GENERAL BIORETENTION CONSTRUCTION NOTES

1. AVOID COMPACTION OF EXISTING SUBGRADE BELOW BIORETENTION FACILITIES DURING CONSTRUCTION.

2. BIORETENTION SOIL MIX TO MEET SPECIFICATION IN THE CITY OF VANCOUVER SURFACE WATER GENERAL REQUIREMENTS, SECTION 4-7.01.

3. BIORETENTION SOIL MIX PLACEMENT, GRADING, AND COMPACTION SHALL NOT OCCUR WHEN THE BIORETENTION SOIL MIX IS EXCESSIVELY WET OR HAS BEEN SUBJECTED TO MORE THAN 1/2" OF PRECIPITATION WITHIN 48 HOURS PRIOR TO PLACEMENT. EXCESSIVELY WET IS DEFINED AS BEING AT OR ABOVE 22% SOIL MOISTURE BY A GENERAL TOOLS AND INSTRUMENTS DSM500 PRECISION DIGITAL SOIL MOISTURE METER WITH PROBE (OR EQUIVALENT). THERE SHOULD BE NO VISIBLE FREE WATER IN THE MATERIAL. THE CONTRACTOR SHALL PLACE BIORETENTION SOIL MIX LOOSELY WITH A CONVEYOR BELT OR WITH AN EXCAVATOR OR LOADER FROM A HEIGHT NO HIGHER THAN 6 FEET, UNLESS OTHERWISE APPROVED BY THE ENGINEER (I.E., DO NOT DUMP MATERIAL DIRECTLY FROM TRUCK INTO CELL). COMPACT BIORETENTION SOIL MIX USING NON-MECHANICAL COMPACTION METHODS (E.G., BOOT PACKING, HAND TAMING, OR WATER CONSOLIDATION) TO 83% (± 2%) OF THE MAXIMUM DRY DENSITY PER MODIFIED PROCTOR TEST (ASTM D1557), OR AS DIRECTED BY THE ENGINEER.

4. MAXIMUM DROP FROM TOP OF CURB TO TOP OF BIORETENTION SOIL SHALL INCLUDE CONSIDERATIONS FOR BIORETENTION SOIL SETTLEMENT.

5. FOR FACILITIES RECEIVING RUNOFF FROM OVER 5,000 SF OF IMPERVIOUS SURFACES, SETBACKS IN SURFACE WATER GENERAL REQUIREMENTS SECTION 4-5.10 APPLY. FOR OTHER FACILITIES, 12" MIN. REQUIRED SEPARATION ABOVE SEASONAL HIGH GROUNDWATER OR HYDRAULICALLY RESTRICTIVE LAYER.

6. MINIMUM UTILITY SETBACKS AND PROTECTION MEASURES MUST CONFORM TO THE VANCOUVER SURFACE WATER GENERAL REQUIREMENTS, AND CURRENT CITY STANDARDS. COORDINATE WITH CITY ENGINEER IN THE EVENT OF UTILITY CROSSINGS OR CONFLICTS.

7. INFILTRATION FACILITIES, TRENCHES, CHAMBERS, REGULATED UNDERGROUND INJECTION CONTROLS (UICS), ETC. SHALL NOT BE LOCATED BENEATH BIORETENTION FACILITIES.

8. SEE CONSTRUCTION PLANS FOR SPECIFIC PROJECT REQUIREMENTS.

9. STORMWATER FACILITY PLANTING SHALL OCCUR WITHIN THE FOLLOWING SEASONAL WINDOWS, DURING APPROPRIATE WEATHER CONDITIONS:
   
   • FALL: OCTOBER 1 TO DECEMBER 1
   
   • LATE WINTER/EARLY SPRING: FEBRUARY 1 TO MAY 1.

   UNACCEPTABLE WEATHER CONDITIONS DURING APPROVED PLANTING SEASONS INCLUDE FREEZING RAIN, SNOW, ICY CONDITIONS, EXTREME WIND, WHEN THE GROUND IS FROZEN, OR DURING TEMPERATURES ABOVE 80 DEGREES FAHRENHEIT.

   PRIOR TO PLANTING, BIORETENTION SOILS WITHIN STORMWATER FACILITIES SHALL BE PROTECTED ACCORDING TO STANDARD PLAN NO. B-7.0.
NOTE:
1. THIS INLET REQUIRES THE PRECAST CATCH BASIN UNIT TO BE ROTATED 90 DEGREES SO THAT THE NARROW SIDE IS PARALLEL TO THE CURB LINE. WHEN CALCULATING OFFSETS FROM CURB TO CENTERLINE (CL) OF THE PRECAST CATCH BASIN, PLEASE NOTE THAT THE CL OF THE GRATE IS NOT THE CL OF THE PRECAST CATCH BASIN. SEE SECTION A.

2. WSDOT TYPE 1 OR TYPE 1L INLET USED WITH COMBINATION INLET FRAME AND GRATE PER WSDOT STANDARD PLAN B-25.20-02.
**NOTES:**

1. **FOREBAY AREA TO BE MIN 10% OF PLANTER OR FACILITY AREA, BASED ON PROJECTED PONDING ELEVATION OF FACILITY.**
   
2. **SEDIMENT STORAGE SUMP TO BE 6" MIN. INCREASE SUMP TO 8" MIN FOR ALL ROADWAYS CLASSIFIED AS ARTERIALS (ACCORDING TO THE LATEST ARTERIAL MAP), AND 10" MIN IF THE CONTRIBUTING AREA EXCEEDS 5,000 SF.**

3. **ROCK SPLASH PAD TO BE 12" WIDE BY 6" DEEP, 4" STREAMBED COBBLES PER WSDOT STANDARD SPECIFICATION SECTION 9-03.11(2).**

4. **SEDIMENT FOREBAY BASE AND WEIR WALL TO BE Poured MONOLITHICALLY. WEIR NOTCHES MAY BE BLOCKED OUT OR SAWCUT INTO WALL. TEST ELEVATION WITH WATER AND GRIND NOTCHES UNTIL FLOWS ARE EQUAL. IF A MONOLITHIC POUR FOR WEIR WALL IS NOT USED, PROVIDE DOWEL BARS TO TIE TO SIDE WALLS AND PROVIDE A WATER-TIGHT SEAL TO PREVENT WATER BYPASS ON BOTTOM AND SIDES. STRUCTURAL ENGINEER REQUIRED FOR APPROVAL OF ALTERNATE DESIGN.**

5. **IF LENGTH OF FOREBAY (L) EXCEEDS 10', CONSULT STRUCTURAL ENGINEER FOR DESIGN RECOMMENDATIONS.**

6. **ALL CONCRETE TO BE 3,000 PSI COMMERCIAL GRADE PER WSDOT STANDARD SPECIFICATION SECTION 6-02.**

7. **ELEVATION AT BOTTOM OF WEIR WALL NOTCHES TO BE 2" MIN BELOW ELEVATION OF PROJECTED GUTTERLINE AT CURB INLET OR ENTRANCE TO FOREBAY.**
NOTES:

1. FRACTURE AND LOOSE SUBGRADE (PERPENDICULAR TO THE SLOPE) TO A DEPTH OF 6 INCHES MINIMUM IMMEDIATELY PRIOR TO PLACEMENT OF BIORETENTION SOIL MIX AND UNDERDRAIN AGGREGATE.

