SURVEY OF HIGHWAY CONSTRUCTION MATERIALS

IN THE TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

prepared by

Engineering Geology Section, Materials Division

Vermont Department of Highways

in cooperation with

United States Department of Transportation

Federal Highway Administration

Montpelier, Vermont

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Acknowledgements

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

1. Various departments and individuals of the Vermont State Department of Highways, notably the Planning and Mapping Division and the Highway Testing Laboratory.

2. Professor D. P. Stewart of Miami University, Oxford, Ohio.

3. Professor C. G. Doll, Vermont State Geologist, University of Vermont, Burlington, Vermont.

4. United States Department of Commerce, Bureau of Public Roads.

History

The Materials Survey Project was formed in 1957 by the Vermont State Department of Highways with the assistance of the United States Bureau of Public Roads. Its prime objective was to compile an inventory of highway construction materials in the State of Vermont. Prior to the efforts of the personnel of the Survey as described in this and other reports, searches for highway construction materials were conducted only as the immediate situation required. Thus only limited areas are surveyed, and no overall picture of material resources was available. Highway contractors or resident engineers are usually required to locate the materials for their respective projects and have samples tested by the Highway Testing Laboratory. The additional cost of exploration for construction materials is passed onto the State in the form of higher construction costs. The Materials Survey Project was established to minimize or elimate this factor by enabling the State and its contractors to proceed with information

on materials sources available beforehand. Prior knowledge of locations of suitable material is an important factor in planning future highways.

The sources of construction materials are located by this Project through ground reconnaissance study of maps and aerial photographs, and geological and physiographic interpretation. Maps, data sheets, and work sheets for reporting the findings of the Project were designed with their intended use in mind. These maps and data sheets were devised to furnish information of particular use to the contractor or construction man. For maximum benefit, the maps, data sheets, and this report should be studied simultaneously.

Inclosures

Included in this folder are two surface-geology maps, one defining the location of tests conducted on bedrock sources, the other defining the location of tests conducted on granular materials. These maps are derived from 15-minute or 7½-minute quadrangles of the United States Geological Survey enlarged or reduced to 1:31250 or 1" = 2604'. Delineated on the Bedrock Map are the various rock types of the area. This information was obtained from numerous sources: Vermont Geological Survey Bulletins, Vermont State Geologist Reports, United States Geological Survey Bedrock Maps, and the Centennial Geological Map of Vermont, as well as other references.

The granular materials map depicts areas covered by various types of glacial deposits (outwash, moraines, kames, kame terraces, eskers, etc.) by which potential sources of gravel and sand may be recognized. This information was obtained primarily from a survey conducted by Professor D. P. Stewart of Miami University, Oxford, Ohio, who had been mapping the glacial features of Vermont during the summer months since 1956. Further

information was obtained from the Soil Survey (Reconnaissance) of Vermont conducted by the Bureau of Chemistry and Soils of the United States Department of Agricultrue, and from Vermont Geological Survey Bulletins, United States Geological Survey Quadrangles, aerial photographs, the Surficial Geologic Map of Vermont, and other sources. On both maps the areas tested are represented by Identification Numbers. Several tests are usually conducted in each area represented by an Identification Number, the number of such tests being more or less arbitrarily determined either by the character of the material or by the topography.

Also included in this folder are data sheets for both the Bedrock and Granular Materials Survey, which contain detailed information for each test conducted by the Project as well as information obtained from other sources, and including an active card file compiled by the Highway Testing Laboratory. The latter information was gathered over a period of years by many persons and consequently lacks the organized approach and detail required for effective use. The information on the cards varied widely in completeness. Transfer of information from the cards to the data sheets was made without elaboration or verification. When possible, the locations of the deposits listed in the card files have also been plotted on the maps; however, some cards in the file were not used because the information on the location of the deposit was incomplete or unidentifiable. Caution should be exercised wherever this information appears incomplete. This Project does not assume responsibility for the information taken from the card files.

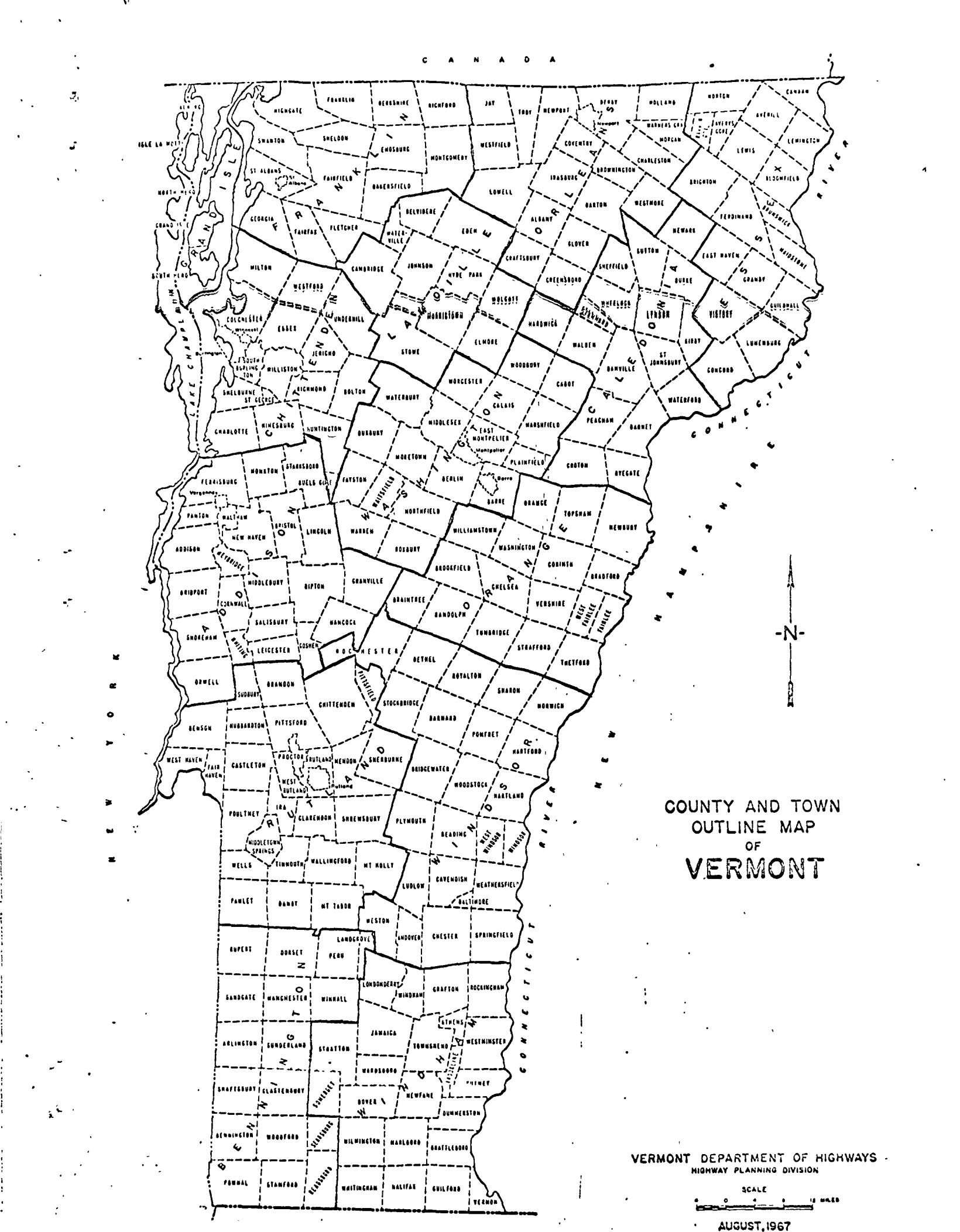
Work sheets contain more detailed information on each test and a detailed sketch of each identification Number Area. The work sheets and laboratory reports are on file in the office headquarters of this Project.

