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## INTRODUCTION

Owen Development was recently founded by Mr. Jim Owen with the assistance of his family. Mr. Owen, himself, has been a prospector and developer for many years.

In 1980 he purchased five claims in the Baldwin-Nairn townships located in Northern Ontario. Since that time he has been developing the property until it was concluded that the potential did exist for a successful business. Thus, with his family's assistance, the last year has been spent researching and conducting studies to confirm the feasibility of this venture.

It is our believe that the information contained in this report will display this potential of Owen Development as being a successful and integral part of the Stone Quarry industry. More specifically, the black stone that predominantly exists on the property could be a viable substitute for the present costly imports.

## PRODUCT

A study, requested by Jim Owen in October of 1986, from Richard Adlington identified the 'black stone' as a Nipissing Diabase (Sudbury Gabbro). Please refer to Appendix 'A'. This type of Diabase has been used in the building stone industry and has been compared to "black granite" (anorthosite).

The basic conclusions from the study are as follows:

- a) fracture patterns on the site must be determined
- b) thin section specimens must be examined to determine the stone's composition.

Various small-scale samples were presented to several companies in the building stone industry. The preliminary examinations generated positive and enthusiastic interest in the stone. Several of these companies requested larger samples to be brought in to them for further testing.

## MARKET ANALYSIS

In recent years there has been a strong upward trend toward the use of natural stone in the building and construction industries. It is being used for both interior and exterior building facing as well as for many other uses.

The Owen property has many benefits when looking at the market potential. In the following subsections these advantages are briefly outlined.

- a) Place

Many potential quarry locations are unfeasible due

to their inaccessibility to major transportation modes. This is not the case with Owen Development. The property has access to highway, rail, and water transportation. Highway 17 is located one mile from the site; CPR railway runs along Highway 17; and shipping facilities are approximately 30 miles away by highway. The only construction required is the building of a road from the site itself to the highway.

There is also the benefit of accessible energy. Hydro lines run through the site as does the Spanish river.

b) Community/Economy

Baldwin-Nairn townships, as well as the surrounding townships, have been economically depressed for the last six to eight years. These communities have relied heavily on the success of only two industries for many decades. These being the mining and paper and pulp industries. Both have been suffering for several years, thus, entire communities are experiencing high levels of unemployment, poorer standards of living and population deflations. The start of a new business such as Owen Development would create new jobs in several areas such as transportation, construction, quarrying, etc. All levels of government as well as the people who make up these commun-

ities would be more than receptive to this.

Another benefit is that Mr. Owen was born and raised in the Espanola area and is well-known. He also spent several years in Sudbury as well as Elliott Lake. The community would be enthusiastic knowing that a local person is planning to establish a business in the area.

These advantages, coupled with the positive interest that the small samples shown to some building stone manufacturers generated, makes Owen Development a very marketable venture.

#### FINANCE

There are both short-term and long-term financial needs for Owen Development. Taking priority at this time, of course, is the short-term requirements.

In order to fulfil the two immediate needs outlined in the Product section, approximately \$25,000 is required. This money would enable us to remove large samples from the property in order to determine the fracture size as well as to do the thin section specimen tests. It will only be after these are determined that we will know which market(s) are to be penetrated. From there the long-term financial requirements can be properly determined.

CONCLUSION

This brief report has been done so that the potential of Owen Development entering the quarry business can be presented. Once it is determined which markets are the most feasible, the potential will be realized into a very profitable and economically sound business.

Appendix 'B' has been enclosed as it, too, demonstrates the potential of this venture. As the first page explains, John Keast was the investigating counselor who represented the CASE program when doing this study.

NIPISSING DIABASE (SUDBURY GABBRO)

The Nipissing Diabase, also known as the Sudbury area Sudbury Gabbro, occurs as large and small sill-like igneous intrusions in the Precambrian lower Proterozoic Huronian sediments. Its age is about 2160 million years. It outcrops over a large area extending from Cobalt in the east to near Sault Ste. Marie in the west.

Much of the Nipissing Diabase is a gabbro consisting mainly of plagioclase feldspar and lesser amounts of pyroxene, both monoclinic and orthorhombic.

Within the gabbro are other facies, including a feldspathic pyroxenite. The rock on the Owen Property in Baldwin Township would fall into this category, pending a thin section examination which would be more definitive.

In an article by B.U. Dressler<sup>1</sup> quoting from a paper by Card and Pattison<sup>2</sup>, in the southern Sudbury area, orthopyroxene can constitute up to 43% of the rock, clinopyroxene up to 46% and quartz up to 10%. Accessory minerals are biotite, titanite, apatite and opaque minerals.

The pyroxenes are the minerals giving the rock its black colour. These may be more or less altered by metamorphism to black hornblende. This will not detract from the rock's use as a building stone and it takes an excellent polish.

This rock has a medium grained igneous (interlocking minerals) texture. It will not be as prone to breakage due to parting along the cleavage planes of large feldspar crystals as is "black granite" (anorthosite).

