

**SURVEY OF HIGHWAY CONSTRUCTION MATERIALS  
IN THE TOWN OF NEWFANE, WINDHAM 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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### Acknowledgments

The work of this Project was implemented with 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 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.

#### Inlosures

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.

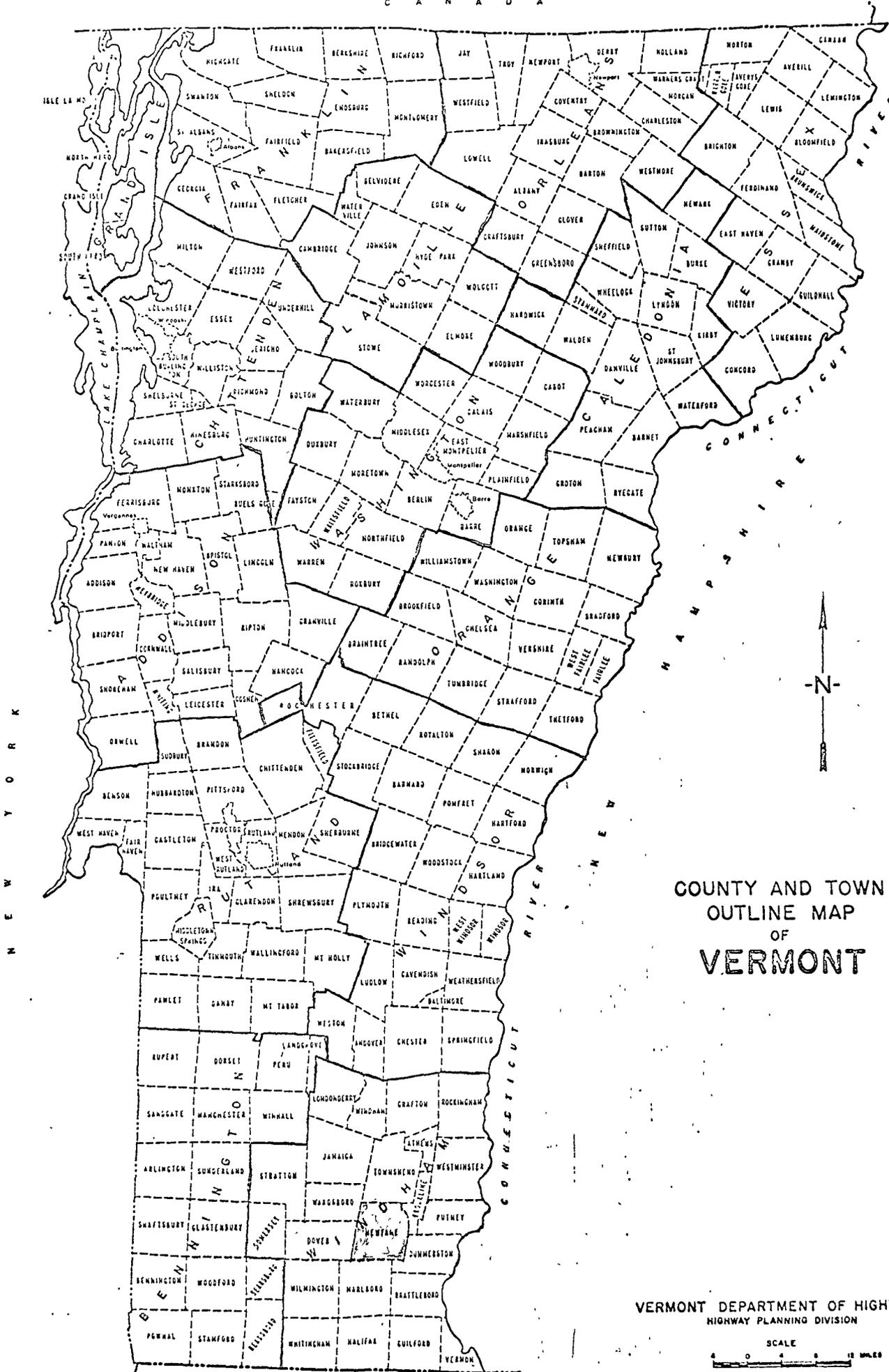
Also included in this report are data sheets for both the Bedrock and Granular Materials Survey, which contain detailed information for each test conducted by the Project as well as information obtained from an active card file compiled and updated by the Engineering Geology Section of the Materials 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

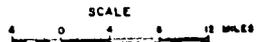
The town of Newfane is situated in the center of Windham County in southeastern Vermont. Newfane is bounded by the towns of Townshend on the north, Brookline on the east, Dummerston on the east and south, Marlboro on the south, and Dover and Wardsboro on the west. (See County and Town Outline Map of Vermont on the following page).

Newfane lies within the Green Mountains physiographic subdivision of the New England Province. This subdivision has rugged mountains with sharp crests and steep slopes. Elevations range from 1,845 feet on an unnamed mountain top near the southwest corner of the town, to less than 360 feet where the West River crosses the Dummerston town line. Drainage in the town is principally eastward via Baker, Hunter and Wardsboro Brooks and the Rock River into the West River. The West River forms the northeast boundary of the township and flows through the eastern part of the town, ultimately joining the Connecticut River in Brattleboro.



COUNTY AND TOWN  
 OUTLINE MAP  
 OF  
**VERMONT**

VERMONT DEPARTMENT OF HIGHWAYS  
 HIGHWAY PLANNING DIVISION



## SURVEY OF ROCK SOURCES

Procedure for Rock Survey

The survey of possible sources of rock for highway construction is divided into office and field investigations.

The office investigation is conducted primarily during the winter months and uses many sources of information to prepare the field work maps and description of rock types. These references differ considerably in dependability due to new developments and completed 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 geological information of the area under consideration.

The field investigation is begun by making a cursory preliminary survey of the entire area and the information obtained, together with that assimilated in the office investigation, is used 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 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 noted that the samples taken by the chip method are often within the weathered zone of the outcrop and thus may give less satisfactory test results than fresh material deeper in the rock structure. When the rock is uniform and yields acceptable abrasion test results, the material source is listed in this report as being satisfactory.

## DISCUSSION OF ROCK AND ROCK SOURCES

Bedrock varies in geological age from the Precambrian Bull Hill gneiss, a member of the Cavendish Formation that occurs along the middle of the Townshend town line, to the upper Silurian Northfield Formation in the southeast corner of Newfane. The bedrock is mainly schistose metamorphic rock and experience in adjacent towns, notably Dummerston, has shown that rocks of high schistosity produce many thin and elongated fragments when crushed. Nevertheless, this survey did inspect several locations where bedrock was conveniently close to the highways.

An exposure of the Bull Hill gneiss east of Town Highway No. 71 was too rounded and had insufficient relief to be developed. A rounded outcrop of amphibolite-quartzite schist (of the Pinney Hollow Formation) having low relief, was too close to houses northeast of the junction of Town Highways No. 57 and 19.

The Moretown member of the Missisquoi formation exposed east of State Aid Highway No. 2, south of its junction with State Aid Highway No. 3, consisted of phyllite, uartzite and schist, but because of low relief was not sampled. Ultramafic serpentine exposed near some houses north of State Aid Highway No. 2, east of the Dover town line, was also inspected but not sampled.

A meta-igneous body, the East Dover ultramafic consists of zoned basaltic rocks. It occurs along the Dover town line. The survey determined that an olivine-rich serpentinite northeast of Adams Brook would be a suitable source of crushed stone for sub-base.

## SURVEY OF SAND AND GRAVEL SOURCES

Procedure for Sand and Gravel Survey

The survey of possible sources of sand and gravel for highway construction is divided into office and field investigations.

