

SURVEY OF HIGHWAY CONSTRUCTION MATERIALS
IN THE TOWN OF CHESTER, WINDSOR COUNTY, VERMONT

prepared by

Engineering Geology Section, Materials Division
Vermont Department of Highways

in cooperation with

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Federal Highway Administration

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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 eliminate 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.

Incllosures

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 Agriculture, 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.

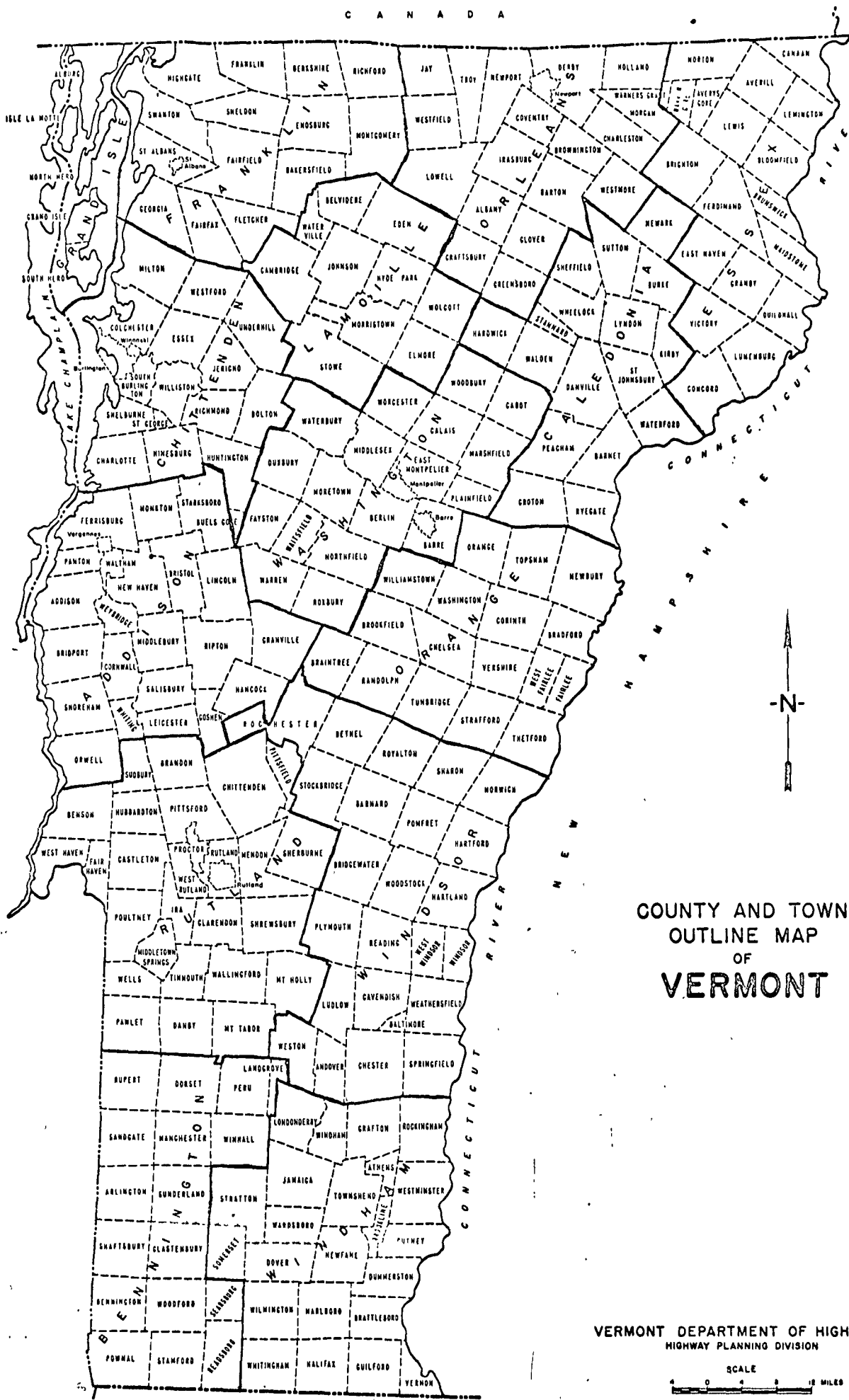
Work sheets contain more detailed information on each test and a detailed sketch of each identification Number Area. The work sheets and laboratory reports are on file in the office headquarters of this Project.

LOCATION

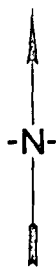
The town of Chester is situated in the southeast part of Vermont at the south edge of Windsor County. Chester is bounded on the northwest by Ludlow, on the north by Cavendish and Baltimore, on the east by Springfield, on the south by Rockingham, Grafton and Windham, and on the west by Andover. (See County and Town Outline Map of Vermont on the following page.)

Chester lies within the Vermont Piedmont Physiographic Subdivision of the New England Upland. The topography is characterized by rugged to rolling terrain, elevation of which varies from 2308 feet at the summit of Steadman Hill in the west-central part of town to less than 520 feet where the Williams River crosses the Springfield and Rockingham town lines.

Principal drainage is into the Williams River which crosses Chester from north to southwest, ultimately entering the Connecticut River in Rockingham. Main tributaries of the Williams are its Middle and South Branches, Andover Branch, Chase Brook; Potash Brook, Whitmore Brook and Trebo Brook. Lesser drainage occurs via Beaver Meadow, Chase Meadow and Great Brooks from the north-east part of Chester and ultimately enters the Black River in Springfield.



COUNTY AND TOWN
 OUTLINE MAP
 OF
VERMONT



VERMONT DEPARTMENT OF HIGHWAYS
 HIGHWAY PLANNING DIVISION



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 primarily during the winter months and comprises the mapping and description of rock types as indicated in various reference sources. Many different sources of information are utilized, as indicated in the bibliography. These references differ considerably in dependability due to new developments and studies that have contributed to the obsolescence of a number of reports. In addition, the results of samples taken by other individuals are analyzed, and the location at which these samples were taken is mapped when possible. 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 almost entirely comprise the lithology within the town of Chester. A few occurrences of ultramafics are scattered around the town which were probably of igneous origin.

Occasionally, rocks belonging to the same formation and exhibiting similar characteristics (ie., 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 Chester is overlain in large part by glacial debris. However, a number of quarries occur in the town which produce two kinds of materials. One kind are talc quarries but the prevalence of very soft soapstone where they occur makes them prohibitive as a source of crushed stone for sub-base. Since the early Nineteenth Century other quarries have been producers of building stone, examples of which can be seen in the walls of numerous houses north of Chester Depot along Vermont Route No. 103. This building stone is principally gneiss from the Mount Holly complex and the Bull Hill member of the Cavendish formation.