2. 18" MIN. BIORETENTION SOIL MIX ON BOTTOM AND SIDES TO TOP OF PONDING AREA. SEE NOTE 2, DETAIL B-1.0. DO NOT USE FILTER FABRIC BETWEEN SUBGRADE AND THE BIORETENTION MIX.

3. MAXIMUM LONGITUDINAL SLOPE (ALONG DIRECTION OF FLOW) OF BIORETENTION SWALES SHALL BE 6% WITHOUT ADDING CHECK DAMS.

4. WHERE SIDEWALK OR PAVEMENT ABUTS BIORETENTION, INSTALL PAVEMENT FIRST AND PROVIDE THICKENED EDGE (8" MIN.) TO PREVENT UNDERMINING.

5. TRANSITION ZONE SOIL SHALL BE BIORETENTION SOIL MIX OR COMPOST-AMENDED SOIL, COMPACTED TO 90% MAX. STANDARD PROCTOR DENSITY (ASTM D698).
NOTES:

1. FRACTURE AND LOOSEN SUBGRADE (PERPENDICULAR TO THE SLOPE) TO A DEPTH OF 6 INCHES MINIMUM IMMEDIATELY PRIOR TO PLACEMENT OF BIORETENTION SOIL MIX AND UNDERDRAIN AGGREGATE, EXCEPT WHEN LINER IS REQUIRED.

2. LINER TO BE INSTALLED ONLY WHEN REQUIRED IN THE CITY OF VANCOUVER SURFACE WATER GENERAL REQUIREMENTS. IMPERMEABLE LINER TO BE 30 MIL MIN. HDPE OR EPDM PER GRI TEST METHOD GM13 (HDPE) OR GM 21 (EPDM) OR APPROVED EQUAL.

3. UNDERDRAIN TO BE 8" MIN. (PUBLIC) SLOTTED PVC PER ASTM D1785 SCH 40 WITH SOLVENT WELDED JOINTS. SLOTS MUST BE 0.0064 INCHES WIDE X 0.3 INCHES APART ON CENTER. SLOTS TO BE ORIENTED AS SPECIFIED IN THE CONTRACT. FIELD CUTTING OF SLOTS IS NOT ALLOWED. SLOPE PIPE AT 0.5% MIN., UNLESS OTHERWISE SPECIFIED. PROVIDE ONE CLEANOUT MIN. PER 100 FEET OF UNDERDRAIN, AND AT EACH END. MATCH CROWN ELEVATION OF UNDERDRAIN TO OVERFLOW PIPE UNLESS OTHERWISE SPECIFIED.

4. 18" MIN. BIORETENTION SOIL MIX ON BOTTOM AND SIDES TO TOP OF PONDING AREA. SEE NOTE 2, DETAIL B-1.0.

5. MAXIMUM LONGITUDINAL SLOPE (ALONG DIRECTION OF FLOW) OF BIORETENTION SWALES SHALL BE 6% WITHOUT ADDING CHECK DAMS.

6. WHERE SIDEWALK OR PAVEMENT ABUTS BIORETENTION, INSTALL PAVEMENT FIRST AND PROVIDE THICKENED EDGE (8" MIN.) TO PREVENT UNDERMINING.

7. TRANSITION ZONE SOIL SHALL BE BIORETENTION SOIL MIX OR COMPOST-AMENDED SOIL, COMPACTED TO 90% MAX. STANDARD PROCTOR DENSITY (ASTM D698).
1. Scarify subgrade to a depth of 3 inches (min) immediately prior to placement of aggregate storage (see STD. PLAN NO. D-5.52) and bioretention soil material.

2. Check dams shall be spaced to provide ponding per site specific design.

3. The planter wall slope is typically designed to match the longitudinal slope of the adjacent roadway/sidewalk. The facility subgrade, however, should be flat. Check dams may be used to terrace facilities to provide sufficient ponding for higher-sloped installations.

4. Lay out drainage notches to prevent ponding behind planter wall with 5' maximum spacing between notches.

5. Provide one cleanout per planter (min) for facilities with underdrains.

6. Liner to be installed only when required in the City of Vancouver surface water general requirements. Impermeable liner to be 30 mil min. HDPE or EPDM per GRI test method GM13 (HDPE) or GM 21 (EPDM) or approved equal.

7. Underdrain to be 8' min. (Public) slotted PVC per ASTM D1785 SCH 40 with solvent welded joints. Slots must be 0.0064 inches wide x 0.3 inches apart on center. Slots to be oriented as specified in the contract. Field cutting of slots is not allowed. Slope pipe at 0.5% min., unless otherwise specified. Provide one cleanout min. per 100 feet of underdrain, and at each end. Match crown elevation of underdrain to overflow pipe unless otherwise specified.

8. Planters in public right of way shall be designed with emergency overflow to the street in the event the planter outlet is obstructed or clogged.
CURB AND GUTTER PER CITY STANDARDS

DESIGN PONDING ELEV.
SCARIFIED AND UNCOMPACTED SUBGRADE, SEE NOTE 1, DETAIL B-3.3A

SIDEWALK
NATIVE SOIL
IMPERMEABLE LINER WHEN REQUIRED, SEE NOTE 6, DETAIL B-3.3A
3" DEPTH COARSE COMPOST, SEE DETAIL B-4.1
BIORETENTION SOIL MIX, SEE NOTE 4, DETAIL B-1.0
UNDERDRAIN AGGREGATE, SEE DETAIL B-4.1

OVERFLOW STRUCTURE TO BE 12" AREA DRAIN WITH BEEHIVE GRATE, SEE DETAIL D-1.6
6" THICK RAISED PLANTER WALL, SEE NOTE 3, DETAIL B-3.3A
3" DEPTH COARSE COMPOST, SEE DETAIL B-4.1, SLOPE TO CENTER OF FACILITY AT 0.5%
18" (MIN)
2' (MIN)
6" (MIN)
2" (MIN)
6" THICK RAISED PLANTER WALL
3" CLEAR

TOP OF RAISED PLANTER WALL
4" (MAX) DRAINAGE NOTCH
ADJACENT SIDEWALK
ADJACENT SIDEWALK (BEYOND)

FRONT VIEW
SIDE VIEW
SECTION

NOTES
SEE STANDARD PLAN NO. B-3.3A, IN-STREET CATCH BASIN - PLAN, FOR DETAIL NOTES.