LOCATION

The town of Andover is situated in the southeast part of Vermont in the southwest corner of Windsor County. Andover is bounded on the west by Weston, on the north by Ludlow, on the east by Chester, on the southeast by Windham, and on the southwest by Londonderry. (See County and Town Outline Map of Vermont on the following page.)

Andover lies within the Vermont Piedmont Physiographic Subdivision of the New England Upland. The topography is characterized by rolling to rugged terrain, elevation of which varies from 2,900 feet at the summit of Terrible Mountain in the northwest part of town, to less than 960 feet where the Williams River Middle Branch flows across the Chester Town Line.

Principal drainage is to the east via the Williams River Middle Branch and its major tributary, Lyman Brook; and south via Andover Branch and its tributary, Trout Brook; Nancy Brook and Lovejoy Brook flow north into Ludlow.


CANADA
NEW YORK
NEW HAMPSHIRE
CONNECTICUT RIVER
LAKE CHAMPLAIN
GRAND ISLE
FRANKLIN
LAMOILLE
ORLEANS
ESSEX
CALEDONIA
WASHINGTON
ORANGE
WINDSOR
WINDHAM
BENNINGTON
RUTLAND
ADDISON
CHITTENDEN
-N-
COUNTY AND TOWN
OUTLINE MAP
OF
VERMONT
VERMONT DEPARTMENT OF HIGHWAYS
HIGHWAY PLANNING DIVISION
SCALE
AUGUST, 1967

SURVEY OF ROCK SOURCES

Procedure for Rock Survey

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

The office investigation is conducted primarilty during the winter months and comprises the mapping and description of rock types as indicated in various reference sources. Many different sources of information are utilized, as indicated in the bibliography. These references differ considerably in dependability due to new developments and studies that have contributed to the obsolescense 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. In other words, as complete a correlation as possible is made of all the information available concerning the geology of the area under consideration.

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

Discussion of Rock and Rock Sources

It should be noted that information on the Rock Materials Map is somewhat simplified. (For a more detailed description of the respective rock formations, see the Summary included in this report.) In the Summary it is apparent that complex metamorphic rocks comprise almost the entire lithology within the town of Andover. A mapped occurrence of Ultramafics is probably of igneous origin.

Occasionally, rocks belonging to the same formation and exhibiting similar characteristics (i.e. color, texture, etc.) may produce different abrasion results owing to different physical and chemical properties. Therefore, in no case should satisfactory test results of an area be construed to mean that the same formation, even in the same area, will not later produce unsatisfactory material. This is especially true of metamorphic rocks,

The town of Andover is overlain by much glacial debris and is heavily wooded. The rocks in the town are either inaccessible due to terrain, heavy vegetation, or glacial cover, or else are in formations not productive of material suitable for Crushed Stone for Sub-base. An occurrence of the gneiss of the Mount Holly Complex is north of State Aid Highway No. 1, near the Weston Town Line. However, this is on the southwest slope of Terrible Mountain where houses were being built.

SURVEY OF SAND AND GRAVEL SOURCES

Procedure for Sand and Gravel Survey

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

The office investigation is conducted primarily during the winter months and comprises the mapping of possible potentially productive areas as indicated from various references. Of these references, the survey of glacial deposits mapped by Professor Stewart proves to be valuable, particularly when used in conjunction with other references such as soil-type maps, aerial photographs, and United States Geological Survey quadrangles. The last two are used in the recognition and location of physiographic features indicating glacial deposits and in the study of drainage patterns. In addition, the locations of existing pits are mapped when known. The locations in which samples were taken by other individuals are noted and mapped when possible.

The field investigation is begun by making a cursory preliminary survey of the entire town. All pits and other areas which show physiographic features that give evidence of glacial or fluvial deposition are noted. These locations are later investigated by obtaining samples of pit faces and other exposed materials. Test pits, dug with a backhoe to a depth of approximately 11 feet, are also sampled. The samples are submitted to the Materials Testing Laboratory where they are tested for gradation and stone abrasion, the latter by the Deval Method (AASHO T-4), and the Los Angeles Method (AASHO T-96).

