City of Bloomington
Bicycle and Pedestrian Safety Commission

Monday, December 14, 2015
5:30 – 7:00 p.m.
Hooker Conference Room, Bloomington City Hall
AGENDA

I. Call to Order and Introductions

II. Approval of Minutes
   a. November 16, 2015

III. Public Comments

IV. Communications from Committee Members

V. Reports from Staff
   a. Engineering Update
   b. IU Bicycle Master Plan
   c. BBC Grant
   d. Statute Research

VI. Old Business

VII. New Business
   a. E 3rd St Spot Improvement
   b. Letter to Incoming Mayor

VIII. Topic suggestions for future agendas

IX. Upcoming Meetings/Events

X. Adjourn

City of Bloomington
Bicycle and Pedestrian Safety Commission

Monday November 16, 2015
Hooker Conference Room, Bloomington City Hall
MINUTES

An audio recording of the meeting is available upon request

I. CALL TO ORDER AND INTRODUCTIONS

Members present: Paul Ash, Kay Bull, Jaclyn Ray, Mitch Rice, Jim Rosenbarger, Mark Stosberg

Staff: Vince Caristo – Planning & Transportation; Scott Robinson – Planning & Transportation; Neil Kopper – Planning & Transportation; Steve Cotter – Parks and Recreation.

Others present: Jim Williams; Daniel McMullen

II. APPROVAL OF MINUTES

Minutes from the October 19, 2015 meeting were presented by staff.

Paul moved to approve the minutes as presented. Mark seconded. ***Motion passed.***

I. PUBLIC COMMENTS

Daniel McMullen said we should try to access new transportation funding recently announced by the Governor to fund local improvements at location such as the Near East Side, West Side, Atwater & Highland.

II. COMMUNICATIONS FROM COMMISSION MEMBERS

Kay introduced herself to the group for the first time. She said that while bicycling on W 7th St near White Oak Cemetery, a vehicle sped up to pass her around the roundabouts, and this is reflective of the experience of riding in this city.

Paul said that people are interested in talking about how things are changing, such that the B-Line trail could be successful beyond explanation.

DRAFT

III. REPORTS FROM STAFF

a. **Engineering Update**
Neil provided updates on the current projects in development. We are working on a federal grant to purchase pedestrian countdown timers and accessible push-buttons for traffic signals. We are bringing consultants on-board for curb ramp and pedestrian signal improvements at the intersections of 3rd & Woodcrest and 2nd & College. We are beginning design for projects at 4th & Rogers, and Allen & Walnut, and will be seeking Commission input. Parts of the Woodlawn Ave project are now open, and will be fully operational in the near future.

b. **Parks Master Plan**
Steve presented highlights from the Parks and Recreation Department's Master Plan Update, which was recently approved by the Board of Parks Commissioners. The plan is supported by a community-wide survey, which identified trails as a top priority for capital projects, and closely aligned with departmental objectives.

c. **Possible Programmatic Expenses (BikeLife Magazine, Tactical Urbanism)**
Vince will setup an evening showing of a webinar on 'Tactical Urbanism'.

Vince asked for advice on the BikeLife Magazine proposal. BikeLife produces and distributes a customized magazine on bicycling for communities. Overall, the group thought this magazine had good content and could be effective at engaging new/non-riders. Vince said he would like an internal and external working group if we embark on this project. He said he'd check in with Tuscon and Boulder staff to try and get their feedback on the magazine.

IV. OLD BUSINESS

V. NEW BUSINESS

a. **Neighborhood Greenway – Portland's Recent Developments**
Vince gave an overview of the finding in this report, and the elements that could be useful to the Commission in developing is Neighborhood Greenway whitepaper.

b. **Trades District**
Vince presented details on the proposal from Flaherty and Collins, LLC.

VI. TOPIC SUGGESTIONS FOR FUTURE AGENDAS

-none-

Indiana University Bicycle Master Plan

Bloomington, Indiana

August 2015

Indiana University
Bicycle Master Plan

INDIANA UNIVERSITY

Bloomington, Indiana

107 South Indiana Avenue
Bloomington, IN 47405

www.indiana.edu

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Office of Sustainability

Bill Brown, AIA, Director

Landscape Architecture Department

Mia Williams, University Landscape Architect
Mark Ramsey, Director of Landscape Architecture
Tristan Johnson, Landscape Designer

Acknowledgements

Special thanks to the following people and organizations:

Steering Committee

Kent McDaniel
Mia Williams
Bill Brown
Mark Ramsey
Tristan Johnson
Scott Robinson
Henri Venable
Perry Maull
Andrew Bredesen
Brandon Koppelmann
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INTRODUCTION AND BACKGROUND

The Indiana University *Bicycle Master Plan* is an important document that builds upon the bicycling tradition of both the University and the Bloomington community, helps meet objectives of the *2010 IU Bloomington Campus Master Plan*, and will aid in fulfilling the research and educational missions of the University. As it is being implemented, the *Bicycle Master Plan* will further enhance the quality of life of Indiana University students, faculty, staff and the larger university community; it will strengthen the connections to the City; it will provide for more dynamic neighborhoods; and it will create a more robust economic and sustainable base for the community.

Indiana University has a rich history which is reflected not only in its architecture but also in its campus landscape. The natural character of the campus lends itself well to pedestrian travel, but given the travel mode trends and the University's sustainability goals, there are many areas of constraints in accommodating more bicyclists.

The University (and its partners) has begun to systematically expand the accommodation of bicycling with the addition of a variety of bicycle facilities including shared-use paths, cycle-tracks, bike lanes and shared lane markings. These efforts include:

- Identification in the *2010 IU Bloomington Campus Master Plan* of the need for a comprehensive system of both pedestrian and bicycle facilities which provide safe, comfortable and convenient travel for pedestrians, bicyclists and motor vehicles.
- Implementation of a growing network of bicycle facilities including nearly 700 bicycle racks, numerous bike care stations, and a host of growing bicycling support programs.
- A number of University offices and groups working in concert to advance bicycling for many reasons, prominent of which is its role in achieving a number of recently established sustainability and health goals.
- Receiving a Bronze rating from the League of American Bicyclists and seeks to receive advanced ratings with submittal of a new rating request in August of this year.
- An ambitious program called "Healthy IU" to encourage exercise and better diet among staff and faculty to increase productivity and lower health care costs.

This *Bicycle Master Plan* includes a detailed analysis of the infrastructure and considers the existing and future needs of students, faculty and staff that currently bicycle, or would be encouraged to bicycle throughout the campus.

As the following sections outline, this plan proposes a bicycling infrastructure network, a supporting expansion of programs and policies, and performance metrics that will help achieve the *Bicycle Master Plan's* established goals and objectives for the planning horizon year of 2025.

BICYCLE MASTER PLAN GOALS AND OBJECTIVES

Goals and objectives for the *IUB Bicycle Master Plan* were developed with input from a Steering Committee and from on-campus stakeholder outreach meetings. Additionally, the *IUB Campus Master Plan* and the *City of Bloomington's Bicycle and Pedestrian Transportation and Greenways System Plan* were reviewed to identify key themes related to bicycling on the IUB campus.

The goals and objectives for the Plan that the Steering Committee affirmed are:

GOAL 1

Develop a comprehensive bicycle facility network that provides safe, efficient, and convenient connectivity within the IUB campus, to student housing, and to off-campus locations accessible via the City of Bloomington's existing and planned network.

Plan Objective: Address major campus bicycling infrastructure needs including internal connectivity through the core campus, interfaces with the City of Bloomington bicycle network, east-west and north-south connectivity through campus, and access to peripheral campus locations (e.g., the athletics facilities).

GOAL 2

Address high-conflict areas within the IUB campus and where campus routes interface with the City of Bloomington's bicycle network.

Plan Objective: Develop short and long-term solutions to high-conflict areas and provide associated planning-level cost estimates for mitigation thereof.

GOAL 3

Improve the convenience of bicycling through the provision of appropriate bicycle parking facilities and policies.

Plan Objective: Recommend potential enhancements to the criteria for bicycle parking with respect to quantity, type, and location (taking into account factors such as parking demand, proximity to building entrances, impacts on other modes of travel, and campus aesthetics).

GOAL 4

Implement new, or refine existing policies and programs to increase bicycle ridership among students, faculty, and staff.

Plan Objective: Implement or refine a range of policies and programs based on evaluation of IU's Bicycle Friendly Campus application, with the intent of elevating IU's current rating from Bronze to Silver, and to Gold by target year 2025.

Plan Objective: Increase the combined bicycling mode share of faculty, staff, employees and students from the current 5.6 percent to 15 percent by the target year 2025.

GOAL 5

Increase the harmony of interaction among bicyclists, pedestrians, and motorists within the IUB campus and on adjoining city streets.

Plan Objective: Develop a University policy that clearly establishes appropriate and acceptable bicyclist, pedestrian, and motorist code of conduct on campus (e.g. use of bike bells, etc).

Plan Objective: Implement ongoing awareness and education of bicycling laws and associated Univeristy code of conduct for bicycling on campus.

STEERING COMMITTEE & STAKEHOLDER MEETINGS

STEERING COMMITTEE MEETINGS

The Steering Committee for development of the IUB Bicycle Master Plan included: representatives from the Office of the Vice President of Capital Planning & Facilities; the University Architect's Office; the Office of Sustainability; Graduate and Professional Student Organization; the Indiana University Student Association; the City of Bloomington; Campus Bus; Parking Operations; Auxiliary Business Services; the Indiana University Police Department; and others. Persons from these offices and organizations include: Kent McDaniel, Mia Williams, Bill Brown, Julie Bauters, Mark Ramsey, Tristan Johnson, Scott Robinson, Henri Venable, Perry Maull, Andrew Bredesen, Brandon Koppelmann, Amanda Turnipseed, Vince Caristo, Michael Baker, Brian Oliger and others.

The Spring 2014 report entitled *Bicycle Friendly Campus Initiatives* by Intern Ms. Hannah Hunt of the Office of Sustainability with mentors Bill Brown, Emilie Rex and

Perry Maull was used by the Consultant team as a significant reference in their work in helping the University develop this Bicycle Master Plan.

STAKEHOLDER MEETINGS

Campus stakeholder meetings were conducted to gather input from current bicyclists and to provide insight into future users. These were held on November 17, 2014 from 9:00 a.m. to 4:00 p.m. at the Neil Marshal Black Culture Center on campus. In general, the faculty and staff were invited to the morning session and the students were invited to the afternoon session. Draft goals and objectives were presented and a GIS map entitled "Existing Bicycle Facilities" developed as part of this bicycle master plan was used to discuss current routes and areas of concerns for bicyclists.

A wide variety of users were present at the meetings, including current bicyclists, those wishing to bike more, students, faculty, and community members from the surrounding city areas. The comments were graphically illustrated on the Stakeholder Meeting Comments Map (see Appendix "A") and also included:

- Maintenance issues with multi-use path along the edge of campus
- No clear maintenance responsibility between the University and the City along edges of campus
- Would like to see more bike repair stations
- Need for education on code of ethics for bicyclists using facilities in coordination with pedestrians
- Would like to see more bike only facilities with separate facility for pedestrians
- More locker rooms with bike storage – design an important part of making these efficient amenities (difficulty at Cyberinfrastructure Building locker room with locked door outside of locker room – can't get to items left in locker room if in use by someone else)
- Bike parking around campus seems to be adequate
    - Would like to see more covered bike parking in parking garages
- Hot spots for bike parking / destinations
    - Kelley School of Business
    - Library
    - Student Center
    - Food Court/Read/Wright Dorms
    - Ballantine/Simon/Jordan Halls
    - Hilltop
    - Cyberinfrastructure Building
    - Sports Stadiums
    - Restaurants and Commercial Locations along 3rd Street
    - Downtown Bloomington
    - Shopping off-campus on 3rd Street and College Mall Road
- Areas of observed or personally-experienced conflicts include:
    - 10th Street & Jordan Ave
    - 10th Street & Fee Lane
    - 10th Street at Kelley School of Business - midblock crosswalk
    - 10th Street at Psychology Building
    - 10th Street at Woodlawn Avenue
    - 10th Street at railroad underpass
    - 10th Street at SR45/SR46 Bypass
    - 7th Street & Indiana Avenue
    - 7th Street at Jordan Avenue
    - 7th Street from Woodlawn to Showalter Fountain
    - Union Street at 7th Street
    - Union Street at 3rd Street
    - Union Street at 10th Street
    - Indiana Avenue at 6th Street
    - Indiana Avenue at 4th Street
- Suggested connections to other paths/trails/parks
    - B-Line connection maybe down 4th Street or 6th Street
    - Allen Street- Covenanter Drive Neighborhood Greenway
    - Bryan Park
    - Cascades Park
- 10th Street/Union Dorms – lockers not used
- Most receive information by email or by visiting the IU transportation website – would like to see a Facebook page created to communicate all things related to transportation including bike improvements and routes

EXISTING CONDITIONS

A GIS map of existing bicycling facilities, conditions and accommodation was compiled and created with information from a variety of sources from IUB and the City, including the City's *Bicycle and Pedestrian Transportation and Greenways System Plan of 2008*. Existing conditions for bicycling on the campus were evaluated with field visits, user survey review (the University's 2014 TDM Survey), and through stakeholder meetings. In addition, existing planning documents and projects were reviewed for relevance to the bicycle infrastructure and needs of campus. A level of service (LOS) assessment for on-campus and adjoining roads was performed; the dominant LOS factors are portrayed on the Existing Bicycle Facilities map (see Figure 1) via the combined illustration of bicycle facility types and compiled roadway traffic volume classes (shown in various bandwidths).

DUNN'S WOODS

10th STREET AT ARBORETUM

JORDAN RIVER

AUDITORIUM CYCLE TRACK

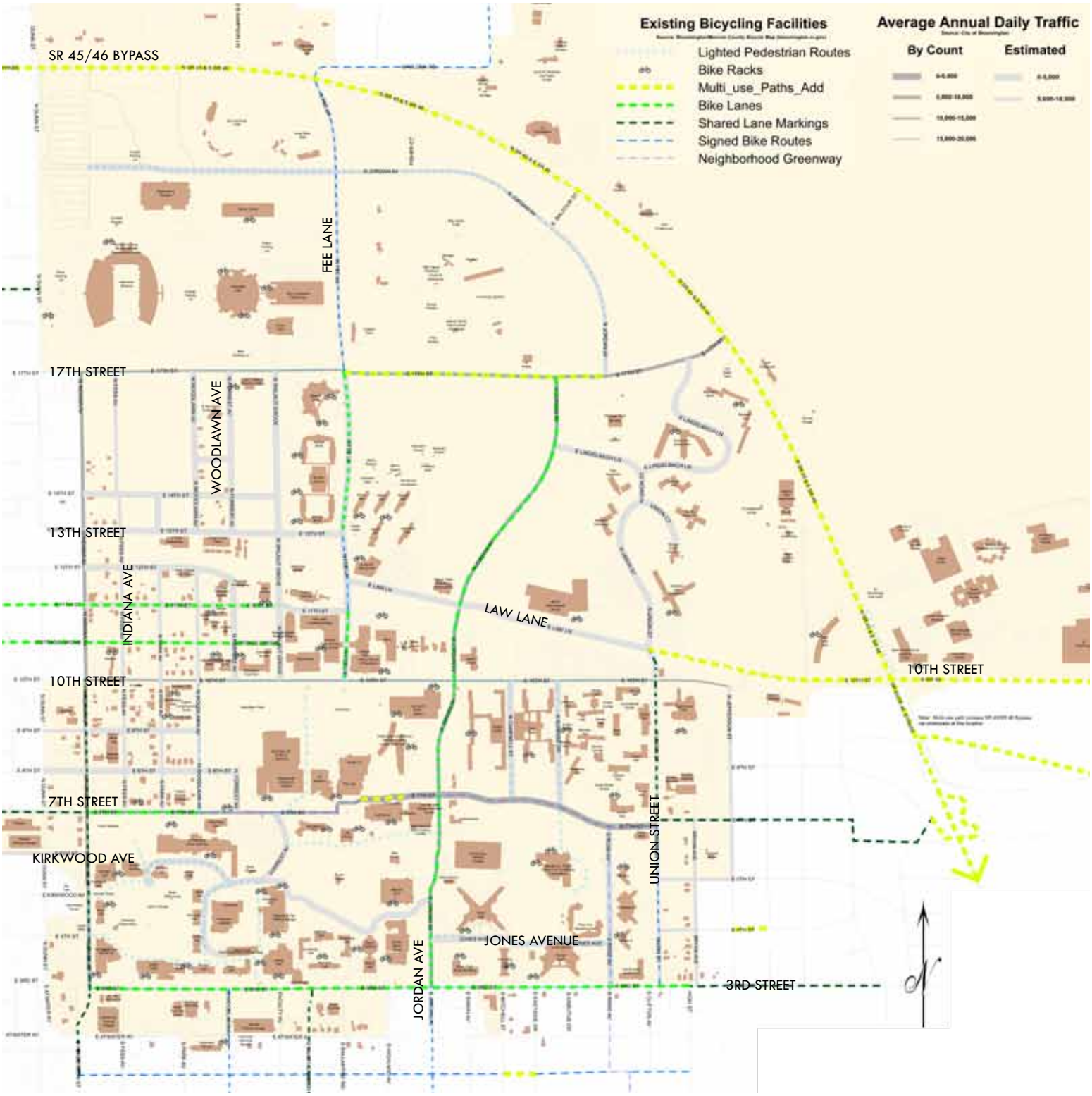

FIGURE 1 - EXISTING BICYCLE FACILITIES MAP

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TRENDS AND TARGETS

As articulated earlier, bicycling has been a feature of campus life for many years, and the activity is increasing. Furthermore, increased bicycling is a highly effective way to achieve a number of goals in the *Campus Master Plan* and those of the Office of Sustainability, especially given the campus and surrounding land use characteristics and University population's current and future anticipated travel patterns. The results of the 2014 Transportation Demand Survey indicate a current 5.6% bicycle mode share based on a weighted average of students commuting to campus (7.1% bike mode share), on-campus students commuting to class (3.3%), and employees commuting to campus (5.6%). This existing mode share is in line with nationwide campus trends – while there are outliers such as Stanford University (52%) and UC-Davis (42%), and some campuses have shares as low as 1%, the majority of campuses have an existing bicycle mode share between 4% and 9%.

