

**SURVEY OF HIGHWAY CONSTRUCTION MATERIALS
IN THE TOWN OF CAMBRIDGE, LAMOILLE COUNTY, VERMONT**

Prepared by

**STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
ENGINEERING GEOLOGY SUBDIVISION**

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Acknowledgments

This project acknowledges the surficial geological information obtained from Professor D. P. Stewart of Miami University, Oxford, Ohio and the bed-rock information from the Centennial Geologic Map of Vermont, C. G. Doll.

History

The Materials Survey Project was initiated in 1957 by the Vermont Department of Highways with the assistance of the Bureau of Public Roads to compile an inventory of highway construction materials in the State of Vermont. Previously, investigations for highway construction materials were conducted only as the immediate situation required and only limited areas were surveyed. Since no overall picture of material resources was available, highway contractors or resident engineers were required to locate the materials for their respective projects and the samples were tested by the Materials & Research Division. The additional expense of exploration for construction materials resulted in higher construction costs being paid by the State. The Materials Survey Project was formed to minimize this factor by enabling the State and the contractors to use available information on material resources and to project cost estimates. Knowledge of locations of suitable materials is an important factor in planning 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 furnish information of particular use to contractors and construction personnel, and should be studied together for maximum benefit.

Enclosures

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- $\frac{1}{2}$ -minute quadrangles of the United States Geological Survey enlarged or reduced to 1:31250 or 1" = 2604'. The various rock formations and types are delineated on the Bedrock Map of the township. This information is obtained from: Vermont Geological Survey Bulletins, Vermont State Geologist Reports, United States Geological Survey Bedrock Maps, Centennial Geologic Map of Vermont, the Surficial Geologic Map of Vermont and other references.

The granular materials map shows areas of various types of glacial deposits (outwash, moraines, kames, kame terraces, eskers, etc.) which are potential sources of gravel and sand. 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 from 1956 to 1966. 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), available Soil Surveys of individual counties (by the Soil Conservation Service of the United States Department of Agriculture), Vermont Geological Survey Bulletins, United States Geological Survey Quadrangles, aerial photographs and other sources. The location of each test area is represented by a Map Identification Number.

This report contains data sheets with detailed information on each test taken in the Granular and Bedrock areas. Data is also used from an active card file compiled by the Materials & Research Division over a period of years. Some cards are not used because they are incomplete or have unusable information on the location of the deposit.

Work sheets containing more detailed information and a field sketch of the area, and laboratory test results are on file in the Materials & Research Division of the Agency of Transportation, State of Vermont.

LOCATION

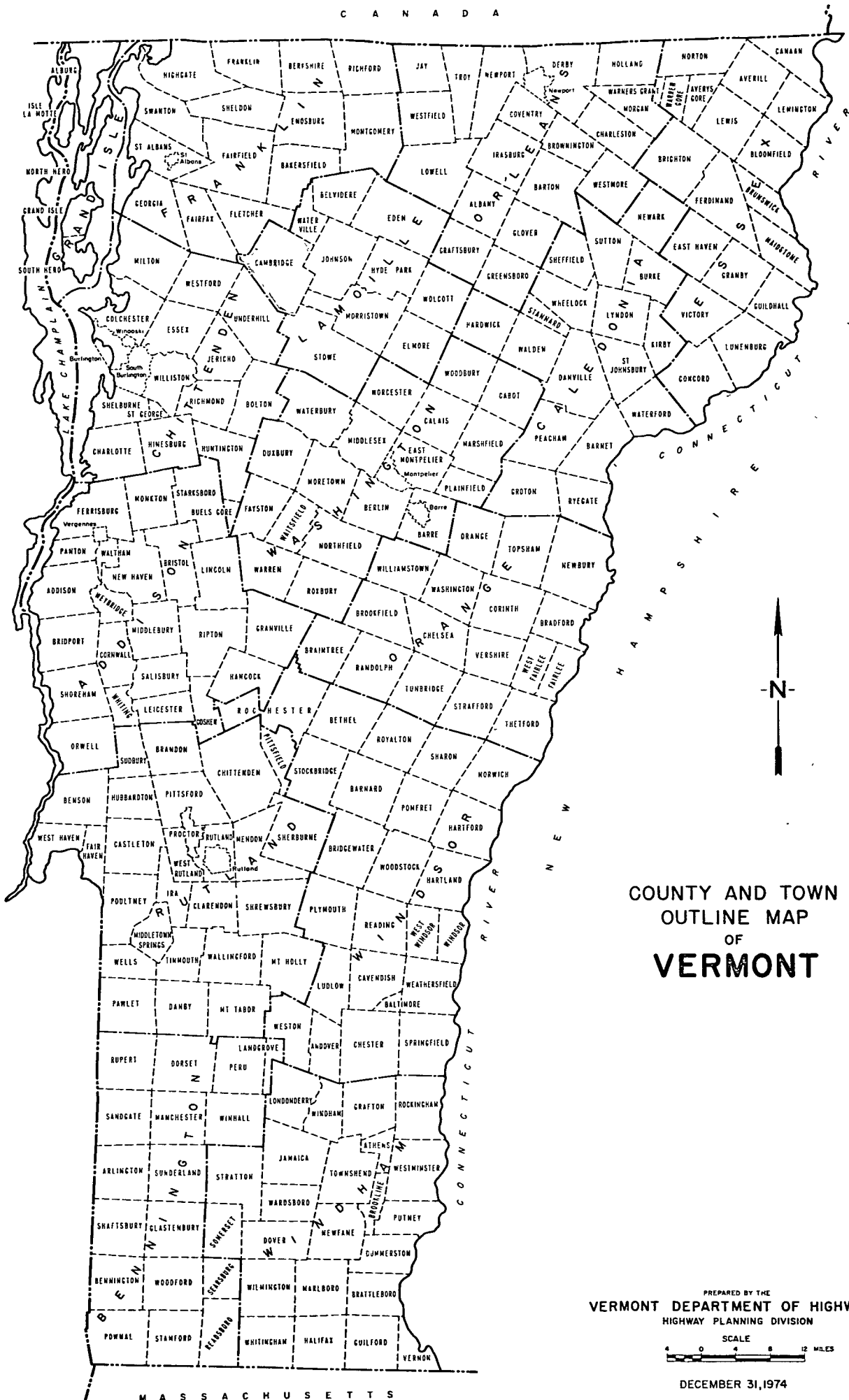
The Town of Cambridge is in the west-central corner of Lamoille County in the northwest section of north-central Vermont. It is bounded on the north and northwest by Fletcher, the northeast by Waterville, the east by Johnson, the southeast by Morris town, the south by Stowe, the southwest by Underhill, and its west corner by Westford and Fairfax (see County and Town Outline Map of Vermont on the following page).