BIORETENTION PLANTER - SECTION

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

STANDARD PLAN NO.

BIRETENTION PLANTER - SECTION

REV. NO. DATE BY APPROVED
0 1-1-2019 AMC

N.T.S
NOTES:
1. ALL MATERIAL AND WORKMANSHIP FOR LATERAL BRACING SHALL CONFORM TO CITY OF VANCOUVER STANDARDS AND WSDOT STANDARD SPECIFICATIONS.
2. PLANTER WALLS EXTENDING MORE THAN 38 INCHES BELOW ADJACENT LOAD-BEARING SURFACE MUST HAVE FOOTING OR LATERAL BRACING.
3. ALL PLANTER WALLS SHALL EXTEND TO BOTTOM OF BIORETENTION SOIL OR DEEPER.
4. CONCRETE LATERAL BRACING SHALL BE CONTINUOUS (NO JOINTS).
5. LATERAL BRACING SHALL BE PROVIDED EVERY 6 FEET (MAX) FOR WALLS UP TO 4 FEET IN HEIGHT.
6. MAXIMUM PLANTER DIMENSIONS WITHOUT A STRUCTURAL ENGINEER’S STAMP TO BE WALL HEIGHT OF 4’, AND INTERNAL WIDTH OF 10’.
7. OTHER MATERIALS MAY BE USED IN LIEU OF HDPE PROVIDED MATERIAL IS NON CORROSIVE, NON-LEACHING, AND SCHEDULE 40.
8. PROVIDE 3 INCH CONTINUOUS SLOT ACROSS TOP OF PIPE TO PLACE REINFORCEMENT AND ENSURE STRUT IS FREE OF VOIDS.

CONCRETE LATERAL BRACING (WALLS UP TO 4’)

CONCRETE STRUT (WALLS UP TO 4’)

SECTION A

BIORETENTION PLANTER - LATERAL BRACING

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

REV. NO. 0  DATE 1-1-2019  BY AMG

STANDARD PLAN NO. B-3.3C
COARSE COMPOST SPECIFICATION:

FURNISH COMMERCIAL MANUFACTURED COMPOST THAT:
· IS PROCESSED THROUGH THERMOPHILIC COMPOSTING MEETING THE EPA’S DEFINITION OF "PROCESS TO FURTHER REDUCE PATHOGENS".
· IS FROM A COMMERCIAL COMPOST FACILITY THAT HOLDS A CURRENT OREGON DEQ COMPOSTING PERMIT OR IS REGISTERED WITH ECOLOGY OR OREGON DEQ AS A COMPOSTING FACILITY.
· MEETS THE REQUIREMENTS OF THE US COMPOSTING COUNCIL (USCC) AND IT'S SEAL OF TESTING ASSURANCE (STA) PROGRAM.
· HAS A CARBON-TO-NITROGEN RATIO BETWEEN 25:1 AND 45:1. COMPOST MAY BE MIXED WITH FIR OR HEMLOCK BARK, OR CLEAN WOOD CHIPS OR SAWDUST, TO RAISE THE CARBON-TO-NITROGEN RATIO ABOVE 25:1.
· IS FREE OF GARBAGE AND TRASH.
· ORIGINATING FROM RECYCLED PLANT WASTE AS DEFINED BELOW:
  - SOURCE-SEPARATED YARD AND GARDEN WASTES
  - WOOD WASTES
  - AGRICULTURAL CROP RESIDUES
  - WAX-COATED CARDBOARD
  - PRECONSUMER VEGETATIVE FOOD WASTES
  - OTHER SIMILAR SOURCE-SEPARATED MATERIALS THAT THE DEQ HAS DETERMINED TO HAVE A COMPARABLE LOW LEVEL OF RISK IN HAZARDOUS SUBSTANCES, HUMAN PATHOGENS, AND PHYSICAL CONTAMINANTS
  - BIOSOLIDS AND MANURE FEEDSTOCKS ARE NOT ALLOWED.
· MEETS THE PARTICLE SIZE AND GRADATION PARAMETERS IN TABLE 1
· CONTRACTOR SHALL SUBMIT TWO 1-GALLON SAMPLES OF THE COMPOST, GATHERED PER STA PROTOCOL (AVAILABLE FROM THE U.S. COMPOSTING COUNCIL) FOR APPROVAL BY THE PROJECT ENGINEER.

<table>
<thead>
<tr>
<th>TABLE 1: COMPOST GRADATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIEVE SIZE</td>
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<tr>
<td></td>
</tr>
<tr>
<td>3-INCH</td>
</tr>
<tr>
<td>1-INCH</td>
</tr>
<tr>
<td>3/4-INCH</td>
</tr>
<tr>
<td>5/8-INCH</td>
</tr>
<tr>
<td>1/2-INCH</td>
</tr>
<tr>
<td>1/4-INCH</td>
</tr>
</tbody>
</table>

ARBORIST WOOD CHIP MULCH SPECIFICATION:

· FURNISH WOOD CHIP MULCH THAT IS CHIPPED FROM CLEARED SITE VEGETATION OR FROM AN APPROVED OFFSITE SOURCE. ENSURE THAT CHIPPED MATERIAL IS FREE OF ANY NOXIOUS WEEDS OR INVASIVE VEGETATION.
· MULCH MAY CONTAIN WOOD, WOOD FIBER, BARK, BRANCHES, AND LEAVES, BUT MAY NOT CONTAIN WEEDS, WEED SEEDS, TRASH, OR VISIBLE AMOUNTS OF SOIL.
· PROVIDE WOOD CHIP MULCH IN THE FOLLOWING SIZE RANGE:
  3-INCH TO 1/4-INCH CHIPPED WOOD MATERIAL AND VEGETATIVE DEBRIS. MINIMIZE FINE MATERIAL WITHIN BLEND.