The Nipissing Diabase intrusions, being sill-like, lie roughly parallel to the bedding of the sediments. In the Baldwin Township area the sediments are steeply dipping so the Nipissing Diabase would be expected to attain considerable depths. This

does not mean the feldspathic pyroxenite facies would necessarily also attain great depths. Apart from the vertical extent shown as hills any downward extension would have to be determined by a few diamond drill holes, which need only go as deep as any possible quarry. Additional information provided by drilling would be the quality of the rock and number of fractures per unit of vertical depth.

Before any drilling, a geological survey of the surface should be made to outline the location of the feldspathic pyroxenite facies. The fracture pattern should be mapped and recorded in detail as part of the survey. Thin sections should be made from specimens from selected locations to determine the minerals present, their proportions and to check for any deleterious accessory minerals.

This report is based on the references given and on my own knowledge of the Sudbury area. I have seen the feldspathic Pyroxenite on the Owen Property but not in this section.

Respectfully submitted,

*R. Adlington*  
R. Adlington  
Geologist  
October 26, 1986

#### REFERENCES

- 1 Burkhardt, B.O. 1984: Chapter 4. General Geology of the the Sudbury Area, p. 70-71, in The Geology and Ore Deposits of the Sudbury Structure, edited by E.G. Pye, A.J. Naldrett and P.E. Giblin, U.G.S. Special Volume 1.
- 2 Card, K.D.,  
Pattison, E.F. 1973: Nipissing Diabase of the Southern Province, Ontario; p. 7-30 in Huronian Stratigraphy and Sedimentation, edited by G.M. Young, G.S.A. SPECIAL PAPER NO. 12



MANAGEMENT SERVICES  
SERVICES DE GESTION-CONSEIL

**CASE** COUNSELLING REPORT  
RAPPORT DU CONSEILLER

CONFIDENTIAL / CONFIDENTIEL

CLIENT'S NAME  
& ADDRESS  
  
NOM ET ADRESSE  
DU CLIENT

Mr. Jim Owen  
175 Hilda Avenue, Apt. 108  
WILLOWDALE, Ontario  
M2M 1V8

**RECEIVED**

DEC 24 1986

MINING LANDS SECTION

COUNSELLOR(S) / CONSEILLER(S) John Keast

CLIENT(S) NO. / NUMÉRO DU(DES) CLIENT(S) 1025

REPORT NO. / NUMÉRO DU RAPPORT 01

INTERIM / PÉRIODIQUE  FINAL

REPORT ISSUED / RAPPORT ÉTABLI LE October 2nd, 19 86

T.L. Chappell

CASE CO-ORDINATOR / COORDONNATEUR DE CASE



PRINCIPAL:

Mr. Jim Owen

ADDRESS:

175 Hilda Avenue, Apt. 8  
Willowdale, Ontario  
M2M 1V8

INTRODUCTION

Jim, I met with you briefly on Saturday, September 6th, 1986 when you were passing through Sudbury on your way to a wedding in Espanola. At this time, you brought to me several samples of polished rock, and we made an appointment to visit your mining claims near Espanola on Saturday, September 20th, 1986.

BACKGROUND

During our visit to the property, you told me that you had acquired 16 claims situated near Espanola, Ontario on the southeast corner of Baldwin Township, and the southwest corner of Nairn Township in the year 1980. I understand that you wanted to further investigate the showings of copper/nickel sulphides on these claims that had originally been investigated years earlier by other interested parties.

Without going into details, you investigated these showings with a geological report, essays, magnetic and electro magnetic surveys, trenching and diamond drilling. The findings from these efforts were not encouraging so you reduced your claims from 16 to 5. You had done enough assessment work on these remaining claims to continue to lease four of them and you hope to do enough additional assessment work to retain the fifth.

You were about to let the whole matter drop when you became interested, through talking to an old prospector, in the possibility that the rock outcroppings on these claims might have some commercial value as polished architectural stone.

Subsequently, you took some grab samples, had them

cut and polished and then brought them to a facility in Cornwall, Ontario, Carniko Tile, to obtain an opinion as to its suitability for architectural stone.

You received an encouraging reply from the plant operator who told you that he had a market for this uniquely coloured stone, but that he would need a large sample (4 feet by 4 feet by eight feet) to put through his cutting sears to determine whether or not this rock was sufficiently competent to be cut into large thin slabs.

This rock is identified, by you to me, from the Geological Report of R. Adlington (July 1, 1981) as pyroxenitic gabbro - who described its occurrences as a "steep sided outcrop".

At this time, having spent over \$22,000 on this project, you decided to seek advice through the CASE program.

#### OBSERVATIONS AND RECOMMENDATIONS

Jim, as you pointed out to me, the location of your claims is ideal because it is adjacent to all services and therefore, the cost of developing and working a quarry would be considerably lessened. However, the cost to obtain the basic information to determine the viability of a specialized stone quarry is still substantial.

In my opinion, the following steps must be taken before starting an actual quarry.

