APPENDIX B

TYPICAL FACLITY DETAILS

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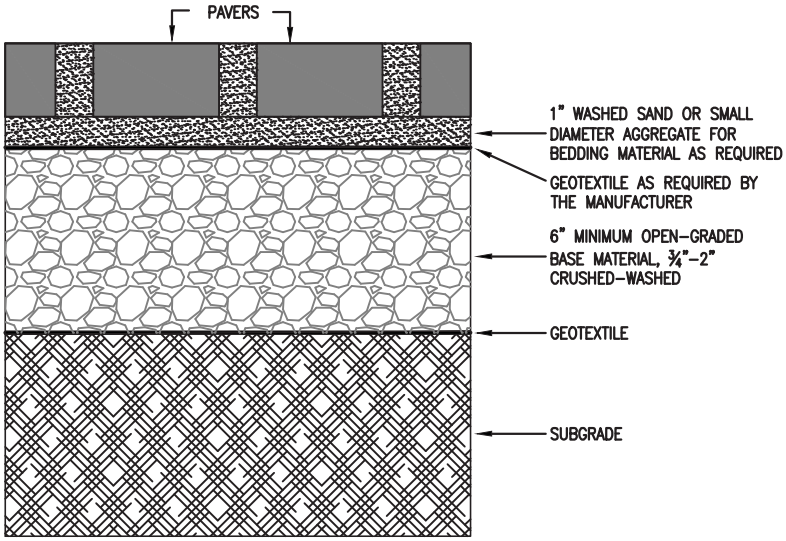
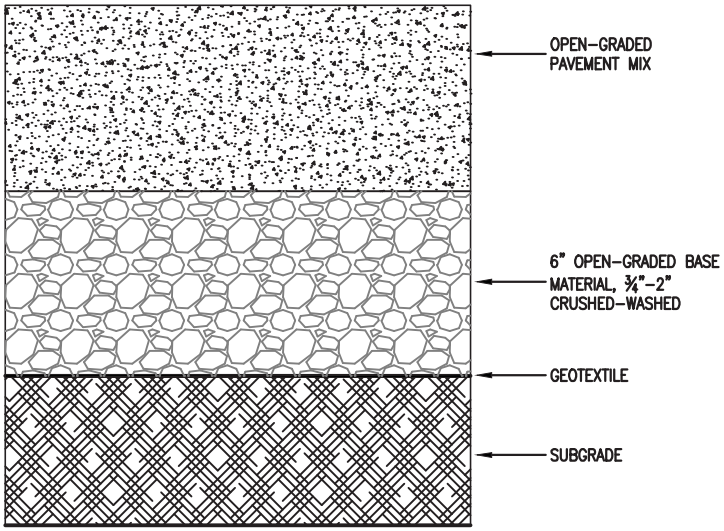
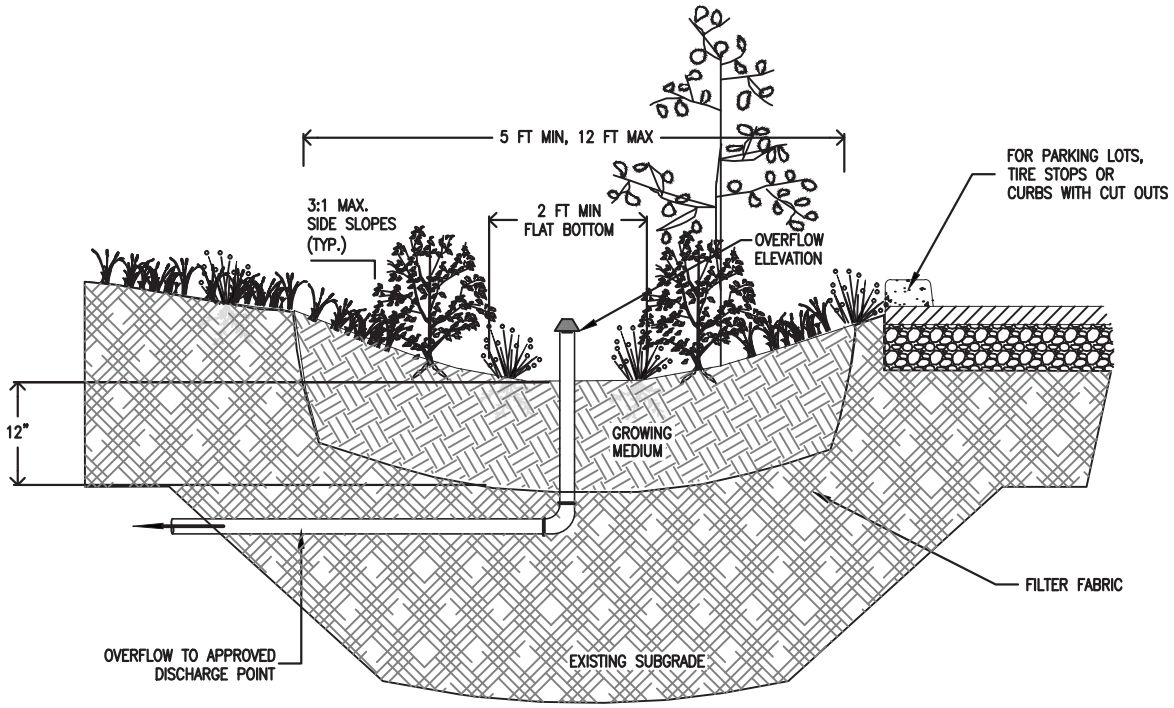


PERMEABLE CONCRETE BLOCK
OR "PAVER" SYSTEMS



PERVIOUS (OPEN GRADED) CONCRETE
AND ASPHALT

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	PERMEABLE PAVEMENTS TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of swale: 5' - 12'.
      Depth of swale: 12"
   b. Longitudinal slope of swale: 0.5% min and 6% max.
   c. Flat bottom width: 2' minimum.
   d. Side slopes of swale: 3:1 maximum.

3. Setbacks (from centerline of facility):
   a. Infiltration swales must be 10' from foundations and 5' from property lines.
   b. Filtration swales must have a waterproof liner when within 10' from foundation of 5' from property lines.

4. Overflow:
   a. Overflows are required to an approved point discharge point unless sized to fully infiltrate the flood control design storm.
   b. Inlet elevation must allow for 2" of freeboard, minimum.

