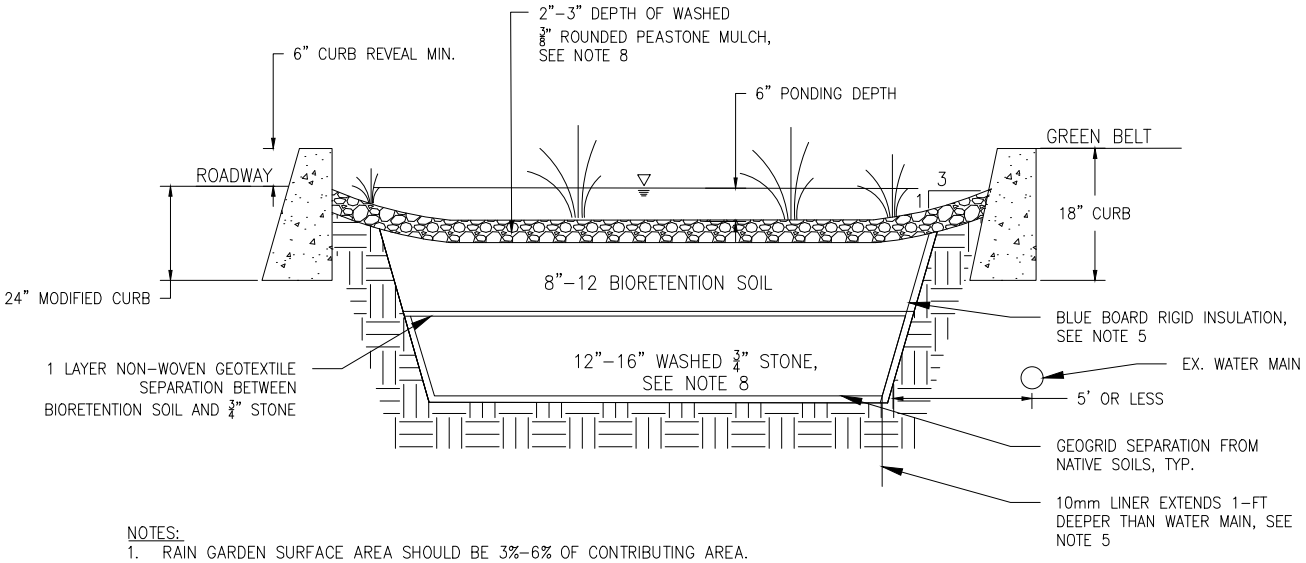
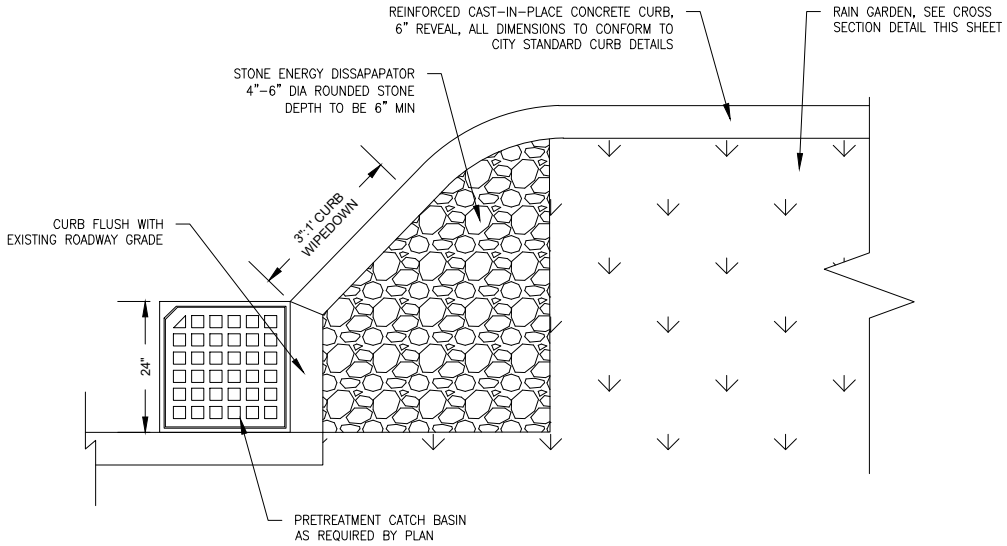


NOTES:

1. RAIN GARDEN SURFACE AREA SHOULD BE 3%–6% OF CONTRIBUTING AREA.
2. FLOW THROUGH OR STANDPIPE OVERFLOW MAY BE REQUIRED
3. SEE PLANS FOR BASIN AREA DIMENSIONS
4. SEE STONE ENERGY DISSIPATER DETAIL FOR INLET PROTECTION DETAILS
5. BLUE BOARD INSULATION AND 10mm LINER SHALL BE INSTALLED ON THE WATER MAIN SIDE OF THE TRENCH FOR THERMAL AND SALT PROTECTION OF THE EXISTING WATER MAIN AND WITHIN 5–FT HORIZ. DISTANCE FROM EXISTING WATER MAIN.
6. PROVIDE A GREEN BELT WIDTH OF 12–INCHES MINIMUM
7. BOTTOM ELEVATION OF RAIN GARDEN SHALL BE APPROXIMATELY 2–FEET HIGHER THAN THE SEASON HIGH GROUNDWATER TABLE FOR THIS AREA.
8. WASHED STONE SHALL BE WASHED CLEAN OF SILTS AND FINES UNTIL WASHING WATER RUNS CLEAR. STONE DELIVERED WITH FINES PRESENT WILL NOT BE ACCEPTED FOR INSTALLATION.
9. BIORETENTION SOIL MIXTURE NOTES:
    a. THE UPPER 12–INCH OF THE BIORETENTION SOIL MIX SHOULD BE AMENDED WITH A LOW–PHOSPHOROUS COMPOST TO ATTAIN 1%–5% ORGANIC MATTER CONTENT.
    b. COMPOST SHALL BE PLANT–BASED LEAF LITTER/YARD WASTE/COMPOST FEEDSTOCKS ARE REQUIRED.
    c. COMPOSTS MADE WITH FOOD SCRAPS, BIOSOLID, OR MANURE ARE NOT PERMITTED.
    d. THE TOTAL AMOUNT OF COMPOST ADDED SHALL NOT EXCEED 3%–5% OF THE TOTAL BIORETENTION SOIL MEDIA VOLUME.
    e. LOW–PHOSPHOROUS SOURCES SHALL BE 1/2" LEAF COMPOST MANUFACTURED BY AGRESOURCE INC.
    f. SEE SPECIFICATION – BIORETENTION SOIL MIXTURE FOR FURTHER DETAILS.

TYPICAL RAIN GARDEN CROSS-SECTION

SCALE: NONE



TYPICAL STONE ENERGY DISSIPATER

SCALE: NONE

BURLINGTON PUBLIC WORKS
Water Resources
53 LAVALLEY LANE
Burlington, VT 05401
(802) 863–4501 water–resources@burlingtonvt.gov

1	DRAFT	3/6/18

TYPICAL RAINGARDEN

PLANS AND DETAILS

DESIGNED AEW	RFS NO.
DRAWN AEW	SCALE NTS
CHECKED SR	DRAWING NO.
DATE FEB 2023	SHEET 1 OF 1

SPECIFICATION - BIORETENTION SOIL MIXTURE

1. DESCRIPTION. This work shall consist of furnishing and installing a low-phosphorus soil mixture in the bioretention basin where indicated on the construction documents. Work shall be consistent with VTrans Standard Specifications Section 651, with the additions and modifications below.

2. MATERIALS.
   a. Bioretention Soil shall consist of loose, friable soil, free of ice, snow, and rubbish with no admixture of refuse or material toxic to plant growth.
   b. The final bioretention soil mixture shall meet the following parameters:

pH	5.5 – 7.5
Moisture Content	25% - 55%
Available Phosphorous	Less than 0.2% phosphorous (Morgan Test or approved equal)

   c. The bioretention soil mixture shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than one (1) inch in diameter excluding mulch.
   d. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth or prove a hindrance to the planting or maintenance operations.
   e. The bioretention soil mixture shall be free of all invasive species, including Knotweed, Phragmites, Purple Loosestrife, Bermuda grass, Quackgrass, Johnson grass, Mugwort, Nutsedge, Poison Ivy, Canadian Thistle, Teathumb, or other noxious weeds.
   f. The bioretention soil shall meet the following requirements:

Textural Class	% of Total (by Weight)
Sand	85-88
Silt (0.002 – 0.05 mm)	8-12
Clay (less than 0.002 mm)	0-2
Compost	3-5

      1. Sand – The Sand shall consist of clean, inert, hard, durable grains of quartz or other hard, durable rock, free from loam or clay, surface coatings and deleterious materials and meeting the gradation requirements of VTrans Specifications, Table 704.01A.
      2. Compost – The compost shall be comprised of well pulverized and composted leaf mulch. No bio-solids or animal or poultry manure may be used. Compost shall be a highly organic dark brown to black spongy residue resulting from the well-aerated composting of deciduous organic materials, free of plants and their roots, debris, stones, or other objects larger than 1-inch in any direction. It should be free of other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth.