Discussion of Sand and Gravel Deposits

Granular materials in Andover suitable for highway construction and related deposits. Their occurrences are mostly limited to between the elevations of 1,060' and 1,260'. Samples from pits at 1,680' and 1,750', and one at 1,050' met specification requirements for Gravel for Sub-base or Sand Borrow and Cushion. However, these sites were either very small, very thin, or nearly depleted; in all cases they represent small local depositions of material.

It should be noted that a large area of granular material occurs west of the Chester Town Line, north of State Aid Highway No. 1. This is the western extension of a probable kame terrace with proven reserves owned by Leonard Eddy. See Materials Inventory, Town of Chester. In Andover, this feature occupies land jointly owned by Charles Lamson and three others. Mr. Lamson did not give permission to sample the property.

Most of the material mapped by D.P. Stewart occurs in the essentially east-west trending part of the Andover Branch and the Middle Branch of the Williams River. A very coarse gravel was noted north of Vermont Route No. 11, near Town Highway No. 29 west of the Chester Town Line. Permission to sample was denied. This is part of a mapped outwash area, but this survey believes that the area is actually fluvial gravels formed by the subsequent washing of the kame terrace materials deposited before them.

In descending order of volume of gravel are: Map Identification Nos. 13 and 8, and in pits at Nos. 6, 2 and 1.

In the same order, sand is located in Map Identification Nos. 11, 6, 2 and 1, all of which are pits.

Andover is a bit too high to have large deposits; lower elevations produce much more granular material, as in Chester.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF ANDOVER

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

Mount Holly Complex: Quartzite, locally massive beds as much as 30 feet thick, micaceous quartzite, and quartz-mica schist that commonly contains garnet or pseudomorphs (largely chloritic) after garnet; schists are locally rusty weathered and contain conspicuous flakes of graphite; also includes amphibolite and minor hornblende gneiss, biotite gneiss, and pegmatite.

Tyson Formation: Feldspathic quartz-mica schist containing biotite, chlorite and carbonate; many beds contain pebbles of quartz and feldspar; cobble or boulder conglomerate commonly at base; thin beds of quartzite, carbonaceous phyllite and schistose dolomite in upper part, overlain at top by massive buff dolomite as much as 30 feet thick.

Plymouth Member (of the Hoosac Formation): Quartzite, schistose quartzite, dolomitic quartzite; carbonaceous phyllite; buff to dark gray dolomite with partings of locally carbonaceous phyllite; quartz-sericite chlorite-albite schist; carbonaceous albite schist.

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

Chester Amphibolite Member (of the Pinney Hollow Formation): Thin layered, ligniform amphibolite and hornblende schist; includes actinolitic greenstone and greenstone north of Windham.

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.

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

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

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 carbonaeous phyllite. Schist and phyllite commonly contain biotite and garnet porphyroblasts in southern Vermont.

Whetstone Hill Member (of the Missisquoi Formation): Carbonaceous black to light gray phyllite and schist containing porphyroblasts of biotite and garnet; beds of gray micaceous quartzite, fine-grained biotite gneiss and amphibolite.

Missisquoi Formation: Rusty weathering carbonaceous mica schist, qurtzite and micaceous quartzite.

Ultramafic Rocks: Serpentinite, carbonate rock, talc-carbonate rock and steatite.

GLOSSARY OF SELECTED GEOLOGIC TERMS

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

Glaciofluvial - A term used to denote formation by or relation to streams within, upon or emerging from 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 naked eye.

Granitoid - A term applied to those igneous rocks having the characteristic texture of granite. The mineral grains may be fine or coarse but are nearly uniform in size.

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

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

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

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

Lignitform - Resembling the structure of wood cells.

Littoral gravel - Horizontally bedded gravel deposited in a shoaling lake or topset beds of deltaic gravel where no foreset bedding is exposed.

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

Outwash - Stratified drift that is stream built beyond the glacier; deposited by meltwater streams issuing from the face of the glacial ice.

Porphyroblastic - The texture of some metamorphic rocks in which large crystals are set in a matrix of finer grains. It resembles the texture of igneous rocks, but the crystals so developed, called porphyroblasts, have not crystallized from a melt, but have grown in place through the action of heat, pressure or infiltrating solutions.

Shoal - A sandbank or gravel bar that makes the water shallow; specifically an elevation which is not rocky and on which there is a depth of water of six fathoms (36 feet) or less.

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

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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 703.03, Soils and Borrow Materials

703.03 Sand Borrow and Cushion

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

Table 703.03A - Gradation Requirements

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

703.05 Granular Borrow

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

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

Table 703.05A - Gradation Requirements

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

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

Section 704, Aggregate

704.05 Gravel for Sub-base

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

(a) Grading
The gravel shall meet the requirements of the following table:

Table 704.05A - Gradation Requirements

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

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

(b) Percent of Wear
The percent of wear of the gravel shall be not more than 25 when tested in accordance with AASHO T 4, or more than 40 when tested in accordance with AASHO 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
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 AASHO T 3, or the crushed stone a percent of wear of not more than 40 when tested in accordance with AASHO T 96.

(d) Thin and Elongated Pieces
Not more than 30 percent, by weight, of thin and elongated peices 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
	4"	100	
Coarse	No. 4	25- 50	100
	No. 100		0- 20
	No. 200		0- 12
	2"	100	
	1½"	90-100	
Fine	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 AASHO T 4, or the crushed gravel a percent of wear of not more than 35 when tested in accordance with AASHO 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 AASHO T 3, or the crushed stone a percent of wear of not more than 40 when tested in accordance with AASHO 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