One of the goals of the University is to bring about a more interconnected, convenient, and intellectually engaging campus. While this goal may be achieved in part through various strategies, potentially including parking restrictions and management, ultimately success will stem from collective increases in mode share among carpooling, walking, motorcycle/moped, transit, and bicycling. Given the inherent limitations of campus carpooling (resulting from divergent employeee and student schedules) and walking (resulting from intra-campus destination travel distances), and the already free and viable transit service, it is likely that an increase in bicycle mode share can reduce reliance on single occupancy vehicles thereby helping to achieve this goal for the campus.

Accordingly, the target bicycle mode share for 2025 should be established at 15%, representing a nearly three-fold increase to the existing bicycle mode share. Noteworthy is this recommendation's close comparison to that of the University of Maryland, College Park, a fellow Big 10 institution, whose Campus Bicycle Study documents a baseline mode share of 5.1% and a 15% target for a 10-year planning horizon.

BICYCLE TRAVEL NEEDS

The *Bicycle Travel Patterns and Preliminary Needs* map (see Figure 2 next page) illustrates the compilation of the major bicycle travel flow needs for both current and future conditions. This compilation was created through review of the *Campus Master Plan's* Circulation and Parking element, particularly the Bicycling section's Future Facilities map; the bicycle master plan's Steering Committee members' input over several meetings in 2014 and 2015; numerous field observations; evaluation of the City's initiatives and plans; input from the campus outreach and stakeholders' input; and the collective knowledge of existing conditions and trends. As these patterns and needs became evident, **five thematic guidelines** emerged that guide the action plan for infrastructure, policies and programs that will advance bicycling throughout the IUB campus:

1. **Preserve the natural environment and aesthetic character of the campus**
2. **Provide facilities for bikes while preserving the strong pedestrian character of the campus**
3. **Create a system of bike facilities which complements existing pedestrian facilities to create a network which is safe and convenient for both by reducing or minimizing conflict areas**
4. **Supplement the current system of bike and pedestrian facilities to reduce the use of automobiles within the campus core**
5. **Continue the sustainability initiatives of the University by creating additional options for bicycle travel both within the campus and via adjoining connections to nieghborhoods and campus supporting land uses**

One of the primary challenges to implementing bicycle infrastructure will be providing a balance between providing new, widened, or separate facilities for bikes while **preserving the historic and natural environment and aesthetic quality of the campus**. While separate (or delineated) facilities for pedestrians and bicyclists are generally functionally ideal, there is a limit to the amount of built environment that is desired on the campus. **Preserving the historic and natural character for which the university is known must remain a high priority with the addition of new bike facilities.**

The flow of people within the IU Bloomington campus is currently dominated by pedestrians with just a few bicyclists. While it is desirable for the campus to maintain

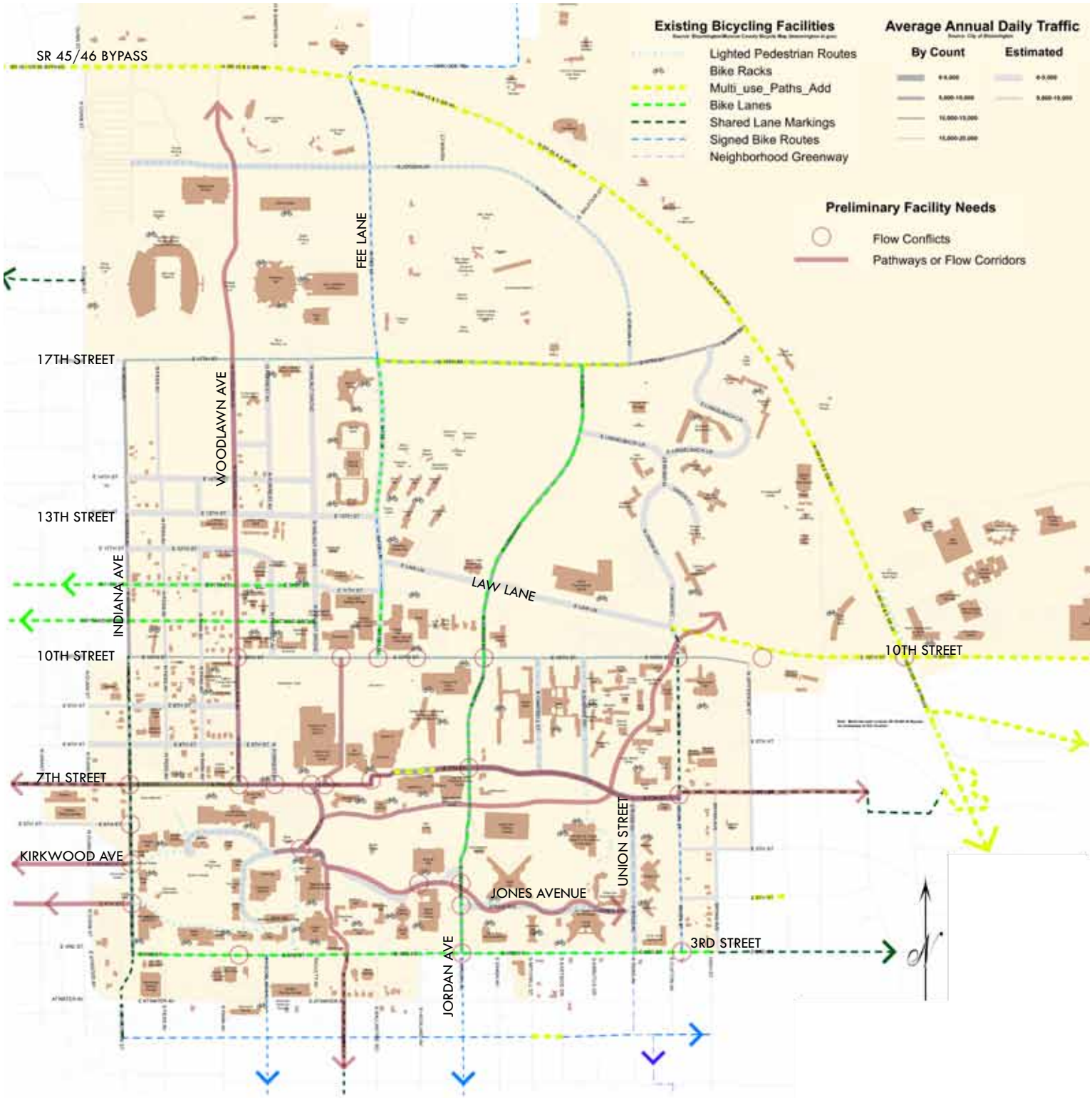

FIGURE 2 - BICYCLE TRAVEL PATTERNS AND PRELIMINARY NEEDS MAP

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this pedestrian focus, there are significant conflict areas between pedestrians, automobiles, and bicyclists. Solutions to address these conflicts will be an important component outlined in the next chapters of this Plan. Several conflict areas were identified on the Bicycle Travel Patterns and Preliminary Needs map including:

- Several conflict points along 10th Street and at intersecting streets
- 7th Street within the core campus area
- Union Street at 10th, 7th, and 3rd Streets
- Indiana Avenue at 6th and 4th Street
- Jordan Avenue between 10th and 3rd Streets

Campuses across the country are faced with the growing need to provide separate or delineated facilities for bike travel while preserving the pedestrian mobility focus. While the two modes of travel are similar in nature, there are inherent conflicts that arise in an environment in which pedestrians constitute the greater mode share. Also, the widespread use of "smart phones" by today's pedestrians greatly exacerbates the frequency and severity of conflicts. Existing physical conditions (such as narrow sidewalks or walkways and lack of designated separate facilities) can contribute to the conflicts. Ignorance of, or simply ignoring, a common code of etiquette for both bicyclists and pedestrians can also be a significant contributing factor and was identified by stakeholders as one of the top reasons limiting use of bikes on the IUB campus. The success of implemented delineated or separate facilities on the IUB campus (such as the cycle track adjacent to the auditorium on 7th Street) demonstrates the value of having separate facilities where the number of pedestrians makes riding a bike challenging. Bike lanes on roadways which provide key connections for students commuting between school, work and home (such as on 3rd Street and Jordan Avenue) have been successful as separate facilities for the bicyclists and the (relatively lower volume) pedestrians on adjacent sidewalks. Shared solutions have also proven successful along the perimeter of campus where the numbers of both pedestrians and bicycles are lower. Ongoing efforts by the University to enhance bicyclists' mobility illustrate the need for a variety of solutions which are site specific and address both existing conditions and future needs.

Indiana University has adopted a planning strategy to minimize the use of automobiles within the campus core. The natural growth of the university over time did not always allow for the separation of motor vehicles from the campus, creating areas of high conflict between pedestrians and automobiles, as seen on 10th Street. Roadways providing access directly through campus further aggravate the conflict between the student (e.g., pedestrian and bicycle) population and vehicles traveling through campus. While implementing this planning strategy is a long term process identified by the University and will include many measures such as limiting parking areas within the campus core, reorganizing service access for key buildings, and creating new road connections on the perimeter of campus, there are incentive measures that will/can also be implemented to further the strategy. A long-term future bicycle circulation was envisioned in the *Campus Master Plan* - see Appendix B.

A complete and convenient network of bicycle facilities can contribute to the success of the overall strategy by making it easier for students, faculty, and staff to travel by bike rather than automobile. This includes providing amenities for bicyclists, including convenient and adequate bike parking, covered bike parking, bike repair stations, lockers and limited shower access for faculty and staff of the university. While bike parking on campus appears to be quite well distributed with good geographic coverage, stakeholders indicated a desire for an expansion in the range of bicycle parking facility types, including covered and interior (building – increased security) facilities, particularly for faculty and staff bicyclists. Furthermore, stakeholders articulated appreciation for the bike repair stations and expressed their desire that their number be expanded as well.

One of the main goals for the Indiana University's Office of Sustainability is to reduce the demand of single occupancy automobiles on campus by 20%. One key avenue in reducing this demand is providing bicycle facilities which are safe and convenient. There are currently a large number of bicycles parked on campus. Several stakeholders noted that the number of bikes parked on campus is far greater than the actual number of people riding bikes on campus. Some suggest the problem lies with the bicycles' pre-mature inoperability due to either poor quality, lack of protection from the elements, or a combination of the these two factors. Many stakeholders believe, however, that this ownership-use disparity gap is caused by a frustration with lack of adequate facilities and the conflicts created with the number of pedestrians on campus. Providing

separate or delineated bicycle facilities alongside the pedestrianways can, in some places, provide a feasible accommodation for bicyclists on campus. In addition, solutions might include additional bicycle facilities which enhance natural corridors such as the Jordan River corridor creating opportunities to restore natural habitat in coordination with the establishment of new facilities such as greenway / pathways. A greatly expanded bike network can contribute to the sustainable goals of the university in many forms, including reducing demand for automobiles, providing an environmentally sensitive transportation solution, and creating a more inclusive and enjoyable campus experience.

A key infrastructure need is better bicycling connections with adjoining neighborhoods, campus supporting land use and regional destinations between the campus and Bloomington. This was affirmed by the Steering Committee and stakeholders alike. A significant majority of the University population lives either on-campus or within 3 miles of the campus – a perfect range for the bicycle as a highly convenient mode of choice. Additional connections were identified as important by the Steering Committee and the stakeholders. These connections included the resurgent downtown Bloomington and destinations extending beyond. Such destinations include reaching the B-Line Trail, Allen Street-Covenanter Drive Neighborhood Greenway, Bryan Park, and Cascades Park. Nearby destinations also included campus-convenient shopping areas such as grocery stores, shopping centers and the mall.

The residential street grid surrounding the campus core provides several opportunities to create these regional connections. Several streets were identified as currently utilized by bicyclists and others that would be utilized with some improvements such as bike lanes. These include:

- East 3rd Street
- East 4th Street
- East Kirkwood Avenue
- East 6th Street
- East 7th Street
- East 8th Street
- 10th Street with the Bypass Multi-use path
- Bypass Multi-use path
- South Jordan Avenue
- South Hawthorne Drive
- South and North Woodlawn Avenue
- South Rose Avenue
- South Henderson Street
- South Mitchell Street
- East 11th Street
- North Walnut Grove
- Fee Lane

Summarizing the overall needs and representing the affirmation of the Steering Committee as to the priority and predominant bicycle transportation flow needs is the aforementioned Bicycle Travel Patterns and Preliminary Needs map (Figure 2). This illustrates the compilation of the major bicycle travel flow needs for both current and future conditions to the horizon year 2025. The infrastructure plan is thus developed to meet these needs. The next chapter highlights that plan and its implementation.

DUNN'S WOODS

DUNN MEADOW

INFRASTRUCTURE ACTION PLAN: RECOMMENDATIONS AND IMPLEMENTATION

The bicycle infrastructure in this bicycle master plan is recommended in keeping with the aforementioned goals, meeting the identified existing and future bicycle flow patterns and follows the five thematic guidelines. The infrastructure identified is for a 10-year implementation horizon; as time progresses toward that implementation target date (2025) an update of this *Bicycle Master Plan* is recommended with future expansion of the network anticipated.

The updated plan is needed to account for projects which are currenlty in planning stages including a future hospital site being considered northeast of State Road 46 Bypass and 10th Street. Direct bikeway connection of that activity center to the campus core should be considered as part of the infrastructure needed to support it.

BICYCLE FACILITIES AND NETWORK

A multitude of facility types are recommended to complete a comprehensive network throughout the IUB campus. These include **on-road and off-road facilities** as well as bike hubs (The Bicycle Hub is defined and functionally described at the end of this section).

The illustrated network of bicycle facilities creates a complete system with strong east-west and north-south connections as recommended in the *Campus Master Plan*. Figure 4 iilustrates the recommendations for the horizon year 2025. Figure 5 is an enlargement, showing the south-central campus area. Table 1, Implementation Schedule, Horizon, and Costs is a listing of the costs associated with the recommendations and projected timeframes for completion and is found at the end of this chapter.

The following text includes a description for the facility types and their roles in completing the campus bicycle network along with any special design considerations for the routes.

EAST-WEST CAMPUS ROUTES

17th Street Multi-Use Path: East 17th Street is a busy and heavily used roadway especially during campus athletic events. The multi-use path proposed adjacent to 17th Street will provide an alternative for students traveling to the athletic complex both during these events and during regular hours. This route provides an important connection to downtown Bloomington but also to the multi-use path along SR 45/46 Bypass (see Figure 3 - Multi-Use Path Typical Section).

