

SURVEY OF HIGHWAY CONSTRUCTION MATERIALS
IN THE TOWN OF WESTFIELD, ORLEANS COUNTY, VERMONT

Prepared by

Engineering Geology Section, Materials Division
Vermont Department of Highways

in cooperation with

United States Department of Transportation
Federal Highway Administration

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1. Various departments and individuals of the Vermont State Department of Highways; notably the Planning Division and Mapping Section and the Materials Division.
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, Federal Highways Administration.

History

The Materials Survey Project was formed in 1957 by the Vermont Department of Highways with the assistance of the Federal Highway Administration. Its prime objective was to compile an inventory of highway construction materials in the State of Vermont. Originally, investigations for highway construction materials were conducted only as the immediate situation required and only limited areas were surveyed; thus, no over-all picture of material resources was available. Highway contractors or resident engineers were required to locate the materials for their respective projects and samples were tested by the Materials Division. The additional cost of exploration for construction materials was passed on to the State bringing about higher construction costs. The Materials Survey Project was established to eliminate or minimize this factor by enabling the State and the contractors to proceed with information on available material resources and to project cost estimates. 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 are used 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 together.

Inclosures

Included in this report are two surface-geology maps, one defining the location of tests on bedrock, the other defining the location of tests on granular materials. These maps are based on 15-minute or 7-1/2-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 formations and types in the township. This information was obtained from: Vermont Geological Survey Bulletins, Vermont State Geologist Reports, United States Geological Survey Bedrock Maps, Centennial Geological Map of Vermont, the Surficial Geologic Map of Vermont and other references.

The granular materials map shows 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 conducted by Professor D. P. Stewart of Miami University, Oxford, Ohio, who mapped the glacial features of the State of Vermont during the summer months since 1956. Further information is obtained from the Soil Survey (Reconnaissance) of Vermont (conducted by the Bureau of Chemistry and Soils of the United States Department of Agriculture), 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. The number and location of tests taken in each area represented by an Identification Number is determined by the nature of the material or its topographic feature.

Also included in this report 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 an active card file compiled and updated by the Engineering Geology Section of the Materials Division over a period of years. Transfer of information from the cards to the data sheets was made and the location of the deposits was plotted on the maps. However, some cards in the file were not used because of incomplete or unidentifiable information on the location of the deposit. Caution should be exercised wherever this information appears incomplete.

Works sheets, containing more detailed information and a field sketch of the area represented by the Identification Number, and laboratory reports are on file in the Materials Division of the Vermont Department of Highways.

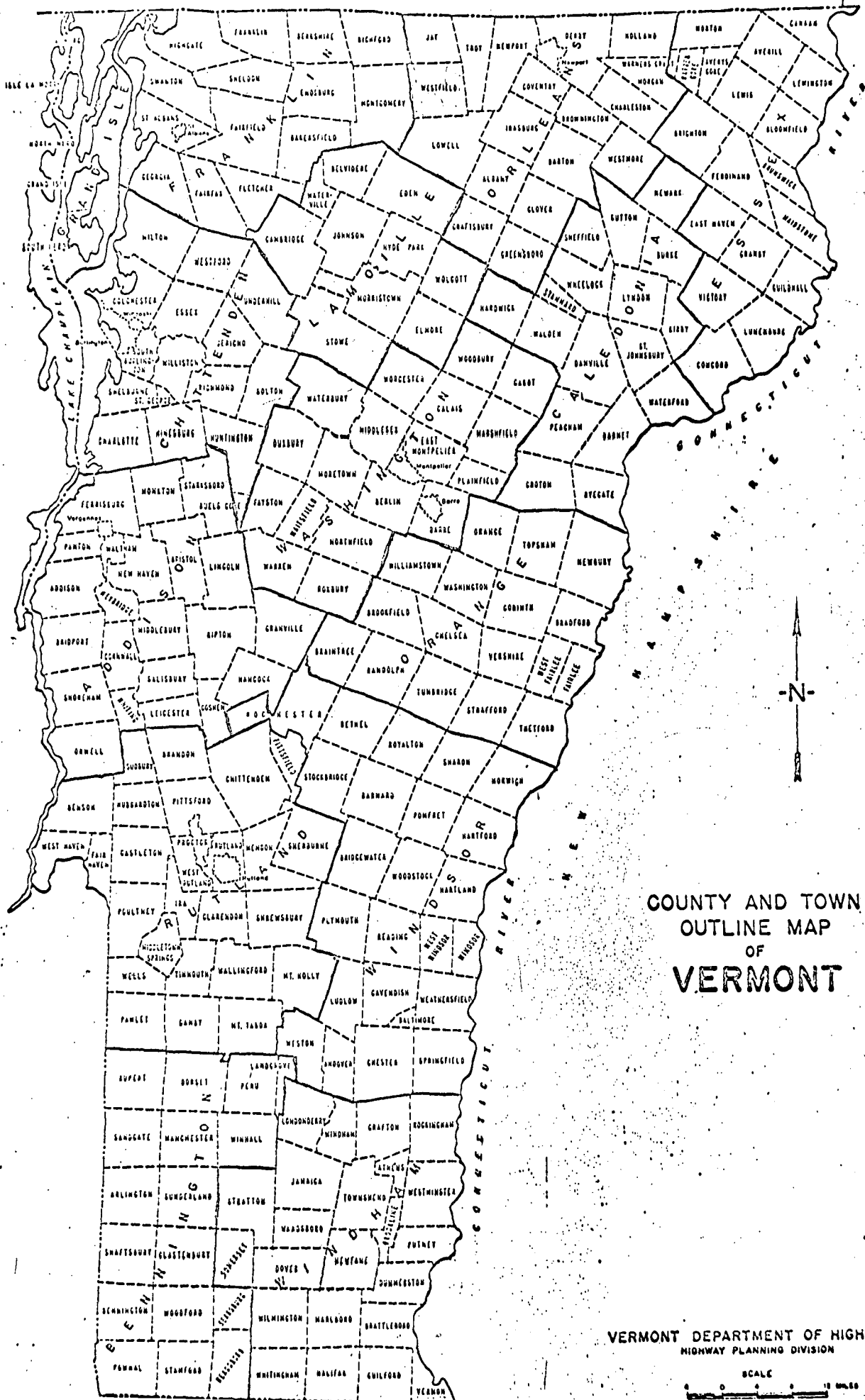
LOCATION

The Town of Westfield is on the west side of Orleans County in north-central Vermont. It is bounded on the north by Jay, on the east by Troy, on the south by Lowell and on the west by Montgomery. (See County and Town Outline Map of Vermont on following page.)

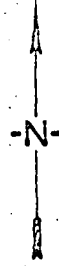
The southeast corner of Westfield, east of Vermont Route 100, lies within the Vermont Piedmont (a region of broad valleys and rounded hills). The rest of the town is in the Green Mountain physiographic subdivision of the New England Upland with rugged, steep-sided, mountaineous terrain. Elevations range from 3,861 feet at the summit of Jay Peak, to less than 760 feet where the Missisquoi River crosses the Troy Town Line.

Two-thirds of the drainage is eastward via Coburn, Mill, Taft and Snider Brooks and their tributaries into the Missisquoi. Subsidiary drainage is westward via Jay Brook, and northward and southward via unnamed streams.

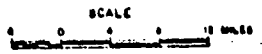
N E W Y O R K



COUNTY AND TOWN
 OUTLINE MAP
 OF
VERMONT



VERMONT DEPARTMENT OF HIGHWAYS
 HIGHWAY PLANNING DIVISION



SURVEY OF ROCK SOURCES

Procedure for Rock Survey

The routine employed by the project, in a survey of possible sources of rock for highway construction, is divided into two main stages: office and field investigations.

The office investigation is conducted primarily during the winter months and comprises the mapping and description of rock types as indicated in various reference sources. Many different sources of information are utilized, as indicated in the bibliography. These references differ considerably in dependability due to new developments and studies that have contributed to the obsolescence of a number of reports. In addition, the results of samples taken by other individuals are analyzed, and the location at which these samples were taken, is mapped when possible. As complete a correlation as possible is made of all the information available concerning the geology of the area under consideration.

The field investigation is begun by making a cursory preliminary survey of the entire area. The information obtained in the preliminary survey, together with the information assimilated in the office investigation, is employed to determine the areas where testing and sampling will be concentrated. When a promising source has been determined by rock type, volume of material, accessibility and adequate exposure and relief, chip samples are taken with a hammer across the strike or trend of the rock and are submitted to the Materials Division for abrasion testing by the Deval Method (AASHTO T-3) and the Los Angeles Method (AASHTO T-96). It should be kept in mind that the samples taken by the chip method are often within the weathered zone of the outcrop and consequently may give a less satisfactory test result than fresh material deeper in the rock structure. When the rock is uniform, and the chip samples yield acceptable abrasion test results, the material source is included in this report as being satisfactory.

Discussion of Rock and Rock Sources

The information on the Rock Materials Map is simplified. (For a more detailed description of the respective rock formations, see the summary included in this report.) In the summary, it is apparent that complex metamorphic rocks comprise almost the entire lithology within the Town of Westfield.

The Hazens Notch schist, quartzite and gneiss underlies most of Westfield. Other formations are: The Jay Peak schist, in the mountainous northwest corner of town; the Ottauquechee schist, quartzite and graywacke, and the Moretown granulite, phyllite and quartzite which underlie the southeast corner of town. Four scattered bands of Hazens Notch amphibolite and Belvidere Mountain amphibolite and greenstone are mapped, but were not located by the field survey.

Ultramafic rocks were mapped in small, inaccessible zones. One low-relief, large mass of serpentinite is masked by dense woods on the north and northeast slopes of "Brown's Ledges" and was not sampled. It represents a possible extension of acceptable material found at Lowell Map Identification No. 2.

The Hazens Notch schist, quartzite and gneiss yielded two failing abrasion test results from Map Identification No. 1 on the lower slopes of Sugar Loaf Mountain, north of Vermont Route 58 in the southwest corner of town.

SURVEY OF SAND AND GRAVEL SOURCES

Procedure for Sand and Gravel Survey

The method employed by the project in a survey of possible sources of sand and gravel for highway construction is divided into two main stages: office and field investigations.

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 the recognition and location of physiographic features indicating glacial deposits and in the study of drainage patterns. In addition, the locations of existing pits are mapped. The locations in which samples were taken by other individuals are noted and mapped.

The field investigation is begun by making a cursory survey of the entire town. All pits and areas that give evidence of glacial or fluvial deposition are noted and later investigated by obtaining samples of pit faces and other exposed materials. Test holes are dug in pit floors and extensions with a backhoe to a depth of approximately 11 feet. The samples are submitted to the Materials Division where they are sieved for gradation and tested for stone abrasion by the AASHTO T-4 method.

