UNIVERSITY HEIGHTS MULTI-USE TRAIL MASTER PLAN

December, 2024

Contact:
Ryan Anderson, PLA
319-893-2660
Ryan.Anderson@bolton-menk.com

BOLTON & MENK
Real People. Real Solutions.

BYT BACKYARD TRAILS
TRAIL DESIGN & DEVELOPMENT IN YOUR COMMUNITY

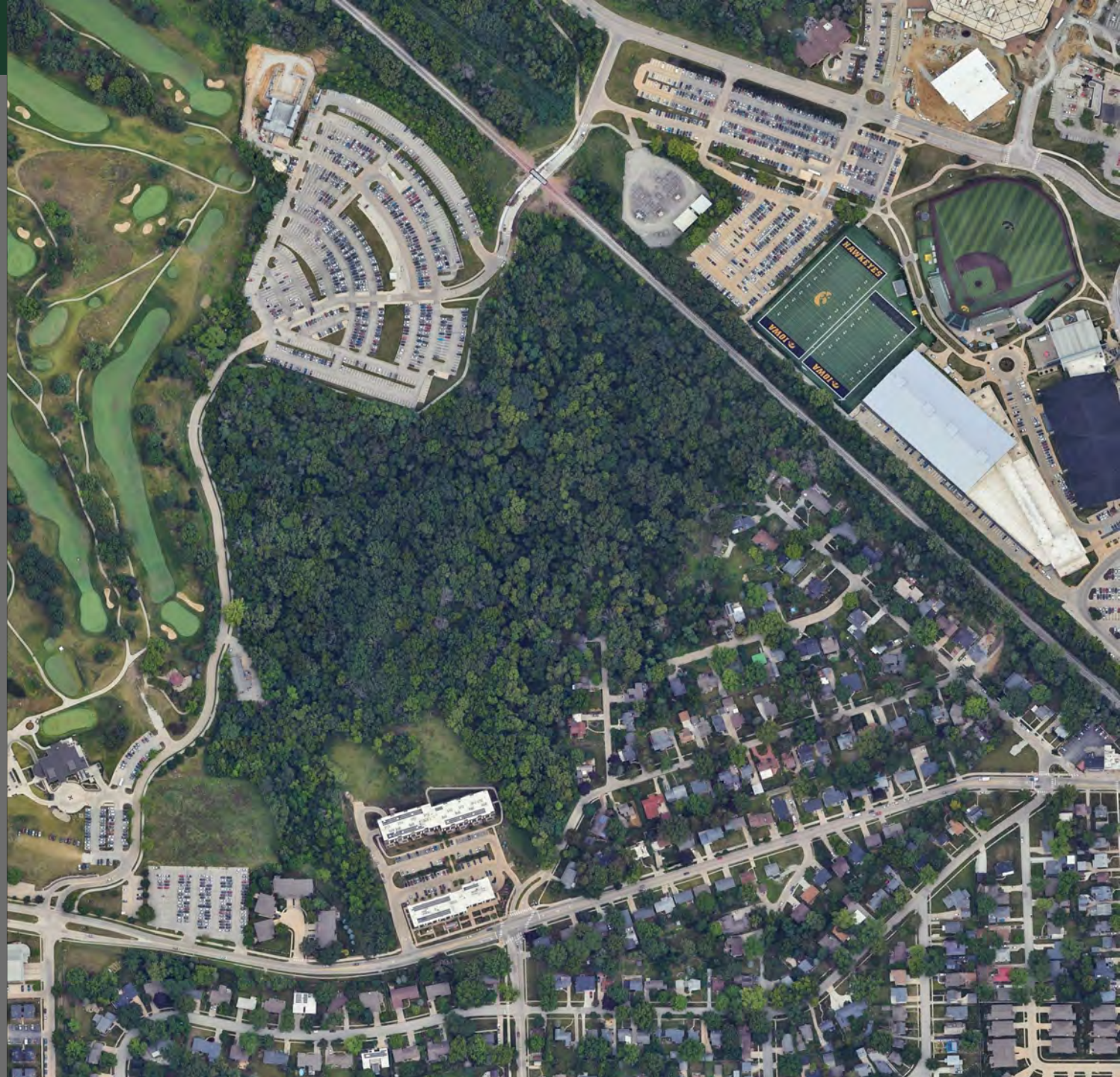


Table of Contents

1. OVERVIEW

I. Project Team
II. Project Goals
III. Process
IV. Project Understanding

Project Team

Design Team

Bolton & Menk
Ryan Anderson
Dillan Patel

Backyard Trails
Ken Barker
Morgan Ross

Steering Group

Josh Schamberger, Think Iowa City

Nick Pfeiffer, Think Iowa City

Nick Herbold, City of University Heights

Dr. Rick Hopson, Resident and cyclist

Design Team Goals

Priority	Goal
1	Enhance accessibility
2	Increase connectivity
3	Provide a safe environment for a range of users
4	Design sustainable trails
5	Generate documents that support grant funding

Project Process

10/3 Notice to Proceed

10/17 Preliminary Site Visit

10/23 Kickoff Meeting

11/22 Preliminary Concept Review Meeting

12/11 Preferred Concept Review Meeting

Site Understanding

Existing, maintained social trails utilized by hikers who are predominantly adjacent neighbors

12 Acre Parcel owned by University Heights

24 Acre Parcel Owned by University Heights and Board of Regents (University of Iowa)

Forest is defined by steep ravines, mature deciduous trees, and an urban boundary

University of Iowa is a partner and has supported the grass trail north of One University Place

SWOT

Strengths:
- 12 Acres of City-owned land
- Available capital
- Mature forest provides sense of immersion