The office investigation is conducted primarily during the winter months and uses various sources of information to map potentially productive granular areas. Of these, the survey of glacial deposits mapped by Professor Stewart, soil-type maps, aerial photographs and United States Geological Survey Quadrangles are valuable sources; the last two are used in the recognition and location of physiographic features indicating glacial deposits and in the study of drainage patterns. The locations in which samples were taken by other individuals are noted and mapped, as well as the sites of existing pits.

The field investigation is begun by making a cursory survey of the entire town. All pits and areas that show 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. All 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

Sand and gravel deposition in Newfane was associated mainly with the latest glacial recession during the Pleistocene epoch. 1,350 feet seems to be the highest elevation where specification sub-base materials occur.

Kame terraces, marginal to the Rock River and West River valleys, are the most widespread features yielding satisfactory materials in the town. See Map. Ident. Nos. 5, 6, 10, 12, 14, 15, 16 and 25.

Outwash deposition, in narrow valleys that served as spillways for glacial meltwater, was tested at Map Ident. Nos. 24 and 26.

A possible kame moraine, northwest of Oregon Mountain, was sampled at Map Ident. Nos. 1 and 2.

Materials at Map Ident. Nos. 3, 4 and 7 consist of possible deltaic gravels. They, as well as pebbly sands emplaced at Map Ident. Nos. 11, 13, 17, 18, 19, 20, 21, 22 and 23, were probably deposited in the high reaches of post-glacial Lake Hitchcock.

The survey determined that an elongate ridge north of Map Ident. No. 3 is probably not an esker, as shown on the Surficial Geological Map, but is bedrock, with a thin granular cover.

Map Ident. No. 27 may have been the site of so-called ablation till, as described by Stewart and MacClintock.

## SUMMARY OF ROCK FORMATIONS - TOWN OF NEWFANE

Barnard volcanic member of the Missisquoi formation: Fine to medium-grained biotite gneiss, hornblende gneiss, and amphibolite.

Bull Hill gneiss member of the Cavendish formation: Quartz-plagioclase-microcline-biotite gneiss, characterized in many areas by augen of microcline as much as 2 inches long; fine<sup>to</sup> medium grained quartz-plagioclase-biotite or biotite-muscovite gneiss.

Hoosac formation: Quartz-sericite-albite-chlorite schist, characterized by albite porphyroblasts - biotite and garnet porphyroblasts common southward; locally carbonaceous.

Missisquoi formation: Rusty-weathering carbonaceous mica schist, quartzite and micaceous quartzite.

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.

Northfield formation: Dark gray to black quartz-sericite slate or phyllite with fairly wide-spread interbeds, a few inches thick, of siltstone and silty crystalline limestone, like that of the Waits River formation; gray quartz-sericite schist containing abundant porphyroblasts of biotite and garnet in southern Vermont.

Pinney Hollow formation: Pale green quartz-sericite (muscovite-paragonite) - chlorite phyllite and schist with abundant magnetite, chloritoid phyllite and schist, quartz-sericite-albite-chlorite schist, and rare beds of carbonaceous and schistose quartzite; garnet porphyroblasts common south of Ottauquechee River.

Stove formation: Quartz-sericite (muscovite-paragonite) - chlorite phyllite and schist; porphyroblasts of albite, garnet, chloritoid, or kyanite are common locally. Schist contains abundant segregations of granular white quartz.

Ultramafics:

- : central core - dunite
- : adjacent to core - serpentinite with 30%-90% olivine
- : north zone - serpentinite cut by talc-carbonate veins.

## GLOSSARY OF SELECTED GEOLOGIC TERMS

ABLATION TILL:

Rock debris of all particle sizes released by melting glacial ice and deposited with little or no sorting.

AMPHIBOLITE:

A metamorphic rock, the distinguishing characters of which are that they consist partly or largely of amphibole (i.e. tremolite, actinolite, hornblende or arfvedsonite), and that they possess a more or less pronounced schistose structure. Color varies from green to black.

AUGEN:

The German word for eyes: used as a prefix before various rock names, especially gneiss, to describe larger minerals or aggregates of minerals in contrast with the rest of the rock.

BASALT:

A word of ancient and unknown origin applied to a group of related igneous rocks that comprise the most common of all lavas. In general usage, the term includes the majority of fine-grained, dark, heavy volcanic rocks.

BEDROCK:

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

CARBONACEOUS:

Containing carbon.

DELTAIC:

Relating to predominantly alluvial deposition built out by a stream into the sea or other body of water. It usually is formed like the Greek letter delta.

DRAINAGE:

The manner in which the water of an area passes off by surface streams and rivers, or by subsurface channels.

DUNITE:

A granitoid igneous rock, belonging to the peridotites, consisting chiefly of olivine with a little chromite or other spinel.

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.

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.

GRANULITE:

A quartz feldspar rock, poor or lacking in mica, and characterized structurally by a single regular plane of schistosity easily visible to the eye. The schistosity is determined mainly by parallel orientation of flat lenses of coarse-grained quartz set in a quartzose matrix of smaller equidimensional grains.

INTERBEDS:

Occur between or lie adjacent and parallel to other beds usually of a different nature.

JOINT:

A fracture or parting plane along which there has been little, if any, movement parallel with the walls.

KAME MORaine:

An accumulation of material deposited directly from the frontal portion of the glacial ice and partially 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.

META-IGNEOUS:

Rocks that owe their metamorphic characteristics to the transformation of pre-existing igneous rocks either through intense heat or pressure or both.

METAMORPHICS:

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

OLIVINE:

An orthosilicate mineral of the chrysolite group having the composition  $(Mg, Fe)_2 SiO_4$ . It has a hardness of 6-1/2 to 7 and a specific gravity of 3.27 to 3.37. The color is typically olive to grayish green, or brown, and the fracture is conchoidal. Under metamorphic influences olivine alters to serpentine and iron oxide.

OUTWASH:

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

PARTINGS:

Thin depositional layers separating thick deposits, as shale in a coal seam.

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.

PORPHYROBLASTS:

Large crystals which have grown in place within the fine-grained groundmass of a metamorphic rock. They have been formed by action of heat, pressure and infiltrating solutions occurring later than the rocks in which they form.

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.

RELIEF:

The term used to designate the difference in elevation between the summits and the lowlands of a particular region.

SCHIST:

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

SCHISTOSITY:

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

SEGREGATION:

In the strict sense, a "segregation" is a concentration of one or more minerals that have grown together during the crystallization of a molten rock. It is restricted to concentrations of early crystallizing minerals in place and is to be distinguished from an injection where the differentiate has undergone a change of position before consolidation.

SERPENTINITE:

A metamorphic rock consisting primarily of the mineral serpentine derived mainly from the alteration of igneous rocks containing olivine or other magnesium-rich minerals. The process whereby these minerals are changed to serpentine is known as serpentinization.

SILTSTONE:

A rock composed of somewhat indurated silt. If possessed of cleavage approximately parallel to bedding it is shale.

SLATE:

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

TREND:

The direction or bearing of the outcrop of a bed, vein, fault, ore body, contact or linear structure. Also the direction or bearing of larger features such as folds, mountains, and ridges.

ULTRAMAFIC:

Pertaining to igneous rocks that have a low percentage of silica (less than 45%), virtually no quartz and feldspar, and corresponding high percentage of iron, magnesium, and calcium. These rocks may occur as individual bodies or in segregations in larger igneous bodies.

VEIN:

A fissure in a rock filled by mineral matter. The mineral mass has well-defined length, width, and depth and is clearly distinguishable in content and structure from the enclosing rock.

WATER TABLE:

The upper limit of the portion of the ground wholly saturated with water.

ZONE:

An area or belt of rocks characterized by some particular property or content. For example, a biotite zone is an area with an extensive development of the mineral biotite in the metamorphic rocks. This development is due to a particular intensity of metamorphism.