The Materials Survey found acceptable sources of crushed stone for sub-base in the Mount Holly at Map Ident. No. 1 and in the Bull Hill at Map Ident. No. 2.

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 Chester suitable for highway construction and related purposes consist mainly of glaciofluvial and related deposits. Their occurrences apparently are limited to elevations below 1,200 feet. The only pit sampled above 1,300 feet had material that did not meet requirements for granular borrow. (See Map Ident. No. 20) Above 1,200 feet surficial deposition consists largely of glacial till.

According to Dr. D.P. Stewart the principal depositional features occur along the Williams River, its Middle and Andover Branches and Great Brook. This materials survey generally agrees with his findings. However, a small kame terrace probably exists at Map Ident. No. 27 which was not discovered during his reconnaissance.

Deposition flanking the valley south of Great Brook is largely deltaic gravel, probably the reworked remains of a kame terrace. (See Map Ident. Nos. 4,5,9,10,12,13 and 14). Features at Map Ident. Nos. 6,7 and 8 Stewart shows to be within a kame terrace. Another delta gravel occurs southeast of the Chester Reservoir and east of Town Highway No. 47. A large gravel pit within that feature that belonged to Mrs. Luther Richardson formerly produced granular borrow that failed to meet the abrasion requirements of gravel for sub-base.

The Williams River valley above Gassetts is the reposition of glacial outwash. Along the valley from Gassetts to the Rockingham Town Line the river is largely flanked by fluvial gravels. Other fluvial gravels occur along the Middle Branch, particularly in the vicinity of a National Guard armory west of Chester village. No tests were taken in these gravels either because of their proximity to residential areas or because permission for backhoe sampling on farmland was denied by owners.

The rest of the granular deposition in Chester investigated for materials sources is mainly marginal to and above the fluvial gravels. Probably the largest future source of gravel for sub-base will be an elongate terrace west of Town Highway No. 38 that overlooks the Andover Branch of the Williams River. This feature was tested at Map Ident. Nos. 22,23,24 and 25. Dr. Stewart believes granular materials there, as well as at Map Ident. Nos. 15,16,17,18,21 and 26, to be littoral gravels. A sand pit northwest of Town Highway No. 4 was not available for sampling. The erstwhile Hawks pit has been filled in and is part of the Chester High School recreational area.

. SUMMARY OF ROCK FORMATIONS IN THE TOWN OF CHESTER

Barnard volcanic member (Missisquoi Formation) fine-to medium grained biotite gneiss, hornblende gneiss and amphibolite.

Bull Hill gneiss (Cavendish Formation): quartz plagioclase-microcline-biotite gneiss characterized in many areas by augen of microcline as much as 2 inches long; fine-to medium-grained plagioclase-biotite-muscovite gneiss

Cavendish Formation: buff dolomite, minor white to pink calcite marble; actinolitic and diopsidic marbles and beds of actinolite diopside granulite common in Chester dome.

Hoosac Formation: a quartz-sericite-albite-biotite-chlorite schist characterized by albite porphyroblasts-biotite and garnet porphyroblasts common southward, locally carbonaceous.

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

Moretown Member (Missisquoi Formation): quartzite and quartz-plagioclase granulite, in layers 1/8 to several inches thick, separated by "pin-stripe" partings that contain muscovite, chlorite, epidote, biotite, and locally garnet; also greenish quartz-sericite-chlorite phyllite and schist, and minor carbonaceous phyllite. Schist and phyllite commonly contain biotite and garnet porphyroblasts in southern Vermont. 6

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

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

Pinney Hollow, Ottauquechee, and Stowe Formations, undifferentiated: includes quartz-muscovite-garnet-chlorite-biotite schist, rusty carbonaceous schist amphibolite, and schistose quartzite; schist locally contains porphyroblasts of staurolite and kyanite, on flanks of Chester and Athens dome.

Readsboro member (Cavendish Formation): quartz-muscovite schist containing biotite or chlorite and characterized by conspicuous porphyroblasts of sodic plagioclase; less commonly quartz-muscovite-paragonite schist

containing chlorite, garnet or chloritoid, or in Chester dome, quartz-muscovite-paragonite schist containing garnet, staurolite, and locally kyanite (Gassetts schist).

Ultramafics: serpentinite, carbonate rock, talc carbonate rock and steatite.

Whetstone Hill member (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.

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.

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.

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
Coarse	4"	100	
	No. 4	25- 50	100
	No. 100		0- 20
	No. 200		0- 12
Fine	2"	100	
	1½"	90-100	
	No. 4	30- 60	100
	No. 100		0- 20
	No. 200		0- 12

(b) Percent of Wear

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

(c) Fractured Faces

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

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

704.09 Dense Graded Crushed Stone for Sub-base

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

(a) Source

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

(b) Grading

This material shall meet the requirements of the following table:

Table 704.09A - Gradation Requirements

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

(c) Percent of Wear

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

(d) Thin and Elongated Pieces

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

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

704.10 Gravel Backfill for Slope Stabilization

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

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

Table 704.10A - Gradation Requirements

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

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

704.11 Granular Backfill for Structures

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

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

Table 704.11A - Gradation Requirements

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

CHESTER GRANULAR DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
1	1	1971	0.5-12	0-0.5	No		100	96	96	12	2	-----	Sand	<p>Owner: Harry Olney.</p> <p>Area is ridge with open hillside near Springfield Town Line and about 0.12 mile north of Vermont Route No. 10. Although excellent sand occurs near east end of ridge which would be best location for a pit, other tests were in poor material.</p> <p>Test #1 was near southeast end of ridge at point 80' N.40° W of iron pin that marks northeast corner of property at Map Ident. No. 2. Material is: 0-0.7', sod and silt; 0.7-7.5', medium sand with a stone layer; 7.5-12', fine sand.</p>
	2	1971	0.5-5.5	0-0.5	No				100	39	26	-----	-----	<p>Test #2 was near northwest end of ridge 150' N 80° W of Test #1. Material is: 0-0.7', sod and silt; 0.7-5.5', fine sand; 5.5'-10', silt-clay.</p>
	3	1971	0.5-5	0-0.5	No			100	99	63	37	-----	-----	<p>Test #3 was on second small ridge near stone wall 140' N 17° W of Test #1. Material is: 0-0.5', sod; 0.5-4', sand; 4'-7', fine sand and silty clay. Bottom, bedrock.</p>

