BOSTON ARCHITECTURAL COLLEGE

Philosophy and Overview

From the BAC website: The mission of the School of Landscape Architecture is to provide first professional degrees founded on excellence in design education through an interdisciplinary, academic and practice based model of design thinking and learning, and open to students and faculty of all cultures who wish to explore new urban landscapes and sustainable design principles influencing the advancement of the landscape architecture profession and the diverse and global communities it seeks to serve. The School of Landscape Architecture takes full advantage of its prime location in the heart of Boston, where students have the ability to observe and consider real aspects of the City, in situ. The City, in this sense, is both the setting and the classroom for students to explore the living and constructed dynamics of urban public open space such that they have constant stimulation in a complex living and learning experience. Concurrent with the academic Landscape Architecture coursework, students participate in experiential learning by working within professional firms. In these settings students test their academic discoveries by responding to real clients, tangible sites, and actual programs and construction budgets. These practice experiences equip students with hands-on knowledge and allow them to move into their professional track early in their careers. For information about Licensure in Landscape Architecture, see the Practice page.

Student Experience and Background

This class is a design studio comprised of Master of Landscape Architecture students entering their second semester, and Bachelor Landscape Architecture students entering their third semester. Prior to entering this class, students completed a transdisciplinary foundation studio where they explored fundamental spatial design processes within the studio environment. Additionally, students completed design representation classes where they gained skills in hardline orthogonal drawing, Adobe Photoshop, Illustrator, InDesign, and AutoCAD. Students also completed City Lab, where they explored the fundamentals of design thinking using the landscapes and works of architecture in the vicinity of the College as a learning resource. City Lab combined daily opportunities for experiential learning in the city with a series of orienting lectures and workshops on Boston history and urbanism, sketchbook use, graphic analysis, iterative process, diagramming, local design culture, and professional practice. As part of City Lab, students visited local firms, and had the opportunity to learn about professional practice and meet local design practitioners.

Reflections on Teaching and Course Content

Throughout the semester, certain elements of the course were highly successful, and a few items could be developed further. Reflecting specifically on teaching the class through the lens of landscape performance, the most successful elements were as follows:

- The analysis process in and of itself played a significant role in the success of the studio and its incorporation of landscape performance as a component of the design process. Throughout the first half of the semester, students are immersed in the analysis process; in the second half of the semester students ground their analysis in a landscape design strategy. With a robust body of research to draw upon, students were able to successfully identify areas within the site as well as its context where landscape performance benefits could have a measurable impact. The design strategies which emerged from the students' analysis involved performance benefits which were informed by their research, and which were relevant within the site's context and beyond.

- Use of the Landscape Architecture Foundation's Case Study Briefs as part of a precedent study successfully supported students' understanding of design strategies which result in high performing projects. Case studies were selected from the LAF website; each student was assigned a case study and a written and visual presentation; case studies were selected based on the presence of characteristics similar to the studio design site. Students were asked to report which predictive tools from the LAF's Benefits Toolkit were used by the CSI team researching the case study, which allowed students to become familiar with predictive modeling tools. Through this process students were able to successfully relate components of landscape design with their resulting landscape performance benefit. Prior to the precedent study, landscape performance benefits were largely an abstract concept within the studio, disconnected from specific sites, programmatic elements, or features of landscape. Following the precedent study, students began to more successfully propose elements within their designs which would contribute to the overall level of landscape performance encapsulated within their design strategies. It is especially notable that immediately following the precedent study, students began to articulate deeper theories about the social role of landscape architecture in urban areas, and the many ways design can foster these connections.
- Use of LAF's Benefits Toolkit as an element of the design process within the students' studio projects was successful in quantifying design features and relating them to performance outcomes. Throughout the second half of the semester, students proposed designs which would achieve specific performance benefits. The next step for the student would be to calculate area, number of features, or other quantifiable elements within the design, and run calculations to predict the performance benefits achieved. Students would then examine these outcomes, and if they felt the outcomes were unsatisfactory the student would make changes in the design until the desired predicted outcome was achieved. These outcomes included environmental, social, and economic benefits; students calculated stormwater retention and runoff, heating and cooling costs, carbon sequestration, number of occupants, traffic flow, safety, and numerous other benefits. Students were able to identify specific programmatic elements that they wished to support within their site design, and articulate the relationship of program to their analysis and the site's context.

Although the studio was successful in most aspects, the following areas could be developed in future semesters:

- Challenges existed in connecting regional analysis to performance benefits. Regional analysis is an essential component of this studio, and positions students to propose landscape architecture designs which succeed at multiple scales, and which relate to their immediate and larger context. However, much of the studio's examination of landscape performance occurred at a smaller scale – mainly within the site, and some immediate context. In future semesters, landscape performance could be aligned with regional analysis in a more meaningful way, connecting what is learned at the regional and urban scale to a specific site or set of sites.
- Economic performance benefits were challenging to connect to the design process. While many environmental and social performance benefits can be predicted or at least imagined prior to the building phase, economic benefits are more closely related to project construction and the impact of the project after it is built. Areas such as cost/benefit analysis were most successfully connected to the analysis process, with some students performing an analysis of existing conditions, and proposing design strategies to adaptively reuse elements in situ. However, this was only marginally possible due to the depth and breadth of the studio; in

future semesters this could become a deeper focus of the design problem. Most challenging was gaining an understanding of the potential economic impact of the design on abutters, surrounding businesses and residents, the neighborhood, and the city itself. This is a metric which is most successfully calculated once the design has been constructed and has been in place for some years. Within the studio, this metric could only be vaguely predicted. However, even this level of anticipation of positive economic impact was a successful element of the studio, as it allowed students to identify the potential for landscape architecture to improve the economic condition of an urban neighborhood.

Application to Other Design Studio Environments

This course relies on the analysis process to facilitate students' understanding of the multiple scales and contexts within which the landscape architect operates. Furthermore, the analysis process provides a framework for the students' first studio design experience, allowing them to find inspiration for design and successfully position this design within a relevant context. The introduction of landscape performance functions naturally as part of the students' journey through analysis to design proposal, providing resources and metrics to both shape as well as support their design proposals. The use of case studies from LAF allows performance benefits to come alive, immediately connecting design elements and strategies to successful performance metrics. In other design studios, this framework of landscape performance-based analysis, precedent study, and design can be applied in a similar manner, with each of investigation relating to landscape performance in different ways. For an advanced studio, analysis may be given significant focus to examining existing conditions in a finer level of detail, anticipating calculation of cost-benefit analyses and proposal of in situ restoration operations. Additionally, significant space can be dedicated to working with predictive modeling as part of the design process: students propose the design, calculate performance metrics, revisit aspects of the site design, recalculate performance metrics, etc. with the eventual goal of arriving at a fully-developed site plan which successfully achieves a range of high-level performance benefits.

As the BAC's School of Landscape Architecture continues to explore opportunities to integrate landscape analysis and performance into studio curriculum, the analysis process itself has the potential to reveal new performance metrics and evaluation methods. The design process could both respond to that which we know - established performance evaluation criteria - as well as to new criteria emerging from the analysis itself. This might in turn provide opportunity for the analysis process to reveal new areas of inquiry, contributing new knowledge and metrics to the growing body of resources for evaluating landscape performance.

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Title: LAN2001: Ecological Analysis and Conceptual Frameworks
Faculty: Aidan C.S. Ackerman, ASLA
aidan.ackerman@the-bac.edu
telephone: 617.512.6845
Offering: Spring 2014
Time and Place: Tuesday 7:15-10:15
Programs: MLA
Prerequisites: Successful completion of Segment I courses and Portfolio review.

Course Overview

This core design studio will introduce students to the fundamental knowledge and technical skills used by landscape architects to conduct inventory and analysis for projects within constructed environments. Through performing research and representation at several scales, students will become aware of the relevant topics and best practices of landscape analysis as they relate to regional, citywide, neighborhood, and human contexts. Students will translate their analysis into a design strategy on a small abandoned industrial lot, incorporating landscape performance goals which establish social, environmental, and economic benefits. This design process will be supported through research and assessment of high-performing landscape projects via The Landscape Architecture Foundation's Landscape Performance Series.

The studio operates in conjunction with DME 2015 and DME 2016 Landscape Representation: GIS and Environmental Design, Intro and Applications, though the studio is not limited to this course sequence.

Course Description

The studio will use the Greater Boston Area as the focus of inquiry to examine the complexity of natural, economic, and social systems that interact within this urban region. Students will learn to collect, analyze, and synthesize complex data within their individual design processes to inform design proposals and decisions about land use and development, and the related infrastructure systems. Investigations at a range of scales will form the basis for multiple analysis projects, ranging from regional and metro scales to site specific ones. Representation techniques will be explored throughout the studio.

Students will perform analyses at a regional scale, assembling a comprehensive, layered analysis addressing topics around natural systems, infrastructure, human activity and behavior, and regional context. By zooming in to the city scale, students will perform a second analysis, examining the economic, social, and environmental benefits of landscape architecture within the city as a whole, and within the framework of an urban neighborhood. Through these explorations, students will be able to assess the individual and aggregate value of high-performance landscapes within an urban context. Further zooming in and out of a specific neighborhood within the city of Boston, each student will perform a thorough analysis of the design site and of its context, performing rigorous contextual and specific analyses within several small neighborhoods surrounding the Roxbury's Dudley Square area of Boston.

Through these analyses, students will discover tools and techniques for establishing measurements and for defining the site's baselines, including the potential economic, ecological, and social performance that may exist theirin. In the final weeks of the semester, the studio will focus on the development of a design strategy for a previously abandoned industrial lot. Students will articulate

landscape performance goals informed by their semester's analysis work, and will in turn individually propose a design strategy for the site which establishes social, environmental, and economic benefits. Students will gain understanding of high-performing landscape projects and their design through examining Case Study Briefs from the Landscape Architecture Foundation's Landscape Performance Series.

LAAB Criteria:
The course curriculum specifically includes coverage of the following criteria:

- Natural and cultural systems including principles of sustainability
- Public Policy and regulation
- Design, planning and management at various scales and applications including but not limited to pedestrian and vehicular circulation, grading drainage and storm water management
- Computer applications and other advanced technology

Course goals:

- Students will gain knowledge in site analysis techniques, and conceptual thinking.
    - Within this studio, students will learn to evaluate data, assessing its value and discovering patterns and connections within the constructed environment. Students will additionally learn to clearly communicate observations, site analysis and design alternatives. Throughout the course, they will be guided through the process of synthesizing large sets of research data, learning to articulate clearly and concisely major themes and key elements of their research and discoveries.
- Students will learn to clearly communicate observations, site analysis and design alternatives.
    - Students will be guided through the process of synthesizing large sets of research data, learning to speak clearly and concisely about major themes and key elements from their research. Frequent pin-ups will allow students to present their analysis techniques and results, with critical feedback allowing them to evaluate the effectiveness of their techniques. Students will be shown how to evaluate the existing site conditions, including local and regional context, developing an approach to the site design which will address issues and explore opportunities for successful design intervention.
- Students will gain experience in methods of representation.
    - Students will learn to translate large quantities of data into graphic form, using GIS, Adobe Photoshop, Adobe Illustrator, and Adobe InDesign. Students will receive critical feedback on the clarity and legibility of their graphic techniques, with clear direction on how to improve the effectiveness of their visual communication. Landscape analysis precedents will be shown to students throughout the semester, accompanied by group discussions evaluating the graphic representation techniques used and their relationship to the analysis data.
- Students will learn to translate analysis into design concepts.
    - Students will learn to verbalize their knowledge of the existing site condition and context, and will be encouraged to develop an approach to the site that is informed by the analysis. Students will learn how to identify areas for improvement, renewal, or change within the existing site conditions, that is furthermore founded through the research precedents available from the Landscape Architecture Foundation's Landscape Performance Series. For the final assignment, students will develop a

site design which clearly addresses issues found within their analysis, and which are also supported with defined social, environmental, and ecological benefits.

- Students will practice how to verbally present ideas and designs in a clear and concise manner.
    - Working with large quantities of analysis data, students will learn how to communicate the most essential elements of their research in a clear, direct manner. Students will participate in multiple pin-ups and reviews throughout the semester, addressing analysis and site design at multiple scales. During these presentation opportunities, students will receive critical feedback on their analysis approach and design intervention. Students will also receive critical feedback on the clarity of their presentations and their ability to communicate complex concepts quickly and legibly.

Format and Assumptions

- This course will be run as a design studio. There will be a pin-up and discussion during each class period with occasional lectures within the studio regarding pertinent information.
- Classes will encourage interaction among students; class participation is an integral component of the learning structure of this course
- You will be expected to complete work on time and with the utmost care and precision. You should come prepared to each class with substantial progress from the previous class.
- Any assigned readings will be discussed in class and should be read with care.

Course Expectations and Policies

- Attendance is mandatory
- You must arrive at class on time
- Students will be excused from class for family or medical emergencies with advance notice, (or immediately after an emergency), by notifying the instructor or BAC staff in writing. Should you need to be absent, please contact the instructor by email or telephone before the beginning of class.

- Grading will be based on attendance, participation, progress review and final review:
    - Attendance and Participation 15%
    - Weekly Progress Reviews* 60%
    - Final Review* 25%

    ** Each assignment review will be graded based on verbal presentation, graphic representation, content, and development/progress*

Course Expectations and Learning Outcomes

Site Analysis

- Students are expected to compile research data related to their analysis subject(s); additionally, they are expected to explore digressive or seemingly unrelated research data; uncovering unique and innovative connections between disparate information. Students are expected to communicate the collective value and relevancy of their findings within the site context and studio objectives; additionally, they are expected to communicate ways in which their findings offer potential for design intervention and inspiration within the studio course.

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Site Design

- Students are expected to create a conceptual site design which responds to the site and context, and which is informed by site analysis at multiple scales. Students are further expected to position the site as a catalyst for urban development at contextual scales, identifying and exploring specific analysis findings which support their argument.