Weaknesses:
- Keeping taxes low
- Stormwater infrastructure
- Limited site accessibility
    - Parking
    - Accessible routes
    - Wayfinding

Opportunities:
- Existing social trail and users
- University of Iowa is aware that plans are in development
- Interpretive signage
- Forest management
- Stormwater management

Threats:
- Potential for bicycle/pedestrian conflict
- Ability to police the trails
- Potential for risk
- Lack of privacy for neighbors

2. SITE ANALYSIS

I. SWOT
II. Topography
III. Existing Social Trails

PARCEL EXTENTS

EXISTING SOCIAL TRAILS

Multi-Use Trail System Master Plan
University Heights, IA

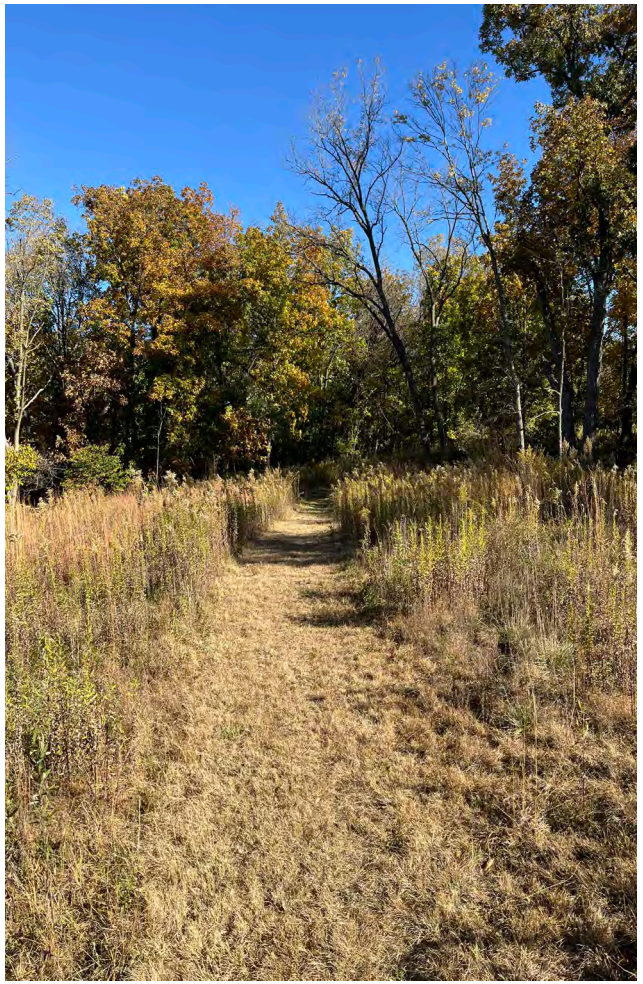
University Heights Multi-use trails
November 2024