1. Engage a geologist to determine the possible extent of the occurrence of the pyroxenitic gabbro. From the geological report and accompanying maps, I notice that the country rock in this area is Nippissing Diabase and therefore the possible extent of the existence of the gabbro should be determined as early as possible in your overall evaluation. Perhaps your previous geologist, R. Adlington,

could help with this.

2. Extract the sample of rock (4' x 4' x 8') required by "CARNIKE TILE" to determine the competency of this rock for use as architectural stone facing.
3. Determine the monetary viability of this operation. This can be done best by engaging a company of Consulting Engineers.
4. Conduct a program of diamond drilling to determine the actual extent of this rock before starting a quarry operation.

From this program Jim, I know you will realize that much money must be spent before any money can be earned. In our discussions, you seemed to be in favour of turning the property over to a mining company in exchange for a negotiated royalty. I would agree with this.

Financing will be a problem. However there are always some companies willing to spend development money in exchange for an ownership option and royalty arrangement. You mentioned Alexander Industries in Sudbury whom you approached and who expressed some interest, but not until 1987. This should be followed up. There are also some large mining contracting companies such as MacIsaac Mining and Tunnelling Company in Sudbury who may be interested.

I have discussed the financial problems facing you in this matter with Tom Chappell in our CASE office, and he is now conducting a search of government aid programs that may be available. His findings will be included with my report or sent later as time dictates.

#### CONCLUSION

Jim, I hope that the foregoing will be of some help

to you in making a decision on your future with these claims. It is unfortunate that you are not in better health so that you can take a more active part in any program that is decided upon.

However, ways can be found around almost anything and the CASE program will always try to help.

I wish you well in your efforts and if there is anything in this report that you wish to discuss with me, please feel free to call me at my home in Sudbury, 673-1555.

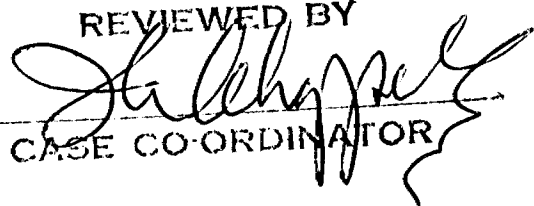
Within a month's time, the CASE office in Sudbury will be calling to enquire if they can be of assistance in the implementation of recommendations contained in this report.

However, should further assistance be required before that time, please phone collect to the Sudbury CASE office, 705-674-8347 and ask for the Co-Ordinator, Mr. T.L. Chappell.

Signed: John D. Keast

P.S.: Enclosed with my report are the two reports that you left with me on September 20th, 1986.

REVIEWED BY

  
CASE CO-ORDINATOR



41105SE0021 2.9656 NAIRN

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PRELIMINARY MARKET STUDY AND PRODUCT REPORT  
Building and Ornamental Stone, Nairn and  
Baldwin Townships, Owen Property

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DEC 24 1986  
**MINING LANDS SECTION**

This report was undertaken to determine a possible market for the particular stone deposits on the Owen property. Also, a further study of the characteristics of these particular deposits were done.

The basis of this report comes from the recommendations outlined in the CASE study done for Jim Owen, September, 1986.

The various references studied and the conversations with persons in the marble and granite industry, lead me to believe that a very positive market potential does exist.

The following elements were predominant:

1. the dark, or "Black Granite" type commanded the most interest;
2. the location of the deposit could be a possible cost incentive;
3. all interested parties were enthusiastic about this type of development in the North.

Cautions, though were apparent, such as:

1. a determination of the extent of the fractures and thus the size of the blocks to be quarried, had to be a priority;
2. consistency and composition were also important;
3. quantity would have to be established, of course; and
4. start up and other expenses could be formulable.

R.J.OWEN

1400-1-15



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**ASTM STANDARD TESTS FOR BUILDING STONE**  
**and**  
**CANMET COST GUIDELINES**

**RECEIVED**  
**DEC 24 1986**  
**MINING LANDS SECTION**





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**SAMPLE REQUIREMENTS FOR ASTM TESTS**

- C 97-83 Absorption and Bulk Specific Gravity of Natural Building Stone
- C 99-52 Modulus of Rupture of Natural Building Stone
- C 170-50 Compressive Strength of Natural Building Stone
- C 241-51 Abrasion Resistance of Stone Subjected to Foot Traffic
- C 666-80 Resistance of Concrete ( Building Stone ) to Rapid Freezing and Thawing
- C 880-78 Flexural Strength of Natural Building Stone
- D 2845-83 Determination of Pulse Velocities and Ultrasonic Elastic Constants of Rock

## Introduction

This report has been assembled in order to familiarize the prospective client with sample requirements, testing procedures and costs involved for the ASTM Standards related to building stone.

CANMET currently has the capability of conducting all the ASTM tests presented in this report and is also capable of offering limited technical advice with respect to sampling techniques and general inquiries on the subject of building stone.

The cost estimates in this report are those for each test condition. However, some engineering practices and/or ASTM tests require that both or several conditions be performed in order to satisfy the respective standards. Where the standard requires multiple test conditions, this is so indicated.