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size: 3/4" - 2-1/2" washed
   b. Depth: 12" minimum

7. A geotextile is required to isolate the drain rock from the subgrade and growing medium

8. Growing medium:
   a. 12" minimum
   b. Import topsoil or amended native soil

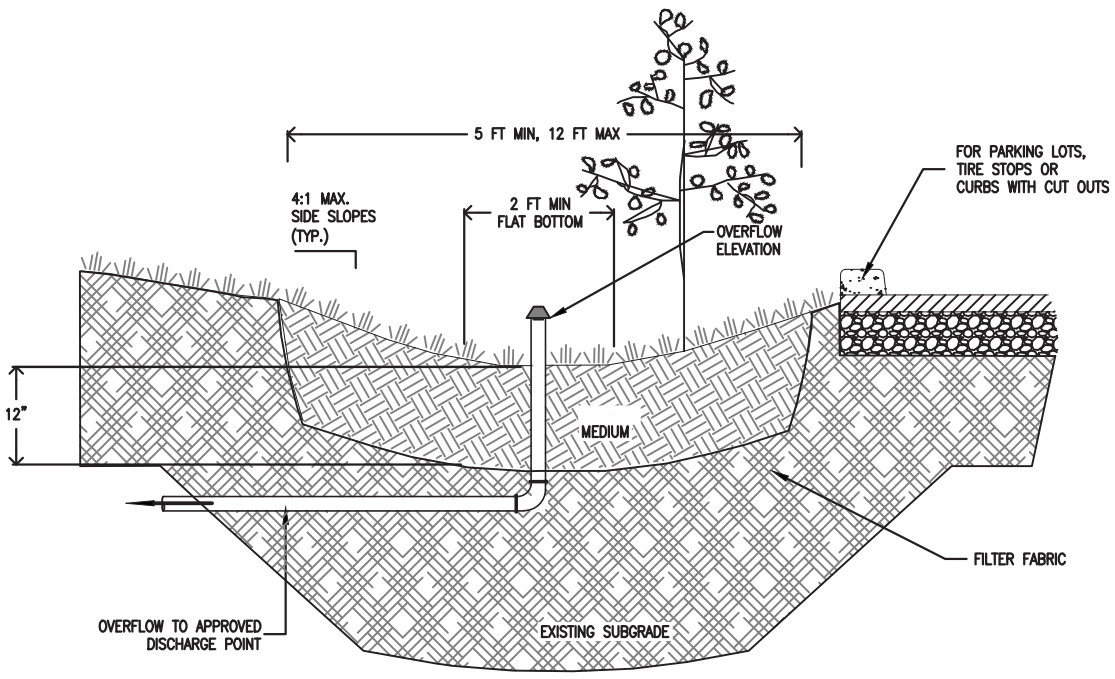
9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Vegetative swales must have following plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers, 2 Small Shrubs, 4 Large Shrubs, and 1 Tree (deciduous or evergreen)

10. Waterproof liner: Shall be 30 mil PVC or equivalent for flow-through facilities.

11. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

12. Check dams: Shall be placed at 12" intervals along the length of the swale.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	VEGETATED SWALE TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of swale: 5' - 12'.
      Depth of swale: 12"
   b. Longitudinal slope of swale: 0.5% min and 6% max.
   c. Bottom width: 2' minimum.
   d. Side slopes: 3:1 maximum for vegetative and 4:1 for grassy.

3. Setbacks (from centerline of facility):
   a. Infiltration swales must be 10' from foundations and 5' from property lines.
   b. Filtration swales must have a waterproof liner when within 10' from foundation of 5' from property lines.

4. Overflow:
   a. Overflows are required to an approved point discharge point unless sized to fully infiltrate the flood control design storm.
   b. Inlet elevation must allow for 2" of freeboard, minimum.

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Growing medium:
   a. 12" minimum
   b. Import topsoil or amended native soil

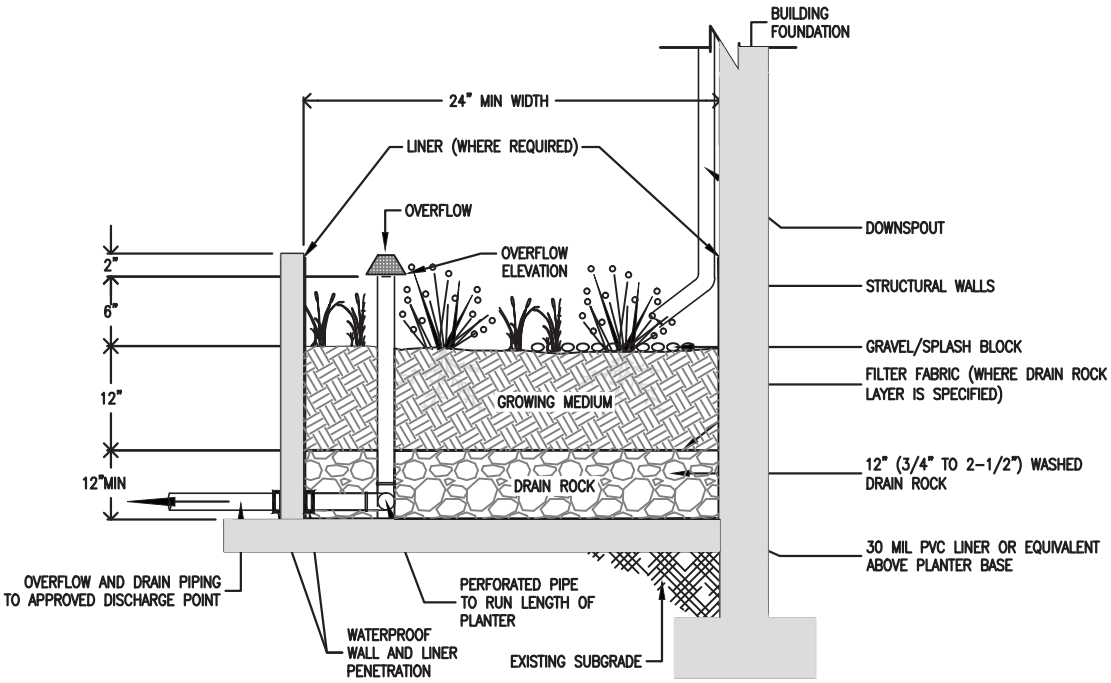
9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Grassy swales must have 100 coverage. Vegetative swales must have following plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers, 2 Small Shrubs, 4 Large Shrubs, and 1 Tree (deciduous or evergreen)

10. Waterproof liner: Shall be 30 mil PVC or equivalent where required.

11. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

12. Check dams: Shall be placed at 12" intervals along the length of the swale.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	GRASSY SWALE TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of planter: 24” minimum.
   b. Depth of planter: 6" minimum from top of growing medium to overflow elevation.
   c. Slope of planter: 0.5% or less.

