NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. (Remove this Note).

PART 1 - GENERAL

1.01 Description: The work of this section is limited to the restoration of disturbance resulting from all construction activities related to the installation of trails in Seattle Parks and Recreation (SPR) properties.

A. This work includes, but may not be limited to:

1. Salvaging, Clearing and/or Removal of Existing Vegetation
2. Stockpiling of Native Organic Material (Forest Duff/Topsoil) or Vegetation
3. Grading of Disturbed Areas
4. Construction of Trails and Related Appurtenances
5. Construction of Drainage
6. Soil Reconditioning or Reinstallation
7. Planting or Replanting of Vegetation
8. Mulching
9. Warranty

1.02 Definitions: The following definitions may apply to this Specification Section only:

A. "Disturbance" refers to any negative impact to the project site caused by the execution of the Contract, including, but not necessarily limited to, access, excavation, exploration, hauling, staging, stockpiling, or survey.

B. "Mechanical Damage" refers to damage caused by unnatural physical forces, including vandalism, inappropriate handling, or damage occurring over time as a result of poor materials or workmanship.

C. "Plant Schedule" refers to the lists of plants associated with the restoration work of this Contract. Schedules are provided for planting in wet sites and dry sites.

D. "Trail Stationing Plan" refers to the spread-sheet formatted stationing plan associated with the restoration work of the Contract identifying specific improvements or restoration measures by type and location along the alignment of the trail.

1.03 Related Sections:

Section 01 56 39 - Tree & Plant Protection
Section 32 11 23 - Mineral Aggregates
Section 31 13 13 - Tree & Plant Removal
Section 31 00 00 - Earthwork
Section 32 15 40 - Crushed Rock Paving for Pathways & Trails
Section 32 20 00 - Soil Preparation
Section 32 90 00 - Landscape Plantings

1.04 Reference Standards: The following standards are considered part of these specifications:

A. American Association of Nurserymen - American Standard for Nursery Stock, ANSI Z 60.1", latest edition.

B. City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

C. Seattle Parks & Recreation Standards for Trail Construction which can be accessed by going to SPR Design Standards website at www.seattle.gov/parks/projects/standards.

1.05 Quality Assurance:

A. Inspections: On-going inspections and observations of the work in progress is required by the Engineer and shall be coordinated by calling the **SPR Inspection Hotline @ 684-7034 .or by email at parksconstruction.inspection@seattle.gov** to make arrangements for inspections.

B. Plant Materials:

1. Upon approval of the purchase order and Vendor, per paragraph 1.06 below, ship plants to project site staging area for inspection and approval by the Engineer. Immediately remove from the site, any plant material not accepted by the Engineer. Alternatively, arrange for inspection at the Vendor's location, if within 20 miles of the Seattle city limits, within 48 hours of anticipated shipping.
3. Refer to paragraph 3.09 below for other inspections required by the Warranty.
4. Comply with the requirements of other inspections that may be identified elsewhere in these specifications.

1.06 Submittals: Provide for SPR approval, a copy of all purchase orders for plant material, including the name, address, and telephone number of the Vendor. Do not ship plant material until approved. Approval of purchase order and vendor does not constitute acceptance of plant material.

1.07 Field Changes: Field Changes may be requested by the Engineer, to the extent that the overall value of the work is not substantially changed. In the event of a substantial change to the scope of work, as determined by agreement between the Contractor and the Owner, a Modification Proposal/Change Order will be negotiated.

1.08 Work Force: The Work Force to be utilized for Planting, paragraph 3.07, shall be experienced in the planting of native species and be approved by the Engineer prior to mobilization.

PART 2 - PRODUCTS

2.01 Native Organic Material: Native Organic Material ("Forest Duff/Topsoil") refers to that material encountered within the limits of disturbance, including haul and access routes that consist of naturally occurring decomposed organic material. This material does not include waste from clearing, logs, branches over 2" in diameter or over 5 feet in length. Native Organic Material, for the purposes of this Section, includes topsoil and composted leaves, sticks, and twigs, which when stockpiled may result in a mixture of those elements.