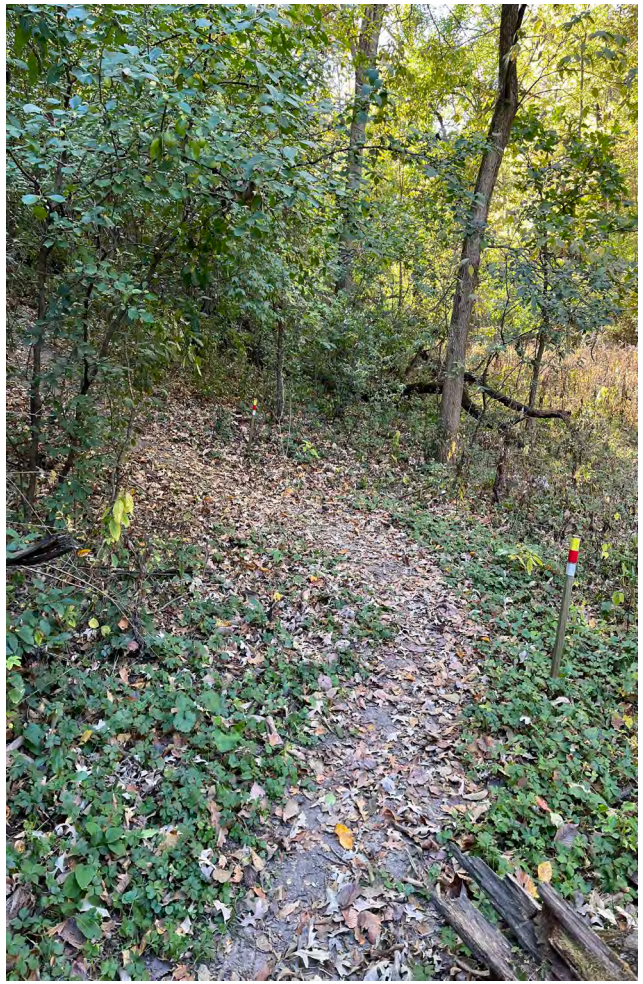
BOLTON & MENK

BACKYARD TRAILS

H:\THINK\AC_PR\24X136332000\CAD\C3D\24X136332000_C_BASE_N1.dwg 11/7/2024 10:25:17 AM

Project Understanding





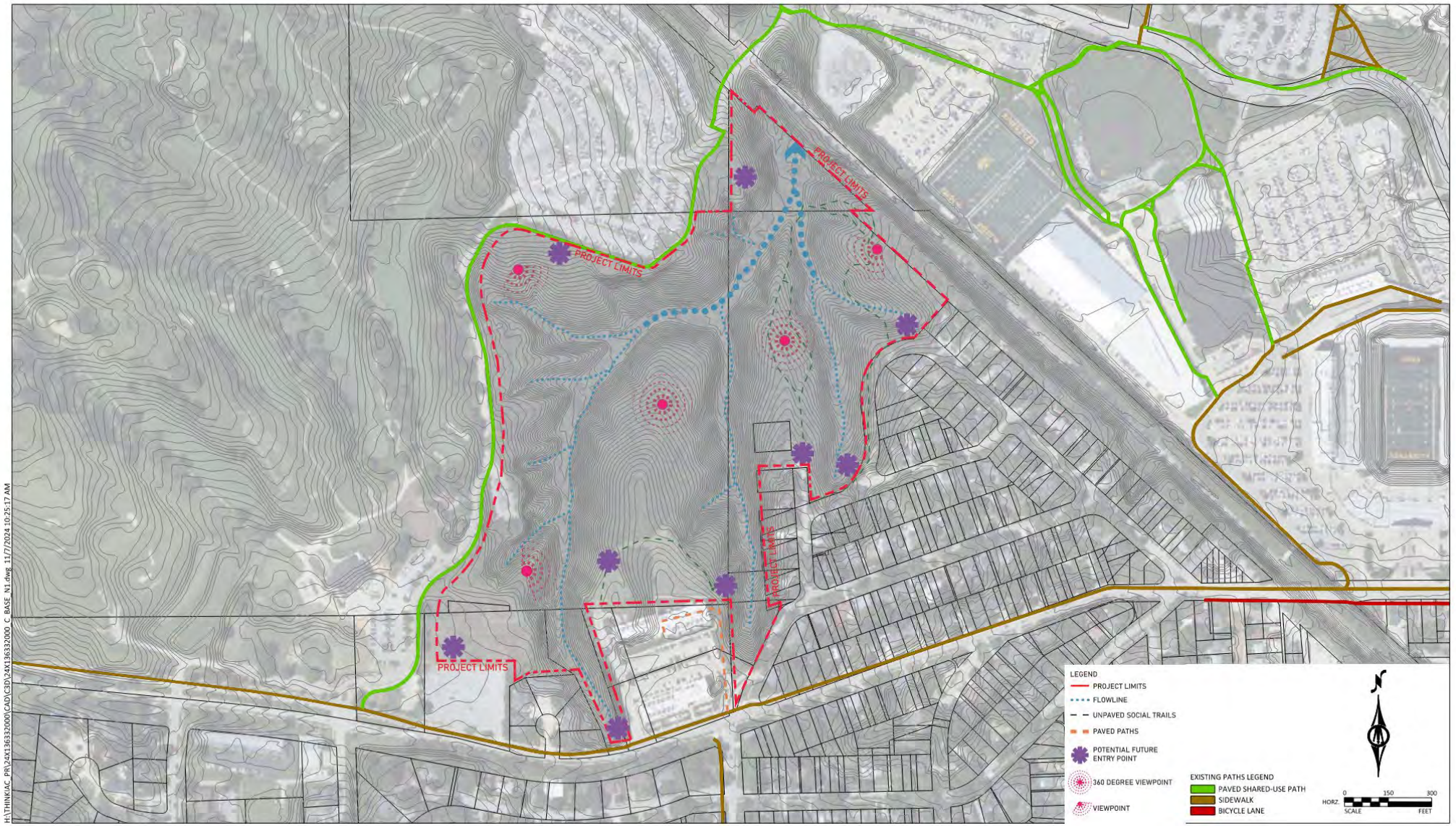
SITE ANALYSIS – ACCESS AND VIEWSHEDS

Multi-Use Trail System Master Plan
University Heights, IA

University Heights Multi-use trails
November 2024

BOLTON & MENK

BACKYARD TRAILS



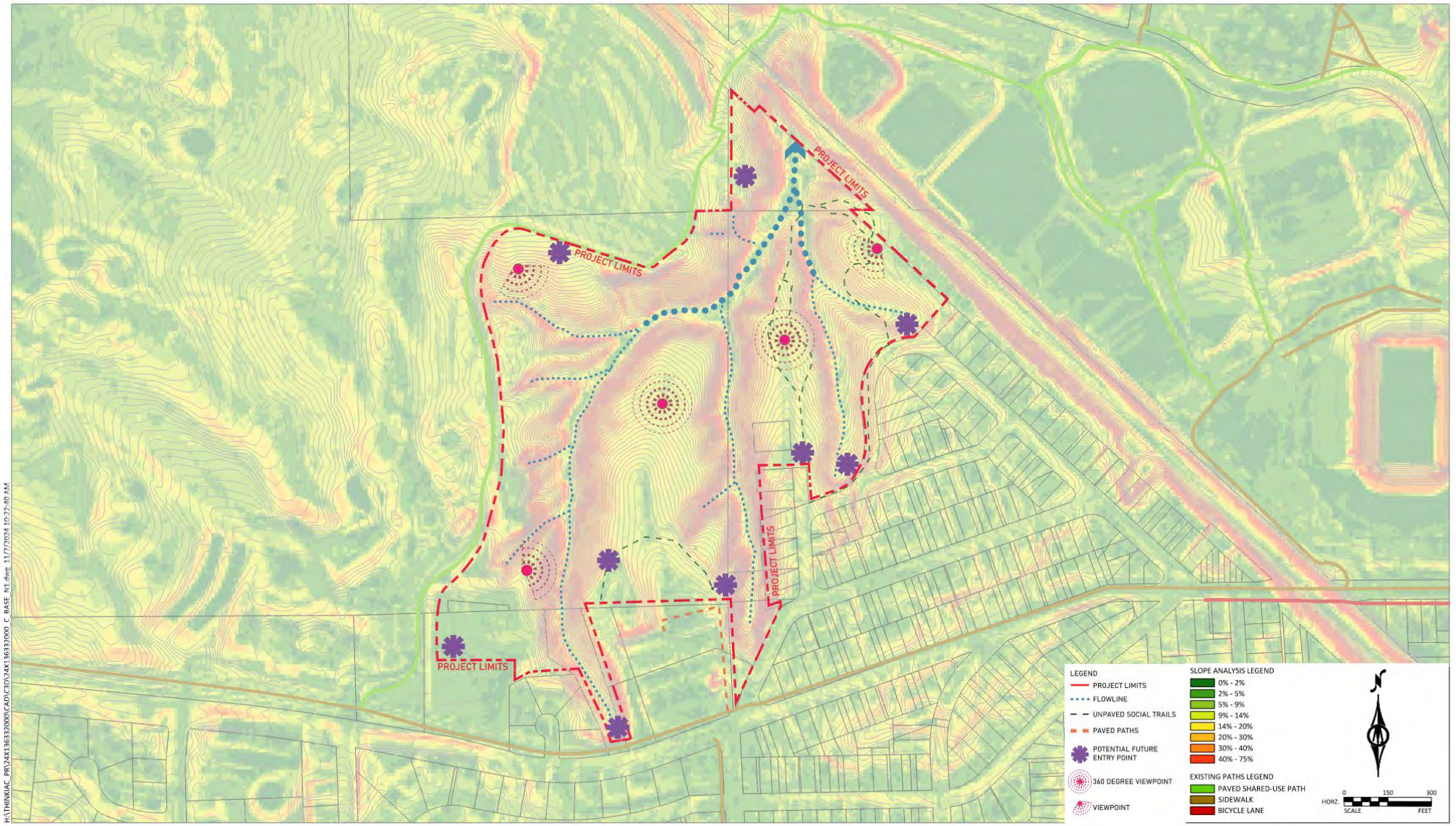
SITE ANALYSIS – TOPOGRAPHY AND DRAINAGE

Multi-Use Trail System Master Plan
University Heights, IA

University Heights Multi-use trails
November 2024

BOLTON & MENK

BACKYARD TRAILS



3. PRELIMINARY DESIGN

I. Concepts 1 and 2
II. Cost Opinions
III. Design Narrative

PRELIMINARY CONCEPT 1

Multi-Use Trail System Master Plan - Concept 1
University Heights, IA

University Heights Multi-use trails
November 2024

BOLTON & MENK

BACKYARD TRAILS

TYPICAL SECTIONS (4X HORIZONTAL SCALE)

