

**SURVEY OF HIGHWAY CONSTRUCTION MATERIALS  
IN THE TOWN OF BARTON, ORLEANS 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**

**Montpelier, Vermont**

**March, 1967**

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### Acknowledgments

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 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 Barton is located in the southeast part of Orleans County in the northeast part of the state. It is bounded on the north by Brownington, on the east and southeast by Westmore and Sutton, on the south by Sheffield and Glover, and on the west by Irasburg. (See County and Town Outline Map of Vermont on the following page.)

Barton is in the Central Plateau Physiographic Region of Vermont, named by some the Vermont Piedmont, and is characterized by moderately to steeply rolling relief. A large area east and northeast of Crystal Lake is upheld by granitic rock, and this terrain is characteristically rugged with elevations ranging from about 1,000 feet in Barton Village to a high of 2,235 feet on Barton Mountain. Vermont Route 16 and May Pond Brook occupy a saddle between two granite upland areas which culminate in May Hill to the south and Barton Mountain to the north.

In that part of Barton west of the latitude through Barton Village there is gentle to abrupt relief on the low hills. Elevations out of the valleys range from 1,000 feet to 1,400 feet and become generally lower toward the north. These hills are underlain by limestones and phyllites or schists.

An interesting physiographic feature in Barton is the glacial trough occupied by U. S. Route 5, Willoughby Brook, and Crystal Lake. This U-shaped valley extends from about two miles west of the Sutton Town Line to Barton Village where Crystal Lake outlets into the lower valley of Barton River.



## 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

Metamorphic phyllites, schists, quartzites, and limestones of the Gile Mountain and Waits River formations are exposed over most of the area of Barton. In addition, a large granitic intrusive is exposed north-east, east, and southeast of Barton Village, and a smaller exposure occurs north of St. Theresa Cemetery near the Irasburg Town Line.

A number of exposures of interbedded phyllites and limestones of the Waits River formation, Barton River member, were investigated by the materials survey party. These included the following: (1) A pasture north of and above Orleans Village where phyllites and thinly bedded limestones were exposed. A sample taken here could not be tested for abrasion because of the prevalence of thin elongated pieces. (2) A railroad cut and wooded ridge to west on the Barton-Irasburg Town Line. The ridge north of the Orleans dump has a few scattered outcrops of limestone and phyllite. The railroad cut was not sampled since it follows the strike of the rock, and therefore a representative sample of the limestone and phyllite would not be taken. (3) A large limestone exposure south of the Orleans dump. This exposure was not sampled since it was not extensive enough for a quarry operation and because of its proximity to dwellings. (4) Quartzitic phyllites located 340 feet west of southbound station 2433+00. Only a small exposure could be found; the phyllite broke tabularly and thus would be unsatisfactory for Sub-base of Crushed Rock. (5) A small exposure of limestone at the junction of U. S. Route 5 and Town Road No. 34. This outcrop was not sampled because of its location next to the highway. (6) A large exposure in a pasture on the west side of Town Road No. 42 in the southwest corner of the town. Two samples were taken on northeast-southwest trending ridges of micaceous quartzite,

phyllite, and limestone. (See Plate II and Table II for Map Identification No. 4.) Although one sample met abrasion requirements for Sub-base of Crushed Rock, the area is not recommended as a source of Item 204 because of the variable nature of the lithologies.

In general, unless thick sections of limestone are exposed during construction of the Interstate Project, the Barton River lithologies are not recommended for Item 204.

It is the granites in the town of Barton which offer the best potential for Sub-base of Crushed Rock. Seven areas were investigated, three of which are within the mapped granitic exposure on the west edge of town. Map Identification No. 3 was the only area sampled; elsewhere only granitic boulders and small well-eroded outcrops of granitic rock were found.

In Map Identification No. 3 a 200-foot wide x 275-foot long exposure of granitic rock and metasediments was sampled in three tests. (See Table II) The granitic body may be a sill or a concentration of sills occurring parallel to the bedding and foliation of the metasediments.

Further exploration in this area is recommended in order to determine the relationship between the two rock types. The area is located favorably to the Interstate Project and would be a handy source of crushed rock, if the igneous rock is thick enough and has sufficient extension.

The granitic cliffs on the northeast side of Crystal Lake were investigated as a further potential source of Sub-base of Crushed Rock. However, the materials survey party decided not to list this area since a quarry operation would be a disturbance to summer camps, a beach area, and a religious shrine. Nonetheless, the rock is there, and appears

satisfactory for Item 204. There is an excellent exposure in this area on the northeast side of Town Road No. 39 about 0.75 mile from Vermont Route 16. No doubt a working face could be started there if right of entry could be obtained.

Two former granite quarries located on the north and northwest side of Vermont Route 16 were sampled. (See Plate II and Table II for Map Identification Nos. 1 and 2.) Access to these quarries is difficult, the presence of grout piles may hinder working the present faces, and both are distant from the proposed location of the Interstate. In these respects Map Identification No. 2 is to be preferred. At this location about 0.10 mile of approximately level haul road perhaps could be built in lieu of following the old haul road.

Granitic rock was sampled in both quarries, and except for one sample taken in a small workings in Map Identification No. 1, met abrasion requirements for Item 204.

One other area near the contact of the granitic rock and the Gile Mountain formation east of the south end of Crystal Lake was investigated and sampled. Access was difficult, following a woods road leading northwest from the end of Town Road No. 55. Only a small outcrop of granitic rock and associated blocks were found, and the one sample taken failed to meet abrasion requirements for Item 204.

No exposures of the Gile Mountain formation were seen by the materials survey party. Later on Interstate construction may expose quartzites with sufficient extent and thickness along the Barton-Glover Town Line. Very likely, however, the presence of schists or phyllites within the quartzites would render this formation unsatisfactory as a source of Item 204.

A small area just north of U. S. Rte. 5 at the Sutton Town Line has been mapped as having abundant granitic dikes. However, no exposures were found, probably due to the fact that kame moraine sands and gravels occur here and obscure the rock for the most part.

## 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

The granular materials in the town of Barton consist mainly of sands and gravelly sands of glaciolacustrine origin, and sands and gravels deposited in contact with glacial ice. There are three modes of origin of ice-contact materials in Barton, and the materials vary from poorly-to well-sorted and range from fine silt size to boulders and cobbles.

Esker sands and gravels are exposed in pits south of Evansville along Lord Brook and Stillwater Swamp, and this feature would be the source of large quantities of specification materials. Kame moraine deposits, consisting of sands and generally silty coarse gravels, were sampled south of and above Vt. Rte. 16 in Map Identification Nos. 49 through 52, and on the north side of U. S. Rte. 5 near the Sutton Town Line. In this area acceptable sands and gravels were sampled in Map Identification Nos. 55 through 58.

Kame terrace gravels and sands are exposed west of Barton Village (Map Identification Nos. 9, 10, 11, and 12), and along both sides of U. S. Rte. 5 from the Barton Country Club north to within about  $1\frac{1}{2}$  miles of Orleans Village. The kame terraces in this area need more testing, especially in Map Identification Nos. 21, 23, 26, 27, 28, 29, and 30, since these areas contain sands and silty or clayey material in addition to the gravels.

The area along the northeast side of the Barton River south of Map Identification No. 21 is reported locally to have gravels on the steep, wooded valley slope. However, no access was available at the time Barton was sampled, and the owner was considering building an access road and testing this area on his own.

Two features designated as a delta and a beach respectively by Dr. D. P. Stewart were sampled. Map Identification No. 37 is a pit showing inclined bedding and yielding both acceptable sands and gravels. Map Identification Nos. 35 and 36 are in the so-called "beach" and gave sandy and silty gravels. A pit adjacent to the mapped beach, but within the designated lake sand area, gave acceptable gravel as well as sand.

The Barton River valley from Glover to near the St. Theresa Cemetery on U. S. Rte. 5 shows very little acceptable sand in small terraces and terrace remnants. The Barton Country Club was not sampled; however, the area immediately north yielded fine, silty sands acceptable for Granular Borrow, Item 105. The owner of the farm land immediately southeast of the Barton Country Club reports very good sands on his property right of Interstate stations 2240+00 to 2250+00, but would not allow test holes to be dug at that time. Most sands acceptable for Item 202 are to be found in the same terraces associated with gravels and with finer deposits. Map Identification Nos. 9 and 10 yield such sands.

Sites of lacustrine deposition along Vt. Rte. 58 between Orleans Village and Evansville, gave acceptable sands in five areas, and in Map Identification No. 40 a gravelly sand and fine gravel acceptable for Item 201 was sampled. A large area of lacustrine sands is taken up by the Orleans Country Club and was not sampled. However, material dug in Map Identification No. 32, and probably contiguous with the Country Club, was very fine and silty, and only one sample met requirements for Granular Borrow.

The coarser lacustrine sediments, including the gravelly sands of Map Identification No. 40, and possibly the gravels of Map Identification

No. 34, are probably the result of local streams depositing loads of coarse sediments near the shore of the large glacial lake occupying the Barton River and Willoughby River valleys. Generally finer sands and the silts would have been deposited in deeper water farther from the shore. The lacustrine sediments are mapped from elevation 860 feet to elevation 1120 feet.

SUMMARY OF ROCK FORMATIONS IN THE TOWN OF BARTON

Gile Mountain Formation - Gray quartz-muscovite phyllite or schist, interbedded and intergradational with gray micaceous quartzite. Locally the phyllites and schists contain porphyroblasts of biotite, garnet, staurolite, kyanite, andalusite, or sillimanite. It is described in the Lyndonville Quadrangle as gray quartz-sericite-biotite schists and impure silty biotite quartzites.

Barton River Member (of the Waits River Formation) - Coarse-grained blue-gray quartzose limestone consisting of recrystallized quartz and calcite grains and weathering in places to a brown earthy crust. The limestones are interbedded with argillaceous schists and phyllites containing quartz, sericite, and biotite, and fine-to medium-grained thin-bedded calcareous quartzites. The schists and phyllites commonly weather a rusty brown. Diopsidic limestone and cordierite hornfels are at contacts with granitic dikes.

Granitic Dikes - Gray granitic rock varying from fine-to coarse-grained. Width and extent of individual dikes not determined.

Undifferentiated Granitic Rocks - Light to dark gray, medium-to coarse-grained granodiorite to quartz monzonite. Referred to in this report as granite.

GLOSSARY OF SELECTED GEOLOGIC TERMS

Alluvial - Pertaining to material carried or laid down by running water.

Aplite - A fine-grained, light-colored igneous rock with sugary texture occurring as an intrusive, and most commonly associated with granites. However, many rock families contain members with aplitic texture.

Argillaceous - Containing or consisting of clay.

Calcareous - Pertaining to or containing calcium carbonate.

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

Dike - A sheet-like body of igneous rock filling a fissure in older rocks which it entered when molten. Dikes cut across the bedding at an angle and vary from less than an inch in width and a few yards in length to thousands of feet in width and many miles in length.

Esker - A long narrow winding ridge of mixed sand and gravel deposited by a stream of meltwater flowing in a tunnel or crevasse in stagnant glacial ice.

Glaciolacustrine - A term used to denote formation by or pertaining to deposition in quiescent waters of glacial lakes.

Granodiorite - A type of deep-seated, crystalline igneous rock composed of plagioclase feldspar, a small amount of orthoclase or other alkalic feldspar, quartz, and usually one or more of the dark minerals biotite, hornblende, or pyroxene.

Hornfels - A general term for very dense, hard, dark-colored sugary-grained rocks that have been recrystallized by the heat of an adjacent igneous intrusive.

Igneous Rocks - One of the three great rock classes; those rocks which have cooled and solidified from a hot mobile solution of minerals, water, and gasses either deep beneath or at the earth's surface.

Intrusive - Igneous rock which has cooled before reaching the earth's surface; contains small to large visible grains. Opposed to Extrusive which solidifies at the surface and contains small unrecognizable grains.

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

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 materials 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.

Meta - A prefix used before rock names to indicate that the minerals have been altered chemically and physically.

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

Pegmatite - A vein-, pipe-, dike-like, or irregular igneous body associated with large intrusives of similar composition. It is characterized by large average grain size, interlocking texture, and unusually great range in grain size.

Phyllite - A fine-grained, foliated metamorphic rock intermediate between the mica schists and slates into which it may grade. The foliation is made possible by the development of a large amount of potash mica, sericite, which also gives the rock a distinctive silvery appearance.

Physiography - Broadly, a study of the physical divisions of the globe - lands, seas, and atmosphere.

Piedmont - An area lying at the foot of mountains.

Quartzite - A compact metamorphic rock composed of quartz grains so firmly cemented that fracture takes place across them and the cementing material with equal ease.

Quartz Monzonite - A deep-seated igneous rock with about equal amounts of orthoclase and plagioclase feldspars, quartz, and dark accessory minerals. It is found in the series, granite, quartz monzonite, granodiorite, quartz diorite.

Schist - A metamorphic crystalline rock having a closely foliated structure and a tendency to split along approximately parallel planes.

Sill - A tabular body of igneous rock which has been injected while molten between layers or foliations of rock. Sills have relatively great lateral extent as compared to thickness.

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

Strike - The direction of a line formed by the intersection of a horizontal plane with a bedding plane, fault, slaty cleavage, or similar geological structure. It is at right angles to the dip.

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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 complete list of specifications see "Standard Specifications for Highway and Bridge Construction" approved and adopted by the Vermont Department of Highways 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 (9) inch 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 (40) percent 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 AASHO 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 ( $3\frac{1}{2}$ ) 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, 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
4"	95-100
1 $\frac{1}{2}$ "	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	4" No. 4	100 25-50
	Fine-Graded Item 205-B	1½" No. 4	95-100 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 (35), 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 (3½) as determined by the colorimetric test described in the AASHO Method of Test, Designation T-21."

TABLE I

## BARTON GRANULAR DATA SHEET NO. 1.

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (Ft)	Exist-ing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
1	1	1966	1-6	0-1	No	100	100	94.1	11.3	2.0 1.9*	1	---	Sand	Owner: Bernard Butler. Area is a lake sand terrace east of and above Vt. Rte. 16 north of Glover Village and is continuation of Glover Area No. 1. Test #1 was dug near north end of terrace. About 6 feet of pebbly fine sand acceptable for Sub-base of Sand, overlies a clay.
	2	1966	2-10	0-2	No	100	98.8	93.2	16.8	4.0 3.7*	1	---	Sand	Test #2 dug at edge of terrace 105 feet south of Test #1. Material comes from beds of fine sand and pebbly sand going to fine sand beds at 5', and continuing to depth.
	3	1966	N O T S A M P L E D											Test #3 dug on slope of terrace. Four feet of silt clay overlies boulders. Extension of material was to east of test holes. Area lies west of proposed location of I-91, which is on slope above terrace.
2	1	1966	N O T S A M P L E D											Owner: Jean Auger. Area is narrow field and pasture slope west of the Barton River across from owner's sawmill. Area along west side of valley above river mapped as lake sand deposition by Dr. D. P. Stewart. However, only silty material and a few boulders seen by materials survey party in a reconnaissance along

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
	2	1966	4.5-8.5	0-4.5	No	95.3	83.2	55.6	14.0	6.3	1	15.0%	Gran. Borrow (Grav.)	a good portion of the west slope of the valley. Test #1 dug at south end and upper side of sidehill field near edge of pasture. Material is heterogenous - stones, silt, minor sand. Stones are sub-angular small cobbles. Test #2 dug at lower edge of sidehill field near bridge across small gully and stream. This test hole is at about same elevation as field bordering river, in which standing hay prevented testing. Top 4.5 feet is sand over a blue clay layer. Water flows in at 4.5' above a sandy or silty pebble gravel, which has excess silt for Item 201. Gravel continues below depth, but flowing water kept caving hole. More tests needed in field along river. There may be a narrow strip of sands or reworked gravels near the river, but there appears to be little left of lacustrine deposition on the valley slope.
3	1.	1966	N	O	T	S	A	M	P	L	E	D		Owner: Dale Hanson. Area is in alluvium as mapped by Dr. D. P. Stewart. A test taken at end of field drive near old dump. Area looked like low lake sand terrace, but material in hole was a cobbly

\*Percentage of Total Sample

TABLE I

## BARTON 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				
4	1	1966	N	O	T	S	A	M	P	L	E	D	silt-clay with minor sand and was not sampled.	
5	1	1966	1-18.5	0-1	Yes	100	100	97.2	23.3	5.0 4.9*	1	---	Gran. Borrow (Sand) Owner: Olin Simons. Area is pit and two adjacent terraces east of and above Vt. Rte. 16. The pit is located in the northerly of the terraces. Test #1 was in 13-foot high east face of pit, and continued in floor. Material is horizontally stratified pebbly fine sands, becoming fine to very fine in bottom. Sample had excess passing the #100 mesh sieve for Item 202. Very possibly sand on face would be acceptable.	
	2	1966	0-5	Floor	Yes	100	100	100	52.0	6.5*	1	---	Gran. Borrow (Sand) Test #2 dug on west edge of pit floor, 85 feet from Test #1. Material is a very fine silty sand, becoming moist below 5 feet, and going to silt.	

