

SURVEY OF HIGHWAY CONSTRUCTION MATERIALS
IN THE TOWN OF POWNAL, BENNINGTON COUNTY, VERMONT

prepared by

Engineering Geology Section, Materials Division
Vermont Department of Highways

in cooperation with

United States Department of Commerce
Bureau of Public Roads

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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 were 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 material 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 being conducted by Professor D.P. Stewart of Miami University, Oxford, Ohio, who has been mapping the glacial features of the State 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, 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.

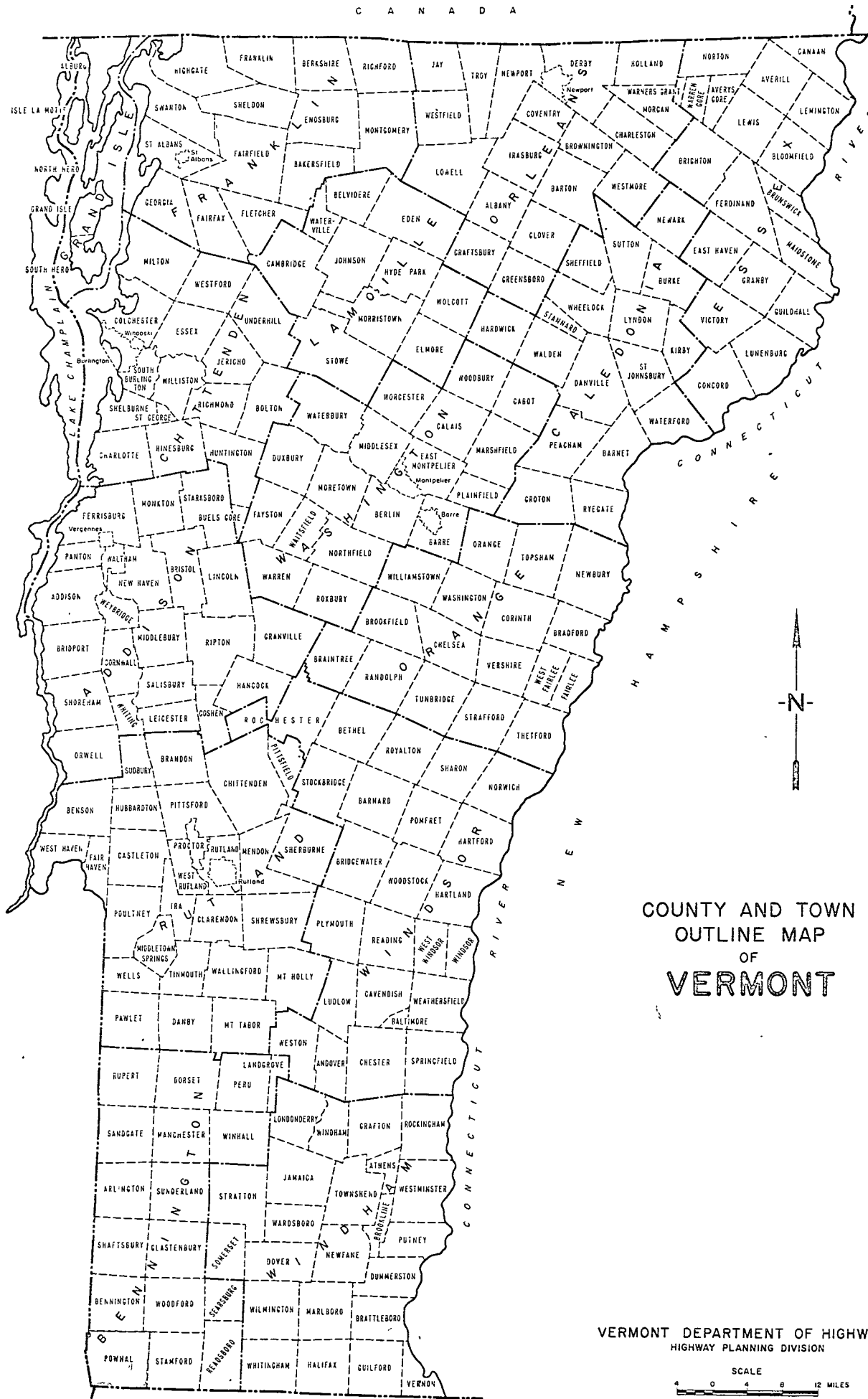
Work sheets contain more detailed information on each test and a detailed sketch of each Identification Number Area. The work sheets and laboratory reports are on file in the office headquarters of this Project.

LOCATION

The town of Pownal is in southwest Bennington County, which county is located at the southwest corner of the State. The town is bounded on the south by Massachusetts State, on the west by New York State, on the north by Bennington and Woodford, and on the east by Stamford. (See County and Town Outline Map of Vermont on the following page).

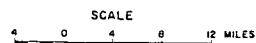
Pownal extends from the western flank of the Green Mountains across the Vermont Valley into the Taconic Range. The Green Mountains here consist of a mountainous terrain composed of north-south trending argillaceous metamorphic rocks that have been locally intruded by granitic dikes. The Vermont Valley is comprised chiefly of metamorphosed carbonate rocks that were less resistant to erosion than rocks of the flanking mountains. The Taconic Range is comprised of highly metamorphosed argillaceous as well as carbonate rocks. The Pownal Upland is a series of low hills that span the Vermont Valley at the latitude of Pownal Center.

Elevations vary from less than 500 feet in the Hoosic River Valley at the Massachusetts line to 2,748 feet on the Dome, a mountain in the southeast part of the town. Drainage northeast of Pownal Center is northward and ultimately into the Roaring Branch of the Walloomsac River. The remainder of the town drains directly into the Hoosic River which is joined by the Walloomsac in New York State, thence flows generally westward to the Hudson.



COUNTY AND TOWN
OUTLINE MAP
OF
VERMONT

VERMONT DEPARTMENT OF HIGHWAYS
HIGHWAY PLANNING DIVISION



SURVEY OF ROCK SOURCES

Procedure for Rock Survey

The routine employed by the project in the survey of possible sources of rock for highway construction is divided into two main stages: office investigation and field investigation. The first is conducted primarily during the winter months and comprises the mapping of rock types as indicated in various reference sources. Many different sources of information were utilized, as indicated in the bibliography. These references differ considerably in dependability due to new developments and studies contributing to the obsolescence of a number of reports. In addition, the results of samples taken by other individuals are analyzed, and the location in 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 second stage of the investigation is begun in the field by making a cursory preliminary survey over the entire area. The information obtained in this survey, together with the information assimilated in the first stage of the investigation, is employed to determine the areas in which the testing and sampling will be concentrated. When a promising source is encountered as determined not only by rock type but also by volume, accessibility, and the existence of a good working face, chip samples are taken with a hammer and submitted to the Highway Testing Laboratory for testing by the Deval Method (AASHTO T-3). It is kept in mind that the samples taken by the chip method are often in the weathered zone of the outcrop and consequently may show a less satisfactory test result than the fresh material deeper in the body of the rock structure. When deemed necessary, further samples are taken by drilling to a depth of approximately 3 feet and blasting across the strike or trend of the outcrop. When the material is uniform and satisfactory tests result from the chip samples, no further drilling, blasting, or sampling is done, and the material source is included 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 the greatest portion of the formation within the town of Pownal. Minor amounts of igneous rock occur on the east and a few calcareous sedimentary rocks are found elsewhere in the town.

Occasionally rocks belonging to the same formation and exhibiting similar outward characteristics (i.e., color, texture, etc.) may produce different abrasion results due 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.

In general, bedrock in the town of Pownal suitable for Item 204, Sub-base of Crushed Rock, rarely occurs as a continuous surface exposure 150 feet or more in length. Most bedrock is covered by a mantle of granular material and vegetation that limits sampling to sporadic outcrops within the linearly measured interval. However, at one locality on County Road (Town Highway No. 36) an extensive bedrock exposure of Cheshire quartzite was sampled. This source is readily accessible for overhaul and with an average wear-test value of 2.0%, is an acceptable material for Item 204. (See Map Identification Number 4).

Additionally, three quarries that had been prior producers of limestone and marble were sampled. All appear to be good potential sources

of Item 204, Sub-base of Crushed Rock, because all wear tests performed met the abrasion requirements with an average value of 4.2%. The quarries are located at Map Identification Number 1 in the Bascom Formation close to the Bennington town line west of U. S. Route 7; and at Map Identification Numbers 2 and 3 in the Glens Falls-Orwell limestones (undifferentiated) east and southeast of North Pownal.

SURVEY OF SAND AND GRAVEL SOURCES

Procedure for Sand and Gravel Survey

The method employed by the project in the survey of possible sources of sand and gravel for highway construction is divided into two main stages: office investigation and field investigation. 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 recognizing and locating physiographic features indicating glacial deposits and in studying drainage patterns. In addition, the location of existing pits are mapped when known. The locations in which samples were taken by other individuals are noted and mapped when possible.

The second stage of the investigation is begun in the field by making a cursory preliminary survey over the entire area noting areas which show physiographic features giving evidence of glacial or fluvial deposits. These locations are later examined by digging test pits with a backhoe to a depth of approximately 11 feet and then sampling the material. The samples are submitted to the Highway Testing Laboratory where they are tested for gradation and stone wear, the latter by the Deval Method (AASHTO T-4-35).

Discussion of Sand and Gravel Deposits

Granular materials within the town of Pownal are largely restricted either to elevations below 700 feet along the Hoosic River or to elevations above 1,000 feet and below 1,400 feet east of U. S. Route 7. Materials at the higher elevations appear to be chiefly glaciofluvial as do the lower ones except for sporadic occurrences of lake sand near North Pownal and at the upper end of the Hoosic Valley.

Map Identification Number 1 is the location of a small deltaic feature that is an acceptable source of Item 202, Sub-base of Sand.

According to Dr. D. P. Stewart, the Pownal Upland was the site of extensive kame moraines flanked by two kame terraces and overlain by at least four eskers. The eskers provide the greatest portion of material acceptable for Item 201, Sub-base of Gravel of the above-named features within the Upland. (See Map Identification Numbers 7, 20, 22, 23, and 35). A small amount of acceptable gravel was found at Map Identification Number 27 in one of the kame terraces. The kame moraines are locally a good source of Sub-base of Sand, Item 202 (see Map Identification Numbers 2, 3, 9, 29, and 30) as well as being a minor source of gravel at Map Identification Numbers 2 and 28.

According to Dr. D. P. Stewart fluvial gravels occur in the vicinity of Map Identification Numbers, 15, 16, 17, 18, 19, 31, and 32. Material acceptable for Sub-base of Gravel, Item 201 was found at all areas so designated except for Map Identification Number 16. (See the Granular Data Sheets for the details).

