceptable for Item 102-A, granular borrow.
	1B	1963	6-10	-	No	100	93.0	70.9	2.0 *1.42	1.0 *0.71	1	-	Sand	Test #1B acceptable for Item 202 Mod., sub-base of sand.
	1C	1963	1-10	0-1	No	100	93.7	76.4	3.0 *2.3	1.5 *1.15	2½	-	Sand	Test #1C composite sample. Acceptable for Item 202

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 4

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	1-7.5	0-1	No	-	-	86.8	56.0	16.0	1	-	-	Mod., sub-base of sand. Test #2 taken 185' along road south of power line. Till. Fails for Item 102-A, granular borrow. Has 16% passing #270 mesh; maximum allowed 10%.
5	1	1963	0-7	-	Yes	100	93.4	82.4	20.0 *16.5	4.0 *3.3	1	-	Sand	Owner: Vermont Dept. of Highways. A small pit. Face of pit slumped badly. Shows evidence of bands of fine silty sand. Test #1 in floor. 0-6' sand and stones, 6'-7' glacial till. Acceptable for Item 202 Mod., sub-base of sand.
6	1	1963	0.5-11	0-0.5	Yes	94.0	89.6	77.1	44.0 *34.0	3.75 *2.9	1	-	Gran. Bor. (Sand)	Owner: James McCullough. A series of pits. Test #1 in floor of lowest pit. 275' north on pit road and 15' west of pit road. 0-0.5' overburden, 0.5'-7.5' bands of fine sand to medium gravel, 7.5'-11' wet fine sand, bottom clay and broken rock. Fails for Item 202 Mod., sub-base of sand. Has 94% passing 1½" mesh; minimum allowed 95%. Has 34% passing #100 mesh; maximum allowed 10%. Acceptable for Item 102-A, granular borrow.

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 5

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	0.5-8	0-0.5	Yes	92.0	81.8	62.5	26.0 *16.2	5.25 *3.28	1	-	Gran. Bor. (Grav.)	Test #2 taken 50' north of Test #1 along pit road and 60' west of pit road 0-0.5' overburden, 0.5'-6' sand with small stones, 6'-8' coarse boney hard packed gravel, sub-angular to rounded stones, some 1 foot in diameter. Fails for Item 201-A, sub-base of gravel. Has 62.5% passing #4 mesh; maximum allowed 60%. Has 26% passing #100 mesh; maximum allowed 15%. Has 5.25% passing #270 mesh; maximum allowed 5%. Insufficient proper-sized stone in sample for wear test. Acceptable for Item 102-A, granular borrow.
	3	1963	0.5-12	0-0.5	Yes	100	100	100	64.0	10.0	2	-	Gran. Bor. (Sand)	Test #3 taken 20' north of pit containing Test #2, 45' south of telephone line, and 175' west of pit road. Uniform fine sand. Fails for Item 202 Mod., sub-base of sand. Has 64% passing #100 mesh; maximum allowed 18%. Has 10% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
	4	1963	0-11.5	-	Yes	100	100	98.9	85.0 *84.0	11.0 *10.9	1	-	-	Test #4 taken 50' west of Test #3, 55' north of tele-

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 6

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														phone cable. Fine sand with fine sand bottom. Fails for Item 102-A, granular borrow. Has 11% passing #270 mesh; maximum allowed 10%.
	5	1963	0.5-12	0-0.5	Yes	100	100	99.3	66.0 *65.4	7.0 *6.9	1	-	Gran. Bor. (Sand)	Test #5 taken 55' west of Test #4 and 115' north of telephone cable. Fine sand with fine sand bottom. Fails for Item 202 Mod., sub-base of sand. Has 65.4% passing #100 mesh; maximum allowed 18%. Has 6.9% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow
	6	1963	0.5-4	0-0.5	Yes	100	97.5	79.1	40.0 *31.6	19.25 *15.2	3	-	-	Test #6 at northern end of pit. Stony sand over glacial till. Fails for Item 102-A, granular borrow. Has 19.25% passing #270 mesh; maximum allowed 10%.
7	1	1963	1-8	0-1	No	100	89.3	60.6	4.0 *2.49	2.0 *1.21	3½	-	Gran. Bor. (Grav.)	Owner: Ford Poultry Farm. A series of granular knolls covered with grass and some scrub. Test #1 on top near south edge of knoll and 75' east of fence. 0-1' overburden, 1'-5' sandy gravel, 5'-8' pebbly sand, sandy bottom. Fails

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 7

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963-	1-6.5	0-1	No	100	84.7	62.3	4.0 *2.49	1.5 *.93	3½	-	Gran. Bor. (Grav.)	for Item 201-A, sub-base of gravel. Has 60.6% passing #4 mesh; maximum allowed 60%. Insufficient proper sized stones in sample for wear test. Acceptable for Item 102-A, granular borrow. Test #2 on east end of knoll east of knoll containing test #1. 0-1' overburden, 1'-6.5' sandy gravel, sandy gravel bottom. Fails for Item 201-A, sub-base of gravel. Has 62.3% passing #4 mesh; maximum allowed 60%. Insufficient proper-sized stones in sample for wear test. Acceptable for Item 102-A, granular borrow.
3	1	1963	0-8	-	Yes	-	-	40.6	5.0	2.5	2	22.0%	Gravel	Owner: Miss Wilder. A small pit with excellent fine gravel. Dimensions of pit 70' by 70'. Material on knoll containing pit extends 110' beyond pit to west, 90' beyond pit to south. Test #1 in floor of pit. Fine gravel, clay and water in bottom. Acceptable for Item 201-A, sub-base of gravel.
	2	1963	1-14	0-1	Yes	-	-	43.8	5.0	1.75	2	19.0%	Gravel	Test #2 in south face.

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 3

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Sandy gravel with sandy gravel bottom. Acceptable for Item 201-A, sub-base of gravel.
	3	1963	1-6	0-1	No	81.2	70.5	53.0	25.0	7.0	1½	-	Gran. Bor. (Grav.)	Test #3 in valley 130' west of pit. Till and boulders. Fails for Item 201-A, sub-base of gravel. Has 25% passing #100 mesh; maximum allowed 15%. Has 7% passing #270 mesh; maximum allowed 5%. Insufficient proper sized stones in sample for wear test. Acceptable for Item 102-A, granular borrow.
	4	1963	0.5-8	0-0.5	No	-	-	36.7	10.0	3.0	2	23.2%	Gravel	Test #4 on knoll 100' west of test #3, 130' east of fence. Gravel. Silt bottom. Acceptable for Item 201-A, sub-base of gravel.
	5A	1963	0.5-6.5	0-0.5	No	100	95.4	86.2	3.0 *2.59%	1.0 *0.86	1	-	Sand	Test #5 in elongated knoll 200' east of pit, 225' west of fence. 0-0.5' overburden, 0.5'-6.5' pebbly sandy, 6.5'-11' medium sand, medium sand bottom. Test #5A acceptable for Item 202 Mod., sub-base of sand.
	5B	1963	6.5-11	-	No	100	82.0	60.2	3.0	1.25	1½	-	Gran. Bor. (Grav.)	Test #5B fails for Item 201-A, sub-base of gravel. Has 60.2% passing #4 mesh; maximum allowed 60%. Insuf-