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 4

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				
	3	1966	1.5-10	0-1.5	No	100	100	98.9	11.9	2.0 1.1*	1½	---	Sand	<p>Thus it appears that better material is above the elevation of the pit floor. Test #3 sampled 45 feet south of pit near south edge of terrace. Material is fine sand showing a few tiny pebbles and a few coarse sand grains. Bedding is fairly distinct and nearly horizontal. Sample met requirements for Item 202. Test #4 dug 155 feet east of pit and about 290 feet west of the proposed location of I-91. Top 7.5 feet is a silty or very fine sand with some silty laminae going to a medium sand with a few pebbles. This terrace would be source of sand for Item 202. Pit extension would be to east. 10,000 to 12,000 cu. yds. of sand is an estimate of material on terrace.</p> <p>Test #5 dug 40 feet below top of south terrace across swale from north terrace. Ducharme property line fence crosses top of this terrace, which is inaccessible to backhoe. Material is a clay, and was not sampled.</p> <p>Test #6 was a hand sample down steep west slope of terrace. Material is pebbly fine sand acceptable for Item 202, to</p>
	4	1966	1.5-10.5	0-1.5	No	100	100	99.2	17.9	5.0*	1	---	Sand	
	5	1966	N	O	T	S	A	M	P	L	E	D		
	6	1966	1-13	0-1	No	100	100	96.0	17.3	3.0 2.9*	2	---	Sand	

\*Percentage of Total Sample

TABLE I

## BARTON 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				
														depth of test. This terrace would also be source of Item 202.
6	1	1966	1-5.5	0-1	No	77.0	73.8	72.8	5.8	1.5 1.1*	1	---	Gran. Borrow (Sand)	Owner: Olin Simons. Area is meadowland along Roaring Brook and the Barton River south of the fairgrounds. Area is mapped as lacustrine deposition but indications are that it is fluvial deposition which is responsible. Test hole #1 was dug about 75 yards downstream from junction of two rivers, and is within mapped alluvium. Top 5.5 feet of hole was sampled as Test #1. Material is pebbly and gravelly sands with excess +1½" stones for Item 202. Goes to a 2-foot thick silt-clay layer and then to gravel with water flowing in at 7.5'.
	2	1966	1-8	0-1	No	70.5	63.4	55.4	14.0	3.0	1	---	Gran. Borrow (Grav.)	Test #2 was a sample of composite material in test hole. Includes gravelly sand from 1'-5.5'; gravel from 7.5'-8'. Few cobbles exceed 6". Too few proper size stones were included for the wear test. The material met gradation requirements for Item 201.
	3	1966	1-7	0-1	No	57.2	43.5	28.1	11.0	4.0	1	9.0%	Gravel	Test #3 was sampled from second hole dug 155 feet west of Test Hole #1. Top 3.5 feet is a cobbly fine sand going to gravel. Water enters at

\*Percentage of Total Sample

TABLE I

BARTON 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 AASHQ T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	4	1966	4-8	0-4	No	55.5	40.7	26.6	18.0	8.0	---	7.6%	Gran. Borrow (Grav.)	6'. Material is mixed with much organic debris including tree limbs, stumps and trunks — probably a recent fluvial or alluvial deposit. Sample met requirements for Item 201. Test #4 dug 500 feet S 20° W of fairgrounds track. Top 4' is silt and silty gravel underlain by gravel with water flowing in at 5'-6'. Many small boulders and 4" to 8" cobbles. Sample appeared silty and did have excess fines for Item 201. Area is probably source of a small quantity of fluvial gravels.
7	1	1966	N	O	T	S	A	M	P	L	E	D		Owner: G. E. Annis. Area is pasture south of and above Roaring Brook. This is more or less lobate ridge extending out of the valley of Roaring Brook onto the side of the Barton River valley, and was mapped as a delta by Dr. D. P. Stewart. However, Test #1, dug at the edge of the Portland Pipeline, south of the proposed location of I-91, encountered only silt to clay. Also highway borings along I-91 encountered silty sands and silts. Origin of the material is probably lacustrine.
8	1	1966	1-10	0-1	No	86.5	81.9	73.4	30.0	15.0	1	---	---	Owner: M. W. Hanson and Son. Area is pasture north of and

\*Percentage of Total Sample

TABLE I

BARTON 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1966	0.5-8	0-0.5	No	100	100	49.6	63.0	28.5	3½	---	---	above State Aid Highway #2, and east of Town Highway #43. It is shown as a delta gravel by Dr. D. P. Stewart. Test #1 was dug in southwest corner of pasture 330 feet west of the proposed location of I-91. Material is poorly sorted in the main; poor stratification noted in the top 5 feet, none below that. Looks like a re-worked glacial till — a few angular boulders and many rock fragments, and much silt. Test #2 sampled about 175 feet west of I-91 line. Material is a light brown silty till with boulders, ledge fragments and cobbles. Both samples had excess silt for Item 105. Terrain in this area suggest a beach, but material is glacial till or re-worked till.
9	1	1966	2-9.5	0-2	No	100	100	100	44.0	8.0*	1	---	Gran. Borrow (Sand)	Owner: Owen Family. Knolls and flat-topped mounds on the upper west side of pasture are located within mapped kame terrace feature. Area is located across Town Highway #40 from farm buildings. Test #1 dug on gentle east slope of pasture 130 feet east-southeast of south knoll. Top 2 feet is gravel (not sampled) overlying a medium sand going soon to a silty sand which continues

\*Percentage of Total Sample

TABLE I

BARTON 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 AASHTO T-21	Abrasion AASHTO T-4-35	Passes VHD Spec.	Remarks
						1 1/2"	5/8"	#4	#100	#270				
	2	1966	1.5-11	0-1.5	Yes	100	98.1	93.8	9.4	3.0 2.8*	1	---	Sand	to 9.5'. Bottoms in silt-clay and rocks. Sample had excess fines for Item 202. Test #2 dug in face and continued in floor of what looks like old pit dug in southeast flank of south knoll. Top 1.5 feet is sandy silt with pebbles going to stratified coarse sands, fine sands and pebbly sands. Material is a medium- to coarse-grained dark gray quartzose sand in lower few feet of hole, going to boulders and moist silt-clay.
	3	1966	2-15.5	0-2	No	100	95.8	91.6	2.7	1.0 0.9*	1	---	Sand	Test #3 sampled from two holes dug near top and on west side of south knoll. Total section sampled was about 15.5 feet. Upper material is coarse to medium sand going to a 2-foot thick silty sand layer at 7'. The silty sand layer dips west and becomes 4 feet thick along the sides of the test hole. This outward dip and thickening suggests that the knoll is an individual kame, and it is, indeed, conical in form. Underlying the silty sand are coarse pebbly sands. Volume of sand in south knoll (kame) is estimated at 5,000 to 7,000 cu. yds.
	4	1966	1-10.5	0-1	No	100	100	100	38.0	30.8*	1	---	---	Test #4 dug on top of middle flat-topped knoll. Top 3 feet

\*Percentage of Total Sample

TABLE I

## BARTON 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				
	5	1966	1-8	0-1	No	100	96.9	81.2	7.3	3.0 2.4*	1	---	Sand	is a medium quartzose sand going to a brown silt or sandy silt. Test #5 dug on west side of nearly flat low northern knoll 40 feet east of trees. Log of hole follows: 0-1'-stony overburden; 1'-4'-fine pebble gravel; 4'-8'-medium to coarse quartzose sand; 8'- continues in sand. Pebble gravel is poorly consolidated; sand contains laminae of brown very fine sand. Hole kept caving, so quit at 8'.
	6	1966	1.5-10	0-1.5	No	100	98.9	89.2	9.2	3.0 2.7*	1	---	Sand	Test #6 dug on gentle northeast slope of north knoll about 12 feet below top. Upper 7' is coarse quartzose sand with crenulated very fine sand laminae. Goes to a coarse pebbly dark gray sand continuing below depth of test. Tests #5 and #6 sampled about a 20-foot section of coarse sands on the north knoll, and about 10,000 to 15,000 cu. yds. of material are a possibility.
10	1	1966	1.5-15	0-1.5	Yes	100	100	99.4	28.8	10.8 10.7*	1 1/2	---	---	Owner: Owen Family. Area is large pasture of knolls and old pits on north side of Town Highway #40, east of and below Map Identification No. 9. Test #1 was a hand sample taken 75 feet from west end of long, low bank or pit on the

\*Percentage of Total Sample

TABLE I

## BARTON 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				
	2	1966	0.5-9.5	0-0.5	Yes	78.3	69.0	46.0	4.0	1.5	1	19.6%	Gravel	<p>south side of the pasture. In general, the face shows sands, silts, and gravels and extension would be south beneath knoll and toward town highway. Material encountered in Test #1 was fine gravel from a thin lens, a thin pebbly sand bed, and beds of fine to silty sands. Composite material was a sandy and pebbly silt with excess fines for Items 202 and 105. Test #2 dug on west side of knoll at north end of pasture in which an old pit was opened. To north and northeast is steep slope leading down to area numbers 11 and 12 and the I-91 line. Material down to 4' is a coarse pebbly sand interbedded with brown sands. A few cobbles up to 4" occur at random. Goes to a fine gravel with mostly ½" to 1" pebbles. Gravel bed dips very steeply to northeast. Hole kept caving, so quit digging at 9.5'. Probably ice-contact deposition, and has been mapped as kame terrace by Dr. D. P. Stewart. Probably little extension of this gravel near test hole, and pit is depleted.</p> <p>Test #3 dug on knoll 130 feet south of Test #2. Material is a brown silt with moist silt</p>
	3	1966	1.5-7	0-1.5	No	100	100	99.2	71.4	35.0	1	---	---	<p>Test #3 dug on knoll 130 feet south of Test #2. Material is a brown silt with moist silt</p>

\*Percentage of Total Sample

TABLE I

## BARTON 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 AASHQ T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
						4	1966	2.5-10	0-2.5	No				
5A	1966	0.5-7.5	0-0.5	No	95.7	84.9	82.7	5.8	1.5 1.2*	1	---	Sand	Test hole #5 dug 160 feet north of east end of long pit on a small knoll. Sample #5A taken from roughly stratified fine sands, silty laminae, and lenses of coarse pebbly sand. Varied dips of pebbly lenses and silty laminae noted. Eastward-dipping cobbly beds hit at 7.5'.	
5B	1966	7.5-10.5	0-0.5	No	75.8	60.6	51.4	5.0	1.5	1	18.7%	Gravel	Sample #5B taken from gravel and cobbly sand beds from 7.5' to 10.5'. Gravels continue below depth.	
6	1966	1-9.5	0-1	No	100	90.7	86.4	4.3	2.0 1.7*	1½	---	Sand	Test #6 dug 75 feet south of east end of pit on low round knoll. It would be the extension of the east portion of the pit. Material is a dark gray-brown pebbly sand with gray quartzose sand beds. A fine sand noted in bottom.	

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1 1/2"	5/8"	#4	#100	#270				
	7	1966	1-9	0-1	No	100	92.8	82.6	6.8	2.5 2.1*	1	---	Sand	Hole kept caving, so quit at 9.5'. Test #7 dug 80 feet south of middle part of pit, 210 feet west of Test #6. Hole shows ice-contact features such as confused bedding, cross bedding, undulatory bedding. Material is poorly consolidated coarse pebbly quartzose sand. Top 1 foot of gravel lens at top of hole not sampled.
	8	1966	0.5-11	0-0.5	No	100	100	100	57.0	20.0*	1	---	---	Test #8 dug 190 feet N-30-E of barn, and about 200 feet west of Test Hole #4. Material is silt and silty sands, unacceptable for Item 105. Gravels probably a hit-or-miss proposition in this area - a small quantity around Test #2 and between Tests #4 and #5. Sands for Item 202 are to be found south of the long pit beneath the large knoll.
11	1A	1966	3-33	0-3	Yes	69.5	56.4	40.1	5.0	3.0	1	17.6%	Gravel	Owner: Stanley Foss. Formerly the Kinsey Pit on the southwest side of Town Highway #34. The present proposed location of I-91 is through the middle of the pit and its south extension. Test #1A taken from pebble and cobble beds on face west of and above main upper floor of pit. A few small

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1 1/2"	5/8"	#4	#100	#270				
	1B	1966	N	O	T	S	A	M	P	L	E	D	boulders and many 4" to 6" cobbles. Face shows rough stratification. Face below Test #1A was exposed by backhoe, and material is a moist clay with boulders and cobbles. Test #1B was not sampled. Test #1 was taken left of southbound station 2227+00.	
	2	1966	1-20	0-1	Yes	95.4	78.8	59.7	7.0	3.5	1	19.6%	Gran. Borrow (Grav.) Test #2 was a hand sample taken on west face 125 feet left of southbound station 2225+00. Gravel is fine and irregularly stratified. Most stones under 2". Sample had barely excess silt for Item 201. Gravels may extend to west under slope.	
	3	1966	3-35	0-3	Yes	52.8	49.9	34.2	20.0	9.0	1	16.8%	Gran. Borrow (Grav.) Test #3 sampled on lower west face at north end of pit. Material is a coarse silty gravel with some boulders and many +6" cobbles. Sample had excess silt for Item 201.	
	4	1966	0-9	None	Yes	67.7	48.3	32.5	6.0	3.5	1	15.9%	Gravel Test #4 dug on upper floor 15 feet right of southbound station 2227+00. Top is coarse sand, pebbly sand, a few 2"-5" cobbles and many 6"-10" cobbles. One or two small boulders also above 6'. Stones are sub-rounded. Becomes a fine gravel below 6' with FeO -- stained pebbles. Water enters at 9'.	

