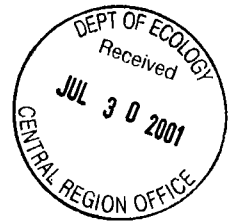




**F O R S G R E N**  
**ASSOCIATES, INC.**



July 26, 2001

Washington State Department of Ecology  
Toxics Cleanup Program  
Attn: Mr. Norm Hepner, PE  
15 W. Yakima Avenue, Suite 200  
Yakima, WA 98902-3401

**Subject: Proposed Eastmont Junior High, East Wenatchee  
Response to Comments on Remediation Strategy**

Dear Mr. Hepner:

We received your e-mailed comments, dated July 17, on the *Site Assessment and Remedial Action Report for the Proposed Eastmont Junior High School, Review Draft*. Thank you for your swift review. Responses to your comments are summarized below, and are numbered in accordance with the numbering of your comments. I have enclosed copies of pertinent project specification text with passages highlighted and a pertinent detail for clarity.

1. Sequence of activities:

The specifications require that the utilities be installed prior to cap placement. The requirement is spelled out in Subsection 3.12 of Section 02300 (Earthwork specification). An addendum to the irrigation specification will indicate the same.

2. Trench width

Trench width is addressed in Section 2300.3.6B of the specs. Standard trench width is pipe diameter plus 24 inches (12 inches each side of pipe). Irrigation piping trench width is pipe diameter plus 4 inches, with a minimum of 6 inches total.

Most utilities do not need tracer wire. For example ductile iron is used for water mains, which can be located magnetically. Storm drain and sewer alignments can be sighted visually from catch basin to catch basin or manhole to manhole. The Douglas County Sewer District requires tracer tape above sewer lines. Power and phone conduits can usually be traced by sending a signal along the line. The irrigation lines are shallow and can be sighted along the sprinkler heads. In addition the contractor is responsible for providing accurate construction as-built drawings. The local utilities typically require possession of as-built drawings before approving occupancy.

3. Planting areas (shrub areas beds etc.)

Planting areas are addressed in the landscape spec sections. The minimum depth of clean soil will be 6 inches beneath the plant root system (see enclosed spec excerpt – 02950.3.5D and 3.6B). There will be 6 inches of topsoil on top of the 6-inch borrow cap in seeded areas (02923.3.3A and detail drawing).

4. Quality control for fill and topsoil

Spec sections 2300.2.1 F and 3.11C require that all borrow and backfill be clean material meeting Washington State Department of Transportation Standard Specifications. As indicated in 02300.1.4B, a sample of proposed soil material must be submitted for evaluation. The contractor will be informed again at the preconstruction meeting that all soil must be shown to be free from chemical contamination.

5. Depth to contaminated soil under impervious surfaces

The depths vary depending on the specific location and impervious surface. A summary table is provided below:

Material	Surface Location and Material Thicknesses				
	Grover <sup>2</sup> Street	Bus Lanes and Parking Lots	Track	Asphalt Walks	Concrete Walks (a)
Asphalt	2"	2"	2"	2"	4"
Crushed Surfacing Top Course	4"	4"	4"		
Crushed Surfacing Base Course	8"	4" or 6"		4"	
Select Borrow (b)				6"	
(a). Concrete walks are the purvey of the landscape architect. Concrete walks will be laid on material left from the Phase 1 (Early Site Preparation Contract) work. The top 12 inches will be compacted prior to sidewalk placement.					
(b). Select Borrow is the material used for the "borrow cap."					

6. Compacted fill layer

The compacted fill layer you refer to is referred to on the project as the "borrow cap." The material is called out on the drawings and in the specs as "Select Borrow." Select Borrow is to meet Washington DOT Specification 9-03.14(2)



except that the maximum size is reduced to 4", per section 2300.2.1F of the project specifications. See enclosed specification excerpts.

Because the material is rocky (with rocks up to 4") it will be obvious when a casual person digging with a hand tool breaks through the topsoil and into the borrow cap, which is what you and I have discussed in the past.

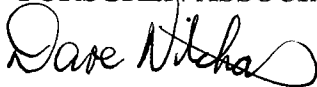
The borrow cap is used in all areas except under impervious surfaces and the football field. For safety reasons, the design team decided not to use rock under the football field. They are using 6 inches topsoil over a warning barrier, which will be orange HDPE safety fence material.

#### 7. Pipe sampling

It is my belief that the orchardists did not use the underground piping for DDT distribution, only for lead arsenate distribution. I will research that, however. We can sample the piping for DDT if necessary.