UNDERDRAIN AGGREGATE SPECIFICATION:

· UNDERDRAIN AGGREGATE MUST CONSIST OF SCREENED SAND, GRAVEL OR OTHER INERT MATERIALS, OR COMBINATIONS THEREOF, FROM SOURCES APPROVED BY THE ENGINEER, HAVING HARD, DURABLE PARTICLES FREE FROM ADHERENT COATINGS.
· THE MATERIALS MUST BE WASHED THOROUGHLY TO REMOVE CLAY, LOAM, ALKALI, ORGANIC MATTER, OR OTHER DETERLEIOROUS SUBSTANCES.
· PARTICLES HAVING A SPECIFIC GRAVITY LESS THAN 1.95 MUST NOT EXCEED 1.0 PERCENT OF THE TOTAL WEIGHT, ORGANIC MATTER, BY CALORIMETRIC TEST, MUST NOT BE DARKER THAN THE REFERENCE STANDARD COLOR (ORGANIC PLATE NO. 3) AASHTO T21 UNLESS OTHER TESTS PROVE A DARKER COLOR TO BE HARMLESS.
· GRADATION AND PARTICLE SIZE PARAMETERS MUST BE AS SHOWN IN TABLE 2.

<table>
<thead>
<tr>
<th>TABLE 2: UNDERDRAIN AGGREGATE GRADATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIEVE SIZE</td>
</tr>
<tr>
<td>3/4-INCH</td>
</tr>
<tr>
<td>1/4-INCH</td>
</tr>
<tr>
<td>U.S. NO. 8</td>
</tr>
<tr>
<td>U.S. NO. 50</td>
</tr>
<tr>
<td>U.S. NO. 200</td>
</tr>
</tbody>
</table>
CONSTRUCTION NOTES:
1. 4" THICK CONCRETE SPLASH PAD ELEVATION SHALL BE LEVEL WITH SOIL INSIDE PLANTER.
2. CONCRETE SPLASH PAD SHALL BE 6" WIDER THAN CHANNEL OPENING ON BOTH SIDES.

N.T.S

Curb Opening Inlet

City of Vancouver
Department of Public Works
Surface Water Management

REV. NO. DATE BY APPROVED
0 1-1-2019 AMG
FRAME AND GRATE ATTACHMENT DETAIL

CONSTRUCTION NOTES:

1. CAST IRON, NATURAL FINISH.
2. NO OPENING GREATER THAN 3/8".
3. PROTECT THREADED HOLES IN FRAME FROM CLOGGING DURING FRAME INSTALLATION.
4. GRATE TO BE RATED FOR H-20 LOADING, WITH A NON-SLIP SURFACE HAVING A STATIC COEFFICIENT OF FRICTION BETWEEN 0.60 AND 1.0 PER ASTM C1020. GRATES ON INCLINES GREATER THAN 4% SHALL HAVE A COEFFICIENT OF 0.80 TO 1.0.
5. GRATE TO BE ADA COMPLIANT.
CONSTRUCTION NOTES:

2. HSS 6" X 2" X 1/8" TUBE SHALL MEET THE REQUIREMENTS OF ASTM A-500 GRADE B.
4. ENTIRE ASSEMBLY SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A-123.

GENERAL NOTES:

1. INCLUDE METAL CURB INLET ON ARTERIALS AND WHERE PARKING IS ADJACENT TO THE CURB OPENING.

N.T.S

METAL INLET ASSEMBLY

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

REV. NO. 0
DATE 1-1-2019
BY AMG
APPROVED
1. Minimum utility setbacks and protection measures must conform to the Vancouver Surface Water general requirements, current city standards, and other utility provider requirements. Coordinate with City Engineer in the event of utility crossings or conflicts.

2. Call 811 or 1-800-424-5555 at least two working days before any excavation to allow utility companies to locate and mark their lines. Any excavation within two feet of painted lines must be done by hand.

1. Top of rain garden shall be 5 feet min. from buildings without basements or with foundation waterproofing and 10 feet min. from buildings with basements without waterproofing.

2. Roof downsput connection optional. Connect with stabilized ditch or slope piped connection at 2% (preferred), 1% min. use 4" min. corrugated polyethylene pipe.

3. Sheet flow into rain garden may be kept widely distributed over a stabilized surface (pavement, pea gravel, grass). If concentrated, provide a 2 min. width swale with 4" depth, 1"-3" washed gravel, streambed cobble, or with grass-like vegetation to prevent erosion.

4. Rain garden shall be sized using the rain garden handbook for Western Washington (https://fortress.wa.gov/ecy/publications/documents/1310027.pdf) or a minimum of 5% of the contributing area.

5. Planting zone information on standard plan No. B-6.2.

6. An overflow location must be designated if the rain garden is not sized to meet best criteria in the rain garden handbook. Overflow location shall be noted on the plans and consist of a stabilized (rock, turf, thick groundcover, or similar) surface discharging to a safe location in the public right-of-way.
PLANTING NOTES:

1. REFER TO THE RAIN GARDEN HANDBOOK FOR WESTERN WASHINGTON FOR GUIDANCE ON PLANT SELECTION, PLACEMENT, AND SPACING BY ZONE.

2. PLANTS MUST BE PERENNIAL AND ADAPTED TO THE CONDITIONS ENCOUNTERED IN ITS ZONE IN THE RAIN GARDEN. SEE PLANTING ZONE TABLE.

3. EVERGREEN AND DECIDUOUS VEGETATION MAY BE USED BUT THE MAJORITY OF MATERIAL MUST PROVIDE A SIGNIFICANT ABOVE GROUND PRESENCE YEAR ROUND.

4. PLANTING DESIGN SHOULD MINIMIZE COMPACTION OF SOIL THROUGH PLANNED MAINTENANCE ACCESS. ANNUAL PLANTS REQUIRING SOIL DISTURBANCE FOR HARVESTING (E.G., CARROTS) OR ANNUAL REPLANTING ARE NOT PERMITTED.

GENERAL NOTES:

1. UNDERDRAINS ARE NOT ALLOWED WITHIN RAIN GARDENS.

2. DO NOT COMPACT THE RAIN GARDEN SOIL MIX.
   A. DO NOT OPERATE HEAVY EQUIPMENT WITHIN THE RAIN GARDEN
   B. DO NOT PLACE OR AMEND RAIN GARDEN SOIL WHEN THE GROUND IS FROZEN OR WHEN THE SOIL IS EXCESSIVELY WET.