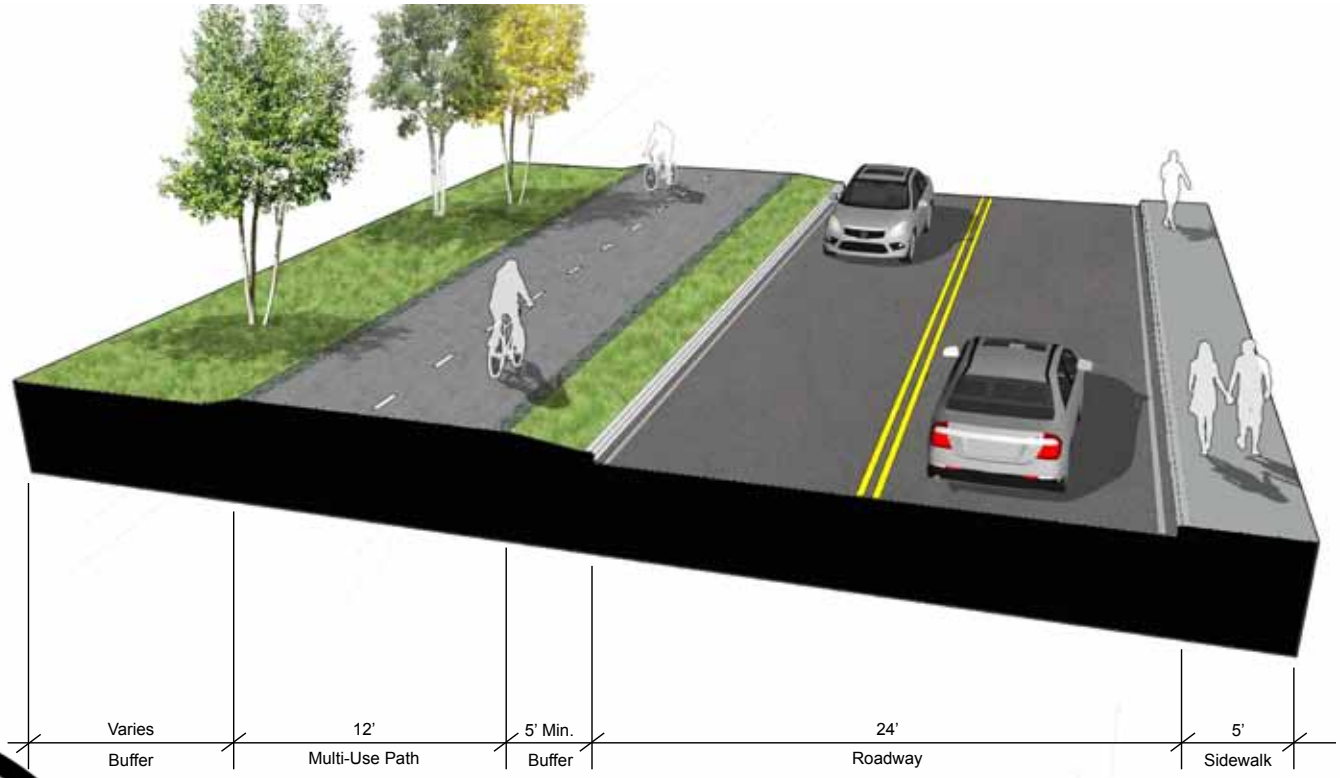

FIGURE 3 - MULTI-USE PATH TYPICAL SECTION

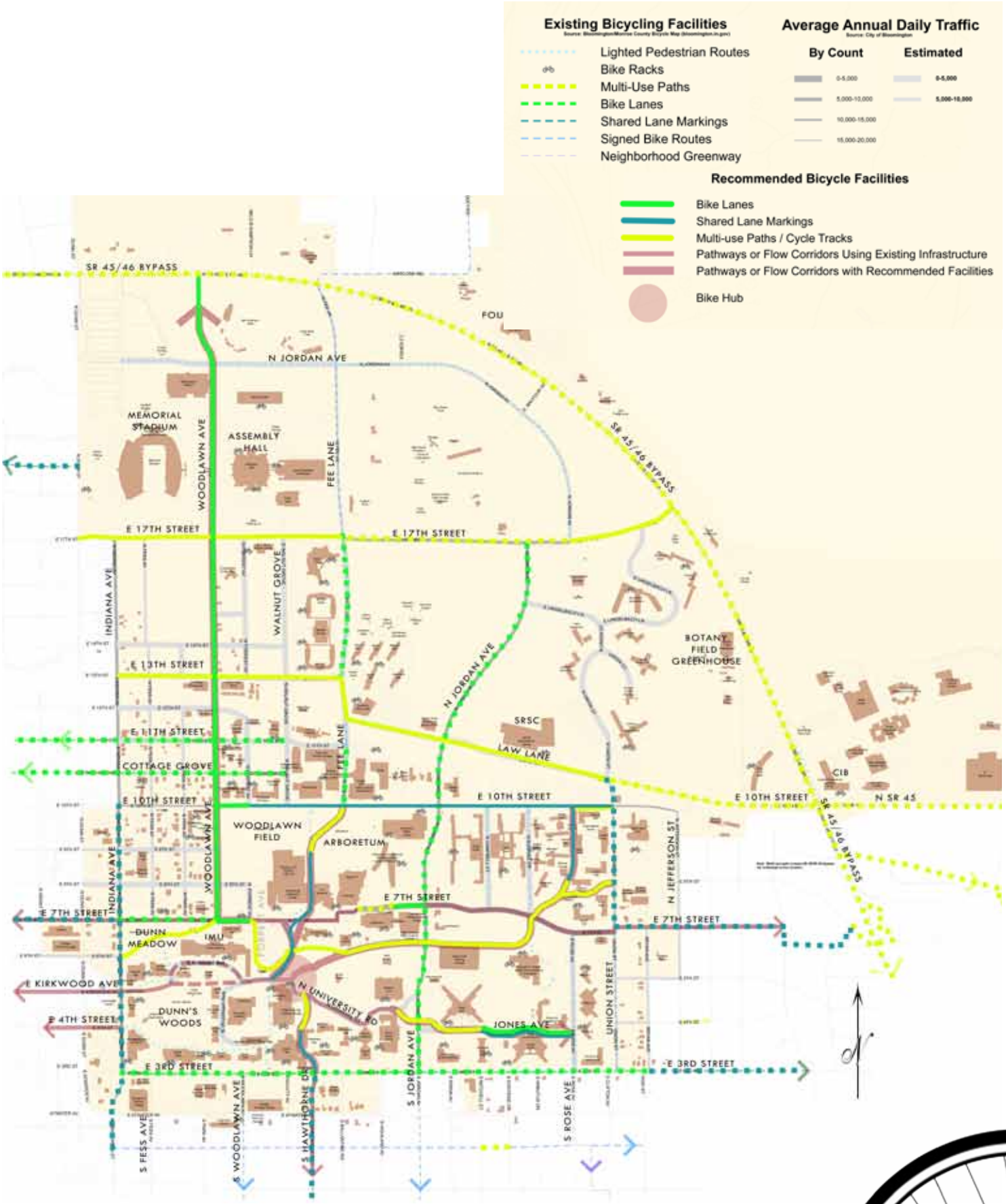

FIGURE 4 - RECOMMENDED BICYCLE FACILITY MAP

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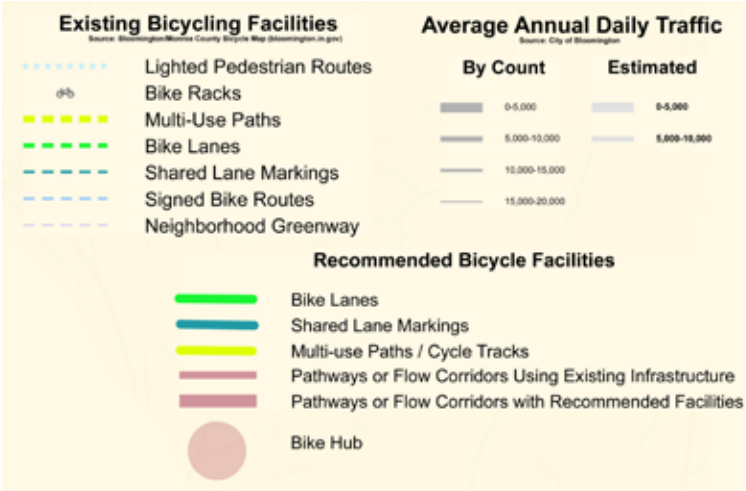
13th Street- Law Lane Multi-Use Path: The 13th Street -Law Lane multi-use path provides an alternative to the 10th Street route with much different character. This route completes a connection from Indiana Avenue to Union Street through campus. In addition, the location of the Student Recreational Sports Center along this route will make it an important connector for many students, faculty, and staff looking for additional recreational opportunities.



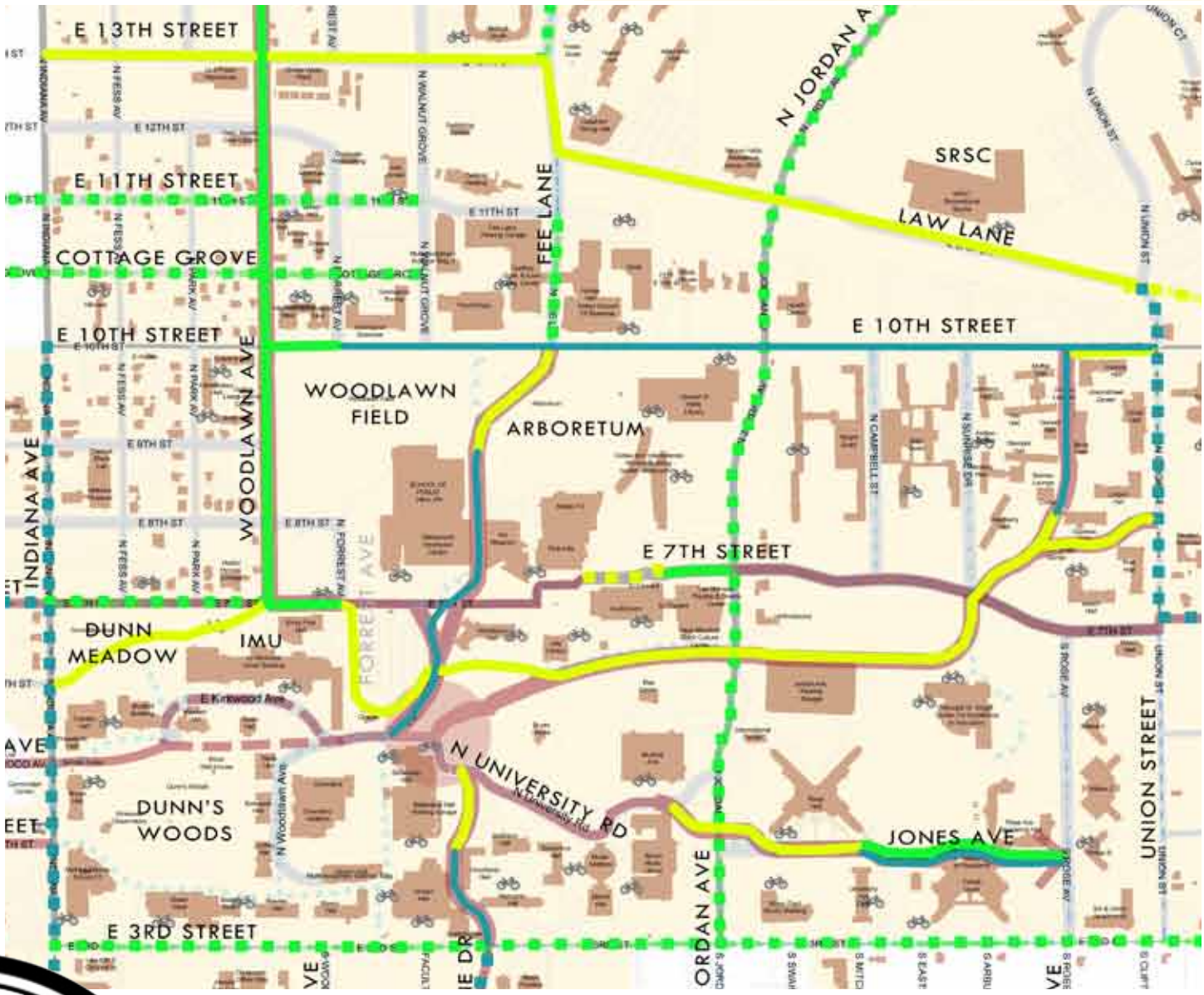


FIGURE 5 - RECOMMENDED BICYCLE FACILITY MAP - SOUTH-CENTRAL CAMPUS DETAIL MAP

SEE DIGITAL COPY IN BACK SLEEVE FOR DETAILS

10th Street Bikeway: Differing bicycle facilities are proposed in the future along 10th Street in the *Campus Master Plan* (adjacent shared use pathway) and in the *City's Bicycle and Pedestrian Transportation & Greenways System Plan* (bike lanes). Whichever implemented in the future, the bikeway will connect with existing bike lanes along the major north-south roadways through campus including Fee Lane, Union Street, and the planned Woodlawn Avenue bike lanes/multi-use path(s). See Figure 6. 10th Street is currently lacking distinct bicycle facilities, but while the corridor is one of the busiest on campus, it's also one of the slowest moving. This allows for bicycles to also travel as vehicles in the relatively slow traffic environment within the street.

Currently, design improvements for the Woodlawn/10th Street intersection include bike lanes on a short section of 10th Street from Park Avenue to North Forrest Avenue. For this 10 year campus Bicycle Master Plan, there are also a few short segments that bike lanes may be striped in, but primarily shared use lane markings are suggested for helping accommodate bicyclists through this highly congested and constrained section of 10th Street.

7th Street Bike Lanes/ Shared Lane Route: The extension of existing bike lanes along 7th Street eastward to the IMU follows recommendations included in the *Bloomington Bicycle and Pedestrian Transportation & Greenways System Plan*. Continuing eastward, with restricted vehicular access east of the IMU parking lot, this bikeway can then transition to a shared lane with bikes inhabiting this low volume, low speed street. If desired, shared lane markings (SLMs) can be used to delineate the desired path of bicycles along this portion of 7th Street. This proposed shared lane route will enable continuity with the existing cycle track adjacent to the Auditorium. The bikeway continues eastward, transitioning into bike lanes as it continues east to Jordan Avenue thus providing a strong east-west connection through the middle of campus. See Figure 6 below.

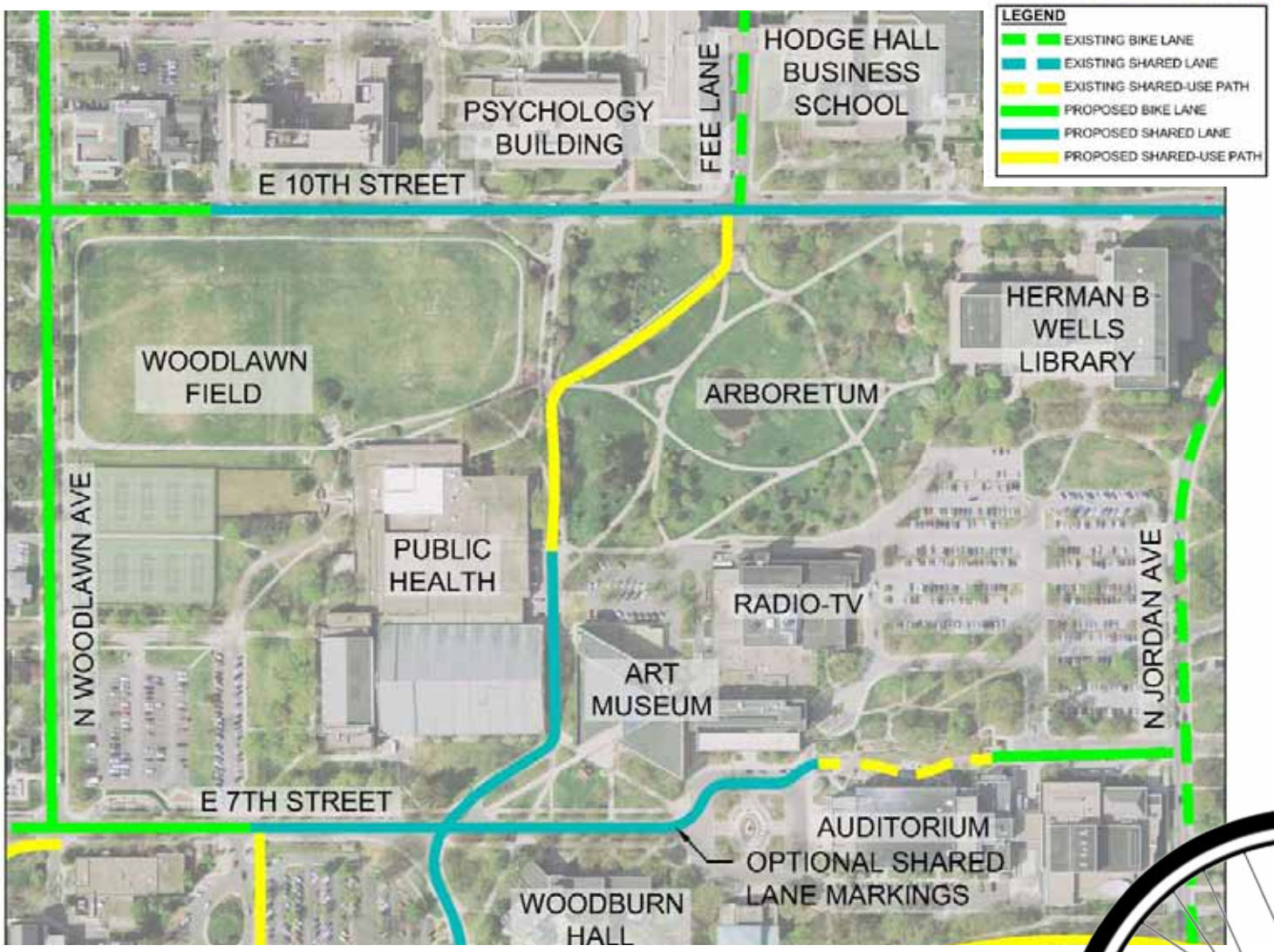


FIGURE 6 - 10TH STREET/7TH STREET DETAIL PLAN

East University Road Bikeway: This low volume, limited access street is the western section of the on-campus bikeway corridor serving the east-west bicycle flow from the southeast student residence area to the proposed Bicycle Hub in the Ballantine-Memorial Union area. This western section utilizes the existing E. University Road from the proposed Bicycle Hub eastward to the southeast corner of the Music Arts Hall. Motor vehicle traffic is restricted in this section, thus traffic flow is low speed and volume. Accordingly, bicyclists can easily and comfortably share this space with minimal roadway striping markings or signage. See Figures 7 and 8.

East University Road to Jordan Avenue Bike Path: Situated approximately parallel to the northwest to southeast diagonal pedestrian walkway is the proposed bikeway (see Figure 8). This short segment, approximate length of 250 feet, provides a direct route for the travel pattern articulated in the above segment. This is recommended to be separate from the existing sidewalk.

Jones Avenue Bike Path from Jordan Avenue to Southeast Corner of Read Hall: This bike path provides continuity from the Jordan Avenue crossing eastward past the southeast corner of Read Hall. While the Jones Avenue roadway section at times can accommodate bicyclists, a separated multi-use path between the road, the on-street parking, and Read Hall will accommodate virtually all desiring to bicycle through this area. See Figure 8.

