

SECTION 02200: EARTHWORK

1 PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Site grading.
- B. Cap materials.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals.
- B. Section 01400 - Construction Quality Assurance/Quality Control.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.
- B. EPA SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods:
 - 1. Method 6010B - Inductively Coupled Plasma-Atomic Emission Spectrometry.
 - 2. Method 6020 - Inductively Coupled Plasma-Mass Spectrometry.

1.4 SUBMITTALS

- A. Provide Ecology's Representative with duplicates of all samples as outlined in Section 01400 - Construction Quality Control/Quality Assurance.
- B. Mechanical Analysis: Provide one per material type or change in material, in accordance with ASTM D422.
- C. Provide Ecology's Representative with hazardous waste disposal certification as necessary depending on the results of Ecology's materials testing.

1.5 DEFINITIONS

- A. Cap Materials: Clean material from commercially available sources that is free of debris, concrete, sod, or clumps.
- B. Site Excavation: Consists of the required removal and proper disposal of every description and of whatever substances encountered within the project's grading

limits and located outside of the limits of excavation for waste materials. Perform excavation to the lines and grades indicated on the Drawings.

- C. Grading: Operations required for smoothing disturbed areas and bringing site grade to lines and grades indicated on the Drawings.

1.6 BACKGROUND DATA

- A. A soil investigation has been performed in support of this project to identify the nature and extent of metals-contaminated soil. The Harvard Road North - Sampling and Testing Report Fall 2005, prepared by Washington Department of Ecology, May 2006 (available for review at www.ridolfi.com/spokaneriver).
- B. Addendum Sampling and Testing Report, Spokane River Shoreline at Harvard Road North, prepared by Ecology, January 2007.

1.7 REGULATORY REQUIREMENTS

- A. Work performed under this Contract shall comply with OSHA requirements in 29 CFR 1910 and 29 CFR 1926, especially OSHA's Hazardous Waste Operations and Emergency Response Standard 29 CFR 1926.65/29 CFR 1910.120 and state specific OSHA requirements where applicable.
- B. Interpretation of standards shall be submitted to the appropriate agency for resolution prior to commencing with the Work.
- C. Where requirements of this specification, applicable laws, criteria, ordinances, regulations and referenced vary, the most stringent requirements shall apply.

1.8 PROTECTION

- A. Protect trees, and other features to remain. All existing vegetation at the site to remain and be protected unless removal is specifically authorized by Ecology's Representative. Field consultation with Ecology's representative *is required* prior to any vegetation removal. See Drawings for more information on plant protection.
- B. Protect bench marks, and site control to remain.
- C. Construction activity must be limited to the specific remedial areas shown on the Drawings. Restore all disturbed areas not designated for improvements.
- D. Provide dust control measures adequate to satisfy regulatory standards.

1.9 MEASUREMENT AND PAYMENT

- A. Cap Materials: Measurement is by the standard ton of actual quantity of material delivered and placed. Cap materials will be measured by the ton in the haul vehicle at the point of delivery or as set forth by the load ticket provided by the material supplier. Includes Cap Materials testing, on-site stockpiling as necessary, loading, haul, placement and compaction. Payment is by the unit price per ton bid for Cap Materials.
- C. Boulders: To the greatest extent possible, boulders currently on site will be rearranged to satisfy project design goals. Contractor to work with Ecology's representative to achieve these goals. If purchase of additional boulders becomes necessary, as determined by Ecology's Representative, measurement is per boulder delivered and placed and payment is by the unit price bid per boulder. Delivery of additional boulders to the site shall not occur without inspection and approval of product by Ecology's Representative.

2 PART 2 PRODUCTS

2.1 CAP MATERIALS

- A. Obtain suitable cap materials that meet the specification requirements from off-site areas as approved by Ecology's Representative.
- B. Provide cap material that is free of trash, vegetation, corrosive, organic or decomposable material, or metals in excess of background concentrations as specified by Ecology.
- C. Cap materials shall consist of well mixed rounded or subrounded granular material, either naturally occurring or processed. It shall be essentially free from wood waste or other extraneous or objectionable materials.
- D. Harvard Road North gravel launch ramp shall meet the following requirements for grading and quality when placed in hauling vehicles for delivery to the site or during manufacture and placement into a temporary stockpile. The exact point of acceptance will be determined by Ecology's representative.

