WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

MONONA TRAILS MASTER PLAN

Illustration by Jordan Telchen / UW-Madison

LANDSCAPE ARCHITECTURE SENIOR CAPSTONE

SPRING 2017

UNIVERCITY BETTER PLACES TOGETHER

MONONA

MONONA TRAILS MASTER PLAN

Author
Jordan Teichen

A SENIOR CAPSTONE PROPOSAL

Submitted in partial fulfillment of the requirements for the degree
Bachelor of Science in Landscape Architecture

Department of **Land**scape **Arch**itecture
College of Agricultural and Life Sciences

University of Wisconsin - Madison
Madison, WI

December, 2016

Approved by
Eric J. Schuchardt, PLA, ASLA
Capstone Coordinator & Instructor

THE AUTHOR

As a child my toy arsenal was composed of LEGOs and PLAYMOBIL. If I wasn't sitting on the floor of my bedroom playing with these toys, I was probably barefoot in my backyard building a fort, or in my basement trying to one-up my brother by building the longest and most extravagant Hot Wheels track.

As I grew older, my insatiable appetite for transforming objects and spaces evolved. In middle school I began working at my local Little League fields. It was here that I truly began to find satisfaction through the transformation of spaces. I spent time trying to make the fields special for the players, and I found great satisfaction in watching players enjoy using them. Fastforward to 2013...

Coming to UW-Madison, I initially pursued an engineering degree, but quickly stumbled upon Landscape Architecture. My grandfather used to own a design-build Landscape Architecture firm in Milwaukee which tipped me off to the program at UW. I quickly realized that this was the perfect profession to pursue my interests that are both deeply aligned with my grandfather's passion for horticulture and my own mission to shape spaces that give people joy.

I'm currently pursuing a degree in Landscape Architecture from UW-Madison with an anticipated graduation in May of 2017. Upon graduation I'll be starting a full-time position at Ken Saiki Design in Madison, Wisconsin.

Jordan Teichen
Department of **Land**scape **Arch**itecture

Fall 2016

ABSTRACT

Monona, a city of about 8,000 residents is surrounded by a portion of Madison and the shore of Lake Monona. As part of an initiative to create a more sustainable Monona, the City has teamed up with The UniverCity Alliance. The UniverCity Alliance is an organization that aims to connect the expertise of UW-Madison students and faculty with a nearby city looking to pursue sustainability initiatives.

This partnership within Monona connects more than a dozen UW-Madison classes under the UniverCity Year Project. The project is divided into 4 branches, which looked at Monona's parks, housing & economic developments, communications, and transportation. Some of the departments working on this project include, Urban & Regional Planning, Soil Science, Landscape Architecture, Business, Engineering, and Life Science Communications.

Monona has a very rich park system. Four of Monona's parks are "community parks." These parks were intended to serve the largest portion of Monona's population. One of these parks however, Ahuska Park, is relatively isolated and hard for residents of Monona to access. As part of their sustainability initiative Monona would like to increase both community and regional access to Ahuska Park.

In the City of Monona, "community parks" also house the majority of Monona's outdoor recreational programming. Ahuska park has many different programming elements on-site, but there's no cohesion or connectivity between everything. This has lead to congestion, lack of accessibility for the handicapped, and the parks overall lack of an identity.

The Monona Trails Master Plan is only one piece of the Univercity Year Project's contributions to the City of Monona. Nevertheless, this plan will aid in the effort to ensure the continued success of Monona as a sustainable city. The plan will aim to create a regional trail that connects to Dane County's larger regional trail system, links major developments in the City of Monona, and improves accessibility to Ahuska Park. Instead of simply connecting to Ahuska Park, the trail will meander through Ahuska Park, providing ample opportunity to improve functionality and accessibility of the park.

CONTENTS

INTRODUCTION

INTRODUCTION

To fulfill the requirements of the Senior Capstone Program in the Department of Landscape Architecture at the University of Wisconsin-Madison I will investigate how ideas of public health may inform the design of a regional trail system and a community park. This investigation will be given context and focus by the concerns and goals of Jake Anderson (City of Monona Director of Parks & Recreation), which include developing more sustainable transportation methods to and from Ahuska Park, and improving the user perceptions and functionality of Ahuska Park. Ahuska Park in the City of Monona, and its surroundings, will be the sites for this study.

Research Topic: Public Health

Landscapes have a significant role in improving public health, and are a tremendous asset that can improve our health and welfare. The study of Public Health within the practice of Landscape Architecture asks questions such as, "What is a healthy place?" and "What effect does the landscape have on mental health?" Proper consideration of the answers to these questions when designing and managing spaces can positively influence the health and well-being of communities. In a report published by the Landscape Institute, five principles that describe healthy places are listed: air, water, and soil quality, measures that help us adapt to, and mitigate climate change, an ability to overcome health inequalities, an ability to make people feel comfortable and at ease, a tendency to increase social interaction and decrease antisocial behavior and stress, and an ability to be restorative, uplifting and healing both physical and mental health conditions of its users. Considering how landscapes can significantly improve the public health, it seems reasonable for communities to invest in them.

The preservation of natural beauty, historic landmarks, and space for recreation has been a concern of many different societies throughout time. "Victorian parks were established as places to seek fresh air and respite for urban populations; the innovative tree-lined suburbs of Port Sunlight and Bourneville were planned so as to enhance residents' sense of wellbeing; while Frederick Law Olmsted's ambitious Emerald Necklace Park in Boston, USA, was designed to improve water quality and reduce the number of deaths from cholera" (George 2013, 1) The relationship between outdoor public space, and the benefits it has on the citizens using it is well documented.

The City of Monona is looking for a trail system, and improvements to Ahuska Park, that will encourage healthy living for its residents. What better way to review Ahuska Park than to analyze it through the lens of public health, and the benefits it is providing the community members of Monona? Ahuska Park is bordered by a wetland and is close to the Yahara River. The stability and utilization of these features is of the utmost concern, in order to ensure the stability and attractiveness of Ahuska Park and the larger regional trail system, and in turn, the health and well-being of Monona's residents.

Senior Capstone Products

The products of this capstone will include a set of design documents and recommendations for Ahuska Park, as well as a regional trail system for The City of Monona, which will be submitted to Jake Anderson, and a capstone document, which will be submitted to the Department of Landscape Architecture in partial fulfillment of the degree of Bachelor of Science in Landscape Architecture.

SENIOR CAPSTONE DESIGN PROCESS

FALL 2016 - SPRING 2017

PROJECT WORKFLOW

The project workflow diagram depicts the stages of the senior capstone design process. Each circle represents a month, and details what will be accomplished during that month. The size of the circles correlate to the workload during that month. Creating this graphic provides a better understanding of the progression of the capstone project throughout the year.

Figure 1.XX: Project Workflow Diagram

HISTORICAL & CURRENT **CONTEXT**

POPULATION BOOM

Originally a part of the Town of Blooming Grove, Monona was founded as its own village on August 29,1938, and eventually was incorporated as a city in 1969. Throughout the 1950s, droves of people looking to live near the beautiful shores of Lake Monona flocked to the Village of Monona. Throughout the 1950's the population of Monona increased 231%, from 2,544 to 8,178 residents.

DEVELOPMENT

As people flocked to Monona, lots that were once farm fields began to transform into residential, commercial, and industrial development throughout the 1960s. Monona annexed land throughout the 60s and 70s, but was eventually landlocked by Lake Monona and the City of Madison.

PRESENT DAY

Since it is landlocked, Monona must turn its attention to urban infill and redevelopment. With the construction of US Highway 12/18 (The Beltine), Monona has seen a lot of infill and redevelopment along Broadway Avenue. As this development occurs, Monona is also focused on balancing both economic and environmental concerns.

(Top): Ahuska Park Site Aerial circa 1995
(Bottom): Ahuska Park Site Aerial circa 2014

LOCATION **CONTEXT**

RESEARCH TOPIC: **PUBLIC HEALTH**

TOWARD IMPROVED PUBLIC HEALTH OUTCOMES FROM URBAN NATURE

Danielle F. Shanahan, Brenda B Lin, Robert Bush, Kevin Gaston, Julie H. Dean, Elizabeth Barber, Richard Fuller

In this article, the author introduces sense of place as an idea of public health. It suggests that evidence-based suggestions for healthy place making could have important public health consequences. Four aspects of the built environment, at different spacial scales, are identified: nature contact, buildings, public spaces, and urban form. The organization of these four aspects offers promising opportunities for public health research.

THE SIGNIFICANCE OF PARKS TO PHYSICAL ACTIVITY AND PUBLIC HEALTH

Bedimo-Rung, Ariane L., Andrew Mowen, Deborah Cohen

This journal describes the relationship between park benefits, park use, and physical activity. It focuses on park environmental characteristics that could be related to physical activity, including park features, access, aesthetics, safety, and policies. Each of these categories is broken down and analyzed, providing readers with an idea of their relative importance.

PUBLIC HEALTH AND LANDSCAPE: CREATING HEALTHY PLACES

George Bull, ED.

This publication outlines the role that landscapes can have in improving public health. It discusses principles that make-up healthy places. The factors that are described are the following: healthy places improve air, water and soil quality, incorporating measures that help us adapt to, and where possible, mitigate climate change; healthy places help overcome health inequalities and can promote healthy lifestyles; healthy places make people feel comfortable and at ease, increasing social interaction and reducing antisocial behavior, isolation and stress; and healthy places are restorative, uplifiting, and healing for both physical and mental health conditions. The second half of the publication explores 22 projects that show how the five principles have been applied to different landscape architecture projects.

PROJECT **GOALS**

CLIENT GOALS

Develop identity for Ahuska Park

Increase ADA accessibility at Ahuska Park

Add additional parking to solve site-congestion during Farmer's Market at Ahuska Park

Create space to hold large events at Ahuska Park

MY GOALS

Increase neighborhood and regional connections to Ahuska Park

Take into account the desires of the residents of Monona

Create regional trail system with a strong identity

PRECEDENTS

PRECEDENT 1: CLARKSVILLE LIBERTY PARK

CLARKSVILLE, TN | 130 ACRES | SMITHGROUP JJR

Clarksville Liberty Park is a recreational destination and community assest in Clarksville, Tennessee that was completed by Smithgroup JJR in 2013. This project was a redevelopment of a an existing park within a wetland and floodplain boundaries. The design integrates the wetland into the surrounding community through the installation of a boardwalk system. With there being a wetland on the site for my capstone project, the integration of a boardwalk onto the site in order to connect the site to the surrounding community presents itself as a viable option.

