



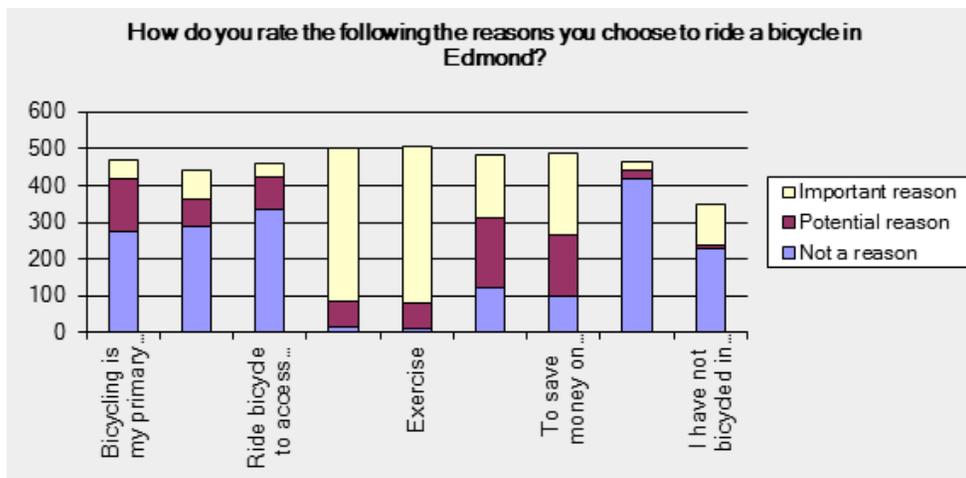
Appendix A – Public Outreach and Input

This appendix provides a full summary of input received from the public throughout the Master Plan development process.

Online Survey

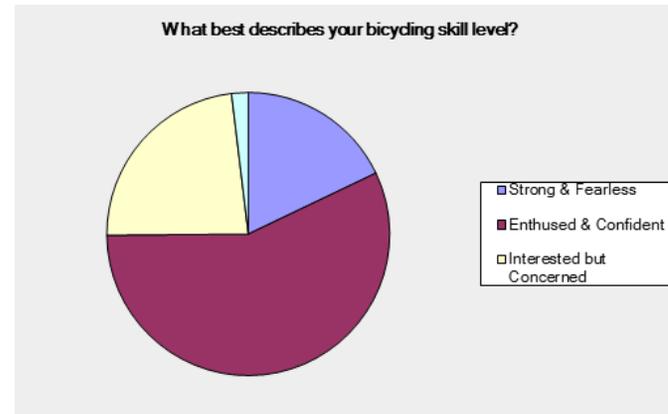
Question 1

How do you rate the following the reasons you choose to ride a bicycle in Edmond?				
Answer Options	Important reason	Potential reason	Not a reason	Response Count
Bicycling is my primary mode of transportation within Edmond (non-student)	53	142	276	471
Bicycling is my primary mode of transportation within Edmond (student)	78	72	290	440
Ride bicycle to access the bus system (CityLink)	37	90	333	460
Recreational purposes	414	71	15	500
Exercise	424	68	13	505
Errands	171	191	123	485
To save money on gas	222	166	99	487
I do not own a car	26	20	420	466
I have not bicycled in Edmond (Select Important reason only)	107	10	230	347
Answered question				515
Skipped question				0



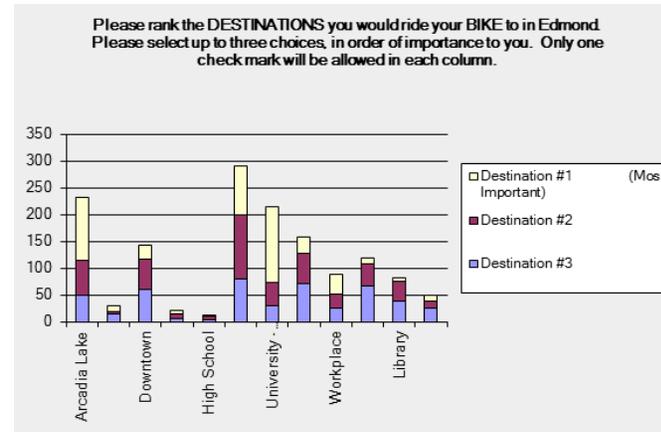
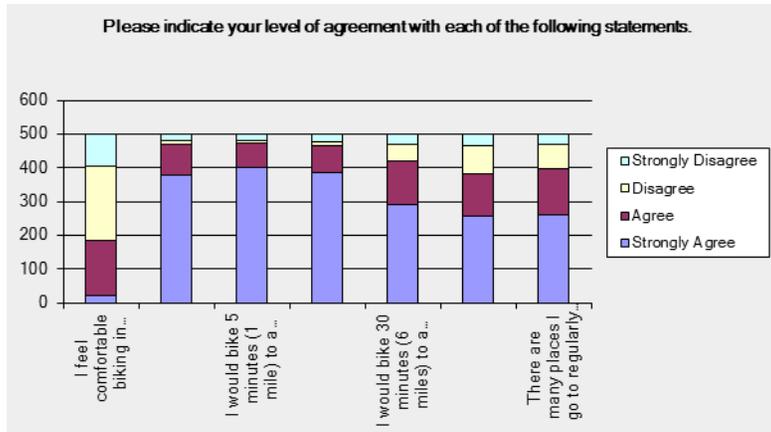
Question 2

What best describes your bicycling skill level?		
Answer Options	Response Percent	Response Count
Strong & Fearless	17.9%	92
Enthusied & Confident	56.9%	292
Interested but Concerned	23.2%	119
No Way, No How	1.9%	10
answered question		513
skipped question		2



Question 3

Please indicate your level of agreement with each of the following statements.					
Answer Options	Strongly Disagree	Disagree	Agree	Strongly Agree	Response Count
I feel comfortable biking in Edmond.	95	222	164	20	501
I want to live in a community where people can bike to many destinations.	22	10	93	376	501
I would bike 5 minutes (1 mile) to a destination if I felt I could do it safely.	22	7	70	402	501
I would bike 10 minutes (2 miles) to a destination if I felt I could do it safely.	25	12	79	385	501
I would bike 30 minutes (6 miles) to a destination if I felt I could do it safely.	32	49	129	291	501
I would bike 10 miles or more if I felt I could do it safely.	37	81	125	258	501
There are many places I go to regularly that are within a 10 minute (2 mile) bike ride from my house.	32	73	134	262	501
Answered question					501
Skipped question					14



Question 4

Please rank the DESTINATIONS you would ride your BIKE to in Edmond. Please select up to three choices, in order of importance to you. Only one check mark will be allowed in each column.

