SURVEY OF HIGHWAY CONSTRUCTION MATERIALS

IN THE TOWN OF WEST RUTLAND, RUTLAND 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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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 C.G. Doll, Vermont State Geologist, University of Vermont, Burlington, Vermont,
4. 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 overall 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 materials is passed onto 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 with their intended use in mind. 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 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: Vermont Geological Survey Bulletins, Vermont State Geologist Reports, United States Geological Survey Bedrock Maps, and the 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, eskers, 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 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, and 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 or verification. When possible, the locations of the 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 wherever 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.

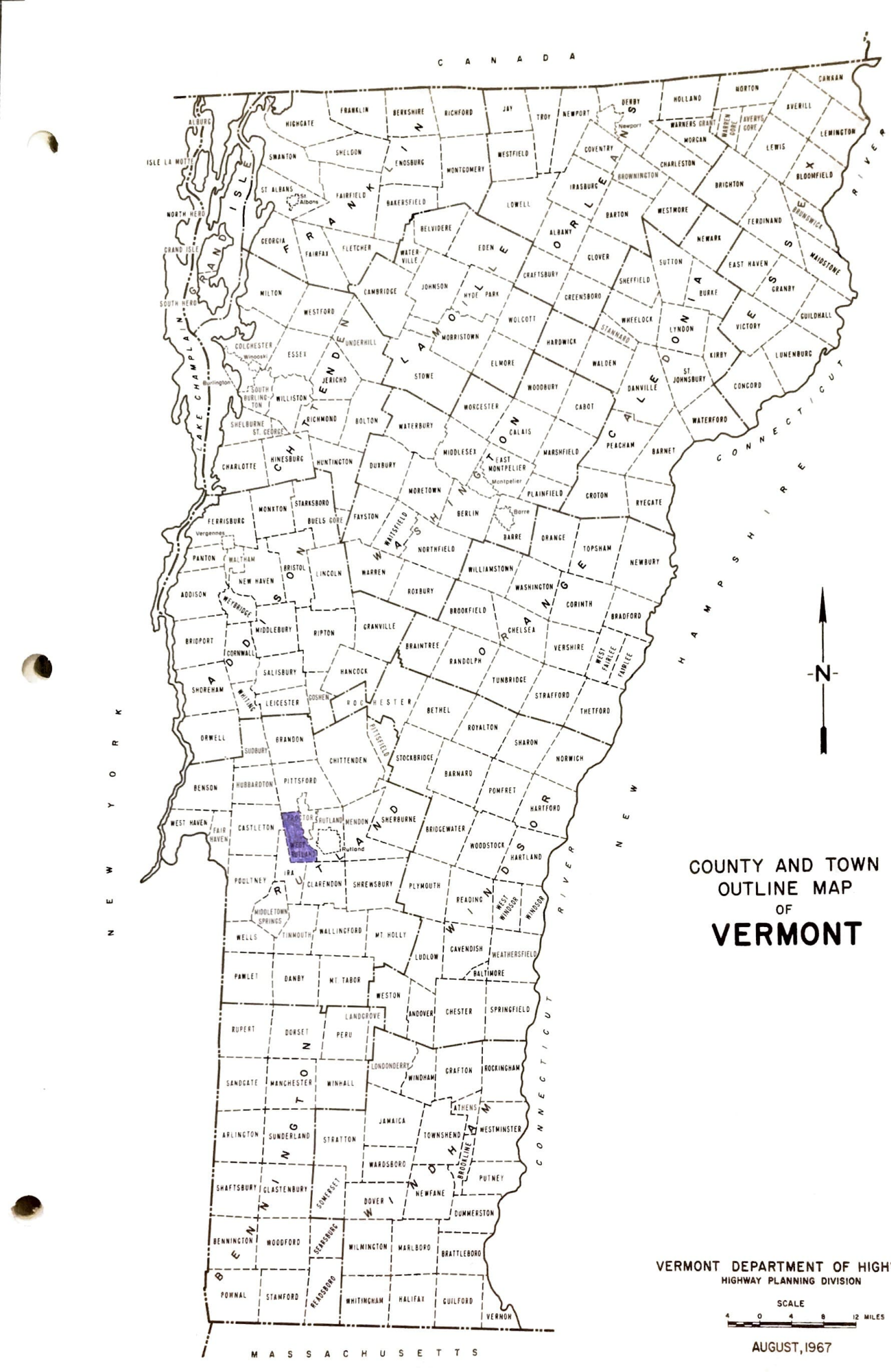
LOCATION

The town of West Rutland is located in Rutland County in the southwest part of the State. It lies west of Rutland City, north of the towns of Clarendon and Ira, east of Castleton, and is bounded on the north by Pittsford and Proctor. (See County and Town Outline Map of Vermont on the following page.)

It is in both the Taconic Range and Limestone Valley physiographic regions, the former characterized by irregular relief with steep-sided ridges and spurs extending in all directions. Rocks of the Taconics consist of slates and phyllites with only minor carbonate and quartzite beds.

A line of swamps following Whipple Hollow is the boundary between the Taconics on the west and the Limestone Valley on the east. This latter region is characterized by low, smoothly rounded or rolling hills and ridges upheld by the Valley Sequence of sedimentary rocks consisting of quartzites and carbonates.

Major drainage occurs south and west via the Castleton River, which enters the Poultney River in Fair Haven; and north and northeast via the Clarendon River into north-flowing Otter Creek in the town of Rutland. Numerous small tributaries drain from the Taconics into the larger rivers.



COUNTY AND TOWN OUTLINE MAP OF VERMONT

VERMONT DEPARTMENT OF HIGHWAYS
HIGHWAY PLANNING DIVISION

SCALE
4 0 4 8 12 MILES

AUGUST, 1967

SURVEY OF ROCK SOURCES

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: 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 obsolescense 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 the 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

The rocks of West Rutland are divided into two stratigraphic and structural sequences. The Taconic Sequence of slates and phyllites with minor occurrences of quartzite and carbonate rocks, upholds the Taconic Mountains on the west side of town; while the Valley Sequence of carbonate rocks and quartzites occurs east of the Taconics and west of the Green Mountains.

The Taconic Sequence in the town of West Rutland has no accessible exposures of rock types suitable for Sub-base of Crushed Rock, Item 204. The Brezee formation of phyllite, marble, and dolomite does outcrop west of State Aid Highway No. 3, but rock types other than phyllites with sufficient extent and thickness for a rock crushing operation were not found.

Numerous marble quarries, several of which are still in operation, have been opened in the Valley Sequence. These are owned by either the Green Mountain or Vermont Marble Companies. The Shedd Quarry, owned by Mrs. Betty Dentart on Town Highway No. 5 on Boardman Hill, is a potential source of Item 204 from well exposed beds of the Intermediate Dolomite member of the Shelburne formation. (See Table II and Plate II for Map Identification No. 3.)

The main commercial marble producing formations in West Rutland are: (1) The Glens Falls-Orwell Limestone, which may also include beds of the Middlebury Limestone or Marble. The Middlebury may be correlated with the Whipple Marble member of the Ira formation (after E-An-Zen). The Whipple Marble is known as the "True Blue" by quarrymen. (2) The Burchards-Beldens limestones underlying the Glens Falls-Orwell. (3) The Sutherland Falls Marble member of the Shelburne formation was quarried to a limited extent on Boardman Hill at the Shedd Quarry.

The Glens Falls-Orwell (Middlebury) and Beldens limestones are exposed in quarries west of the Arterial Highway and west of Clarendon Avenue in West Rutland Village. Two samples out of four taken in this area met abrasion requirements for Item 204, and it is apparently the presence of the soft, sugary-textured Middlebury marble or limestone which contributes to the failures. This area is not recommended as a source of Item 204. (See Plate II and Table II for Map Identification Numbers 1 and 2.)

Craggy, gray-weathering siliceous dolomite beds exposed north and south of the Shedd quarry, would be the best source of Sub-base of Crushed Rock, Item 204 in West Rutland. Plenty of relief and area is available at this location for opening a quarry and setting up a crusher.

Other areas investigated as sources of Item 204 include two quarries in Whipple Hollow where the Middlebury ("True Blue") marble is exposed; a narrow exposure of Clarendon Springs dolomite on the north side of U. S. Route 4 at the West Rutland-Rutland Town Line that is too small an area for a quarry site, and another small exposure of dolomite beside the railroad tracks on the wooded hillside near the above town line. This area is not only small, but has difficult access, and no exposures above the railroad cut could be found.

