



**MATERIAL SPECIFICATION FOR
AGGREGATES - SURFACE TREATMENT**

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1006.01 SCOPE

This specification covers the requirements for aggregates for use in surface treatment.

1006.01.01 Specification Significance and Use

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

Use of this specification or any other specification shall be according to the Contract Documents.

1006.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

1006.02 REFERENCES

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Material

OPSS 1001 Aggregates - General

Ontario Ministry of Transportation Publications

MTO Laboratory Testing Manual:

LS-601	Material Finer than 75 µm Sieve in Mineral Aggregates by Washing
LS-602	Sieve Analysis of Aggregates
LS-604	Relative Density and Absorption of Coarse Aggregate
LS-606	Soundness of Aggregates by Use of Magnesium Sulphate
LS-607	Percent Crushed Particles in Processed Coarse Aggregate
LS-608	Percent Flat and Elongated Particles in Coarse Aggregate
LS-609	Petrographic Analysis of Coarse Aggregate
LS-613	Insoluble Residue of Carbonate Aggregates
LS-614	Freezing and Thawing of Coarse Aggregate
LS-618	Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus
LS-619	Resistance of Fine Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus
LS-625	Guidelines for Sampling of Aggregate Materials
LS-703/704	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1006.03

DEFINITIONS

For the purpose of this specification, the following definitions apply:

Bench means a ledge parallel to stratigraphic bedding that in quarries forms a single level of operation above which rock is excavated from a contiguous face.

CCIL means the Canadian Council of Independent Laboratories.

Duplicate Samples means two samples taken at the same time and location – one to be used for Quality Assurance Testing and the other for Referee Testing.

Physical Property means an inherent attribute or feature of an aggregate material. Tests are carried out to determine an aggregate's resistance to weathering or degradation or both.

Quality Assurance (QA) means a system or series of activities carried out by the Owner to ensure that Materials received from the Contractor meet the requirements specified in the Contract Documents

Referee Testing means testing of a material property or attribute for the purpose of resolving acceptance.

Slag means fused silicate material from the processing of ores and includes air-cooled blast furnace slag, blast furnace slag, copper slag, nickel slag, and steel slag.

1006.05

MATERIALS

1006.05.01

Aggregates

1006.05.01.01

General

Aggregates shall be according to OPSS 1001, unless otherwise specified in this specification.

Aggregates shall be produced from sands, gravels, or quarried rock.

Aggregates containing slag or composed of slag are not acceptable for use as surface treatment aggregates.

At the discretion of the Owner, the physical property requirements may be waived provided the Contractor has demonstrated satisfactory field performance for a pavement that is at least 3 years old and constructed in a similar environment for the same application and using the same aggregate that is being proposed. An independent petrographic examination and report shall be provided to the Owner that demonstrates to the Owner's satisfaction that the aggregate used in the pavement being referred to is the same as the aggregate under consideration for acceptance.

When a change in the character of the aggregate occurs or when the performance of the aggregate is found to be unsatisfactory, use of those aggregates shall be discontinued until the Contractor can prove to the satisfaction of the Contract Administrator that the source remains acceptable or can be made acceptable.

1006.05.01.02

Gradation Requirements

Aggregate shall meet the gradation requirements shown in Table 1.

1006.05.01.03 Physical Property Requirements

Aggregate shall meet the physical property requirements of Table 2.

1006.07 PRODUCTION

1006.07.01 Aggregate Processing, Handling, and Stockpiling

Aggregates separated during processing, aggregates secured from different sources, and aggregates from the same source but of different gradations shall be placed in individual stockpiles. When screenings from primary and secondary crushers are produced separately, they shall be stockpiled separately.

Aggregates that have become mixed with foreign matter of any description or aggregates from different stockpiles that have become mixed with each other shall not be used and shall be immediately removed from the stockpile.

1006.08 QUALITY ASSURANCE

1006.08.01 General

QA testing may be carried out by the Owner for purposes of ensuring that the aggregates used in the work are according to the requirements of this specification. Individual test results may be forwarded to the Contractor as they become available.