3. Setbacks:
   a. Infiltration planters must be 10' from foundations and 5' from property lines.
   b. Filtration planters do not require a setback with an approved waterproof liner.

4. Overflow:
   a. Overflows are required to an approved discharge point when using the Simplified Method
   b. Overflows are not required when sized to fully infiltrate the flood control event using the Presumptive Method.
   c. Minimum 2" freeboard from overflow elevation to the top of the planter walls.

5. Piping: Minimum 3” pipe required for up to 1,500 sq ft of impervious area, otherwise 4” min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size: 3/4” to 2-1/2" diameter open graded
   b. Depth: 12” Minimum
   c. Length and Width: Full length and width of facility

7. Drain rock layer shall be separated from the growing medium by a geotextile

8. Growing medium:
   a. 12” minimum
   b. Import topsoil or amended native topsoil

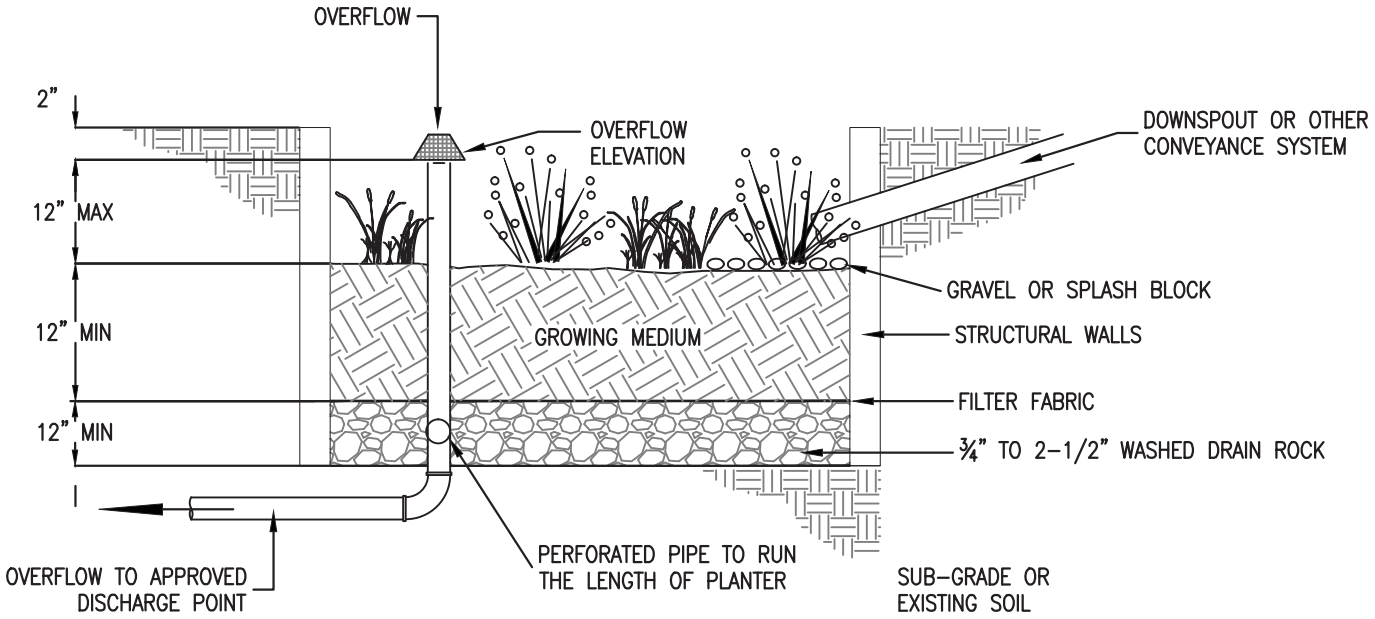
9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Number of plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers and 4 Small Shrubs, OR
   c. 60 Ground Covers and 12 Small Shrubs

10. Planter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Walls shall be included on building plans here incorporated into foundations or other permitted structures..

11. Waterproof liner (where required): Shall be 30 mil PVC or equivalent.

12. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	FOUNDATION FILTRATION PLANTER TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of planter: 24” minimum.
   b. Depth of planter: 6" minimum from top of growing medium to overflow elevation.
   c. Slope of planter: 0.5% or less.

3. Setbacks:
   a. Infiltration planters must be 10' from foundations and 5' from property lines.
   b. Filtration planters do not require a setback with an approved waterproof liner.

4. Overflow:
   a. Overflows are required to an approved discharge point when using the Simplified Method
   b. Overflows are not required when sized to fully infiltrate the flood control event using the Presumptive Method.
   c. Minimum 2" freeboard from overflow elevation to the top of the planter walls.

5. Piping: Minimum 3” pipe required for up to 1,500 sq ft of impervious area, otherwise 4” min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size: 3/4” to 2-1/2" diameter open graded
   b. Depth: 12” Minimum
   c. Length and Width: Full length and width of facility

