



Linear Urban Forests: Springfield, MA

Nate Wright, Dept. of Civil and Environmental Engineering, UMass Amherst

Rick Harper, Dept. of Environmental Conservation; David Bloniarz, U.S. Forest Service

Introduction

With the rise of temperature and extreme weather events, climate change continues to threaten our planet – especially cities, where the majority of our population resides.

Cities dominated by impervious surfaces and combined storm-sewer systems are overwhelmed during rainfall events and often discharge raw sewage into the environment.

Springfield, MA has struggled with air quality, stormwater, and high urban temperatures, making it a suitable pilot city.



Fig. 2. Linear Urban Forest Plan and Profile Illustrations
From Harvard Graduate School of Design

Plant Selection

Following the IPCC RCP 4.5 model, a complete list of current and projected native plants (trees, shrubs, and ground cover) was generated to create a recommended plant palette. Plant communities will also be selected to increase symbiosis and climate resiliency.

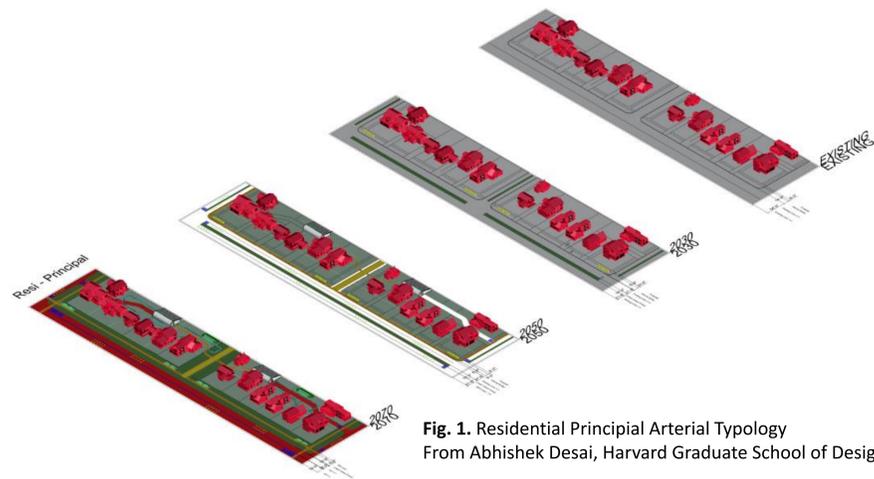


Fig. 1. Residential Principal Arterial Typology
From Abhishek Desai, Harvard Graduate School of Design

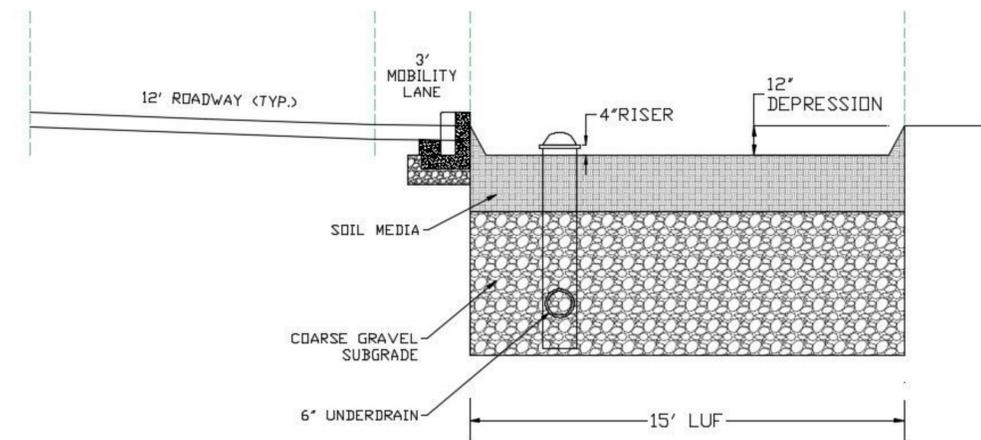


Fig. 3. Road Cross Section for ResiXLocal Typology

Following the rise of autonomous electric vehicles (AEVs), smaller roadways will create space for Linear Urban Forests, which can reduce urban temperatures and stormwater runoff.

Landscape Design and Roadway Cross Sections

“Tessellating” Springfield MA: interstate, major arterial, minor arterial, and local roads intersect with residential, industrial, commercial, and open space. Based on these typologies, road cross sections were generated in AutoCAD. Future technology such as solar roadways and alternative road materials may impact the design of the LUF, but will ideally work in harmony.

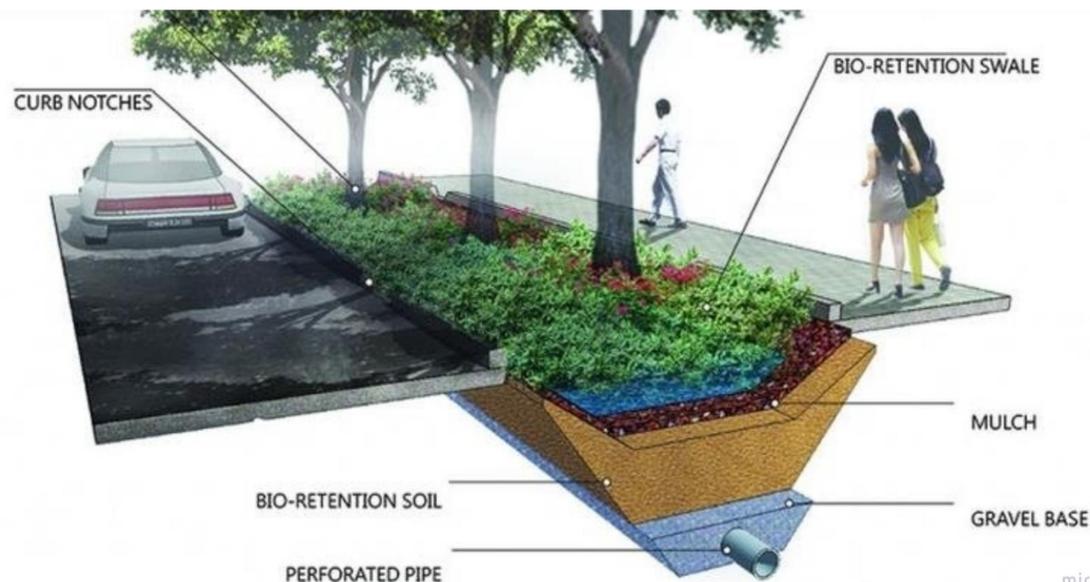


Fig. 4. Linear Urban Forest Rendering
From Harvard Graduate School of Design

Outlook

This project will continue through 2024. A small pilot plot in Springfield will be selected to begin testing proposed designs. Public outreach and community engagement will be essential in educating the public and garnering support. This project will serve as a template for other cities and municipalities.