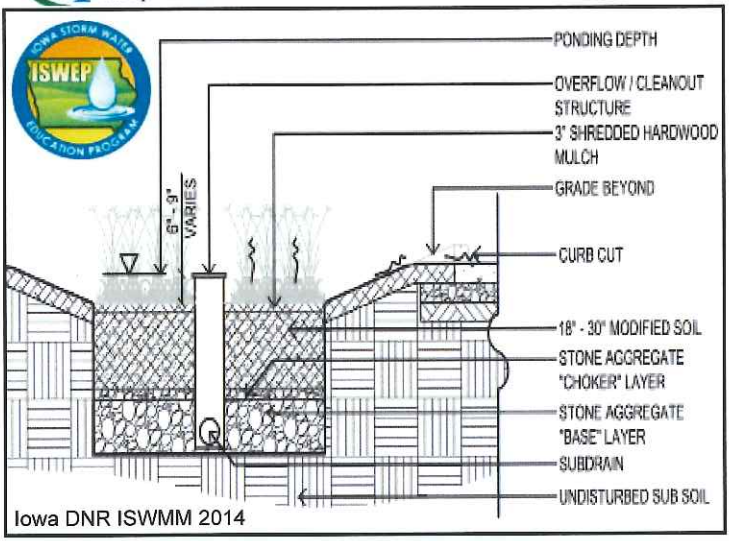
Bioretention Cell

Installation

Rainscaping Iowa
Landscapes for clean water



Iowa DNR ISWMM 2014

Bioretention cells are engineered to infiltrate, percolate and filter stormwater runoff. Attention must be given during construction to prevent compaction and prevent sediment from clogging the modified soil mix.

Installation Notes: **BEFORE** installation begins, ensure all grading activity is complete and erosion and sediment control practices are in place upstream to protect the integrity of the bioretention cell. Minimize foot traffic. **DO NOT** stockpile materials on or near the surface of the completed bioretention cell. **DO NOT** drive or operate machinery through the cell.

Excavation: Excavate area to the length, width, and depth specified in the contract documents. **DO NOT** compact the subgrade of the cell. **DO NOT** operate machinery in the cell – work from the sides. Scarify the bottom of the cell with bucket tines before placing stone aggregate sub-base.

Stone Aggregate Base: Spread the first 2 inches of the aggregate sub-base, consisting of an open-graded, clean, durable aggregate (No. 57) 1 - 2 inches in diameter with a 35 - 40% porosity, evenly in the bottom of the bioretention cell.

Sub-drain: Make a small depression in the layer of storage aggregate where the slotted pipe will be placed. Place pipe at elevation within the aggregate layer as specified in contract documents. Install cleanouts at location(s) specified in contract document.

Overflow / Outlet: Install outlet structure as specified in contract documents at elevation specified above ponding depth.

Remaining Aggregate Base: Place remaining aggregate sub-base to elevation specified in the contract document.

Choker Layer: Place a 2 to 3 inch choker aggregate layer that consists of clean, durable 3/8 inch diameter chip (No. 8) over the stone aggregate sub-base.

Modified Soil Mix: Use uniform mixture of 75-90% washed concrete sand, 0-10% approved organic compost, 0-25% soil with a soil texture meets specifications (A-horizon characteristics).

Modified Soil Mix Placement: Place modified soil in 8 to 12 inch lifts to elevation specified in contract document, plus 15% of specified depth to allow for natural settlement. **DO NOT** operate machinery in the excavated area while placing the modified soil mix.

Settling: Allow natural settlement of the modified soil mix or spray water to saturate bioretention cell. Add additional modified soil mix as required to restore settled surface to finished elevation.

Level Surface: Uniformly grade and rake the surface of modified soil mix so that it is smooth and level end to end while maintaining required ponding depth, as specified in contract document.

Seeding: If contract document specifies seeding for the surface of the of bioretention cell, install seeding as specified. Mulch seeded areas with bonded fiber matrix or rolled erosion control products as specified in the contract document.

Mulching / Planting: If contract document specifies mulching, place a 3 inch layer of shredded hardwood mulch over area filled with modified soil mix. **DO NOT** place mulch over seeded areas. If contract document specifies plants, install after mulch has been placed.

Stabilization: Protect area immediately around bioretention cell until it is stablized. Keep inlet protection in place until after a few good rains in order for bioretention cell to settle, for seeds to establish or plants are at least 12" tall.

Curb Cuts: If curbs are present, cuts should be made once plants are established. If cuts are made with a wet saw, vacuum up the slurry or if dry, sweep up dust and dispose of properly, along with any sediment that may have accumulated in the inlet areas.