ANDOVER GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
1	1A	1971	1-8	0-1	Yes	100	100	84	79	23	9		Sand	Owner: Mario Gentile. Area is a small pit west of Town Highway No. 4 and north of State Aid Highway No. 3. Test #1A was a hand shovel sample of face in southeast lobe of pit. Log of Test #1A: 0-1', overburden; 1-8', lenses and layers of sand, pebbles, silt, and silt-clay; test bottoms in sloughed material.
	1B	1971	8-15	0-1	Yes	100	100	82	64	17	6		Sand	Log of Test #1B: 8-15', lenses of pebbly sand and fine gravelly sand. Test bottoms on silty sand.
	2	1971	0-8	---	Yes	79	77	56	40	11	7	21.7%	Gravel	Test #2 was dug in floor near corner of pit, 45' N45°W. of Test #1. Log of Test #2: 0-7', gravel; 7', water and large boulders; 8', large boulder.
	3	1971	1-7	0-1	No	100	100	98	94	63	45		-----	Test #3 was dug on grassy knoll, 180' N35°E. of Test #2. Log of Test #3: 0-1', overburden; 1-2', sand; 2-7', very stiff, silt-clay-like till. Material no good. Not much extension of pit - except possibly to the northwest.
2	1A	1971	1-5	0-1	Yes	77	63	43	27	8	5	20.1%	Gravel	Owner: Donis-Howe Lumber Corp. Area is a sprawling but relatively shallow pit just west of Town Highway No. 12. Test #1A was a hand shovel

ANDOVER GRANULAR DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														sample of north face of middle of pit complex. A thin seam of gravel overlies fine material. Log of Test #1A: 0-1', overburden; 1-3', brown pebbly sand and fine gravel; 3-5', fine gravel with small cobbles. Test bottoms on hard-packed silty fine sand.
	1B	1971	5-7	0-1	Yes	100	100	100	96	51	23		----	Test #1B was a hand shovel sample below Test #1A. Log of Test #1B: 5-7', alternate beds of silty fine sand, sand; and silt-clay.
	2	1971	0-10	----	Yes	100	84	63	54	26	11	21.4%	----	Test #2 was a sample of the crushed gravel stockpile in the pit. The gravel was crushed and stockpiled by the owner, so only the amount of fines and the percentage of wear information could be used for a possible modification of the specification requirements.
	3A	1971	1-8	0-1	Yes	100	88	67	42	8	3	20.4%	Gravel	Test #3A was a hand shovel sample of the north face of the small southern pit. The beds dip south to the present stream and indicate ice-contact and local stream bedding. Log of Test #3A: 0-1', overburden; 1-8', layers of interbedded fine gravel and gravelly sand.
	3B	1971	8-23	0-1	Yes	76	68	58	46	14	5	19.1%	Gravel	Log of Test #3B: 8-15', fine gravelly sand; 15-18', sand 18-23', gravelly sand; material caves easily.

ANDOVER GRANULAR DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	4A	1971	2.5-7.5	0-2.5	Yes	100	98	74	53	20	9		Gran. Borrow (Grav.)	Test #4A was a hand shovel sample of north face of north pit. Log of Test #4A: 0-2.5', silty overburden; 2.5-5.5', fine pebbly gravel and pebbly coarse sand; 5.5-6', silt seam; 6-7.5', pebbly fine gravel. Test bottoms in sloughed material.
	4B	1971	8-12	0-2.5	Yes	100	100	96	85	16	6		Sand	Log of Test #4B: 7.5-8', oxidized layer, not sampled; 8-12', pebbly sand becoming fine sand; 12-12.5', layer of stones.
	4C	1971	12.5-16.5	0-2.5	Yes	100	100	90	81	46	22		-----	Log of Test #4C: 12.5-16.5', fine sand becoming very silty; 16.5'- floor, silt-clay; water on floor as of 8/31/71.
	5	1971	1-10	0-1	Yes	100	93	84	75	14	7		Sand	Test #5 was a hand shovel sample of north face in central part of pit. Log of Test #5: 0-1', overburden; 1-7', pebbly sand with fine gravel; 7-9', sand; 9-10', silty sand; test bottoms at 10' on hard-packed, moist, silty sand.
	6	1971	0.5-8	0-0.5	Yes	100	100	100	100	86	69		----	Test #6 was dug in floor, 70' S20°W. of Test #5. Log of Test #6: 0-0.5', overburden; 0.5-8', sand with silt-clay seams; some water at 3.5' and also at 7'.
	7	1971	0.5-8	0-0.5	Yes	100	100	100	96	74	59		----	Test #7 was dug in floor of south pit, 80' S10°E. of Test #3. Log of Test #7: 0-0.5', overburden; 0.5-2', fine gravelly sand; 2-7', sand with a wet silty

ANDOVER GRANULAR DATA SHEET NO. 4

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														binder; test bottoms at 8' on water and silty sand. The material is like quick sand.
	8	1971	0.5-8	0-0.5	Yes	100	100	100	85	71	47		----	Test #8 was dug in floor near stockpile, 235' S40°W. of apple tree. Log of Test #8: 0-0.5', overburden; 0.5-6', silty fine sand; 6-8', wet sticky silt-clay.
	9A	1971	0.5-6	0-0.5	No	96	91	60	30	16	9	15.4%	Gran. Borrow (Grav.)	Test #9A was dug on a grassy stripped terrace, 80' S65°W. of strippings pile in north end of pit. Beds dip south or southwest about 15°-20°. The stones are sub-rounded to tabular and sub-angular. Log of Test #9A: 0-0.5', over burden; 0.5-6', fine gravel over pebbly gravel. Test bottoms in fine sand. Test #9A is north end of hole.
	9B	1971	0.5-8	0-0.5	No	100	88	83	69	39	22		-----	Log of Test #9B (south end of hole): 0.5-4', gravel; 4-6', sand; 6-7', pebbles; 7-8', fine sand.
	10	1971	0-8.5	---	Yes	100	100	100	100	84	60		-----	Test #10 was dug in floor, 90' S18°W. of Test #4C. Log of Test #10: 0-6', silty fine sand; 6-8.5', wet silty fine sand; like a quick sand. Overall this deposit is just a local, post glacial one which has a maximum of 5 feet of gravel over some sand. The sand is not very thick, and it grades into silt-clay throughout the test area.

