

SUSTAINABLE
LANDSCAPE FOR
AFFORDABLE
HOUSING

Emerson Avenue Apartments

PROJECT TEAM:

- Great River Greening
- Urban Homeworks

FUNDING

PARTNERS:

- Home Depot Foundation
- Hennepin County
- Christ Presbyterian Church

SITE AREA:

- Small Urban Lot
1/5 acre

PROJECT SCOPE:

- 12 unit low-income building on an urban lot. 1 efficiency unit, 5 one-bedroom units, and 6 two-bedroom units.

SUSTAINABLE

PRACTICES:

- Native Planting
- Rain Garden
- Permeable Parking
- Tree Placement

COSTS:

- Installation
\$50,000
- Yearly Maintenance
After Establishment
\$1,000 (approx..)



SITE DESCRIPTION

The property dates to the early half of the century, when like all developments of the time, stormwater flowed directly into the storm sewer and the Mississippi River, approximately one mile away to the East. For this reason the site still caused the rapid movement of stormwater with very limited to no pretreatment or infiltration. The site contained almost 100% impervious surface with a few limited areas of sloped turf grass on clay soils.



OBJECTIVES

- A Reduce impact of stormwater run off on the local municipality.
 - Create spaces for stormwater to infiltrate.
 - Reduce amount of impervious surface on site.
 - Reduce stormwater utility fees from the city of Minneapolis.
- A Use native plant materials to reduce energy.
 - Locate trees to reduce summer cooling costs and improve indoor/outdoor comfort.
 - Locate trees so that winter heating costs are not increased.
- A Create a usable outdoor space for residents.
 - Spaces that residents can occupy and that bring residents together as neighbors in an environment that feels and is safe.
- A Use a native plant palette that integrates into the urban fabric.
- A Engage volunteers and youth.

DESIGN

With a site that is completely built out and located on compacted urban clay soils, the approach to the design was to reduce as much of the impervious surface as possible, promoting infiltration or filtration of stormwater wherever possible. Inevitably filtration still allows stormwater to flow to the storm sewer; yet for this particular site it is a viable option as the infiltration rate into the soil is quite low. Filtration on this site allows the water to be filtered and cleansed, as well as postponing the flow to the storm sewer.