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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		0-10
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 MASHO T 3, or the crushed stone a percent of wear of not more than 40 when tested in accordance with MASHO 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

## NEWFANE 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	93	71	52	10	6	24.5	Gravel	<p>Owner: Miami Development Corp.</p> <p>Area in forest contains a small (70' x 40') pit north of Town Highway #27 about 0.9 mile north of its junction with Town Highway #30. Only a hand sample of the northeast face was taken because area was being logged and slash blocked further testing.</p> <p>Material in Test #1 was: 1'-4', sandy gravel; 4'-5', sand with a small silt seam; 5'-8', fine to medium gravel; bottom, sloughed material.</p> <p>There is good access to this pit by a woods road. Future development would be limited by non-granular material and forest.</p>
2	1A	1974	1 - 9	0 - 1	Yes	100	100	89	72	9	4	--	Sand	<p>Owner: Miami Development Corp.</p> <p>Former Owner: Dover Hills</p> <p>Area contains an (80' x 190') pit 0.13 mile east of Town Highway #27 about 0.44 mile north of its junction with Town Highway #30. Test #1 was in south face.</p> <p>Material in Test #1A was: 1'-6', pebbly sand; 6'-8', fine gravel; 8'-9', pebbly sand.</p>

TABLE I

## NEWFANE 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			
	1B	1974	9 - 18	0 - 1	Yes	91	91	80	67	8	5	--	Gran. Borrow (sand)	Test #1B was taken with a back-hoe in lower 22-foot south face. Material was: 9'-18', pebbly sand.
	2	1974	0.5-8.5	0-0.5	Yes	100	91	85	73	24	22	--	--	Test #2 was taken in 12-foot west face. Material was: 0.5'-2', pebbly sand; 2'-6', sand; 6'-7', pebbly sand with a few cobbles; 7'-8.5', sand; bottom sloughed material.
	3	1974	2 - 12	0 - 2	No	94	88	81	75	27	3	--	Sand	Test #3 was dug about 190' south-east of Test #1. Material was: 2'-6', fine sandy gravel and pebbly fine sand; 6'-12', medium and fine sands; bottom, sand with fine silt layers.
	4	1974	1.5-9	0-1.5	No	100	89	77	62	39	29	--	--	Test #4 was in open field about 500' west of Test #1. Material was: 1.5'-5', bouldery gravel; 5'-9', gravelly silt; bottom, same. There is good access to this pit by field roads.
3	1	1974	2 - 18	0 - 2	Yes	92	87	80	64	28	12	--	Sand	Owner: William Mundell Area has an 850' long pit about 0.16 mile west of Town Highway #27 with access 0.43 mile north of its

## NEWFANE GRANULAR DATA SHEET NO. 3

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			
														junction with State Aid Highway No. 2. Test #1 was in 18-foot north face.
	2	1974	2 - 12	0 - 2	Yes	80	74	57	46	8	4	27.6%	Gran. Borrow (Grav.)	Material was: 2'-6', silty sand with pebble lenses; 6'-9', light tan sand; 9'-12', pebbly fine gravel; 12'-14', fine sand; 14'-15', pebbly fine gravel; 15'-16', silty sand; 16'-18', silt and pebbly fine gravel. Floor of pit was wet. Test #2 was in 32-foot northeast face, north of boulder piles.
	3	1974	1 - 7	0 - 1	Yes	100	94	71	54	16	10	19.8%	Gran. Borrow (Grav.)	Material was: 2'-5', pebbly fine gravel; 5'-5.5', sand; 5.5'-7', pebbly fine gravel; 7'-8', sand; 8'-12', coarse cobbly gravel; 12'-32', sloughings with large boulders. Test #3 was in middle of 8-foot east face of lower lobe of pit and west of access road.
	4	1974	1 - 6	0 - 1	Yes	100	88	81	70	13	4	--	Sand	Material was: 1'-3', sand and stones 3'-7', fine pebbly gravel; bottoms in sand. Test #4 was in 6-foot west face of lower lobe, about 60' S 55° W of Test #3. Material was: 1'-4', sand with stones; 4'-5', pebbly fine gravel; 5'-6', silt; bottoms in angular rock fragments.

TABLE I

## NEWFANE 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			
	5	1974	2 - 24	0 - 2	Yes	90	84	65	50	21	11	23.2%	Gran. Borrow (Grav.)	Test #5 was in 24-foot northeast face of uppermost pit level.  Material was: 2'-10', pebbly sand and fine gravel; 10'-12', sand; 12'-18', pebbly sand with fine gravel lenses; 18'-19', sand; 19'-24', fine gravel and pebbly sand.
	6	1974	2 - 10	0 - 2	Yes	82	80	65	53	12	7	31.6%	Gran. Borrow (Grav.)	Test #6 was in 18-foot southeast face of uppermost level.  Material was: 2'-10', fine gravel; 10'-18', sloughings that appear to be sand.
	7	1974	2 - 23	0 - 2	Yes	100	94	79	63	9	4	24.0%	Sand	Test #7 was in 35-foot southeast face.  Material was: 2'-23', medium and fine gravel with sand layers; bottom, sand and sloughings.
4	1	1974	3 - 20	0 - 3	Yes	100	100	84	77	42	30	--	--	Owner: David Holcomb  Area consists of a (150' x 50') pit and lower flats northwest of and above the end of Town Highway #50. This was a three-level pit at the time of the survey. Development would probably be limited by evergreen forest.  Test #1 was in the 24-foot northwest face above the lower level.

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 5

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 - 9	--	Yes	92	82	68	52	16	6	37.6%	Gran. Borrow (Grav.)	Material was: 3'-14', medium and fine sand and silt; 14'-18', pebbles and small cobbles in sand; 18'-20', fine and medium sand; 20'-24', sloughings.  Test #2 was in the 12-foot north-west face above the middle level of pit.
	3	1974	2 - 14	0 - 2	Yes	100	100	99	95	22	7	--	Sand	Material was: 0-1', fine gravel; 1'-2', sand; 2'-3', fine gravel; 3'-4', sand; 4'-6', pebbly sand; 6'-9', sand and pebbly sand; 9'-12', sloughings.  Test #3 was in the 17-foot face above the upper level of the pit.
	4	1974	1 - 8	0 - 1	No	89	75	57	44	22	13	30.7%	Gran. Borrow (Grav.)	Material was: 2'-4', sand; 4'-6', fine sand; 6'-8', pebbly sand; 8'-14', sand layers, pebbles, silt and small (1/2") stones.  Test #4 was in east edge of field, 60' north of field access road.
	5	1974	1 - 10	0 - 1	No	-	96	92	82	23	7	--	Sand	Material was: 1'-8', bouldery gravel; bottom, same.  Test #5 was in possible extension about 125' northwest of Test #3.  Material was: 1'-9', fine sand; 9'-10', sand; bottom, sand.

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 6

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	1	1974	0.5 - 15	0-0.5	Yes	75	68	49	39	18	9	19.2%	Gran. Borrow (Grav.)	Owner: Richard Blood Area is an inactive (85' x 85') pit in evergreen woods 200' south-east of State Aid Highway No. 3 about 0.6 mile from its junction with State Aid Highway No. 2. Possible extension to the east was stripped but had young trees on it at the time of the survey. Test #1 was in 25-foot east face. Material was: 0.5'-15', coarse gravel with sand and silt layers; 15'-25', sloughings.
	2	1974	0.5 - 10	0-0.5	No	93	79	61	52	24	15	23.2%	Gran. Borrow (Grav.)	Test #2 was near edge of woods about 140' east of test #1. Material was: 0.5'-1.5', silty gravel; 1.5'-2.5', stones and silt; 2.5'-10', sandy bouldery gravel; bottom, bouldery gravel.
6	1A	1974	2 - 16	0 - 2	Yes	68	68	41	33	13	6	26.7%	Gran. Borrow (Grav.)	Owner: Richard Blood Area is an active (160' x 50') pit in pine woods about 0.21 mile east of State Aid Highway No. 3. Access road is 0.6 mile south of State Aid Highway No. 2. This was a two-level pit and test #1A was in 24-foot southeast face of active upper level. Material was: 2'-5', sand; 5'-6', silt; 6'-7', sand; 7'-8', silt;