Jones Avenue Bikeway – Southeast Corner of Read Hall to South Rose Avenue: This easternmost section of the bikeway corridor will utilize the existing roadway, accommodating bicyclists through a creative restriping of the roadway. The eastern most portion (which is currently one-way motor vehicle traffic) which will have a westbound bike lane striped and the eastbound bicycle traffic sharing the motor vehicle lane with sharrow lane markings providing guidance, see Figure 9 - Jones Avenue Contra Flow Typical Section.

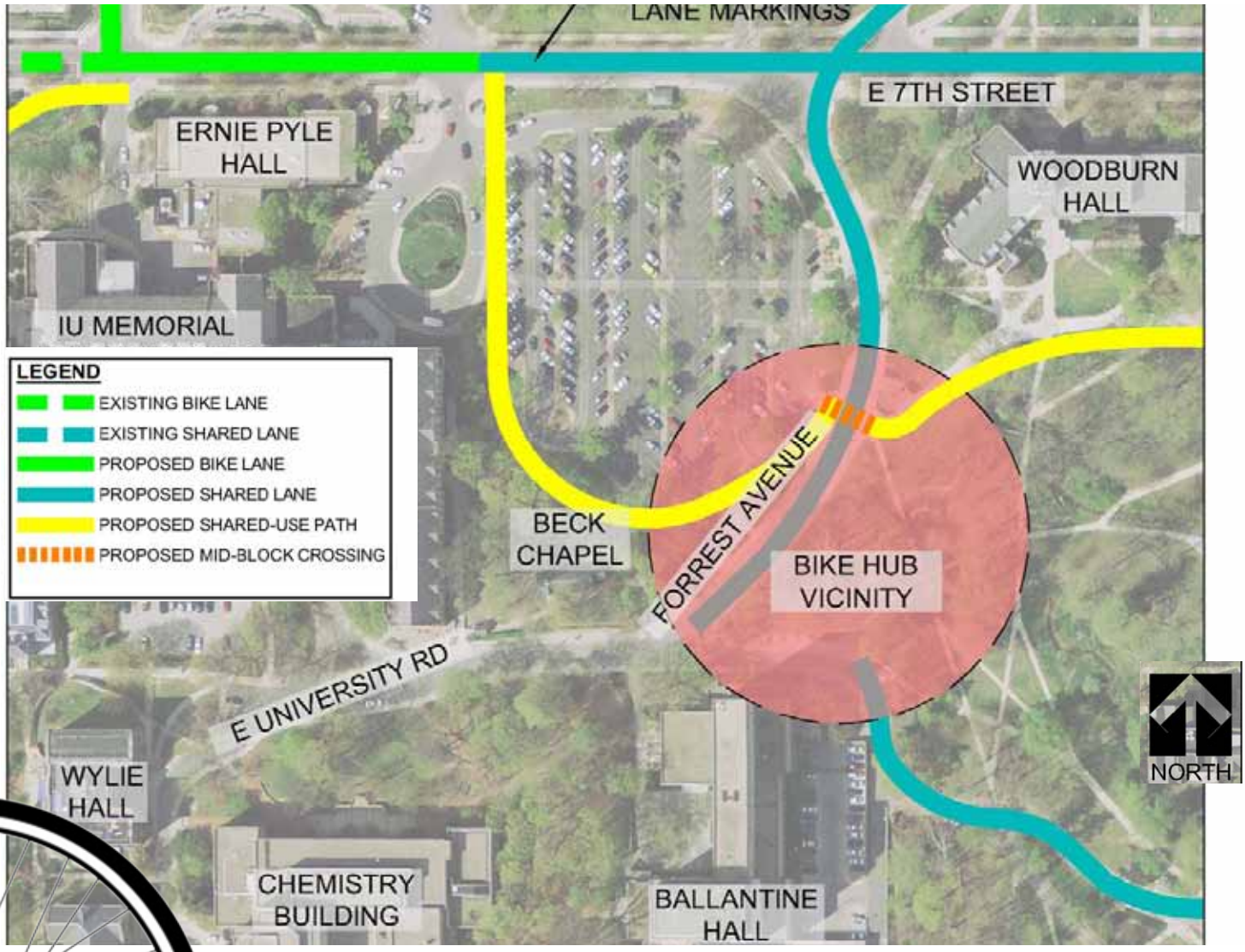


FIGURE 7 - EAST UNIVERSITY ROAD BIKEWAY AND MULTI-USE PATH DETAIL PLAN

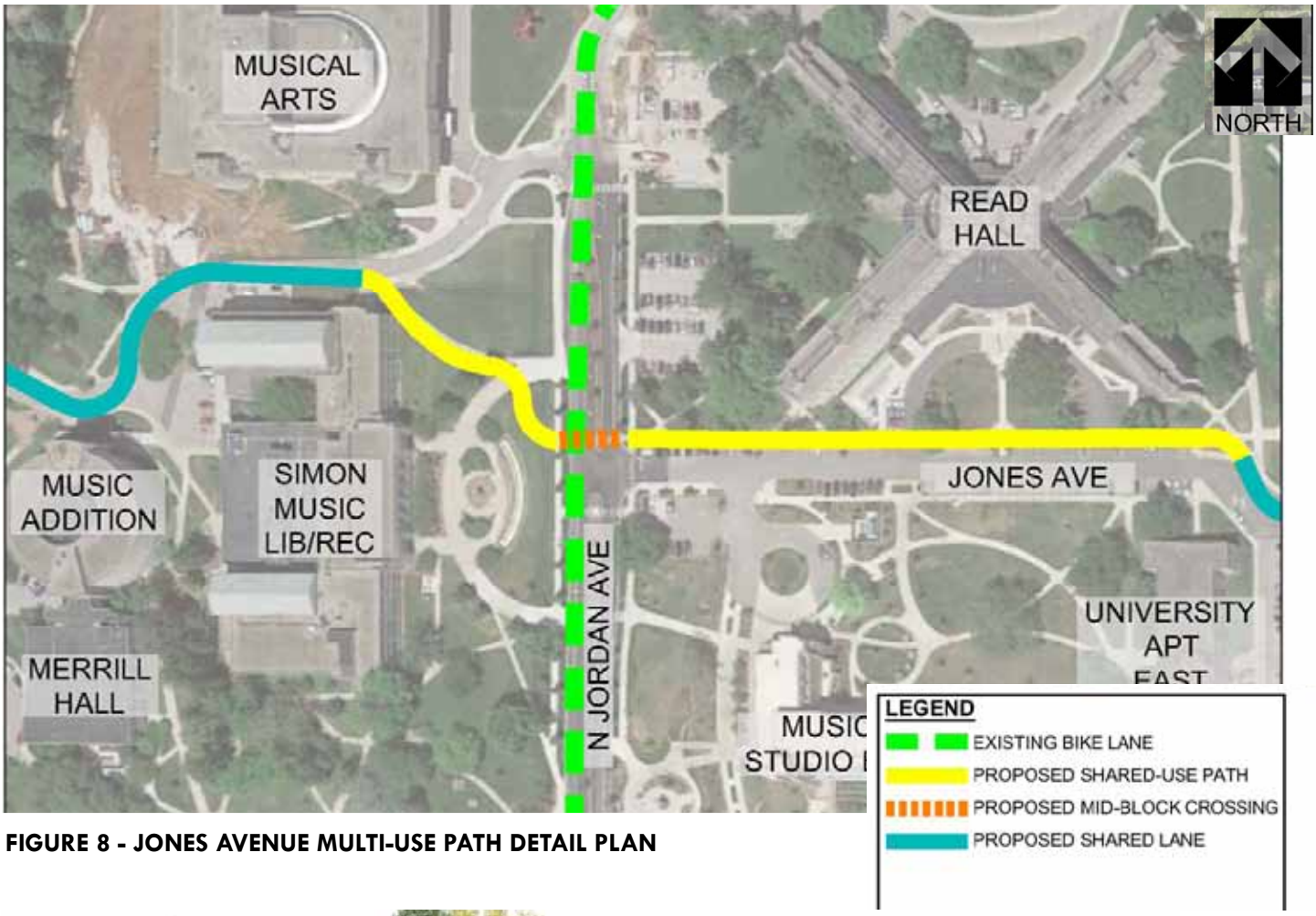


FIGURE 8 - JONES AVENUE MULTI-USE PATH DETAIL PLAN

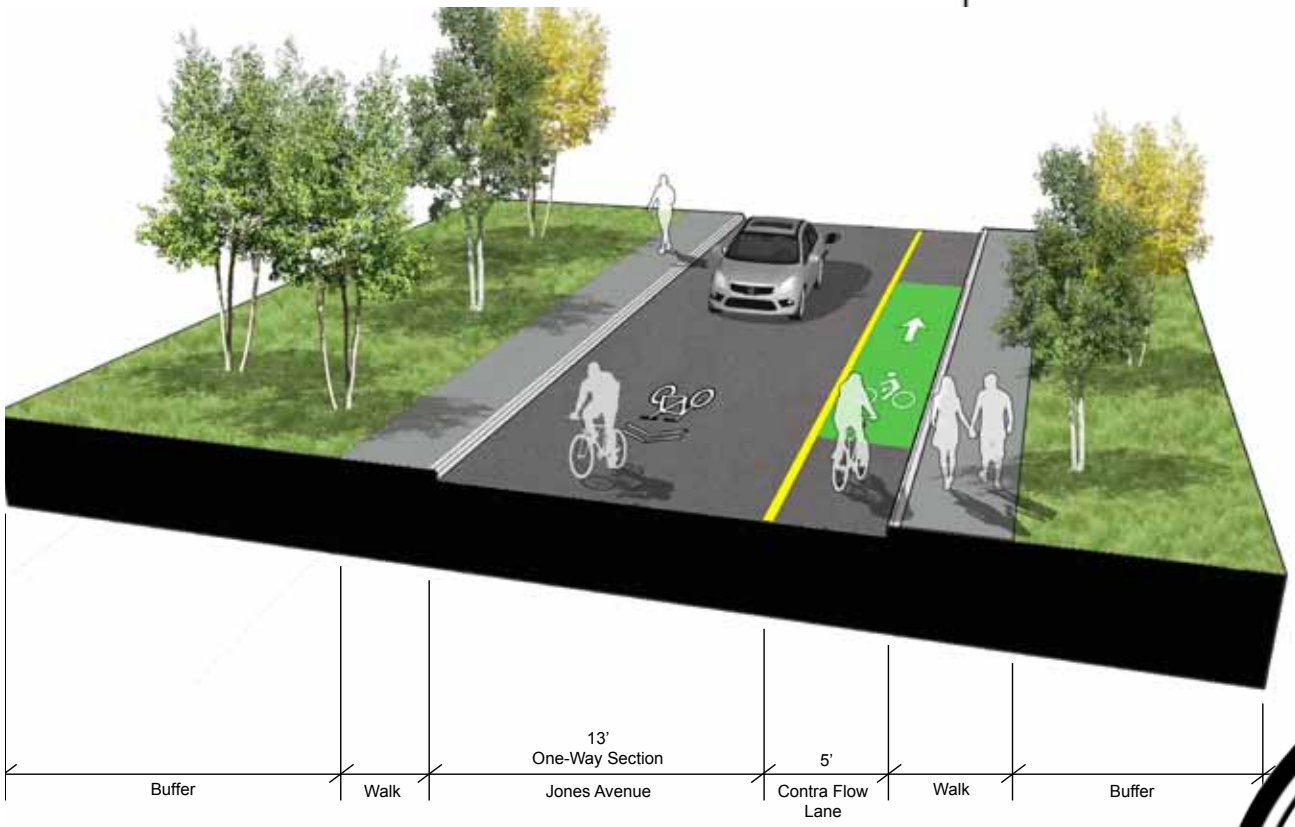


FIGURE 9 - JONES AVENUE CONTRA FLOW TYPICAL SECTION

The recent improvements made along Jordan Avenue between 3rd Street and University Road have greatly enhanced the area of the proposed Jones Avenue-East University Road east-west corridor. Namely, the new medians, left turn lanes, pedestrian crossing, and buffered bike lanes provide a more comfortable corridor for all users. Also, the realignment of University Road with the addition of the left turn lane has lengthened the weave distance a bicyclist has to maneuver across Jordan Avenue to make a left turn off of Jordan.

3rd Street/East-West Corridor: Wrong way riding on 3rd Street should be somewhat alleviated on-campus as a significant portion of the eastbound bicycle activity can be accommodated within the East University Road – Jones Avenue bikeway corridor. It is suggested that in the future the City may wish to investigate ways to optimize the 3rd Street - Atwater Avenue Corridor to explore options for eastbound bicycle travel demand not satiated by the East University Road – Jones Avenue bikeway corridor.

Jordan River Greenway: A key theme of the Campus Master Plan is to embrace the Jordan River - ***The Jordan River is Bloomington's most prominent natural feature and represents a unifying common thread through much of the core campus. Its unifying quality and continuity must be leveraged both formally and functionally as the campus develops, further reinforcing the importance of this natural asset. Future development should embrace the river's natural scenic quality and accentuate its environmental setting.***

The Jordan River Greenway proposed in this Bicycle Master Plan thus would follow the Jordan River from the location that it leaves campus near Indiana Avenue through Dunn Meadow north of the IU Memorial Union. The greenway then continues east through the proposed bike hub where it continues east, following existing sidewalks south of Woodburn Hall and the Auditorium where it crosses Jordan Avenue and runs to the north of the Jordan Avenue parking garage. After passing the parking garage the greenway turns to the north following the Jordan River as it crosses over 7th Street and then turns east again to the south of Cypress Hall where it ends at Union Street. This corridor provides important connections from the residential areas in the northeast corner of campus to the core of campus at the IU Memorial Union (see figure 11, 12 and 13).

In addition to the travel needs which are fulfilled by the greenway there is an opportunity to provide a multi-use trail with unique character to other trails on-campus. The greenway should be designed with special considerations for the natural corridor in which it is located. Design details should include special material selection for the trail along with amenities to add to the greenway experience such as benches and lighting. The greenway will be an important connector and recreational facility for the campus.

Construction of the greenway also creates an opportunity to implement restoration measures as recommended in the *2010 Campus Master Plan*. The greenway should be located outside of the floodway to minimize its footprint on the natural corridor and maintenance issues associated with flooding. See Figure 10- Jordan River Greenway Typical Section.