3. EVERGREEN AND DECIDUOUS VEGETATION MAY BE USED BUT THE MAJORITY OF MATERIAL MUST PROVIDE A SIGNIFICANT ABOVE GROUND PRESENCE YEAR ROUND.

4. PLANTING DESIGN SHOULD MINIMIZE COMPACTION OF SOIL THROUGH PLANNED MAINTENANCE ACCESS. ANNUAL PLANTS REQUIRING SOIL DISTURBANCE FOR HARVESTING (E.G., CARROTS) OR ANNUAL REPLANTING ARE NOT PERMITTED.

TABLE: PLANTING ZONES

<table>
<thead>
<tr>
<th>ZONE</th>
<th>PLANT TYPE</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EMERGENTS, PERENNIALS &amp; LOW SHRUBS (PLANTS THAT CAN TOLERATE STANDING WATER)</td>
<td>FACILITY BOTTOM</td>
</tr>
<tr>
<td>2</td>
<td>EMERGENTS, PERENNIALS &amp; LOW SHRUBS (PLANTS THAT CAN TOLERATE OCCASIONAL STANDING WATER)</td>
<td>LOWER SLOPE TO TOP OF PONDING</td>
</tr>
<tr>
<td>3</td>
<td>GROUNDCOVERS / SHRUBS (PLANTS THAT PREFER DRIER SOILS)</td>
<td>UPPER SLOPE / SURFACE GRADE</td>
</tr>
<tr>
<td>1</td>
<td>ACCENT SHRUB (SELECT APPROPRIATE SHRUB BASED ON ZONE)</td>
<td>SURFACE GRADE / LOWER SLOPE / FACILITY BOTTOM</td>
</tr>
<tr>
<td>3</td>
<td>TREE</td>
<td>CENTER WITHIN UPPER SLOPE. CONSIDER CANOPY OF FULL-GROWN TREE. ALLOW CLEARANCE FOR WALKWAYS.</td>
</tr>
</tbody>
</table>
REQUIREMENTS FOR BIORETENTION SOIL PREPARATION AND SOIL PROTECTION

SOIL PREPARATION

PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS, THE SOIL SURFACE SHALL BE ROUGHENED USING A BOW RAKE OR SIMILAR TOOL TO CREATE RIDGES OR FURROWS A MINIMUM OF 1" DEPTH, THAT RUN PERPENDICULAR TO THE SLOPE AND NATURAL DIRECTION OF WATER FLOW.

EXCESSIVE COMPACTION OF BIORETENTION SOILS SHALL BE AVOIDED DURING SURFACE ROUGHENING. SOIL SHALL BE MULCHED OR COVERED WITH EROSION CONTROL BLANKETS AS QUICKLY AS POSSIBLE AFTER ROUGHENING.

SOIL PROTECTION

NO STOCKPILING OF MATERIALS OR MECHANICAL COMPACTION OF SOILS SHALL BE ALLOWED WITHIN STORMWATER FACILITIES AFTER SOIL PLACEMENT OCCURS. BIORETENTION SOILS MUST BE PROTECTED AND TEMPORARY SIGNAGE INSTALLED ACCORDING TO TEMPORARY SIGNAGE STANDARDS WITHIN THIS SECTION.

MULCHING

BIORETENTION FACILITIES GRADED WITH FLAT TO MILD SLOPES (SIDE SLOPES 3:1 OR LESS AND LONGITUDINAL SLOPES LESS THAN 5 PERCENT) THAT WILL BE PLANTED PRIOR TO OCTOBER 15, SHOULD BE PROTECTED WITH HYDRAULICALLY-APPLIED EROSION CONTROL PRODUCTS (HECPs) TO PROVIDE TEMPORARY EROSION AND SEDIMENT CONTROL. MULCH WILL PROVIDE PROTECTION FROM SOIL COMPACTION AND PROVIDE WEED SUPPRESSION.

ALL PRODUCTS SHALL BE MADE IN THE UNITED STATES, 100% BIODEGRADABLE, AND CONTAIN 100% RECYCLED, THERMALLY REFINED (WITHIN A PRESSURIZED VESSEL) VIRGIN WOOD FIBERS DERIVED FROM CLEAN, WHOLE WOOD CHIPS. THE HECPs SHALL BE PHYTOSANITIZED AND UPON APPLICATION FORM AN INTIMATE BOND WITH THE SOIL SURFACE TO CREATE CONTINUOUS, POROUS, ABSORBENT AND FLEXIBLE EROSION RESISTANT BLANKETS THAT ALLOW FOR HEALTHY PLANT GROWTH. HYDRAULIC MULCH (HM) WOOD WITH TACK IS AN ACCEPTABLE PRODUCT FOR THIS APPLICATION.

SUBMIT THE FOLLOWING INFORMATION TO THE CITY PRIOR TO MULCH APPLICATION:

- PRODUCT DATA: SUBMIT MANUFACTURER’S PRODUCT DATA AND INSTALLATION INSTRUCTIONS. INCLUDE REQUIRED SUBSTRATE PREPARATION, LIST OF MATERIALS AND APPLICATION RATES.
- CERTIFICATIONS: MANUFACTURER SHALL SUBMIT A LETTER OF CERTIFICATION THAT THE PRODUCT MEETS OR EXCEEDS ALL TECHNICAL AND PACKAGING REQUIREMENTS.

THE HM SHOULD MEET THE REQUIREMENTS DESCRIBED IN TABLE 1.

<table>
<thead>
<tr>
<th>TABLE 1. PRODUCT PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROPERTY</strong></td>
</tr>
<tr>
<td>MASS PER UNIT AREA</td>
</tr>
<tr>
<td>WATER HOLDING CAPACITY</td>
</tr>
<tr>
<td>MATERIAL COLOR</td>
</tr>
<tr>
<td>VEGETATION ESTABLISHMENT</td>
</tr>
<tr>
<td>FUNCTIONAL LONGEVITY 2</td>
</tr>
<tr>
<td>ECOTOXICITY</td>
</tr>
<tr>
<td>BIODEGRADABILITY</td>
</tr>
</tbody>
</table>

1. ASTM TEST METHODS DEVELOPED FOR ROLLED EROSION CONTROL PRODUCTS AND HAVE BEEN MODIFIED TO ACCOMMODATE HYDRAULICALLY-APPLIED EROSION CONTROL PRODUCTS.