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 7

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			
	1B	1974	16 - 30	0 - 2	Yes	74	66	49	38	6	3	23.2%	Gravel	8'-10', pebbly sand; 10'-16', bony, coarse gravel.  Test #1B was dug in lower southeast face and floor of active upper level.  Material was: 16'-30', bony gravel with an estimated 20% to 30% coarser than 4".
	2	1974	1 - 8	0 - 1	Yes	94	74	63	55	33	20	26.7%		Test #2 was in 12-foot southwest face of active upper level of pit.  Material was: 1'-4.5', fine sand; 4.5'-8', gravel; 8'-12', sloughings
7	1	1974	2 - 28	0 - 2	Yes	100	100	94	90	7	3	--	Sand	Owner: David Jones  Area is a small (50' x 135') pit 0.03 mile north of Town Highway No. 37 about 0.25 mile west of its junction with Town Highway No. 26. Pit seemed nearly depleted.  Test #1 was in 32-foot north face.  Material was: 2'-8', pebbly fine gravel; 8'-20', sand; 20'-28', silty sand or fine sand; 28'-32', sloughings.
8	1	1974	1 - 10	0 - 1	No	87	77	49	32	12	6	27.6%	Gran. Borrow (Grav.)	Owner: Mrs. Lillian Stone  Area is a small (250' x 110') field northeast of Town Highway

TABLE I

## NEWFANE 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			
														<p>No. 19. 0.06 mile long access road was 0.29 mile northwest of junction with State Aid Highway No. 2.</p> <p>Test #1 was 250' northwest of access at north end of field.</p> <p>Material was: 1'-10', bouldery gravel with estimated 30% to 40% coarser than 4"; bottom, same.</p>
9	1	1974	3 - 9	0 - 1	Yes	95	93	59	45	9	5	17.2%	Gravel	<p>Owners: John Stookey and Gordon Woodworth.</p> <p>Former Owners: McCall and Blood.</p> <p>Area is a small (75' x 75') inactive pit about 0.08 mile north by access road from State Aid Highway No. 5 about 0.43 mile east of junction with Town Highway No. 42. Material would be available only if entire area was taken and cleaned up afterwards.</p> <p>Test #1 was in 12-foot east face.</p> <p>Material was: 1'-3', not in place; 3'-9', sandy gravel; bottom, sloughings.</p>
	2	1974	1 - 10	0 - 1	No	93	87	60	42	17	9	24.2%	Gran. Borrow (Grav.)	<p>Test #2 was in field 100' northwest of pit.</p> <p>Material was: 1'-9.5', coarse gravel with silt; 9.5'-10', silt; bottom, same; water at 8'.</p>

TABLE I

## NEVADIAN 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	
						#1-1/2"	1/2"	#4	#100	#200				
	3	1974	2 - 10	0 - 2	No	89	80	68	51	22	10	25.8%	Gran. Borrow (Grav.)	Test #3 was in partially overgrown field 250' northeast of Test #2.  Material was: 2'-8', sandy gravel; 8'-10', stony sand; bottom, same; water table at 2.5'.
10	1	1969	1.5-20	0 -1.5	Yes	100	100	96.6	93.9	8.7	1.4	--	Sand	Owner: Isaac Dessaint, with lifetime lease to Hugh Sparks.  This pit complex was sampled in 1969 near the southeast part of present extent. Most of the material tested then has been removed. Pit truncated a wooded knoll and 1969 sample locations pertain to only that pit.  Test #1 was on 22-foot face at northeast part of pit.  Material was: 1'-20', pebbly sand, fine sand, and coarse sand.
	2	1969	0.5-12	0 -0.5	Yes	100	100	100	100	20.3	1.9	--	Gran. Borrow (Sand)	Test #2 was in floor 30' west of test #1.  Material was: 0.5'-12', uniform clean sand.
	3A	1969	1 - 13	0 - 1	Yes	87.2	83.3	64.2	47.5	24	9	17.4%	Gran. Borrow (Grav.)	Test #3A was on face of spur at south end of pit.  Material was: 1'-6', sand, silt and pebbles; 6'-7', sharp angular pebbles and silt; 7'-13', gravel and sand.

TABLE I'

## NEWFANE 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	3B	1969	13 - 26	0 - 1	Yes	100	100	100	72.9	22.2	7.8	--	Gran. Borrow (Sand)	Test #3B was on face below test #3A.
	4	1969	0.5 - 10	0 -0.5	Yes	91.9	84.6	72.0	56.7	12	14.9		Gravel	Test #4 was in floor 25' north of test #3B.  Material was: 0.5'-10', gravelly sand with a few cobbles.
	5	1969	0.5 - 11	0 -0.5	Yes	100	100	100	100	9.4	1.1	--	Sand	Test #5 was in lowest southwest floor of pit.  Material was: 0.5'-11', fine to medium sand.
	6	1969	1 - 11	0 - 1	Yes	86.7	79.6	62.0	46.4	6.0	1.0	17.8%	Gravel	Test #6 was in limited westward extension about 30' west of faces.  Material was: 1'-11', cobbly sand, pebbly sand and gravel; bottoms in sand.  Permission to dig backhoe samples was denied in 1974.
	7	1974	0 - 16	none	Yes	100	100	98	96	31	16	--	--	Test #7 was on 18-foot south face of pit, 210' northeast of State Aid Highway No. 2.  Material was: 0'-16', fine and medium sands; bottom, same.
	8	1974	8 - 20	0 -0.5	Yes	93	86	66	49	6	3	19.4%	Gravel	Test #8 was in 20-foot west face about 480' northeast of test #1. Upper 8 foot section of face was not sampled.

TABLE I

## NEWFANE 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			
	9	1974	1 - 9	0 - 1	Yes	100	87	75	74	19	6	---	Gran. Borrow (Sand)	<p>Material was: 0.5'-4', gravel; 4'-6', sand; 6'-14', gravel; 14'-18', fine gravel; 18'-19', pebbly sand; 19'-20', fine gravel; bottom, fine gravel.</p> <p>Test #9 was in 9-foot face about 240' south-southeast of test #8.</p> <p>Material was: 1'-4', fine and medium sands; 4'-9', pebbly and medium sands; bottom, sloughings.</p> <p>Test #10 was about 200' northeast of test #9 in 13-foot face.</p> <p>Material was: 3'-8', uniformly graded gravel; 8'-13', gravel; bottom, same.</p>
11	1	1974	1.5 - 11	0 - 1.5	No	92	78	48	34	12	7	19.7%	Gravel	<p>Owner: Wayne White</p> <p>Area is a long (900' x 150') field west of Vt. Route 30. Access to field was 300' south of the junction of Town Highway No. 62 and Vermont Route 30.</p> <p>Test #1 was at north end of field about 90' west of Route 30 and 75' south of property line stone wall.</p> <p>Material was: 1.5'-11', coarse gravel; bottom, same.</p>
	2	1974	2.5 - 11	0 - 2.5	No	89	79	59	43	7	4	20.2%	Gravel	<p>Test #2 was near center of field about 75' west of Route 30 and 400' southeast of test #1</p>

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 12

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			
	3	1974	1.5 - 9	0 - 1.5	No	92	87	63	47	5	3	20.2%	Gravel	Material was: 2.5'-3.5', fine sand; 3.5'-11', coarse gravel; bottom, same.  Test #3 was in field 300' southeast of test #2.  Material was: 1.5'-9', gravel. Test bottomed in water.
12	1A	1974	5 - 20	0 - 3	Yes	94	79	56	44	10	7	21.3%	Gravel	Owner: L. D. Cornwell  Former Owner: Kenneth Dowley Jr.  Area consists of a heavily tree grown pit west of Town Highway No. 15. Access is just north of Wardsboro Brook about 0.08 mile north of Vermont Route 30. Possible extension would be north-eastward and across Town Highway No. 15 into a 330' x 300' field east of the Cornwell house.  Test #1A was in upper 45-foot west face.  Material was: 3'-5', inaccessible; 5'-20', sandy coarse gravel.
	1B	1974	20 - 30	0 - 3	Yes	93	86	72	57	12	7	20.6%	Gravel	Test #1B was below test #1A.  Material was: 20'-30', sandy coarse gravel that bottomed in sloughings.