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 14

Map Ident. No.	Field Test No.	Year 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				
	5	1966	1.5-21	0-1.5	Yes	86.4	81.7	70.9	5.0	2.3 1.6*	1½	---	Gran. Borrow (Sand)	Test #5 dug on 12-foot face on east side of pit, and continued for 9 feet in floor. Hole dug 50 feet right of north-bound station 2225+00. Beds of pebbly sands and coarse sands dip shallowly to east, bedding being shown by pebble orientation. These pebbly sands may represent stream grading of gravels from coarse near valley slope to finer to east near contact with the glacial ice. Sample failed for Item 202 because of excess 1½" stones.
	6	1966	1-12	0-1	Yes	90.6	77.7	59.0	7.0	6.5	1½	---	Gran. Borrow (Grav.)	Test #6 sampled from upper face at south end of pit. Material is fine cross-bedded gravels. Most stones are under 3". Sample had excess silt for Item 201, and too few proper size stones were included for the wear test. Bottom of face is a light gray quartzose sand.
	7	1966	2.5-11.5	0-2.5	No	100	100	100	18.0	5.0*	1	---	Sand	Test #7 dug 30 feet southwest of pit in edge of pasture. Material below 2.5 feet of soil and stones is a fine dark gray quartzose sand acceptable for Item 202.
	8	1966	2-9	0-2	No	91.5	84.4	84.4	8.4	4.0 3.4*	1½	---	Gran. Borrow (Sand)	Test #8 dug 100 feet southwest of Test #7 on pasture sidehill. Under 2 feet of soil and "wood-chuck" gravel are beds of

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 15

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Overburden (Ft)	Existing Pit	Sieve Analysis % Passing					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	9	1966	0-17	None	Yes	N O T S A M P L E D								pebbly sand, coarse sand going to fine sand. Sample had excess +1½" stones for Item 201. Test #9 was an observation of lower face of pit in north end, below where Test #4 was taken. From 0-17' was gravel going to gravelly sand, and underlain by 16 feet of clay with a few cobbles from 17' to 33'. Gravel not sampled. Pit area within right-of-way. Possible extension to west-southwest and south may still be within construction limits.
12	1	1966	1.5-11	0-1.5	No	85.9	77.6	69.6	11.8	6.0 4.2*	1	---	Gran. Borrow (Sand)	Owner: Stanley Foss. Area is north extension of Kinsey Pit along proposed location of I-91. Test #1 dug 25 feet right of northbound station 2231+00 on a small knoll. Material is a gravelly sand interlayered with pebbly sand beds. Layers from 4'-6.5' are pale rust-red stained. Hole bottoms in gray gravelly sand. Gravelly sands pinch out to nothing at south end of hole where material is mainly a sand with a very few stones. Sample had excess five-eighths inch and 1½" stones for Item 202. This area also in construction zone.
13	1	1966				N O T S A M P L E D								Owner: Phillip Royer. Area is sidehill above and north of

\*Percentage of Total Sample

TABLE I

## BARTON 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					Color AASHO T-21	Abrasion AASHO T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
	2	1966	N	O	T	S	A	M	P	L	E	D		Brown's Bowling Alleys. Intent was to check on possible patches of lake sand. Test #1 and #2 dug along field drive on lower side of field, just north of and above tracks. Glacial till with ledge fragments, and not sampled.
	3	1966	1.5-10	0-1.5	No	78.5	76.1	62.8	19.0	6.5	1	---	Gran. Borrow (Grav.)	Test #3 dug on south slope of hillside. Material is silty sand with stones - possibly a patch of ice-contact, partially sorted material. One or two sand pockets noted, as well as a thin fine sand in bottom. A layer of sub-angular to angular cobbles hit at 6'.
	4	1966	N	O	T	S	A	M	P	L	E	D		Test #4 dug on flat area on hill 250 feet north of Test #3. Material is silt and angular stones with minor sand. Ledge fragments hit in bottom (about 6.5'). Probably is a glacial till. Hole not sampled.
	5	1966	N	O	T	S	A	M	P	L	E	D		Test #5 dug near southwest corner of field 250 feet west of Test #3. Material is a silty sand with a few stones and 1 or 2 boulders, and was not sampled.
14	1	1966	4.5-16	0-4.5	Yes	60.1	47.0	37.3	14.0	11.0	1	18.0%	---	Owner: Amri Vezina. This is a small overgrown gravel bank on a woods road leading along Barton River and a small tri-

\*Percentage of Total Sample

TABLE I

## BARTON 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				
														butary west of U. S. Rte. 5 and north of the Barton Country Club. Test #1 dug on 16-foot high face above woods road. Top 4.5 feet of face was very stony with a boulder or two, and was not sampled. Material from 11.5'-16' is sand, silt, clay and rounded to sub-rounded pebbles and cobbles. Sample had excess passing the #270 mesh sieve for Items 201 and 105. Variation in material size, and irregular bedding noted, indicates an ice-contact origin for this pit, although Dr. D. P. Stewart has mapped this area as lacustrine in origin. Lake sands do appear above and west of the pit on a steep-sided knoll, and farther west in the woods.
	2	1966	0.5-10	0-0.5	Yes	54.8	41.0	30.4	3.0	1.5	1	18.8%	Gravel	Test #2 dug on top of south bank about 40 feet northeast of Test #1. Material is a coarse gravel with many +6" cobbles and a few small boulders (like top of face). Fines are a coarse dark sand.
	3	1966	0.5-10	0-0.5	Yes	80.1	65.3	42.8	7.0	3.8	1	24.8%	Gravel	Test #3 dug at foot of steep silty sand bank at northwest end of pit area. Top 3.5 feet is a coarse quartzose sand going to gravelly sand with mostly -1½" pebbles. Some Fe O

\*Percentage of Total Sample

TABLE I

BARTON 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
						1½"	5/8"	#4	#100	#270				
														staining noted. A very few +4" cobbles noted also. The flat-topped feature sampled has possibly 2,500 cu. yds. of gravels. Extension to east and northeast limited by fill bank of Barton River. Gravels may extend west and northwest beneath lake sands. Feature is possibly a remnant of a kame terrace, and is located only a few hundred feet east of the proposed location of I-91.
15	1	1966	1.5-10	0-1.5	No	100	100	100	74.0	19.0*	1½	---	---	Owner: Bill Fisk. Area is sandy and piney pasture west of the Barton River and north of the Barton Country Club. Test #1 dug beside pasture or woods road 180 feet west of Rev. southbound station 2267+00. Material is silt and sandy silt, and is unacceptable for Items 202 and 105.
	2	1966	1-10	0-1	No	100	100	100	54.0	6.0*	1	---	Gran. Borrow (Sand)	Test #2 dug 160 feet southeast of and about 30 feet below elevation of Test #1. Material is a very fine silty sand unacceptable for Item 202. Area was designated as one of lake sand deposition, and deposits appear to be silts and silty sands, probably acceptable only for Granular Borrow, Item 105.
16	1	1966	1-5.5	0-1	No	71.6	64.9	54.9	13.6	13.0	1½	---	---	Owner: Bill Fisk. Area is one of pastures above the west

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 19

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (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	1966	0.5-5.5	0-0.5	No	65.0	53.0	36.8	18.0	5.3	1	19.2%	Gran. Borrow (Grav.)	side of the Barton River and a terrace west of and above pasture Lower level has been mapped as a kame terrace, and upper level or terrace was designated as lake sand deposition. Test #1 dug at north end of pasture at edge of woods. Top 5.5 feet is a poorly sorted silty coarse gravel with some soft angular stones. Goes to silt or silty sand. Test #2 dug 210 feet east-northeast of Test #1 above west bank of river, and is 10 feet to 12 feet below elevation of Test #1. Material is a "dirty" looking gravel with stones mostly under 4". Many soft or rotten stones noted. Goes to a buff colored silt or silty sand with a boulder. Sample had excess fines for Item 201.
	3	1966	N	O	T	S	A	M	P	L	E	D		Test #3 dug midway along east edge of pasture, 50 feet from river bank. Top 2 feet was silt and stones with ledge or boulders in the bottom. These tests have encountered mainly poorly sorted, and silty probable ice-contact gravels, which might be crushed for town roads. Further testing needed to determine if there are gravels of any quantity meeting Ver-

\*Percentage of Total Sample

TABLE I

## BARTON 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				
	4	1966	1-10	0-1	No	100	100	93.1	23.3	6.0 5.6*	1	---	Gran. Borrow (Sand)	mont Highway Department specifications. Test #4 dug on west edge of pasture just north of old road and at foot of terrace slope. Material is a fine brown sand with a few pebbles, and thin silty laminae noted throughout. Hole is stratified with a 2.5-foot thick pebbly sand layer at 6.5' over a very fine sand from 9'-10'. Hole bottoms in silt. Sample had excess fines for Item 202.
	5	1966	3-11	0-3	No	100	100	96.5	40.5	22.0 21.2*	1	---	---	Test #5 dug on terrace northwest of Test #4. Top 3 feet is silt and pebbly silt going to pebbly sands interbedded with bands of pebbles and silty sands or sandy silts. Hole bottoms in fine quartzose sand. Sample had excess fines for Item 202 and 105.
	6	1966	1.5-10	0-1.5	No	100	84.6	66.6	10.0	5.0 3.3*	1½	---	Gran. Borrow (Sand)	Test #6 dug 110 feet northeast of Test #5 above steep slope down to small intermittent stream. Material is somewhat silty and gravelly sand with thin interbeds of fine sand and pockets of coarse sand. One or two boulders noted, and a bed of fine sand hit in the bottom. Tests #5 and #6 look like ice-contact deposition and it may be that the lacustrine deposition occurs at

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
17	1	1966	2-11	0-2	No	100	100	99.6	18.9	3.8*	1	---	Gran. Borrow (Sand)	Owner: Bill Fisk. This area is rough, wooded and sandy terrain near the proposed location of I-91 in the vicinities of station 2286+50 to 2288+20. Area is approximately 900 feet west of Area #16. Test #1 dug about 65 feet left of southbound station 2286+50 beside woods road in small clearing. Material is a uniform fine quartzose sand with a few small pebbles. Sample had barely excess passing the #100 mesh sieve for Item 202. Looks like lacustrine deposition.
	2	1966	2.5-11	0-2.5	No	100	100	97.3	14.6	3.0 2.9*	1	---	Sand	Test #2 dug about 205 feet northwest along woods road from Test #1, and it is about 150 feet west of southbound station 2288+20. Material is interbedded fine to coarse sands with a gravelly layer at 4.5'-5.5'. Also a few silty sand lenses noted, as well as a boulder at 7'. (Boulder must be of ice-rafted origin, since area and material appears to be of glacial lake origin.) Much of this area is within construction limits; therefore, further testing is recommended both to the east and west of the line.

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 22

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				
18	1	1966	0.5-5	0-0.5	Yes	57.5	47.8	42.1	57.0	23.8	1	---	---	Owner: Howard Conley. A high pit on Hogtrough Brook about 950 feet east of the proposed location of I-91. Pit is in feature mapped as kame terrace, having a seeming erosional relationship to Hogtrough Brook, since its south end is flanked by a meadow lying along the brook. This area and Area #19 to the north is thickly wooded. Test #1 taken in bed of silt and cobbles on top of northeast face of pit. This test represents material in extension to north in woods east of tests taken in Area #19. Below test are sands with pebbles and silty sands, and face is concealed on bottom. Sample had excess silt for Item 105. This part of pit appears to be a source of Granular Borrow at best.
	2A	1966	1.5-11.5	0-1.5	Yes	81.2	69.8	49.2	10.0	5.8	1	17.4%	Gran. Borrow (Grav.)	Test #2A taken on top of face at southwest corner of pit. Top 11.5 feet of 30-foot high face was sampled. Material is mainly a fine gravel with a silt-clay coating on the stones with some silt and a few soft stones. Most stones are under 3", and only a few +6" cobbles noted. Sample had excess silt for Item 201.
	2B	1966	19-30	0-1.5	Yes	69.7	57.5	38.8	11.0	7.5	1	20.4%	Gran. Borrow (Grav.)	Test #2B sampled from about

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
	3	1966	38-50	0-2	Yes	92.0	90.1	85.1	25.5	8.5 7.2*	1	---	Gran. Borrow (Sand)	19'-30' on face below Test #2A. Material is a silty poorly-sorted gravel with 2" to boulder-size stones present. Most large cobbles and a few boulders occur below 24' on the face. Bedding is indistinct - seems to dip to north. Sample had too much silt for Sub-base of Gravel, Item 201. These tests and Test #6 represent material south of pit in wooded rough area, which could be location of further testing. Test #3 dug on lower east face. Material sampled included coarse sand, silty sand, and silt. A few cobbles present were not sampled. Goes to gravel at floor level. Sample had excess fines for Item 202.
	4	1966	1-7	0-1	Yes	70.1	52.9	30.6	27.0	13.0	1	13.6%	---	Test #4 dug in floor at foot of east face. Two beds of gravel sampled: One - 1½"-2" stones predominate; Two- larger stones including cobbles. Fines appear silty. Hole bottomed at 7' in gravel with boulders. Sample had excess silt for Items 201 and 105.
	5	1966	0.5-9	0-0.5	Yes	69.4	61.1	39.8	13.0	8.5	1	25.2%	Gran. Borrow (Grav.)	Test #5 dug in floor at south end of pit. Material is continuation of sandy gravel on face-- mainly a fine gravel with a few boulders and a few

\*Percentage of Total Sample

TABLE I

BARTON 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
						1½"	5/8"	#4	#100	#270				
	6	1966	3-15	0-3	No	60.3	49.9	35.0	10.0	6.3	1	18.4%	Gran. Borrow (Grav.)	cobbles at random. Stones are sub-rounded to sub-angular; some FeO stains noted; some stones are coated with rust-colored silt-clay and these beds are dense. Sample had excess silt and barely excessive wear for Item 201. Test #6 dug at base of steep wooded bank where gravels are exposed 180 feet south of pit along haul road. About 8 feet of fine gravel overlies stones in a silty matrix. Quite a few 2½"-4" stones especially in top 8 feet. Some FeO staining noted as well as silt coatings on the stones. Sample had excess silt for Item 201. Pit extension to north and east appears to be source of Granular Borrow only. Further testing recommended to south.
19	1	1966	2-18	0-2	No	100	100	100	38.0	10.0*	1	---	Gran. Borrow (Sand)	Owner: Gabriel LeBlanc. A wooded area north of and above Hogtrough Brook and northwest of Conley Pit (Area #18). Test #1, however, was a sample taken on bottom of steep wooded bank beside the brook and about 600 feet east of I-91 line. Material is interbedded, medium, fine, and silty sands and silt, and is acceptable for Item 105.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 25

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	1966	2-9	0-2	No	89.8	83.8	74.8	65.0	40.0 29.9*	1	---	---	Test #2 dug on woods road in wooded area 105 feet northeast of northbound station 2310+00. Test is at southwest corner of small clearing which borders the south side of Town Highway #33. Material is silt and stones with a silty gravel lens about 2 feet thick. Has excess silt for Item 105. Looks like a poorly sorted ice-contact gravel just "dumped" in place.	
	3	1966	2-9	0-2	No	65.6	58.0	44.3	32.0	12.0	1	34.0%	---	Test #3 dug on woods road 160 feet east of northbound station 2310+00. Material is a silty gravel with angular stones and some clay. One or two boulders noted. Silt to clay in bottom. Sample had excess silt for Item 105.	
	4	1966	N O T S A M P L E D												Test #4 dug 190 feet east of Test #3 in woods south of southeast corner of field. Material is silt and stones and was not sampled. Area to southeast is too heavily wooded to get backhoe in. There doesn't seem to be much hope for specification materials in this area. Any testing should be done east of Test #4 and toward the Conley Pit (toward the east side of the terrace).

\*Percentage of Total Sample

TABLE I

## BARTON 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				
20	1	1966	2-10	0-2	No	100	100	98.1	42.2	10.0 9.8*	1	---	Gran. Borrow (Sand)	Owner: Gabriel LeBlanc. A pit area and adjacent pasture on the northwest side of Town Highway #33. Area was mapped within lacustrine deposition by Dr. D. P. Stewart, and is shown flanked by kame terrace to east. Actually pit is within kame terrace, and pasture above it to west shows material which may be of lacustrine origin. Test #1 dug 30 feet northwest of pit face in pasture. Material is fine to medium sand with a few coarse grains, and a few pebbles. Seems to be the sand in bottom.
	2	1966	1.5-10.5	0-1.5	No	100	100	96.3	35.6	12.5 12.0*	1	---	---	Tests #2 and #3 were dug on west side of pasture 100 feet and 250 feet north of and above Highway #33. Material is fine to medium sand with
	3	1966	N	O	T	S	A	M	P	L	E	D		#3 not sampled — hole bottomed in silt or clay. These tests probably represent lacustrine deposition.
	4	1966	1-11	0-1	No	100	100	71.6	61.0	10.8 7.7*	1½	---	---	Test #4 dug at lower (east) end of pasture about 150 feet north of town highway. Material in top 3 feet is brown powdery silt with many sub-angular to sub-rounded stones. This overlies a very fine or silty sand to depth.