Answer Options	Destination #1 (Most Important)	Destination #2	Destination #3	Response Count
Arcadia Lake	116	66	49	231
CityLink bus stop	10	5	14	29
Downtown	26	58	59	143
Elementary or Middle School	7	8	6	21
High School	1	5	4	10
Parks	91	120	79	290
University – UCO or OC	141	43	30	214
Shopping Areas	31	56	71	158
Workplace	37	26	25	88
Restaurants	12	40	67	119
Library	6	36	39	81
Other	11	13	26	50
Other (please specify)				48
Answered question				492
Skipped question				23

Open Responses to Question 4

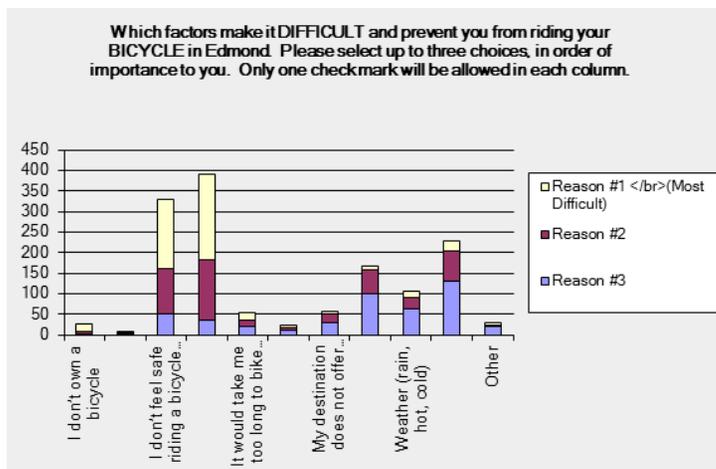
Number	Other (please specify)
1	Pops
2	Quail Springs Mall
3	Doctor appointments
4	Lake Hefner
5	Parks
6	All of city streets
7	Hefner
8	other parks
9	Church
10	To lake hefner
11	not a biker
12	City parks
13	riding the streets through Edmond for exercise
14	Around for exercise
15	out laying streets outside of city limits away from city traffic or residential streets north, east and south of Edmond
16	Tuesday & Thursday Weeknight Group Ride Routes from Farmers Market
17	lake hefner
18	safe route to longer recreational routes which my be outside of city limits. I ride 80+ miles per ride.
19	Countryside
20	Would like to have good 30 mile or longer loop around town. Or a loop that you could connect to OKC Hefner Lake.
21	post office
22	Recreational to Luther and Piedmont
23	Church
24	Family House
25	Biking in general (anywhere)
26	Connect to OKC trail network.

Number	Other (please specify)
27	liquor store
28	YMCA on Rankin
29	Friends & family's houses
30	Mitch
31	Sorority house
32	Neighborhood
33	My Workplace is UCO
34	Walmart I-35
35	Church
36	Just around town for exercise.
37	Just around - no particular end point
38	convenience stores
39	BIKE TRAILS
40	Neighborhood
41	Guthrie, Jones, Piedmont - need to ride 30 to 75 miles
42	bike trails (multi use paths) regardless of destination
43	access to get out of town. Covell from mitch park
44	jones, luther just out east
45	all over Edmond
46	East of I-35 and north Edmond for exercise/recreation
47	rural area to ride
48	OKC



Question 5

Which factors make it DIFFICULT and prevent you from riding your BICYCLE in Edmond. Please select up to three choices, in order of importance to you. Only one check mark will be allowed in each column.				
Answer Options	Reason #1 (Most Difficult)	Reason #2	Reason #3	Response Count
I don't own a bicycle	18	4	3	25
I am physically limited from riding a bicycle	3	5	1	9
I don't feel safe riding a bicycle in traffic	168	111	51	330
Lack of bicycle facilities (e.g. bike lanes, etc)	209	146	35	390
It would take me too long to bike to the places I need to go	20	14	20	54
Personal security (crime)	4	6	12	22
My destination does not offer shower/locker facilities	7	20	30	57
Insufficient bicycle parking at potential destinations (e.g. shopping, public facilities)	11	58	99	168
Weather (rain, hot, cold)	14	29	62	105
Difficult Barriers to cross (intersections, railroads, etc)	25	75	129	229
Other	6	5	19	30
Other (please specify)				30
Answered question				487
Skipped question				28



Open Responses to Question 5

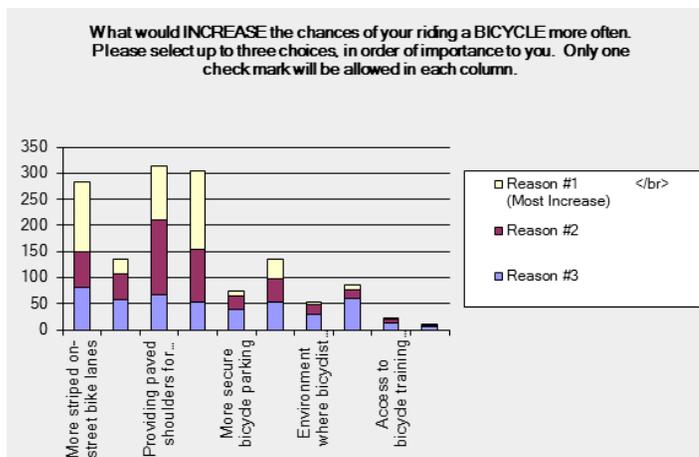
Number	Other (please specify)
1	Traffic
2	most of the above. Edmond's roads do not accomidate bikes in all areas. no parking, security, bike lanes ect.
3	Not enough sidewalks north edmond. Especially to connect kelly & danforth to covell & mitch park. My family and I would ride everyday to mitch park and enjoy the lovely park more if it was easier accessable.
4	Roads have lots of pot holes. I recently broke my jaw after falling off my bike b/c my tire blew out on an Edmond road.
5	It's difficult to take the amount of materials that I transfer to and from work every day.
6	insufficient parking & difficult barriers are also important reasons
7	I have young children and they don't bike yet.
8	ordinance to ride on sidewalks rather than roads
9	I live north of Edmond. Narrow sholders, no bike lanes, hills and blind spots.
10	can't bike to work due to things I have to carry
11	Just not enough safe streets to ride on
12	More empahsis on weather, Oklahoma is not suitable for biking a lot of the year
13	no shoulders and steep drop offs on roads where I live
14	None of these affect me
15	streets and roads lack shoulder and lanes

Number	Other (please specify)
16	Lack of education and awareness from auto drivers
17	there are not sidewalks along some of my paths.
18	Very poor quality roads
19	Trains stopping, blocking multiple crossings.
20	loose dogs
21	i am a trail rider and there are no bike trails
22	I am very uncomfortable riding on Edmond roads
23	south Broadway is a barrier
24	need more paved paths (multi use paths) to make people feel safe
25	TOO MUCH TRAFFIC - NOT SAFE
26	Angry motorists that are not willing to share the road
27	lack of a good route to get out of town
28	drivers are not educated to bicycle rights and they try to kill us with their car
29	motorists that are ignorant to bicycle rights on the road
30	rude motorists



Question 6

What would INCREASE the chances of your riding a BICYCLE more often. Please select up to three choices, in order of importance to you. Only one check mark will be allowed in each column.				
Answer Options	Reason #1 (Most Increase)	Reason #2	Reason #3	Response Count
More striped on-street bike lanes	133	67	82	282
More shared lane markings (vehicles and bikes share a lane) that are accompanied with pavement markings and signage	29	49	57	135
Providing paved shoulders for bicyclists to ride on	104	142	68	314
More separated bikeways (i.e. bike sidepaths or trails)	151	100	53	304
More secure bicycle parking	9	27	38	74
Environment where drivers share the road with bicyclists	39	44	53	136
Environment where bicyclist ride predictably and follow the rules of the road	3	19	30	52
Increased traffic enforcement for drivers and bicyclists who break the law	9	17	59	85
Access to bicycle training and safety classes	1	7	13	21
Other	3	3	5	11
Other (please specify)				11
Answered question				484
Skipped question				31



Open Responses to Question 6

Number	Other (please specify)
1	side walks where walkers and bike riders can safely travel
2	There needs to be a balance of awareness for both drivers and cyclists BUT drivers need to know cyclist have the right to be there. And cyclists must adhere to the laws.
3	Edmond needs to get its car traffic tackled before it worries to much about bikes.
4	We need bike lanes
5	At the least, sidewalks repaired/replaced, connected between neighborhoods, etc
6	Driver and cyclist education
7	Sidewalks
8	There's not an "other" for me. I ride most often with my children--on road riding is not an option for me.
9	Improved train track crossing options.
10	BIKE TRAILS
11	Motorist training (what to do around bicycles)

