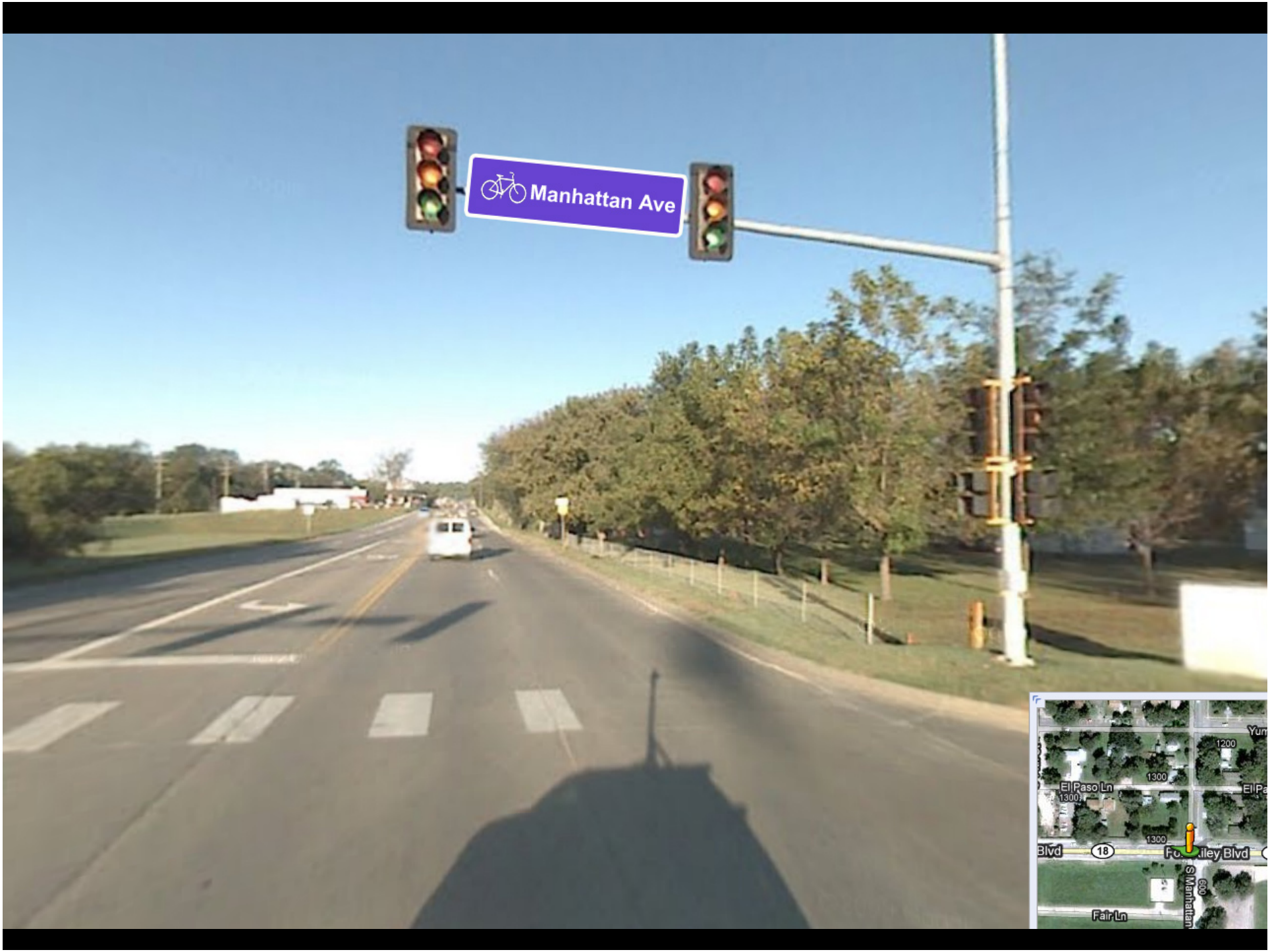

Manhattan Ave
El Paso Ln
1300
1200
18
Fair Ln

1998 Manhattan Bike Master Plan

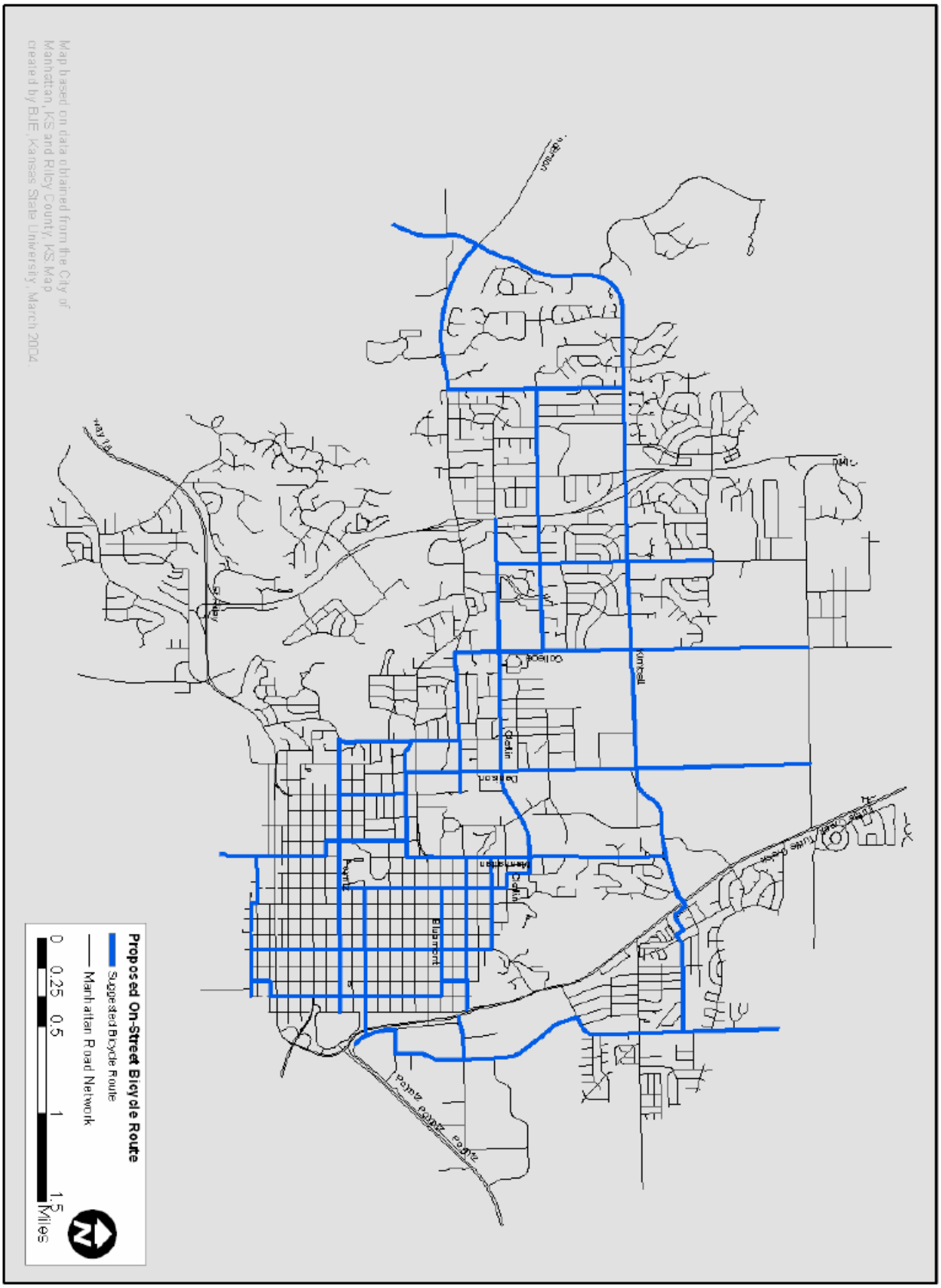
- Complete Linear Trail
- Develop inter-city bicycle facilities
- Bicycle parking
- Policies for future growth

Types of Cyclists

- A: operate under most conditions
- B: casual riders. Prefer low-speed, low-volume streets or paths
- C: child riders. Require comfortable areas.

1998 plan for completing the bike network

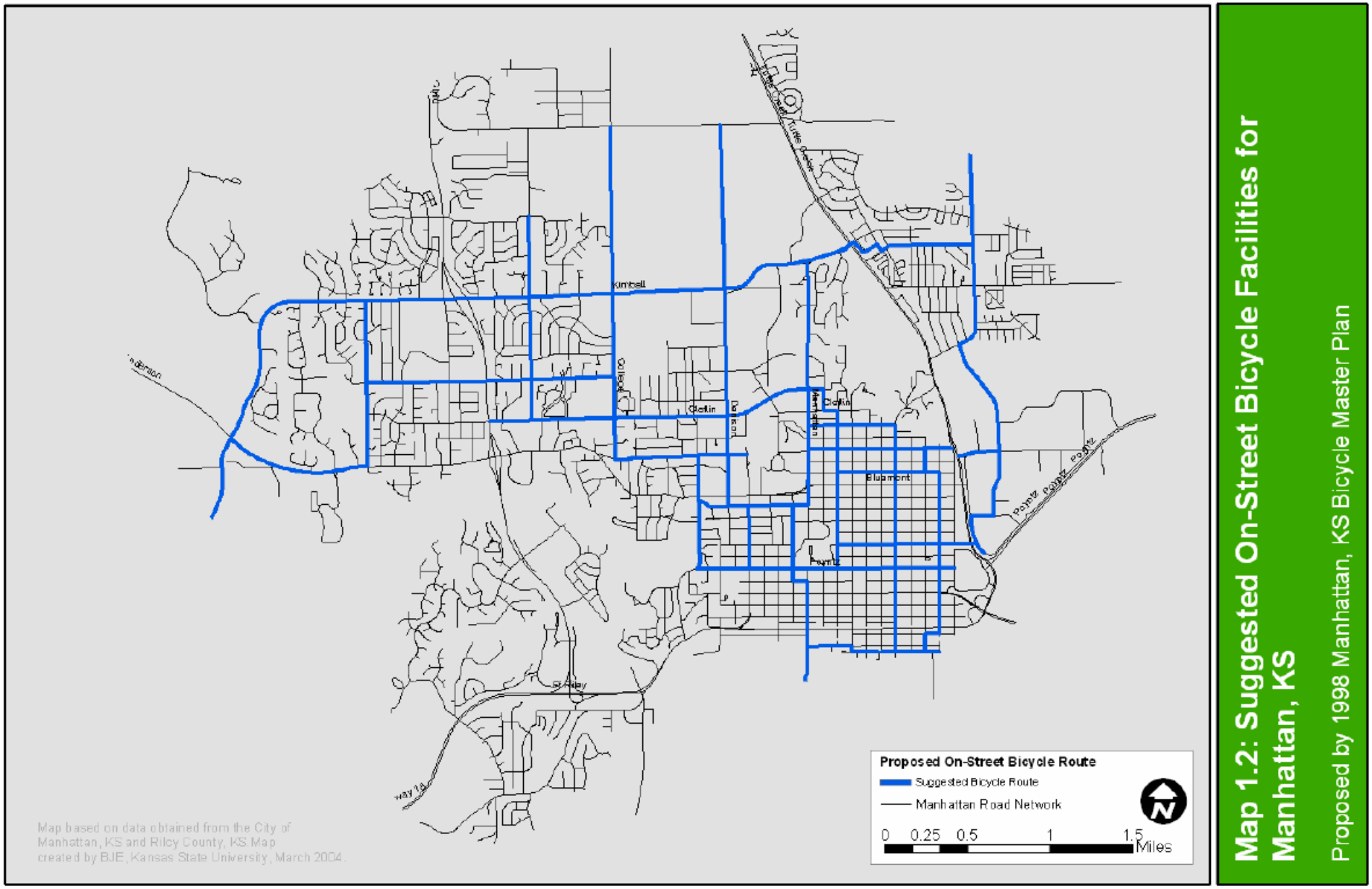
- “wheel and spokes” concept
- “All streets should be accessible to bicycle travel.”
- “An inter-connected network of designated bicycle routes – spokes – should be developed throughout the community.”
- “ideally, a rough grid of approximately ¼ - ½ mile spacing”
- Designated major streets as bicycle routes (College, Browning, Kimball, Poyntz, 14th, Juliette, etc.)



Map 1.2: Suggested On-Street Bicycle Facilities for Manhattan, KS

Proposed by 1998 Manhattan, KS Bicycle Master Plan

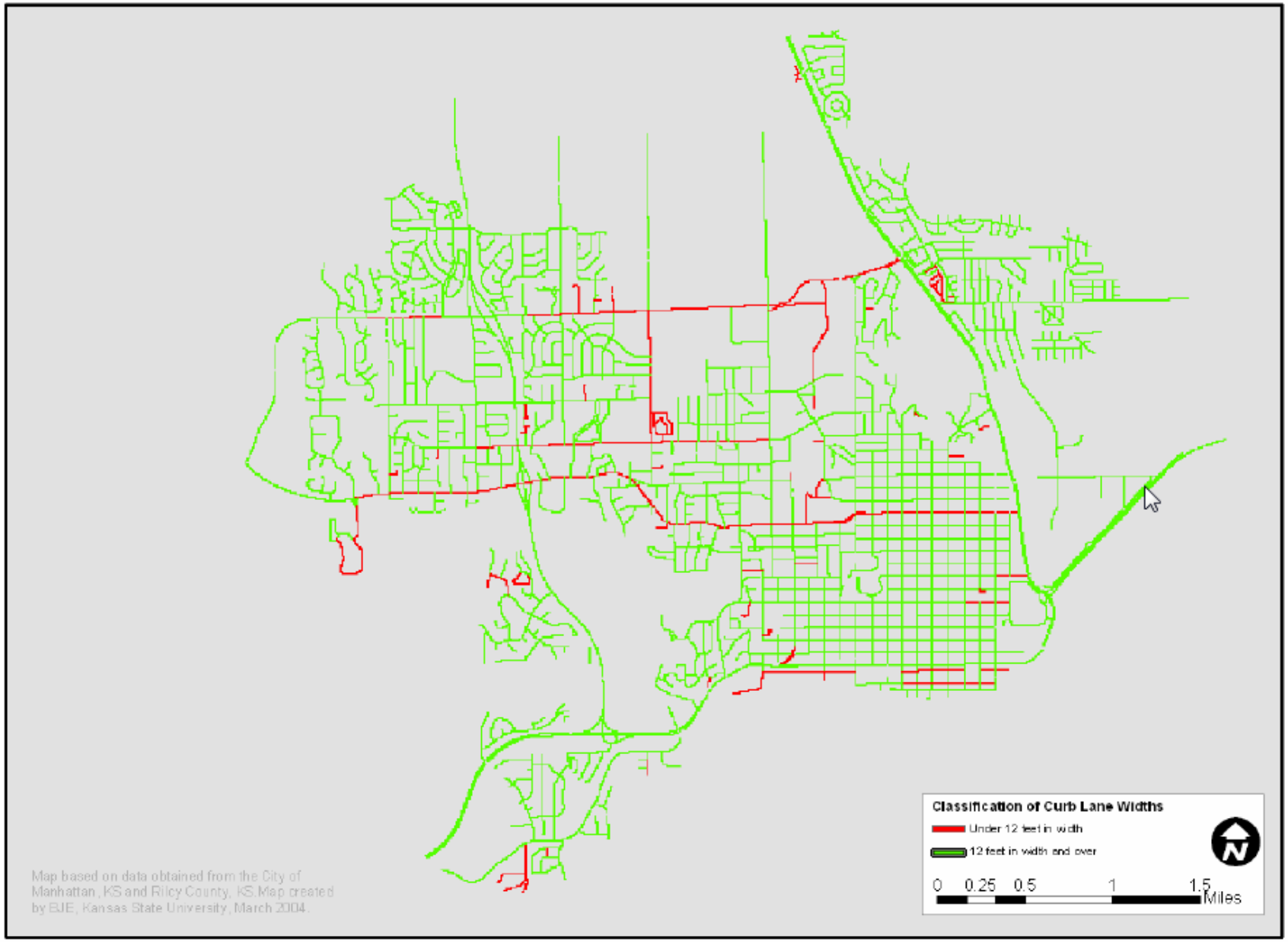
Ehreth's 2004 critique of the Master Plan



Map 1.2: Suggested On-Street Bicycle Facilities for Manhattan, KS

Proposed by 1998 Manhattan, KS Bicycle Master Plan

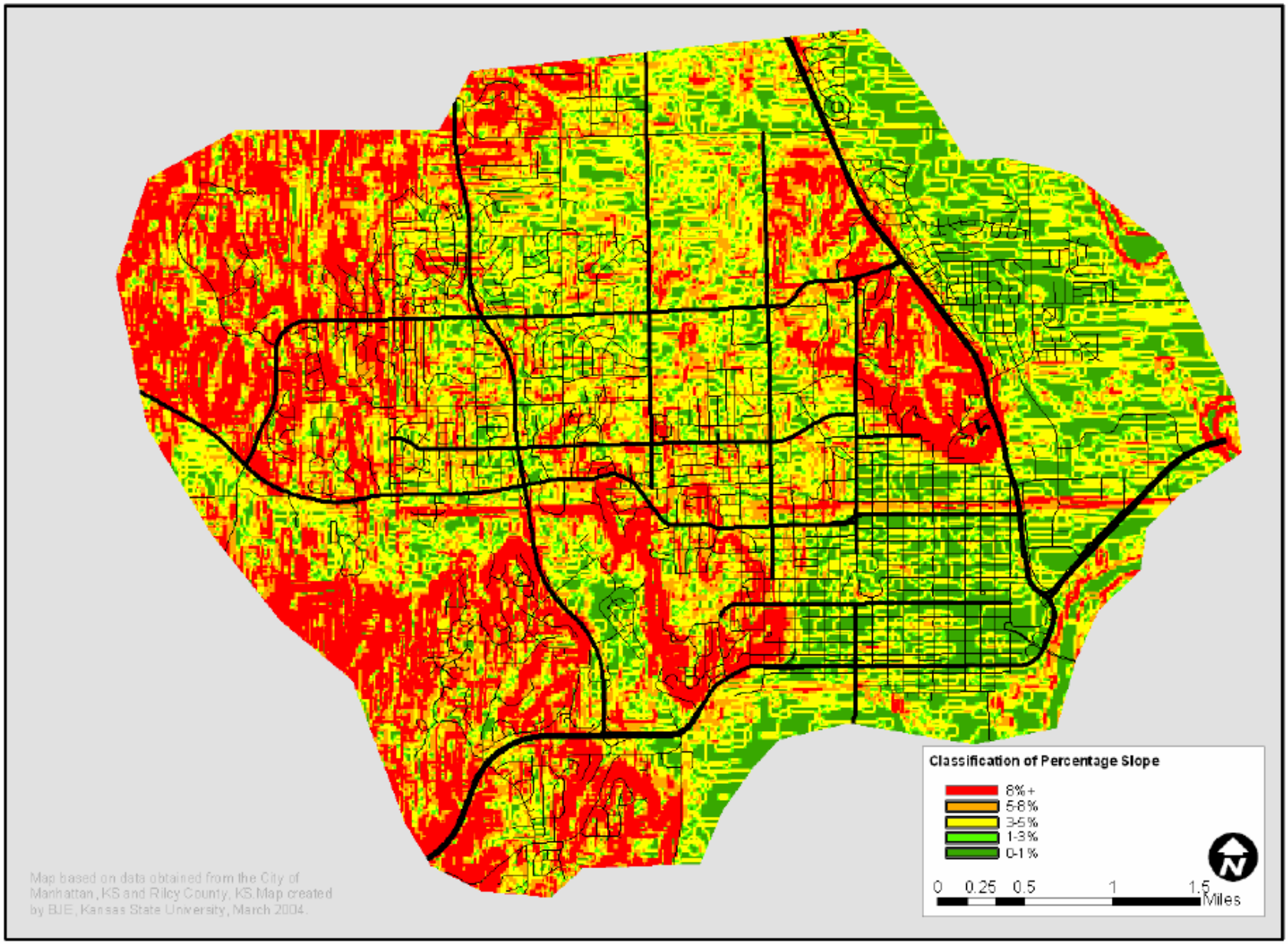
Curb lane widths under 12 ft.