Cambridge lies entirely within the Green Mountain Physiographic Sub-division of the New England Upland. The Green Mountains are characterized by steep-sided hills and mountains that are steeper in the south and southeast quarter of Cambridge. Elevations range from 3,960 feet atop Bear Head (near the southern boundary) to below 440 feet in the western corner of Cambridge where the Lamoille River crosses the Fairfax Town Line. North and west of the mountain ranges the land is typified by rounded hills of less relief.

Primary drainage is westward via the Lamoille River trending roughly east-west through the center of town. Secondary drainage is north, northeast, south and southwest via the North and Gallup Branches, Judevine, Settlement and Hunt Brooks, and Brewster and Seymour Rivers. Many unnamed streams drain the northern slopes of Mt. Mansfield in the southern part of town and the western and northern slopes of the Sterling Range in the eastern corner of Cambridge.

Three small bodies of water in the Mt. Mansfield State Forest are Lake of the Clouds (3,930'), Bear Pond (3,530'), and Sterling Pond (3,008') which extends into Stowe.

N E W Y O R K



COUNTY AND TOWN OUTLINE MAP OF VERMONT

PREPARED BY THE
VERMONT DEPARTMENT OF HIGHWAYS
HIGHWAY PLANNING DIVISION

SCALE
0 4 8 12 MILES

DECEMBER 31, 1974

M A S S A C H U S E T T S

SURVEY OF ROCK SOURCES

Procedure for Rock Survey

The method 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 during the winter months and comprises the mapping and description of rock types perused from many reference sources, as acknowledged in the bibliography. These references differ considerably in dependability due to subsequent developments and studies that have contributed to the obsolescence of a number of reports. The results of samples taken by other individuals are analyzed, and their location is mapped when possible. As complete a correlation as possible is made of the available geological information concerning the area under consideration.

The field investigation is begun by making a cursory survey of the entire town. The information obtained from the preliminary survey, and that from the office investigation, is used to determine where sampling will be concentrated. When a promising source has been determined by rock type, volume of material, accessibility, 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 & Research Division for abrasion testing by the Deval Method (AASHTO T-3) and the Los Angeles Method (AASHTO T-96). Samples taken by the chip method are often within the weathered zone of the outcrop and thus may give a less satisfactory test result than fresh material from unweathered rock. When the rock is uniform, and the chip samples yield acceptable abrasion test results, the material source is listed in this report as being satisfactory.

Discussion of Rock and Rock Sources

The information on the Rock Materials Map (Plate II) is a cartographic generalization. A more detailed description of the respective rock formations is given in the Summary of Rock Formations included in this report.

Occasionally, rocks belonging to the same formation and exhibiting similar characteristics (i.e., color and texture) produce different abrasion test results owing to differing physical properties or chemical compositions. Therefore, in no case should satisfactory test results obtained in one area be construed to mean that the same formation, even in the same area, will not later produce unsatisfactory material; this is particularly true of metamorphic rocks.

Metamorphic rocks of the Green Mountain Sequence underlie the town. The Underhill Formation, schist, phyllite, and gneiss, is mapped as underlying most of Cambridge and outcrops steeply in the Smugglers Notch region of the Mt. Mansfield State Forest, but was not sampled because of its future unavailability as a source. The same formation underlies the Sterling Range, but was inaccessible. Formations in the rest of Cambridge are covered by glacial drift, alluvium, or heavy woods, or are unavailable due to commercial or residential development.

The formations mapped as underlying Cambridge from west to east are the Pinnacle Formation (Tibbitt Hill volcanic member), Pinnacle Formation graywacke and conglomerate, Underhill Formation schist, phyllite, and gneiss, Underhill Formation (White Brook dolomite and limestone member), Underhill greenstone, Hazens Notch Formation schist, quartzite and gneiss. There are five small, mapped bodies of greenstone or ultramafic rock in town.

SURVEY OF SAND AND GRAVEL SOURCES

Procedure for Sand and Gravel Survey

The method used for conducting the 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 during the winter months and comprises the mapping of potentially productive areas from various references. Of these references, the survey of glacial deposits mapped by Professor Stewart is particularly helpful when used with 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. The locations of existing pits are mapped, as are the locations in which samples were taken by other individuals.

The field investigation is begun by making a cursory survey of the entire town. All pits, and any areas that show evidence of glacial or fluvial deposition are noted, and later investigated by obtaining samples from pit faces and other exposed surfaces. Test holes in pit floors and extensions are later dug with a backhoe to a depth of approximately 11 feet to obtain material which is submitted to the Materials & Research Division for gradation, sieve analysis and AASHTO T-4 Method stone abrasion test.

Discussion of Sand and Gravel Deposits

Results of this survey showed that granular deposition in Cambridge is limited to features between 600' and 1,200' elevation. Material is coarser in the south along Vermont Route 108, towards the mountains. The bulk of granular material used in town is drawn from the Schofield Pit (Waterville) and the Coburn Pit (Belvidera) because most areas in town are nearly depleted. Granular deposition along the Brewster River valley is mainly a thin (3'-8') skim of nearly horizontal gravel overlying sand.

The most promising sources of Gravel for Sub-base Item 704.05 are listed with the most favorable first; Map Identification Nos. 21, 22, and 19 (Nos. 21 and 19 are pits, No. 22 is a wooded extension north of No. 21). Nos. 21 and 22 are being held for development as future house lots; No. 19 has a very limited amount of material.

Areas yielding acceptable Sand Borrow and Cushion Item 703.03 are listed with the most favorable first: Map Identification Nos. 10, 5, 4, and 16 which are all pits.

Other areas with passing samples were not listed due to lack of reserves, or their unavailability.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF CAMBRIDGE

Green Mountain Sequence

Camels Hump Group

Underhill Formation: Silvery, gray-green, quartz-sericite-albite-chlorite-biotite schist containing abundant lenticular segregations of granular white quartz; locally quartz-sericite-albite-chlorite phyllite; porphyroblasts of albite, garnet, and magnetite are common and locally very abundant in gneissic facies in axial anticlines of the Green Mountain anticlinorium.

Underhill Formation, greenstone: varied composition including albite-chlorite-epidote-calcite and sericite-magnetite-chlorite-clinozoisite rocks.

Underhill Formation: carbonaceous quartz-sericite-albite-chlorite schist and phyllite.

Underhill Formation (White Brook member): chiefly brown-weathered whitish, tan and gray sandy dolomite, locally only a hematitic zone; includes carbonaceous crystalline limestone in Cambridge syncline.