If you have any questions, please give me a call at 509-667-1426; Diane Owen of our office is the most knowledgeable if you have specific design-related questions.

Sincerely,  
FORSGREN ASSOCIATES



David Nitchals, P.E.  
Project Manager

Enclosures

c: Steve Walther, ALSC Architects  
Thom Kutrich, Forsgren



**SECTION 02300 - EARTHWORK****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Washington State Department of Transportation (WSDOT)/American Public Works Association (APWA) Standard Specifications for Road, Bridge and Municipal Construction 2000.
- C. Washington State Department of Transportation (WSDOT)/American Public Works Association (APWA) Standard Plans for Road, Bridge and Municipal Construction.
- D. Any inconsistency in this section shall be resolved by application of the Washington State Department of Transportation (WSDOT)/American Public Works Association (APWA) Standard Specifications for Road, Bridge and Municipal Construction 2000
- E. Soils Investigation Report and Draft Soil Remediation Report for the Eastmont Junior High by Forsgren Associates, Inc.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Preparing subgrade for slabs-on-grade, walks, pavements, lawns, and plantings.
  - 2. Excavating and backfilling for buildings and structures.
  - 3. Drainage course for slabs-on-grade.
  - 4. Crushed Surfacing Top Course for concrete walks and pavements.
  - 5. Crushed Surfacing Base Course and Crushed Surfacing Top Course for asphalt paving.
  - 6. Excavating and backfilling trenches.
  - 7. Borrow Cap.
- B. Related Sections include the following:
  - 1. Division 1 Section "Unit Prices" for a schedule of unit prices.
  - 2. Division 1 Section "Construction Facilities and Temporary Controls."
  - 3. Division 2 Section "Erosion and Pollution Control."
  - 4. Division 2 Section "Water Distribution" for trench excavation, backfill, bedding.
  - 5. Division 2 Section "Sanitary Sewerage" for trench excavation, backfill, bedding.
  - 6. Division 2 Section "Storm Drainage" for trench excavation, backfill, bedding.

**1.3 DEFINITIONS**

- A. Backfill: Soil materials used to fill an excavation.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. Crushed Surfacing Base Course: Layer placed between the subgrade and the top course layer.
- C. Crushed Surfacing Top Course: Layer placed between the base course and the asphalt surfacing.
- D. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- E. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- F. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- G. Excavation: Removal of material encountered above subgrade elevations.
  - 1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- H. Borrow Cap: Topsoil, select borrow, gravel layers, and/or warning barrier to bring subgrade to finish elevations in grass and landscaped areas.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- J. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- K. Subgrade: Surface or elevation remaining after completing excavation, top surface of a fill, backfill immediately below subbase, drainage fill, or topsoil materials.
- L. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

#### 1.4 SUBMITTALS

- A. Product Data: For the following:
  - 1. Plastic warning tape.
- B. Samples: For the following:
  - 1. 30-lb (14-kg) samples, sealed in airtight containers, of each proposed soil material from on-site or borrow sources.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
  - 2. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two business days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
  - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, SM, and ML, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Utility Trench Backfill: Utility trench backfill shall be clean borrow meeting the requirements of *WSDOT/APWA Section 9-03.19 Bank Run Gravel for Trench Backfill*.
- E. Pipe Bedding: Pipe bedding shall consist of crushed or naturally occurring borrow meeting the requirements of *WSDOT/APWA Section 9-03 Aggregates*.
- F. Select Borrow: Select Borrow shall be clean borrow meeting the requirements of *WSDOT/APWA Section 9-03.14(2) Select Borrow*, except that the maximum particle size shall be limited to 4 inches.

- G. Topsoil: Shall be friable surface soil taken from the 'A' horizon as determined by the U.S.D.A. Soil Conservation Service Soil Survey. Topsoil shall be free from materials toxic to plant growth, noxious weed seeds, rhizomes, roots, subsoil, stones and other debris. 100 percent of the topsoil shall pass through a 1" sieve. Maximum electrical conductivity shall be 2.0 milliohms and the maximum exchangeable sodium percentage shall be 10 percent. Topsoil shall consist of sandy clay loam, sandy loam, loam, clay loam, silty clay loam, or silt loam soil. These textural classes shall be determined by the U.S.D.A. Classification System. These textural classes shall be restricted by the following maximum percentage compositions based on the material passing the U.S. No. 10 sieve:

Separates	Maximum Allowable Percentage
Sand	50%
Clay	20%

The maximum percentage retained on a 1/4 inch sieve shall not exceed 20 percent by volume. Of the material passing the 1/4 inch sieve, not more than 10 percent by weight shall be retained on a U.S. No. 10 sieve. Total organic matter shall be 5 percent minimum to 10 percent. Organic matter shall be determined by the Walkley-Black sulfuric acid dichromate digestion process. The pH shall be 5.5 to 7.5.