Map 2.1: Conditions Associated with Bicycle Safety Concerns in Manhattan, KS, 2004

Estimated Curb Lane Widths in Manhattan, KS

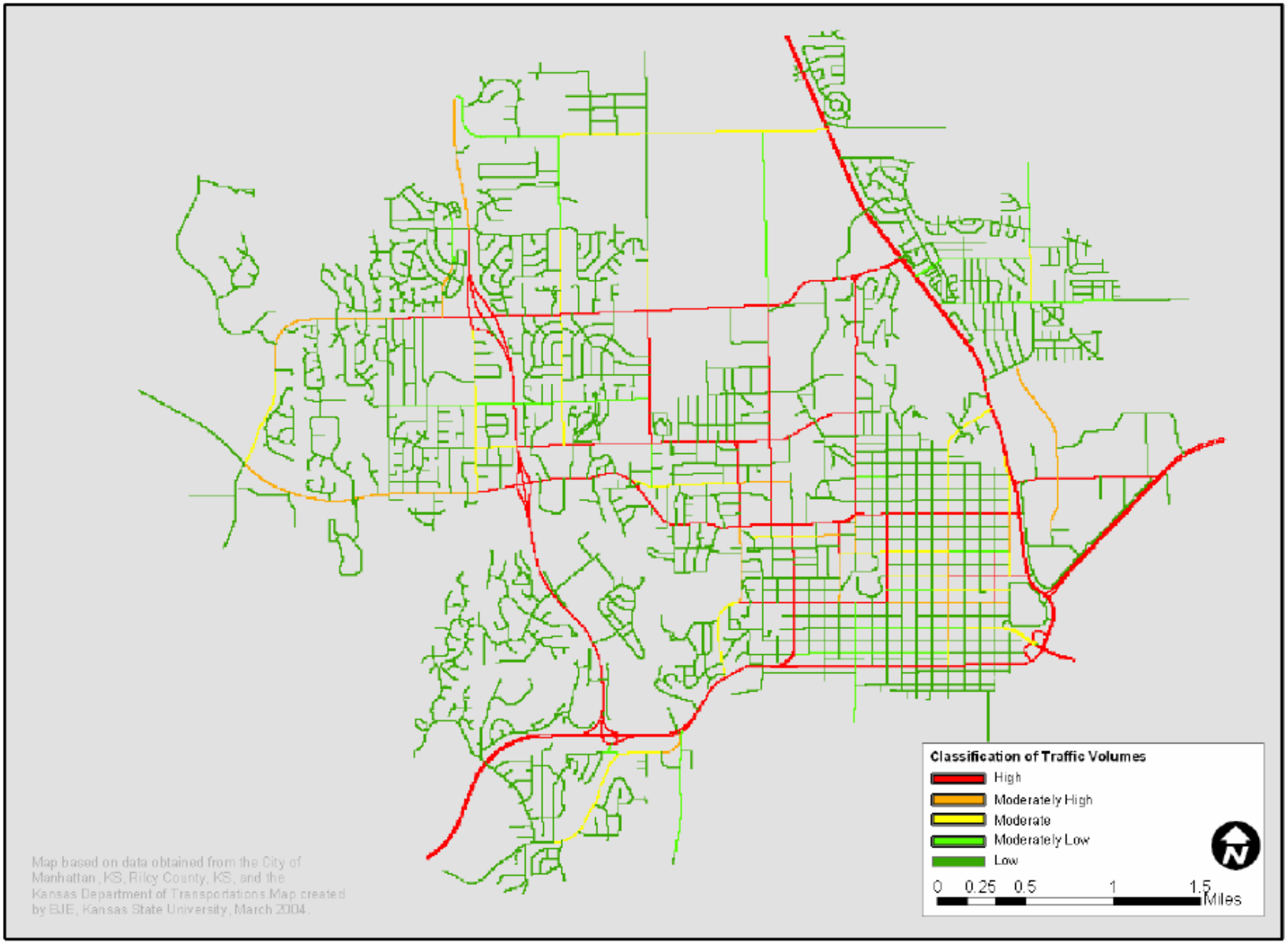
Topography



Map 2.2: Conditions Associated with Bicycle Safety Concerns in Manhattan, KS, 2004

Percentage Slope in Manhattan, KS

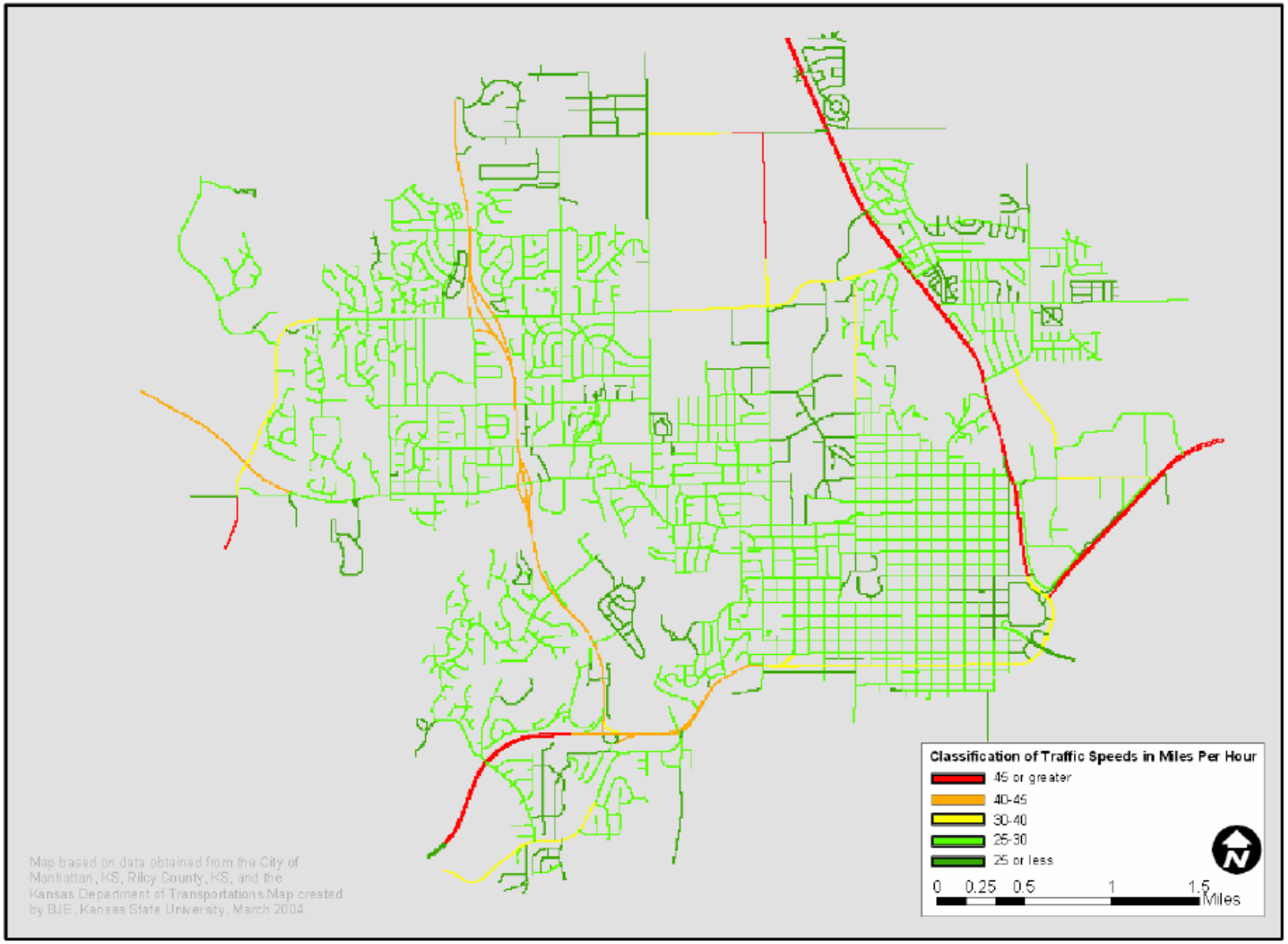
Traffic Volume



Map 2.3: Conditions Associated with Bicycle Safety Concerns in Manhattan, KS, 2004

Estimated Traffic Volumes in Manhattan, KS

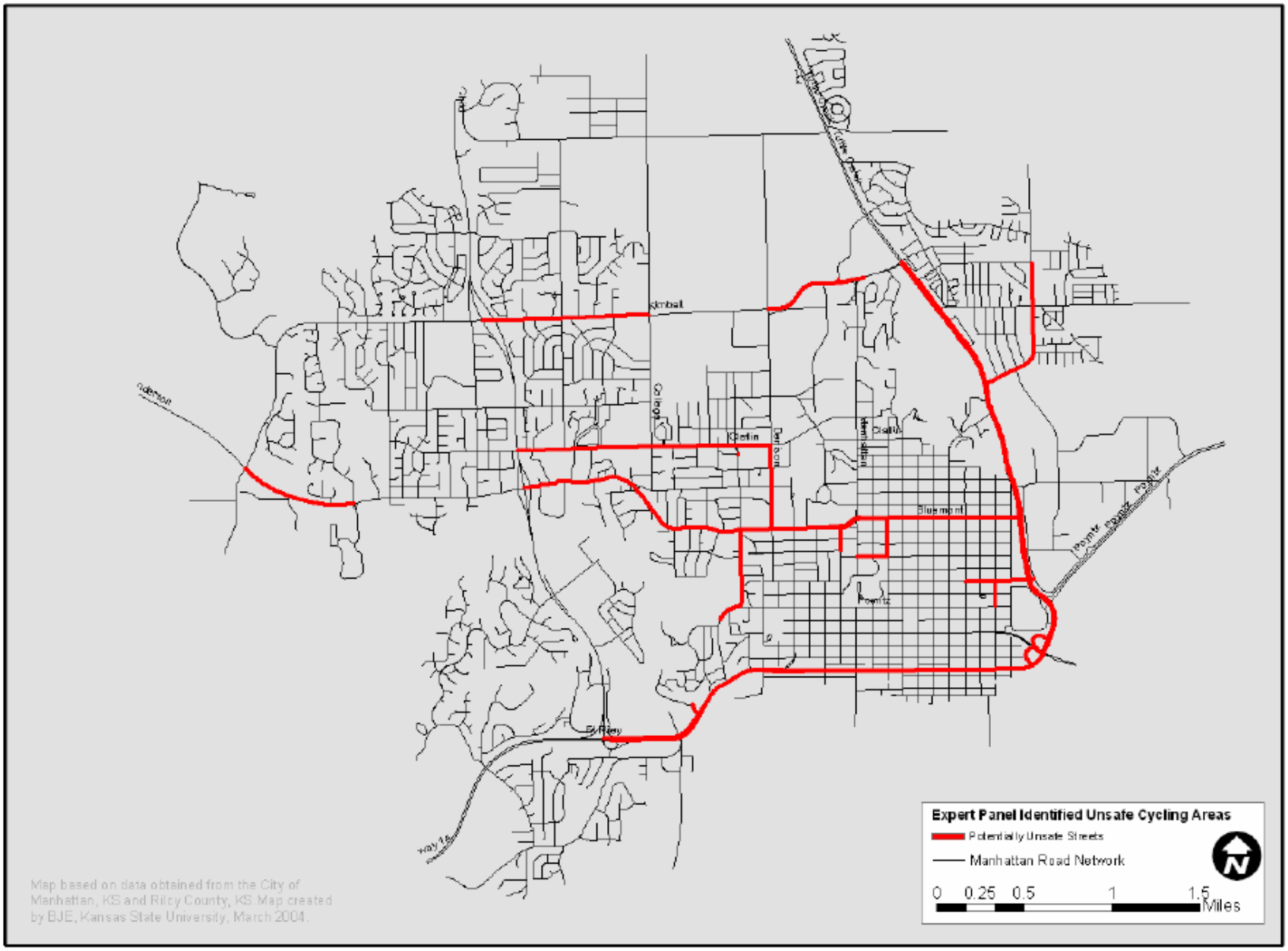
Traffic Speeds



Map 2.4: Conditions Associated with Bicycle Safety Concerns in Manhattan, KS, 2004

Traffic Speeds in Manhattan, KS

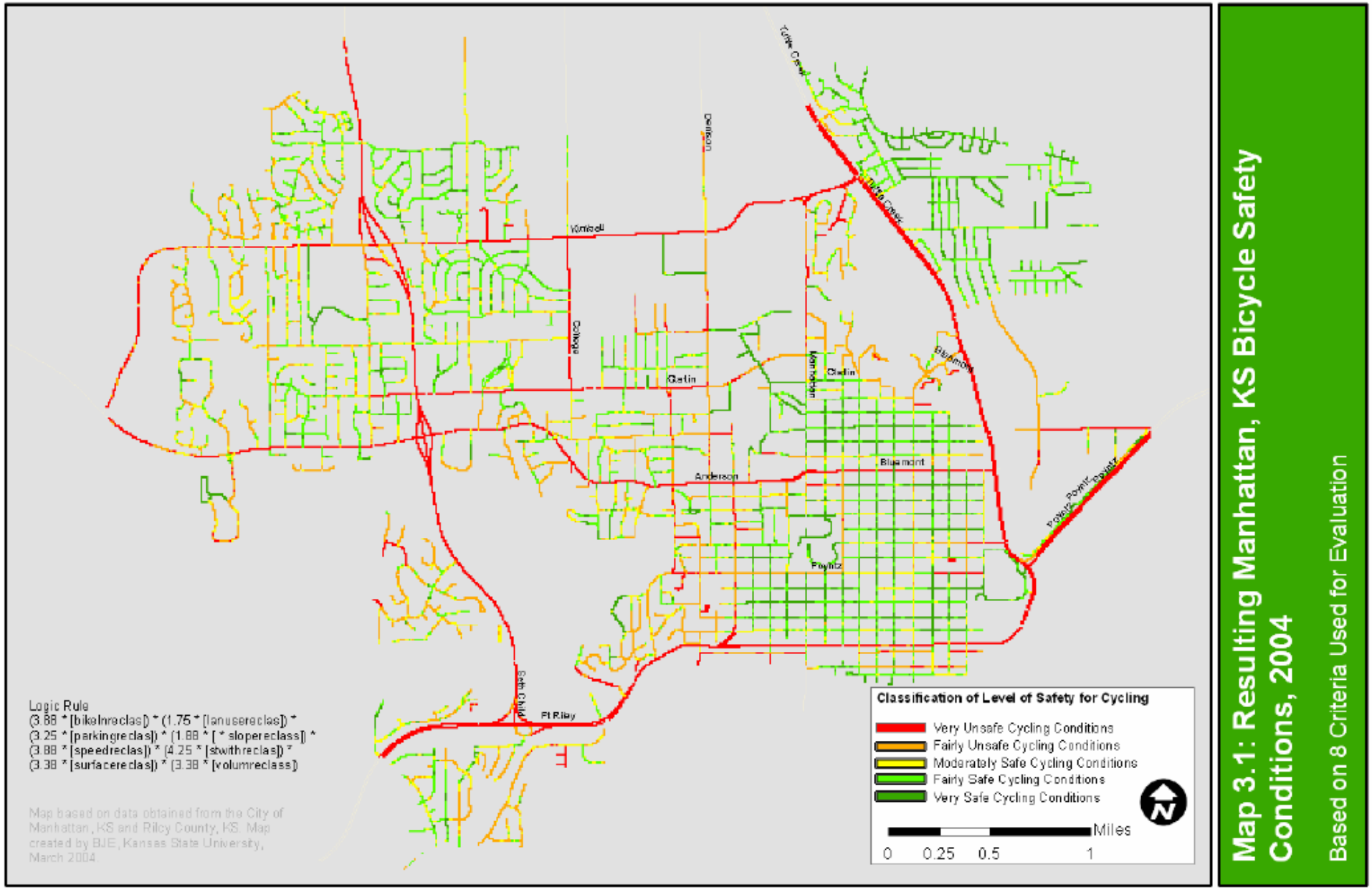
Expert Observations



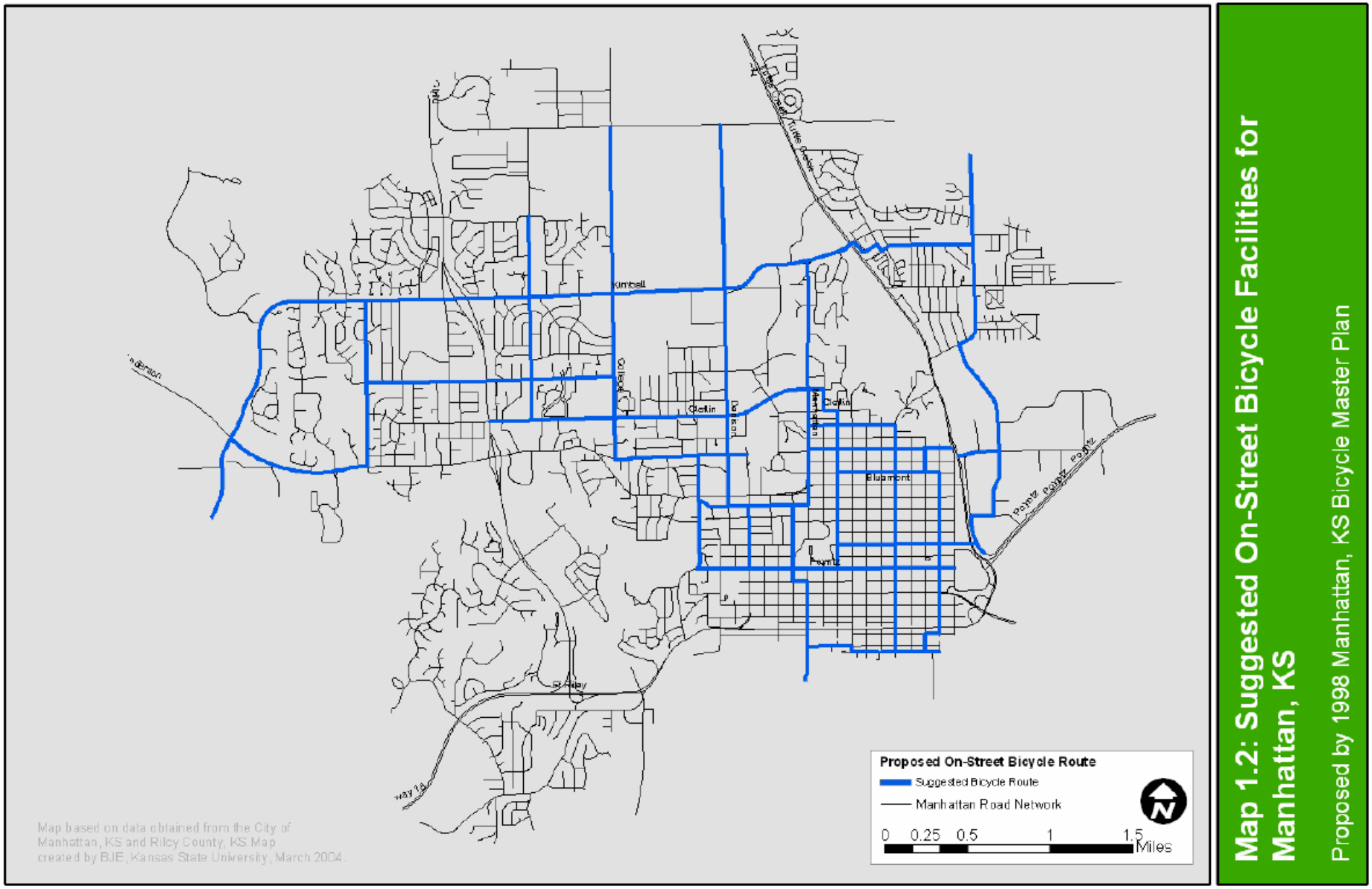
Map 2.9: Areas with Potentially Unsafe Cycling Conditions, Manhattan, KS, 2004