For more detailed information on stone specifications and the physical testing of building stone or slate refer to the 1985 Annual Book of ASTM Standards, Volume 04.08 Soil and Rock; Building Stone.

Should you have any questions relating to this report, testing procedures, combinations of related tests and conditions or building stone in general please do not hesitate to contact Mr. R.K. Collings at ( 613 ) 992-8794.

## **SAMPLE REQUIREMENTS**

The following sample requirements and specifications have been taken from the corresponding ASTM Standard test requirements. These requirements shall be adhered to when submitting samples of building stone for testing.

In addition to the attached specific sample requirements for each ASTM test the following information shall also be submitted:

- 1- samples shall be clearly numbered and identified as to precise location;
- 2- the rift (bedding), grain and head grain, if necessary, shall be clearly marked on each individual prepared and/or unprepared sample;
- 3- sample orientation pertaining to the direction of load which is to be applied to each sample shall be clearly stated and be included in the accompanying sample documentation;
- 4- accompanying documentation with all the above information for each sample and specifying the ASTM test required.

Also, the sample shall be selected to represent a true average of the type or grade of stone under consideration and shall be of the quality supplied to the market under the type designation to be tested. The sample may be selected by the purchaser or his authorized representative from the quarried stone or taken from the natural ledge and shall be of adequate size to permit the preparation of the required number of samples or specimens for each test required.<sup>1</sup>

<sup>1</sup> 1985 Annual Book of ASTM Standards, Volume 04.08 Soil and Rock; Building Stone page 4.

**SCHEDULE FOR ASTM BUILDING STONE TESTS**

ASTM TEST	ASTM TEST NAME	estimated time ( hours )		
		for sample preparation	to perform test	total
* C 97 - 83	absorption and bulk specific gravity of natural building stone	1.5	0.50	2.00
* C 99 - 52	modulus of rupture of natural building stone	1.5	0.50	2.00
* C 170 - 50	compressive strength of natural building stone	1.5	0.50	2.00
* C 241 - 51	abrasion resistance of stone subjected to foot traffic	1.5	0.50	2.00
* C 666 - 80	resistance of concrete ( building stone ) to rapid freezing and thawing	1.5	0.50	2.00
* C 880 - 78	flexural strength of natural building stone	1.5	0.50	2.00
D2845 - 83	laboratory determination of pulse velocities and ultrasonic elastic constants of rock	1.0	0.50	1.50

\* TESTS MAY BE DONE IN COMBINATION THEREBY ELIMINATING SOME SAMPLE PREPARATION COSTS

ASTM Designation: C 97-83

Standard Test Requirements for

**ABSORPTION AND BULK SPECIFIC GRAVITY  
OF NATURAL BUILDING STONE**

Sample specifications:

Minimum number of samples:.....1

Minimum sample size:.....greater than 150 mm x 230 mm (6x9 in.)

Minimum number of specimens per sample:...3

Minimum specimen size:.....cubes, prisms, cylinders, or any regular  
form with least dimension not under 50 mm  
( 2 in.) and greatest dimension not over  
75 mm ( 3 in.)

Specimen preparation:.....sawed or drilled surface

Test conditions:

DRY - specimens oven dried for 24 hours; then 48 hours immersed in distilled water

Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.

B: test - 0.5 hrs.

Approximate estimate of cost per test:

A: unprepared specimens - 100.00

B: prepared specimens - 25.00

ASTM Designation: C 99-52

Standard Test Requirements for

## MODULUS OF RUPTURE OF NATURAL BUILDING STONE

### Sample specifications:

Minimum number of samples:.....1 (per condition of loading )  
Minimum sample size:.....greater than 100 x 200 x 200 mm ( 4x8x8 in.)  
Minimum number of specimens per sample:....3  
Minimum specimen size:.....slab 100 x 200 x 60 mm ( 4x8x2 1/4 in.)  
Specimen preparation:.....sawed and ground

### Test conditions:

#### CONDITION 1:

DRY ( perpendicular to rift or bedding )

Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

#### CONDITION 2:

DRY ( parallel to rift or bedding )

Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

#### CONDITION 3:

WET ( perpendicular to rift or bedding )

Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

#### CONDITION 4:

WET ( parallel to rift or bedding )

Minimum number of specimens: 3

ASTM Designation: C 99-52 con't.

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

Approximate estimate of cost per test condition:

A: unprepared specimens - 100.00  
B: prepared specimens - 25.00

ASTM Designation: C 170-50

Standard Test Requirements for

**COMPRESSIVE STRENGTH OF  
NATURAL BUILDING STONE**

Sample specifications:

Minimum number of samples:.....1 (per condition of loading )  
Minimum sample size:.....greater than 50 x 50 x 225 mm ( 2 x 2 x 9 in.)  
Minimum number of specimens per sample:....3  
Minimum specimen size:.....cubes, square prisms, or cylinders - the diameter or lateral dimensions being greater than 50 mm ( 2 in.) and the ratio of height to diameter or lateral dimension should be not less than 1:1  
Specimen preparation:.....sawed and ground

Test conditions:

**CONDITION 1:**  
**DRY STRENGTH ( perpendicular to rift or bedding )**  
Minimum number of specimens: 3

Estimated number of person hours:  
A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

**CONDITION 2:**  
**DRY STRENGTH ( parallel to rift or bedding )**  
Minimum number of specimens: 3

Estimated number of person hours:  
A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

**CONDITION 3:**  
**WET STRENGTH ( perpendicular to rift or bedding )**  
Minimum number of specimens: 3

Estimated number of person hours:  
A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.