Pinnacle Formation: Schistose graywacke, gray to buff, commonly striped, quartz-albite-sericite-biotite-chlorite rock predominates; quartz-cobble and boulder conglomerate is common, chiefly near base.

Pinnacle Formation (Tibbit Hill volcanic member): albite-actinolite-chlorite-epidote greenstone; locally pillowed and vesicular.

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

Plutonic Rocks: Ultramafic; serpentinite, carbonate rock, talc carbonate rock, and steatite.

GLOSSARY OF SELECTED GEOLOGIC TERMS

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

Albite - The light-colored, sodium end member of the continuous plagioclase feldspar series which is found in alkali rocks. The name is often compounded with the names of rocks containing the mineral.

Anticlinorium - A large composite fold consisting of a series of anticlines and synclines which, taken as a group, have the general form of an arch or anticline. The term is applied only to relatively large features having a width of at least several miles.

Biotite - A dark platy silicate commonly known as black mica.

Calcite - A common rock-forming carbonate mineral distinguished by its softness, perfect rhombohedral cleavage, white or pale color, and vitreous luster; its ready effervescence in cold dilute hydrochloric acid distinguishes it from Dolomite.

Carbonaceous - Containing carbon.

Chlorite - A group of green hydrous silicates of aluminum, ferrous iron, and magnesium, which occur in plate-like crystals or scales.

Clinozoisite - A hydrous calcium aluminum silicate usually found in crystalline schists derived by the metamorphism of a dark igneous rock containing calcic feldspar. It is grayish white, green or pink and usually forms as columnar crystals.

Conglomerate - The consolidated equivalent of gravel which can have considerable range in size and composition of the constituent rock and mineral fragments. The matrix of finer material between the larger fragments may be sand, silt, or any of the common natural cementing materials such as calcium carbonate, silica, clay, or iron oxide.

Dolomite - A rock and its constituent mineral, $\text{CaMg}(\text{CO}_3)_2$. It is a favorable material for highway construction.

Drainage - The manner in which the water of an area flows by surface streams and rivers, or by subsurface channels.

Drift - Rock material of any sort deposited in one place after having been moved from another. Specifically, a deposit of earth, sand, gravel, and boulders, transported by glaciers (glacial drift) or by running water emanating from glaciers (fluvoglacial drift) and distributed as till, stratified drift, and scattered rock fragments.

Epidote - A calcium aluminum iron silicate mineral usually occurring in rocks as formless grains and masses. It is usually green; pistachio-or yellowish-green being the characteristic shade.

Facies - The composite nature of sedimentary deposits reflecting the conditions and environment of their origin.

Gneiss - A metamorphic rock of alternating bands of light and dark minerals; the light bands are rich in feldspar and quartz, and the dark bands are rich in hornblende and mica.

Graywacke - Dark, hard sandstone consisting of angular grains of quartz, feldspar, and rock fragments in a fine, compact matrix of micas, clay minerals, and chlorite.

Hematitic - Of, or containing hematite, a common ore mineral of iron. It occurs in steel-gray to black crystals, and in red, earthy masses. It has a distinctive cherry-red to reddish-brown streak and alters principally to limonite.

Lenticular - Applied to a mass of rock or earth that thins out in all directions from the center like a double-convex optical lens.

Matrix - The natural rock or earthy material in which pebbles, fossils, or minerals are imbedded.

Metamorphic - Rocks that owe their distinctive characteristics to the transformation of pre-existing rocks through intense heat, high pressure, solutions, or combination.

Phyllite - A fine-grained, foliated metamorphic rock intermediate between the mica schists and slates, into which it may grade. The cleavage is due to the presence of a large amount of the potash mica, sericite, which also gives the rock a distinctive silvery appearance. Its fracture is intermediate between the smooth, even cleavage of slate and the rather splintery fissility of schist; the rock is not as tough as slate.

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 are formed by heat, pressure, and infiltrating solutions occurring later than the rocks in which they form.

Quartzite - A common siliceous rock, the metamorphic equivalent of sandstone, which is composed of quartz grains so firmly cemented that fracture occurs with equal ease across the grains and the cementing material.

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

Sericite - A mineral very similar to muscovite mica. It occurs in small flakes and scales in metamorphic rocks such as sericite schists and sericite gneisses.

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

Steatite - A soft, metamorphic mineral known as soapstone. It is an impure, and massive-to-schistose talc that may grade into talc schists. It is distinguished by its softness (it can be cut by a knife) and its greasy or soapy feel.

Syncline - A fold of rock strata that is concave upward and in which younger formations occur toward the center of curvature.

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

Ultramafic - Igneous rocks having a low percentage of silica (less than 45%), virtually no quartz and feldspar, and a correspondingly high percentage of iron, magnesium, and calcium. These rocks may occur as individual bodies or as segregations in layered igneous bodies.

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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, March, 1976.

DIVISION 700 - 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 - SAND BORROW AND CUSHION

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, or organic material.

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

TABLE 703.05A - GRANULAR BORROW

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.

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 - GRAVEL FOR SUB-BASE

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 - CRUSHED STONE FOR SUB-BASE

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves TOTAL SAMPLE
4½"	100
4"	90-100
1½"	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 - LEVELING MATERIAL

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves TOTAL SAMPLE
3/4"	100
1/2"	70-100
No. 4	50- 90
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 - CRUSHED GRAVEL FOR SUB-BASE

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 - DENSE GRADED CRUSHED STONE FOR SUB-BASE

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 - GRAVEL BACKFILL FOR SLOPE STABILIZATION

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 $\frac{2}{3}$ 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 - GRANULAR BACKFILL FOR STRUCTURES

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION - GEOLOGY SECTION

TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
1	1	1978	0.5-11	0-0.5	Yes	100	100	91	82	15	6	-	Sand	Owner: Town of Cambridge. Area is a very overgrown pit which is nearly depleted. Pit is just south of Cambridge Town Highway No. 71 (Class 4) and 0.25 mile west of its junction with Vermont Route 104. Test No. 1 was in floor of overgrown pit, 50' south of the road. Material is: 0'-0.5', overburden; 0.5'-1.5', pebbly fine gravel; 1.5'-7', sand; 7'-9', pebbly sand; 9'-11' sand.
	2	1978	0-7	-	No	100	100	100	100	96.0	95.5	-	A-4 Silt	Test No. 2 was in brushy, overgrown field, 125' S 60° W of Test No. 1. Material is: 0'-7', hard-packed silt-clay. Sample was run for soil classification.
2	1	1978	0-5.5	0-0.5	Yes	100	100	100	100	93	41	-	-	Owner: Maurice Pouliot. Area is pit at north base of steep knolls, southeast of junction of Cambridge Town Highway No. 71 (Class 4) with Vermont Route 104. Terpstra Construction Co. was drawing material from pit to use as fill for a road into his nearby housing development. Owner planned to have area smoothed-over before winter.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION - GEOLOGY SECTION

TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VMD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
														Test No. 1 was in the southeast floor of pit. Material is: 0'-5.5', silty fine sand; bottom, silt-clay.
3	1	1978	0-5.5	-	Yes	100	100	100	100	41	21	-	-	<p>Owner: Maurice Pouliot. Area is an inactive, nearly depleted pit 0.1 mile south of Vermont Route 104, 0.16 mile east of Cambridge Town Highway No. 71 (Class 4). Owner's house is 100' northwest of pit. Pit was to be smoothed-over before winter.</p> <p>Test No. 1 was in floor, 15' north of steep, inaccessible faces. Material is: 0'-5.5', sand; bottom, water and blue silt-clay.</p>
4	1	1978	2-6	0-2	Yes	91	87	67	48	17	13	10.4%	Granular Borrow (Gravel)	<p>Owner: Fred Boyden. Area is an overgrown pit on pastured knolls, adjacent to the south side of Cambridge Town Highway No. 65 (Class 3) and across the road from Blaisdell's commercial building. Owner may open knolls up for material in the future.</p> <p>Test No. 1 was in floor of overgrown pit near road. Material in the southwest end of test hole is: 0'-2', overburden; 2'-4', fine gravel; 4', ledge; the northeast side of hole: 2'-7', gravel; bottom, sand.</p>

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
6	1	1978	1-10	0-1	No	100	100	100	100	16	8	-	Sand	<p>Owner: Richard Machia. Area is a fairly steep, smoothed-over pit 100' southeast of Cambridge Town Highway No. 10 (Class 3), 0.36 mile northeast of Cambridge Town Highway No. 2 (Class 2). Pit floor is now meadow.</p> <p>Test No. 1 was the northeast corner of the upper slope. Material is: 0'-1', overburden; 1'-10', sand.</p>
	2	1978	0-10	-	No	100	100	100	99	40	10	-	Granular Borrow (Sand)	<p>Test No. 2 was near road at base of slope, 210' N85°W of, and 32' below Test No. 1. Material is: 0'-5', sand with some silt-clay (material may have been smoothed over as it does not look "in place"; 5'-10', sand which looks clean but slightly fine; bottom, silt-clay.</p>
7	1	1978	1-10	0-1	No	100	100	91	78	24	13	-	Granular Borrow (Sand)	<p>Owner: Ted Barnet. Area is a field with a smoothed-over pit west of Cambridge Town Highway No. 7 (Class 3) and 0.34 mile north of its junction with Cambridge Town Highway No. 12 (Class 3).</p> <p>Test No. 1 was in field, 100' west of road. Material is: 0'-1', overburden; 1'-7', silty fine sand; 7'-8.5', sand; 8.5'-10', pebbly fine gravel; bottom, boulders. Leslie Rogers, the previous owner, said that the old pit extended to where test No. 1 was dug, so the top 5' or</p>

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 6

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1978	1-8.5	0-1	No	100	100	100	100	16	11	-	Sand	so of material might not be "in place". Test No. 2 was in lower south edge of old smoothed-over pit, 340' S60°W of Test No. 1. Material is: 0'-1', overburden; 1'-2.5', silty sand; 2.5'-5.5', fine sand; 5.5'-8.5', sand which is slightly coarser than the sand in the 2.5'-5.5', interval; bottom, rock.
	3	1978	2-10	0-2	No	89	84	60	45	13	8	19.3%	Gravel	Test No. 3 was in slope of low knoll, 700' due south of Test No. 2. Material is: 0'-2', overburden; 2'-10', gravel; bottom, same. Material is good but very limited in extent.
	4	1978	1-10	0-1	No	100	100	100	100	77	71	-	-	Test No. 4 was in slope of knol. 230' south of Test No. 3. Material is: 0'-1', overburden; 1'-10', silty fine sand or silt-clay; bottom, silt-clay.
8	1	1978	3-15	0-3	Yes	95	92	64	39	19	13	18.3%	Granular Borrow (Gravel)	Owner: Irving Pollander. Area is an inactive and nearly depleted pit formerly owned by Pollander's uncle, Clifton Reynolds Pit is 0.11 mile south of Cambridge Town Highway No. 12 (Class 3), and its access is 0.12 mile west of the junction of Cambridge Town Highway No. 12 (Class 3) and Vermont Route 108.

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TABLE I

CAMBRIDGE 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-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1978	1-15	0-1	Yes	100	100	100	86	12	5	-	Sand	Test No. 1 was in gravel zone of west face in southwest part of pit. Material is: 0'-3', overburden; 3'-13', pebbly gravel or fine, silt-clay coated gravel; 13'-15', a low quality gravel with a silt-clay binder; bottom, silt.
	3	1978	0-8.5	-	Yes	97	97	73	46	22	16	13.5%	-	Test No. 2 was in south face of pit, 60' S55°E of Test No. 1. Material is: 0'-1', overburden; 1'-7', pebbly sand; 7'-9', sand; 9'-11', pebbly sand; 11'-14', sand; 14'-15', silt seam; bottom, sand.
	4	1978	1-5	0-1	Yes	100	92	81	62	8	6	14.8%	Sand	Test No. 3 was in floor, 30' northwest of Test No. 2. Material is: 0'-8.5', fine gravel with a silt-clay binder; bottom, water. Beds dip 30°-40° to the southeast.
														Test No. 4 was in floor, 245', N20°W of Test No. 3. Material is: 0'-1', overburden; 1'-5', fine gravel; water poured into hole to within 2 feet of the top.
9	1	1978	1-14	0-1	Yes	100	100	100	100	35	21	-	-	Owner: Gerald Machia. Area is a tiny pit on a steep, wooded slope just west of the St. J. & L. C. R.R. tracks, 0.23 mile northwest along tracks from Vermont Route 108.