Gravel launch ramp 1 1/4-inch minus chipped basalt (WSDOT 1 1/4" E Chips)	
Sieve Size	Percent Passing by Weight
1 1/4"	100
1"	80-90
5/8"	28-38
3/8"	2-6
No. 4	1-5
No. 200	0-1

- E. Imported boulders are to match type of material and sizing of existing boulders at the Harvard Road North site. Boulders will be inspected and approved by Ecology’s Representative before acceptance of any delivery or placement.
- F. Harvard Road North Site spawning mix cap material shall conform to the following gradation requirements:

Preliminary Harvard Road North Gravel Spawning Mix Cap	
Sieve Size	Percent Passing by Weight
3-inch	100
2-inch	95-85
1-inch	90-70
1/2-inch	70-50
No. 4	40-25
No. 10	30-10
No. 40	2-0
No. 200	2-0

2.2 WATER

- A. Provide clean potable water, free from deleterious substances, trash and vegetation.

2.3 EQUIPMENT

- A. Provide equipment of suitable size, weight and traction necessary to perform the Work specified herein and that can access the site via existing access points.
- B. Contractor is responsible for securing their supplies and equipment. Ecology will identify acceptable locations for staging and parking.



3 PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey benchmarks, control elevations and intended elevations for the Work are as indicated.
- B. Notify Ecology's Representative immediately of discrepancies between survey information and information in Drawings, should any such discrepancies be identified. Under this circumstance, commence with earthwork operations only as directed by Ecology's Representative.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Protect benchmarks, survey control points and other features from excavating equipment and vehicular traffic.
- C. Ecology will perform waste profile sampling and analysis prior to disposal of excavated materials.
- D. Coordinate with Ecology's selected soil disposal facility (Graham Road Recycling and Disposal Facility) at least ten (10) working days prior to initiating soil disposal activities to allow facility review of waste profiling analyses.

3.3 STOCKPILING

- A. To the extent possible use existing gravel parking area for equipment staging and stockpiling of materials. Use of any other portion of the site must be approved by Ecology's Representative.
- B. Stockpile clean materials in non-vegetated areas that are convenient to work-in-progress. Verify location selection with Ecology's Representative.
- C. Stockpile in sufficient quantities to meet project schedule and requirements.
- D. Stockpile excavated materials on liners in non-vegetated areas that are convenient to work-in-progress. Verify location selection with Ecology's Representative.
- E. Excavated material stockpile areas will be sampled by Ecology to determine if cross contamination has occurred. In the event of contamination confirmation, materials shall be excavated and transported to selected disposal facility.
- F. Wet and cover excavated and stockpiled material to prevent wind erosion as

needed:

1. Maintain exclusion zone around stockpiled materials to eliminate the chance of public exposure.
- G. Separate differing materials with dividers or stockpile apart to prevent mixing.
- H. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- I. Do not stockpile topsoil greater than 8-feet in height nor for a time period of greater than 1 month.
- J. Upon project completion, remove excess stockpile material and liners, leave area clean and neat and return to pre-project condition.

3.4 EXCAVATION

- A. Excavate material indicated on drawings to a depth of 1 foot.
- B. Provide dust controls during excavation adequate to satisfy regulatory standards.
- C. Maintain public exclusion zone in construction areas.
- D. Schedule order of work to minimize excavation timeframe.

3.5 CAP AND FILL PLACEMENT

- A. Uniformly operate hauling and spreading equipment over the full width of each lift to prevent differential compaction.
- B. Avoid excessive compaction of cap material within the spawning area. Use track-walk or similar method to create finished surface.
- C. Total thickness of clean backfill and capping is to be 1-foot throughout remediation area as indicated on project Drawings.
- D. Cap boat launch ramp area with 6-12 inches of 1 ¼-inch minus chipped basalt as specified as necessary to achieve desired grade. Place materials in 6-inch lifts, completing roller compaction on each lift before placing next layer.

3.6 TOLERANCES

- A. Provide a final grade that is plus or minus 0.10 foot from required elevation. Final project acceptance will depend on comparison of topographic surveys to

establish that final grade is within acceptable tolerance.

3.7 QUALITY CONTROL

- A. Section 1400 - Construction Quality Control/Quality Assurance: Field inspection and testing.
- B. If tests indicate that the Work does not meet specified requirements, remove Work, replace and retest. Coordinate any retesting with Ecology's Representative.
- C. Provide duplicate samples to Ecology's Representative for CQA testing as outlined in Section 01400.

END OF SECTION