ANDOVER GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
3	1	1971	1-8	0-1	No	100	90	79	72	58	41		----	Owner: Alvin Jarvis. Area is a field northwest of Map Identification No. 4 and north of the house at the north end of Town Highway No. 14. Test #1 was dug in field, 30' S40°E. of power pole #17. Log of Test #1: 0-1', overburden; 1-3.5', sandy till with some pebbles; 3.5-4.5', layer of angular stones; 4.5-7', sandy till with silt; 7-8', boulder till.
4	1	1971	1-9	0-1	No	100	83	81	81	67	27		----	Owner: Alvin Jarvis. Area is a small overgrown pit north of house at north end of Town Highway No. 14. Test #1 was dug atop a grassy knoll, 40' S30°E. of stone wall. Log of Test #1: 0-1', overburden; 1-2', coarse sand; 2-7', rather hard-packed, fine sand; 7', boulder; 7-9', silty sand seams with a few angular stones. This is a very localized deposit.
	2	1971	1-7.5	0-1	No	89	89	70	64	32	13		Gran. Borrow (Sand)	Test #2 was dug midway up a partly wooded, partly dug slope. Log of Test #2: 0-1', gravelly overburden; 1-2', gravelly sand; 2-4', sand; 4-7.5', sandy till with random angular cobbles and a clay matrix. There was a boulder at 2'.
	3	1971	1-7	0-1	Yes	53	53	49	45	40	32		----	Test #3 was dug in floor at east end of access road. Log of Test #3: 0-1', overburden;

ANDOVER 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 % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														1-3', sand; 3-7', material looks like pebbly sand, but is really a fine silty till matrix with some angular pebbles in it; also, some angular cobble-sized stones were noted. From 3-7', the till was rather hard packed.
5	1	1971	1-9	0-1	No	100	100	100	100	98	72		-----	Owner: Charles Hale (Horseshoe Acres Camp Ground). Area is a small clearing on a hillside knoll south of the junction of State Aid Highway No. 1 and Town Highway No. 13. Test #1 was dug in shallow test gully atop knoll. Log of Test #1: 0-1', overburden; 1-3', pebbly sand; 3-5', sand; 5-6', silt seam; 6-7', sand; 7-9', silty fine sand.
	2	1971	1-10	0-1	No	100	100	100	97	28	15		Gran. Borrow (Sand)	Test #2 was dug at east end of clearing, 105' N83°E. of and 15' below Test #1. Log of Test #2: 0-1', overburden; 1-9', sand; 9-10', fine sand.
6	1	1971	0-10	---	Yes	69	62	47	30	18	6	24.8%	Gravel	Owner: F.A. Resch. Area is a pit east of State Aid No. 3, north of Town Highway No. 22, and northwest of Town Highway No. 41. Area is mapped as kame terrace. Test #1 was a hand shovel sample of the nearly vertical northwest face of pit. Some current ripple marks were noted. Beds dip nearly north about 15-20°. The material was very loose and unconsolidated. Overall, it seems to be a bit on the fine side. Log of Test #1: 0-10', lenses of

ANDOVER GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														fine gravel, gravelly sand; pebbly gravel and pebbly coarse sand.
	2A	1971	1-8	0-1	Yes	81	63	46	37	7	4	23.5%	Gravel	Test #2A was a hand shovel sample on upper face near southwest lobe of pit. Test is a gravel cap over sand (#2B). Log of Test #2A: 0-1', overburden; 1-8', gravel; bottoms on sand.
	2B	1971	8-14	0-1	Yes	100	93	86	79	26	8		Sand	Log of Test #2B: 8-14', sand; 14-16', cobbly sand (not sampled).
	3	1971	1-15	0-1	Yes	100	99	91	82	17	3		Sand	Test #3 was dug by backhoe in face in southwest part of pit, 50' S50°W. of spur in south part of pit. Log of Test #3: 0-1', overburden; 1-3', gravelly sand; 3-15', sand.
	4	1971	0.5-10	0-0.5	Yes	100	86	73	63	18	10		Gran. Borrow (Sand)	Test #4 was dug in floor, 85' N30°W. of spur in south part of pit. Beds are variable but dip about easterly 10°. Material is a pebbly sand. Log of Test #4: 0-0.5', overburden; 0.5-2.5', fine gravel; 2.5-3', sand; 3-4', fine gravel; 4-10', sand with pebble layers.
	5	1971	0.5-10	0-0.5	Yes	100	100	100	98	39	11		Gran. Borrow (Sand)	Test #5 was dug in floor near north end of lower (east) part of pit. Log of Test #5: 0-0.5', overburden; 0.5-2', pebbles; 2-10', sand; water seeps in at 8'.
	6A	1971	2-7	0-2	Yes	67	58	42	30	7	4	18.9%	Gravel	Test #6A was a hand shovel sample of east face of lower pit. Log of Test #6A: 0-2', overburden; 2-7', gravel.
	6B	1971	7-13		Yes	100	100	98	98	7	3		Sand	Log of Test #6B: 7-13', clean-looking sand, bottoms on gravel. Floor is at 13'.

ANDOVER GRANULAR DATA SHEET NO. 8

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	6C	1971	13-20	----	Yes	100	100	100	100	24	7		Sand	Log of Test #6C: 13-14', layer of fine gravel; 14-20', horizontal layers of sand with thin seams of fine sand or silt.
	7	1971	0-27	---	Yes	100	93	73	59	16	7		Gran. Borrow (Sand)	Test #7 was a hand shovel sample of high face in south end of pit. Log of Test #7: 0-27', mixed layers of sand, gravel, pebbles, and gravelly sand.
	8	1971	0.5-8	0-0.5	Yes	100	50	45	40	40	22		-----	Test #8 was dug in floor of second level, 25' west of west face of pit. Log of Test #8: 0-0.5', overburden; 0.5-1.5', fine gravel; 1.5-3.5', sand; 3.5-8', a sandy silty, well-packed till with some angular stones.
	9	1971	0.5-8	0-0.5	Yes	100	100	99	94	29	16		-----	Test #9 was dug in floor of second level, 75' south of Test #8. Log of Test #9: 0-0.5', overburden; 0.5-1.5', pebbly fine gravel; 1.5-8', sand.
7	1	1971	1-10	0-1	Yes	69	61	44	34	8	5	25.1%	Gran. Borrow (Grav.)	Owner: Mrs. Florence Plumb. Area is a pit west of Mrs. Plumb's house and west of Town Highway No. 23. There is quite a lot of lumber stacked in the area and a lot of scrap lumber is in the pit. Test #1 was a hand shovel and back-hoe sample of face in small lobe in south end of pit. Estimated 5-10% +6" stones. Log of Test #1: 0-1', overburden; 1-5', coarse cobbly gravel; 5-8', coarse gravelly sand; 8-10', cobbly