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 9

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														ficient proper-sized stones. in sample for wear test. Acceptable for Item 102-A, granular borrow.
9	1A	1963	0.5-11	0-0.5	No	-	-	63.9	4.0	1.5	1½	-	Gran. Bor. (Grav.)	Owner: Mrs. Nellie Perley. A series of terraces. Test #1 75' north of edge of first terrace, 240' west of fence, 90' south of toe of second terrace. 0-0.5' overburden, 0.5'-2' sand washed down from second terrace, 2'-2.5' topsoil, original level of terrace, 2.5'-5' gravel, 5'-11' pebbly sand, silt or clay bottom. Test #1A composite. Fails for Item 201-A, sub-base of gravel. Has 63.9% passing #4 mesh; maximum allowed 60%. Insufficient proper-sized stones in sample for wear test. Acceptable for Item 102-A, granular borrow.
	1B	1963	5-11	-	No	100	96.5	71.0	2.0 *1.42	0.5 *0.35	1	-	Sand	Test #1B acceptable for Item 202 Mod., sub-base of sand.
	2	1963	0.5-7.5	0-0.5	Yes	-	-	39.9	15.0	1.75	1	22.4%	Gravel	Test #2 in floor of old pit in second terrace. 0-0.5' overburden, 0.5'-4.5' gravel, 4.5'-6' medium sand, 6'-7.5' sandy gravel,

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 10

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														water at 7.5'. Acceptable for Item 201-A, sub-base of gravel.
	3	1963	2.5-10	0-1	No	95.9	87.7	68.5	4.0 *2.74	1.25 *0.86	1½	-	Gran. Bor. (Sand)	Test #3 taken 25' north of face of pit, 150' south of power line. 0-1' overburden, 1'-2.5' fine sand and silt, 2.5'-4' sandy gravel, 9-10' fine to medium sand. Fails for Item 202 Mod., sub-base of sand. Has 68.5% passing #4 mesh; minimum allowed 70%. Acceptable for Item 102-A, granular borrow.
10	1	1963	2.5-8	0-1.5	No	-	-	47.3	3.0	1.0	1½	24.4%	Gravel	Owner: Mrs. Nellie Perley. A series of large flat terraces. Test #1 in flat open field on terrace. 200' east of fence, 180' north of fence. Pebbly sand with rounded stones of numerous sizes. Layers horizontal, alternating pebbly sand and sandy gravel. Material kept caving in beyond 8'. But similar material continues in bottom. 0-1.5' over-burden, 1.5'-2.5' fine silty sand, 2.5'-4' pebbly sand, 4'-8' sandy gravel, sandy gravel bottom. Acceptable for Item 201-A, sub-base of gravel.

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 11

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	1-9	0-1	No	-	-	54.1	3.0	0.8	1	26.8%	Gran. Bor. (Grav.)	Test #2 taken 450' east of test #1, 200' north of fence, 150' west of fence. 0-1' overburden, 1'-5' fine sandy gravel, 5'-7.5' pebbly sand, 7.5'-9' sand, sand bottom. Fails for Item 201-A, sub-base of gravel. Has wear of 26.8%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
11	1A	1963	1-6.5	0-1	No	-	-	24.5	4.0	1.5	1½	23.8%	Gravel	Owner: Nathaniel Drew Gordon An incised portion of large terrace overlooking small pit. Test #1 taken 50' northwest of edge of terrace 25' east of fence. 0-1' overburden, 1'-6.5' sandy gravel, 6.5'-9.5' fine sand. 9.5'-10.5' sandy gravel. Test #1A acceptable for Item 201-A, sub-base of gravel.
	1B	1963	6.5-9.5	-	No	100	100	98.9	61.0 *60.2	9.5 *9.4	1	-	Gran. Bor. (Sand)	Test #1B fails for Item 202 Mod., sub-base of sand. Has 60.2% passing #100 mesh; maximum allowed 18%. Has 9.4% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
	1C	1963	1-10.5	0-1	No	-	-	48.1	36.0	2.8	1	26.0%	Gran.	Test #1C composite. Fails

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 12

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes WHD Spec.	Remarks
													Bor. (Grav.)	for Item 201-A, sub-base of gravel. Has 36% passing #100 mesh; maximum allowed 15%. Has wear of 26%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	2A	1963	1-5.5	0-1	No	-	-	40.2	5.0	1.3	2½	19.5%	Gravel	Test #2 taken 250' northwest of Test #1, 50' east of fence. 0-1' overburden, 1'-5.5' sandy gravel, 5.5'-7' sandy, 7'-10' gravel gravel bottom. Test #2A acceptable for Item 201-A, sub-base of gravel.
	2B	1963	5.5-7	-	No	100	100	97.6	66.0 *64.4	4.8 *4.68	1	-	Gran. Bor. (Sand)	Test #2B fails for Item 202 Mod., sub-base of sand. Has 64.4% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
	2C	1963	1-10	0-1	No	89.1	74.0	55.4	9.0	1.3	1½	25.6%	Gran. Bor. (Grav.)	Test #2C composite. Fails for Item 201-A, sub-base of gravel. Has wear of 25.6%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	3	1963	4-10.5	0-1	No	-	-	47.6	3.0	1.0	1	29.8%	Gran. Bor.	Test #3 taken 120' east of fence from point 125' along fence from gully. Fails for Item 201-A, sub-base of gravel. Has wear of 29.8%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 13

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#10	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes Min Spec.	Remarks
	4	1963	0.5-9	0-0.5	No	-	-	49.2	4.0	1.5	1	22.6%	Gravel	Test #4 beneath telephone cable 60' northwest of pole #137-315, 290' east of corner fencepost. Sandy gravel. Acceptable for Item 201-A, sub-base of gravel.
	5	1963	2-9	0-1	No	-	-	50.2	8.0	3.0	2	24.2%	Gravel	Test #5 taken 275' west of Test #4, 65' south of woods 75' east of fence. 0-1' overburden, 1'-2' silty sand, 2'-9' sandy gravel, fine wet sand in bottom, with some silt. Acceptable for Item 201-A, sub-base of gravel.
	6A	1963	2-14	0-2	Yes	-	-	40.9	3.0	1.0	3	24.0%	Gravel	Test #6 in face of pit. Dimensions of pit 125' east and west 150' north and south. Overgrown with 10" poplars. Face covered with vegetation. Test #6A taken with handshovel. 0-2' overburden, 2'-7' sand with stones, 7'-14' gravel. Acceptable for Item 201-A, sub-base of gravel.
	6B	1963	14-20	-	Yes	-	-	22.0	7.0	2.0	1	17.4%	Gravel	Test #6B taken with back-hoe. Gravel with gravel bottom. Acceptable for Item 201-A, sub-base of gravel.
	7	1963	2-11	0-2	Yes	100	100	100	24.0	2.75	1	-	Gran. Bor. (Sand)	Test #7 in floor of pit. Fine sand with wet sand in bottom. Fails for Item 202

ROYALTON GRANULAR DATA SHEET NO. 14

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Mod., sub-base of sand. Has 24% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
12	1	1963	0-3	-	Yes	100	100	100	77.0	56.0	1	-	-	Owner: Robert Dumville. A series of many pits. Test #1 in floor of easternmost pit. Silty sand with silt bottom. Fails for Item 102-A, granular borrow. Has 56% passing #270 mesh; maximum allowed 10%.
	2	1963	4.5-9	0-1	No	97.4	89.2	71.7	6.0 *4.3	2.5 *1.79	1½	-	Sand	Test #2 in woods 50' north of pit containing Test #1, 100' east of woods road. 0-1' overburden, 1'-4.5' silt, 4.5'-9' pebbly sand, pebbly sand bottom. Acceptable for Item 202 Mod., sub-base of sand.
	3	1963	0-11	-	Yes	100	100	100	38.0	1.75	1½	-	Gran. Bor. (Sand)	Test #3 in west end of pit north of pit containing Test #1. 0-8' fine to medium sand, 8'-8.5' silt, 8.5'-11' fine to medium sand. Fails for Item 202 Mod., sub-base of sand. Has 38% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
	4	1963	0-10	-	Yes	-	-	64.0	7.0	1.0	1	16.2%	Gran. Bor.	Test #4 in east face of large pit north of pit