Areas Identified by Expert Panel

Final calculations



Ehreth's 2004 critique of the Master Plan



Map 1.2: Suggested On-Street Bicycle Facilities for Manhattan, KS

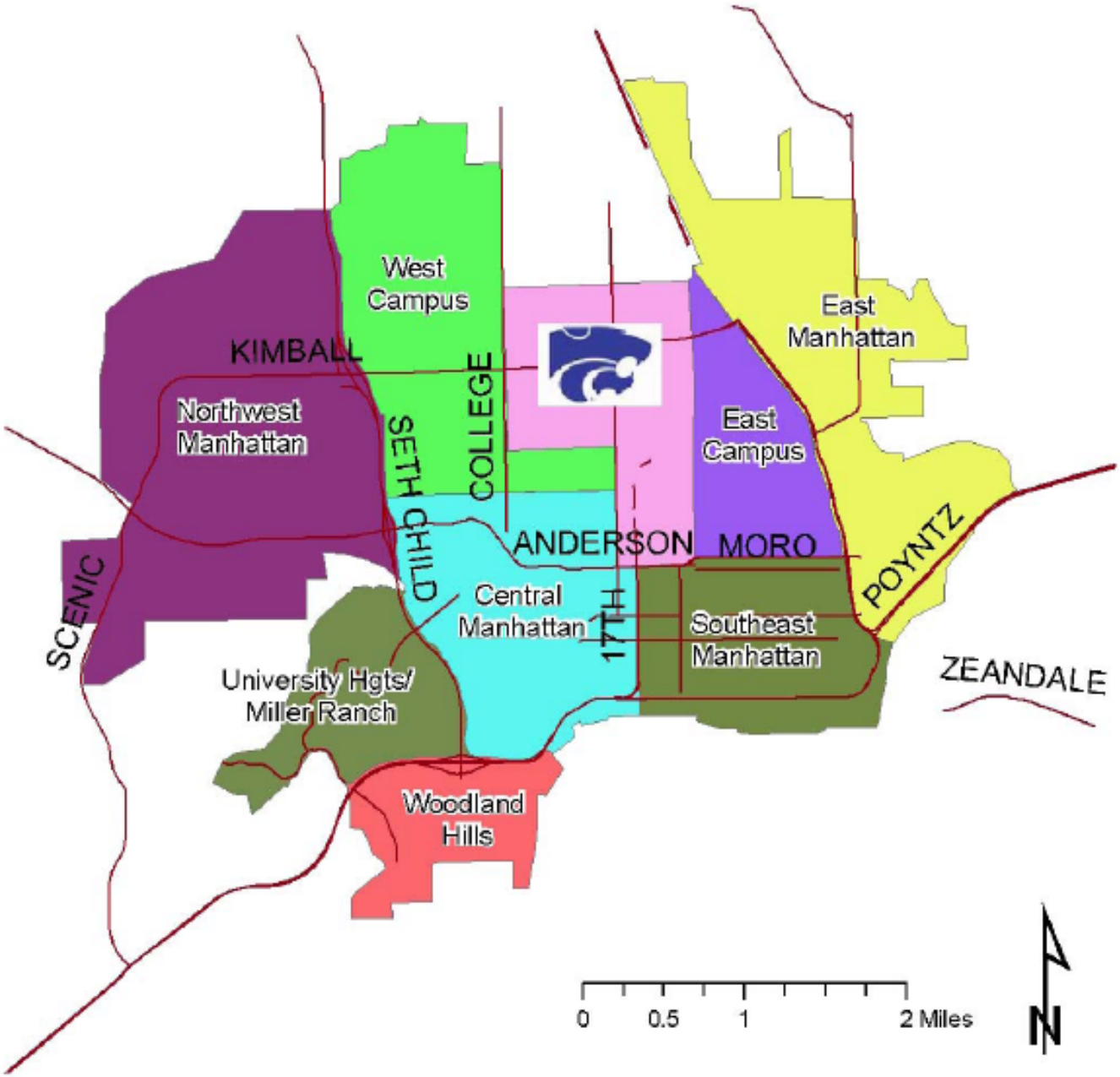
Proposed by 1998 Manhattan, KS Bicycle Master Plan

“on-street road segments suggested by the Master Plan were very unsafe for shared use of bicycles and automobiles”
– Ben Ehreth 2004

2008 BICYCLE MASTER PLAN UPDATE, CITY OF MANHATTAN, KANSAS

by

CHAD BUNGER


West Campus
KIMBALL
Northwest Manhattan
SETH CHILD
COLLEGE
East Manhattan
East Campus
ANDERSON
MORO
POYNTZ
SCENIC
Central Manhattan
17TH
Southeast Manhattan
ZEANDALE
University Hgts/ Miller Ranch
Woodland Hills
0
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2 Miles
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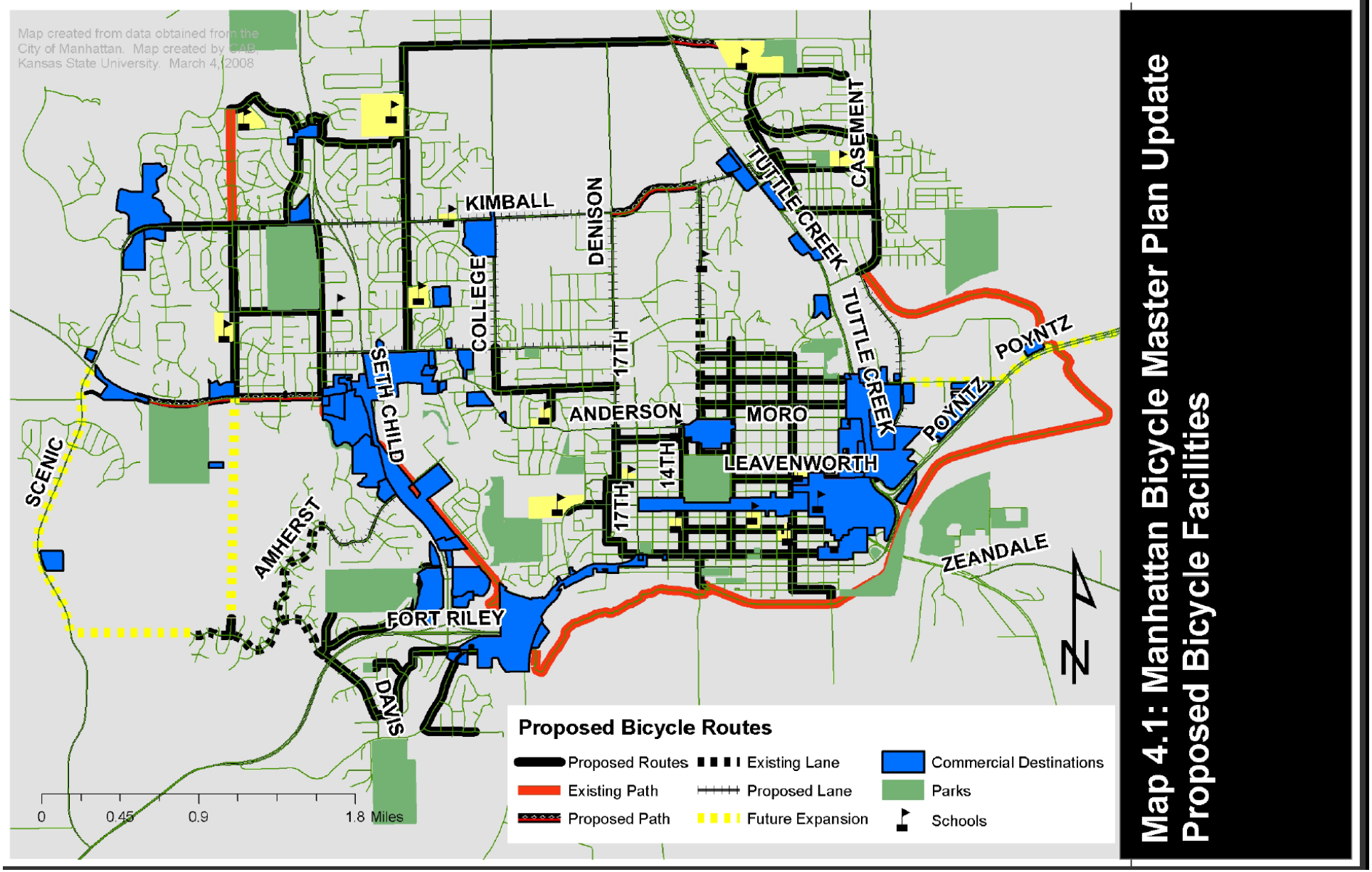
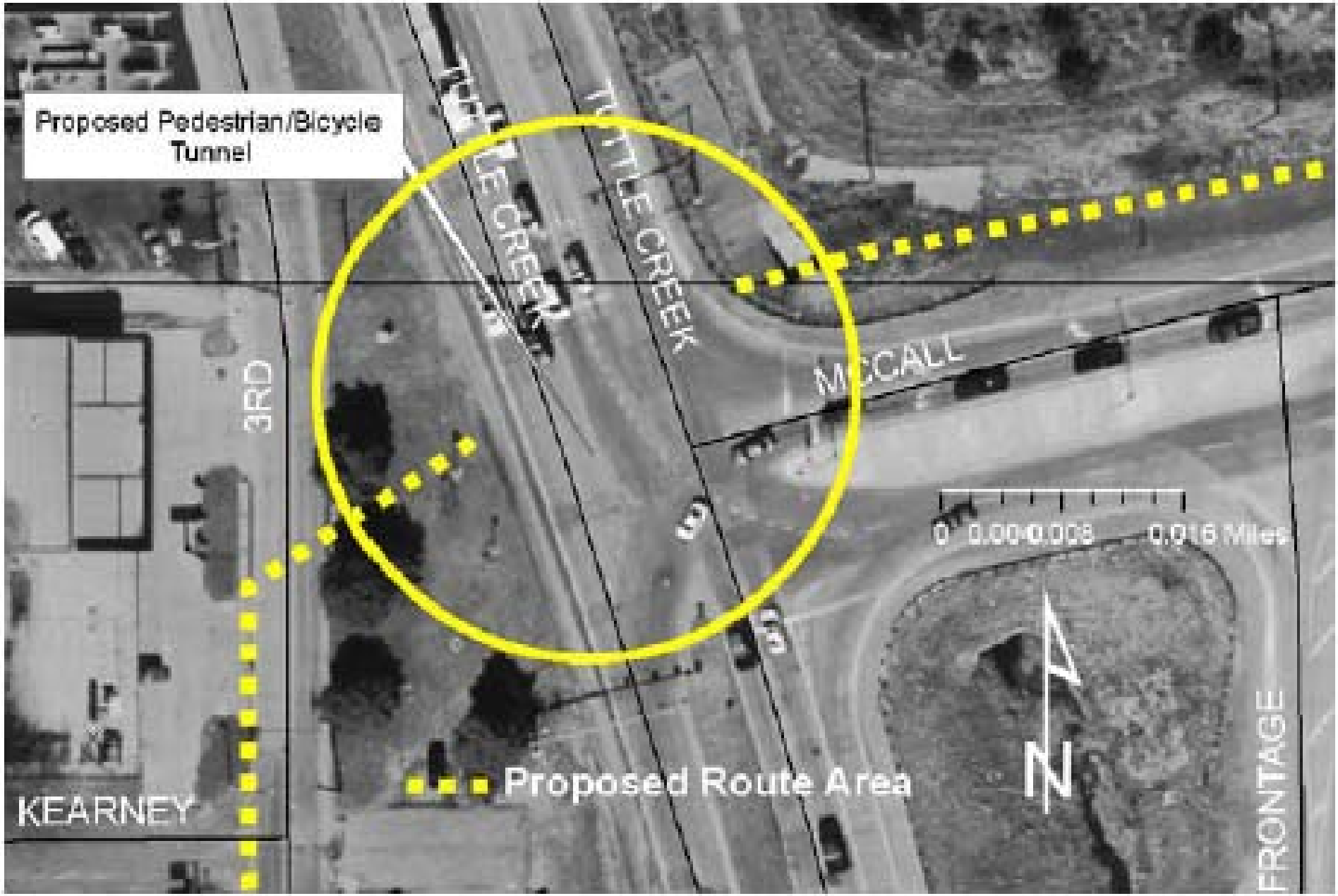
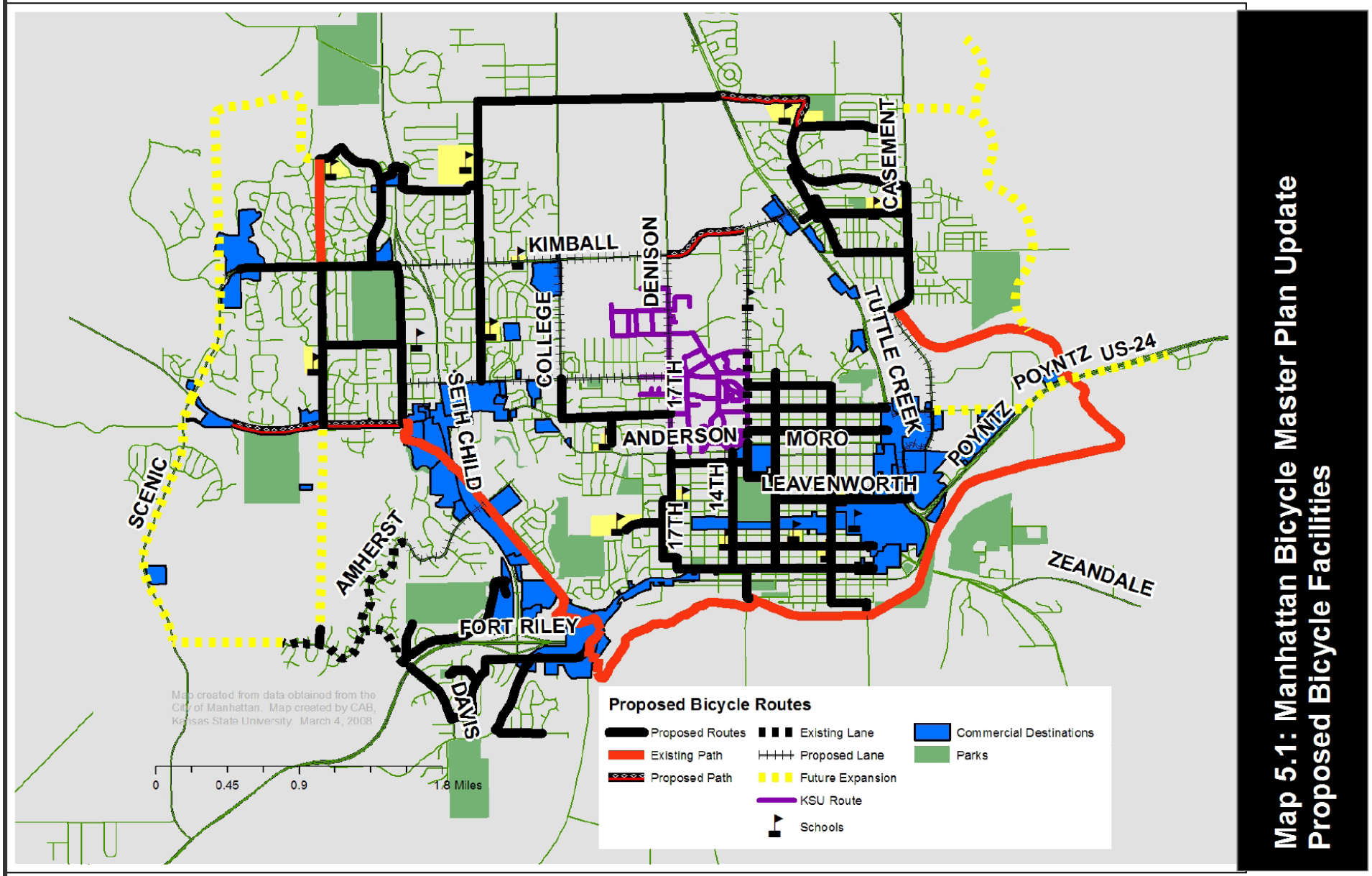

Map created from data obtained from the City of Manhattan. Map created by CAD, Kansas State University. March 4, 2008
KIMBALL
DENISON
CASEMENT
TUTTLE CREEK
COLLEGE
17TH
SETH CHILD
ANDERSON
MORO
POYNTZ
LEAVENWORTH
14TH
SCENIC
AMHERST
FORT RILEY
ZEANDALE
DAVIS
0
0.45
0.9
1.8 Miles
Proposed Bicycle Routes
Proposed Routes
Existing Path
Proposed Path
Existing Lane
Proposed Lane
Future Expansion
Commercial Destinations
Parks
Schools
N
Map 4.1: Manhattan Bicycle Master Plan Update
Proposed Bicycle Facilities


Proposed Pedestrian/Bicycle Tunnel
LITTLE CREEK
LITTLE CREEK
3RD
MCCALL
KEARNEY
Proposed Route Area
0 0.004 0.008 0.016 Miles
N
FRONTAGE

BIKE THE

CITY OF MANHATTAN

Aggieville



Map 5.1: Manhattan Bicycle Master Plan Update Proposed Bicycle Facilities

Current shortcomings

- Not up to date with latest paths
- Unfamiliar with backroads, cut-throughs, unofficial paths, and B-biker workarounds
- Focus on A-bikers (<2%)
- Recent innovations in bicycle planning

A revised approach …

- Focus on B-bikers not A-bikers
- Focus on everyday commuting, not just recreation
- Goal: Complete ½ mile unbroken grid network
- Use separate low-traffic routes when possible (B-biker friendly)

Why B-bikers?

- Over 85% of potential riders
- A-Bikers will ride anyway
- B-bikers not swayed by A-focused improvements

Types of Cyclists (Portland DOT Revision)

- Strong & Fearless = 1-2% (prefer no amenities … ride with traffic)
- Enthused & Confident = 6% (will ride with traffic, but prefer amenities)
- Interested but concerned= 60%
- “No way. No how” = 32%
- Aim for the 60%

SCIENTIFIC AMERICAN

www.scientificamerican.com - October 16, 2009

How to Get More Bicyclists on the Road

To boost urban bicycling, figure out what women want

By Linda Baker

CYCLE TRACK, here along New York City's Ninth Avenue, keeps bicyclists physically separated from motor vehicle traffic. Such

Getting people out of cars and onto bicycles, a much more sustainable form of transportation, has long vexed environmentally conscious city planners. Although bike lanes painted on streets and automobile-free "greenways" have increased ridership over the past few years, the share of people relying on bikes for transportation is still less than 2 percent, based on various studies. An emerging body of research suggests that a superior strategy to increase pedal pushing could be had by asking the perennial question: What do women want?

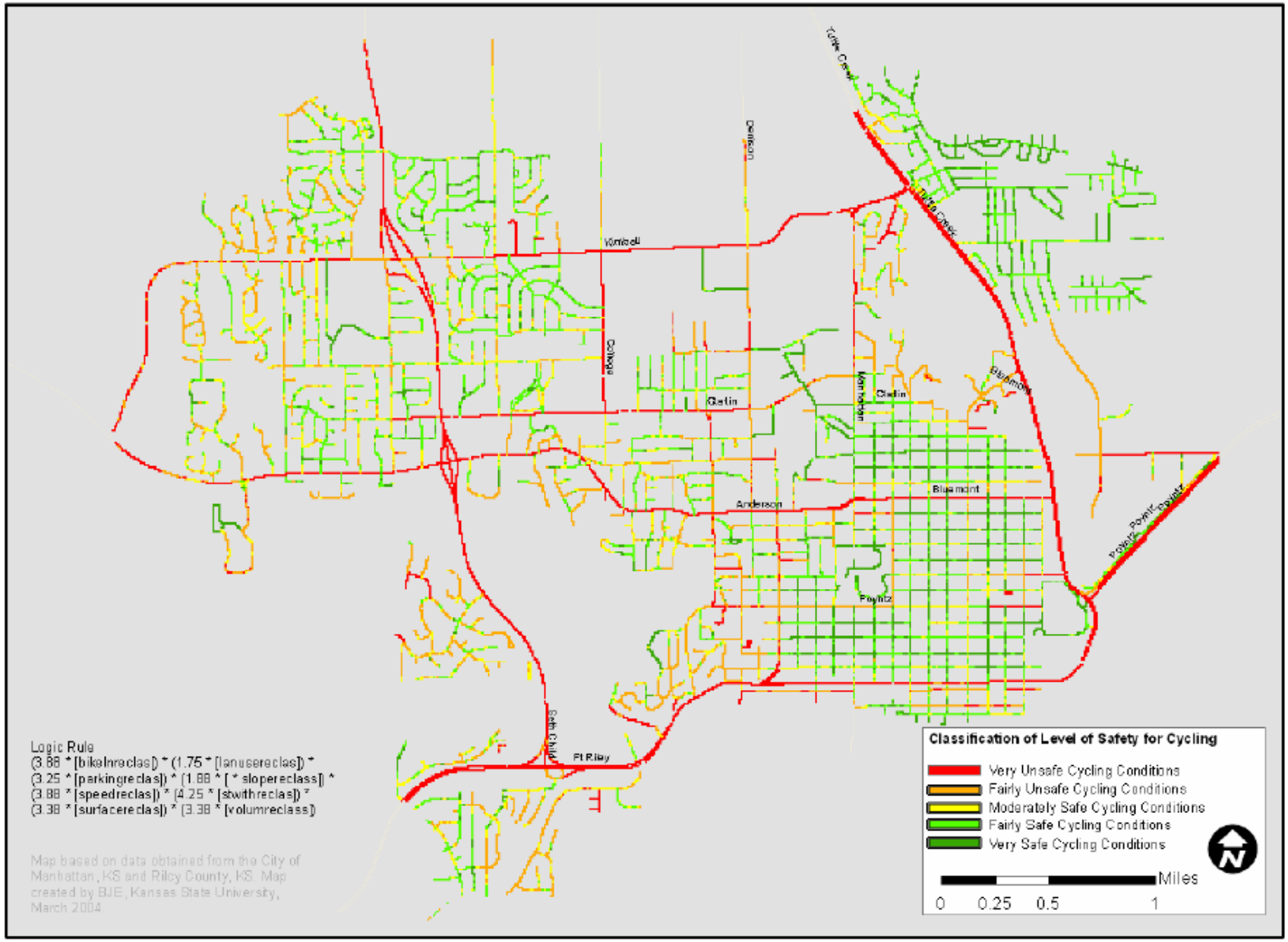
In the U.S., men's cycling trips surpass women's by at least 2:1. This ratio stands in marked contrast to cycling in European countries, where urban biking is a way of life and draws about as many women as men—sometimes more. In the Netherlands, where 27 percent of all trips are made by bike, 55 percent of all riders are women.