## NEWFANE GRANULAR DATA SHEET NO. 13

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			
	2	1974	0.5 - 8	0 - 0.5	No	88	84	66	52	13	6	23.1%	Gravel	Test #2 was near south side of field 125' east of Town Highway No. 15.  Material was: 0.5'-5', sandy coarse gravel (3"-8" stones); 5'-8', bouldery gravel (3"-15" stones); bottom, same.
	3	1974	1 - 10	0 - 1	No	73	67	54	45	15	8	24.0%	Gravel	Test #3 was near east side of field 400' northeast of test #2.  Material was: 1'-10', sandy bouldery coarse gravel; bottom, same.  There is supposedly an indian burial ground at the southeast corner of this field. Responsible authorities should be notified in the event of its excavation.
13	1	1974	1 - 11	0 - 1	No	100	88	73	65	21	8	--	Gran. Borrow	Owner: Milford Lownerance  Area is woodland and pasture west of Town Highway No. 15. Access is via a steep woods road about 0.47 mile north of junction with Vermont Route 30. Area is roughly 2,400' from north to south and parallels the town highway.  Test #1 was at eastern edge of a flat field overlooking steep bank adjacent to town highway.

## NEWFANE 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			
	2	1974	1 - 8	0 - 1	No	100	100	95	84	25	8	--	Sand	Material was: 1'-5', pebbly sand; 5'-10.5', sand and fine gravel; 10.5'-11', fine sand; bottom, same.  Test #2 was in field about 200' west of test #1.
	3	1974	1 - 11	0 - 1	No	91	91	78	63	4	2	15.9	Gravel	Material was: 1'-2', fine sand; 2'-5', pebbly sand; 5'-8', inter-layered fine and pebbly sands; bottom, pebbly sand. Water was encountered at 3'.  Test #3 was near the northern end of a southward sloping field and about 120' south of a small stream crossing. Material was: 1'-3', pebbly sand and medium sand layers; 3'-11', fine gravel; bottom, same.
	4	1974	1 - 12	0 - 1	No	96	88	67	50	5	3	19.4	Gravel	Test #4 was in field 300' south of Test #3. Material was: 1'-12' gravel; bottom, same.
	5	1974	1 - 11	0 - 1	No	77	68	46	37	13	8	21	Gravel	Test No. 5 was near southwest corner of field 340' west of Test #4. Material was: 1'-10.5', medium and fine sand layers; 10.5'-11', fine gravel; bottom, same.
	6	1974	1 - 11	0 - 1	No	76	61	43	34	16	12	21.6	Gran. Borrow (Grav.)	Test #6 was in pasture about 500' south of Test #5. Material was: 1'-4', bouldery gravel (3"-15" stones); 4'-11', coarse gravel (1"-8" stones); bottom, same. Bottom of test hole was moist.

TABLE I.

## NEWFANE GRANULAR DATA SHEET NO. 15

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			
	7	1974	2.5-11	0-2.5	No	100	100	95	86	10	3	--	Sand	<p>Test #7 was in logged-off area about 400' south of Test #6. Material was: 2.5' - 11' bouldery, sandy gravel; bottom, same.</p> <p>A 500-foot long ridge lies south of Test #7. Because of slash left from logging operations, ridge was not accessible to backhoe.</p>
14	1	1974	0 - 11	--	Yes	90	85	67	52	25	15	19.0	Gran. Borrow (Grav.)	<p>Owner: Leon Bills. Former Owner: George Reed. Area is a 300' x 120' pit east of Vermont Route 30. Access was 0.29 mile north of junction with Town Highway No. 45, and 0.20 mile south of Town Highway No. 18. Eastward extension was heavily wooded. Test #1 was in 15-foot east face. Material was: 0'-6', sandy coarse gravel (3"-10" stones); 6'-11', silty gravel with fine sand seams; bottom, sloughings.</p> <p>Many springs were running from hillside behind pit and floor was littered with junked cars, boulders, logs, strippings and trees.</p>
15	1	1974	2 - 6	0 - 2	No	89	82	61	47	16	8	31.8	Gran. Borrow (Grav.)	<p>Owner: Clarence Brown. Area contains two fields (600' x 175') separated by a house and garage west of Town Highway No. 45. Access to south field was 0.43 mile north</p>

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 16

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			
	2	1974	1 - 11	0 - 1	No	79	73	63	57	7	3	21.2	Gravel	<p>of Town Highway No. 45 junction with Vermont Route 30. Access to north field was 0.53 mile north of same junction.</p> <p>Test #1 was in middle of south field about 250' from access. Material was: 2'-2.5', sand; 2.5'-6', bouldery gravel; bottom, same.</p> <p>Test #2 was near northwest corner of north field about 250' from its access. This field slopes about 30° to the east. Material was: 1'-4', bouldery gravel; 4'-6', fine gravel; 6'-8', sand; 8'-11', bouldery gravel; bottom, sand.</p>
16	1	1974	0 - 8	None	Yes	100	86	82	67	20	10	19.0	Sand	<p>Owner: Clarence Brown. Area is a small (50' x 50') pit east of Town Highway No. 45 with access road about 0.57 mile north of its junction with Vermont Route 30. Pit overlooks town dump and there is no possible extension.</p> <p>Test #1 was in 8-foot west face. Material was: 0'-4', sandy gravel; 4'-4.5', silt seam; 4.5'-8', sandy gravel; bottoms on wet floor, possibly overlying ledge.</p>

TABLE I.

## NEWFAVE 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			
17	1	1974	1 - 8	0 - 1	Yes	95	90	71	54	6	3	17.8	Gravel	Owner: Kenneth Dowley, Jr. Area is a large (730' x 350') meadow between two pits northwest of Town Highway No. 15. Northeast pit access was 1.56 miles north of junction with Vermont Route 30. Southwest pit has an 0.15 mile access road that joins Town Highway No. 15 about 1.36 miles north of Vermont Route 30. A 300' x 385' field southwest of this pit was also sampled.  Test #1 was in 9-foot east face of southwest pit. Material was: 1'-8', sandy gravel; bottom, sloughings.
	2	1974	1 - 7	0 - 1	Yes	91	85	57	45	5	2	15.1	Gravel	Test #2 was in northeast face, about 195' northwest of Test #1. Material was: 1'-7', sandy gravel; bottom, sloughings.
	3	1974	1 - 8	0 - 1	Yes	89	83	57	43	4	2	12.8	Gravel	Test #3 was in north face about 160' northwest of Test #2. Material was: 1'-8', sandy gravel; bottom, sloughings.
	4	1975	0.5-9	0-0.5	Yes	90	83	61	49	4	3	15.0	Gravel	Test #4 was in upper 13-foot west face of northeast pit. Material was: 0.5'-1', sandy gravel. This pit on the drive to owner's home would be better described as a roadside bank.