Two small terraces at Map Identification Numbers 38 and 40 are probably kamic in origin. Both of them contain material acceptable for Item

201, Sub-base of Gravel. Additionally, Map Identification Number 38 is a possible source for Item 202, Sub-base of Sand.

At Map Identification Number 41 occurs a very hard material that is an excellent source of Item 201, Sub-base of Gravel. This was probably emplaced as a kame terrace.

Dr. D. P. Stewart identified as a possible beach gravel some coarse materials on Mason Hill. These he apparently associates with lake sand remnants that lie lower in elevation between it and the Hoosic River to the west. The beach gravel was sampled at Map Identification Numbers 46, 47, and 48. As can be seen from the Granular Materials Map, only one area (Map Identification Number 48) meets the requirements for Item 201, Sub-base of Gravel. Map Identification Number 47 however, represents a good source of Item 202, Sub-base of Sand. Owing to their inaccessibility, the lake sand remnants were not sampled. It should be noted that sloughed down overburden at Map Identification Numbers 42, 43, 44, and 45 probably represents these lake sands. The only acceptable source for Item 201, Sub-base of Gravel is at Map Identification Number 44.

At Map Identification Number 33 are some deposits slightly lower in elevation than those above Map Identification Numbers 42, 43, 44, and 45. These are also probably lake sands.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF POWNAL

Hortonville Formation - Black, carbonaceous, and pyritic slate and phyllite, locally sandy; brown-weathered limy beds are common near base.

Glens Falls-Orwell (undifferentiated) - Combined where deformation has made the two lithologies indistinguishable. Thick-bedded sublithographic to lithographic dove-gray weathered limestone cut by white calcite veins (Orwell) is generally succeeded by thin-bedded, dark blue-gray coarsely granular limestone. Both lithologies are fossiliferous.

Bascom Formation - Interbedded dolomite, limestone or marble, calcareous sandstone, quartzite, and limestone breccia; irregular dolomitic layers, thin sandy laminae, and slaty or phyllitic partings characterize limestone and marble of lower, middle, and upper parts of the Bascom, respectively; south of West Rutland it includes some of the Chipman Formation.

Shelburne Formation - Chiefly a white marble or gray limestone characterized by raised reticulate lines of gray dolomite on the weathered surface; includes Columbian marble of the marble quarries.

Clarendon Springs Dolomite - Fairly uniform, massive, smooth-weathered gray dolomite characterized by numerous geodes and knots of white quartz; quartz sandstone and irregular masses of chert are near the top.

Winooski Dolomite - Buff-weathered, pink, buff, and gray dolomite; beds 4 inches to 1 foot thick separated by thin, protruding, red, pink, green, and black siliceous partings.

Monkton Quartzite - Distinctively red quartzite interbedded with lesser buff and white quartzite and relatively thick sections of dolomite like that of the Winooski; the quartzites thin to the east, and they become gray and phyllitic to the east and south.

Dunham Dolomite - Buff-weathered siliceous dolomite, pink and cream mottled or buff to gray on fresh surface; lower part is massive and upper part is sandy and resembles the Winooski dolomite.

Cheshire Quartzite - Very massive, white to faintly pink or buff vitreous quartzite near the top in west-central and southwestern Vermont; predominantly a less massive-appearing mottled gray, somewhat phyllitic quartzite; dolomitic sandstone and conglomerate near the base of the formation in west-central Vermont apparently grades southward into the Dalton Formation.

St. Catherine Formation - Purple, gray-green, and variegated slate and phyllite containing minor interbeds of white to green quartzite; locally albitic.

Dalton Formation - Schistose quartzite containing pebbles of feldspar and blue quartz; impure dolomite containing pebbles of quartz and feldspar occurs locally; conglomerate common near the base.

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 schist, quartzite, and calc-silicate granulite; includes numerous small bodies of pegmatite and gneissoid granitic rock. Quartzite, locally in massive beds as much as 30 feet thick, micaceous quartzite, and quartz-mic schist that commonly contains garnet or pseudomorphs (largely chlorite) after garnet; schists are locally rusty weathered and contain conspicuous flakes of graphite; also includes amphibolite and minor hornblende gneiss, biotite gneiss, and pegmatite.

GLOSSARY OF SELECTED GEOLOGIC TERMS

Argillaceous - Containing or consisting of clay. Commonly used to indicate the presence of clay; as argillaceous sandstone.

Beach - As used here the term applies to material of shoreline deposits which may consist of any size grade of sediment, but is usually well-sorted sand and pebbles.

Calcareous - Consisting of, or containing calcium carbonate. As combined with rock names indicates a considerable proportion, say 50 percent, of calcium carbonate together with an equal or predominant amount of the material indicated by the rock name.

Carbonate Rocks - Products of a process of chemical decomposition by which carbon dioxide contained in water combines with the oxides of calcium, magnesium, potassium, sodium, and iron. As a result of this union carbonates or bicarbonates of these metals are produced, including dolomite, siderite, calcite and other less plentiful minerals.

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

Dike - A sheet-like body of igneous rock that fills a fissure in older rocks which it entered while in a molten condition. Varies from less than an inch in width and a few yards in length to thousands of feet in width and many miles in length. May radiate in groups from a center or occur singly and isolated from other igneous bodies.

Esker - A relatively long, narrow, winding ridge of mixed sand and gravel. In longitudinal profile their crests are seen to be sinuous. They are considered to have been deposited by streams of meltwater flowing through crevasses and tunnels in stagnant ice sheets.

Fluvial - Pertaining to streams.

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

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

Kame Moraine - An accumulation of material deposited directly from the frontal portion of the glacial ice and partially sorted by water action. Deposits may take the form of coalescent knolls, hummocks, ridges, etc.

Kame Terrace - An accumulation of stratified drift laid down chiefly by streams between a glacier and an adjacent valley wall.

Limestone - A bedded sedimentary deposit consisting chiefly of calcium carbonate. The most important and widely distributed of the carbonate rocks. The percentage of calcium carbonate ranges from 40 percent to more than 98 percent. Common impurities are clay and sand.

Marble - A soft, white rock being the metamorphic form of limestone in which the calcium carbonate (calcite) is recrystallized and the calcite crystals are overgrown and interlocked with additional calcite. Commercially it is a trade name applied to any carbonate rock of good color and texture and hard enough to take a polish.

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

Quartzite - A firm, compact rock composed of grains of quartz so firmly united that fracture takes place across the grains instead of around them.

Sedimentary Rocks - Rocks composed of sediment; mechanical, chemical or organic. They are formed through the agency of water, wind, glacial ice, or organisms and are deposited at the surface of the earth at ordinary temperatures. The materials from which they are made must originally have come from the disintegration and decomposition of older rocks, chiefly igneous.

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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 April, 1964.

Item 105, Granular Borrow

"Article 105.02 - Materials. The granular borrow shall be obtained from approved sources and shall consist of satisfactorily graded, free-draining, hard durable stone and coarse sand practically free from loam, silt, clay, and organic matter.

"The sand portion (material passing the No. 4 screen) shall have not more than ten percent (10%) passing the No. 270 mesh sieve and shall show a color of not more than three and one-half ($3\frac{1}{2}$) as determined by the colorimetric test described in AASHO Method of Test, Designation T-21.

"When used in connection with fine grading or in fills where piling is to be driven, the granular material shall all pass the nine-inch (9") square-opening screen."

Item 201, Sub-base of Gravel

"Article 201.02 - Materials. The gravel shall consist of material reasonably free from silt, loam, clay, or organic matter. It shall be obtained from approved sources and meet the following requirements:

"Not less than forty percent (40%) stone shall be retained on No. 4 sieve.

"The percent of wear shall be not more than twenty-five (25) when tested by laboratory methods using Method T-4 or more than forty (40) when tested by AASHO Method T-96.

"The stone portion of the gravel shall be uniformly graded from coarse to fine, and the maximum-size particles shall not exceed two-thirds (2/3) of the layer being spread.

"The sand portion, when tested by laboratory methods using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Minimum Percent of Stone	Percent Passing Square Openings No. 100	Percent Passing Square Openings No. 270
40	0-15	0-3
50	0-15	0-4
60	0-15	0-5
70	0-15	0-6

"The sand shall show a color of not more than three and one-half (3½) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

Item 202, Sub-base of Sand

"Article 202.02 - Materials. The sand shall consist of material reasonably free from silt, loam, clay, or organic matter. It shall be obtained from approved sources and meet the following requirements:

"The sand, when tested by laboratory methods using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
1½"	95-100
5/8"	80-100
No. 4	70-100
No. 100	0-18
No. 270	0-5

"The sand shall show a color of not more than three and one-half (3½) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

Item 204, Sub-base of Crushed Rock

"Article 204.02 - Materials. The materials for sub-base, filler, and

sand cushion shall be obtained from approved sources and meet the following requirements:

A - Crushed Rock. "The crushed rock shall be uniformly graded, crusher-run material and shall be free from dirt. The ledge from which this material is obtained shall be stripped and cleaned before blasting. Conical stockpiling, or any other method of stockpiling which causes segregation of aggregates, will not be permitted.

"The crushed rock, when tested by laboratory methods using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
1"	95-100
1½"	25-50
No. 4	0-15

"The percent of wear shall not be more than eight (8) when tested by laboratory methods using Method AASHO T-3 or more than forty (40) when tested by AASHO Method T-96."

Item 205, Sub-base of Crushed Gravel

"Article 205.02 - Materials.

A - Crushed Gravel. "The crushed gravel shall consist of material reasonably free from silt, loam, clay, or organic matter. It shall be obtained from approved sources and produced by a crusher adjusted to deliver a product uniformly graded from coarse to fine.

"When tested by laboratory methods using Method AASHO T-27, it shall meet the grading requirements as set forth below:

		Square Openings	Percent Passing
Sub-base of Crushed Gravel	Coarse-Graded Item 205-A	1"	100
		No. 4	25-50
	Fine-Graded Item 205-B	1½"	95-100
		No. 4	30-60

"At least thirty percent (30%) by weight of the stone content of the crushed gravel, that is, the material retained on the No. 4 screen, shall have a minimum of one (1) fractured face as determined by

actual count from the sample submitted to the laboratory.

"The percent of wear shall not be more than twenty (20) when tested by laboratory methods using Method AASHO T-4 or more than thirty-five when tested by AASHO Method T-96.