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 15

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
													(Grav.)	containing Tests #1 & #3. Sandy gravel with fine sand bottom. Fails for Item 201-A, sub-base of gravel. Has 64% passing #4 mesh; maximum allowed 60%. Acceptable for Item 102-A, granular Borrow.
	5	1963	1-10	0-1	No	100	92.1	75.3	2.0 *1.5	0.5 *0.38	1	-	Sand	Test #5 taken 200' north of junction of old racetrack and road to pit containing Test #4, 50' east of racetrack. 0-1' overburden, 1'-7.5' pebbly sand, 7.5'-10' medium sand. Acceptable for Item 202 Mod., sub-base of sand.
	6	1963	1-10	0-1	No	100	100	80.0	22.0 *17.6	5.0 *4.0	2	-	Sand	Test #6 on large knoll northeast of pit. 0-1' overburden, 1'-5' pebbly sand, 5'-10' fine sand, with bands of silt. Acceptable for Item 202 Mod., sub-base of sand.
	7	1963	1-7	0-1	No	100	94.8	77.1	6.0 *4.6	2.0 *1.54	1	-	Sand	Test #7 on south end of knoll containing Test #6. 0-1' overburden, 1'-7' pebbly sand, 7'-11' fine silty sand. Acceptable for Item 202 Mod., sub-base of sand.
	8	1963	1-12	0-1	No	100	95.0	39.4	19.0 *17.0	2.0 *1.73	2	-	Sand	Test #8 adjacent to west leg of racetrack 125' north of junction with woods road. 0-1' overburden, 1'-11.5'

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 16

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														fine to medium moist sand, 11.5'-12' gravel with well-rounded hard-looking stones. Acceptable for Item 202 Mod., sub-base of sand.
13	1	1963	1-10.5	0-1	No	-	-	27.2	4.0	1.8	3	23.8%	Gravel	Owner: Ford Poultry Farms. A large flat area. Test #1 at west end of meadow and adjacent to Vt. Route 107. 0-1' overburden, 1'-10.5' coarse gravel, some stones over 6", 10.5' water on bedrock. Acceptable for Item 201-A, sub-base of gravel.
	2	1963	1-3.5	0-1	No	-	-	41.2	6.0	1.5	3½	22.0%	Gravel	Test #2 adjacent to Vt. Route 107 and 340' east of Test #1. 0-1' overburden, 1'-3.5' gravel. Could not go deeper due to underground telephone cable. Acceptable for Item 201-A, sub-base of gravel.
	4A	1963	2-7	0-2	No	-	-	32.8	5.0	2.5	1	14.0%	Gravel	Test #4 taken 160' north-east of Test #3 and adjacent to Waterman Road. 0-2' overburden, 2'-7' gravel, 7'-11' fine sand, fine sand bottom. Test #4A acceptable for Item 201-A, sub-base of gravel.
	4B	1963	7-11	-	No	100	90.4	88.0	30.0 *26.4	4.8 *4.22	1	-	Gran. Bor.	Test #4B fails for Item 202 Mod., sub-base of sand.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 17

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
													(Sand)	Has 26.4% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
	5A	1963	1-6	0-1	No	100	100	100	84.0	35.0	1	-	-	Test #5 adjacent to water-man Road and 420' north-west of Test #4. 0-1' over-burden, 1'-6' fine silty sand, 6'-11.5' gravel, ledge bottom. Test #5A fails for Item 102-A, granular borrow. Has 35% passing #270 mesh; maximum allowed 10%.
	5B	1963	6-11.5	-	No	-	-	40.0	26.0	8.0	1	19.6%	Gran. Bor. (Grav.)	Test #5B has some stones over 6" not included in samples. Fails for Item 201-A, sub-base of gravel. Has 26% passing #100 mesh; maximum allowed 15%. Has 8% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
14	1	1963	0-11	-	Yes	100	100	100	94.0	27.0	1	-	-	Owner: Mrs. Florence Bigelow A very extensive pit area. Contains scattered piles of overburden. Test #1 in floor in southeast corner. Fine silt. Possible silt bottom. Fails for Item 102-A, granular borrow.
	2	1963	1-12	0-1	Yes	-	-	44.8	3.0	1.25	3	23.2%	Gravel	Test #2 in face adjacent to Test #1 sandy gravel.

ROYALTON GRANULAR DATA SHEET NO. 18

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Acceptable for Item 201-A, sub-base of gravel.
	3	1963	0-3	-	Yes	100	100	98.0	36.0 *35.2	5.0 *4.9	1	-	Gran. Bor. (Sand)	Test #3 in floor at south side of pit. Medium to fine sand. Fails for Item 202 Mod., sub-base of sand. Has 35.2% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
	4	1963	0-11.5	-	Yes	100	100	100	65.0	6.25	1	-	Gran. Bor. (Sand)	Test #4 in northwest corner of pit. Fails for Item 202 Mod., sub-base of sand. Has 65% passing #100 mesh; maximum allowed 18%. Has 6.25% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
	5	1963	0-11	-	Yes	100	100	91.8	92.0 *84.5	55.0 *50.6	1	-	-	Test #5 under power line at north end of pit. In floor of pit. Silty sand. Fails for Item 102-A, granular borrow. Has 50.6% passing #270 mesh; maximum allowed 10%.
	6	1963	0-11	-	Yes	100	100	100	91.0	53.5	1	-	-	Test #6 in floor of small pit south of main pit. Silty sand. Fails for Item 102-A, granular borrow. Has 53.5% passing #270 mesh; maximum allowed 10%.
	8	1963	0-11	-	Yes	100	100	97.1	88.0 *85.5	32.0 *31.1	1	-	-	Test #8 in section south of section containing Test#7.

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 19

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes WHD Spec.	Remarks
														Fine sand and silt. Fails for Item 102-A, granular borrow. Has 32% passing #270 mesh; maximum allowed 10%.
15	1	1963	0-2	-	No	-	-	38.0	6.0	1.0	1	16,0%	Gravel	Owner: Donald Bigelow. A large river bar in White River. Test #1 taken 200' right of centerline of proposed project I 89 at station 1170+25. Coarse gravel. Acceptable for Item 201-A, sub-base of gravel.
16	1A	1963	1.5-5	0-1.5	No	100	95.6	87.0	5.0 *4.35	1.0 *0.87	2	-	Sand	Owner: Donald Bigelow. A large terrace overlooking bend in river. Test #1 170' right of median of proposed project I 89 at station 1157+0. 0-1.5' overburden, 1.5'-5' pebbly sand to fine gravel. East end of hole (not sampled) looked stonier than west end, 5'-10.5' fine sand with bands of silt, fine sand with bands of silt in bottom. Test #1A acceptable for Item 202 Mod., sub-base of sand.
	1B	1963	5-10.5	-	No	100	100	100	94.0	42.0	1	-	-	Test #1B fails for Item 102-A, granular borrow. Has 42% passing #270 mesh;

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 20

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Existing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color-AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														maximum allowed 10%.
	1C	1963	1.5-10.5	0-1.5	No	100	100	95.3	39.0 *37.1	26.0 *24.8	1	-	-	Test #1C composite. Fails for Item 102-A, granular borrow. Has 26% passing #270 mesh; maximum allowed 10%.
	2	1963	1-9.5	0-1	No	100	93.9	63.0	5.0	1.5-	1½	-	Gran. Bor. (Grav.)	Test #2 taken 5' left of median of proposed project I 89 at station 1156+75. 0-1' overburden, 1'-9.5' sandy gravel, sandy gravel bottom. Fails for Item 201-A, sub-base of gravel. Has 63% passing #4 mesh; maximum allowed 60%. Insufficient proper-sized stone in sample for wear test. Acceptable for Item 102-A, granular borrow.
	3	1963	1.5-10	0-1.5	No	-	-	58.9	3.0	1.75	2	-	Gran. Bor. (Grav.)	Test #3 taken 535' of median of project I 89 at station 1156+0, 20' in from top of bank. 0-1.5' overburden, 1.5'-10' sandy gravel. Insufficient proper-sized stones in sample for wear test. Grading acceptable for Item 201-A, sub-base of gravel. Acceptable for Item 102-A, granular borrow.
17	1	1963	1-5	0-1	No	100	97.7	85.9	3.0 *2.56	1.0 *0.86	2	-	Sand	Owner: Albert Lyman. A large rolling meadow of granular material. Test

* Percentage of Total Sample.