\*Percentage of Total Sample

TABLE I

## BARTON 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				
	5A	1966	2.5-10	0-2.5	Yes	86.8	72.5	57.5	7.0	3.0	1	20.6%	Gravel	Sample had excess silt for Item 105. This does not look like lacustrine deposition. Test #5A sampled from upper face on northwest corner of pit. Material is pebbly sand, gravelly sand, and thin fine gravel beds. Sample met requirements for Item 201. However, extension of material may be limited due to its thinning along face to south. Test #5B dug from beds of coarse pebbly sand on the bottom 10 feet of the face. Sample met requirements for Item 202. Test #6 dug in floor below northwest face. Gravel is fine and somewhat silty with a few 5"-8" cobbles at 8', and 1 or 2 small boulders at random. Gravel is coarse below 9'. Dip of beds is shallow toward west-northwest. Sample had excess silt for Item 201. Test #7 dug in pit road 80 feet east of Test #6 in attempt to locate extension of gravel. Silty sand with a few cobbles and a boulder found, and was not sampled. Test #8 dug in floor of pit along west face 110 feet south of Test #6. About 3.5 feet of silt eroded from face overlies a coarse silty gravel. This
	5B	1966	10-20	0-2.5	Yes	100	92.2	87.6	4.4	2.0 1.8*	1	---	Sand	
	6	1966	0-10	None	Yes	79.5	59.9	32.3	14.0	8.0	1	20.1%	Gran. Borrow (Grav.)	
	7	1966	N	O	T	S	A	M	P	L	E	D		
	8	1966	3.5-10	0-3.5	Yes	67.5	51.6	37.8	18.0	9.5	1	21.8%	Gran. Borrow (Grav.)	
						*Percentage of Total Sample								

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
														goes to a fairly clean cobble bed and a pebbly sand bed. Composite sample was a coarse silty gravel unacceptable for Item 201. There would be much non-specification material in this pit on the west face, which would require stripping to get at any quantity of those gravels represented by Tests #5 and #8. Small quantities of gravel are a possibility in the northwest to north extension of the pit.
21	1	1966	0.5-15	0-0.5	Yes	100	83.3	77.1	6.9	2.3 1.8*	1	---	Sand	Owner: Town of Barton. Area is a long bank of exposed sands, silty sands, gravels and boulders on the east side of the Central Vermont tracks across Barton River from "Pops Lunch". Feature has been mapped as a kame terrace by Dr. D. P. Stewart. Bank is inaccessible because no room is available on the railroad embankment for a haul road. Presently a haul road crosses the tracks into the property owned by Barton Village. This property lies north of the area sampled, and possibly an access could be constructed between the properties. This should be investigated and more testing done. Test #1 was a hand sample of a pebbly or gravelly sand taken

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
	2	1966	3-8.5	0-3	Yes	72.5	54.0	46.4	10.0	3.3	3½	18.0%	Gravel	a few rods south of the Barton Village property. Ledge or a huge ledge block was noted on the face a short distance south of the test. The sample taken met requirements for Item 202. Test #2 was a hand sample of lower 8-foot face of exposure south of Test #1. Top 3 feet is silt and stones going to a fairly clean gravel which is acceptable for Item 201. There is a question as to whether Barton or the Central Vermont Railroad actually owns the property.
22	1	1966	4-11.5	0-4	No	100	100	100	21.0	2.5*	1	---	Gran. Borrow (Sand)	Owner: Gabriel LeBlanc. Area is pasture terrace between owner's barn and pit (Area #20) on the west side of U. S. Route 5. Test #1 dug at edge of terrace about 150-175 feet south of barn. Top 4 feet is pebbles, silty sand and angular stones, and was not sampled. From 4'-11' is a fine to very fine sand with silty sand laminae. Material had excess passing the #100 mesh sieve for Item 202.
	2	1966	1-10.5	0-1	No	100	98.2	97.0	56.0	18.0 17.5*	1	---	---	Test #2 dug about 225 feet southwest of Test #1 near north end of old pit area. Material is a moist sandy silt with a few pebbles. Becomes a silt-clay at 10.5'. Area recommen-

\*Percentage of Total Sample

TABLE I

## BARTON 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				
														ded only for small quantities of Granular Borrow.
23	1	1966	3.5-10	0-3.5	No	71.5	62.0	52.1	8.0	3.0	1	20.1%	Gravel	Owner: W. Boudreau. Test #1 dug on field terrace south of owner's barn and north of G. LeBlanc's barn. Area is continuation of kame terrace down west side of valley. Top 3.5 feet is soil and silty sand over beds of coarse sand, gravelly sand and a few +6" cobbles. Becomes quite stony and goes to a fine sand.
	2	1966	1-9	0-1	No	77.9	63.0	57.2	25.0	8.0	1	21.8%	Gran. Borrow (Grav.)	Test #2 dug 240 feet south-southeast of Test #1 in cornfield. Top 4 feet is gravel grading through gravelly sand to sand from 5'-7'. A cobble layer at 7' overlies a gravelly sand going to fine or silty sand at 9'. Sample had excess silt for Item 201. Continuation of terrace appears to swing past to northwest of owner's barn, but these terraces were heavy with hay and could not be sampled. Possibly some goodly supplies of gravel between Tests #1 and #2. Area is near proposed I-91 line.
24	1	1966	1-11.5	0-1	No	100	100	100	99.8	29.0*	1	---	---	Owner: Nelson Doyon. A terrace-like feature through which granite blocks and boulders protrude. It is probably near end of kame terrace, and is located north of owner's

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 31

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						
														barn. Test #1 dug at edge of terrace 325 feet east of south-bound station 2351+00. Material is silt over a silt-clay in the bottom. Area is not a source of anything.		
25	1	1966	1.5-8	0-1.5	No	N	O	T	S	A	M	P	L	E	D	Owner: Nelson Doyon. Area is pasture on north side of Town Highway #29 west of U. S. Route 5. Test location, 0.13 mile west of U. S. Route 5, is near contact between mapped kame terrace and lake sands. However, pasture to west is bouldery and wet, and site for new school, which is southwest, shows silty to clayey material. Test encountered silty sand and silty clay over boulders or bedrock pieces, and hole was not sampled. Area between test and U. S. Route 5 and also rough pasture to north of this was investigated, but no evidence of granular material was seen.
26	1	1966	2-14	0-2	Yes	88.8	80.8	59.7	29.0	12.0	1	25.0%	---	Owner: Nelson Doyon. Area is pit opened in north side of knolls which lie on the east side of the Central Vermont Railroad tracks south of Town Highway #30. Extension of pit would be south and southeast into knolls which had not been hayed at the time the pit was sampled. Test #1 dug on corner		

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 32

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	1966	0.5-7.5	0-0.5	Yes	93.7	86.9	76.5	10.7	11.0 8.4*	1	---	---	on east face. Material is a fine silty gravel from interbeds of silty sand, pebbly sand and sandy to silty gravel at the bottom of the face. Beds dip to west-northwest which conforms to slope of knoll east of pit. A few +6" cobbles noted. Sample had excess silt for Items 201 and 105. Test #2 dug in pit floor below Test #1. Material is pebbly and silty sand, and gravelly sand with very few +2½" stones and excess silt for Items 202 and 105.
	3	1966	3-16.5	0-3	Yes	100	100	88.6	9.7	3.8 3.4*	1	---	Sand	Test #3 dug on east face of pit south of Test #1. Top 3 feet is overburden going to interbeds and lenses of coarse to fine sand, pebbly sand, silty sand, and gravelly sand. Face bottoms in gravelly sand. A stony silt shows on south face near top, and lower face is covered with vegetation and sloughed material. Could not get around to top of east, southeast, and south face because of hay crop, but more testing is recommended there. Pit is in kame terrace as mapped by Dr. D. P. Stewart.
27	1	1966	2-12.5	0-2	No	100	100	100	90.0	33.8	1	---	---	Owner: Marcel Vaillancourt. An area of coalescent knolls flattening out at north end of

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 33

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	1966	3-10	0-3	No	93.9	92.4	90.9	1.8	1.0 0.9*	1	---	Gran. Borrow (Sand)	pasture. Location is north of Town Highway #30 and east across railroad tracks from owner's buildings. Test #1 dug on east side of top of most prominent knoll east-southeast of house. Material is thinly-bedded silt, silty sand and fine sand, all too fine for Item 105. Test #2 dug on knoll 140 feet north of and about same elevation as Test #1. Top 2.5 feet is silty gravel going to gravelly and coarse pebbly sands. Hole kept caving, so dug only to 10'. Sample had excess +1½" stones for Item 202.
	3	1966	N	O	T	S	A	M	P	L	E	D		Test #3 dug on knoll 130 feet east of Test #2. Hole dug for 6 feet in silt to clay, and was not sampled. Tests #1 and #3 may be material representative of lacustrine deposition in deep waters. Dr. D. P. Stewart has mapped "silt to clay" as occurring east of and above his mapped kame terrace, and those tests may have encountered locally thick lake sediments on an irregular kame terrace surface.
	4	1966	3-8.5	0-3	No	100	100	100	4.0	1.3*	1	---	Sand	Test #4 dug 375 feet north of Test #2 near north end of pasture. Top 3 feet is reddish.

\*Percentage of Total Sample

TABLE I

## BARTON 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				
	5A	1966	3-8.5	0-3	Yes	67.9	50.6	36.0	5.0	1.8	1	17.0%	Gravel	sand with stones over a gray-brown fine sand. Test #5A was dug on upper face of a small farm pit in swale 150 feet northeast of and below Test #3. Gravel beds have only a few +6" stones - material is mainly a fine gravel.
	5B	1966	8.5-16	0-3	Yes	100	100	94.2	2.8	1.0 0.9*	1	---	Sand	Test #5B was of coarse pebbly sand beds underlying the gravels, and continuing in floor of pit. Sands met requirements for Item 202, and continued below depth of test. In an attempt to locate the gravel extension, Test Hole #6 was dug 90 feet east of the farm pit. Only silt hit down to 9', and hole was not sampled. More testing needed in vicinity of farm pit to find gravels, and very likely much stripping would be required.
	6	1966	0-9			N O T S A M P L E D								
	7	1966	2-10.5	0-2	Yes	82.2	68.5	58.1	9.0	3.0	1	21.0%	Gravel	Test #7 dug on north edge of farm pit which has been dug on northwest side of big knoll east-southeast of owner's house. Material is a sandy gravel becoming very clean toward the bottom. Only a very few +6" stones and perhaps 10% from 3"-6". Indistinct bedding dips to west. Material is a gravelly sand below 6'.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 35

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 AASHQ T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														More testing needed in this area. It is likely that much stripping of silts will be required to uncover any amount of gravels.
28	1	1966	3-14	0-3	Yes	63.4	53.8	31.2	12.0	5.5	1	21.2%	Gran. Borrow (Grav.)	Owner: Eugene Duchesneau. Area is old farm pits dug on sides of knolls on either side of Town Highway #30. Test #1 dug in side of knoll on south side of road. Material is a coarse silty gravel with many +3" stones, and a few +6" stones. From 10'-14' gravel is very coarse with many +6" cobbles, and matrix seems quite silty or clayey. Looks like ice-contact deposition, and edge of kame terrace has been mapped in this area by Dr. D. P. Stewart. Sample had barely excess silt for Item 201.
	2	1966	2.5-10	0-2.5	Yes	70.7	51.6	34.4	13.0	6.0	1	19.6%	Gran. Borrow (Grav.)	Test #2 dug on exposed face of knoll 130 feet west of Test #1. Ice-contact features such as confused bedding, and large to small particle size noted. Gravel sampled was less coarse than Test #1, had more soft stones, and more silt than Test #1. Owner alleges that gravels extend to south under hay land.
	3	1966	14-26	0-3	Yes	59.1	40.7	24.7	5.0	2.8	1½	15.2%	Gravel	Test #3 dug on lower face of old farm pit on north side of road. Top 14 feet of face not

\*Percentage of Total Sample

TABLE I

## BARTON 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
						1½"	5/8"	#4	#100	#270				
														sampled but appears to be silty sand and stones. Further testing should be done to north of face. Material sampled is a clean gravel, fairly coarse with a coarse sand matrix in a minor amount. Most stones look polished and are coated with fine dark sand. Unsampld portion consisted of many +8" stones increasing in the bottom 6 feet of the face. Little bedding noted.
29	1	1966	2-6	0-2	N O T S A M P L E D									Owner: W. Boudrea. Area is meadow and pasture slope north of end of Town Highway #27 on the east side of the Barton River valley. Test #1 dug in southeast corner of meadow below barn. Material is alluvium and barnyard effluvia, and was not sampled.
	2A	1966	1.5-6	0-1.5	No	71.2	71.2	68.7	17.2	7.0 4.8*	2	---	Gran. Borrow (Sand)	Test hole #2 dug on gently sloping pasture sidehill 260 feet northeast of barn. Top 6 feet is silty sand with pebbles - a silty and gravelly sand with excess stones retained on sieves above #4 for Item 202. This material was sampled as #2A.
	2B	1966	6-11	0-1.5	No	90.9	72.3	48.8	9.0	4.1	1	20.8%	Gravel	Test #2B was sampled from gravel and gravelly sands at 6'-11'. Composite of test hole would have had enough stones for specification gravel, but

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 37

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				
	3	1966	3-10	0-3	No	100	100	98.5	41.4	10.8 10.6*	1	---	---	with excess silt for that Item. Test #3 dug on more or less flat area 120 feet north of Test #2. Composite material is a pebbly and silty sand unacceptable for Items 202 and 105. Sands are fine to coarse and pebbly with silt laminae. Hillside above and east of meadow is probably northward extension of kame terrace. In places this feature is covered by silts to clays of glacial lake origin. Further testing needed between Test Hole #2 and pit (Area #30) to north. Much stripping is to be expected.
30	1	1966	N	O	T	S	A	M	P	L	E	D	Onwer: W. Boudreau. Area is pit and vicinity at north end of pasture hillside north of Area #29. End of kame terrace is probably located here since drainage crosses trend of feature, which would not be the case had granular materials been present. Test #1 dug on lower south face of grown-in pit. (Pit fell into dis-use since excessive stripping became necessary.) Only silt and clay was hit in Test #1. Upper face was concealed by sloughed material and vegetation, but appears to be silty or clayey.	

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 38

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	1966	20-30	0-20	Yes	91.6	75.8	54.2	5.0	2.8	1	21.3%	Gravel	Test #2 dug a few feet west of Test #1 at southwest corner of pit. Top 20 feet of face appears to be sloughed silts and clays. Bottom 10 feet of face consists of gravels with thin silty sand or silty clay layers, and sample taken here met requirements for Item 201.
	3	1966	4.5-9.5	0-4.5	No	95.0	81.4	66.2	2.6	1.8 1.2*	2	---	Gran. Borrow (Sand)	Test #3 dug southwest of end of pit on sloping terrace-like area on pasture hillside. Material under 4.5 feet of silt is a coarse pebbly to gravelly sand. Sand portion seems to be of partially decomposed granitic rock grains. Below 8' is gravelly sand or gravel, and if hole had been dug 2 feet deeper, sample might have had sufficient stones for Item 201. Much stripping needed to uncover possible gravels along west slope of pasture between southwest corner of pit and Test #29-2.
31	1	1966	1-15	0-1	Yes	100	100	97.4	27.0	13.8 13.4*	1	---	---	Owner: Charles Smith. Area is farm pit on east slope of Barton River valley below owner's barn. Pebbly and cobblely silt-clay and silty sand encountered in one sample taken on face at northeast end of pit. Also large boulders seen. Pit is located in feature mapped as a delta by Dr. D. P.

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 39

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				
														Stewart. Wide range in grain size as well as lack of bedding attests, however, to a non-deltaic origin. Material closely associated with glacial till; may have been reworked by stream erosion in the dim past.
32	1	1966	1.5-3.5	0-1.5	No	100	100	100	78.0	27.5*	1	---	---	Owner: Neal Tarbox. Area is south of and above Willoughby River valley east of Orleans Village. Appears to be an area of lacustrine deposition perhaps contiguous with the Country Club. Tests #1 and #2 were hand samples dug to shallow depths on the west side of a flat pasture, and on the southwest slope of the pasture. Material is silt to silty sand with a few small pebbles. Sample #2 met requirements for Item 105.
	2	1966	1.5-4	0-1.5	No	100	100	98.7	35.5	7.5 7.4*	3½	---	Gran. Borrow (Sand)	Sample #2 met requirements for Item 105.
	3	1966	1-11	0-1	No	100	100	98.4	53.1	15.0 14.6*	1	---	---	Test #3 dug with backhoe at southwest corner of flat pasture. Material is a sandy silt beneath a 1-foot thick pebbly sand layer, and is unacceptable for Item 105. Access is very difficult from Vt. Rte. 58, and area is not recommended as a source of Item 105.
33	1	1966	1.5-8.5	0-1.5	No	100	100	98.7	27.6	3.8 3.6*	2	---	Gran. Borrow (Sand)	Owner: Neal Tarbox. Area is pasture east of and above Orleans Village reservoir and

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 40

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	1966	0-4.5	N	O	T	S	A	M	P	L	E	D	north of the Willoughby River. Test #1 dug at south edge of large rolling pasture above slope down to Willoughby River. Pasture is about 0.5 mile from State Aid Highway #5 along woods and pasture road. Material is a very fine sand going to silty sand at 8.5'. Pasture needs more testing to determine if it is a source of Sub-base of Sand. Is probably lacustrine in origin. Test #2 dug on pasture knoll west of and below large pasture, and overlooks State Aid Highway #5. Material is silt to silt-clay overlying a plastic clay at 4.5'.
34	1A	1966	3-21	0-3	Yes	84.6	72.8	52.0	6.0	3.0	1	19.6%	Gravel	Owner: Dr. S. B. Churchill. Area is pit and vicinity on the southeast side of Town Highway #8. Pit is located in side of large fairly flat area at top of steep valley slope. Area may be as designated by Dr. D. P. Stewart, a beach of the glacial lake which occupied the Willoughby and Barton River valleys.
	1B	1966	21-29	0-3	Yes	68.4	45.8	25.7	8.0	4.5	1½	18.0%	Gravel	Test #1 was taken on east face of pit. Top 21 feet of face is less coarse and less stony than bottom 8 feet. Both tests on face, Test #1A and