SURVEY OF SAND AND GRAVEL SOURCES

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 are mapped when known. 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 area 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 then 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 Deposits

The granular deposits in West Rutland occur as sands and gravels of ice-contact origin deposited as kame terraces, kame moraines or crevasse fillings, and material deposited as proglacial outwash or fluvial gravels.

Large areas containing ice-contact material have been opened west of Clarendon Avenue and north of the Castleton River near the Ira Town Line. Map Identification Numbers 3 and 4 are large pits in which coarse, cobbly, and bouldery gravels have been uncovered, but which are now pretty well depleted. Map Identification Number 23 will become inaccessible due to constrctuion of the Arterial Highway. This area has been mapped by Dr. D. P. Stewart as a kame moraine deposit and contains three pits and a granular ridge which may be a crevasse filling. Gravels acceptable for Item 201, Sub-base of Gravel have been sampled at these two localities and material was removed during the 1967 construction season.

Other acceptable gravels of probable ice-contact origin were sampled in Map Identification Numbers 1, 5, 7, 11, 18, 20, and 22. Acceptable gravels which may be either fluvial or proglacial in origin and having many tabular stones were sampled in Map Identification Numbers 10 and 16. Gravels from Map Identification Number 12 barely failed to meet abrasion requirements for Item 201, Sub-base of Gravel.

Gravels at Map Identification Numbers 2, 3, 8, 9, 17, 23, and 24 are closely associated with glacial till and bedrock, and their extensions would be limited by these materials.

Sands of glaciolacustrine origin were mapped within the village limits of West Rutland. However, no tests could be taken. Sands acceptable for

Item 202, Sub-base of Sand that occur within the ice-contact features, are of little consequence. Tests in Map Identification Numbers 11, 14, 18, and 20 encountered acceptable sands in probably small quantities.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF WEST RUTLAND

VERMONT VALLEY SEQUENCE

Hortonville Formation - Black, carbonaceous, and pyritic slate and phyllite, locally sandy; brown-weathered limy beds are common near base.

Glens Falls-Orwell Formation (undifferentiated) - Combined where deformation has made the two lithologies indistinguishable. Thick-bedded sublithographic to lithographic dove-gray weathered limestone cut by white calcite veins (Orwell) is generally succeeded by thin-bedded, dark blue-gray, coarsely granular limestone. Both lithologies are fossiliferous.

Burchards Member (Chipman Formation) - Blue-gray limestone with irregular spots of light buff dolomite that give weathered surface a mottled appearance.

Bascom Formation - Interbedded dolomite, limestone or marble, calcareous sandstone, quartzite, and limestone breccia; irregular dolomitic layers, thin sandy laminae, and slaty or phllitic partings characterize limestone and marble of lower, middle, and upper parts of the Bascom, respectively; south of West Rutland it includes some of Chipman formation.

Shelburne Formation - Chiefly a white marble characterized by raised lines of gray dolomite on the weathered surface. Includes Sutherland Falls marble, Intermediate Dolomite (a massive, gray-weathering rock) and the massive, white Columbian marble.

Clarendon Springs Formation - Fairly uniform, massive smooth-weathered gray dolomite characterized by numerous geodes and knots of white quartz; quartz sandstone and irregular masses of chert are near the top.

Cheshire Formation - Very massive, white to faintly pink or buff vitreous quartzite near the top in west-central and southwestern Vermont; predominantly a less massive-appearing mottled gray, somewhat phyllitic quartzite; dolomitic sandstone and conglomerate near the base of the formation in west-central Vermont apparently grades into the Dalton formation.

TACONIC SEQUENCE

Hatch Hill-West Castleton Formation (undifferentiated) - The Hatch Hill, a relatively thin formation that succeeds the West Castleton, is characterized by rusty and spongy weathered gray calcareous quartzite traversed by numerous white-quartz veins. The West Castle-

ton is a gray to black, siliceous, carbonaceous, and pyritiferous slate containing paper-thin white sandy laminae. Black slates are common to both formations. A blue-gray weathered black limestone is near the base of the West Castleton in a few places.

St. Catherine Formation - Purple, gray-green, and variegated slate and phyllite containing minor interbeds of white to green quartzite; locally albitic. Purple and green chloritoid-bearing slate and phyllite is in northern Taconic Range, but not separated farther south.

Zion Hill Member (St. Catherine Formation) - White weathered green vitreous chloritic quartzite and graywacke spotted with limonite.

Brezee Formation - Dark gray to black phyllite with beds of blue-gray marble, dark gray dolomite, sandy dolomite, and dolomitic sandstone, in upper part; beds of massive quartzite as much as 20 feet thick occur locally and in places contain pebbles of blue quartz. Phyllites are locally highly albitic.

GREEN MOUNTAINS

Mount Holly Complex - Mainly fine- to medium-grained biotitic gneiss, locally muscovitic, and in western areas chloritic; massive and granitoid in some localities, fine-grained or schistose and compositionally layered in others; also abundant amphibolite and hornblende gneiss, and minor beds of mica schist, quartzite, and calc-silicate granulite; includes numerous small bodies of pegmatite and gneissoid granitic rock.

GLOSSARY OF SELECTED GEOLOGIC TERMS

Alluvial - Pertaining to material carried or deposited by running water.

Breccia - A rock consisting of consolidated angular rock fragments larger than sand grains. There may be fault, talus, and volcanic Breccia.

Calcareous - Pertaining to or containing calcium carbonate.

Carbonaceous - Containing carbon.

Carbonate Rocks - Rocks composed of the molecule CO_3 combined with calcium, magnesium, etc. Includes limestones and dolomites.

Crevasse Filling - A ridge of water-sorted material originally deposited in a large glacial crevasse or fissure and left standing after the ice melts.

Delta - A predominantly alluvial deposit built by a stream entering the sea or other body of water. Usually it has the form of the Greek letter delta.

Dolomite - A rock consisting predominantly of the mineral calcium magnesium carbonate (Dolomite), containing carbon dioxide 47.7%, lime 30.4%, and magnesia 21.9%.

Esker - A long, narrow winding ridge of mixed sand and gravel deposited by a stream of meltwater flowing in a tunnel or crevasse in stagnant glacial ice.

Fluvial - Pertaining to streams.

Glaciolacustrine - A term used to denote formation by, or deposition in quiescent waters of glacial lakes.

Ice-Contact - Refers to sediments which have accumulated in contact with stagnant or wasting glacial ice. They assume the varied topographic forms expressed by eskers, kames, and kame terraces.

Kame - A conical hill of generally poorly stratified drift deposited in contact with glacial ice by streams flowing in or on the ice.

Kame Moraine - An accumulation of material deposited directly from the frontal portions of melting glacial ice and partly sorted by water action. Deposits may take the form of coalescent knolls, hummocks, ridges, etc.

Kame Terrace - Stratified sands and gravels deposited by streams between a glacier and an adjacent valley wall.

Limestone - A bedded sedimentary rock consisting chiefly of calcium carbonate. The most important and widely distributed of the carbonate rocks.

Lithographic Stone - Fine grained, compact and homogeneous limestone formerly used for engraving.

Marble - A soft, white rock being the metamorphic form of limestone in which the calcium carbonate (calcite) is recrystallized and the calcite crystals are overgrown and interlocked with additional calcite. Commercially it is a trade name applied to any carbonate rock of good color and texture and hard enough to take a polish.

Metamorphic Rocks - Rocks that owe their distinctive characteristics to the transformation of preexisting rocks through intense heat or pressure or both.

Outwash - Stratified sands and gravels that are stream-built beyond the glacier; deposited by meltwater streams issuing from the face of the glacial ice.

Phyllite - A fine-grained, foliated metamorphic rock intermediate between the mica schists and slates into which it may grade. The foliation is made possible by the development of a large amount of potash mica, sericite, which also gives the rock a distinctive silvery appearance.

Physiographic - Pertaining to the physical divisions of the earth.

Proglacial - Pertaining to the area beyond the outer limit of a glacier. That area which is the location of outwash deposits or glacial lake deposits.

Quartzite - A compact metamorphic rock composed of quartz grains so firmly cemented that fracture takes place across the grains and the cementing material with equal ease.

Slate - A very fine-grained homogeneous metamorphic rock which splits smoothly along parallel cleavage planes and yields roughly similar slabs.

Till - An unsorted, unstratified, and unconsolidated heterogeneous mixture of clay, silt, sand, gravel, and boulders deposited directly by glacial ice.