When a hydrated lime anti-stripping agent is used and testing is required, test samples for the physical property requirements shall be taken prior to the addition of the hydrated lime. If this is not practical, samples coated in hydrated lime may be taken and the lime removed by washing prior to testing. In this case, the requirements for LS-601 shall be waived.

The Owner shall be responsible for all costs associated with testing for QA purposes, unless otherwise specified in the Contract Documents.

1006.08.02 Laboratory Requirements

The Contract Administrator shall designate all QA laboratories.

An acceptable laboratory conducting aggregate tests for physical properties shall be one that holds a current Type D certificate from CCIL for the applicable test methods and also participates in the annual MTO Proficiency Sample Testing Program for the specific tests, when applicable.

An acceptable laboratory conducting tests for gradation according to LS-602, materials finer than 75 µm by washing of the aggregates according to LS-601, and percent crushed particles according to LS-607 shall be one that holds a current Type C certificate from CCIL.

Testing shall be conducted by qualified laboratory staff that holds a current certificate from CCIL in aggregate testing.

Equivalent alternate laboratory and technician certifications or laboratory proficiency testing programs may be used to demonstrate similar requirements provided that they are acceptable to the Contract Administrator.

1006.08.03 Alternative to LS-614

LS-614 shall be used for acceptance, unless written notification to the Contract Administrator to replace it with LS-606 for acceptance is received prior to sampling of the applicable materials for QA purposes. Provided the Contract Administrator has received such a request, LS-606 shall be used. Otherwise, conformance to LS-614 shall be required.

When notification is provided after QA testing using LS-614 has been initiated, the Contractor shall be charged for the cost of the testing using LS-614, administrative charges, and additional sampling, if required.

1006.08.04 Sampling

Sampling shall be according to LS-625.

Duplicate samples shall be randomly obtained from the stockpile and sealed by the Contractor in the presence of the Contract Administrator. The stockpiles from which the samples are to be taken shall contain at least 10% of the total quantity of aggregate needed or a minimum quantity of 500 tonnes, whichever is greater, unless otherwise directed by the Contract Administrator.

The mass of each sample shall meet the requirements shown in Table 3. Each bag or container shall hold not more than 30 kg. When more than 30 kg is required, the total sample shall be recombined by the QA laboratory prior to testing.

In the event that the Contractor is unavailable to take the sample, no further materials shall be placed in the work until the duplicate samples have been taken.

The Contractor shall provide new or clean sample bags or containers that are constructed to prevent the loss of any part of the material or contamination or damage to the contents during shipment. Metal or cardboard containers are unacceptable.

QA samples shall be identified on both the inside and the outside of the sample container.

1006.08.05 Testing and Retention of Samples

When the Contract Administrator elects to carry out QA testing, one of the duplicate samples shall be randomly selected for testing by the QA laboratory and the remaining sealed sample shall be retained by the QA laboratory for possible referee testing.

1006.08.06 Acceptance

QA test results shall be used for acceptance purposes, except when referee testing has been carried out.

When QA test results show that the aggregates meet the requirements of this specification, the aggregates shall be accepted.

When QA test results show that the aggregates do not meet the requirements of this specification, the Contract Administrator shall notify the Contractor that the aggregates represented by the test results shall not be accepted. This notification shall take place in writing within 3 Business Days of receipt of the non-conforming data. The Contractor has the option of either removing the material from the work or invoking referee testing. The Contractor may request a reduced price in lieu of removal for aggregates that fail to meet the requirements of this specification. Irrespective of the negotiation of a reduced price payment, the warranty provisions of the Contract Documents shall apply.

1006.08.07**Referee Testing**

When QA test results do not meet the requirements of this specification the Contractor has the option of invoking referee testing of the test result that fails to meet the requirements. The Contractor shall notify the Contract Administrator of the selected option in writing within 2 Business Days following notification of unacceptable material.

The Contract Administrator shall select a referee testing laboratory acceptable to the Contractor within 3 Business Days following the Contractor's notification to invoke referee testing. Referee test samples shall be delivered to the referee testing laboratory from the QA laboratory by the Contract Administrator. The sealed test sample shall be opened in the presence of the Contractor and the Contract Administrator.