7. Drain rock layer shall be separated from the growing medium by a geotextile filter fabric

8. Growing medium:
   a. 12” minimum
   b. Import topsoil or amended native topsoil

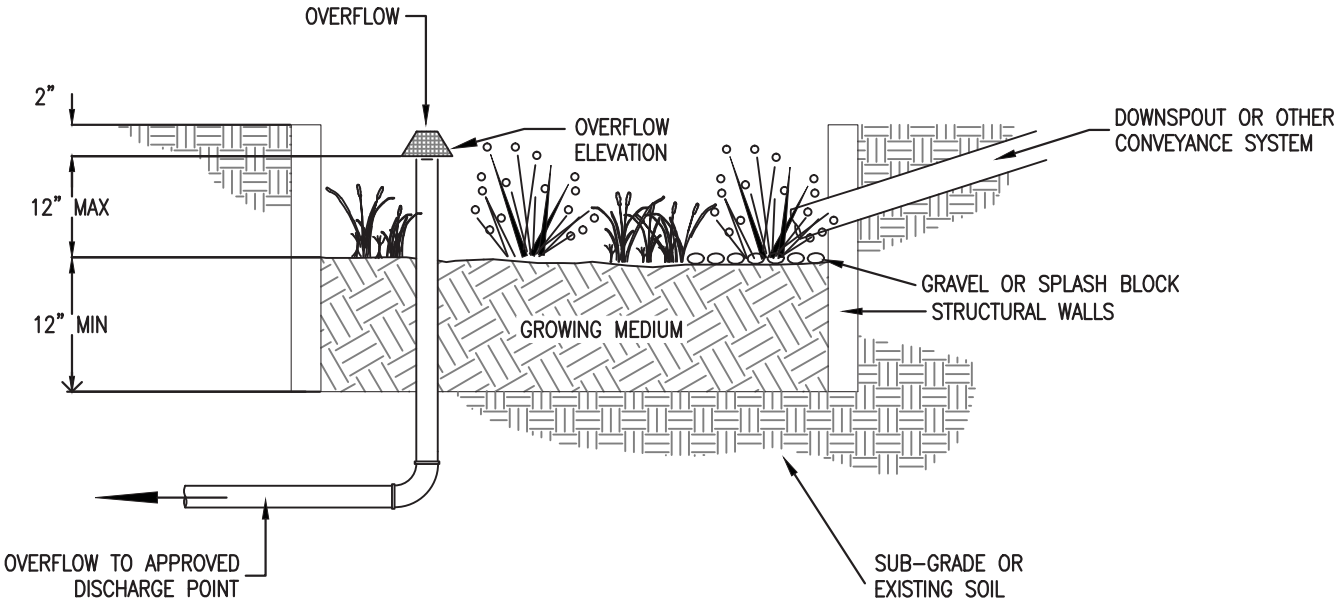
9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Minimum container size is 1 gallon. # of plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers and 4 Small Shrubs, OR
   c. 60 Ground Covers and 12 Small Shrubs

10. Planter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Walls shall be included on building plans here incorporated into foundations or other permitted structures..

11. Waterproof liner (where required): Shall be 30 mil PVC or equivalent.

12. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	FILTRATION PLANTER TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of planter: 24" minimum.
   b. Depth of planter: 6" minimum from top of growing medium to overflow elevation.
   c. Slope of planter: 0.5% or less.

3. Setbacks:
   a. Infiltration planters must be 10' from foundations and 5' from property lines.
   b. Filtration planters do not require a setback with an approved waterproof liner.

4. Overflow:
   a. Overflows are required to an approved discharge point when using the Simplified Method
   b. Overflows are not required when sized to fully infiltrate the flood control event using the Presumptive Method.
   c. Minimum 2" freeboard from overflow elevation to the top of the planter walls.

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

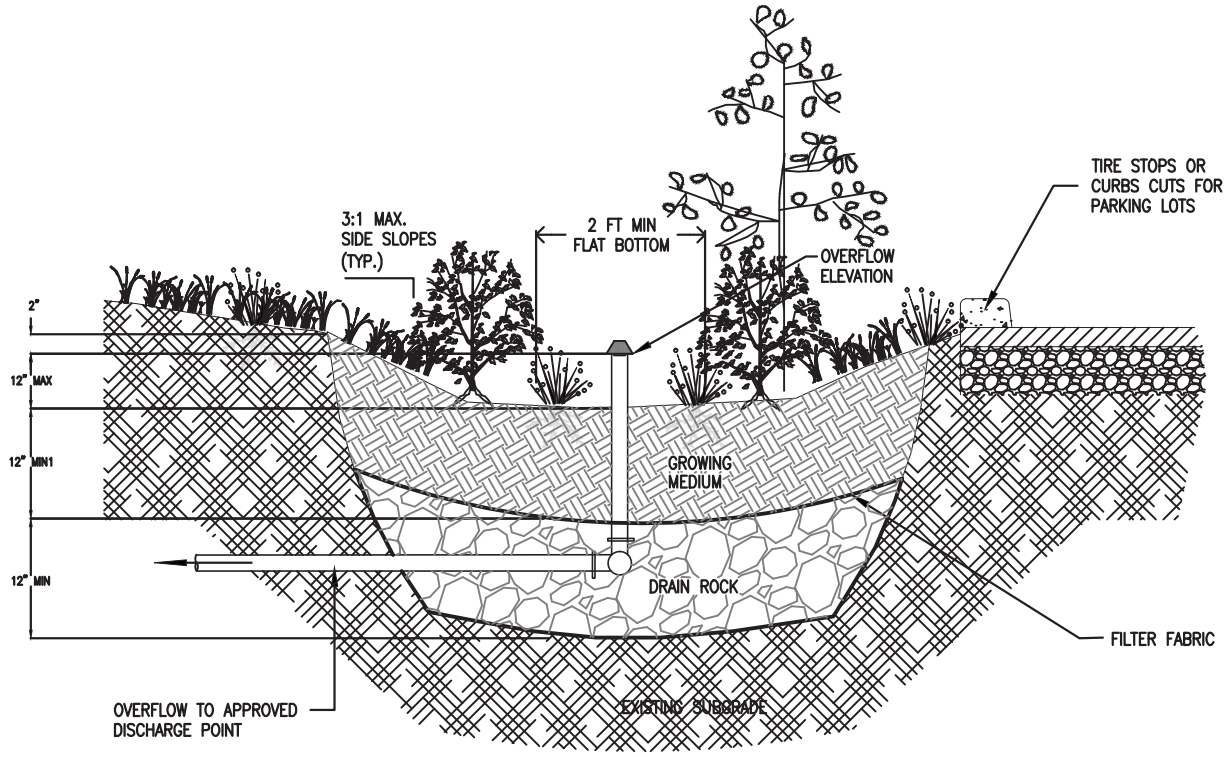
6. Growing medium:
   a. 12" minimum
   b. Import topsoil or amended native topsoil

9. Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Minimum container size is 1 gallon. # of plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers and 4 Small Shrubs, OR
   c. 60 Ground Covers and 12 Small Shrubs

10. Planter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Walls shall be included on building plans here incorporated into foundations or other permitted structures..

11. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	INFILTRATION PLANTER TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Depth of rain garden: 6" minimum and 12" maximum
   b. Flat bottom width: 2' min.
   c. Side slopes of Rain Garden: 3:1 maximum.

3. Setbacks:
   a. Infiltration rain gardens must be 10' from foundations and 5' from property lines. Filtration Rain Garden do not require a setback with an approved waterproof liner.