ANDOVER 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 % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														gravel with boulders; test hole bottoms at 10' in light sand.
	2	1971	2-6	0-2	Yes	100	100	100	99	94	93		----	Test #2 was dug in floor, 75' N75°W. of Test #1. Log of Test #2: 0-2', gravelly overburden; 2-6', silt-clay.
	3	1971	2-6	0-2	No	100	100	100	98	88	82		-----	Test #3 was dug at edge of field near northwest part of pit. Log of Test #3: 0-2', gravelly overburden; 2-6', silt-clay.
8	1	1971	0.5-10	0-0.5	No	60	55	42	33	10	7	18.1%	Gravel	Owner: Mrs. Florence Plumb. Area is a terraced field west of Town Highway No. 23 and south of Mrs. Plumb's driveway. Test #1 was dug near edge of grassy knoll, 35' S86°E. of power pole 1432/-5. Ice-contact bedding dips about 10° to east-southeast. Log of Test #1: 0-0.5', sod; 0.5-10', coarse, cobbly gravel with estimated 10% +6" stones; test bottoms at 10' on silt-clay layer.
	2	1971	1-11.5	0-1	No	54	50	38	32	5	2		Gran. Borrow (Grav.)	Test #2 was dug in field 170' S82°W. of power pole 1432/-5. Bedding is ice-contact and seems to dip about 15°-20° to the north. Log of Test #2: 0-1', sod; 1-6', cobbly gravel; 6-10', bouldery gravel; 10-11.5', bouldery gravel which is finer than that from 6-10' interval.
	3	1971	1-11.5	0-1	No	63	54	43	32	6	3	27.5%	Gran. Borrow (Grav.)	Test #3 was dug at edge of field, 215' N50°W. of Test #2.

ANDOVER GRANULAR DATA SHEET NO. 10

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														Log of Test #3: 0-1', sod; 1-4', pebbly sand; 4-6', cobbly gravel; 6-11.5', coarse cobbly or bouldery gravel. Material seems finer than that of Tests #1 and #2.
9	1	1971	1-6	0-1	Yes	63	54	38	26	16	10	27.9%	Gran. Borrow (Grav.)	Owner: Mrs. Florence Plumb. Area is pit with a long field as its western extension. Pit is 0.45 mile east of Town Highway No. 23. Test #1 was a hand shovel sample of the north face of lobe just west of ramp. Log of Test #1: 0-1', overburden; 1-6', dirty, poorly sorted, cobbly, well-packed, coarse gravel; test bottoms on boulders which overlie silt-clay.
	2	1971	1-10	0-1	No	64	56	45	36	17	10	27.0%	Gran. Borrow (Grav.)	Test #2 was dug near the northwest edge of long field, 110' s south of access road at edge of field. Log of Test #2: 0-1', sod; 1-3', large boulders; 3-5', coarse cobbly gravel; 5-9', cobbly gravel; 9-10', bouldery gravel.
	3	1971	1-10.5	0-1	No	71	68	48	36	26	14	24.6%	Gran. Borrow (Grav.)	Test #3 was dug near west edge of long field, 460' S30°E. of Test #2. Log of Test #3: 0-1', gravelly overburden; 1-6', fine gravel with some cobbles and a few random boulders; 6-7', boulder

ANDOVER GRANULAR DATA SHEET NO. 11

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Existing Pit	Sieve Analysis % Passing 2"	1½"	½"	#4	#100	#200	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
														layer; 7-8', cobbly gravel; 8-9', sand and silt-clay; 9-10.5', gravel.
	4	1971	2-11	0-2	No	57	44	34	25	19	12	22.0%	Gran. Borrow (Grav.)	Test 34 was dug near pit in southeast corner of field, 55' N57°W. of Test #1 and 530' S40°E. of Test #3. Log of Test #4: 0-2', silty fine sandy overburden; 2-5', gravel; 5-6', bouldery gravel; 6-9', fine gravel; 9-10', bouldery gravel; 10-11', gravel.
	5	1971	0-6	---	Yes	-----	NOT SAMPLED					-----	-----	Test #5 was dug in pit floor 100' S10°E. of Test #1. Material was not in place - did not sample.
10	1A	1971	1-9	0-1	Yes	65	54	38	28	8	5	17.7%	Gravel	Owner: John Davison, Sr. Area is a wooded knoll with a steep-faced pit on its southeast side. The area is south of State Aid Highway No. 1 near its junction with Town Highway No. 23. Owner wanted only the pit area sampled and not the fields. Test #1A was on the upper part of high face on southeast end of wooded knoll. Log of Test #1A: 0-1', overburden; 1-9', a cap of gravel overlies sand; may be due to post glacial shoaling.
	1B	1971	9-22	---	Yes	100	100	100	96	42	15		Gran. Borrow (Grav.)	Log of Test #1B: 9-22', beds of sand, silty sand and silt-clay.
	1C	1971	22-30	---	Yes	100	100	100	99	63	18		-----	Log of Test #1C: 22-30', sand and silt seams; test bottoms on

ANDOVER GRANULAR DATA SHEET NO. 12

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	2	1971	0.5-10	0-0.5	Yes	100	100	100	100	95	73		---	sloughed material. Test #2 was dug in floor, 50' southeast of face. Log of Test #2: 0-0.5', overburden; 0.5-4', sand; 4-6', fine sand; 6-10', silt-clay (moist).
11	1	1971	0.5-20	0-0.5	Yes	100	100	100	99	20	6		Sand	Owner: Carl Mikkelsen (formerly the Gordon Property). Area is a rather poorly worked sprawling pit west of and 35' above Vermont Route No. 11 at the Simonsville Church, near the Middle Branch of the Williams River. Area is mapped as kame terrace. Overall, the material is a sand with some fine gravel layers here and there. There was a lot of material drawn from the pit between 8/18/71 and at least 9/3/71. Test #1 was a hand shovel sample of northwest face in upper level of pit. Log of Test #1: 0-0.5', overburden; 0.5-20', fine and medium sand beds with a silty sand layer; test bottoms in sloughed material.
	2	1971	3-10	0-1	Yes	77	71	44	33	20	9	22.4%	Gran. Borrow (Grav.)	Test #2 was a hand shovel sample of north end of southeast lobe of lowest part of the northeastern-most pit. Log of Test #2: 0-1', overburden; 1-3', not able to reach; 3-10', dusty fine gravel; test bottoms on sloughed material & strippings.