- H. Crushed Surfacing Base and Top Course: Crushed surfacing shall be manufactured from ledge rock, talus, or gravel in accordance with *WSDOT/APWA Section 9-03.9(3) Crushed Surfacing*.
- I. Engineered Fill (Structural Fill Per Soils Report): Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (38-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

## 2.2 ACCESSORIES

- A. Warning Barrier: Warning Barrier shall be high density polyethylene safety fence. The warning barrier shall be Guardian manufactured by Tenax Corporation or approved equal meeting the following requirements:
1. Color: Orange
  2. Mesh Size: 1.5-inches x 3-inches
  3. Tensile Strength: Machine Direction - 110 lbs/ft, Transverse - 60 lbs/ft
- B. Filter Fabric:
1. Products:
    - a. Amoco 4545
    - b. Mirafi 140N

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

- B. Protect subgrade and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.2 EXPLOSIVES

- A. Explosives: Do not use explosives.

### 3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

### 3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings, Foundations, and Slabs: Do not disturb bottom of excavation. Trim bottoms to required lines and grades to leave solid base to receive other work.

### 3.5 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

### 3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches (300 mm) on each side of pipe or conduit.
2. Clearance: As indicated.

- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.



2. Surveying locations of underground utilities for record documents.
3. Inspecting and testing underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

### 3.11 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Pipe Bedding material shall be in accordance with the following:
  1. For Ductile Iron water line installation -- *WSDOT/APWA Section 9-03.12(3) Gravel Backfill for Pipe Zone Bedding*
  2. For Sanitary Sewer and Storm Drainage installation - *WSDOT/APWA Section 9-03.16 Bedding Material for Thermoplastic Pipe*
- C. All backfill for utility trenches shall be clean borrow soil materials meeting requirements of *WSDOT/APWA Section 9-03.19 Bank Run Gravel for Trench Backfill*. Soils from trench excavations are unsuitable for backfill due to arsenic and lead contamination.
- D. Place and compact initial backfill of borrow material, free of particles larger than 1 inch (25 mm), to a height of 12 inches (300 mm) over the utility pipe or conduit.
  1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- E. Coordinate backfilling with utilities testing.
- F. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- G. Place and compact final backfill of satisfactory soil material to final subgrade.
- H. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

### 3.12 BORROW CAP

- A. Schedule: Borrow cap, outside of surfaced/paved areas, shall not be placed until the following is completed;
  1. Water distribution including testing and approval by the local utility agency.
  2. Sanitary Sewer including testing and approval by the local utility agency.
  3. Storm Drainage including testing and approval by the local agency.
  4. Roadway subgrade, surfacing and paving including testing and approval by the local agency's

- B. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing borrow cap fills.
- C. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- D. The borrow cap shall not be placed in the detention pond area.
- E. Place and compact borrow cap material in layers as follows:
  - 1. Under grass and planted areas: 6-inches Select Borrow, 6-inches Topsoil.
  - 2. Under asphalt walkways: 6-inches Select Borrow, 4-inches Crushed Surfacing Top Course, 2-inches ACP Class A per Section 02741 Hot-Mix Asphalt Paving.
  - 3. Under football field: Warning barrier, 6-inches Topsoil.
  - 4. Under track: 4-inches Crushed Surfacing Top Course, 2-inches ACP Class A per Section 02741 Hot-Mix Asphalt Paving.

### 3.13 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill, borrow cap, or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.14 COMPACTION OF BACKFILLS, BORROW CAP AND FILLS

- A. Place backfill, select borrow and topsoil in layers not more than 8 inches in loose depth using heavy compaction equipment. Place fill materials in layers not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
  - 1. Under structures, building slabs, steps, pavements, tennis courts and track, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill, fill material, select borrow, or topsoil at 92 percent.
  - 2. Under asphalt walkways, lawn or landscaped areas scarify and recompact top 6 inches below subgrade and compact each layer of backfill or select borrow at 85 percent.