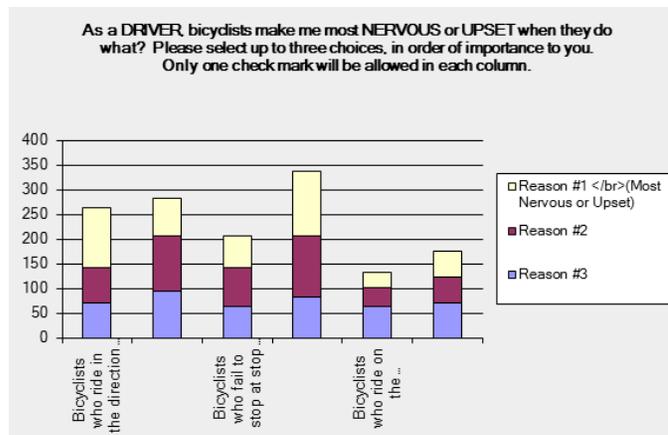
Question 7

As a DRIVER, bicyclists make me most NERVOUS or UPSET when they do what? Please select up to three choices, in order of importance to you. Only one check mark will be allowed in each column.				
Answer Options	Reason #1 (Most Nervous or Upset)	Reason #2	Reason #3	Response Count
Bicyclists who ride in the direction of oncoming traffic	122	72	70	264
Bicyclists who have erratic riding behaviors	78	111	94	283
Bicyclists who fail to stop at stop signs and traffic signals	66	77	64	207
Bicyclists who are not visible at night: no headlights or reflectors	132	123	83	338
Bicyclists who ride on the sidewalk and dart across the street	29	38	64	131
Failure of bicyclists to move to the side of the road to allow vehicle to pass	54	52	70	176
Other (please specify)				17
Answered question				483
Skipped question				32



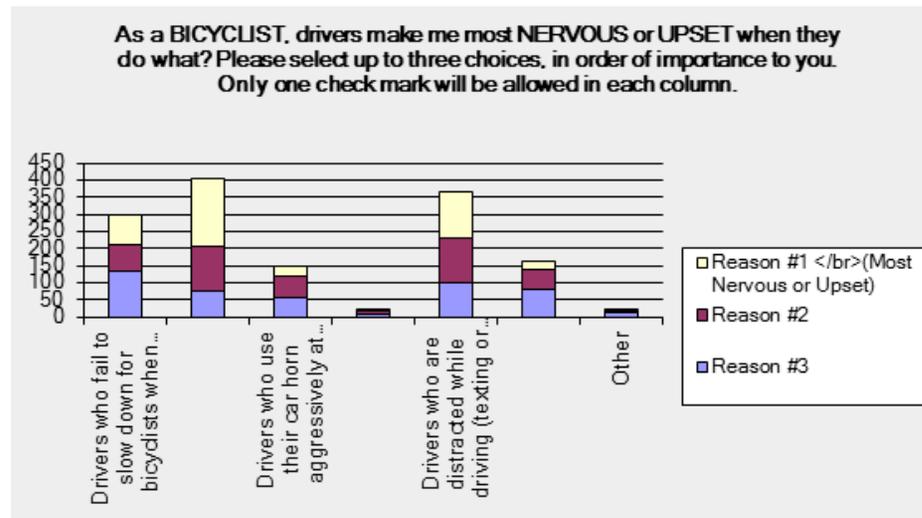
Open Responses to Question 7

Number	Other (please specify)
1	No helmets
2	Because there is not enough room for me to pass them safely
3	#1 bicyclists who ride 2 & 3 abreast or more
4	Bicycles who ride with no shoulder available in heavy traffic areas
5	Bicyclists riding without a helmet
6	There must be a better communication of both the drivers and cyclists rights so both parties can adhere to them and share responsibility.
7	Bicyclists who ride side by side and make it very difficult to pass. Need to go to single file when a car is behind them and get as far right as possible.
8	No room to pass bikes on Edmond roads
9	bicyclists who use the street instead of a paved bike path
10	I'm not as much concerned with bicyclists as I am with drivers
11	When a cyclist doesn't control her/his lane - riding too far to the right (side of the road), making other auto drivers pass within the same lane.
12	Bicyclist that ride 4 across and do not let you pass
13	Cyclists who ride side by side and slow down traffic!
14	Children are the worst at not abiding traffic rules. It's time for the parents' to take responsibility for their children darting in and out of traffic. This usually happens after school lets out.
15	Bicyclists who ride more than two abreast
16	I dont get to nervous, I just give them the right of way, but its hard when they ride in the dark without lights.
17	riders riding along side each other instead of single file



Question 8

As a BICYCLIST, drivers make me most NERVOUS or UPSET when they do what? Please select up to three choices, in order of importance to you. Only one check mark will be allowed in each column.				
Answer Options	Reason #1 (Most Nervous or Upset)	Reason #2	Reason #3	Response Count
Drivers who fail to slow down for bicyclists when the road is narrow	89	79	132	300
Drivers who fail to provide a safe distance when passing the bicyclists on the road	197	134	73	404
Drivers who use their car horn aggressively at bicyclists	27	61	58	146
Drivers who open the driver's door without checking for oncoming bicyclists	1	7	9	17
Drivers who are distracted while driving (texting or talking on cell phones)	135	130	100	365
Drivers using excessive speed on neighborhood/minor street	25	57	81	163
Other	4	3	13	20
Other (please specify)				20
Answered question				480
Skipped question				35





Open Responses to Question 8

Number	Other (please specify)
1	ALL THE ABOVE!!
2	Drivers who fail to yield and stop to bicycle at 4 way stop
3	Again, better communication between both parties.
4	Drivers that yell and throw things at cyclists
5	Edmond needs more interconnection between neighborhoods so we don't have to ride on section line roads to go places.
6	No way to get off the road on a path
7	Drivers making a right turn on Red light without checking for bicyclists
8	Drivers who intentionally increase their speed or run a stop sign when they encounter a bicyclist, meanwhile making rude and unnecessary gestures directed toward the bicyclist.
9	All of the above!!
10	all of the above are issues
11	using this spot to tell you, while I neither work, not live in Edmond, I shop and worship in Edmond exclusively and therefore, spend most of my non-sleeping time in Edmond.
12	Or all of these.
13	When drivers wave cyclist on at stop signs or intersections and interrupt the flow of traffic. Bikes follow the same rules as cars so when a car is at a stop sign before me, and will not go when I stop at the stop sign it really frustrates me.
14	Drivers who do not heed the pedestrian right-of-way in crosswalks, especially when making turns.
15	Drivers who pull even at intersections, then go first.
16	all of the above
17	They fear to pass a cyclist.
18	Pretty much ALL of these things scare cyclists. I would rank them all #1
19	Drivers who come too close in back of me - Tailgate me
20	drivers not yielding the right of way at intersections / stop signs

Public Open House #1

The first public open house for the Bicycle Master Plan was held on March 8, 2012. Over 100 people from the public attended the meeting and provided comments on maps, comment forms, and during a question and answer session that followed a presentation given by the project team. The table below provides a summary of all the comments received during the open house with the exception of map comments. Map comments were transferred to the project team's study network map, which was used to guide the team's field analysis and development of the draft bicycle network.