ASTM Designation: 170 - 50 con't.

**CONDITION 4:**

**WET STRENGTH (parallel to rift or bedding)**

**Minimum number of specimens: 3**

**Estimated number of person hours:**

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

**Approximate estimate of cost per condition:**

A: unprepared specimen - 100.00  
B: prepared specimen - 25.00

ASTM Designation: C 241-51

Standard Test Requirements for

**ABRASION RESISTANCE OF  
STONE SUBJECTED TO FOOT TRAFFIC**

Sample specifications:

Minimum number of samples:.....1  
Minimum sample size:.....25 mm ( 1 in.) thick x 200 mm ( 8 in.) square  
Minimum number of specimens per sample:...3  
Minimum specimen size:.....cubes, 25 mm ( 1 in.) x 50 mm ( 2 in.) square  
Specimen preparation:.....sawed with sharp edges rounded by grinding

Test conditions:

DRY - specimens oven dried for 24 hours; then abrasion tested for 30 minutes  
Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

Approximate estimate of cost per test:

A: unprepared specimen - 100.00  
B: prepared specimen - 25.00

ASTM Designation: C 666 - 80

Standard Test Requirements for

**RESISTANCE OF CONCRETE ( BUILDING STONE ) TO  
RAPID FREEZING AND THAWING**

Sample specifications:

Minimum number of samples:.....1

Minimum sample size:.....variable

Minimum number of specimens per sample:..3

Minimum specimen size:.....a) 100 x 200 x 50 mm (4 x 8 x 2 1/4 in.)

b) cube, square, prism or cylinder -  
the diameter or lateral dimension is not less  
than 50 mm ( 2 in.) and the ratio of the height  
to diameter or lateral dimension is not less  
than 1:1

Specimen preparation:.....sawed or core drilled

Test conditions:

**NET** - to determine the resistance of building stone specimens to rapid repeated  
cycles of freezing and thawing by;

**PROCEDURE A:** rapid freezing and thawing in water

Minimum number of samples: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.

B: test - 0.5 hrs.

**PROCEDURE B:** rapid freezing in air and thawing in water

Minimum number of samples: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.

B: test - 0.5 hrs.

All specimens are tested for fundamental traverse frequency, pulse velocity  
and weight at beginning of test and after 300 cycles.

ASTM Designation: C 666 - 90 con't

Approximate estimate of cost per test procedure:

A: unprepared sample - 100.00

B: prepared sample - 25.00

ASTM Designation: C 890 - 78

Standard Test Requirements for

## FLEXURAL STRENGTH OF NATURAL BUILDING STONE

### Sample specifications:

Minimum number of samples:.....1  
Minimum sample size:.....127 mm ( 5 in.) wide x 25 mm  
( 1 in. ) thick x 300 mm ( 12 in. )  
long  
Minimum number of specimens per sample:....3  
Minimum specimen size:.....slab 38 mm ( 1 1/2 in. ) wide x  
25 mm ( 1 in. ) thick x 300 mm  
( 12 in. ) long  
Specimen preparation:.....split and sawed

### Test conditions:

#### CONDITION 1:

DRY - A: heat specimens at 50°C for 24 hours and cool at room temperature  
in a desiccator for 48 hrs.

Minimum number of samples: 3

Estimated number of person hours:

A: sample preparation - 1.5 hrs.  
B: test - 0.5 hrs.

#### CONDITION 2:

WET - B: immerse specimens in water at 20°C for 48 hrs.

Minimum number of samples: 3

Estimated number of person hours:

A: sample preparation - 1.5 hrs.  
B: test - 0.5 hrs.

Approximate estimate of cost per test condition:

A: unprepared sample - 100.00  
B: prepared sample - 25.00

ASTM Designation: D 2845-B3

Standard Test Requirements for

**LABORATORY DETERMINATION OF PULSE VELOCITIES  
AND ULTRASONIC ELASTIC CONSTANTS OF ROCK**

Sample specifications:

Minimum number of samples:.....1 ( or as many samples as necessary to  
to reflect the true nature of the deposit )  
Minimum sample size:.....ratio of pulse travel distance ( length ) to  
minimum lateral dimension not to exceed 5  
Sample preparation:.....sawed, drilled, cored with contact surfaces  
finished by lapping or grinding

Test conditions:

CONDITION 1:  
oven dried state ( 0% saturation )

Estimated number of person hours:  
A: specimen preparation - 1.0 hrs.  
B: test - 0.5 hrs.

