

Root Box “Silva Cell” Systems



AUROLORA
CORRIDOR
N 165TH TO N 185TH STREETS

Water quality treatments being utilized on Aurora Avenue include:



Root Boxes (“Silva Cell” Systems)



Rain Garden Planter



Bioswale



“Filterra” Bioretention Systems



Ecology Embankments



Conventional Systems

The City of Shoreline is installing root box systems throughout the N 165th – N 185th section of the Aurora Corridor Project.

This system of modular blocks holds lightly compacted healthy soils in place, promoting root and tree growth while bearing loads for above ground streetscapes.

The underground system provides stormwater management allowing filtration to remove pollutants while retaining runoff to mitigate flooding and erosion.



The City's goals in utilizing this technology are:



To promote healthy trees



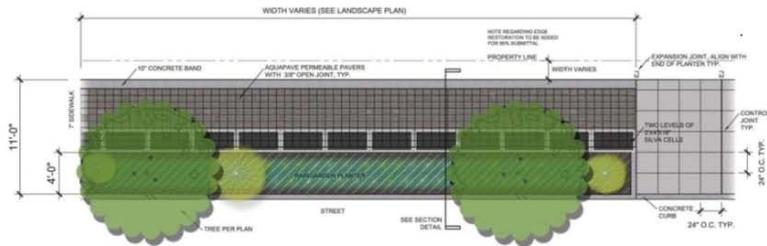
Assist with water quality



Provide bioretention

SILVA CELLS + POROUS PAVERS

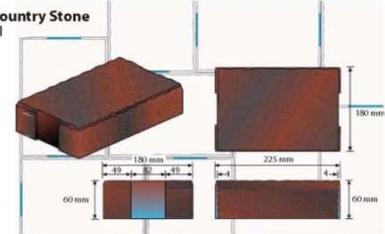
PLAN



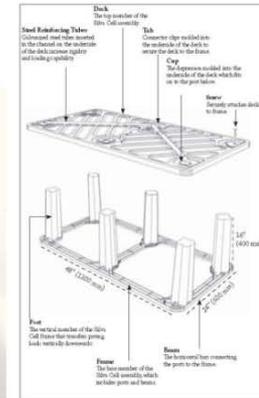
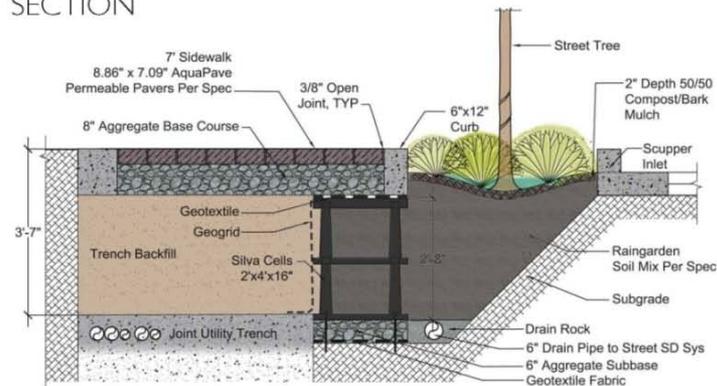
MATERIALS