CHESTER GRANULAR DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
2	1	1971	1.5-12	0-1.5	No	-----D I D N O T S A M P L E -----								<p>Owner: Norman C. Jaquith</p> <p>This area comprises the south end of the open hillside referred to at Map Ident. No. 1. Both areas are used for cow pastures.</p> <p>Test #1 was located 50' east of a rock wall in the woods at the southwest corner of the pasture. Material in general looked poor so was not tested. Log of the test hole was as follows: 0-1.5', sod and silt; 1.5-3', sand with stones; 3'-12', boulder clay with a water trickle at 11.3'.</p>
	2	1971	1-3	0-1	No	100	99	95	31	12	-----	-----	<p>Test No. 2 was in hillside near south-center of pasture 230' S80°E of Test No. 1. Material is: 0-1', sod and silt; 1'3', orange brown silty sand. Bottom boulders.</p>	
3	1	1971	1.5-10	0-1.5	No	71	63	45	28	23	17	22.5%	-----	<p>Owner: Norman C. Jacquith.</p> <p>Area is the north half of a field behind the owner's farm buildings and service station on Vermont Route No. 10.</p> <p>Test #1 was at north edge of field 25' south of a rock wall and 120' S78°E of northwest fence corner of field. Material</p>

CHESTER GRANULAR DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	1¼"	#4	#100	#200			
	2	1971	1.5-10	0-1.5	NO	77	62	49	40	15	8	22.8%	Gravel	is 0-1.5', sod; 1.5-10', fine-medium-coarse gravel with silt. Test #2 was 300' east of Test #1 near N-S rock wall. Material is: 0-1.5', coarse gravel; 7-8', sand; 8-10', coarse gravel.
4	1	1971	1.5-7	0-1.5	Yes	100	94	87	85	8	3	-----	Sand	Owner: Oakely Patenaud. Area is the west end of a field with small pit south of Vermont Route No. 10 and about 0.17 mile east of Town Highway No. 27. Extension would be west into property belonging to Walter F. Kangas who would not permit test holes. Test #1 was in west face of pit and 8' east of property line wall. Material is: 0-1', sod; 1-1.5', silt; 1.5-7', orange-brown alternately fine to coarse sand with a few 1½" stones.
5	1	1971	1-3.5	0-1	No	62	51	41	33		9	-----	Gran. Borrow	Owner: Walter F. Kangas Area is a field with terrace at its west end south of Vermont Route No. 10 at its junction with Town Highway No. 27. Test #1 was at west end of terrace 40' from rock wall. Material appears to be glacial till and was tested only for Granular Borrow.

CHESTER GRANULAR DATA SHEET NO. 4

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"	1 1/2"	3/4"	#4	#100	#200			
	2	1971	1-4	0-1	No	71	68	63	59	22	9	25.0%	Gran. Borrow (Gravel)	<p>Log of hole was as follows: 0-1', sod; 1-3.5', cobbly sandy orange-brown silt. Bottom, boulders.</p> <p>Test #2 was at east end of terrace 270' from Test No. 1. Material is: 0-1', sod; 1-2', gravel; 2-4', orange-brown sand. Bottom, silt-clay</p> <p>Material in this area would probably not be available.</p>
6	1	1971	0.5-6	0-0.5	Yes		100	95	89	5	2	-----	Sand	<p>Owner: H.L. Haber.</p> <p>Area is an inactive low, narrow pit north of Town Highway No. 30 a about 0.75 mile east of Town Highway No. 31. This would be a very limited source of material because of its proximity to a utility line at the northeast.</p> <p>Material is: 0.5-2.5', sand; 2.5'-3.5', pebbly fine gravel; 3.5-5.5', sand; 5.5-6', dark brown coarse sand.</p>
7	1	1971	0-2	-----	No	100	96	91	86	10	2	-----	Sand	<p>Owner: Ingwald Rogstad</p> <p>Feature tested was a stripped hillside in campground south of Town Highway No. 30 at point about 0.7 mile east of Town Highway No. 31. Same owner possesses pit that formerly belonged to Emil Mattson; sampling of which was denied</p>

CHESTER GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1½"	½"	#4	#100	#200			
														because of proximity to a recently constructed pond. Material at Test #1 in campground was: 0-0.5', not in place; 0.5-2.5', sand with a few 1½" stones and becoming silty with depth.
8	1	1971	0.5-3.5	0-0.5	Yes	91	86	67	48	9	5	*	Gravel	Owner: Ingwald Rogstad Area is the northeast corner of a field north of a cemetery on Town Highway No. 33 near the Springfield Town Line. The west face of a pit belonging to John Vigneault was hand sampled. Material is: 0-0.5', thin sod with silt; 0.5-2', sandy gravel; 2'-3.5', pebbly sand going to silty sand at 3.5'. *There was insufficient proper size stone taken to perform the "percent of wear" test.
9	1	1971	2.5-9	0-2.5	Yes	100	92	78	60	10	5	-----	Sand	Owner: Hazen J. Fuller Sr. Area is a bank along Town Highway No. 30 south and east of its junction with Town Highway No. 31. There were several small pits in the bank that had been recently opened by the Town Road Commissioner. The material sampled probably

CHESTER GRANULAR DATA SHEET NO. 6

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1 1/2"	1/2"	#4	#100	#200			
														represents the edge of a kame terrace.
	2	1971	1-11	0-1	Yes	87	73	62	54	5	1	-----	Gran. Borrow (Gravel)	Test #1 was in pit face of south side of T.H. No. 30 opposite junction with T.H. No. 31. Material is 0-2.5', strippings; 2.5-9', layers of sand, pebbly sand with a few cobbles noted.
	3	1971	1-8	0-1	Yes	74	61	47	41	10	5	21.3%	Gravel	Test #2 was in central small pit about 175' east of Test #1. Material is: 1-8', layers of sand and pebbly sand; 8-11', fine gravel; bottom, boulders.
														Test #3 was in east small pit about 240' east of Test #2. Material is: 1-8', cobbly fine gravel; bottom, sloughed material and angular boulders.
10	1	1971	1-12	0-1	Yes	58	54	41	29	22	8	-----	Gran. Borrow (Gravel)	Owner: E.H. Johnson Area is a largely depleted pit overlooking Great Brook east of T.H. No. 31. This pit might be a future source for small amounts of sand borrow and cushion.
	2	1971	0.5-2.7	0-0.5	Yes	--	100	97	94	16	3	-----	Sand	Test #1 was in upper east face of pit. Material is: 1-7', cobbly gravel; 7-12', pebbly fine gravel. Test #2 was in face of upper level 130' north of Test #1.