### 3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrade to required elevations within the following tolerances:
1. Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm).
  2. Walks: Plus or minus 1 inch (25 mm).
  3. Pavements, Track and Tennis Courts: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

### 3.16 CRUSHED SURFACING BASE AND TOP COURSES

- A. Under pavements and walks, place crushed surfacing base, top course on prepared subgrade and as follows:
1. Compact base and top course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
  2. Shape base and top course to required crown elevations and cross-slope grades.
  3. When thickness of compacted base or top course layers is 4 inches (150 mm) or less respectively, place materials in a single layer.
  4. When thickness of compacted base or top course layers exceeds 4 inches (150 mm), place materials in equal layers, with no layer more than 4 inches (150 mm) thick when compacted.
- B. Pavement Shoulders: Place shoulders along edges of base or top course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

### 3.17 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality control testing.
- B. Allow testing agency to inspect and test subgrade and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work shows compliance with the requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of building slab, but in no case fewer than three tests.
  2. Paved Areas, Tennis Courts, and Track Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 7,200 sq. ft. or less of paved area, but no fewer than three tests.

3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### 3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

### 3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Surplus Soil Disposal: Transport surplus soil to designated storage areas on the owners property. Stockpile or spread soil as shown on plans or directed by Architect.

END OF SECTION 02300

- C. Stakes: Pressure treated softwood lumber, pointed end.
- D. Tree Chain: Chain Lock Tree Ties one inch wide to withstand wind pressure and resultant movement of plant life. Chain Lock Tree Ties manufactured by: Mastermark; local distributor Wilbur-Ellis Co., Ph. (509) 928-4512. Submit sample for approval.
- E. Decorative Bark Mulch Cover : Fir or Hemlock bark chips 3/4" inch minimum and 1 1/2" inch maximum size. Submit sample for approval.
- F. Edging: Extruded concrete lawn edging.
- G. Decorative Cover: Ground Fir bark mulch, 3/4" to 1", free of sawdust and shredded particles.

## 2.6 PLANT SOIL MIX

- A. A uniform mixture of 1 part peat and 3 parts topsoil by volume shall be used in all planting beds and pits.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that prepared subsoil and planters are ready to receive work.
- B. Saturate soil with water to test drainage.
- C. Verify that required underground utilities are available, in proper location, and ready for use.

### 3.2 PREPARATION OF SUBSOIL

- A. Refer to Section 02923.
- B. Dig pits and beds 6 inches larger than plant root system.

### 3.3 PLACING TOPSOIL

- A. Refer to Section 02923.

### 3.4 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 2 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

### 3.5 PLANTING

- A. Place plants for best appearance for review and final orientation by the landscape architect.
- B. Set plants vertical.

## TREES, PLANTS AND GROUND COVER

- C. Remove non-biodegradable root containers.
- D. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.
- E. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant materials in vertical position.
- F. Saturate soil with water when the pit or bed is half full of top-soil and again when full.

### 3.6 PLANT RELOCATION AND RE-PLANTING

- A. Re-locate plants as directed by the landscape architect.
- B. Re-plant plants in pits or beds, partly filled with prepared topsoil mixture, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.

### 3.7 INSTALLATION OF ACCESSORIES

- A. Place decorative cover in all planting beds to a depth of 3".
- B. Wrap deciduous shade and flowering tree trunks and place tree protectors.

### 3.8 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:

Tree Caliper	Tree Support Method
1 inch (25 mm)	2 stakes with two ties
1 - 2 inches (25 - 50 mm)	2 stakes with three ties
2 - 4 inches (50 - 100 mm)	3 guy wires to 3 buried deadmen.

### 3.9 TREE PRUNING

- A. Prune trees to NAA Class 1 - Fine Pruning.

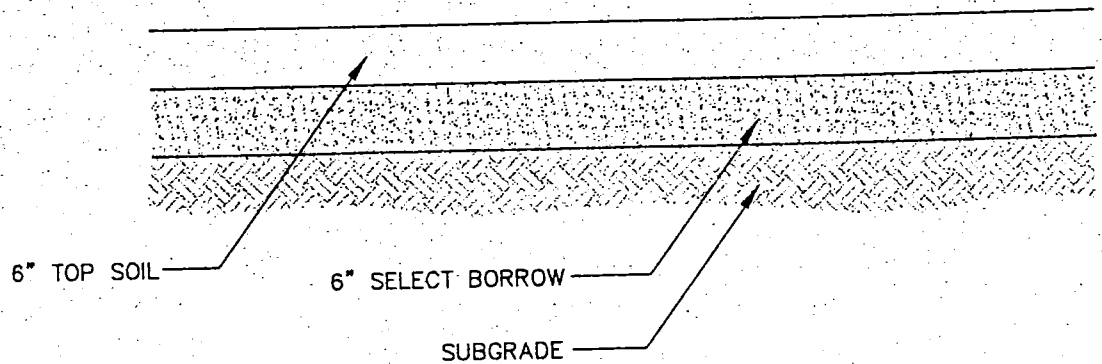
### 3.10 FIELD QUALITY CONTROL

- A. Section 01400. - Quality Assurance: Field inspection and testing.
- B. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

### 3.11 MAINTENANCE

- A. Neatly trim plants where necessary.
- B. Immediately remove clippings after trimming.
- C. Water to prevent soil from drying out.
- D. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions.