Representation

- Students are expected to clearly and accurately represent their analysis findings, including utilization of exploratory, inventive advanced visual communication techniques to effectively convey their research. Students are expected to visually integrate only the relevant information in diagrammatic form, including recombining and reinterpreting data in an innovative manner. Students are expected to produce conceptual design graphics with proper scale and line weight, communicating the design concept and related analysis information.

Readings, Resources and Materials, Required and Recommended

- Readings as provided by the instructors
- Sketch Book
- Trace, and adequate markers and scales. (*bring to each class!*)
- Recommended books:

    - Adams, Michelle (2011), High Performance Landscape Guidelines: 21st Century Parks for NY, Design Trust for Public Space. ISBN-13: 978-0977717521

    - Cantrell, Bradley (2010), Digital Drawing For Landscape Architecture: Contemporary Techniques and Tools for Digital Representation in Site Design, Wiley press. ISBN-10: 0470403977

    - Deming, M. Elen and Simon Swaffield (2011), Landscape Architecture Research: Inquiry, Strategy, Design, Wiley Press, ISBN-10: 0470564172

    - Francis, Mark (2003). Urban Open Space: Designing For User Needs (Landscape Architecture Foundation Land and Community Design Case Study Series), Island Press, ISBN-10: 1559631139

    - LaGro, James A (2008). Site Analysis: A Contextual Approach to Sustainable Land Planning and Site Design, Wiley Press, ISBN-10: 0471797987

    - LaGro, James A (2001), Site Analysis: Linking Program and Concept in Land Planning and Design, Wiley press, ISBN-10: 0471344125

    - Lynch, Kevin and Gary Hack (1984), Site Planning, Third Edition, MIT Press. ISBN: 0-262-12106-9

    - McHarg, Ian (1995), Design with Nature, Wiley Press. ISBN-10: 047111460X

    - Reid, Grant (Sept. 2002), Landscape Graphics, Revised Edition, Watson-Guptill Publications. ISBN-10: 0-8230-7333-5

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Readings, Resources and Materials, Required and Recommended (Continued)

- Steenbergen, Clemens, Meeks, Sabine and Steffen Nijhuis (2008), Composing Landscapes: Analysis, Typology and Experiments for Design, Basel ; Boston : Birkhäuser, ISBN-10: 3764387823
- Tufte, Edward R. (May 2001), The Visual Display of Quantitative Information, 2nd Edition, Graphics Press. ISBN-10: 0961392142
- Tufte, Edward R. (May 1990), Envisioning Information, Graphics Press. ISBN-10: 0961392118
- Turner, Monica, Gardner, R.H. and Robert V. O'Neill (2001), Landscape Ecology in Theory and
- Practice: Pattern and Process, Springer Press, ISBN-10: 0387951237
- Waldheim, Charles (2006), The Landscape Urbanism Reader, Princeton Architectural Press. ISBN-10 1-56898-439

Online Resources:

The Landscape Architecture Foundation: Landscape Performance Series
http://www.lafoundation.org/research/landscape-performance-series/

The Landscape Architecture Foundation: Benefits Toolkit
http://www.lafoundation.org/research/landscape-performance-series/toolkit/

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Course and BAC Expectations and Policies

Campus Compact

The BAC is committed to creating an educational environment that promotes opportunities for learning. Such an environment can only occur when every individual in the BAC community takes an active role in respecting the integrity of others.

•Full text at http://www.the-bac.edu/x372.xml

Academic Integrity

The BAC requires that all work completed by a member of the school meet the following requirements:

- It must wholly be the work of that person.
- It must be original for the class for which it is in. Failure to adhere to these guidelines is considered cheating, or academic dishonesty, and undermines the values that drive the school.
- Full text at http://www.the-bac.edu/x367.xml

Diversity Statement

The Boston Architectural College is committed to promoting a community that celebrates, affirms, and vigorously pursues inclusiveness in all its forms.

- Full text at http://www.the-bac.edu/x434.xml

Academic Support & Statement for students with Learning Disabilities

The BAC offers reasonable accommodations to students who otherwise cannot reach their academic potential due to a learning disability, physical impairment, medical/psychological condition, or unforeseen circumstances that may arise during the course of their studies. All forms of accommodation are tailored specifically to the individual student and meet guidelines for educational benefit and academic consistency. Accommodations will be made only in a manner which maintains the integrity of required learning objectives.

- Full text at http://www.the-bac.edu/x383.xml

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Schedule and Course Outline - Subject to Change at the Discretion of the Instructor
Course Assignments: LAN2001 Ecological Analysis and Conceptual Frameworks

Weeks 1-4 (4 weeks): Assignment #1: Regional Analysis Project: Greater Boston Metro Area

Students will research, analyze, and represent research at a regional scale, using digital tools as well as printed material, maps, and other archival data. Students will assemble a comprehensive, layered analysis which addresses topics of natural systems, infrastructure, human activity, and regional context. Analysis should address the benefits and drawbacks of these elements, investigating each element's contribution to a robust regional network.

Weeks 5-8 (4 weeks): Assignment #2: Multi-Scale Urban Analysis: Boston/Roxbury

For this assignment, one or more analysis topics will be given to each student, and the student will perform an analysis both at the scale of the city of Boston, as well as at the scale of the neighborhood of Roxbury. Examining the same topic at two scales, students will explore that the level of inquiry and representation appropriate to each scale. Students will explore the economic, social, and environmental benefits of landscape architecture within the city as a whole, as well as within the urban neighborhood.

Weeks 6-7 (2 weeks): Precedent Study, Landscape Performance Series

Working in small groups, students are assigned several case studies from the Landscape Architecture Foundation's Landscape Performance Series. In this short assignment, students will utilize short Case Study Briefs to understand various aspects of landscape performance as embodied by each built project. Students will examine the methodologies utilized by research teams to quantify landscape performance, and will learn to understand and make use of the tools found in the Landscape Performance Series Benefits Toolkit. This assignment will culminate in in-class presentations by each group, which will cover the following topical areas: performance benefits found in each project, methodologies used to quantify these benefits, and utilization of tools from the Benefits Toolkit to quantify performance benefits.

Week 9: Midreview, Landscape Performance CSI (Case Study Investigation) Precedent Study

Weeks 10-12 (3 weeks): Assignment #3: Contextual Site Analysis: Dudley Square

Students will each perform a thorough analysis of the site and its context, performing rigorous analyses within several small neighborhoods surrounding Roxbury's Dudley Square area. Students will learn to analyze the landscape through the lens of performance, discovering tools and techniques to establish knowledge of the site's baseline and potential economic, ecological, and social performance. Students will propose performance benefits which they feel would have positive impact at the site and neighborhood scale, and will substantiate these proposals with evidence from their analysis research.

Weeks 13-15 (3 weeks): Assignment #4: Conceptual Site Design

In the final weeks of the semester, students will focus on the development of a high-performance design strategy on a previously unused industrial lot. Students will perform a precedent study high-performance landscapes through examining Case Study Briefs from the Landscape Architecture Foundation's Landscape Performance Series. Students will then in turn individually design a design for the site which articulates goals for social, environmental, and economic benefit. Additional infrastructural, ecological, and building components should coalesce to form a coherent site design which takes into account the previous analysis work from the entire semester.

Week 16: Final Review

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Course Schedule – Subject to Change

WEEK 1

- Introduction to Class
- Discussion: Introduction to Concepts in Site Analysis
- Handout Assignment #1: Regional Analysis Project

WEEK 2

- Lecture: Analysis Methodology
- Pin-Up: Assignment #1

WEEK 3

- Desk Critiques: Assignment #1

WEEK 4

- Final Pin-Up: Assignment #1
- Handout Assignment #2: Multi-Scale Urban Analysis

WEEK 5

- Lecture: Defining Objectives For A Multi-Scale Urban Analysis
- Pin-Up: Assignment #2

WEEK 6

- Desk Critiques: Assignment #2

WEEK 7

- Lecture: Graphic Representation Techniques For Analysis
- Desk Critiques: Assignment #2
- Discussion: Midreview

WEEK 8

- MIDREVIEW, Landscape Performance CSI (Case Study Investigation) Precedent Study

WEEK 9

- Handout Assignment #3: Contextual Site Analysis

WEEK 10

- Lecture: Advanced Analysis Representation Techniques
- Desk Critiques: Assignment #3

WEEK 11

- Desk Critiques: Assignment #3

WEEK 12

- Final Pin-Up: Assignment #3
- Handout: Assignment #4: Conceptual Site Design

WEEK 13

- Desk Critiques: Assignment #4: Conceptual Site Design

WEEK 14

- Lecture: Synthesis of Analysis Data and Conceptual Design
- Desk Critiques: Assignment #4: Conceptual Site Design

WEEK 15

- Desk Critiques: Focus on final presentation preparation

WEEK 16

- FINAL REVIEW

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Assignment: Landscape Performance CSI (Case Study Investigation) Precedent Study

Handout Documents: Project handout from LAF's Landscape Performance Series; includes listing of landscape performance benefits, sustainable features, challenge/solution, cost comparison, and lessons learned.

Assignment Dates: March 11th – March 18th

The Case Study Investigation (CSI) program is a unique research collaboration that matches LAF-funded student-faculty research teams with leading practitioners to document the benefits of exemplary high-performing landscape projects. Teams develop methods to quantify environmental, economic and social benefits and produce Case Study Briefs for LAF's Landscape Performance Series. The teams are led by LAF Research Fellows, select faculty members with demonstrated interest or expertise in quantifying landscape benefits. Fellows develop methods for data collection, provide academic rigor, and receive funding to support a student research assistant.

For this project, each student will be given a Case Study Brief for a project which is similar to the semester-long analysis site of inquiry in Dudley Square. Students are asked to write a written response to this case study, examining the design challenge and the resulting landscape. Additionally, each student will present their assigned case study to the class immediately following spring break.

Written Response: Review the assigned case study, and carefully craft a minimum 1200 word written response.

In-Class Presentation: Each student will create 6-8 slides with images and accompanying text. This presentation should function as a summary of what was covered in the 2-page written response. Students will bring their slides to class on March 18th in PDF or Powerpoint format.

Items to include:

The following items should be included in both the written response and the in-class presentation. Text for the in-class presentation should be minimal, and slides should rely primarily on visuals (site plan, before/after photographs, etc).

- A description of the site's program before and after the design was constructed
- A summary of the designer's challenges and solutions
- A description of the design elements in the case study, and the related performance benefits
- A description of the performance goals which were achieved by the designer
- A description of how the LAF's Benefits Toolkit was used by the designer (refer to attached Methodology for each project).

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Assignment #1: Regional Analysis Project
Site Location: Greater Boston Area

What comprises a region?

The many elements within a region comprise the region as a whole. Natural as well as man-made environmental elements, combined with human and wildlife activity, together create an urban region.

Why examine regional aspects through analysis?

The region where the site is located contains many factors which greatly impact the site itself, however small the site may be. For example, major highway traffic from surrounding suburbs may pass near or through the site, bringing residents from neighboring towns into the scope of the design. Large disparities in race or household income across the region may make evident certain design necessities previously unimagined. Additionally, the overlap of natural and man-made elements across the region may not function in sync; wildlife habitat, spread of invasive or native species, and watershed activity could occur outside of the constraints of the urban design. Examining all of these elements simultaneously at a regional scale can greatly impact the information we use to design the site.

The goals of site design using the regional analysis approach are to: understand the site in its larger context; inform design possibilities beyond the site scale, create or improve ecological networks; improve human access to the site; and inspire design possibilities.

Methodology:

Gather information from online resources covering the following topics:

NATURAL SYSTEMS

1. Vegetation (forested, grassland, wetland, man-made aeras)
2. Hydrology (rivers, streams, lakes, ponds, wetlands, tidal flux, etc.)
3. Wildlife Habitat (birds, mammals, reptiles, fish, insects, migration patterns, etc.)

INFRASTRUCTURE

1. Impervious Surfaces (buildings, roads, parking lots)
2. Transportation (Vehicular, Subway, Commuter Rail, Ferry, Bicycle, Pedestrian)
3. Power Utilities (Gas, Electric, Hydro, Wind, Nuclear)

HUMAN ACTIVITY

1. Demographics (Household Income, Age, Race, Gender)
2. Land Use (residential, commercial, industrial)

REGIONAL LANDSCAPE

1. Major Open Space (fields, greenways, parking lots, airports, etc.)
2. Density (measure and show physical or population density)

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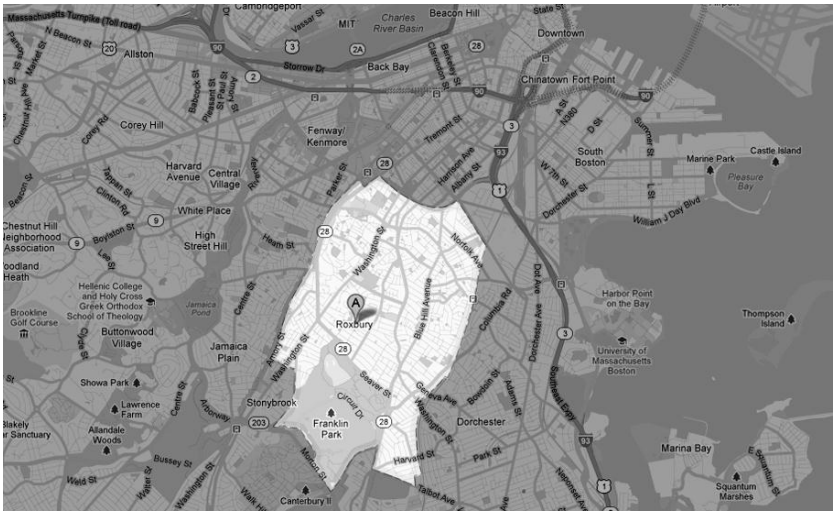
Assignment #2: Multi-Scale Urban Analysis
Site Location: Boston/Roxbury



Neighborhood of Roxbury

The relationship between a city and its parks, rivers, streets, neighborhoods, and other systems is one of great complexity. To best understand how such elements operate as part of the city's urban fabric, analysis should occur at several scales simultaneously.