CHESTER GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	¾"	#4	#100	#200			
														Material is 0.5-27', sand with layers of pebbles; 27-33', sloughed material.
	3	1971	5-22	0-5	Yes	100	94	89	83	38	30	-----	-----	Test #3 was in east face at north end of pit. Material is: 0-5', pebbly strippings and roots; 5'-22', layers of sand, silty sand, and pebbly sand; 22'-27', sloughings.
	4	1971	22-27	0-5	Yes	100	95	85	80	19	6	-----	Sand	Test #4 was in lower east face at north end of pit below Test #3. Material is: 22-27', clean coarse sand with fine gravel lenses.
	5	1971	0.5-11	0-0.5	Yes	--	100	94	82	7	3	-----	Sand	Test #5 was in eastward extension 70'S40°E of east-central face. Material is: 0-0.5, silt; 0.5-11', pebbly sand; bottom, bedrock. Large boulders occur here 50' east of test.
	6	1971	12-16	0-1	Yes	74	68	48	35	15	7	23.0%	Gravel	Test No. 6 was in upper east face below Test #1. Material is: 12-16', sandy gravel with an occasional cobble or boulder; bottom, clay with rotten boulders.
	7	1971	27-31	0-0.5	Yes	100	86	86	79	14	4	-----	Gran. Borrow (Gravel)	Test #7 was in lower face below Test #2. Material is: 27-30', medium sand; 30-31', gravel; bottom, boulder. Apparently the sand interval in this test would be acceptable for Sand Borrow and Cushion.

CHESTER 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 % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1 1/2"	1/2"	#4	#100	#200			
	8	1971	0.5-9	0-0.5	Yes	---	--	---	100	14	2	-----	Sand	Test #8 was in north floor of pit at point about 10' west of Test #4. Material is: 0-0.5', silt and stones; 0.5-9', medium to fine sand (water at 4.3').
	9	1971	2-14	0-2	Yes	87	76	61	50	10	2	25.1%	Gran. Borrow (Gravel)	Test #9 was in northeast facing subsidiary face in west-central floor. Material is: 0-2', silt; 2-14', cobbly sandy gravel; 14-18', silt-clay and stones.
11	1A	1971	1-11	0-1	Yes	82	71	59	47	16	7	19.5%	Gravel	Owner: Clifton Loomis Area contains pit in woods west of State Aid Highway #1 and 250' south of Baltimore Town Line. Feature tested is probably an isolated kame. Test #1A was in upper northwest face of pit. Material is: 1-3', cobbly sand; 3'-6', fine gravel; 6-11', stony coarse sand.
	1B	1971	11-18	0-1	Yes	84	6	58	42	8	5	26.1%	Gran. Borrow (Gravel)	Test # 1B was in northwest face below Test #1A. Material is: 11-18', clean coarse gravel with boulders.
	2	1971	1-4	0-1	Yes	87	87	74	61	13	7	19.4%	Gran. Borrow (Gravel)	Test #2 was in floor of pit 25' south of Test #1B. Material is: 1-4', coarse gravel; bottom, boulders or bedrock.

CHESTER 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			
							3	1971	1-10	0-1	Yes			
12	1A	1971	1-8	0-1	Yes	100	91	85	80	16	10	-----	Sand	<p>Owner: A. and L. Disilvestri</p> <p>Area is a large nearly depleted sand pit that formerly belonged to F.O. Cook. Material would probably not be available in near future. Pit is located north of Vermont Route 100 at Town Highway No. 30 junction.</p> <p>Test #1A was in upper north face, represents north end of pit. Material is: 0-1', pine needles and humus; 1-8', fairly clean medium sand coarsening at bottom.</p>
	1B	1971	8-18		Yes	100	91	87	82	6	1	-----	Sand	<p>Test #1B was in lower north pit face below Test #1A. Material is: 8'-18', medium coarse sand.</p>
	1C	1971	18-21		Yes		100	99	94	12	3	-----	Sand	<p>Test #1C was in lower north pit face below Test #1B. Material is: 18-21', pebbly medium sand.</p>
	2	1971	0.5-10	0-0.5	Yes				100	60	26	-----	-----	<p>Test #2 was in north end of floor about 6' south of Test #1C. Material is: 0-0.5', sand not in place; 0.5-10', fine-medium sand.</p>

CHESTER GRANULAR DATA SHEET NO. 10

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
	3	1971	0.5-4	0-0.5	Yes	100	95	85	80	27	12	-----	Sand	Test #3 was in floor about 100' south of Test #2 and probably delimits sand in floor. Material is 0.5'-4', sand with pebbles and cobbles; 4-8', boulder till.
13	1	1971	1-8	0-1	Yes	55	47	33	27	11	3	23.2%	Gravel	Owner: Bruce Tucker Area is north end of a field south of Vermont Route #10 with very active pit exploiting material from north edge southwards. Test #1 was in north face of pit. Material is: 1'-2', pebbly sand; 2-6', coarse sandy gravel; 6-8', gravel.
	1B	1971	8-12		Yes	100	79	72	59	24	16	-----		Test #1B was in north pit face and represents material below Test #1A. Interval from 8-12' was well-packed, poorly sorted stony till with bands of silt-clay.
	2	1971	0.5-7	0-0.5	Yes		100	99	97	40	13	-----	Gran. Borrow (Grav.)	Test #2 was located 115' south of Test #1 and 75' north of property line. It represented southward extension of material; as follows: 0-0.5', silt; 0.5-7', fine sand with a few cobbles; bottom, boulders.
	3	1971	0.5-3.5	0-0.5	Yes		100	83	71	3	2	-----	Sand	Test #3 was located in floor of pit 35' northeast of Test #1. Material is: 0-0.5', sandy silt;