ROYALTON GRANULAR DATA SHEET NO. 21

Ident. No.	Field Test No.	Year Field Tested	Depth or Sample (FT)	Over-burden (FT)	Existing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes V.D Spec.	Remarks
														#1 taken 140' west of fence. 0-1' overburden, 1'-5' pebbly sand, 5'-11' silt and clay, silt and clay bottom. Acceptable for Item 202 Mod., sub-base of sand.
18	1	1963	0-9.5	-	No	100	100	98.5	59.0 *58.0*	10.0 9.85	1	-	Gran. Bor. (Sand)	Owner: George Gates. A pit on 4 levels. Test #1 behind upper level of pit along power line. Partially stripped. 0-3.5' pebbly sand, 3.5'-5' medium sand, 5'-9.5' fine sand. Fails for Item 202 Mod., sub-base of sand. Has 58% passing #100 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
	2	1963	0-10	-	Yes	100	100	100	94.0	27.5	1	-	-	Test #2 in floor of upper pit. Fine sand. Fails for Item 102-A, granular borrow. Has 27.5% passing #270 mesh; maximum allowed 10%.
	3	1963	2-10.5	0-2	Yes	100	100	83.0	21.0 *19.5*	5.0 *4.65	1	-	Gran. Bor. (Sand)	Test #3 in floor of third level. 0-2' fill, 2'-6' dark gray pebbly sand, 6'-7' fine tan sand with cross-beds, 7'-10.5' dark gray pebbly sand. Fails for Item 202 Mod., sub-base of sand. Has 19.5% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 22

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	4	1963	0-7.5	-	Yes	-	-	56.8	8.0	4.0	1	-	Gran. Bor. (Grav.)	Test #4 in floor of 2nd level, 0-7.5' coarse gravel, some stones over 6". 7.5'-10' fine sand, fine sand bottom. Fails for Item 201-A, sub-base of gravel. Has 4% passing #270 mesh; maximum allowed 3%. Insufficient proper-sized stones in sample for wear test. Acceptable for Item 102-A, granular borrow.
	5	1963	0-10	-	Yes	-	-	24.7	8.0	4.0	1	25.4%	Gran. Bor. (Grav.)	Test #5 in floor of lowest level. Coarse gravel, some stones over 6". Fails for Item 201-A, sub-base of gravel. Has wear of 25.4%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	6A	1963	3-14	-	Yes	100	100	100	93.0	36.0	1	-	-	Test #6 in north face of third level. Stripped. 0-3' fine sand and silt, 3'-14' fine sand and silt, 14'-26' pebbly sand, 26'-35.5' fine to medium sand with concretions, 35.5'-43.5' sandy gravel. Partially sampled due to slump. Test #6A fails for Item 102-A, granular borrow. Has 36% passing #270 mesh; maximum allowed 10%.

ROYALTON GRANULAR DATA SHEET NO. 23

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	6B	1963	14-26	-	Yes	98.1	94.2	89.9	4.0 *3.59	1.0 *0.9	1	-	Sand	Test #6B acceptable for Item 202 Mod., sub-base of sand.
	6C	1963	26-35.5	-	Yes	100	100	95.7	37.0 *35.4	13.0 *12.45	1	-	-	Test #6C fails for Item 102-A, granular borrow. Has 13% passing #270 mesh; maximum allowed 10%.
	6D	1963	35.5-43.5	-	Yes	-	-	25.8	4.0	1.25	1	25.0%	Gravel	Test #6D acceptable for Item 201-A, sub-base of gravel.
	7A	1963	10-30	0-2	Yes	-	-	43.6	16.0	6.0	1	34.0%	Gran. Bor. (Grav.)	Test #7 in face of lower pit. 0-2' overburden, 2'-10' fine sand to silt, 10'-30' gravel, 30'-60' coarse gravel, 60'-75' coarse gravel, sandy bottom. Test #7A fails for Item 201-A, sub-base of gravel. Has 16% passing #100 mesh; maximum allowed 15%. Has 6% passing #270 mesh; maximum allowed 5%. Has wear of 34%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	7B	1963	30-50	-	Yes	-	-	34.4	11.0	4.0	1	26.4%	Gran. Bor. (Grav.)	Test #7B fails for Item 201-A, sub-base of gravel. Has wear of 26.4%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	7C	1963	60-75	-	Yes	-	-	33.2	11.0	5.0	1½	23.0%	Gravel	Test #7C acceptable for Item 201-A, sub-base of gravel.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 24

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	8	1958	-	-	Yes	-	-	18.1	10.0	4.0	1	19.6%	Gravel	Test #8 taken by D.P. Stewart. Location unknown. Acceptable for Item 201-A, sub-base of gravel.
19	1A	1963	1-11	0-1	Yes	-	-	42.3	17.0	6.75	1	30.6%	Gran. Bor. (Grav.)	Owner: Philip Kratky. A small pit on north side of high knoll. Test #1 gravel. Test #1A fails for Item 201-A, sub-base of gravel. Has 17% passing #100 mesh; maximum allowed 15%. Has 6.75% passing #270 mesh; maximum allowed 5%. Has 30.6% wear; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	1B	1963	11-22	-	Yes	-	-	47.7	13.0	3.0	1	26.4%	Gran. Bor. (Grav.)	Test #1B fails for Item 201-A, sub-base of gravel. Has wear of 26.4%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
20	1A	1963	0.5-9.5	0-0.5	No	100	100	100	79.0	21.0	1	-	-	Owner: Philip Kratky. A small open meadow on low terrace parallel to river. Test #1 taken 380' south of brook, 45' west of fence which parallels White River. 0-0.5' overburden, 0.5'-9.5' fine sand, 9.5'-11.5' gravel, gravel bottom. Test #1A fails for Item 102-A, granular borrow.