CONDITION 2:  
saturated condition ( 100% saturation )

Estimated number of person hours:  
A: specimen preparation - 1.0 hrs.  
B: test - 0.5 hrs.

CONDITION 3:  
any intermediate state

Estimated number of person hours:  
A: specimen preparation - 1.0 hrs.  
B: test - 0.5 hrs.

Approximate estimate of cost per test condition:

A: unprepared specimens - 75.00  
B: prepared specimens - 25.00



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**ASTM STANDARD TESTS FOR SLATE**  
**and**  
**CANMET COST GUIDELINES**



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**SAMPLE REQUIREMENTS FOR ASTM TESTS**

- C 120-52 Flexure Testing of Structural or Electrical Slate ( Modulus of Rupture )
- C 120-52 Flexure Testing of Roofing Slate ( Modulus of Rupture )
- C 120-52 Flexure Testing of Roofing Slate ( modulus of Elasticity )
- C 121-48 Water Absorption of Slate
- C 217-58 Weather Resistance of Natural Slate



## Introduction

This report has been assembled in order to familiarize the prospective client with sample requirements, testing procedures and costs involved for the ASTM Standards related to slate.

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- 4- accompanying documentation with all the above information for each sample and specifying the ASTM test required.

Also, the sample shall be selected to represent a true average of the type or grade of stone under consideration and shall be of the quality supplied to the market under the type designation to be tested. The sample may be selected by the purchaser or his authorized representative from the quarried stone or taken from the natural ledge and shall be of adequate size to permit the preparation of the required number of samples or specimens for each test required.<sup>1</sup>

<sup>1</sup> 1985 Annual Book of ASTM Standards, Volume 04.08 Soil and Rock; Building Stone page 4.

**SCHEDULE FOR ASTH SLATE TESTS**

ASTH TEST	ASTH TEST NAME	estimated time ( hours )		
		for sample preparation	to perform test	total
C 120 - 52	flexure testing of structural or electrical slate (modulus of rupture)	1.5	0.75	2.25
*	flexure testing of roofing slate ( modulus of rupture )	1.5	0.75	2.25
*	flexure testing of roofing slate ( modulus of elasticity )	1.5	1.50	3.00
C 121 - 48	water absorption of slate	1.0	0.50	1.50
C 217 - 58	weather resistance of natural slate	1.5	0.50	2.00

\* TESTS MAY BE DONE IN COMBINATION THEREBY ELIMINATING SOME SAMPLE PREPARATION COSTS

ASTM Designation: C 120-52 (Reapproved 1981)

Standard Test Requirements for

**FLEXURE TESTING OF STRUCTURAL OR  
ELECTRICAL SLATE ( MODULUS OF RUPTURE )**

Sample specifications:

Minimum number of samples:.....6

Minimum sample size:.....300 mm x 38 mm x 25 mm ( 12 x 1 1/2 x 1 in.)

Sample preparation:.....split and sawed

Test conditions:

DRY ( perpendicular to rift or bedding )

Minimum number of samples: 3

DRY ( parallel to rift or bedding )

Minimum number of samples: 3

Estimated number of person hours:

A: sample preparation - 1.50 hrs.

B: test - 0.75 hrs.

Approximate estimate of cost per test:

A: unprepared sample - 112.50

B: prepared sample - 37.50

ASTM Designation: C 120-52 (Reapproved 1981)

Standard Test Requirements for

**FLEXURE TESTING OF ROOFING SLATE  
( MODULUS OF RUPTURE )**

Sample specifications:

Minimum number of samples:.....6  
Minimum sample size:.....100 mm x 100 mm ( 4 x 4 in.)  
Sample preparation:.....sawed

Test conditions:

DRY ( perpendicular to rift or bedding )  
Minimum number of samples: 6

Estimated number of person hours:

A: sample preparation - 1.5 hrs.  
B: test - 0.75 hrs.

Approximate estimate of cost per test:

A: unprepared samples - 112.50  
B: prepared samples - 37.50

ASTM Designation: C 120-52 (Reapproved 1981)

Standard Test Requirements for

**FLEXURE TESTING OF ROOFING SLATE**

**( MODULUS OF ELASTICITY )**

Sample specifications:

Minimum number of samples:.....6  
Minimum sample size:.....200 mm ( 8 in.) long  
Sample preparation:.....sawed

Test conditions:

DRY ( perpendicular to rift or bedding )  
Minimum number of samples: 3

DRY ( parallel to rift or bedding )  
Minimum number of samples: 3

Estimated number of person hours:

A: sample preparation - 1.50 hrs.  
B: test - 1.50 hrs.