2.02 Native Mineral Soil: Where described in this Section, Native Mineral Soil refers to that soil encountered during clearing and excavation that contains little or no Native Organic Material. Native Mineral Soil, for the purposes of this Section, includes clay, silt, sand, gravels, and rock in such a combination as to provide adequate drainage with a minimum of visible voids.

2.03 Crushed Rock Base and Top Course Aggregates:

(BASE COURSE OPTIONS)

A. Use as Base Course for ADA Accessible (or as Top Course for non-ADA accessible) pathways or trails, as directed by the Engineer through the design review process: 5/8" Minus Crushed Rock (Mineral Aggregate Type 1 – "Ledge Rock" Top Course Keystone), bearing no naturally occurring or worn surfaces per Section 02060 – Mineral Aggregates, or per City of Seattle Standard Specifications (most recent edition).

A. Use as Base Course for major pathways or trails (in conjunction with Optional geo-textile fabric) in wet or soft site conditions, as directed by the Engineer through the design review process: 1-1/4" Minus Crushed Rock (Mineral Aggregate Type 2 – Base Course Rock), bearing no naturally occurring or worn surfaces per Section 02060 - Mineral Aggregates, or per City of Seattle Standard Specifications (most recent edition).

(TOP COURSE OPTIONS)

B. Use as Top Course for ADA Accessible (less than 5% grades) pathways in formal park settings, with Optional Stabilizer/Binder, as directed by the Engineer through the design review process: 1/4" Minus Crushed Rock (#4 to Dust) ("Seattle Parks Mix") shall consist of crushed ledge rock or talus bearing no naturally occurring or worn surfaces as produced by Glacier Northwest, or approved equal.

B. Use as Top Course for ADA Accessible (less than 5% grades) pathways or trails in informal park settings, as directed by the Engineer through the design review process: 3/8" Minus Crushed Rock ("Trail Mix") as produced by Washington Rock Quarry, or approved equal.

2.04 (Optional) Stabilizer/Binder:

A. Stabilizer/Binder shall be used in conjunction with pathway and trail construction where grades are steeper than 2% and/or as directed by the Engineer through the design review process and shall be one of the following products:

1. "Generic-CPX 2900 Series Generic Copolymer Resin Soil-Stabilizer Solution", as supplied by A.R. Smith Distributing Co., LLC, 303 33rd Avenue, Seattle, WA 98122, Ph. 206-650-0832, FAX: 206 219-4149, or arsmith30333@comcast.net or alex@arsmithcompany.com.

2. "Stabilizer", as supplied by Stabilizer Solutions, Inc., 33 South 28th Street, Phoenix, AZ 85034, Ph 800-336-2468, or www.stabilizersolutions.com.

3. "PolyPavement", as supplied by PolyPavement, P.O. Box 36339, Los Angeles, CA 90036, Ph. 323-954-2240 or www.polypavement.com.

4. "NaturalPAVE", as supplied by Soil Stabilization Products Company, Inc., 806 West 22nd Street, Merced, CA 95344, Ph. 209-383-7849 or www.sspco.com.

5. Or, approved equal.

2.05 (Optional) Geo-textile Fabric Liner:

A. Geo-textile Fabric Liner shall be used in wet or soft site conditions, as directed by the Engineer, through the design review process and shall be an engineered geo-synthetic, reinforced, woven product as supplied by Northwest Linings and Geotextile Products, Inc., 21000-77th Avenue South, Kent, WA 98032, Ph. 253-872-0244, or www.northwestlinings.com, or, approved equal.

B. Lumber: Materials specified in this Section are for Foot-bridges under 20' in length, Water bars, Turnpike sections, and Step construction only. Refer to City of Seattle Standard Plans and Specifications (most recent edition), for lumber associated with all other wood construction associated with this Contract. All pressure treated lumber shall be only the types of treatment as called out in the SPR's Design Standards Section 06000.01. To access the information refer to SPR standards website at www.cityofseattle.gov/parks/projects/standards. All lumber for work of this section shall be LP-22, #2 Structural or better.