4. Overflow:
   a. Overflows are required unless sized to fully infiltrate the flood control design storm.
   b. Inlet elevation must allow for 2" of freeboard, minimum.

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Drain rock:
   a. Size: 3/4"-2-1/2" washed
   b. Depth: 12" Minimum

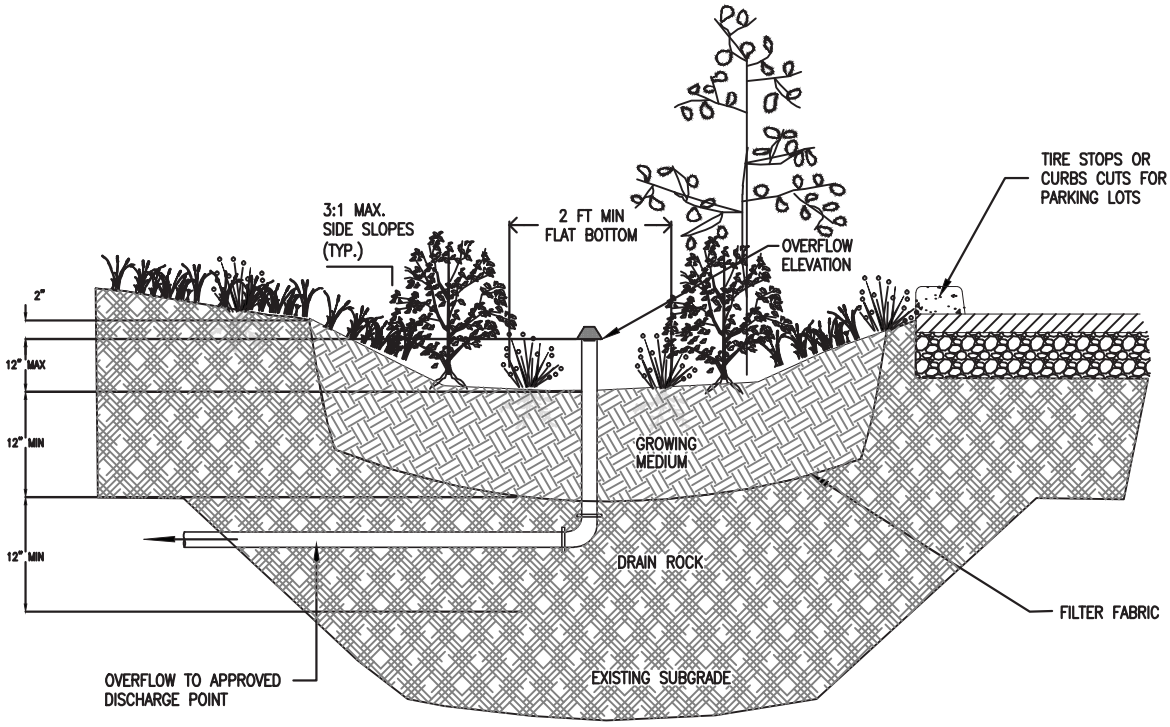
7. Drain rock later shall be separated form the growing medium and the surround soils by a geotextile filter fabric.

8. Growing medium:
   a. 12" minimum
   b. Imported topsoil or amended native topsoil.

Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Number of plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers, 2 Large Shrubs 4 Small Shrubs and 1 tress (deciduous or evergreen)

10. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	FILTRATION RAIN GARDEN TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Depth of rain garden: 6" minimum and 12" maximum
   b. Flat bottom width: 2' min.
   c. Side slopes of Rain Garden: 3:1 maximum.

3. Setbacks:
   a. Infiltration rain gardens must be 10' from foundations and 5' from property lines. Filtration Rain Garden do not require a setback with an approved waterproof liner.

4. Overflow:
   a. Overflows are required unless sized to fully infiltrate the flood control design storm.
   b. Inlet elevation must allow for 2" of freeboard, minimum.

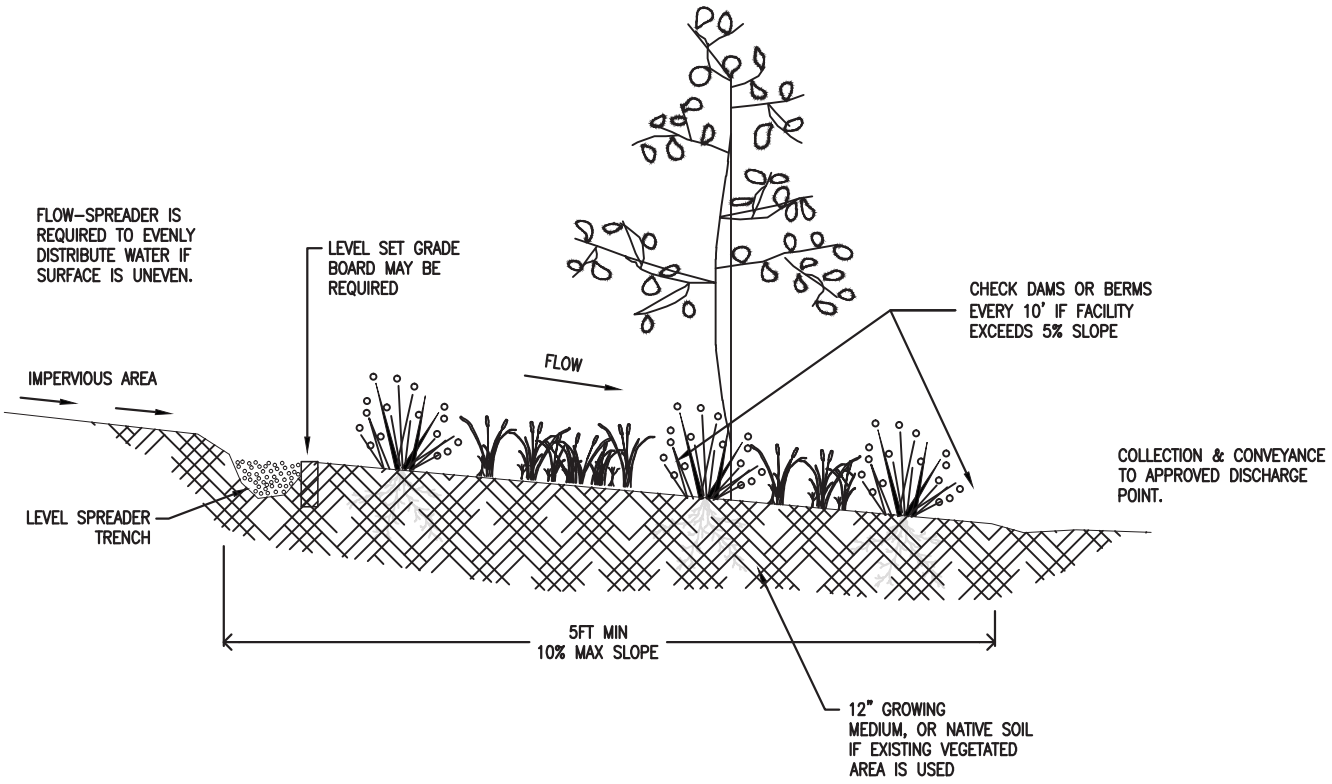
5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Growing medium:
   a. 12" minimum
   b. Imported topsoil or amended native topsoil.