Referee testing shall be carried out in the presence of the Contract Administrator. Where applicable, the referee testing laboratory shall also test a control aggregate sample for each test method required. The Contractor may observe the testing at no cost to the Owner.

The Contractor and Owner may send a maximum of two representatives each to observe the referee testing. The Contract Administrator shall notify the Owner and Contractor a minimum of 3 Business Days in advance of the date of referee testing. Provided that such notice was given, referee testing shall be carried out regardless of the absence of one or more observers.

Observers shall follow the referee laboratory protocols for access to the premises and testing equipment and shall not unnecessarily impede the progress of the testing. Observers shall be permitted to validate sample identification and view sample condition. Subject to safety requirements, test method and equipment limitations, they shall also be permitted to observe test procedures, take notes, view equipment readings and review completed work sheets while in attendance.

Comments on the non-conformity of the test methods shall be made and corrected at the time of testing.

Referee test results shall be binding on both the Owner and the Contractor.

When a referee test result shows that the aggregates do not meet the requirements of this specification, the aggregates represented by the test result, including aggregates in existing stockpiles or in the Work, shall be rejected. The Contractor shall remove the aggregates from the work at no cost to the Owner. The Contractor may request a reduced price in lieu of removal for aggregates that fail to meet the requirements of this specification. Irrespective of the negotiation of a reduced price payment, the warranty provisions of the Contract Documents shall apply.

When referee test results show that the aggregates meet the requirements of this specification, the aggregates represented by the sample shall be accepted.

The Owner shall be responsible for the cost of referee testing provided that the referee test results show that the aggregates meet the applicable specifications otherwise the Contractor shall be responsible for the cost.

TABLE 1
Gradation Requirements, LS-602

MTO Sieve Designation	Percent Passing by Mass					
	Class 1 (Note 1)	Class 2	Class 3 (Note 2)	Class 4	Class 5 (Note 1)	Class 6 (Note 3)
19.0 mm	--	100	100	--	--	--
16.0 mm	--	98-100	96-100	--	--	100
13.2 mm	100	75-95	67-86	--	--	96-100
9.5 mm	75-100	50-80	29-52	100	100	50-73
6.7 mm	0-40	--	--	--	40-85	--
4.75 mm	0-10	25-50	0-10	70-100	5-25	0-10
2.36 mm	--	--	--	10-100	0-10	--
1.18 mm	--	10-40	--	5-90	0-5	--
600 µm	--	--	--	3-70	--	--
300 µm	--	2-20	--	2-40	--	--
150 µm	--	2-13	--	0-15	--	--
75 µm	Note 4	2-7	Note 4	0-7	Note 4	Note 4

Notes:

1. Class 1 and Class 5 aggregates shall be washed according to OPSS 1001.
2. Class 3 aggregate has the same gradation requirements as HL4 coarse aggregate.
3. Class 6 aggregate has the same gradation requirements as HL3 coarse aggregate.
4. Class 1, 3, 5, and 6 requirements for percent passing 75 µm are shown in Table 2.