## NEWFANE 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			
	5	1974	0 - 9	None	Yes	96	96	78	66	9	6	--	Gran. Borrow (Sand)	Test #5 was in floor of southwest pit about 120' southwest of Test #1. Material was: 0'-9', sandy fine gravel; bottom, silt.
	6	1974	1 - 11	0 - 1	No	83	77	56	43	6	3	16.1	Gravel	Test #6 was in field 350' northeast of Test #1. Material was: 1'-11', sandy gravel with sand layers; bottom same.
	7	1974	0.5-10	0-0.5	No	100	94	74	62	12	5	13.3	Gravel	Test #7 was in field southwest of southwest pit. Material was: 0.5'-6', pebbly sand; 6'-8', sandy fine gravel; 8'-10', gravel; bottom, same.
18	1A	1971	1 - 11	0 - 1	Yes	96	90	60	50	1	1	11.4	Gravel	Owner: Nicholas Mercedes. Former owner: Dowley Brothers. Area is a double level pit east of Town Highway No. 15 with access about 0.83 mile southeast of its junction with State Aid Highway No. 4. Field east of pit and bank along West River were included in area.  Test #1A was in 11-foot southwest face of pit. Material was: 1'-11', sandy gravel; bottoms in sand.
	1B	1971	1 - 9	0 - 1	Yes	87	74	49	40	5	3	16.3	Gravel	Test #1B was in 11-foot northwest face of pit. Material was: 1'-9', coarse stoney gravel; bottoms in sloughings.
	2A	1974	1 - 8	0 - 1	Yes	100	83	56	43	4	2	17.0	Gravel	Test #2A was in upper level of west face of pit. Material was: 1'-8',

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 19

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			
														sandy gravel that bottoms in fine sand.
	2B	1974	8 - 15	0 - 1	Yes	82	68	68	67	70	33	9.4	--	Test #2B was below test #2A in west face of pit. Material was: 8'-9', sandy gravel; 9'-15', fine sand; bottom, same.
	3	1974	1 - 11	0 - 1	No	100	100	100	100	45	23	--	--	Test #3 was at northwest corner of field about 840' north of barn. Material was: 1'-11', silty sand; bottom, same.
	4	1974	1 - 11	0 - 1	No	100	100	100	100	50	23	--	--	Test #4 was in lower field about 300' southeast of Test #3. Material was: 1'-11', silty sand; bottom, same.
	5	1975	1 - 11	0 - 1	No	100	85	74	72	35	15	--	Gran. Borrow (Sand)	Test #5 was in woods about 500' southeast of Test # 4. Material was: 1'-9', fine sand; 9'-11', coarse sandy gravel; bottom, same.
	6	1974	1 - 11	0 - 1	No	94	94	78	70	25	10	--	Gran. Borrow (Sand)	Test #6 was about 50' southeast of barn and 300' southwest of Test #5. Material was: 1'-5.5', fine and medium sands; 5.5'-11', gravelly sand and sandy gravel; borrom, same. Water table at 10.5'.
	7	1974	1 - 11	0 - 1	No	100	100	91	88	43	22	--	--	Test #7 was about 300' east of Test #6. Material was: 1'-10.5', fine sand; 10.5'-11', stony sand; bottom, same.

## NEWFANE 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	8A	1974	1 - 5	0 - 1	No	100	100	100	100	52	26	--	--	Test #8A was at edge of woods about 400' southwest of Test #7. Material was: 1'-5', fine sand; bottom, gravel.
	8B	1974	5 - 11	0 - 1	No	71	62	46	35	14	7	10.1	Gravel	Test #8B was below Test #8A. Material was: 5'-11', gravel; bottom, gravel and water.
	9	1974	1 - 11	0 - 1	No	96	96	82	78	6	3	--	Gran. Borrow (Sand)	Test #9 was in pasture about 240' northwest of Test #8A. Material was: 1'-5', fine sand; 5'-11', pebbly sand; bottom, same or fine gravel.
	10	1974	1 - 8	0 - 1	No	100	100	72	61	15	6	12.2	Sand	Test #10 was in pasture about 500' southwest of Test #9. Material was: 1'-5', fine sand; 5'-6.5', gravelly sand; 6.5'-8', gravel; bottom, reddish gravel and silty sand. Water at bottom of hole.
	11	1974	1 - 11	0 - 1	No	100	83	71	67	50	25	--	--	Test #11 was near edge of field 270' southeast of Test #10. Material was: 1'-7', fine sand to silt; 7'-11', sandy coarse gravel; bottom, same.
	12	1974	1.5-11	0-1.5	No	100	100	75	66	25	11	--	Sand	Test #12 was in field about 500' southwest of Test #11. Material was: 1.5'-8', fine sand; 8'-11', fine gravel; bottom, same.
	13	1974	1 - 7	0 - 1	No	100	100	100	100	75	43	--	--	Test #13 was in field about 300' west of Test #12. Material was: 1'-6', fine sand; 6'-7', silt; water table encountered at 6'.

## NEWFANE GRANULAR DATA SHEET NO. 21

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			
	14	1974	1.5-11	0-1.5	No	93	79	51	34	8	4	15.2	Gravel	Test #14 was near Town Highway about 105' northwest of Test #1. Material was: 1.5'-2.5', sandy gravel; 2.5'-6', fine gravel; 6'-11', gravel; bottom, same. This was best looking gravel in the area!
	15	1974	1.5 - 6	0 -1.5	No	89	76	51	38	25	20	22.0	--	Test #15 was near Town Highway about 240' southwest of Test #14. Material was: 1.5'-6', gravel. Test was dug in water table as water streamed into hole from all sides.
	16	1974	4 - 11	0 - 4	No	94	84	57	38	9	5	12.8	Gravel	Test #16 was 200' north of main barn. Material was: 0'-4', fine sand and silt; 4'-11', gravel; bottom, same.
'19	1	1974	2 - 12	0 - 1	Yes	96	93	55	40	12	7	16.0	Gravel	Owner: Kenneth Dowley. Area is 180' x 50' pit west of Town Highway No. 15 with access road about 0.73 mile south of intersection with State Aid Highway No. 4. Owner says no more material is available from pit.  Test #1 was in 14-foot south face of pit. Material was: 2'-12' sandy coarse gravel that bottomed in sloughings.
	2	1974	1 - 11	0 - 1	No	89	87	59	43	9	5	16.8	Gravel	Test #2 was near east edge of field about 500' south of Test #1. Material was: 1'-11', sandy coarse gravel; bottom, same.

## NEWFANE 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
20	1	1974	2 - 12	0 - 2	Yes	78	67	50	38	17	13	20.6	Gran. Borrow (Grav.)	Owner: Frank Houghton. Area is a heavily overgrown pit northwest of Vermont Route 30 with access about 0.14 mile south of junction with State Aid Highway No. 4. There was very little extension possible; this was to the west.  Test #1 was in the upper 27-foot west face. Material was: 2'-6', fine gravel; 6'-8', gravel; 8'-12', cobbly coarse gravel. Test bottomed on a boulder layer with sand and cobble sloughings below 12'.
21		1974			Yes	--	N O T	S A M P L E D						Owner: Charles Neid. Area is a small (60' x 40'), heavily overgrown depleted pit northwest of Vermont Route 30 with access 0.02 mile southwest of junction with State Aid Highway No. 4. Not sampled because of nearly development.
22	1	1974	3 - 12	0 - 3	No	100	100	95	86	9	5	---	Sand	Owner: Earl Morse. Area is a 700' X 300' field northeast of the junction of State Aid Highway No. 4 with Vermont Route 30. Access to field was from Route 30 about 280' north of junction.  Test #1 was in a 4' to 5' depression near the center of the field. Material was: 3'-4.5', sand;

TABLE I

## NEWFANE 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						Abrasion AASHTO T-4	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
														4.5'-11.5', pebbly sand; 11.5'-12', fine sand. Owner claimed the field surrounding this depression contains gravel but would not permit additional sampling.
23	1	1974	1 - 10	0 - 1	No	83	83	82	81	49	21	---	---	<p>Owner: Courtney Nau. Area is a long (1200' x 250') field east of Town Highway No. 15. Access to north end of field was 0.24 mile south of junction with Vermont Route 30. Access to south end of field was 0.17 mile north of intersection of town highway with State Aid Highway No. 4. Area is bounded on the east by the West River.</p> <p>Test #1 was 50' east of town highway and 120' south of the north access road. Material was: 1'-10', fine sand. Test bottomed in coarse gravel in the water table.</p>
	2	1974	0.5-10	0-0.5	No	100	94	91	88	50	26	---	---	<p>Test #2 was near center of field 500' south of Test #1 and 100' east of the town highway. Material was: 0.5'-10', fine sand. Test bottomed on coarse gravel in the water table.</p>
	3	1974	0.5-10	0-0.5	No	100	100	98	97	42	18	---	---	<p>Test #3 was 500' south of Test #2 and 100' east of the town highway. Material was: 0.5'-10', fine sand. Test bottomed on coarse gravel in the water table.</p>