ROYALTON GRANULAR DATA SHEET NO. 25

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	1B	1963	9.5-11.5	-	No	-	-	54.4	43.0	15.3	1	-	-	Has 21% passing #270 mesh; maximum allowed 10%. Test #1B fails for Item 102-A, granular borrow. Has 15.3% passing #270 mesh; maximum allowed 10%.
	2	1963	0.5-11.5	0-0.5	No	100	100	100	73.0	28.0	2	-	-	Test #2 on small knoll 455' south of Test #1, 15' east of base of high ridge. Fails for Item 102-A, granular borrow. Has 28% passing #270 mesh; maximum allowed 10%.
21	1	1963	1-8	0-1	No	100	98.3	87.6	12.0 *10.5	4.0 *3.5	2½	-	Sand	Owner: Albert Gagne. A large granular terrace containing two small pits. Area contains large truck garden. Test #1 taken 85' east of town road, measuring from point 115' north of house. 0-1' overburden, 1'-3' silty sand, 3'-5.5' sandy fine gravel with flat stones, 5.5'-8' medium to fine sand. Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	0-7	-	Yes	96.7	94.5	91.5	8.0 *7.3	3.25 *2.35	1½	-	Sand	Test #2 in floor of small pit approximately 350' east of town road. Trees in floor 15' in height indicating age of pit as 20 years. Pit now used

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 26

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														as dump. Very narrow east and west but 240' north and south. Fine to medium sand with boulders. Acceptable for Item 202 Mod., sub-base of sand.
	3	1963	1.5-7.5	0-1.5	Yes	-	-	52.6	11.0	4.5	2	40.6%	Gran. Bor. (Grav.)	Test #3 in face at south end of small pit. Fine gravel with sand bottom. Fails for Item 201-A, sub-base of gravel. Has 4.5% passing #270 mesh; maximum allowed 3%. Has wear of 40.6%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	4	1963	1-7	0-1	No	-	-	26.7	20.0	7.0	1	30.6%	Gran. Bor. (Grav.)	Test #4 taken 12' east of large pit 145' north of south end. Coarse gravel with many stones over 6". Fails for Item 201-A, sub-base of gravel. Has 20% passing #100 mesh; maximum allowed 15%. Has 7% passing #270 mesh; maximum allowed 5%. Has wear of 30.6%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
22	1	1963	0-2	-	No	-	-	43.0	1.0	0.5	1	12.4%	Gravel	Owner: John Kilburn, A large river bar. Test #1 taken 400' south of north end of bar, 20' from river

ROYALTON GRANULAR DATA SHEET NO. 27

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	0-2	-	No	-	-	29.4	3.0	1.0	1	14.6%	Gravel	edge. Acceptable for Item 201-A, sub-base of gravel. Test #2 taken 250' south of Test #1, 20' from river edge, 140' north of south end of bar. Acceptable for Item 201-A, sub-base of gravel.
23	1A	1963	0.5-4	0-0.5	No	100	100	100	36.0	26.0	3	-	-	Owner: Frank Farrell. A granular terrace. Test #1 35' right of proposed project I 89 at station 1051+50, 75' north of shack. 0-0.5' overburden, 0.5'-4' fine sand and silt, 4'-10.5' sandy gravel. Test #1A fails for Item 102-A, granular borrow. Has 26% passing #270 mesh; maximum allowed 10%.
	1B	1963	4-10.5	-	No	-	-	49.4	6.0	1.5	1½	23.2%	Gravel	Test #1B acceptable for Item 201-A, sub-base of gravel.
24	1	1963	0-2	-	No	-	-	23.2	14.0	2.75	2	10.6%	Gravel	**Owner: Roland Daniels.** An area of river gravel. Test #1 in flat adjacent to sawmill, 10' west of river bank. Material similar to that in river bar. Acceptable for Item 201-A, sub-base of gravel.

ROYALTON GRANULAR DATA SHEET NO. 28

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion. AASHO T-4-35	Passes VHD Spec.	Remarks
25	1	1963	1-11.5	0-1	No	-	-	32.5	12.0	3.0	2	15.4%	Gravel	Owner: Dale Camp. A level open meadow on large terrace. Permission granted to dig in barnyard only. Test #1 adjacent to barn and 115' west of fence. 0-1' overburden, 1'-9' fine gravel, 9'-11.5' sand. Acceptable for Item 201-A, sub-base of gravel.
26	1A	1963	0.5-3	0-0.5	Yes	-	-	27.2	25.0	8.25	1½	21.8%	Gran. Bor. (Grav.)	Owner: Leon Bushway. A small pit. Test #1 in floor of pit. 0-0.5' overburden, 0.5'-3' gravel, 3'-5' medium sand, 5'-8' fine sand and silt ledge bottom. Test #1A fails for Item 201-A, sub-base of gravel. Has 25% passing #100 mesh; maximum allowed 15%. Has 8.25% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
	1B	1963	3-8	-	Yes	100	100	100	41.0	21.0	1	-	-	Test #1B fails for Item 102-A, granular borrow. Has 21% passing #270 mesh; maximum allowed 10%.
	2	1963	0.5-4	0-0.5	No	100	100	100	81.0	23.75	1	-	-	Test #2 taken 10' east of pit, 150' right of proposed project I 89 at station 1021+95. 0-0.5' overburden, 0.5'-4' fine silty sand, ledge bottom.

ROYALTON GRANULAR DATA SHEET NO. 29

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Fails for Item 102-A, granular borrow. Has 23.75% passing #270 mesh; maximum allowed 10%.
	3	1963	1.5-10.5	0-1.5	No	-	-	44.7	6.0	1.75	1	22.0%	Gravel	Test #3 taken 160' north of Test #2, 80' south of fence adjacent to town road. Acceptable for Item 201-A, sub-base of gravel.
	4A	1963	0.5-5	0-0.5	No	100	100	100	90.0	20.0	2½	-	-	Test #4 taken 200' east of Test #3. 0-0.5' overburden, 0.5'-5' fine sand, 5'-8' gravel, ledge bottom. Test #4A fails for Item 102-A, granular borrow. Has 20% passing #270 mesh; maximum allowed 10%.
	4B	1963	5-8	-	No	-	-	22.4	28.0	9.0	1	27.3%	Gran. Bor. (Grav.)	Test #4B fails for Item 201-A, sub-base of gravel. Has 28% passing #100 mesh; maximum allowed 15%. Has 9% passing #270 mesh; maximum allowed 5%. Has 27.9% wear; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	5A	1963	2-6.5	0-1	No	-	-	40.5	5.0	1.5	3½	18.4%	Gravel	Test #5 taken 120' south of Test #4, 200' right of proposed project I 39 at station 1019+50. 0-1' overburden, 1'-2' yellowish brown fine sand and silt, 2'-6.5' gravel, 6.5'-10.5' fine sand and silt, ledge bottom. Test #5A acceptable for [illegible]

ROYALTON GRANULAR DATA SHEET NO. 30

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														sub-base of gravel.
	5B	1963	6.5-10.5	-	No	100	100	93.0	42.0 *39.4	7.5 *7.0	2	-	Gran. Bor. (Sand)	Test #5B fails for Item 202 Mod., sub-base of sand. Has 39.4% passing #100 mesh; maximum allowed 18%. Has 7% passing #270 mesh; maximum allowed 5%. Acceptable for Item 102-A, granular borrow.
27	1	1963	0.5-9	0-0.5	No	100	100	78.3	2.0 *1.53	0.75 *0.59	3½	-	Sand	Owner: Howard Eddy. A granular terrace. Test #1 60' right of proposed project I 89 at station 1011+50 0-0.5' overburden, 0.5'-9' pebbly sand, Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	1-9-	0-1	No	100	100	94.3	2.0 *1.88	1.0 *0.94	2	-	Sand	Test #2 taken 30' left of proposed project I 89 at station 1012+50. Pebbly sand. Acceptable for Item 202 Mod., sub-base of sand.
28	1	1963	1-7	0-1	No	-	-	51.3	5.0	1.3	2	25.3%	Gran. Bor. (Grav.)	Owner: Dale Camp. A large level terrace. Test #1 taken 80' north of barn, 115' east of fence. Sandy gravel. Fails for Item 201-A, sub-base of gravel. Has wear of 25.3%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 31