Vegetation: Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Number of plantings per 100sf of facility area:
   a. 100 Ground Covers, OR
   b. 80 Ground Covers, 2 Large Shrubs 4 Small Shrubs and 1 tress (deciduous or evergreen)

10. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	INFILTRATION RAIN GARDEN TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, as well as foot traffic for proposed infiltration areas prior to and during construction.

2. Dimensions:
    a. Flow line length: 5' minimum.
    b. Slopes: 0.5 - 10%

3. Setbacks (from beginning of facility):
    a. 5' from property line
    b. 10ft from buildings
    c. 50ft from wetlands, rivers, streams, and creeks where required.

4. Overflow: Collection from filter strip shall be specified on plans to approved discharge point.

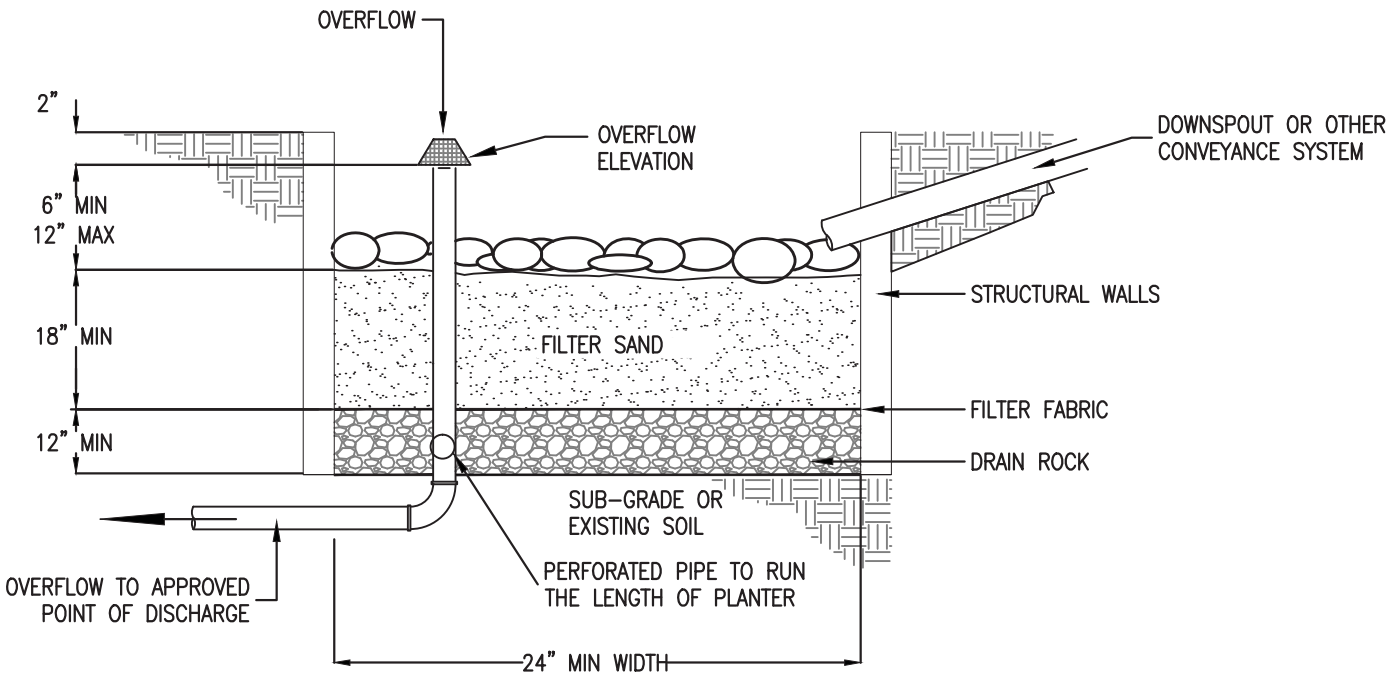
5. Growing medium: Unless existing vegetated areas are used for the filter strip, growing medium shall be used within the top 12".

6. Vegetation: The entire filter strip must have 100% coverage by native grasses, native wildflower blends, native ground covers, or any combination thereof. Follow landscape plans otherwise refer to plant list in SWMM Appendix F. Number of plantings per 100sf of facility area:
    a. 100 Ground Covers, OR
    b. 80 Ground Covers, 4 Small Shrubs, OR
    c. 60 Ground Covers, 12 Small Shrubs

7. Level Spreaders: A grade board, perforated pipe, berm or trench may be required to disperse the runoff evenly across the filter strip to prevent a point of discharge. The top of the level spreader must be horizontal and at an appropriate height to provide sheet flow directly to the soil without scour. Grade boards can be made of any material that will withstand weather and solar degradation. Trenches used as level spreaders can be open or filled with washed crushed rock, pea gravel, or sand

8. Check dams: shall be placed according to facility design otherwise:
    a. Equal to the width of the filter
    b. Every 10' where slope exceeds 5%.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	FILTER STRIP TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width: 24" minimum.
   b. Depth: 6" minimum
   c. Slope: 0.5% or less

3. Setbacks (from centerline of f):
   a. Infiltration sand filters must be 10' from foundations and 5' from property lines. Filtration sand filters do not have setbacks with an approved waterproof liner.

4. Overflow:
   a. Overflows are required to an approved point of discharge.
   b. Inlet elevation must allow for 2" of freeboard, minimum.

