DESIGNING THE ARC OF RECREATION

THE RAILROAD TRAIL FROM ARMORY STREET TO STATE STREET - A VISION FOR
THE MC KNIGHT URBAN COMMUNITY
Arc of Recreation

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Acknowledgements

The Department of Landscape Architecture and Regional Planning is excited about working in the Springfield urban community. This City has already made many good decisions and we see first positive results. Our mission is to catalyze meaningful projects like the Rail Trail and raise their priority for City politicians and planners. The realization of the ARC OF RECREATION can help the City of Springfield in reshaping their great city and their great neighborhood. The work of the Senior Urban Design Studio 2008 describes a comprehensive and process-oriented way with various facets that is documented in this report.

We want to thank the Springfield Department of Planning & Economic Development for their great support.

We specially thank Scott Hanson for his enthusiasm, personal input, and great cooperation on this project.

We thank Michael Tully from the Springfield Parks Department for coming to our reviews and promoting the trail.

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We thank the many people from the McKnight community for sharing our ideas and their hearty welcome.

We also thank the faculty of the Department of Landscape Architecture and Regional Planning for participating and contributing their valuable comments during our studio reviews and our office staff to print out this report.

I thank my colleague John Taylor for the great collaboration and our teaching assistant Neal Overstrom for his tireless mentoring and advising.

I thank all the Senior students in this Urban Design Studio for their great work, passion, and dedication.

We hope our Urban Design Studio could contribute to make the ARC OF RECREATION happen and the McKnight community a great place in Springfield.

Prof. Frank Sleegers, Amherst, February 2009
The primary goal is to design an urban recreational trail as an intriguing amenity for residents and visitors of the Mason Square neighborhoods and the people at all Springfield. The secondary goal of this studio is to understand this project area as a system in the urban fabric and to develop a design that expresses a vision for Mason Square as a sustainable urban community.

Studio Objectives
1. Create design concepts for the abandoned Highland Division Railroad corridor from Armory Street to State Street as the beginning of a new spine for Mason Square – the ‘arc of recreation’. This spine should enhance the activities of the adjacent neighborhoods and should establish a coherent local network of open space.
2. Develop a vision for the entire Highland Division Railroad corridor that connects to the regional and city side Open Space and Trail system. Base your vision on proposals for zoning, land uses and open space.
3. Design legible gateways for how the proposed rail trail would connect to the Armory Street in the West and the State Street Corridor at Mason Square/Edisonal Corridor in the South.
4. Integrate significant historic buildings. Propose locations for planned buildings as infill to create architectural edges. Reorganize parking and service areas at Mason Square.
5. Explore strategies to use the rail trail corridor for urban storm water management, brownfield mitigation and other means to create a sustainable urban system.
6. Acknowledge and support the ethic and cultural variety in the Mason Square neighbourhood with specific design ideas.
7. Develop cost estimates for the developed design areas to support the realization of the project.

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Studio Format and Learning Objectives
Urban Design is founded in a systematic understanding of the urban fabric. It investigates urban form; it describes existing land uses and the relationship to transportation and circulation systems; it analyzes open space systems and proposes visions and process-oriented strategies for urban communities. Specific tasks for the students were expressed:

- The design is explored through a simultaneous use of plans, section and three-dimensional work models.
- Interviews with the client and the users are applied to establish a robust design program.
- Intensive individual observations and sketching on the site complete external site data.
- Specific case studies create a reference to support the design ideas.

Specific Learning Objectives
Open Space Network
- Create clearly defined nodes of open space as gathering areas for people.
- Determine Open space corridors including sidewalks as pedestrian corridors and part of the open space network.
- Identification of areas where this system needs to be improved.
- Create a hierarchy of open space nodes and corridors.