For this assignment, a single analysis topic will be given to each student, and the student will perform an analysis both at the scale of the city of Boston, as well as at the scale of the neighborhood of Roxbury. Examining the same topic at two scales, it is essential to remember that the level of inquiry must match the scale. For example, when looking at transportation, analysis of the city of Boston might reveal major roadways, walking bicycle paths, and bus routes. At the neighborhood scale, this inquiry might also include specific bus stops, T stations, crosswalks, etc. Before beginning these analyses, be sure to think carefully about what you will be looking for at each scale.

Methodology:

Gather information from online resources covering the following topics:

1. Land Use + Historic Context
2. Green Space
3. Hydrology
4. Water Quality
5. Climate/Microclimate
6. Institutions, Neighborhood Demographics
7. Vegetation
8. Topography, Soils and Geology
9. Transportation

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Assignment #4: Contextual Site Analysis
Site Location: Dudley Square, .5 mile radius of Dudley Square Station

The relationship of the site to its immediate context is one that is continually changing and evolving. In order to intimately understand the context within which the designer operates, it is necessary to examine and analyze the surrounding urban fabric, deriving both information and inspiration from these elements. The analysis must be both objective and subjective; the designer should rely on objective mapping tools such as GIS, as well as experiential information gained by spending time on the site and exploring its surrounding neighborhood.

For this assignment, students will each perform a thorough analysis of the site and its context. No individual topics will be given; instead, students will undertake their own individual analyses of the site by examining topics from the list below. Multiple topics must be analyzed by each student, and each student must present a compelling reason for having examined their topics of choice. During this process, each student should develop a position or attitude about the site and the potential for design opportunities. Be sure to draw upon existing analysis performed in previous assignments; these analyses can be found in the course dropbox.

Methodology:
Gather information from site visits + online and printed resources covering the following topics:

1. Land Use + Historic Context
2. Vegetation + Green Space
3. Urban Water Management
4. Climate/Microclimate
5. Institutions, Neighborhood Demographics
6. Topography
7. Transportation

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Assignment #4: Conceptual Site Design
Site Location: Dudley Square, Roxbury

In the final weeks of the semester, students will select and develop a design scheme within Dudley Square and its immediate surroundings. Students will first select a site (or sites) where they will implement a landscape architecture design. The site may be previously unused, or it may contain building elements or other infrastructure. A proposal will be developed for transforming the site(s) into a viable landscape architecture project; students should be able to articulate how their previous analyses informed their site selection. Students should consider adjacent factors such as neighborhood demographics, circulation and transit schemes, and urban environmental factors, as well as larger regional patterns of settlement, development, circulation, decay and renewal.

Following the site election, students will focus on the development of a design strategy which achieves specific performance benefits. Students must be able to describe how they selected these performance benefits, and how their design will achieve their selected performance benefits. Development of various infrastructural, ecological, and building components should come together to form a coherent design strategy which takes draws upon the previous analysis work from the entire semester. Students should focus on developing landscape performance goals which position their chosen site(s) as a catalyst for positive change and urban renewal, impacting both the immediate site extents as well as the greater context of Dudley Square and beyond.

Students will develop a timeline for phased implementation of their design, and will use predictive calculations and modeling tools to anticipate the expected impact of their intervention. Students will also visually explore the impacts of their design within a broader urban context through diagrammatic representation.

Performance Benefits
Students are expected to integrate multiple performance benefits through their site design. Possible areas to develop performance benefits include:

Land
Shoreline protection
Transportation
Land efficiency/preservation
Soil preservation
Soil creation/restoration

Water
Stormwater management
Water conservation
Water quality
Flood protection

Habitat
Habitat preservation
Habitat creation/restoration

Carbon, Energy & Air Quality
Energy use & emissions
Air quality
Temperature & urban heat island
Carbon storage & sequestration

Materials & Waste
Reused/recycled materials
Local materials
Waste reduction
Green waste

Economic
Property values
Operation and maintenance savings
Economic development
Job creation

Social
Recreational & social value
Cultural heritage
Public health & safety
Educational value
Noise mitigation
Food production
Scenic quality/views

To locate existing landscape projects which achieve some of these performance benefits, visit http://www.lafoundation.org/research/landscape-performance-series/case-studies/

From there, you can search for case studies by landscape performance benefit, project type, or location.

BOSTON ARCHITECTURAL COLLEGE

Key Questions

- Problem definition: what problems does the project solve?
- Program: what is the project's program? How does this translate into site selection and development of form?
- Perception and meaning how is this place perceived and valued?
- Community: how is the community served by this project? What is the social impact and meaning of the project?
- Environmental impact: how does this project serve the environment? How does this project contribute to sustainability?
- Infrastructure: what are the underlying challenges presented by the site? What are the constraints dictated by the site?

Key questions are informed by A Case Study Method For Landscape Architecture (1999), Mark Francis, ASLA

Assignment Deliverables

Site Plan (1)
To scale; scale varies by project. Plan should be diagrammatic and conceptual.

Site Sections (minimum 3)
Sections should be to scale and include:

- entire site transect
- site detail 1
- site detail 2

Design Concept Diagrams (minimum 3)
Diagrams should show aspects of in-site operations, contextual operations, relationship to and impact on surrounding context.

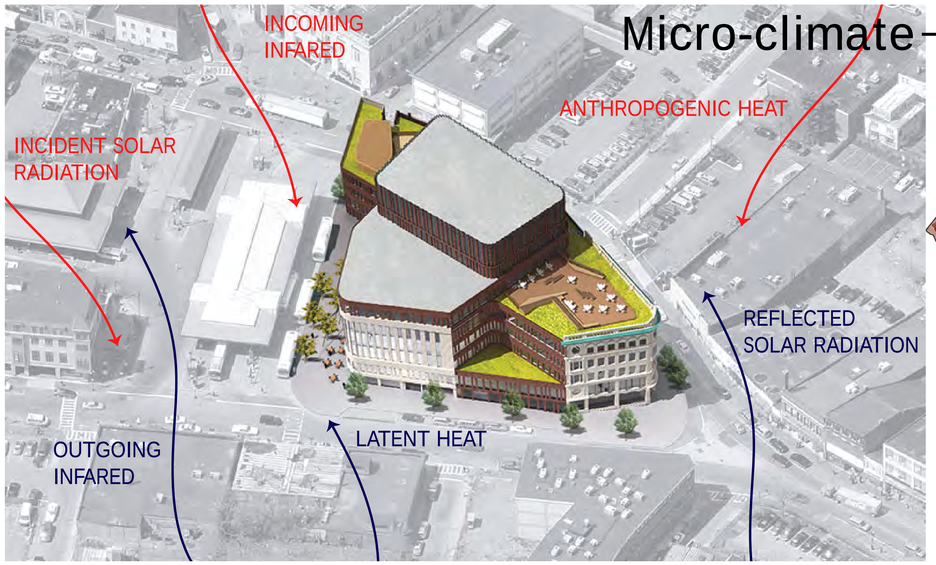
Performance Benefit Diagrams (minimum 2)
Diagrams should explain elements of performance within the design, and should quantify these performance benefits using predictive tools such as LAF's Performance Benefit Toolkit. Diagrams can make use of plan graphics, sections and elevations, 3D modeling, as well as data visualization tools to represent quantitative performance values.

Students are expected to expand their representation beyond the minimum requirements as necessary, in order to effectively communicate the intentionality and impact of their design interventions.

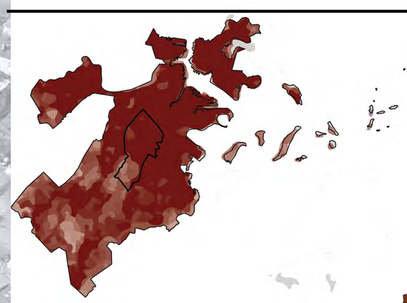
Urban Climates
BOSTON

MLA Candidate Olivia Fragale
Ecological Analysis and Conceptual Frameworks Studio
Instructor Aidan Ackerman
March 3, 2014

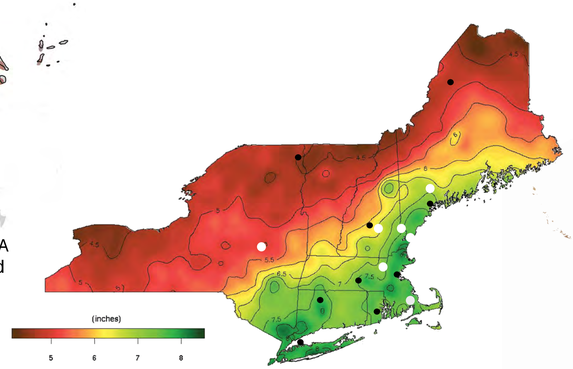
THE SCALE OF CLIMATE



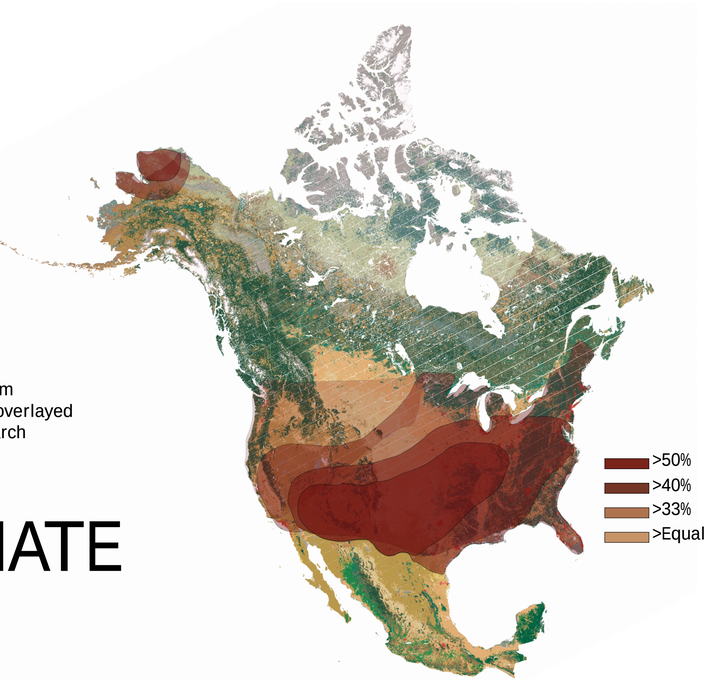
Micro-climate — Local Climate — Regional Climate — Global Climate



Region of Boston overlayed with NASA MODIS Land Surface Temperature and Emissivity Image

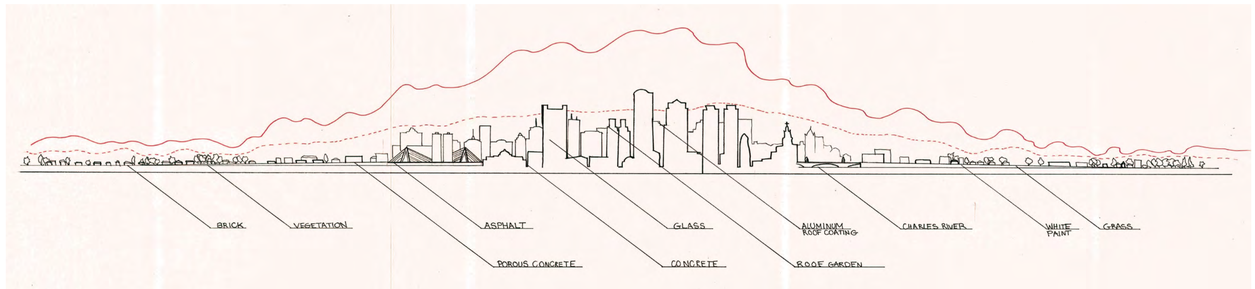


Extreme precipitation estimates from Northeast Regional Climate Center overlayed with location data for climate research stations.



National Land cover dataset overlayed with NOAA's December 2007 to February 2008 temperature outlook estimates. Broken down to show areas that have a greater than 50% chance of getting warmer, greater than 40% chance, greater than 33% chance, and chances for remaining equal.

URBAN HEAT ISLAND PROFILE



MEASURING CLIMATE

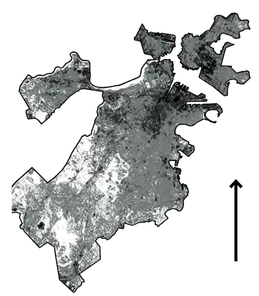
IMPACTS OF SURFACE MATERIALS

Emittance of a material refers to its ability to release absorbed heat.

Albedo measures the percent of incoming solar radiation that is reflected.

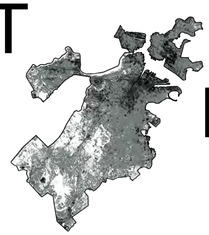
COMMON CHARACTERISTICS

Human-built environments are replacing and impacting natural environments causing unintended outcomes.