C. Fasteners:

1. All plate-type and stamped fasteners shall be 16 gauge hot dipped galvanized steel or as approved by the Engineer prior to installation.
2. All other fasteners and connectors, i.e., nails, screws, and bolt assemblies, shall be galvanized steel, sized per details or as appropriate for the task.
3. Reinforcing Bars used as anchor pins for wood-on-grade construction shall be #4 deformed.

2.06 Drainage:

A. Culvert Pipe shall be ***6" to 12" I.D. HDPE***, double-wall re-core, smooth interior wall, or approved equivalent.

B. Rock for Rock Spillway and Rock Lined Sump shall be granite, largest face generally flat, weathered or shot, and minimum size 1/2 cubic foot.

2.07 Soil Conditioning and Planting Backfill:

A. Native Organic Material as described in this Section, paragraphs 2.01, above.

B. Moisture Retention Agent shall be a Hydophylic Acrylic Copolymer, "Soil Moist" by JRM Chemical, Cleveland, Ohio, or equal.

C. Planting Backfill shall be a thoroughly blended mixture of existing soil, Moisture Retention Agent at the manufacturers recommended rate, and Native Organic Material or imported Decomposed Organic Amendment as described below as follows:

1. Decomposed Organic Amendment (Compost): The Decomposed Organic Amendment shall consist of 100% recycled organic material, and shall consist of yard waste debris and/or other organic waste materials that have been sorted, ground up, aerated and aged and shall be fully composted, stable and mature (non-aerobic). The composting process shall be for at least six months time and the organic amendment shall have a uniform dark, soil-like appearance. In addition, the decomposed organic amendment shall have the following physical characteristics:

2.08 Plant Materials:

A. Provide only those plant species identified on the Plans. Where specific cultivars or varieties are not identified, provide only the species as indicated. Do not provide cultivars or varieties unless approved by the Engineer.

B. Size:

1. Meet or exceed the standards for plant size per container as described in "American Standard for Nursery Stock, ANSI Z 60.1".
2. Provide trees and shrubs at the sizes indicated on the schedules. In the event of unavailability, provide one size smaller at a documented credit to the Owner, or alternatively, one size larger at no additional cost to the Owner.
3. Provide groundcovers at the size indicated on the schedules. In the event of unavailability, provide one size smaller at a documented credit to the Owner.

C. Quality:

1. Meet or exceed the standards for plant quality as described in "American Standard for Nursery Stock, ANSI Z 60.1".
2. Plant Material shall be healthy, vigorous, and sound upon inspection and acceptance. There shall be no evidence of insect infestation including eggs, insects, or feeding damage. There shall be evidence of mechanical damage such as broken branches, root balls, or bruising of foliage.

3. Plant material shall have been grown and held in conditions similar to those expected for the species.

2.09 Mulches: Erosion Control Blanket and Mulch shall be as follows:

A. Clean, un-bound Wood Excelsior, supplied in bales.

B. Other types of clean, natural mulch materials (such as recycled chippings from tree trimming/removal operations) shall be used as the site conditions dictate and shall be as shown on the Plans, or as required and approved by the Engineer.

PART 3 - EXECUTION

3.01 Clearing:

A. Only clear the vegetation that is immediately threatened by activity associated with the work of this Contract.

B. Remove no deciduous trees over 3” in trunk diameter measured 4 feet above ground level and no coniferous trees measuring over 5’ above ground level without prior approval of the Engineer. Obtain approval by flagging trees proposed for removal prior to coordinating a review by the Engineer. Anticipate the alignment far enough ahead to allow for alternate routing in the event proposals for tree removal are rejected by the Engineer.

C. Where overhead clearance requirements necessitate the pruning or limbing of tree branches over 3” in diameter at that point where the cut is to be made, obtain approval through the same procedure identified above in paragraph 3.01.B.