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
29	1	1963	0-2	-	No	-	-	37.3	2.0	0.75	1	10.3%	Gravel	Owner: Dale Camp. River bar opposite brick house. Test #1 in upstream end of bar. Water at 3'. Acceptable for Item 201A, sub-base of gravel.
30	1	1963	0-4	-	No	-	-	28.2	5.0	2.5	1	9.6%	Gravel	Owner: Mrs. Florence Silvester. A small river bar. 200' by 90'. Test #1 in center of bar. Water at 4'. **Acceptable for Item** 201-A, sub-base of gravel.
31	1	1963	0.5-9.5	0-0.5	No	100	100	91.0	3.0 *2.73	1.0 *0.91	1½	-	Sand	Owner: E.R. Peterson. A large kame terrace with open meadow on top. Test #1 taken 60' north of fence, 135' southeast of corner fence post. Uniform sand. **Acceptable for Item 202** Mod., sub-base of sand.
	2	1963	0.5-10	0-0.5	No	100	100	100	96.0	53.0	1	-	-	Test #2 taken 400' north of test #1, 210' northeast of corner fence post. 0-0.5' overburden, 0.5'-7.5' fine sand, 7.5'-9.0' fine, wet sand, silt, 9.0'-10.0' medium fine sand, sand bottom. Fails for Item 102-A, granular borrow. Has 53% passing #270 mesh; maximum allowed 10%.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 32

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
32	1	1963	76-90	-	Yes	100	100	98.9	10.0 *9.89	1.0 *.99	1	-	Sand	Owner: George Goodrich. A large erosion gulley in large sand area. Test #1 in face of old overgrown pit. 85' across face, pit 40' from front to back. Face 90' high. Fine to medium sand. Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	1-10	0-1	Yes	100	100	99.5	39.0 *38.9	4.0 *3.9	1½	-	Gran. Bor. (Sand)	Test #2 in face of small new pit, 73' from farm lane. 40' across face. Fine sand with silt. Fails for Item 202 Mod., sub-base of sand. Has 38.9% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
	3	1963	1.5-10	0-1.5	Yes	100	100	97.3	9.0 *8.75	1.0 *0.97	1	-	Sand	Test #3 in floor of small pit. Face of pit 81.5' east of corner of old slaughter house. 55' across face. Test #3 19' from face. Medium sand. Acceptable for Item 202 Mod., sub-base of sand.
33	1A	1963	1.5-9.5	0-1.5	Yes	100	100	100	7.0	1.0	1	-	Sand -	Owner: Eaton, Eaton & Co. A very high granular terrace containing a pit with high face. Test #1 in north face of small pit on top of terrace 117' back from edge of Terrace. Test #1A

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 33

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														fine to medium sand. Acceptable for Item 202 Mod., sub-base of sand.
	1B	1963	9.5-20.5	-	Yes	-	-	36.9	9.0	2.25	1½	27.6%	Gran. Bor. (Grav.)	Test #1B fails for Item 201-A, sub-base of gravel. Has wear of 27.6%; maximum allowed 25%. Acceptable for Item 102-A, granular borrow.
	2	1963	1-10	0-1	No	100	100	99.3	9.0 *3.9	2.0 *1.98	1	-	Sand	Test #2 taken 190' along road from Test #1. 0-1' overburden, 1'-4.5' brown pebbly sand, 4.5'-10' medium sand. Acceptable for Item 202 Mod., sub-base of sand.
	3A	1963	0.5-3.5	0-0.5	No	100	100	99.2	86.0 *85.2	39.5 *39.2	3	-	-	Test #3 north of lumberyard north of Test #2. 0-0.5' overburden, 0.5'-3.5' fine sand and silt, 3.5'-10.5' pebbly sand. Test #3A fails for Item 102-A, granular borrow. Has 39.5% passing #270 mesh; maximum allowed 10%.
	3B	1963	3.5-10.5	-	No	94.2	88.5	72.0	4.0 *2.9	1.0 *0.82	1	-	Gran. Bor. (Sand)	Test #3B fails for Item 202 Mod., sub-base of sand. Has 94.2% passing 1½" mesh; minimum allowed 95%. Acceptable for Item 102-A, granular borrow.
34	1	1963	1-11	0-1	No	100	100	95.0	90.0 *85.5	73.0 *69.5	1	-	-	Owner: R.A. Slator. A large open meadow of rolling knolls. Test #1 120' right of proposed relocation of

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 34

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														Vt. Route 110 at station 63+50. 0-1' overburden, 1'-2' fine sand, 2'-5' pebbly sand, 5'-11' fine sand, fine sand bottom. Fails for Item 102-A, granular borrow. Has 73% passing #270 mesh; maximum allowed 10%.
	2	1963	1-9	0-1	No	100	100	100	95.0	52.5	2	-	-	Test #2 on knoll east of Test #1 and 30' south of corner fence post. Silt. Fails for Item 102-A, granular borrow. Has 52.5% passing #270 mesh; maximum allowed 10%.
35	1	1963	2-7	0-2	No	100	100	96.7	15.0 *14.5	2.5 *2.42	2	-	Sand	Owner: Richard Butterfield. A small meadow on small terrace. Test #1 adjacent to north side of shed. 0-2' overburden, 2'-4' medium fine sand, 4'-7' medium sand, 7'-10.5' silt, silt bottom. Acceptable for Item 202 Mod., sub-base of sand.
36	1	1963	1-6	0-1	Yes	100	100	98.0	4.0 *3.94	0.75 *.73	2	-	Sand	Owner: Napoleon Vezino. A small overgrown pit. Face 12' high. Almost depleted. Adjoining knoll may contain sand. Pit 140' north-south, 50' east-west. Test #1 in floor of

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 35

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														pit. Acceptable for Item 202 Mod., sub-base of sand.
37	1	1963	0-8.5	-	No	100	100	100	15.0	1.0	2	-	Sand	Owner: George Dodge. A bare sandy knoll with bed rock exposed nearby. Test #1 acceptable for Item 202 Mod., sub-base of sand.
38	1	1963	0.5-10.5	0-0.5	No	100	100	99.2	44.0 *43.6	4.25 *4.21	1	-	Gran. Bor. (Sand)	Owner: George Dodge. A steep terrace of knoll. Test #1 on top of knoll near south end. 0-0.5' overburden, 0.5'-4' fine sand, 4'-6.5' medium sand, 6.5'-10.5' fine sand. Fails for Item 202 Mod., sub-base of sand. Has 43.6% passing #100 mesh; maximum allowed 18%. Acceptable for Item 102-A, granular borrow.
39	1	1963	1-5.5	0-1	No	100	100	100	3.0	1.25	3	-	Sand	Owner: Town of Royalton. A granular wooded area adjacent to reservoir. Test #1 southwest of reservoir and 50' south of power pole #96. 0-1' overburden, 1'-5.5' sand, ledge bottom. Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	1-8	0-1	No	100	100	100	98.0	97.4	1½	-	-	Test #2 east of reservoir. 150' north of power line along road, 52' east of

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 36

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														springhouse. 0-1' over-burden, 1'-2' brown fine sand, 2'-8' silt. Ledge bottom. Sample processed by Soils Lab. 100% passing #4 mesh 100% " #10 " 99.6% " #40 " 98.0% " #100 " 97.6% " #200 " 97.4% " #270 " AASHO Soil Type A-4. Fails for Item 102-A, granular borrow. Has 97.4% passing #270 mesh; maximum allowed 10%.
40	1	1963	1-10.5	0-1	No	100	100	100	99.0	89.0	1½	-	-	Owner: Arthur Van Dousen. A high small level terrace. Test #1 on top of extremity of terrace. Silt. Fails for Item 102-A, granular borrow. Has 89% passing #270 mesh; maximum allowed 10%.
41	1	1963	1-11	0-1	No	100	100	93.8	53.0	11.0	1	-	-	Owner: Kenneth Prior. A low level terrace. Test #1 taken 140' north of fence. 0-1' overburden, 1'-5' pebbly sand, 5'-9' fine sand, 9'-11' wet sandy silt. Fails for Item 102-A, granular borrow. Has 11% passing #270 mesh;