**TABLE 2
Physical Property Requirements**

MTO Laboratory Test	MTO Test No.	Class 1 (Note 1)	Class 2 (Note 1)	Class 3 (Note 1)	Class 4	Class 5 (Note 1)	Class 6 (Note 1)
Wash Pass 75 µm sieve, Guideline B, % maximum	LS-601	1.3 (Note 2)	--	1.3 (Note 2)	--	1.3 (Note 2)	1.3 (Note 2)
Absorption, % maximum	LS-604	1.75	--	2.0	--	1.75	1.75
Percent Crushed Particles, % minimum	LS-607	60	60	60	--	60	60
Flat and Elongated Particles, % maximum	LS-608	20	20	20	--	20	20
Petrographic Examination, % non-carbonate retained 4.75 mm sieve, % minimum	LS-609	60 (Note 3)	60 (Note 3)	60 (Note 3)	--	60 (Note 3)	60 (Note 3)
Unconfined Freeze-Thaw, % maximum loss, (Note 4)	LS-614	6	15	6	--	6	6
Micro-Deval Abrasion (Coarse Aggregate), % maximum loss	LS-618	17	25	17	--	17	17
Micro-Deval Abrasion (Fine Aggregate), % maximum loss	LS-619	--	30	--	25	--	--
Plasticity Index, maximum	LS-703/704	--	0	--	0	--	--
Alternative Requirement to Unconfined Freeze-Thaw Loss, LS-614							
Magnesium Sulphate Soundness (coarse aggregate), % maximum loss	LS-606	12	15	12	--	12	12
<p>Notes:</p> <ol style="list-style-type: none"> With the exception of LS-619 and LS-703/704, the physical property requirements for Class 1, 2, 3, 5, and 6 aggregates noted above shall be conducted on the material retained on the 4.75 mm sieve. When quarried rock is used as a source of coarse aggregate, a maximum of 2.0% passing the 75 µm sieve shall be permitted. The requirements listed below are only applicable to the area to the north and west of a boundary defined by the north shore of Lake Superior, the north shore of the St. Mary's River, the south shore of St. Joseph's Island, the north shore of Lake Huron easterly to the north and east shore of Georgian Bay (excluding Manitoulin Island), along the Severn River to Washago and a line easterly passing through Norland, Burnt River, Burleigh Falls, Madoc, and hence easterly along Highway 7 to Perth and northerly to Calabogie and easterly to Arnprior and the Ottawa River: <ol style="list-style-type: none"> When the coarse aggregate for use in surface treatment is obtained from a gravel pit or quarry containing more than 40% carbonate rock type (e.g. limestone and dolostone), then blending with aggregate of non-carbonate rock types shall be required to increase the minimum non-carbonate rock type content of the coarse aggregate to 60%, as determined by petrographic examination (LS-609). In cases of dispute LS-613, shall be used with a minimum acid insoluble residue of 60%. When the coarse aggregate for use in surface treatment is obtained from a non-carbonate source, blending with aggregate from carbonate rock types is not permitted. The Owner shall waive the requirements for LS-614, provided the Contractor has submitted a written request that the coarse aggregates meet the alternative requirements for LS-606. 							

TABLE 3
Sample Size

Material	Minimum Mass of Field Samples (Note 1) kg
Fine aggregate	15
19 mm coarse aggregate	25
37.5 mm coarse aggregate	50

Note:

1. Individual sample containers shall hold no more than 30 kg of aggregate. When more than 30 kg is required, additional sample containers shall be used.

Appendix 1006-A, November 2013 FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The designer should determine if the following is required and, if so, specify it in the Contract Documents:

- If the QA sampling and testing frequencies provided in Appendix 1006-B are to be used for QA purposes, Appendix 1006-B needs to be invoked by reference in the Contract Documents.
- If the payment reduction in lieu of aggregate removal provided in Appendix 1006-C is to be used, Appendix 1006-C needs to be invoked by reference in the Contract Documents.
- If the form in Appendix 1006-D is to be used for submission purposes, Appendix 1006-D needs to be invoked by reference in the Contract Documents.

The designer should be aware that quality assurance (QA) testing for purposes of ensuring material used in the Work meets the requirements of is not mandatory, unless specifically included in the Contract Documents. The designer should determine the need for QA testing based on the size and complexity of the work and specify the required frequency of QA sampling and testing. Appendix 1006-B provides recommended QA sampling and testing frequencies.

The requirement for a minimum of 60% non-carbonate aggregate, Table 2, Note 3, in certain parts of the province is based on the following considerations: Carbonate aggregates, due to their low resistance to abrasion, polish easily under traffic and, depending on traffic volume, may result in pavements with relatively differing low frictional properties. In areas of the province with a predominant type of rock, siliceous or carbonate, it has been found that it is best to give consistent frictional properties to pavement surfaces. For instance, it has been found that the use of carbonate aggregates in areas of predominantly siliceous rocks results in lower frictional values than normal for that area and a relatively higher proportion of wet weather skidding accidents in those areas paved with carbonate rocks. In areas of the predominant use of carbonate rocks it has been found that drivers appear to adjust their behaviour to the generally lower frictional properties.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

No information provided here.