BIBLIOGRAPHY

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.

Soils Survey (Reconnaissance) of Vermont, W. J. Latimer; 1930; Bureau of Chemistry and Soils, United States Department of Agriculture.

Soil Exploration and Mapping; 1950; Highway Research Board, Bulletin 28.

Survey of Highway Aggregate Materials in West Virginia; December, 1959; Engineering Station, West Virginia University, Morgantown, West Virginia.

Materials Inventory, Bangor Quadrangle, South Half; September, 1959; University of Maine.

Glacial Geology and the Pleistocene Epoch, R. F. Flint; 1947; John Wiley and Sons, Inc.

A Handbook of Rocks, J. F. Kemp; June, 1946; D. Van Nostrand Company, Inc.

Rock and Rock Minerals, L. V. Pirsson; June, 1949; John Wiley and Sons, Inc.

Glossary of Selected Geologic Terms, W. L. Stokes and D. J. Varnes; 1955; Colorado Scientific Proceedings, Vol. 16.

Centennial Geologic Map of Vermont, C. G. Doll; 1961.

Castleton Quadrangle, Vermont-New York, Geological Survey, United States Department of the Interior.

Stratigraphy and Structure of the Castleton Area, Phillip Fowler; Vermont Geological Survey, Bulletin No. 2, 1950.

Stratigraphy and Structure of a Portion of the Castleton Quadrangle, E-An-Zen; Vermont Geological Survey Bulletin No. 25, 1964.

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 a complete list of specifications see Standard Specifications for Highway and Bridge Construction, approved and adopted by the Vermont Department of Highways in 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-inch (9") 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 percent (40%) 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 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 ($3\frac{1}{2}$) 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
$1\frac{1}{2}$"	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 and shall be 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
1½"	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 Item 205-A	4"	100
		No. 4	25-50
	Fine-Graded Item 205-B	1½"	95-100
		No. 4	30-60

"At least thirty percent (30%) by weight of the stone content of the crushed gravel, that is, the material retained on the No. 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 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 ($3\frac{1}{2}$) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
1	1	1966	1-10	0-1	Yes	80.7	56.4	43.2	9	3.0	2	20.6%	Gravel	Owner: Miss Ida Fox. A 75 foot x 40 foot pit and rounded ridge on the north side of Town Highway No. 16 about 0.5 mile from Town Highway No. 15. Pit is in upper (west) end of ridge and appears to be at end of granular deposit. Ridge stands above rolling meadow to north, sampled as Map Ident. No. 2. Test #1 sampled by Callahan in south face of pit. Only 20'-25' extension here, being limited by road. Sample was gravel, bottoming in clay.
	2	1966	1-10	0-1	Yes	84.5	74.4	50.6	8	4.0	1	19.4%	Gran. Borrow (Grav.)	Test #2 sampled by Callahan in east face of pit. Represents extension down ridge to east. Apparently looked "dirty" or silty, but barely failed for Item 201. Test bottomed in clay.
	3	1967	1.5-12	0-1.5	No	55.8	42.0	27.2	14	5.0	1	14.8%	Gravel	Test #3 sampled 45' east of pit on top of 15 foot wide crest of rounded ridge. Material is gravel with some +4" cobbles and a 1 foot thick pebble layer. Hole bottoms in gravel. Ridge at base is about 80'-90' wide.
	4	1967	2.5-11.5	0-2.5	No	85.5	71.1	46.2	3	1.0	1	14.0%	Gravel	Test #4 sampled from hole 175' east of Test #3 on top of ridge. Ridge slopes down to east quite steeply from this test. Material in hole is a fine gravel,

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 2

Map 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-3	Passes VHD Spec.	Remarks
														looking somewhat coarser in bottom.
	5	1967	2-9.5	0-2	No	73.0	63.8	38.1	9	4.0	1	22.0%	Gravel	Test #5 dug 90' east of and about 13' below elevation of Test #4. Material is a gravel acceptable for Item 201.
	6	1967	2-9	0-2	No	79.1	63.1	33.0	3	2.0	1	15.6%	Gravel	Test #6 dug 95' east of and about 21' below elevation of Test #5 near fence where ridge merges with eastward sloping orchard. Material is gravel acceptable for Item 201.
2	1	1967	2-12	0-2	No	81.8	69.2	49.3	9	8.0	1	15.8%	Gran. Borrow (Grav.)	Owner: Miss Ida Fox. Area is rolling meadow north of and below ridge. Meadow slopes gently down to east and falls off steeply to north to drainage. Probably an ice-contact feature. Test Hole #1 dug 100' from northwest corner of meadow on ridge near trees. Beds of sand and pebbly sand with some silt goes to fine gravel below 7' which continues in bottom. Sample had excess silt for Item 201.
	2	1967	2-12	0-2	No	90.9	75.5	55.1	13	6.0	1	17.2%	Gran. Borrow (Grav.)	Test #2 dug 155' S-20-W of Test #1 on high ground in southwest corner. This corner of meadow may be a deposit contiguous with the ridge sampled as Map Ident. No. 1. Material comes from inclined beds of sand and silty clay overlying fine gravel with a few cobbles. Many somewhat

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														flat stones noted. Sample had excess -270 material for Item 201.
	3	1967	2-6	0-2	No	100	100	67.5	32	15.0	1½	---	---	Test #3 dug in swale 120' northeast of Test #2 and 100' southeast of Test #1. Unstratified silty sand with a few pebbles and very few cobbles encountered. Has excess silt for Item 105, Granular Borrow.
	4A	1967	2-8.5	0-2	No	100	97.4	88.6	58	18.0	1	---	---	Test #4 dug 210' east-southeast of Test #2 on trend of same ridge as #2. From 2'-8.5' was indistinctly bedded silty pebble sands sampled as Test #4A. Material had excess silt for Item 105.
	4B	1967	8.5-11.5	0-2	No	74.9	62.5	45.8	14	5.0	1	18.2%	Gran. Borrow (Grav.)	Test #4B sampled from 8.5'-11.5'. Gravel with some cobbles encountered and continues below depth of test. Sample had excess passing the #270 mesh sieve for Sub-base of Gravel, Item 201.
	5	1967	0-9	N	O	T	S	A	M	P	L	E	D	Test #5 dug at foot of ridge (Map Ident. No. 1) at edge of woods 110' from Test #4. Log of hole: 0-4' sand, 4'-9' silt-clay. Hole was not sampled.
	6	1967	1.5-10.5	0-1.5	No	100	100	60.8	45	15.0	1½	---	---	Test #6 dug at corner of woods on ridge along north side of meadow about 205' east of Test #1. Top 6' is gravelly sand over fine silty sand. Goes to

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 4

Map 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
	7	1967	1-4	0-1	N O T S A M P L E D									silty clay at bottom. Sample had excess silt for Item 105. Test #7 dug in north end of lower flat field northeast of rolling meadow. Silt to clay in top over boulders. Did not sample - apparently out of granular area. Best potential in this area seems to be upper (west) end of meadow in vicinities of Tests #1 and #2.
3	1	1962	2-10	0-2	Yes	79.1	70.4	51.6	6	2.3	1	19.6%	Gravel	Owner: Vermont Marble Company. A large pit area with very limited southeast extension and brought up against Erickson Brothers' pit on north side. There is probably still some material left in a westward extension into a pine wood with many cobbles and boulders showing. Pit has been sampled at various times and has gradually been worked to the west.
	2	1966	2-6	0-2	Yes	94.4	87.0	71.7	44	26.0	1	---	---	Tests #1 and #3 taken in east end of pit area (#3 in floor). However, much material has
	3	1966	0-6	None	Yes	92.6	83.3	66.9	30	10.0	1	---	Gran. Borrow (Sand)	been removed at this end, ledges or huge blocks show in the south face and S. V. Rossi has scratched around there and has built maintenance sheds. Test #2 was sampled on west face. Material is very silty with many +6" cobbles not included

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 5

Map 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	1967	8-34	0-8	Yes	42.9	35.8	23.3	9	4.0	1	17.0%	Gravel	in sample. Test #4 dug on south face near re-entrant about 90' from west end. Top 8' is silt and organic and stony material. From 8'-18' is a sandy cobble gravel overlying a finer pebble gravel. Top 8' is vertical; lower face shows much sloughing. Top of face is about 160' from stone wall to south and surface is thinly wooded and shows boulders and cobbles, possibly could extend pit in this area.
	5	1967	5-29	0-5	Yes	47.6	38.4	26.7	5	2.8	1	17.6%	Gravel	Test #5 dug on south face midway along. Top 5' is loamy and stony. Foot of face has much sloughed material including large boulders. Some tabular stones on face. Lower 16' of face is a hard-packed pebble gravel - apparently has much silt binder. From Tests #4 and #5, it would seem that a limited south extension (about 150' north-south x 200' east-west) would give some gravel. From 4'-8' of stripping is to be expected and probably a cobbly or bouldery gravel would be encountered. A westward extension should be tested in pine woods.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 6