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Drain rock (minimum): 12" minimum of 3/4" - 2-1/2" washed.
   .

7. Separation between drain rock: Drain rock shall be separated from sand layer and surrounding sold by a geotextile filter fabric

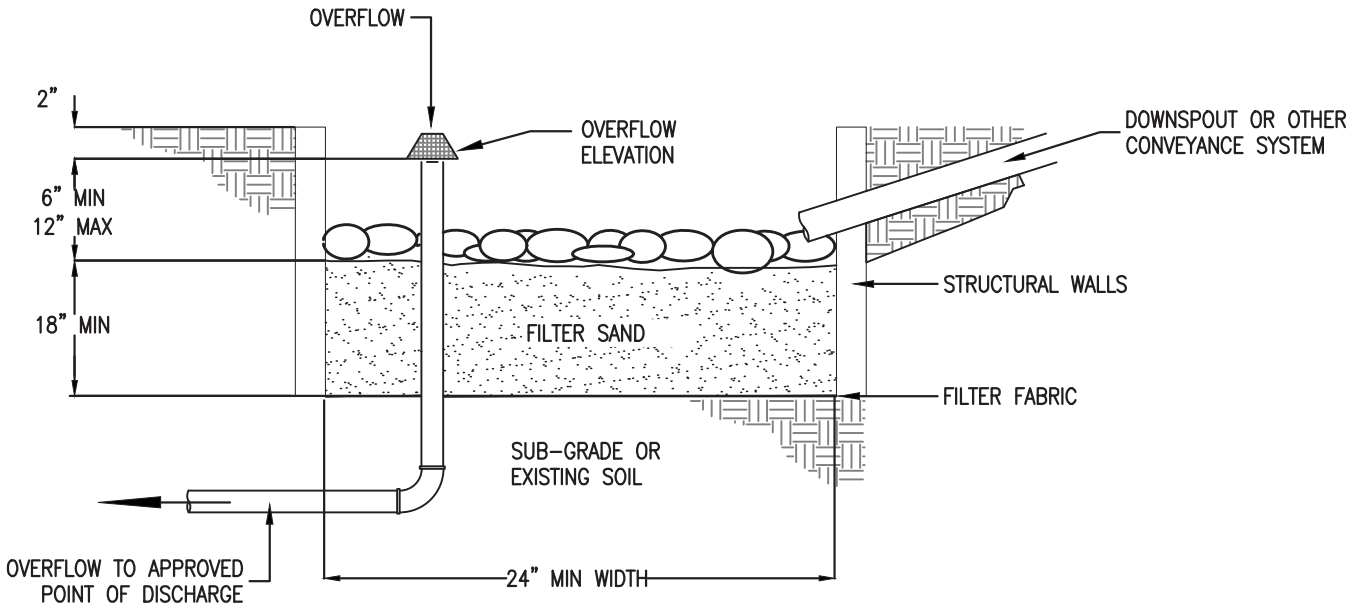
8. Filter sand:
   a. 18" minimum.
   b. See sand specification in SWMM.

9. Sand filter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Filter walls built into foundation walls shall be shown on building plans.

10. Waterproof liner (where required): Shall be 30 mil PVC or equivalent.

11. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	FILTRATION SAND FILTER TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width: 24" minimum
   b. Depth: 6" minimum
   c. Slope: 0.5% or less.

3. Setbacks:
   a. Infiltration sand filters must be 10' from foundations and 5' from property lines.
   b. Flow-through sand filters must be less than 30" in height above surrounding area if within 5 feet of property line.

4. Overflow (where required):
   a. Overflow required for Simplified Approach.
   b. Inlet elevation must allow for 2" of freeboard, minimum.
   c. Protect from debris, sand, and sediment with strainer or grate.

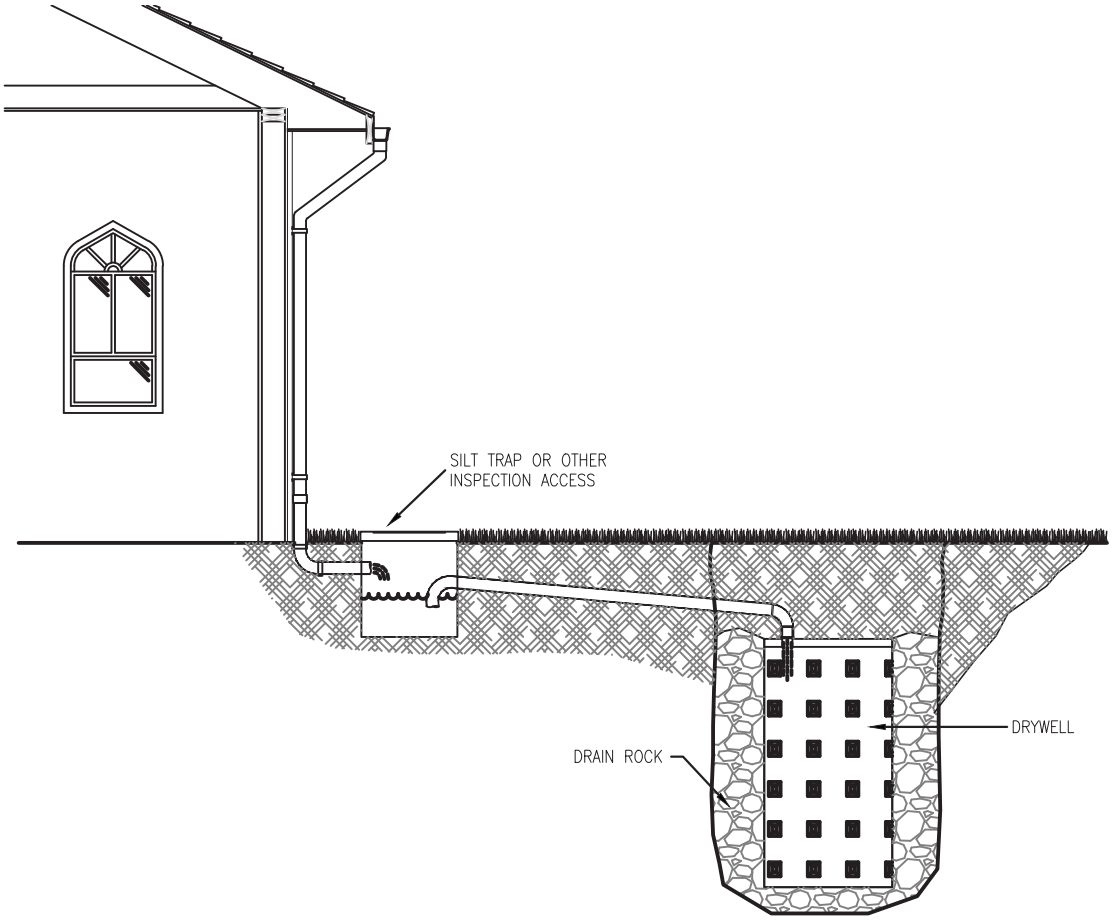
5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Filter sand:
   a. 18" minimum.
   b. See sand spec in SWMM Exhibit 2-4.