**Appendix 1006-B, November 2013
FOR USE IN MUNICIPAL CONTRACTS, WHEN REFERENCED IN THE CONTRACT DOCUMENTS**

Note: This is a non-mandatory Additional Information Appendix intended to provide supplementary requirements for the OPS specification in a municipal contract, when the appendix is invoked by the Owner. It is written in mandatory language to permit invoking it by reference in the Contract Documents. If the appendix has not been invoked by reference in the Contract Documents, it does not apply.

Supplementary Requirements for Quality Assurance Sampling and Testing Frequencies

OPSS.MUNI 1006, Aggregates - Surface Treatment is amended as follows:

1006.08 QUALITY ASSURANCE

1006.08.01 General

The first paragraph of subsection 1006.08.01 is deleted in its entirety and replaced with the following:

QA sampling and testing shall be carried out by the Owner for the purpose of ensuring that the aggregates used in the Work are according to the requirements of the Contract Documents. QA sampling and testing carried out at the frequency specified in Table B-1. Individual test results may be forwarded to the Contractor as they become available.

Table B-1 is added.

**TABLE B-1
Sampling and Testing Frequencies for Physical Property and Gradation Requirement (Note 1)**

Aggregate Quantity from Each Source t	Minimum Frequency Class 1, 2, 3, 4, 5 and 6
< 500	Sampling and testing may be waived at the discretion of the Contract Administrator.
≥ 500 and ≤ 2,000	One sample for both physical properties and gradation.
> 2,000 (Note 2)	<u>Gradation:</u> One sample per 2,000 tonnes. <u>Physical Properties:</u> One sample per 20,000 tonnes.
<p>Notes:</p> <ol style="list-style-type: none"> 1. The physical property requirements may be waived at the discretion of the Owner, provided that the Contractor has demonstrated satisfactory field performance for a pavement that is at least 3 years old and constructed in a similar environment for the same application and using the same aggregate that is being proposed. An independent petrographic examination and report shall also be provided to the Owner that demonstrates to the Owner's satisfaction that the aggregate used in the pavement being referred to is the same as the aggregate under consideration for acceptance. 2. When the quantity of granular material is: <ol style="list-style-type: none"> a) Less than one-half the quantity required for a sample, then that quantity shall be added to the quantity representing the previous sample. b) Greater than or equal to one-half the quantity required for a sample, then that quantity shall require its own sample. 	

**Appendix 1006-C, November 2013
FOR USE IN MUNICIPAL CONTRACTS, WHEN REFERENCED IN THE CONTRACT DOCUMENTS**

Note: This is a non-mandatory Additional Information Appendix intended to provide supplementary requirements for the OPS specification in a municipal contract, when the appendix is invoked by the Owner. It is written in mandatory language to permit invoking it by reference in the Contract Documents. If the appendix has not been invoked by reference in the Contract Documents, it does not apply.

Supplementary Requirements for Payment Reduction In Lieu of Removal of Aggregates

OPSS.MUNI 1006, Aggregates - Surface Treatment is amended as follows:

When a tested sample of aggregates shows that the aggregates do not meet the requirements of this specification, the aggregates represented by the test result, including material in existing stockpiles or in the Work, shall not be accepted. The Contractor may request a reduced price in lieu of removal provided that the applicable test results for that sample:

- a) Do not exceed the requirement for LS-614, or LS-606 if it has replaced LS-614, by more than 25% of the specified value.
- b) Do not exceed the requirement for LS-618 by more than 10% of the specified value.
- c) Do not exceed the requirement for LS-619 by more than 15% of the specified value.
- d) Do not identify a plasticity index within the material, when determined according to LS-703/704, and meet the requirement for LS-602 on the 75 µm sieve.
- e) Do not exceed 10% of the specified value for any other requirement in this specification.

Irrespective of the negotiation of a reduced price payment, the warranty provisions of the Contract Documents shall apply.

**Appendix 1006-D, November 2013
FOR USE IN MUNICIPAL CONTRACTS, WHEN REFERENCED IN THE CONTRACT DOCUMENTS**

Note: This is a non-mandatory Additional Information Appendix intended to provide supplementary requirements for the OPS specification in a municipal contract, when the appendix is invoked by the Owner. It is written in mandatory language to permit invoking it by reference in the Contract Documents. If the appendix has not been invoked by reference in the Contract Documents, it does not apply.