2. FUNCTIONAL LONGEVITY IS THE ESTIMATED TIME PERIOD, BASED UPON ASTM D5338 TESTING AND FIELD OBSERVATIONS, THAT A MATERIAL CAN BE ANTICIPATED TO PROVIDE EROSION CONTROL AND AGRONOMIC BENEFITS AS INFLUENCED BY COMPOSITION, AS WELL AS SITE-SPECIFIC CONDITIONS, INCLUDING, BUT NOT LIMITED TO – TEMPERATURE, MOISTURE, LIGHT CONDITIONS, SOILS, BIOLOGICAL ACTIVITY, VEGETATIVE ESTABLISHMENT AND OTHER ENVIRONMENTAL FACTORS.
REQUIREMENTS FOR BIORETENTION SOIL PREPARATION AND SOIL PROTECTION (CONTINUED)

MULCHING (CONTINUED)

COMPLY WITH PRODUCT AND EQUIPMENT MANUFACTURER’S SPECIFICATIONS FOR INSTALLATION. APPLY HM WOOD WITH TACK AT ACCORDING TO THE RATES IN TABLE 2, UNLESS OTHERWISE SPECIFIED BY MANUFACTURER.

TABLE 2. HM WOOD WITH TACK APPLICATION RATES FOR SLOPE GRADIENT CONDITIONS.

<table>
<thead>
<tr>
<th>SLOPE GRADIENT/CONDITION</th>
<th>HM WOOD WITH TACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 4H TO 1V</td>
<td>2,000 (2,240)</td>
</tr>
<tr>
<td>&gt; 4H TO 1V AND ≤ 3H TO 1V</td>
<td>2,500 (2,800)</td>
</tr>
</tbody>
</table>

PLANTING SHALL OCCUR DIRECTLY WITHIN MULCH AND BEGIN WITHIN FIRST TWO WEEKS OF THE FALL PLANTING SEASON. APPLY STORMWATER FACILITY MULCH ACCORDING TO STANDARD PLAN B-4.1.

EROSION CONTROL BLANKETS

EROSION CONTROL BLANKETS SHALL BE USED TO PROTECT BIORETENTION SOILS WITH MODERATE TO STEEP SLOPES (SLOPES GREATER THAN OR EQUAL TO 3:1) AND IN FACILITIES WHERE SOILS WILL BE EXPOSED FOR MORE THAN 3 MONTHS OR PAST THE FIRST TWO WEEKS OF OCTOBER. EROSION CONTROL BLANKETS SHALL BE MADE OF NATURAL PLANT FIBERS UNALTERED BY SYNTHETIC MATERIALS, MEETING THE REQUIREMENTS OF WSDOT STANDARD SPECIFICATIONS SECTION 9-14.5(2)D, AND INSTALLED ACCORDING TO STANDARD PLAN B-7.1 AND B-7.2.

DURING INSTALLATION, ALLOW ADEQUATE MATERIAL FOR OVERLAPPING AND TRENCHING ACCORDING TO STANDARD PLAN B-7.1. EXTRA STAPLES OR ANCHORING MAY BE REQUIRED ON STEEP SLOPES IN ACCORDANCE WITH THE MANUFACTURERS’ RECOMMENDATIONS.

BLANKETS AND STAKES/STAPLES SHALL BE REMOVED PRIOR TO PLANTING, BEING CAREFUL TO CONTAIN AND REMOVE ANY ACCUMULATED SEDIMENT, WEED SEEDS, AND DEBRIS WITHIN THE BLANKET. DURING REMOVAL, BLANKETS SHALL BE ROLLED FROM THE BOTTOM OF THE SLOPE OR THE DOWNSTREAM END OF A FACILITY TO THE TOP TO TRAP SEDIMENT FROM THE SLOPE WITHIN THE BLANKET ROLL.

TEMPORARY SIGNAGE

TEMPORARY SIGNS SHALL BE INSTALLED DURING THE PERIOD WHERE BIORETENTION SOIL MEDIA IS INSTALLED AND PRIOR TO PLANT INSTALLATION THAT INCLUDES THE FOLLOWING INFORMATION:

- THIS IS A STORMWATER FACILITY.
- STOCKPILING ANY MATERIAL IS PROHIBITED WITHIN THIS AREA.
- PLANTING OF THIS FACILITY WILL OCCUR IN FALL OR SPRING.
- PROTECT THIS FACILITY BY KEEPING ALL ANIMALS, FOOT TRAFFIC, AND DEBRIS OUT OF FACILITIES.
- TO REPORT ANY ISSUES OR INCIDENTS, PLEASE CONTACT ON-SITE CITY INSPECTOR (PROVIDE CONTACT INFORMATION).

HIGH VISIBILITY FENCE

HIGH VISIBILITY FENCING SHALL BE INSTALLED AROUND THE BIORETENTION PERIMETER UNTIL THE ENTIRE SITE AND CONTRIBUTING AREA HAS BEEN STABILIZED.
SOIL PROTECTION EROSION CONTROL BLANKET INSTALLATION

STAGGER ROWS OF STAPLES (TYP)

MIN 4" OVERLAP. UPSTREAM BLANKET SHALL LAY OVER TOP OF DOWNSTREAM ENDS

6" WIRE STAPLE (TYP)

3' MAX

12" MAX

4' MIN

2"-4" BALLAST AGGREGATE TO TOE OF SLOPE OR 4' MIN. SEE NOTE 2

PROTECTION AT INLETS FOR SLOPED FACILITIES

CURB OPENING INLET

6" WIRE STAPLES AT 12" O.C. ALONG WALL SLOPE TO CENTER OF FACILITY

EROSION CONTROL BLANKET

SLOPE TO CENTER OF FACILITY

12" MIN EMBEDMENT

6" MIN EMBEDMENT

NOTES:

1. EROSION CONTROL BLANKET TO MEET THE REQUIREMENTS OF WSDOT STANDARD SPECIFICATIONS SECTION 9-14.5(2)D.
2. INSTALL 6" WIRE STAPLES AT 12" O.C. WITHIN BALLAST-PROTECTED AREA PRIOR TO ROCK PLACEMENT

INITIAL ANCHOR AT VERTICAL WALLS

SECONDARY ANCHOR TRENCH ADJACENT TO CURB, SIDEWALK, OR VERTICAL WALL

TEMPORARY EROSION CONTROL BLANKET

CITY OF VANCOUVER
DEPARTMENT OF PUBLIC WORKS
SURFACE WATER MANAGEMENT

REV. NO. DATE BY APPROVED
0 1-1-2019 AMC

N.T.S

STANDARD PLAN NO. B-7.2
ANCHOR TRENCH ADJACENT TO LANDSCAPING

INITIAL CHANNEL ANCHOR TRENCH ADJACENT TO CURB OR SIDEWALK

BACKFILL WITH FOOT COMPACTION

EROSION CONTROL BLANKET

6" WIRE STAPLE

EROSION CONTROL BLANKET

6" WIRE STAPLE AT 12" SPACING

COMPACTED FILL

6"
City of Vancouver Plant List for Bioretention Within the Public Right-of-Way

**Zone A:** Area of the facility within the maximum ponding elevation, with frequent standing water or saturated soils. Plants within this area can tolerate temporary standing water and seasonally wet soil conditions.