B - Sand. "The sand content of the crushed gravel, that is, the material passing the No. 4 screen, when tested by laboratory methods using Method AASHO T-27, shall meet the grading requirements set up in the following table:

Square Openings	Percent Passing
No. 100	0-18
No. 270	0-8

"The sand shall show a color of not more than three and one-half ($3\frac{1}{2}$) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

TABLE I

POWNA 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
1	1A	1967	2-13.5	0-2	Yes	100	95.4	80.1	13.6	3.0 2.4*	1	---	Sand	Owner: Robert Jarvis. Area consists of a pit east of Town Highway No. 16 at a point about 0.35 mile north of its intersection with Town Highway No. 15. No tests performed contained sufficient stone to be classified as Item 201. Material generally consists of a dark flaky sand with occasional slate pebbles that become more numerous toward the base. Test #1A representing the upper face, met requirement for Item 202 and 105. Test #1B representing the center face, also met requirements for Items 202 and 105. An excess of overburden that had slumped down from the above precluded sampling most of the lower face. Material in place from the lowest 4 feet was sampled by means of the backhoe. This fraction was gradationally too coarse for Item 202 and too fine for Item 201. It is acceptable for Item 105. Possible eastward extension of the pit is limited by a downward sloping field that was not readily accessible to the backhoe.
	1B	1967	13.5-20	---	Yes	100	92.4	77.8	10.9	3.0 2.3*	1	---	Sand	
	1C	1967	30-34	---	Yes	96.8	89.2	67.7	8.0	2.0	1	---	Gran. Borrow (Sand)	
2	1	1967	5-10	0-3	No	81.8	76.7	67.6	3.0	2.3	1	---	Gran. Borrow (Sand)	Owner: Amos Heap. This area consists of a large field about 0.2 mile northwest

*Percentage of Total Sample

TABLE I

POWNAI 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks	
						1 1/2"	5/8"	#4	#100	#270					
														of the intersection of Town Highway No. 22 with Town Highway No. 6. It contains two small pits about 200 feet apart in a hillock near the southwest corner. Access to the field is via extension of the access road to the pit at Map Identification No. 3. Test #1 was at the west end of the field on the highest hill and next to the north fence. Material is 0-3' sod; 3'-5' coarse gravel beds that dip east; 5'-10' stony sand which comprised the interval tested. It met the requirements for Item 105. Test #2 was on the hill next to the north fence 700' east of Test #1. Material to a depth of 6.5' is cobbly loam and was not sampled.	
	2	1967	1-6.5	0-1	No	N	O	T	S	A	M	P	L	E	D
	3A	1967	2-6	0-2	Yes	100	90.5	82.3	4.4	3.0 2.5*	1	---	Sand	Test #3 was in the west face of the pit near the southeast corner of the field. Material is 0-2' sod and stones; 2'-6' pebbly coarse sand(3A); 6'-7' cobbles; 7'-14' sandy gravel(3B). Test #3A meets requirements for Items 202 and 105.	
	3B	1967	6-14	---	Yes	100	83.0	73.6	0.7	0.8 0.6*	1	---	Sand	Test #3B meets requirements for Items 202 and 105.	
	4A	1967	1-8	0-1	Yes	68.9	54.3	40.2	8.0	2.8	1	10.0%	Gravel	Test #4 was in the east face of the pit near the west end of the field. Material is	

*Percentage of Total Sample

TABLE I

POWNAL 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	4B	1967	8-12	---	Yes	100	93.9	83.6	2.5	1.0 0.8*	1	---	Sand	0-1' loamy sod; 1'-8' cross-bedded sand and gravel beds (4A); 8'-12' clean pebbly sand (4B). Test #4A meets requirements for Items 201 and 105. Test #4B is acceptable for Items 202 and 105.
3	1	1967	0.5-14.5	0-0.5	Yes	96.8	96.2	96.2	7.7	3.0 2.9*	1	---	Sand	Owner: Amos Heap. The area consists of a large sand pit about 0.1 mile west of the intersection of Town Highway No. 22 with Town Highway No. 6. Test #1 was in the south face of the northwest extension of the pit. The face consists of a much cross-bedded ice-contact deposit bounded on the east by a large pocket of cobbles. Material meets the requirements for Items 202 and 105.
	2	1967	3-7.5	0-3	Yes	89.6	79.2	72.7	11.0	3.0	1	---	Gran. Borrow (Sand)	Test #2 was in the upper southeast face of the main part of the pit. Material consists of 0-3' sod, loam, and stones; 3'-7.5' clean stony sand with an excess retained on the 1½" screen, making it unacceptable for Item 202. It is acceptable for Item 105. Sloughed in overburden made the sampling of the lower face impractical, even with the backhoe. This pit can probably be extended into the hills that lie to the south and northwest. Further

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 4

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														sampling will be necessary to determine extent and specifications of extension materials.
4	1A	1967	2-4	0-2	No	100	100	98.6	49.3	13.0	1	---	---	Owner: Amos Heap. The area consists of a high ridge immediately west of the Heap residence. Access was from the west 0.29 mile via the entrance to the Pownal Landfill (Map Ident. No. 9) on Town Highway No. 7. Test #1 was on the top of the ridge. Material consists of 0-2' sod; 2'-4' fine reddish sand(1A) and 4'-7.5' clean medium to coarse sand(1B). Test #1A was rejected for Item 105 because excessive fines passed the #100 and #270 mesh sieves.
	1B	1967	4-7.5	---	No	100	100	100	3.0	1.3*	1	---	Sand	Test #1B material is acceptable for Items 202 and 105. Test #1 is not representative of the entire ridge, but only of its crest. See Map Identification No. 7 for for description of material in the base of the ridge at a point about 400 feet south. Although Test #1B bottomed in medium sand, materials lying below 7.5' will need further tests to determine acceptability.
5	1	1967	2-6	0-2	No	100	100	84.7	76.0	40.0	1	---	---	Owner: Mrs. John Geannelis. The area is a wooded meadow east of Geannelis farmhouse

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 5

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														south of Town Highway #22. Test #1 was next to birch grove S70°E of farmhouse. Material is 0-1' sod; 1'-2' white clay lenses; 2'-6' gravelly silt. Test of last interval rejected for Item 105 because of excessive fines.
6	1	1967	1-5	0-1	No	100	100	74.5	48.0	23.0	1½	---	---	Owner: Albert Brown. Area is narrow clearing in planted pine woods south of Town Highway No. 22 at point 0.14 mile west of intersection with State Aid Highway No. 3. Test #1 was near south end of clearing 150' from Town Highway No. 22. Material is 0-1' sod & loam; 1'-5' cobbly silt. Because of excessive fines it was not acceptable for Item 105.
7	1A	1967	1.5-7	0-0.5	Yes	100	100	99.3	3.0	2.0*	1	---	Sand	Owner: Amos Heap. The area is a small grassy pit west of Town Highway 7 at point 0.24 mile southwest of junction with Town Highway No. 22. Test #1 was in the northeast face of pit. Material is 0-0.5' sod; 0.5'-1.5' dirty sand; 1.5'-7' clean medium sand(1A); 7'-11' clean sandy gravel(1B). Bottomed in cobbly gravel. Test #1A interval acceptable for Items 202 and 105.
	1B	1967	7-11	---	Yes	67.6	59.0	50.4	6.0	3.0	1	5.8%	Gravel	Test #1B interval is acceptable for Items 201 and 105. Possible extension here would be toward north.(See Map Identifi-

*Percentage of Total Sample

TABLE I

POWNA 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
8	1	1967	0.5-5	0-0.5	No	100	100	80.9	51.0	27.0	2	---	---	cation No. 4). Owner: Albert Brown. The area consists of an old race track southwest of the intersection of Town Highway No. 22 with State Aid Highway No. 3. Test #1 was inside of the track near the west end. Material is 0-0.5' sod; 0.5'-5' silt with cobbles. Because of excessive fines, it is unacceptable for Item 105.
9	1	1967	0-6	---	Yes	100	100	95.1	22.0	8.0 7.6*	1	---	Gran. Borrow (Sand)	Owner: Amos Heap. The area is a small field west of Town Highway No. 7 at a point 0.45 mile southwest of the intersection with Town Highway No. 22 currently used for the Pownal Landfill. The field is westward sloping and is characterized by minor hills and ridges with poor drainage along their margins. Materials are in the process of removal at several levels at the same time refuse is being dumped at the west edge. Test #1 was in east face of the middle level. Material is 0-1' stony sand; 1'-4' pebbly sand; 4'-6' silty sand. Although acceptable for Item 105, it fails to meet the requirements for Item 202 because an excess passes the #100 and

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 7

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1½"	5/8"	#4	#100	#270				
	2	1967	0.5-9.5	---	Yes	95.9	89.3	78.1	10.3	6.0 4.7*	1	---	Sand	#270 mesh sieves. Test #2 was in the east face of the highest level. Material is 0-0.5' pebbly sand with loam(not tested); 0.5'-2' coarse sand; 2'-6.5' coarse gravel; 6.5'-9.5' coarse sand; 9.5'-? gravel. In addition to being acceptable for Items 202 and 105, the percent of wear was 17.6%.
	3	1967	1.5-8	0-1.5	No	100	100	85.0	42.0	17.0	1	---	---	Test #3 was in a swale near the south end of the area about 220' S20°W of Test #2. Material is 0-1.5' loam; 1.5'-8' reddish silty sand; 8'-? cobbles. Because an excess passes the #270 sieve, it fails to meet the requirements for Item 105.
	4	1967	1.5-13.5	0-1.5	No	100	100	97.3	4.9	3.0 2.9*	1	---	Sand	Test #4 was 240' east of Test #2 on top of a knoll in an old excavation. Material is 0-1.5' sod; 1.5'-13.5' fine reddish to gray sand with some silt. It is acceptable for Items 202 and 105.
10	1A	1967	0.5-7.5	0-0.5	Yes	96.4	83.6	65.0	3.3	2.0 1.3*	1	---	Gran. Borrow (Grav.)	Owner: Clarence Vadakin. The area is a pit east of Town Highway No. 6 at a point about 0.12 mile north of Town Highway No. 1 crossing. The face of this pit had much partially sloughed-in overburden that made most of it inaccessible for sampling. In addition,

*Percentage of Total Sample

TABLE I

POWNA GRANULAR DATA SHEET NO. 8

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	1B	1967	7.5-10	---	Yes	100	100	100	63.0	36.0	1	---	---	thick beds of brown silt occurred as central layering for an estimated one third of the exposure. Test #1A was taken in the east face at the top of the lower level near the north end. Material sampled is a gravelly sand, the stone content of which (35.0%) rates it as intermediate in gradation between Items 201 and 202. There was insufficient proper size stone for the percent of wear test. It meets requirements for Item 105.
	2	1967	31.5-36.5	0-31.5	Yes	100	92.2	83.7	16.7	10.3 8.6*	1	---	---	Test #1B was a 2.5-foot layer of sandy brown silt that failed to meet the requirements for Item 105. Test #2 was taken near the base of the highest point of the east face, which is 36.5' above the floor. Material sampled is a silty sand which barely fails to meet the specifications for Item 105, because of a slight excess passing the #270 sieve. The floor of the pit is clay. This pit could possibly be extended into a wooded hill to the east.
11	1	1967	1-8	0-1	No	78.1	60.7	45.3	28.0	13.0	1	13.6%	---	Owner: Mrs. Lucy Quimby. The area consists of an excavated gravel bank on a private road north of the South Stream Waterfowl Area about 0.4 mile

