Department of Development Services
Building Division

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SUBJECT: TG-25-2006 LISTING OF LANDSCAPE AGGREGATE SUPPLIERS

1.0 PURPOSE: This guideline specifies test methods, sampling & reporting requirements to be listed as a landscape aggregate supplier.

2.0 SCOPE: This guideline may be adopted by a jurisdiction to regulate the use and import of landscape aggregate as defined here-in. Adoption shall be by ordinance of the jurisdiction.

3.0 ABBREVIATIONS & ACRONYMS:

AAL: **Approved Analytical Laboratory**

ACI: **American Concrete Institute**

ASTM: **American Society for Testing and Materials**

AWWA: **American Water Works Association**

CCDDS-BD **Clark County Department of Development Services-Building Division**

EPA: **Environmental Protection Agency**

IBC: **International Building Code**

QAP: **Quality Assurance Plan**

SM: **Standard Method Published by AWWA**

SOP: **Standard Operating Procedure**

TG: **Technical Guideline**

APPROVED DATE: August 14, 2006
EFFECTIVE DATE: August 28, 2006

Written By:	Concurred By:	Approved By:
/s/	/s/	/s/
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4.0 DEFINITIONS:

Aggregate Sample: Is the sample or samples obtained from the conveyor belt as described by ASTM D75. Aggregate sampling may only be performed by an Approved Quality Assurance Agency.

Aggregate Sample Fraction: Is a soil sample, of sufficient size and finer than the No.100 sieve, designated for chemical analysis. This soil sample is obtained by mechanical reduction and sieving a reduced sample through a No.100 -sieve

Analyst, Supervising Analyst, and Laboratory Director: Refer to TG-17

Approved Analytical Laboratory: Is a quality assurance agency engaged in the chemical testing and reporting of aggregate intended for landscape and aesthetic purposes.

Approved Chemical Test Method: Is the analytical test method listed in this TG as approved for a specific chemical property.

Approved Landscape Aggregate Supplier: Is an aggregate producer that participates in testing of aggregate as prescribed here-in.

Controlled Copy: Any document for which distribution and status are to be kept current by the issuer.

Equivalent Test Methods to "Approved Chemical Test Methods of Soils": Equivalent test methods, when specifically allowed, refer to Equivalent AWWA Standard Methods or EPA Standard Methods.

Landscape Aggregate: Is aggregate passing a 6-inch sieve size, used in non-structural applications for landscape, decoration and aesthetic purposes.

Quality Assurance Plan (QAP): A controlled document that provides procedural basis to insure the production of reliable, accurate, and reproducible analytical test data.

Reduced Sample: Is a soil or aggregate sample obtained from a bulk sample by an appropriate reduction technique as specified in this TG.

Standard Operating Procedure (SOP): Specific quality assurance procedures to be carried out to ensure the overall quality of all laboratory analyses.

5.0 REFERENCES:

International Building Code (IBC)

Building Administrative Code of Clark County (BAC)

Southern Nevada Amendments to the IBC

ASTM C 535-03^{e1}	Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 702-98 (2003)	Standard Practice for Reducing Samples of Aggregate to Testing Size
ASTM D 75-03	StandardPractice for Sampling Aggregates
ASTM D 3740-01	Standard Practice for Minimum Requirements for Agencies Engaged in the

Testing and/or Inspection of Soil and Rock.

ASTM E 329-03 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Material Used in Construction

AWWA SM 4500 American Water Works Standard

Technical Guidelines (TG-15, TG-16, TG-17)

6.0 RESPONSIBILITIES:

6.1 Clark County Engineering Group

6.1.1 Review and disposition applications for listing as an aggregate supplier.

6.1.2 Maintain a CCDDS-BD approved aggregate suppliers listing.

6.1.3 Receive and review test results of proficiency samples.

6.1.4 Perform periodic audits of CCDDS-BD approved aggregate supplier. Frequency of such audits is to be determined by CCDDS-BD.

6.2 Approved Analytical Laboratory

6.2.1 Receive aggregate sample fractions designated for analytical testing by and from an approved Quality Assurance Agency.

6.2.2 Perform analytical testing.

6.2.3 Perform the required calculations.

6.2.4 Prepare a report of test results.

6.2.5 QAA and AAL participating in testing shall keep test records for a period of two years.

6.2.6 Test records shall be provided to CCDDS-BD upon request.

6.3 Approved Quality Assurance Agency

6.3.1 Collect, store, reduce, prepare, classify and transport aggregate samples in accordance with Section 7.0.

6.3.2 Implement chain-of-custody procedures.

6.3.3 Review chemical test results and provide written report of results.

6.3.4 Perform Los Angeles Abrasion Testing.

6.3.5 Licensed Professional Engineer shall review testing methology results.

6.3.6 QAA and AAL participating in testing shall keep test records for a period of two years.

6.3.7 Test records shall be provided to CCDDS-BD upon request.

6.4 Approved Aggregate Suppliers

6.4.1 Hire an approved QAA agency to randomly sample aggregate supplies.
6.4.2 Hire an approved QAA agency to perform Los Angeles Abrasion Test.
6.4.3 Hire an approved Analytical Laboratory to test aggregate samples.
6.4.4 Pay appropriate fees as identified in the Administrative Code.
6.4.5 Perform other activities as prescribed here-in.
6.4.6 Maintain records of aggregate for two years.