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 41

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	1966	0.5-10.5	0-0.5	Yes	100	100	97.9	14.7	1.8 1.76*	1½	---	Sand	and Test #1B, met requirements for Item 201. Extension of gravels would be to east. Few gravels left in pit proper. Test #2 dug in floor below Test #1, Material is interbedded coarse, fine, and pebbly sands. Is stratified and dips shallowly toward the west-northwest.
	3	1966	1-8.5	0-1	Yes	100	100	100	18.0	1.0*	1	---	Sand	Test #3 dug in haul road on west edge of pit floor, 115 feet from Test #1. One foot of gravel overlies medium to very fine sands. Goes to silty sand at 8.5'.
	4	1966	1.5-10	0-1.5	Yes	100	100	99.3	18.9	2.0*	1	---	Gran. Borrow (Sand)	Test #4 dug near northwest corner of pit 60 feet from Test #3. Sands vary from medium to very fine, and are generally finer below 5'. Pebbles occur throughout. Sample had barely excess passing the #100 mesh sieve for Item 202. Pit floor is about 115 feet x 90 feet, and would be source of perhaps 3,000 cu. yds. of Item 202 sand.
	5	1966	3-9.5	0-3	No	88.1	77.6	62.2	7.0	3.3	1	31.9%	Gran. Borrow (Grav.)	Test #5 dug at edge of pasture south of pit, and 230 feet southwest of Test #1A. Top 3 feet is soil and stones overlying a gravelly sand down to 9' where material becomes a pebbly sand. Sample had too few stones and excessive wear

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 42

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (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				
														for Item 201. More testing needed in field or pasture east and southeast of pit. Probably gravels can be expected in this extension.
35	1	1966	1.5-10	0-1.5	No	79.2	66.8	50.6	11.0	6.0	2	26.9%	Gran. Borrow (Grav.)	Owner: Dr. S. B. Churchill. Area is large pasture above Willoughby River east of Town Highway #8 and southeast of pit (Area #34). Test #1 dug near upper north side of pasture, 210 feet north of slope down to river, and 175 feet from east edge of pasture. Top 4.5 feet of test hole is a silty gravel separated by a gray sand lens from underlying finer, cleaner and somewhat more stony gravels. Sample had excess silt and excessive wear for Item 201.
	2	1966	3-10	0-3	No	73.6	61.1	45.8	11.0	6.0	1	21.6%	Gran. Borrow (Grav.)	Test #2 dug on south edge of pasture. Top 3 feet is a reddish silty sand overlying gravel. The gravels are somewhat silty and fairly coarse with perhaps 15% exceeding 4". Bedding is flat, stones are sub-rounded to sub-angular; no "shingle" structure noted. A few syenite porphyry cobbles noted. Material does not look well sorted enough for a beach gravel, and may be of ice-contact origin. Possibly feature is a kame terrace, and

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 43

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (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				
	3A	1966	2-6.5	0-2	No	92.6	79.1	62.8	8.0	4.0	1	---	Gran. Borrow (Grav.)	would include pit (Area #34). Test hole #3 dug near west side of old pasture, 5 to 8 feet above elevation of Test hole #1. Material in top 3 feet is a "dirty"-looking gravel with a few +6" sub-angular cobbles, and goes from 3'-6.5' to a gravelly or pebbly sand. This material sampled as Test #3A, and had too few stones for Item 201.
	3B	1966	6.5-10	0-2	No	100	100	96.8	4.8	1.5 1.4*	1½	---	Sand	Test #3B was of fine to medium sand sampled from 6.5'-10'. This sample met requirements for Item 202, and composite of hole would have undoubtedly met requirements for that item. A source of modified gravels - probably excess passing the #270 mesh sieve would be typical of these gravels. Possibly some sands near Test #3 and along east side of pasture.
36	1	1966	2-9.5	0-2	No	66.2	53.5	45.8	8.0	4.3	1½	19.8%	Gran. Borrow (Grav.)	Owner: Dr. S. B. Churchill. Area is atop steep face rising up on west bank of Willoughby River, and is east across fields from owner's buildings. Top 8 or 9 feet of vertical bank shows flat-lying beds of gravel, cobbles, and a few boulders. Lower face is silt and clay. One test dug 10 feet from bank. Sample was of a gravel with barely excess

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 44

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				
														silt going to clay or silty clay at 9.5'. Top of bank mapped by Dr. D. P. Stewart as beach gravel. Further testing may show a specification material.
37	1A	1966	2-15	0-2	Yes	84.9	77.7	70.2	5.6	2.3 1.6*	1½	---	Gran. Borrow (Sand)	Town of Barton. Area is large pit in feature designated by Dr. D. P. Stewart as a delta located west of Heath School on Town Highway #14. Pit is upwards of 300 feet long with high faces all around. A second lift has been started on the east side, and it is in this part of the pit, and in an extension to the east and southeast, beneath 8 to 12 feet of sand, that gravels are to be found. Pit extension limited to west by steep wooded hillside. Test #1A taken on upper face of pit at southwest corner. Material is coarse to fine sands with interbeds of pebbles in the ¼"-¾" range, and a few isolated large pebbles. Sample was too stony for Item 202.
	1B	1966	15-30	0-2	Yes	100	89.3	78.0	2.3	2.0 1.6*	1½	---	Sand	Test #1B taken from beds of medium to coarse pebbly sands from 15'-30' at southwest corner of pit. Also a few 2"-4" pebbles and a few silty sand layers noted. Test #1B met requirements for Item 202, and

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 45

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				
	2A	1966	2-37	0-2	Yes	78.4	71.2	61.0	7.0	2.0	1	---	Gran. Borrow (Grav.)	composite of face probably would have passed. Test #2A sampled from upper and middle face at southeast corner of pit. Top 12 feet is medium sand and gravelly sand; from 12'-37' are beds of gravelly sand with mostly -2" pebbles. From 37'-60' is concealed by sloughed material. Sample had barely too few stones for Item 201. Top 12 feet of face probably would have been acceptable for Item 202, and the top 8 feet or 12 feet of the entire east and southeast faces and their extension should be tested further.
	3	1966	0.5-9.5	0-0.5	Yes	96.6	94.6	89.9	5.4	1.0 0.9*	1	---	Sand	Test #3 dug in pit floor 85 feet from south end. Material is stratified fine sands and pebbly sands dipping shallowly to the south-southwest. A few cobbles also noted.
	4	1966	30-43	0-8	Yes	76.9	63.6	49.8	12.0	3.5	1	24.3%	Gravel	Test #4 dug on east face upper level near northeast corner of pit. Lower 13 feet of face sampled. Top 8 feet is sand, underlain by concealed material from 8'-30'. Top of this face and extension to east and southeast, together with material represented by Test #2A could no doubt be used as Item 202. Sampled material in Test

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 46

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				
	5	1966	2-30	0-8	Yes	65.3	55.6	41.2	7.0	3.0	1	20.0%	Gravel	#4 is sandy gravel, and a few cobbles. Larger cobbles and small boulders were not sampled. Test #5 was a hand sample taken 20 feet south of Test #4 on upper and middle face. Beds of pebbles, gravelly sand, gravel, and at 28' a bed of cobbles and boulders with interstitial silt to clay sampled. Below this is a sand, and lower face is concealed by sloughed material. Samples #4 and #5 met requirements for Item 201.
	6	1966	0-5.5	None	Yes	73.9	66.0	54.0	7.0	1.5	1	24.1%	Gravel	Test #6 dug at south end of upper lift, 120 feet south of Test #4. Material is a gravel from indistinct beds of pebbles, 5"-7" sub-rounded to sub-angular cobbles, and stony sands. Many stones are granitic. Goes at 5.5' to a coarse sand at least 3 feet thick. Pit is a source of gravel and sand. However, Town property is not large, and extension of pit to east and southeast would be on property owned by Joseph Bergeron. A smaller pit near the west side of Town Highway #14 behind the schoolhouse is owned by Joseph Bergeron, but he did not wish to have samples taken, and mentioned that he might have pit filled in.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 47

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 AASHQ T-4-35	Passes VHD Spec.	Remarks
						1½"	5/8"	#4	#100	#270				
														Therefore, owner may not want Town pit extended. A small bank just east of the north end of the large pit follows the property line. No samples were taken here since material appeared silty, and because extension of material would be under land which the owner wasn't interested in having developed.
38	1	1966	4-9.5	0-4	No	100	93.8	88.9	4.4	1.3 1.2*	1	---	Sand	Owner: Mrs. Helen Heath. Area is west-sloping pasture on the east side of Town Highway #14 north of the Heath farm. Both sides of road have been mapped as lacustrine deposition by Dr. D. P. Stewart. West side of road is hay land, and owner did not want samples taken there. Test #1 dug about 175 feet east of road. Under 4 feet of soil and silt lies a coarse pebbly sand bottoming at 9.5' in a silt or clay.
	2	1966	N	O	T		S	A	M	P	L	E	D	Test #2 dug 125 feet east of Test #1 up gentle slope from it. Some granite boulders show on surface. Dug for 5 feet in silt-clay and did not sample.
	3	1966	4.5-10	0-4.5	No	100	98.4	96.8	23.2	14.0*	1	---	---	Test #3 dug on flat area 100 feet east of road. Under 4.5 feet of soil and silt-clay is a pebbly "dirty" looking sand, which is a sandy silt and is

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 48

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				
														unacceptable for Item 105. Area appears to be near edge of lacustrine deposition as shown by boulders and clay. Possibly a shore line of the glacial lake is in this area.
39	1	1966	2.5-11.5	0-2.5	No	100	94.1	84.5	4.2	2.0 1.7*	1	---	Sand	Owner: W. S. Chadwick. Area is pasture on the east side of Town Highway #14 about 0.5 mile south of Vt. Rte. 58. Dr. D. P. Stewart has mapped this as lacustrine deposition. Test #1 dug south of knoll on a flat area across from owner's buildings, 215 feet from road. Material is coarse pebbly sand with a few silty sand laminae. Very few pebbles over 1½".
	2	1966	1.5-11.5	0-1.5	No	100	93.8	92.4	20.3	3.0 2.8*	1	---	Gran. Borrow (Sand)	Test #2 dug 170 feet northeast of Test #1, and southeast of prominent knoll. Material is stratified pebbly to fine sands with silty sand laminae, and has excess passing the #100 mesh sieve for Item 202.
	3	1966	N	O	T	S	A	M	P	L	E	D		Test #3 dug on north side of prominent knoll at edge of old town road. Interbedded silts, silty sands, and silt-clay layers encountered down to 8'. Hole was not sampled.
	4	1966	0-6	N	O	T	S	A	M	P	L	E	D	Test #4 dug at top of prominent knoll. Lacustrine silt-clay hit in 6-foot hole, and was not sampled. Area would be source of Item 202 on more-

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 49

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				
														or-less flat pasture. Finer materials seem to occur on the higher elevations.
40	1	1966	1-22	0-1	No	74.6	64.5	53.0	9.0	4.0	1½	23.7%	Gravel	Owner: W. S. Chadwick. Area is ridge on south side of Vt. Rte. 58, a cross section of which has been exposed by cut for relocation of Town Highway #14. Most of material would be in extension to west, but owner had seeded this land, and did not want samples taken. Test #1 sampled on face of road cut. Log of face follows: 0-1' overburden; 1'-8' cross-bedded pebbly sand; 8'-12.5' gravel; 12.5'-13.5' cross-bedded sand; 13.5'-22' gravelly sand. May be delta deposit with beds dipping to north-northeast. East side of road cut shows a 3-foot x 20-foot gravel lens in pebbly sand and sand beds.
	2	1966	1-9	0-1	No	68.3	55.4	33.9	6.0	2.8	1	21.4%	Gravel	Test #2 dug 40 feet from barn and 70 feet west of town road. Material is a gravel with mainly 1"-3" stones. Fewer stones below 6', and there material is a gravelly sand. This test taken on side of ridge, and Test #1 probably is more representative of the material in the feature.
41	1	1966	0-5											Owner: Roy Leonard. Area is pit and thickly wooded vicinity

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 50

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	1966	12-22	0-3	Yes	100	100	99.3	15.9	2.0*	1	---	Sand	southeast of junction of Vt. Rte. 58 and Town Highway #14. Test #1 dug in poplar woods in exposed sand area on haul road just north of old pit. A few inches of pebbly sand overlies a silt-clay, and hole was not sampled.
	3	1966	0-4	N O T S A M P L E D										Test #2 dug on lower face of small 30-foot long pit hidden in woods. Much vegetation and sloughed material on upper face. Sample was fine pebbly sand acceptable for Item 202. Little or no extension of material possible: glacial till appears in woods to east, and terrain drops off to a drainage way just south of the pit. Test #3 dug in edge of poplar grove in haul road north of Test #1. Material is silt-clay with an interbed of medium quartzose sand, and was not sampled. Area is probably one of lacustrine deposition, and very little granular material would be found.
42	1	1966	0-5	N O T S A M P L E D										Owner: Roy Leonard. Area is one of pasture knolls on south side of Vt. Rte. 58 across from Town Highway #13. Two test holes dug in silt and silt-clay with stones. Neither was sampled. No evidence of lacustrine deposition seen.
	2	1966	0-5	N O T S A M P L E D										

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 51

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				
43	1	1966	2-9.5	0-2	No	100	100	100	82.0	18.0*	1	---	---	Owner: Neal Tarbox. Wooded and hilly pasture just west of the Barton-Brownington Town Line on the north side of Vt. Rte. 58. Test #1 dug 70 feet north of and 10 to 15 feet above highway. Material is silt and sandy silt.
	2	1966	1.5-10	0-1.5	No	100	100	98.7	15.8	10.5 10.4*	1½	---	---	Test #2 dug 110 feet north of and about 15 feet above Test #1. Material is silty sand with a very few small pebbles.
	3	1966	1-10	0-1	No	100	100	99.2	20.8	11.0 10.9*	1	---	---	Test #3 dug about 220 feet east-southeast of Test #1 and is about 20 feet above Vt. Rte. 58. Material similar to Test #2 - a silty sand. Area was designated as lacustrine deposition by Dr. D. P. Stewart, but only fine sediments found.
44	1	1966	0-10.5	Stripped	Yes	75.4	62.8	52.1	7.0	3.0	1	---	Gran. Borrow (Grav.)	Owner: Roland Chaput. Area is pit in an esker on the east side of Town Highway #17 south of Evansville. Old pit area to north (now depleted) shows trend of esker, and Dr. D. P. Stewart traces esker toward the south along Lord Brook. However, one test taken south of pit on boulder-strewn ridge showed only boulders, cobbles and silts. Test #1 dug on west side of pit about 80 feet from the south end. A small area has been stripped, and the strippings have been pushed off

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 52

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	1966	2-10	0-2	Yes	77.4	61.6	43.6	8.0	4.3	1	24.0%	Gran. Borrow (Grav.)	toward the northwest. Material is cross-bedded pebbly sands, gravelly sands and pockets or lenses of pebbles. One or two small boulders noted. Sample met grading requirements for Item 201, but too few proper size stones were included for the wear test. Test #2 dug atop south face of pit. Two feet of gravelly sand overlies a fine gravel becoming coarser with depth. Goes then to a 1-foot thick gravelly sand overlying a bed of 6"-10" cobbles. A thin silt-clay lens noted at 5'. Stones are sub-angular to sub-rounded. Sample had barely excess silt for Item 201.
	3	1966	N	O	T	S	A	M	P	L	E	D		In search for pit extension and trend of esker, Test #3 was dug 260 feet southwest of Test #2 in corner of field near road. Dug for 4.5 feet in compact silt-clay and did not sample.
	4	1966	N	O	T	S	A	M	P	L	E	D		Test #4 dug on low boulder-strewn wooded ridge about 120 feet south of pit. Boulders, silt and cobbles were encountered and not sampled. Trend of esker or extension of material not found. An area of gravel about 130 feet x 60 feet remains south of the pit.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 53

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				
														North pit looks depleted - possibly some granular borrow material remains.
45	1	1966	1.5-4.5	0-1.5	No	100	100	89.8	27.8	10.5 9.4*	3½	---	---	Owner: Mrs. Geraldine Phillips. Area is a small pasture on the north side of Vt. Rte. 16, east of Town Highway #22. A low ridge in pasture is probably continuation of esker seen in Chaput Pit (Area #44), and which continues to south. Test #1 dug alongside of woods road or pasture road about 110 feet south of edge of woods. Material is "dirty"-looking pebbly sand with silt at 4' and ledge at 4.5'. Test #1 is 80 feet from crest of ridge. Sample had excess silt for Item 105.
	2	1966	1.5-10	0-1.5	No	80.8	69.4	52.4	10.0	5.0	1	29.6%	Gran. Borrow (Grav.)	Test #2 dug on crest of low ridge 65 feet from edge of woods. Top 3 feet is a pebbly silty sand and then goes to a gravel over a gravelly sand. Few +6" cobbles, many 2"-6" stones. Sample had excess silt and excessive wear for Item 201.
	3	1966	2.5-10.5	0-2.5	No	100	96.3	84.5	27.9	9.3 7.8*	1	---	Gran. Borrow (Grav.)	Test #3 dug at edge of woods north of Test #2. Composite of hole is a silty pebbly sand from beds of silty sand, gravelly sand, and pebbly sand. Goes at 10' to gravelly sand with 2"-5" stones. Sample had

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 54

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				
														excess fines for Item 202. More testing needed in this area. Possibly better gravels are deeper. Extension would be along ridge and is limited laterally by drainage and swamp.
46	1	1966	2.5-16	0-2.5	Yes	66.7	52.7	40.9	8.0	3.5	1	21.3%	Gravel	Owner: Mrs. Geraldine Phillips. Area is pit and vicinity south of Vt. Rte. 16 opposite Town Highway #22. Pit appears to be on esker which swings to the southwest just behind edge of woods. Access onto crest impossible because of thick woods. Test #1 dug on face in southeast corner of pit. Composite is gravel. Log of face follows: 0-2.5' overburden; 2.5'-5' stratified fine gravels; 5'-9' coarse sandy gravel; 9'-12.5' very coarse sand; 12.5'-16' gravel. Sample met requirements for Item 201. Extension of this material limited to east and southeast because ridge drops off toward brook. May extend to south and southwest.
	2	1966	0-5.5	Floor	Yes	83.1	65.6	39.7	3.0	1.8	1	19.6%	Gravel	Test #2 dug in floor below Test #1. Top 5 feet is gravel going to a pebbly sand. From 5.5' to 7' is coarse sand, and could have been included in sample without exceeding maximum sand content for Item 201.