## NON-FINE GRANULAR DATA SHEET NO. 24

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			
24	1	1974	2 - 16	0 - 2	Yes	100	100	95	87	40	13	---	Gran. Borrow (Sand)	Owner: Stanley Bills. Former owner: Norman Clarkson. Area is a 240-foot long ridge east of Vermont Route 30 with a small (30' x 30') pit at north end of ridge, and a large field to the south that was planted with corn before the survey. Access to field was 0.37 mile north of junction with town highway No. 15, and access to pit was 0.18 mile north of field access.  Test #1 was in the 16-foot face of the pit. Material was: 2'-5', fine sand; 5'-6', fine gravel; 6'-16', fine sand; bottom, fine sand.
	2	1974	2 - 12	0 - 2	No	100	100	100	100	27	6	---	Sand	Test #2 was on west face of wooded ridge. Material was: 2'-12', fine sand. Bottom of the face was level with corn field.
	3	1974	1 - 5	0 - 1	No	100	100	100	100	49	17	---	---	Test #3 was near the river about 200' southeast of Test #2. Test hole was dug with a post hole digger in the corn field. Material was: 1'-5', fine sand; bottom, same
	4	1974	1 - 4	0 - 1	No	100	100	98	95	13	4	---	Sand	Test #4 was in corn field about 800' southwest of Test #3. Material was: 1'04', fine sand; bottom, same
25	1	1974	1 - 12	0 - 1	Yes	92	89	77	62	7	5	14.4	Gran. Borrow (Grav.)	Owner: Emmons Robinson. Former owner: Earle Davis. Area is a small (50' x 40') pit southwest of Vermont Route 30 with access road

TABLE I.

## NEWFANE GRANULAR DATA SHEET NO. 25

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-1	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1974	1 - 11	0 - 1	No	83	81	55	41	10	8	18.2	Gravel	about 0.40 mile north of junction with town highway No. 15.  Test #1 was in 15-foot west face. Material was: 1'-12', sandy gravel bottom, sloughings.
	3	1974	1 - 11	0 - 1	No	93	90	75	61	14	8	18.2	Gran. Borrow (Grav.)	Test #2 was in woods about 150' southwest of Test #1. Material was 1'03.5', sand; 3.5'-5.5', pebbly sand; 5.5'-11', gravel; bottom, same.  Test #3 was on the south side of a heavily wooded knoll 150' west of the railroad bed. Knoll was approximately 400' south of pit. Material was: 1'-3', sand; 3'-3.5' fine sand; 3.5'-7.5', fine gravel; 7.5'-8.5', fine sand; 8.5'-11', pebbly sand; bottom, same.
26	1	1974	1 - 7	0 - 1	No	89	81	58	47	7	3	9.4	Gravel	Owner: Jim Lloyd. Area is a large field east of the River Bend Motel on Vermont Route 30. Access to field is about 0.95 mile north of junction with town highway No. 15. Owner would allow no holes dug in field. Test holes were dug 0.15 mile east of highway behind trees.  Test #1 was 75' south of access road near entrance to small field behind trees. Material was: 1'-7' a clean sandy gravel.

TABLE I

## NEWFANE GRANULAR DATA SHEET NO. 26

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	1.5-10	0-1.5	No	77	70	43	32	7	3	9.6	Gravel	Test #2 was 390' south of Test #1. Material was: 1.5'-2.5', sand; 2.5'-10', sandy coarse gravel; bottom, same in water.
	3	1974	1 - 10	0 - 1	No	75	75	61	55	32	15	---	Gran. Borrow (Grav.)	Test #3 was 250' southeast of Test #2. Material was: 1'-8', fine sand; 8'-10', sandy coarse gravel; bottom, same.
27	1	1974	1 - 6	0 - 1	Yes	100	77	69	60	57	41	---	---	Owner: O. S. Parmer. Area is a small (75' x 100') diggings southeast of town highway No. 11 with access 0.24 mile north of its junction with State Aid Highway #1. Material is not available.  Test #1 was on knoll in poplar trees about 200' from town highway. Material was: silt and stones.
	2	1974	1 - 8	0 - 1	No	87	75	58	46	14	7	33.2	Gran. Borrow (Grav.)	Test #2 was 150' northeast of Test #1. Material was: 1'-2', sand; 2'-8', bouldery gravel; bottom, boulders.

TABLE I - SUPPLEMENT

<u>Newfane Property Owners - Granular</u>	<u>Map Ident. No.</u>
Bills, Leon	14
Bills, Stanley	24
Blood, Richard	5, 6
Brown, Clarence	15, 16
Clarkson, Norman	24
Cornwall, L. D.	12
Davis, Earle	25
Dessaint, Isaac	10
Dover Hills	2
Dowley, Kenneth Jr.	12, 17, 19
Dowley Brothers	18
Holcomb, David	4
Houghton, Frank	20
Jones, David	7
Lawrence, Milford	13
Lloyd, Jim	26
Mercede, Nicholas	18
Miami Development Corp.	1, 2
Morse, Earl	22
Mundell, William	3
Nau, Courtney	23
Neid, Charles	21
Parmer, O. S.	27
Reed, George	14
Robinson, Emmons	25
Sparks, Hugh	10
Stone, Lillian	8
Stookey, John	9
White, Wayne	11
Woodworth, Gordon	9

NEWTANE ROCK DATA SHEET NO. 1

Ident. No.	Field Test No.	Year Field Tested	Rock Type	Exist- ing Quarry	Method of Sampling	Abrasion AASHO		Remarks
						T-3	T-96	
1	1A	1974	Serpen- tinite	No	Chip	3.7	19.7	Owner: William Mundell  Rock is exposed on the east face of a gravel pit in wooded hillside west of Town Highway No. 27. Bedrock exposure probably would increase with further pit development. Hillside is the west slope of a ridge that has 35 to 50 feet of relief. For more than 500 feet the north-south trending ridge shows evidence of bedrock control.  The exposure samples was 135 feet long and 50' wide. Test #1A was from the north end and test #1B was from near the middle. Both bedrock and random boulders were sampled.
	1B	1974	Serpen- tinite	No	Chip	4.0	16.8	Olivine-rich serpentinite shows distorted flow structure that dips approximately 60° NE. Jointing is partially concealed by gravel pockets. Some thin and elongate fragments were noted.  The pit has a good access road. Because the vicinity of this area is sparsely populated, an extensive quarrying operation would affect few people. However, its proximity to Adams Brook, with consequential down stream water pollution by crusher dust, should be considered. Material was available.