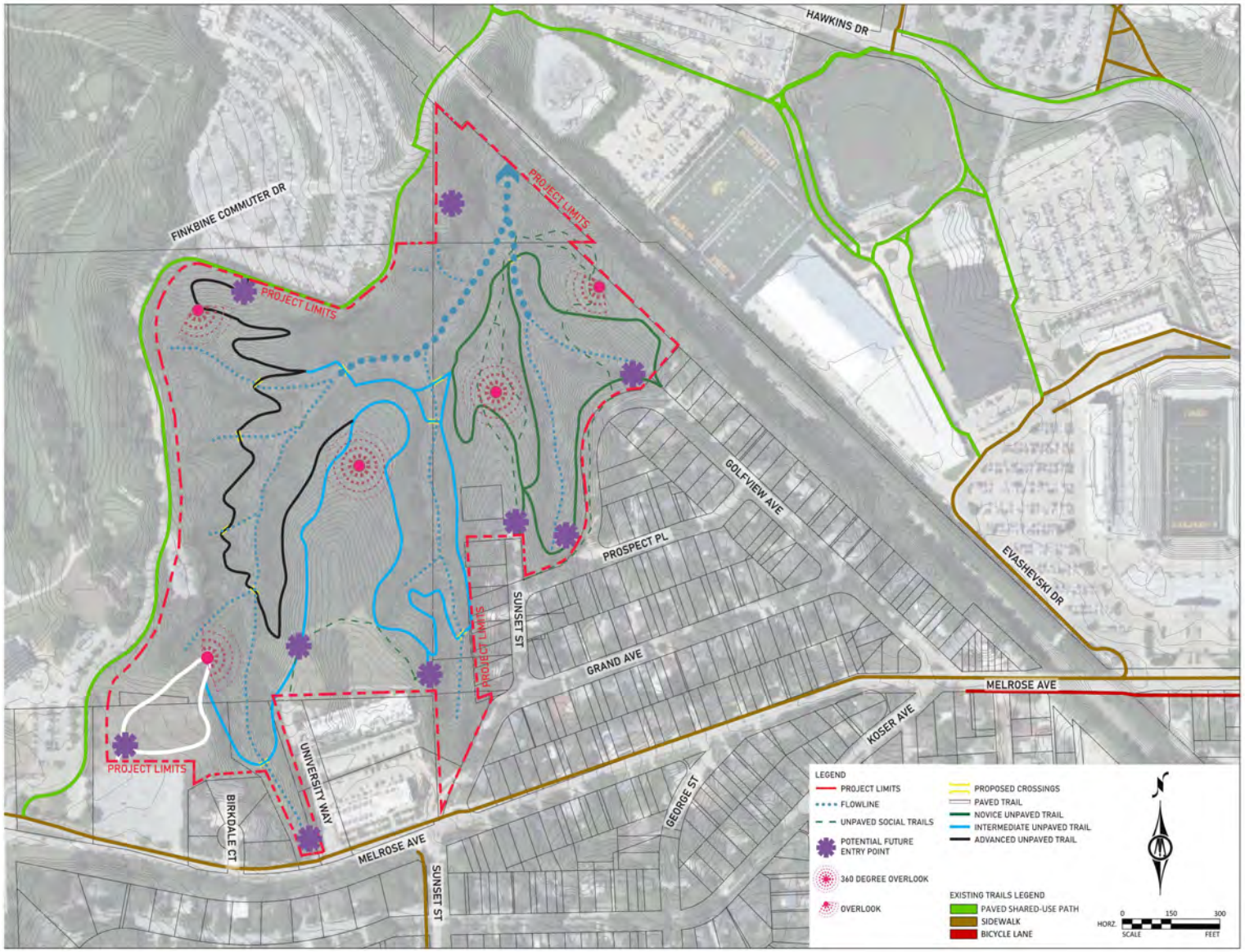
UNPAVED TRAIL PAVED TRAIL

PRECEDENT IMAGES

UNPAVED TRAIL IMAGE CREDIT: BACKYARD TRAILS, LLC

PAVED TRAIL

BOARDWALK CROSSING IMAGE CREDIT: BACKYARD TRAILS, LLC



PRELIMINARY CONCEPT 2

Multi-Use Trail System Master Plan - Concept 2
University Heights, IA

University Heights Multi-use trails
November 2024

BOLTON & MENK

BACKYARD TRAILS

TYPICAL SECTIONS (4X HORIZONTAL SCALE)

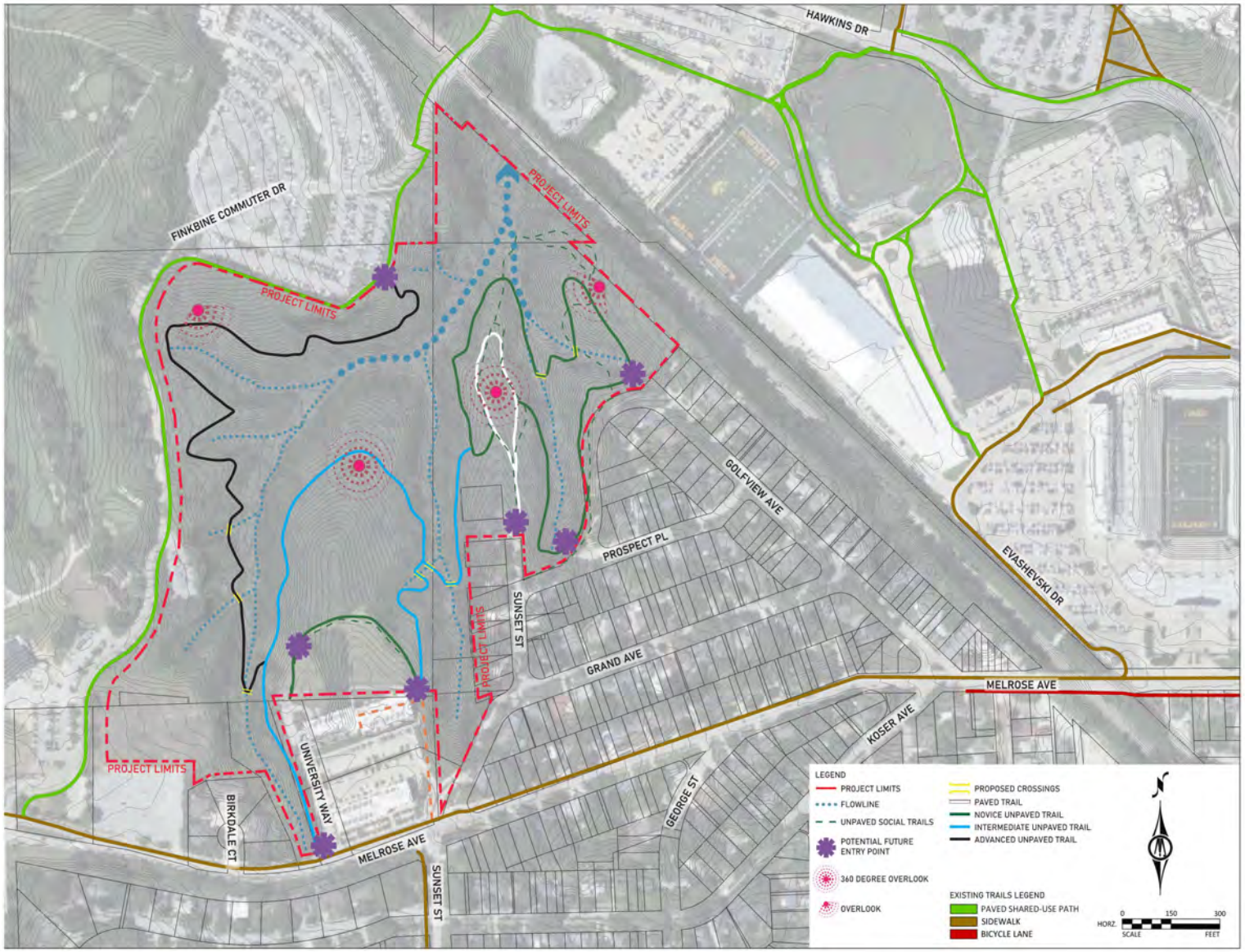
UNPAVED TRAIL PAVED TRAIL

PRECEDENT IMAGES

UNPAVED TRAIL IMAGE CREDIT: BACKYARD TRAILS, LLC

PAVED TRAIL

BOARDWALK CROSSING IMAGE CREDIT: BACKYARD TRAILS, LLC



PRELIMINARY COST OPINIONS

BOLTON & MENK
Real People. Real Solutions.