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 55

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				
	3	1966	2-11	0-2	Yes	55.2	41.4	32.9	31.0	15.5 5.1*	1	26.4%	---	Test #3 dug on west face of pit. Material is a silty, poorly sorted gravelly and bouldery material with much silt-clay, and many rotten stones. Many boulders in top 5 feet; few in bottom 6 feet. Goes to a clay seam at 11'. Sample had excess silt for Item 201.
	4	1966	0-7	Floor	Yes	75.3	62.3	49.9	7.0	3.5	1	24.0%	Gravel	Test #4 dug in floor below Test #3. A few big cobbles and boulders in top 2 feet overlie a fine gravel. A gravelly sand comes in at 5', and water enters at 7'. Sample met requirements for Item 201.
	5	1966	0.5-8	0-0.5	Yes	62.0	43.6	29.5	14.0	6.0	1	26.6%	Gran. Borrow (Grav.)	Test #5 dug in floor in north end of pit about 90 feet north of Test #4. Material is a coarse somewhat silty gravel with many sub-angular cobbles and small boulders. Stones over 4" comprise 25% of material in top 4 feet and about 15% of material from 4' to 7'. Water hit at 8'. Sample failed to meet abrasion requirements for Item 201, and except for the high wear, best use of material would be for crushing. However, it could be crushed for town roads. Extension of specification gravels should be sought to south and south-

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 56

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				
	6	1966	2.5-7	0-2.5	No	100	100	99.6	9.0	3.0*	1	---	Sand	west in woods. Very likely a lower lift could be started also in material represented by Tests #2 and #4. Test #6 dug 30 feet west of west edge of pit on slope of ridge. Top 7 feet is a coarse quartzose sand overlying a cobble gravel. Test may be representative of a pocket of material, and not of any large quantity.
	7	1966	2-10	0-2	No	66.9	59.8	51.2	14.0	6.3	1½	40.4%	Gran. Borrow (Grav.)	Test #7 dug on northwest flank of esker 300 feet southwest of pit. Hole dug at edge of woods. Material is a silty gravel from layers of gravelly sand and "dirty"-looking gravel. Many soft sub-angular to sub-rounded stones. Sample had excess silt and excessive wear for Item 201.
	8	1966	2.5-8	0-2.5	No	80.9	61.6	41.3	21.0	11.0	1	27.8%	---	Test #8 dug atop south roadside bank of Vt. Rte. 16, 150 feet north of pit. Material below 2.5 feet of overburden is a fine silty gravel with very few +3" stones. Becomes a fine gravel or sandy gravel from 6'-8'. Pit and probable extension to south and southwest in woods would be source of gravels.
47	1A	1966	0-14	Stripped	Yes	66.9	58.8	45.8	11.0	6.0	1	24.2%	Gran. Borrow (Grav.)	Owner: Ray Paquette. Area is 0.5 mile stretch of winding wooded ridge with pit located

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 57

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	1966	14-29	Stripped	Yes	77.1	63.7	47.5	5.0	2.5	1	27.6%	Gran. Borrow (Grav.)	northwest of Stillwater Swamp. Access to pit is along woods road in which gravels are exposed from place to place. Test #1A was sampled from 0-14' on 30-foot face of pit. Top 9 feet consists of silty and cobbly gravel beds with 2 interbeds of gravelly sand. Below 9 feet are beds of clean gravelly sand and coarse quartzose sand beds. Sample had excess silt for Item 201. Test #1B was of coarse sand beds and gravelly sands with pockets of pebbles and small cobbles taken from 14'-29'. Sample had excessive wear for Item 201. Pit face is cross-section of esker; beds dip both east and west from crest of feature. An area 100 feet x 130 feet north of and above the pit has been stripped, but it was inaccessible to the backhoe.
	2	1966	0-10	None	Yes	97.9	88.4	76.7	6.9	2.5 1.9*	1	---	Sand	Test #2 dug in floor of pit below Test #1B, 35 feet from west side. Material is coarse pebbly sand from beds of sand, pebbles and gravelly sand, and is acceptable for Item 202. Beds dip shallowly south and are of fine sand below 8 feet.
	3	1966	2-8	0-2	Yes	100	98.4	95.2	4.8	2.0 1.9*	1 1/2	----	Sand	Test #3 dug in floor at east end of pit face 85 feet east

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 58

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				
	4	1966	0-9	None	Yes	100	100	98.5	3.0	2.0*	1	---	Sand	of Test #2. Beds of very coarse sand with large pebbles, and coarse sand with a few small pebbles dip shallowly south. Sand is fine below 5.5'. Confused bedding, slumping, and many local diverse dips noted (attests to ice-contact deposition). Test #4 dug on face of lower lift and continued in lower floor 70 feet south of upper face. Material on 6-foot face is similar to Test #3 - a coarse pebbly sand - and then goes to a fine or medium sand in lower floor. Becomes wet 3.5 feet below floor. Probably 3,000 to 4,000 cu. yds. of sands for Item 202 are to be found in floor.
	5	1966	0-20	Stripped	Yes	79.0	63.1	50.9	8.0	5.0	1	25.4%	Gran. Borrow (Grav.)	Test #5 dug on face at east end. Top 8 feet is a silty gravel with rotten stones and much matrix silt. Goes to a fairly clean gravel from 8' to 15', and then to coarse pebbly or gravelly sands. Composite sample is a sandy gravel with excess silt and excessive wear for Item 201.
	6	1966	1-7.5	0-1	No	57.4	49.7	38.2	16.0	7.5	1½	---	Gran. Borrow (Grav.)	Test #6 dug about 475 feet north-northeast of pit in haul road where it passes over continuation of esker. Cobbles and silty sands show in road

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 59

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				
	7	1966	3-10	0-3	No	80.8	67.1	49.8	13.0	5.8	1	24.8%	Gran. Borrow (Grav.)	banks. Material in test hole is a "dirty" gravel with many +6" cobbles and a very few small sub-angular boulders. A few rotten stones, much matrix silt to clay, and absence of stratification noted. Sample had excess silt for Item 201, and too few proper size stones were included for the wear test. Test #7 dug 850 feet south of Vt. Rte. 16 on edge of woods road. This site also appears to be on esker or on its flank, but feature is discontinuous or at best indistinct between Test #7 and Test #6. Material in Test #7 is a sandy gravel with few 3"-6" stones down to 9.5', and then goes to a coarse pebbly sand. Sample had excess silt for Item 201. More exploration needed along woods road, especially where it follows or crosses the ridge. The pit and its extension to the north would be source of modified gravels. Much clearing and stripping would be required where future testing uncovered a gravel.
48	1A	1966	3-33	0-3	Yes	83.6	69.7	55.5	11.0	5.0	1	26.4%	Gran. Borrow (Grav.)	Owner: Henry Labrecque. Area is huge pit of many faces, levels, and "islands" of unsuitable material, located behind

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 60

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				
	1B	1966	31-41	0-3	Yes	71.6	64.5	58.0	4.0	1.0	1	---	Gran. Borrow (Grav.)	owner's buildings. Pit is in esker. Test #1A sampled from upper face in middle south end of pit. Sample was of interbedded gravels, and coarse to fine sands with silt laminae. Gravel beds are about 3 feet thick and make up 35% - 40% of face. Pebbles within the sand beds make up remaining stone content. Sample had excess silt (5% vs 4% for this stone content) and excessive wear for Item 201. Test #1B sampled from 31'-41' on 45-foot high face. From 31' - 35' is a gravel bed going to 6 feet of cobbly sand. Bottom 4 feet of face is silt-clay. Sample had too few proper size stones for wear test. Lateral exposure of gravels was 65 feet. To the west, and in the entire southwest corner of the pit are fine sands or silty sands in which a lower lift has been started. To the east a 180-foot long face is concealed by sloughed material and vegetation including trees and shrubs.
	2A	1966	3-23	0-3	Yes	77.4	63.9	43.6	13.0	6.5	1	22.6%	Gran. Borrow (Grav.)	Test #2A sampled from top 23 feet of face in southeast corner of pit. Material is a fine gravel from beds of pebbles and small cobbles all under

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 61

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					
	2B	1966	23-38	0-3											
	3	1966	1-48	0-1	Yes	N	O	T	S	A	M	P	L	E	D
						66.9	50.8	27.5	12.0	7.3	1		23.0%	Gran. Borrow (Grav.)	6". Sand is minor. Goes to silt-clay and stony beds on bottom 15 feet of face. These beds were exposed by backhoe as Test #2B, but were not sampled. Test #3 was a hand sample of high east face of pit in north end about 50 feet south of where an upper level still remains. Top 12 feet is a clean gravel going to 6 feet of gravelly sand. Lower 35 feet of face is silty sand and cobble beds with some matrix silt-clay. Composite of face has excess silt for Item 201. About 15% - 20% of face exceeds 6", and includes a few small boulders. An 18-foot lift of clean material could be started atop this face above Test #3 with an extension of about 125 feet to the north. Clearing would be required, and access would be around south end and along east side of pit. Eastward extent of material probably limited by east slope of esker.
	4	1966	2-5	0-2	Yes	100	100	95.6	4.7	3.0	2		----	Sand	Test #4 dug in west side of pit floor at south end of pit, and is at top of lower face in southwest corner of pit. Top 2 feet is silt clay overlying a coarse quartzose sand. A huge boulder hit at 5'. Upper

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 62

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				
	5	1966	3-10	0-3	Yes	72.8	49.4	33.9	2.0	1.0	1	19.0%	Gravel	face above test looks silty - southwest corner of pit probably a source of Item 105. Test #5 dug in floor at east side of pit below Test #2. Top 3 feet is silt-clay with stones overlying a gravel with coarse sand and sub-rounded stones. Material is very clean. Many stones are granitic.
	6	1966	0.5-10.5	0-0.5	Yes	68.3	52.3	34.5	8.0	3.0	1	20.2%	Gravel	Test #6 dug 60 feet west of Test #5. Log of hole follows: 0-0.5" silt and stones; 0.5'-3' fine gravel; 3'-6' medium sand with silty sand laminae; 6'-7' cobbles and small boulders; 7'-10.5' coarse gravel with some +6" stones. Sample met requirements for Item 201. This part of pit floor would seem to be source of a small quantity of Item 201 gravels.
	7	1966	32-50	0-3	Yes	77.6	57.4	32.6	43.0	15.0	1	18.4%	---	Test #7 taken on lower east face in south part of north pit area. Four feet of fine gravel overlies a thick bed of silt-clay with pebble lenses. Bottom 5 feet of face is a coarse gravel with many +6" cobbles and a few boulders. Sample had excess fines for Items 201 and 105.
	8	1966	10-10	None	Yes	67.7	48.8	35.7	11.0	7.0	1	18.3%	Gran. Borrow (Grav.)	Test #8 dug on 10-foot high lower face at north end of pit. Test represents material in 100-foot long x 70-foot wide

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 63

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				
														floor in north end, which was inaccessible to backhoe. A silty gravel with some clay, minor sand, cobbles and boulders, and some rotten stones encountered. Goes to a coarse sand at 9'. Floor of main pit is wet and muddy - looks like a till or alluvium bottom. Sample had excess silt for Item 201. Look for gravels on south face and extension to south; in floor in southeast corner of pit; in pasture to east-southeast of Test #2A; atop east face of north part of pit in woods. At time pit was sampled, owner did not want tests taken in pasture south and southeast of pit, nor did he want to open that area.
49	1	1966	6-30	0-6	Yes	43.3	37.3	28.2	8.0	5.0	1	23.2%	Gravel	Owner: Henry Labrecque. Area is a long narrow pit on the south side of Town Highway #24 east of Vt. Rte. 16. The Labrecque-Maxwell property line runs across the south end of the pit. Test #1 sampled on 36-foot high east face just north of property line. Top 6 feet is silty overburden. Bottom 6 feet of face is silt-clay. Sampled material is a coarse sandy gravel with many unsampled cobbles and boulders.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 64

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	1966	18-30	0-18	Yes	70.5	62.0	52.4	18.0	6.5	1	---	Gran. Borrow (Grav.)	Test #2 sampled on lower west face of pit. Top 18' was sloughed material with vegetation and underlying material could not be reached. From absence of stones, top appears sandy or silty. Sample includes silty gravel and coarse pebbly sands; had excessive silt for Item 201.
	3	1966	1-11	0-1	Yes	74.5	61.8	48.2	5.0	2.8	1	30.2%	Gran. Borrow (Grav.)	Test #3 dug in north end of pit on east side. Material is stratified coarse pebbly sand or fine gravel dipping to east. Few +2" stones, no +4" stones in top 7 feet. Becomes coarser below this. Is very coarse and stony below 10 feet. Sample failed to meet abrasion requirements for Item 201.
	4	1966	1-10.5	0-1	Yes	100	100	96.0	5.8	1.8 1.7*	1	---	Sand	Test #4 dug 80 feet northwest of Test #3 in northwest corner of pit. Material is a coarse pebbly sand with fewer pebbles than Test #3, and going to a fine sand below 5'. Sample met requirements for Item 202. Gravels appear to be getting soft in this area as well as in following two areas. Modify the wears and look for gravels along the east side of the Labrecque pit and south into the Maxwell pasture. Small quantities of sands in the floor toward the north end

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 55

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				
														probably not worth going after. More testing needed along west side of pit in hayfield.
50	1	1966	0.5-8.5	0-0.5	Yes	77.1	59.0	42.6	10.0	4.8	1	27.7%	Gran. Borrow (Grav.)	Owner: Dale Maxwell. This is upper part of pit south of Labrecque pit. Test #1 dug in middle of 95-foot x 75-foot pit. Material is a sandy gravel from beds of gravel, gravelly sand and pebbly sand. Water runs in at 8.5'. Sample had excess silt and excessive wear for Item 201.
	2	1966	2.5-16	0-2.5	Yes	70.5	59.3	47.6	6.0	2.3	1	28.2%	Gran. Borrow (Grav.)	Test #2 dug on 16-foot high south face of pit. Top 2.5 feet is overburden; 2.5'-8' is sandy gravel; from 8'-16' is coarse pebbly sand with a bed of pebbles and cobbles at bottom. Beds dip steeply south. Sample failed to meet abrasion requirements for Item 201. Area is probably a source of Item 201 with a modification on the wear. More testing needed in pasture south of and above pit, which has been mapped as kame moraine by Dr. D. P. Stewart, and which is sidling and very knolly. Access to Maxwell pit and pasture is via field road leading out from owner's buildings, or through Labrecque pit.
51	1A	1966	2-9	0-2	Yes	63.7	55.9	46.1	13.0	5.8	2	35.8%	Gran. Borrow (Grav.)	Owner: William Reynolds. Area is pit and vicinity northwest