Figure 1.XX: Boardwalk in Clarksville Liberty Park's wetland

Figure 1.XX: Aerial view of Clarksville Liberty Park

PRECEDENT 2: **MONONA WATERFRONT REDEVELOPMENT**

MONONA, WI | VANDEWALLE AND ASSOCIATES

An ongoing project in the City of Monona that can be incorporated into the masterplan for the Monona Trails Master Plan is Monona's Waterfront Redevelopment Project. This project can also serve as a precedent for future development along Monona's Broadway Avenue commercial corridor. The project is envisioned as an "urban waterfront destination serving as a year-round gathering place and recreational trailhead, focused on active healthy lifestyles in a village-like setting." The development is on West Broadway Avenue, just a few blocks west of Ahuska Park.

This new development will consist of residential, office, retail, and lodging opportunities, and showcases what Monona is looking for in a redevelopment in the Broadway Corridor. A proposed bike trail is intended to cross the Beltline and connect to a wetland to the south. This new trail system could connect to my site and serves a huge opportunity for better connectivity of parks and other public open space throughout Monona.

Monona Waterfront Redevelopment character sketch

Monona Waterfront Redevelopment aerial rendering

PRECEDENT 3: **CARMEL CLAY CENTRAL PARK**

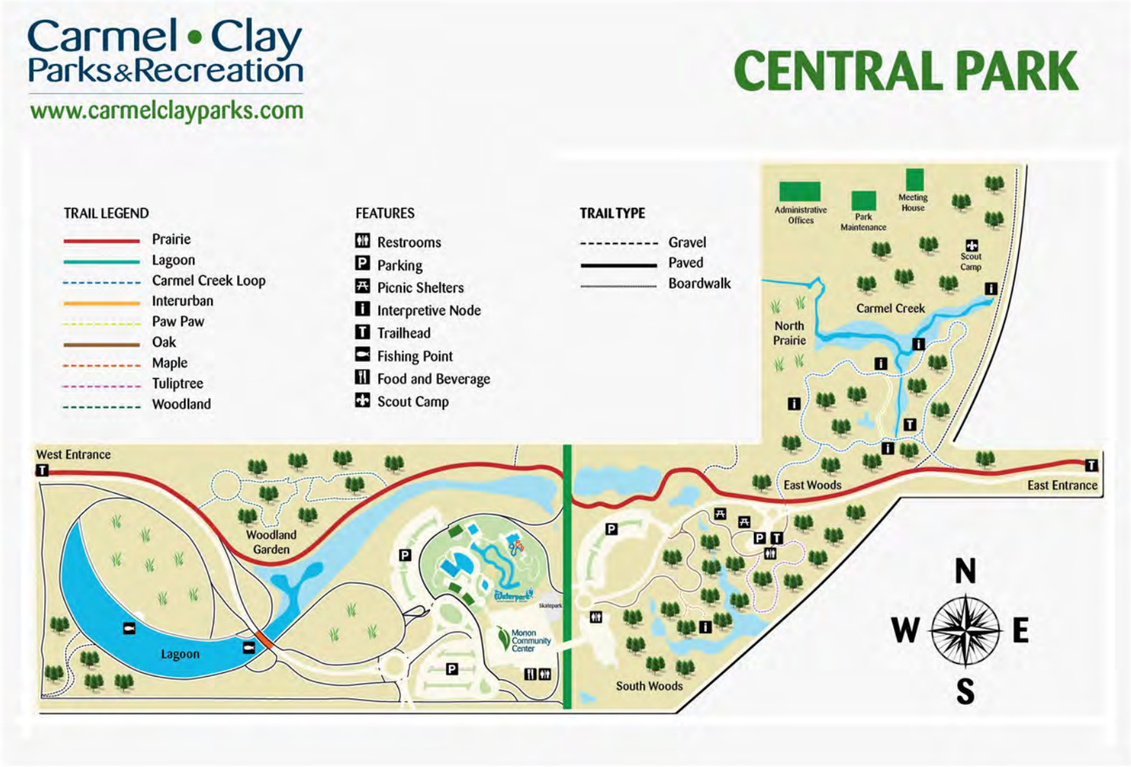
CARAMEL, INDIANA | SMITHGROUP JJR

Caramel Clay Central Park in Caramel, Indiana is a shining example of how to balance both "natural beauty and environmental integrity with inspired design." The park sits near the center of the city, and shows how proper community design allows the public to easily access the site and its many recreational resources.

Over four miles of trails meander through the park, connecting users of the park to various amenities scattered throughout. The trails traverse through a lagoon, designed capture almost all of the site's stormwater runoff. Tasteful hardscape and planting design complement the trail network and its surrounding landscape.

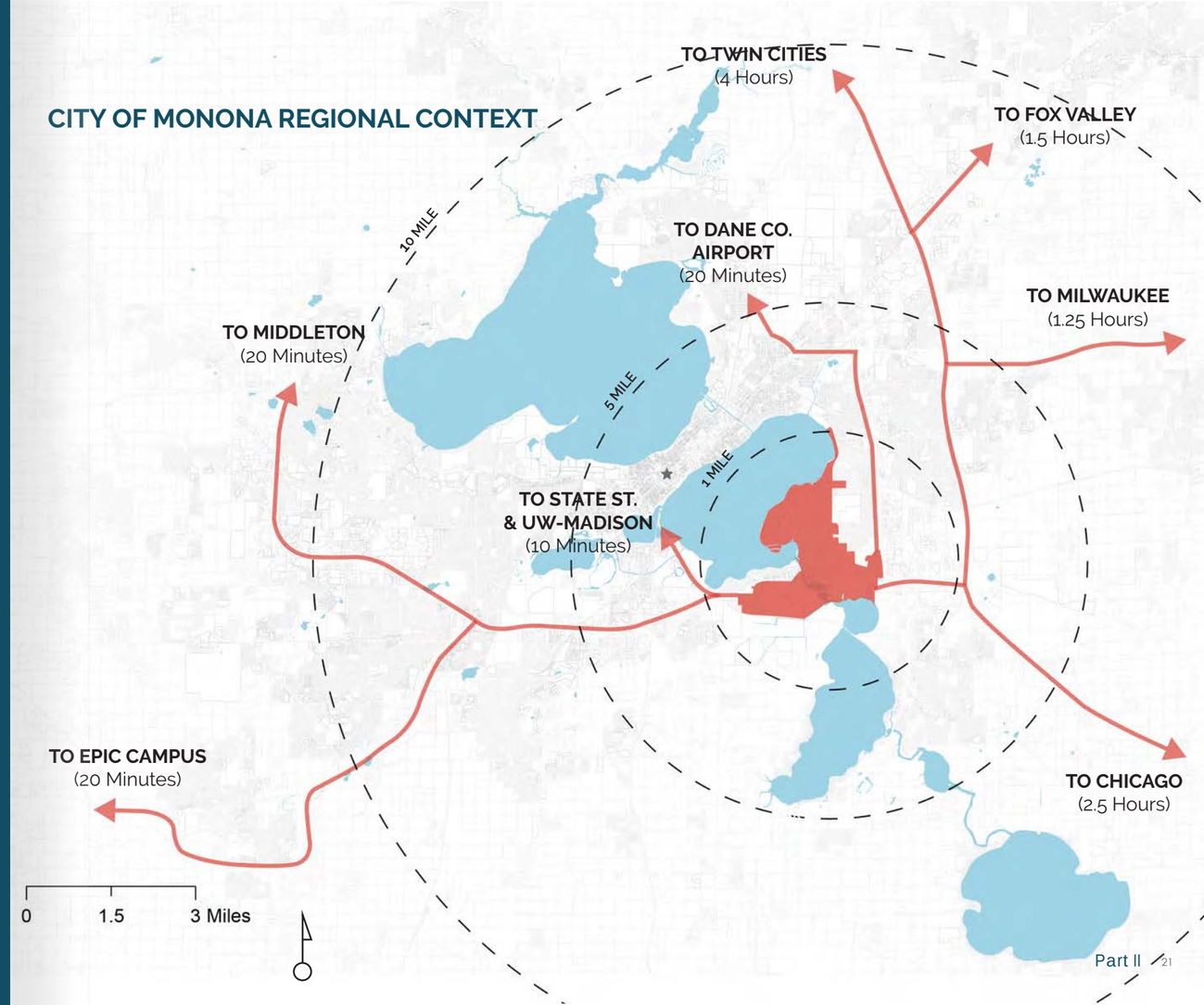
(Top): Trail through Prairie (Bottom): Lagoon Boardwalk