FIGURE 10 - JORDAN RIVER GREENWAY - TYPICAL SECTION

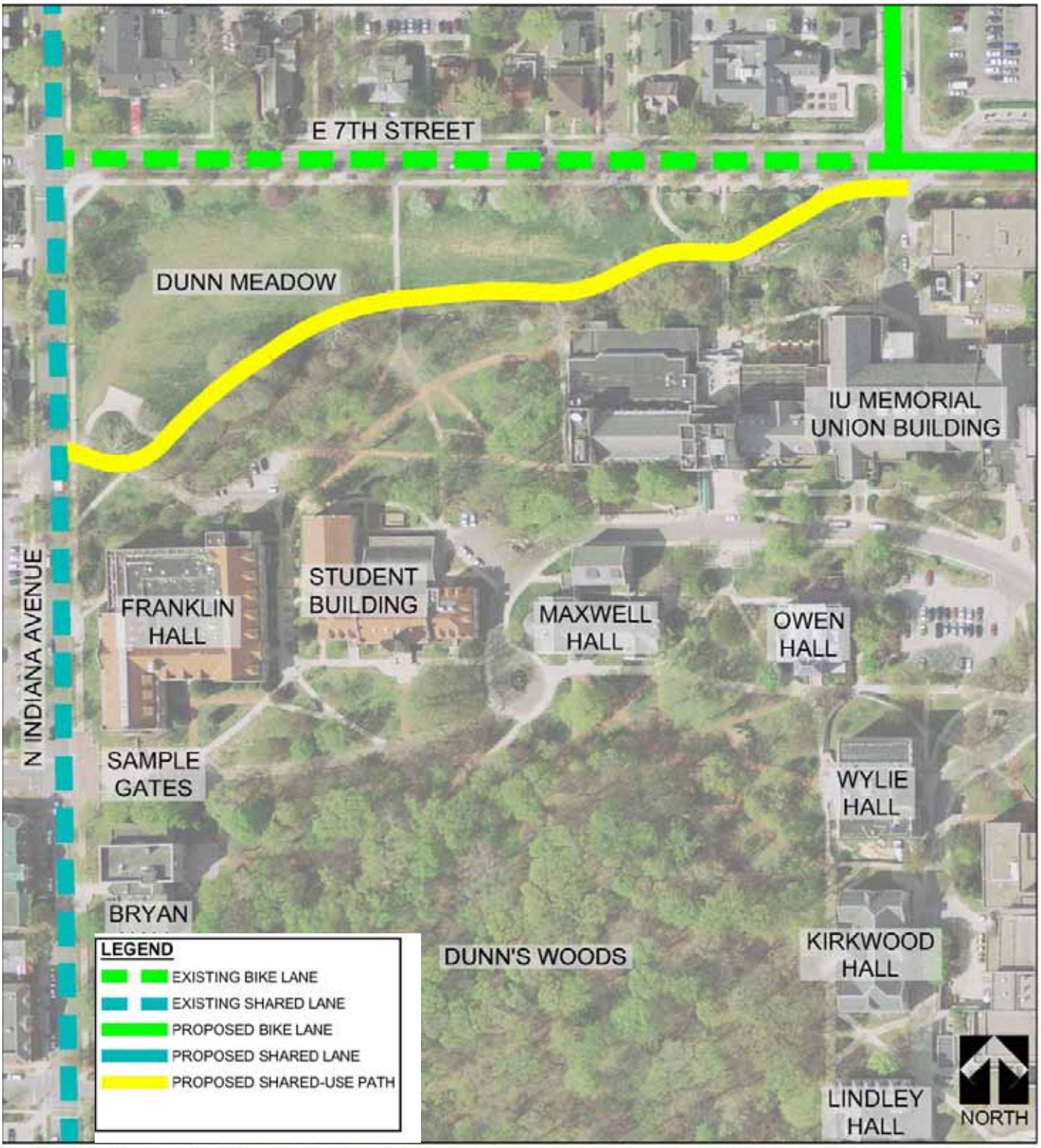


FIGURE 11 - JORDAN RIVER GREENWAY - INDIANA AVENUE TO IMU DETAIL PLAN

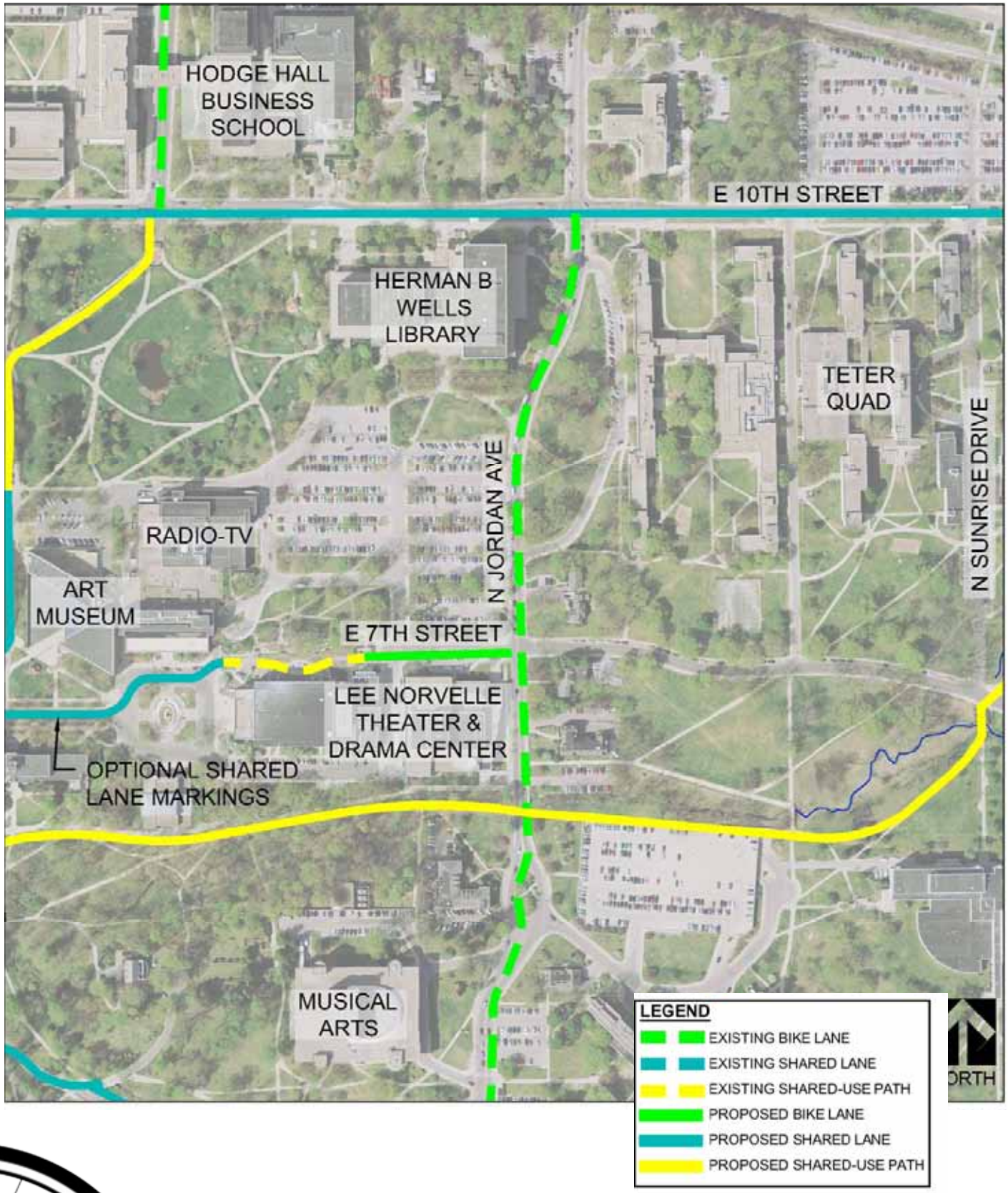


FIGURE 12 - JORDAN RIVER GREENWAY - IMU TO E. 7TH STREET DETAIL PLAN

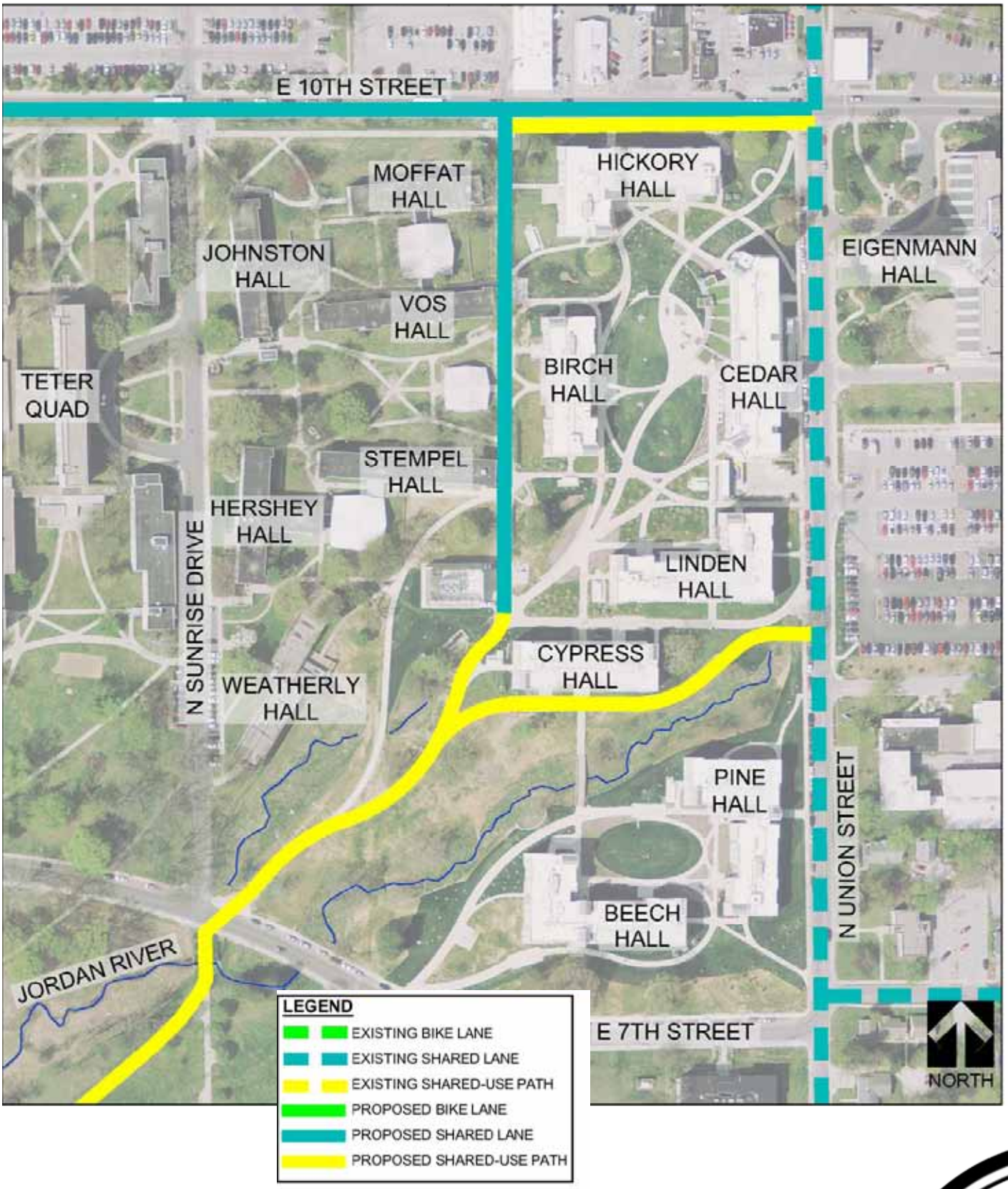


FIGURE 13 - JORDAN RIVER GREENWAY - E. 7TH STREET TO UNION STREET DETAIL PLAN

Dunn's Woods Corridor (from Ballantine Hall to Sample Gates): The existing east-west corridor just north of Dunn's Woods is a flow corridor for bicyclists traveling from the Ballantine Hall area through the Sample Gates to Kirkwood Avenue. The current bicycle demand is handled sufficiently with minimal bike/pedestrian conflicts. However, as the campus bicycle infrastructure is developed, the bicycle volume on campus will increase, simultaneously increasing the bicycle flow through the Dunn's Woods corridor. As this increases, the infrastructure will need to be re-assessed.

NORTH-SOUTH CAMPUS ROUTES

Woodlawn Avenue Multi-Use Path/Bike Lanes: The extension of Woodlawn Avenue is providing a new and complete north-south corridor through campus. As such, this corridor has been planned as a complete street. Bike lanes are planned along the street on each side of the roadway along with an off-road multi-use path on each side. Providing both on-road and off-road facilities gives options for bicyclists of different skill levels (see Figure 14). The Woodlawn Avenue corridor provides a direct connection between the southern portion of campus and the athletic facilities including the Stadium and Assembly Hall.

North Forrest Avenue Bikeway: This is a most critical component in serving the north-south central flow of bicycle traffic generally running from the Ballantine and Memorial Union Bike Hub area to the Fee Lane and 10th Street area (see Figure 15). The existing cross-section has potential to be more than adequate to handle increased bicycle flows, if the cross-section is better optimized for both bicyclist flow and pedestrian flow. The solution is fairly straightforward. The existing sidewalks do not serve the current pedestrian flows, thus pedestrians use the whole of the roadway cross-section, as motor vehicle is highly restricted in this roadway segment. Influencing bicycle traffic to travel the portion of the roadway cross-section proximate to the street centerline will enhance bicycle flow while allowing pedestrians to not only use the sidewalks but also the outer portions of the roadway surface, providing a better sharing of the street cross-section. The placement of frequently spaced shared lane markings on both sides of the street centerline can influence bicycle traffic stream location.

WOODLAWN AVENUE

7TH STREET AT WOODLAWN AVENUE

FORREST AVENUE NEAR 7TH STREET

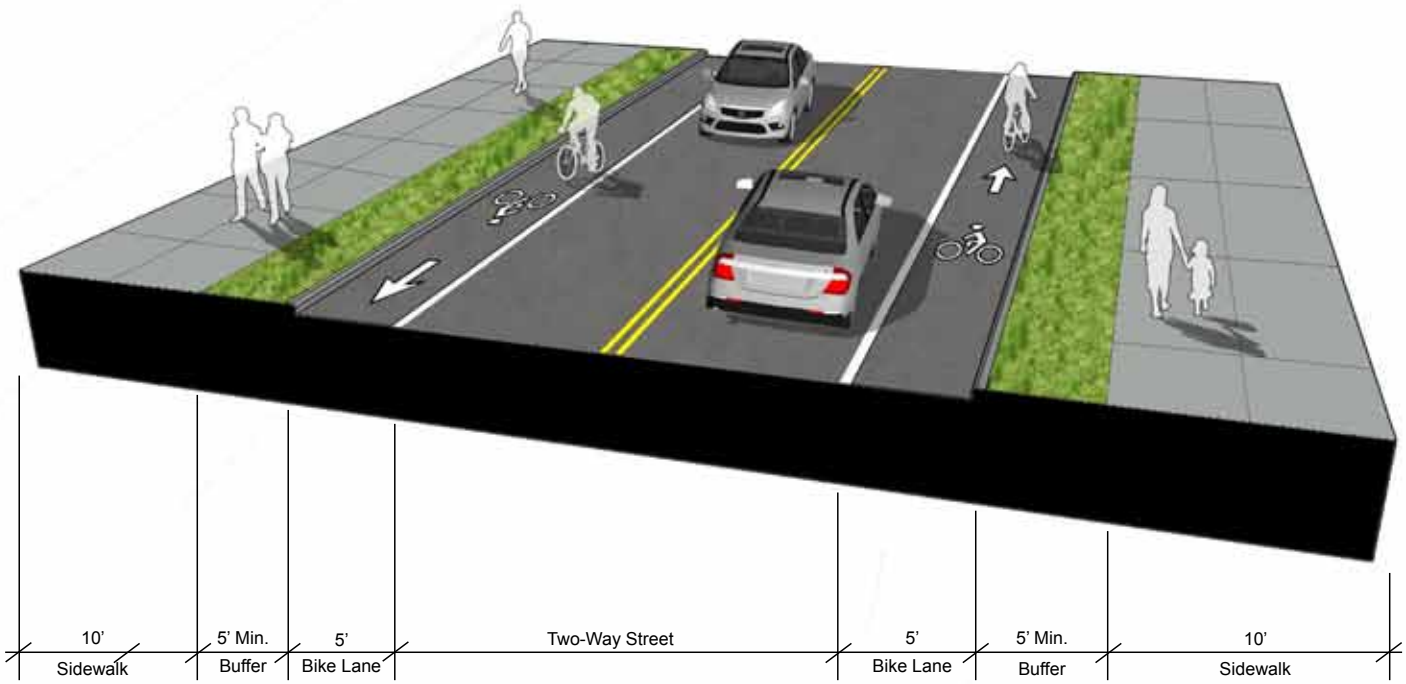


FIGURE 14 - WOODLAWN AVENUE TYPICAL SECTION

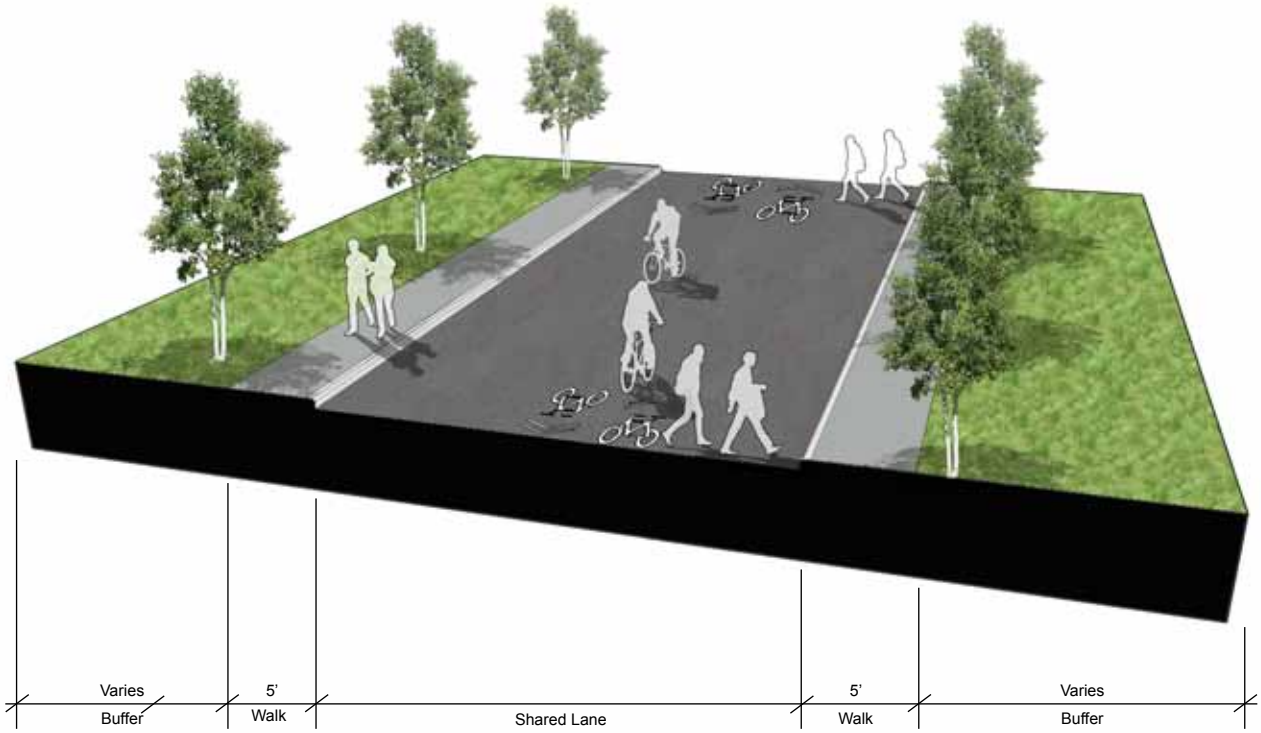


FIGURE 15 - FORREST AVENUE SHARED LANE TYPICAL SECTION

North-South Concourse Bikeway/Arboretum Multi-Use Path: This is the corridor that will carry a significant flow of bicycle traffic from the busy classroom building concentration and the Indiana Memorial Union (IMU) area in the southwest portion of campus to the classroom buildings and other facilities in the 10th Street/Fee Lane vicinity. This proposed corridor will continue from the North Forrest Avenue bikeway northward through the Arboretum to the intersection of 10th Street and Fee. A slight geometric modification to the Forrest Avenue/7th Street intersection would facilitate bicycle through movement northward to the Arboretum area via the service drive between the Public Health and Art Museum. Bicyclists may share the low volume and speed drive. North of this shared vehicular area, a multi-use pathway will be located to minimize impact to the Arboretum while providing this important conduit for bicycle flow. The pathway will incorporate special design considerations for the unique character and history of the Arboretum and the highly congested intersection that it will be connecting with at 10th Street and Fee Lane. As the bikeway/multi-use path approaches the Ticket Booth vicinity just south of the Fee Lane and 10th Street intersection, options for separating the bicycle and pedestrian flows should be investigated during the preliminary design phase. See Figures 7 and 16.