Landuse and Zoning
Understand the relationship between land use and zoning. Where do people live and work, where do they go to school, where do they shop or go out and how do they get there?
- Analyse existing land uses and develop a vision for a land use pattern that envisions future development and integrates existing land uses identified undesired landuses.
- Develop a design concept that is based upon your visionary land use pattern. Describe zoning proposals as a planning tool that supports a design vision.
- Integrate the landuse vision with the vision of an open space network.
The Senior Urban Design Team and delivered Products for the McKnight Community

Delivered Products
- Regional and City Context M 1” – 500’ for the Open space system and diagrams
- Base Model M 1” – 100’ with topography
- Masterplan M 1” – 100’
- Design Concept Plan M 1” – 20’ for focus areas:
  - Agnew Street, Dingle
  - St. James Ave, Bay Street, Mason Square, St. James Ave
  - Perspectives and vertical topologies as specific anomalies
- Concept for the final phase M 1” – 10’
- Report with selected material submitted to the Office of Planning

Context of the Mason Square Area, History, and Community

Springfield MA in Western Massachusetts was founded by William Pynchon in 1636 and became an important city for industry and manufacturing since its establishment in 1783 as the United States Armory. The decline of industry in the United States after the Second World War and the closure of the Armory in 1968 affected the economy of Springfield heav-

The new Federal Courthouse is great architecture that
- New trends in Springfield are quite positive:
- The old Basketball Hall of Fame has been turned into a Health Spa with mixed retail and provides work for 100 people.
- New firms in Springfield engage in Biotechnology.
- The whole 3.2 mile long State Street corridor is under redesign for $13,000,000.
- The Main Street corridor has been or is in the process of being upgraded.
- The new Federal Courthouse is great architecture that already has an positive impact on the development of the surround ing neighborhood.
- Many new owner occupied houses in Old Hill have been built, many street trees have been planted.

Springfield with a 350 year history needs to showcase its cities assets to be
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- It is crucial to remark that Springfield’s once affluent property and homes. Our project area, the Highland neighborhood of Mason Square, is about 1.8 miles or 35 walking minutes away from the Connecticut River. The Highland Division Railroad Corridor has been abandoned for decades. Recent incentives of the Highland Neighborhood Council propose to turn this corridor into a Redevelopment/Bike Trail. Much of Springfield’s property borders the Rail Trail, therefore the Rail Trail can be used to revitalize the community, neighborhoods, mixed properties and the Economy.
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Site Analysis and Assessment - Understanding the Area and the Site

Context of the Mason Square Area, History, and Community

Median Household Income
McKnight is one of the poorer neighborhoods in Springfield with a median household income of $21,810 (Citywide - $30,417). 4.881 people live in McKnight with a decrease of 7% from 1990 - 2000. 50% of McKnight are African American. Most of the people identify themselves strongly with the McKnight neighborhood.

Community Conversation
We have conducted several interviews with stakeholders and people from the Mason Square community and asked them about the rail trail. They expressed very different opinions.

Many expressed favoring arguments:
• They are excited about this rail trail.
• Bicyclists are interested in a connection downtown leading nearby towns, Agawam, Chicopee, Northampton and Hartford.
• Residents expressed enthusiasm to walk their dogs. They want a place to walk, bicycle, and take their kids and pets to.
• Residents are aware of the crime and hope something like the rail trail will help out by bringing in people.

Others expressed concerns:
• Most people don’t know where its located.
• Safety is very important, currently people don’t feel safe entering the abandoned railway at all.
• Railway is not frequently talked about, therefore residents know little about the site.
• Residents fear connection at Mason Square will open door to more violence and cause traffic problems.
• The present corridor is a physical barrier that splits the neighborhoods.

Recommendations
To make the Arc of Recreation a success it has to be much more part of a public conversation. The discussion has to be held in the community where the various activities on the future trail can be debated. We were overwhelmed with the great presence and feedback that we got from a public presentation to the McKnight neighborhood on October 22 on Girard Avenue. We think that the McKnight community is ready for the trail as a shared use pathway.
Site Analysis and Assessment - Understanding the Area and the Site

Trails, Road Network, Public Transportation and Connectivity, Open Space System

The street system in the four neighborhoods in relationship to the Rail Trail can create a coherent open space network.

Four gateways from the street network to the Trail have to be designed, a coherent network across the Trail established.

Transportation network: Local and regional buses

Regional Trail System - Open Space Network

The Arc of Recreation is a crucial piece to connect the neighborhoods of Springfield's larger downtown area to the Connecticut Riverwalk and other regional trail systems. The Mason Square neighborhoods are missing a coherent open space network with parks and greenways that could create a better community. There is a real opportunity to use vacant and underutilized lots. These need to be designed and connected.