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 8

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
														Test No. 1 was on upper slope of steep, sloughed face. Material is: 0'-1', overburden; 1'-9', silty fine sand with silt-clay seams; 9'-11', layer of silt-clay; 11'-14', sand; bottom, silt-clay and sloughed material.
10	1	1978	0.5-9	0-0.5	Yes	100	100	93	75	23	10	-	Sand	<p>Owner: State of Vermont(formerly St. J. & L. C. R.R.). Area is an inactive, overgrown, and smoothed-over pit adjacent to the west side of Vermont Route 108, 0.49 mile south of its junction with Cambridge Town Highway No. 12 (Class 3). This area was once under consideration as a site for the State Garage.</p> <p>Test No. 1 was in the south face of the lowest pit level. Material is: 0'-0.5', overburden; 0.5'-3', pebbly sand; 3'-5', fine sand; 5'-8', sand; 8'-9', pebbly sand or fine gravel; bottom, pebbly sand. There were piles of screened pebbles and small cobbles on the floor. There was water on the pit floor 3'-5' below, and 100' north of Test No. 1.</p>
	2	1978	0-8	-	Yes	100	100	100	98	7	4	-	Sand	<p>Test No. 2 was in floor of lowest level, 115' N10°E of, and 5' below the bottom of Test No. 1. Material is: 0'-5', sand; 5'-8', sand with a water seep; bottom, sand and water (seems a bit like quick-sand).</p>

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CAMBRIDGE GRANULAR DATA SHEET NO. 9

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1978	2-8	0-2	Yes	100	100	96	85	22	16	-	-	Test No. 3 was in southwest floor of middle level, 65' S65 ⁰ W, of Test No. 1. Material is: 0'-2', overburden; 2'-8', sand with a bit of pebbly sand; bottom, fine gravel. Could not go deeper due to the angle of the backhoe.
	4	1978	0-10	-	Yes	100	100	100	100	59	46	-	-	Test No. 4 was in southwest floor of upper level of pit (at about the same elevation as the road). Material is: 0'-10', sand; bottom, sand.
	5	1978	0-10	-	Yes	100	100	100	99	17	7	-	Sand	Test No. 5 was in floor of upper level, 150' N70 ⁰ E of Test No. 4. Material is: 0'-10', sand; bottom, sand.
11	1	1978	1.5-10	0-1.5	No	100	100	100	100	96.4	94.5	-	A-4 Silt	Owner: Bernie Carchrie(formerly Leighton Woods). Area is a grassy knoll in field north and above Vermont Route 109, 0.14 mile east of the St. J. & L. C. R.R. tracks. Test No. 1 was atop grassy knoll northeast of bank along Vermont Route 109. Material is: 0'-1.5', overburden; 1.5'-10', silt-clay. Material was analyzed for soil classification only.

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
16	1-A	1978	1-7	0-1	Yes	85	85	67	54	9	2	16.5%	Gravel	Owner: Mrs. Carrie Stewart. Area is an inactive pit extending to the property lines. Pit is 0.14 mile west of Vermont Route 108; the access is 0.19 mile south of the junction of Vermont Route 108 and Cambridge Town Highway No. 31 (Class 3). Test No. 1-A was in the upper face in southeast corner of pit. Material is: 0'-1', overburden; 1'-7', fine gravel; bottom, sand. Gravel is good but very limited.
	1-B	1978	7-14	-	Yes	100	100	95	93	31	12	-	Granular Borrow (Sand)	Test No. 1-B was below Test No. 1-A. Material is: 7'-14', sand with thin beds of silty sand and some silt sand and some silt-clay; bottom, moist silt-clay.
	2	1978	0.5-8.5	0-0.5	Yes	100	100	100	90	12	7	-	Sand	Test No. 2 was in floor, 35' N65°W of Test No. 1-B. Material is: 0'-0.5', overburden; 0.5'-8.5', sand with a few pebbles; bottom, moist silty sand to silt-clay.
	3	1978	0-5	-	Yes	100	100	95	85	31	14	-	Granular Borrow (Sand)	Test No. 3 was in floor of middle level, 80' N40°E of, and 10' below Test No. 2. Material is: 0'-5', sand with a few pebbles; bottom, bl silt-clay.

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CAMBRIDGE GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	4	1978	0.5-11	0-0.5	Yes	100	95	83	74	15	4	-	Sand	Test No. 4 was in lowest floor, 320' N45°W of, and 6' below Test No. 3. Material is: 0'-0.5', overburden; 0.5'-3', pebbly sand; 3'-4', sand; 4'-5', pebbly sand; 5'-7', sand; 7'-9.5', gravel; 9.5'-11', sand.
	5	1978	0.5-5.5	0-0.5	Yes	100	91	85	72	13	3	-	Sand	Test No. 5 was in floor near access road, 415' S55°E of Test No. 4, and 120' east of Test No. 3. Material is: 0'-0.5', overburden; 0.5'-5.5', pebbly sand; bottom, silt or silt-clay.
17	1	1978	1-11	0-1	Yes	100	94	77	63	17	5	-	Sand	<p>Owner: Frank Hitchcock. Area is a small inactive, overgrown, and depleted pit, 200' north of Vermont Route 108. Access is 0.2 mile northwest of the junction of Vermont Route 108 and Cambridge Town Highway No. 4 (Class 3). The access enters at a curve on the hill east of the area so great care should be taken due to poor visibility.</p> <p>Test No. 1 was on east face of pit and represents an extension of the material east into the cornfield. Material is: 0'-1', overburden; 1'-6', pebbly sand or fine gravel; 6'-8', sand; 8'-11', silty fine sand; bottom, silt-clay. Material is good but of limited amount.</p>

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1978	1-6	0-1	Yes	100	100	100	100	63	28	-	-	Test No. 2 was in floor, 35' N25°W of Test No.1. Material is: 0'-1', overburden; 1'-6', silty fine sand; bottom, moist silt-clay.
18	1	1978	1-17	0-1	No	100	100	100	95	17	5	-	Sand	Owner: Clark Dodge. Area is a pit at southeast edge of cornfield, 0.21 mile S30°W of Vermont Route 108 Access is 0.29 mile southeast of its junction and Cambridge Town Highway No. 44 (Class 3). There were a row of witness stakes in the cornfield, so possibly a housing development is planned. Test No. 1 was on the upper slope, southeast of and above the pit. Material is: 0'-1', overburden; 1'-6', pebbly sand; 6'-10', sand; 10'-17', fine sand; bottom, sloughed material. The lower part of slope seems to have been bulldozed.
	2	1978	0-5.5	-	Yes	100	100	96	89	20	6	-	Sand	Test No. 2 was on low west face of small southwest lobe of pit. The beds were nearly horizontal and seemed to be deltaic. Material is: 0'-5.5', dusty pebbly sand; bottom, silty sand and silt-clay seams. Floor is damp. The material looks similar to that of Test No. 1.