CHESTER GRANULAR DATA SHEET NO. 11

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	¾"	#4	#100	#200			
														0.5-3.5', stony sand. Water table was encountered at 2.8'.
14	1A	1971	2.5-8.5	0-2.5	Yes	69	61	45	36	5	2	24.3%	Gravel	<p>Owner: John Hurley and Walter Mack.</p> <p>Area comprises small pit in west end of field south of Town Highway No. 30 at point about 0.1 mile east of Town Highway No. 32.</p> <p>Test #1A was in upper east-central pit face. Material is: 0-1', sod; 1-2.5', silt and stones; 2.5-8', coarse fine gravel.</p>
	1B	1971	8.5-14.5		Yes			100	98	18	3	-----	Sand	<p>Test #1B was in lower east-central face below Test #1A. Material is: 8.5-14.5', clean sand.</p>
	2	1971	1-3.5	0-1	Yes	71	62	41	32	22	13	26.3%	Gran. Borrow (Grav.)	<p>Test #2 was in field near wire fence 55' east of Test #1A. Material is: 0-1', sod and silt; 1-3.5', angular gravel with cobbles; bottom, packed cobbles and boulders.</p> <p>This property was formerly owned by Stanley C. Schoonover.</p>
15	1	1971	0-10	-----	yes	68	58	45	35	15	8	18.4%	Gravel	<p>Owner: Frederick S. Malone and Company.</p> <p>Area includes a pit west of Town Highway No. 62 at point about</p>

CHESTER 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	2-10	0-2	Yes	70	60	43	37	5	2	23.1%	Gravel	<p>200' south of Vermont Route No. 103.</p> <p>Test #1 was in upper northwest face of pit. Material is: 0-10', bouldery coarse gravel with silty fines. Lower 10' of this 20' high face was covered with bouldery material.</p> <p>Test #2 was in stripped area near woods 50' N 20° W. of Test #1. Material is; 0-2', sod and stony silt; 2-10', cobbly gravel with a sand wedge at 4'.</p>
16	1	1971	1.5-7.5	0-1.5	No	100	94	68	57	2	1	23.2%	Gravel	<p>Owner: R.J. Hudson</p> <p>Area tested was in horse pasture. This is part of an extensive kame terrace comprised of coalescent knolls. Owner would only permit one hand sample but property had been tested by the Materials Division in prior years. There is a sand pit in knoll south of this area.</p> <p>Test #1 was in gravel bank, below fence in pasture about 100' south of Town Highway No. 60 at point 0.5 mile from Vermont Route No. 103, Material is: 0-1.5', sod and silt; 1.5-7.5', sandy gravel; 7.5-9', cobbles and boulders.</p>

CHESTER GRANULAR DATA SHEET NO. 13

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
17	1	1971	3.5-22	0-3.5	Yes			100	98	28	8	-----	Sand	<p>Owner: Everett Phillips</p> <p>Area is comprised of two long pits north of Vermont Route No. 11 at west end of Chester village. Ernest Duprey (deceased) formerly was the owner.</p> <p>Test #1 was in east pit face 120' from its east end. Material is: 3.5-22', silty fine sand.</p>
	2	1971	12-20	0-6	Yes	59	53	34	28	14	8	17.8%	Gravel	<p>Test #2 was in east face of west pit. Material is: 0-6', silty; 6-12', silty fine sand (for which see test #1); 12-20', coarse cobbly gravel. See Map Ident. No. 18 for possible north-eastward extension of materials in this area.</p>
18	1	1971	3-18	0-3	Yes	100	92	90	85	48	33	-----	-----	<p>Owner: Mrs. A.S. Kelly.</p> <p>Area is an active pit in hillside north of east pit at Map Ident. No. 17.</p> <p>Test #1 was in southwest face of upper level. Material is: 0-1.5, pebbly silt; 1.5-3', sandy silt with stones; 3-5', silty sand layers; 5-7', gravelly sand with silt; 7-8', gravel; 8-10½', clay; 10.5-13', clay with sand layers; 13-14', medium sand; 14-18', clay with sand layers; 18-</p>

CHESTER 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 AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1 1/2"	1/2"	#4	#100	#200			
	2	1971	0-15	---	Yes				100	61	28	-----	-----	21 (floor), clay. Test #2 was in west face of lower level. Material is: 0-15', fine sand with silt seams.
	3	1971	0-8	----	Yes		100	96	95	21	10	-----	Sand	Test #3 was in lower floor of pit. Material is: 0-8', fine sand with silt; bottom, clay.
19	1	1971	1-5	0-1	Yes	100	84	78	72	13	7	-----	Gran. Borrow (Sand)	Owner: J.C. Goldthwaite. Area is a pit 250' east of Town Highway No. 42 at point 1.6 miles north of Vermont Route No. 11. Test #1 was in north-west face of pit. Material is: 1-3', pebbly coarse sand; 3-4', cobbly sand; 4-5', sand; bottom, silt.
20	1	1971	2-5	0-2	Yes		100	91	88	62	44	-----	-----	Owner: Vermont Dept. of Forest and Parks. Area is a pit with limited stripped extension in deciduous woodland on Town Highway No. 63 at point 0.45 mile northwest of its junction with Town Highway No. 10. Test #1 was in northwest face of pit. Material is: 0-1.5', sod; 1.5-2', silt; 2-5', silty sand with stones and limonite "rust"; 5-15', sandy silt to clay with stones.

CHESTER GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
21	1	1971	0.5-9.5	0-0.5	Yes		100	99	95	22	6	-----	Sand	<p>Owner: Dr. Andrew Owens.</p> <p>Area is overgrown pit in center of sand hill east of Town Highway No. 53 at point 0.13 mile north of Vermont Route No. 11. This pit formerly belonged to Dodge.</p> <p>Test #1 was in center face of pit. Material is: 0-0.5', moss and silt; 0.5-9.5', medium sand becoming finer with depth.</p>
	2	1971	0-3.5	-----	Yes				100	32	9	-----	Gran. Borrow (Sand)	<p>Test #2 was 20' east of Test #1. Material is: 0-3.5', fine sand; 3.5-5', silt-clay.</p>
22	1	1971	2-10	0-2	Yes	70	62	52	42	10	5	22.7%	Gravel	<p>Owner: Leonard Eddy</p> <p>Area is an open field next to Andover Town Line with large pit at southwest corner. Owner requests no additional exploitation of woodland to south.</p> <p>Test #1 was in center of north pit face. Material is: 0-0.5', sod; 0.5-2', sandy brown silt; 2-3', silty sand; 3-5', sandy gravel; 5-10', cobbly sandy gravel.</p>
	2	1971	3-10	0-3	Yes				7		8	-----	Sand	<p>Test #2 was located 140' north of pit at point 200' east of Andover Town Line. Material is: 0-3', sod and silt; 3-10', medium-fine sand with a few stones; bottom,</p>