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
4	1	1966	1-35	0-1	Yes	95.0	76.7	51.7	5	3.0	2	20.2%	Gravel	Owner: Erickson Brothers. A huge pit area north of the Vermont Marble Company pit and west of the current construction. North and west extensions are presently limited by brook and bedrock. There was still some floor gravels in mid-1967, but quantities are decreasing. Five samples were taken in 1966, two in 1962. Two samples in 1966 were taken from floor (#3 and #5). All samples are of coarse hard-packed stony gravels with many +6" stones not included in samples. Test #7 was taken in north face, which at the time was 20' high, but which now has been removed.
	2	1966	1-35	0-1	Yes	90.8	72.8	45.7	10	5.3	1	20.8%	Gran. Borrow (Grav.)	
	3	1966	0-6	None	Yes	85.0	69.7	44.4	7	2.5	2	---	Gran. Borrow (Grav.)	
	4	1966	1-20	0-1	Yes	86.3	72.8	49.5	8	4.0	1	21.2%	Gravel	
	5	1966	0-8	None	Yes	88.2	68.0	44.6	9	4.0	1½	20.0%	Gravel	
	6	1962	1-20	0-1	Yes	77.0	55.9	30.5	4	0.75	1	15.0%	Gravel	
	7	1962	0-20	None	Yes	75.9	63.7	36.6	4	1.0	1	13.9%	Gravel	
5	1	1967	2-7	0-2	No	64.3	51.4	33.6	5	2.5	1	23.2%	Gravel	Owner: Erickson Brothers. This is a 2-3 acre meadow north of the four lane highway on the east side of Calendon Avenue. The meadow is located northeast of the wide curve of the arterial highway. Test #1 dug at south end of meadow a few feet from highway fence and about 150' from Clarendon Avenue. A cobbly, "dirty"-looking gravel with many 3"-6" cobbles was encountered. Water hit at 7'.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	0-3.5	N	O	T	S	A	M	P	L	E	D	Test #2 dug about 200' east of and only 2'-3' below elevation of Test #1. Overburden, a few stones, and at 3.5' water was encountered. No sample taken.
	3	1967	4.5-11	0-4.5	No	67.1	55.0	36.2	9	4.0	1	21.6%	Gravel	Test #3 dug about 375' north of Test #1 near edge of small brook in northwest corner of meadow. About 4.5' of overburden and silt to clay overlies a coarse, "dirty"-looking gravel with some +6" cobbles. Material not well sorted - some tabular cobbles. Looks a little cleaner in bottom of hole.
6	1	1966	2-10	0-2	Yes	88.6	67.9	41.8	23	15.0	1	24.4%	---	Owner: Charles Pecor. A small bank opened by the Town on the west side of Town Highway No. 6. Material appears to be a coarse, silty, poorly-sorted gravel occurring as a probable thin kame terrace. Bedrock shows on steep, heavily wooded slope behind pit. Any north extension limited by buildings; only extension would be to south. Two face samples were taken by Callahan and were too silty for Item 201.
	2	1966	2-18	0-2	Yes	80.8	65.4	44.1	16	9.0	3	28.6%	Gran. Borrow (Grav.)	
7	1	1966	2-25	0-2	Yes	87.6	56.6	28.2	8	4.3	1	22.8%	Gravel	Owner: John Krystofik. This is a small pit on the west side of Town Highway No. 6 with an extension to south, west, and

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 8

Map 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
														northwest. A north extension is limited by buildings; a bouldery pasture to the northwest probably limits deposit in that direction. Also bedrock appears to the west on the wooded hillside and in the pasture. Pit is possibly 50' long with an 18-foot high face.
	2	1966	2-25	0-2	Yes	84.0	63.1	35.4	9	4.0	2	27.0%	Gran. Borrow (Grav.)	Tests #1 and #2 were taken at northeast and southeast ends of the pit face respectively, and were continued in floor. Test #2 failed to meet abrasion requirements for Item 201.
	3	1966	1-10	0-1	No	79.7	58.9	36.6	8	3.3	1	28.1%	Gran. Borrow (Grav.)	Test #3 dug 23' west of pit face in field. Gravel is fairly coarse with excessive wear for Item 201.
	4	1966	1-9	0-1	No	86.5	63.4	36.6	13	5.8	1	25.6%	Gran. Borrow (Grav.)	Test #4 dug 200' south of Test #3 in field. Material is somewhat silty and also had excessive wear for Item 201.
	5	1966	1-7	0-1	No	82.6	61.9	44.4	22	6.3	1	29.9%	Gran. Borrow (Grav.)	Test #5 dug in field 100' east of Test #4 and south of pit. Clay hit at 7'. Gravel in this hole is on the silty side and had many +6" stones not put in sample. The sample also had excessive wear for Item 201.
	6	1966	1-9	0-1	No	89.1	72.3	52.9	15	6.0	1	27.7%	Gran. Borrow (Grav.)	Test #6 was dug 80' north of Test #3 near garden. Many +6" stones were present and were not included in sample. Sample

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 9

Map 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
														had excessive wear and too much silt for Item 201. Gravel in this area could be modified for Vt. Highway Dept. use or possibly crushed for town roads.
8	1	1966	1-5	0-1	Yes	86.1	75.9	54.6	20	10.0	1	---	Gran. Borrow (Grav.)	Owner: Arthur Anderson. This is pit area with two levels and a sloping field to west. A new house has been built in field to south blocking extension. Feature drops off to north, and is probably a patch of kame terrace. Area is located on west side of State Aid Highway No. 3 just north of Town Highway No. 6. Water stands in lower level behind old house and barn. Test #1 taken in 5-foot high lower face. Material is sandy, poorly-graded gravel, unacceptable for Item 201.
	2	1966	1-15	0-1	Yes	85.2	74.6	60.0	33	16.0	1	---	---	Tests #2 and #3 were taken near middle and north end of
	3	1966	2-15	0-2	Yes	81.5	79.9	58.2	29	16.3	2	---	---	15-foot high second level face. Material is a silty, poorly-graded gravel with some +6" cobbles not sampled. Apparently upper face was opened to get above clays encountered in lower floor.
	4	1966	2-10	0-2	No	98.0	81.4	54.4	7	1.3	1	26.8%	Gran. Borrow (Grav.)	Test #4 dug in east-sloping field above pit 15' back from face. Material is a fine

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 10

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														gravel with excessive wear for Item 201.
	5	1966	2-10	0-2	No	96.2	82.7	65.8	12	2.0	1	---	Gran. Borrow (Grav.)	Test #5 dug 20' west of south end of upper face of pit. Material is not well-graded and has some flat stones. Sample had too few stones for Item 201.
	6	1966	2-10	0-2	No	96.1	89.0	81.7	46	29.0	1	---	---	Test #6 dug 160' west of Test #4 near upper side of field. Material is a silty stony sand, too silty for Item 105. Ledge shows just west of Test #6. Pit was formerly used by the Town. Probably clay and bedrock rises toward west.
9	1	1963	7-15	0-1	Yes	75.5	64.5	46.2	13	2.75	1½	27.8%	Gran. Borrow (Grav.)	Owner: Herbert Johnson(owned formerly by Vermont Marble Company). Area is 200-foot long x 50-foot wide pit on east side of Town Highway No. 1, 1.1 miles north of State Aid Highway No. 4. Extension would be to east and north, presently wooded and of difficult access. A steep log road slabs the hillside north of the pit, but is too steep for backhoe. Tests were confined to the pit. Test #1 was sampled on lower west face from 7'-15'. From 1'-7' was silty sand with stones. Sample interval included alternate layers of sand and stones. Little or no extension