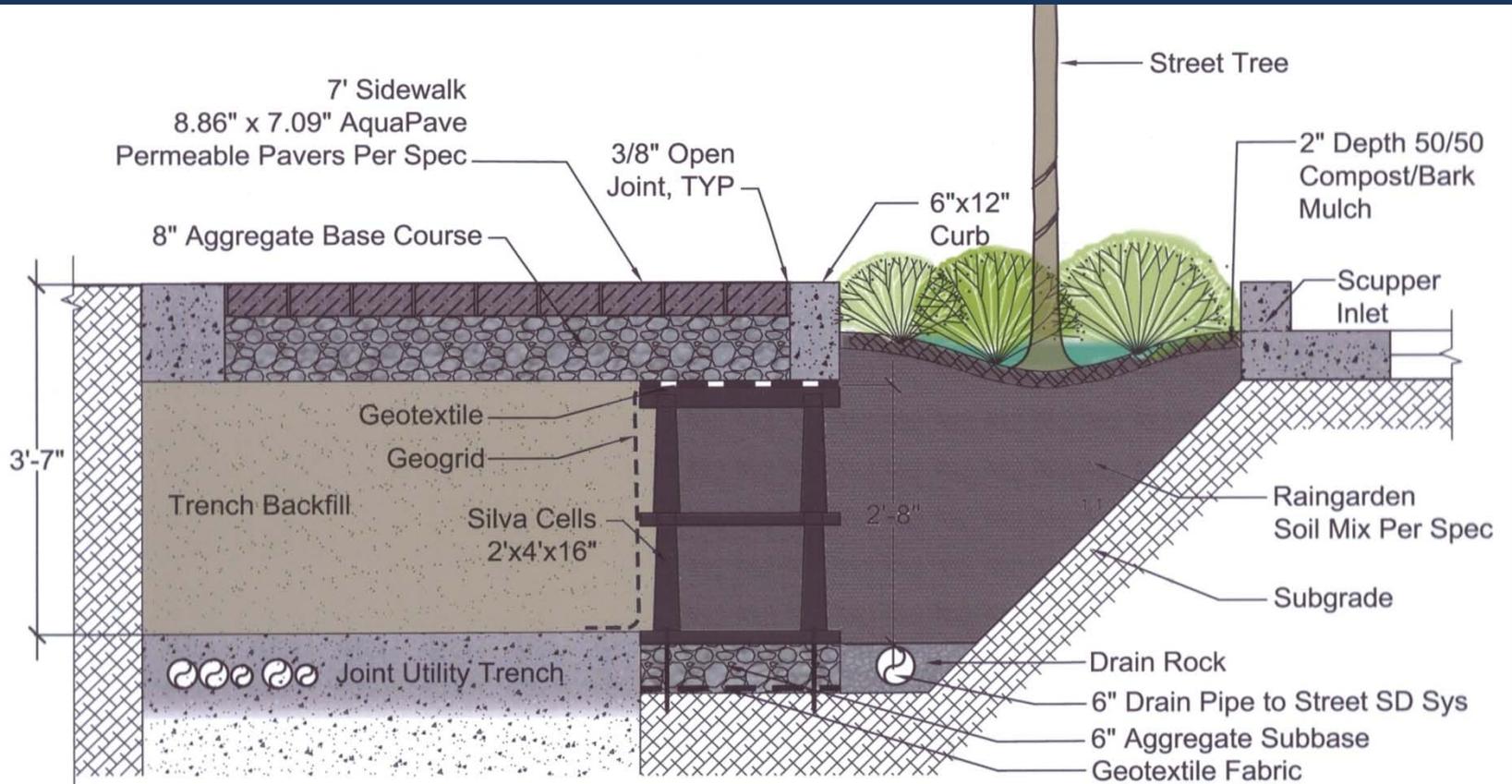


Old Country Stone Type 1

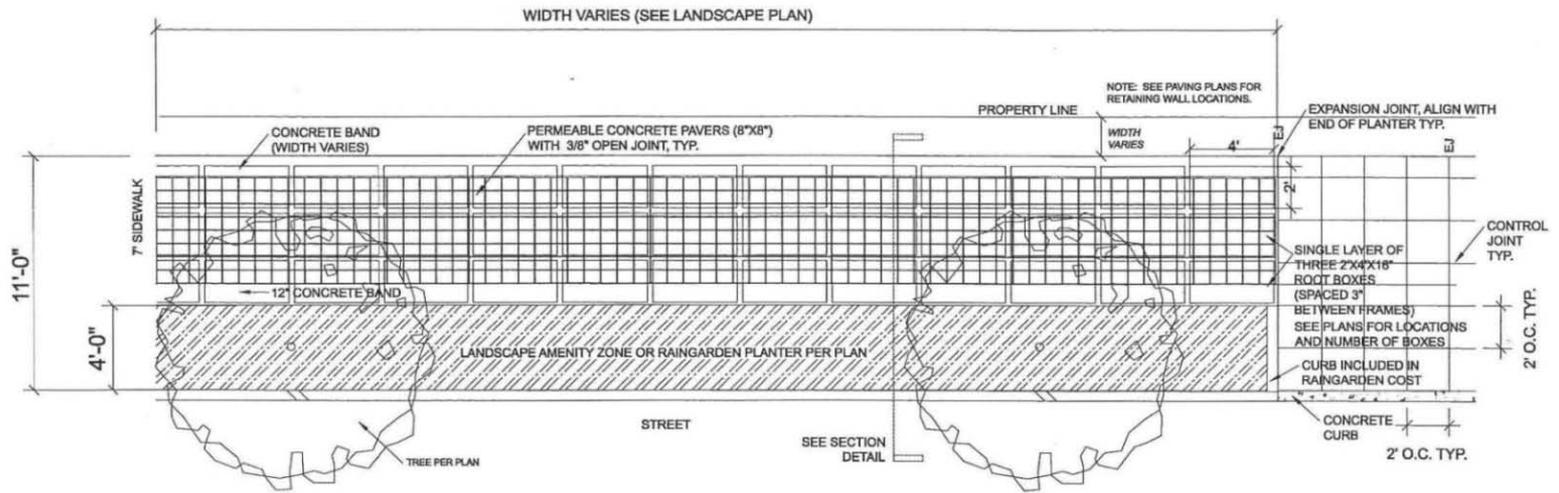


SECTION

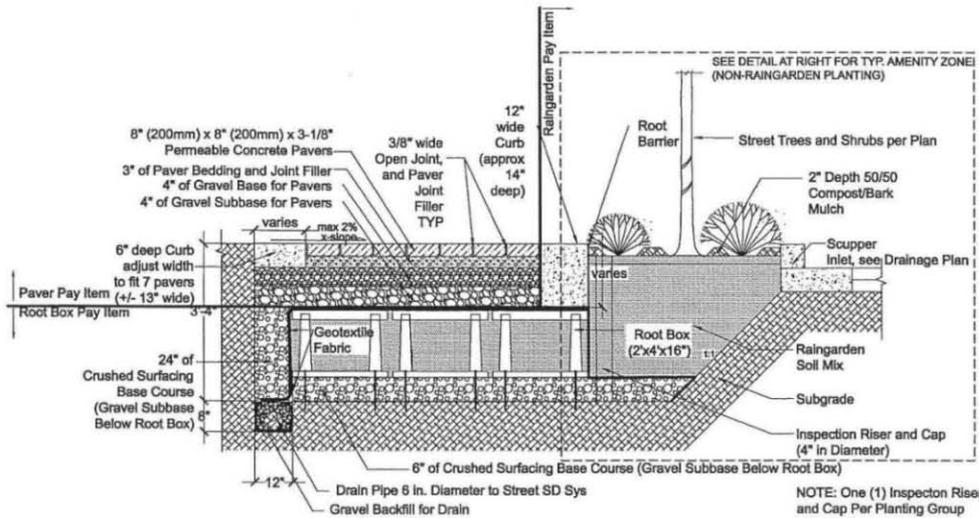




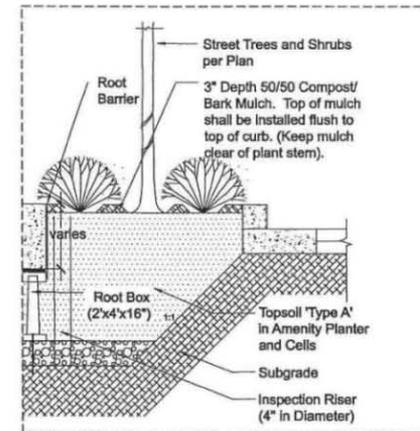
Root box cross section



1 ROOT BOX LAYOUT PLAN



2 ROOT BOX WITH RAIN GARDEN AND PERMEABLE PAVERS



3 ROOT BOX WITH AMENITY ZONE AND PERMEABLE PAVERS

Aurora Project plan sheet



A sub base aggregate is placed in the excavated trench and compacted.