Approximate estimate of cost per test:

A: unprepared sample - 150.00  
B: prepared sample - 75.00

\* test may be done in conjunction with modulus of rupture of slate

Approximate estimate of cost per test when done in conjunction with  
the modulus of rupture of slate:

A: total cost for combined test - 87.50

ASTM Designation: C 121-48 (reapproved 1981)

Standard Test Requirements for

### WATER ABSORPTION OF SLATE

Sample specifications:

Minimum number of samples:.....6

Minimum sample size:.....square or rectangular slab;  
5 - 8 mm ( 3/16 - 5/16 in.) in thickness and  
greater than 100 mm ( 4 in.) square

Sample preparation:.....split and sawed

Test conditions:

CONDITION 1:

NET - 48 hr. immersed in water ( preferred method )

Minimum number of samples: 6

Estimated number of person hours:

A: sample preparation - 1.0 hrs.

B: test - 0.50 hrs.

CONDITION 2:

NET - 8 hr. immersed in water and boiled ( alternate method )

Minimum number of samples: 6

Estimated number of person hours:

A: sample preparation - 1.0 hrs.

B: test - 0.50 hrs.

Approximate estimate of cost per test condition:

A: unprepared sample - 75.00

B: prepared sample - 25.00

ASTM Designation: C 217-58

Standard Test Requirements for

**WEATHER RESISTANCE OF NATURAL SLATE**

Sample specifications:

Minimum number of samples:.....1  
Minimum sample size:.....greater than 150 x 100 x 250 mm ( 6 x 4 x 10 in.)  
Minimum number of specimens per sample:...3  
Minimum specimen size:.....50 x 100 mm ( 2 x 4 in.) x 25 mm ( 10 in.) in length  
Specimen preparation:.....cut and ground

Test conditions:

WET - 7 days in 1% sulfuric acid solution + 24 hours drying  
Minimum number of specimens: 3

Estimated number of person hours:

A: specimen preparation - 1.5 hrs.  
B: test - 0.5 hrs.

Approximate estimate of cost per test:

A: unprepared specimens - 100.00  
B: prepared specimens - 25.00





May 8, 1987

Your File: 86-115  
Our File: 2.9656

Mining Recorder  
Ministry of Northern Development and Mines  
199 Larch Street  
Sudbury, Ontario  
P3E 5P9

Dear Sir:

RE: Data for Assaying submitted under Section 77(19)  
of the Mining Act R.S.O. 1980 on Mining Claims  
S 551164, et al, in Haim and Baldwin Townships

---

The enclosed statement of assessment work credits for Assaying  
have been approved as of the above date.

Please inform the recorded holder of these mining claims and  
so indicate on your records.

Yours sincerely,

Gary L. Weatherson, Manager  
Mining Lands Section  
Mineral Development and Lands Branch  
Mines and Minerals Division

Whitney Block, Room 6610  
Queen's Park  
Toronto, Ontario  
M7A 1W3

Telephone: (416) 965-4888

DK/mc

cc: James Owen  
Suite 108  
175 Hilda Avenue  
Willowdale, Ontario  
M2M 1V8

John Keast  
1000 Ramsey Lake Road  
Sudbury, Ontario  
P3E 2C7

Resident Geologist  
Sudbury, Ontario

Encl.



Recorded Holder  
**JAMES OWEN**

Township or Area  
**NAIRN AND BALDWIN TOWNSHIPS**

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
<b>Geophysical</b> Electromagnetic _____ days Magnetometer _____ days Radiometric _____ days Induced polarization _____ days Other _____ days Section 77 (19) See "Mining Claims Assessed" column <b>Geological</b> _____ days <b>Geochemical</b> _____ days Man days <input type="checkbox"/> Airborne <input type="checkbox"/> Special provision <input type="checkbox"/> Ground <input type="checkbox"/> <input type="checkbox"/> Credits have been reduced because of partial coverage of claims. <input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	<p>\$300.00 SPENT ON ANALYSES OF SAMPLES TAKEN FROM MINING CLAIMS:            S 551164 to 67 inclusive</p> <p>20 ASSESSMENT WORK DAYS ARE ALLOWED WHICH MAY BE GROUPED IN ACCORDANCE WITH SECTION 76(6) OF THE MINING ACT.</p>

Special credits under section 77 (16) for the following mining claims

No credits have been allowed for the following mining claims

not sufficiently covered by the survey       insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical - 80; Geological - 40; Geochemical - 40; Section 77(19) - 60.

Hyman Twp. (M-945)

THE TOWNSHIP

OF

**NAIRN**

DISTRICT OF SUDBURY

SUDBURY MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

PATENTED LAND	(P)
CROWN LAND SALE	C.S.
LEASES	(L)
LOCATED LAND	Loc.
LICENSE OF OCCUPATION	L.O.
MINING RIGHTS ONLY	M.R.O.
SURFACE RIGHTS ONLY	S.R.O.
ROADS	—
IMPROVED ROADS	—
KING'S HIGHWAYS	—
RAILWAYS	—
POWER LINES	—
MARSH OR MUSKEG	—
MINES	—
CANCELLED	C.
PATENTED S.R.O.	—

NOTES

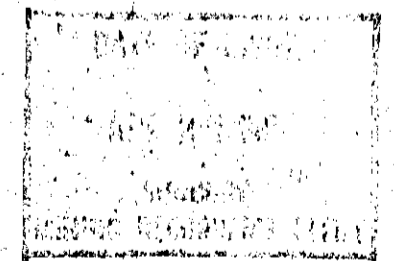
400' surface rights reservation along the shores of all lakes and rivers.