South Hawthorne Drive Multi-Use Path/Shared Lane Markings: Completing this north-south corridor includes shared lane markings on Forrest Drive adjacent to the Union parking lot then traveling slightly east on a multi-use path to connect with another shared lane route on South Hawthorne Drive. This connects the north-south route to bike lanes along 3rd Street and to the neighborhoods adjacent to the campus on the south side.

Indiana Avenue: Indiana Avenue is a one-way, two lane street with on-street parking generally on one side of the street. The majority of it is a 30 foot wide cross-section. It is marked with shared lane markings. Its intersections adjoining the main portion of campus are stop controlled and traffic (posted) speed is approximately 30 mph. The City has proposed bike lane(s) from Hunter (south of 3rd) northward to 17th Street. This campus Bicycle Master Plan's proposed facilities (e.g., Jordan River Greenway) will connect with the City's future bike lane on Indiana.

HEAVY PEDESTRIAN FLOW THROUGH ARBORETUM

OLD STADIUM GATES AT 10TH STREET

10TH STREET AND FEE LANE

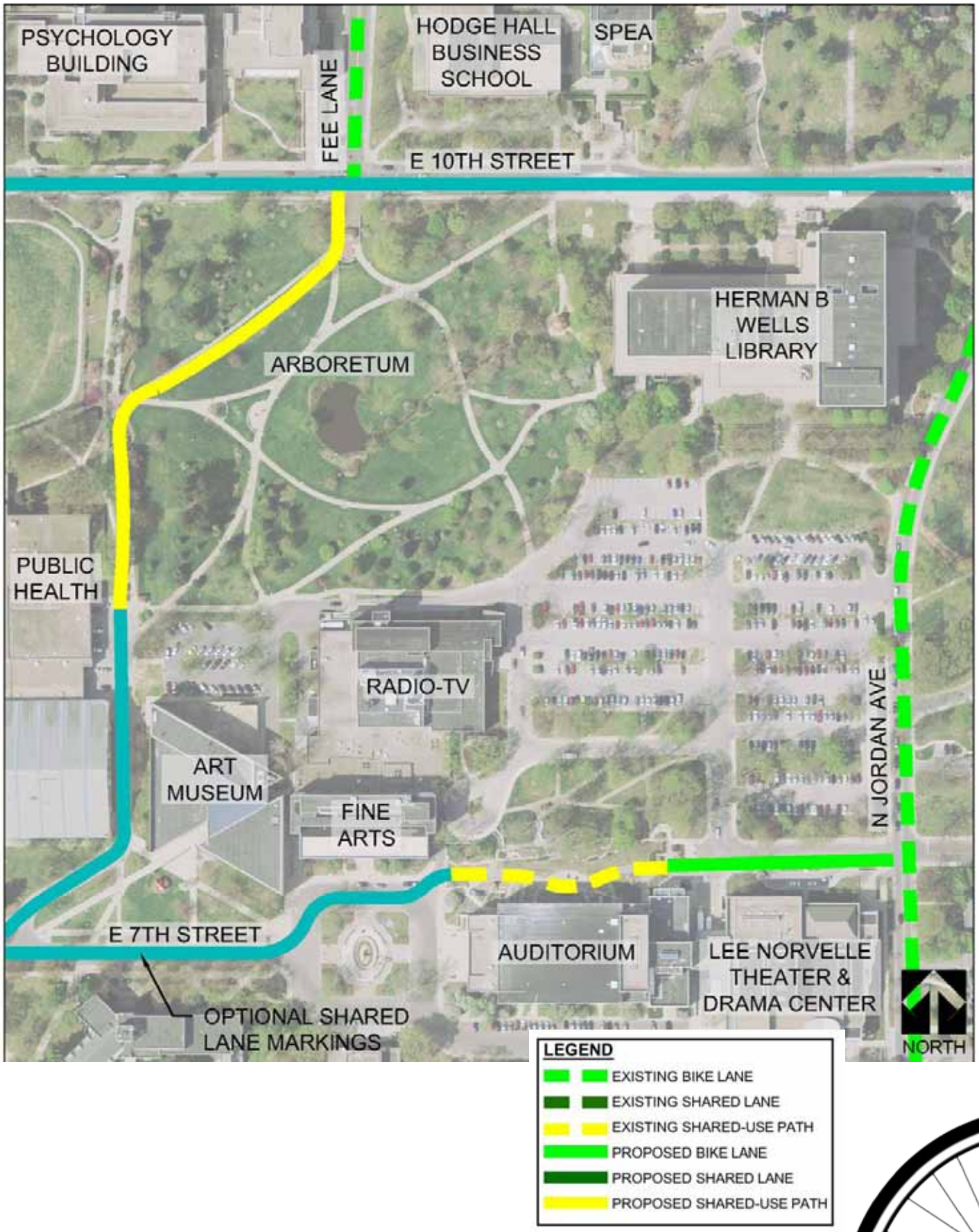


FIGURE 16 - NORTH FORREST AVENUE/ARBORETUM BIKEWAY DETAIL PLAN

IUB BICYCLE HUB

A centerpiece to the 2025 Bicycle Facilities Network is the Bicycle Hub in the proximity of the Ballantine Hall/ Indiana University Memorial Union. This location is the logical nexus of daily student flow, and particularly for those who are, or will be using bicycles (see Figure 17). Short-term bicycle parking is a central component of the covered open-air Hub, and there will be a menu of parking options including higher-end daily bike storage lockers. Depending on the Hub's proximity to the Biddle Hotel in the Memorial Union, it could include a future bike share or concierge. The IUB Bike Hub will be host to a number of related functions that further the efficacy of the bicycle as a major agent of sustainability and it will be central in the daily life of campus. For example, the Hub will include several bicycle care (repair) stations, bicycling convenience items, and perhaps a small coffee bar furthering social interaction. It can also include a weekly bike triage/tune-up day, hosted by local bicycle shops on a rotating basis. This can be held in the Hub's small stage area that campus clubs can also use, similar to what is currently held on the streetside/enlarged sidewalk area just northeast of Ballantine Hall. A smaller Bike Hub, with just the fundamental components, should be considered in the north athletic complex area near the intersection of Woodlawn and 17th Street or near the current park and ride bus center.

OREGON STATE UNIVERSITY - COVERED BIKE PARKING

PORTLAND STATE BIKE HUB - INDOOR PARKING

PORTLAND STATE BIKE HUB - BIKE REPAIR STATION

NEW YORK BIKE SHARE PROGRAM

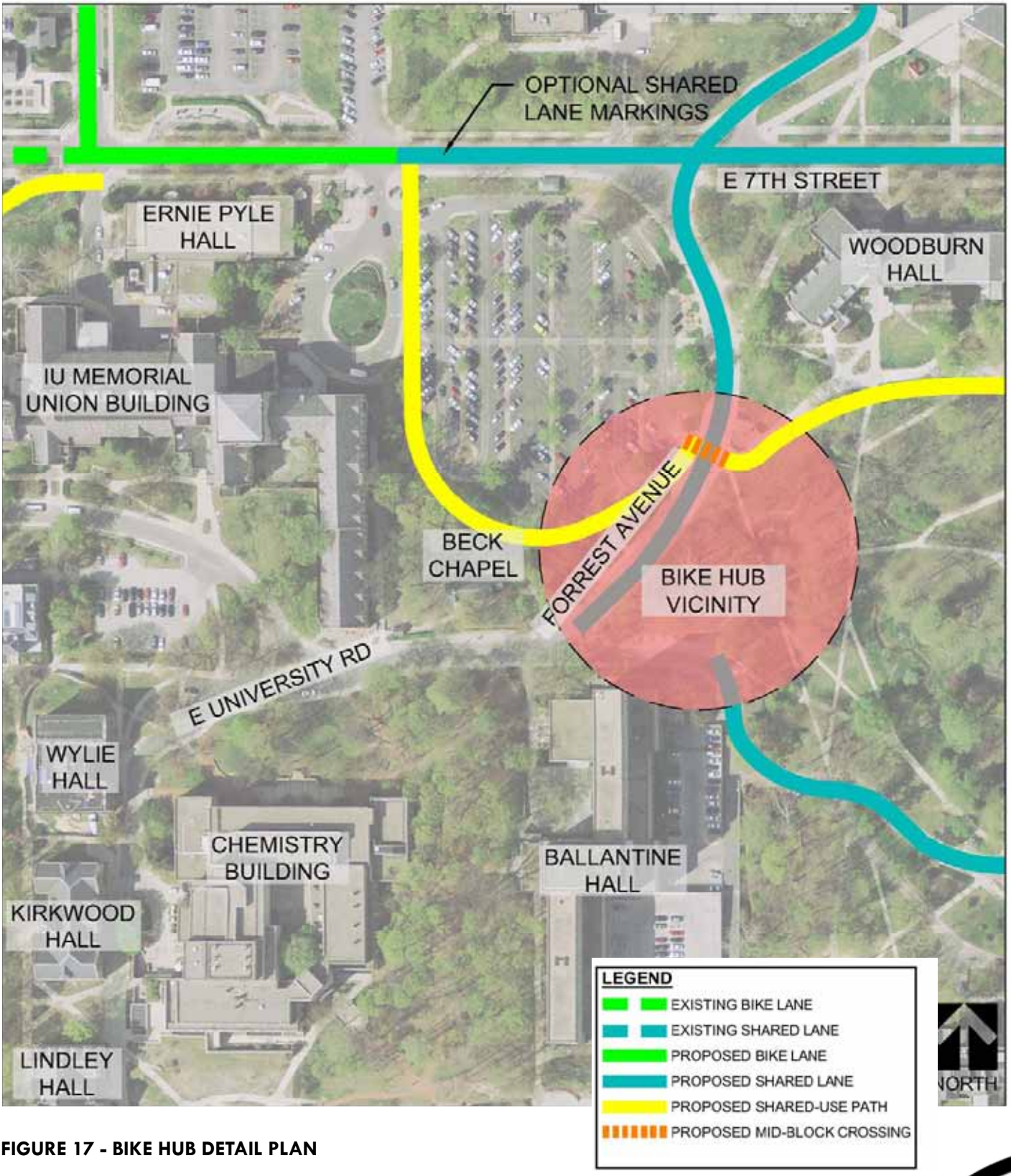


FIGURE 17 - BIKE HUB DETAIL PLAN

IMPLEMENTATION SCHEDULE, HORIZON AND COSTS

Table 1 - Recommended Bicycle Facilities: Indiana University Bicycle Master Plan details the facility type and costs for each facility illustrated on the Recommended Bicycle Facility map (see following page). This table recommends priorities for construction of the facilities to complete the proposed network over the projected 10-year timeframe. Priorities were determined through analysis of the Bicycle Patterns and Needs as well as the budget conditions for the University. High priority facilities include those which would not only fulfill a high demand but would also have a high impact on the use of bicycles by providing the framework for the network within the first year of facility construction. An update of this plan should begin in the year 2023 and should include an inventory of projects which were implemented and analysis of the applicability of proposed projects within current conditions.

UNION STREET CENTER

JORDAN RIVER CORRIDOR

7TH STREET BIKE LANE

INTERSECTION OF 7TH STREET AND INDIANA AVENUE

Recommended Bicycle Facilities: Indiana University Bicycle Master Plan - 10 year Implementation

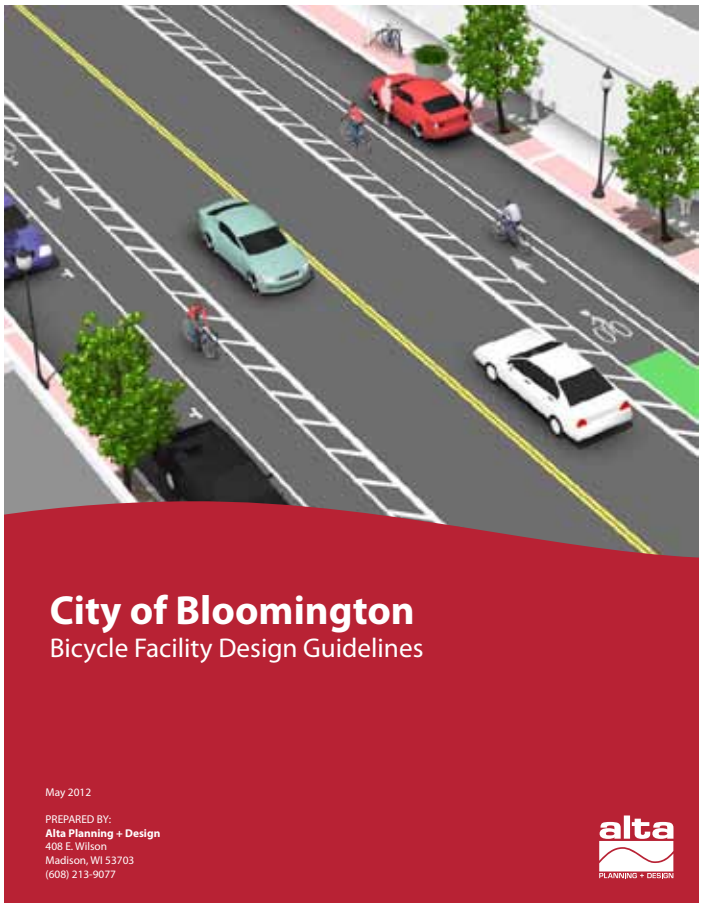
Facility Location / Road Name	From	To	Length (mi)	Recommended Facility Type(s)	Nominal Unit Costs	Estimated Const. Cost[1]	Target Priority Date
S Hawthorne Dr	E 3rd St	North End of Goodbody Hall	0.09	SLMs	$750.00/ea*4 (both directions)	$4,000	1 yr
University Rd	Ballantine-MU Bike Hub	Music Arts Hall Entrance	0.25	Shared Lane - bikeway signs	$300/ea*5 (both directions)	$3,000	1yr
Jones Ave	SE corner of Read Hall	S Rose Ave	0.18	WB contraflow bike lane and EB SLMs	$10,000/mi and $750/ea*4 (one direction)	$10,000	1yr
E 7th St	N Woodlawn Ave	N Forrest Ave	0.06	Bike Lanes	$10,000/mi	$1,000	1yr
E 7th St	IU Auditorium / Theater	N Jordan Ave	0.05	Bike Lanes	$10,000/mi	$1,000	1yr
N Forrest Ave	E Kirkwood Ave	E 7th St	0.13	SLMs and broad crosswalk	$750/ea*6 (both directions)	$15,000	1yr
N-S Concourse / Arborteum Pathway	N. Forrest Avenue	E10th St	0.25	Multi-Use Path (SLM portions south of, and potentially between Public Health and Art Museum)	$500,000/mi and $750/ea*8 (both directions)	$300,000	3 yr
S Hawthorne Dr	North end of Goodbody Hall	E University Rd	0.07	Multi-Use Path	$500,000/mi	$50,000	3yr
10th St.	N Woodlawn Ave	Union Street	0.76	SLMs	$750.00/ea*32 (both directions)	$24,000	3yr
N Woodlawn Ave	E 7th St	N SR 45	1.31	Bike Lanes and Multi-Use Path	Underway	$0	3yr
University Rd	Music Arts Hall Entrance	N Jordan Ave	0.06	Multi-Use Path	$500,000/mi	$40,000	5yr
Jones Ave	N Jordan Ave	SE corner of Read Hall	0.16	Multi-Use Path	$500,000/mi	$100,000	5yr
E Law Ln	N Fee Ln	N Union St	0.51	Multi-Use Path	$500,000/mi	$325,000	5yr
N Fee Ln	E Law Ln	E 13th St	0.08	Multi-Use Path	$500,000/mi	$50,000	5yr
E 17th St	N Dunn St	N Fee Ln	0.50	Multi-Use Path	$500,000/mi	$325,000	5yr
E 17th St	Armstrong Stadium	N SR 45	0.45	Multi-Use Path	$500,000/mi	$300,000	5yr
Jordan River Greenway Pathway	N Indiana Ave	N Forrest Ave	0.39	Multi-Use Path	$500,000/mi	$250,000	5yr
Jordan River Greenway Pathway	N Forrest Ave	N Sunrise Dr	0.55	Multi-Use Path	$500,000/mi	$350,000	5yr
Jordan River Greenway Pathway	N Sunrise Dr	Union Street	0.31	Multi-Use Path and SLMs	$500,000/mi and $750/ea*6 (both directions)	$250,000	5yr
Bike Hub Ballantine - Memorial Union	N/A	N/A	N/A	Bike Hub	$500,000/ea	$475,000	5yr
Bike Hublet - Stadium Area	N/A	N/A	N/A	Small-Scale Bike Hub	$150,000/ea	$125,000	5yr
E 13th St	N Indiana Ave	N Fee Ln	0.43	Multi-Use Path	$500,000/mi	$275,000	10yr
					5yr Horizon Cost	$2,998,000	
					10yr Horizon Cost	$3,273,000	

[1] Includes 25% contingency in construction cost

BICYCLE FACILITIES DESIGN STANDARDS

The recommended bicycle facilities design standards should be the most current *AASHTO Guide to Development of Bicycle Facilities*, the *Manual of Uniform Traffic Control Devices*, and information from the *FHWA's Characteristics of Emerging Road and Trail Users and Their Safety*, particularly for the design of off-street pathways. The City's *Bikeway Design Guidelines* should be in harmony with the aforementioned and should be used accordingly. The *NACTO Urban Bikeway Design Guide* may be used as a reference for planning, but actual design of facilities should give precedence to the prior mentioned documents for facilities' operational reliability. Planning and design of multi-use pathways and/or cycle tracks, "protected" bikeways, or similarly configured bikeways in close (parallel) proximity to motor vehicle ways should be done with the utmost cognizance, respect and implementation of Indiana traffic laws and driver/operator expectations and reaction abilities with regard to the conflict areas at driveway and street intersections. Horizontal, vertical and aesthetic approach chicanes for bikeways, as successfully pioneered on the Indianapolis Cultural Trail, provides some excellent ways to accomplish these operational reliability goals.