Discussion of Sand and Gravel Deposits

Results of this survey showed that granular materials in Westfield suitable for highway and related construction purposes were deposited by glaciofluvial and glaciolacustrine processes in the eastern quarter of town at elevations from 750 feet to 1,290 feet.

Glaciofluvial deposits occur as kame terraces and kames in ten mapped zones, glaciolacustrine deposits occur at four lake sediment zones and one intermediate area is mapped as a delta gravel.

The most promising sources of Item 704.05, Gravel for Subbase, are listed in order of most favorable first: Map Identification Numbers 17, 9, 10, 31, 18 and 13. All but No. 31 are pits. Even though other areas yielded samples of gravel acceptable for subbase, they are not listed because of very limited reserves or the areas are too close to residential development.

Map Identification Numbers yielding Item 703.03, Sand Borrow and Cushion, are listed in order of most favorable first: 17, 18, 6, 7, 5, 10, 9 and 26. All but No. 7 are pits. Other areas yielded samples of acceptable Sand Borrow and Cushion but are not listed because they are nearly depleted or being developed for other uses.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF WESTFIELD

Belvidere Mountain amphibolite member of the Hazens Notch formation:

Coarse to fine-grained hornblende-epidote-albite rock; grades to epidote-chlorite-actinolite-albite greenstone where less metamorphosed.

Hazens Notch formation:

Chiefly albite-actinolite-chlorite-epidote greenstone; locally hornblende-epidote-chlorite-albite amphibolite.

Hazens Notch formation:

Interbedded carbonaceous and noncarbonaceous quartz-sericite-albite-chlorite schist; grades to quartzite and gneiss.

Jay Peak member of the Underhill formation:

Pale, silver-green, quartz-sericite-chlorite-albite schist, locally quartzitic.

Moretown member of the Missisquoi formation:

Quartzite and quartz-plagioclase granulite, in layers 1/8 to several inches thick, separated by "pinstripe" partings that contain muscovite, chlorite, epidote, biotite and locally garnet; also greenish quartz-sericite-chlorite phyllite and schist and minor carbonaceous phyllite. Schist and phyllite commonly contain biotite and garnet porphyroblasts in southern Vermont.

Ottawaquechee formation:

Black carbonaceous phyllite or schist containing interbeds of massive quartzite commonly criss-crossed by veins of white quartz; quartzite is dark gray and carbonaceous, light gray or white; also includes light green quartz-sericite phyllite or schist and sericitic quartzite; beds of phyllitic graywacke and feldspar granule conglomerate are north of Lamoille River. Schist contains abundant porphyroblasts of garnet and biotite from Ludlow south.

Stowe formation:

Quartz-sericite (muscovite-paragonite)-chlorite phyllite and schist; porphyroblasts of albite, garnet, chloritoid, or kyanite are common locally; includes phyllitic graywacke north of Lamoille River. Schist contains abundant segregations of granular white quartz.

Ultramafic rocks:

Dunite, peridotite and serpentinite.

Ultramafic rocks:

Serpentinite, carbonate rock, talc-carbonate rock and steatite.

GLOSSARY OF SELECTED GEOLOGIC TERMS

Actinolite: A variety of amphibole, occurring in greenish masses or bladed crystals.

Albite: The light-colored, sodium end member of the plagioclase feldspar group, which is found in alkali rocks.

Amphibolite: A green-to-black, metamorphic rock containing varying amounts of amphibole (i.e., tremolite, actinolite, hornblende or arfvedsonite) and having some schistose structure.

Bedding: The arrangement of rock or granular materials in layers.

Bedrock: The more or less solid, undisturbed rock in place either at the surface or beneath superficial deposits of gravel, sand or soil.

Bedrock control: Land features which show bedrock on, or close to, the surface; also used in describing part of the topography.

Biotite: A silicate mineral commonly known as black mica.

Chlorite: A general group of green hydrous silicates of magnesium and iron; they may contain aluminum.

Chloritoid: A brittle member of the mica group.

Conglomerate: The consolidated equivalent of gravel with varied grading and composition and a matrix of sand, silt or one of the common natural cementing materials (calcium carbonate, silica, clay or iron oxide).

Drainage: The manner by which water moves on the surface, in streams, rivers and brooks or under the surface, in channels.

Drift: A deposit of earth, sand, gravel and boulders, carried by glaciers (glacial drift) or by water flowing from glaciers (fluvio-glacial drift). Large areas of North America and Europe are drift-covered in higher latitudes.

Dunite: An ultramafic igneous rock with granitic texture, composed of olivine and a little chromite or spinel.

Epidote: A calcium aluminum iron silicate found in rocks as grains or formless masses. It is usually some shade of green, pistachio-green or yellowish-green.

Fluvial: Pertaining to streams.

Glacio-fluvial: A term used to denote formation by or relation to streams within, upon or emerging from glacial ice.

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

Gneiss: Originally meaning a more or less banded metamorphic rock with the mineral composition of granite. The term now designates a foliated metamorphic rock with no specific composition implied, but having layers that are mineralogically unlike and consisting of particles visible to the eye. Usually gneiss displays an alternation of granular minerals and schistose minerals with the rock tending to split along the schistose bands.

Graywacke: A loosely applied term covering dark, hard sandstone having angular grains of quartz, feldspar and rock fragments in a fine, compact matrix of micas, clay minerals and chlorite.

Hornblende: An amphibole usually forming prismatic masses in igneous and metamorphic rocks. It is black, dark green or brown.

Interbedded: Occurring between beds, or lying adjacent and parallel to other beds of a different nature.

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

Kame Terrace: Stratified sands and gravels deposited by water flowing between a glacier and an adjacent valley wall.

Kamic: Relating to stratified drift deposited by streams flowing in or on the ice at the sides or terminus of a glacier.

Kyanite: A blue, metamorphic, aluminum silicate which forms in thin-bladed crystals or as crystalline aggregates.

Muscovite: An important member of the mica group of minerals, known also as white mica, potash mica or isinglass.

Olivine: An olive to grayish-green or brown orthosilicate of the chrysolite group having a conchoidal fracture. Metamorphism alters olivine to serpentine and iron oxide.

Outcrop: A part of a body of rock that appears bare and exposed at the surface of the ground. Often, the term applies to areas where the rock formation occurs just below the surface even though it is not actually exposed.

Outwash: Stratified sands and gravels deposited by meltwater streams flowing from the face of the glacier.

Paragonite: A mica, similar in appearance and composition to muscovite but containing sodium instead of potassium.

Peridotite: A low-silica, granitic-textured igneous rock composed of olivine and some pyroxene, amphibole and mica. Feldspar can only be present in minor amounts. Peridotite characteristically alters to the dark green rock, serpentinite.

Phyllite: A fine-grained, foliated metamorphic rock intermediate between the mica schists and slates into which it may grade. The foliation is caused by large amounts of potash mica (sericite) which gives the rock a distinctive silvery appearance.

Plagioclase: The common rock-forming feldspar of the albite-anorthite isomorphous series.

Porphyroblasts: Large crystals formed in the fine-grained matrix of a metamorphic rock by heat, pressure and solutions. These crystals occur later than the parent rock.

Quartzite: The compact, metamorphic equivalent of sandstone composed of quartz grains so firmly bonded that fracture occurs across the grains instead of around them.

Scarp: A steep straight slope of any height.

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.

Sediments: All material deposited from water (streams, lakes or seas), wind or ice.

Sericite: A mineral very similar to muscovite mica, occurring as small flakes and scales which often give metamorphic rocks a pearly luster on smooth surfaces.

Serpentinite: A metamorphic rock composed of serpentine which is derived from the alteration of magnesium-rich igneous rocks.

Shale: A general term for lithified muds, clays and silts that tend to split into thin sheets along the bedding planes or along cleavage planes. Shale differs from mudstone, claystone and siltstone by having the pronounced tendency to split (fissility).

Shoal: A sand or gravel bar that makes the water shallow; specifically an elevation which is not rocky and is covered by no more than six fathoms (36 feet) of water. Coarse material usually occurs over less coarse material.

Siliceous: Containing or pertaining to silica (silicon dioxide, SiO_2), or having some qualities or characteristics of silica.

Sillimanite: A brown, grayish or pale green aluminum silicate (Al_2SiO_5) metamorphic mineral occurring in long, slender, often fibrous crystals.

Siltstone: A rock composed of somewhat indurated silt. It is a shale if the cleavage is nearly parallel to the bedding.

Slate: The homogeneous, metamorphic equivalent of shale, but so fine-grained that no mineral grains are visible. Slate splits so perfectly that it yields slabs having smooth surfaces.

Sodic Plagioclase: The sodium-rich feldspar, albite.

Spillway Gravel: Outwash gravel deposited in a valley that was a spillway for a melting glacier.

Staurolite: A brown to black, iron aluminum silicate ($\text{HFeAl}_5\text{Si}_2\text{O}_{13}$) which often shows twinning in the form of a cross.

Steatite: An impure, massive to schistose talc, distinguished by its softness and greasy or soapy feel. Commonly known as soapstone.

Structural: Of, pertaining to or resulting from, the effects of folding or faulting of the earth's crust; tectonic; as structural ridges or valleys.

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

Ultramafic: Low-silica igneous rocks having virtually no quartz and feldspar, but having a correspondingly high amount of iron, magnesium and calcium. These rocks may occur as individual bodies or as segregations in larger igneous masses.

Water Table: The upper surface of a zone of saturation except where the surface is formed by an impermeable body.

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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 July, 1971.

DIVISION 700 - MATERIALS

Section 703, Soils and Borrow Materials

703.03 Sand Borrow and Cushion

Sand Borrow shall consist of material reasonably free from silt, loam, clay, or organic matter. It shall be obtained from approved sources and shall meet the requirements of the following table:

Table 703.03A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	Sand Portion
2"	100	
1½"	90-100	
½"	70-100	
No. 4	60-100	100
No. 100		0- 30
No. 200		0- 12

703.05 Granular Borrow

Granular Borrow shall be obtained from approved sources, consisting of satisfactorily graded, free draining, hard, durable stone and coarse sand reasonably free from loam, silt, clay, and organic material.

The Granular Borrow shall meet the requirements of the following table:

Table 703.05A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	Sand Portion
No. 4	20-100	100
No. 200		0- 15

The maximum size stone particles of the Granular Borrow shall not exceed 2/3 of the thickness of the layer being spread.