Waterpark Entrance



Caramel Clay Central Park Site Plan

THE REGION

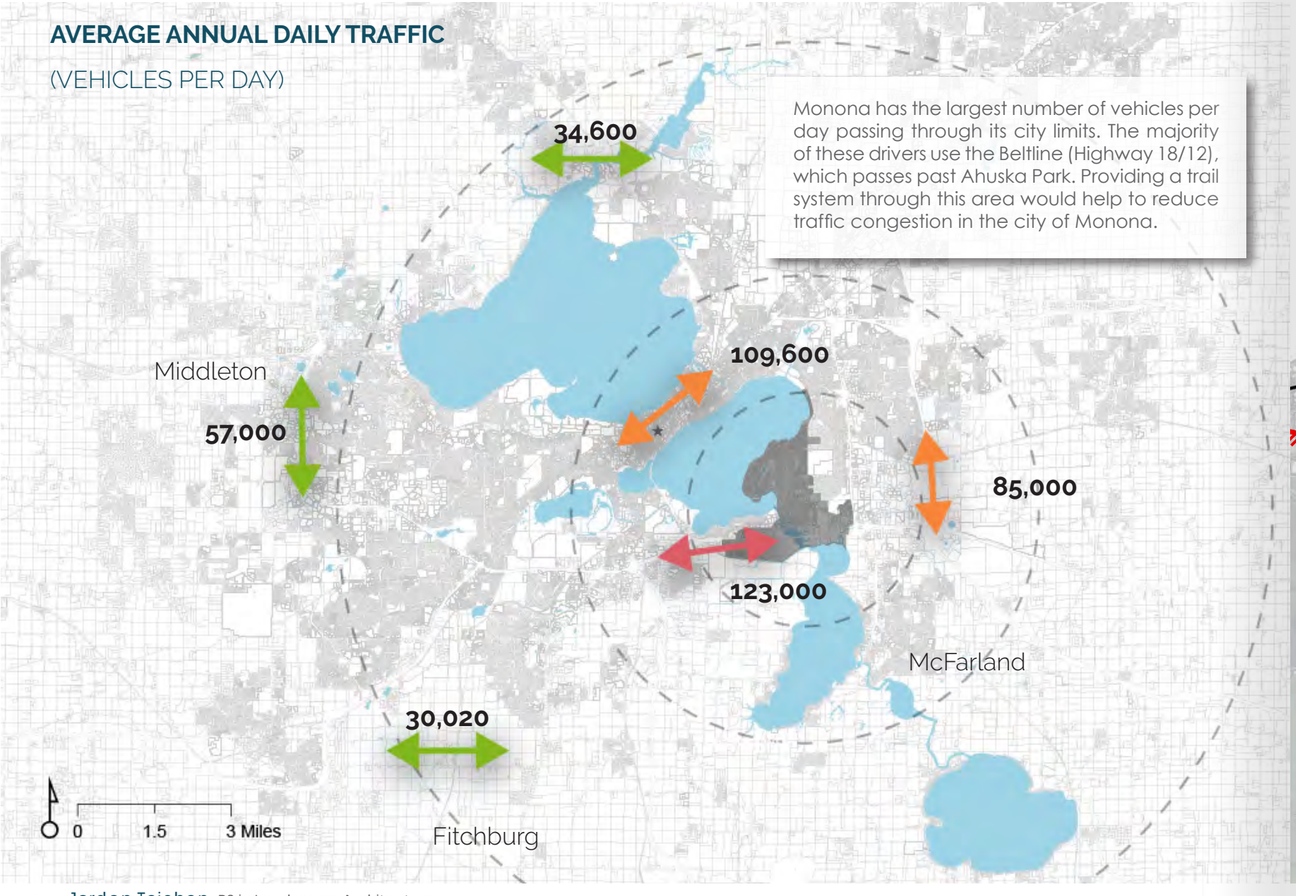

CITY OF MONONA REGIONAL CONTEXT
TO TWIN CITIES
(4 Hours)
TO FOX VALLEY
(1.5 Hours)
10 MILE
TO DANE CO.
AIRPORT
(20 Minutes)
TO MILWAUKEE
(1.25 Hours)
TO MIDDLETON
(20 Minutes)
5 MILE
1 MILE
TO STATE ST.
& UW-MADISON
(10 Minutes)
TO EPIC CAMPUS
(20 Minutes)
TO CHICAGO
(2.5 Hours)
0
1.5
3 Miles

REGIONAL **TRAFFIC VOLUME**

AVERAGE ANNUAL DAILY TRAFFIC

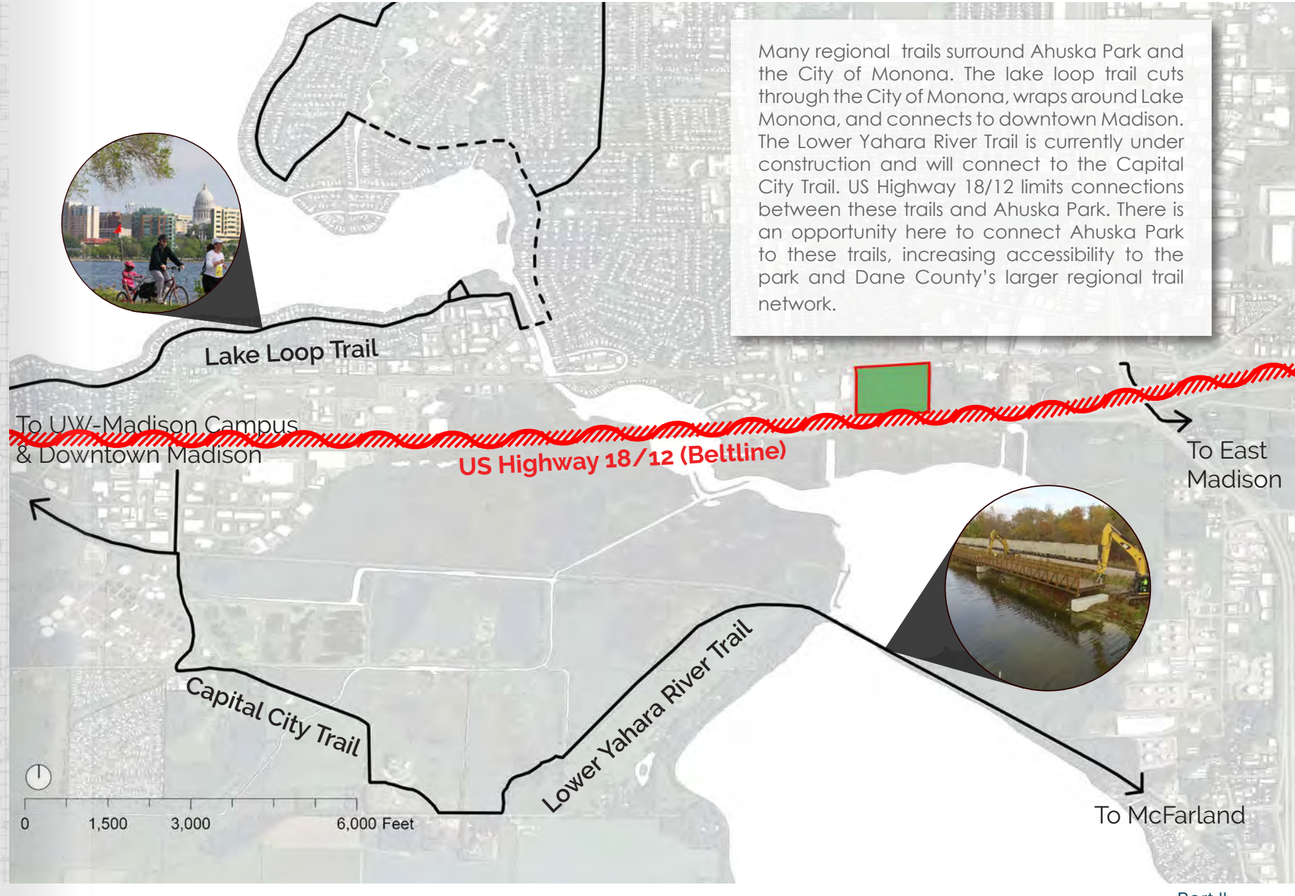
(VEHICLES PER DAY)

Monona has the largest number of vehicles per day passing through its city limits. The majority of these drivers use the Beltline (Highway 18/12), which passes past Ahuska Park. Providing a trail system through this area would help to reduce traffic congestion in the city of Monona.



REGIONAL **TRAIL SYSTEM**

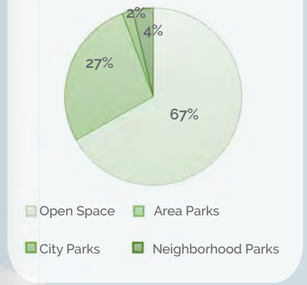
Many regional trails surround Ahuska Park and the City of Monona. The lake loop trail cuts through the City of Monona, wraps around Lake Monona, and connects to downtown Madison. The Lower Yahara River Trail is currently under construction and will connect to the Capital City Trail. US Highway 18/12 limits connections between these trails and Ahuska Park. There is an opportunity here to connect Ahuska Park to these trails, increasing accessibility to the park and Dane County's larger regional trail network.