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 66

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				
	1B	1966	9-18	0-2	Yes	100	100	98.8	3.9	1.5*	1½	---	Sand	of end of Town Highway #37. Pit is within kame moraine as designated by Dr. D. P. Stewart, and is located on May Pond Brook. Test #1A was a hand sample taken on corner of pit face near middle of pit. Two feet of sand overlies a coarse sandy gravel. Sample had excess silt and excessive wear for Item 201.
	2	1966	2.5-10	0-2.5	No	100	100	93.6	2.8	1.0 0.9*	1	---	Sand	Test #1B sampled from 9'-18' below Test #1A. Material is a coarse dark gray pebbly sand with silty laminae and a cobble bed near the bottom.
	3	1966	4-9	0-4	Yes	100	100	99.8	11.0	2.5 2.3*	1	---	Sand	Test #2 dug at edge of woods 115 feet north-northeast of pit. Top 2.5 feet is boulders and silty sand going to a coarse dark gray-brown quartzose sand.
	4	1966	7-15	0-2	Yes	100	100	100	15.0	2.5*	1	---	Sand	Test #3 dug atop north face of pit. Top 2 feet is overburden going to 2 feet of silty gravel like Test #1A. Goes then to a medium pebbly quartzose sand, and to a gravel at 9'. Test #4 sampled on lower north face. Intent was to hit gravel found at 9' in Test #3, 25 feet to north. However, material on face is a sand with fine sand laminae, going to a fine gravel at 15'. Some cross-bedding seen on face

\*Percentage of Total Sample

TABLE I

BARTON GRANULAR DATA SHEET NO. 67

Map Ident. No.	Field Test No.	Year Field Test	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				
	5	1966	0.5-7.5	0-0.5	Yes	100	96.1	88.2	4.4	1.5 1.3*	1	---	Sand	(also in Test #1B). Test #5 dug in floor below Test #4. Bottom of face and top of Test #5 was of cobbles with a boulder or two. Material sampled was very coarse sand with large pebbles going to a cobble layer at 7.5'. Stratification dips shallowly to the south-southeast. This pit and extension to north is a sand source, and evidently owes its origin to ice-contact deposition. Possibly is a kame terrace which occupied the valley of May Pond Brook and lay against the higher elevations to the east.
52	1	1966	0.5-10	0-0.5	Yes	97.3	88.6	74.7	3.0	1.5*	1	---	Sand	Owner: Gordon Baker. Area is pit in woods and pit in meadow to north on east side of Town Highway #36. Area mapped by Dr. D. P. Stewart as kame moraine. Test #1 dug on top of meadow pit. Top 3 feet is sand with sub-angular cobbles over gravelly and pebbly sand. Bottom 7 feet is coarse sand. Hole bottoms in gravelly sand.
	2	1966	N	O	T	S	A	M	P	L	E	D		Hole bottoms in gravelly sand. Test #2 dug in pit floor where 2.5 feet of pebbly sand overlies silt-clay. Hole was not sampled.
	3	1966	1.5-9	0-1.5	No	64.3	50.7	41.1	16.0	6.0	2	21.4%	Gran. Borrow (Grav.)	Test #3 dug at upper (east) edge of meadow 300 feet north-east of pit. Top 3 feet is
						*Percentage of Total Sample								

TABLE I

## BARTON GRANULAR DATA SHEET NO. 68

Map Ident. No.	Field Test No.	Year Field Tested	Depth of Sample (Ft)	Over-burden (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				
	4	1966	0-6											sub-angular stones and silty sand; becomes somewhat less silty and has more sub-rounded stones below that. Goes to a fairly clean sand at 10'. Sample had excess silt for Item 201. Many boulders noted along edge of and in woods, and there is evidence of shallow depths to ledge on upper side of meadow. Test #4 dug at edge of meadow 120 feet east of pit. Three feet of silty gravel overlies 3 feet of gravelly sand. Hole bottoms in ledge at 6'. Hole not sampled. Probably extension of sands in Test #1 would be north and northeast, and to shallow depths, toward Test Hole #4. Silty gravels with boulders are likely to be found here and there.
	5	1966	0-5.5	Stripped	Yes	95.2	94.6	86.6	2.6	1.0 0.9*	2	---	Sand	Test #5 dug in depleted pit area in thin woods about 115 feet south of meadow pit. Material is a coarse pebbly sand with water flowing in at 5.5' above a bouldery silt-clay. Practically no material left in this old pit.
53	1	1966	0-9.5	None	Yes	100	98.1	86.5	12.1	3.5 3.0*	1	---	Sand	Owner: Mabel LaClair. Area is a small pit on U. S. Rte. 5 southeast of Crystal Lake, and just southeast of a small cemetery. Pit shows sands, par-

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 69

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	1966	0-8	Stripped	Yes	100	98.3	97.3	2.9	0.5*	1½	---	Sand	tially cemented sand layers and huge boulders. Test #1 dug in floor. Material is medium pebbly sand with a few cobbles or boulders. Top 5 feet shows cross-bedding; silty sands with confused bedding were encountered below that. Must be ice-contact deposition. Test #2 was a hand sample of pit face at southeast corner. Fine quartzose sands with a very few igneous pebbles were sampled.
	3	1966												Test #3 dug on lower side of pit floor beside access road from old U. S. Rte. 5. Hole is about 7 feet below elevation of Test #1. Material is rock fragments and silt-clay, and was not sampled. Pit is only 130 feet long, and extension is limited to the 150-foot wide area between the two roads. Area along U. S. Rte. 5 from Crystal Lake to the Sutton Town Line has been designated as kame moraine by Dr. D. P. Stewart, and pit does show some type of ice-contact deposition.
54	1	1966	0-7											Owner: Mabel LaClair. Area is a flat to rolling shrubby pasture east across U. S. Rte. 5 from owner's buildings. Access is via woods or field

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 70

Map Ident. No.	Field Test No.	Year Field Test	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	1966	N	O	T	S	A	M	P	L	"E	D		drive. An alder swamp and drainage lies east of the pasture, and a small stream flows just west of the pasture. Possibly some granular materials occur in the area between the two waterways, but they would generally be found at depths too great to strip the silt-clays encountered. Both test holes hit only silts or silty clays with a cobble or boulder or two, and no samples were taken.
55	1	1966	3-7.5	0-3	No	84.3	72.4	53.7	8.0	3.0	2½	19.4%	Gravel	Owner: State of Vermont. Area is small meadow north of Roy Lord's house above U. S. Rte. 5, and east of Town Highway #56. Meadow is just below and south of steep hillside where bedrock is exposed. To east of meadow a hillside rises to a more or less flat area, the south slope of which is exposed above U. S. Rte. 5 and shows angular boulders, cobbles, etc. Some tests have been taken on the west slope of this hill above the small meadow by Vt. Highway District No. 9, according to Mr. Lord. Test #1 dug in low spot in meadow. Material is poorly sorted with pockets of cobbles, gravels, sands, and silty,

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 71

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	1966	2-7	0-2	No	100	77.9	61.7	10.0	4.0	3	---	Gran. Borrow	completely unsorted detritus. Test #2 dug on flat area at upper (southeast) end of meadow. Material similar to Test #1, but has few +1" stones. More testing needed in meadow, and on hill to east, which is of difficult access. Area mapped as kame moraine by Dr. D. P. Stewart.
56	1	1966	0-10	Stripped	Yes	82.2	70.3	49.1	30.0	16.0 7.9*	1	20.5%	---	Owner: C. E. Chaffee. Area is knoll with pit and more-or-less flat area to northwest on the northeast side of and above U. S. Rte. 5. Test #1 dug on southeast side of knoll in old stripped test pit area on top of pit. Material is silty gravel with some 6"-10" sub-angular cobbles, pebble-cobble beds, and interbeds of silty sand. Dip of beds is to southeast. Sands are exposed along U. S. Rte. 5 on the roadside bank, and to the northwest on the knoll.
	2	1966	0.5-5	0-0.5	No	100	99.2	96.7	6.8	4.5 4.4*	1½	---	Sand	Test #2 dug near northwest side of flat area, 60 feet from old haul road. Material is coarse pebbly sand and coarse sand in steeply dipping beds. Sands kept caving so quit digging at 5.5'.
	3	1966	0.5-10	0-0.5	Yes	75.4	60.3	45.4	30.0	13.3	1	24.2%	---	Test #3 dug on upper face of pit newly opened in southeast side of knoll. Many +1 cu. yd.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 72

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				
57	1	1966	0.5-4	0-0.5	No	68.8	58.5	44.9	13.0	4.5	3½	24.4%	Gran. Borrow (Grav.)	boulders, many 1'-1½' boulders and many cobbles. Sample taken in middle part of face where gravels are coarse and silty with sub-angular stones. Gravels somewhat finer on northeast side of pit. Stony silts are the rule on the northwest side. Sample taken had excess silt for Items 201 and 105. Sutton was crushing material from this pit at the time sampled. Southeast part of area (knoll and to north of pit) is underlain by silty boulder gravels; small quantities of sand would be found toward the northwest end of the area. Material owes its origin to kame moraine (ice-contact) deposition. Owner: C. E. Chaffee. Area is rolling field north of U. S. Rte 5, and west of Wheeler Brook. Access is about 0.35 mile along woods road leading north from U. S. Rte. 5. Area mapped as kame moraine. Test #1 dug on knoll at north (upper) side of field. Material is a light colored gravel with mainly sub-angular stones. Sand portion appears fine and silty, but sample had barely excess silt for Item 201. Goes to a silty and pebbly sand at

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 73

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	1966	0.5-6	0-0.5	No	100	100	81.8	45.0	16.3 13.3*	2	---	---	4'. Owner had dug nine holes prior to sampling; six of these were sampled. Another test hole 50 feet west of Test #1 showed 4.5 feet of gravel over a silty sand. Test #2 dug on east edge of field 220 feet from and below Test #1. About 1 foot of gravel overlies an unsorted material consisting of silt and small stones. A very few sub-angular small cobbles noted also. Sample had excess silt for Item 105.
	3	1966	0.5-7	0-0.5	No	71.4	60.4	41.4	10.0	3.8	3½	24.4%	Gravel	Test #3 sampled from test hole dug at top of slope near southwest edge of field, 180 feet north of test trench in lower part of meadow. Material is a light-colored coarse gravel with many +6" cobbles. Fines are a coarse sand. Stones are sub-angular to sub-rounded. No bedding evident. Sample met requirements for Item 201.
	4	1966	0-5	Stripped	Yes	76.8	65.2	48.8	8.0	4.0	3½	21.6%	Gravel	Test #4 dug atop face of small pit on west edge of field where haul road comes out of woods. Material is a light-colored gravel with very few +4" stones, but with many in the 2"-4" range.
	5	1966	0.5-12	0-0.5	Yes	78.9	64.0	41.2	13.0	5.0	1	33.8%	Gran. Borrow (Grav.)	Test #5 was a hand sample of 12-foot high face of 35-foot long pit. Material is well-

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 74

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				
	6	1966	1-5	0-1	No	73.2	58.2	44.5	7.0	2.8	1½	21.6%	Gravel	sorted albeit sandy gravel from pebbly gravels, sandy gravels with soft stones, sand layers, and fine gravel layers. Sample had excess silt and excessive wear for Item 201. Test #6 was a hand sample of side of test trench 180 feet south of and below Test #3. Material is a gravel with a few +4" stones and many small pebbles. Sample looked silty or sandy, but met requirements for Item 201. Bottoms in ledge. Extension would be north toward Test #3. Best chance for gravels seems to be between Tests #3 and #6, and around small pit on west side of meadow. Re-testing there might give a satisfactory wear for Item 201.
58	1	1966	2-10.5	0-2	No	66.1	51.8	34.8	8.0	3.0	1½	15.4%	Gravel	Owner: C. E. Chaffee. Area is steep-sided, flat-topped wooded ridge just west of the Sutton Town Line. Ridge is just south of junction of Wheeler and Big Valley Brooks which are diverted by this feature. Access was constructed just prior to testing, and involves crossing a swampy area and Wheeler Brook and negotiating the steep southwest slope of the ridge. Test #1 dug in access road on first

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 75

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	1966	3.5-9.5	0-3.5	No	82.6	62.0	46.3	12.0	6.3	1	20.6%	Gran. Borrow (Grav.)	steep grade, and is about 12 feet above base of hill. Material is a light-colored coarse gravel with few +6" cobbles. Stratification dips shallowly to southwest. Test #2 dug 70 feet east of and 10 feet above elevation of Test #1. Test hole is located on a narrow flat area. About 3.5 feet of reddish silty and stony overburden overlies a somewhat sandy gravel going to a coarse pebbly quartzose sand. Beds dip to southwest. At 8' a light-colored sand comes in. Composite of hole is a sandy gravel with excess silt for Item 201.
	3	1966	3-13	0-3	No	100	98.4	89.9	4.5	1.3 1.2*	1½	---	Sand	Test #3 dug about 100 feet east of and 25 feet to 30 feet above elevation of Test #2. Location is on edge of flat top of hill. Log of hole follows: 0-3' silty sand with stones; 3'-8' light-colored pebbly medium sand; 8'-13' very coarse pebbly sand; 13'-? gravelly sand. Material is stratified.
	4	1966	3-10.5	0-3	No	100	99.2	95.3	2.9	0.8 0.7*	1½	---	Sand	Test #4 dug about 145 feet east-southeast of Test #3 at edge of flat area above steep south slope. Top 3 feet of hole is a silty gravel going abruptly to beds of coarse and medium pebbly sands showing

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 76

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				
	5	1966	2.5-12	0-2.5	No	100	100	97.4	29.2	12.5 12.2*	1½	---	---	cross-bedding. Test #5 dug on west side of draw about 290 feet west of Sutton Town Line. Hole is about 12 feet below level of flat area. Top 2.5 feet is overburden overlying a medium sand. A 2-foot thick layer of sandy silt comes in at 5' and goes to a fine or medium sand with a few pebbles below that. Sample had excess fines for Item 202 and 105. This test may be representative of material underlying those sands encountered in Tests #3 and #4.
	6	1966	2.5-10.5	0-2.5	No	65.0	48.2	37.4	6.0	2.5	2½	17.9%	Gravel	Test #6 dug on woods road above steep north bank of hill above brook. This part of hill is higher than where Tests #3 and #4 were taken, and it appears that gravels may hold up the higher elevation. Hole begins in 3 feet of reddish silty sand with many +6" sub-angular cobbles. Mostly 1½"-3" stones in a gray coarse sand below this. Goes to a gravelly sand with depth. Eighty percent of stones are igneous and sound quite sound. Sample met requirements for Item 201.
	7	1966	4-12	0-2	No	93.4	92.4	86.3	1.7	0.5 0.4*	1½	---	Gran. Borrow (Sand)	Test #7 dug 70 feet west of and 11 feet below Test #6 on west-facing slope above brook.

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 77

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				
	8	1966	2.5-10.5	0-2.5	No	90.6	87.2	74.9	1.5	1.0 0.7*	3	---	Gran. Borrow (Sand)	<p>Top 2 feet is overburden going to 2 feet of gravel like Test #6, and then to a coarse pebbly sand like Test #3. Top of sand seems to be about same elevation as top of Test Hole #3. Sample had excess +1½" stones for Item 202. More sampling needed on north and northwest part of ridge. Possibly gravels to a depth of 12 feet cap this part of the ridge.</p> <p>Test #8 dug at northwest end of lower flat area, 20 to 25 feet below elevation of Test #7 and 180 feet northwest of Test #1. Test is about same elevation as Test #2. Material is a very coarse quartzose pebbly sand with 1 or 2 large cobbles. Below 8' at the southeast end of the hole is a gravelly sand. Goes to a gravel at 11', sample had excess +1½" stones for Item 202. This material is not contiguous with that of Test #1 or Test #2 since a test hole dug 60 feet north-northwest of Test #1 shows 8 feet of silt to clay with a boulder or two. However, lower southwest and west sides of ridge should be opened for gravels, and this would include material in Tests #1, #7, and #8. The flat</p>

\*Percentage of Total Sample

TABLE I

## BARTON GRANULAR DATA SHEET NO. 78

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				
														wooded top of the ridge would be source of Item 202 down to 10 or 12 feet. Material is of kame moraine or kame terrace origin, and a pit or pits opened in this feature would encounter a wide range of and abrupt changes in grain size.