Section 704, Aggregate

704.05 Gravel for Sub-base

Gravel for Sub-base shall consist of material reasonably free from silt, loam, clay, or organic matter. It shall be obtained from approved sources and shall meet the following requirements:

(a) Grading

The gravel shall meet the requirements of the following table:

Table 704.05A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	Sand Portion
No. 4	(20-60)	100
No. 100		0-18
No. 200		0- 8

The stone portion of the gravel shall be uniformly graded from coarse to fine, and the maximum size stone particles shall not exceed 2/3 the thickness of the layer being placed.

(b) Percent of Wear

The percent of wear of the gravel shall be not more than 25 when tested in accordance with AASHTO T 4, or more than 40 when tested in accordance with AASHTO T 96.

704.06 Crushed Stone for Sub-base

Crushed Stone for Sub-base shall consist of clean, hard, crushed stone, uniformly graded, reasonably free from dirt, deleterious material, pieces which are structurally weak and shall meet the following requirements:

(a) Source

This material shall be obtained from approved sources and the area from which this material is obtained shall be stripped and cleaned before blasting.

(b) Grading

This material shall meet the requirements of the following table:

Table 704.06A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	
4 1/2"	100	
4"	90-100	
1 1/2"	25- 50	
No. 4	0- 15	

(c) Percent of Wear

The percent of wear of the parent rock shall be not more than 8 when tested in accordance with AASHTO T 3, or the crushed stone a percent of wear of not more than 40 when tested in accordance with AASHTO T 96.

(d) Thin and Elongated Pieces

Not more than 30 percent, by weight, of thin and elongated pieces will be permitted.

Thin and elongated pieces will be determined on the material coarser than the No. 4 sieve.

(e) Filler

The filler shall be obtained from approved sources and shall meet the requirements as set up for Sand Cushion, Subsection 703.03.

(f) Leveling Material

The leveling material shall be obtained from approved sources and may be either crushed gravel or stone screening produced by the crushing process. The material shall consist of hard durable particles, reasonably free from silt, loam, clay or organic matter.

This material shall meet the requirements of the following table:

Table 704.06B - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	
1"	100	
3/4"	90-100	
1/2"	50- 90	
No. 4	30- 70	
No. 100	0- 20	
No. 200	0- 10	

704.07 Crushed Gravel for Sub-base

Crushed Gravel for Sub-base shall consist of material reasonably free from silt, loam, clay or organic matter. It shall be obtained from approved sources and shall meet the following requirements:

(a) Grading

The crushed gravel shall be uniformly graded from coarse to fine and shall meet the requirements of the following table:

Table 704.07A - Gradation Requirements

Grading	Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
		Total Sample	Sand Portion
Coarse	4"	100	
	No. 4	25- 50	100
	No. 100		0- 20
	No. 200		0- 12
Fine	2"	100	
	1 1/2"	90-100	
	No. 4	30- 60	100
	No. 100		0- 20
	No. 200		0- 12

(b) Percent of Wear

The percent of wear of the parent gravel shall be not more than 20 when tested in accordance with AASHTO T 4, or the crushed gravel a percent of wear of not more than 35 when tested in accordance with AASHTO T 96.

(c) Fractured Faces

At least 30 percent, by weight, of the stone content shall have at least one fractured face.

Fractured faces will be determined on the material coarser than the No. 4 sieve.

704.09 Dense Graded Crushed Stone for Sub-base

Dense Graded Crushed Stone for Sub-base shall consist of clean, hard, crushed stone, uniformly graded, reasonably free from dirt, deleterious material and pieces which are structurally weak, and shall meet the following requirements:

(a) Source

This material shall be obtained from approved sources and the area from which this material is obtained shall be stripped and cleaned before blasting.

(b) Grading

This material shall meet the requirements of the following table:

Table 704.09A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	
3½"	100	
3"	90-100	
2"	75-100	
1"	50- 80	
½"	30- 60	
No. 4	15- 40	
No. 200	0- 10	

(c) Percent of Wear

The percent of wear of the parent rock shall be not more than 8 when tested in accordance with AASHTO T 3, or the crushed stone a percent of wear of not more than 40 when tested in accordance with AASHTO T 96.

(d) Thin and Elongated Pieces

Not more than 30 percent, by weight, of thin or elongated pieces will be permitted.

Thin and elongated pieces will be determined on the material coarser than the No. 4 sieve.

704.10 Gravel Backfill for Slope Stabilization

Gravel Backfill for Slope Stabilization shall be obtained from approved sources, consisting of satisfactorily graded, free draining, hard, durable stone and coarse sand reasonably free from loam, silt, clay, and organic material.

The gravel backfill shall meet the requirements of the following table:

Table 704.10A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	Sand Portion
No. 4	20-50	100
No. 100		0- 20
No. 200		0- 10

The stone portion of the gravel backfill shall be uniformly graded from coarse to fine, and the maximum size stone particles shall not exceed 2/3 the thickness of the layer being placed.

704.11 Granular Backfill for Structures

Granular Backfill for Structures shall be obtained from approved sources, consisting of satisfactorily graded, free draining granular material reasonably free from loam, silt, clay, and organic material.

The granular backfill shall meet the requirements of the following table:

Table 704.11A - Gradation Requirements

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Total Sample	Sand Portion
3"	100	
2½"	90-100	
No. 4	50-100	100
No. 100		0- 18
No. 200		0- 8

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
1	1	1974	1-8	0-1	Yes	100	100	100	100	60	31	---	---	Owners: Daberer, Hubert and Soden, James A. Area has two adjacent, inactive, depleted pits southeast of Vermont Route 242, 0.05 mile northeast of Montgomery Town Line. Test No. 1 was in northeast face of southwest pit. Material is: 1'-8', fine silty sand; bottom, same.
	2	1974	2-10	0-2	Yes	100	100	99	95	58	33	---	---	Test No. 2 was in north face of northeast pit. Material is: 2'-10', fine silty sand with a few pebbles; bottom, same.
2	1	1974	1-5	0-1	No	100	88	77	66	53	37	---	---	Owner: Austin Slayton. Area is an overgrown pasture (200' x 300') in the woods west of State Aid Highway No. 1 with access road 0.35 mile south of junction with State Aid Highway No. 3. Test No. 1 was near center of fenced-in field. Material is: 1'-5', hard-packed glacial rubble with a few angular rock fragments in a fine matrix.
3	1A	1974	2-13	0-2	Yes	79	66	51	37	12	7	27.5%	Gran. Borrow (Grav.)	Owner: Clifton Kennison, Sr. Area is an inactive pit on southern edge of meadow south

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
														of State Aid Highway No. 3 with access 0.3 mile east of its junction with State Aid Highway No. 1. Test No. 1A was in upper part of north face at east end of pit. Material is: 2'-13', coarse gravel. (Estimated 10%-15% stone exceeded the size included in sample.)
	1B	1974	13-24	0-2	Yes	100	100	93	82	5	3	---	Sand	Test No. 1B was below Test No. 1A. Material is: 13'-24', interbedded sand and pebbly sand.
	1C	1974	24-37	0-2	Yes	100	100	95	84	5	1	---	Sand	Test No. 1C was below Test No. 1B. Material is: 24'-37', sand and pebbly sand.
	1D	1974	37-45	0-2	Yes	100	100	87	78	8	3	---	Sand	Test No. 1D was below Test No. 1C. Material is: 37'-45', sand.
	2	1974	0.5-10	0-0.5	Yes	85	85	799	64	4	2	---	Gran. Borrow (Sand)	Test No. 2 was in floor at east end of pit, 40 feet southeast of Test No. 1D. Material is: 0.5'-3', interbedded pebbly fine gravel and sand; 3'-9', sand; 9'-10', fine gravel.
	3	1974	---	0-2	Yes	----- NOT SAMPLED -----						-----	-----	Test No. 3 was in floor at west end of east lobe of pit. Bed-rock at 2', not sampled.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	4	1974	---	---	Yes	---	---	---	NOT	SAMPLED	---	---		Test No. 4 was in southern edge of floor at east end of pit, 60 feet south of Test No. 1D. Material was not in place and was not sampled.
	5A	1974	1.5-8	0-1.5	Yes	92	78	52	37	10	6	27.8%	Gran. Borrow (Grav.)	Test No. 5A was in upper part of 18-foot north face of west pit lobe. Material is: 1.5'-8', dusty coarse gravel (estimated 15%-20% stone exceeded the size included in sample).
	5B	1974	8-18	0-1.5	Yes	100	100	95	88	6	2	---	Sand	Test No. 5B was below Test No. 5A. Material is: 8'-18', sand with pebbly seams; bottoms in sand.
	6	1974	0.5-11	0-0.5	Yes	100	100	97	95	19	6	---	Sand	Test No. 6 was in floor at west end of pit, 25 feet southwest of Test No. 5B. Material is: 0.5'-11', sand; bottom, pebbly fine gravel and water. Possible extension is northward into a 200' x 400' meadow between pit and road, however, owner did not allow testing and will not sell material.
4	1	1974	1-14	0-1	Yes	100	94	69	43	5	3	30.8%	Gran. Borrow (Grav.)	Owner: Austin Slayton. Area is a large field with small (40' x 50') pit in its southeast corner. Access road is east of State Aid Highway No. 1, 0.35

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 4

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
														mile south of junction with State Aid Highway No. 3. Test No. 1 was in 18-foot west face. Material is: 1'-8', fine gravel; 8'-12', pebbly sand; 12'-14', fine gravel; 14'-18', sloughed material.
	2	1974	0.5-10	0-0.5	Yes	82	73	55	41	5	3	30.6%	Gran. Borrow (Grav.)	Test No. 2 was in floor. Material is: 0.5'-4', pebbly fine gravel; 4'-8', sand and pebbly sand; 8'-10', fine gravel. (Estimated 5% stone exceeded the size included in sample.)
	3	1974	1.5-10	0-1.5	No	83	71	57	43	4	3	31.2%	Gran. Borrow (Grav.)	Test No. 3 was in southeast corner of field, 100 feet east of Test No. 2. Material is: 1.5'-9', pebbly fine gravel; 9'-10', coarse gravel. (Estimated 1%-2% stone exceeded the size included in sample.)
	4	1974	2-10	0-2	No	91	82	62	45	13	10	28.8%	Gran. Borrow (Grav.)	Test No. 4 was near opening in tree-line, 350 feet northwest of Test No. 3. Material is: 2'-5', coarse gravel; 5'-10', cobbly gravel. (Estimated 10%-15% stones exceeded the size included in sample.)
	5	1974	1-10	0-1	No	78	73	56	37	16	12	29.1%	Gran. Borrow (Grav.)	Test No. 5 was at edge of knoll, 100 feet west of Test No. 4. Material is: 1'-10', coarse gravel. (Estimated 10%-15% stone exceeded the size included in sample.)