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 9

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
														from State Aid Highway No. 3. Test #1 was at the foot of the southwest end of the bank. Material consists of 0-1' stony loam; 1'-8' cobbly gravel with sand. There is a 6" clay lens at 4'. Except for excessive portions passing the #100 and #270 mesh sieves, this material meets gradational and abrasion requirements for Item 201.
12	1	1967	2-5	0-2	No	100	95.0	88.6	55.7	32.0	1	---	---	Owner: Clarence Vadakin. The area is a field northeast of the intersection of Town Highways No. 6 and No. 7. Test #1 material from the highest point in the field consisted of 0-2' sod and loam; 2'-5' silt or sand with cobbles. It failed to meet the specifications for Item 105.
13	N	O	T	S	A	M	P	L	E	D				Owner: Clarence Vadakin. The area consists of a narrow field enclosed by woods north of Town Highway No. 7 just west of bend about 0.2 mile west of the Towsley Cemetery. It is reached through the north end via field roads from the farm west of the cemetery. Test #1 was near the south end of the field next to east woods. Material is 0-0.5' sod; 0.5'-3' sandy silt and stones. Material was not sampled and appears

*Percentage of Total Sample

TABLE I

POWNAI 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
14	1	1967	4-12	0-4	Yes	63.8	47.5	33.4	15.0	7.5	1	16.2%	Gran. Borrow (Grav.)	to be glacial till. Owner: Mrs. Alma White. The area consists of an old pit southeast of the intersection of Town Highway No. 1 with U. S. Route 7. Adjacent to the pit on its north side is a stockpile of sand that remains from the days when this area was the site of the District 1 Garage. Test #1 was at the east end of the south face. Material is 0-2' overburden not exposed; 2'-4' sod and loamy gravel (not tested); 4'-12' cobbly gravel. The last mentioned interval failed to meet gradational requirements for Item 201 because too much material passes the #270 sieve. It meets specifications for Item 105. Extension possibilities mainly to the southwest, are limited by close proximity to U. S. Route 7.
15	1	1967	1.5-7	0-1.5	No	79.2	70.3	46.8	17.0	7.0	2	---	Gran. Borrow (Grav.)	Owner: Robert Rudd. Area consists of north end of a terrace east of Town Highway No. 12 and south of a private blacktop road. Test #1 was at the far north end of the field. Material is 0-1.5' sod; 1.5'-7' dirty coarse gravel with an occasional cobble. It fails to meet the requirements for

*Percentage of Total Sample

TABLE I

POWNAI 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1967	1.5-6	0-1.5	No	70.3	57.2	37.6	8.0	3.0	2	24.0%	Gravel	Item 201, because an excess passes the #100 and #270 mesh sieves. There was insufficient proper size stone for the percent of wear test. It is acceptable for Item 105. Test #2 was located next to the east fence about 0.12 mile south of Test #1. Material is 0-1.5' sod; 1.5'-6' dirty coarse gravel with an occasional cobble. It is acceptable for Item 201. There is a possibility for extension 600 feet south to Test #1, Map Identification No. 18.
16	1A	1967	1.5-5.5	0-1.5	No	88.3	79.9	52.9	8.0	3.0	1	---	Gran. Borrow (Grav.)	Owner; Robert Rudd. The area consists of the first large meadow west of Town Highway No. 12. Test #1 was at the northwest corner of the meadow. Test #1A material is 0-1.5' sod and loam; 1.5'-5.5' fine gravel which meets the gradational requirements for Item 201. There was insufficient proper size stone for percent of wear test. It is acceptable for Item 105.
	1B	1967	5.5-9	---	No	82.6	71.8	50.4	8.0	3.0	1	---	Gran. Borrow (Grav.)	There is a facies change at 5.5 feet with the strata below becoming much coarser. This interval, 5.5'-9', was sampled as Test #1B. It is stony gravel, bottom of which was not

*Percentage of Total Sample

TABLE I

POWVAL GRANULAR DATA SHEET NO. 12

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	2-7	0-2	No	82.3	67.3	41.6	3.0	1.0	1	25.3%	Gran. Borrow (Grav.)	reached. In addition to being acceptable for Item 105, it also meets gradational requirements for Item 201. There was insufficient proper size stone for the percent of wear test. Test #2 was at the northeast corner of the meadow. Material is 0-2' sod and loam; 2'-7' coarse gravel, bottom of which was not reached. It passed the gradational, but failed to meet the abrasion requirements for Item 201. It passes the specifications for Item 105.
	3	1967	1.5-7	0-1.5	No	82.1	66.0	40.1	7.0	3.0	1	26.2%	Gran. Borrow (Grav.)	Test #3 was at the east edge of the meadow about 0.15 mile south of Test #2. Material is 0-1.5' sod and loam; 1.5'-7' coarse gravel, bottom of which was not reached. It passed the gradational, but failed to meet the abrasion requirements for Item 201. It passes the specifications for Item 105.
17	1	1967	1.5-6.5	0-1.5	No	73.5	66.8	45.7	3.0	0.5	1½	30.0%	Gran. Borrow (Grav.)	Owner: Robert Rudd. The area comprises the east half of a field west of and separated by a tree row from Map Identification No. 16 area. The west half of the field was not sampled because of an oat patch that the owner did not want disturbed. Test #1 was at the east edge of the field

*Percentage of Total Sample

TABLE I

POWNAI 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	1.5-7	0-1.5	No	73.8	64.2	42.1	4.0	0.5	1	20.5%	Gravel	0.06 mile north of the south-east corner. Material is 0-1.5' sod and loam; 1.5'-6.5' coarse gravel, bottom of which was not reached. It meets the gradational requirements for Items 201 and 105, but failed to pass the abrasion test for Item 201.
	3	1967	1.5-7.5	0-1.5	No	82.3	72.7	46.2	3.0	0.5	1	20.6%	Gravel	Test #2 was near the north end of the field about 0.12 mile northwest of Test #1. Material is 0-1.5' sod and loam; 1.5'-7' gravel with cobbles, bottom of which was not reached. It meets the requirements for Items 201 and 105. Test #3 was at the south edge of the field where the fence angle bends to the southwest. Material is 0-1.5' sod and loam; 1.5'-7' coarse gravel, bottom of which was not reached. It meets the requirements for Items 201 and 105.
18	1	1967	0.5-7	0-0.5	No	63.8	52.7	32.1	5.0	2.0	1	21.6%	Gravel	Owner: Robert Rudd. The area consists of the south end of a terrace east of Town Highway No. 2 that overlooks Potter Hollow. Test #1 was at the edge of the terrace near the start of a toboggan run. Material is 0-0.5' sod; 0.5'-7' dirty coarse gravel, bottom of which was not reached. It

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	N	O	T	S	A	M	P	L	E	D		is acceptable for Items 201 and 105. Test #2 was in lower Potter Hollow Meadow at the foot of a terrace 150 feet east of Test #1. Backhoe exposed 3.5' of unsorted clay, cobbles, and silt which were not sampled. There is possibility for extension 600 feet north to Test #2, Map Identification No. 15.	
19	1A	1967	1-16	0-1	Yes	79.1	68.0	49.2	7.0	2.0	1	25.6%	Gran. Borrow (Grav.) Owner: Robert Rudd. The area comprises the south end of a terrace west of Town Highway No. 12 with pit excavation next to the same. Test #1 was in the southwest corner of the face of the pit. Test #1A consisted of upper and central portions of the face. Material is 0-1' sod; 1'-16' dirty gravel. It meets the gradational requirements for Items 105 and 201, but barely failed the abrasion test for the latter.	
	1B	1967	16-24	---	Yes	86.9	81.4	63.9	7.0	2.0 1.3*	1	---	Gran. Borrow (Grav.) Test #1b embraced material in the lower face. It consists of a gravelly sand. Because an excess of pebbles were held by the 1½" screen, it failed to meet the requirements for Item 202. It is acceptable for Item 105.	
	2	1967	N	O	T	S	A	M	P	L	E	D	Test #2 was in the floor east	

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1 1/2"	5/8"	#4	#100	#270				
	3	1967	2-7.5	0-2	No	91.5	77.0	54.3	6.0	1.5	1	21.2%	Gravel	of Test #1. The backhoe encountered 2.5' of clean pebbly sand overlying clay. Test #3 was located at the southeast end of the terrace and represents a possible northward extension of the pit. Material is 0-2' loamy stony sand; 2'-7.5' dirty coarse gravel with cobbles which meets the specifications for Items 201 and 105.
	4	1967	1-9	0-1	No	94.9	73.2	40.4	4.0	1.0	1	22.0%	Gravel	Test #4 was at the west end of the area about 0.05 mile from the pit where tree line meets an east-west fence. Material is 0-1' sod; 1'-9' dirty coarse gravel dipping eastward with an occasional cobble or boulder. It meets the requirements for Items 201 and 105.
20	1	1967	2-20	0-2	Yes	88.5	69.6	28.6	7.0	3.0	1	14.2%	Gravel	Owner: Norman Joly. The area consists of a small pit north of Town Highway No. 23 at a point 1/2 mile east of intersection with Town Highway No. 6. Test #1 was taken in the northwest face. Material consists of 0-2' sod and loam with pebbles; 2'-3' coarse gravel; 3'-4' silt; 4'-6' sandy cobbles; 6'-14' clean fine gravel; 14'-20' sandy cobbles; bottoms in silt. It meets

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 16

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														the requirements for Items 201 and 105. This pit could possibly be extended northward into a wooded ridge that was inaccessible to backhoe sampling.
21	1A	1967	1-5	0-1	Yes	63.2	54.2	42.6	15.0	4.3	2	---	Gran. Borrow (Grav.)	Owner: George McClenithan. The area consists of an east-west trending ridge under utility lines and northwest of Map Identification No. 22 on State Aid Highway No. 3. Test #1 was at the west end of ridge next to tamarack trees. Test #1A was in the face of tiny pit. Material is 0-1' sod; 1'-5' dirty cobbly gravel which barely fails to meet the requirements for Item 201 because of a slight excess passing the #270 sieve. There was insufficient proper size stone for the percent of wear test. It is acceptable for Item 105.
	1B	1967	0-5	---	Yes	83.2	63.8	44.1	13.0	6.0	1	13.6%	Gran. Borrow (Grav.)	Test #1B was in the floor of the same pit next to Test #1A. material is similar to that of Test #1A and also is unacceptable for Item 201 and acceptable for Item 105.
22	1	1967	1-5	0-1	Yes	86.7	61.3	36.4	11.0	5.0	2	13.2%	Gravel	Owner: George McClenithan. The area comprises an east-west trending ridge, with several small pits adjacent to