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 11

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														to west as it would be limited by road.
	2	1966	2-38	0-2	Yes	95.0	86.1	61.6	11	6.0	1	---	Gran. Borrow (Grav.)	Test #2 was a hand sample on east face which averages about 38' high. Face is badly sloughed; material is poorly graded with silty fines and some flat stones and many over 6". Face bottoms in silt-clay.
	3	1966	1-9	0-1	Yes	86.8	78.2	60.3	12	5.3	1	---	Gran. Borrow (Grav.)	Test #3 dug with backhoe on face in northeast corner of pit. Material is a gravel with barely too few stones for Item 201. Insufficient proper size stones were sampled for the wear test. Test had a clay bottom.
	4	1966	1-9	0-1	Yes	87.9	76.8	54.4	28	12.3	1	28.0%	---	Test #4 sampled on middle east face. Stuff is silty with a clay bottom.
	5	1966	1-7	0-1	Yes	77.3	66.1	48.8	27	15.8	1	25.6%	---	Test #5 dug in southeast face. Stuff is a silty gravel unacceptable for Item 201.
	6	1966	0-11	None	Yes	61.9	48.7	35.6	16	5.5	1	20.0%	Gran. Borrow (Grav.)	Test #6 dug in northwest corner of pit floor. Stuff has plenty of stones, but has excess fines for Item 201. From face tests it appears that only poorly graded material remains - possibly good enough for town roads. Check a north extension and possibly north end of pit floor. Also from aerial photo study, some wooded knolls

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 12

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sive Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														south of the pit appear to be part of the deposit and should be investigated. Possibly deposit is a kame terrace.
10	1	1967	2-11	0-2	No	82.9	69.2	45.9	9	4.0	1	26.3%	Gran. Borrow (Grav.)	Owner: Carlson Estate(Eric Carlson). Area is long terraced meadow on east side of State Aid Highway #3. Upper level only a few feet below level of road is 400' long along the north side (measured from barn) and about 150' along the south side; lower level slopes very gently to river. Test #1 dug 85' southwest of barn 200' from State Aid Highway No. 3 and is 53' north of south fence line. Material is not well-sorted, but fines are coarse. Some sub-rounded to tabular cobbles and large cobbles in bottom.
	2	1967	2-11	0-2	No	56.3	43.8	29.0	8	3.0	1	24.0%	Gravel	Test #2 dug 134' north of Test #1, 55' from barn. Material is a coarse gravel with many cobbles. Material is pretty well consolidated.
	3	1967	2-11.5	0-2	No	70.8	55.1	36.4	7	3.0	1	24.4%	Gravel	Test #3 dug 260' N-60-E from Test #2 near north side of meadow. Gravel appears a little finer than other tests and has a few tabular cobbles. Water hit at 11'.
	4	1967	2-12	0-2	No	57.4	49.1	33.6	12	4.0	1	25.0%	Gravel	Test #4 dug in field road near east edge of upper terrace 140'

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														south of Test #3. Gravel has quite a few tabular stones and goes to gravelly sand with water at 12'.
	5	1967	1-6.5	0-1	No	78.5	60.2	42.9	15	6.0	1½	25.0%	Gran. Borrow (Grav.)	Test #5 dug 145' south of and about 7' below elevation of Test #4. Test is in lower level about 5' north of south fence line. Gravel from 2.5'-5', gravelly sand from 5'-6.5', with water at 6.5'. Sample had excess silt for Item 201.
	6	1967	1.5-5.5	0-1.5	No	76.0	58.2	43.9	23	6.0	1	24.4%	Gran. Borrow (Grav.)	Test #6 dug in lower terrace 250' east of Test #5. Material is a gravel with many tabular stones and a sand layer near bottom. Water in bottom. Looks like a good gravel area. Possibly north side of lower terrace might be better material. Land to north owned by George Spiegel who gave permission to sample, but too late to get in during the 1967 season.
11	1	1967	3-11	0-3	No	100	95.5	73.3	1.5	1.0 0.7*	1	---	Sand	Owner: Clifton Cressy(owned formerly by George Sherman). Area is pasture ridge possibly a terrace on west side of State Aid Highway No. 3 north of the State Forest Highway. In east end of ridge is an old pit area now grown thickly to trees. Test #1 was dug on lower (east)

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														end of ridge a few feet above old pit. Material is a pebbly sand going to a sand from 8'-11'.
	2	1967	3-8	0-3	No	77.1	68.1	40.6	5	1.5	1	22.4%	Gravel	Test #2 dug 235' northwest of Test #1 on ridge 195' from steep pasture hillside. Top 3' is overburden going to 5' of gravel and bottoming in pebbly silt-clay.
	3A	1967	1.5-5	0-1	No	88.9	81.3	58.5	5	3.0	1	23.2%	Gravel	Test Hole #3 dug on upper south side of ridge 130' southeast of Test #2 and 150' southwest of Test #1. Top 5.5' is fine gravel sampled as Test #3A, bottom 5' is pebbly sand sampled as Test #3B.
	3B	1967	5.5-10.5	0-1	No	100	85.3	83.4	8	4.0 3.3*	1½	---	Sand	
12	1A	1967	1.5-5	0-1.5	No	55.7	42.5	25.1	6	1.5	1	25.6%	Gran. Borrow (Grav.)	Owner: Clifton Cressy (former owner George Sherman). This is large meadow on west side of State Aid Highway No. 3 south of barn and north of Map Ident. No. 11. Mapped as kame terrace by Dr. D. P. Stewart, but appears topographically to be outwash. Test #1 dug near pit and farm shed at north end of meadow. Top 1.5'-5' is a coarse tabular gravel with barely excessive wear for Item 201.
	1B	1967	5-9.5	0-1.5	No	100	100	100	72	17.0	1	---	---	Test #1B sampled from 5'-9.5' and is a silty sand going to even finer material at 9.5'.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
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 % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	1.5-8.5	0-1.5	No	48.6	33.6	18.8	4	1.0	1	26.4%	Gran. Borrow (Grav.)	Test #2 dug 330' southeast of Test #1 at roadside. Material is a coarse gravel with excessive wear for Item 201. Water hit at 8.5'.
	3	1967	2.5-8	0-2.5	No	63.6	54.6	36.7	6	2.0	1	26.8%	Gran. Borrow (Grav.)	Test #3 dug 165' south of Test #2 alongside State Aid Highway No. 3. Material is a coarse gravel with some tabular stones with water at 8'. Test is 42' north of bedrock exposure.
	4	1967	3-6	0-3	No	58.7	43.2	25.2	5	1.3	1	27.4%	Gran. Borrow (Grav.)	Test #4 dug 250' southwest of Test #3 and is at foot of pasture ridge. Thick soil and overburden above a 3-foot thick coarse gravel layer. Bottoms in wet fine sand. Thin tabular, soft, and coarse gravels in meadow .o to fine sand or silt and water.
13	1	1967	1-5	0-1	N O T S A M P L E D									Owner: Clifton Cressy (formerly George Sherman). This is a meadow on east side of State Aid Highway No. 3 south of house. There is a slight change in slope about 40' from road and meadow then drops off toward creek very gently. Test #1 dug in change of slope. Material is stones and clay and was not sampled.
	2	1967	1-6	0-1	No	71.6	55.4	38.8	17	8.0	1	17.8%	Gran. Borrow (Grav.)	Test #2 dug 87' north of Test #1 and 43' from road. Test is in remnant of terrace, which is

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 16

Map 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
														probably same feature as across road. Log of test: 0-1' over-burden; 1'-3.5' "dirty" fine gravel; 3.5'-7.5' clayey gravel; 7.5'- water. Sample had excess fines for Item 201.
	3	1967	1-6	0-1	N	NOT SAMPLED								Test #3 was dug 135' north of Test #2, 50' from road and was at change in slope at north edge of terrace. Area had probably been back-filled as old bricks were found. No sample taken.
14	1	1966	0-1	--	N	NOT SAMPLED								Owner: Clifton Cressy (George Sherman when sampled). Area includes two knolls on either side of State Aid Highway No. 3, one behind barn and one in meadow behind house. Both have small pits in them. Test #1 dug on east side of knoll behind barn. This knoll is 200' long x 50' wide. Test hit ledge at 1' and sand was not sampled.
	2	1966	1-10	0-1	No	100	85.9	63.0	7	3.3	1	25.2%	Gran. Borrow (Grav.)	Test #2 dug atop knoll behind barn. Material is a gravelly sand with too few stones and barely excessive wear for Item 201.
	3	1966	1-10	0-1	Yes	100	94.0	81.6	13.1	4.8 3.9*	1	---	Sand	Test #3 dug in old small pit on north end of knoll behind house in meadow. Material is a pebbly fine sand acceptable for Item 202.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 17