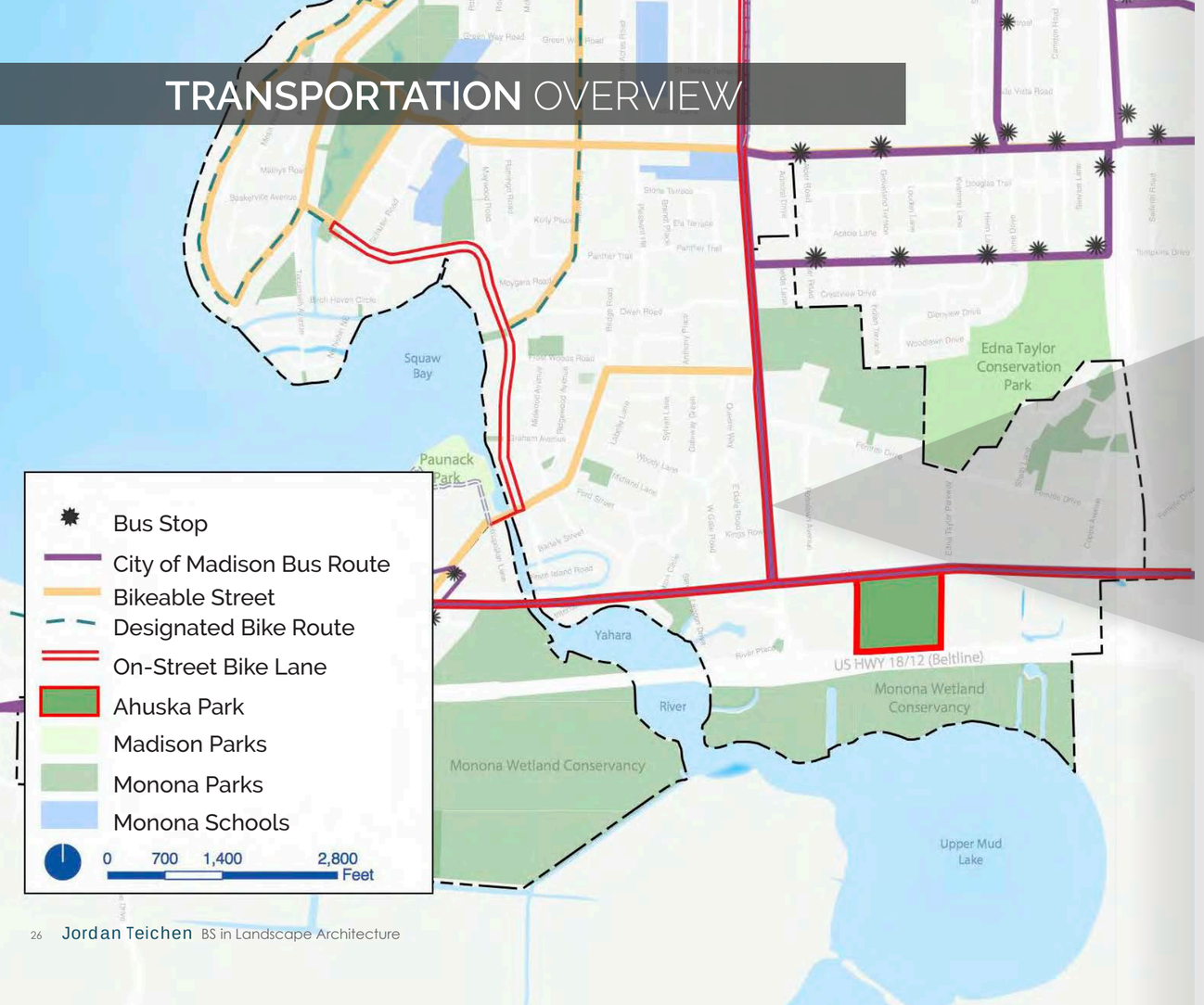
THE COMMUNITY

PARK SYSTEM OVERVIEW

Monona has a very rich park system. Four of Monona's parks are "area parks," one of which is Ahuska Park. Area parks house the majority of Monona's outdoor recreational programming. Ahuska Park is roughly 22 acres, the second largest park in Monona behind Winnequah Park.



TRANSPORTATION OVERVIEW



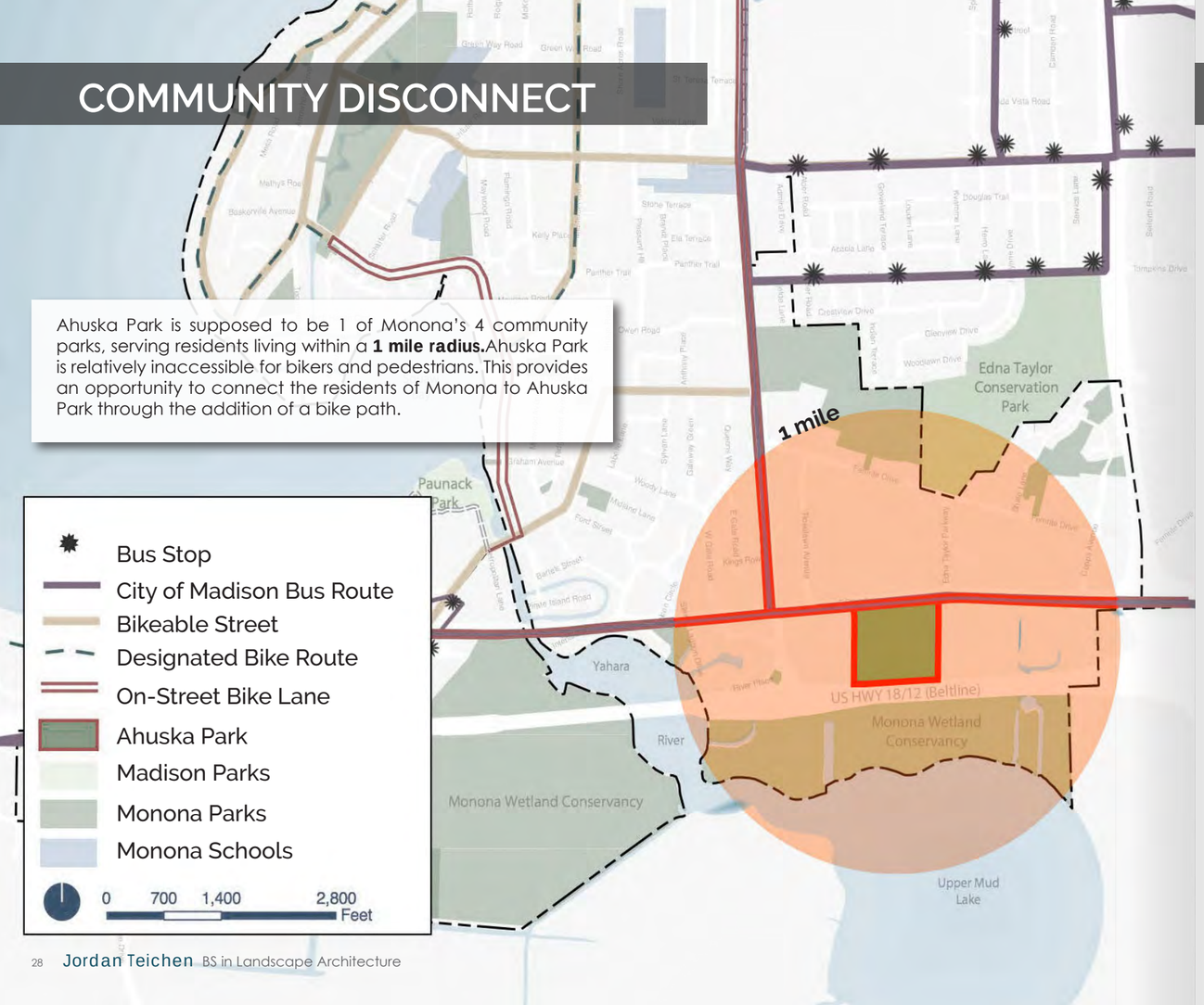
View of bike lane and adjacent traffic flow along Monona Drive.

The northern most portion of Monona is relatively well-connected. Residents living in this area of Monona have many different transportation options. As you move further south, ,toward US Highway 18/12, many of these transportation options begin to fall off.

The only bikeable route to Ahuska Park from the rest of the City of Monona is through an on-street bike lane along Broadway Avenue. Much like the on-street bike lane on Monona Drive (Pictured:Left), using it is an uncomfortable experience. Users of the bike lane are side-by-side with heavy traffic.

COMMUNITY DISCONNECT

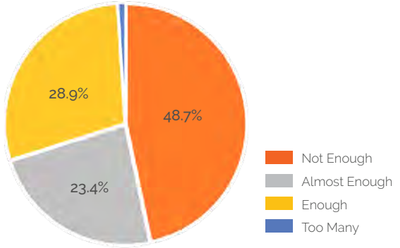
Ahuska Park is supposed to be 1 of Monona's 4 community parks, serving residents living within a **1 mile radius.**Ahuska Park is relatively inaccessible for bikers and pedestrians. This provides an opportunity to connect the residents of Monona to Ahuska Park through the addition of a bike path.



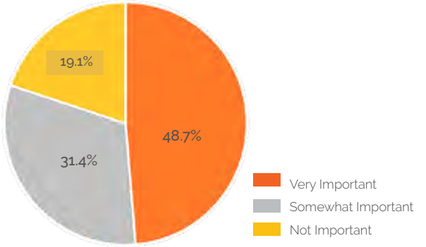
NEED FOR NATURE TRAILS

A number of years ago a survey was conducted with Monona's residents regarding Monona's Parks and Recreation system. The following graphics showcase some of the results. It is clear that Monona has a relatively active population, and they would enjoy having additional nature trails.

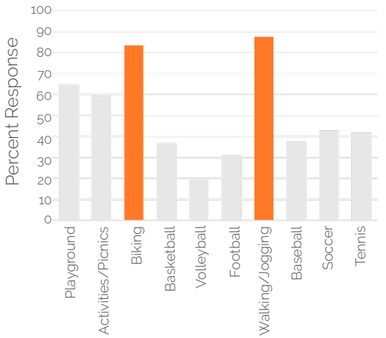
How well are Monona's trails meeting the needs of the community?



How would you rate the importance of adding additional nature trails to Monona parks?



As a resident of Monona, mark which of the following activities are important to you.



BROADWAY CORRIDOR OVERVIEW

Ahuska Park is supposed to be 1 of Monona's 4 community parks, serving residents living within a **1 mile radius.**Ahuska Park is relatively inaccessible for bikers and pedestrians. This provides an opportunity to connect the residents of Monona to Ahuska Park through the addition of a bike path.

MASTER PLAN FOCUS AREA: EAST BROADWAY CORRIDOR

Lake Loop Trail

To UW-Madison Campus & Downtown Madison

To East Madison

Capital City Trail

Lower Yahara River Trail

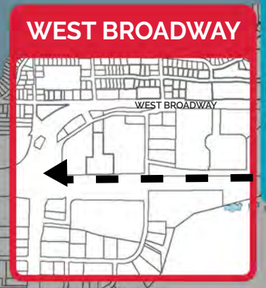
To McFarland

0 1,500 3,000 6,000 Feet

The construction of the Beltline was completed in 1988. Properties along Broadway Ave. benefit from excellent transportation access. These properties are also highly visible from the Beltline. For this reason, it's exceedingly important that Monona create a positive image for the city with any development happening in any of these corridors, including a potential trail system

SQUAW BAY

WEST BROADWAY



MONONA WATERFRONT DISTRICT

EAST BROADWAY

UPPER MUD LAKE

SURROUNDING **COMMUNITY**

EXISTING **LAND USE**

THE SITE

AHUSKA PARK **INVENTORY**

DESIGN STRATEGIES

DESIGN CONCEPT

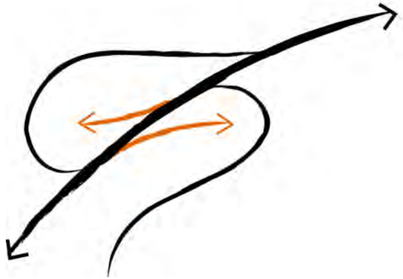
Both on a regional and site scale, the design of the landscape was inspired by a pair of white wings. The word “Ahuska” means white wing in the native Ho-Chunk language. The Ho-Chunk tribe occupied most of the land that is now known as Monona. The following diagrams showcase the design concepts for both the regional trail system, and the site design at Ahuska Park.