ROYALTON GRANULAR DATA SHEET NO. 37

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	1-11	0-1	No	100	98.9	85.3	4.0 *3.4	1.25 *1.06	1	-	Sand	maximum allowed 10%. Test #2 taken 310' west of Test #1, 125' north of fence. 0-1' overburden, 1'-11' interbedded bands of pebbly sand, fine sand, silt. Acceptable for Item 202 Mod., sub-base of sand.
	3	1963	1-3.5	0-1	No	93.2	88.3	76.9	36.0 *27.6	13.5 *10.4	1	-	-	Test #3 taken 190' north of Test #1, 40' south of railroad right-of-way fence. 0-1' overburden, 1'-3.5' dirty pebbly sand, ledge and water at 3.5'. Fails for Item 102-A, granular borrow. Has 13.5% passing #270 mesh; maximum allowed 10%.
42	1	1963	0-2	-	No	95.3	89.5	64.3	3.0 *1.93	1.0 *0.64	2	11.8%	Gran. Bor. (Grav.)	Owner: O.W. Harlow. A large river bar. Test #1 taken 30' from river's edge. Sandy gravel. Fails for Item 201-A, sub-base of gravel. Has 64.3% passing #4 mesh; maximum allowed 60%. Acceptable for Item 102-A, granular borrow.
43	1	1963	0-10.5	-	Yes	100	100	94.5	2.0 *1.89	1.5 *1.42	2	-	Sand	Owner: James W. Avery. A small pit. Mostly sand. Dimensions of pit 80' north and south, 200' east and west. Test #1 in face.

* Percentage of Total Sample

ROYALTON GRANULAR DATA SHEET NO. 38

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	0-4	-	Yes	100	96.4	78.9	5.0 *3.94	1.5 *1.18	1½	-	Sand	0-11.5' pebbly sand, 11.5'-12' clay, clay bottom. Acceptable for Item 202 Mod., sub-base of sand. Test #2 in floor. 0-4' sand, 4'-8.5' clay, ledge bottom. Acceptable for Item 202 Mod., sub-base of sand.
44	1	1963	0-4.5	-	No	-	-	40.6	4.0	1.5	1	13.4%	Gravel	Owner: Merl Mudgett. Test #1 in river bar. Sandy gravel, water at 3.5'. Acceptable for Item 201-A, sub-base of gravel.
	2	1963	0-3	-	No	-	-	31.3	5.0	2.25	1	13.0%	Gravel	Test #2 30' from river's edge. Sandy gravel. Water at 3'. Acceptable for Item 201-A, sub-base of gravel.
45	1	1963	0-2	-	No	-	-	20.5	2.0	0.75	1	11.0%	Gravel	Owner: James W. Avery. A large river bar 60' by 315'. Test #1 taken 50' from upstream end, Water at 6'. Acceptable for Item 201-A, sub-base of gravel.
46	1	1963	1-11	0-1	No	100	100	100	93.0	43.0	1	-	-	Owner: James W. Avery. A series of sharp knolls. Test #1 at level of Vt. Route 14 and adjacent to log crib. Fails for Item 102-A, granular borrow.