We identified the abandoned Highland Division Railroad corridor as the green spine of the four Mason Square neighborhoods. It will connect the neighborhoods as a linear park, but connection to the Rail Trail is the key. The four gateways from the street system in the McKnight neighborhood and the "Dingle" should be designed as attractive handicapped accessible entrances to the Arc of Recreation.
State Street, from the Central Business District to Boston Road, is a critical urban corridor. The city finds that an interim overlay district for this corridor is necessary to promote increased future commercial and civic activities along this currently forgotten and crucial city crossroads (Mason Square). The overlay seeks to create a much more defined commercial edge along the State St. corridor.

- Zoning currently does not provide planned direction to develop a community in Springfield, because of lots of special permitting.
- Lack of certainty about land use and permit process may inhibit investment.
- Little design guidance for “in fill” redevelopment.

We recommend to strictly reinforce Business A and create a form based overlay district on State Street.

Zoning districts in the four neighborhoods of Mason Square

Zoning

Major land uses in the project area

Land Use

Future land uses should be supported
- Sense of place and community
- Open space connectivity, pedestrian friendly environment
- Appreciation of unique history
- Mixed Use incentives to increase density

The Mason Square area at State Street/Wilbraham Road has some land uses that are inappropriate for a center of a vibrant community. The majority of commercial uses are very auto-oriented with long frontages and areas of parking. We recommend decentralized parking areas and on-street parking that would support local businesses but are pedestrian friendly at the same time. A minor issue are the dominating institutional land uses in the core area of Mason Square. Frequented during the daytime, they are closed in the late afternoon and on the weekends. We recom
Watershed and Topography - Contamination and Remediation

The water quality of the Connecticut River and the Mill River is poor due to a number of Combined Sewer Overflow Outlets. Much of our design area has impermeable surfaces. Our proposals seek to reduce stormwater run-off on site via infiltration into the ground and reduction of impervious surfaces. The Arc of Recreation is a suitable area where infiltration could be showcased and become an amenity. Simultaneously it could reduce Springfield’s problem of polluting its rivers and streams after heavy rain storm events.

Topography and the local Watershed

The major part of our project area is located on an upper terrace that is located east from downtown. Over a length of about 1.8 miles it has elevations from 236’ in the north to 196’ in the south. The lowpoint of our area with 137’ is located at Agnew Street/Armory Street where some of the design proposals seek to manage stormwater runoff by infiltration into the ground.

Phytoremediation is a process-oriented and aesthetical pleasing tool to remediate brownfields

Contaminated areas adjacent to Armory Street need to be remedi-ated to become suitable areas for future development.

Site Analysis and Assessment - Understanding the Area and the Site

Permeable and unpermeable surfaces in the four neighborhoods

Major topography of the study area

Enclosed profile of the corridor at St. James Ave.

Combined Sewer Overflow Outlet (CSO)

Sheet Flow

Channeled Flow

Rivers and streams in the Springfield area

Rivers and streams in the Springfield area
The larger vacant lots towards the periphery of the neighborhood could be revitalized as urban farms, operating in much the same spirit as the community gardens but on a larger scale. As a whole, these positive efforts would build a stronger, safer community within McKnight, getting people out and into the neighborhood, working together to change their landscape into something that is productive and beneficial to all. A rail trail serving a neighborhood that is a strong community would be a safer one. A series of open green spaces connected by the rail trail would become a venue for art in the community. A program to encourage local artists, children, and residents to paint murals or make sculptures for the trail would give the people of Mason Square and McKnight a true sense of ownership and pride in this recreational corridor. The very nature of a recreational trail for biking, walking, jogging, and moving between a connected series of open spaces would encourage an active and healthy lifestyle. Spaces for basketball, handball and other activities would further encourage children to play outdoors. And gardening, as an outdoor activity itself, would be an additional form of active outdoor recreation people would be able to participate in.