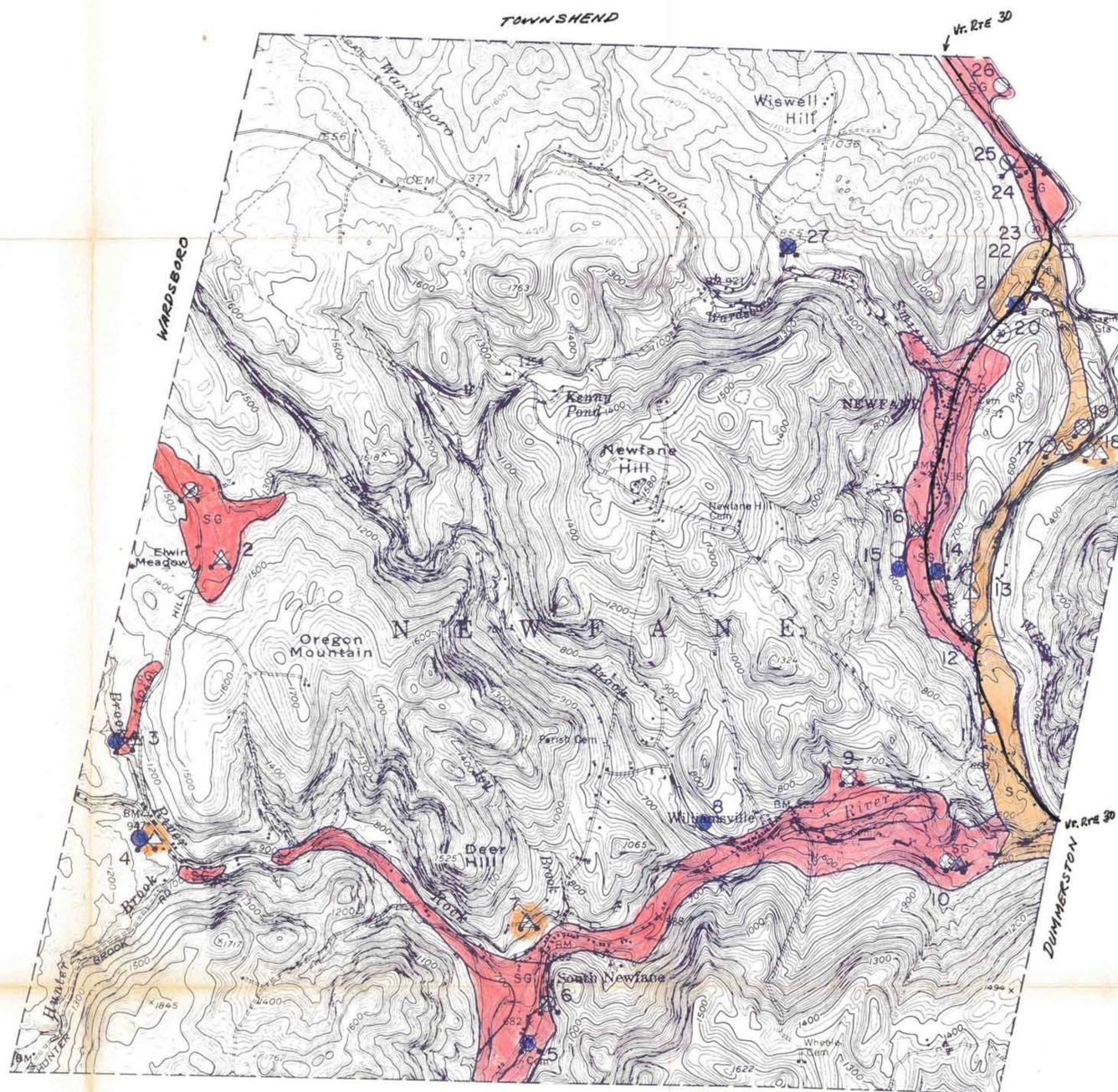
TABLE II - SUPPLEMENT

Newfane Property Owners - Rock

Map Ident. No.

Mundell, William  
(Brown, Stuart and Holland, Richard)

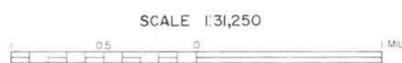
1



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)

NEWFANE



1974

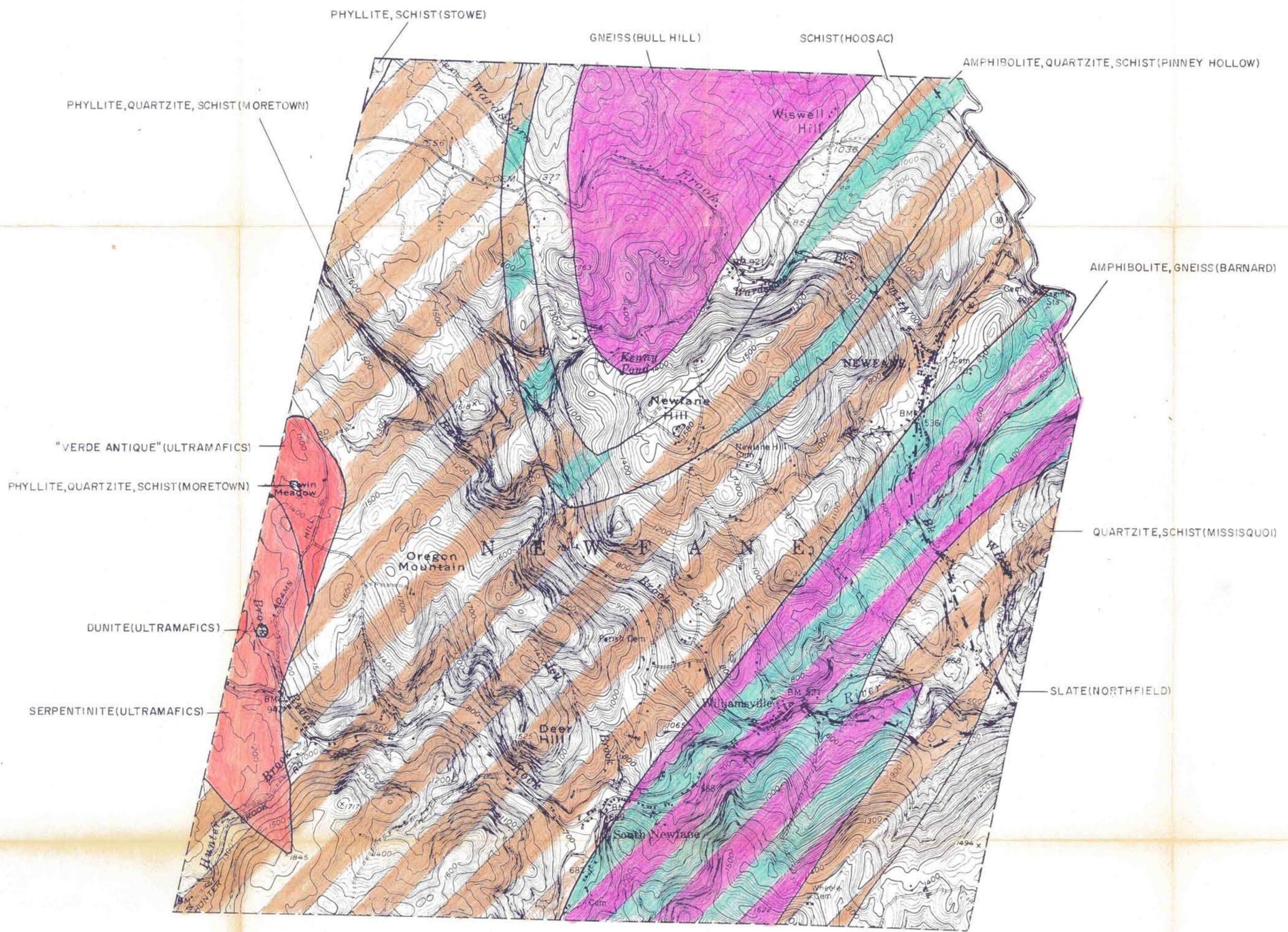
GRANULAR MATERIALS MAP

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

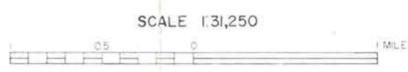
DATE					
BY					



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)
- Pink box GNEISS
- Light brown box QUARTZITE
- Purple box DOLOMITE
- Blue box MARBLE, LIMESTONE
- White box SCHISTS, SLATES, PHYLLITES, SHALES, CONGLOMERATES
- 3 IDENTIFICATION NUMBER (refer to data sheets)

NEWFANE



SCALE 1:31,250

CONTOUR INTERVAL 20 FEET

1974

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					