D. Refer to the construction details associated with the trail work for additional clearing requirements.

E. Remove thoroughly from the Project Site all material cleared. Alternatively, chip all material mechanically and disperse equally to both sides of the Project alignment.

3.02 Stockpiling of Native Organic Material:

A. Refer to paragraph 2.01 above for a description of Native Organic Material.

B. Excavate by scraping the upper soil profiles to collect the material. Work in such a manner as to accumulate a minimum of Native Mineral Soil.

C. Stockpile Native Organic Material (Organic Material) in a linear “berm” along both outer edges of disturbance. In the event that excavated Native Mineral Soil (Mineral Soil) requires such room as to make stockpiling the Organic Material on both sides of the disturbed area impractical, stockpile the Mineral Soil on the up-slope side of the disturbed area. Areas receiving stockpiles will be considered disturbed areas.

D. Stockpile Organic Material loosely. Do not compress or compact stockpiles beyond the natural compression of the material to achieve a steeper angle of repose.

3.03 Grading:

A. General:

1. Grading of disturbed areas, within the limits of SPR jurisdiction, falls within two categories; grading taking place beneath areas to receive trails on grade and their associated appurtenances (referred to as "Traffic Areas"), and grading taking place beneath areas to receive elevated trail structures such as footbridges, bridges and areas to receive plantings,(referred to as "Non-Traffic Areas").
2. On average, the rough grade of all areas within the limits of disturbance shall transition smoothly into the adjacent existing undisturbed grades. Exceptions are those areas on the up-slope side, which are scheduled to receive parallel ditches.

B. Traffic Areas:

1. All Traffic Areas shall be rough graded with clean Native Mineral Soil containing a minimum of contaminating organic material.
2. Areas scheduled to receive a Standard Trail Section:
   a. Shall be graded with a side slope draining either inward to a parallel drainage ditch or outward down-slope at between 2 and 5 percent, and
   b. Shall be compacted to the greatest density supportable by the surrounding soils and slopes.
3. Areas scheduled to receive Turnpike and/or Waterbars;
   a. Shall be graded flat, or no more than 2% across in any direction, and
   b. Shall be compacted to the greatest density supportable by the surrounding soils and slopes.
4. Areas scheduled to receive Drainage improvements:
   a. Shall occur only as excavations into undisturbed soil, and
   b. shall be graded in lateral section per the drawings and in profile such that they result in positive the designed out-fall.

C. Non-Traffic Areas:

1. All Non-Traffic Areas shall be rough graded with either Native Mineral Soil or a combination of Native Mineral Soil and Native Organic Material. Minimize use of stockpiled Organic Material and do not use Organic Material occurring outside the limits of disturbance.
2. Areas scheduled to receive Elevated Trail Structures:
   a. Shall be graded;
      i. To smoothly transition into adjacent existing grades, or
      ii. To drain along pre-existing flow lines. Where directed, re-constructed flow-lines shall be reinforced with imported rock

as associated with Drainage work, and as defined in paragraph 2.04.B, above, and

b. Shall be compacted to the greatest density supportable by the surrounding soils and slopes.

3. Areas scheduled to receive Plantings:
   a. Shall be graded to smoothly transition into adjacent existing grades,
   b. Shall be compacted to such an extent as to prevent excessive erosion but not to such an extent as to inhibit infiltration or percolation of surface water into the soil. Compaction, shall be generally at 70% of maximum density at 15% moisture by weight.

3.04 Trail Construction:

A. General:

1. Work of this Section consists of all services, labor, equipment, and materials necessary to construct the trail system described in the Trail Stationing Plan. This includes construction of Standard Trail Section, Water Bars, Turnpike Section, Steps, and Footbridges under 20' in length.
2. The Trail Stationing Plan has been developed to meet the existing topography, soil conditions, and apparent hydrology of the Project Site. If, in the course of construction of the Sewer Interceptor, substantial changes are made to any of these existing characteristics, it will become necessary to alter, in the field, the Trail Stationing Plan. The current schedule of construction details associated with this work and described below will be used to adapt the plan to actual conditions. Refer to paragraph 1.02.D.
3. Prior to performing the work of this section, verify the condition of the rough grade as being in conformance with the above paragraphs 3.03.A.2 and 3.03.B. Obtain Engineer approval of conditions as adequate to proceed.
4. Provide clean, uncontaminated surfaces.

