

Slope Area Maintenance Materials

GENERAL

1.01 DESCRIPTION OF WORK

The work described in this specification includes identification, characterization, and approval of materials used for maintenance of slope areas in the Thea Foss and Wheeler-Osgood Waterways. Materials to be used for slope maintenance activities may include the following:

- Slope cap filter material;
- Rip Rap;
- Quarry spalls; and
- Habitat mix.

1.02 QUALITY ASSURANCE

Sampling, testing, and inspection for compliance with this specification shall be in accordance with the requirements specified herein.

1.03 STANDARD SPECIFICATIONS

The Standard Specifications for the work described in this section shall be the Standard Specifications for Road, Bridge, and Municipal Construction as prepared by the Washington Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter, 2006 Edition.

1.04 SUBMITTALS

The following submittals shall be provided for slope maintenance materials:

- A. Source Identification (per Paragraph 2.02-A).
- B. Material Source Characterization (per Paragraph 2.02).
- C. Shipping Receipts and Material Volumes for slope maintenance materials (per Paragraph 3.01).

Test reports shall be provided by a laboratory that is independent of the supplier.

PART 2 - PRODUCTS

2.01 GENERAL

Materials shall be of the quality, size, shape, and gradation or equal to that specified herein. Material sources shall be selected well in advance of the time when the material will be required in the work. Suitable representative samples and test reports, as described below, must be submitted to and approved by the Engineer prior to delivery of materials to the jobsite.

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2.02 MATERIAL SOURCE CHARACTERIZATION

Material source characterization shall be performed as specified below to assure that materials used for slope maintenance are natural, native, virgin materials, free of unwanted materials including debris or recycled materials, and meet the requirements of these specifications. Any material that has been determined to be substandard by the City of Tacoma for any reason will be rejected. In the event that a material is rejected, it shall be removed from the site.

Slope cap filter material, rip rap, quarry spalls and habitat mix were placed on shoreline slopes within the Thea Foss and Wheeler-Osgood Waterways as part of Thea Foss and Wheeler-Osgood Waterways Remediation Project. Slope maintenance activities will use materials that meet the specifications for these materials approved for use by the United States Environmental Protection Agency (EPA) as part of the Thea Foss and Wheeler-Osgood Waterways Remediation Project.

Each material source shall be approved by EPA, in accordance with these specifications, prior to materials being bought to the area requiring maintenance. Specific sources used to supply these materials as part of the Thea Foss and Wheeler-Osgood Waterway Remediation Project have already been approved by EPA. Where a previously approved borrow source is identified as the source for materials to be used for slope maintenance, the Material Source Characterization will consist of Source Identification (2.02 A), Source Inspection (2.02 B), and Grain Size Distribution (2.02 C. 1). The Material Source Characterization for sources not previously approved by EPA shall include all of the requirements specified below. The Contractor shall submit a characterization of any and all imported material prior to any on-site placement.

A. Source Identification

Prior to material source sampling, documentation of the origin of each type of maintenance material including the names, addresses, and source identification numbers and maps identifying specific location(s) of material source(s).

B. Source Inspection

All material sources shall be inspected at the source by a representative of the City of Tacoma and the supplier(s) of the material. The witnessing of the inspection by a representative of the City shall in no way release the supplier(s) from complying with the Specifications and in no way shall be construed as approval of any particular source of material.

C. Testing, Reporting, and Certification

Samples of the source material comprising slope cap filter material and habitat mix shall undergo all of the following tests. Rip rap and quarry spalls will meet the requirements of 2.03 and 2.04.

1. Grain Size Distribution (ASTM D 422-63).
2. Particle Specific Gravity (ASTM D 854).
3. Weight per unit volume of uncompacted materials.

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4. Priority Pollutant Metals (EPA SW 846 6010B/6020/ 7000 Series).
5. Volatile Organic Compounds (EPA SW 846 8260B).
6. Semi-volatile Organic Compounds (EPA SW 846 8270C).
7. Chlorinated Pesticides (EPA Method 8081).
8. Polychlorinated Biphenyls (EPA Method 8082).
9. Total Organic Carbon (EPA Method 9060).