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	4	1966	1-10	0-1	Yes	100	100	100	68	26.0	1	---	---	Test #4 dug south of Test #3. Material is a silty sand unacceptable for Item 105. South end of this knoll shows bedrock.
15	1	1967	0-6	N	O	T	S	A	M	P	L	E	D	Owner: Clifton Cressy(formerly George Sherman). Area is pasture hillside west of junction of State Aid Highway No. 3 and Town Highway No. 8. Two holes were dug to 6' in unsorted clay till with angular and tabular stones. No samples were taken.
	2	1967	0-6	N	O	T	S	A	M	P	L	E	D	
16	1	1967	2-7	0-2	No	67.2	53.0	32.3	5	1.5	1	24.4%	Gran. Borrow (Grav.)	Owner: Clifton Cressy(formerly George Sherman). A small meadow at southeast corner of junction of State Aid Highway No. 3 and Town Highway No. 8. Mapped by Dr. D. P. Stewart as outwash. Test #1 dug near small barn. Material is a tabular coarse gravel. Water hit at 6' - sampling down to 7' - gravel continues in bottom.
	2	1967	1.5-7	0-1.5	No	51.5	38.8	22.0	8	3.3	1	25.6%	Gran. Borrow (Grav.)	Test #2 dug about 175' south of Test #1, 65' from road and 80' southeast of a USGS BM. Material is a very coarse gravel with many 3"-6" cobbles. Water hit at 6', but gravel continues in bottom. Both samples failed the abrasion test. Meadow slopes gently down to east. Gravel may

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 18

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														continue eastward, but only a little would be above water.
17	1	1967	2-11	0-2	No	77.7	68.3	47.5	4	2.0	1½	---	Gran. Borrow (Grav.)	Owner: Clifton Cressy(formerly George Sherman). Area is field above Whipple Hollow Creek on the east side of State Aid Highway No. 3 and north of Town Highway No. 8. May possibly be kame terrace. Ledge outcrops appear north of the field in a pasture. Test #1 dug near south end of more or less flat top of field near its east edge. Hole shows boulders, a lens of cobbles, and gray silty sand coating on the stones. Probably is ice contact. Stuff is poorly consolidated. Material met grading requirements for Item 201, but too few proper size stones were included for the wear test.
	2	1967	2-7	0-2	N O T S A M P L E D									Test Hole #2 dug 165' north of Test #1, again on the east side of field. Material is a clay till and was not sampled.
18	1	1966	2-25	0-2	Yes	92.6	73.7	52.8	3	1.3	1	16.6%	Gravel	Owner: Clifton Cressy(George Sherman when sampled). Area includes pits on either side of Town Road No. 8 just east of Whipple Hollow Creek. Extension of the south pit is limited by the creek and town road. Possibly material may

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 19

Map 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
														occur to the east between the pit and a granular knoll. Extension of the north pit is north along a narrow wooded ridge beside the creek. Bedrock limits an eastward extension. Test #1 dug in face of pit on north side of road. Gravel is well-graded.
	2	1966	0-10	None	Yes	84.9	63.3	34.6	10	4.3	1	19.0%	Gravel	Test #2 dug in floor of north pit. A well-graded gravel. Water hit at 10'. Pit floor may have a limited extension (50'-75') to east, but meadow to east shows wet spots.
	3	1966	1-15	0-1	Yes	96.7	89.4	73.9	12.6	6.5 4.8*	1	---	Sand	Test #3 dug in southeast face of south pit. Material is a pebbly sand.
	4	1966	0-8	--	Yes	100	87.7	63.1	26	12.0	1	---	---	Test #4 dug in floor of south pit. Material is a silty pebbly sand bottoming in silty sand.
	5	1967	4-9.5	0-4	No	83.8	70.3	48.6	7	2.5	1	14.8%	Gravel	Test #5 dug 50' north of north pit in direction of extension. The ridge is about 50' wide and test is 110' southwest of bedrock outcrop. Top 4' of hole is pebbly silt; from 4'-9.5' is gravel. Hole bottoms in pebbly silt-clay.
19	1	1967	1-10.5	0-1	No	94.9	71.2	55.0	12	5.0	1	---	Gran. Borrow (Grav.)	Owner: Clifton Cressy(formerly George Sherman). Area is upper side of meadow next to cemetery east of Map Ident.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 20

Map 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	1967	0-4	N O T S A M P L E D										No. 18. Probably is of ice-contact origin and is mapped as kame terrace by Dr. D. P. Stewart. Test #1 dug 100' north of Town Highway No. 8 75' from cemetery. Inclined beds and lenses of sand, gravelly sand, and gravel were sampled. Bottom is sand with cobbles. Too few proper size stones were included for the wear test. Test #2 dug 150' north-northeast of Test #1. Cobbles and silt overlie ledge - no sample taken. Area is north of a granular knoll sampled as Map Ident. No. 21 and is downhill and west of a granular ridge sampled as Map Ident. No. 20. Also the cemetery indicates granular material. Probably Map Ident. No. 19 is a granular area with gravels probably confined to the ridge and high ground in the upper southeast corner of the meadow.
20	1	1967	1-7.5	0-1	No	96.4	86.4	71.4	15.7	7.0 5.0*	1	---	Sand	Owner: Clifton Cressy(formerly George Sherman). A granular ridge east of and above cemetery. May be a crevasse filling. Test #1 dug 195' north of road corner on ridge a short ways down slope from top of slope. A silt-clay seam hit

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 21

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														at 1.5'-3'. Otherwise a gravelly sand. Hole bottoms in silt-clay.
	2	1967	1.5-10	0-1.5	No	64.4	49.1	36.3	13	4.5	1	24.8%	Gravel	Test #2 dug 125' down slope from Test #1 and is about 85' from northeast corner of cemetery. Test hole showed some +6" cobbles (not sampled) and had many slaty stones. Same material in bottom. Beds in both holes dip to west. Granular probably confined to ridge - looks like till on either side. Material might be used to resurface town roads in the vicinity.
21	1	1967	1.5-18	0-1.5	Yes	71.4	61.9	45.8	6	2.5	1	---	Gran. Borrow (Grav.)	Owner: Dr. Leonard V. Strong. Owner had farm up for sale and was not interested in selling material. This area is knoll northwest of barn and a few feet south of Town Highway No. 8. Test #1 dug on face of pit on northwest side of knoll. Seven feet of sandy gravel overlies 11' of pebbly sand. Quite a few +6" stones occur at top of face and were not included in sample. Face bottoms in pebbly sand.
	2	1967	1-10.5	0-1	Yes	87.2	82.5	62.1	5	2.0	1	---	Gran. Borrow (Grav.)	Test #2 sampled in face on south end of knoll. Interbedded gravelly sand was sampled and sample had too few stones

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 22

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														for Item 201. Insufficient proper size stones were included for wear tests in both samples. Bottom of test #2 is silty sand. Knoll is about 185' long, 24' high, and about 50-60' wide.
22	1	1967	2-9.5	0-2	No	90.5	74.0	35.1	4	2.0	1½	15.0%	Gravel	Owner: Dr. Leonard V. Strong. Area is knolls south of buildings south of junction of Town Highways No. 7 and No. 8. Knolls are possibly a kame terrace remnant. Ledge is exposed in town road just east of knolls and in wooded hill just to south. Quite a steep bank drops off from knoll down to creek on the west. Test #1 dug on west knoll near southwest corner. Material is a uniformly fine gravel with probable extent along top of bank to south into woods.
	2	1967	4-10	0-4	No	78.1	58.2	39.1	4	2.0	1	20.8%	Gravel	Test #2 dug about 140' north of and 15' below elevation of Test #1. Top 2' is soil; 2'-4' is silty sand; 4'-10' is gravel with a cobbly gravel in bottom. Knoll continues north for another 45' or so, and Test #2 is about 12'-15' above foot of knoll.
	3	1967	1.5-10.5	0-1.5	No	82.5	70.8	52.9	2	1.0	1	18.8%	Gravel	Test #3 dug on east knoll 130' from edge of road and 125' northwest of bedrock outcrop.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 23