Bike Facilities (General)
More bike lanes that allow safe travel
Bike lanes needed on major arterials
Provide bicycle access to businesses
Prefer bike lanes to shared lanes
Would like to see cycle track
Make older sidewalks bicycle friendly/dual use
Would like to see barrier between bike lane and vehicle lane, e.g. cycle track or buffer
Fewer protected bike lanes is better than more unprotected bike lanes
Painted bike lanes make people pay more attention
Bike lanes should almost follow the 1 mile grid system-this would be appropriate for commuters and enthusiast whom might be going farther
Protected multi-use trail system for casual rider, families and less experienced cyclists
Shared lanes with proper markings/signage
Bike lanes are important to growing cycling in Edmond
Need bike routes that connect all city parks, parks to schools and schools to neighborhoods to encourage families to bike
Need signage and markings to raise awareness
Building bicycle/walking links between neighborhoods would really open things up in the disconnected parts of city
Bike Facilities (Specific)
Bike lanes on 2nd Street
Connect to routes to Oklahoma City

Would like to bike to transit center from west, but no safe route
Most interested in traveling around UCO campus, e.g. 2nd St between Broadway and Coltrane and on Danforth between Bryant and Broadway
Would like to see designated route or bike lanes connecting Mitch Park, Hafer Park and Lake Arcadia trailhead.
[Need] designated route to get north-south, e.g. bike lanes on Boulevard
Roadway (General)
Traffic calming needed
Reduce travel lanes to reduce vehicle speeds
Recent street improvements illustrate complete streets is just a phrase and not a committed practice in Edmond-a complete streets approach that includes great [bi] cycling design must be embraced by the city
Intersections
Traffic signals need to detect bicycles
Bike Parking
Bike racks needed at more locations
Great need for bike parking at stores and restaurants along 2nd, Danforth, Bryant
Encourage businesses to put in bike racks
Covered parking would be good
Enforcement
Police need to enforce traffic laws
Police as educators rather than enforces-for both motorists and cyclists
Education



Cyclists and drivers need to be better informed on how to share the road
Raise awareness through signs, printed materials, stickers, etc
Other
Want to see different ideas that would help bicycling be more safe
Cities that have provided bike lanes are reaping benefits
[bicycling] improvements [will] support residents in their healthy habits
[having bike lanes] would be a great reason to live in Edmond
Would like to bike more for recreation and exercise, but it needs to be safer to do so.
People need to see cycling as a viable means of transportation
Recently moved to downtown Edmond area with the intention of walking and biking more
Connect subdivisions with trails
Would like to see Edmond set “new standard” for bikeability in the Midwest
Would love to bike to work and protected bike lanes would help
Bring cycling community together via social networking to share experiences, thoughts-include a representative from law enforcement

Public Open House #2

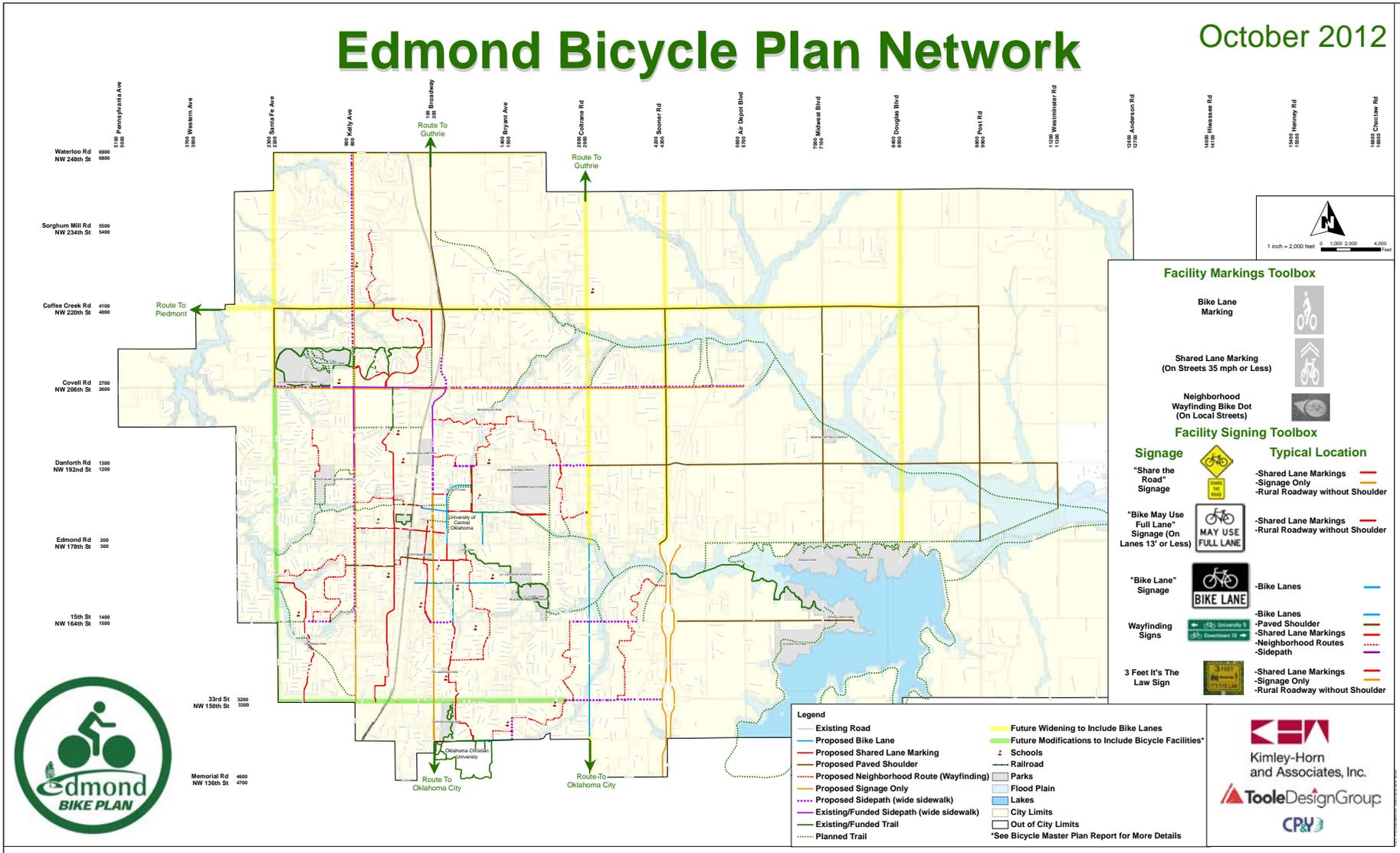
A second open house was held on September 13, 2012. The purpose of this open house was to present the draft Master Plan and recommended bicycle network, and provide an additional opportunity for the public to comment. Over 50 people attended the open house and provided valuable feedback. The majority of participants were very supportive of the draft plan’s recommendations and the draft bicycle network.

It was evident, based on discussions at the open houses and the numerous comments received throughout the Plan development process, that there is great interest within the Edmond community to improve bicycling conditions throughout the city so that bicycling can be a viable form of transportation as well as a recreational activity. A common theme among public comments was making Edmond more bicycle friendly, which would greatly enhance the quality of life in Edmond and help bolster its reputation as a desirable place to live.

Appendix B – Bicycle Plan Network

Edmond Bicycle Plan Network

October 2012



Appendix C – Wayfinding Protocol and Best Practices

This appendix provides guidance for establishing a comprehensive bicycle wayfinding system.

Introduction

Wayfinding signs provide information about destinations, direction and distance to help bicyclists determine the best routes to take to major destinations. Signs provide information that helps bicyclists understand and use the bicycle on-street and path network without the use of a map. Directional signs also provide additional messaging to motorists to expect bicycles on the roadway. The presence of signs encourages bicycling on designated corridors because users feel the signs will direct them to the best route for getting to their destination. The recommended bicycle network consists of many neighborhood streets that have low volumes of traffic and low vehicle speeds, but are circuitous. Wayfinding signs, along with crossing improvements where these routes meet arterial streets, may be all that is required to establish these facilities and attract ridership.