The results of such tests shall be provided at least two weeks before delivery of the materials to the jobsite. The results of each test shall be provided in a report that clearly identifies the following:

1. Source of samples.
2. Sampling dates.
3. Chain of custody.
4. Sampling locations.
5. Supplier's certification that the samples tested and the results provided are representative of materials that shall be delivered to the site.

The supplier shall ensure the chemical nature of the material used for slope maintenance in the Thea Foss and Wheeler-Osgood Waterways does not pose a risk to human health or the environment. As such, imported slope maintenance materials shall be, at a minimum, less than the Sediment Quality Objective (SQO) concentrations for Commencement Bay (EPA 1989) and the Explanation of Significant Differences (EPA 2000).

D. Inspection of Materials at the Jobsite

Slope maintenance materials shall be visually inspected upon delivery. Materials shall be inspected for presence of foreign, recycled, or reprocessed material. Material may be rejected due to identification of any such material or as a result of substandard test results. Materials may be segregated for testing based on appearance or odor. Segregated material may be tested according to procedures at the City of Tacoma's discretion.

2.03 SLOPE CAP FILTER MATERIAL

Slope cap filter material shall be clean, free-draining sand and gravel from a recognized and established borrow site. Individual particles shall be free from all objectionable coating. The material shall contain no organic matter or soft friable particles in quantities considered objectionable. Slope cap filter material shall meet the following gradation requirements:

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<u>U.S. Standard Sieve Size</u>	<u>Percent Passing (by weight)</u>
6 inch	100
4 inch	90 to 100
3/4 inch	50 to 90
No. 4	35 to 65
No. 10	15 to 45
No. 40	2 to 10
No. 200	0 to 2 (wet screen)

2.04 RIPRAP

Riprap shall consist of broken stone from an approved source that is hard, sound, dense, and durable. It shall be free from seams, cracks, and other defects tending to destroy its resistance to weather and seawater. Dry unit weight shall not be less than 160 pounds per solid cubic foot. Riprap shall meet the degradation, wear, and specific gravity requirements of Section 9-13 of the Standard Specifications. Rock for Riprap shall be angular, each piece having its greatest dimension not greater than three times its least dimension, and shall meet the following gradation requirements:

Light Riprap:

Light Riprap shall be large rock, 12 to 15 inches in size with up to 25 percent by weight smaller than 12 inches. The portion smaller than 12 inches shall be crushed rock that is greater than the U.S. No. 4 Standard Sieve size.

Heavy Riprap:

<u>Weight In Pounds</u>	<u>Percent Lighter (by weight)</u>
1,000	100
400	55 to 90
50	20 to 50
2	5 to 15

2.05 QUARRY SPALLS

Quarry spalls shall consist of broken stone from an approved source, free from segregation, seams, cracks or other defects and shall conform with the requirements for quality and gradation in Section 9-13.6, QUARRY SPALLS of the Standard Specifications.

2.06 HABITAT MIX

Habitat mix shall consist of 2-inch minus pit-run, rounded material from an approved source, uniform in quality and substantially free from wood, roots, bark and other extraneous materials. The individual particles shall be free from all objectionable coating and shall contain no organic matter or soft friable particles in quantities considered objectionable by the City of Tacoma. The material shall conform to the following gradation:

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<u>U.S. Standard Sieve Size</u>	<u>Percent Passing (by weight)</u>
2 inch	100
1/1/2 inch	80 to 95
3/4 inch	60 to 80
No. 4	40 to 60
No.10	30 to 50
No. 40	10 to 20
No. 200	0 to 5 max. (wet screen)

PART 3 - EXECUTION

3.01 GENERAL

Slope maintenance materials shall be provided from a source approved by EPA. The supplier shall provide daily reports of the quantities of slope maintenance materials used. The reports shall include tabulated summaries of volumes placed for each material. Shipping receipts for all materials delivered to the site shall also be submitted on a daily basis.

END OF SECTION