CHESTER GRANULAR DATA SHEET NO. 16

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	1"	#4	#100	#200			
	3	1971	2.5-7	0-2.5	Yes	100	95	84	74	18	7	-----	Sand	cobbles. Test #3 was in open field 390' S80°E of Test #2. Material is: 0-2.5', sod and silt; 2.5-7', medium-fine sand with a few stones; 7-9', cobbles.
23	1A	1971	1.5-7	0-1.5	No	65	58	45	34	6	4	24.9%	Gravel	Owner: Leonard Eddy Area is a long field between pits at Map Ident. Nos. 22 and 24. Owner believes that usable material thins to north edge of field. Test #1A was located 280' east of fence and 20' north of rock wall at edge of woods. Material is: 0-1.5', sod and silt; 1.5-7', sandy coarse gravel.
	1B	1971	7-10		No		100	99	97	22	8	-----	Sand	Test #1B was below Test #1A. Material is: 7-10', medium sand.
	2	1971	1.5-5.5	0-1.5	No	64	52	38	28	9	6	21.8%	Gravel	Test #2 was at edge of field 350'N85°E of Test #1A and 440' west of Map Ident. No. 24 area fence. Material is: 0-1.5', sod and silt; 1.5-5.5', sandy coarse gravel; bottom, sand and clay.
	3	1971	1.5-7.5	0-1.5	No	70	61	41	33	6	4	26.8%	Gran. Borrow (Grav)	Test #3 was in field 260'N55°W of Test #2 and 250'N35°E of Test #1A. Material is: 0-1.5, sod and silt; 1.5-7.5', cobbly coarse

CHESTER GRANULAR DATA SHEET NO. 17

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	¾"	#4	#100	#200			
														gravel with sand toward bottom.
24	1A	1971	0.5-6.5	0-0.5	Yes	73	62	53	46	10	4	-----	Gran. Borrow (Grav)	<p>Owner: Leonard Eddy</p> <p>Area contains several coalescent pits southeast of the owners farm buildings at the end of Town Highway No. 41.</p> <p>Test #1A was in upper northwest face of long west pit. Material is: 0-0.5', cobbly silt; 0.5-2.5', cobbly gravel; 2.5-4', fine sand; 4-6.5', gravel with a few cobbles.</p>
	1B	1971	6.5-15.5		Yes	86	73	52	42	5	3	25.0%	Gravel	<p>Test #1B was in lower northwest face of long pit below Test #1A. Material is: 6.5-15.5', sandy gravel with an occasional cobble.</p>
	2	1971	1-6	0-1	Yes	100	86	76	71	11	4	-----	Gran. Borrow (Grav.)	<p>Test #2 was in floor of long pit south of barn. Material is: 1-2.5', gravelly sand; 2.5-6', sand with an occasional cobble; 6', water.</p>
	3	1971	0.5-10	0-0.5	Yes	81	56	44	33	6	4	20.6%	Gravel	<p>Test #3 was in stripped extension 80'S17'E of Test #5A. Material is: 0.5-10', gravel; bottom, sand.</p>
	4	1971	0-6	----	Yes	64	56	36	26	10	6	18.1%	Gravel	<p>Test #4 was 27' north of a log pile at east end of pit floor. Material is: 0-6', coarse gravel;</p>

CHESTER 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 AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						2"	1½"	¾"	#4	#100	#200			
	5A	1971	0.5-9	0-0.5	Yes	72	65	55	44	5	3	18.5%	Gravel	6-8'+, gravel. Water at 6'. Test #5A was at top of south-east face of pit. Material is: 0.5-7', sand and gravel layers; 7-9', coarse cobbly gravel; bottom, sloughed over fine gravel.
	5B	1971	9-21		Yes	79	73	60	48	5	3	20.1%	Gravel	Test #5B was in face below Test #5A. Material is: 9-21', fine gravel and coarse sand; 21', silt seam.
	6	1971	0.5-6.5	0-0.5	Yes	61	58	45	34	6	4	21.9%	Gravel	Test #6 was in floor of pit under power line at point 280' south of Town Highway No. 41. Material is: 0.5-6.5', clean, coarse cobbly gravel; 6.5', water.
	7A	1971	0.5-3	0-0.5	Yes	68	55	32	24	10	6	22.9%	Gravel	Test #7A was in floor of small pit at point about 105' south of Town Highway No. 41. Material is: 0.5-3', coarse bouldery gravel.
	7B	1971	3-10		Yes		100	88	76	3	2	-----	Sand	Test #7B was below Test #7A in floor. Material is: 3-10', sand (water at 8'), bottom, silt-clay.
	8A	1971	1.5-11	0-1.5	Yes	100	75	67	61	12	4	-----	Gran. Borrow (Grav.)	Test #8A was in east face of small pit east of Test #7A. Material is; 1.5-4', pebbly fine sand; 4-5', sand; 5-6.5', layer of 6"-10" cobbles.
	8B	1971	11.5-15		Yes	100	93	90	87	6	3	----	Sand	Test #8B was below Test #8A in east face. Material is: 11.5-15', coarse pebbly sand.

CHESTER GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1 1/2"	1/2"	#4	#100	#200			
	9A	1971	2-10	0-2	Yes	75	65	47	39	7	4	17.6%	Gravel	Test #9A was in east face 50' east of Test #6. Material is: 2-10' gravelly sand and gravel.
	9B	1971	10-22		Yes		100	81	71	6	3	-----	Sand	Test #9B was in east face below Test #9A. Material is: 10-11', silt seam; 11-15', gravelly sand; 15-22', pebbly sand.
	10	1971	1-8.5	0-1	No	84	78	55	40	5	3	22.5%	Gravel	Test #10 was located 200' S70°W of northwest fence corner and represents west extension of long pit. Material is: 0-1', sod and silt; 1-8.5', sandy cobbly gravel.
25	1	1971	1-12	0-1	Yes	79	75	56	42	6	3	21.7%	Gravel	Owner: C.H. Killman Area is a pit surrounded by woods at point 0.16 mile west of Town Highway No. 38. Test #1 was in south face of pit. Material is: 1-3', dirty gravelly sand; 3-12', alternating layers of gravel, coarse sand and pebbles.
	2	1971	2-5	0-2	Yes	100	94	73	64	6	3	-----	Sand	Test #2 was hand sample on wooded terrace 150'N80°W of Test #1. Material is: 2-5', pebbly sand.
	3	1971			Yes	49	39	26	18	14	10	21.2%	-----	Test #3 was in southwest face of upper level of pit. Material is: 0-0.5', silt; 0.5-7.5', interbedded gravels and silty sands