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	6	1974	---	0-3	No	---	---	---	NOT	SAMPLED	---	---	Test No. 6 was in southwest corner of field, 450 feet southwest of Test No. 5. Bedrock at 3', no sample was taken.	
	7	1974	1-8	0-1	No	63	59	45	33	15	10	28.4%	Gran. Borrow (Grav.)	Test No. 7 was in field north of tree-line, 1,000 feet north of Test No. 6. Material is: 1'-8', bouldery gravel. (Estimated 40%-50% stone exceeded the size included in sample.)
	8	1974	2.5-5	0-2.5	No	67	63	52	40	15	10	28.4%	Gran. Borrow (Grav.)	Test No. 8 was at east edge of meadow, 750 feet east of Test No. 7. Material is: 2.5'-5', coarse gravel; bottoms on boulders. (Estimated 30%-40% stone exceeded the size included in sample.) Pit extension is uphill to the west. Material is available.
5	1	1974	3-12	0-3	Yes	100	90	72	58	4	2	30.8%	Gran. Borrow (Grav.)	Owner: John Ferrara. Area is a field with active pit (100' x 200') at north end. Access is east of State Aid Highway No. 1, 0.47 mile north of its junction with Town Highway No. 5. Test No. 1 was in 25-foot north face. Material is: 3'-12', gravel, (estimated 5% stone exceeded the size included in sample); 12'-25', sand, silty

TABLE I

WESTFIELD 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	0-6	Strip-ped	Yes	88	88	80	66	5	3	---	Gran. Borrow (Sand)	sand and sloughed material. Test No. 2 was in south face of small diggings, 130 feet south of Test No. 1. Material is: 0'-6', interbedded sand and pebbles; bottoms on sand at floor level.
	3	1974	0-6	Strip-ped	Yes	91	91	75	59	4	2	---	Gran. Borrow (Grav.)	Test No. 3 was in 6-foot south face, 75 feet south of Test No. 2. Material is: 0'-1', pebbles; 1'-3', pebbly sand; 3'-4', pebbles; 4'-6', sand.
	4	1974	1-10	0-1	Yes	84	73	63	48	12	6	32.6%	Gran. Borrow (Grav.)	Test No. 4 was in pit floor 30 feet southeast of Test No. 1. Material is: 1'-6', bouldery coarse gravel; 6'-8', cobbly gravel; 8'-9', sand; 9'-10', bouldery gravel; bottom, cobbly coarse gravel. (24 inch-plus boulders).
	5	1974	3-9	0-3	No	100	100	82	61	24	15	---	Gran. Borrow (Sand)	Test No. 5 was in west edge of field at base of slope near State Aid Highway No. 1, 100 feet south of access. Material is: 3'-4.5', pebbly sand; 4.5'-6', sand; 6'-9', pebbly fine gravel; bottom, pebbly fine gravel.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	6	1974	1-10	0-1	No	93	91	78	62	5	3	27.8%	Sand	Test No. 6 was in field 200 feet southeast of Test No. 5. Material is: 1'-10', uniform gravel with a few 4 inch-plus stones; bottom, same.
	7	1974	1-10	0-1	No	85	82	69	53	3	2	33.8%	Gran. Borrow (Grav.)	Test No. 7 was in field near tree line, 140 feet north-northeast of Test No. 6. Material is: 1'-10', fine gravel to gravel with few tabular 4 inch-plus stones; bottom, same.
6	1	1974	2.5-35	0-2.5	Yes	79	72	58	39	6	5	33.4%	Gran. Borrow (Grav.)	Owner: Jesse Elliott. Area is large (220' x 130') pit and field west of State Aid Highway No. 3. Access is 0.46 mile north of junction of State Aid Highway No. 3 and Town Highway No. 5. Junior Kennison, Road Commissioner, draws from pit. Test No. 1 was in northwest face of pit. Material is: 2.5'-10', dusty gravel; 10'-16', sand and pebbly sand; 16'-35', fine-to-cobbly gravel; 35'-40', sloughed material, (estimated 10% stone exceeded the size included in sample).

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 8

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	8-14	0-3	Yes	94	87	64	50	6	3	28.1%	Gran. Borrow (Grav.)	Test No. 2 was in southwest face of pit. Material is: 3'-8', sand and pebbly sand (not sampled); 8'-9', sand; 9'-14', cobbly gravel; bottom, sand.
	3	1974	2-10	0-2	Yes	74	74	55	37	5	3	33.4%	Gran. Borrow (Grav.)	Test No. 3 was in southeast face of pit. Material is: 2'-10', pebbly gravel and gravel layers; bottom, sloughed material.
	4	1974	0.5-10	0-0.5	Yes	100	90	81	74	12	6	27.9%	Sand	Test No. 4 was in northwestern floor of pit. Material is: 0.5'-5', gravel; 5'-7', pebbly sand; 7'-10', water and bouldery gravel; bottom, water and bouldery gravel. (Estimated 10%-15% stone exceeded the size included in sample.)
	5	1974	0.5-7	0-0.5	Yes	93	87	71	62	45	25	---	---	Test No. 5 was in western floor of pit, 120 feet southwest of Test No. 4. Material is: 0.5'-2', dirty fine gravel; 2'-7', silty fine sand with random angular pieces of rock fragments; bottom, till. (Water seeped into hole at 2 feet.)

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 9

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	6	1974	0.5-10	0-0.5	Yes	78	73	52	37	7	5	31.3%	Gran. Borrow (Grav.)	Test No. 6 was in southeast corner of pit floor, 125 feet southeast of Test No. 5. Material is: 0.5'-10', coarse cobbly gravel and bouldery gravel; bottom, same.
	7	1974	1-10.5	0-1	No	87	86	60	40	10	6	29.6%	Gran. Borrow (Grav.)	Test No. 7 was in southwest corner of stripped area south of pit. Material is: 1'-5.5', interbedded fine gravel and sand; 5.5'-7.5', coarse sand; 7.5'-10.5', fine gravel; bottom, sand.
	8A	1974	1.5-5	0-1.5	No	62	57	43	31	7	4	29.2%	Gran. Borrow (Grav.)	Test No. 8A was in field near woods, 125 feet south of Test No. 7. Material is: 1.5'-5', cobbly gravel.
	8B	1974	5-9.5	0-1.5	No	100	100	96	83	11	5	---	Sand	Test No. 8B was below Test No. 8A. Material is: 5'-7', sand; 7'-9.5', sand and silty sand; bottom, sand and silty sand. Water seeping into hole at 7 feet from the northwest.
	9	1974	1-7	0-1	No	100	100	98	92	54	28	---	---	Test No. 9 was in clearing atop small knoll in sugar woods, 175 feet west of old sugar house. Material is: 1'-7', pebbly sand over sand; bottom, 7'-9', silt to clay.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 10

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
7	1	1974	1-10	0-1	No	100	100	92	87	36	9	---	Gran. Borrow (Sand)	Owner: Jesse Elliott. Area is a field and wooded ridge bounded on its north edge by Gerard Roy and Angela Roberts' property line. Field drive access road is northwest of State Aid Highway No. 1 and 0.71 mile northeast of its junction with Town Highway No. 5. Test No. 1 was in northwest corner of small clearing atop ridge near Roberts and Roy property line. Material is: 1'-3.5', pebbly sand and fine gravel; 3.5'-10', sand; bottom, sand.
	2	1974	0.5-10.5	0-0.5	No	96	83	65	45	6	3	26.8%	Gran. Borrow (Grav.)	Test No. 2 was in south end of ridge, 600 feet south of Test No. 1. Material is: 0.5'-10.5', pebbly fine gravel; bottom, same.
	3	1974	2-11.5	0-2	No	100	94	85	80	16	3	---	Sand	Test No. 3 was near east edge of ridge, 225 feet north of Test No. 2. Material is: 2'-4', pebbly fine gravel; 4'-11.5', sand; bottom, sand.
	4	1974	1-12	0-1	No	100	100	97	94	20	8	---	Sand	Test No. 4 was in east edge of ridge, 180 feet southeast of Test No. 1. Material is: 1'-4', sand; 4'-5', pebbly sand; 5'-7', sand; 7'-8', pebbly sand; 8'-12', sand; bottom, sand.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 11

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	5	1974	1.5-7	0-1.5	No	100	100	100	100	90	46	---	---	Test No. 5 was in northwest corner of rolling meadow, 130 feet northwest of State Aid Highway No. 3. Material is: 1.5'-7', silty fine sand; 7'-10', material was wet, fine, sandy silt (not sampled).
	6	1974	1-6	0-1	No	100	100	100	97	73	36	---	---	Test No. 6 was in power line right-of-way at south end of field, 500 feet south of Test No. 5. Material is: 1'-6', silty fine sand; 6'-9', fine sandy silt (not sampled).
8	1	1974	1-11	0-1	Yes	100	100	100	99	14	4	---	Sand	<p>Owners: Gerard Roy and Angela Roberts.</p> <p>Area is small and large pits with surrounding fields and woods on north extension. 0.12 mile field drive access road is east of State Aid Highway No. 3 and 0.88 mile northeast of its junction with Town Highway No. 5. Area has building lots marked out and material is not available.</p> <p>Test No. 1 was in east face of small western pit. Material is: 1'-2', brown sand; 2'-3', pebbly sand; 3'-9', tan-gray sand, 9'-10', pebbly sand; 10'-11', sand; bottom, sand.</p>