B. Standard Trail Section

1. Generally, Standard Trail Section consists of a 30" (standard) or 72" (wide section) wide trail tread on grade.
2. Import and place Trail Surfacing in a single lift to the dimensions specified in the details. Provide sufficient material to insure a full 3" depth following compaction.
3. Compaction
   a. Perform compaction only under suitable conditions. Do not compact excessively wet or dry material or when the sub-grade soils are excessively wet or dry. Allow materials to dry or add clean water as necessary to achieve optimum moisture.
   b. Mechanically compact the Trail Surfacing to the maximum density supportable by the underlying soils.

C. Turnpike:

1. Generally, Turnpike shall consist of a 30” (standard) or 72” (wide section) wide trail tread on grade, retained by 4”x4”x8’ LP-22 timbers pinned to the sub-grade with 24” - #4 deformed reinforcing bar, 3 bars per timber.
2. Layout and set bottom of retaining timbers flush to, or up to 1/2” below, compacted sub-grade, end to end with no gaps between timbers. Stagger joints on opposing sides of tread where practical. Miter ends of timbers equally where trail alignment turns.
3. Pre-drill timbers 3/8”, to accept reinforcing bar pins, at 12” from each end and at the center. Set 24” - #4 reinforcing bar pins into stable soil to a depth of 3/4” below the top of retaining timber.
4. Import and place, in one lift, sufficient Trail Surfacing to provide an average depth of 4” following compaction, with a crown of 1” above top of retaining timbers.
5. Compaction, per 3.04.B.3 above.

D. Water Bars:

1. Generally, Water Bars are intended to both divert surface water off the trail and stabilize Trail Surfacing. Construct Water Bars of pressure treated 4x4’s, LP-22 timbers pinned to the sub-grade with 24” - #4 deformed reinforcing bar, 2 bars per timber. Install Trail Surfacing as shown in Standard Trail Section, per paragraph 3.04.B, above.
2. Locate timbers flush to the prepared sub-grade, spaced per the Trail Stationing Plan. Where formal drainage ditching is scheduled, set timbers to divert surface run-off into these ditches. Where no formal drainage work is associated with the Water Bars, set the timbers to divert surface run-off, generally down-slope.
3. Pre-drill timbers perpendicular to the prevailing slope 3/8”, to accept 24” - #4 reinforcing bar pins, at 6” from each end. Set reinforcing bar pins into stable soil to a depth of 1” below top of timber.

E. Steps:

1. Generally, Steps are constructed of pressure treated 6x6’s, LP-22 timbers arranged in a “crib-work” fashion, each riser consisting of 2 sides and a leading edge, stacked and staggered to fit the slope to the tolerances indicated in the drawings. Individual timbers are fastened with 30” - #4 deformed reinforcing bars as indicated below.
2. Begin all Step construction at the bottom of the slope by excavating a stable, flat bench slightly larger than the design dimensions of the Step. Mechanically compact this bench to the maximum density supportable by the soils present, assuming optimum moisture content per paragraph 3.04.B.3 above.
3. Arrange the timbers per the drawing, with the leading edge timber spanning the full width of the Steps. Length of the sides of the crib-work will vary depending on the slope. Provide sufficient length for the next Steps sides to overlap a minimum of 12”.