6.5 Adopting Jurisdiction

6.5.1 Participate in adopting standard.
6.5.2 Regulate compliance with standard.

7.0 PROCEDURES

7.1 FIELD SAMPLING:

7.1.1 Sampling shall be performed by a CCDDS-BD approved quality assurance agency.

7.1.2 Sampling frequency shall be at random dates no less than twice per year. Sampling frequency shall increase if quarry production exceeds 50,000 tons/year at a rate of 2 tests for each 50,000 tons.

7.1.3 Sampling shall comply with applicable ASTM Standard Method D75.

7.1.4 Sample storage and transportation, to an AAL, shall not contaminate or otherwise alter aggregate chemical properties.

7.1.5 Rock type shall be classified in accordance with standard Geologic methodology

7.1.6 Each type of aggregate produced shall be identified by quarry, samples, size, source, color and name.

7.2 AGGREGATE SAMPLE REDUCTION

7.2.1 Aggregate sample reduction shall be performed by a CCDDS-BD approved quality assurance agency (QAA), or the AAL. When performed, at the request of a QAA by an AAL, the QAA is responsible for sample reduction procedures in accordance with Subsection 7.2.

7.2.2 Aggregate reduction shall comply with applicable ASTM Standard Method D 75.

7.2.3 A portion of the sample shall be set aside for ASTM Standard Method L.A. Abrasion testing.

7.2.4 Aggregate sample for chemical testing shall be pulverized so the entire sample passes the No. 100 sieve.

7.2.5 Aggregate passing through the No. 100 sieve shall be used for extraction of an aqueous solution.

7.2.6 Aggregate samples supplied to the AAL shall be in accordance with sampling criteria, and shall equal no less than twice the amount of aggregate required for each specified test.

7.3 SOIL SAMPLE CONDITIONING AND EXTRACTION OF AN AQUEOUS SOLUTION

7.3.1 Aggregate sample fraction designated for analytical analysis shall be conditioned, for the required time duration and by mechanical or other means, as required in the approved test method.

7.3.2 Sample conditioning & extraction shall be performed by a CCDDS-BD approved Analytical Laboratory.

7.3.3 Aqueous solution shall be prepared from the conditioned sample.

7.4 ANALYTICAL TESTING:

7.4.1 Analytical testing shall be performed on an aqueous solution extracted as specified in the approved test method.

7.4.2 Test Methods shall be as follows, where "x" refers to the method subscript A, B, C, etc. as per the Standard Methods, SM, published by AWWA:

7.4.2.1 **SULFATE**: SM 4500x

7.5 REPORTING: Report of analytical test results shall, as a minimum, contain the following information:

7.5.1 Test method(s) used.

7.5.2 Sampling method and sample type (composite or single location). Each type of aggregate produced shall be identified by size, source, color and name.

7.5.3 Sample location, sample number (where multiple samples were obtained).

7.5.4 Name of person who obtained sample (must be from a CCDDS-BD approved Quality Assurance Agency).

7.5.5 Common Geologic Identification of the Rock Type.

7.5.6 Sample description.

7.5.7 Testing shall be reviewed by a licensed engineer and stamped with their original seal. Analysis of tests results must indicate compliance or noncompliance to the criteria in section 9.0.

7.6 LANDSCAPE AGGREGATE LISTING PROCEDURE

7.6.1 Test results stamped with the original seal of the licensed engineer shall be submitted to CCDDS-BD. Test results must be supplied each time sampling is required by section 7.1.

7.6.2 Pay appropriate fees as identified in the Building Administrative Code for each aggregate source and type to be submitted. Fee shall be a 1 hour minimum charge as listed in the Building Administrative Code.

7.6.3 Clark County will publish a listing of approved aggregate suppliers on the 15th of each month. Clark County may publish the listing more frequently.

8.0 RECORDS:

Test records are the property of Clark County and will be maintained for two years after review.

9.0 CRITERIA:

9.1 Approved aggregate shall have a water soluable sulfate content less then 0.20 percent by weight.

9.2 Approved aggregate shall have loss from abrasion not to exceed 50 percent.

10.0 REVISION HISTORY:

Title	Revision/Approved Date	Effective Date
TG-25-2006	August 14, 2006	August 28, 2006
TG-25-2004	June 15, 2004	July 1, 2004