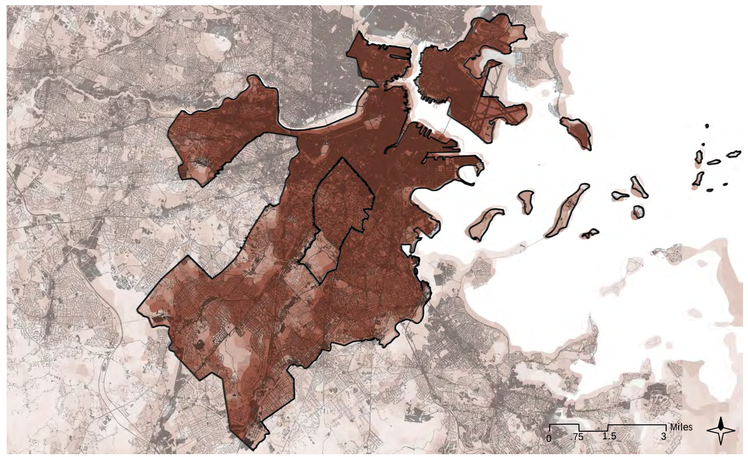


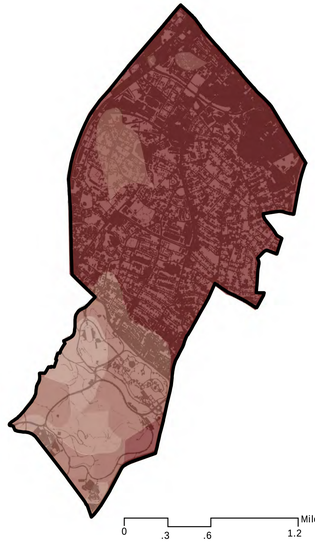
Elements Influencing Boston and Roxbury Climate

BUILT ENVIRONMENTS

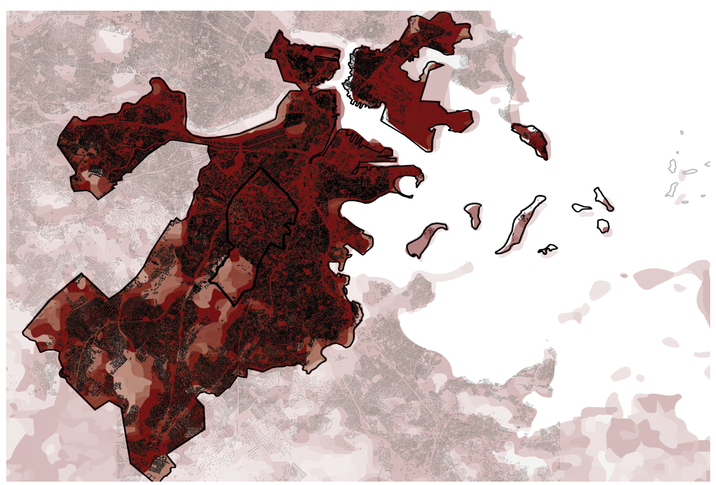


Does impervious land cover have temperature implications?



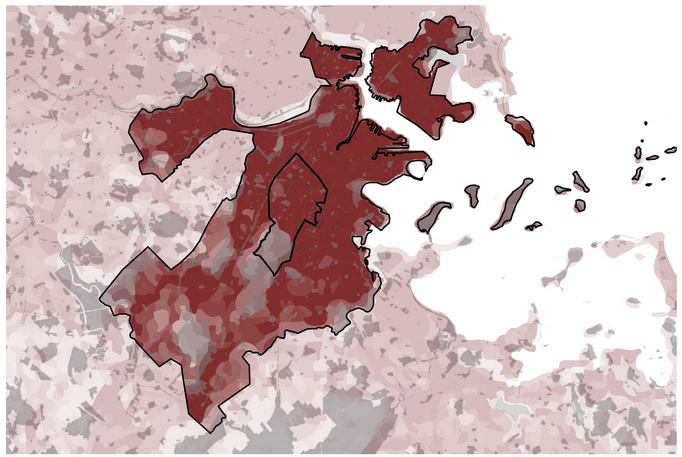


What is the relationship between building footprint and climate?

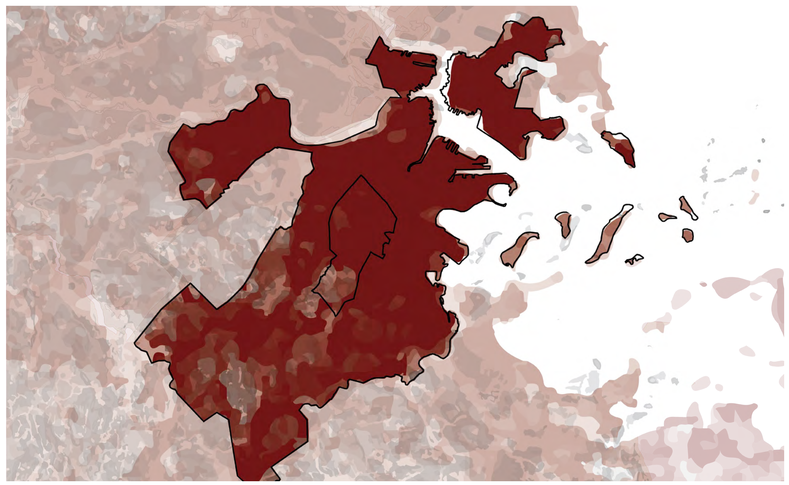


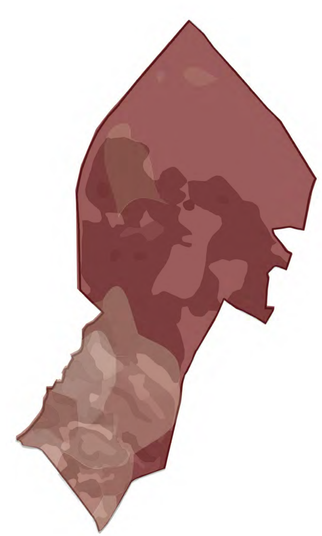
NATURAL ENVIRONMENTS

Does open space in an urban fabric mitigate impacts of UHI?

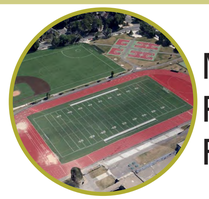


Is there a relationship between slope and climate?





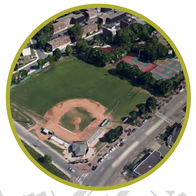
PUBLIC SPACE IN DUDLEY SQUARE



Madison Park High Fields

Madison Park Village

Bike Path



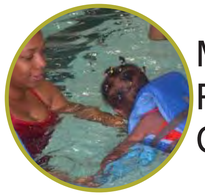
Ramsay Park

Roxbury Heritage State Park

Eliot Cemetery

Dewitt Drive Playground

Orchard Gardens Schoolyard



Madison Park Rec Center

Bynoe Park

Jeep Jones Park

Orchard Gardens Boys and Girls Club

O'Bryant Schoolyard

Dudley Square Public Library

Madison Park Community Garden

Boston Evening Academy Schoolyard

Post Office

Yawkey Boys and Girls Club

Veterans Memorial Park

Dudley Square T Station

Forested Area

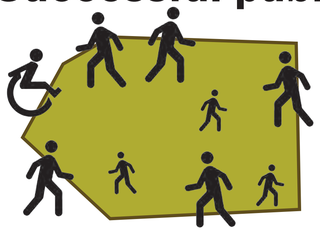
Sun Rays Community Garden

St. James Street Park

Erica Quigley
5/13/14
LAN2001: Ecological Analysis and Conceptual Frameworks: Assignment 3
Sources:
Open Space: MassGIS, 2014
Transit: MassDOT Office of Transportation Planning, 2012
Roads: MassDOT Office of Transportation Planning, 2012
Elevation: USGS National Elevation Database, 2013
Images: The Noun Project (Arts and Culture by Pete Fecteau, Basketball by Andrew Fortnum, Chair by Hayley Wells, Eye by Edward Boatman, Gardener by Erin Gillaspy, Grass by Tim Shedor, Handshake by Drue McCurdy, Lawn Mower by Sergi Delgado, Magnifying Glass by Karl Schaeffler, Picnic Table by Alex Fuller, Reading by Juan Pablo Bravo, Rock by John Maravelakis, Stairs by Brian Oppenlander, Stone Wall by Albert Vila, Tree by Nicolas Ramallo; Walking by Irene Hoffman); Google Earth, iamtonyang.com, Mass Paths, Design for Generation, Boys and Girls Club, Project for Public Spaces, Boston Public Library, Boston Police Department, Charles Apple, Flickr, New Jersey Urban Forest, Boston.com, HDBJ Landscapes, Celebrate Yonge, MVVA Inc., Wikimedia

NEIGHBORHOOD INVENTORY

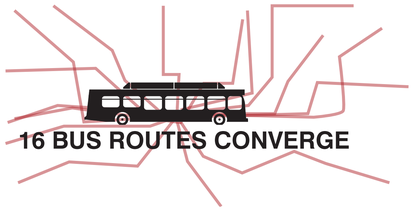
Successful public spaces are accessible and well-traveled



OBJECTIVE
- Pedestrian activity
- Open to anyone

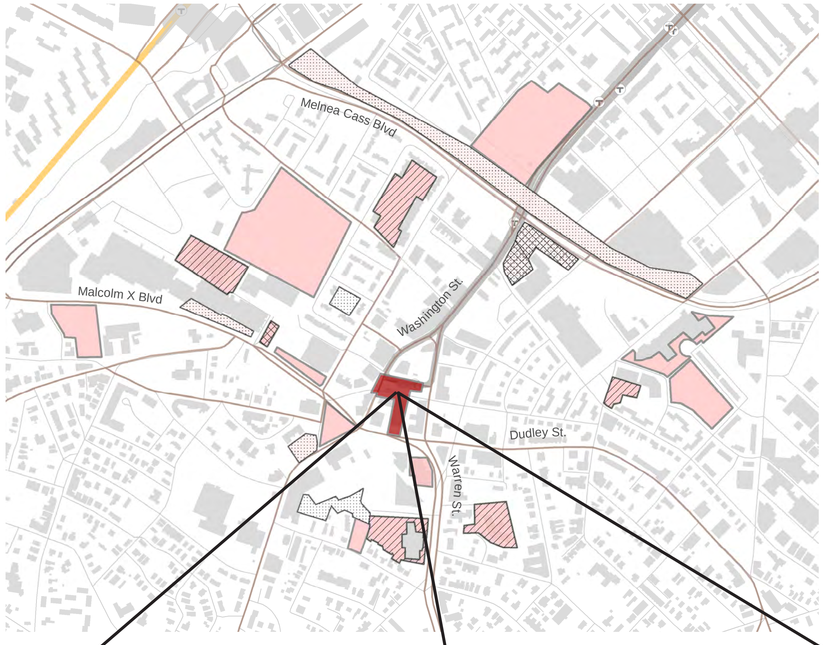
SUBJECTIVE
- Universally accessible

Dudley Square T Station



16 BUS ROUTES CONVERGE

30,000 DAILY BOARDINGS AND ALIGHTINGS



PEDESTRIAN ACTIVITY
- High
- Low
- None

UNIVERSAL ACCESSIBILITY
- Yes
- No

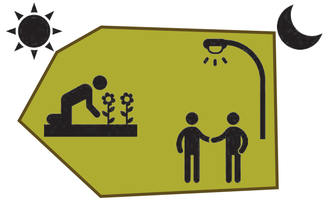
OPEN TO ALL
- Yes
- Somewhat
- No

Dudley Square T Station: High pedestrian activity

Dudley Square T Station: High pedestrian activity

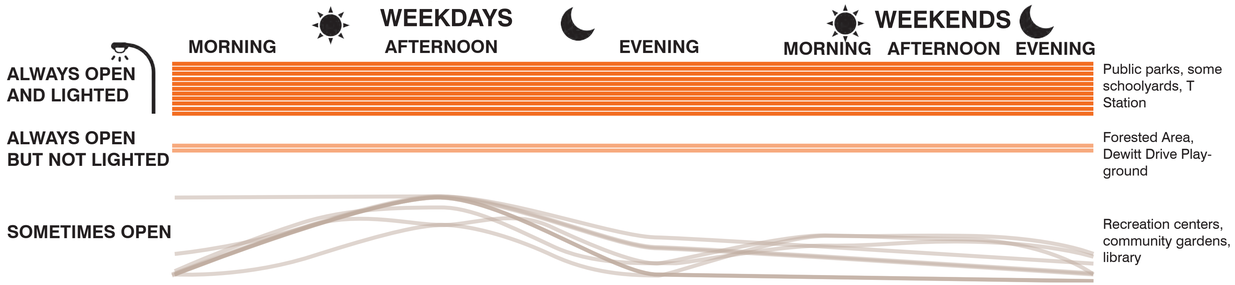
Dudley Square T Station: High pedestrian activity

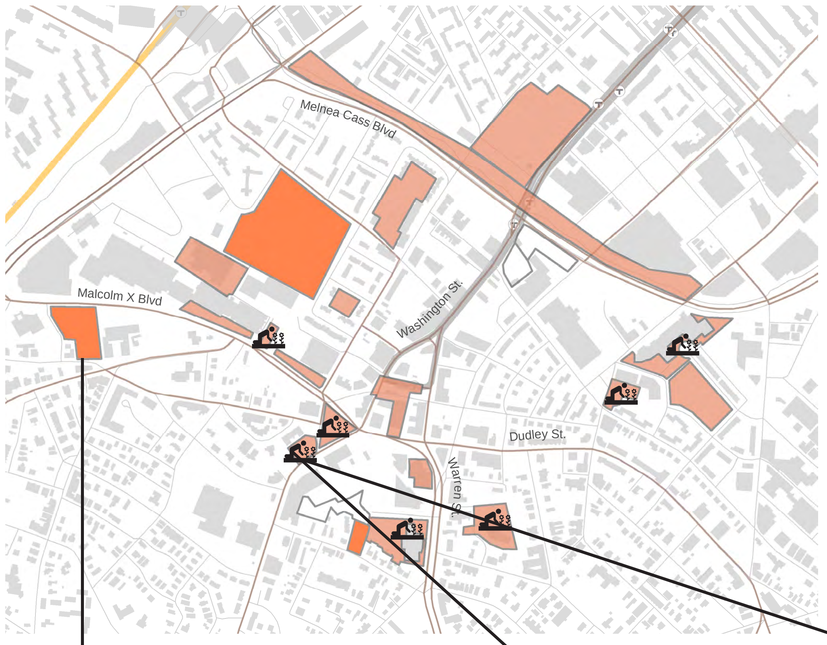
Successful public spaces promote sociability



OBJECTIVE
- Open at all times of day and lighted in the evening
- Users steward space