## TREES, PLANTS AND GROUND COVER



## GRASS AND LANDSCAPE AREAS

NO SCALE

(ALL DEPTHS SHOWN ARE COMPACTED DEPTHS)

- ① MINIMUM PIPE COVER = 2'  
MINIMUM PIPE SLOPE = 1.0%  
ADJUST SDCO LOCATION AS REQUIRED  
PER LANDSCAPE/SIDEWALK PLAN  
SLEEVE ALL PIPE UNDER VEHICLE USE  
AREAS.
- ② OUTFALL RIPRAP  
2' THICK  
15' WIDE  
15' LONG  
1' ABOVE GROUND OF PIPE OUTLETS

**SECTION 02923 - LANDSCAPE GRADING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Final grade topsoil for finish landscaping.

**1.2 RELATED SECTIONS**

- A. All other Division 2 Sections.

**PART 2 PRODUCTS**

**2.1 MATERIAL**

- A. Topsoil: Imported from off site. Refer to 02300 and other Division 2 Sections for additional information.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify building and trench backfilling have been inspected.
- B. Verify substrate base has been contoured and compacted, and approved as completed work prior to beginning topsoiling operations.

**3.2 SUBSTRATE PREPARATION**

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products or building debris to a depth which insures complete removal of the product.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil and in areas defined as swale bottoms to a minimum of 6".

**3.3 PLACING TOPSOIL**

- A. Place topsoil in areas where seeding and planting are required.
  - 1. Seeded and Shrub Areas: 6 inches minimum.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to building and structures to prevent damage.
- E. Lightly roll placed topsoil. Do not compact to more than 85% relative compaction.



# WSDOT SPEC

## AGGREGATES

9-03

Sieve Size	Percent Passing
4" square <sup>1</sup>	100
U.S. No. 4	50-80
U.S. No. 40	30 max.
U.S. No. 200	7.0 max.
Sand Equivalent	42 min.

All percentages are by weight.

<sup>1</sup>For geosynthetic reinforced walls or slopes, the maximum particle size shall be limited to 1 1/4 inches.

### 9-03.14(2) Select Borrow

Material for select borrow shall consist of granular material, either naturally occurring or processed, and shall meet the following requirements for grading and quality:

Sieve Size	Percent Passing
6" square <sup>1,2</sup>	100
U.S. No. 40	50 max.
U.S. No. 200	10.0 max.
Sand Equivalent	22 min.

All percentages are by weight.

<sup>1</sup>For geosynthetic reinforced slopes, the maximum particle shall be limited to 1 1/4 inches.

<sup>2</sup>The maximum particle size shall be limited to 4 inches when select borrow is used in the top 2 feet of embankments or where Method C compaction is required.

### 9-03.14(3) Common Borrow

Material for common borrow shall consist of granular or nongranular soil and/or aggregate which is free of deleterious material and is nonplastic.

Deleterious material includes wood, organic waste, coal, charcoal, or any other extraneous or objectionable material.

The material shall be considered nonplastic if the percent by weight passing the U.S. No. 200 sieve does not exceed 15 percent, or if the soil fraction passing the U.S. No. 40 sieve cannot be rolled, at any moisture content, into a thread as prescribed in Section 4 of AASHTO Standard Test Designation T 90. If requested by the Contractor, the plasticity may be increased with the approval of the Engineer if it is determined that an increased plasticity will be satisfactory for the specified embankment construction.

The material shall not contain more than 3 percent organic material by weight.

### 9-03.15 Bedding Material for Rigid Pipe

Bedding material for rigid pipe shall meet the requirements of Section 9-03.12(3) except the percent passing the U.S. No. 200 sieve shall be 7 percent maximum.

If, in the opinion of the Engineer, the native granular material is free from wood waste, organic material, and other extraneous or objectionable materials, it may be used for pipe bedding. The material shall have a maximum dimension of 1 1/2 inches.