4. Pre-drill timbers plumb 3/8", to accept 30" - #4 reinforcing bar pins, as follows;
   a. For leading edge timbers, 2 places 4" from each end, and
   b. For side timbers 4" from exposed ends, and
      i. If tread will be longer than 24", one place centered between exposed end and leading edge of the next riser, and
      ii. If last riser at top of steps, 3 places 12" on center beginning 4" from each end.
      iii Set pins into stable earth to a depth of 3/4" below top of each timber.
5. Backfill each Step as it is constructed by importing sufficient Trail Surfacing in a single lift to completely fill the crib-work upon compaction per 3.04.B.3 above.
6. Begin construction of successive risers directly atop the preceding riser, using the drilling and pinning procedure, paragraph 3.04.E.4 above, to secure the overlapped portions of the riser below.
7. Backfill the sides of the completed Steps with Native Mineral Soil to a point 2" below the bottom of the leading edge timber of each step.

F. Footbridges and Railings:

1. Generally, Footbridges are wooden structures constructed with either post-and-beam construction for sections over 14" above grade or mudsill construction for sections under 14" above grade. Sections more than 30" above grade require a handrail. All timbers, lumber, and fasteners are per paragraphs 2.03.B and 2.03.C above, sized per the details or as appropriate for the task.
2. Refer to other Specifications of this project for details regarding installation of Sewer Interceptor supported by Footbridges or Boardwalks.
3. At the Contractors option, all construction of Footbridges under 20' in total length associated with this project may be of the post-and-beam construction technique described for Footbridges over 14" above grade, or per details provided for Boardwalks or Footbridges over 20' in overall length.
4. Construct all Footbridge components plumb and level, with the exception of extreme ends, which may transition at up to, but no more than, a 5% slope down to the successive or proceeding trail detail.

3.05 Drainage:

A. General:

1. Work of this Section consists of all services, labor, equipment, and materials necessary to construct the Drainage work associated with the trail system described in the Trail Stationing Plan. This includes construction of Drainage Dips, Drainage Ditches, Rock-Lined Sumps, Culverts, Lead-off Ditches, and associated Rock Spillways.
2. The Trail Stationing Plan has been developed to meet the existing topography, soil conditions, and apparent hydrology of the Project Site. If, in

the course of construction of the Sewer Interceptor, substantial changes are made to any of these existing characteristics, it will become necessary to alter, in the field, the Trail Stationing Plan. The current schedule of construction details associated with this work and described below will be used to adapt the plan to actual conditions. Refer to paragraph 1.02.D.

3. Verify that the conditions of the areas that are scheduled to receive drainage work are consistent with the requirements of paragraph 3.03.B.4 above. Obtain Engineer approval of conditions as adequate to proceed.

B. Drainage Dips:

Where directed by the Trail Stationing Plan to install a Drainage Dip, refer to the detail and provide the necessary grading alteration to the specified trail construction detail, paragraph 3.04, above. Each Drainage Dip shall collect and divert surface run-off down-slope to an associated Rock Spillway, paragraph 3.05.G, below.

C. Drainage Ditches:

1. Where indicated on the Trail Stationing Plan, Drainage Ditch refers to a surface run-off interceptor trench that runs parallel to and up-slope from the trail and perpendicular to the prevailing slope
2. Where directed by the Trail Stationing Plan, excavate Drainage Ditches to the dimensions indicated in the details. Provide ditch bottoms that slope positively to the associated outlet.
3. Where Drainage Ditches slope at greater than 1’ vertically in 12’ for more than 30’, provide a 6”x6” timber check-dam across the bottom of the ditch, embedded 12” into each side, 10’ spacing. Secure the timber check-dam as for Water Bars, paragraph 3.04.D.3 above, except 12” from each end.

D. Rock-Lined Sump:

Where directed by the Trail Stationing Plan to install a Culvert associated with a Drainage Ditch, install on the up-slope side of the trail or trail structure a Rock-Lined Sump (Sump) as follows:

1. Identify the intersection point of the flow-line of the culvert and the flow-line of the associated ditch to be drained. At the point of intersection, excavate sufficient undisturbed Native Mineral Soil to allow the excavation to be tightly lined with Rock, per paragraph 2.04.B above, leaving a sump approximately 1 foot deep below bottom of ditch invert of Culvert with a capacity of 2 cubic feet. Dimensions for Sump should be approx. 1’-5 square or 1’-7 diameters.
2. Beginning with the bottom of the Sump and working up to the bottom of the associated Drainage Ditch, line the Sump with Rock. Rock should fit tightly, with no gaps over 2” in any dimension. Provide additional Rock across the bottom of the Drainage Ditch which over-hangs the Sump 1” to protect the Sump walls from out-washes.