Map of proposed land uses in the McKnight neighborhood

Matt Crete, Siu Fu Lau, Zeena Hutchinson, Dan Shaw

Building Community Through Landscape: Urban Agriculture, Community Art, and Active Recreation

This project uses the City’s interest in the McKnight Rail Trail as an opportunity to address the more fundamental issues in the neighborhood, by building community through landscape. With a rail trail design that is also a neighborhood master plan, this project speaks to hunger, nutrition, crime, poverty, pedestrian and bicycle connectivity, abandoned land, and stormwater management, in an implementable strategy that calls for community involvement. Based on statistical evidence and concerns revealed in conversations, crime and safety is a fundamental element that would have to be addressed if the abandoned rail corridor around McKnight were ever to be developed into a recreational trail. The concept is to build community through solutions in the landscape, via urban agriculture, community art, and active recreation. By revitalizing abandoned lots within the neighborhood into community gardens, to be designed and run by residents of McKnight, the people here will be able to grow nutritious food within their neighborhood, helping feed themselves as well as selling their products at the Mason Square farmer’s market; supplementing local income, and particularly, local food availability.

The Rail Trail, Green Streets, parks and vacant lots are building community through landscape

Master Plan: Urban Agriculture, Community Art, and Active Recreation

The Dingle

Taylor Street

St. James Avenue

Rail Trail Arc of Recreation

Rail Trail Arc of Recreation

Agnew Street

Albany Street

Magazine Street

Armory Street

St. James Avenue

State Street

Dartmouth Street

Bay Street

Wilbraham Road

State Street

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Map of proposed land uses in the McKnight neighborhood
Landform and water become an experience along the Rail Trail and create gateways to the community.

Sketches explore typologies of spatial experience along the Trail.

Landform and Water Park.
Building Community through Landscape: Urban agriculture and community art. Examples from an inspiring field trip to Philadelphia established the framework for this design proposal.

Drive-in movie theater, urban agriculture, engagement of industrial structures and recreational activities along the Trail transform vacant land into meaningful places.
An outdoor community art gallery in planted cabinets is the gateway to the Rail Trail from Bay Street.

Rain gardens along the Trail engage the community with natural processes.
The Arc of Recreation connects to Watershops Pond in the South.

In the heart of Mason Square a diverse mix of activities will make this area into a vibrant place.
Chris Boshar, Mike Coffin, Shawn Klinger, Josh Pettit
A Wooded Walk within the City

This project provides ecological, educational, recreational, and utilitarian functions to the residents and visitors of the City. The Rail Trail is a proposed linear greenway to accommodate walkers and bikers and other recreational uses. On the City scale it establishes a greenway connection between the Connecticut River and Watershops Pond. The Watershops Pond is a potential terminus for the Rail Trail and could be developed as a waterfront park that creates access to the water. The Mill River was also indicated as an important greenway that connects to the Connecticut River and would close the loop.

This design creates an experience in an urban setting. An educational arboretum and educational facilities along the trail encourage to use and discover the Rail Trail as a whole piece. This design references the industrial era that was meaningful for the City. The Trail connects neighborhoods and offers safe ways to school and work. Green Streets with narrowed car corridors offer bike lanes and create access to the trail.

Urban infill is proposed on State Street in a way that it respects existing businesses and institutional uses. At Agnew Street a mix of affordable and market rate housing is proposed with ecological design principles.

The pattern of trees, steel rail, and concrete will be utilized as a way-finder along the trail to notify the user of their proximity to a notable space. It will break up the continuity of a linear trail while utilizing a material that was once used along this corridor to subtly embrace the history of once was.
Chris Boshar, Mike Coffin, Shawn Klinger, Josh Pettit

The industrial revitalization process is a necessary aspect as a vision to complete the northern border of the Arch of Recreation. The area will be redeveloped as an ecological example for similar sites in the future and will be based on previous projects of green industrial revitalization. The majority of stormwater will be treated on site and all of the impervious parking surfaces will have bio-swales and water retention basins to avoid unnecessary infrastructure and storm-water overflow. This redevelopment will serve as the first step in incorporating the industry into the proposed trail. While we cannot immediately change the users of the area, the recharging of stormwater and propose water management will be the first step to attracting new industry into the area. To further the green industrial development, infill and new construction will all be built to LEED standards and include alternative means of energy, green roofs, and water recycling efforts. The path finder will complement the educational walk while helping to create a narrative walk along the way. It serves as a guide to the trail while also incorporating historical references in both its design and the story that it tells.