*Percentage of Total Sample

TABLE I

POWNA 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	0-3.5	---	Yes	68.8	49.6	29.2	8.0	5.0	2	10.8%	Gravel	State Aid Highway No. 3 about 0.1 mile north of intersection with State Aid Highway No. 47. Test #1 was in the larger of the two pits near a fence bounding the highway. The material is 0-1' sod and loam; 1'-5' sandy coarse gravel with an occasional boulder, bottom of which was not reached. It is acceptable for Items 201 and 105. Test #2 was in a small pit on the crest of ridge northwest of Test #1. The material is 0-3.5' sandy coarse gravel, bottom of which was not reached and is acceptable for Items 201 & 105. Backhoe digging at Test #2 location was extremely slow owing to compaction of material. Material had to be "scratched at" several times before each basket was removed. Test #3 was on crest of ridge due north of brown-shingled house. Material is 0-1' sod; 1'-2.5' dirty gravel; 2.5'-7.5' pebbly sand. Material sampled barely failed to meet requirements for Item 202 because slight insufficiency passed #4 screen. It is acceptable for Item 105.
	3	1967	2.5-7.5	0-2.5	No	100	81.3	69.5	5.6	3.0 2.1*	2	---	Gran. Borrow (Sand)	Owner: Herbert Lewis. The area is a road cut on pri-
23	1	1967	2-7.5	0-2	Yes	62.7	53.4	36.2	7.0	4.3	1	11.8%	Gravel	

*Percentage of Total Sample

TABLE I

POWNAL GRANULAR DATA SHEET NO. 18

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
														vate road (leading to the Barber Pond recreation area) immediately north of its intersection with State Aid Highway No. 3. Test #1 was at the lower left edge of the cut which has recently been exploited for fill. Material is 0-2' silty clay; 2'-7.5' dirty cobbly gravel; 7.5'-9' clay and cobbles. The cobbly gravel interval meets the specifications for Items 201 and 105. This pit could possibly be extended northeastward into a wooded ridge that was inaccessible to the backhoe.
24	1	1967	10-15	0-10	Yes	100	100	66.2	1.3	1.0 0.6*	1	---	Gran. Borrow (Sand)	Owner: Clinton Hutchins. The area is an old pit north of State Aid Highway No. 3 about 0.62 mile east of its intersection with U. S. Route 7. Test #1 was in the lower face at the south end of the pit. The material is 0-10' gravelly loam that has sloughed in from above, thus was not in place; 10'-15' clean sand with stones near the base. The latter interval, which was tested, failed to meet the requirements for Item 202 because of an insufficiency passing the #4 screen. It is acceptable for Item 105.

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
25	N	O	T	S		A	M	P	L	E	D		<p>Owners: Floyd Patterson and Ned Towslee.</p> <p>This area is comprised of a knoll of crushed gravel under the telephone line northeast of a go-cart race track and a partially overgrown pit between the knoll and State Aid Highway No. 3 on the south. Ned Towslee owns the gravel pit which is largely depleted. Extension possibilities are limited by close proximity to State Aid Highway No. 3. Floyd Patterson owns the crushed gravel knoll. Most of the heavily wooded land embracing the feature north of Map Identification No. 25 is owned by Floyd Patterson. He is reluctant to allow testing and maintains that most of the material formerly present has been exploited in connection with previous contracts.</p>	
26	1	1967	2.5-9	0-2.5	Yes	---	---	---	---	---	---	---	<p>Owner: William Blanchard.</p> <p>The area consists of a large pit southeast of the intersection of Town Highway No. 35 with State Aid Highway No. 3. Test #1 was at the lower north end of the face. The material is 0-2.5' sloughed in cobbly sand that was not sampled, because it is not in place; 2.5'-</p>	

*Percentage of Total Sample

TABLE I

POWNAI 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1958	2-30	0-2	Yes	37.9	35.7	26.8	4.0	3.5	1	12.0%	Gravel	9' dirty coarse gravel that is questionably in place. Analysis of this sample could not be determined owing to the erroneous transcription of laboratory results. Test #2 was sampled in 1958 by Laboratory personnel. The material sampled met the requirements for Items 201 and 105.
27	1	1967	1.5-4.5	0-1.5	Yes	66.2	51.6	40.2	9.0	3.8	1	23.6%	Gravel	Owner: Frank Myers. The area consists of a pit and possible woodeed extension located behind the owner's house south of State Aid Highway No. 3. Test #1 was at the top of the pit at a point S10°W of the owner's house. The material is 0-1.5' loam; 1.5'-2.5' medium sand; 2.5'-4.5' cobbly gravel with an occasion boulder, bottom of which was not reached. Sand and gravel layers collectively meet the requirements for Items 201 and 105. The area within the owner's property limits is largely depleted.
28	1A	1967	8-15	0-2	Yes	100	100	100	85.0	28.0	1	---	---	Owner: Richard Pudvar. The area is a large pit west of Town Highway No. 35 at a point 0.34 mile south of State Aid Highway No. 3. Test #1 was in a face at the west end of the pit. Test #1A ma-

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 21

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	1B	1967	15-34	---	Yes	82.0	74.8	49.9	6.0	2.0	1	8.5%	Gravel	terial is 0-2' loamy gravel; 2'-8' coarse cobbly gravel (not sampled because inaccessible); 8'-15' silty fine sand which was rejected for Item 105 because of an excess passing the #100 and #270 sieves. Test #1B of the lower face consists 15'-34' stony clean gravel which is acceptable for Items 201 and 105. The southwest end of this pit could possibly be extended southward towards Map Identification No. 30.
29	1A	1967	2-8	0-2	Yes	89.7	81.0	59.7	6.0	5.0 3.0*	1	---	Gran. Borrow (Grav.)	Owner: Mrs. Alma White. The area is a large sand pit on woods road about 0.3 mile east of Town Highway No. 4. Test #1 was in the east face of the upper level. The material is 0-2' loamy gravel; 2'-12' stony sand that was sampled in two sections. Test #1A, consisting of an interval from 2'-8', failed to meet the gradational requirements for Item 201 because an excess passes the #270 sieve. It is rejected for Item 202 because an insufficiency passes the #4 screen, but it is acceptable for Item 105.
	1B	1967	8-12	---	Yes	100	87.4	72.9	2.2	1.0 0.7*	1	---	Sand	Test #1B, consisting of inter- from 8'-12', meets the require-

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 22

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1967	2-12.5	0-2	Yes	100	100	97.6	6.0	2.0	1	---	Sand	ments for Items 202 and 105. Test #2 was in the east face of the lower level. The material is a sand which is acceptable for Items 202 and 105. This pit could possibly be extended northeastward into a wooded ridge that was not accessible to the backhoe.
30	1	1967	6.5-18	0-2	Yes	100	93.2	89.0	11.6	5.0 4.5*	1	---	Sand	Owner: Harold Campbell. The area is a large pit about 0.3 mile east of Map Identification No. 29 via woods road and is about 0.25 mile south of Map Identification No. 28 via Town Highway No. 35 and woods road right. Test #1 was at the far north end of the pit in the face of the upper level. The material consists of interbedded fine sands with cross-bedded pebbly sand occurring as follows: 0-2' sod; 2'-6.5' sloughed overburden inaccessible to sampling; 6.5'-18' sampled interval which is acceptable for Items 202 and 105.
	2	1967	0-8	---	Yes	100	100	100	78.0	26.0	1	---	---	Test #2 was in the floor of the upper level. The material varies from fine sand to silt that at 8 feet bottoms in silty clay. It fails to meet requirements for Item 105.

*Percentage of Total Sample

TABLE I

POWNA GRANULAR DATA SHEET NO. 23

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	3	1967	0-6.5	---	Yes	100	100	88.2	10.6	4.0 3.5*	1	---	Sand	Test #3 was in a stripped area 30' north of Test #1. The material is 0-2' gravelly sand; 2'-6.5' bedded clean sand dipping south. It meets the requirements for Items 202 and 105. The north end of this pit could possibly be extended northward towards Map Identification No. 28.
31	1	1967	0.5-10	0-0.5	Yes	81.8	59.8	36.4	6.0	2.3	1	22.4%	Gravel	Owner: Joseph Sarkis. The area is a gravel pit south of the Hoosic River at the end of Town Highway No. 24. Test #1 was taken in the center of a 15' high face. The upper 10' was sampled for this test. The material consists of a stony gravel that meets the requirements for Items 201 and 105.
	2	1967	10-15	---	Yes	100	93.5	70.8	12.0	4.0 2.8*	1	---	Sand	Test #2 was taken about 20 feet southeast of Test #1 in the lower 5' of the face. The material consists of pebbly silty sand that is acceptable for Items 202 and 105.
	3	1967	0-7	---	Yes	78.1	62.4	40.4	5.0	3.0	1	23.2%	Gravel	Test #3 was taken in the floor of the pit opposite Test #2. The material is a northeastward dipping sandy coarse gravel with cobbles. It is acceptable for Items 201 and 105. See Map Identification No. 32 for possible extension.

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 24

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
32	1	1967	0.5-6.5	0-0.5	No	64.6	46.6	28.9	8.0	4.0	1	23.8%	Gravel	Owner: Joseph Sarkis. The area comprises the end of a meadow southeast of a gravel pit at the south end of Town Highway No. 24. (See Map Identification No. 31). Test #1 was at the southeast corner of a meadow near a black oak. The material consists of 0-0.5' sod; 0.5'-6.5' cobbly coarse gravel, the bottom of which was not reached, that meets the requirements for Items 201 and 105.
	2	1967	0.5-7	0-0.5	No	76.1	55.9	30.5	10.0	5.0	1	26.8%	Gran. Borrow (Grav.)	Test #2 was near the southwest corner of the meadow at a point about 0.07 mile from Test #1. The material is similar to that of Test #1. Bedding dips gently northeast. The material fails to meet the abrasion specifications for Item 201, but gradationally it is acceptable for both that item and Item 105.
	3	1967	0.5-6.5	0-0.5	No	75.6	58.0	34.4	10.0	6.0	1	23.2%	Gran. Borrow (Grav.)	Test #3 was located about 0.04 mile northwest of Test #2. The material is similar in all respects to that of Tests #1 and #2, but a slight excess passing the #270 sieve makes it unacceptable for Item 201 although acceptable for Item 105.