TRAIL WITH NODES OF INTEREST

Winding path creates a sense of **mystery**

Nodes of interest **“pull”** users along the trail

NODES THAT DRAW PEOPLE IN



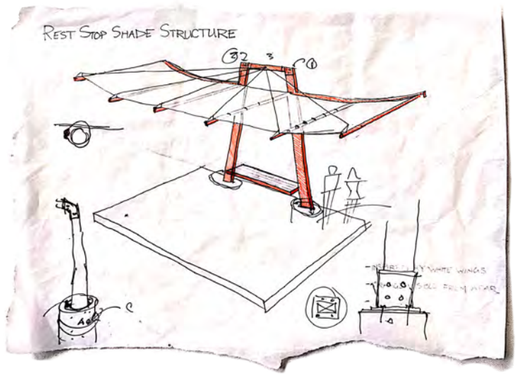
The form of the trailside nodes are inspired by a pair of **wings**.

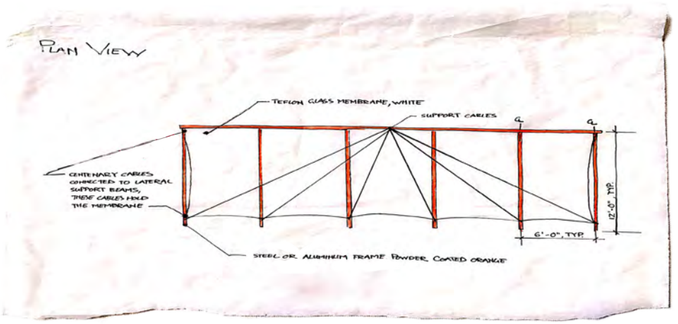
The nodes **“catch”** users coming off of the trail.

COMMUNITY DESIGN

TRAIL REST-STOP NODE DESIGN

PRELIMINARY SHADE STRUCTURE DESIGN SKETCHES





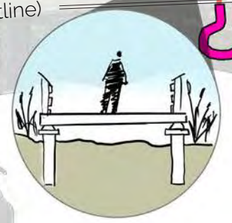
The form of the seating areas and design of the shade structure were inspired by a pair of white wings. “Ahuska” means “white wing” in Ho-Chunk. The wing shape seating nodes and shade structure draw people in that are using the bike path. The orange coated steel of the shade structure allows for the structure to stand out in the winter when the canvas “wings” of the structure would need to be removed.

WETLAND BOARDWALK

3.3 MILES OF WETLAND BOARDWALK

East Broadway Ave.

US HWY 18/12 (Beltline)



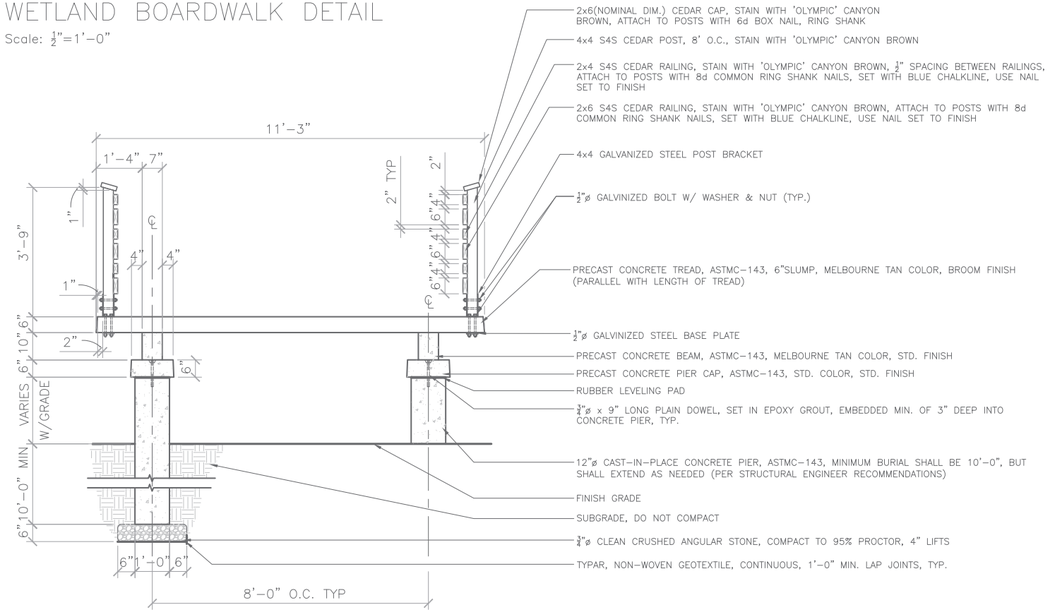
WETLAND BOARDWALK

0' 1000' 2000'

The concrete boardwalk has greater utility than the conventional timber or composite boardwalk. While initially more money up-front, concrete boardwalks have a much longer lifespan than other boardwalks. They also allow for top down construction, meaning that the boardwalk can be built from itself (see right). This eliminates the need to drive heavy machinery on the wetland soil, and in turn, protects the wetland.

WETLAND BOARDWALK DETAIL

Scale: $\frac{1}{2}$"=1'-0"

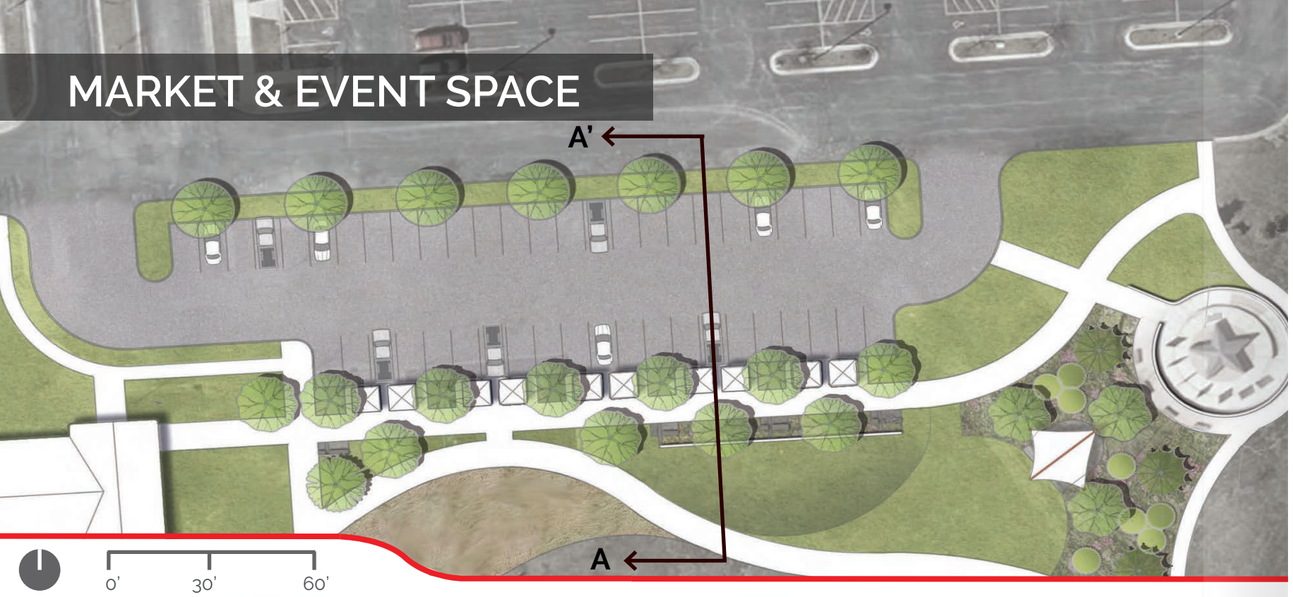


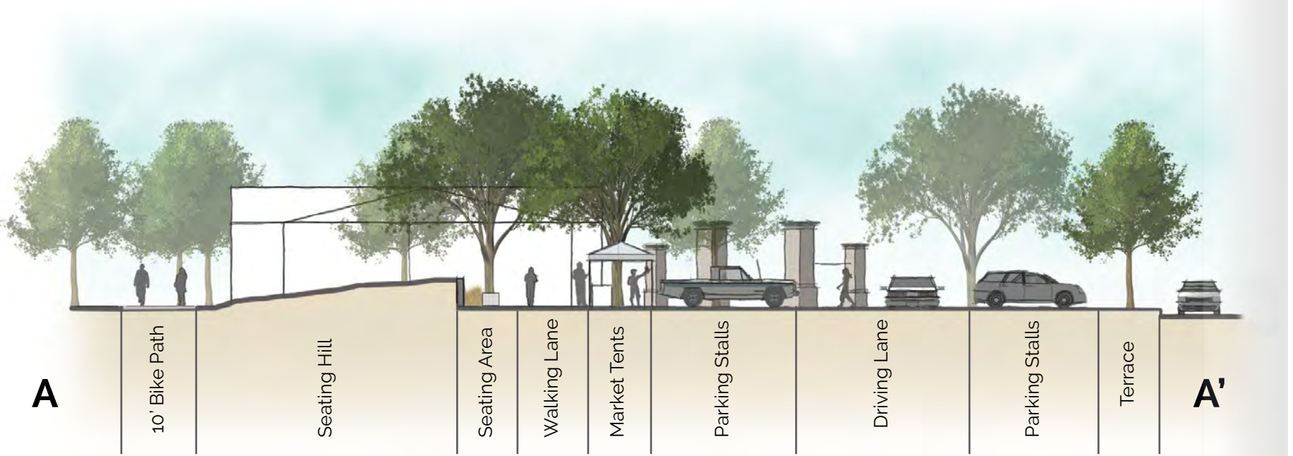

RIVERWALK
RIVERWALK BOARDWALK
0.5 MILES RIVERWALK
East Broadway Ave.
US HWY 18/12 (Beltline)
0'
1000'
2000'

SITE DESIGN

AHUSKA PARK SITE PLAN

MARKET & EVENT SPACE





IMPROVED FARMERS MARKET SPACE

On Sunday mornings throughout the summer and fall, Monona has a farmer's market at Ahuska Park. Tents are setup in the west parking lot, decreasing the total number of parking spaces available for those coming to enjoy the market. Expanding the parking lot and providing a new space for the farmer's market will eliminate this problem.