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	4	1967	3-11	0-3	No	81.6	72.3	51.9	4	1.5	1	21.8%	Gravel	Beds of pebbly and gravelly sands go to a gravel toward bottom. A few +6" stones were not included in sample. Test #4 dug in hollow between knolls, about 60' east of and 14' below Test #1. Material is mainly a fine gravel with a few 3"-6" cobbles. Looks like a good area with an extension south into woods along top of creek bank, and possibly further south along west edge of field to south of woods. Owner was not interested in selling material, but he had farm up for sale, and new owner might sell.
23	1	1965	0.5-8.5	0-0.5	No	87.8	74.9	45.3	7	3.0	1	19.5%	Gravel	Owner: Fritz Pawlusiak. This is large kame terrace with two or three small pits north across valley from U. S. Rte. 4. This area will be severed by the four lane limited access highway and tests were taken as part of a Right-of-Way case. Test #1 was dug 150' west of small, old pit opened in hillside on east side of feature. Material is a gravel going to clay till at 8.5'. Test #2 dug 200' north of Test #1, encountered a silty gravel with tabular stones and some +6"
	2	1965	0.5-9	0-0.5	No	83.7	74.7	57.4	35	18.0	1	20.4%	---	

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 24

Map 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
														cobbles. Sample had excess silt for Item 105.
	3	1965	0.5-9	0-0.5	No	87.1	76.7	59.6	31	14.0	1	20.2%	---	Test #3 dug on hillside 200' west of Test #2 and is 360' east of a north-south ridge. Material is silt and stones with excess silt for Item 105.
	4	1965	0.5-8	0-0.5	Yes	89.4	62.6	28.4	13	5.0	1	17.9%	Gravel	Test #4 dug in face of 70-foot long pit located 200' east of ridge and 135' down-slope from trees. Pit has 12-foot high face. Sample to 8' was a gravel going to a clayey till.
	5	1965	0.5-8	0-0.5	No	89.4	81.4	69.8	7	4.0	1	---	Gran Borrow (Grav.)	Test #5 dug on crest of ridge running north-south down hill-side. This feature is probab-ly a crevasse filling. A small digging occurs on the east side of the ridge. Material in test is a fine gravelly sand with too few stones for Item 201. A fair-sized pit has been opened in this ridge and was being used during mid-1967.
	6	1965	0.5-10	0-0.5	No	100	100	90.2	29	9.0	1½	---	Gran. Borrow (Sand)	Test #6 dug southeast of pit where Test #4 was taken and is at top of steep side slope of "terrace". Material is sand with pebbles and too much fine sand and silt for Item 202.
	7	1965	1-7	0-1	No	100	100	73.2	35	18.0	2½	---	---	Tests #7, #8, and #9 were ta-ken on lower (south) edge of feature 300', 600' and 800'
	8	1965	1-9	0-1	No	82.9	73.5	57.4	39	13.0	1	25.4%	---	

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 25

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	9	1965	1-10	0-1	No	88.0	81.9	64.8	25	11.0	---	---	---	respectively west from Test #6. Material is silty sand with pebbles to cobbles and all samples had excess silt for Item 105.
	10	1965	1-9.5	0-1	No	91.2	81.1	63.7	25	8.0	1	---	Gran. Borrow (Grav.)	Test #10 dug in field 250' north of Test #9 and is west of ridge on which Test #5 was sampled. Material is a pebbly very fine sand to silty sand - a poor looking material.
	11	1965	0.5-4.5	0-0.5	No	86.1	72.2	45.0	11	4.0	2	18.9%	Gravel	Test #11 dug 250' north of Test #10 and is 205' downslope from edge of thin woods. Only 4' of gravel over a till.
	12	1965	0.5-6	0-0.5	No	85.0	77.6	57.9	30	5.0	1	---	Gran. Borrow (Grav.)	Test #12 dug 330' west of Test #9, 30' north of field road, and is 80' south of tree corner. Material is a silty-looking gravel with excess silt for Item 201.
	13	1965	0.5-6.5	0-0.5	No	96.4	83.2	62.5	39	24.0	1	18.9%	---	Test #13 dug 200' west of Test #12 and 140' from west end of cleared field. Material is a silty gravel going to ledge or boulders at 6.5'.
	14	1965	0.5-8	0-0.5	No	87.5	81.9	61.0	28	11.0	1	---	---	Test #14 dug southwest of Test #12, 100' south of field road. Material is silty sand with stones.
	15	1963	1-10	0-1	Yes	80.7	67.8	49.3	5	2.25	1	19.6%	Gravel	Two samples, numbered 15 and 16 were preliminary samples taken by Callahan in 1963 and 1965 respectively. They were
	16	1965	2-20	0-2	Yes	94.3	78.6	50.3	5	3.0	1	12.6%	Gravel	

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 26

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														sampled from the pit in the steep hillside at the east side of the area, and both met requirements for Item 201. This pit looks silty with a lot of hard-packed material. In mid-1967 further test pits had been dug on the west side of the ridge on the upper(north) edge of the field, and these showed gravelly material. The ridge had been opened up as well. There may be some gravels left here for the 1968 construction season.
24	1	1964	0.5-7	0-0.5	Yes	90.9	74.3	55.1	56	10.8	1	---	---	Owners: Cacchio & Schreiber. Area probably a kame terrace or a remnant west of the Pawlusiak property, and is just east of Ira Town Line. Construction of the arterial highway took place in the feature and sampling was done for Right-of-Way proceedings. Tests #1, #2, and #3 were taken in Ira. Tests #4 through #9 (#1 through #6 in this report) were dug in West Rutland. Test #1 dug in face of small pit on center line at station 618+65. Pit faces south on field road. Material is silty and clayey till.
	2	1964	1-7	0-1	No	72.8	51.5	20.4	16	9.5	3½	17.4%	Gran. Borrow (Grav.)	Test #2 dug 135' north of station 620+00 on flat-topped ridge or small terrace.

*Percentage of Total Sample

TABLE I

WEST RUTLAND
GRANULAR DATA SHEET NO. 27

Map 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
														Material is a gravel with excess silt for Item 201. Looks silty in hole. Has rounded stones getting more angular in bottom.
	3	1964	1-8	0-1	No	67.9	51.5	32.7	19	8.5	2½	19.6%	Gran. Borrow (Grav.)	Test #3 dug on ridge east of stream at station 623+10. Material was silty looking, very coarse gravel with boulders up to 2' (stones over 6" not sampled). Most stones are well-rounded.
	4	1964	1-8	0-1	No	84.8	65.9	44.0	5	2.8	2	26.8%	Gran. Borrow (Grav.)	Test #4 dug 236' north of station 622+50 on knoll above stream and wet area. Log of Hole: 0-1' overburden, 1'-5' gravel, 5'-8' sand with stones, 8'-8.5' wet sand and silt. Material was too soft for Item 201.
	5	1964	1.5-10	0-1.5	No	84.9	76.6	60.6	27	15.3	1	---	---	Test #5 dug 350' north of station 629+00. Log of Test: 0-1.5' overburden, 1.5'-4.5' silt or sandy silt, 4.5'-10' silty sand with stones. Bottom is the same. Below 4.5' looks good for Item 105.
	6	1964	1.5-8	0-1.5	No	91.0	84.0	60.7	33	15.5	2	---	---	Test #6 dug in northeast corner of field, 350' north of Test #5 and 15' west of Pawlusiak property line. Material is a glacial till, wet at 8'.

*Percentage of Total Sample

TABLE I
Supplement

WEST RUTLAND PROPERTY OWNERS - GRANULAR	Map Ident. No.
Anderson, Arthur	8
Cacchio & Schreiber	24
Carlson Estate	10
Cressy, Clifton	11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Erickson Brothers	depleted → 4, 5
Fox, Ida (Miss)	1, 2
Johnson, Herbert	9
Krystofik, John	7
Pawlusiak, Fritz	23
Pecor, Charles	6
Strong, Leonard, V. (Dr.)	21, 22
Vermont Marble Company	3 depleted

Table II
Supplement

WEST RUTLAND PROPERTY OWNERS - ROCK	Map Ident. No.
Dentart, Betty (Mrs.)	3
Green Mountain Marble Company	1
Vermont Marble Company	2