SUBJECTIVE
- Feels welcoming/friendly





USERS STEWARD SPACE

FEELS WELCOMING
- Yes
- Somewhat
- No

Jeep Jones Park: Welcoming entry

Sun Rays Community Garden: Users steward space

Sun Rays Community Garden: Users steward space

NEIGHBORHOOD INVENTORY

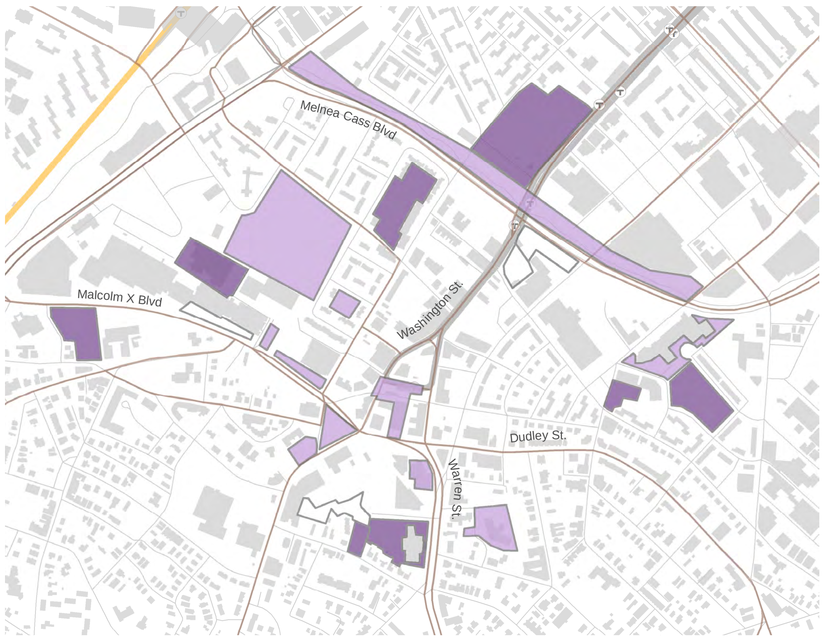
Successful public spaces have many uses and activities

OBJECTIVE
- Uses and activities available

Uses/Activities

ART/MUSIC · BOARD GAMES · COMPUTER · EATING · GARDENING · NATURE

LOUNGING · PLAYGROUND · SOCIALIZING · SPORTS/ EXERCISE · STROLLING

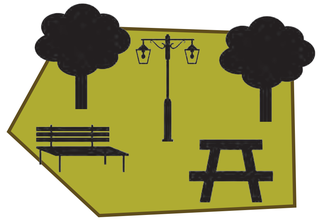


NUMBER OF USES
- High (10 or more)
- Medium (5-9)
- Low (1-4)

Jeep Jones Park: Multiple uses and activities

Yawkey Boys and Girls Club: Multiple uses and activities

Successful public spaces are comfortable



SUBJECTIVE OBJECTIVE
- Choice of seating
- Trees
- Feels unique (views, natural features, historic)

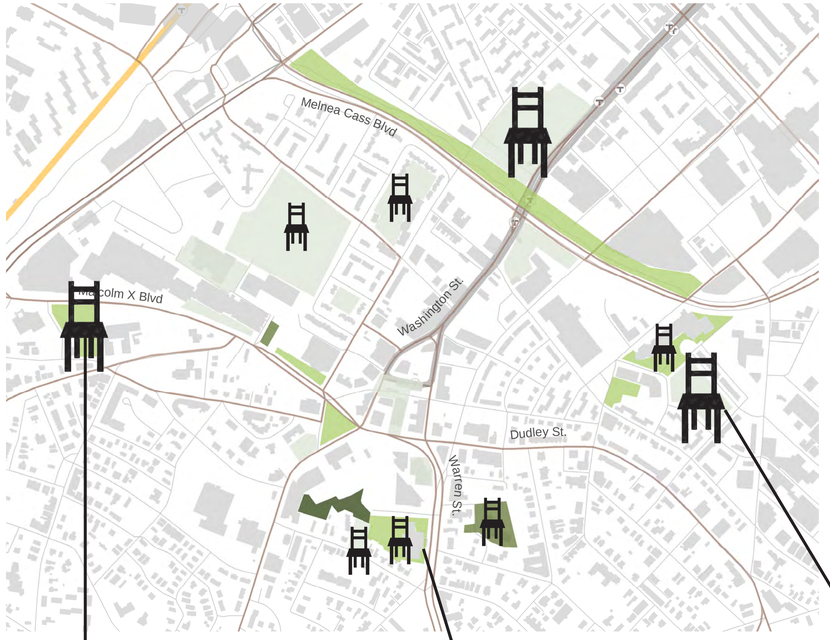
Seating types

BENCH · TABLE · MOVABLE CHAIR · BLEACHERS/ LARGE STAIRS · LAWN

LOG · BOULDER · SEATING WALL · IN THE SUN · IN THE SHADE

The importance of giving people the choice to sit where they want is generally underestimated.

Project for Public Spaces



SEATING CHOICE
- No seating choices
- Some seating choices
- Many seating choices

TREES PER ACRE
- Very High (51-500)
- High (41-50)
- Medium (21-40)
- Low (0-20)

Jeep Jones Park: Unique views and many seating choices

Yawkey Boys and Girls Club: Unique geology

Bynoe Park: Unique play features and many seating choices

ANALYSIS

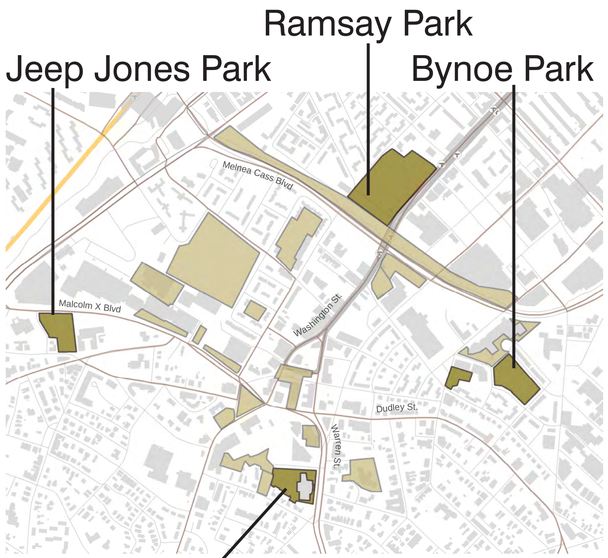
NEIGHBORHOOD INVENTORY

Methodology

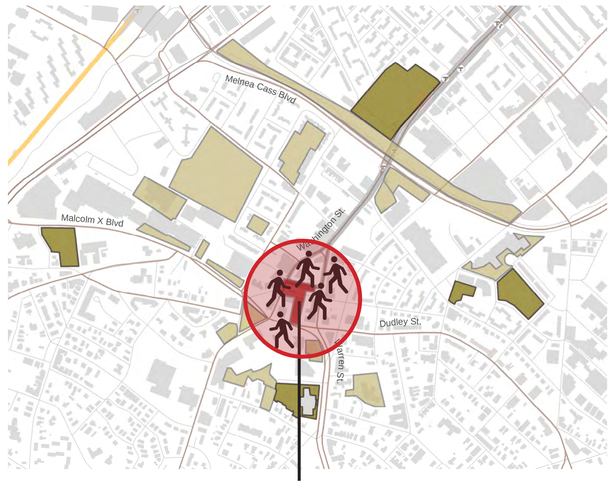
- Metrics derived from Project for Public Spaces
- Repeated site visits for three weeks
- Web research