PERFORMANCE STAGE

During the farmers' market, local musicians play shows. They don't have a designated performance space, however. The new performance stage and open lawn space would eliminate this problem. The stage and lawn also open additional opportunities for events and performances at Ahuska Park.

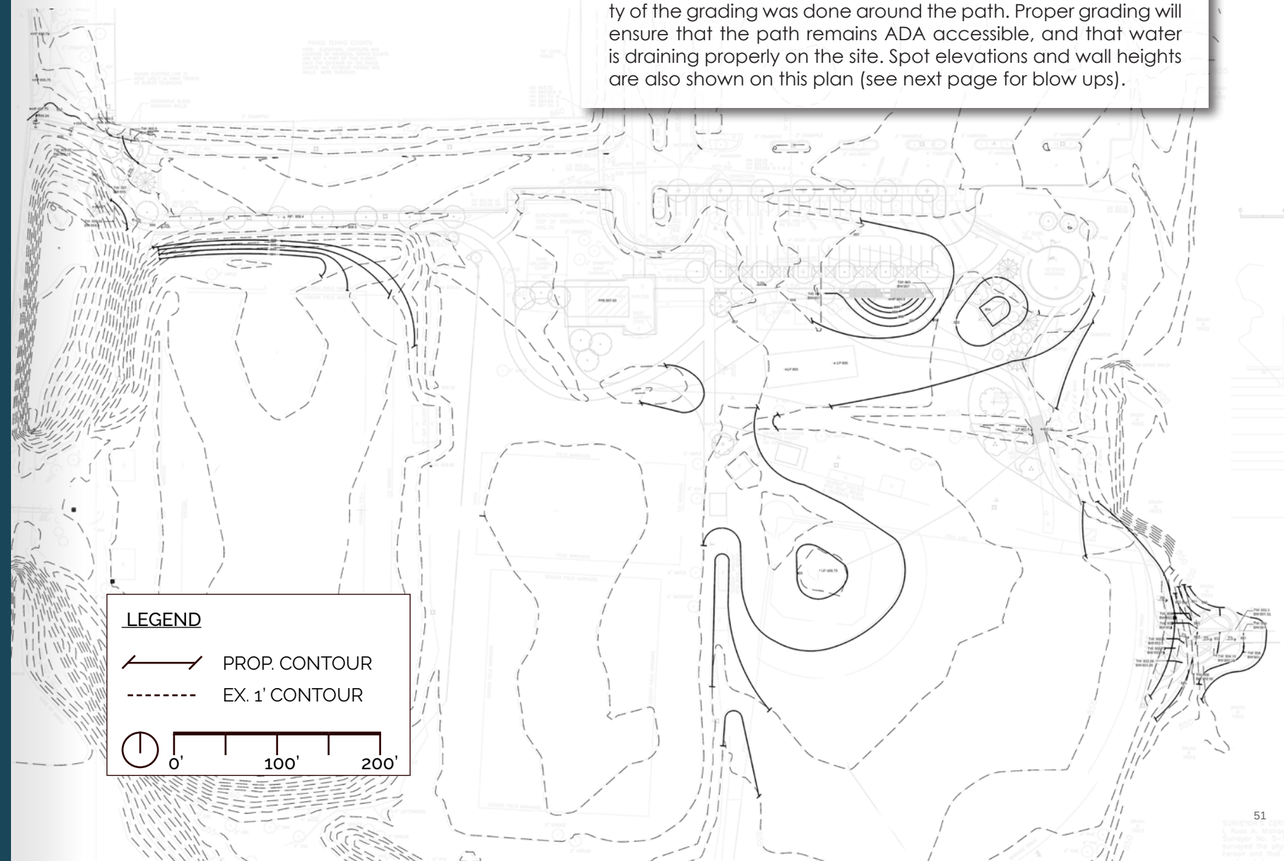
INCORPORATION OF EXISTING MEMORIAL

The Dane County Veteran's Memorial is currently along the eastern edge of Ahuska Park. The cultural and social importance of the memorial ensured that it would be incorporated into the final design of the park. Plants screen the memorial for privacy, and strategically placed paths lead parkgoers to the memorial.

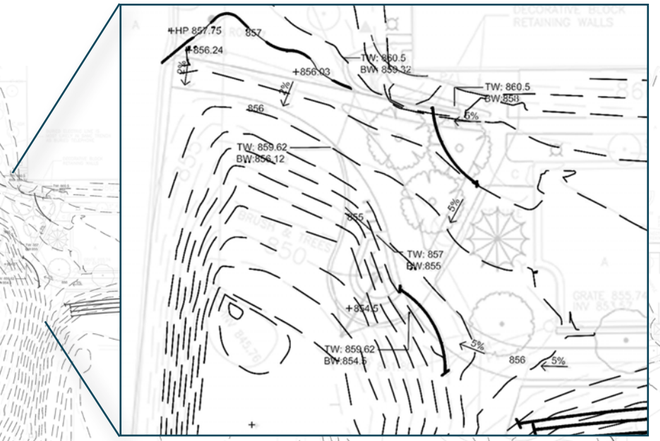
GRADING & DRAINAGE

GRADING PLAN

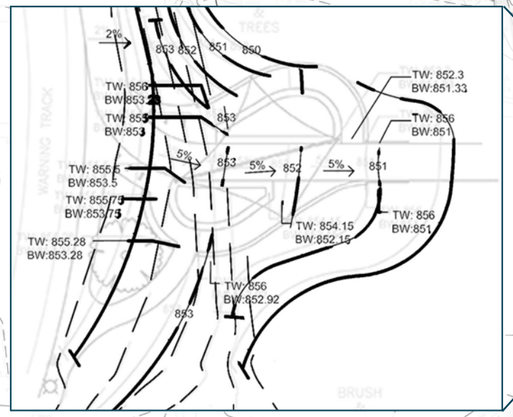
Ahuska Park is an extremely flat site, with grades dropping slightly as you move toward the wetland to the east. The majority of the grading was done around the path. Proper grading will ensure that the path remains ADA accessible, and that water is draining properly on the site. Spot elevations and wall heights are also shown on this plan (see next page for blow ups).