Community Gardens

The addition of community gardens throughout the McKnight and Bay neighborhoods will add beauty that can demonstrate the great diversity of plants that grow in the neighborhoods as well as the potentials that the gardens will be constructed on vacant lots that were strategically selected to serve different street blocks and communities. These gardens will provide opportunities for people to grow plants and vegetables and grow personally through healthy activities. The gardens will add an opportunity for people to be educated about the process of growing. The addition of these gardens will encourage the involvement of all different people and cultures to “keep the garden alive and growing.” Plants and vegetables can be used by the active participants in the community gardens as well as friendly competitions that would be held to promote the interaction and growth of the community as a whole.
As an aspect of an educational corridor the ecology walk utilizes the water which is currently retained on the site and transforms it into a celebrated experience that adds aesthetic, educational, and functional value.
Arc of Recreation

Chris Boshar, Mike Coffin, Shawn Klinger, Josh Pettit

Sectional Elevation facing South at Armory Street - Market rate housing

Sectional Elevation facing North at Armory Street - Market rate housing
Zach Beaulieu, Mike Curadossi, Dan Neviackas, Carl Saccone

Recreation, Education, and Leisure to connect the divided Neighborhoods

The design proposes a railroad trail that creates destinations for recreation, education, and leisure and unites four neighborhoods with a linear park. The new Boulevard on Armory Street is closing the Arc of Recreation and reconnects with the State Street corridor. Market rate housing can be established when the area is revitalized. Activities on the trail tie into the neighborhood. A wooden deck will connect the Dingle with the new trail and offer a walk through the tree tops. Crossing Bay Street a gateway with sitting areas and a grove of trees invite the residents from the neighborhood to gather. The Rebecca Johnson School is a K-10 school that focuses on visual arts, temporary art and art education. This design expands this education to outdoor classrooms close to the bike trail.

In the Mason Square area the design emphasizes on urban infill and alternatives to the current road network. Reduced vehicular travel lanes allow for bike lanes and angled parking with bump outs the tease pedestrian movement. Mixed uses for the buildings include a library in the old Indian Motorcycle building. The old Firehouse is used as cafe on the first floor and offices above.
Zach Beaulieu, Mike Curadossi, Dan Neviackas, Carl Saccone

Shared Pathway for all generations

Armory Street facing North as a Green Boulevard
Walking across the Dingle

Gateway from Bay Street to the Arc of Recreation facing North
Art along the Arc of Recreation creates identity.

Adaptive Reuse of the vacant Old Firehouse with mixed uses reactivates Mason Square.

Outdoor classrooms are created close to Rebecca Johnson School and explore art and creativity.

The Arc of Recreation is connecting Mason Square and unites the neighborhoods.
Remediation in Motion - Riding the Bike on the Trail is putting everything to Motion.

The goal of this proposal is to design a rail trail that will successfully unite the four target neighborhoods as well as Mason Square and the Educational Corridor. This design proposal is pursued a 2-phased strategy. The first phase is cleaning up contaminated areas with phyto- and bioremediation. The second phase is a low-impact industrial revitalization with smart stormwater management, native plants, and sustainable practices. Following action agenda is identified:

- Design a rail trail that will successfully unite the four target neighborhoods as well as mason square and the educational corridor.
- Manage storm water from impervious surfaces in developed areas in efforts to recharge the groundwater.
- Create clear entrances to the trail at intersections with major roads and using art throughout the arc of recreation to support our theme.
- Create proper signage at entry points to help the trail users understand where they are on the trail and where they can connect to other districts.
- Remediate the contaminated areas along the trail (Brown Fields) for future development for recreational use.
Stormwater Management
This design is approaching a mix of tools and devices to reduce stormwater runoff: Pervious asphalt parking lots, curb cuts, plants that filter and clean runoff from the streets. Rainwater is kept on the site for infiltration. This efforts will reduce the amount of water that is channelled through the pipes and will reduce the number of stormwater events that will charged into the Combined Sewage Overflows (CSO’s).