Edmond History and Current Practice

Policy and Regulatory Framework

Standards and guidance for the use of signage for bicycle purposes is provided by the following documents:

Manual on Uniform Traffic Control Devices (MUTCD) Guidelines

The Manual on Uniform Traffic Control Devices (MUTCD 2009 edition) includes standards for:

- Sign design for directional bicycle signs;
- Sign installation such as minimum height of signs above ground and horizontal placement from edge of the roadway or path; and
- Symbols and appropriate abbreviations for destination names.



Existing bike route sign in Edmond

The most recent update to the MUTCD in 2009 introduces new sign types and provides additional right-of-way placement guidelines for directional signs.

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities

The AASHTO Guide provides supplemental information to the MUTCD. The guide explains the use and benefits of different sign types for bicycle wayfinding.

Americans with Disabilities Act (ADA) Guidelines

The ADA Standards for Accessible Design offer guidance on sign assembly placement to maintain the proper vertical and horizontal clearance for pedestrians. These guidelines will apply in locations where sign assemblies need to be placed adjacent to or in the sidewalk.

Sign Types

Bicycle route signs are signs that guide bicyclists along designated contiguous bikeways. The bikeways may consist of on- and/or off-street bicycle facilities. The signed bikeways create a bicycle route and a network of bicycle routes creates the bicycle route system.

The bicycle route sign system, or wayfinding system, is the system of signing bikeways in a consistent, standardized fashion. Bicycle route sign systems are designed for bicyclists who are familiar with the city's landmarks and districts, but unfamiliar with the preferred route to their intended destination(s). The sign system provides bicyclists with direction, destination and distance information. Generally three different categories of signs are provided in order to assist the bicyclist (listed below).

1. **Decision and Spot Decision Signs (D1):** at decision points where two or more routes intersect or where guidance is required
2. **Named Route Signs (M1):** along designated named routes
3. **Route Designation or Confirmation Signs (D11):** to confirm a route choice and provide guidance at a turn in a route



D1-1c

2009 MUTCD Figure 9B-4



M1-8



M1-8a



D11-1c

Decision Signs (D1-1c series)

Decision signs mark decision points where two or more bicycle routes intersect. Decision signs are installed on the approach to an intersection. Signs include direction, destination and distance (in miles) information.

Sign Placement in the Right-of-Way:

Place 30+ feet on the approach to a decision point or intersection of another signed bicycle route. To allow for comfortable merging across travel lanes for left turns place the decision sign at the appropriate distance from the intersection based on the number of lanes that a bicyclists must merge across:

- No merge: 30 feet
- One lane merge: 100 feet
- Two lane merge: 200 feet

Sign Specs

36"X6", white on green and retro-reflective.

Sign Placement on Post

Directional sign organization at a given decision point will be based on the following guidelines:

1. Install D1-1c signs on the approach to intersections where signed routes intersect and where routes lead directly to the intended destination. The bicycle route system can connect business districts, schools, parks, neighborhoods and other important locations that are directly on designated routes.
2. The number of destinations provided on a given post is not to exceed three. This allows for proper vertical clearance to be maintained. Three signs per post is also about the maximum amount of information that can be read by a passing bicyclist.
3. The number of signs on a given post pointing in the same direction is not to exceed two. Limiting destinations to two in one direction is necessary to provide space for destinations in other directions, because this sign type will be installed at intersecting routes.



Decision and named route signs from Seattle. On paths, both sign types are used to mark the route and provide direction to destinations on and off the path.

4. The sign with the nearest destination should go at the top of the assembly with the most distant destination at the bottom. If destinations are equal in distance, the sign with an up arrow should be placed on top. This arrangement allows for the nearest destination to “fall off” the top of the sign and subsequent destinations to move-up as the bicyclists approaches.
5. When directional blades are placed on named routes or they direct users directly to named routes, named route signs (M1-8a and supplementary signs) may be placed on the same sign post below the D1-1c sign(s). Placing multiple sign types on one post will reduce the number of posts used as well as provide all necessary information for bicyclists in one location.

Sign Content

Destination and directional information will be unique on most signs. Determining destinations is important to the function of the network. Distance information will be determined by the spacing of decision points and destination locations.

1. Identify and Rank Destinations:
 - Develop a list of all destinations and rank them in a hierarchy. For example:
 - Primary: paths, bridges, business districts, neighborhoods, regional parks, downtown
 - Secondary: Institutions, transit stations, other municipalities
 - Tertiary Destinations: other public institutions/facilities, airport, designated bicycle streets
 - The ranking will help determine the sign content at a given decision point within the network.
2. Provide distance measurements in tenth of a mile increments such as 4.3, 1.2. This allows for detailed destination information in denser urban areas. If mileage on a sign is a whole number, do

not include the tenth mile placeholder. For example use “4” rather than “4.0”

3. If a bike route terminates at a location where there is no destination use the name of the final cross street or bike route as the destination.

Directional Spot Signs (D1-1b series)

Spot signs are similar to directional signs but provide direction and destination information only. Use D1-1b signs when a destination is off the signed route or when getting to the route requires additional wayfinding.

Spot signs may include the words “To” and “Via” where necessary and may vary in width to accommodate limited space in the right of way. Spot signs do not need to be followed by a confirmation sign.



Spot sign along bicycle route in Seattle.

Spot signs may be used where:

1. Guidance to signed bicycle routes from adjacent roadways, sidepaths etc. or access to important facilities such as a path is needed.
2. Guidance from signed bicycle routes when important destinations are a short distance off the signed route. In such cases, a directional sign may indicate the best access point from the signed route to the destination. Use additional spot signs to guide bicyclists to that destination.

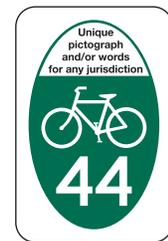


D1-1b

2009 MUTCD Figure 9B-4



M1-8



M1-8a

2009 MUTCD Figure 9B-4

Named Route Signs (M1-8 series)

Install M1-8 or M1-8a signs along named regional on-road routes and paths to assist users in wayfinding along named routes or to confirm that the user is on the desired route. Use M1-8 or M1-8a with supplementary signs such as directional arrows (M5 and M6 series) and the words “North”, “South”, “East”, “West”, “To”, “End”, “Begin”, etc. (M3, M4 series). The M1-8 series of signs are small in size and are a cost effective way to mark bicycle routes. There are pros and cons to the use of route numbers or route names. If a route already has a colloquial name, use the colloquial name and not an arbitrary number to avoid confusion. Route names are encouraged because they can often provide additional contextual information such as destination information i.e. Smith Street Bike Route will likely follow Smith Street and Smith Street passes by X, Y and Z locations. Route numbers do not provide this context and require a bicyclist to look at a map to understand where the route goes. In areas where signed bike routes are dense, the use of numbers can be confusing because a bicyclist may have to ride on several numbered routes to get to a destination. Numbered routes can work well for cross jurisdiction travel, on routes that do not already have a colloquial name or on routes with many turns where a colloquial name is not clear. On an M1 sign, route numbers can be more visible than text from a distance.

Sign Specs:

Size: 12”X18”, white on green and retro-reflective. The letters on signs should be 2 to 1.5 high for best visibility.