“safe and comfortable”

Goal: An unbroken "green" grid

	A-Bikers Only		Some B's	B-Bikers	C-Bikers	
Level	0	1	2	3	4	5
Color	Red	Orange	Yellow	Green	Bicycle Boulevard	Path
Routes	7,000+VPD Shared lanes 40+ MPH No Shoulder	3,000+VPD 12-15 ft crbln 30-40 MPH	1-3,000 VPD 30 MPH Max	1500 max VPD Under 25 MPH	1500 max 20 MPH Signed	HPVs only
Crossing	None	Light but no Xwalk	Xwalk	X-walk with button	Bike-specific crossing light	Underpass /Overpass

Ehreth's 2004 calculations

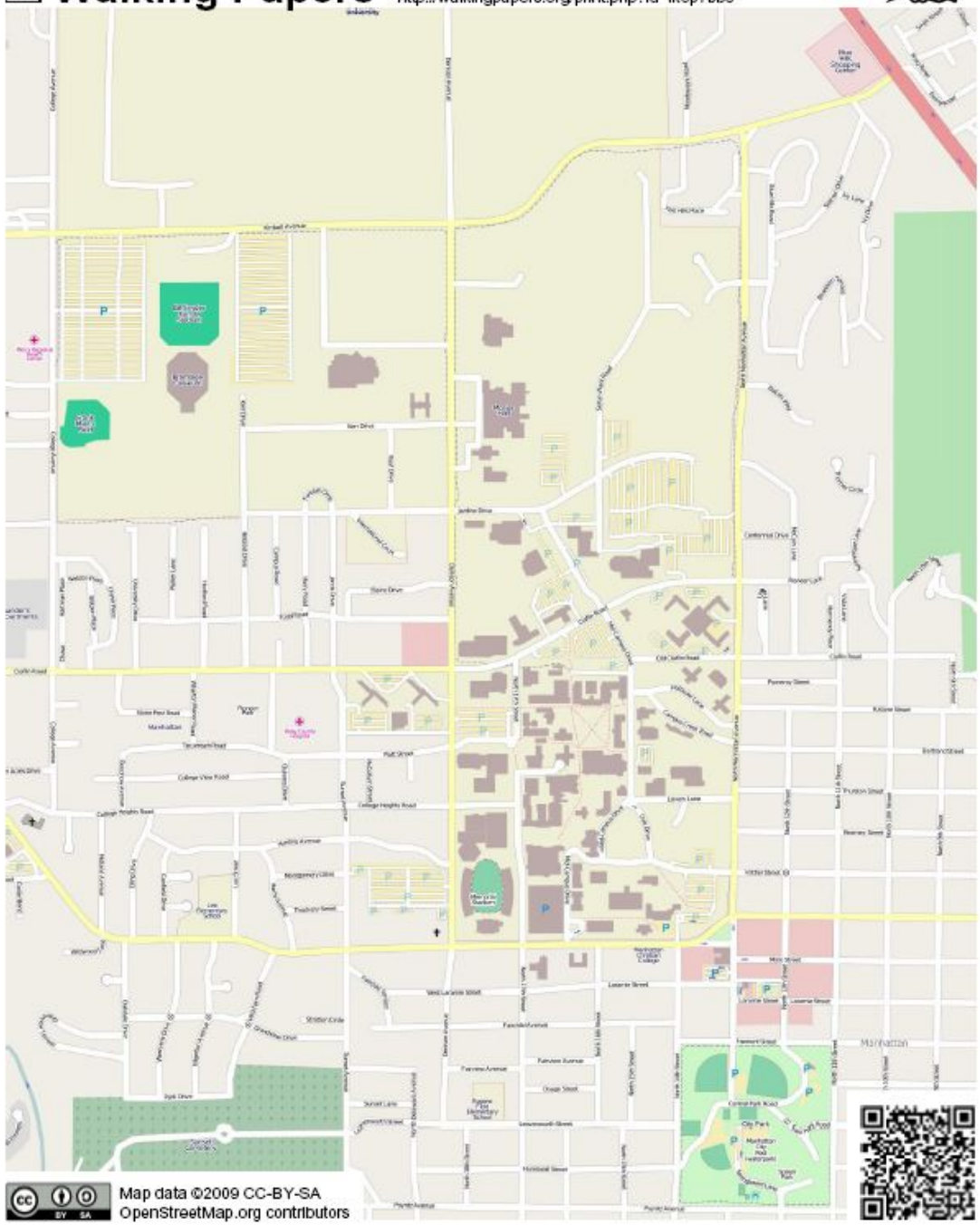


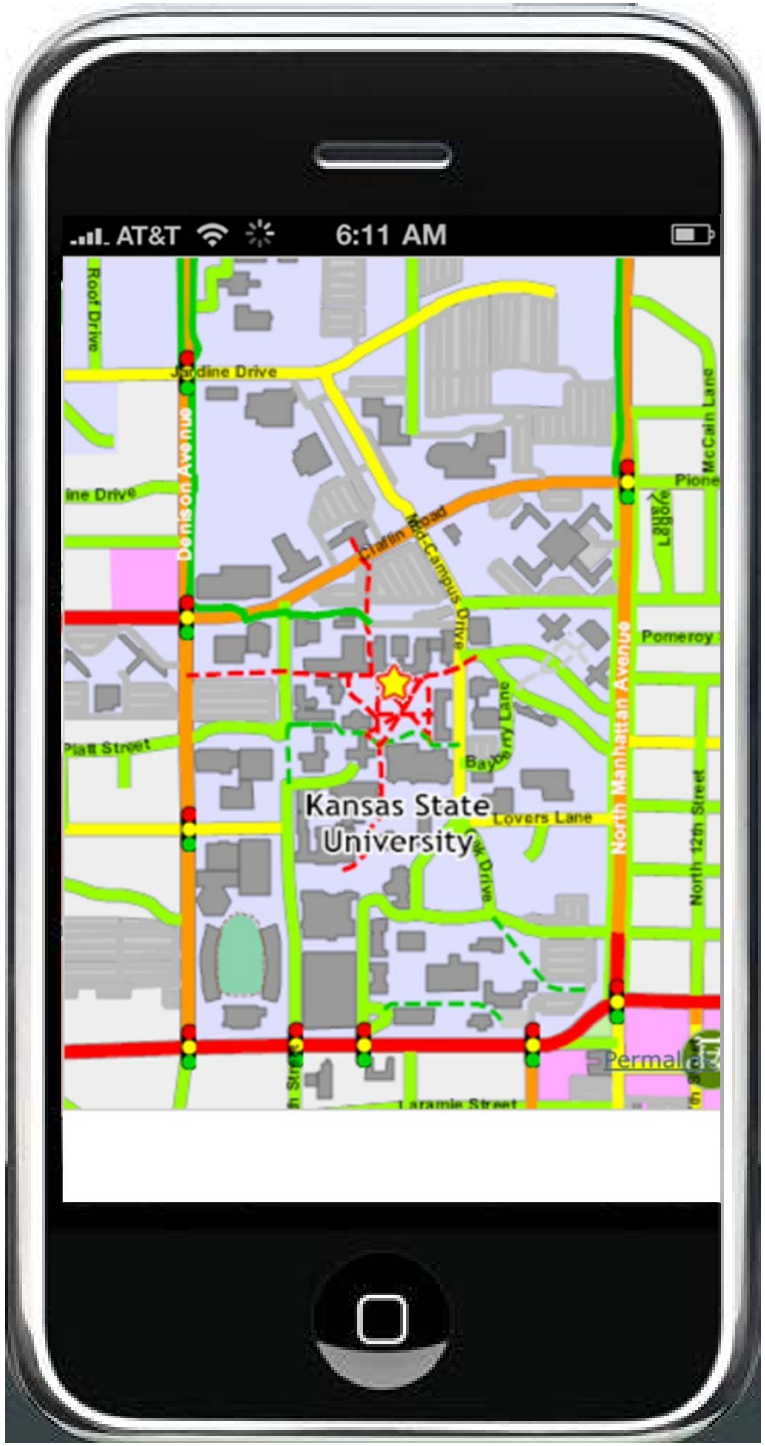
A lot of student and community projects have explored Manhattan's options….


K-STATE

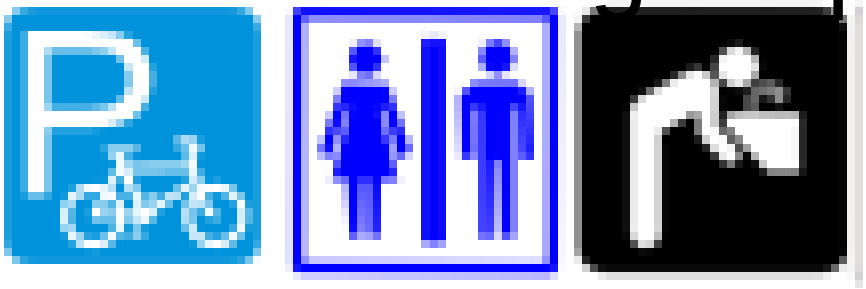
Walking Papers

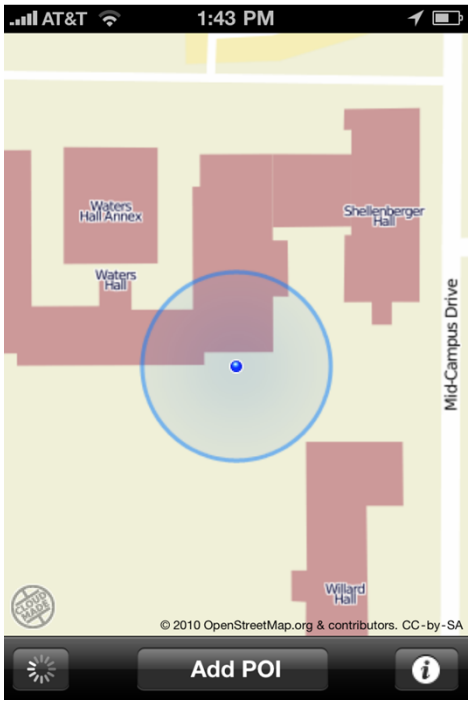
Help improve OpenStreetMap by drawing on this map, then visit
http://walkingpapers.org/print.php?id=fk6p7bb6

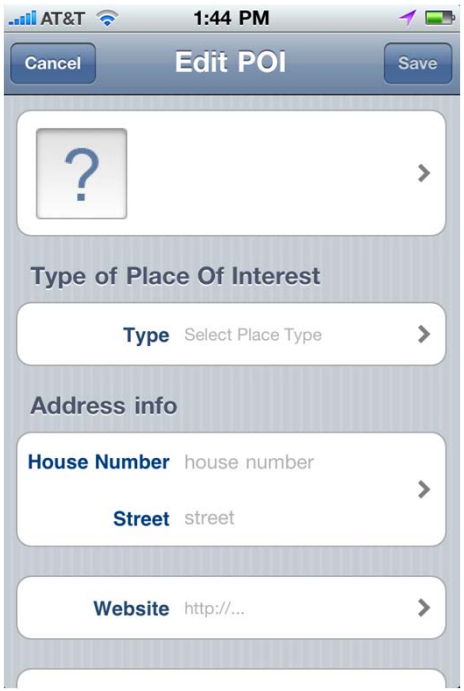


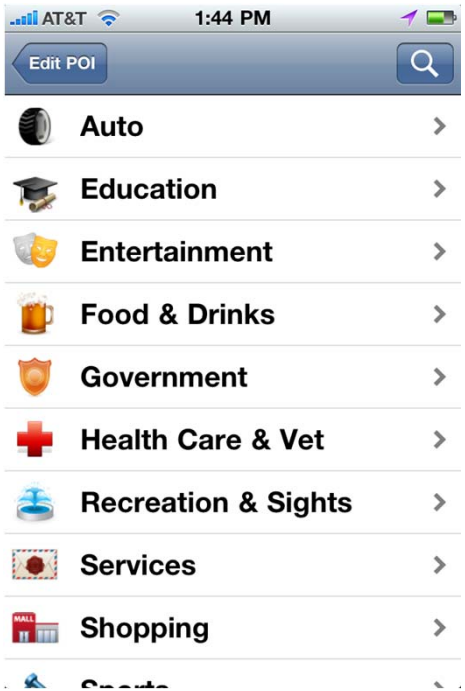

AT&T
6:11 AM
Roof Drive
Jardine Drive
Denison Avenue
Platt Road
McCain Campus Drive
Pioneer Lane
McCain Lane
Pomeroy
Platt Street
Bayou Lane
Kansas State University
Lovers Lane
North Manhattan Avenue
North 12th Street
Laramie Street

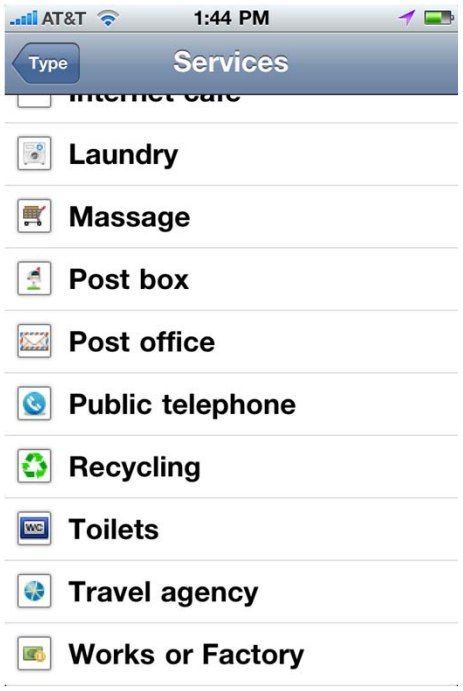
Adding Points of Interests (POIs) with an iPhone using Mapzen