**Zone B:** Area of the facility above the maximum ponding elevation, where soils are moist to dry. Plants within this area are selected to be drought tolerant, stabilize slopes, and be placed so that mature growth does not require frequent pruning or cause line of sight issues.

**Zone C:** Landscape areas adjacent to the stormwater facility. Typically planted with drought-tolerant plants. Plants within this area are selected to tolerate dry soils and help blend the facility within the surrounding landscape. Street trees may be located within Zone C, upon City approval. Trees must be selected so that root structures and leaf drop do not negatively impact stormwater infrastructure and performance.
Only plants listed are allowed for use in publicly-owned bioretention facilities. This list may also be used for privately-owned facilities if desired.

<table>
<thead>
<tr>
<th>Latin Name / Common Name</th>
<th>Potential Mature Height</th>
<th>Planting Zone</th>
<th>On Center Plant Spacing</th>
<th>Evergreen</th>
<th>Sun and Shade Tolerance</th>
<th>Pruning Timing¹</th>
<th>Maintenance Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquilegia formosa / Western columbine</td>
<td>3'</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Full Shade</td>
<td>NA</td>
<td>No maintenance required. Allow seeds to fall in place and propagate new plants.</td>
</tr>
<tr>
<td>Camassia leichtlinii / Large camas</td>
<td>3'</td>
<td>B</td>
<td>6&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>No maintenance required. Allow seeds to fall in place and propagate new plants.</td>
</tr>
<tr>
<td>Camassia quamash / Common camas</td>
<td>18&quot;</td>
<td>A/B</td>
<td>6&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>No maintenance required. Allow seeds to fall in place and propagate new plants.</td>
</tr>
<tr>
<td>Carex morrowii 'Ice Dance' / Ice Dance Japanese sedge</td>
<td>12&quot;</td>
<td>A/B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Part Shade to Full Shade</td>
<td>Late winter/ early spring</td>
<td>Clean out dead leaves in spring, if desired.</td>
</tr>
<tr>
<td>Carex obnupta / Slough sedge</td>
<td>4'</td>
<td>A</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Full Shade</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, if necessary. Excellent soil binder.</td>
</tr>
<tr>
<td>Carex stipata / Sawbeak sedge</td>
<td>3'</td>
<td>A/B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, if necessary. Excellent soil binder.</td>
</tr>
<tr>
<td>Carex testacea / Orange New Zealand Sedge</td>
<td>12&quot;</td>
<td>B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>Early spring</td>
<td>Leave some seed heads to repopulate plants in fall. Prune back only as needed, does not need annual pruning.</td>
</tr>
<tr>
<td>Delphinium menziesii / Menzie's larkspur</td>
<td>3'</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Late Summer</td>
<td>Large showy dark blue to purple flowers bloom late spring to early summer and are excellent for pollinators. Stalks and stems will die off and dry through summer. Dry stalks can be trimmed and removed, if desired. Seeds will produce new plants and roots will resprout next spring.</td>
</tr>
<tr>
<td>Echinacea angustifolia and Echinacea sp. / Blacksamson echinacea</td>
<td>24&quot;</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun</td>
<td>Late Fall/Winter</td>
<td>Deadhead in winter if desired, but seedheads provide winter food for songbirds.</td>
</tr>
<tr>
<td>Echinacea purpurea / Purple coneflower</td>
<td>24&quot;</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Late Fall/Winter</td>
<td>Deadhead in winter if desired, but seedheads provide winter food for songbirds.</td>
</tr>
<tr>
<td>Helictotrichon sempervirens / Blue oat grass</td>
<td>3'</td>
<td>B/C</td>
<td>3'</td>
<td>Y</td>
<td>Full Sun</td>
<td>NA</td>
<td>Drought-tolerant once established.</td>
</tr>
<tr>
<td>Juncus arcticus ssp. littoralis / Mountain rush</td>
<td>24&quot;</td>
<td>A/B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>Remove dead leaves with a hand rake, if necessary.</td>
</tr>
<tr>
<td>Juncus ensifolius / Daggerleaf rush</td>
<td>18&quot;</td>
<td>A</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, if necessary.</td>
</tr>
<tr>
<td>Juncus patens / Spreading rush</td>
<td>3'</td>
<td>A</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, if necessary.</td>
</tr>
<tr>
<td>Juncus patens 'Elk Blue' / California Grey rush</td>
<td>24&quot;</td>
<td>A</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, as necessary</td>
</tr>
<tr>
<td>Juncus tenuis / Slender rush</td>
<td>30&quot;</td>
<td>A</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun</td>
<td>Late winter/ early spring</td>
<td>Remove dead leaves with a hand rake, as necessary</td>
</tr>
<tr>
<td>Iris douglasiana / Douglas' iris</td>
<td>18&quot;</td>
<td>A/B</td>
<td>12&quot;</td>
<td>N</td>
<td>Full Sun</td>
<td>Late fall</td>
<td>Clear out dead leaves, if desired, but not necessary</td>
</tr>
<tr>
<td>Iris tenax / Oregon iris</td>
<td>24&quot;</td>
<td>B</td>
<td>12&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Late fall</td>
<td>Clear out dead leaves, if desired, but not necessary</td>
</tr>
<tr>
<td>Pennisetum 'Little Bunny', Pennisetum sp. / Fountain grass</td>
<td>18&quot;</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Late winter</td>
<td>Leave dry vegetation over winter and clear out dead stalks late winter to make room for new spring growth. Divide plants every few years to reinvigorate growth.</td>
</tr>
<tr>
<td>Polystichum munitum / Western swordfern</td>
<td>3'</td>
<td>B/C</td>
<td>3'</td>
<td>Y</td>
<td>Part to Full Shade</td>
<td>NA</td>
<td>Clean out dead leaves, if desired.</td>
</tr>
<tr>
<td>Rudbeckia fulgida 'Goldsturm' / Black eyed susan</td>
<td>24&quot;</td>
<td>B</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Winter</td>
<td>Deadhead in winter if desired, but seedheads provide winter food for songbirds.</td>
</tr>
</tbody>
</table>