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	3-A	1978	0-10	-	Yes	100	100	100	100	37	10	-	Gran- ular Borrow (Sand)	Test No. 3-A was in the upper part of east face of northeast lobe of pit. Material is: 0'-6', fine sand; 6'-6.5', pebbly sand layer; 6.5'-7.5', silt or silt-clay seam; 7.5'-10', sand, which looks pretty good.
	3-B	1978	10-20	-	Yes	100	100	100	100	47	35	-	-	Test No. 3-B was below Test No. 3-A. Material is: 10'-15', silty fine sand; 15'-17', silt-clay; 17'-19', sand; 19'-19.5', silt-clay with water; 19.5'-20', dry sand; bottom, sloughed material.
	4	1978	0.5-11	0-0.5	No	100	85	84	80	22	8	-	Gran- ular Borrow (Sand)	Test No. 4 was near, tree-line east of and above pit, 35' N45°E of Test No. 1. Material is: 0'-0.5', overburden; 0.5'-7.5', sand; 7.5', -8.5', pebbly sand; 8.5'-11', sand; bottom, sand.
	5	1978	0-10	-	Yes	100	100	100	100	92	58	-	-	Test No. 5 was in floor, 35' N80°E of Test No. 2. Material is: 0'-4', fine sand; 4'-6', silty fine sand; 6'-10', fine sand with thin beds of silty fine sand or silt-clay; bottom, water.
	6	1978	0-11	-	Yes	100	100	100	100	86	47	-	-	Test No. 6 was in floor, 75' N55° W of Test No. 3. Material is: 0'-5.5', silty fine sand; 5.5'-11', sand (caves easily); bottom, wet sand and silt-clay.

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CAMBRIDGE GRANULAR DATA SHEET NO. 17

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
19	1	1978	0.5-8	0-0.5	Yes	87	82	72	59	8	3	18.3%	Gravel	Owner: Gerald Machia (formerly: Clifton Reynolds). Area is a pit with wooded extension to the north, 0.62 mile southwest of Cambridge Town Highway No. 25 (Class 3); Access is 0.24 mile west of its junction with Cambridge Town Highway No. 34 (Class 3). Pit is open but not active. Owner is very undecided about selling, but would rather sell all, than a portion of the acreage. Test No. 1 was in east face of the upper level. Material is: 0'-0.5', overburden; 0.5'-1.5', fine gravel; 1.5'-3', pebbly sand; 3'-7', fine gravel; 7'-8', gravelly sand; bottom, gravel sand.
	2	1978	1-8	0-1	Yes	90	85	70	53	6	3	17.9%	Gravel	Test No. 2 was in northwest face of upper level, 170' N60°W of Test No. 1. Material is: 0'-1', overburden; 1'-3', fine gravel; 3'-4', sand; 4'-5', gravelly sand; 5'-6', fine gravel; 6'-8', gravelly sand; bottom, gravelly sand.
	3	1978	1-6	0-1	Yes	100	96	86	75	16	7	-	Sand	Test No. 3 was in northwest face of lower level, 50' S25°E of Test No. 2. Material is: 0'-1', overburden; 1'-2', pebbly sand; 2'-4', sand; 4'-6', gravelly sand and fine gravel; bottom, silt-clay and angular pebbles.

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CAMBRIDGE GRANULAR DATA SHEET NO. 18

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	4	1978	0.5-6	0-0.5	Yes	100	100	95	87	19	5	-	Sand	Test No. 4 was in east face of lower level, 170' S55 ⁰ E of Test No. 3. Material is: 0'-0.5', overburden; 0.5'-1', fine sand; 1'-2', pebbly sand; 2'-3', sand; 3'-5', fine sand; 5'-6', sand and small cobbles; bottom, silt-clay. Overall, material is a skim of gravelly sand overlying finer material.
	5	1978	1.5-10	0-1.5	Yes	100	100	98	93	34	12	-	Gran- ular Borrow (Sand)	Test No. 5 was in floor of upper level, 75' N60 ⁰ W of Test No. 1. Material is: 0'-1.5', overburden; 1.5'-5.5', pebbly sand; 5.5'-10', sand with a few thin lenses of silt-clay; bottom, damp sand.
	6	1978	0.5-6	0-0.5	Yes	100	100	97	90	34	12	-	Gran- ular Borrow (Sand)	Test No. 6 was in floor of lowest level, 105' S40 ⁰ E of Test No. 3. Material is: 0'-0.5', overburden; 0.5'-6', sand; bottom, silt-clay.
	7-A	1978	5-7	-	No	100	95	87	74	8	3	-	Sand	Test No. 7-A was in stripped zone between pit and woods, 110' N60 ⁰ E of Test No. 2. Test was only of gravelly zone. Material is: 5'-7', fine gravel or gravelly sand (See 7-B).
	7-B	1978	0.5-10	0-0.5	No	100	100	86	76	17	6	-	Sand	Test No. 7-B was a composite of material which included the gravelly 5'-7', interval. Material is: 0'-5' overburden; 0.5'-4.5', sand; 4.5'-5' silty-fine sand; 5'-7', fine gravel or gravelly sand; 7'-10', sand; bottom, sand.

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CAMBRIDGE GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	8	1978	2.5-10	0-2.5	No	93	90	73	56	11	4	19.1%	Gravel	Test No. 8 was in woods, 160' N5°W of Test No. 7. Material is: 0-2.5', overburden; 2.5'-7', fine gravel; 7'-8', sand; 8'-10', fine gravel; bottom, gravelly sand.
	9	1978	2.5-10	0-2.5	No	100	100	91	78	20	5	-	Sand	Test No. 9 was in small clearing in the woods, 310' S70° E of Test No. 1. Material is: 0'-2.5', overburden; 2.5'-10', a till composed of small stones and fines; bottom, same.
	10	1978	2-10	0-2	No	100	100	90	84	69	60	-	-	Test No. 10 was in small clearing east of access road, 0.3 mile south of Cambridge Town Highway No. 25 (Class 3). Material is: 0'-2', overburden; 2'-10', silt-clay (till) with angular pebbles and rocks.
20	1	1978	1-5	0-1	Yes	76	74	57	41	30	25	20.1%	-	Owner: Gerald Machia (formerly: Wesley Pope). Area is a partly overgrown and smoothed-over pit on a three-acre plot, which abuts R. Stanley's holdings at Map Identification No. 21. Machia's pit is extremely close to property lines and this is nearly depleted. The pit is 0.1 mile north of Cambridge Town Highway No. 44 (Class 3); access is 0.27 mile west of its junction with Cambridge Town Highway No. 49 (Class 3). There is very poor visibility encountered when entering the town road from pit access.