         The compost shall have the following properties:

pH	5.5 - 8.0
Moisture Content	35% - 55%
Soluble Salts	4.0 mmhos (dS)
C:N ration	15 – 30:1
Particle Size	<1 “
Organic Matter Content	> 25%
Bulk Density	< 1,3000 lbs/cubic yard
Foreign Matter	< 1% (dry weight)

3. SUBMITTALS.

Bioretention Soil Test Reports

1. Prior to ordering bioretention soil mixture materials, submit soil test reports for two separate samples to the Resident Engineer for review and approval. Do not order materials until approval has been obtained. Delivered materials shall be from the same source as the tested material and verified as such.
2. The Contractor shall employ a certified testing laboratory to test the material and shall submit bioretention soil mixture test result reports for representative samples to the Representative. Reports shall include:
   a. Location of sample source, date of sample.
   b. Tests for Phosphorus, Potassium, Soluble Salts, soil pH, Moisture Content, Organic Matter Content, and soil texture analysis in accordance with the current standards of the Association of Official Agriculture Chemists.

Test shall include a soil particle gradation analysis and classification of soil.

4. METHOD OF MEASUREMENT. The quantity of Bioretention Soil Mixture to be measured for payment will be the number of Cubic Yards of material furnished and placed in the final, accepted work.

5. BASIS OF PAYMENT. The accepted quantity of Bioretention Soil Mixture will be paid at the contract unit price per Cubic Yard. Payment will constitute full compensation for furnishing, transporting, handling, placing, and finishing the materials specified, as well as for furnishing all labor, tools, equipment, and incidentals necessary to complete the work. Submittals shall be incidental to this item.

SPECIFICATION – 3/8" WASHED CIRCULAR PEA STONE

1. DESCRIPTION. This work shall consist of furnishing and placing washed circular pea stone within bioretention and/or rain garden areas.

2. MATERIALS. Stone placed shall meet the requirements of VTrans Specifications 704.02, and the gradation of VTrans Specifications Table 704.02A.

3. PLACING. Place carefully to depth of 2"-3" or as detailed on plans.

4. METHOD OF MEASUREMENT. The quantity of 3/8" Circular Pea Stone to be measured for payment will be the number of square feet installed in the completed and accepted work, measured within the limits shown on the Plans or as directed by the Engineer.

5. BASIS OF PAYMENT. The accepted quantity of 3/8" Washed Circular Pea Stone will be paid for at the Contract unit price per square foot. Payment will be full compensation for furnishing, transporting, and placing the material specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

SPECIFICATION - 4"-6" ROUNDED STONE FOR INLET PROTECTION

1. DESCRIPTION. This work shall consist of furnishing and placing washed rounded stone within bioretention or rain garden areas.

2. MATERIALS. Provide submittal to Engineer for review and approval

3. PLACING. Place carefully to depth of 6" or as detailed on plans.

4. METHOD OF MEASUREMENT. The quantity of 4"-6" Rounded Stone to be measured for payment will be the number of square feet installed in the completed and accepted work, measured within the limits shown on the Plans or as directed by the Engineer.

5. BASIS OF PAYMENT. The accepted quantity of 4"-6" Rounded Stone will be paid for at the Contract unit price per square foot. Payment will be full compensation for furnishing, transporting, and placing the material specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

SPECIFIATION – GEOTEXTILES

1. DESCRIPTION. This work shall consist of furnishing and placing geotextiles in bioretention areas. Work shall be carried out in accordance with VTrans Specification Section 649 Geotextile Fabric, with the following exceptions.

2. MATERIALS:
   a. Non-Woven Geotextile fabric shall be AASHTO Class 2 non-woven geotextile, ADS 601T, Mirafi 160N, or approved equal.
   b. Geogrid shall be ADS BX154GG, Mirafi MIragrid BXG120, or approved equal.

3. METHOD OF MEASUREMENT. The quantity of Geotextile of the type specified to be measured for payment will be the number of square yards placed in the complete and accepted work. Slope measurements will be used in computing the area. Measurement will not be made for material used for repairs, seams, or overlaps. Measurement will not be made for material used to replace an installation of fabric that has become damaged, destroyed, lost, washed away, or otherwise ineffective unless authorized by the Engineer.

4. BASIS OF PAYMENT. The accepted quantity of Geotextile of the type specified will be paid for at the Contract Unit Price per square yard. Payment will be full compensation for furnishing, transporting, storing, handling, placing, repairing, and removing the material specified and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work. Unless otherwise specified in the Contract, payment for the maintenance of Geotextile of the type specified will not be paid for directly, but will be considered incidental to the specific Contract Item.