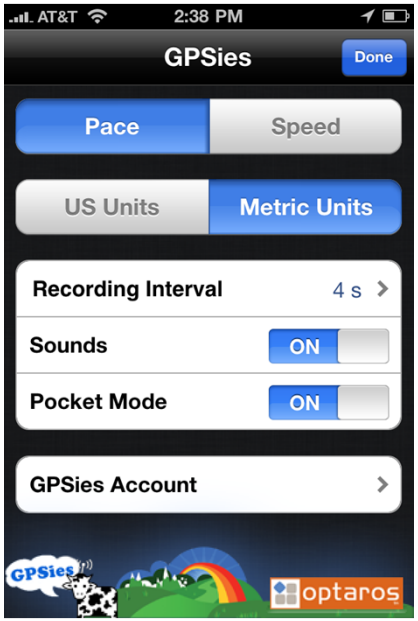


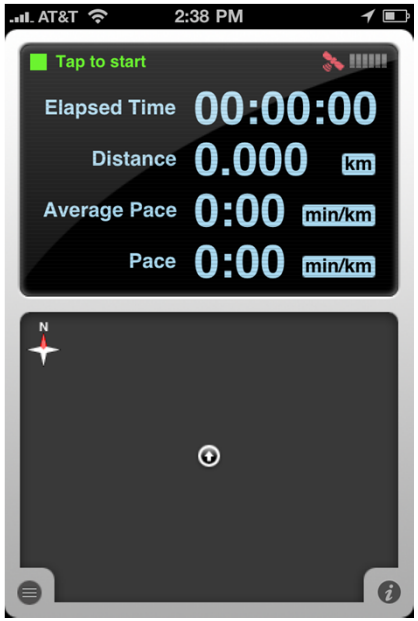


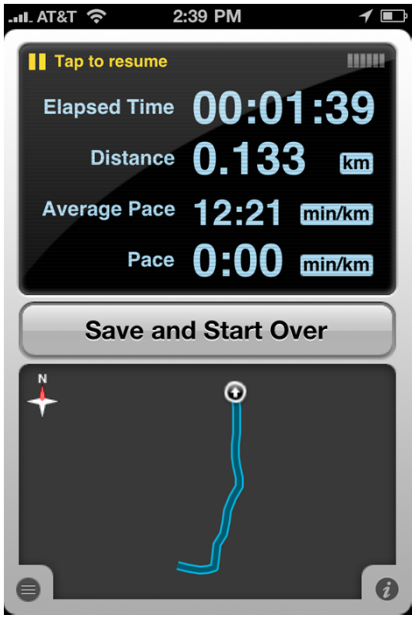


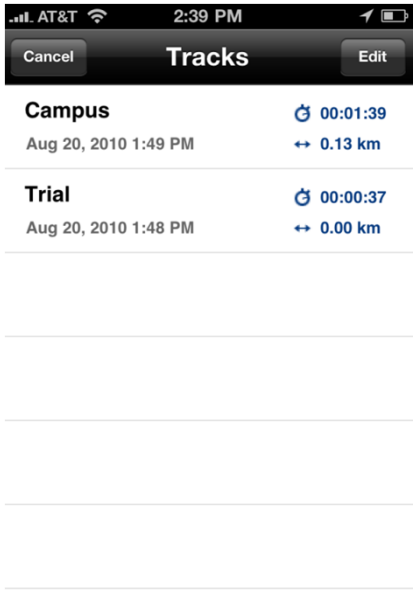


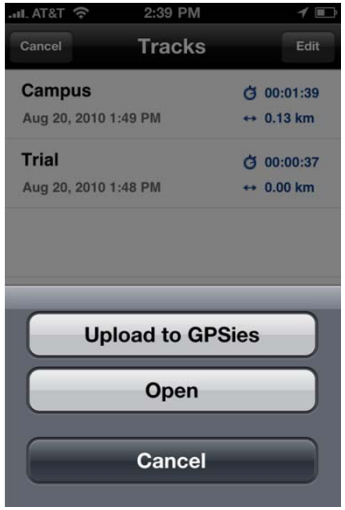
Sharing Tracks on iPhone

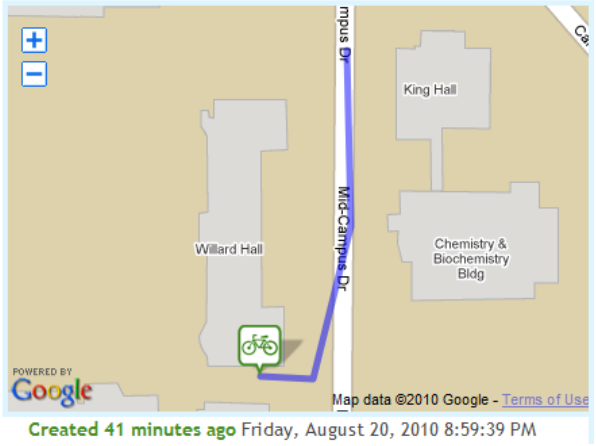


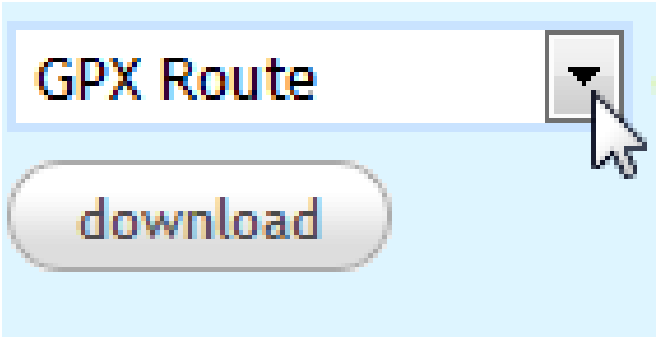




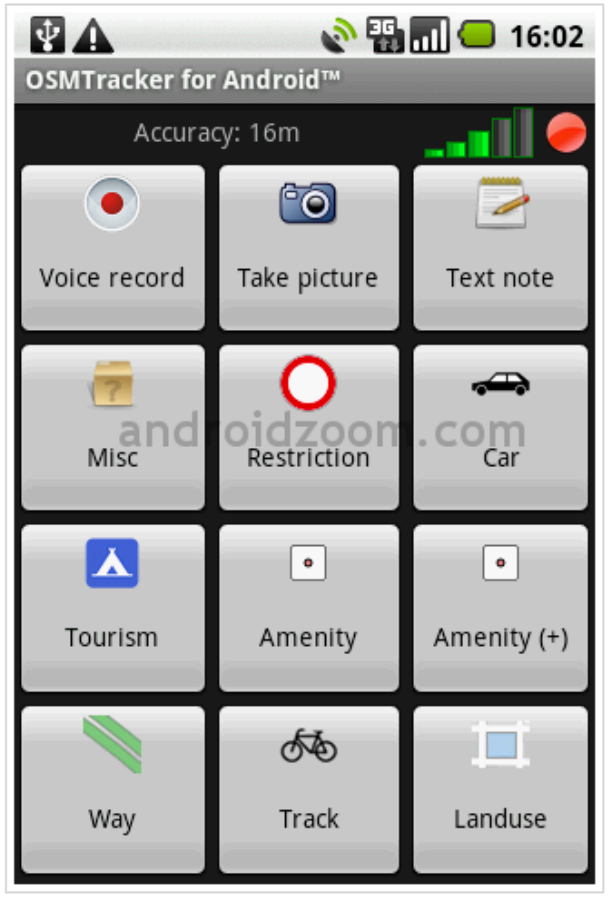


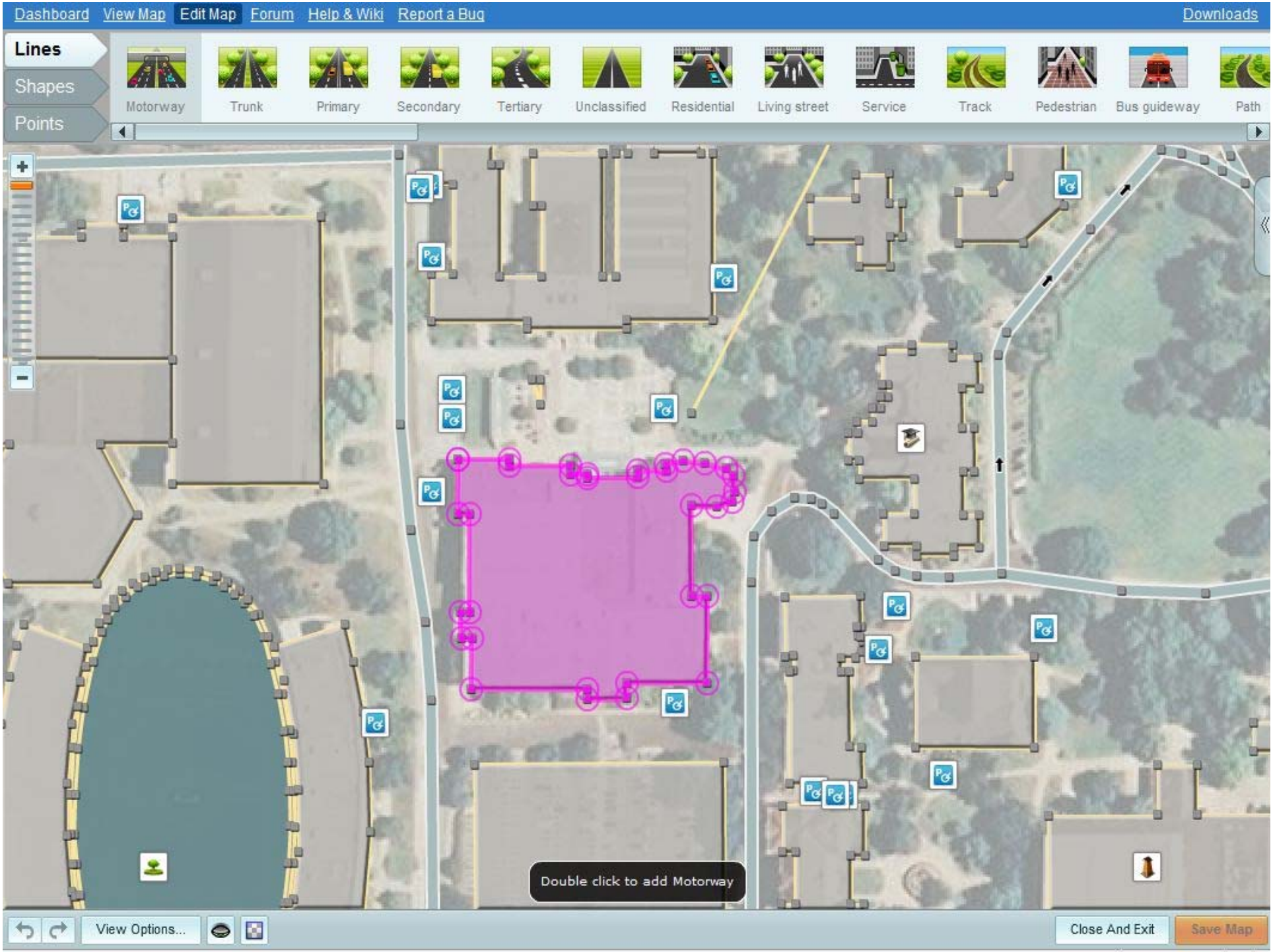


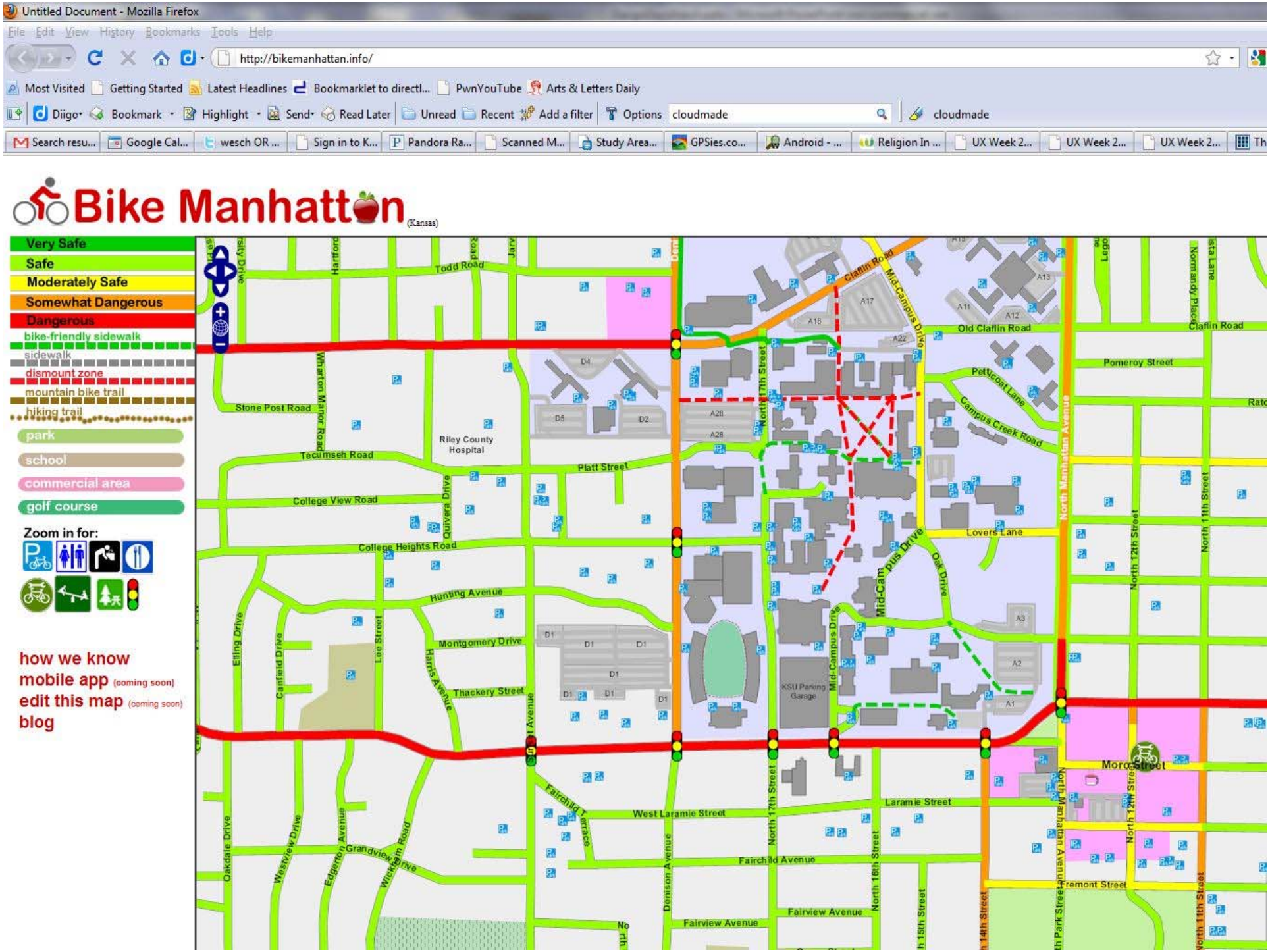




OSMTracker for Android




Dashboard
View Map
Edit Map
Forum
Help & Wiki
Report a Bug
Downloads
Lines
Shapes
Points
Motorway
Trunk
Primary
Secondary
Tertiary
Unclassified
Residential
Living street
Service
Track
Pedestrian
Bus guideway
Path
Double click to add Motorway
View Options...
Close And Exit
Save Map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File Edit View History Bookmarks Tools Help
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Most Visited Getting Started Latest Headlines Bookmarklet to directl... PwnYouTube Arts & Letters Daily
Diigo Bookmark Highlight Send Read Later Unread Recent Add a filter Options cloudmade cloudmade
Search resu... Google Cal... wesch OR ... Sign in to K... Pandora Ra... Scanned M... Study Area... GPSies.co... Android - ... Religion In ... UX Week 2... UX Week 2... UX Week 2...
Bike Manhattan (Kansas)
Very Safe
Safe
Moderately Safe
Somewhat Dangerous
Dangerous
bike-friendly sidewalk
sidewalk
dismount zone
mountain bike trail
hiking trail
park
school
commercial area
golf course
Zoom in for:
how we know
mobile app (coming soon)
edit this map (coming soon)
blog
Todd Road
Claflin Road
Mid-Campus Drive
Old Claflin Road
Pomeroy Street
Petticoat Lane
Campus Creek Road
Stone Post Road
Wharton Manor Road
Riley County Hospital
Tecumseh Road
Platt Street
College View Road
Quivera Drive
College Heights Road
Lovers Lane
North Manhattan Avenue
North 11th Street
North 12th Street
North 17th Street
Oak Drive
Hunting Avenue
Elting Drive
Canfield Drive
Lee Street
Harris Avenue
Montgomery Drive
Thackery Street
KSU Parking Garage
Fairchild Terrace
West Laramie Street
Laramie Street
Fairchild Avenue
Fairview Avenue
Fremont Street
Oakdale Drive
Westview Drive
Edgerton Avenue
Grandview Drive
Wickham Road
Denison Avenue
North 16th Street
North 15th Street
North 14th Street
North Park Street


K-STATE

Students, community members plan to make city bike-friendly

Designers generate more than 1 million new ideas to improve Manhattan

Hilary Burton
staff writer

Students, city staff, community members and K-State faculty gathered together at the K-State Alumni Center on Wednesday afternoon to discuss the future of bikes in Manhattan. This is the second year the Department of Landscape Architecture/Regional and Community Planning has held this two-day event called Design Days.

Stephanie Rolley, head of the department, said Design Days was the faculty's idea.

"A couple years ago an internationally known program held a design week at K-State that went really well," she said. "After that success, we decided we could hold our own mini-event."

This year, the department teamed up with Michael Wesch, assistant professor of cultural anthropology, and Ben Champion, director of sustainability for Design Days' "Cruise. Commute. Connect." workshop to stimulate new ideas for a more bike-friendly Manhattan.

"The purpose of Design Days is to tackle a community dilemma," Rolley said. "In Manhattan, city boards and committees, as well as community members, have expressed high concerns for cyclists."

Landscape architecture students discuss the functionality of the bike lanes around Manhattan. Participants were given 48 hours to brainstorm ideas for a bike-friendlier Manhattan.

Heather Scott | Collegian

Divided into 21 design teams, 170 students were given 48 hours to develop new design plans.

Student teams were assigned various locations in Manhattan. These on-site teams addressed a number of questions about the location. Questions included, "Can a biker get to the K-State campus from that area?" and "Are these routes safe?"

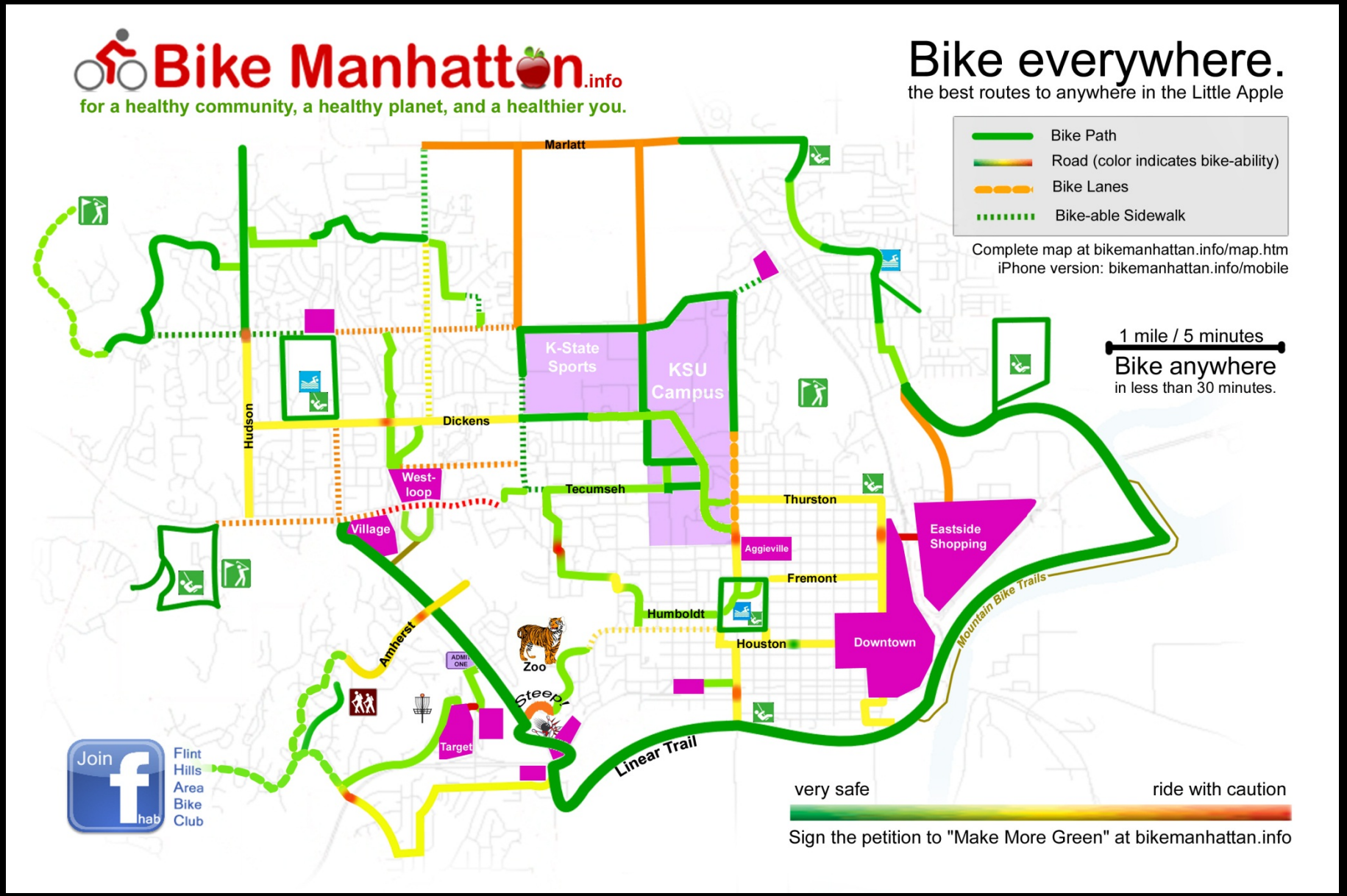
Based on the analysis of the area, students then worked together to create a design catering to the needs assessed. This year, after the 48 hours had been completed, the design teams had developed 1,789,562 new ideas for a more bike-friendly Manhattan.

After coming up with improvement plans for the cycling community, students created an interactive exhibit set up in the center to showcase their ideas.

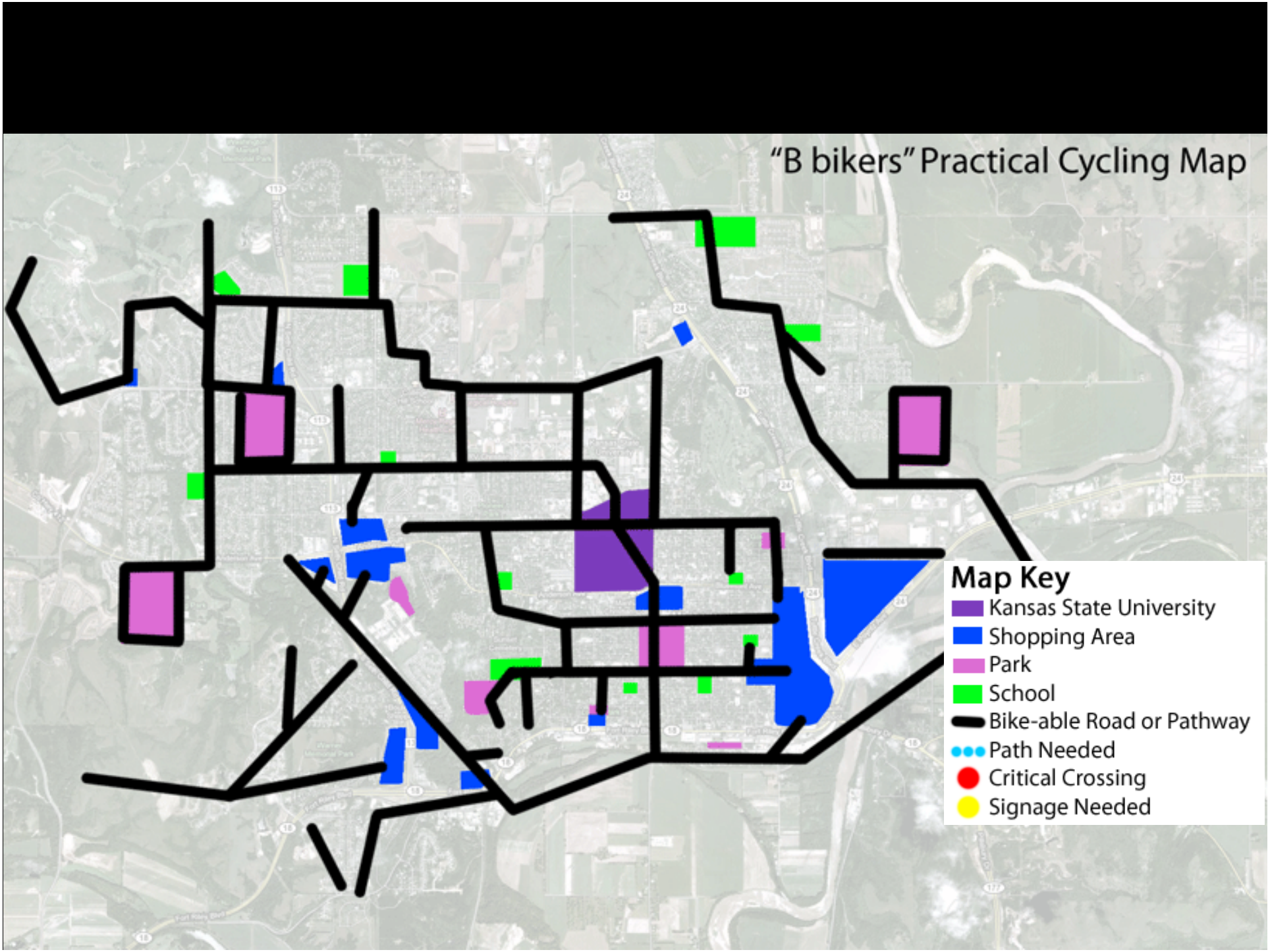
See DESIGN, Page 5

Conclusions….?