Industrial Landuse and Clustered Housing
This design fosters new, clean industry as a modern and more sustainable model for the City of Springfield. It also seeks to be compatible with residential landuses. On Agnew Street we propose clustered housing with a mix of market rate rented units and owner occupied houses.
Mason Square
In the center of Mason Square this design proposal seeks to improve the quality of living, working, and shopping in a mixed use scenario. On the southern side of the Indian Motorcycle building the first floors get small private gardens. On the upper floors balconies in the courtyard offer outdoor space. Prominent areas such as the edges that face the rail trail and State Street are used for retail, offices, and gastronomic. The first floor on State Street is recessed to offer a gallery walk that invites for walking and keeps people apart from the highly trafficked street. Ample on-street parking on Wilbraham Road and State Street is reducing traffic speed and supports small local businesses. Urban infill is creating architectural edges that define the street and improve the spatial experience of the pedestrians. Parking of infill development is accommodated on dispersed parking lots with tree plantings. Stormwater Runoff is directed to open swales or infiltrates the porous surfaces.

Public Art
Public art can draw people into the area. To be successful it has to accompany people on the trail and be part of the streetscape. It should be a unique experience for problematic areas like underpasses and encompass vacant buildings. Public art can also describe pathways and tell people where to go as a means of orientation.

The courtyard of the Indian Motorcycle Building will become a livable outdoor space.

The State Streets Arcades create a walkable corridor. Mixed landuses will revitalize the Indian Motorcycle Building. Balconies and small garden plots will create usable open space for the residents.
Brandon Breau, Chris Cyr, Jon Petty, Vardan Hovhannesian

The Arc of Recreation: Natural Walk - Community - Industrial Heritage as a Choreography of Experience

This proposal seeks to create a choreographed experience along the Arc of Recreation that focuses on the landscape as the primary medium to revitalize the community of the McKnight neighborhood. This includes efforts to increase private open space: Private gardens are proposed for the high density apartment buildings on Girard Avenue. The design proposal complemented by the implementation of a green streets network that identifies the major neighborhood roads as streets that easeify walking and biking. The intersections of trail and streets become gateways and landmarks at the same time. The design is goaled to stop the dominance of the car in the city.

First visual design typologies demonstrate that furniture and materials are playing an important role in shaping the Arc of Recreation as a continuous experience.
Brandon Breau, Chris Cyr, Jon Petty, Vardan Hovhannesian

The Arc of Recreation as a linear park is shaped by series of spaces defined by landform. This park engages visitors and residents alike.

Sectional Elevation facing West.

Sectional Elevation facing North. Specimen trees give character and atmosphere.

Open Space Theater and a Specimen Trees Arboretum connect the Community with Nature
Brandon Breau, Chris Cyr, Jon Petty, Vardan Hovhannesian

Sectional Elevation facing North at Mason Square

Gateway Park at Armory Street

Meeting House at the Gateway Park

Arrival Area
Brandon Breau, Chris Cyr, Jon Petty, Vardan Hovhannesian

Sectional Elevation facing North along Bay Street

Sectional Elevation facing East crossing Bay Street
Arc of Recreation

Brandon Breau, Chris Cyr, Jon Petty, Vardan Hovhannesian

Landform and Trees define the area between Wilbraham Road and State Street
The vision for Mason Square is a mixed use redevelopment. The Arc of Recreation is the connector to an urban plaza in the heart of Mason Square where the historic buildings are seen as an opportunity. Examples from Lowell, MA deal as a paradigm for Mason Square. The old factory buildings were discovered as an asset. This design proposes improvements to ease pedestrian movement that also serves local businesses: ample tree plantings and raised cross walks with light signals are seen for pedestrian movement. A planted pergola is shaping an arc in the third dimension and creates a ceiling.

Along the rail trail there are lots of opportunities for passive recreation: Areas encourage activities like: picnicking and barbecues, soccer, frisbee, sunbathing and others. Other areas are destined as private gardens.

On the trail there are turn tables that connect into the neighborhood and reference the railroad.