PROJECT FOR PUBLIC SPACES

HIGH-PERFORMING SPACES



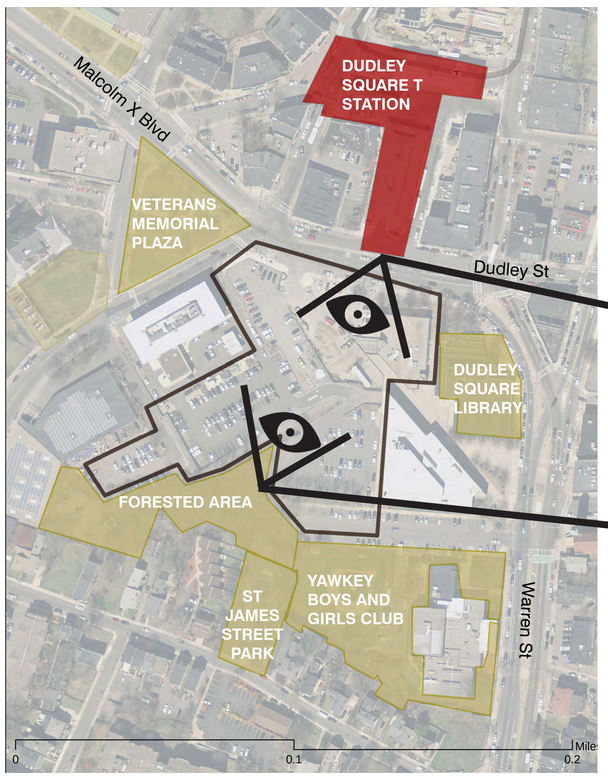
SPACES ARE SEPARATED FROM PEDESTRIANS



SOLUTION: BRING THE PUBLIC TO PUBLIC SPACES

CONCEPT

A multi-use space that connects high pedestrian activity with existing spaces

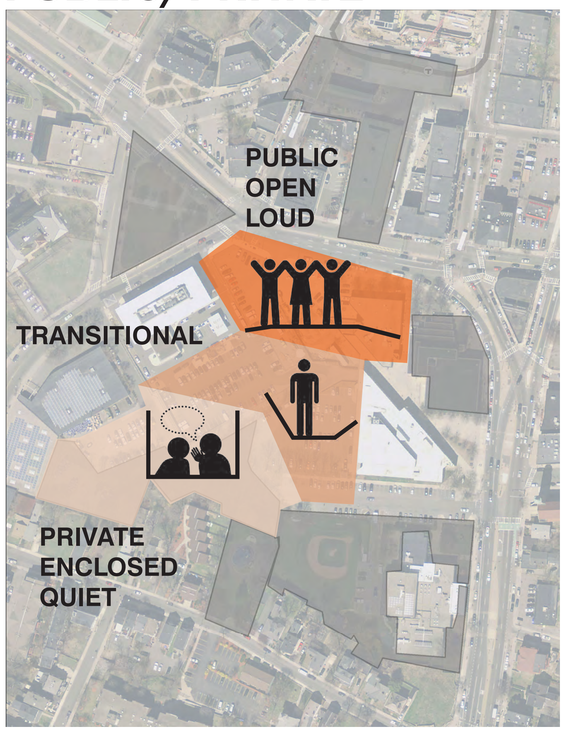


View of focus area from Dudley Square T Station

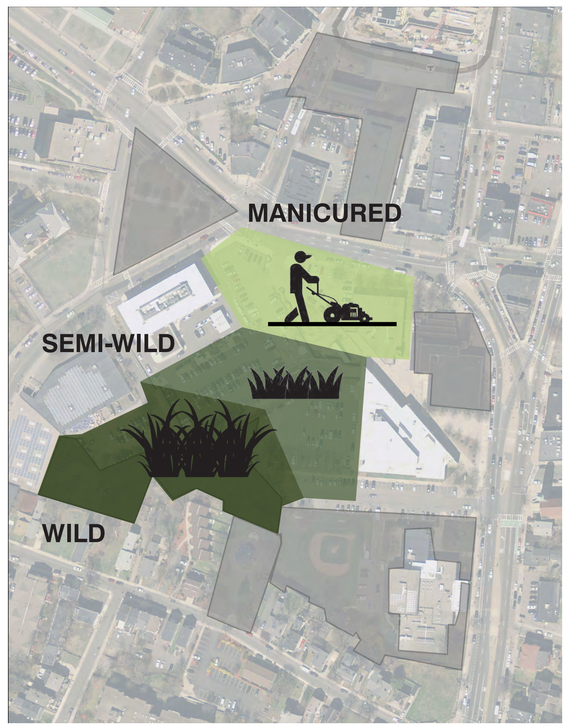
View of focus area from Forested Area

CONNECTING WITH NEIGHBORS AND THE LANDSCAPE

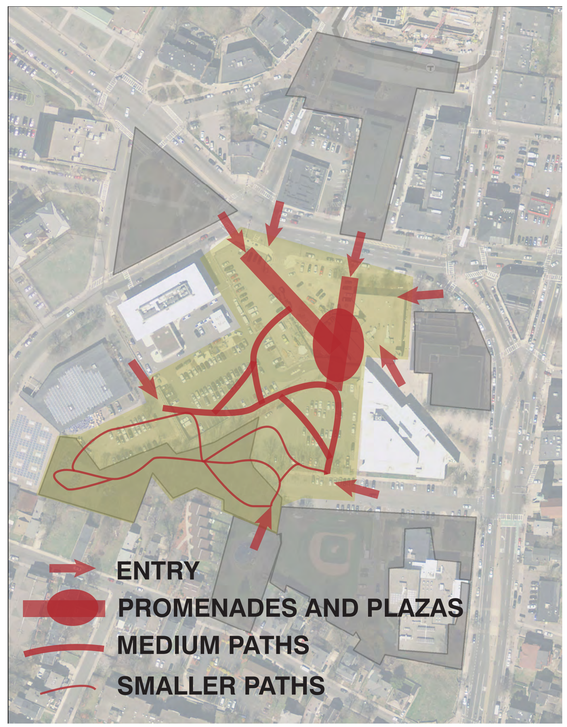
PUBLIC/PRIVATE



WILDNESS



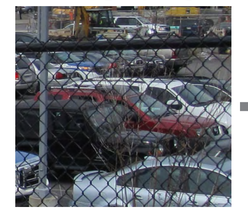
ACCESS & CIRCULATION



PERFORMANCE BENEFITS

SCENIC QUALITY

EXISTING



PROPOSED

RECREATIONAL VALUE

0 user days per year → 4 acres = 5,200 user days per year

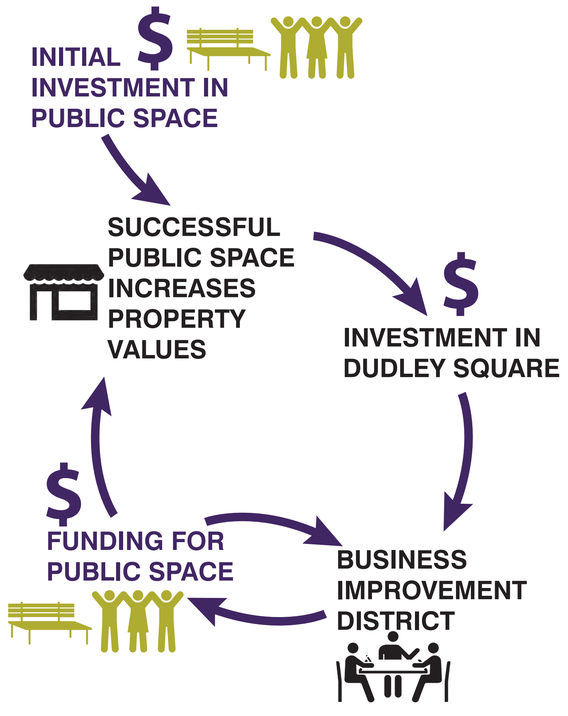
JOB CREATION

0 jobs → 10-15 vendors

3-5 park staff

RIPPLE EFFECT

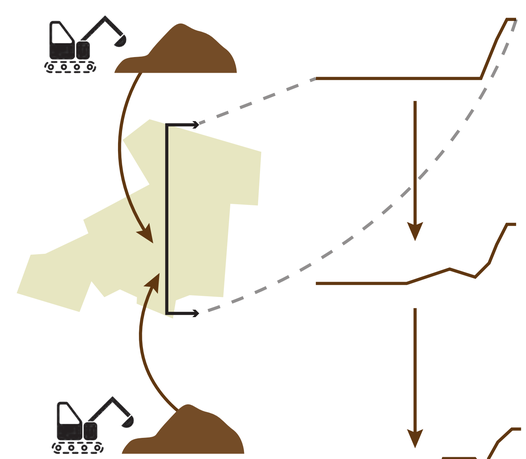
FUNDING



EARTHWORK IN CONTEXT

1 CLEAN FILL FROM NEARBY CONSTRUC-TION PROJECTS

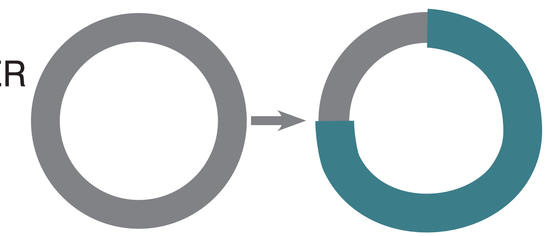
2 MANUFACTURED TOPOGRAPHY CREATES INTEREST



CARBON STORAGE

0 trees → 100 medium trees = 44,000 lbs CO_2 per year

STORMWATER

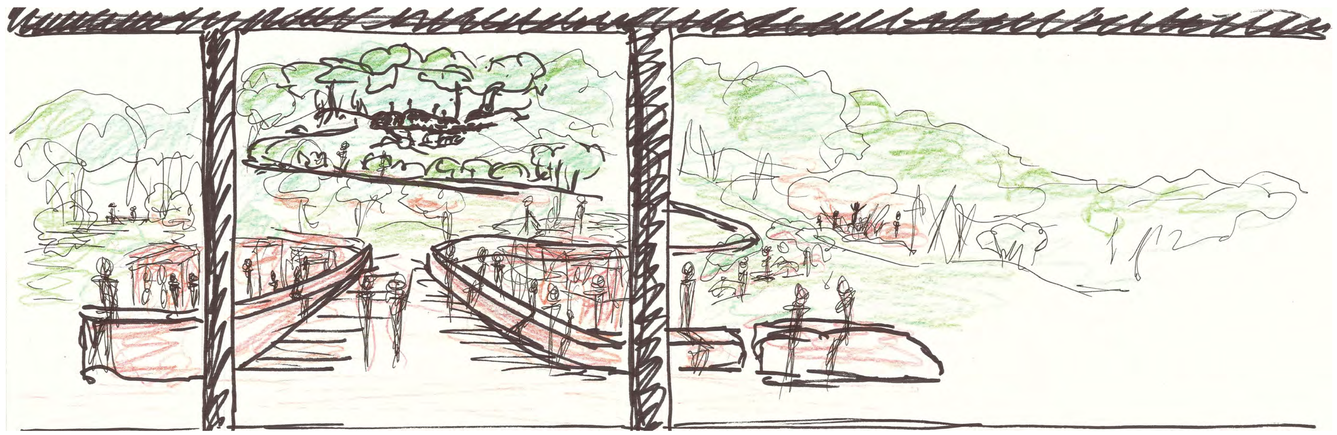


0% permeable → 75% permeable

CONNECTING WITH NEIGHBORS AND THE LANDSCAPE

SITE TRANSECT LOOKING EAST

SITE DETAIL: VIEW FROM DUDLEY SQUARE T STATION



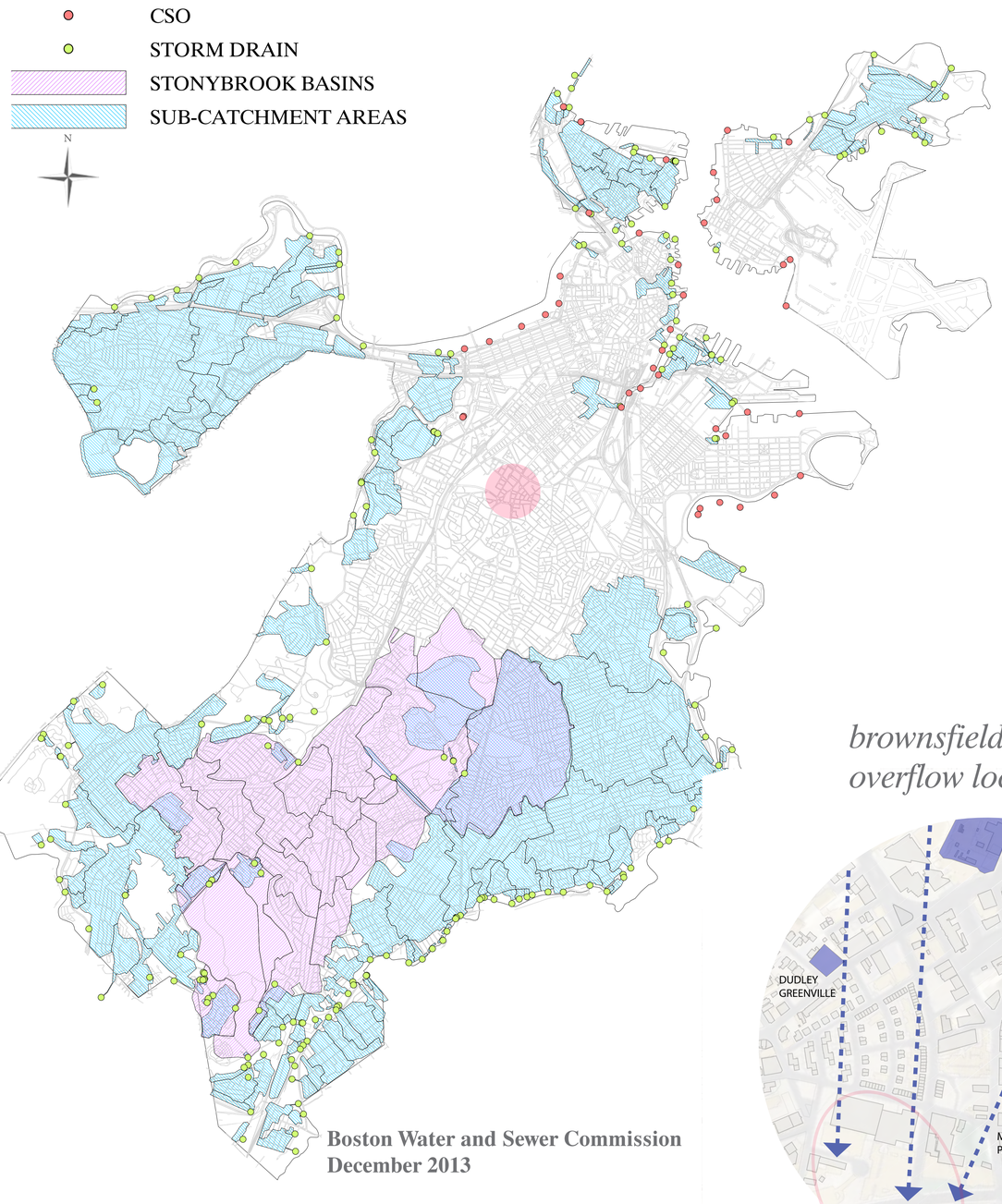
SITE DETAIL: VIEW FROM FORESTED AREA

Puddingstone: Art, nature, playscape, furniture, neighborhood symbol







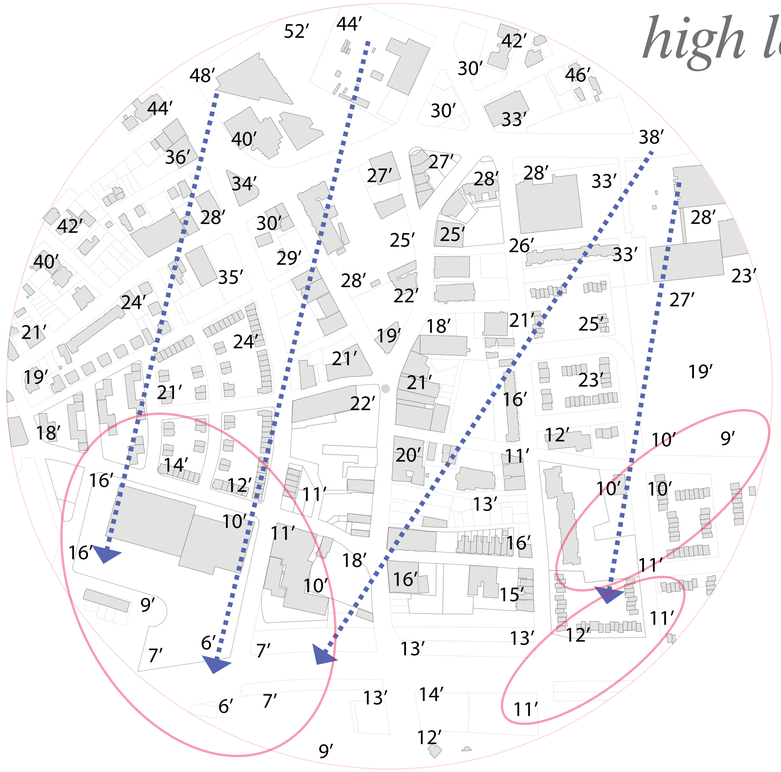



Boston Water and Sewer Commission
December 2013

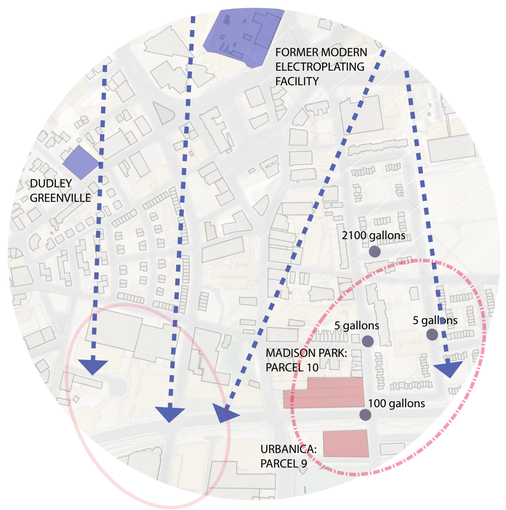
DUDLEY SQUARE SURFACE WATER ANALYSIS

Olivia Fragale MLA Candidate
LAN2001: Ecological Analysis
Instructor Aidan Ackerman