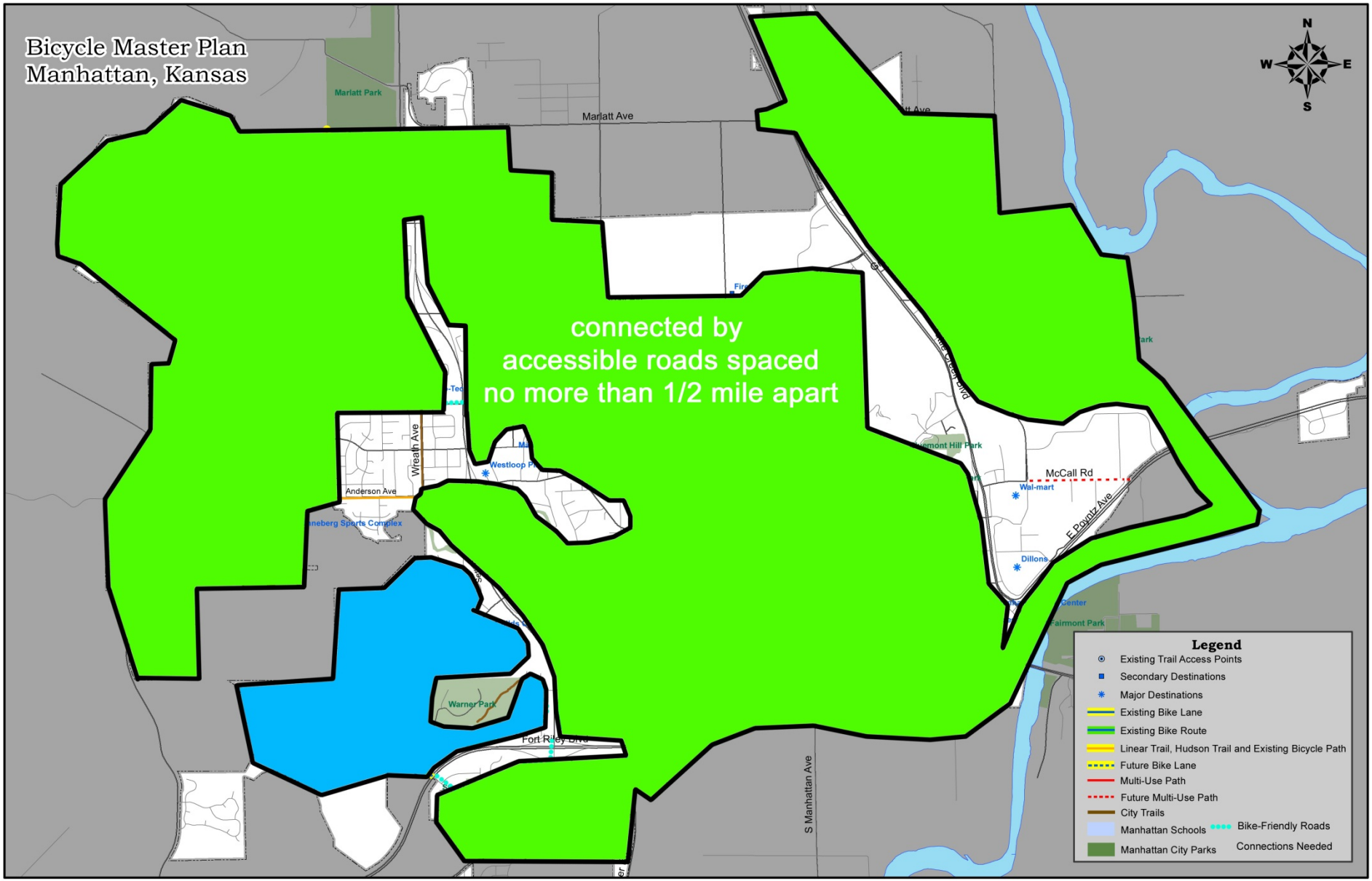
We’re closer than we think …

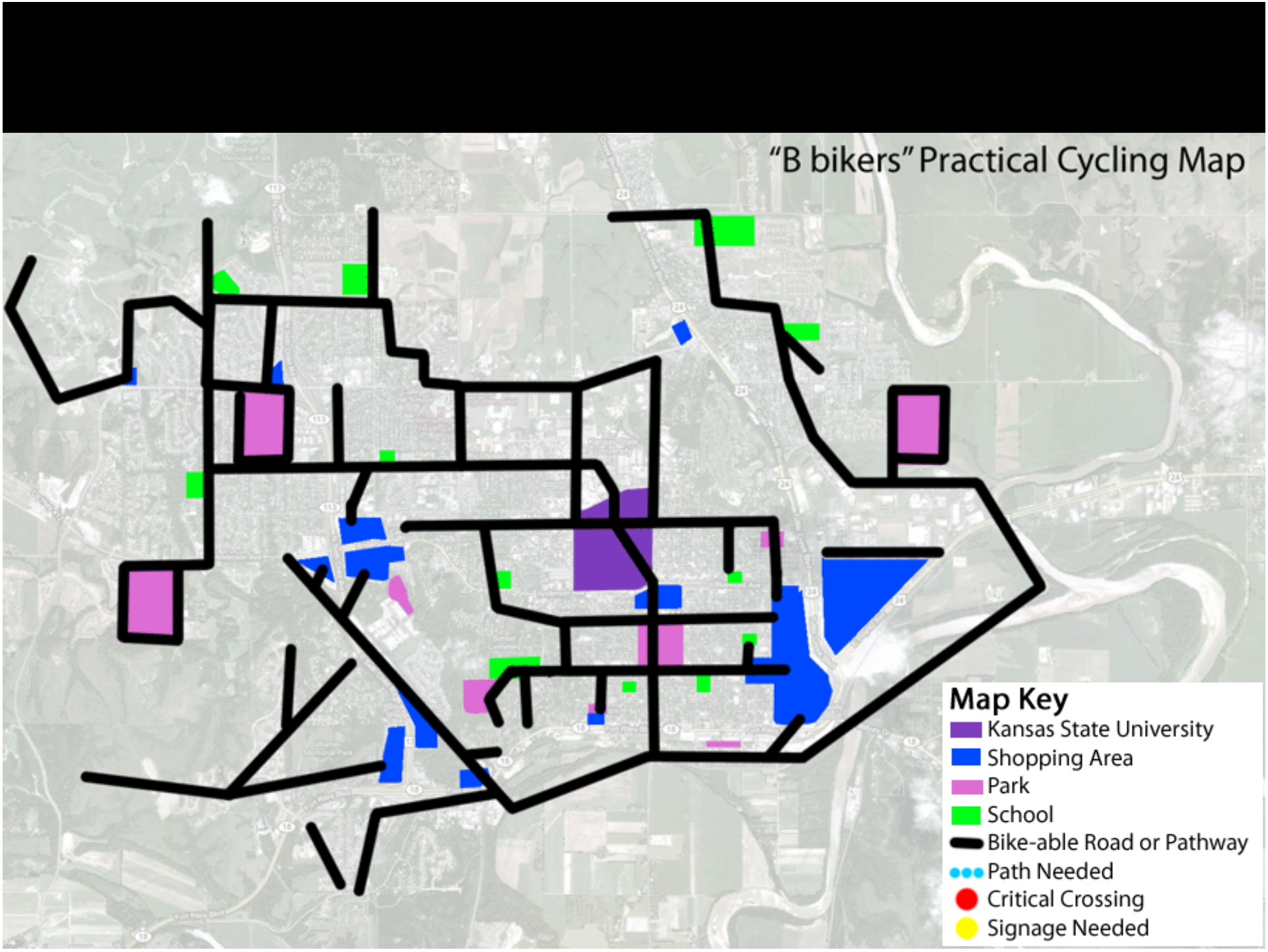


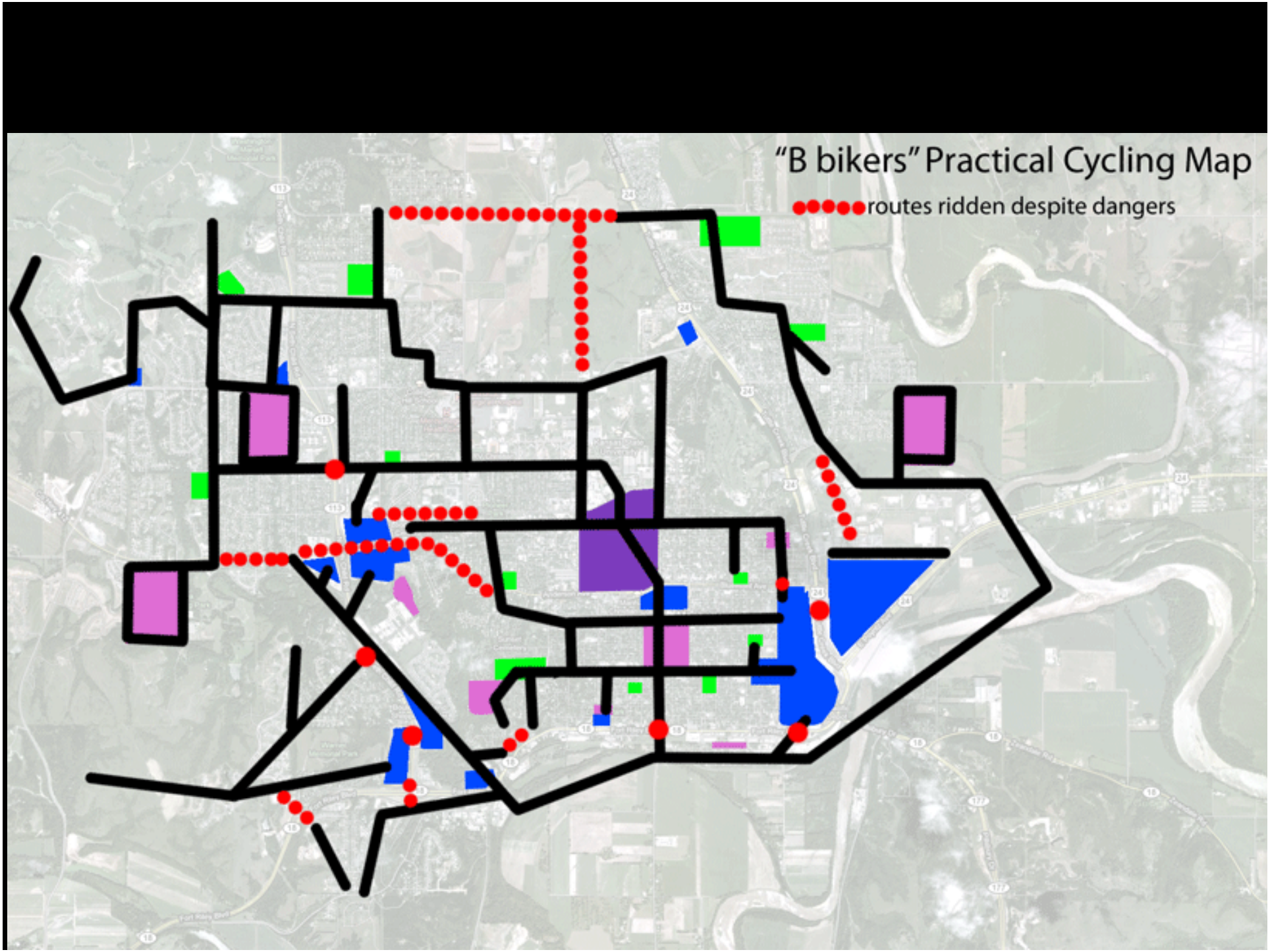
Where are the barriers?


"B bikers" Practical Cycling Map
Map Key
Kansas State University
Shopping Area
Park
School
Bike-able Road or Pathway
Path Needed
Critical Crossing
Signage Needed

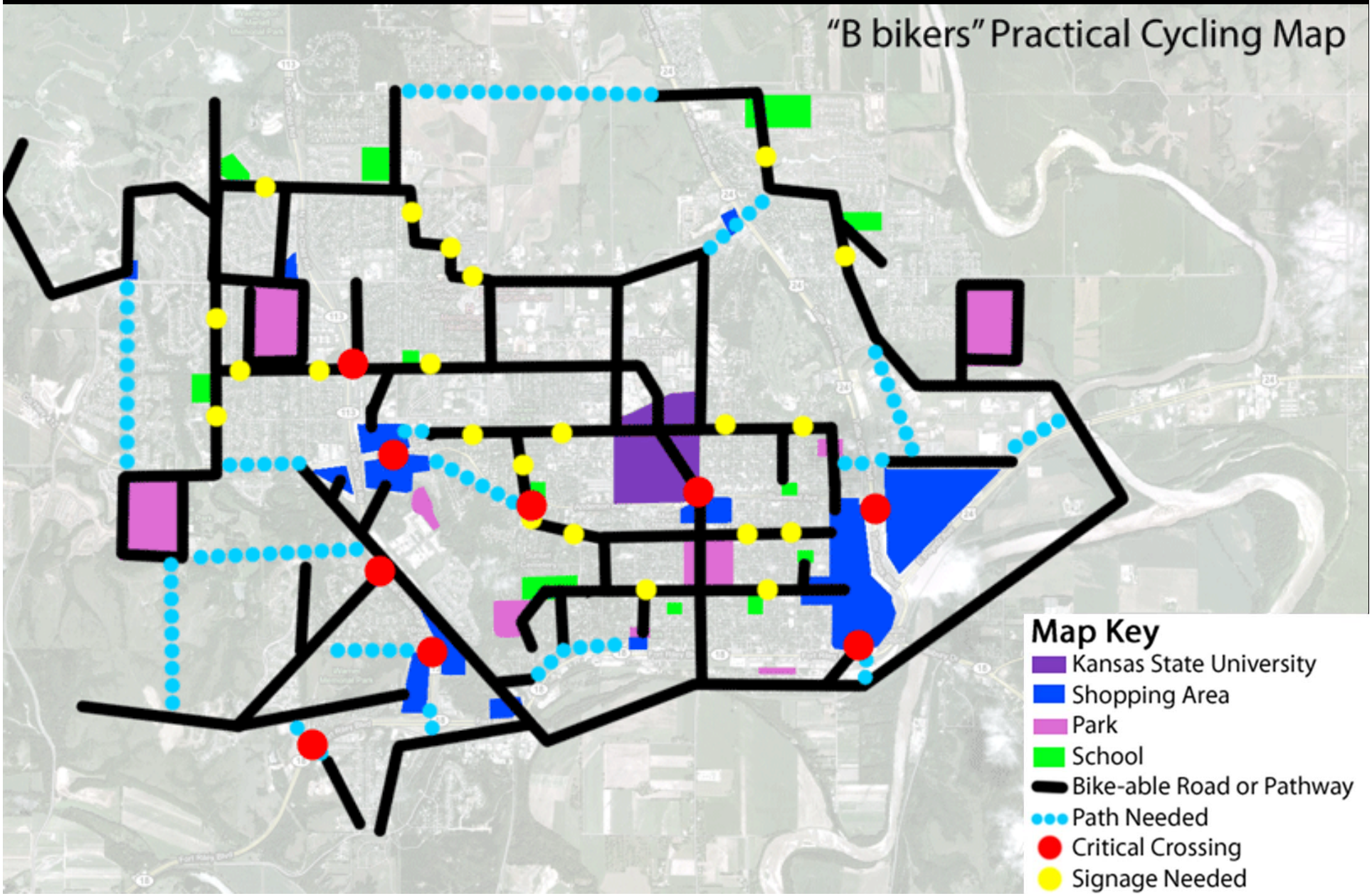
B-biker accessibility

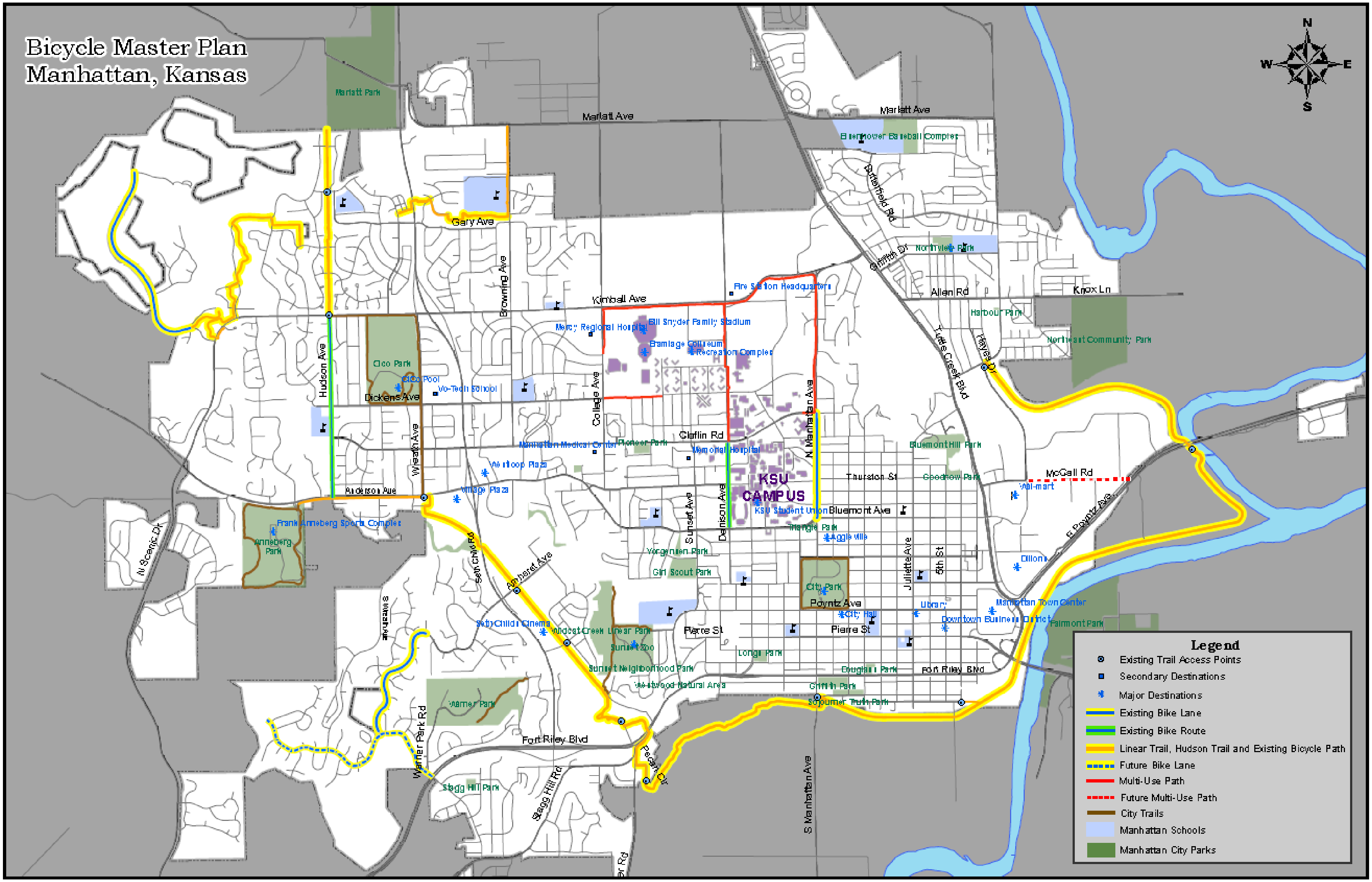



"B bikers" Practical Cycling Map
Map Key
Kansas State University
Shopping Area
Park
School
Bike-able Road or Pathway
Path Needed
Critical Crossing
Signage Needed

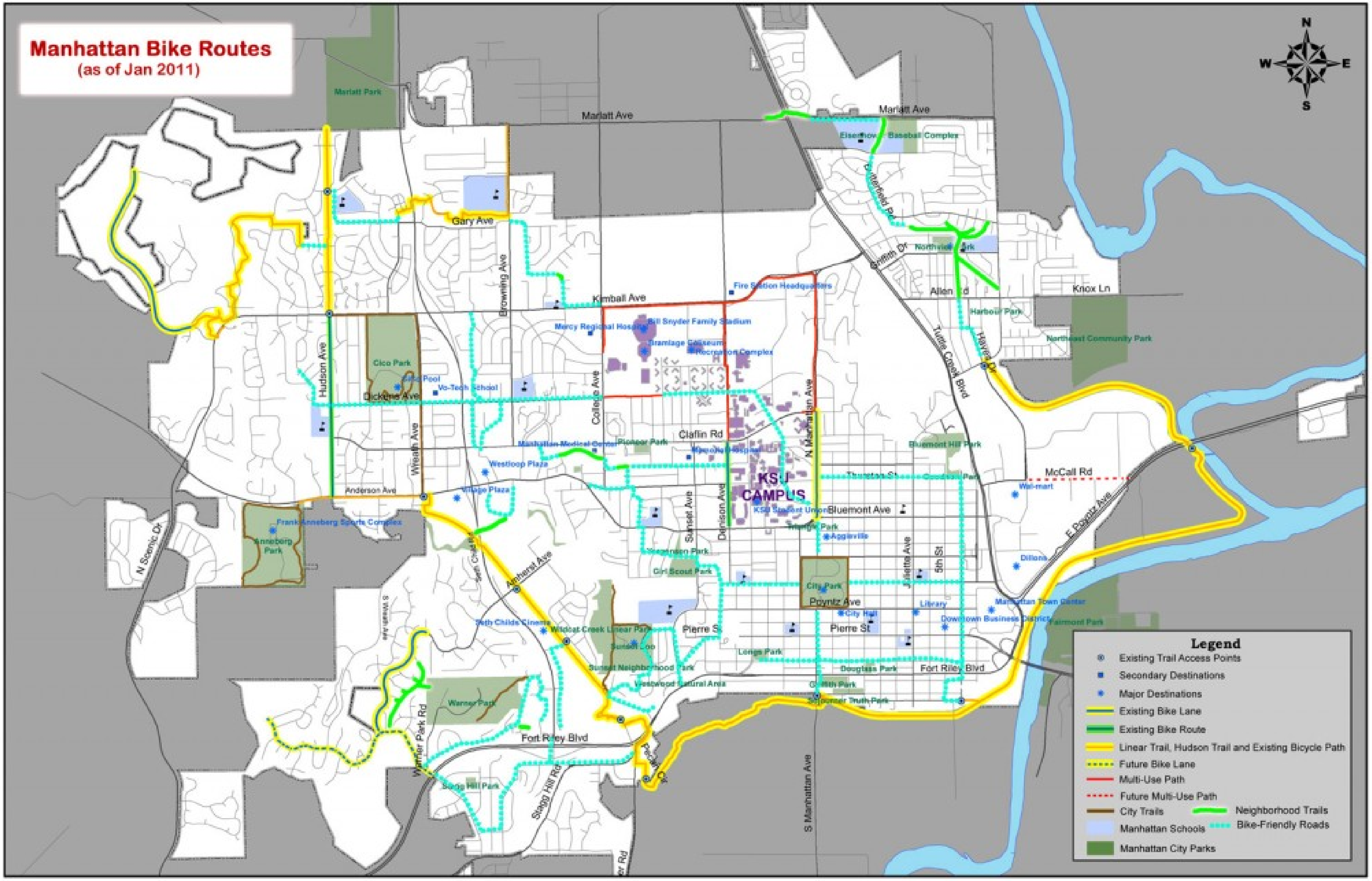

"B bikers" Practical Cycling Map
routes ridden despite dangers

Projects Needed





Bicycle Master Plan
Manhattan, Kansas
N
W
E
S
Marlatt Park
Marlatt Ave
Eisenhower Baseball Complex
Butterfield Rd
Gary Ave
Browning Ave
Griffith Dr
Northview Park
Allen Rd
Knox Ln
Kimball Ave
Fire Station Headquarters
Harbour Park
Northeast Community Park
Mercy Regional Hospital
Bill Snyder Family Stadium
Bramlage Coliseum
Recreation Complex
Hayes Dr
Tuttle Creek Blvd
Hudson Ave
Cico Park
Cico Pool
Vo-Tech School
Dickens Ave
College Ave
N Manhattan Ave
Claflin Rd
Manhattan Medical Center
Pioneer Park
Memorial Hospital
Bluemont Hill Park
Wreath Ave
Westloop Plaza
Thurston St
Goodnow Park
McCall Rd
Wal-mart
Anderson Ave
Village Plaza
KSU CAMPUS
KSU Student Union
Bluemont Ave
E Poyntz Ave
Frank Anneberg Sports Complex
Anneberg Park
N Scenic Dr
Sunset Ave
Denison Ave
Triangle Park
Aggieville
Yorgensen Park
Girl Scout Park
Juliette Ave
6th St
Dillons
Seth Child Rd
Amherst Ave
City Park
Poyntz Ave
Library
Manhattan Town Center
City Hall
Downtown Business District
Fairmont Park
Seth Child Cinema
Wildcat Creek Linear Park
Pierre St
Sunset Zoo
Longs Park
Sunset Neighborhood Park
Douglass Park
Fort Riley Blvd
Westwood Natural Area
Griffith Park
Sojourner Truth Park
Warner Park
Warner Park Rd
Fort Riley Blvd
Pecan Cir
Stagg Hill Park
Stagg Hill Rd
S Manhattan Ave
Legend
Existing Trail Access Points
Secondary Destinations
Major Destinations
Existing Bike Lane
Existing Bike Route
Linear Trail, Hudson Trail and Existing Bicycle Path
Future Bike Lane
Multi-Use Path
Future Multi-Use Path
City Trails
Manhattan Schools
Manhattan City Parks