WEST ENTRY NODE GRADING



EAST ENTRY NODE GRADING

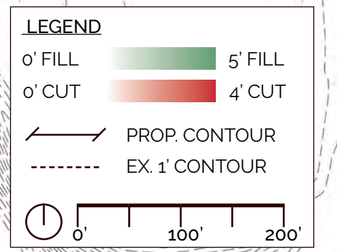


CUT & FILL DIAGRAM

24, 775 TOTAL CUBIC FEET OF CUT
47,928 TOTAL CUBIC FEET OF FILL

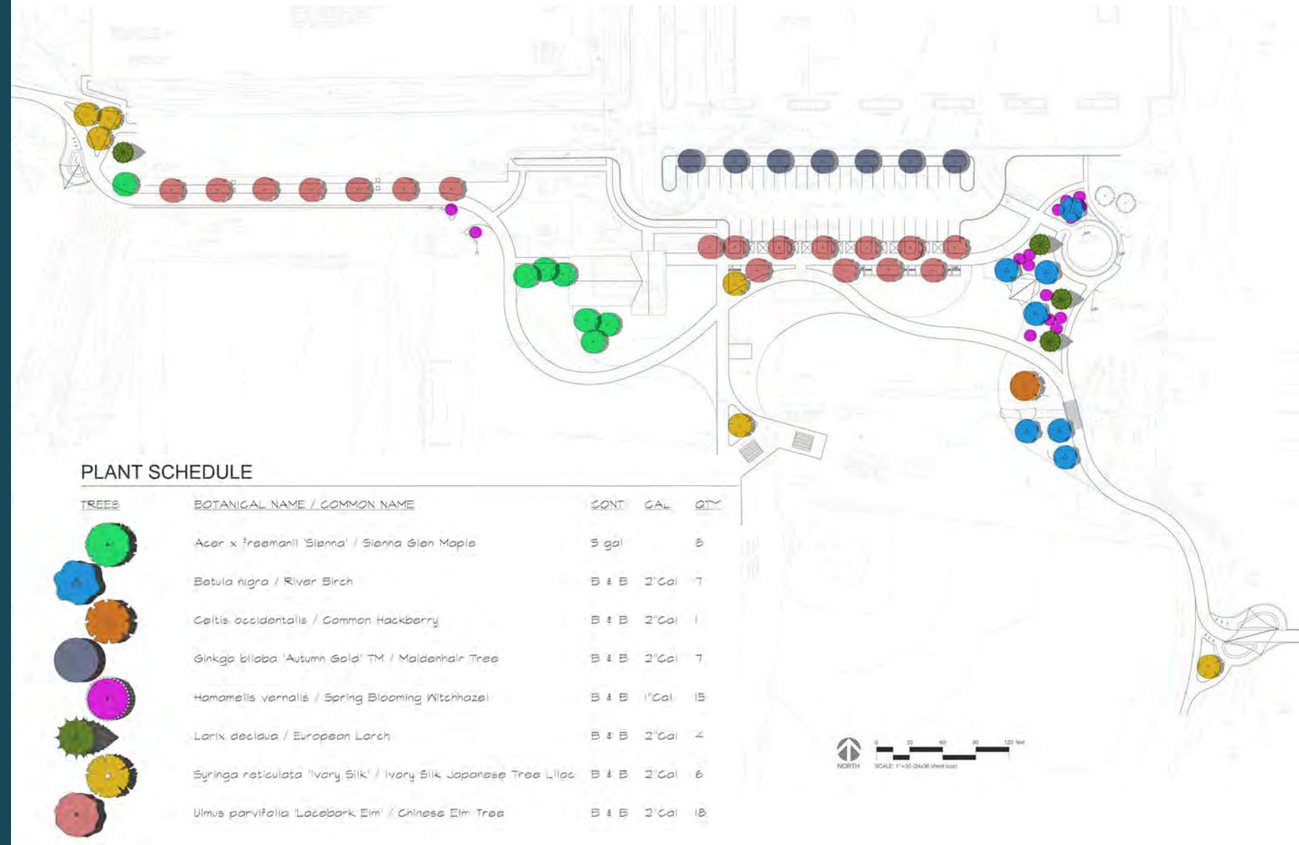
CUT FILL RATIO 1.25:1

1,301.30 CUBIC YARDS OF FILL NEEDED



PLANTING DESIGN

TREE PLANTING PLAN



PLANT SCHEDULE

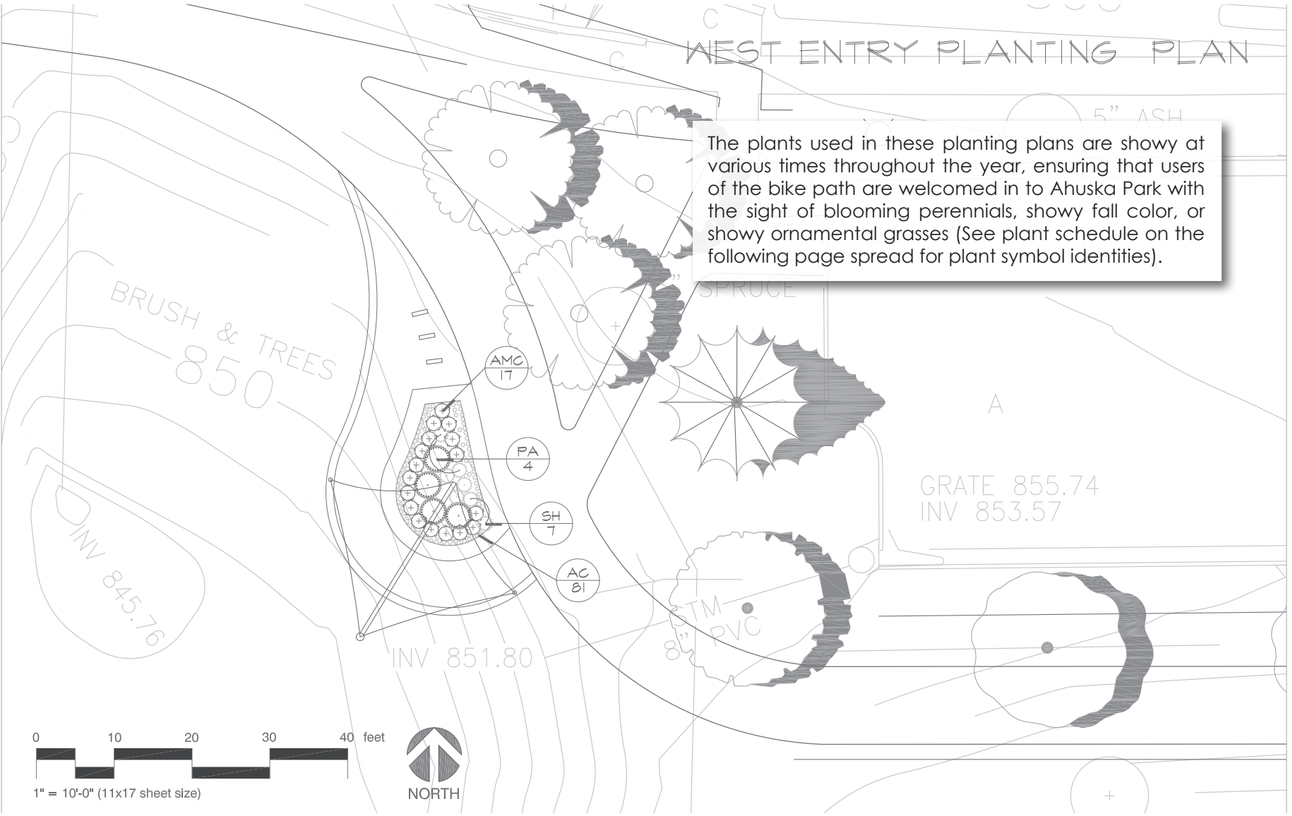
TREES	BOTANICAL NAME / COMMON NAME	CONT	CAL	QTY
	Acer x freemanii 'Sienna' / Sienna Glen Maple	5 gal		8
	Betula nigra / River Birch	B & B	2"Cal	7
	Celtis occidentalis / Common Hackberry	B & B	2"Cal	1
	Ginkgo biloba 'Autumn Gold' TM / Maidenhair Tree	B & B	2"Cal	7
	Hamamelis vernalis / Spring Blooming Witchhazel	B & B	1"Cal	15
	Larix decidua / European Larch	B & B	2"Cal	4
	Syringa reticulata "Ivory Silk" / Ivory Silk Japanese Tree Lilac	B & B	2"Cal	6
	Ulmus parvifolia 'Lacebark Elm' / Chinese Elm Tree	B & B	2"Cal	18

NORTH

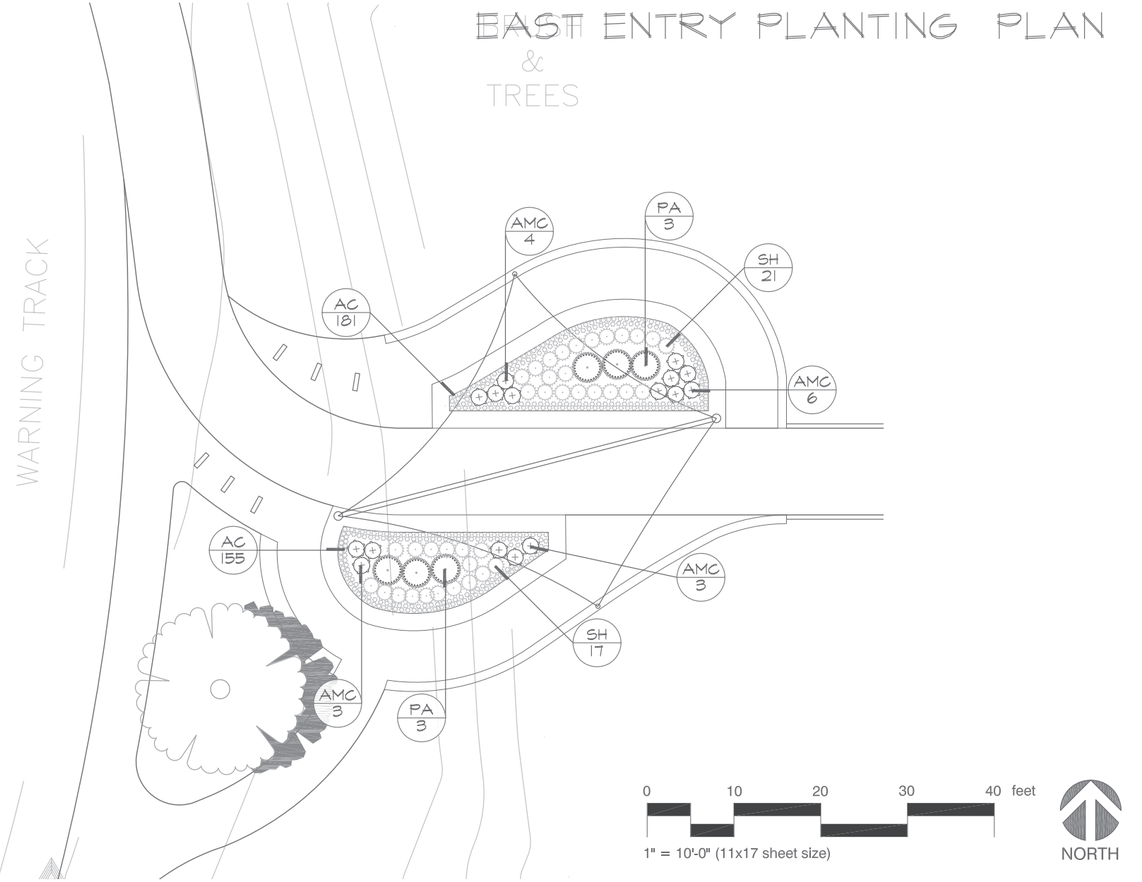
0 30 60 90 120 feet

SCALE: 1"=30' (24x36 sheet size)

ENTRY NODE PLANTING PLANS



The plants used in these planting plans are showy at various times throughout the year, ensuring that users of the bike path are welcomed in to Ahuska Park with the sight of blooming perennials, showy fall color, or showy ornamental grasses (See plant schedule on the following page spread for plant symbol identities).



STORMWATER SWALE PLANTING PLAN

The stormwater swale planting plan has a diverse array of species. All of the plants are tolerant of moist/wet soil and have seasonal interest. The notion that users of the path should move in and out of planted areas is reinforced with this planted area. Entering the site from the east, moving west, bikers and pedestrians will be sheltered as they cross the swale, but will suddenly be immersed in the openness of the site as they continue past the stormwater swale.