Finally, due to the need to preserve pedestrian safety and the ambiance of the IUB campus, design of bikeway facilities with pedestrian ways, whether collinear or at conflict points, should be accomplished with pedestrian comfort and safety as a priority. To that end, collinear facilities designed and constructed in the future should provide distinctly separate and/or distinctive surface patterns guiding bicyclists into primary zones. See Figure 18 for options to achieve this.



BLOOMINGTON BICYCLE FACILITY DESIGN GUIDELINES

INDIANAPOLIS CULTURAL TRAIL ROAD INTERSECTION

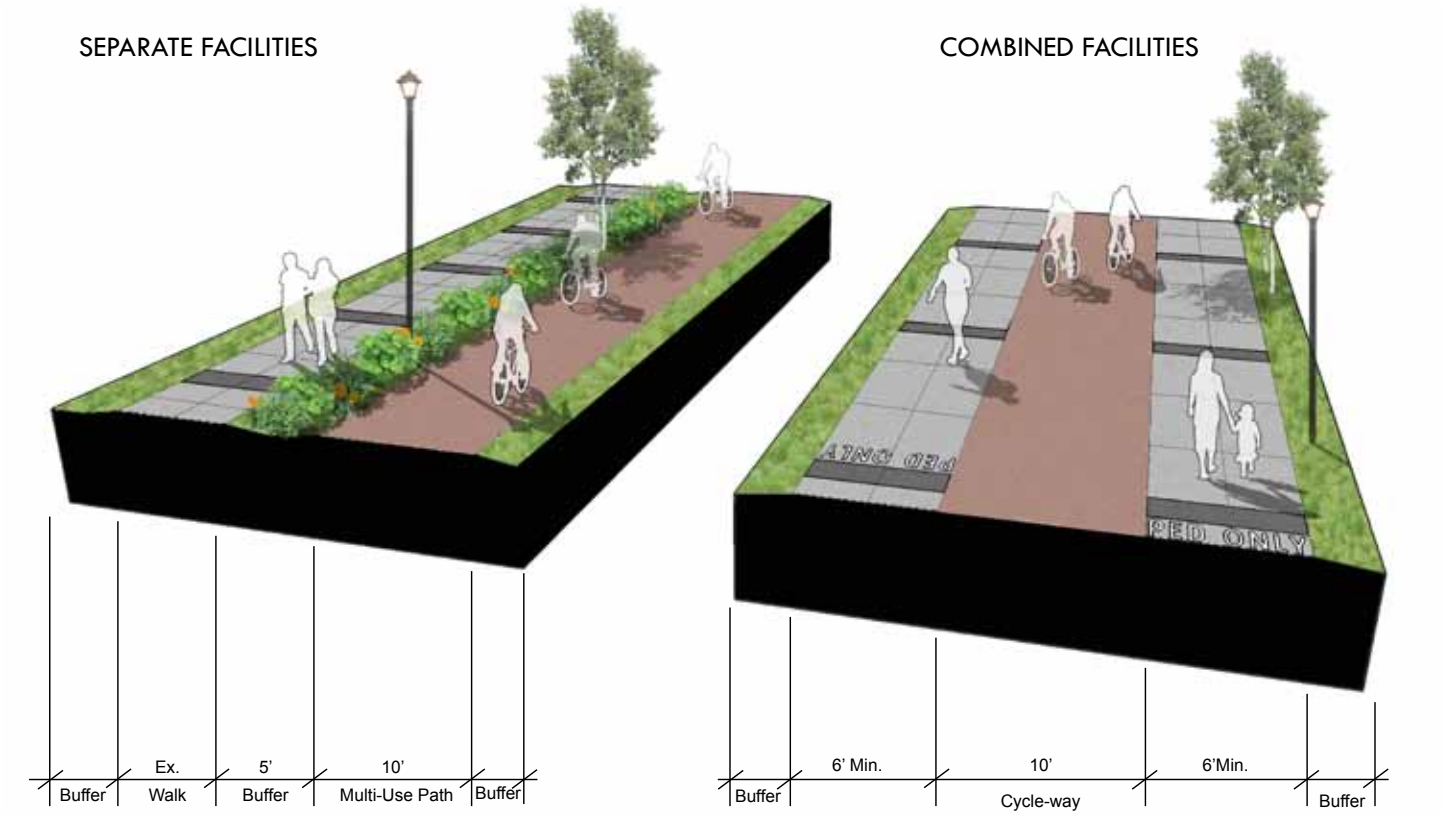


FIGURE 18 - ADJACENT PEDESTRIAN AND BICYCLE FACILITY RECOMMENDATIONS

INDIANAPOLIS CULTURAL TRAIL SEPARATED FACILITIES

INDIANAPOLIS CULTURAL TRAIL COMBINED FACILITIES

POLICIES AND PROGRAMS

Policies and programs complement existing and future bicycling infrastructure, and help achieve the goals and objectives of the Plan. Bicycle-related programs and policies currently in place on the Campus are discussed in this section, and recommendations are provided for strengthening these policies and programs or establishing new programs where appropriate.

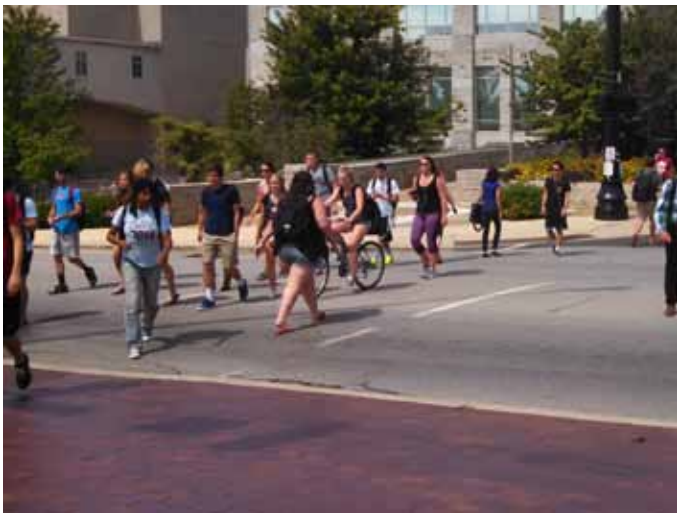
EDUCATION AND OUTREACH

Education of the student, faculty, and staff population is essential to expanding the role of bicycling on the IUB campus and creating safer interactions and better harmony among bicyclists, pedestrians, and motorists. A central challenge is that each year, thousands of new students come to the campus from all over the world and many lack a good understanding of the rules of the road and proper bicycling etiquette. The University should proactively educate new students on the rules of the road as part of a unified bicycle education campaign. Careful consideration of effective outreach tactics is essential to ensure that bicycle safety and encouragement messages reach the target audience. Better education and messaging is also needed for the entire University population to ensure continued harmony as the bicycle mode share increases.

Interaction with Pedestrians

One of the key challenges of bicycling on the IUB campus is that lack of dedicated space for cycling results in conflicts with pedestrians. While provision of infrastructure can help with this problem, in keeping with thematic guidelines 1, 2 and 3, broader education of bicyclists on their obligation to yield to pedestrians and overtaking etiquette will help preserve the campus' pedestrian friendly ambience – even as the bicycle mode share increases.

The City of Bloomington has a program to distribute bicycle bells, which can help alert pedestrians to the presence of an overtaking bicyclist. The University should work with the City to expand this program to cover cyclists on campus. An annual contribution of several thousand dollars to this program would provide a large number of bicyclists with bells. Bells can be issued with bike registration/parking permits. Student volunteers could also hand out the bells in parallel with the City's off-campus distribution. These efforts should be done in concert with general messaging regarding bicyclist and pedestrian expectations to reach the entire university population.



Interaction with Motorists

In addition to interacting with pedestrians, bicyclists on campus must understand how to effectively interact with motorists. Many bicyclists neglect basic rules of the road while riding in and around campus, which exacerbates tension between motorists and cyclists and makes it difficult for drivers to understand their intentions. Conversely, some motorists do not understand the rights of cyclists and how to share the road effectively and safely. As part of the education campaign, students should be provided with information about their legal obligations and how to interact with motorists (and pedestrians) to reinforce safe behaviors, such as: stopping at stop signs and signals, riding with the direction of traffic, riding on the road rather than on sidewalks, and using hand signals. Motorists could also be reminded as to the rights and responsibilities of bicyclists, including: the right to ride in the road, the right to ride two abreast, and the responsibility to follow the same

traffic rules that apply to motorists. Motorists could be also reminded as to their legal obligations to bicyclists.

Bicycle Parking

A current challenge faced by the University is that many students often either buy low-cost bicycles that are not capable of withstanding long-term daily use or exposure to the elements – or don't maintain them. Over a short period of time, many of these bicycles become unusable and are abandoned – often taking up space at University bike racks. They are an eyesore and also take up valuable bike parking space near residential and classroom buildings. The *Bicycle Master Plan* recommends **enhanced bicycle parking at dorms** that upon implementation, will afford greater protection for parked bicycles. This investment in bike parking should be accompanied by **educational messages** related to the types of factors that should be considered when purchasing a bike and how bikes should be stored to extend their useful life.

Outreach Channels

Successful **bike education campaigns** rely not only on the content of messages, but also in how they are delivered. It must be recognized that influencing behavior is challenging, and that creative approaches are needed to gain the attention of students in particular. The University has several resources in place that can serve as the foundation for its bicycle education communications strategy.

Freshman Orientation provides a unique opportunity to reach a large portion of the incoming class with a consistent bike education message. Although there are many interests competing for the attention of incoming freshman, it is a unique opportunity to provide a comprehensive overview of bicycling on the IUB campus, including information related to routes, quality bicycle acquisition and maintenance, bike parking, safety concerns, and basic courtesy expectations for interacting with motorists and pedestrians. Incorporating bicycle education into residential programming is another opportunity to reach a large portion of the undergraduate population. Both approaches are recommended to create a lasting education campaign.

Bike Safety Prezi is a unique presentation of recommendations, and applicable Indiana and City of Bloomington laws, produced by the Office of Sustainability. It can be accessed at http://sustain.indiana.edu/programs/bicycle-initiative/biking-tips.php. This presentation should be expanded to include: reasons why bicycling on the sidewalk is not recommended – or at least the operational challenges of riding on sidewalks and walkways, the obligation (and wisdom) of audible indication of overtaking pedestrians on pathways/walkways, and other beneficial actions on the part of bicyclists to promote harmony while interacting with pedestrians throughout the IUB campus.

The **Bicycle Resources** webpage within the Office of Sustainability's "Programs" website directs visitors to resources that can enable their better use of the bicycle for transportation and recreation within and around the IUB campus. Similarly, the Office of Parking Operations has information furthering bicycle ridership on its Bicycling page, under the Alternative Transportation tab in their portion of the IUB website. In particular, the bike repair kits located in each of the five IUB vehicular parking garages are mentioned. From the user standpoint, it may be desirable to develop a comprehensive website dedicated to bicycling on campus, but this may be difficult due to differing departmental roles and responsibilities.

The Little 500 is the biggest intramural event on the IU campus and the largest collegiate bike race in the United States. The proceeds from this legendary bike race, held every April, go toward student scholarships at IU. This event, which is well publicized by the University, may also be a good medium for expanding bicycle ridership among students and for distributing educational messages. The University should explore opportunities for using the Little 500 race as an outreach channel for bicycle education and encouragement.

The use of **social media** outlets such as Facebook and Twitter, as mentioned in the report entitled *Bicycle Friendly Campus Initiatives* by Intern Ms. Hannah Hunt of the Office of Sustainability, can serve an effective role in communicating bicycle education messages. These technologies evolve rapidly, requiring the University to adapt in order to reach students on their preferred communication platform.

Education and Outreach Recommendations

- ***Work with the City to expand its bicycle bell distribution program to cover cyclists on campus. A few thousand dollars of annual investments is recommended to reach a significant number of cyclists each year. This Fall 2015 a "Bells for Bike Safety" initiative by the Office of Sustainability is underway already.***
- ***Develop new or expand existing educational materials (e.g., Bike Safety Prezi) to clarify bicyclist and pedestrian expectations with respect to the use of shared space.***
- ***Proactively educate new students on the benefits of bicycle use, need for quality bicycles, rules of the road and other bicycle education topics through freshman orientation, and ongoing residential programming.***
- ***Use social media and other innovative communication technologies to ensure bicycle education messages reach the target audience and are reinforced on an ongoing basis.***
- ***Explore opportunities for using the Little 500 race as an outreach channel for bicycle education and encouragement.***

WAYFINDING

Bicycling (wayfinding and parking) maps, whether on-line or hard copy, can be very beneficial to increasing bicycle ridership – provided adequate physical accommodation exists. The University provides information on bicycle parking locations on campus and the City provides a bicycle suitability and facilities map that includes routes through the campus. As an increasing number of students consider and seek housing in areas adjacent to campus, graphical communication of bicycle-friendly access can help them make informed decisions that affect the campus' overall bicycle ridership. Development of a campus-focused bike map is recommended to help new students and faculty that are interested in biking in and around campus. Partnership with the City is key in providing this important information to students, faculty and staff.

Wayfinding Recommendations

- ***Develop an IUB Campus Bike Map including bike routes, bike parking locations, and educational messages.***

ENFORCEMENT

Enforcement is a key element of creating lasting behavior change. While some students are likely to change their behavior on the basis of education alone, the risk of an enforcement action can be a deciding factor for many. Increased enforcement must be implemented in a staged manner, and with ample communication in advance of the effort. For example, IUPD could distribute a broad announcement that they will be enforcing stop sign violations during a particular upcoming month. Then, during that month they may start by giving warnings for the first two weeks of the campaign followed by tickets for violators in the latter half of the month. In this case, the goal would be to first create awareness of stop sign laws which can be accomplished through issuance of warnings, and to follow up with tickets to those who did not change their behavior after sufficient warning. This type of phased enforcement reduces the likelihood of negative publicity that sometimes results from enforcement campaigns.

In order for enforcement to be successful, it must be consistent over a longer period of time. IUPD input will be essential for educational messages related to bicycling on campus and ensure that the relevant laws are enforced. Consistent enforcement of the rules of the road is necessary to ensure compliance among bicyclists and motorists alike.

Enforcement Recommendations

- ***Ensure that IUPD is engaged in the establishment of educational messages related to bicycling on the IUB campus.***
- ***Consistently enforce the rules of the road for bicyclists and motorists on the IUB campus.***

BICYCLE AVAILABILITY

The IUB student population is fortunate to have few barriers to bicycle ownership, but education is needed to elevate the quality and/or maintenance of bicycles being employed. Bicycle parking is provided throughout the campus, and off-campus residences typically provide bicycle storage options. As noted above, recommendations for enhanced bicycle parking are included in the Bicycle Master Plan, which will help students to keep their bicycles in a good state of repair. One way for students to acquire a bike is through the bicycle auctions held by Parking Operations, usually in September and May, where hundreds of abandoned and unclaimed bikes are sold. Auctions are held in the Jordan Ave. parking garage. This activity provides affordable bicycles to students and faculty and helps increase ridership. For this reason, the bicycle auction program should be continued.

The topic of bike share was considered in the development of the Plan, but at this point, there appears to be minimal market need for a full-service bike share system deployment for the IUB campus. While there are many college campuses across the Nation implementing full-service bike share systems - many due to the undeniably highly prominent image that bike share promotes - a system for IUB would need significant capital and operating subsidies. Alternatively, less formal bike pools / share programs, modeled more closely to what some corporations or hotels employ – many using local bike shops to service, could be more effective until a transportation market develops operationally justifying a bike share system investment by the University. The larger bicycle travel market need articulated earlier – safety and courtesy education and enforcement on the campus, should be the focus of the University's program investments for now.

Bicycle Availability Recommendations

- ***Increase awareness and education for quality bicycle acquisition and/or maintenance***
- ***Continue the bicycle auction program.***
- ***Consider implementing informal bike pool/share initiatives on the IUB campus.***

Finally, the above recommendations will require the increase of one fulltime equivalent of staffing resources.

BICYCLE PARKING

Bike parking on the IUB campus has historically been implemented in response to identified bike parking needs. While stakeholders indicated during the development of this Plan that the quantity of bike parking may be adequate overall, there are specific locations that may benefit from an increase in bike parking spaces. Additionally, they articulated that some of the racks do not meet current best practices for bike rack configuration.