Sign Placement in the Right-of-Way:

On-path M1-8 or M1-8a signs may be used:

1. At path entrances and exits
2. 30’-50’ after every controlled intersection or street crossing; or
3. Every ¼ mile to mile where there is a gap in signage. Spacing will

depend on the density of the street network

4. At transitional locations (such as path-to-road transitions) or in cases where bicyclists will be transitioning to sidewalks

On-street M1-8 or M1-8a signs may be placed:

5. 30+ feet before a turn with an M5 or M6 arrow (follow decision sign guidelines for placement at the approach to an intersection)
6. 30-60 feet after the turn to confirm the path
7. At decision points where needed
8. Within proximity to a named route (within a few blocks), similar to a spot sign. Named route signs can be used in conjunction with a supplementary sign such as an arrow and “To”. When farther than a few blocks off the designated route, decision signs can be used to direct users to named route

Sign placement on post:

M1-8 or M1-8a signs can be mounted on the same post, below regulatory, warning or destination signs.

1. M1-8 or M1-8a signs may be placed back-to-back or back-to-back with regulatory or warning signs.
2. When multiple M1-8 or M1-8a signs are placed on the same post, they can be stacked depending on height and visibility. The current route should be the top sign.



A modified M1-8a sign at the entrance to a shared use path.

Route Designation, Turn and Confirmation Signs (D11-1c series)

These signs confirm that a bicyclist is on the correct route. The sign is used in two ways:

3. 1. Route Confirmation Sign: Signs are placed on the far side of an intersection following the directions indicated by decision signs and at intervals along the route to confirm that the bicyclist is still on the correct route.
4. 2. Turn Sign: at turns in a route with an arrow (M5 or M6 series sign). In this case D11-1c and an arrow sign are placed on the approach to an intersection. Confirmation signs will include destination information generally with the text "To" the location indicated on the directional sign. When a confirmation sign is used on a named route, an M1-8 or M1-8a sign may be placed below the confirmation sign.



D11-1c

2009 MUTCD Figure 9B-4

Sign Specs:

24"X18", white on green and retro-reflective.

Street Name Signs

Install street name signs at path /roadway intersections. This helps path users find path entrances and identify cross streets along paths. Placing bicycle and pedestrian legends on the path name sign indicates to motorists that the information on the sign can be disregarded.



Trail Name Sign (SNS)

A path name sign would be added to street name sign assemblies at intersections of paths and roadways.

Supplemental Signs

Supplemental signs provide additional information to D11-1 or M1 series signs. Cardinal direction signs (M3 series) and alternate route signs (M4 series) are placed above the M1 series. Arrow signs in the M5 and M6 series are placed below D11-1 and M1 signs to provide directional information.



2009 MUTCD Figure 9B-4

General Sign Components

The following guidelines outline general rules for the signs

5. For all signs use upper and lower case letters
6. Use Clearview Series C font. This differs from Colorado Department of Transportation standards and is approved for use by the Federal Highway Administration. It strikes a balance between visibility and maximum characters per sign.
7. Use two-inch high capital letters. This size is visible from approximately 80 feet
8. For destination names that are too long to fit on one line, use intuitive abbreviations
9. Do not use periods in the abbreviations of destination names

10. Avoid the use of diagonal arrows when possible
11. Use graffiti film on bicycle route signs that are lower to the ground, particularly on paths. This will increase the longevity of the signs.

Sign Placement Guidance

Guidance on signage placement is important to providing a legible sign system. Predictable and uniform placement of directional signs at traffic controlled intersections and at intervals helps to provide proper guidance particularly if a turn in a route is to occur.

For bicyclists, a good baseline distance required to read a sign and determine an action is 30 feet from the intersection. Additional engineering judgment is required when placing directional signs to allow for visibility of the sign with parking and vegetation and other possible obstructions.

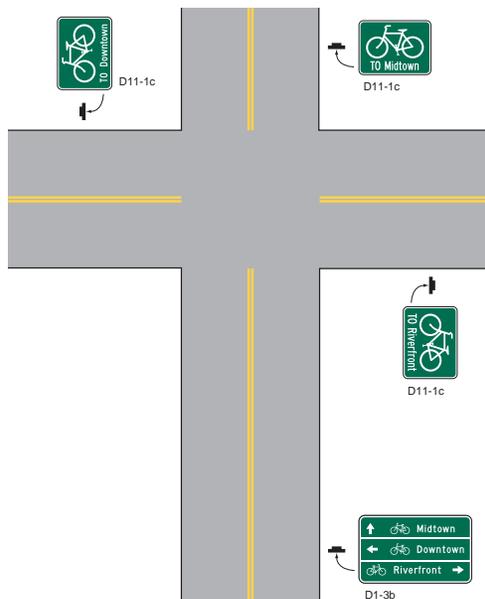


Figure 9B-6 from the 2009 MUTCD provides general lateral placement of D1-1 and D11-1 signs at an intersection.

Roadways

Turn Signs:

1. Follow placement guidelines for decision signs.

Confirmation Signs:

2. 30-60 feet on the far side of the intersection after decision points, preferably within sight of the decision sign.
3. 30-60 feet after stop controlled or signalized intersections.
4. Or after every 1/4 mile to mile of unsigned segment along designated on-street routes depending on the density of the street grid.

Sign content:

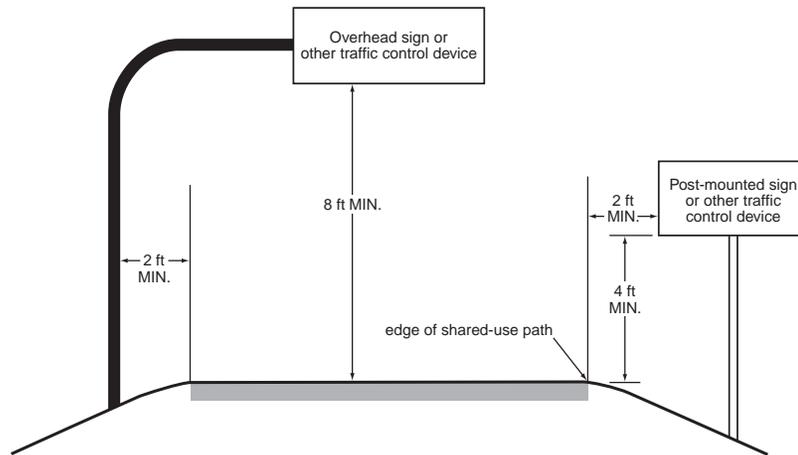
1. If there are two destinations in one direction, a confirmation sign may include two lines of text. This may require reduction of the bicycle symbol.

Sign mounting height is also outlined in the MUTCD ([section 2A.18](#)), however, due to speed and sight line differences between bicyclists and motor vehicles, minimum post heights are recommended for bicycle signs.

Mounting height guidance:

1. Sidewalk Clearance: 7 feet of clearance from the bottom of the sign to the ground should be allowed. If there are multiple signs per post, and the lowest sign is lower than 7 feet, the lowest sign cannot stick-out more than 4 inches into the sidewalk. If bicycles use the sidewalk the clearance height should be 8 feet.
2. If there is no sidewalk and few obstructions such as parked cars, optimum vertical height for bicycle signs is 7 feet from the bottom of the sign.