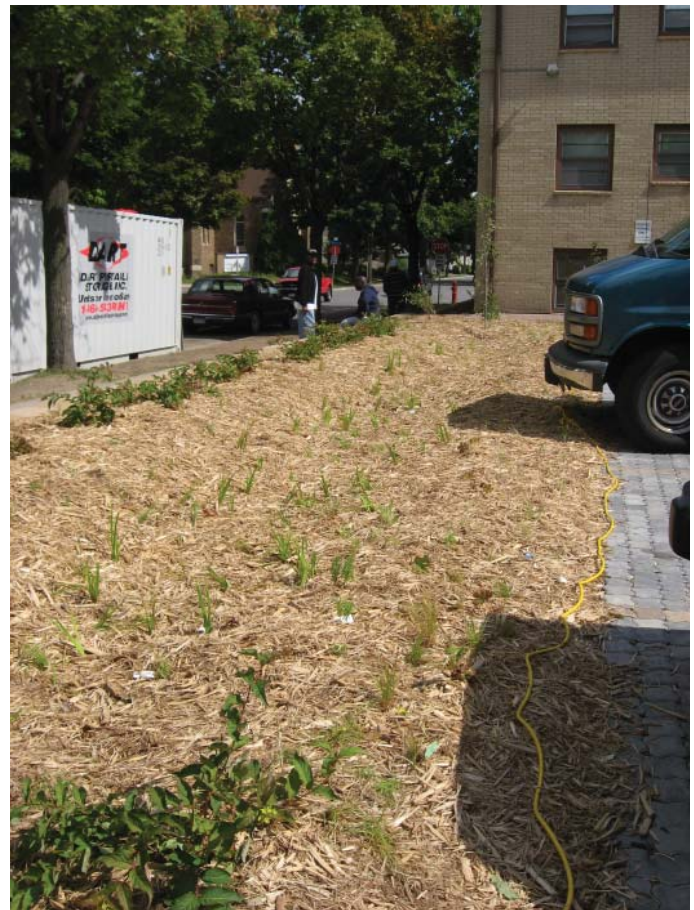
Rear paver patio



Site just after initial excavation

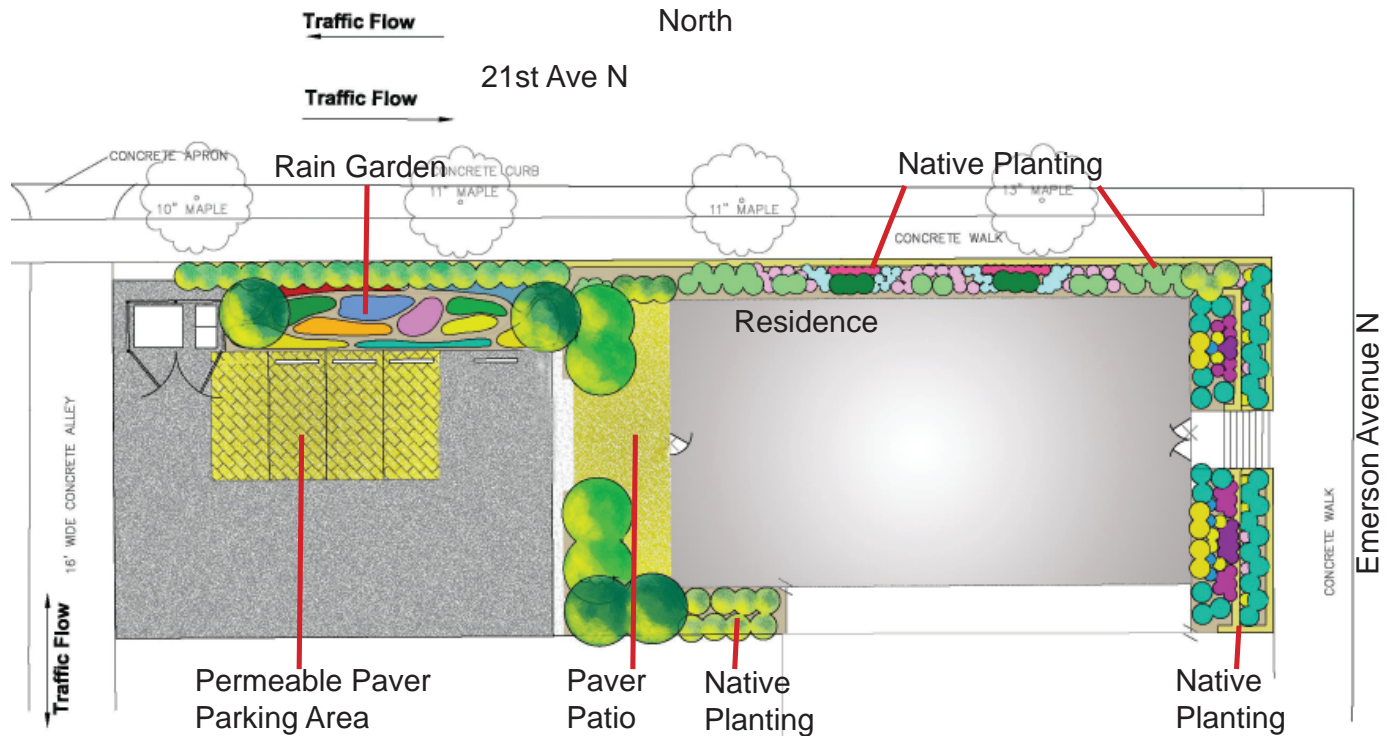
Additionally all turf areas as well as a portion of the existing parking lot (broken up) were planted to native plants. By adding deep-rooted native vegetation to the site the root structures will begin to break up the soils overtime with root channels, thus improving the infiltration rate on the site.

The final design utilized various sustainable landscape practices to aid in stormwater mitigation, reduction in pollution and water use associated with lawn maintenance, and provide for energy reduction. The plan called for a permeable parking area, rain garden adjacent to the parking lot, and an elevated planting terrace containing native vegetation.



Rain garden adjacent to Permeable parking area

PROJECT SITE PLAN



CHALLENGES

A Clay Soils

A percolation test on the existing sites soils suggested that some modifications to the original concept and site goals were required. The percolation test resulted in less than a 1/8 of an inch of percolation per hour. This can be attributed to the site's compacted clay soils. The low percolation number meant the site was not able to infiltrate as much water, and the design had to compensate with a system of both infiltration and filtration. The area where the rain garden was to be located required a full excavation, with amended soil brought in. For the permeable paver parking area, a deeper excavation for base material allows for longer holding time matching up with the rain garden excavation.

A Current Zoning Codes

By installing a full-scale landscape retrofit the plan had to go through the City of Minneapolis Planning and Zoning. Working closely with the city's planning and zoning staff ensured that the finished site plan met with the city's current stormwater plan. The city engineer was open to discussing possible solutions to areas that needed to be addressed. The main issues had to do with site run-off from stormwater, capturing some while slowing down the rest before it enters the city storm sewer system.

A Storing Equipment and Supplies

With the amount of excavation required to transform the site, storage onsite became an issue. A rental storage unit was kept in the street. This allowed for secure storage for the duration of the project.

LESSONS LEARNED

- A After the project was completed, the property manager noticed the retaining wall had started to attract a large amount of people loitering on the wall. The property owner decided to install a low 18" black wrought-iron ornamental fence attached to the top of the wall to deter loitering.

- A Learning from previous projects about the challenge of initial watering, the team discussed up-front how to deal with this need. A soaker hose was installed in the mulch, turned on by the property manager at the hose bib to help with watering through the first year of establishment. Once the plants were established the hose was pulled out of the mulch and used on future projects.

CONTACT INFORMATION

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