\*Percentage of Total Sample

TABLE I  
Supplement

BARTON PROPERTY OWNERS - GRANULAR	Map Ident. No.
Annis, G. E.	7
Auger, Jean	2
Baker, Gordon	52
Barton, Town of	21, 37
Boudreau, W.	23, 29, 30
Butler, Bernard	1
Chadwick, W. S.	39, 40
Chaffee, C. E.	56, 57, 58
Chaput, Roland	44
Churchill, S. B. (Dr.)	34, 35, 36
Conley, Howard	18
Doyon, Nelson	24, 25, 26
Ducharme, Gerard	4
Duchesneau, Eugene	28
Fisk, Bill	15, 16, 17
Foss, Stanley	11, 12
Hanson, Dale	3
Hanson, M. W. & Son	8
Heath, Helen (Mrs.)	38
Labrecque, Henry	48, 49
LaClair, Mabel	53, 54
LeBlanc, Gabriel	19, 20, 22
Leonard, Roy	41, 42
Maxwell, Dale	50
Owen Family	9, 10.
Paquette, Ray	47
Phillips, Geraldine (Mrs.)	45, 46
Reynolds, William	51
Royer, Phillip	13
Simons, Olin	5, 6
Smith, Charles	31
Tarbox, Neal	32, 33, 43
Vaillancourt, Marcel	27
Vermont, State of	55
Vezina, Amri	14

TABLE II

## BARTON 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	1	1966	Granitic	No	Chip	7.0%	Owner: Henry Labrecque. Area is west of Vt. Rte. 16 on the lower east side of Barton Mountain. A low granitic exposure in a sugar orchard, a very small workings, and a fairly large quarry with huge grout piles were sampled. Access is about 0.60 mile along a steep woods road leading northwest from Vt. Rte. 16. Test #1 taken on low exposures in sugar orchard about 375 feet north of sugarhouse. The outcrop measures about 60 feet and 100 feet on the ends, and about 195 feet along the trend (northeast-southwest). Sample taken was on ends and along trend of outcrops. The rock is a medium-grained granitic rock and seems somewhat soft. It is quite uniform. If this property were chosen as a source of Item 204, this exposure should be the first to be explored. It is on southeast slope of wooded hillside, and plenty of relief is available for a high working face. Also, this exposure is only about 0.25 mile from the main road, and the access would not be steep.
	2	1966	Granitic	Yes	Chip	10.2%	Test #2 sampled from grout pile of very small workings near foot of wooded hillside, about 325 feet north-northeast of Test #1. Rock is granitic and medium-to coarse-grained, with pegmatite veins in places. Sample of material taken failed to meet abrasion requirements for Item 204.
	3	1966	Granitic	Yes	Chip	5.2%	Test #3 sampled from grout pile at 170-foot long working face about 0.28 mile northwest of small workings. Two large grout piles, in which 1 cu. ft. to 2. cu. yd. blocks are found, stand in front of the working face. Granite is exposed in smooth outcrops both east and north-northeast of the quarry. Access to this face involves about 0.30 mile of very steep haul road beyond Test #1. Exploration is recommended in the vicinity of Test #1. This area is about 4.7 miles from the Interstate Project at the south edge of Barton Village.
2	1	1966	Granitic	Yes	Chip	4.0%	Owner: Howard Conley. This is a small inactive quarry in the woods on the north side of Vt. Rte. 16 on the south side of Barton Mountain. Former access is about 0.20 mile up fairly steep haul road now grown in with alders. An

TABLE II

## BARTON 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
	2	1966	Granitic	Yes	Chip	4.0%	access could be constructed from the top of the grade near Paul Doyle's place on Vt. Rte. 16 north through the woods for about 0.10 mile. A 30-foot to 12-foot high x 245-foot long face had been worked and many blocks have been left in front of it. Two samples were taken. Test #1 was of random pieces from a grout pile filling a ravine at the northwest end of the face. The rock is granitic, fine-grained and equigranular. Occasional thin pegmatite and aplite veins are present. The rock appeared somewhat soft and powdery, but met abrasion requirements for Item 204. Test #2 sampled from 20-foot to 30-foot intervals on working face. There is much jointing and thin to fairly thick sheeting. Within 75 feet of the northwest end of the face the granite is coarse-grained and has many pegmatite veins. From 75 feet to 135 feet the rock is medium-grained equigranular, has few veins, and is very hard. The south end of the face is only 12 to 15 feet high, and here the granite is medium-grained had has a few veins. Many blocks lie in front of this part of the face. This sample met abrasion requirements for Item 204. There is plenty of granite here. Clearing is required as well as construction of a haul road. Many blocks need to be gotten out of the way to get at the face. There is not too much relief in an eastward extension of the present face. This area is about 2.2 miles from Barton Village.
3	1	1966	Granitic & Meta-Sediments	No	Chip	10.4%	Owner: Gerard Perrault. Area is thin woods and pasture on the east side of Town Highway #29 west of the Irasburg Town Line. This area and its extension to the northwest into Irasburg is mapped as a granitic body. Charles G. Doll, in Bulletin No. 3 of the Vermont Geological Survey, writes that great concentrations of sills occur in this part of the Memphremagog Quadrangle. Thin interfingers or interbeds of quartzose limestone and phyllite were observed within the preponderantly granitic outcrops in this pasture, and possibly the granite is a succession of sills following rapidly across the strike. The outcrops sampled
	2	1966	Granitic & Meta Sediments	No	Chip	6.9%	

TABLE II

## BARTON ROCK DATA SHEET NO. 3

Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Exist- ing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
	3	1966	Granitic & Meta- Sediments	No	Chip	5.2%	covered an area of from 150 to 200 feet wide and about 275 feet in length. Relief is between 15 and 25 feet. The lower (east) edge of the exposures is bordered by a poorly drained area. Three tests were taken, generally across the strike, from random outcrops. Two samples met requirements and one sample failed to meet requirements for Item 204. This area is quite small and is of little relief. If the granite occurs as sills, there will be much variation in the quality of material from this source, since much of it will be phyllite and limestone. Granite is exposed again across the town road and probably is contiguous with that in the sampled area. An extension therefore is possible beneath the narrow hayfield west of the pasture.
4	1	1966	Quartzose Limestone & Phyllite	No	Chip	8.8%	Owner: Arland Butler. Area is pasture on west side of Town Highway #42 near southwest corner of the township. A sample traverse across two ridges striking N-38-E was made. An intervening swale 185 feet wide revealed no exposures. Outcrops are of micaceous and quartzose limestone, phyllite, quartz mica schist, and quartz veins of the Barton River member of the Waits River Formation. Test #1 was a sample of quartzose and micaceous limestone or a calcareous quartz schist on the easternmost ridge. Ten feet of phyllite near the top of the ridge was also included. About 25 to 30 feet of relief on first ridge. This sample failed to meet abrasion requirements for Item 204; however, the quartzose and micaceous limestone looked durable enough for the Item. The phyllites would be undesirable.
	2	1966	Phyllite Quartzite & Limestone	No	Chip	6.4%	Test #2 was sampled across the strike beginning 100 feet down-strike from Test #1. Phyllite and limestone interbeds were sampled in the first 35 feet. Sixty feet of quartz mica schist, quartzose limestone, phyllite, and vein quartz were included in the traverse continued on the second ridge. No outcrops exposed in the intervening swale. This sample met abrasion requirements for Item 204. This area isn't recommended as a source of Item 204 because of

TABLE II

## BARTON ROCK DATA SHEET NO. 4

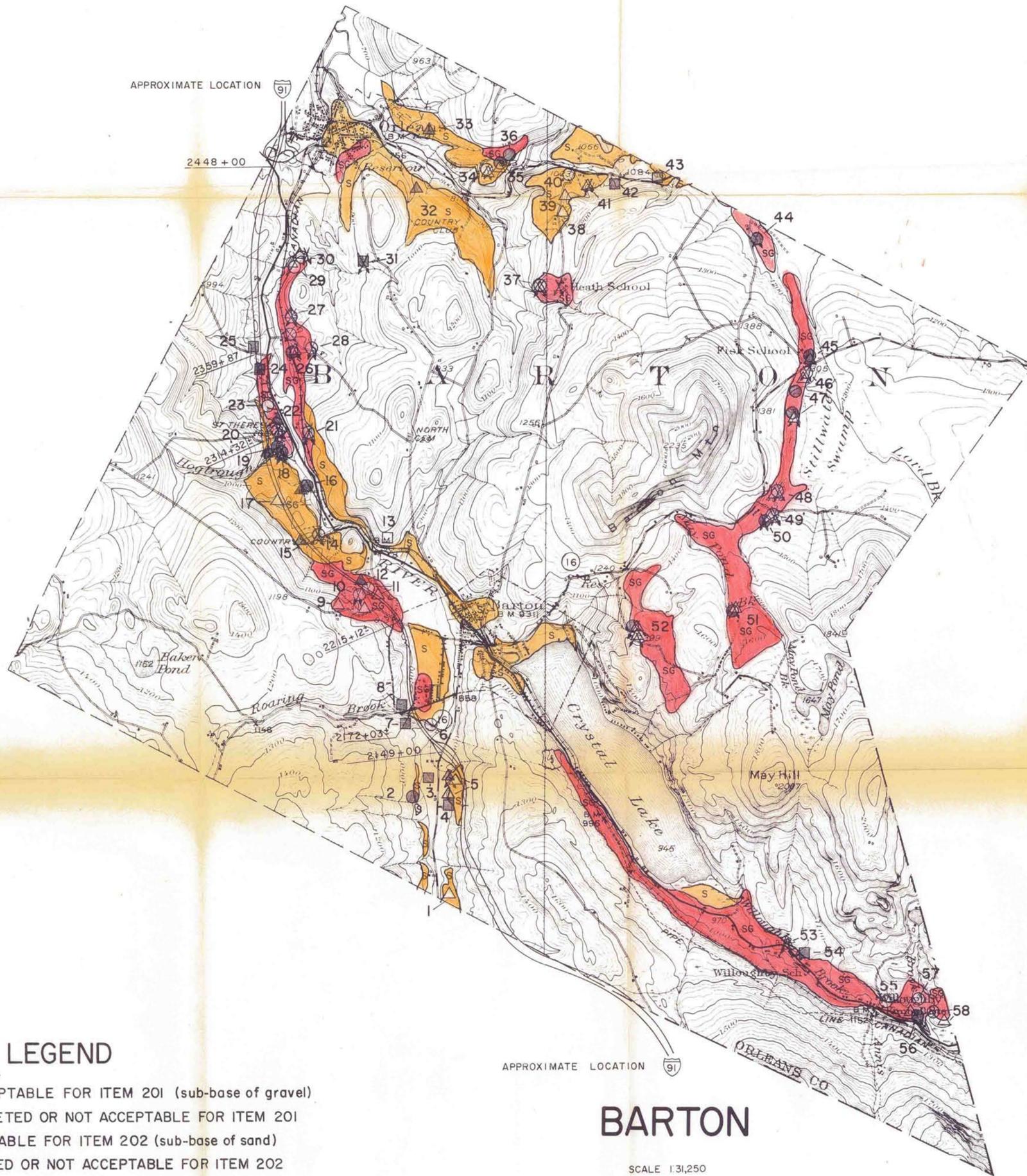
Map Ident. No.	Field Test No.	Year Field Tested	Rock Type	Existing Quarry	Method of Sampling	Abrasion AASHO T-3	Remarks
							the phyllites and schists. Further testing would undoubtedly give different test results. The area is located about 3.8 miles from the Interstate Project near the fairgrounds.

TABLE II  
Supplement

BARTON PROPERTY OWNERS - ROCK

Map Ident. No.

Butler, Arland	4
Conley, Howard	2
Labrecque, Henry	1
Perrault, Gerard	3



APPROXIMATE LOCATION

2448+00

APPROXIMATE LOCATION

# BARTON

SCALE 1:31,250



CONTOUR INTERVAL 20 FEET

1967

## 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)

## GRANULAR MATERIALS MAP

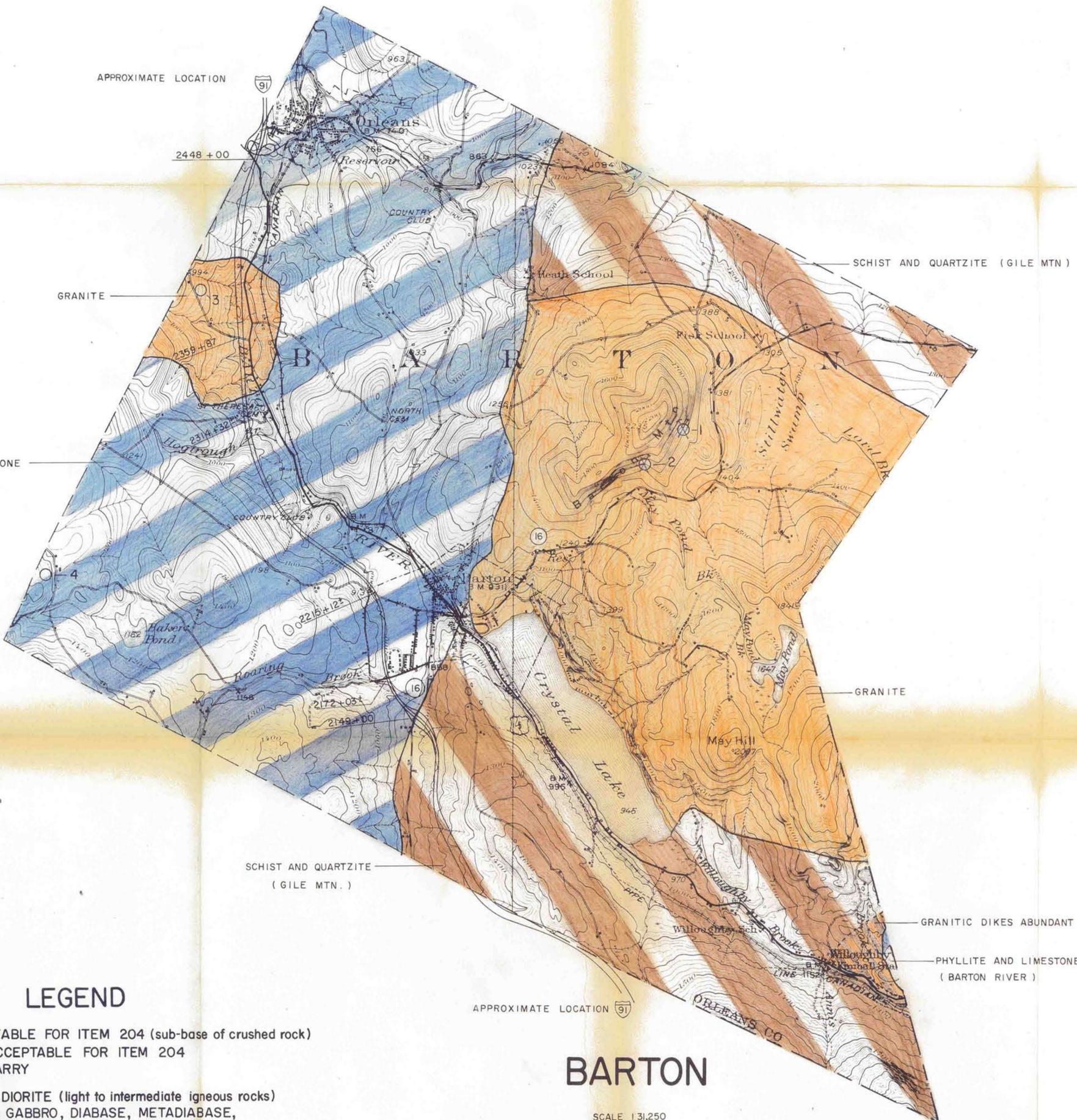
BY  
VERMONT DEPARTMENT OF HIGHWAYS  
IN COOPERATION WITH  
U.S. BUREAU OF PUBLIC ROADS

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

PLATE 1

GRANULAR

DATE				
BY				



APPROXIMATE LOCATION

2448 + 00

GRANITE

SCHIST AND QUARTZITE (GILE MTN)

PHYLLITE AND LIMESTONE (BARTON RIVER)

GRANITE

SCHIST AND QUARTZITE (GILE MTN.)

GRANITIC DIKES ABUNDANT

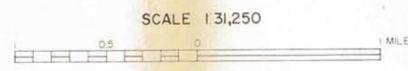
PHYLLITE AND LIMESTONE (BARTON RIVER)

APPROXIMATE LOCATION

### LEGEND

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

## BARTON



SCALE 1:31,250

CONTOUR INTERVAL 20 FEET

1967

### 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

DATE				
BY				