Figure 9B-1. Sign Placement on Shared-Use Paths



Shared Use Paths

Horizontal, lateral and vertical installation of bicycle signs differs for shared-use paths and roadways. For paths follow lateral and vertical sign placement guidelines in the MUTCD guidelines for signs placed along shared-use paths (Figure 9B-1):

1. 8 foot minimum vertical clearance
2. 2 foot clearance from edge of path to edge of sign
3. 4 foot minimum distance between ground and bottom edge of sign

Signing of the Bicycle Network

The Edmond Bicycle Master Plan recommends a bicycle network that consists of improvements on over 120 miles of roadway. The type and phasing of improvements may vary depending on a number of criteria, including expected user volumes, roadway constraints, vehicle volumes and speeds, feasibility, destinations served, and relative importance in the overall network. Wayfinding is an important component of establishing the network. Wayfinding signs may be used alone, i.e. signed route, or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings). The phasing of signing and other bicycle network improvements do not need to occur at the same time. For example, for some lower

speed/lower volume roadways installation of wayfinding signage may proceed the striping of bike lanes, and in this sense could be used as an interim step toward implementing additional recommended treatments. The network



2003 MUTCD guidelines for directional bicycle signs. Right: Chicago developed the D1-1c sign to consolidate direction, destination and distance information onto one sign.

consists of several signed routes that have no pavement markings, and over time, the city may find it makes sense to add additional signed routes to the network. The decision to develop a signed route versus installing a bike lane or shared lane marking may be based on the following criteria:

- Alternate routes parallel, and within close proximity (less than a half mile) to a route with bicycle facilities
- Lower volume streets
- Spur routes, or routes that may span a relatively short distance and terminate at a specific destination or loop back into the main route

Best Practices

The cities of Chicago and Seattle provide examples of best practices for bicycle wayfinding. Below are descriptions of their wayfinding systems.

Chicago



Decision signs preceding an intersecting signed bike route in Chicago.

The City of Chicago has implemented an extensive directional sign system for bicycles using destination-based signage for the on-street bicycle network. The MUTCD D11-1c and D1-1c series signs were developed by the City of Chicago in an effort to consolidate the amount of signage required by the 2003 MUTCD for bicycle wayfinding using the D11-1, D1-1 and supplemental signs. The D11-1c provides specific destination information, such as “To Evanston” in lieu of the general “BIKE ROUTE” text of the D11-1 sign. This is helpful in distinguishing different routes in a dense bicycle route network. The D11-1c is used by the City of Chicago

as a confirmation sign to confirm a route selection. The sign is to be placed on the far side of an intersection after a route choice had been made. The D1-1c consolidates direction, destination and distance information onto one small sign. Several D1-1c signs can be installed together at the approach to a decision point to provide information on multiple routes. The D11-1c and the D1-1c were developed by the City of Chicago and later incorporated into the 2009 edition of the MUTCD.

Seattle

The city of Seattle also has a directional sign system for bicycles. Modeled after the Chicago system, the Seattle system also uses the D11-1c and D1-1c series of signs. Because Seattle has an extensive off street path system, additional signs were required to distinguish named routes. The M1-8 series of signs are used in Seattle to mark named routes. These signs are installed along named routes with supplementary signs from the M2, M3, M4, M5 and M6 series. M1 signs are also installed at decision points on paths with D1-1c or D11-1c signs (see figure).



Many of Seattle’s paths are named. In order to include the colloquial route name on the M1-8a sign, adjustments were made to the sign. The route number was replaced with route name within the main body of the sign. The space at the top of the sign was used for a logo. This complete sign system helps bicyclists get to destinations throughout the city and provides guidance to and along named bicycle routes.

Edmond Application

The Edmond Bicycle Network may consist of two general categories of signed routes:

- Named Routes:
 - Paths such as the proposed Arcadia Lake Trail
 - Recreational loops such as the loop around the Mitch Park, or a loop that combines path segments with on-street segments Shortgrass Rd and developed paths in the vicinity.
- Un-named Network Routes:
 - Routes between destinations such as transit, schools, business districts, major employment centers, or major path access points.

The two route types will work in unison to provide bicyclists with a navigable system along designated bicycle routes.

Bicycle Dots



Bicycle dot

Bicycle dots are pavement markings intended to supplement, complement or be used in lieu of bicycle route signs. Unlike shared lane markings, bicycle dots are not intended to provide guidance on bicycle positioning within the roadway. Bicycle dots are not intended to affect good behavior by bicyclists or motorists. They are a tool intended to provide guidance in route finding.

Bicycle dot pavement markings and accompanying arrows may be used:

1. Where it is determined that supplemental directional information is needed or in lieu of directional, non-decision signs, i.e. where there are not two intersecting routes. Dots on signed routes should provide guidance in turns in the route and to confirm the route. Where 2 routes intersect, dots should be supplemented with directional signs. Use 2' diameter dots on roadways.
2. Where the use of shared lane markings is not desired from a neighborhood aesthetics standpoint or not necessary from an operational standpoint.
3. In marked crosswalks of trail crossings to guide cyclists across the marked crosswalk. Use 1' diameter dots between crosswalk rungs.
4. Transitions from road to sidewalk or side path and vice-versa. Use 1.5' diameter dots on sidewalks or entrances to curb ramps.
5. Miscellaneous spot locations determined by use of engineering judgment.

Placement guidelines

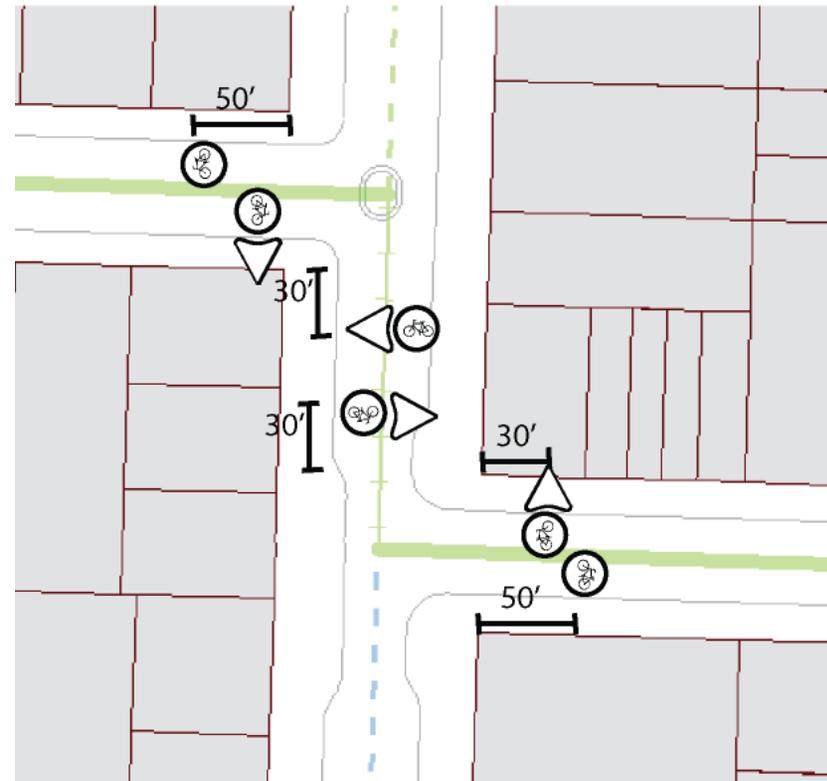
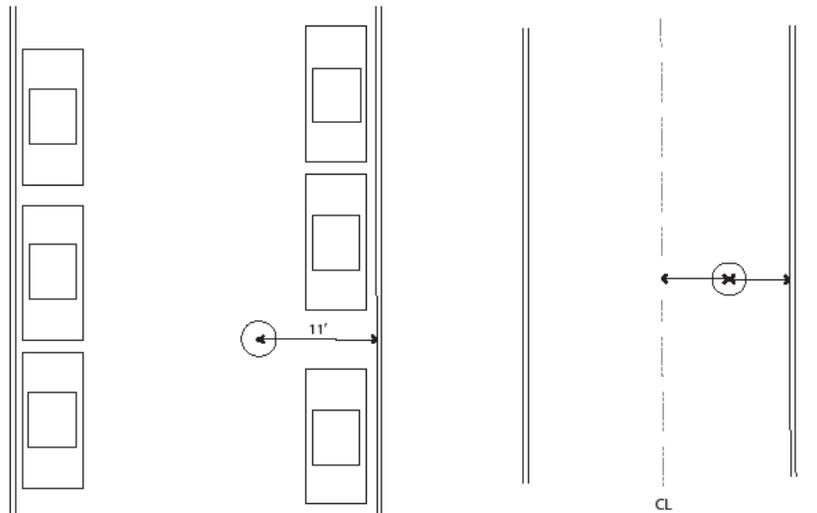
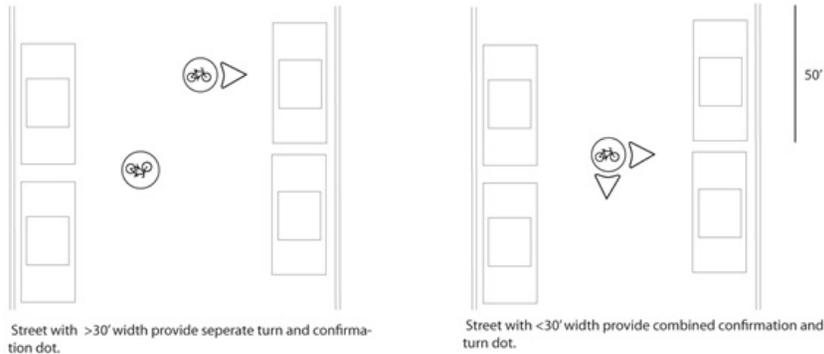
Bicycle dots on **non-arterial** streets:

1. Place a dot with appropriate arrow marking(s) 30' before the intersection at intersection approaches.
2. Place a dot approximately 50' from curb face of roadway from which turn is being made when used to confirm a turn.
3. On streets with 2 parking lanes and 1 lane of travel, place bicycle dots 11' from the curb.

4. On streets with no parking, place bicycle dots in the middle of the lane assuming there are 2 lanes of travel.
5. If the width of street is 30' or less, combine confirmation and directional dots (see figure number below) and should be placed 30' to 50' from the intersection. If width of street is greater than 30' confirmation dots and directional dots should be separate as per guidelines 1 and 2.

Dot placement for turns in the route:

1. Place turn dot with arrow 30' from curb face of roadway to which turn is to be made with arrow pointing in direction of turn.
2. Place confirmation dot 50' from curb face of roadway from which turn is to be made.



Dot placement for long stretches between turns:

1. Place dots $\frac{1}{4}$ mi apart if no turns or major intersections occur along the route.

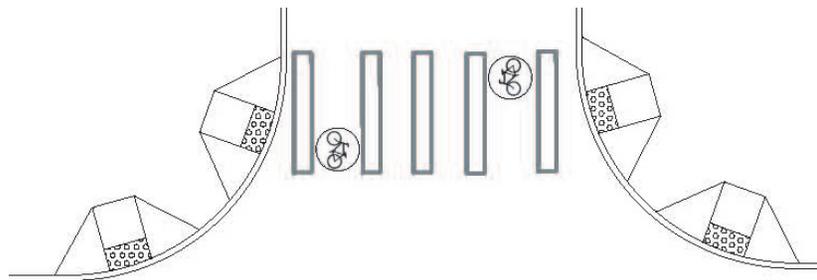


Placement at Crosswalks

At times it is necessary to guide bicyclists across crosswalks.

To do so dots may be placed:

1. Between the rungs of the crosswalk out of the tire track of motor vehicles.
2. Offset to the right in the direction of travel to keep bicyclists to the outside of crosswalk.

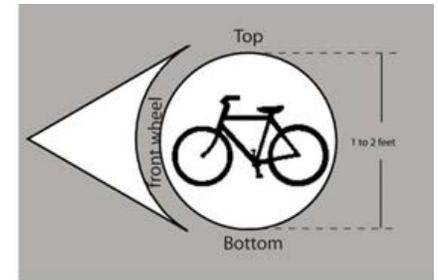


Field Placement (to be done by layout crews)

Dots can range in size depending on where they are needed. Use 2 ft diameter dots for on-street. Those used for crosswalks and transition locations should be 1.5 feet in diameter. Generally, try to make measurements from the center point of the circle. The following is a guide to how dots will be laid out in the field to provide guidance on dot center point placement, bicycle logo orientation and proper location of supplementary arrows.

Layout Markings for Bike Dot Installation

For bike dot installation align the top of dot with the large spray paint dot. Align the bottom of the dot with the small spray paint dot. Align the arrow(s) with the spray painted arrow(s). In some cases there may be two arrows per dot. The front wheel of the bicycle should always be to the left except when there is a right arrow. With all other arrows or no arrows the front wheel of the bicycle should be to the left.



	Layout marks	Bike dot and arrow	Correct orientation per layout marks
Left turn			
Right turn			
Left and straight			

Complete Streets Resolution

RESOLUTION NO. 11-10

A RESOLUTION SUPPORTING THE COMPLETE STREETS PHILOSOPHY TO EXPAND TRANSPORTATION CHOICES IN EDMOND

WHEREAS, throughout the City of Edmond's Vision Plan - Tomorrow's Edmond (1996) - the concern for provision of bicycle and pedestrian facilities that form networks of connectivity around our community is a common thread; and

WHEREAS, a transportation system conducive to walking, bicycling, and public transit, for all ages and abilities, reduces traffic congestion, improves public health, decreases air pollution, enhances economic vitality, provides a more livable community, and improves the overall quality of life for Edmond residents; and

WHEREAS, the Edmond Transportation Plan (2007) regards roadways as community facilities that must be developed and maintained to serve the entire community with careful consideration of impacts to neighborhood quality and integrity, pedestrian and bicycle mobility and safety, and community aesthetics and corridor quality; and

WHEREAS, in accordance with goals embodied in Edmond Plan IV (2007), the City intends to provide a full range of transportation facilities for pedestrian, cyclist, public transit, and vehicular modes that better support travel options, thereby reducing automobile dependence by encouraging fewer vehicular trips; and

WHEREAS, when and where physically and economically, feasible the Complete Streets philosophy supports the Transportation Goals and Policies of Chapter 5 Edmond Plan IV, the City of Edmond will strive to ensure that all users of our transportation system are able to travel safely and conveniently on all streets and roadways within the public right-of-way; and

WHEREAS, Complete Streets are defined as those that provide safe and convenient transportation facilities for all modes of travel, including pedestrians, bicyclists, public transit riders, and motorists, that are safe and accessible for users of all ages and mobility levels; and

WHEREAS, Complete Streets reduce road congestion by providing safe travel choices that encourage alternative transportation options that serve to increase the overall capacity of the transportation network as well as decrease consumer transportation costs; and

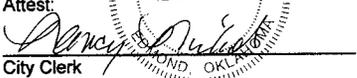
WHEREAS, Complete Streets enhance economic vitality by providing safe, convenient, and inviting pedestrian, bicycle, and public transit facilities that promote active public centers users of all ages and abilities, and generate a sense of place in and around retail districts and provide connection between places of residence to centers of recreation, retail, education, and places of work; and

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF EDMOND THAT:

Street projects should be planned, designed, and operated, when physically and economically feasible, in accordance with our Edmond Transportation Plan (2007) or any plan adopted in the future, giving consideration to the accepted standards for Complete Streets, as outlined by the National Complete Streets Coalition, to provide for a balanced, responsible, and equitable way

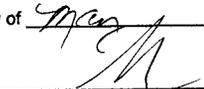
to accommodate and ensure travel for pedestrians, bicyclists, and public transit riders of all ages and abilities amongst vehicular traffic.

PASSED AND APPROVED BY THE MAYOR AND COUNCIL OF THE CITY OF EDMOND, OKLAHOMA, on this 24th day of May, 2010.


Attest: 
City Clerk


MAYOR

APPROVED as to form this 24th day of May, 2010.


CITY ATTORNEY