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 12

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	1-12	0-1	Yes	100	100	100	99	14	4	---	Sand	Test No. 2 was in west face of small western pit, 55 feet west of Test No. 1. Material is: 1'-3', coarse sand and pebbly sand; 3'-10', sand; 10'-11', pebbly sand; 11'-12', sand; bottom, sand.
	3	1974	1.5-10	0-1.5	Yes	100	100	92	86	34	16	---	---	Test No. 3 was in middle of east face of large eastern pit. Material is: 1.5'-3', silt with angular pebbles; 3'-4', brown-silty sand; 4'-5.5', gray sand; 5.5', 2 inch layer of brown sand; 5.5'-8', gray sand; 8'-10', pebbly sand.
	3B	1974	10-16	0-1.5	Yes	85	85	76	63	9	4	---	Gran. Borrow (Sand)	Test No. 3B was below Test No. 3. Material is: 10'-12', pebbly fine gravel; 12'-16', sand; bottom, same.
	4	1974	0.5-10	0-0.5	Yes	100	100	100	99	39	12	---	---	Test No. 4 was in floor of small western pit. Material is: 0.5'-10', fine silty sand; bottom, same.
	5	1974	0.5-10	0-0.5	Yes	79	72	58	47	15	8	27.5%	Gran. Borrow (Grav.)	Test No. 5 was in floor at north end of large eastern pit, 70 feet northwest of Test No. 3. Material is: 0.5'-7', pebbly fine gravel; 7'-10', pebbly sand; bottom, pebbly sand.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	6	1974	0.5-10	0-0.5	Yes	100	100	100	99	35	13	---	Gran. Borrow (Sand)	Test No. 6 was in floor near access to large east pit, 150 feet south of Test No. 5. Material is: 0.5'-4', coarse sand; 4'-8', sand; 8'-10', fine sand; bottom, fine sand. Backhoe hole dug in small clearing, 100 feet east of junction of field and pit roads. Encountered ledge at 2 feet (not sampled).
9	1	1974	2-15	0-2	Yes	92	84	75	62	6	3	---	Gran. Borrow (Sand)	Owner: Tom Power. Area is (60' x 125') pit and large field east of cemetery with 0.10 mile field drive access, 0.15 mile north of junction of State Aid Highway No. 1 with Town Highway No. 6. Test No. 1 was in 26 foot west face of pit. Material is: 2'-7', dusty fine gravel; 7'-15', sand with pebbly sand seams; bottom, sloughed material.
	2	1974	0.5-7	0-0.5	Yes	100	92	70	55	8	4	24.4%	Gravel	Test No. 2 was in 10 foot southeast face of pit. Material is: 0.5'-4', pebbly fine gravel with a few cobbles; 4'-7', pebbly sand and silty sand; bottom, sloughed material.
	3	1974	0.5-4	0-0.5	Yes	100	100	97	90	29	12	---	Sand	Test No. 3 was in pit floor 20 feet east of Test No. 1. Material is: 0.5'-4', sand; bottom, bedrock.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	4	1974	2.5-9	0-2.5	No	68	58	42	30	15	10	29.0%	Gran. Borrow (Grav.)	Test No. 4 was in east edge of meadow, 350 feet north of Test No. 3. Material is: 2.5'-6', cobbly gravel; 6'-9', coarse bouldery gravel; bottom, bouldery gravel.
	5	1974	1.5-9	0-1.5	No	76	68	52	39	5	3	29.1%	Gran. Borrow (Grav.)	Test No. 5 was in north edge of field near State Aid Highway No. 1, 425 feet northwest of Test No. 4. Material is: 1'-9', coarse gravel; bottom, same.
10	1	1974	0.5-11	0-0.5	Yes	100	100	91	80	22	8	---	Sand	Owner: Tom Power. Area is (60' x 150') pit and field southeast of cemetery, with 0.10 mile field access 0.15 mile north of junction of State Aid Highway No. 1 with Town Highway No. 6. Test No. 1 was in northwest face of pit. Material is: 0.5'-2.5', fine gravel; 2.5'-11', interbedded fine sand, silty sand and pebbly sand layers; bottom, 11'-17', sloughed material.
	2	1974	0.5-4.5	0-0.5	Yes	100	88	76	60	8	4	19.2%	Gravel	Test No. 2 was in southeast face of pit. Material is: 0.5'-2', pebbly sand, 2'-4.5', sand and silty sand seams; bottom, 4.5'-6', sloughed material.

WESTFIELD GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						3 Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1974	0.5-10	0-0.5	Yes	100	100	99	98	45	16	---	---	Test No. 3 was in northwest floor of pit. Material is: 0.5'-10', sand; bottom, same.
	4	1974	1.5-8	0-1.5	No	87	87	79	60	7	4	28.3%	Gran. Borrow (Grav.)	Test No. 4 was in southeast corner of meadow, east of pit. Material is: 1.5'-8', pebbly sand and fine gravel seams; bottom, same; had to stop hole at 8' due to caving.
	5	1974	1-8	0-1	No	86	79	63	49	5	3	33.6%	Gran. Borrow (Grav.)	Test No. 5 was atop overgrown knoll, 170 feet east of southeast face of pit. Material is: 1'-8', fine gravel with occasional cobble layers; bottom, same; stopped hole at 8' due to caving.
	6	1974	0.5-9	0-0.5	No	100	84	79	70	9	3	---	Gran.	Test No. 6 was atop small knoll, 90 feet northeast of Test No. 4. Material is: 0.5'-4', pebbly sand with fine gravel seams; 4'-7', pebbly fine gravel; 7'-9', sand; bottom, sand.
11	1A	1974	2-11	0-2	Yes	94	93	76	60	4	3	36.6%	Gran. Borrow (Grav.)	Owner: Lawrence St. Jacques. Area is small overgrown pit north of Town Highway No. 6 and 0.43 mile west of its junction with State Aid Highway No. 1. Material is not available, owner wants to keep for his own use. Test No. 1A was in north face of pit. Material is: 2'-11', fine pebbly gravel.

TABLE I

WESTFIELD 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	1B	1974	11-19	0-2	Yes	92	74	54	39	4	3	36.6%	Gran. Borrow (Grav.)	Test No. 1B was below Test No. 1A. Material is: 11'-19', clean cobbly gravel; bottom, same; caves easily.
	2	1974	0-9	---	Yes	100	89	79	67	36	21	---	---	Test No. 2 was in pit floor, 30 feet southeast of Test No. 1. Material is: 0'-1.5', gravel; 1.5'-3', fine gravelly sand; 3'-6', sand; 6'-9', silty fine sand; bottom, silt to clay.
12	1	1974	1-9	0-1	No	93	86	69	49	5	2	31.8%	Gran. Borrow (Grav.)	Owner: Roger Dunton. Former Owner: Charles Pudvah. Area is large field extending from hillside with knolls on west edge. 0.08 mile access road is south of Town Highway No. 6 end and 0.73 mile west of its junction with State Aid Highway No. 1. Test No. 1 was in west edge of knoll at high northern part of field. Material is: 1'-9', pebbly sand and fine gravel; bottom, sand.
	2	1974	0.5-11	0-0.5	No	100	100	89	78	10	3	---	Sand	Test No. 2 was near tree line on low knoll, 430 feet south-southwest of Test No. 1. Material is: 0.5'-3', pebbly sand; 3'-11', sand; bottom, sand.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 17

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1974	2-6	0-2	No	100	100	100	100	61	27	---	---	Test No. 3 was near tree line at south end of field, 700 feet south-southeast of Test No. 2. Material is: 2'-6', sand; bottom, sand and water.
	4	1974	2-6	0-2	No	100	84	77	63	51	35	---	---	Test No. 4 was in north end of field, 470 feet north of Test No. 1. Material is: 2'-6', silt to clay with stone fragments; bottom, boulders and water.
	5	1974	1-9	0-1	No	100	83	75	64	30	16	---	---	Test No. 5 was near tree line at northeast edge of field, 600 feet northeast of Test No. 1. Material is: 1'-6', poorly sorted gravel; 6'-9', boulders and sand; bottom, boulders. Material is not available.
13	1A	1974	1-15	0-1	Yes	89	79	63	49	7	4	26.6%	Gran. Borrow (Grav.)	Owner: Joseph Cushner. Former Owner: A. Meunier. Area is large pit northwest of west end of Town Highway No. 7. 0.33 mile field drive and woods road access is 0.12 mile west of Town Highway No. 7 junction with State Aid Highway No. 1. Access road needs culvert for drainage ditch and bridge for small stream. Test No. 1A was in north-north-west face of pit. Material is:

WESTFIELD GRANULAR DATA SHEET NO. 18

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	1B	1974	15-30	0-1	Yes	84	70	59	42	5	3	30.7%	Gran. Borrow (Grav.)	1'-3', dusty fine gravel; 3'-3.5', sand; 3.5'-6', fine gravel; 6'-9', gravelly sand; 9'-10.5', sand; 10.5'-11', brown sand; 11'-14', pebbly coarse sand with some cobbles; 14'-15', gravelly sand.
	1C	1974	30-37	0-1	Yes	100	93	83	59	3	1	26.4%	Gran.	Test No. 1C was below Test No. 1B. Material is: 30'-37', sand and gravelly sand layers; bottom, sloughed material; face of pit caves easily.
	2	1974	0.5-8	0-0.5	Yes	100	100	99	96	13	4	---	Sand	Test No. 2 was in pit floor, 30 feet south of Test No. 1. Material is: 0.5'-8', sand; bottom, sand.
14	1	1974	1-27	0-1	Yes	100	100	79	67	38	11	---	Gran. Borrow (Sand)	Owner: Paul LeTourneau. Area is (300' x 150') pit and surrounding pasture, 0.1 mile west of Vermont Route 100 and 450 feet south along Vermont Route 100 from Troy-Westfield Town Line marker to access road. Pit had small pond on its floor and bedrock showing in west extension.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
														Test No. 1 was in southwest face of pit. Material is: 1'-1.5', fine gravel; 1.5'-5.5', fine sand; 5.5'-6', fine gravel; 6'-7', sand; 7'-8', silt to clay; 8'-9', sand; 9'-10', fine gravel; 10'-14', sand; 14'-16', fine gravel; 16'-20', sand with some stones; 20'-27', sand with fine gravel layer; bottom, sloughed material.
	2	1974	1-19	0-1	Yes	67	58	39	28	28	17	18.0%	---	Test No. 2 was in north face of pit. Material is: 1'-3.5', pebbly sand; 3.5'-9', fine gravel; 9'-16', gravel; 16'-18', cobbly gravel; 18'-19', angular rock fragments with silt to clay; bottom, sloughed material.
	3	1974	1-10	0-1	No	100	100	92	87	61	20	---	---	Test No. 3 was in pasture near southwest edge of pit. Material is: 1'-7', sand; 7'-10', pebbly sand; bottom, pebbly sand.
	4	1974	1-6	0-1	Yes	100	98	75	54	24	12	18.8%	Gran. Borrow (Grav.)	Test No. 4 was in pit floor, 50 feet west of Test No. 2. Material is: 1'-6', pebbly fine gravel; bottom, water and bouldery gravel.
15	1	1974	2-10	0-2	Yes	100	100	98	77	5	4	---	Sand	Owner: Paul LeTourneau. Area is old, overgrown, trash-strewn pit in large meadow. 0.1 mile field access is southeast