CHESTER GRANULAR DATA SHEET NO. 20

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing						Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						2"	1½"	½"	#4	#100	#200			
														with many cobbles and a few boulders.
	4	1971	7.5-16.5		Yes			100	99	11	4	-----	Sand	Test #4 was in lower southwest face of upper level and in floor. Material is: 7.5-11' (face) and 0-5' (floor), alternating coarse and medium sand layers.
	5	1971	-----	0-3	Yes	----- N O T S A M P L E D -----						-----		Test #5 was in edge of parking area northeast of lowest pit face. Stones and silt with tree roots were encountered to a depth of 3 feet so no sample was taken.
26	1	1971	0.5-5.5	0-0.5	Yes		100	90	82	23	6	-----	Sand	Owner: Leonard Eddy Area is ridge in open field that has shallow pit near east end. Area is north of Town Highway No. 41. Test #1 was located in stripped extension about 10' north of pit. Material is: 0-1', sandy coarse gravel; 1-5.5', fine sand with gravel; bottom, silt.
	2	1971	1-3	0-1	No		100	97	87	18	5	-----	Sand	Test #2 was in ridge 125' N70 ^{OW} of Test #1. Material is: 0-1', sod and silt; 1-3', stony silty sand; 3-5.5', silt-clay.
27	1	1971	2-11	0-2	Yes	81	67	49	39	11	5	22.9%	Gravel	Owner: Vermont Electric Power Company. Area is pit on Windsor Minerals

TABLE I
Supplement

CHESTER PROPERTY OWNERS - GRANULAR

Map Ident. No.

Disilvestri, A. and L.	12
Eddy, Leonard	22, 23, 24, 26
Fuller, Hazen J., Sr.	9
Goldthwaite, J.C.	19
Haber, H.L.	6
Hudson, R.J.	16
Hurley, John E.	14
Jaquith, Norman C.	2,3
Johnson, E.H.	10
Kangas, Walter F.	5
Kelly, A.S. (Mrs.)	18
Killman, C.H.	25
Loomis, Clifton	11
Mack, Walter	14
Malone, Frederick S., and Co.	15
Olney, Harry	1
Owens, Dr. Andrew	21
Patenaud, Oakley	4
Phillips, Everett	17
Rogstad, Ingwald	7,8
Tucker, Bruce	13
Vermont Electric Power Co.	27
Vermont, State of	20

CHESTER ROCK DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Results
1	1	1971	Gneiss	Yes	Chip	5.5%	Owner: Stephen Hazen. Area is an old quarry that formerly was a source of building stones for houses in Chester Depot. Material appears to be a granitoid gneiss. Rock unquestionably is within the Mount Holly complex. Outcrop trends N 30°E and at least 250' of rock is exposed including the 170' long quarry. Test #1 was sampled at south end of quarry across major joint planes.
	2	1971	Gneiss	Yes	Chip	3.4%	Test #2 was taken at north center of east face about 100' north of Test #1.
	3	1971	Gneiss	Yes	Chip	3.5%	Test #3 was taken below north face about 70' north of Test #2. This quarry was tested by the Materials Laboratory in 1960. It is in the woods east of Town Highway No. 33 at a point about one mile north of Vermont Route No. 103.
2	1	1971	Gneiss	Yes	Chip	2.9%	Owner: William F. Hoffman. Area is an old quarry that formerly belonged to Howard Moses. Material appears to be a granitoid gneiss. Rock probably is within the Bull Hill member of the Cavendish formation. Exposures of this rock are limited to walls of the quarry. Lination of banding in gneiss is roughly north-south. Test #1 was taken from chips along the 110' long southeast wall. Test #2 was taken either from, or along the base of, the 50' long northwest wall. This quarry was also tested by the Materials Laboratory in 1960. It is located north of Town Highway No. 61 next to Springfield Town Line.
	2	1971	Gneiss	Yes	Chip	2.3%	