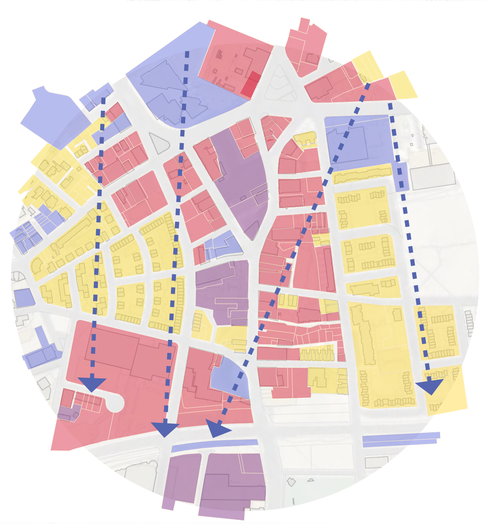
high low elevation



brownsfield site and overflow locations

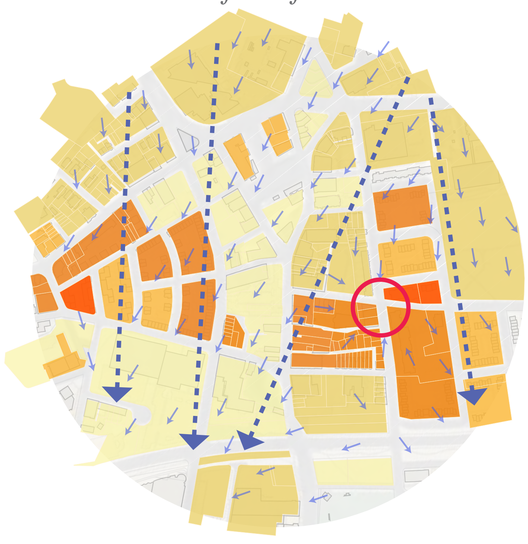


land use flow interactions



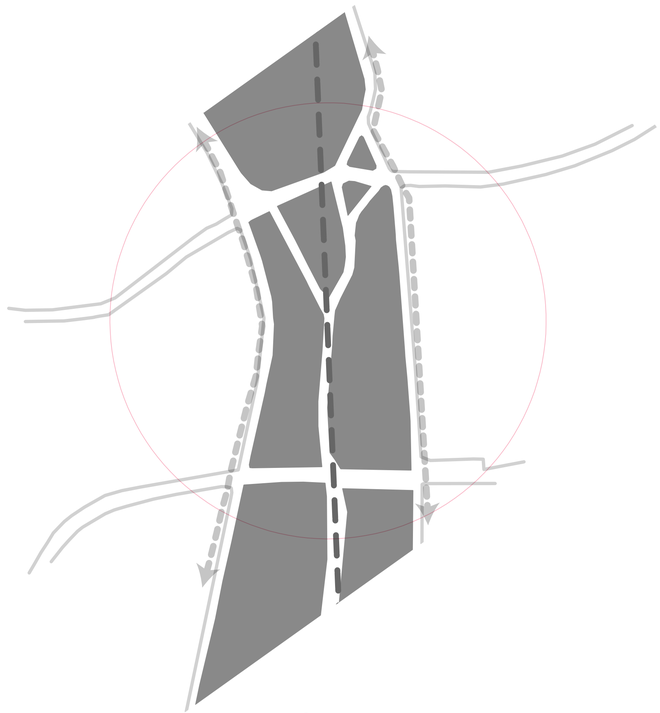
land use
- commercial
- industrial
- residential
- institutional

population and small scale surface flows

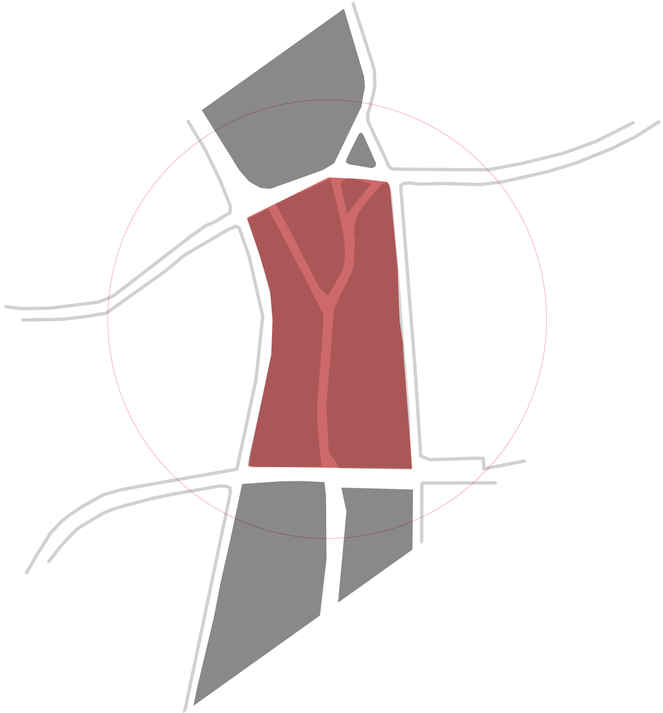


population per hectar
- 0 - 5
- 5 - 50
- 50 -100
- 100 - 200
- 200 - 300

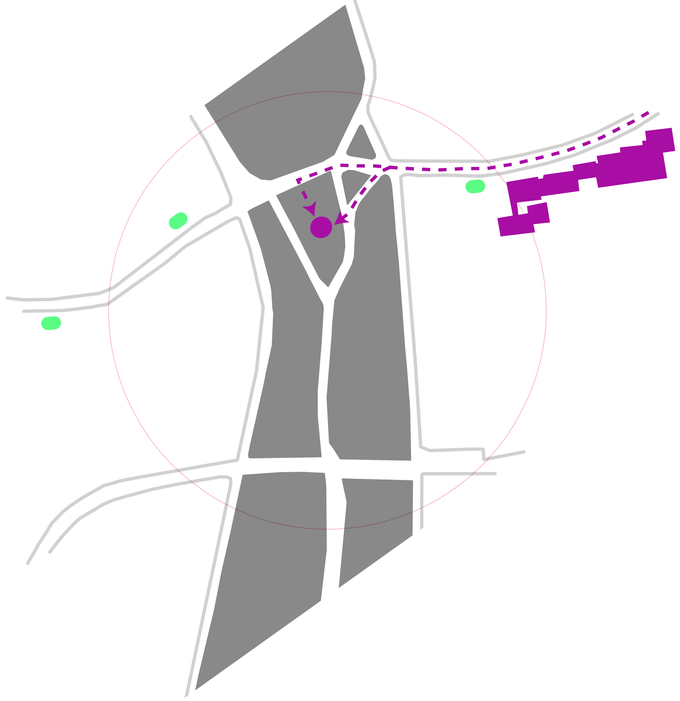
SPATIAL ANALYSIS



main corridor



active artery

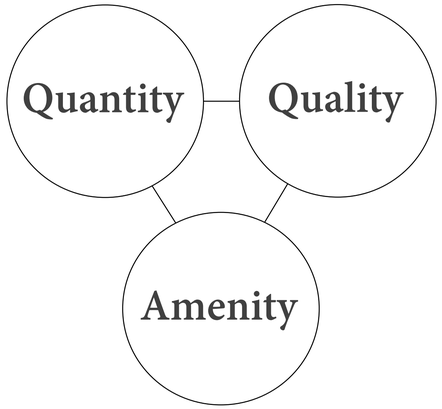


educational access

community link

PERFORMANCE BENEFITS

urban drainage triangle

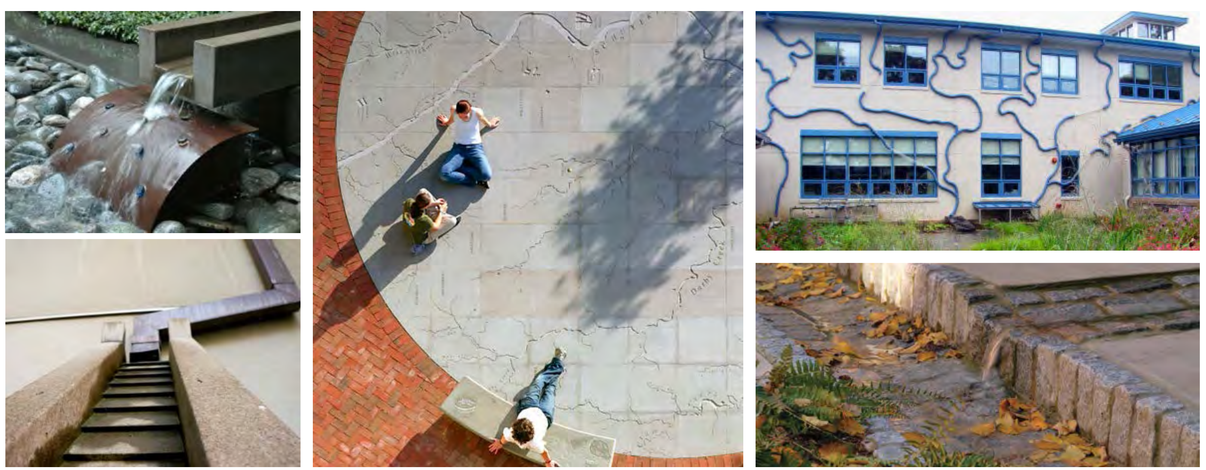


UTILITY
hydrologic function as protection

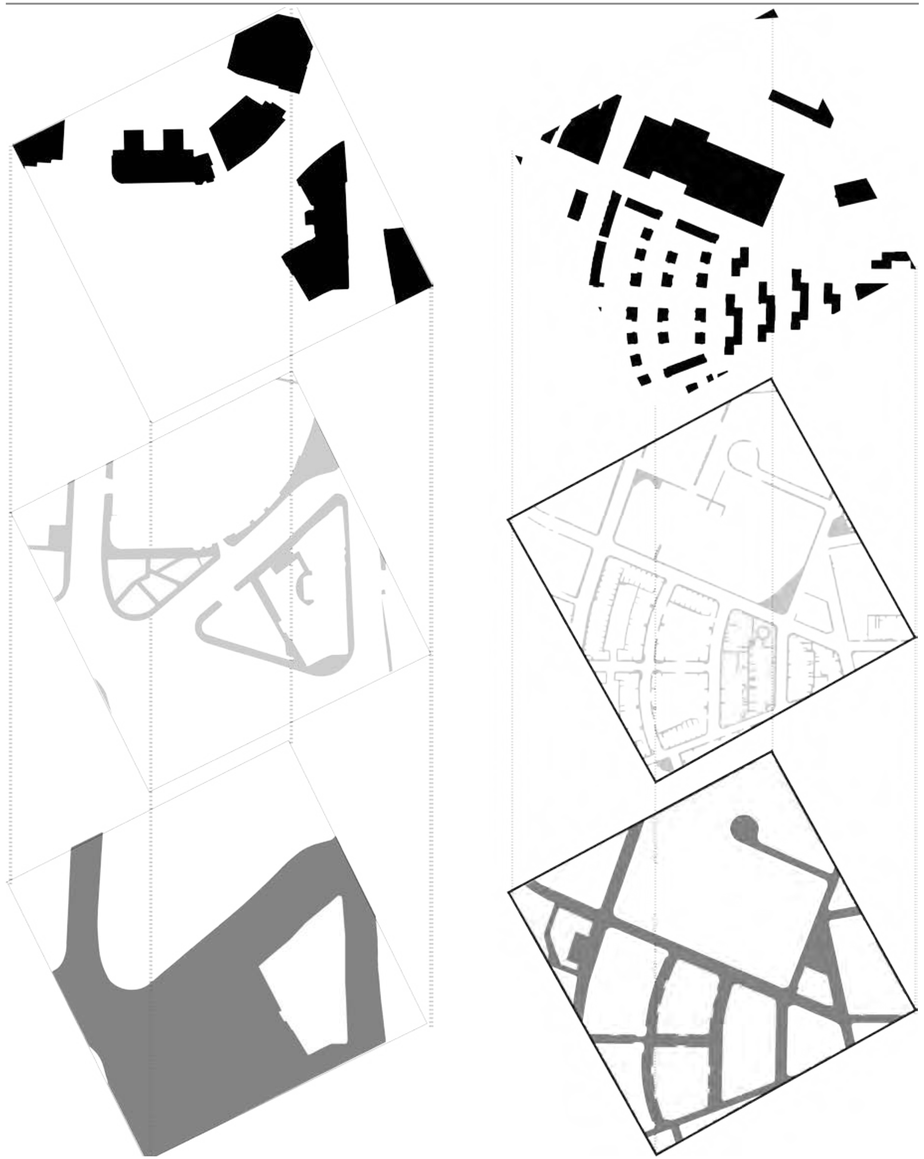
EXPERIENTIAL
context for learning

PUBLIC
statement of values in shared spaces

inspiring precedent



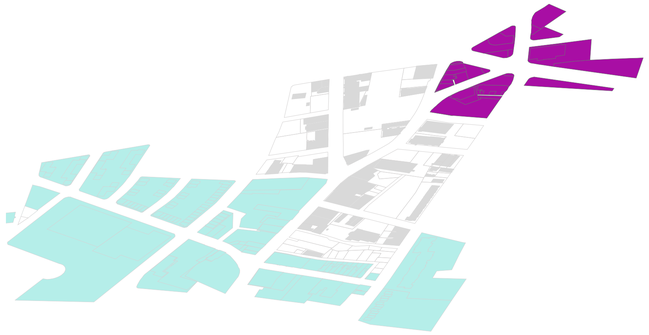
surface relationships



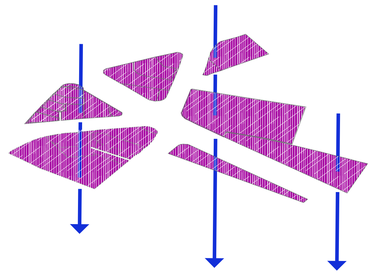
Gross % of Impermeable Cover	Gross % of Permeable	Average User Characteristics
ROOFS ROADS PARKING SIDEWALKS	MOWED GRASS ABANDONED GROWTH STREET VEGETATION	GROSS LOT SIZE DENSITY PER GROSS ACRE SEWAGE GENERATE GAL. PER DAY