AREAS WITHDRAWN FROM DISPOSITION

M.R.O. — MINING RIGHTS ONLY  
S.R.O. — SURFACE RIGHTS ONLY  
M.+S. — MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
(P) REFORESTATION		31/8/79	S.R.O.	38047
(L) SEC. 36/80	W.1/84	10/5/84	S.R.O.	180539

\* Order No. W. 26/85 N.E.R. (Surface Rights Only) 1985.12.12.



PLAN NO. **M.883**

ONTARIO  
MINISTRY OF NATURAL RESOURCES  
SURVEYS AND MAPPING BRANCH

Baldwin Twp. (M-645)

Lorne Twp. (M-999)

Foster Twp. (M-814)



411055E0021 2.9656 NAIRN

MAP SYMBOLOLOGY

Aerial Cableway	Pipeline (above ground)
Boundary	Railroad
International	Single Track
Interprovincial	Double Track
District, Township	Abandoned
Indian Reserve	Turbine
Approach	Road
Lot, Concession	Highway, County
Approach	Township
Park Boundary	Access Road of doubtful maintenance or significant driveway
Bridge	Traffic, Bush Road (garage, utility)
Beach, Railroad	Rapids
Building	Double line river with multiple rapids
Chimney	Double line river with multiple rapids
Cliff, Pit, Pile	Reservoir
Contours	River, Stream, Canal
Interpretation	Approximate seasonal direction of flow
Approximation	Rock
Depression	Spot Elevation (base elevation) 100.0
Control Points	Tower
Horizontal	Transmission Line
Vertical	Poles
Culvert	Pipes
Falls	Tunnel
Double line river	Utility Poles
Fence, Hedge, Wall	Wharf, Dock, Pier
Feature Outline (Construction Features, etc.)	Wooded Area
Flooded Land	
Lock	
Marsh or Swamp	
Moat	
Mine Head Frame	
Outcrop	

AREAS WITHDRAWN FROM DISPOSITION

- M.R.O. - MINING RIGHTS ONLY
- S.R.O. - SURFACE RIGHTS ONLY
- M.+S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	File
SEC-36/80	W 2/83	31/3/83	S.R.O.	77094

NOTES

Area shown thus CL 1664 under Water Power Lease Agreement No. 110, File No. 9214 - Surface Rights Withdrawn.

Lots 2 to 6 inclusive and 8 to 12 inclusive Con. V and Lots 1 to 11 inclusive Con VI, subject to Section 109 of the Mining Act, (R.S.O. 1980)

E 1/2 of NE 1/4 of S 1/2 of LOT 1, CON. 6 Mining Rights Withdrawn by Order in Council dated 9 January, 1945. File No. 9296

SAND and GRAVEL

MNR GRAVEL RESERVE (1983 12 07)

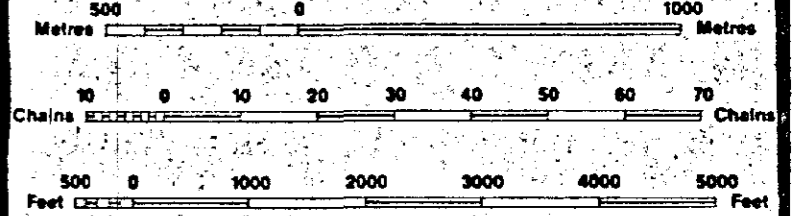
LEGEND

HIGHWAY AND ROUTE No.	
OTHER ROADS	
TRAILS	
SURVEYED LINES:	
TOWNSHIPS, BASE LINES, ETC.	
LOTS, MINING CLAIMS, PARCELS, ETC.	
UNSURVEYED LINES:	
LOT LINES	
PARCEL BOUNDARY	
MINING CLAIMS ETC.	
RAILWAY AND RIGHT OF WAY	
UTILITY LINES	
NON-PERENNIAL STREAM	
FLOODING or FLOODING RIGHTS	
SUBDIVISION OR COMPOSITE PLAN	
RESERVATIONS	
ORIGINAL SHORELINE	
MARSH or MUSKEG	
MINES	
TRAVERSE MONUMENT	

DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	◐
LEASE, SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	◼
" MINING RIGHTS ONLY	◻
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	○
CANCELLED	○
SAND & GRAVEL	○

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1912, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1.



SCALE 1:20 000  
GRID ZONE 17

DATE OF ISSUE  
MAR 6, 1987  
SUDBURY  
MINING RECORDER'S OFFICE

TOWNSHIP  
**BALDWIN**  
M.N.R. ADMINISTRATIVE DISTRICT  
**ESPANOLA**  
MINING DIVISION  
**SUDBURY**  
LAND TITLES / REGISTRY DIVISION  
**SUDBURY**

Ministry of Natural Resources  
Land Management Branch  
Ontario

Original Compilation: JULY, 1985  
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