A network of frames (each with six rigid vertical posts) is positioned on the base material and anchored in place. These frames can be stacked one, two, or three high allowing for varying capacity.



Geogrid is placed around the entire system to properly hold soil in place.



“Strongbacks” are placed on top of frames. They are only required during installation and compaction of soil to help hold frames in place .



Soil is placed between the frames.



Soil is spread with shovels and compacted by foot.



The deck is put into place right after the strongback is removed.



The deck is a rigid platform with ample openings for air and water penetration. Two diagonal channels house galvanized steel tubes to help prevent deformation.



Decks are screwed to frames.



Strongbacks are moved and reused as the work progresses.



For large areas, installation follows a progression of steps.



Progression of work.



Geotextile material is placed over the entire system.



An aggregate base course is placed on top of system.



For this portion of the project, pavers spaced with gravel (allowing for infiltration) are placed over the newly installed root box system for a public sidewalk. Trees will be planted soon.

The following slides illustrate alternative stormwater management methods of capturing and retaining runoff that Shoreline is using along Aurora Avenue in addition to conventional methods of storm drains and catch basins. These methods also help to filter and clean the water they catch.



Rain garden planters



Bioswales



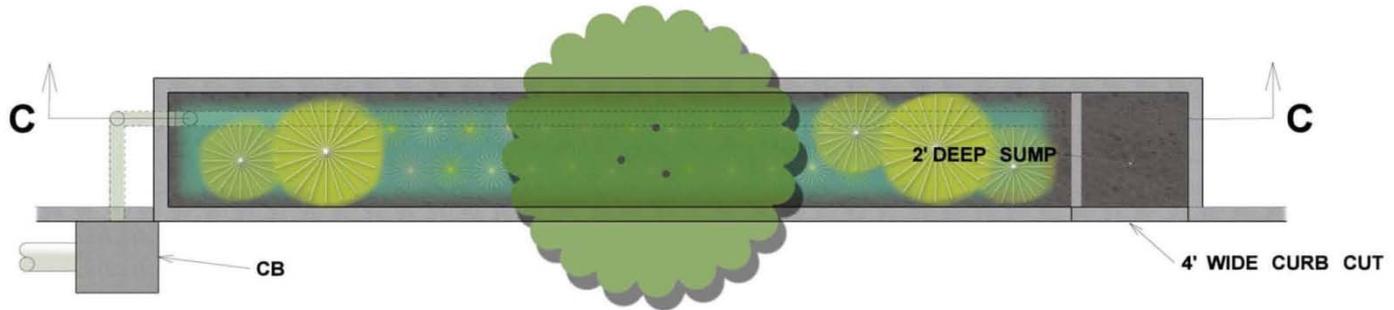
Ecology embankments



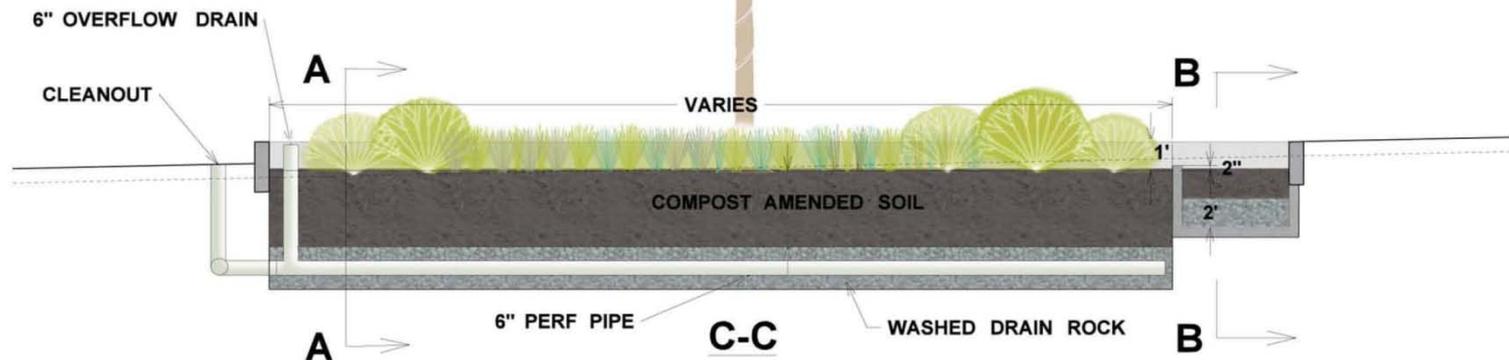
Filtterra

RAINGARDEN PLANTERS

PLAN



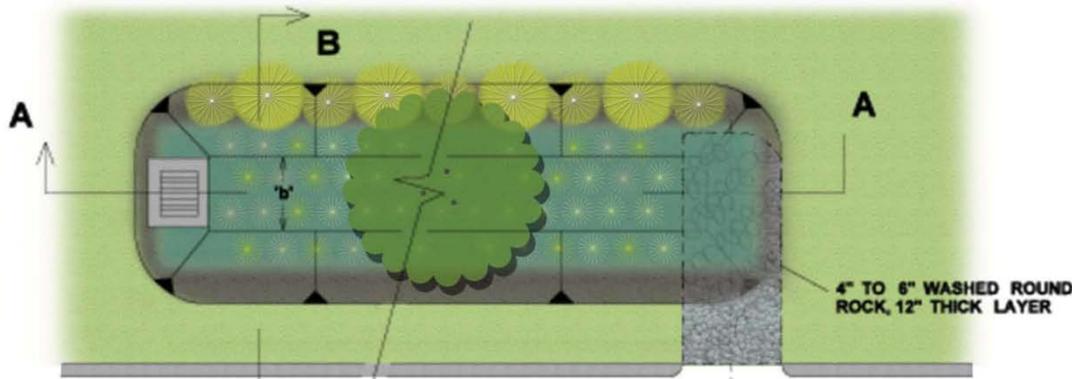
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The rain garden sits in a depression where the compost-rich soils absorb water and along with water-tolerant species help retain and filter runoff.

RAINGARDEN SWALES

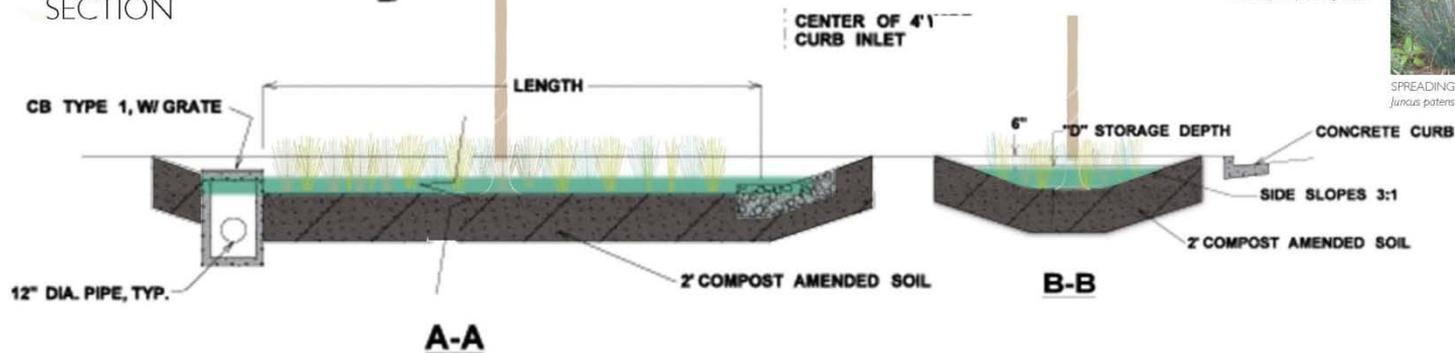
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PALETTE