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 25

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
33	1	1967	1-9	0-1	Yes	100	100	100	16.0	2.3	1	---	Sand	Owner: Joseph Sarkis. The area comprises lobate buffs east and southeast of an old town dump about a thousand feet southwest of the gravel pit at Map Identification No. 31. Test #1 was in the face of a small pit left of a point where the dump access road leaves the meadow. The material is 0-1' sod; 1'-9' fine sand that is acceptable for Items 202 and 105.
	2	1967	0-10	---	No	100	100	100	25.0	3.0	1	---	Gran. Borrow (Sand)	Test #2 was near the center of the bluff about 350' southeast of Test #1. The material is similar to that of Test #1, but an excess passing the #100 sieve makes it unacceptable for Item 202. It meets the requirements for Item 105. Further testing would be necessary if extensive exploitation of this area is contemplated.
34	1	1967	0.5-7.5	0-0.5	No	81.8	59.7	23.2	17.0	9.5	1½	24.2%	Gran. Borrow (Grav.)	Owner: Joseph Sarkis. The area consists of the south end of a meadow where a road from the old town dump enters Halifax Hollow. The material encountered is a very coarse somewhat rotten gravel with cobbles. It fails to meet the gradational requirements for Item 201, because of excesses passing the #100 and #270

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 26

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
35	1	1967	14-23.5	0-0.5	No	72.4	59.5	34.5	15.0	9.0	1	13.1%	Gran. Borrow (Grav.)	sieves. It is acceptable for Item 105. Owner: H. Mattison. The area is a ridge west of the Mattison farm on Town Highway No. 33. Test #1 is located at the south end of the area and was in the foot of a north facing concave bank. The material is 0-0.5' sod; 0.5'-14' sloughed over section inaccessible to the backhoe; 14'-23.5' fairly clean medium gravel with interspersed large cobbles. Because of excessive fines passing the #270 sieve it fails to meet the requirements for Item 201. It is acceptable for Item 105.
	2	1967	5-12.5	0-0.5	Yes	68.0	43.1	34.8	34.0	16.0	1	10.0%	---	Test #2 was at the north end of a small pit at the foot of the west side of rounded ridge north of Test #1. The material is 0-0.5' sod; 0.5'-5' largely cobbles that were inaccessible to the backhoe; 5'-12.5' cobbly gravel with too many fines to meet the requirements for either of Items 201 and 105.
	3	1967	0.5-?	0-0.5	Yes	N O T S A M P L E D								Test #3 was in the face of a small pit at the north of the area. The material apparently is glacial till and was not tested.

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 27

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
36	1	1967	3-7	0-1.5	No	100	100	95.8	22.0	5.0 4.8*	1	---	Gran. Borrow (Sand)	Owner: Noble Hetherington. The area is about ¼ of a mile due west of house on Town Highway No. 34 and consists of an open field with basin enclosed by hills. Test #1 was at a high point immediately south of the basin. Material is 0-0.5' sod and loam; 0.5'-1.5' loamy sod; 1.5'-7' fine sand with a pebble lens. It fails to meet the requirements for Item 202, because an excess passes the #100 sieve but it is acceptable for Item 105. Test #2 was at the lowest point of the basin. The material consists of 0-0.5' sod; 0.5'-3' loamy silt. It was not sampled.
	2	1967	0.5-3	0-0.5	No	N	O	T	S	A	M	P		
37	1	1967	1-7	0-1	Yes	93.7	84.7	66.3	3.0	1.5	1	---	Gran. Borrow (Sand)	Owner: Noble Hetherington. The area contains an old pit of small size in the woods southwest of the area at Map Identification No. 36. Test #1 was near the foot of the east face. The material is 0-1' sod and loamy gravel; 1'-7' stony sand that is acceptable for neither Item 201 nor Item 202, because the stone to sand ratio is intermediate in classification. It meets the requirement for Item 105. Much overburden and heavy woods

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 28

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
														precluded sampling the lower (7'-12.5') face. Additional sampling, mainly toward the northeast in heavy woods, is necessary to determine possible extension.
38	1A	1967	7-21	0-2	Yes	78.6	62.8	34.7	4.0	2.0	1	21.2%	Gravel	Owner: Parley Palmer. The area is a small pit above the Palmer farm which is at the end of Town Highway No. 8. Test #1A was in the upper part of the southeast facing pit. The material is 0-2' sod; 2'-7' sand(not sampled); 7'-21' medium to coarse gravel that is acceptable for Items 201 and 105.
	1B	1967	21-28	---	Yes	100	100	97.1	2.9	1.0	1	---	Sand	Test #1B was in the lower part of the southeast facing pit. The material is a clean coarse sand that is acceptable for Items 202 and 105.
	2	1967	0-5.5	---	Yes	100	100	84.3	6.7	2.5 2.1*	1	---	Sand	Test #2 was in the floor of the pit about 20 feet south of the face. The material is fine sand becoming pebbly with depth. It is acceptable for Items 202 and 105. At 5.5' water and silt were encountered. This pit has largely depleted a small terrace. Only possible extension appears to be into a remanant to the north-east.

*Percentage of Total Sample

TABLE I

POWNAL GRANULAR DATA SHEET NO. 29

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
39	1	1967	2-7	0-2	No	100	100	100	20.0	2.0	1	---	Gran. Borrow (Sand)	Owner: Parley Palmer. The area is a small field at its high end next to the woods that is 0.5 mile from the junction with Town Highways No. 8 and No. 9 via Ellis Mine Hollow. This field is continuous with the field described at Map Identification No. 40. Test #1 was at the edge of woods 30 feet north of Ellis Mine road. The material is 0-1' sod; 1'-2' silty clay; 2'-7' fine sand that is acceptable for Item 105, but fails to meet the requirements for Item 202 because an excess passes the #100 sieve; 7'-8.5' clay(not sampled).
40	1	1967	2.5-7.5	0-2.5	No	87.3	66.4	45.0	7.0	2.0	3	18.8%	Gravel	Owner: Parley Palmer. The area tested is a small field that encloses part of a terrace bordering Ellis Mine Hollow on the south. It is located about 0.4 mile from the junction with Town Highways No. 8 and No. 9. This field is continuous with the field described at Map Identification No. 39. Test #1 was at the east end of the field next to a birch grove. The material is 0-2.5' sod and loam; 2.5'-7.5' coarse dirty gravel that is acceptable for

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 30

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	1.5-7.5	0-1.5	No	71.8	55.7	36.6	5.0	2.0	1	25.2%	Gran. Borrow (Grav.)	Items 201a and 105. Test #2 was in the center of the north edge of the terrace about 405 feet west of Test #1. The material is coarse gravel that barely fails to meet the abrasion requirements for Item 201. It is acceptable for Item 105.
	3	1967	1.5-7.5	0-1.5	No	74.2	70.6	45.4	8.0	4.0	1	25.6%	Gran. Borrow (Grav.)	Test #3 was in the center of the south edge of the field next to tree row at a point about 390 feet S50°W of Test #1 and 210 feet S25°E of Test #2. The material is coarse gravel that barely fails to meet the abrasion requirements for Item 201. It is acceptable for Item 105.
	4	1967	1.5-7.5	0-1.5	No	65.0	49.9	28.5	7.0	3.0	1	27.7%	Gran. Borrow (Grav.)	Test #4 was near the west end of the field about 245 feet west of Test #2 and about 405 feet N60°W of Test #3. The material is a coarse gravel that fails to meet the abrasion requirements for Item 201, but that is acceptable for Item 105. Test holes all bottom in gravel.
41	1A	1967	0-14.5	---	Yes	92.2	74.5	52.7	13.0	4.0	1	20.1%	Gran. Borrow (Grav.)	Owner: Harwood Moore. Area is an old pit at the southwest extension of Town Highway No. 43 on the south edge of a wide-spreading ridge at a point about 500 feet in

*Percentage of Total Sample

TABLE I

POWNA GRANULAR DATA SHEET NO. 31

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	1B	1967	14.5-25.0	---	Yes	100	79.5	51.0	5.0	1.5	1	5.6%	Gravel	elevation above the Hoosic River. Test #1A was in the upper face of the upper level. The material consists of much semi-tabular, very hard greenstone gravel with some fine sand and a little brown silt. Because of a slight excess passing the #270 sieve it barely fails to meet requirements for Item 201 although it is acceptable for Item 105. Test #1B was in the lower face of the upper level about 25 feet west of Test #1A. It is acceptable for both Item 201 and Item 105. Gravel in bottom.
42	1	1967	6-7	0-6	Yes	100	100	87.6	4.4	2.0 1.8*	1	---	Sand	Owner: Hart Brothers. The area is the first pit north of Town Highway No. 50 east of its intersection with U. S. Route 7. The feature sampled is an embankment consisting of well-bedded heavily cemented gravels and cobbles overlain by cobbles and silty clay some of which has sloughed down from above. Test #1 was an attempt to penetrate through the slough. The material is 0-6' sloughed in the sand (not tested because not in place); 6'-7' pebbly sand which meets the requirements for Items 202 and 105. Silty clay and

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 32

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														cobbles at the top of the face as well as the wooded steep slope above the pit were inaccessible to sampling. Additional sampling is necessary to determine usefulness of this area as a potential materials source.
43	1	1967	3-12	0-2	Yes	100	100	95.0	7.6	3.5 3.3*	1	---	Sand	Owner: Hart Brothers. The area is the second pit north of Town Highway No. 50 east of its intersection with U. S. Route 7. The feature sampled is an embankment consisting mainly of sand with some gravel showing graded bedding overlain by other gravels of ice-contact origin. Test #1 was at the east corner of the pit just above the floor in a pebbly sand. The material meets the requirements for Items 202 and 105. Owing to the inaccessibility of the upper face and the wooded steep slope above it, only the low-east part of the face was sampled. Further testing is necessary to determine possible extension of this pit as a materials source. The floor of this pit is clay.
44	1	1967	0.5-13	0-0.5	Yes	44.9	30.8	17.1	6.0	2.0	1	10.4%	Gravel	Owner: Hart Brothers. The area is a large gravel pit north of the east entrance to

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 33

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	0.5-4	---	Yes	83.2	69.8	52.7	14.0	7.0	1	---	Gran. Borrow (Grav.)	<p>the Green Mountain Park race trace on U. S. Route 7. The feature sampled consists of an embankment with extensive poorly bedded cobbly gravels and silty sands, all of which show evidence of ice-contact deposition. Test #1 was at the east edge of the face above the lowest level of the pit. The material consists of 0-0.5' loamy gravel; 0.5'-13' cobbly coarse gravel that is acceptable for Items 201 and 105; 13'-19' not exposed and not sampled.</p> <p>Test #2 was in an old access road at possible westward extension(on top). The material is poorly bedded with much loam. It consists of 0-0.5' sod; 0.5'-4' dirty coarse gravel that has too many fines passing the #270 sieve for acceptance as Item 201, however it meets the requirements for Item 105. There was insufficient proper size stone for the percent of wear test. The test bottomed in clay.</p>
45	1	1967	2-12	0-2	Yes	91.2	81.3	69.2	15.0	6.0 4.2*	1	---	Gran. Borrow (Sand)	<p>Owner: Hart Brothers. The area is the third pit north of Town Highway No. 50 east of its intersection with U. S. Route 7. The feature sampled</p>

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 34

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														consists of a high sand embankment with silt. Below 100' almost the entire face was covered with sloughed in overburden. Exposed material in place has much interbedded silt and possibly clay. There are extension possibilities at the top of the face, but this location was inaccessible to backhoe sampling. Test #1 was at the foot of the face. The material is 0-2' sloughed in overburden; 2'-12' stony sand that has an excess of stone retained by the #4 and the 1½" screens making it unacceptable for Item 202. It meets the requirements for Item 105.
46	1	1967	1.5-7	0-1.5	Yes	100	100	98.4	40.3	32.0 31.5*	1	---	---	Owner: David McNab Deans. Tests were in a stripped area south of Town Highway No. 41 at a point about 1.15 miles east of its junction with Town Highway No. 40. The feature sampled is a wooded terrace that extends into Massachusetts. Map Identification Nos. 47 and 48 are in the same feature which has been extensively exploited in recent years. Test #1 was located 230 feet southwest of birch at the intersection of the pit road with Town Highway No. 41 at low point in

*Percentage of Total Sample.