OPSS 1006 – Surface Treatment Aggregate Test Data

Contract No.:	Contractor:	Contract Location:	
Name of Testing Laboratory:		Telephone No.:	Fax No.:
Sampled by (Print Name):		Date Sampled (YY/MM/DD):	
Aggregate Class:		Quantity (tonnes) :	
Source Name/Location:		Aggregate Inventory Number (AIN) :	

Laboratory Test and Number	Requirements						Test Results		
	Class 1 (Note 1)	Class 2 (Note 1)	Class 3 (Note 1)	Class 4	Class 5 (Note 1)	Class 6 (Note 1)	Reference Material	Sample	Meets Requirements (Y/N)
Wash Pass 75 µm Sieve Guideline B, % maximum, LS-601	1.3 (Note 2)	--	1.3 (Note 2)	--	1.3 (Note 2)	1.3 (Note 2)			
Absorption, % maximum, LS-604	1.75	--	2.0	--	1.75	1.75			
Percent Crushed Particles, % minimum, LS-607	60	60	60	--	60	60			
Flat and Elongated Particles, % maximum, LS-608	20	20	20	--	20	20			
Petrographic Examination, Minimum % non-carbonate retained on 4.75 sieve, LS-609	60 (Note 3)	60 (Note 3)	60 (Note 3)	--	60 (Note 3)	60 (Note 3)			
Unconfined Freeze-Thaw, % maximum loss, LS-614 (Note 4)	6	15	6	--	6	6			
Micro-Deval Abrasion (CA), % maximum loss, LS-618	17	25	17	--	17	17			
Micro Deval Abrasion (FA), % maximum loss, LS-619	--	30	--	25	--	--			
Plasticity Index, maximum, LS-703/704	--	0	--	0	--	--			
Alternative Requirement to Unconfined Freeze-Thaw (LS-614)									
Magnesium Sulphate Soundness, % maximum loss, LS-606 (Note 4)	12	15	12	--	12	12			

I hereby certify that testing has been carried out by a properly qualified/certified test technician:

Issued by: _____
PRINT NAME
TESTING LABORATORY REPRESENTATIVE SIGNATURE
DATE

Received by: _____
PRINT NAME
CONTRACT ADMINISTRATOR REPRESENTATIVE SIGNATURE
DATE

Copies to: **Contract Administrator** **Contractor**

Appendix 1006-D

Notes:

4. With the exception of LS-619 and LS-703/704, the physical property requirements for Class 1, 2, 3, 5, and 6 aggregates noted above shall be conducted on the material retained on the 4.75 mm sieve.
5. When quarried rock is used as a source of coarse aggregate, a maximum of 2.0% passing the 75 μ m sieve shall be permitted.
6. The requirements listed below are only applicable to the area to the north and west of a boundary defined by the north shore of Lake Superior, the north shore of the St. Mary's River, the south shore of St. Joseph's Island, the north shore of Lake Huron easterly to the north and east shore of Georgian Bay (excluding Manitoulin Island), along the Severn River to Washago and a line easterly passing through Norland, Burnt River, Burleigh Falls, Madoc, and hence easterly along Highway 7 to Perth and northerly to Calabogie and easterly to Arnprior and the Ottawa River:
 - a) When the coarse aggregate for use in surface treatment is obtained from a gravel pit or quarry containing more than 40% carbonate rock type (e.g, limestone and dolostone), then blending with aggregate of non-carbonate rock types shall be required to increase the minimum non-carbonate rock type content of the coarse aggregate to 60%, as determined by petrographic examination (LS-609). In cases of dispute LS-613, shall be used with a minimum acid insoluble residue of 60%.
 - b) When the coarse aggregate for use in surface treatment is obtained from a non-carbonate source, blending with aggregate from carbonate rock types is not permitted.
4. The Owner shall waive the requirements for LS-614, provided the Contractor has submitted a written request that the coarse aggregates meet the alternative requirements for LS-606.