TABLE II

WEST RUTLAND
ROCK DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
1	1	1967	Marble	Yes	Chip	14.4%	Owner: Green Mountain Marble Company. Area is quarry with two openings located southwest of the eastbound lane at station 763 to 765+50. Vermont Marble Company's Westland Quarry lies to the north, and Erickson's property to the south. The quarry openings measure 50' x 70' and are filled with water. One sample was taken from random quarried blocks and outcrops in the vicinity of the south opening. The rock is a gray-weathering, soft, sugary white marble mapped by Dr. Doll as the Glens Falls-Orwell. The rock looks like the Middlebury, and in the West Rutland area and to the south, may be included in the Glens Falls-Orwell. The rock looked too soft for Sub-base of Crushed Rock, Item 204 and did fail to meet abrasion requirements for that item.
2	1	1966	Marble	Yes	Chip	6.8%	Owner: Vermont Marble Company, Westland Quarry. Located about 450' southwest of eastbound station 760+00. One small, deep openings a large dump and marble exposures occur. Test #1 was sampled at random from waste dump. Rock is a sugary white marble with some impurities. It has been variously mapped and named the Glens Falls-Orwell, Middlebury, and Whipple. Rocks outcropping on the surface weather gray and contain thin dolomite bands and fit the description of the Middlebury. Quarried blocks exhibit green streaking and resemble the underlying Beldens member of the Chipman formation.
	2	1967	Marble & Dolomite	Yes	Chip	6.0%	Test #2 was sampled from outcrops of gray-weathering marble and a band of relief of buff-weathering gray dolomite occurring south of the opening. The dolomite is apparently a thin band whose dip conforms to the slope and under which the marble occurs. This test met abrasion requirements for Item 204, but the dolomite may have attributed to this.
	3	1967	Marble	Yes	Chip	23.0%	Test #3 was sampled from random quarried blocks and outcrops on the north side of the opening. The outcrops are

TABLE II

WEST RUTLAND
ROCK DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
							a gray-weathering marble; the quarried blocks are a green-streaked white marble, which probably is the Beldens member, older than, and underlying the Glens Falls-Orwell (Middlebury). This area would extend to the west and north-northwest, but it is doubtful if this would be a satisfactory rock source since much of the marble is soft.
3	1	1967	Dolomite	No	Chip	5.5%	Owner: Mrs. Betty Dentart. Shedd Quarry on Boardman Hill 0.40 mile south of Town Highway No. 5. Seven to ten acres owned by Mrs. Dentart. Surrounding laned owned by Mrs. Florence Stone. Test #1 taken on low ridge 345' north of small quarry opening. Rock was exposed for about 90' across the strike and has about 15' relief. The rock is a craggy, light to dark gray patchy weathering siliceous dolomite, and breaks angular to blocky. Beds seem to become thicker toward top of ridge and rock breaks more blocky. The mapped dip is westward and the block fits the description of the Intermediate Dolomite member of the Shelburne formation. Marble resembling the underlying Sutherland Falls member is exposed in the small quarry east of the trend of the ridge.
	2	1967	Dolomite	No	Chip	3.7%	Test #2 sampled 405' south of and a few feet above the elevation of the quarry. A craggy, gray-weathering, siliceous dolomite is exposed for about 190' across the strike with 25'-30' of relief. The lower west side of the exposures are very close to a stone fence. The rock broke mainly blocky to angular and seems quite hard.
	3	1967	Marble	Yes	Chip	5.2%	Test #3 sampled from random waste and quarried blocks around the quarry. The rock is a massive white marble with irregular gray streaking, weathering light to dark gray. The rock is fairly hard for the most part, but a sugary texture in places made it soft. Probably is the Sutherland Falls member. Area is a good source of rock for Item 204.

LEGEND

- GRAVEL, ACCEPTABLE FOR ITEM 201 (sub-base of gravel)
- GRAVEL, DEPLETED OR NOT ACCEPTABLE FOR ITEM 201
- SAND, ACCEPTABLE FOR ITEM 202 (sub-base of sand)
- SAND, DEPLETED OR NOT ACCEPTABLE FOR ITEM 202
- GRANULAR BORROW, ITEM 105
- MATERIAL NOT ACCEPTABLE FOR ITEM 105
- EXISTING PIT
- SAND & GRAVEL DEPOSIT
- SAND DEPOSIT
- 3 IDENTIFICATION NUMBER (refer to data sheets)

WEST RUTLAND

SCALE 1:31,250

CONTOUR INTERVAL 20 FEET

1967

GRANULAR MATERIALS MAP

BY

VERMONT DEPARTMENT OF HIGHWAYS

IN COOPERATION WITH

U.S. BUREAU OF PUBLIC ROADS

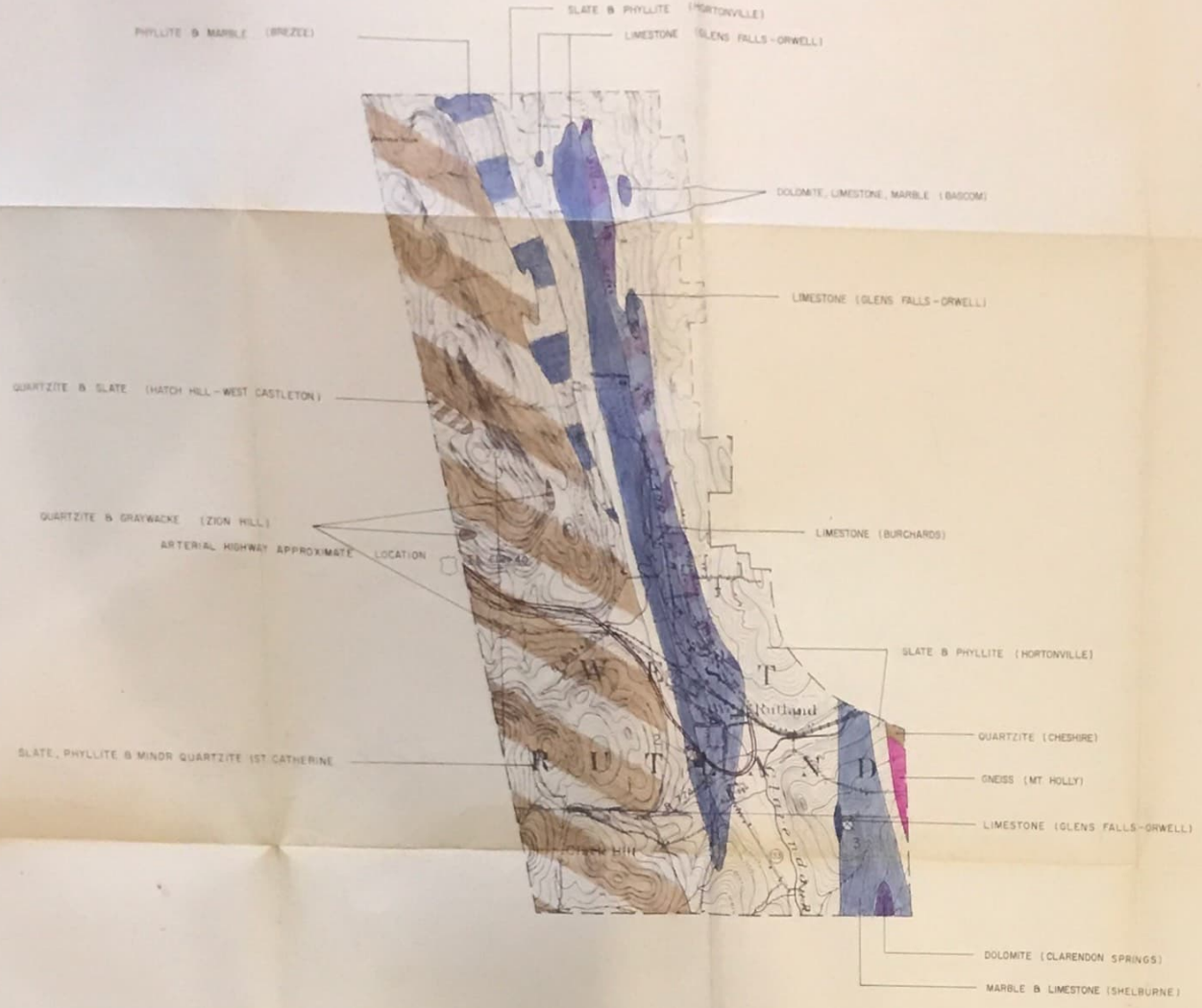
NOTE: BASED ON U.S.G.S. TOPOGRAPHIC MAPS

RUTLAND COUNTY VT. HWY. DISTRICT NO. 3

REVISIONS DATE BY

WEST RUTLAND

PLATE 1 GRANULAR



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, AND GRAYWACKES

3 IDENTIFICATION NUMBER (refer to data sheets)

WEST RUTLAND

SCALE 1:31,250

CONTOUR INTERVAL 20 FEET

1967

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

PLATE II

ROCK

RUTLAND COUNTY VT. HWY. DISTRICT NO. 3

REVISIONS DATE BY

WEST RUTLAND