Low Shrubs

<table>
<thead>
<tr>
<th>Latin Name / Common Name</th>
<th>Potential Mature Height</th>
<th>Planting Zone</th>
<th>On Center Plant Spacing</th>
<th>Evergreen</th>
<th>Sun and Shade Tolerance</th>
<th>Pruning Timing¹</th>
<th>Maintenance Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctostaphylos uva-ursi / Kinnikinnick</td>
<td>12&quot;</td>
<td>B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>No hedge trimming or pruning.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Latin Name/ Common Name</th>
<th>Potential Mature Height</th>
<th>Planting Zone</th>
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<th>Sun and Shade Tolerance</th>
<th>Pruning Timing¹</th>
<th>Maintenance Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctostaphylos uva-ursi / 'Vancouver Jade'/ Vancouver Jade Bearberry</td>
<td>12&quot;</td>
<td>B</td>
<td>12&quot;</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>No hedge trimming or pruning.</td>
</tr>
<tr>
<td>Geranium ‘Gerwat’ Rozanne/ Rozanne cranesbill</td>
<td>18&quot;</td>
<td>B/C</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>NA</td>
<td>Prune plants to encourage additional blooming, if desired. Prune side stems to control spread.</td>
</tr>
<tr>
<td>Mahonia nervosa / Cascade Oregon grape</td>
<td>24&quot;</td>
<td>A/B</td>
<td>3'</td>
<td>Y</td>
<td>Full Sun to Shade</td>
<td>NA</td>
<td>No hedge trimming or pruning.</td>
</tr>
<tr>
<td>Mahonia repens / Creeping Oregon grape</td>
<td>24&quot;</td>
<td>B</td>
<td>24&quot;</td>
<td>Y</td>
<td>Full Sun to Shade</td>
<td>NA</td>
<td>No hedge trimming or pruning.</td>
</tr>
<tr>
<td>Cornus sericea ‘Kelsey’/ Kelsey’s dwarf redtwig dogwood</td>
<td>3’</td>
<td>A/B</td>
<td>24&quot;</td>
<td>N</td>
<td>Full Sun</td>
<td>Fall or winter</td>
<td>No hedge trimming or pruning.</td>
</tr>
<tr>
<td>Cornus sericea ‘Isanti’/ Isanti dogwood</td>
<td>4’ to 5’</td>
<td>A/B</td>
<td>3’</td>
<td>N</td>
<td>Full Sun</td>
<td>Fall or winter</td>
<td>Plant in areas along ROW where line of sight for vehicles and pedestrians can tolerate slightly higher growth. Still has smaller dogwood form and structure.</td>
</tr>
<tr>
<td>Heuchera micrantha native, ‘Purple Palace’, and other varieties/ Alumroot, Coralbells</td>
<td>24”</td>
<td>B</td>
<td>24”</td>
<td>Y</td>
<td>Full Sun to Part Shade</td>
<td>Early spring</td>
<td>Clear out dead leaves, if desired, but not necessary</td>
</tr>
<tr>
<td>Lavandula angustifolia ‘Hidcote Blue’ and Lavandula sp./ Hidcote Blue English lavender</td>
<td>3’</td>
<td>B</td>
<td>24”</td>
<td>Y</td>
<td>Full Sun</td>
<td>During flower bloom period for first 3 years</td>
<td>Prune back flower stalks and 1” to 2” of soft new growth during first three years of establishment to encourage a dense, full growth habit. No further pruning necessary after first three years.</td>
</tr>
<tr>
<td>Potentilla fruticosa ‘Sunset’/ Sunset shrubby cinquefoil</td>
<td>24”</td>
<td>B</td>
<td>24”</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Late winter/ early spring</td>
<td>Prune in dormant season to avoid negatively affecting flowering</td>
</tr>
<tr>
<td>Ribes sanguineum / Red flowering currant</td>
<td>8’</td>
<td>B/C</td>
<td>5’</td>
<td>N</td>
<td>Full Sun</td>
<td>Winter</td>
<td>Native shrub used as accent shrub or species of interest. Plant minimum of 4’ from sidewalk or roadway edge to avoid need for pruning. Not appropriate where low vegetation is needed for safe line of sight. Important pollinator and wildlife plant.</td>
</tr>
<tr>
<td>Spiraea betulifolia / White spirea</td>
<td>3’</td>
<td>B/C</td>
<td>24”</td>
<td>N</td>
<td>Full Sun to Part Shade</td>
<td>Winter</td>
<td>Plant at least 1 foot from sidewalks and adjacent impervious surfaces to avoid pruning.</td>
</tr>
<tr>
<td>Spiraea japonica ‘Little Princess’ and Spiraea japonica sp./ Little Princess Japanese spiraea</td>
<td>3’</td>
<td>A/B</td>
<td>24”</td>
<td>N</td>
<td>Full Sun</td>
<td>NA</td>
<td>Needs regular watering during extreme dry periods. No pruning necessary.</td>
</tr>
<tr>
<td>Symphoricarpos albus / Snowberry</td>
<td>5’</td>
<td>A/B/C</td>
<td>3’</td>
<td>N</td>
<td>Full Sun to Full Shade</td>
<td>Fall or winter</td>
<td>Native shrub that can be grown in massings or used singly within facilities. Plant minimum of 3’ from sidewalk or roadway edge to avoid need for pruning. Not appropriate where low vegetation is needed for safe line of sight.</td>
</tr>
<tr>
<td>Teucrium chamaedrys / Wall germander</td>
<td>24”</td>
<td>B/C</td>
<td>24”</td>
<td>Y</td>
<td>Full Sun</td>
<td>After flowering</td>
<td>Low, drought-tolerant shrubs loved by pollinators. Prune or shear after blooming to encourage bushy, compact growth habit.</td>
</tr>
</tbody>
</table>

Notes
1. Most plants should not require pruning unless there is a line of sight, clearance, or sidewalk conflict. Proper placement of plants away from sidewalks should help avoid need for regular pruning. Lavender is the only species that requires pruning during the first three years after planting in order to create the appropriate long-term growth form.