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 20

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
														of Vermont Route 100 and 0.23 mile northeast of Vermont Route 100 junction with Town Highway No. 5. Owner does not want to extend pit into surrounding field. Test No. 1 was in floor of northwest corner of overgrown pit. Material is: 2'-4', silty, pebbly sand; 4'-7', brown, pebbly, coarse sand; 7'-8', dark brown pebbly sand; 8'-10', reddish-brown sand; bottom, sand and water.
	2A	1974	3-12	0-3	Yes	100	100	100	100	94	73	---	---	Test No. 2A was in northwest face of pit, 20 feet west of Test No. 1. Material is: 3'-12', silty fine sand with silt to clay seams.
	2B	1974	12-19	0-3	Yes	88	80	61	45	6	5	18.4%	Gravel	Test No. 2B was below Test No. 2A. Material is: 12'-19', pebbly fine gravel; bottom, sand.
16	1	1974	7-14	0-2	Yes	100	100	100	98	62	38	---	---	Owner: Jacques Couture. Former Owner: J. P. Couture (father). Area is two small pits with equal 0.35 mile access roads northwest of Vermont Route 100. Field access is 200 feet south-

TABLE I

WESTFIELD 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
														west of Vermont Route 100 junction with Town Highway No. 4. Test No. 1 was in northwest face of southern pit. Material is: 2'-7', unsampled; 7'-9', sand; 9'-10', rusty gray "hard-pan"; 10'-11', pebbly sand; 11'-14', sand; bottom, silt to clay.
	2	1974	1-7	0-1	Yes	100	89	84	75	60	43	---	---	Test No. 2 was in pit floor, 25 feet east of Test No. 1. Material is: 1'-7', sand, silt, 1/2" to 1" stone fragments, silt to clay and random 4 inch-plus boulders; bottom, silt to clay.
	3	1974	1-11	0-1	Yes	100	100	97	88	75	34	---	---	Test No. 3 was in western face of north pit. Material is: 1'-4', silt and sand; 4'-8', stone fragments and silt matrix; 8'-11', silt to clay; bottom, till.
	4	1974	1-4	0-1	Yes	100	100	91	79	59	55	---	---	Test No. 4 was in pit floor, 25 feet east of Test No. 3. Material is: 1'-3', silt; 3'-4', wet gravel; bottom, bedrock.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 22

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
17	1	1974	1-9	0-1	Yes	77	72	55	43	6	2	28.2%	Gran. Borrow (Grav.)	Owner: Mrs. Marge Faxman. Area is small pit and wooded terrace extension southeast of Town Highway No. 10. 50 foot access drive is 0.11 mile southwest of Town Highway No. 10 junction with Town Highway No. 9. Test No. 1 was in east face of pit. Material is: 1'-9', sand, fine gravel and gravel; bottom, sand and sloughed material.
	2	1974	1-10	0-1	Yes	100	100	99	94	18	3	---	Sand	Test No. 2 was in southeast face of pit. Material is: 1'-10', sand and pebble layers; bottom, sand.
	3	1974	0.5-10	0-0.5	Yes	100	100	93	90	28	10	---	Sand	Test No. 3 was in floor of small pit, 20 feet west of Test No. 1. Material is: 0.5'-10', sand; bottom, sand.
	4	1974	1-11	0-1	No	100	93	81	69	14	4	---	Sand	Test No. 4 was in small clearing, 100 feet southwest of Test No. 2. Material is: 1'-11', mixed layers of pebbly sand, sand, pebbly fine gravel and sand; bottom, pebbly sand.
	5	1974	1-10	0-1	No	100	100	84	74	22	7	---	Sand	Test No. 5 was in small clearing, 425 feet southwest of Test No. 4. Material is: 1'-6',

WESTFIELD GRANULAR DATA SHEET NO. 23

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	6	1974	1-10	0-1	No	79	77	63	50	17	6	24.0%	Gravel	pebbly sand; 6'-7', fine gravel; 7'-9', pebbly sand; 9'-10', sand; bottom, sand. Test No. 6 was in small clearing north of woods road, 275 feet east-northeast of Test No. 5. Material is: 1'-6', gravel; 6'-10', pebbly sand; bottom, pebbly sand.
	7	1974	1.5-10	0-1.5	No	94	94	76	65	18	6	---	Gran. Borrow (Grav.)	Test No. 7 was in small clearing, 240 feet east of Test No. 6. Material is: 1.5'-3', pebbly gravel; 3'-6.5', sand; 6.5'-8.5', pebbly fine gravel; 8.5'-10', sand; bottom, sand.
18	1	1974	1-7	0-1	Yes	100	100	92	80	18	6	---	Sand	Owner: Mrs. Marge Paxman. Area is (40' x 40') pit and surrounding woods on hillside west and above campground. 0.35 mile woods road access to pit is steep and southeast of Town Highway No. 10, 0.10 mile southwest of junction with Town Highway No. 9. Test No. 1 was in the northwest face of pit. Material is: 1'-7', sand with some pebbles.
	1B	1974	7-10	0-1	Yes	100	88	74	63	18	4	---	Gran. Borrow (Sand)	Test No. 1B was below Test No. 1. Material is: 7'-10', pebbly fine gravel and sand.

TABLE I

WESTFIELD 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	1C	1974	10-18	0-1	Yes	83	77	63	54	14	3	19.2%	Gravel	Test No. 1C was in pit floor below Test No. 1B. Material is: 10'-13', sand with pebble lenses; bottom, sand.
19	1	1974	4-9	0-4	No	100	100	100	100	92.3	77.6	---	---	Owner: Reginald LeBlanc. Area is low meadow west of Vermont Route 100 and 0.17 mile north of Vermont Route 100 junction with Town Highway No. 15. Material is not available. Test No. 1 was in northwest corner of meadow, 0.1 mile west of Vermont Route 100. Material is: 4'-3', fine silty sand; 8'-9', blue silt; bottom, silt to clay.
20	1	1974	3-5	0-3	No	90	79	52	35	14	7	23.4%	Gravel	Owner: Reginald LeBlanc. Area is large, low meadow east of Vermont Route 100 and north of Town Highway No. 15. Field had two or three drainage ditches cut into it and material would not be available. Test No. 1 was in the northeast corner of low field, 0.22 mile east of Vermont Route 100. Material is: 3'-5', gravel; bottom, water poured into hole.

TABLE I

WESTFIELD 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	4-9	0-4	No	100	100	94	66	5	2	---	Sand	Test No. 2 was in the southeast corner of field, nearly across from cemetery and north of Town Highway No. 15. Material is: 4'-6', silt and pebbles; 6'-9', fine pebbly gravel; bottom, water table.
21	1	1974	3-5	0-3	No	69	56	42	32	33	23	30.5%	---	Owner: Reginald LeBlanc. Area is gradually sloping pasture west of Vermont Route 100 and directly across from Vermont Route 100 and Town Highway No. 15 junction. 0.10 mile field access road goes between buildings. Test No. 1 was in upper west end of pasture. Material is: 3'-5', coarse bouldery gravel; bottom, ledge.
	2	1974	1-11	0-1	No	92	90	71	56	16	11	---	Gran. Borrow (Grav.)	Test No. 2 was near middle of pasture, 375 feet east of Test No. 1. Material is: 1'-6.5', cobbly gravel; 6.5'-9', sandy gravel; 9'-11', gravel; bottom, gravel.
	3	1974	2-9	0-2	No	100	100	100	100	89	46	---	---	Test No. 3 was in northeast corner of pasture, 450 feet northeast of Test No. 2. Material is: 2'-4', pebbly sand; 4'-9', silty sand with few pebbles; bottom, silt to clay; water coming into west end of hole at 4'.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 26

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
22	1	1974	0.5-9	0-0.5	Yes	100	100	95	82	12	3	---	Sand	Owner: E. W. Housh. Area is (100' x 75') pit in overgrown field. Field drive access extends 0.16 mile southeast from Town Highway No. 17 at its junction with Town Highway No. 14. The property is over-seen by Foster-Taber Corp., Stowe, Vermont. Material is not for sale. Test No. 1 was in northwest face of pit. Material is: 0.5'-3', pebbly sand; 3'-6', sand; 6'-8', light tan sand; 8'-9', pebbly sand; bottom, sloughed material.
	2	1974	0.5-8	0-0.5	Yes	100	91	87	81	30	11	---	Sand	Test No. 2 was in southwest face of pit, 60 feet southeast of Test No. 1. Material is: 0.5'-3', pebbly sand; 3'-7', sand; 7'-8', silty fine sand; bottom, sloughed material.
	3	1974	0.5-10	0-0.5	Yes	100	100	97	94	25	5	---	Sand	Test No. 3 was in pit floor 15 feet east of Test No. 1. Material is: 0.5'-10', sand; bottom, sand.
	4	1974	1-10	0-1	No	100	100	100	98	50	16	---	---	Test No. 4 was in field, 200 feet southwest of Test No. 1. Material is: 1'-10', sand; bottom, sand.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 27

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
23	1	1974	1-9	0-1	No	31	28	23	16	14	7	30.8%	---	Owner: Robert Delaney. Former Owner: Ostrout. Area is large overgrown field southeast of old barn and Town Highway No. 17. Field drive access extends 0.05 mile southeast and is 0.77 mile southwest of Town Highway No. 17 junction with Town Highway No. 18. Test No. 1 was in overgrown field 150 feet south of old barn. Material is: 1'-5.5', gravel; 5.5'-6.5', sand; 6.5'-9', gravel; bottom, boulders.
	2	1974	1-10	0-1	No	100	93	76	60	7	2	22.7%	Gravel	Test No. 2 was 350 feet south-southeast of Test No. 1. Material is: 1'-4', pebbly gravel; 4'-7', sand; 7'-10', fine gravel; bottom, fine gravel. Material may not be available.
24	1	1974	1-11	0-1	Yes	92	88	65	48	12	9	21.0%	Gran. Borrow (Grav.)	Owner: Robert Delaney. Former Owner: Ostrout. Area is (60' x 200') pit with limited extension into Map Identification No. 23. Access is 0.27 mile northwest on Pent Road No. 1 from Town Highway No. 19, and 0.38 mile north from Town Highway No. 19 junc-

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 28

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	0.5-3	0-0.5	Yes	100	86	68	54	20	7	26.8%	Gran. Borrow (Grav.)	<p>tion with Town Highway No. 26. Test No. 1 was in northwest face of north end of pit. Material is: 1'-2', pebbly sand; 2'-6', fine gravel; 6'-8', sand; 8'-10', fine gravel; 10'-11', sand; bottom, sand and water.</p> <p>Test No. 2 was in pit floor at edge of pit, 75 feet east of Test No. 1. Material is: 0.5'-3', sand and gravelly sand; bottom, bedrock.</p>
25	1	1974	2-10	0-2	No	89	89	82	72	20	6	---	Gran. Borrow (Sand)	<p>Owner: Jean Paul Bonneau. Former Owner: J. P. McClure. Area is large side hill field sloping down southeast of Town Highway No. 19. Field drive junction with Town Highway No. 19 is 0.53 mile southwest of Town Highway No. 19 junction with Town Highway No. 18. Material probably not available since land is being considered for house lots.</p> <p>Test No. 1 was at east end of field near new and old haul road junctions. Material is: 2'-4', pebbly fine gravel; 4'-5', rust-cemented fine gravel;</p>