At the entrance to the rail trail on Agnew street family friendly market rate row housing is proposed.
Arc of Recreation

Chris Corbett, Mike Elliott, Mason Ovian, Glenn Sovie

Sectional Elevation facing North at St. James Ave

Sectional Elevation facing West along the Trail at the apartments off Girard Avenue
Arc of Recreation

Sectional elevation facing East along the Trail at Mason Square.

Chris Corbett, Mike Elliott, Mason Ovian, Glenn Sovie
## Cost Estimates

### Urban Design Studio

**Date:** 10/22/2008  
**Project:** Arc of Recreation  
**Team:** Neavickas, Curado, Saccone, Beaulieu

#### Perennials

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perennials, 10,000 sf</td>
<td>$9.00</td>
<td>$90,000.00</td>
<td></td>
</tr>
</tbody>
</table>

#### Uplights, medium quality

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uplights, 1,157 EA</td>
<td>$400.00</td>
<td>$462,800.00</td>
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</table>

#### Bollard, steel, heavy, removable for emergency

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bollard, steel, 20 EA</td>
<td>$300.00</td>
<td>$6,000.00</td>
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</table>

#### Park Bench, medium quality

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Bench, 10 EA</td>
<td>$1,750.00</td>
<td>$17,500.00</td>
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#### Chainlink fence, 10 feet high

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chainlink fence, 300 LF</td>
<td>$40.00</td>
<td>$12,000.00</td>
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#### Structures, Light, Furniture

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Hardscape Surfaces</td>
<td>$934,720.00</td>
<td></td>
<td></td>
</tr>
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</table>

#### Plants and Grass

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogwood etc, 1,000 EA</td>
<td>$165.00</td>
<td>$165,000.00</td>
<td></td>
</tr>
<tr>
<td>Ornamental Shrubs (Yew, Apple etc.), 100 EA</td>
<td>$300.00</td>
<td>$30,000.00</td>
<td></td>
</tr>
<tr>
<td>Trees, 1.5-2 in. (Maples, Oaks, etc.), 230 EA</td>
<td>$520.00</td>
<td>$119,600.00</td>
<td></td>
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</tbody>
</table>

#### Waste container, medium quality

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste container, 18 EA</td>
<td>$500.00</td>
<td>$9,000.00</td>
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</tbody>
</table>

#### Boardwalk, Hardwood

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boardwalk, Hardwood, 6,000 sqf</td>
<td>$20.00</td>
<td>$120,000.00</td>
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</tbody>
</table>

#### Compacted Gravel or Stone Dust

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compacted Gravel or Stone Dust, 30,000 sqf</td>
<td>$4.00</td>
<td>$120,000.00</td>
<td></td>
</tr>
</tbody>
</table>

#### Concrete for sidewalks

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete for sidewalks, 8,000 sqf</td>
<td>$9.00</td>
<td>$72,000.00</td>
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#### Asphalt for regular neighborhood streets

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<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Asphalt for regular neighborhood streets, 52,800 sqf</td>
<td>$6.00</td>
<td>$316,800.00</td>
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#### Asphalt for arterial roads

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</thead>
<tbody>
<tr>
<td>Asphalt for arterial roads, 0 sqf</td>
<td>$10.00</td>
<td>$0.00</td>
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#### Pipes

<table>
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<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Pipes, 6 inch, 0 LF</td>
<td>$3.00</td>
<td>$0.00</td>
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#### Swales

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Swale, 6 ft wide, 2 feet deep, 10,080 LF</td>
<td>$1.50</td>
<td>$15,120.00</td>
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#### Graded landform cut or fill

<table>
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<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Graded landform cut or fill, 25,000 cf</td>
<td>$1.50</td>
<td>$37,500.00</td>
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#### Soil for planting and seeding

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<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil for planting and seeding, 25,000 cf</td>
<td>$2.00</td>
<td>$50,000.00</td>
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#### Total Landform and swales

<table>
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<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Total Landform and swales</td>
<td>$87,501.00</td>
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#### Total Hardscape Surfaces

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<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Total Hardscape Surfaces</td>
<td>$934,720.00</td>
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#### Grand Total

<table>
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<tr>
<th>Item Description</th>
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<tbody>
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<td>Grand Total</td>
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Bibliographie and References