PROJECT #: 24X.136332000
DATE: NOVEMBER 2024

UNIVERSITY HEIGHTS - MULTI-USE TRAIL
OPINION OF PROBABLE COST - CONCEPT 1

#	ITEM DESCRIPTION	QUANTITY	UNITS		UNIT COST		TOTAL COST
TRAIL DEVELOPMENT							
1	Dirt Trail	11,000	LF	*	$15	=	$165,000
2	Rock Armoring	3,300	SF	*	$45	=	$148,500
3	Boardwalk	8	EA	*	$15,000	=	$120,000
					Construction Subtotal	=	$433,500
PAVED TRAIL DEVELOPMENT							
1	Concrete - 5" atop 4" Granular Class A Crushed Stone	600	SY	*	$90	=	$54,000
2	Concrete - 7" atop 6" Granular Class A Crushed Stone	133	SY	*	$100	=	$13,300
3	Concrete Overlook - 5" atop 4" Granular Class A Crushed Stone	5	EA	*	$5,000	=	$25,000
					Construction Subtotal	=	$67,300

	Construction Subtotal	=	$500,800
	Master Plan Level Contingency**(30%)	=	$150,300
	Construction Subtotal w/ Contingency	=	**$651,100**
	Professional Design & Engineering Fees** (10%)	=	$65,110
	Soft Costs** (Geotech, Topo Survey, Printing, Permitting, etc.)	=	$20,000
	ESTIMATED TOTAL PROJECT COSTS*	=	**$736,300**

UNIVERSITY HEIGHTS - MULTI-USE TRAIL
OPINION OF PROBABLE COST - CONCEPT 2

#	ITEM DESCRIPTION	QUANTITY	UNITS		UNIT COST		TOTAL COST
TRAIL DEVELOPMENT							
1	Dirt Trail	9,150	LF	*	$15	=	$137,250
2	Rock Armoring	3,000	SF	*	$45	=	$135,000
3	Boardwalk	8	EA	*	$15,000	=	$120,000
					Construction Subtotal	=	$392,250
PAVED TRAIL DEVELOPMENT							
1	Concrete - 5" atop 4" Granular Class A Crushed Stone	700	SY	*	$90	=	$63,000
2	Concrete - 7" atop 6" Granular Class A Crushed Stone	133	SY	*	$100	=	$13,300
3	Concrete Overlook - 5" atop 4" Granular Class A Crushed Stone	4	EA	*	$5,000	=	$20,000
					Construction Subtotal	=	$76,300

	Construction Subtotal	=	$468,550
	Master Plan Level Contingency**(30%)	=	$140,600
	Construction Subtotal w/ Contingency	=	**$609,150**
	Professional Design & Engineering Fees** (10%)	=	$60,915
	Soft Costs** (Geotech, Topo Survey, Printing, Permitting, etc.)	=	$20,000
	ESTIMATED TOTAL PROJECT COSTS*	=	**$690,100**

Preliminary Design Feedback

- Prefer concept A to because of the additional trail length
- Recommend relocating paved trail to area north of One University Place
- Prefer not to increase pedestrian and vehicular traffic through the existing neighborhood
- Trail should function as a local amenity, not a regional destination
- Trail should serve a primarily recreational purpose, not commuter purpose
- Connections to existing off-street trail system is important to create a new experience along a longer string of regional trail amenities