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TABLE I

CAMBRIDGE 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-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
	2	1978	0.5-6	0-0.5	Yes	100	100	94	84	36	32	-	-	<p>There needs to be a culvert where the access road crosses a small brook. Test No. 1 was in the low east face of upper pit level. Material is: 0'-1', overburden; 1'-4', angular fragments and gravel; 4'-5'; pebbly gravel; bottom, sand.</p> <p>Test No. 2 was in floor near southwest corner of pit. Material is: 0'-0.5', overburden; 0.5'-6', silt-clay and angular stone fragments; bottom, same. There are zones of water on floor.</p>
21	1	1978	1-8	0-1	Yes	86	77	63	49	27	24	30.7%	-	<p>Owner: Robert Stanley (formerly Wesley Pope). Area is field with a small pit in northwest corner. Pit is 0.1 mile north of Cambridge Town Highway No. 44 (Class 3), 0.15 mile west of its junction with Cambridge Town Highway No. 49 (Class 3). Test No. 1 was in center of low north face of pit. Material is: 0'-1', overburden; 1'-8', gravel with random angular boulders; bottom, pebbly sand. Face caved very readily.</p>
	2	1978	1-10	0-1	Yes	83	74	62	48	6	4	28.3%	Gran- ular Borrow (Gravel)	<p>Test No. 2 was in floor, 120' N60° W of Test No. 1. Material is: 0'-1' overburden; 1'-4', fine-to-medium gravel; 4'-6', boulder layer with some gravel; 6'-10', gravel; bottom, gravel and boulders. Material needs to be screened or crushed.</p>

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TABLE I

CAMBRIDGE GRANULAR DATA SHEET No. 21

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over- burden (Ft)	Exist- ing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						2"	1-1/2"	1/2"	#4	#100	#200			
	3	1978	0.5-10	0-0.5	No	100	96	86	75	9	5	27.6%	Sand	Test No. 3 was in overgrown field 225' N25°E of Test No. 1. Material is: 0-0.5', overburden; 0.5'-2', sand; 2'-3.5', gravel; 3.5'-4', sand; 4'-6', gravel; 6'-8', sand; 8'-10', gravel; bottom, boulders.
	4	1978	0.5-10	0-0.5	Yes	82	82	64	45	16	12	26.9%	Gran- ular Borrow (Gravel)	Test NO. 4 was in the floor at east end of pit. Material is: 0-0.5' overburden; 0.5'-4', pebbly fine gravel; 4'-6', gravel; 6'-9', bouldery gravel; 9'-10', gravel. Some tabular, phyllitic stones are in the gravel.
	5	1978	1.5-10	0-1.5	No	86	71	58	35	16	9	28.0%	Gran- ular Borrow (Gravel)	Test No. 5 was near clump of gray birches in overgrown field southeast of pit. Material is: 0'-1.5' overburden; 1.5'-5', coarse bouldery gravel; 5'-8', slightly finer gravel; 8'-10', bouldery gravel.
	6	1978	1.5-11	0-1.5	No	82	79	61	36	11	7	27.1%	Gran- ular Borrow (Gravel)	Test No. 6 was near stone wall at north end of field, 380' N25°E of Test No. 5. Material is: 0'-1.5' overburden; 1.5'-11', gravel; bottom fine gravel and gravel.
	7	1978	1.5-10	0-1.5	No	87	72	39	17	17	10	26.2%	-	Test No. 7 was in northeast corner of field, 440', S60°E of Test No. 6. Material is: 0'-1.5', overburden; 1.5'-4', bouldery gravel; 4'-8.5', gravel; 8.5'-9.5', very large boulder; 9.5'-10.5', gravel; bottom, gravel.

[illegible]

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION - GEOLOGY SECTION

TABLE I

CAMBRIDGE 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-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
22	1	1978	1-11	0-1	No	100	85	67	45	8	4	24.8%	Gravel	<p>Owner: Robert Stanley (formerly: Wesley Pope).. Area is in deciduous woods north of stone wall at the north end of Map Identification No. 21.</p> <p>Test No. 1 was in small clearing in woods, 235' northeast of opening in stone wall. Material is: 0'-1', overburden; 1'-4', pebbly gravel; 4'-5', gravel; 5'-6.5', pebbly gravel; 6.5'-8.5', coarse gravel; 8.5'-11', gravel; bottom, gravel.</p>
	2	1978	1-7	0-1	No	89	71	61	51	7	4	25.3%	Gran- ular Borrow (Gravel)	<p>Test No. 2 was in woods, 75' east of curve in logging road, and below highest part of feature. Material is: 0-1', overburden; 1'-7', somewhat bouldery gravel; bottom, sand. There is a drop-off 250' east of the hole. Owner wants to use land for house lots.</p>
23	1	1978	0.5-10	0-0.5	Yes	100	92	77	62	10	7	23.3%	Sand	<p>Owner: Ted Hoehn. (Formerly Rod Hubbard). Area is a small inactive pit on an overgrown knoll on the old Rod Hubbard place, 0.13 mile east of Cambridge Town Highway No. 49. (Class 3); access is 0.53 mile north of the junction of Cambridge Town Highways No. 49 and 51 (Class 3).</p>

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION - GEOLOGY SECTION

TABLE I

CAMBRIDGE 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						Abrasion AASHTO T-4-35	Passes VMD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
														<p>Access is rough and through an area thickly overgrown by brush. Knoll may be a small, local delta, but it does not have enough material to be commercially worthwhile.</p> <p>Test No. 1 was atop northeast ramp of small trench in granular knoll in overgrown orchard. Material is: 0'-0.5', overburden; 0.5'-5.5', gravel with somewhat tabular stones; 5.5'-6.5', pebbly sand; 6.5'-10', gravel with smaller and rounder stones than those in the 0.5'-5.5' interval; bottom, gravel. There were not many stones large enough for the abrasion test.</p>
	2	1978	1-7	0-1	No	77	77	69	60	54	38	-	-	<p>Test No. 2 was in overgrown orchard, 170' N20°W of Test No. 1. Material is: 0'-1', overburden; 1'-7', mostly a till composed of sand-sized rotted rock fragments and angular rocks. Test was not in granular feature.</p>
	3	1978	0.5-2.5	0-0.5	Yes	77	73	52	37	17	10	34.7%	Gran- ular Borrow (Gravel)	<p>Test No. 3 was in floor of narrow trench along slope of pit face, 50' S20°W of Test No. 1. Material is: 0'-0.5', overburden; 0.5'-2.5', gravel; bottom, silt-clay and angular rocks (till).</p>

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STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION - GEOLOGY SECTION