ANDOVER 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 AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	3	1971	1-6	0-1	Yes	81	81	69	56	47	29		-----	Test #3 was dug in floor, 50' S57°E. of Test #1. Log of Test #3: 0-1', overburden; 1-3', poorly worked fine gravel; 3-6', boulders with much sticky, wet silt matrix. Water seep at 3'.
	4	1971	1-10	0-1	Yes	100	100	88	80	16	5		Sand	Test #4 was dug in floor of lowest level of northeast part of pit, 100' N15°E. of small face where road drops. Log of Test #4: 0-1', overburden; 1-8', variably bedded sands and silty sands; 8-10', moist fine gravel.
12	1	1971	2-5	0-2	No	47	41	32	26	22	19	29.3%	-----	Owner: Charles and Joseph Stiassni. Manager: David Baker, Hilltop Farm. Area is pasture northeast of old school at junction of Town Highway No. 28 and Vermont Route No. 11. Test #1 was dug near southeast corner of lower level of terraced pasture, 110' N40°E. of pole 1-225-214 on Vt. Route No. 11. There is an estimated 30% stones larger than 6" in diameter. Log of Test #1: 0-2', silty, cobbly overburden; 2-5', coarse, cobbly gravel with some larger boulders and quite a lot of silt. There are two very large boulders at 2.5', and a lot of water flows in at 3'.

ANDOVER GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	2	1971	1-5	0-1	No	58	48	36	26	24	15	31.9%	Gran. Borrow (Grav.)	Test #2 was dug on pasture terrace near wooded knoll, 160' N12 W. of and 16' above Test #1. Log of Test #2: 0-1', overburden; 1-5', cobbly, somewhat tabular gravel; test hole bottoms in moist, fine, blue-gray silty sand or silt-clay.
13	1	1971	2-8	0-2	No	72	70	54	50	10	5	20.3%	Gravel	Owner: Charles and Joseph Stiassni. Manager: David Baker, Hilltop Farm. Area is wooded knoll north of rest area on Vermont Route No. 11, and east of Map Identification No. 12. Area is mapped as outwash but it appears to be either kame terrace or kame moraine. Knoll is heavily wooded so only one test was taken; the feature appears to have a moderately large amount of fairly good material. Test #1 was dug in small clearing along logging road near east brow of knoll. Log of Test #1: 0-2', roots and overburden; 2-5', sandy gravel; 5-6', silt-clay seam; 6-7', clean sharp sand; 7-8', bouldery gravel; test bottoms at 8' on bouldery gravel.

TABLE I
Supplement

ANDOVER PROPERTY OWNERS - GRANULAR	Map Ident. No.
Davison, John, Sr.	10
Donis-Howe Lumber Corp.	2
Gentile, Mario	1
Hale, Charles	5
Jarvis, Alvin	3,4
Mikkelsen, Carl	11
Plumb, Mrs. Florence	7,8,9
Resch, F.A.	6
Stiassni, Charles and Joseph	12,13

ANDOVER ROCK DATA SHEET NO. 1

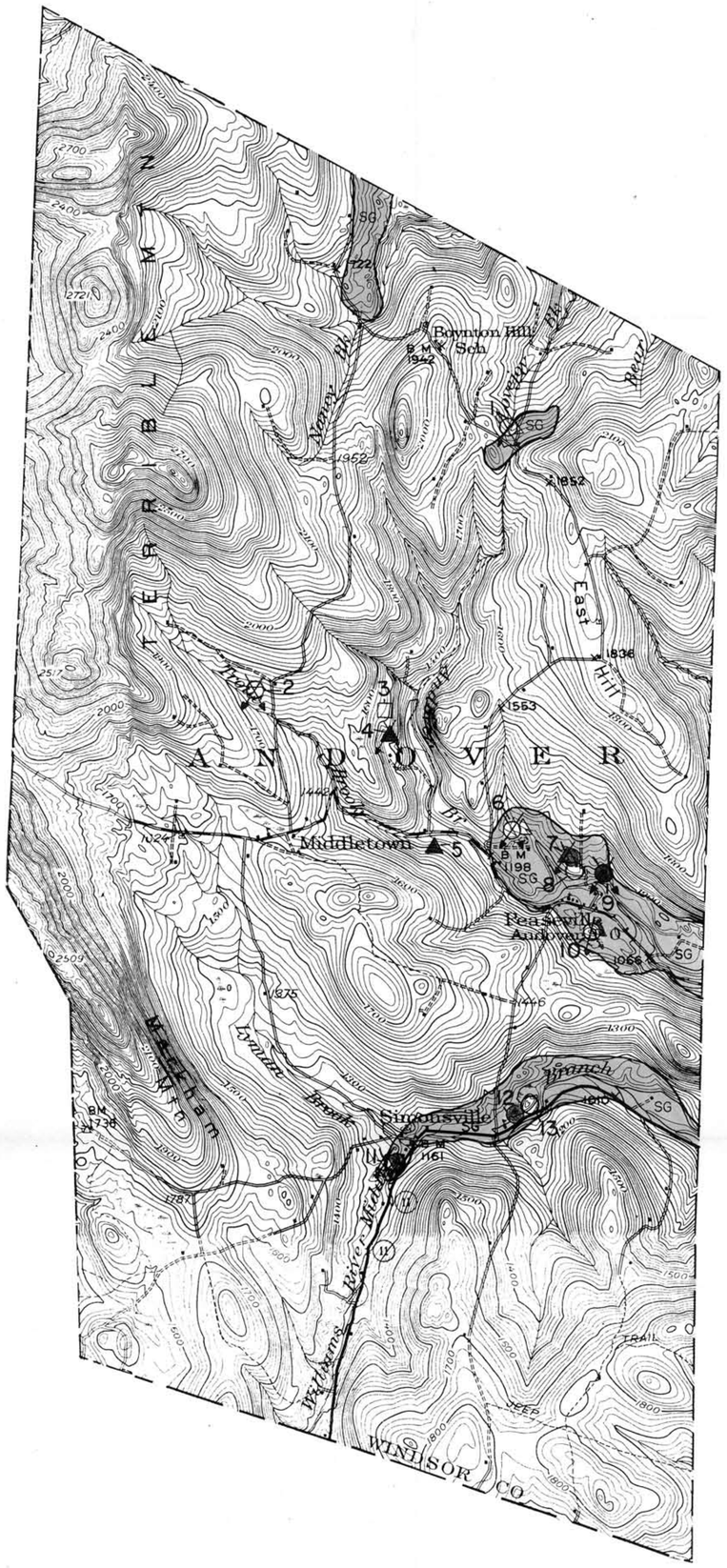
Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Results
T H E R E W E R E N O R O C K S A M P L E S I N A N D O V E R							

