

1. Why is green infrastructure needed in the Downtown Geneva Historic District?

2. What are the green infrastructure practices and techniques suitable for this area? Where should these practices be implemented?

3. What are the advantages of implementing these practices?

4. What are examples of successful green infrastructure practices here and in other historic districts?

History

Geneva was originally where the Seneca Native American village of Kanadasaga was settled. The village was destroyed and abandoned in 1779 and resettled by Europeans around 1793. The village of Geneva was officially established in 1806 and separated from the surrounding town of Geneva. The village then became the city of Geneva in 1871. Geneva was a hub for industry, experiencing a peak era between 1830 and 1875.



Canal systems were built connecting the lakes and villages and were the dominant form of transportation for a while. The downtown area of the city of Geneva is currently under consideration and in the process to become an officially recognized historic area.



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About the FLI-Community Design Center (FLI-CDC)

The Finger Lakes Institute, in partnership with Hobart & William Smith Colleges has created a community design center that strives to provide Finger Lakes communities with innovative, creative, and sustainable design solutions that improve the built environment and quality of life, while protecting the natural environment.

Communities throughout the Finger Lakes region share similar economic, environmental, and social characteristics mainly as a result of the natural assets and history of the region. The current and future state of communities relies on improving quality of life for all citizens, being good stewards of natural resources, and fostering the responsible growth of the built environment. To support these efforts, we offer comprehensive sustainable community development planning and design services to communities throughout the Finger Lakes region.

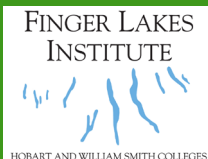
It is our mission to:

- Raise awareness of the benefits and potential of sustainable community development and design for small towns, villages, cities and other entities;
- Encourage preservation and protection of natural resources and the built environment;
- Facilitate regional planning and collaboration among communities, businesses, non-profits, higher education institutions, and other entities;
- Foster community resilience by providing an active resource center for holistic community planning and design and disseminating our expertise nationally.

Please contact us at fli@hws.edu for more information.

About this Project

The primary goal of Green Infrastructure for Historic Districts is to provide assistance to municipalities and residents who wish to incorporate the concepts and practices of green infrastructure into their structures while maintaining the historic integrity of the individual buildings and the overall character of their community.



How to Grow a Green Community

A Guideline for Stormwater Management

Downtown
Geneva
Historic
District

1. "green infrastructure" In the context of stormwater management, the term includes a wide array of practices at multiple scales to manage and treat stormwater, maintain and restore natural hydrology and ecological function by infiltration, evapotranspiration, capture and reuse of stormwater, and establishment of natural vegetative features.

As impervious ground cover increases with development, such as roadways, buildings and sidewalks, run-off from rain and snow events increases. As this run-off travels across these surfaces, it collects pollutants and contaminants. With traditional grey infrastructure, it travels to sewers and pipes, and is often deposited untreated into local waterbodies, harming the ecosystem. Green infrastructure provides opportunities to reuse that water, filter it and re-charge the groundwater aquifer, protecting the natural environment. Many green infrastructure practices today actually were common place in the Downtown Geneva Historic District in the 19th century, pre-industrialization.

The specific green infrastructure techniques that have been suggested for Downtown Geneva Historic District given it's rich history, and particular location and existing built infrastructure are listed below.

● **Stormwater planters** are small landscaped stormwater treatment devices that can be placed above or below ground and can be designed as infiltration or filtering practices. Three versions of storm water planters exist: contained planters, infiltration planters, and flow-through planters.



2. The green infrastructure techniques proposed and recommended for Downtown Geneva Historic District include:

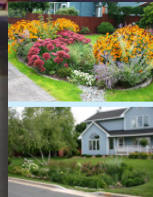
Green Roofs, Cisterns, Rain Barrels, Rain Gardens, Stormwater Planters, and Tree Planting

● **Green roofs** are roofs that are partially or completely covered with vegetation planted over a rooftop membrane. Green roofs maximize the absorption of rainwater and reduce the runoff from urban impervious surfaces. Green roofs can be installed on a wide range of buildings, including industrial, educational, and government facilities; offices; other commercial property; and residences. It is important to pick the most ideal plant types to go into the roof gardens that best suit the location.



● **Cisterns** are large-scale rain barrels used in commercial and industrial settings. A cistern is a waterproof receptacle built to catch and store rainwater. They are distinguished from wells by their waterproof linings. Cisterns may be used in most areas, residential, commercial, and industrial due to their minimal site constraints relative to other storm water management practices.

● **Rain barrels** are water tanks used to collect and store rainwater runoff, typically from rooftops via rain gutters. Barrels usually range from 50 to 80 gallons and have a spigot for filling watering cans and a connection for a soaker hose.



● **Rain gardens** are shallow depressions in the landscape that are planted with deep rooted native plants and grasses. Rain gardens should be placed around edges of a building, near downspout outlets, or frequently wet and soggy areas of yards.

● **Tree planting** refers to concentrated groupings of trees planted in landscaped areas while tree pits, also called tree boxes, generally refer to individually planted trees in contained areas such as sidewalk cut-outs or curbed islands.

3. The **benefits** of implementing these green infrastructure techniques include: minimizing the spread of pollutants, filtering out pollutants, reducing erosion, slowing the speed of water, recharging ground water, collecting and storing free water resources for use, improving aesthetics, reducing the heat island effect, and strengthening the local ecosystem.

Specifically, **green roofs** reduce stormwater run-off which, in turn, reduces the stress on urban sewer systems and decreases run-off related pollution of natural waterways and also save energy costs for building owners. Attaching a **cistern** to a water system decreases the amount of water needed and consumed from the municipal water systems and saves a significant amount of money for individuals. **Rain gardens** improve water quality and reduce storm water pollution by collecting and using rain water that would otherwise be drained into the sewer system. **Rain barrels** are useful tools for saving money and reducing stormwater run-off. They easily collect gallons and gallons of water for gardening, car washing, pet washing, and other lawn care utilities, which reduces demand, and amount you are billed for each month. **Stormwater planters** are another creative way to incorporate "gardens" into urban areas. Hanging planters in front of storefronts and homes are always an aesthetic addition to an area, stormplanters are just another way to achieve this effect on a larger scale.

4. Downtown Geneva was partially built over natural wetland. Previously, wetlands were thought to be a waste of space, so they were drained, filled, and built over. Wetlands however act as very important and effective natural flood barriers, and contaminant treatment centers. Downtown Geneva is very impervious heavy, and run-off can flow straight into Seneca Lake untreated. Historic photos show porous paving, like cobblestone and dirt roads, and streets with newly planted saplings. By implementing green infrastructure techniques like **green roofs**, or increasing the number of **tree plots**, **rain gardens**, and contained **stormwater planters**, run-off can drastically be reduced and filtered before draining into the lake.