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 29

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	1-7	0-1	No	100	100	100	89	68	57	---	---	5'-10', sand with pebbly sand seams; bottom, sand. Test No. 2 was 300 feet southwest of Test No. 1. Material is: 1'-3', sand; 3'-7', silt to clay with angular stone fragments; bottom, silt to clay.
26	1A	1974	1.5-18	0-1.5	Yes	94	89	80	66	5	1	---	Gran. Borrow (Sand)	Owner: Jean Paul Bonneau. Former Owner: J. P. McClure. Area is pit and surrounding woods 0.45 mile southeast of Town Highway No. 19. Access is 0.53 mile southwest of Town Highway No. 19 junction with Town Highway No. 18. Material probably not available since land is being considered for house lots. Test No. 1A was in south face of pit. Material is: 1.5'-18', layers of fine gravel, pebbly sand and intermixed layers of sand and fine sand.
	1B	1974	18-35	0-1.5	Yes	100	100	97	89	31	12	---	Gran. Borrow (Sand)	Test No. 1B was below Test No. 1A. Material is: 18'-28', pebbly sand and sand; 28'-35', fine sand; bottom, sloughed material.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 30

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	2-10	0-2	No	71	65	57	49	11	5	27.6%	Gran. Borrow (Grav.)	Test No. 2 was in clearing at top of pit, 50 feet southwest of Test No. 1. Material is: 2'-10', gravel with sand seams; bottom, gravel.
	3	1974	1-11	0-1	No	100	100	100	90	23	8	---	Sand	Test No. 3 was in clearing in woods, 600 feet southeast of pit. Material is: 1'-11', sand; bottom, bedrock.
27	1A	1974	1-7	0-1	No	86	77	59	47	12	6	23.4%	Gravel	Owner: Oliver Choquette. Area is high pasture and surrounding woods 0.40 mile west of Vermont Route 100, and 1.43 mile south of Vermont Route 100 junction with Town Highway No. 19. Material is probably not available. Test No. 1A was near tree-line at northwest edge of pasture. Material is: 1'-7', gravel.
	1B	1974	7-11	0-1	No	100	100	99	96	8	2	---	Sand	Test No. 1B was below Test No. 1A. Material is: 7'-11', sand; bottom, sand.
	2	1974	2-11	0-2	No	100	100	99	95	65	30	---	---	Test No. 2 was in southwest corner of pasture, 1000 feet south-southeast of Test No. 1. Material is: 2'-3', fine gravel; 3'-5', sand; 5'-11', fine silty sand; bottom, fine silty sand.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 31

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1974	1-11	0-1	No	100	100	100	100	89	71	---	---	Test No. 3 was in pasture, 800 feet north-northeast of Test No. 2. Material is: 1'-11', silty sand; bottom, silt.
	4	1974	1-11	0-1	No	100	100	91	78	8	2	---	Sand	Test No. 4 was near tree-line, 380 feet north-northwest of Test No. 3, and 310 feet north-east of Test No. 1. Material is: 1'-4', pebbly sand; 4'-9', fine pebbly gravel; 9'-11', pebbly sand; bottom, pebbly sand.
28	1	1974	0.5-5	0-0.5	Yes	100	80	70	64	17	4	---	Gran. Borrow (Sand)	Owner: Raymond Sheltra. Area is small (30' x 90') pit and field west of Vermont Route 100. Field drive access is 1.16 mile south of Vermont Route 100 junction with Town Highway No. 19. Test No. 1 was in north face of pit atop rolling field. Material is: 0.5'-3', pebbly sand and sand seams; 3'-5', pebbly fine gravel and sand; bottom, fine gravel.
	2	1974	0.5-10	0-0.5	Yes	100	100	100	100	64	27	---	---	Test No. 2 was in pit floor, 20 feet southwest of Test No. 1. Material is: 0.5'-10', moist, fine silty sand; bottom, same.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 32

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1974	1-11	0-1	No	100	100	100	100	84	48	---	---	Test No. 3 was in field, 200 feet west-southwest of Test No. 2. Material is: 1'-3', reddish-brown sand; 3'-11', grayish-brown sand; bottom, fine silty sand.
	4	1974	1-11	0-1	No	100	100	95	88	64	58	---	---	Test No. 4 was in field east of line fence, 550 feet west-northwest of Test No. 3. Material is: 1'-5', sand; 5'-11', silty fine sand with clay traces; bottom, silt to clay.
	5	1974	1-10	0-1	No	100	88	79	69	16	3	---	Gran. Borrow (Sand)	Test No. 5 was atop knoll, 90 feet north of Test No. 4. Material is: 1'-5', pebbly coarse sand; 5'-10', sand; bottom, sand.
29	1	1974	1-9.5	0-1	No	100	100	99	98	47	18	----	---	Owner: Mrs. Alice Barre. Area is pasture and hillside west of Vermont Route 100 and south of Taft Brook. 0.1 mile field drive access is 0.75 mile south of Vermont Route 100 junction with Town Highway No. 19. Test No. 1 was atop knoll east of ledge on western edge of field. Material is: 1'-8', fine sand; 8'-9.5', coarse

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 33

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	1-9	0-1	No	100	100	100	100	88	85	---	---	sand; bottom, coarse sand and water. Test No. 2 was in southwest corner of field, 700 feet south-southwest of Test No. 1. Material is: 1'-9', silt to clay; bottom, same.
	3	1974	1-7	0-1	No	100	100	88.9	88.9	67.2	58.3	---	---	Test No. 3 was in knoll on east side of field, 120 feet west of Vermont Route 100. Material is: 1'-7', silt to clay; bottom, same.
	4	1974	2-9.5	0-2	No	100	100	100	100	78	56	---	---	Test No. 4 was on south slope of lowest northern part of field. Material is: 2'-6', gray-blue silt; 6'-7', rusty silt seam; 7'-9.5', brown silt; bottom, same.
30	1	1974	0.5-9.5	0-0.5	No	100	100	96	95	63	37	---	---	Owner: Mrs. Alice Barre. Area is large, overgrown, rolling field east of and above Vermont Route 100. Steep 0.2 mile access road is 0.75 mile south of Vermont Route 100 junction with Town Highway No. 19. Test No. 1 was at west edge of field atop wooded terrace, 60 feet east of access road.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 34

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	1-10	0-1	No	83	83	72	64	49	28	---	---	Material is: 0.5'-9.5', fine sand; bottom, same. Test No. 2 was near tree-line on north edge of field, 900 feet northeast of Test No. 1. Material is: 1'-5', pebbly sand; 5'-10', pebbly sand; bottom, sand with a few cobbles.
	3	1974	1-10	0-1	No	89	89	81	76	69	41	---	---	Test No. 3 was in southeast corner of field, 1100 feet S.20°W. of Test No. 2. Material is: 1'-10', sand with random angular pebbles and stones; bottom, same.
31	1	1974	2-10	0-2	No	89	82	59	44	8	5	24.6%	Gravel	Owner: Mrs. Alice Barre. Area is low pasture east of Vermont Route 100 and north of Taft Brook. 100 foot access road is 0.63 mile south of Vermont Route 100 junction with Town Highway No. 19. Material may not be available. Test No. 1 was in north end of field, 75 feet northwest of power pole No. JYT81. Material is: 2'-3', gray sand; 3'-8.5', fluvial gravel; 8.5'-10', gravel; water at 8.5 feet; bottom, gravel and water.

TABLE I

WESTFIELD GRANULAR DATA SHEET NO. 36

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
34	1A	1974	0.5-6	0-0.5	No	100	100	87	84	41	22	---	---	Owner: Harold Davis. Area is low meadow east of Mineral Spring Brook with 0.6 mile access northeast of Town Highway No. 4. Access is 0.03 mile south of Town Highway No. 4 junction with Town Highway No. 20. Area may need bridge or culvert for access road. Material is not available. Test No. 1A was on low terrace east of brook in west end of field. Material is: 0.5'-4', brown sand; 4'-6', gray sand; bottom, gravel.
	1B	1974	6-10	0-0.5	No	75	49	36	28	12	6	17.6%	Gravel	Test No. 1B was below Test No. 1A. Material is: 6'-10', bouldery gravel; bottom, same with water at 6 feet.
	2	1974	2-10	0-2	No	100	100	100	100	86.0	70.0	---	---	Test No. 2 was at base of slope in east edge of field, 0.2 mile east of Test No. 1. Material is: 2'-8', silty fine sand; 8'-10', gray silt; bottom, gray silt.
	3	1974	1-10	0-1	No	100	100	100	100	69	56	---	---	Test No. 3 was in southwest edge of terrace above meadow, 175 feet northeast of Test No. 2. Material is: 1'-9', sandy silt; 9'-10', gray silt; bottom, silt.

TABLE I
SUPPLEMENT

WESTFIELD PROPERTY OWNERS - GRANULAR

Map Identification No.