Table II
Supplement

ANDOVER PROPERTY OWNERS - ROCK

Map Identification No.

There were no rock property owners.



N

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)

ANDOVER

SCALE 1:31,250

0.5 0 1 MILE

CONTOUR INTERVAL 20 FEET

1972

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

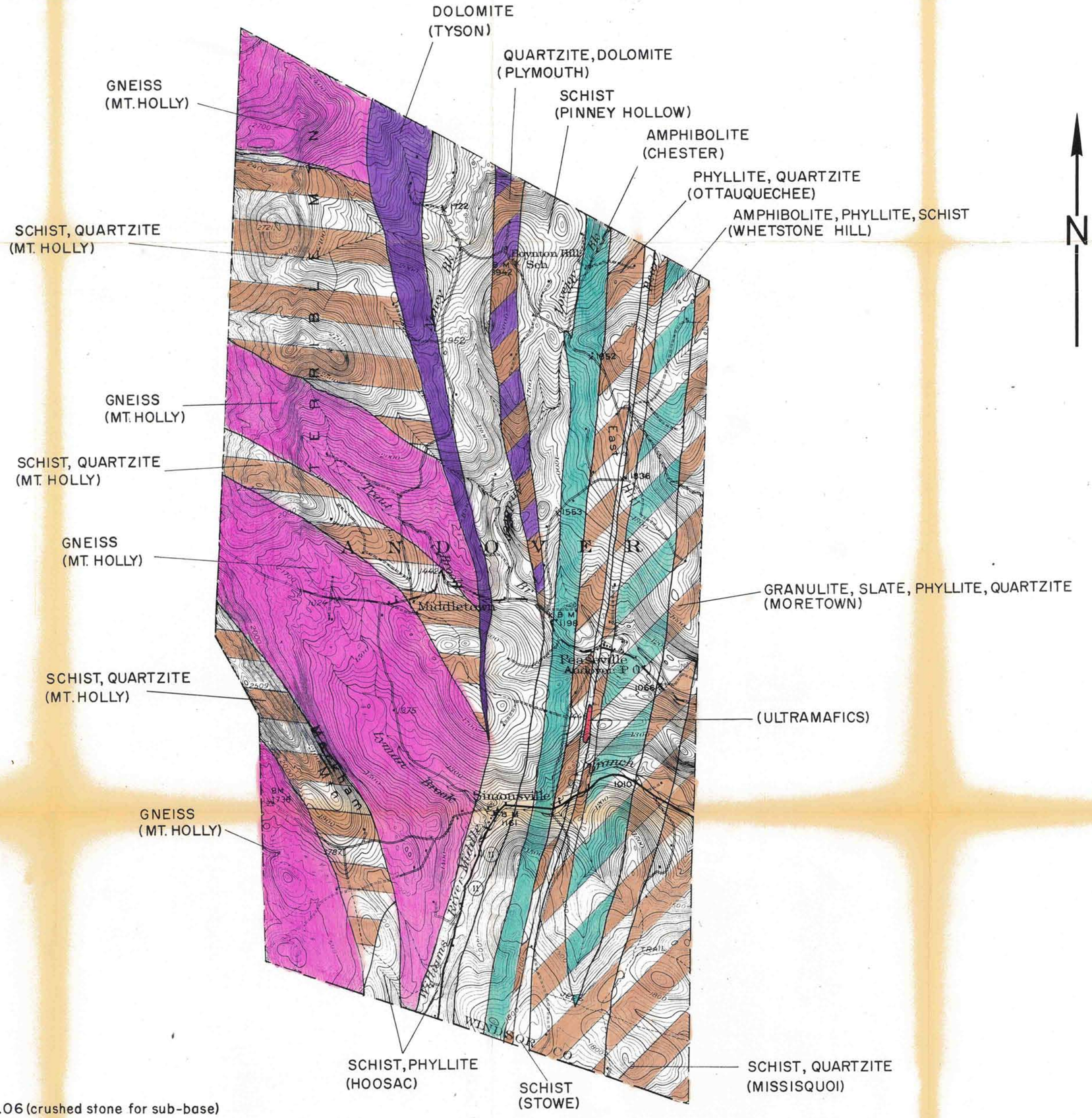
GRANULAR

WINDSOR COUNTY VT. HWY. DISTRICT NO. 2

REVISIONS

DATE							
BY							

ANDOVER



LEGEND

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

ANDOVER

SCALE 1:31,250

0.5 0 1 MILE

CONTOUR INTERVAL 20 FEET

1972

ROCK MATERIALS MAP

BY

VERMONT DEPARTMENT OF HIGHWAYS

IN COOPERATION WITH

U.S. BUREAU OF PUBLIC ROADS

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

PLATE II

ROCK

WINDSOR COUNTY VT. HWY. DISTRICT NO. 2

REVISIONS

DATE							
BY							

ANDOVER