4. PREFERRED DESIGN

I. Preferred Concept
II. Precedent Imagery
III. Cost Opinion
IV. Design Narrative
V. Next Steps

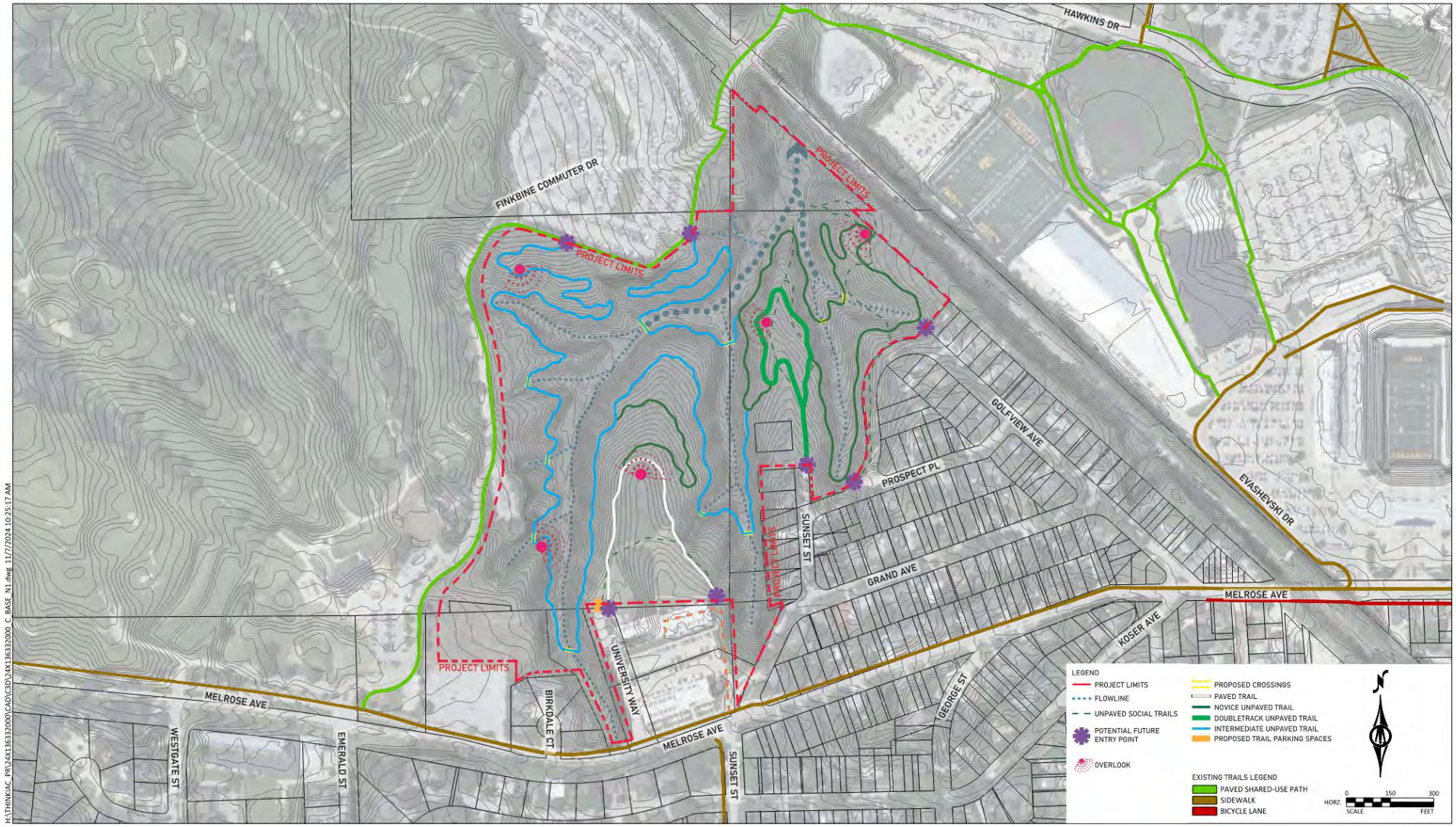
PREFERRED CONCEPT

Multi-Use Trail System Master Plan
University Heights, IA

University Heights Multi-use trails
December 2024

BOLTON & MENK

BACKYARD TRAILS



PRECEDENT IMAGES

Paved Trail

Boardwalk Crossing*

Rock Armoring*

Singletrack Trail*

*** Images courtesy of Backyard Trails**

PRECEDENT IMAGES

Accessible Parking

Overlook

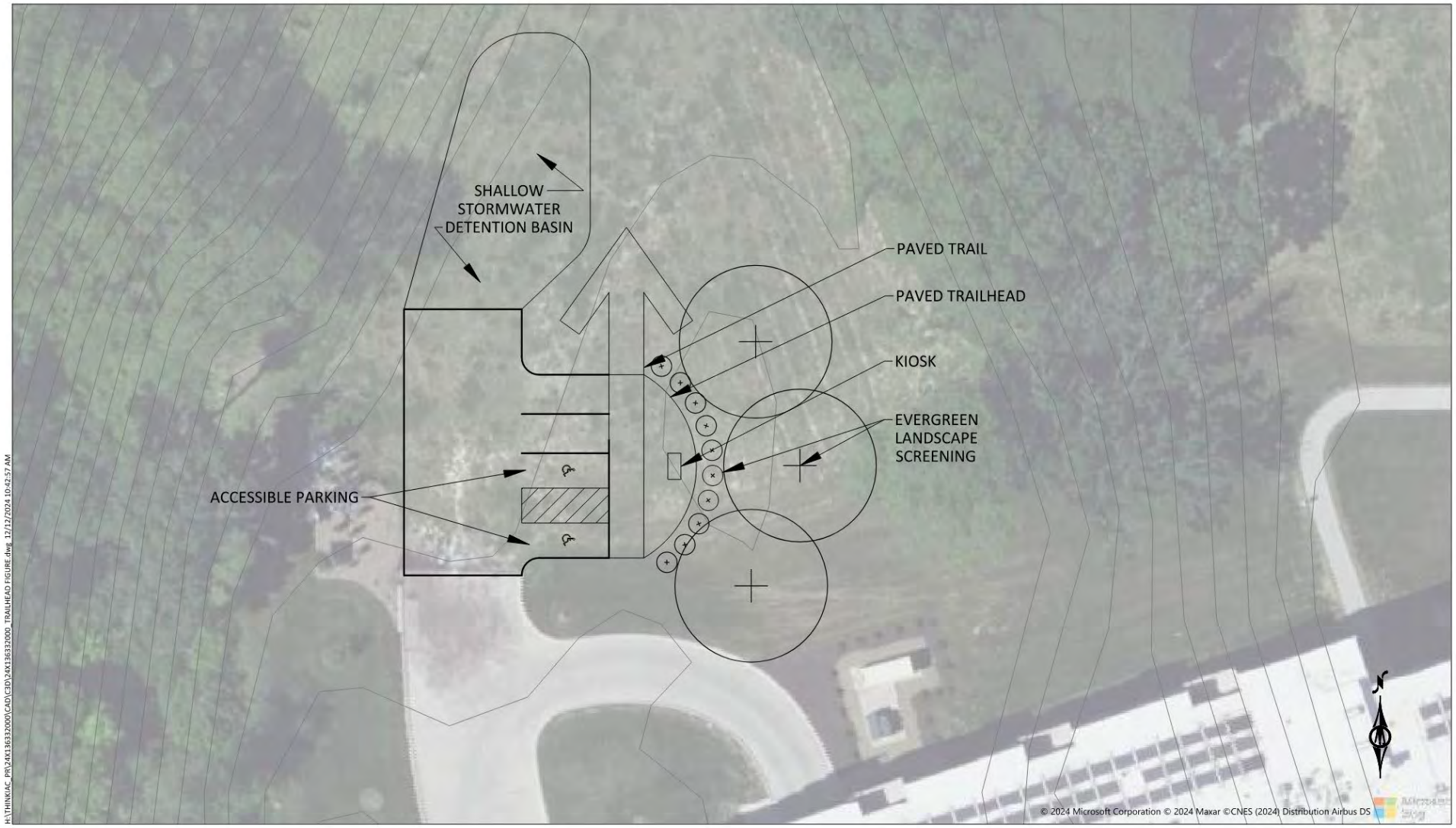
Seating

Kiosk with Signage

TRAILHEAD CONCEPT

Multi-Use Trail System Master Plan
University Heights, IA

University Heights Multi-use trails
December 2024



H:\THINK\AC_PR\24X136332000\CAD\C3D\24X136332000_TRAILHEAD FIGURE.dwg, 12/12/2024 10:42:57 AM

PREFERRED CONCEPT COST OPINION

UNIVERSITY HEIGHTS - MULTI-USE TRAIL
OPINION OF PROBABLE COST

#	ITEM DESCRIPTION	QUANTITY	UNITS		UNIT COST		TOTAL COST
UNPAVED TRAIL DEVELOPMENT							
1	Dirt Trail - Singletrack (3' Tread)	11,600	LF	*	$15	=	$174,000
2	Dirt Trail - Doubletrack (5' Tread)	1,300	LF	*	$20	=	$26,000
3	Rock Armoring	2,000	SF	*	$45	=	$90,000
4	Boardwalk	11	EA	*	$15,000	=	$165,000
						=	$455,000

#	ITEM DESCRIPTION	QUANTITY	UNITS		UNIT COST		TOTAL COST
TRAILHEAD AND PAVED TRAIL AMENITIES							
5	Concrete Trail and Trailhead- 6' Wide, 5" Depth with Subbase	800	SY	*	$90	=	$72,000
6	Concrete Parking Lot - 7" Depth with Subbase	280	SY	*	$120	=	$33,600
7	Overlook	5	EA	*	$10,000	=	$50,000
8	Kiosk and Signgage	1	EA	*	$10,000	=	$10,000
9	Landscape Screening	1	EA	*	$5,000	=	$5,000
10	Stormwater Detention Basin	1	EA	*	$5,000	=	$5,000
					Construction Subtotal	=	$175,600

	Construction Subtotal	=	$630,600
	Master Plan Level Contingency (20%)	=	$126,200
	Construction Subtotal w/ Contingency	=	**$756,800**
	Professional Design & Engineering Fees (10%)	=	$75,680
	Soft Costs (Geotech, Topo Survey, Printing, Permitting, etc.)	=	$20,000
	ESTIMATED TOTAL PROJECT COSTS	=	**$852,500**

Design Narrative - Project Goals

- Connect people to nature
- Provide a wide range of experiences within the context of social and environmental sustainability
- Create a new attraction connected to the existing regional trail network
- Increase public safety
- Increase sense of privacy for neighbors
- Optimize trail lengths within available land
- Develop a master plan for a system of trail circuits throughout the forested ravine
- Include a trail circuit on University Heights property

Design Narrative - Sustainability

Properly planned for, designed, and constructed singletrack trails and mountain bicycling facilities are environmentally, socially, and economically sustainable.

- The *environmental* sustainability of a trail asks and answers the question, “What are the potential impacts of a trail on the landscape?” and weighs this against the benefits provided by the trail. A trail also allows for access to better manage the landscape through removal of invasive species and erosion control measures.