SWALE PLANTING CONCEPT SKETCH

PLANT SCHEDULE

TREES	CODE	BOTANICAL NAME / COMMON NAME	CONT	CAL	QTY
	AS	Acer x freemanii 'Sienna' / Sienna Glen Maple	5 gal		8
	BN	Betula nigra / River Birch	B & B	2"Cal	7
	CEO	Celtis occidentalis / Common Hackberry	B & B	2"Cal	1
	GB	Ginkgo biloba 'Autumn Gold' TM / Maidenhair Tree	B & B	2"Cal	7
	HV	Hamamelis vernalis / Spring Blooming Witchhazel	B & B	1"Cal	15
	LD	Larix decidua / European Larch	B & B	2"Cal	4
	SR	Syringa reticulata 'Ivory Silk' / Ivory Silk Japanese Tree Lilac	B & B	2"Cal	6
	UP	Ulmus parvifolia 'Lacebark Elm' / Chinese Elm Tree	B & B	2"Cal	18

SHRUBS	CODE	BOTANICAL NAME / COMMON NAME	SIZE	FIELD2	SPACING	QTY
	CO	Cephalanthus occidentalis / Buttonbush	5 gal		84" o.c.	22

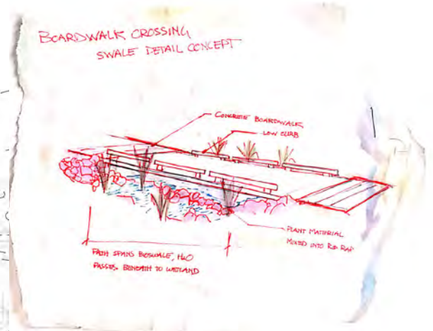
ANNUALS/PERENNIALS	CODE	BOTANICAL NAME / COMMON NAME	SIZE	FIELD2	SPACING	QTY
	AC	Allium cernuum / Nodding Wild Onion	4"pot		6" o.c.	529
	AMC	Amorpha canescens / Leadplant	4"pot		24" o.c.	33
	AI	Asclepias incarnata 'Ice Ballet' / Ice Ballet Swamp Milkweed	4" pot		36" o.c.	52
	BA	Baptisia alba macrophylla / White Wild Indigo	4"pot		30" o.c.	28
	RS	Rudbeckia subtomentosa / Sweet Black-eyed Susan	4" pot		24" o.c.	77
	SNA	Symphyotrichum novae-angliae / New England Aster	4"pot		36" o.c.	40

GRASSES	CODE	BOTANICAL NAME / COMMON NAME	SIZE	FIELD2	SPACING	QTY
	CP	Carex pensylvanica / Pennsylvania Sedge	4"pot		12" o.c.	45
	CS	Carex stipata / Sawbeak Sedge	4"pot		30" o.c.	22
	EV	Elymus virginicus / Virginia Wild Rye	2 gal		24" o.c.	57
	PA	Pennisetum alopecuroides / Fountain Grass	3 gal		42" o.c.	10
	SC	Scirpus cyperinus / Wool Grass	2 gal		36" o.c.	28
	SH	Sporobolus heterolepis 'Tara' / Prairie Dropseed	5 gal		24" o.c.	69

STORMWATER MANAGEMENT

STORMWATER RUNOFF

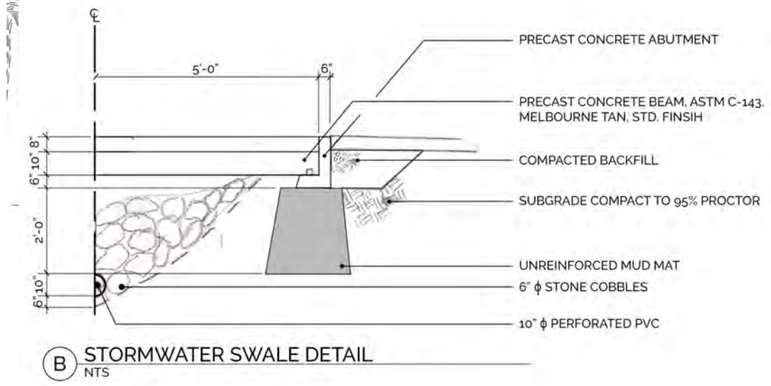
Using the improved grading plan, the entire site was divided into microwatersheds. Within each microwatershed, storm-water runoff volumes were calculated for each land use type. Adding all of the runoff volumes together within each microwatershed resulted in the total volume of water that would be draining from that microwatershed during a storm event. The pipes and drains were sized for a 100 year storm event.



SWALE MICROWATERSHED

TOTAL Q: 2.299 CFS
10" ϕ PIPE NEEDED

15,249 SQ. FT.



B STORMWATER SWALE DETAIL
NTS

CONCLUSION

REFLECTION

Monona is a rather progressive city, and has a lot of accessible city-wide data available. The information presented in Part II is accurate. However, with the amount of available data and resources, the regional, community & site inventory and analysis could be more in-depth. Additional social & ecological factors could be considered.

Both the regional and site scales were appropriate with regard to the amount of detail conveyed. The regional trail system could be more refined, and additional trail placement alternatives could be explored.

Originally, the scale of the project was far too small. After doing research, the scale of the project was expanded to include the regional trail system. At first, the scope of work simply consisted of some site improvements at Ahuska Park. If the opportunity for a regional trail system had presented itself earlier in the year a more in-depth description of the proposed trail could have been provided.

By far, the most difficult part of this project was defining the program for the project. It took over a semester to cement the "big picture" of my project, a trail master plan for Monona. Had this been the project from the start, the project could have been more in-depth. Additional cultural elements could have been incorporated into the designs, specifically Monona's Ho-Chunk history.

APPENDIX

LITERATURE REFERENCES

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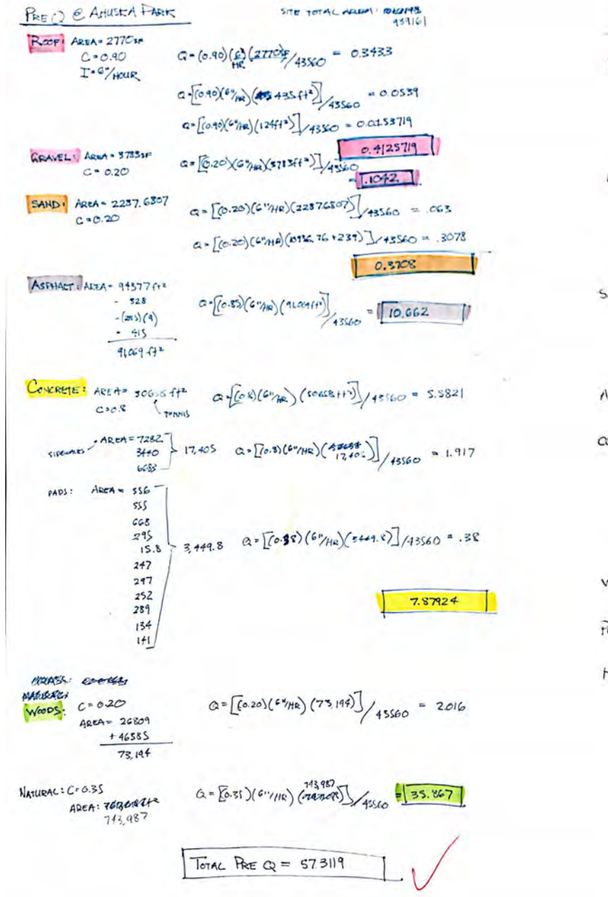
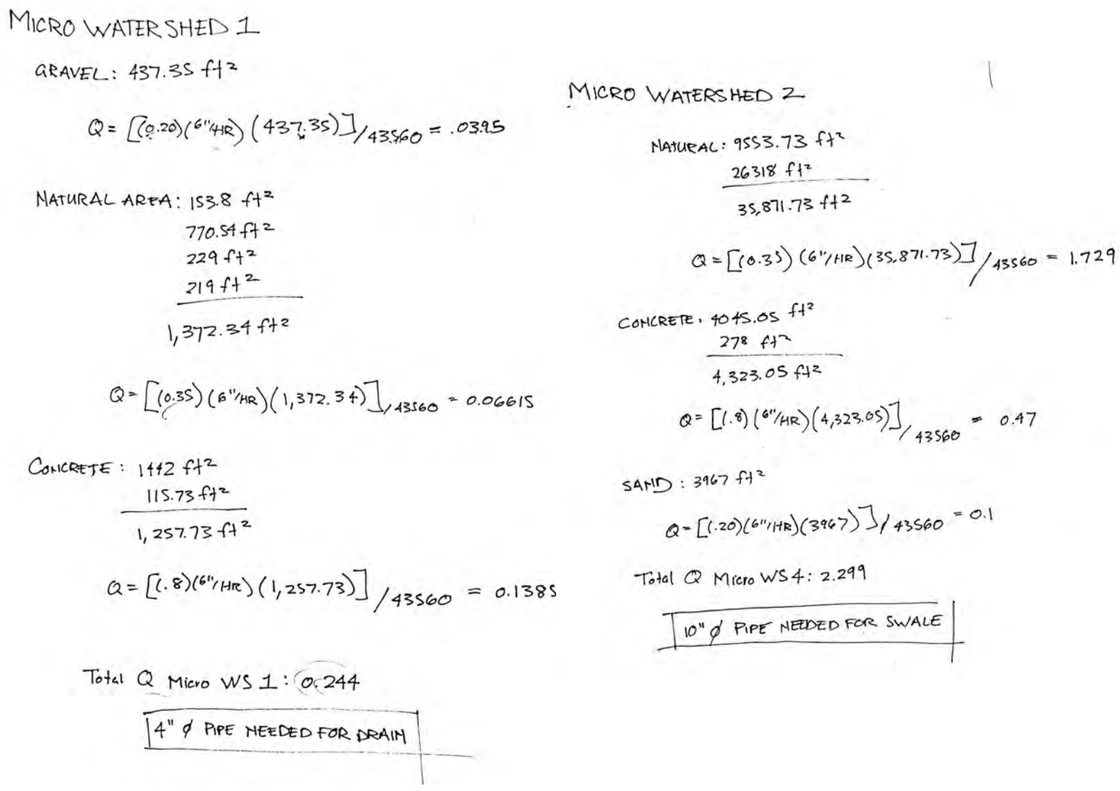
STORMWATER CALCULATIONS





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JASON VARGO

UniverCity Year program director

javargo@wisc.edu

608-265-9761

KELLY CONFORTI RUPP

UniverCity Year program manager

kelly.rupp@wisc.edu

608-890-0330

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