TABLE I

CAMBRIDGE 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-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1-1/2"	1/2"	#4	#100	#200			
25	1	1978	1.5-8	0-1.5	No	76	69	53	40	13	6	19.8%	Gravel	Owner: John Safford. Area is a small wooded terrace which represents a small western extension of pit (leach field) at Map Identification No. 26. It is 0.1 mile north of Cambridge Town Highway No. 75 (Class 3), 0.45 mile east of its junction with Vermont Route 108. Owner is holding land to get a good price from Smugglers' Notch Ski Area. Test No. 1 was in small clearing atop wooded terrace. Material is good, but very limited in extent. Material is 0'-1.5', overburden; 1.5'-8', coarse gravel with boulders; bottom, sand.
26	-----	-----	NOT	SAMPLED	-----	-----	-----	-----	-----	-----	-----	-----	-----	Owner: Smugglers' Notch Ski Area (former owner: John Safford). Area is a depleted pit which is now used exclusively as a leach field for 1,700 people in ski village. This area was given a Map Identification No. as it shows on the air photos.
27	1	1978	1-10	0-1	No	100	90	81	73	56	43	-	-	Owner: State of Vermont. Area is a wooded terrace south of Cambridge Town Highway No. 75 (Class 3). Test No. 1 was in a small clearing 115' S40°W of the road. Material is: 0-1', overburden; 1'-10', compact, silty fine till with angular pebbles and boulders; bottom, same.

TABLE I
SUPPLEMENT

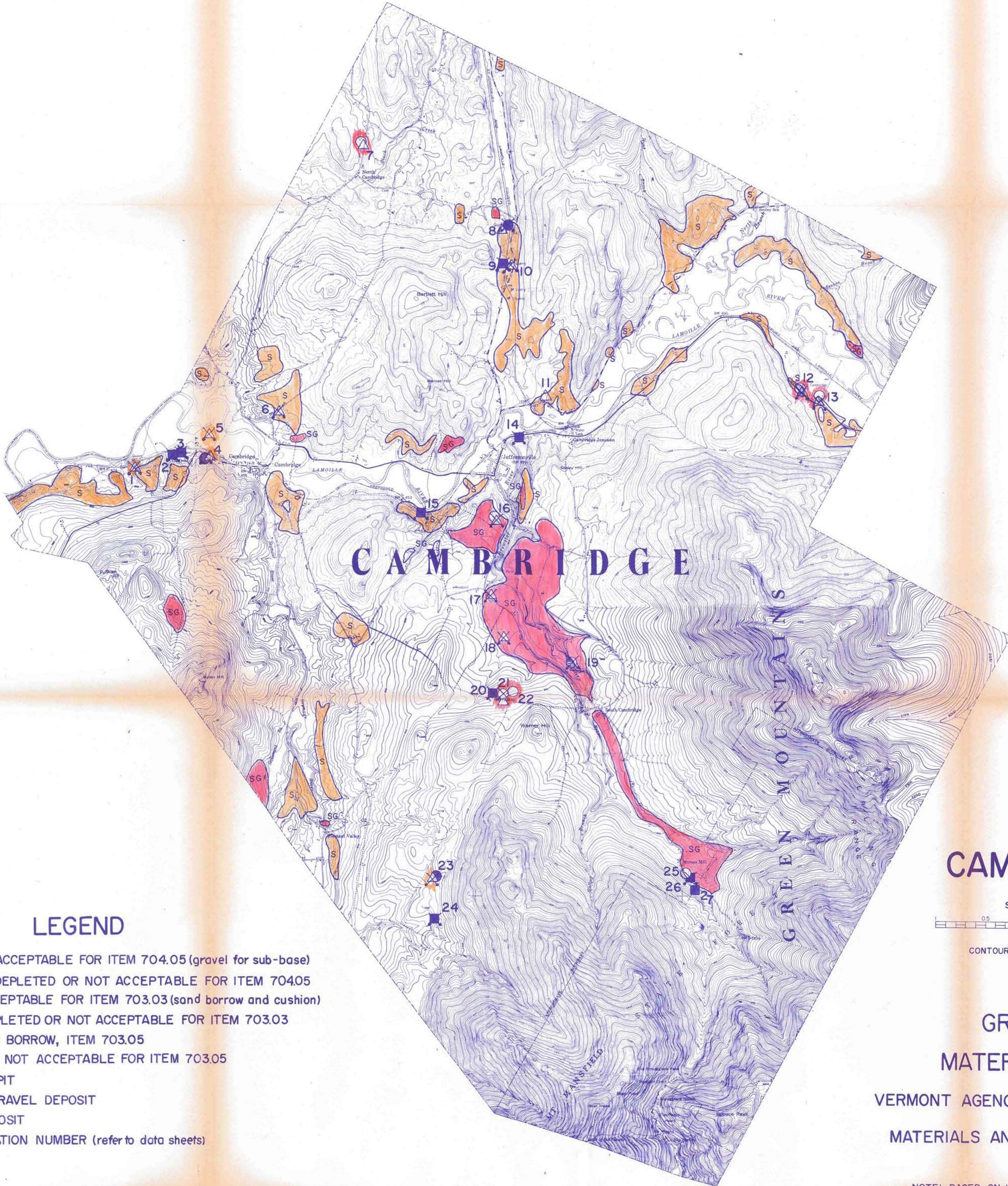
<u>CAMBRIDGE PROPERTY OWNERS - GRANULAR</u>	<u>Map Identification No.</u>
Barnet, Theodore	7
Boyden, Frederick	4, 5
Brosseau, Omer	14
Cambridge, Town of	1
Carchrie, Bernard	11
Dodge, Clark	18
Greene, Mrs. John	24
Hitchcock, Francia	17
Hoehn, Theodore	13, 23
Hunt, Victor	12
Machia, Richard	6
Machia, Gerald	9, 19, 20
Pollander, Irving	8
Pouliot, Maurice	2, 3
Safford, John	25
Smugglers' Notch Ski Area	26
Stanley, Robert	21, 22
Stewart, Mrs. Carrie	16
Vermont, State of	10, 27
Williamson, Joseph	15

TABLE II
SUPPLEMENT

CAMBRIDGE PROPERTY OWNERS - ROCK

Identification No.

Rock resources exist in the Town of Cambridge but are not exploitable in the foreseeable future because they are in the Mt. Mansfield State Forest or are physically inaccessible.



LEGEND

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

CAMBRIDGE

SCALE 1:31,250
0.5 0 1 MILE
CONTOUR INTERVAL 20 FEET
1979

GRANULAR
MATERIALS MAP
BY
VERMONT AGENCY OF TRANSPORTATION
MATERIALS AND RESEARCH DIVISION

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

REVISIONS

DATE					
BY					