CONCEPT

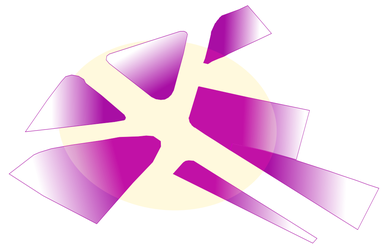
opportunity one



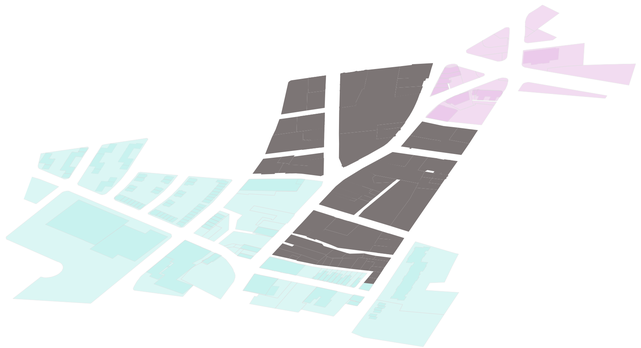
FILTRATION



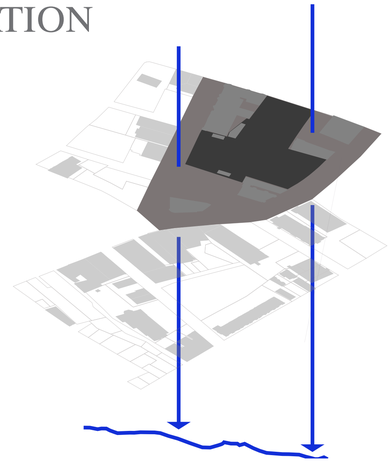
GATHERING



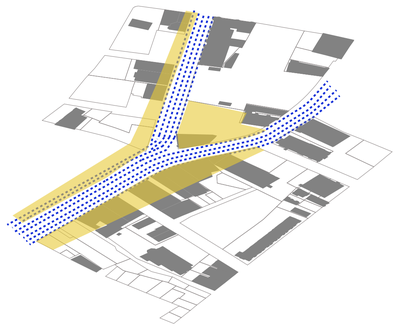
opportunity two



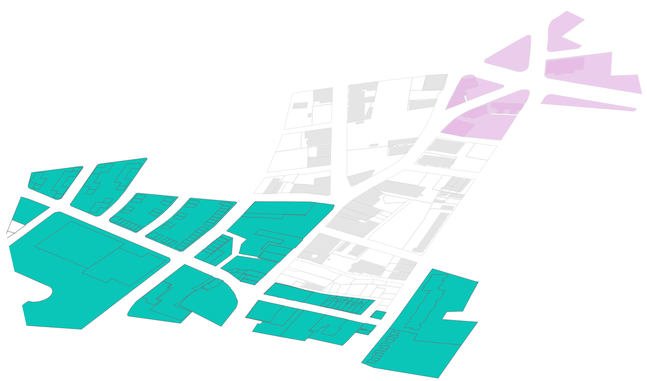
INFILTRATION

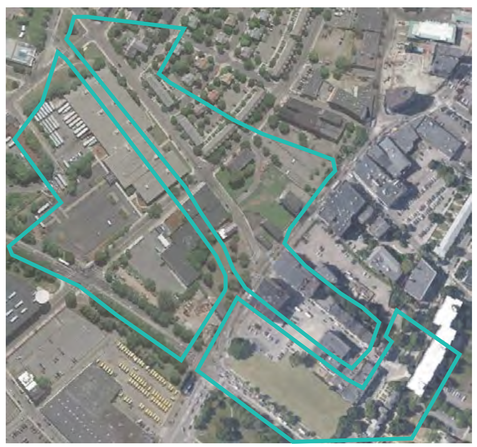


VISUAL CONVEYANCE

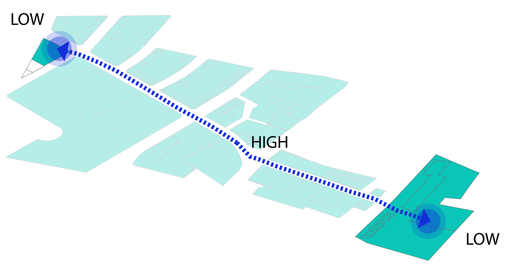


opportunity three

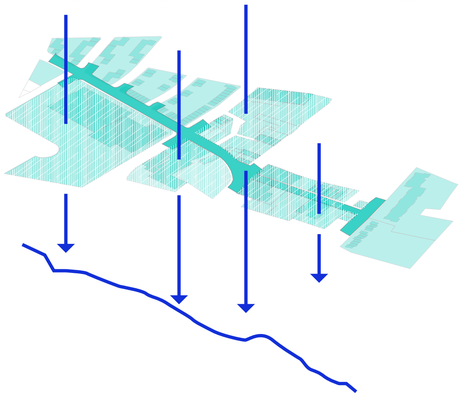




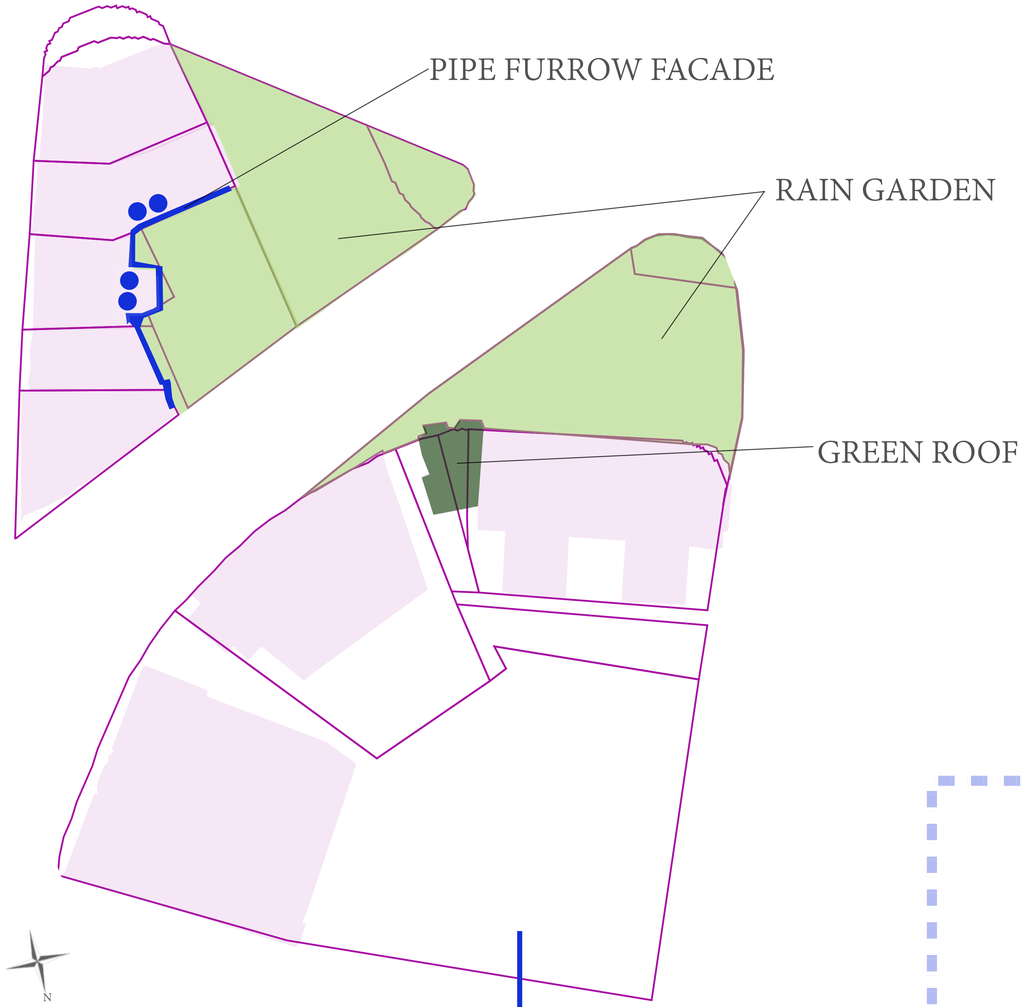
CONVEYANCE TO RETENTION



FILTRATION TO INFILTRATION

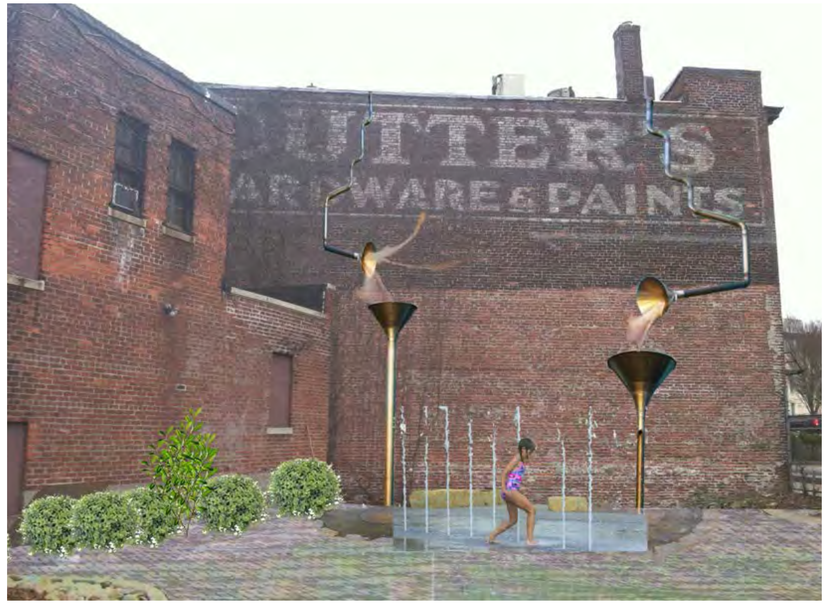


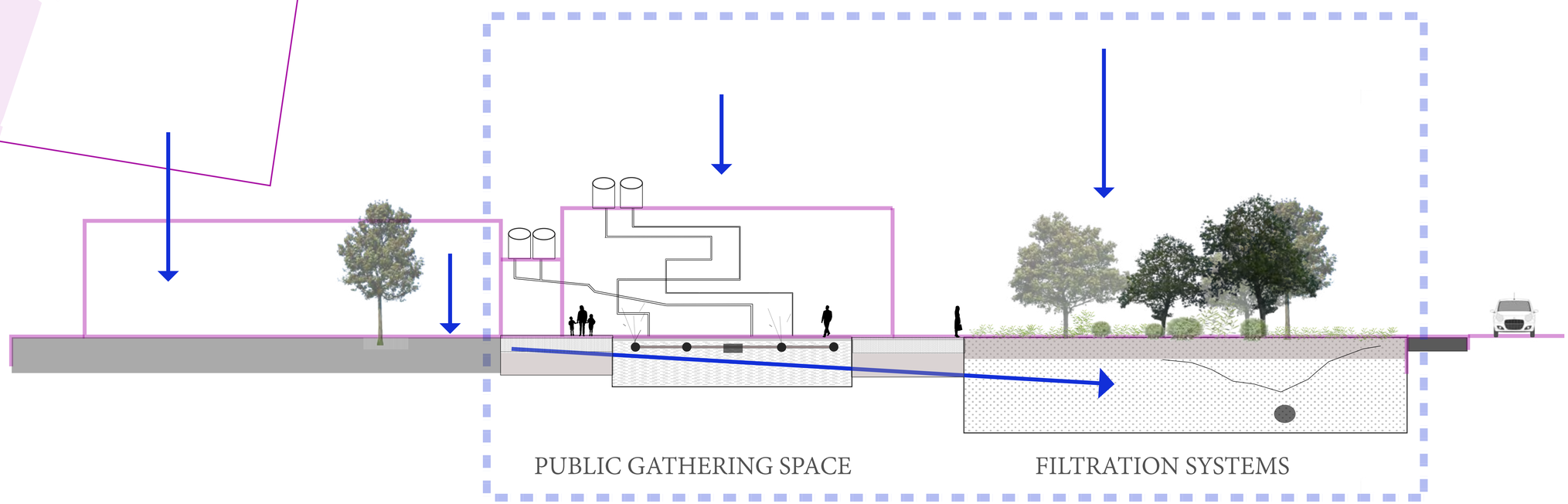
STRATEGIC PLAN: OPPORTUNITY ONE



EXISTING CONDITION

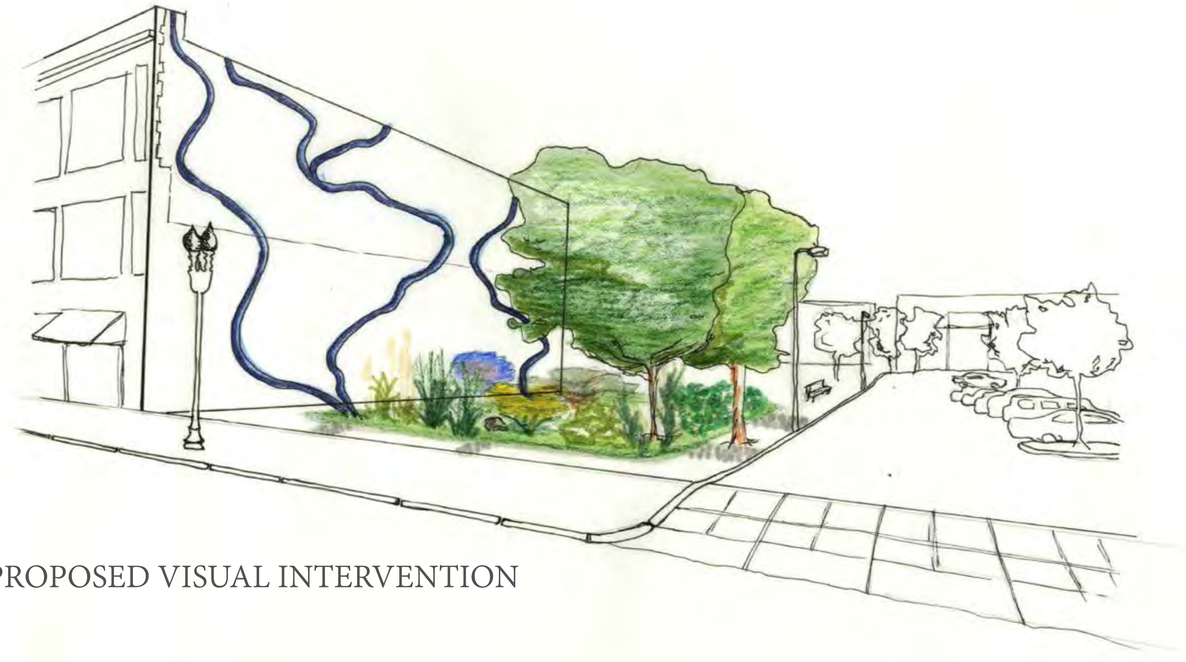
PROPOSED GATHERING





STRATEGIC PLAN: OPPORTUNITY TWO

EXISTING STREET FENCING



PROPOSED VISUAL INTERVENTION

STRATEGIC PLAN: OPPORTUNITY THREE