Rockbrook Tributary Stream Restoration & Prairie Lane Park Bioretention

Prairie Lane Park, Omaha, NE

City of Omaha Stormwater Program

SITE AND PROJECT SUMMARY

Rockbrook Tributary was a 1,100-foot long concrete lined channel installed in 1967. Bisected by Frederick Street, between 115th Avenue and Westwood Lane, the channel is surrounded by residential neighborhood and adjacent to Prairie Lane Park. Deteriorating channel sections and vegetative growth in the concrete liner prompted an effort to rehabilitate the channel with a combination of natural and man-made elements.

In 2013, the existing concrete lined channel was removed and new improvements began. The main goals of this project aimed to improve channel stability, stream habitat, and water quality while trying to minimize impact on the existing floodplain. Slopes within the channel were seeded with native grasses to better stabilize stream banks and prevent erosion. Along the stream bed, grade control structures, and constructed riffles were installed to slow the overall flow of stormwater runoff. These features also aid in preventing erosion of the stream bed itself, minimizing the amount of sediment leaving the channel and keeping it functioning and looking good for years to come.

Another aspect of the project incorporated bioretention gardens within Prairie Lane Park. A total of three were built in Prairie Lane Park to provide storage and treatment of stormwater prior to entering the Rockbrook Tributary. Two of the bioretention systems (A & B) were designed to fit into existing shallow depressions within the landscape and incorporated native grasses and flowers that are well adapted for the climate conditions in Omaha. Bioretention systems A & B were installed along 116th Street with the third bioretention system (C) located just north of the softball practice field. The three bioretention systems collect and filter stormwater runoff from Prairie Lane Park and South 116th Street.

The largest bioretention system within the park (C) is unique in that it is comprised entirely of turf grass as compared to the more traditional design of bioretention systems A & B. Bioretention system C was designed with a relatively flat grade to continue to serve as a recreational area for the neighborhood.

BIORETENTION "C"

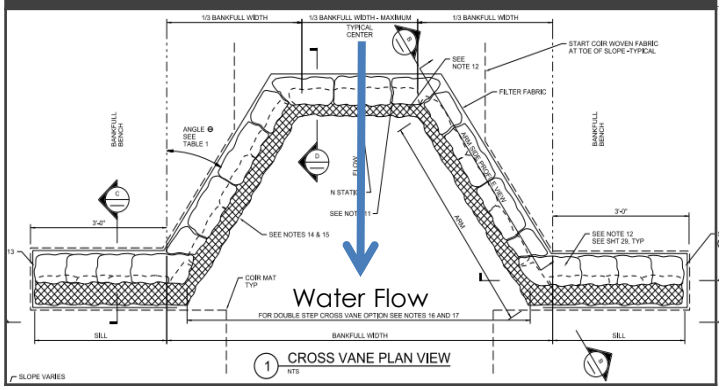
PROJECT DETAILS

	VEGETATED CHANNEL	BIORETENTION GARDENS
System Footprint	Approx. 1.15 acres	5,740 ft^2 (3 systems)
Contributing Area	Approximately 100 acres	
Design Volume	N/A	3,000 ft^3
Underdrain	None	4" Perforated HDPE Pipe
Pre-Treatment System	None	Grass Swales
Predominant Land Use	Residential	
Percent Impervious (%)	Approximately 9%	
Predominant Soil Types	**Native**: Classic Urban Complex, Silty Clay	**Native**: Silty Clay **Growing Media**: 70/30 Sand/OMA-GRO

DESIGNED BY	CONSTRUCTED BY	MONITORING/ ASSESSMENT BY	MAINTENANCE BY
CH2M	Big Muddy Workshop	City of Omaha Stormwater Program	City of Omaha Stormwater Program

SITE LOCATION – 115th St & Frederick St

GRADE CONTROL SECTION VIEW

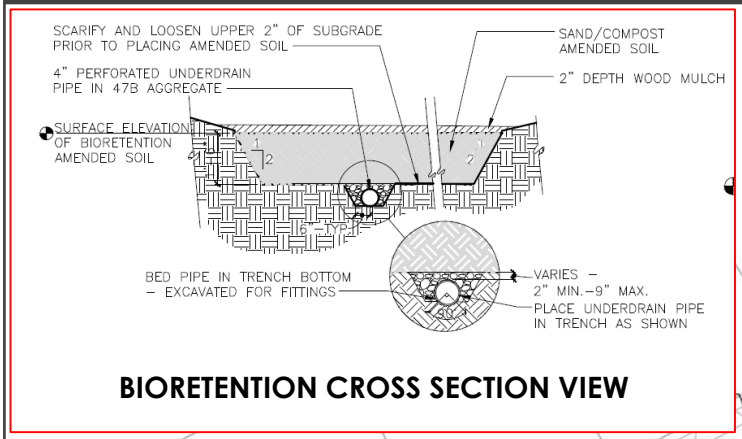


BIORETENTION "B"

STREAM CHANNEL

BIORETENTION "C"

PROJECT LAYOUT



BIORETENTION CROSS SECTION VIEW