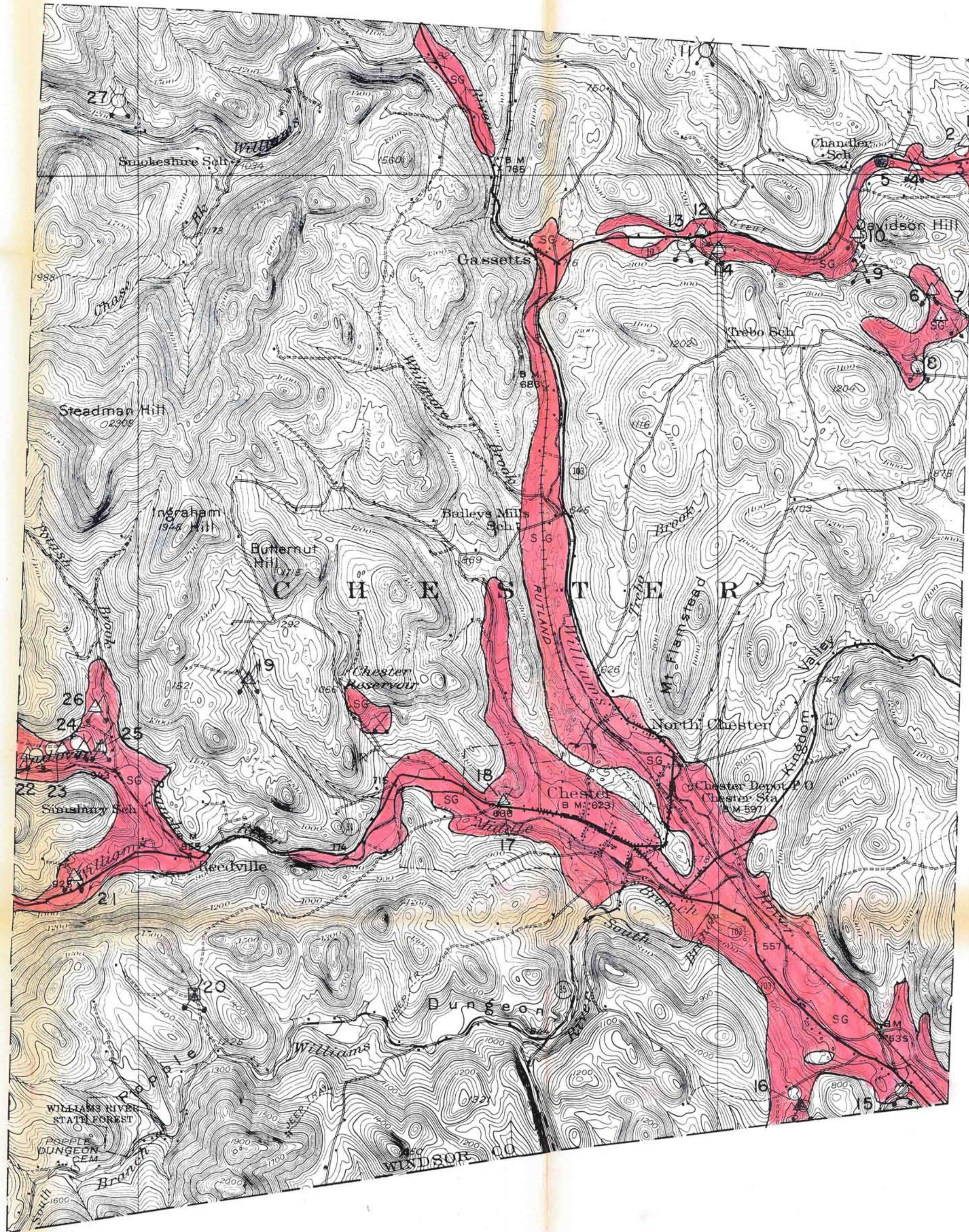
TABLE II
Supplement

CHESTER PROPERTY OWNERS - ROCK

Map Ident. No

Hazen, Stephen
Hoffman, William

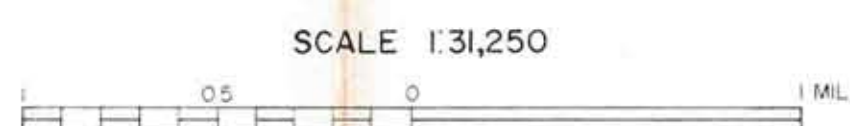
1
2



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)

CHESTER



CONTOUR INTERVAL 20 FEET
1971

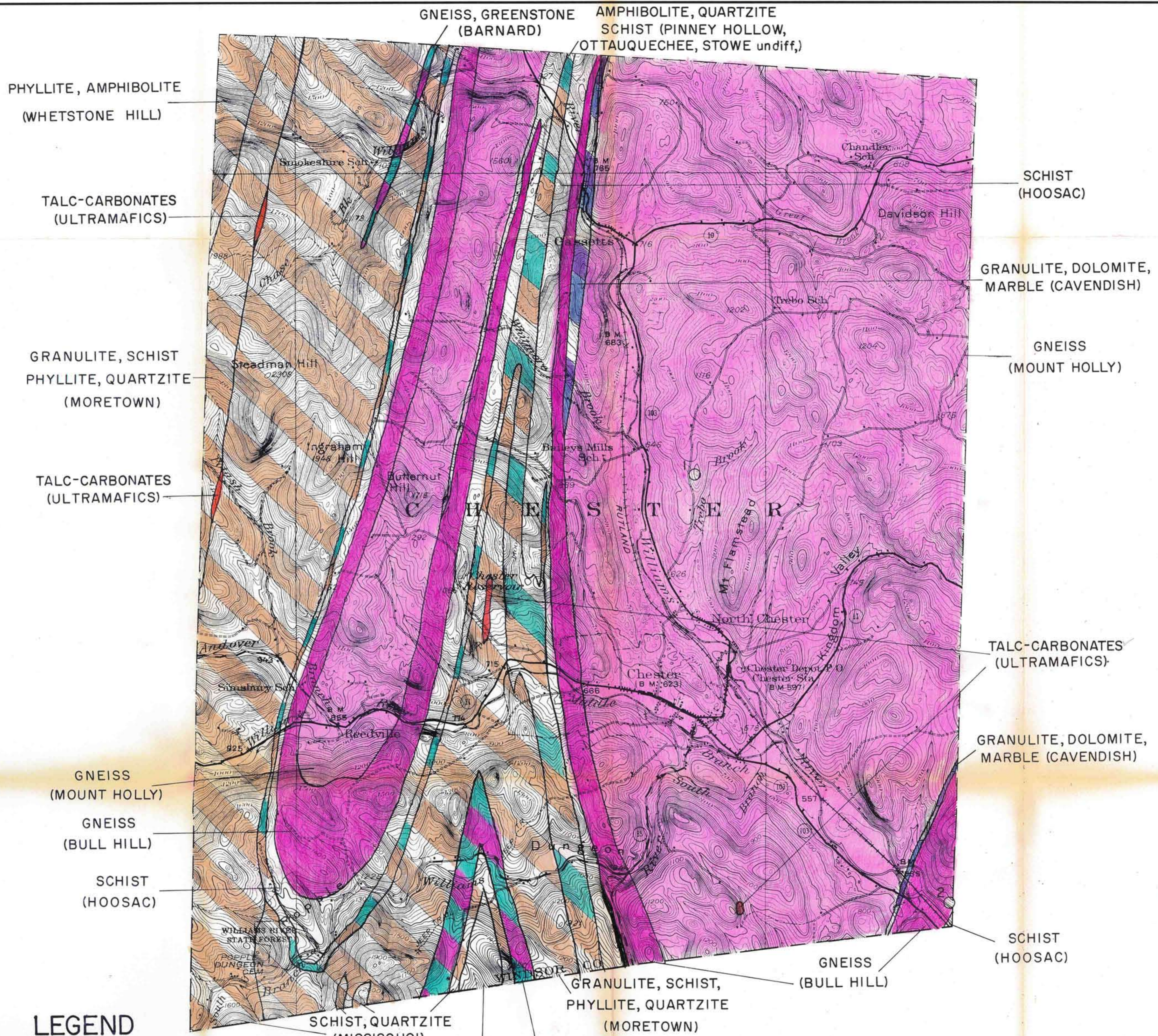
GRANULAR
MATERIALS MAP

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

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

PLATE I
GRANULAR

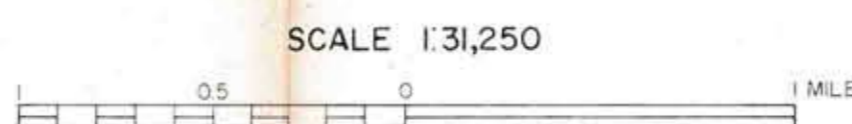
DATE				
BY				



LEGEND

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

CHESTER



SCALE 1:31,250
CONTOUR INTERVAL 20 FEET
1971

ROCK MATERIALS MAP

BY VERMONT DEPARTMENT OF HIGHWAYS

IN COOPERATION WITH

U.S. BUREAU OF PUBLIC ROADS