TABLE I

POWNA GRANULAR DATA SHEET NO. 35

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						% Passing								
						1½"	5/8"	#4	#100	#270				
	2	1967	1.5-6	0-1.5	No	94.7	83.8	67.2	5.0	3.0	1	---	Gran. Borrow (Sand)	excavation. The material is 0-1.5' not in place; 1.5'-7' fine sand and silts with a few cobbles at 5'; bottoms in silty clay. The material tested is unacceptable for Item 105 owing to excessive fines passing the #100 and #270 sieves. Test #2 was on the top of slope at the southwest end of the clearing. The material is 0-1.5' sod and loam; 0.5'-6' gravelly sand with cobbles and boulders (estimated 30%). Because of insufficient stone, it failed to meet either the gradational or abrasion requirements for Item 201. It is acceptable for Item 105.
47	1	1967	1.5-6	0-1.5	No	95.2	89.8	72.0	7.2	6.0 4.3*	1	---	Sand	Owner: David McNab Deans. The tests were in an excavated area south of Town Highway No. 41 at a point about 1.1 miles east of its junction with Town Highway No. 40. The feature sampled is a wooded terrace that extends into Massachusetts. Map Identification Nos. 46 and 48 are in the same feature which has been extensively exploited in recent years. Test #1 was in the center of stripped slope at the southwest end of the area. The material is 0-1.5' loamy gravel; 1.5'-6'

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 36

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks		
						1 1/2"	5/8"	#4	#100	#270						
	2	1967	0.5-6	0-0.5	Yes	100	100	86.2	9.5	4.0 3.4*	1	---	Sand	pebbly sand with cobbles which meets the requirements for Items 202 and 105. The hole bottomed in stony clay. Test #2 was at the northeast end of the area next to mixed pine and birch. It represents possible extension of an excavated pit in that direction. The material is 0-0.5' loamy sand; 0.5'-6' pebbly sand that is acceptable for Items 202 and 105. Bottoms in sandy cobbles and boulders.		
48	1	1967	0-4	---	No	N	O	T	S	A	M	P	L	E	D	Owner: David McNab Deans. The area consists of an extensive irregularly shaped pit that is located along the Massachusetts State line at a point on Town Highway No. 41, 0.88 mile east of its junction with Town Highway No. 40. The pit has been opened in a wooded terrace that extends into Massachusetts. (Also see Map Identification Nos. 46 and 47). Test #1 was located west of road at the west end of the area at point 720' north of gate on state line. The location apparently has been stripped of usable gravel. The remainder consists of cobbles, clay and a little coarse gravel. It was dug to a depth of 4

*Percentage of Total Sample

TABLE I

POWNAI GRANULAR DATA SHEET NO. 37

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1967	3.5-11	0-3.5	Yes	70.4	57.7	36.1	16.0	6.0	1	25.6%	Gran. Borrow (Grav.)	feet, but not tested. Test #2 was a face sample at the southwest end of the pit 0.1 mile southeast of Test #1. The material is 0-1.5' dirty gravel; 1.5'-3.5' clay; 3.5'-11' dirty coarse gravel with cobbles that has excessive fines passing the #100 and #270 sieves which make it unacceptable for Item 201. It is acceptable for Item 105.
	3	1967	0-6	---	Yes	88.1	75.5	51.0	9.0	5.0	1	35.4%	Gran. Borrow (Grav.)	Test #3 was in an eastward sloping bank located about 75' north of woods line (state line) near the southeast end of the pit. The material consists of 0-6' dirty gravel that has been stripped. It fails to meet the abrasion requirements for Item 201 and fails the gradational requirements for Item 201 because of an excess of fines passing the #270 sieve. Acceptable for Item 105.
	4	1967	0-8	---	No	93.1	81.8	58.6	7.0	2.0	1	20.0%	Gravel	Test #4 was in cleared extension 375' north of the southeast end of the pit. The material is stony fine gravel that has been stripped of overburden. It meets the requirements for Items 201 and 105.

*Percentage of Total Sample

TABLE I
Supplement

POWNAI PROPERTY OWNERS - GRANULAR

Map Ident. No.

Blanchard, William	26
Brown, Albert	6, 8
Campbell, Harold	30
Deans, David McNab	46, 47, 48
Geannelis, John (Mrs.)	5
Hart, Henry	42, 43, 44, 45
Heap, Amos	2, 3, 4, 7, 9
Hetherington, Noble	36, 37
Hutchins, Clinton	24
Jarvis, Robert	1
Joly, Norman	20
Lewis, Herbert	23
Mattison, H.	35
McClenithan, George	21, 22
Moore, Harwood	41
Myers, Frank	27
Palmer, Parley	38, 39, 40
Patterson, Floyd	25
Pudvar, Richard	28
Quimby, Lucy (Mrs.)	11
Rudd, Robert	15, 16, 17, 18, 19
Sarkis, Joseph	31, 32, 33, 34
Towslee, Ned	25
Vadakin, Clarence	10, 12, 13
White, Alma (Mrs.)	14, 29

TABLE II

POWNAI ROCK DATA SHEET NO. 1

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Exist- ing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
1	1A	1967	Marble	Yes	Chip	6.6%	Owners: Mrs. Louise Taylor and Miss Myrtle Pillsbury. The area is a 150' long marble quarry on Carpenter Hill in heavy woods about one-quarter mile west of U. S. Route 7. Access is via a woods road that joins U. S. Route 7 at a point three-quarters of a mile north of the town line in Bennington. The quarry was formerly worked for building stone that was used in the walls of the St. Francis de Sales Catholic Church in Bennington. The material sampled is a thick-bedded, medium gray calcareous marble. Test #1A was of the north end of a 20' high face at 5 foot intervals.
	1B	1967	Marble	Yes	Chip	4.2%	Test #1B was taken along the floor for 65' from the base of the face to the access road at 5 foot intervals.
	1C	1967	Marble	Yes	Chip	6.2%	Test #1C was down a slope from the access road for 65' to a lower woods road. All tests show that marble meets the abrasion requirements for Sub-base of Crushed Rock, Item 204.
2	1A	1967	Limestone	Yes	Chip	2.4%	Owner: Mrs. Kate Hart. The area is an enclosed limestone quarry about 175' long and 160' wide on a prominent hill about 1,000 feet east of the North Pownal post office. Access is via 0.07 mile of woods road that joins State Aid Highway No. 2 about 0.19 mile east of its junction with Vermont Route 346. The material sampled is a thin-bedded dark blue-gray limestone that has a dove-gray sublithographic appearance on the weathered surface. Test #1A was along the base of the northeast face from the north corner to the foot of "second level" at 10' intervals for 80'.
	1B	1967	Limestone	Yes	Chip	4.0%	Test #1B was along the base of "second level" for 80' at 10' intervals to the base of the 53' high southeast face. Both tests meet the requirements for Sub-base of Crushed Rock, Item 204.
3	1A	1967	Limestone	Yes	Chip	3.8%	Owner: B. L. Powell. The area is a large limestone quarry readily visible to the west from the long U. S. Route 7 gradient south of Pownal Center. Access is via a winding woods road that

TABLE II

POWNAI ROCK DATA SHEET NO. 2

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
	1B	1967	Limestone	Yes	Chip	4.0%	joins Vermont Route 346 at a point 0.33 mile northwest of its intersection with Town Highway No. 27. The quarry is enclosed on three sides. It is 366' long and 80' high at its 125' wide northwest end. The material sampled is a thick-bedded medium gray limestone with calcite veins. Test #1A was taken along the northeast side at 18-foot intervals for 108' at rough contact of limestone with overlying slate. Test #1B was taken from the end of Test #1A continuing along the northeast side to the northwest end for an additional 108' at 18' intervals. Both tests indicate that this limestone meets the requirements for Sub-base of Crushed Rock, Item 204.
4	1A	1967	Quartzite	No	Chip	1.8%	Owner: John Maximillan. The area is a clearing in heavy woods on the hillside north of Town Highway No. 36 in which several northeast-southwest oriented outcrops occur. Access to the outcrops is by foot for about 300' from the Town Highway at point about one and one-quarter miles from State Aid Highway No. 3. The material is a compact and massive vitreous white to gray quartzite with two well-developed cleavages. Two outcrops were sampled. Test #1A was taken from the southwest end of the first outcrop, encountered northeast for 115' at 24' intervals.
	1B	1967	Quartzite	No	Chip	2.4%	Test #1B covered an additional 115' northeast to the place where outcropping becomes covered with woodland.
	2A	1967	Quartzite	No	Chip	1.8%	Test #2A was taken from the southwest end of the third major outcropping for 95' at 19' intervals parallel to Test #1A.
	2B	1967	Quartzite	No	Chip	2.0%	Test #2B covered an additional 92' northeast to the place where outcropping becomes covered with woodland. Test #2 lies 2.8' N35°W of Test #1.

TABLE II
Supplement

POWNAI PROPERTY OWNERS - ROCK

Map Ident. No.

Hart, Kate (Mrs.)

2

Maxmillian, John

4

Pillsbury, Myrtle (Mrs.)