9. Sand filter walls:
   a. Material shall be stone, brick, concrete, wood, or other durable material (no chemically treated wood).
   b. Concrete, brick, or stone walls shall be included on foundation plans.

10. Install washed pea gravel or river rock to transition from inlet or splash pad to growing medium.

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	INFILTRATION SAND FILTER TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. All drywells are considered Class 5 injection wells and must be registered with the Oregon Department of Environmental Quality as Underground Injection Control (UIC) systems.

2. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

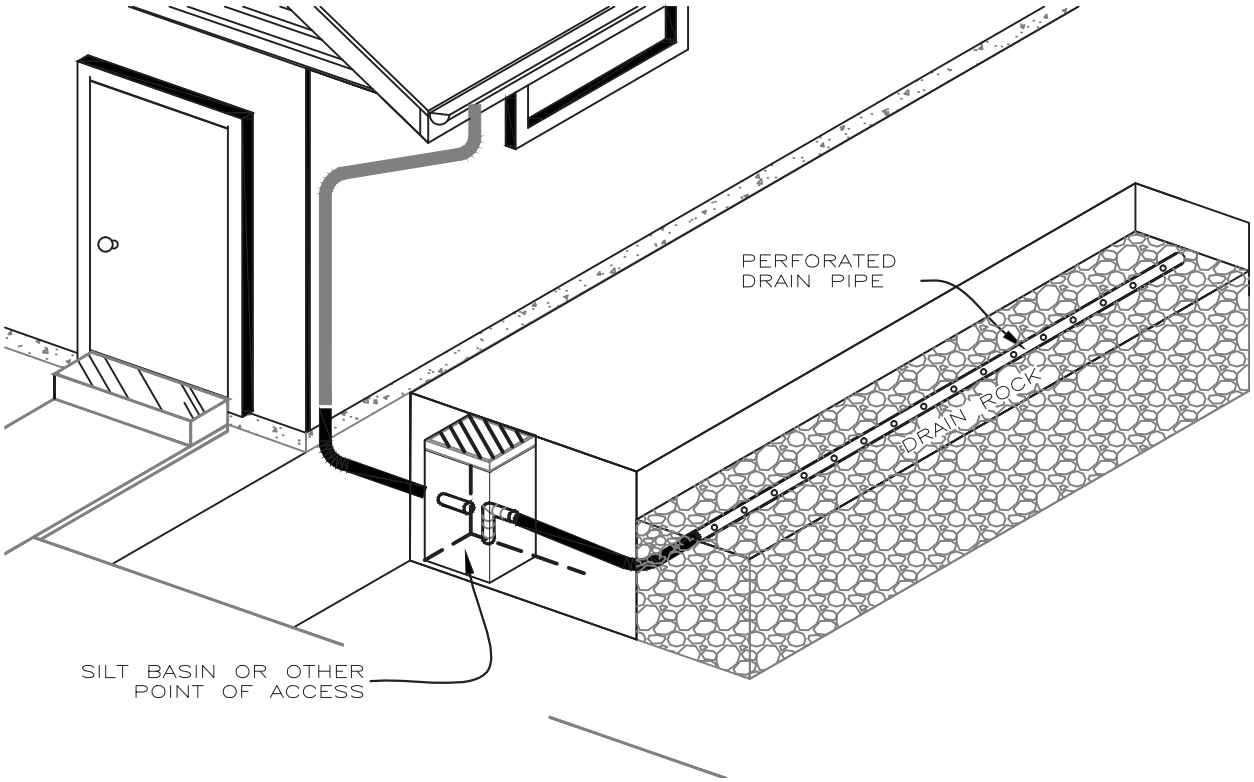
3. Drywells shall be designed using the presumptive approach due to the limited soil conditions in Eugene and the need to fully infiltrate the flood control design storm. This detail is intended to illustrate a typical drywell installation. Installation shall conform to the drywell design provided by the Presumptive Method.

4. Setbacks (from center of facility):
   a. 10' from foundations
   b. 5' from property lines

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Silt Traps: A silt trap or other access point is required at finished grade for inspection and maintenance access

Eugene	CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	DRYWELL TYPICAL DETAILS	DATE 1/2/2014 SCALE NTS DRAWN BY SNG



1. All soakage trenches are considered injection wells and must be registered with the Oregon Department of Environmental Quality as Underground Injection Control (UIC) systems.

2. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

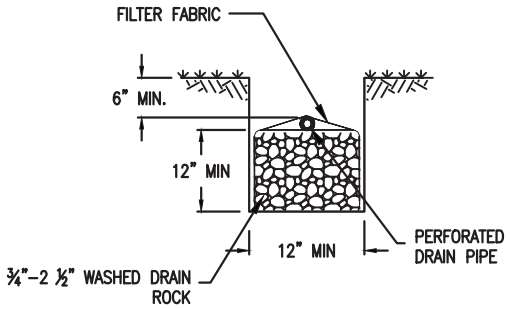
3. Soakage trenches shall be designed using the presumptive approach due to the limited soil conditions in Eugene and the need to fully infiltrate the flood control design storm. This detail is intended to illustrate a typical soakage trench installation. Installation shall conform to the soakage trench design provided by the Presumptive Method.

4. Setbacks (from center of facility):
   a. 10' from foundations
   b. 5' from property lines

5. Piping: Minimum 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping material, slopes and installation shall follow the Uniform Plumbing Code.

6. Silt Traps: A silt trap or other access point is required at finished grade for inspection and maintenance access

SOAKAGE TRENCH
TYPICAL CROSS SECTION



CITY OF EUGENE, OREGON DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION	SOAKAGE TRENCH TYPICAL DETAILS	DATE	1/2/2014
		SCALE	NTS
		DRAWN BY	SNG

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