- A *socially* sustainable trail provides visitors the opportunity to achieve their recreation objectives while protecting land resources; increasing the capacity of the land for enjoyment while minimizing negative impacts. Minimizing opportunities for collision between different user groups is integral to good trail design.
- In the context of community development, singletrack trails and mountain bike facilities are a value proposition similar to other parks infrastructure, such as ball fields and playgrounds, categorized as an *economically* sustainable and fiscally sound form of public recreation with benefits outweighing costs.

Design Narrative – Community-wide Asset

- Connectivity to existing trail network accommodates both locals and visitors
- Wide range of ages from youth to elderly
- Accessible amenities accommodate a wide range of abilities
- Trails accommodate a wide range of hobbies from mountain bicyclists, to dog walkers, to naturalists and hikers
- Opportunity for seasonal accessibility
- Opportunity for community gatherings

Next Steps

- Fundraising for capital which includes grant applications
- Coordinate master plan with Board of Regents/University of Iowa
- Ongoing coordination with University Heights steering committee members
- Identify project phasing
- Hire consultant for construction documents and bidding

- Optional Steps
  - Ecological assessment of forest health
  - Survey and schematic design of trailhead locations

Disclaimer

- This master plan report include designs that have been verified through a desktop analysis of topographic conditions and site visits to review potential trail alignments with existing conditions. Designs are subject to change based on additional discoveries during the final design process.

- Features including specimen trees, concrete rubble, and stormwater infrastructure have been observed and considered as part of the master plan but are not represented. It is assumed that these features will be located and incorporated as part of the final design process.

- Unit costs have been included for this project based on typical conditions and average bid precedents. These costs are for planning purposes only and are subject to change based on unforeseen conditions including; unstable soils, buried debris, and unplanned alterations to the landscape between the completion of this report and final design.

- Trailhead design, including stormwater detention basin, is preliminary and subject to change based on stormwater calculations and surveyed conditions developed as part of the final design process.

Contact:
Ryan Anderson, PLA
319-893-2660
Ryan.Anderson@bolton-menk.com

BOLTON & MENK

Real People. Real Solutions.

BYT BACKYARD TRAILS