* Percentage of Total Sample

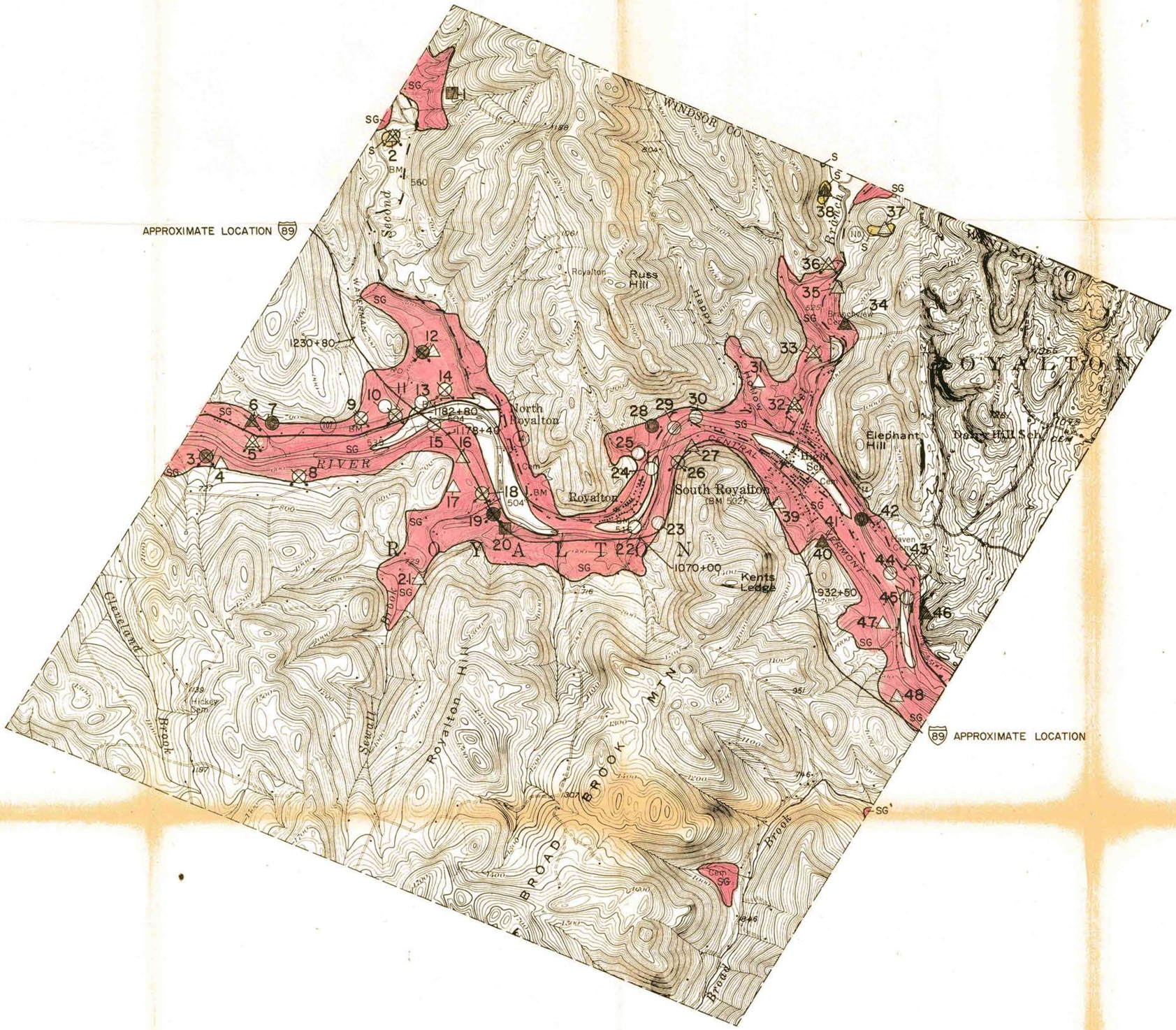
ROYALTON GRANULAR DATA SHEET NO. 39

Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (FT)	Over-burden (FT)	Exist-ing Pit	Sieve Analysis % Passing 1½"	5/8"	#4	#100	#270	Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
	2	1963	0.5-10.5	0-0.5	No	100	100	97.2	59.0	39.0	1	-	-	Has 43% passing #270 mesh; maximum allowed 10%. Test #2 in saddle at top of knoll. 0-0.5' overburden, 0.5'-2' silt, 2'-2.5' gravel, 2.5'-10.5' silt, silt bottom. Fails for Item 102-A, granular borrow. Has 39% passing #270 mesh; maximum allowed 10%.
47	1	1963	0.5-5	0-0.5	No	100	96.7	88.1	2.0 *1.76	0.75 *0.66	2	-	Sand	Owner: The Dutton Sisters. Test #1 across farm road from barn. 0-0.5' overburden, 0.5'-1.5' medium sand, 1.5'-2' sandy gravel, 2'-5' fine to medium sand, 5'-5.5' silt and clay. Acceptable for Item 202 Mod., sub-base of sand.
	2	1963	0.5-5	0-0.5	No	100	98.6	89.6	48.0 *42.0	21.25 *20.0	1	-	-	Test #2 in slope, of knoll beyond barn. Fine to pebbly sand, ledge bottom. Fails for Item 102-A, granular borrow. Has 21.25% passing #270 mesh; maximum allowed 10%.
48	1	1963	0.5-5	0-0.5	No	100	100	99.1	8.9 *8.8	3.5 *3.47	3½	-	Sand	Owner: Charles Leighton. Test #1 taken 5' right of centerline of project I 89 at station 369+15. Medium sand. Acceptable for Item 202 Mod., sub-base of sand.

* Percentage of Total Sample

ROYALTON ROCK DATA SHEET NO. 1

Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Distance Between Samples (FT)	Remarks
1	1	1963	Schist & Quartzite	No	Chip	17.1	-	Owner: Howard Eddy. This is a small outcrop of ledge rock (200' X 225') which is apparently almost entirely on the proposed R.O.W. of I 89. Rock type: Micaceous Quartzite interbedded and intergradational with quartz mica schist. Rock contains garnets in both quartzite and schist. There was no reaction to dilute HC_0. Surface of outcrop was weathered but a great deal of effort was made to obtain fresh rock for the sample. Outcrop located right of stations: 1014+25 to 1016+50 of the survey centerline. This is not a recommended source for sub-base of crushed rock.



LEGEND

- ○ GRAVEL, ACCEPTABLE FOR ITEM 201-A (sub-base of gravel)
- ◉ GRAVEL, DEPLETED OR NOT ACCEPTABLE FOR ITEM 201-A
- △ SAND, ACCEPTABLE FOR ITEM 202 (sub-base of sand) Mod.
- ▲ SAND, DEPLETED OR NOT ACCEPTABLE FOR ITEM 202 Mod.
- □ GRANULAR BORROW, ITEM 102-A
- ■ MATERIAL NOT ACCEPTABLE FOR ITEM 102-A
- ╳ EXISTING PIT
- SG SAND & GRAVEL DEPOSIT
- S SAND DEPOSIT
- 3 IDENTIFICATION NUMBER (refer to data sheets)

ROYALTON

SCALE 1:31,250

1 0.5 0 1 MILE

CONTOUR INTERVAL 20 FEET

1964

GRANULAR MATERIALS MAP

BY

VERMONT DEPARTMENT OF HIGHWAYS

IN COOPERATION WITH

U.S. BUREAU OF PUBLIC ROADS

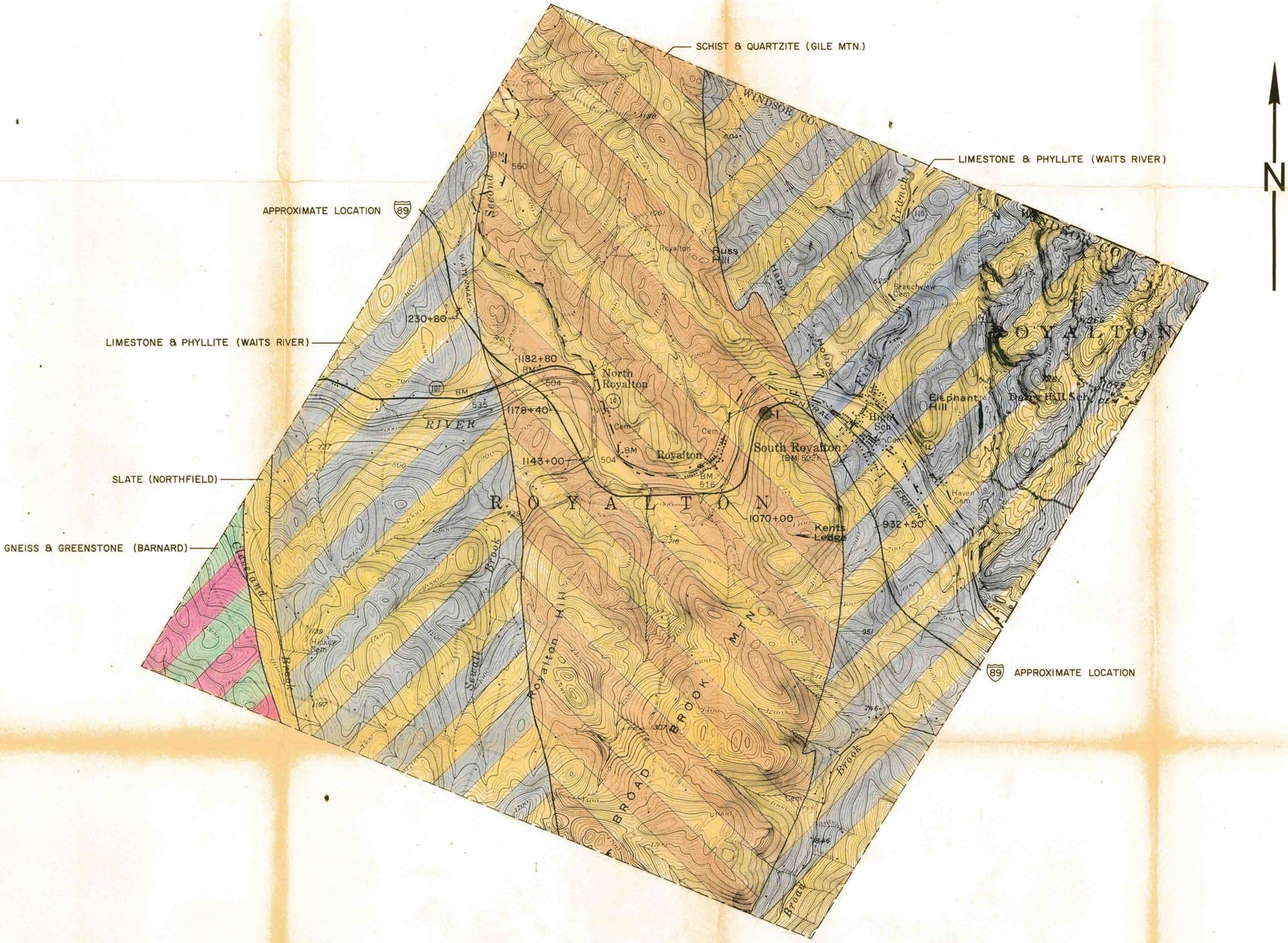
NOTE: BASED ON U.S.G.S. TOPOGRAPHIC MAPS

GRANULAR

WINDSOR COUNTY VT. HWY. DISTRICT NO. 4

REVISIONS

DATE						
BY						



LEGEND

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

ROYALTON

SCALE 1:31,250

1 0.5 0 1 MILE

CONTOUR INTERVAL 20 FEET

1964

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

ROCK

WINDSOR COUNTY VT. HWY. DISTRICT NO. 5

REVISIONS

DATE						
BY						

ROYALTON