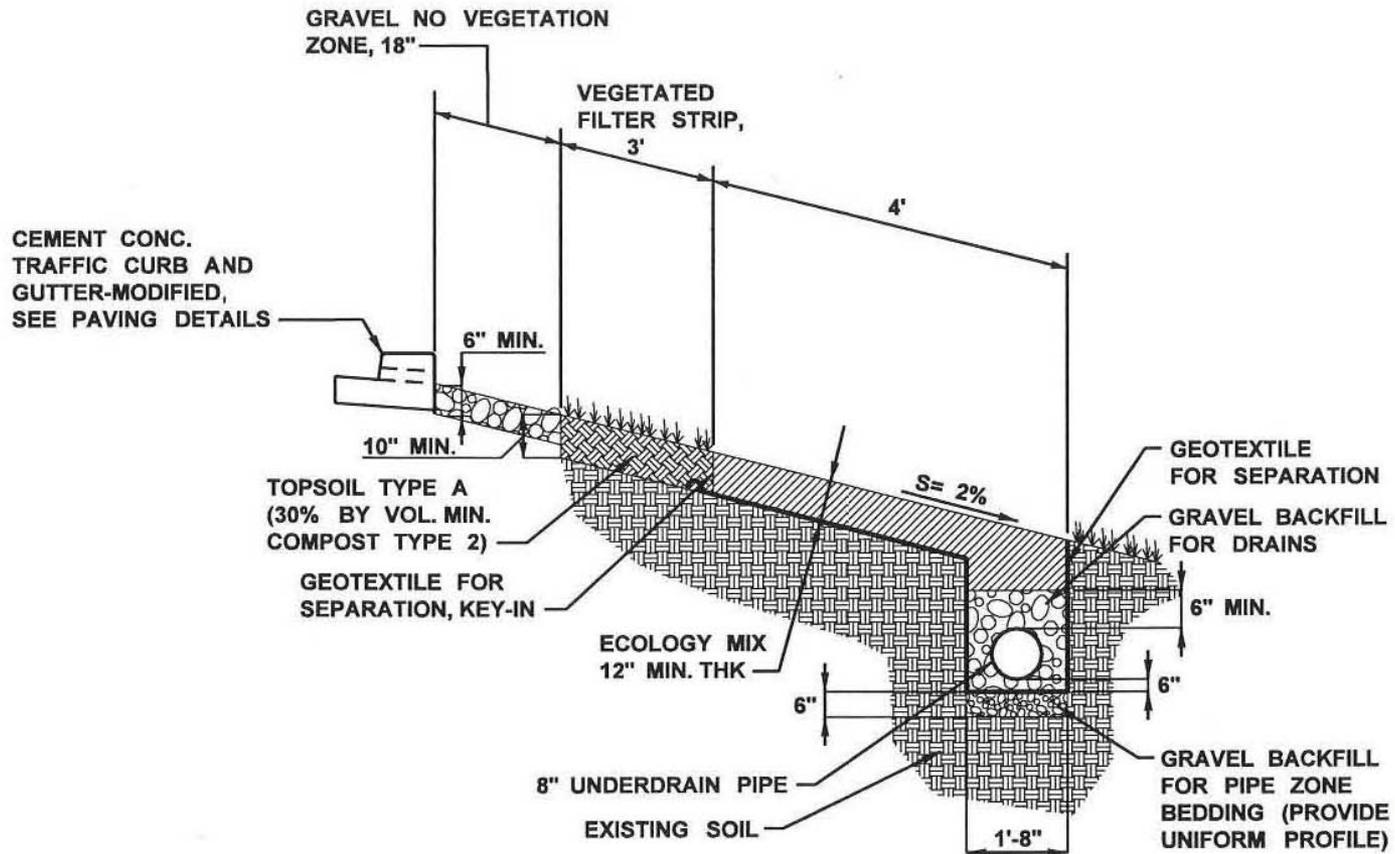
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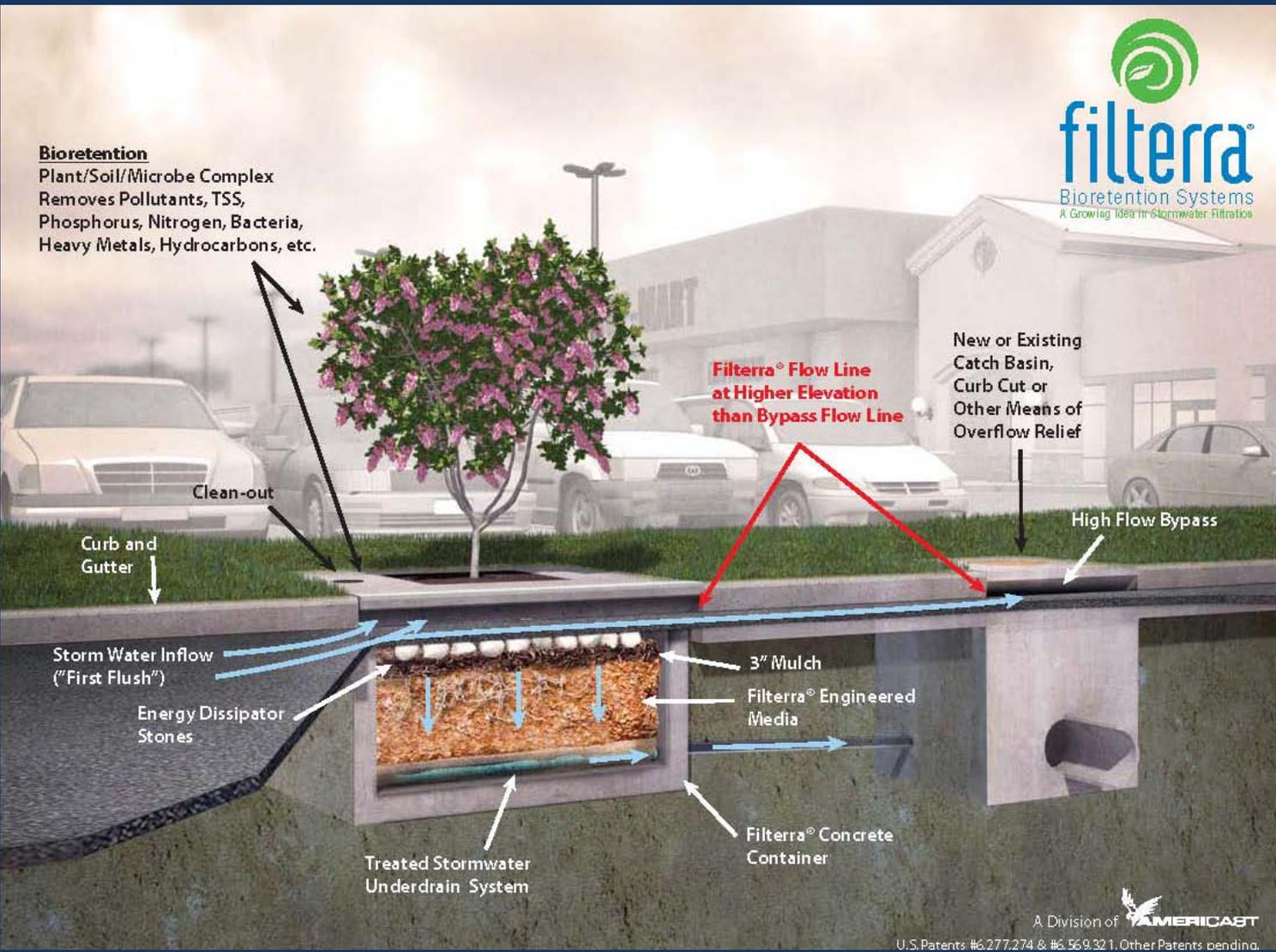
AURORA CORRIDOR IMPROVEMENT PROJECT | STORMWATER LID ELEMENTS

* - plants used in Phase I

Unlike traditional stormwater management that involves the rapid conveyance of water, low impact development (LID) is an approach that retains and infiltrates rainfall on-site. Bioswales are one component of LID that allow infiltration and filtering of stormwater run-off.



Ecology embankments are planted adjacent to a roadway shoulder to receive “sheet flow” and more naturally filter out most pollutants in the runoff.



The Filterra system adds aesthetics to the urban landscape while catching runoff through curb cuts, removing and containing key pollutants, and releasing treated water through an underdrain system to a detention storage system.