3. Pack joints in the bottom of the Sump with 5/8” Minus Crushed Rock per paragraph 2.03.A.

E. Culverts:

1. Culverts occur either at the apparent low-point of a Drainage Ditch or as a surface water run-off outlet along flat, wet runs of trail. If for reasons defined in paragraph 3.04.A.2, the Trail Stationing Plan identifies a location as scheduled to receive a Culvert that does not appear to meet this criterion, notify the Engineer and obtain specific direction before proceeding with the work.
2. Culverts have, normally associated with them, the following additional elements:
   a. Rock-Lined Sump, paragraph 3.05.D, above
   b. Leadoff Ditch, paragraph 3.05.F, below.
   c. Rock Spillway, paragraph 3.05.G, below.
3. Install Culverts as follows:
   a. Generally perpendicular to trail, sloping to drain down-slope,
   b. Extend Culvert 12” beyond edge of trail up-slope or 4” into Sump
   c. Extend Culvert 12” beyond edge of trail down-slope
   d. Invert of pipe at inlet shall be either
      i. Flush with finish grade at Culverts not associated with Drainage Ditches, or
      ii. 6” below bottom of the Drainage Ditch.
   e. Minimum cover over Culvert shall be 6”.
   f. Invert of Culvert out-fall shall be sufficiently lower than the inlet to provide adequate flow, generally 2-5%.
   g. Where the existing slope permits, construct a Rock Spillway at the out-fall of the Culvert.
   h. Where the existing slope would otherwise inhibit discharge of the out-fall, construct a Lead-off Ditch, paragraph 3.05.F

F. Lead-off Ditch:

1. Construct a Lead-off Ditch where directed by the Trail Stationing Plan or where the elevation of the out-fall of a Culvert would otherwise be below existing grade.
2. Lead-off ditches shall have a flat bottom 8” in width a be a minimum 12” in depth, depth increasing as necessary to provide a 2% slope to a point where natural grade allows for discharge. Lead-off Ditches shall be excavated into previously undisturbed earth.
3. At the out-fall point of all Lead-off Ditches, provide a Rock Spillway, paragraph 3.05.G.

G. Rock Spillway:

Install Rock Spillways (Spillway) at the out-fall point of all drainage structures as follows:

1. Use only imported rock, which complies with paragraph 2.04.B of this specification.
2. Extend the Spillway the width or diameter of the drainage structure discharge to each side of the discharge point and 3 times that dimension down-slope. Slope the Spillway to drain a minimum 2% or to conform to the existing slope. Embed the Rock so that only the top plane is exposed, butting all joints as tightly as possible. Pack all resulting joints with 5/8" Minus Crushed Rock complying to paragraph 2.03.A.

3.06 Soil Reconditioning:

A. General

The intent of the work of this section is to provide a complex soil profile and finished grade for planting that is more conducive to the survival of native plant species scheduled for restorative planting. All areas of disturbance, generally those consisting of exposed mineral soils unless otherwise directed by the Engineer, shall receive Soil Reconditioning.

B. Identify the limits of disturbance remaining following the work of paragraphs 3.03, 3.04 and 3.05. Verify that the condition of rough grades encountered is in compliance with paragraph 3.03.C, as appropriate for the specific location. Obtain Engineer's approval of the conditions as adequate to proceed before commencing the work.

C. Distribute equally all stockpiled Native Organic Material over the disturbed areas identified above. Incorporate this material into the top 2" of the sub-grade soil. Roll or otherwise lightly compact the resulting surface to form a consistent mat.