1

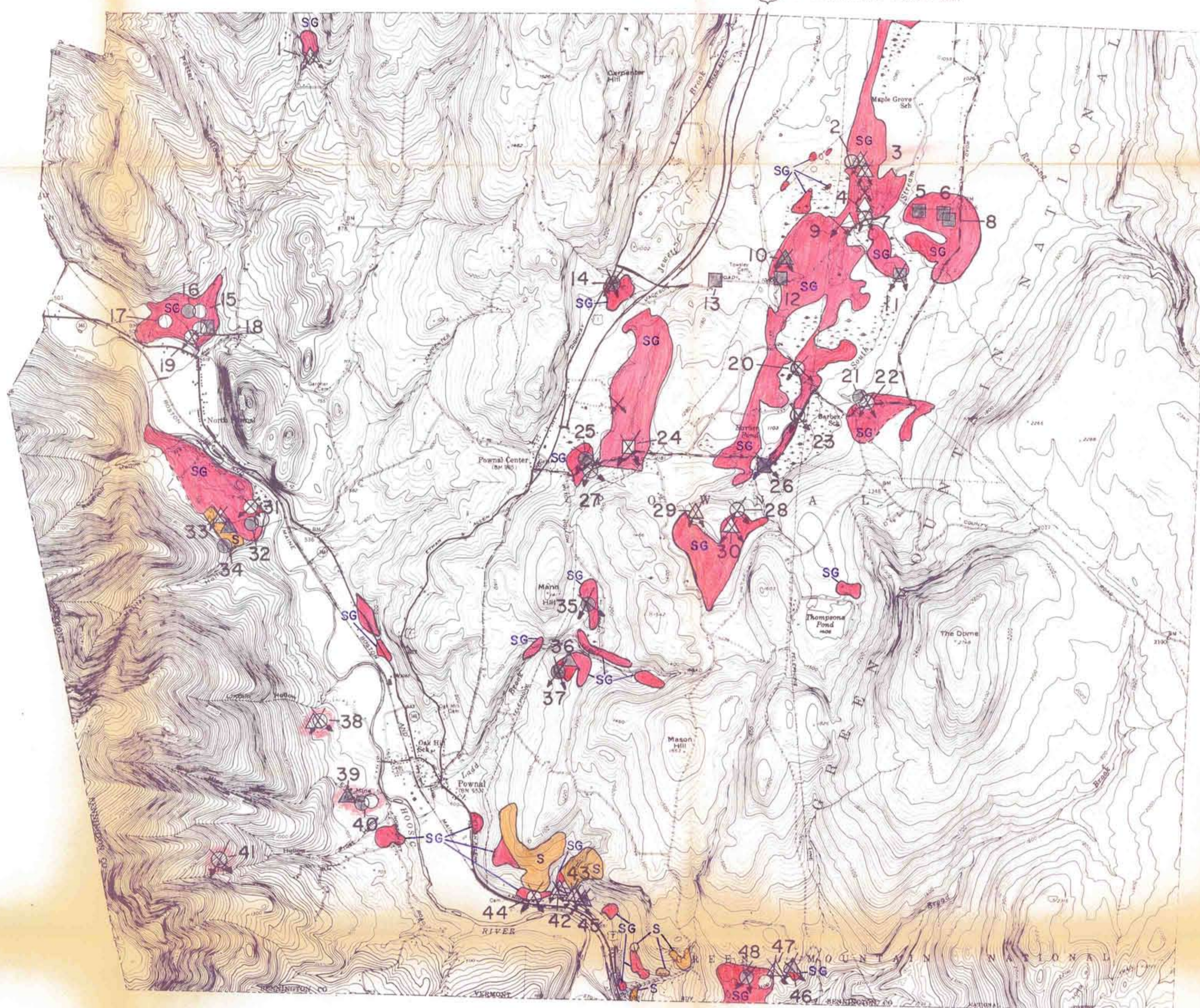
Powell, B. L.

3

Taylor, Louise (Mrs.)

1

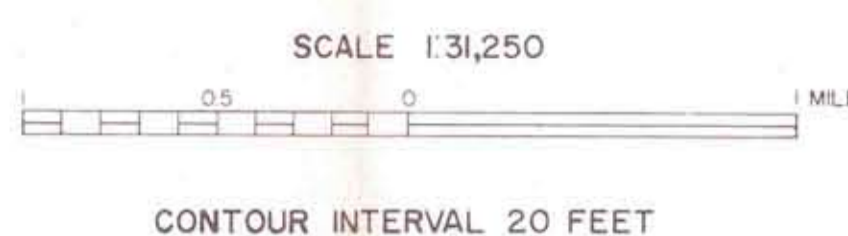
ARTERIAL HIGHWAY 7 APPROXIMATE LOCATION



LEGEND

- GRAVEL, ACCEPTABLE FOR ITEM 201 (sub-base of gravel)
- GRAVEL, DEPLETED OR NOT ACCEPTABLE FOR ITEM 201
- △ SAND, ACCEPTABLE FOR ITEM 202 (sub-base of sand)
- ▲ SAND, DEPLETED OR NOT ACCEPTABLE FOR ITEM 202
- GRANULAR BORROW, ITEM 105
- MATERIAL NOT ACCEPTABLE FOR ITEM 105
- ✕ EXISTING PIT
- SG SAND & GRAVEL DEPOSIT
- S SAND DEPOSIT
- 3 IDENTIFICATION NUMBER (refer to data sheets)

POWNAL



GRANULAR MATERIALS MAP

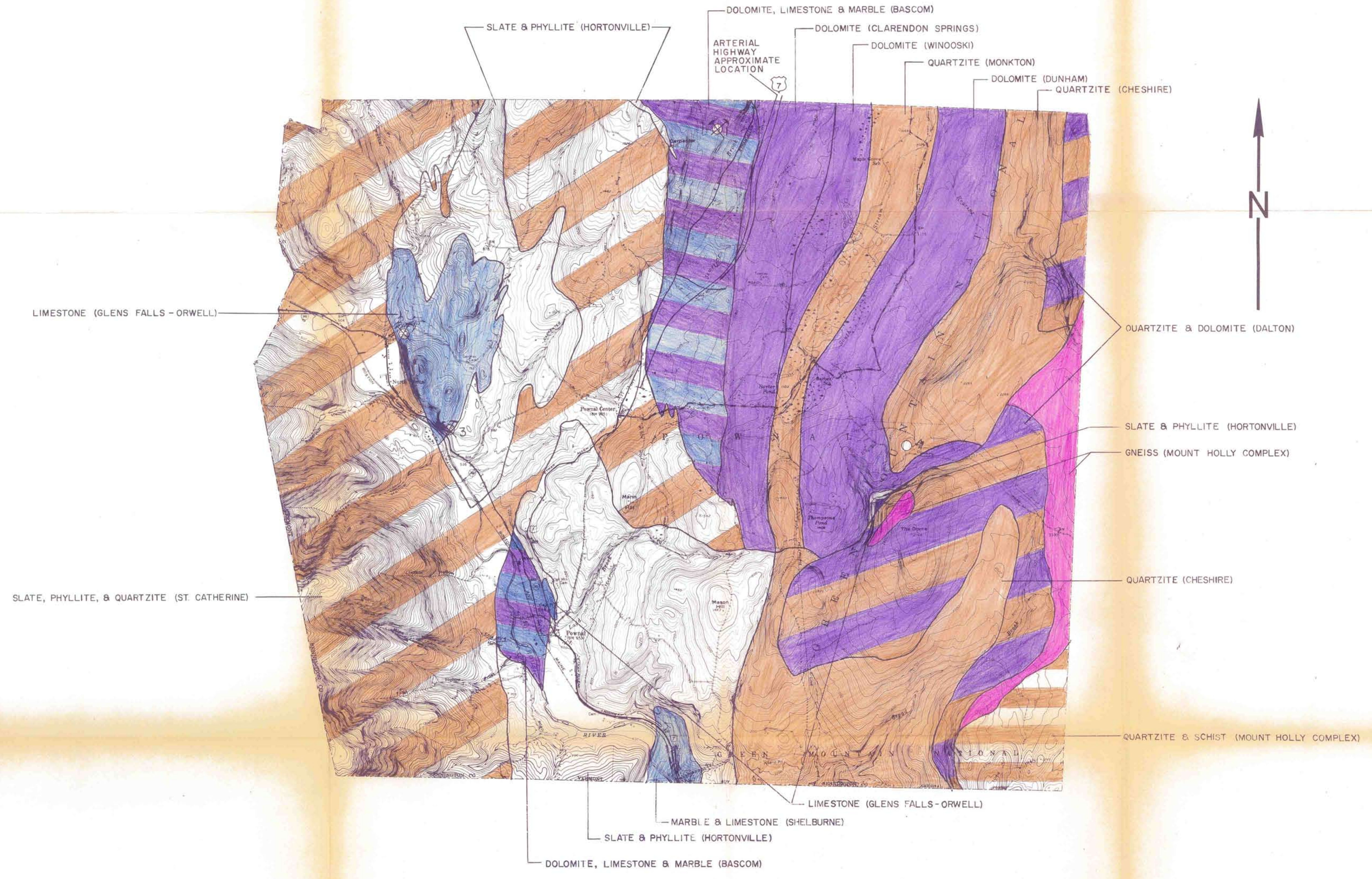
BY
 VERMONT DEPARTMENT OF HIGHWAYS
 IN COOPERATION WITH
 U.S. BUREAU OF PUBLIC ROADS

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

PLATE I GRANULAR

REVISIONS

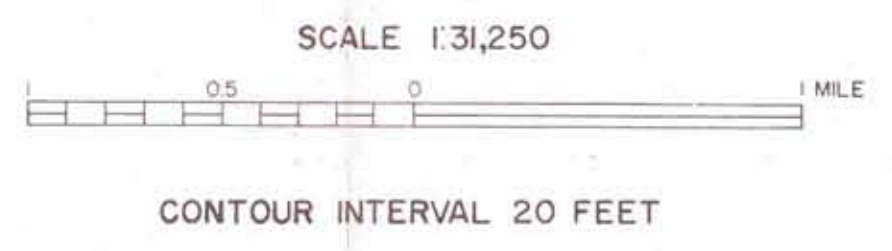
DATE				
BY				



LEGEND

- ROCK, ACCEPTABLE FOR ITEM 204 (sub-base of crushed rock)
- ROCK, NOT ACCEPTABLE FOR ITEM 204
- ✕ EXISTING QUARRY
- Orange box GRANITE TO DIORITE (light to intermediate igneous rocks)
- Green box AMPHIBOLITE, GABBRO, DIABASE, METADIABASE, GREENSTONE, TRAP DIKES (basic or dark igneous rocks)
- Red box PERIDOTITE, PYROXENITE, SERPENTINITE (ultra-basic igneous rocks)
- Pink box GNEISS
- Light brown box QUARTZITE
- Dark brown box DOLOMITE
- Blue box MARBLE, LIMESTONE
- White box SCHISTS, SLATES, PHYLLITES, SHALES, CONGLOMERATES
- 3 IDENTIFICATION NUMBER (refer to data sheets)

POWNAL



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

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

REVISIONS

DATE				
BY				