Manhattan Bike Routes
(as of Jan 2011)
N
W
E
S
Marlatt Park
Marlatt Ave
Marlatt Ave
Eisenhower Baseball Complex
Butterfield Rd
Gary Ave
Griffith Dr
Northview Park
Kimball Ave
Browning Ave
Fire Station Headquarters
Allen Rd
Knox Ln
Mercy Regional Hospital
Bill Snyder Family Stadium
Bramlage Coliseum
Recreation Complex
Harbour Park
Northeast Community Park
Hudson Ave
Cico Park
Vo-Tech School
Dickens Ave
College Ave
Tuttle Creek Blvd
Hayes Dr
N Manhattan Ave
Claflin Rd
Manhattan Medical Center
Pioneer Park
Bluemont Hill Park
Westloop Plaza
Wreath Ave
KSU CAMPUS
Thurston St
Goodnow Park
McCall Rd
Anderson Ave
Village Plaza
Wal-mart
Frank Anneberg Sports Complex
Anneberg Park
Sunset Ave
Denison Ave
KSU Student Union
Bluemont Ave
Triangle Park
Aggieville
E Poyntz Ave
N Scenic Dr
Seth Child Rd
Amherst Ave
Girl Scout Park
Juliette Ave
5th St
Dillons
City Park
Poyntz Ave
Library
Manhattan Town Center
City Hall
Downtown Business District
Fairmont Park
Seth Childs Cinema
Wildcat Creek Linear Park
Pierre St
Pierre St
Sunset Zoo
Longs Park
Sunset Neighborhood Park
Douglass Park
Fort Riley Blvd
Westwood Natural Area
Griffith Park
Sojourner Truth Park
Warner Park
Warner Park Rd
Fort Riley Blvd
Stagg Hill Park
Stagg Hill Rd
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Legend
Existing Trail Access Points
Secondary Destinations
Major Destinations
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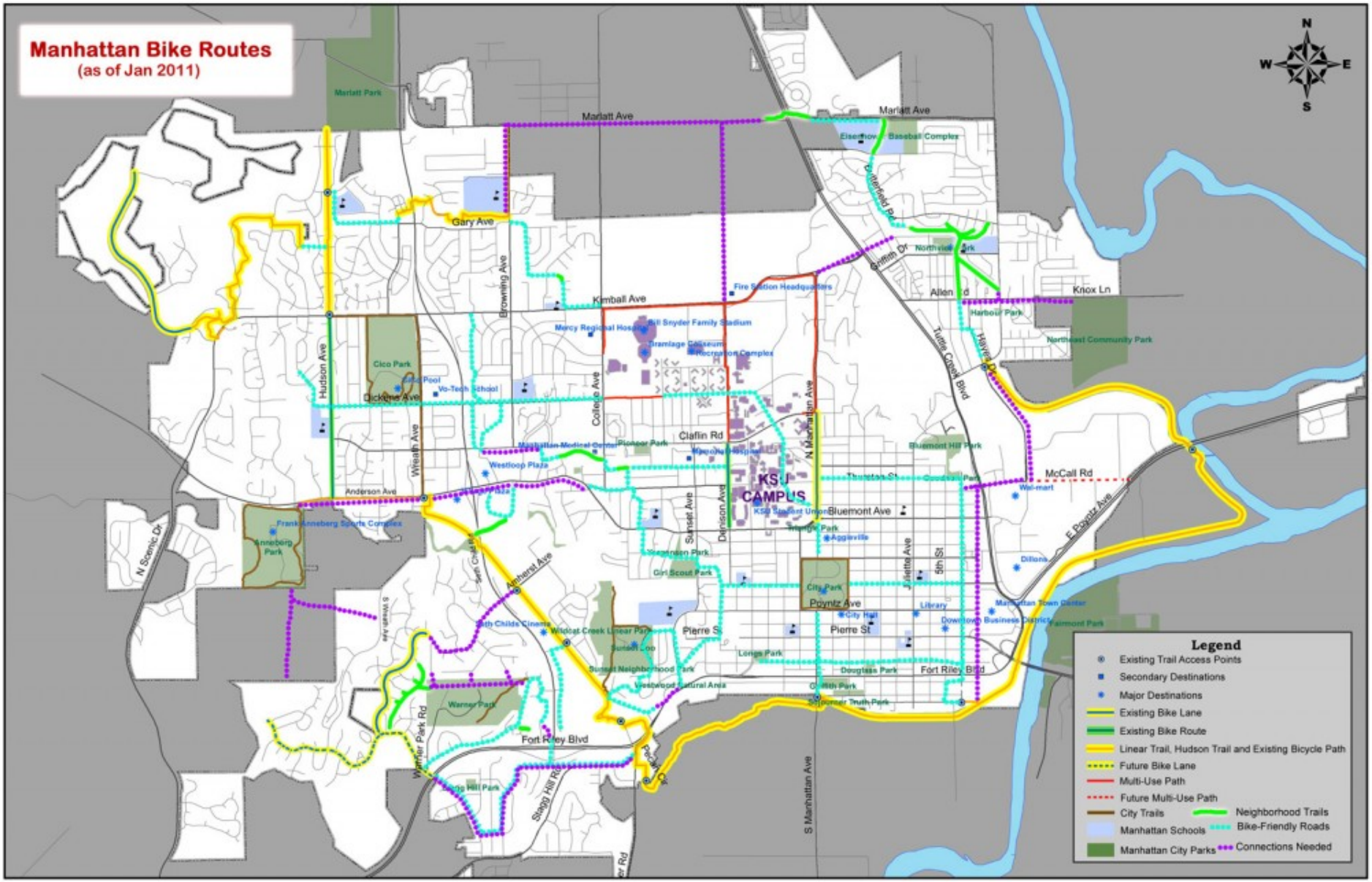
Existing Bike Route
Linear Trail, Hudson Trail and Existing Bicycle Path
Future Bike Lane
Multi-Use Path
Future Multi-Use Path
City Trails
Neighborhood Trails
Manhattan Schools
Bike-Friendly Roads
Manhattan City Parks


Manhattan Bike Routes
(as of Jan 2011)
N
W
E
S
Marlatt Park
Marlatt Ave
Eisenhow Baseball Complex
Gary Ave
Griffith Dr
Northview Park
Kimball Ave
Fire Station Headquarters
Bill Snyder Family Stadium
Mercy Regional Hospital
Drainage Coliseum
Recreation Complex
Allen Rd
Knox Ln
Harbour Park
Northeast Community Park
Tuttle Creek Blvd
Hayes Dr
Browning Ave
Hudson Ave
Cico Park
Cico Pool
Vo-Tech School
Dickens Ave
College Ave
Claflin Rd
Pioneer Park
Manhattan Medical Center
Westloop Plaza
N Manhattan Ave
Bluemont Hill Park
McCall Rd
Wal-mart
Wreath Ave
Anderson Ave
KSU CAMPUS
KSU Student Union
Bluemont Ave
Aggieville
Sunset Ave
Denison Ave
Juliette Ave
5th St
F Poyntz Ave
Dillons
Frank Anneberg Sports Complex
Anneberg Park
N Scenic Dr
Westmoreland Park
Girl Scout Park
City Park
Poyntz Ave
Library
City Hall
Manhattan Town Center
Downtown Business District
Fairmont Park
Amherst Ave
Seth Childs Cinema
Wildcat Creek Linear Park
Pierre St
Sunset Loop
Sunset Neighborhood Park
Longs Park
Douglass Park
Fort Riley Blvd
Westwood Natural Area
Warner Park
Warner Park Rd
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Multi-Use Path
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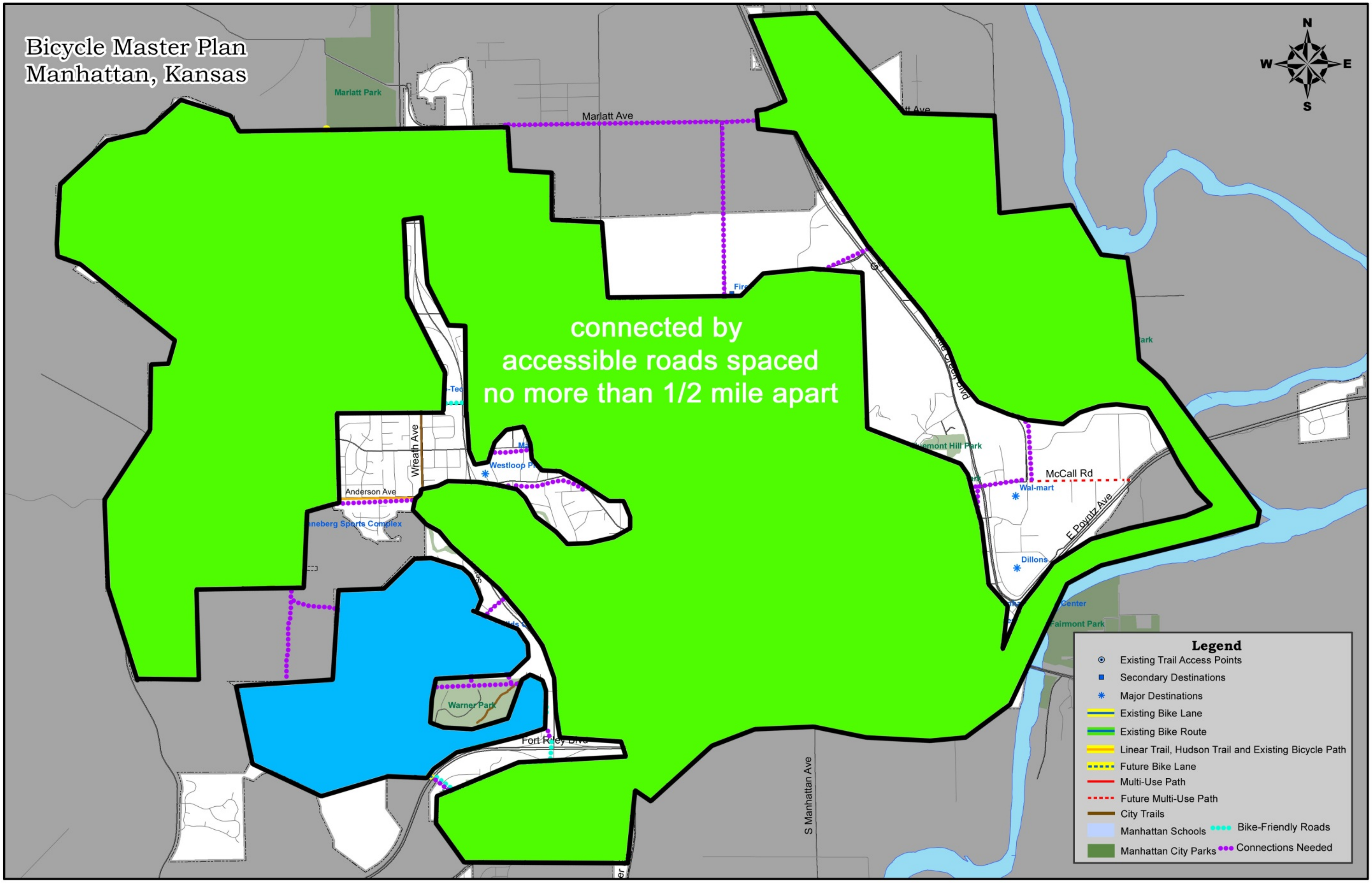
City Trails
Neighborhood Trails
Manhattan Schools
Bike-Friendly Roads
Manhattan City Parks
Connections Needed


Bicycle Master Plan
Manhattan, Kansas
connected by
accessible roads spaced
no more than 1/2 mile apart
N
W
E
S
Marlatt Park
Marlatt Ave
Wreath Ave
Anderson Ave
Westloop
McCall Rd
Wal-mart
E Poyntz Ave
Dillons
Fairmont Park
Warner Park
Fort Riley Blvd
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Legend
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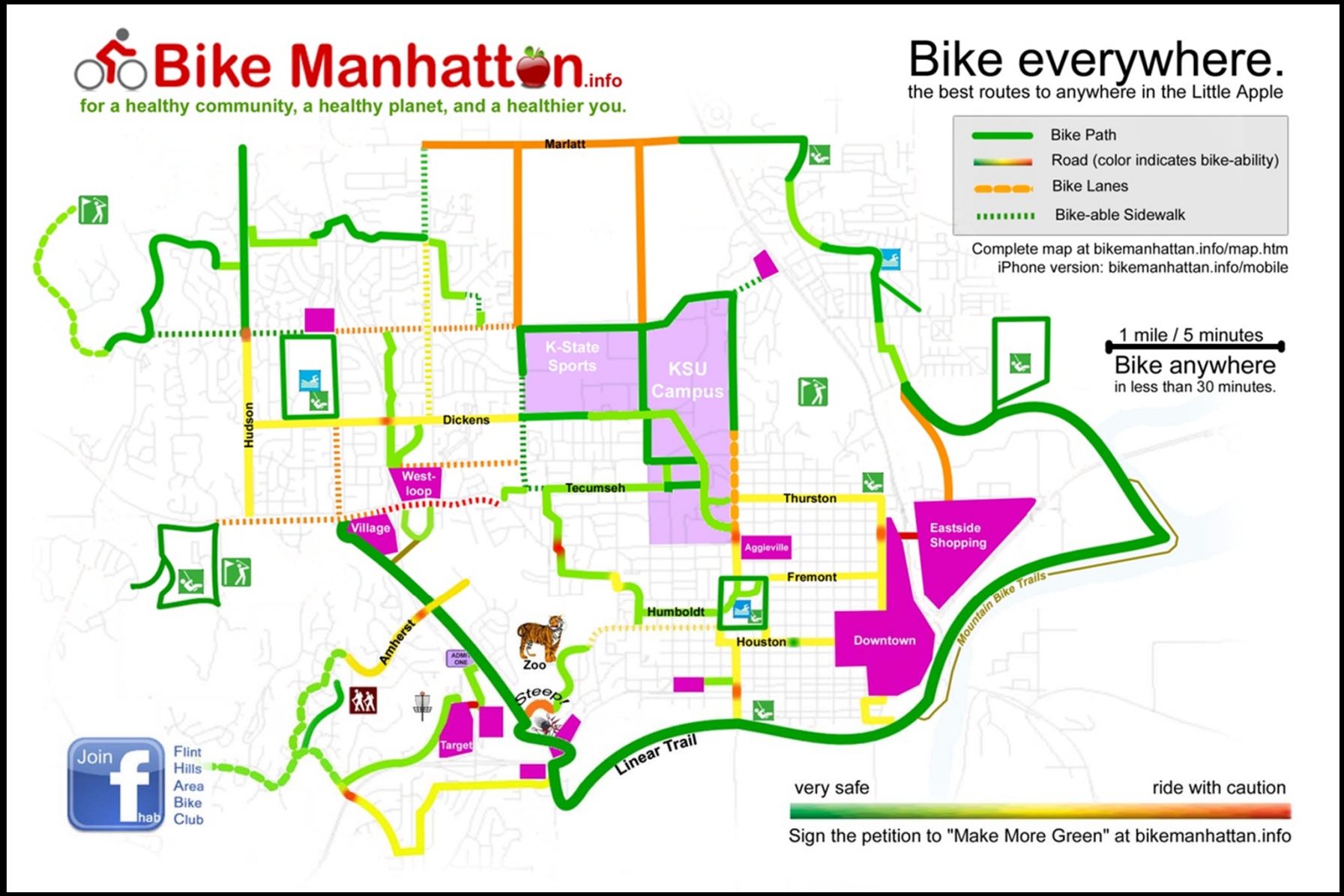
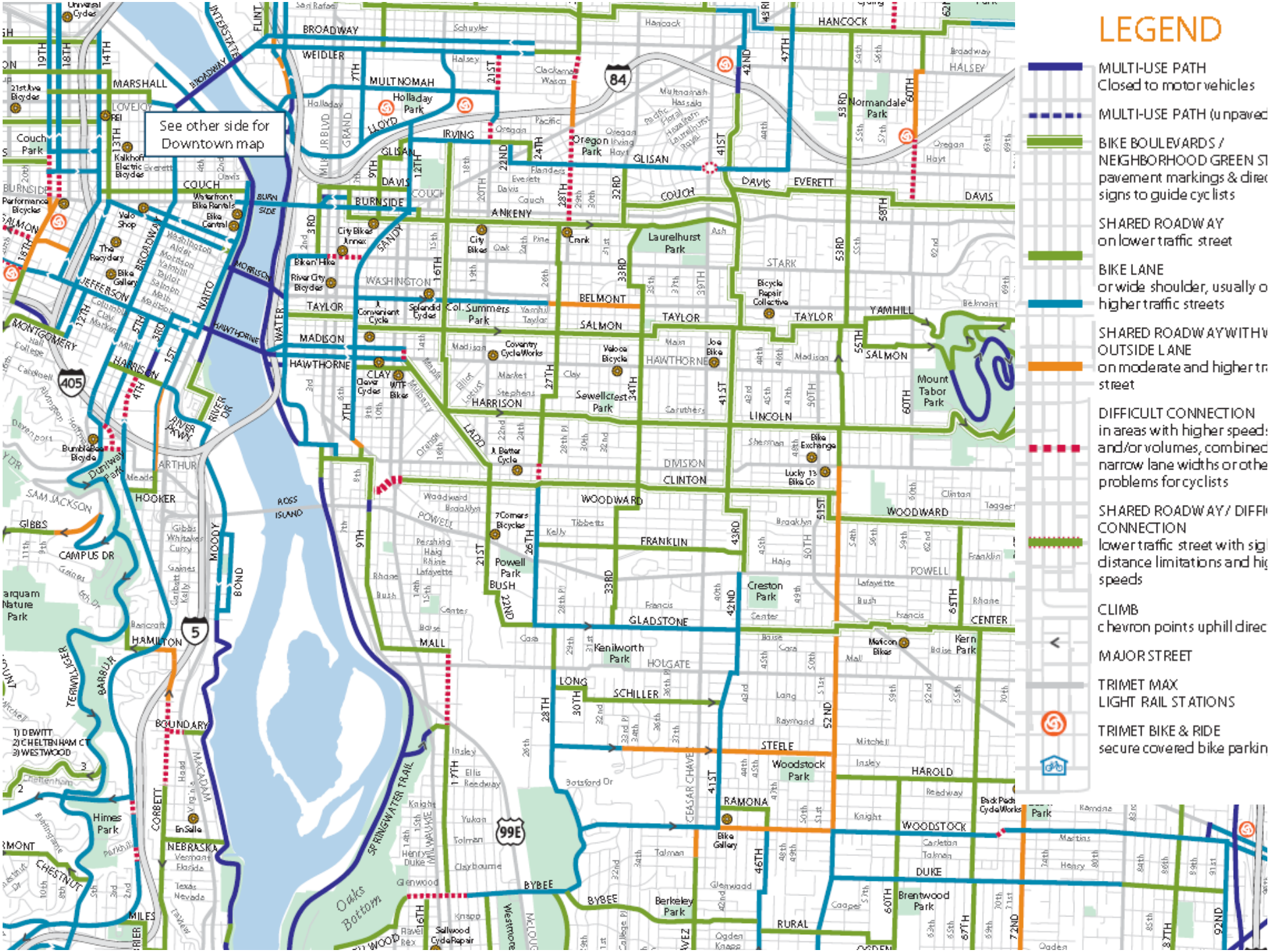
Future Bike Lane
Multi-Use Path
Future Multi-Use Path
City Trails
Manhattan Schools
Bike-Friendly Roads
Manhattan City Parks
Connections Needed

How do we get there?