Barre, (Mrs.) Alice	29, 30, 31
Bonneau, Jean Paul	25, 26
Choquette, Oliver T.	27
Couture, Jacques	16
Cushner, Joseph	13
Davis, Harold	32, 33, 34, 35
*Daberer, Hubert	1
Delaney, Robert	23, 24
Dunton, Roger	12
Elliott, Jesse	6, 7
Ferrara, John F.	5
Housh, E. W.	22
Kennison, Clifton R., Sr.	3
LeBlanc, Reginald E.	19, 20, 21
LeTourneau, Paul	14, 15
Paxman, Marjorie	17, 18
Power, Tom	9, 10
**Roberts, Angela	8
**Roy, Gerard	8
St. Jacques, Lawrence	11
Sheltra, Raymond	28
Slayton, Austin H.	2, 4
*Soden, James A.	1

* Denotes Joint Ownership

** Denotes Joint Ownership

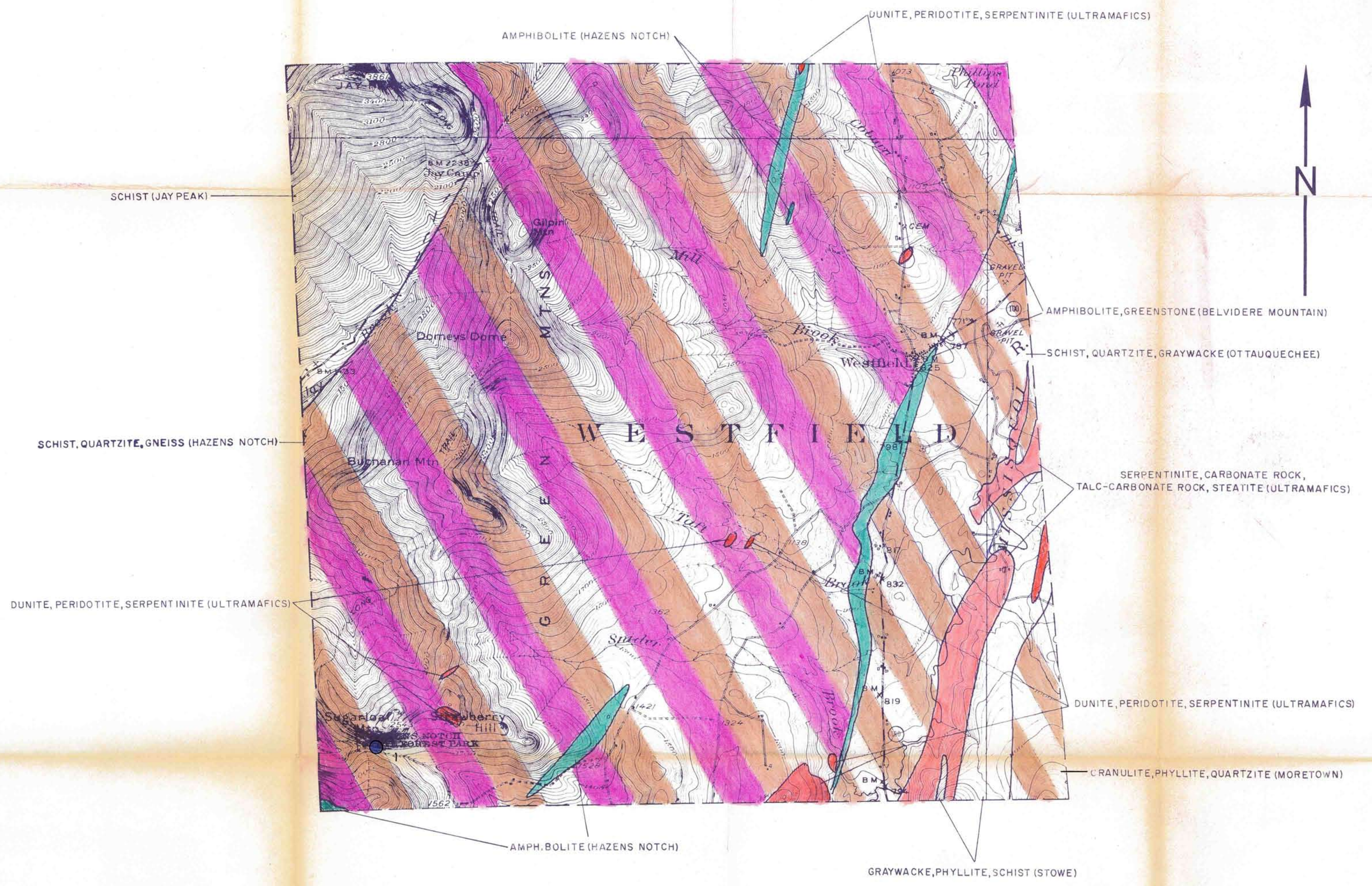
TABLE II
SUPPLEMENT

WESTFIELD PROPERTY OWNERS - ROCK

Map Identification No.

Vermont, State of

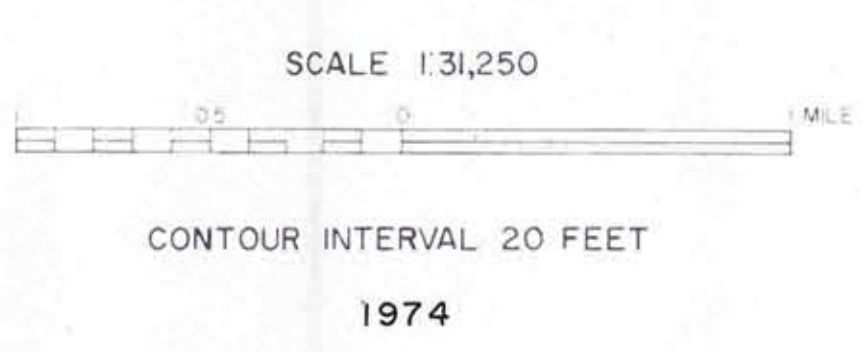
1



LEGEND

- ROCK, ACCEPTABLE FOR SEC. 704.06 (crushed stone for sub-base)
- ROCK, NOT ACCEPTABLE FOR SEC. 704.06
- ✕ EXISTING QUARRY
- Orange box GRANITE TO DIORITE (light to intermediate igneous rocks)
- Green box AMPHIBOLITE, GABBRO, DIABASE, METADIABASE, GREENSTONE, TRAP DIKES (basic or dark igneous rocks)
- Red box PERIDOTITE, PYROXENITE, SERPENTINITE (ultra-basic igneous rocks)
- Purple box GNEISS
- Light blue box QUARTZITE
- Dark blue box DOLOMITE
- Blue box MARBLE, LIMESTONE
- White box SCHISTS, SLATES, PHYLLITES, SHALES, CONGLOMERATES
- 3 IDENTIFICATION NUMBER (refer to data sheets)

WESTFIELD



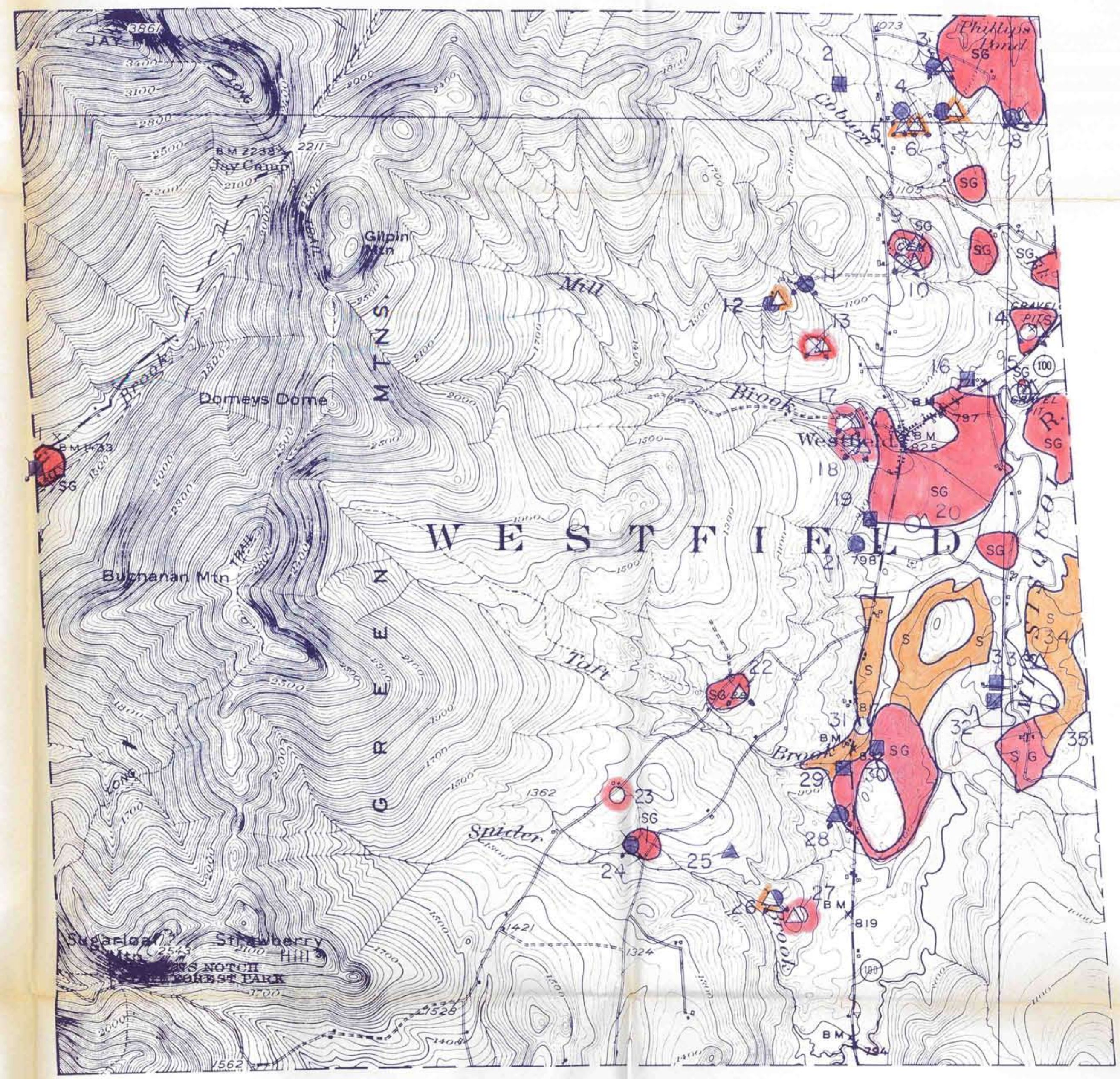
ROCK MATERIALS MAP

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

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

REVISIONS

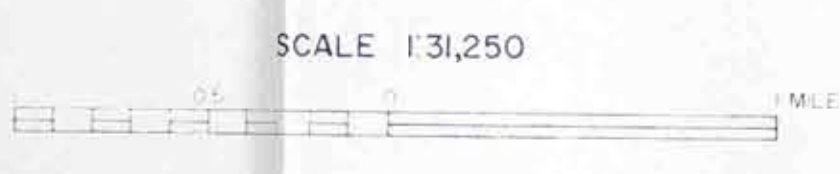
DATE				
BY				



LEGEND

- GRAVEL, ACCEPTABLE FOR SEC. 704.05 (gravel for sub-base)
- GRAVEL, DEPLETED OR NOT ACCEPTABLE FOR SEC. 704.05
- △ SAND, ACCEPTABLE FOR SEC. 703.03 (sand borrow and cushion)
- ▲ SAND, DEPLETED OR NOT ACCEPTABLE FOR SEC. 703.03
- GRANULAR BORROW, SEC. 703.05
- MATERIAL NOT ACCEPTABLE FOR SEC. 703.05
- ✕ EXISTING PIT
- SG SAND & GRAVEL DEPOSIT
- S SAND DEPOSIT
- 3 IDENTIFICATION NUMBER (refer to data sheets)

WESTFIELD



1974

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

PLATE I
GRANULAR

REVISIONS	DATE	BY