3.07 Planting:

A. General

1. All areas of disturbance not occupied by drainage, trail on-grade, or related appurtenance, shall receive Planting, including areas beneath Bridges, Boardwalks, or Footbridges.
2. Refer to the Trail Stationing Plan for identification of areas to receive plant material from each of the two Plant Schedules. Calculate the total area associated with each Plant Schedule, and provide a copy of the purchase order to the Engineer for approval, per paragraph 1.02.D.
3. Provide and maintain stationing stakes indicating limits of planting for each schedule.
4. Planting activity is to take place between October 1st and December 1st only.
5. Prior to commencing planting activity, obtain approval of the plant material per paragraph 1.05.B.

B. Shipping and Handling:

1. Plant material received on-site showing evidence of mishandling such as tightly bound or broken branches, crushed or misshapen containers or root-balls, or stripped, crushed, or severely bruised foliage will be rejected and must be removed from the project site immediately.
2. Plant material shall be transported to the planting location with extreme care and attention. Do not handle plant material by any means other than fully supporting the container or root-ball. Previously accepted plant material, l showing evidence of mishandling, such as broken branches or loose root-balls will be rejected and must be removed from the site immediately.

C. Tree Locations: Stake for SPR approval the locations of individual trees. Locate in a natural, random pattern. Alternatively, provide SPR with stakes pre-marked by species and in the specified quantities for placement within 48 hours of receipt.

D. Preparation and Planting:

1. Excavate planting pit approximately 1.5 xs as deep as the root mass provided with the plant and twice as wide.
2. Planting Backfill
   a. The excavated soil, thoroughly incorporate the manufacturers recommended rate for Moisture Retention Agent and the Native Organic Material found at the surface of the pit.
3. Backfill the planting pit with sufficient Planting Backfill to result in the plant root crown being flush with the surrounding grade.
4. Gently disturb the root ball of the plant manually, to loosen tightly wound or matted roots.
5. Set the plant plumb in the planting pit and backfill with Planting Backfill. By hand, compact the backfill to eliminate air pockets.
6. Water all plants in thoroughly.

3.08 Mulching: Provide a uniform 2” layer of un-bound Wood Excelsior Erosion Control Blanket or other approved mulch materials over all disturbed areas not covered by trail on-grade or drainage appurtenances.

3.09 Warranty:

A. Prior to Contract Close-out, coordinate a punch-list walk-through with the Engineer by calling the **SPR Inspection Hotline @ 684-7034 or by email at parksconstruction.inspection@seattle.gov**.

B. Correct any punch list items to the standards established by the Trail Stationing Plan, Plant Schedules, details, and this Specification. Upon satisfying the requirements of the punch list, request the Engineer’s acceptance of the work as substantially complete.

C. Warranty the materials and workmanship for a period of one year from date of the Engineer’s acceptance as substantially complete, as follows:

1. At 6 months, coordinate an inspection of the condition of the work and correct, in a timely manner, any damage or failure as follows:
   a. For plant material, replace 100% of trees and shrubs and 50% of groundcovers showing significant sign of decline as determined by the Engineer. Exclusion to this warranty is allowed for obvious mechanical damage due to vandalism or natural processes.
   b. For Drainage work and Trails or Trail Appurtenances, repair and/or replace any defects which may have occurred other than obvious mechanical damage due to vandalism.
2. At the one year anniversary, coordinate an inspection of the condition of the work and correct, in a timely manner, any damage or failure as follows;
   a. For plant material, replace 50% of trees and shrubs showing significant sign of decline as determined by the Engineer. Exclusion to this warranty is allowed for obvious mechanical damage due to vandalism or natural processes.
   b. For Drainage work and Trails or Trail Appurtenances, repair and/or replace any defects which may have occurred other than obvious mechanical damage due to vandalism.

D. Upon satisfaction of the requirements of the punch list, at 6 months and one year, obtain the Engineer's approval of the work as physically complete.

END OF SECTION