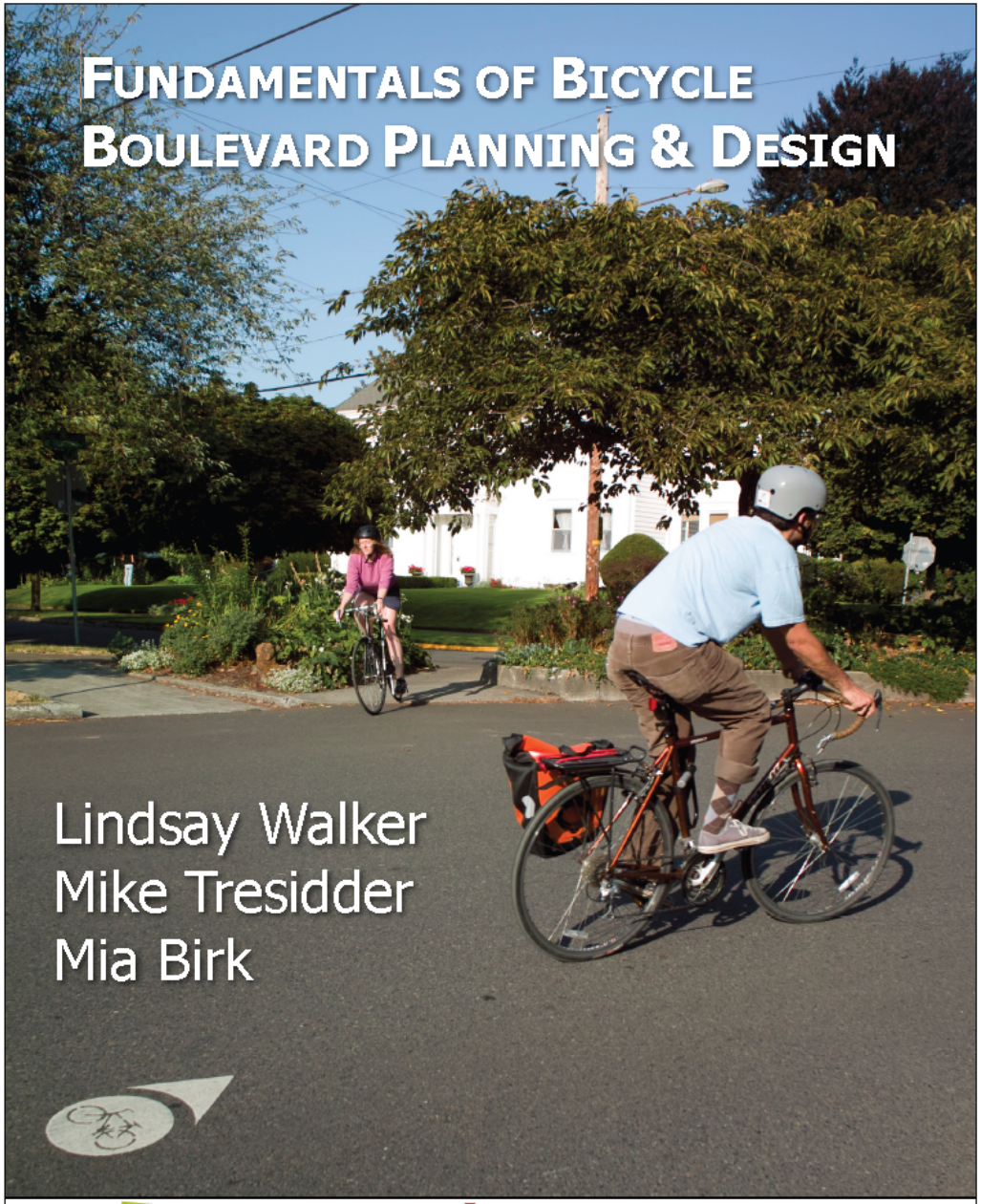
Step One: Mark and promote current network



Step Two: Transform informal network into official Bicycle Boulevards


See other side for Downtown map
LEGEND
MULTI-USE PATH
Closed to motor vehicles
MULTI-USE PATH (unpaved
BIKE BOULEVARDS /
NEIGHBORHOOD GREEN ST
pavement markings & direc
signs to guide cyclists
SHARED ROADWAY
on lower traffic street
BIKE LANE
or wide shoulder, usually o
higher traffic streets
SHARED ROADWAY WITH W
OUTSIDE LANE
on moderate and higher tr
street
DIFFICULT CONNECTION
in areas with higher speeds
and/or volumes, combined
narrow lane widths or othe
problems for cyclists
SHARED ROADWAY / DIFFI
CONNECTION
lower traffic street with sig
distance limitations and hig
speeds
CLIMB
chevron points uphill direc
MAJOR STREET
TRIMET MAX
LIGHT RAIL STATIONS
TRIMET BIKE & RIDE
secure covered bike parkin

Fundamentals of Bicycle Boulevard Planning & Design

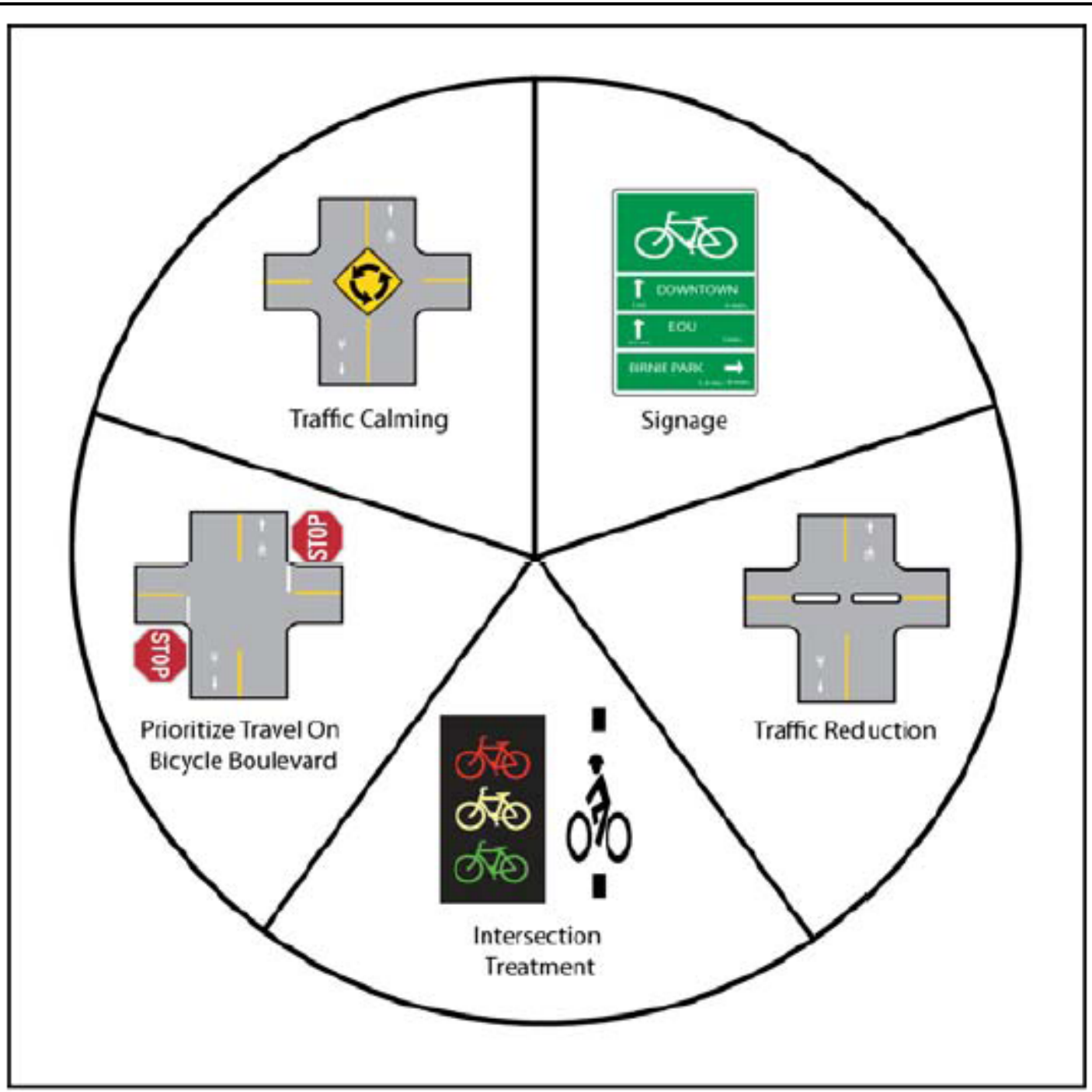


Lindsay Walker
Mike Tresidder
Mia Birk

ibpi
Initiative for Bicycle & Pedestrian Innovation

alta
PLANNING + DESIGN

Portland State
UNIVERSITY


Traffic Calming
DOWNTOWN
EOU
BIRNIE PARK
Signage
STOP
STOP
Prioritize Travel On
Bicycle Boulevard
Traffic Reduction
Intersection
Treatment


BICYCLE BOULEVARD
MILVIA
VIRGINIA
Miles
N. Berk. BART 0.7
Fourth St. 1.7
UC Village 2.2


RUSSELL
BICYCLE BOULEVARD
NO
PARKING
ANY
TIME


BICYCLE BOULEVARD
HILLEGASS-BOWDITCH
THIS
WAY


BICYCLE BOULEVARD
NINTH STREET


Dntwn. Milwaukie
1.6 MI.
10 MIN.
King Rd.
Commercial Ctr.
1.7 MI./10 MIN.
Springwater Trail
to Sellwood
1.7 MI./10 MIN.

SW 14th Street - Bicycle Boulevard Improvements (continued)

Description

This project would provide bicycle boulevard treatments on a three-mile segment of SW 14th Street, continuing north as a shared-use trail segment connecting to the Meredith Trail. These projects would connect neighborhoods on the southwest side of Des Moines to the trail network along the river and to the Blank Park Zoo and to the proposed superblock at Fort Des Moines.

Proposed Improvements

- Traffic calming installations to discourage high school students driving on SW 14th Street
- Bicycle boulevard route markings and wayfinding signs on SW 14th Street from Cassidy Drive and Amos Avenue and along Cassidy Drive from SW 14th Street to Bell Avenue
- Trail connection from SW 14th Street to Meredith Trail

Planning-Level Cost Opinion

Costs for the SW 14th Street boulevard will vary depending on level of improvements:

- **Level 1: Signage**
  $14,000 - "Bike Route" signs every 300'
- **Level 2: Pavement Markings**
  $8,000 - Boulevard markings every 100'
- **Level 3: Intersection Treatments**
  $600 - Turn stop signs at Park Avenue
  $10,000 - Install bike signal actuation at McKinley Avenue & Army Post Road
- **Level 4: Traffic Calming**
  $10,000 - Traffic circles at Watrous Avenue, Hackley Avenue, Porter Avenue, and Amos Avenue
- **Level 5: Traffic Diversion**
  $80,000 - Chicanes around school (4)

Note that each treatment level would build upon the previous level - cost estimates presented do not combine treatment costs.

The cost of the connector trail from Bell Avenue to the Meredith Trail and Grays Lake Park will require additional engineering review. Costs could range from approximately $3.6 million for a route through the parking lot and a bridge to the trail, to $1.5 million for a route parallel to Fleur Drive.

Pavement markings indicate to both bicyclists and motorists that the roadway is a designated bicycle route and aid in wayfinding

Wayfinding helps cyclists find connections between routes

Traffic circles can be used along bicycle boulevards to reduce automobile speeds without hindering bicycle travel

Planning-Level Cost Opinion

Costs for the SW 14th Street boulevard will vary depending on level of improvements:

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- **Level 5: Traffic Diversion**

  $80,000 - Chicanes around school (4)

Note that each treatment level would build upon the previous level - cost estimates presented do not combine treatment costs.

12 miles needed=

- $56,000 for signs
- $30,000 for road markings
- More for signals, etc. if needed

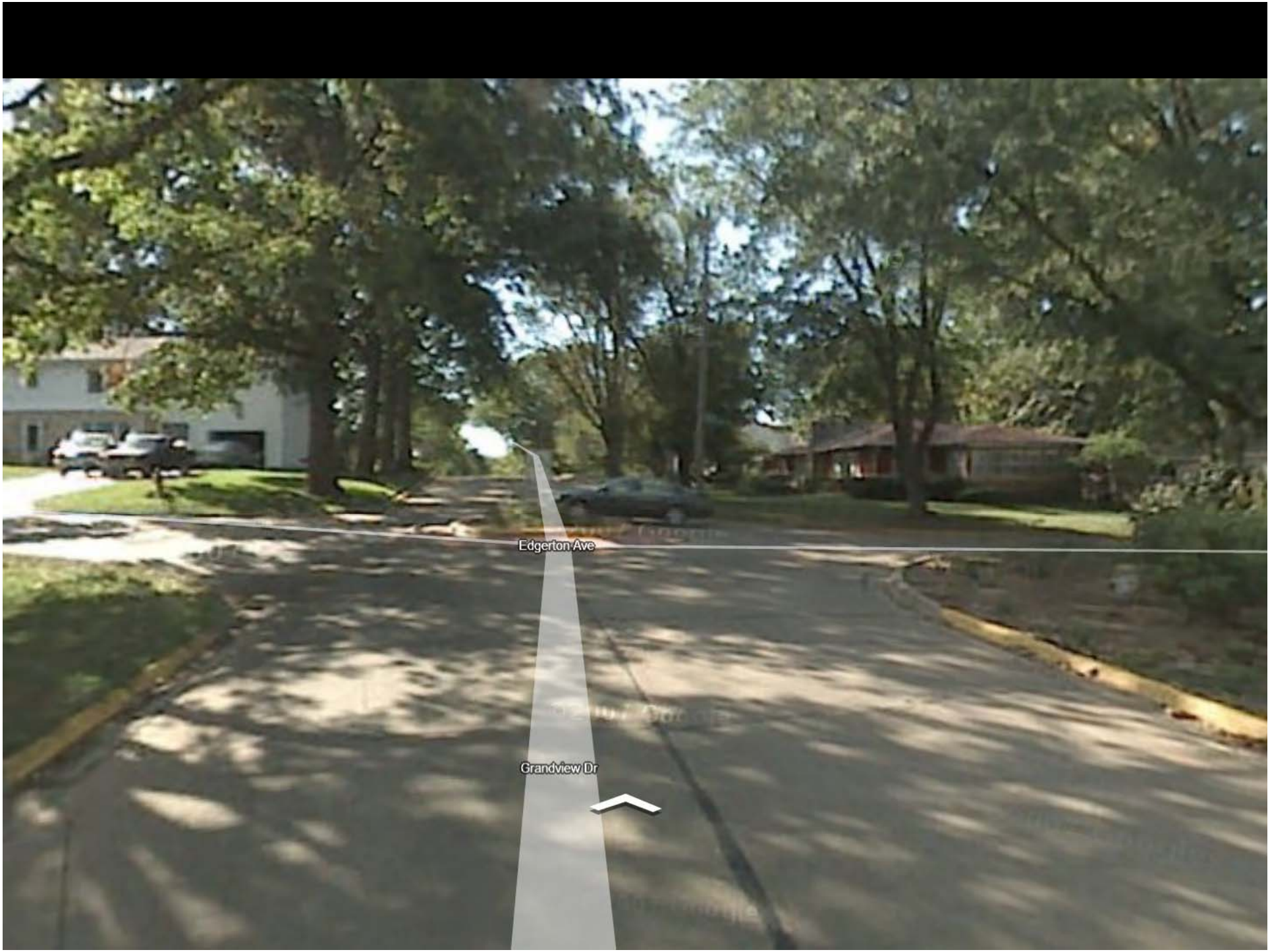
Available Tools

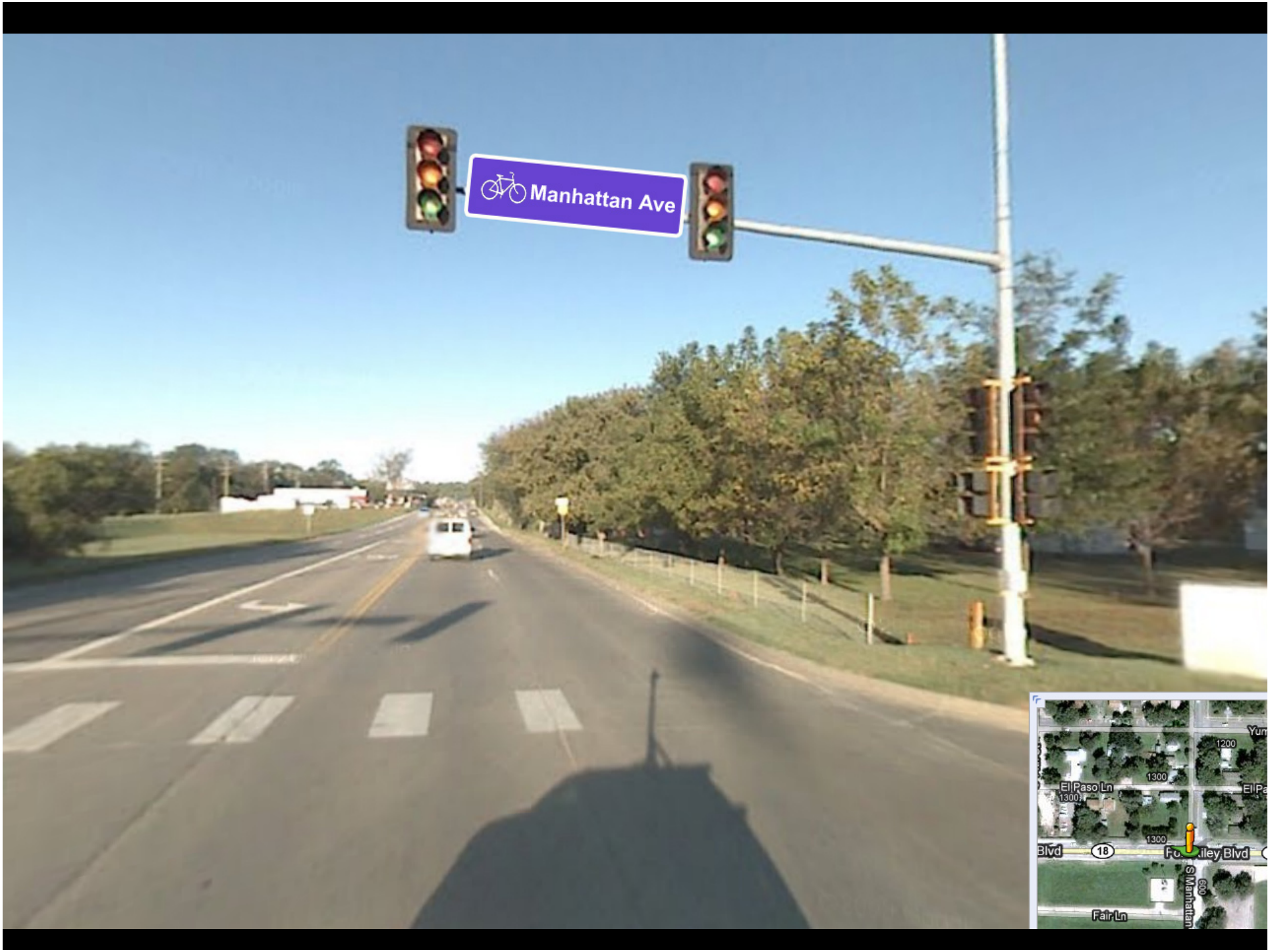
Medians	
Pinch Points	
Partial Diverters	

Signage & Markings	
Chicanes (Rio Grande)	
Traffic Circles (Rio Grande)	

9th & Houston


N 8th St
Moro St


Edgerton Ave
Grandview Dr


Manhattan Ave
El Paso Ln
1300
1200
18
Fair Ln

Advantages of BBs

- Cheap! (as little as $3,500/mile)
- Works for B-bikers (Portland State study)
- B-biker access to key destinations
- Preliminary studies show dramatic increase in ridership
- Creates *liveable* streets
- “For people concerned with safety and avoiding traffic, a well-connected network of low-traffic streets, including some bicycle boulevards, may be more effective than adding bike lanes on major streets with high volumes of motor vehicle traffic.”
  – Jennifer Dill 2009 JPHP

They don’t solve all our problems … but they’re a great start!

Further planning needed for more capital-intensive projects to go where BB’s and education can’t.