As bicycling infrastructure is implemented throughout the campus, the University would benefit from a more accelerated approach to providing parking including development of criteria for calculating the number of spaces and identifying the preferred location and types of racks to be installed. Development and implementation of bike parking guidelines would ensure that racks contribute to the campus aesthetic and aid in the achievement of the new bicycle mode share target.

Bike Parking Recommendations

- ***Establish a target number of bicycle parking spaces for the entire campus and for specific buildings based on occupancy. For example, the University of California Berkeley has a target of providing one bicycle parking space for every ten students. In comparison with their existing bicycle mode share and the proposed target for IUB, an overall target rate approaching one space per 35 students for the next 10 years should be gradually implemented.***
- ***Increase enforcement of non-functional bicycles' removal from parking facilities.***
- ***Identify opportunities to implement covered bike parking in existing garages and other covered, and convenient areas.***

- ***Develop design guidelines for bike rack installation on campus including rack types, clearance requirements, and foundation specifications. Racks that do not meet newly developed guidelines should be phased out and/or improved over time, as budget allows. The second edition of the Association of Pedestrian and Bicycle Professionals Parking Guidelines provides detailed guidance on planning and implementing bicycle parking.***
- ***Establish a specialty bike rack design (possibly*** through ***a student design competition) to be used at high-profile locations such as the IMU and in other highly visible campus locations.***
- ***Develop criteria for the installation of different types of bicycle parking based on the intended use. A few examples are provided below:***
  - ***Classroom buildings: short-term uncovered or partially covered (roof only) bike parking; close to building entrances.***
  - ***Dorms: short-term covered bike shelters (roof and 3 sides); long-term indoor key-controlled bike storage rooms, or bike lockers; reasonably close to buildings.***
  - ***Special event locations (stadiums, auditorium, etc.): short-term uncovered or partially covered bike parking; may be relatively far from building entrances.***
- ***Consider expanding bike parking at locations identified by stakeholders:***
  - ***Kelley School of Business***
  - ***Main library***
  - ***Student Center***
  - ***Food Court/Read/Wright Dorms***
  - ***Ballantine/Simon/Jordan Halls***
  - ***Hilltop***
  - ***Cyberinfrastructure Building***
  - ***Stadiums***
- ***Continue to implement bike valet as part of the Greening of Athletics for major events such as football games.***

CUSTOM BIKE RACK

BIKE PARKING IN PARKING GARAGE

BICYCLE LOCKER

EVALUATION

The most recent University administered Travel Demand Management survey included additional questions generated during the *Bicycle Master Plan* development that will help assess progress towards the above objective. Those questions should be retained in future years to help mark progress towards Goal 1and its increased bike mode share.

Evaluation Recommendations

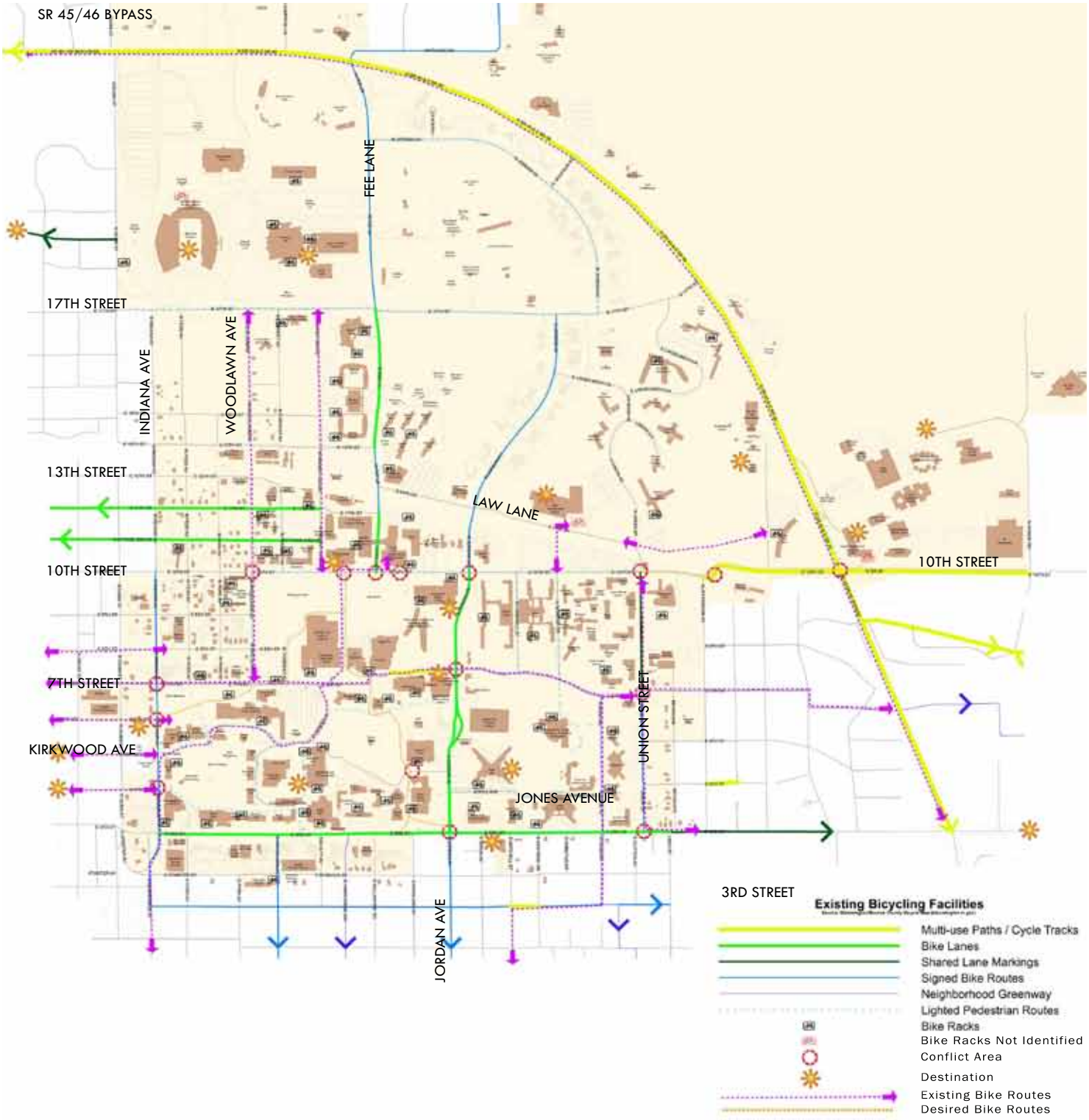
- ***Continue to collect data through the Travel Demand Management Survey to assess progress towards Goal 1.***
- ***Permanent bicycle counting should be established at several control points on campus. If infrared counting equipment is installed, then cameras should be used at the locations for one week each quarter to enable mode share splits to be estimated. Annualized bicycle counts can then be established to track the increase of bicycling on campus over time.***

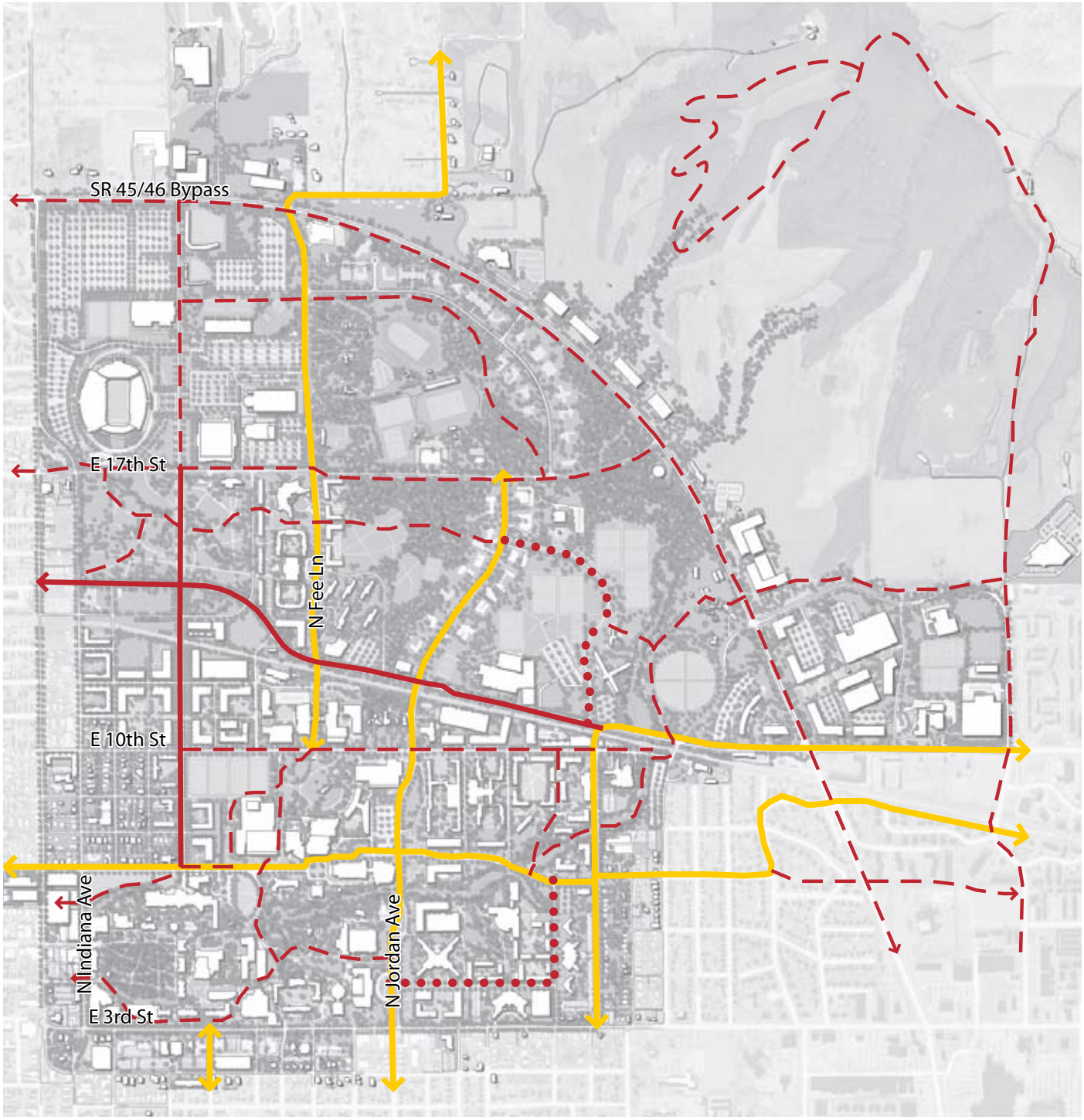
INFRARED BICYCLE/PEDESTRIAN COUNTER

APPENDIX

Indiana University
Bicycle Master Plan

August 2015


SR 45/46 BYPASS
FEE LANE
17TH STREET
INDIANA AVE
WOODLAWN AVE
13TH STREET
LAW LANE
10TH STREET
10TH STREET
7TH STREET
KIRKWOOD AVE
UNION STREET
JONES AVENUE
3RD STREET
JORDAN AVE
Existing Bicycling Facilities
Multi-use Paths / Cycle Tracks
Bike Lanes
Shared Lane Markings
Signed Bike Routes
Neighborhood Greenway
Lighted Pedestrian Routes
Bike Racks
Bike Racks Not Identified
Conflict Area
Destination
Existing Bike Routes
Desired Bike Routes



FUTURE BICYCLE CIRCULATION

- Existing Bicycle Circulation
- On-Street Bike Lane
- Off-Street Bike Path
- Bike-Friendly Street

0 600 1200 1800 Feet

INDIANA UNIVERSITY BLOOMINGTON CAMPUS MASTER PLAN (2010)
BICYCLE CIRCULATION MAP

FACILITY DEFINITIONS

Bicycle- A pedal-powered vehicle upon which the human operator sits. The term "bicycle" includes three- and four-wheeled human-powered vehicles. In Indiana, a bicycle is considered a vehicle.

Bicycle Boulevard- A street segment, or series of contiguous street segments, that has been modified to accommodate through bicycle traffic and minimize through motor traffic.

Bicycles Facilities- A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically defined for bicycle use.

Bicycle Lane or Bike Lane- A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane, unless designed as a contra-flow lane.

Bicycle Level of Service (Bicycle LOS)- A model used to estimate bicyclists' average perception of the quality of service of a section of roadway between two intersections.

Bicycle Locker or Bike Locker- A secure, lockable container used for individual bicycle storage.

Bicycle Network- A system of bikeways designated by the jurisdiction having authority. This system may include bike lanes, bicycle routes, shared use paths, and other identifiable bicycle facilities.

Bicycle Rack or Bike Rack- A stationary fixture to which a bicycle can be securely attached.

Bicycle Route or Bike Route- A roadway or bikeway designated by the jurisdiction having authority, either with a unique route designation or with Bike Route signs, along which bicycle guide signs may provide directional and distance information. Signs that provide directional, distance, and destination information for bicyclists do not necessarily establish a bicycle route.

Bikeway- A generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Highway- general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Independent Right-of-way-general term denoting right-of-way outside the boundaries of a conventional highway.

Right-of-way- general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Right of way (Assignment)-The right of one driver or pedestrian to proceed in a lawful manner in preference to another driver or pedestrian.

Roadway-The portion of the highway, including shoulders, intended for vehicular use.

Roundabout- type of circular intersection that provides yield control to all entering vehicles and features channelized approaches and geometry to encourage reduced travel speeds through the circular roadway.

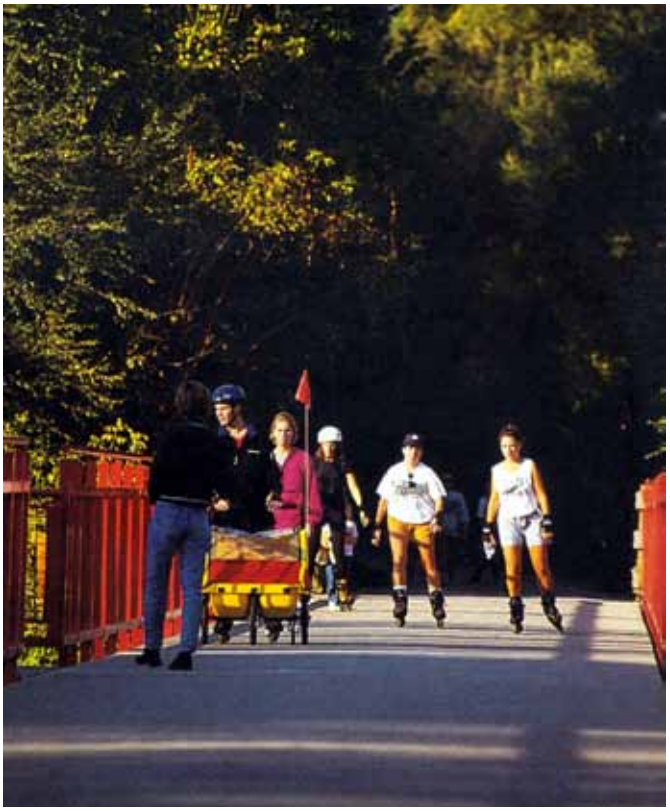
Rumble Strips- textured or grooved pavement treatment designed to create noise and vibration to alert motorists of a need to change their path or speed. Longitudinal rumble strips are sometimes used on or along shoulders or center lines of highways to alert motorists who stray from the appropriate traveled way. Transverse rumble strips are placed on the roadway surface in the travel lane, perpendicular to the direction of travel.

Shared Lane- lane of a traveled way that is open to both bicycle and motor vehicle travel.

Shared-Lane Marking- pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane.

Shared Roadway- roadway that is open to both bicycle and motor vehicle travel.

Shared Use Path- bikeway physically separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Most shared use paths are designed for two-way travel.



Shoulder-The portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of subbase, base, and surface courses. Shoulders, where paved, are often used by bicyclists.

Sidewalk-That portion of a street or highway right-of-way, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians.

Sidepath- shared use path located immediately adjacent and parallel to a roadway.

Traveled way-The portion of the roadway intended for the movement of vehicles, exclusive of shoulders and any bike lane immediately inside of the shoulder.

Unpaved Path-Path not surfaced with a hard, durable surface such as asphalt or Portland cement concrete.

REFERENCES

1. AASHTO. A Policy on Geometric Design of Highways and Streets. American Association of State Highway and Transportation Officials, Washington, DC, 2011.

2. FHWA. Manual on Uniform Traffic Control Devices. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2009.

3. National Highway Traffic Safety Administration, Bureau of Transportation Statistics. National Survey of Pedestrian and Bicyclist Attitudes and Behaviors. U.S. Department of Transportation, Washington, DC, 2002.

December 4, 2015

Dear Bicycle and Pedestrian Safety Commission,

After reviewing state and city bicycles statutes from surrounding Midwestern states, Oregon, and NYC, I present some ideas for statutes for your consideration. These statutes are all focused on safety issues and could enhance the Bloomington Bicycle code.

Sidewalk riding statute
Yielding rules defined and/or
Not in business district and/or
Eliminated completely

Earphone Restriction
Riders can only have one earphone in use while operating the bicycle

Hand and Arm Signals
Define hand and arm signals
Require use of hand and arm signals

Right side of roadway riding
Ride as close as practicable to right-hand curb
Exceptions:
Overtaking
Preparing to turn left
Unsafe road conditions
Intending to go straight when vehicle traffic will be turning right
One-way streets – as close to left-hand side is okay

I look forward to the discussion about these statutes at the next BPSC meeting.

Best,
Christine Meade
Planning & Transportation Intern
SPEA – MPA 2016