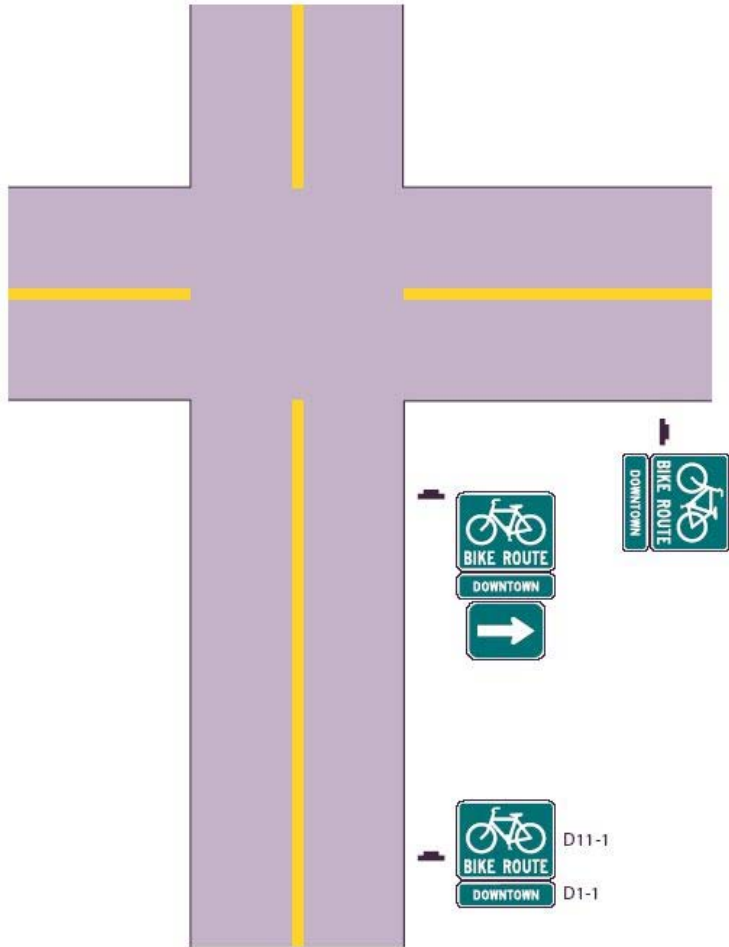


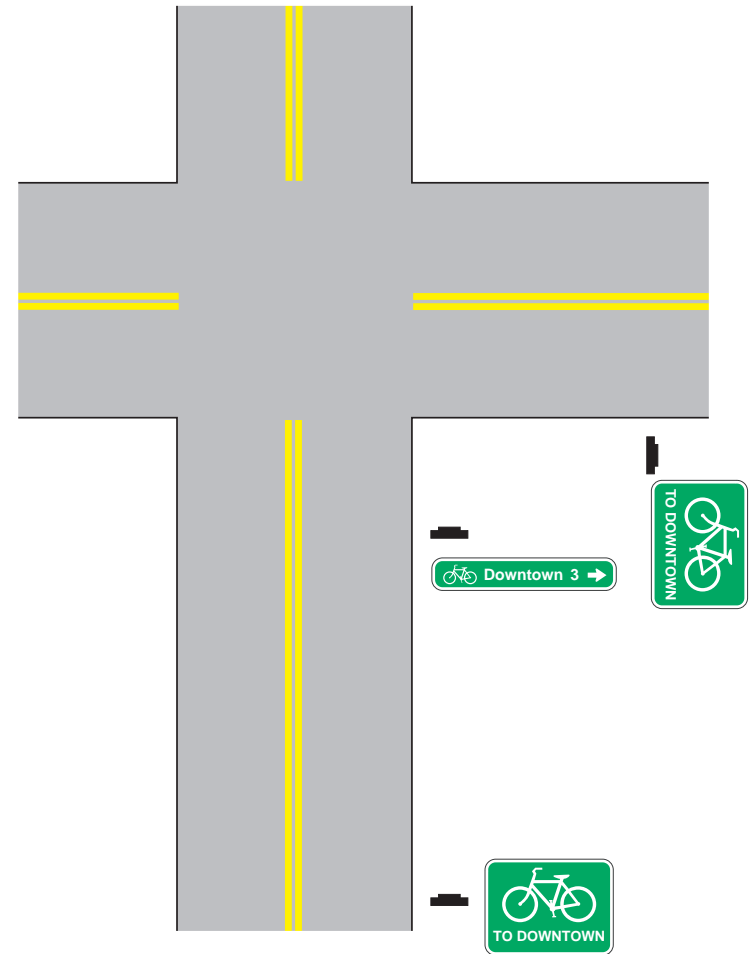
# Attachment 1



**A: Existing MUTCD Bicycle Route Signing System**

(MUTCD Figure 9B-6)

not to scale



**B: Proposed Bicycle Route Signing System**

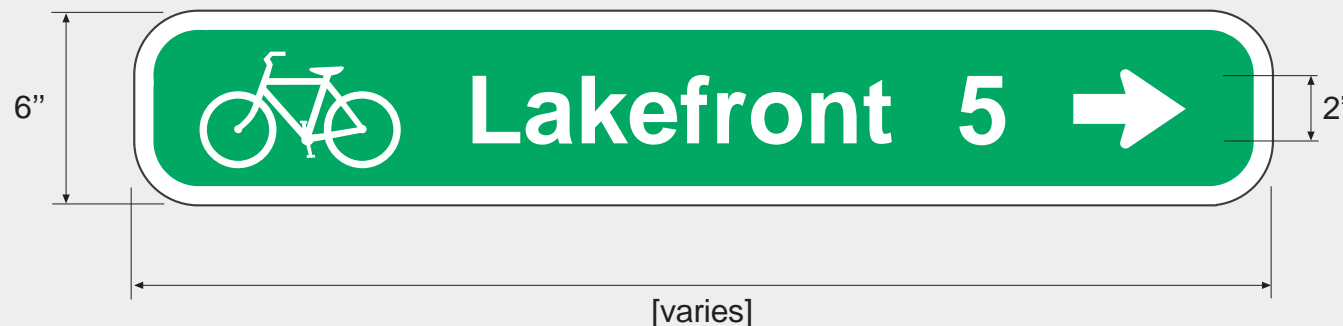
not to scale



# Attachment 3: D1-1b

## Examples of CDOT's Proposed Chicago Wayfinding Signs

Example A



Example B



### Sign Type

Number: D1-1b

Size: [varies] x 6"

*Note: maximum width of 36"*

Color: Legend - White (retroreflective)

Background - Green (retroreflective)

Font: 2"

Symbol: 5.2" x 3"

Note: All other dimensions are standard

D1-1b dimensions. See *Standard*

*Highway Signs*, page 3-26.

C I T Y O F C H I C A G O			
<b>D1-1b</b>			
REVISED	1-27-04	SCALE	1" = 6"
D1-1b vIDOT.FH9			

# Attachment 4: D11-1 Modified

## Examples of CDOT's Proposed Chicago Named Destination Signs

### Sign Type

Number: D11-1 Modified

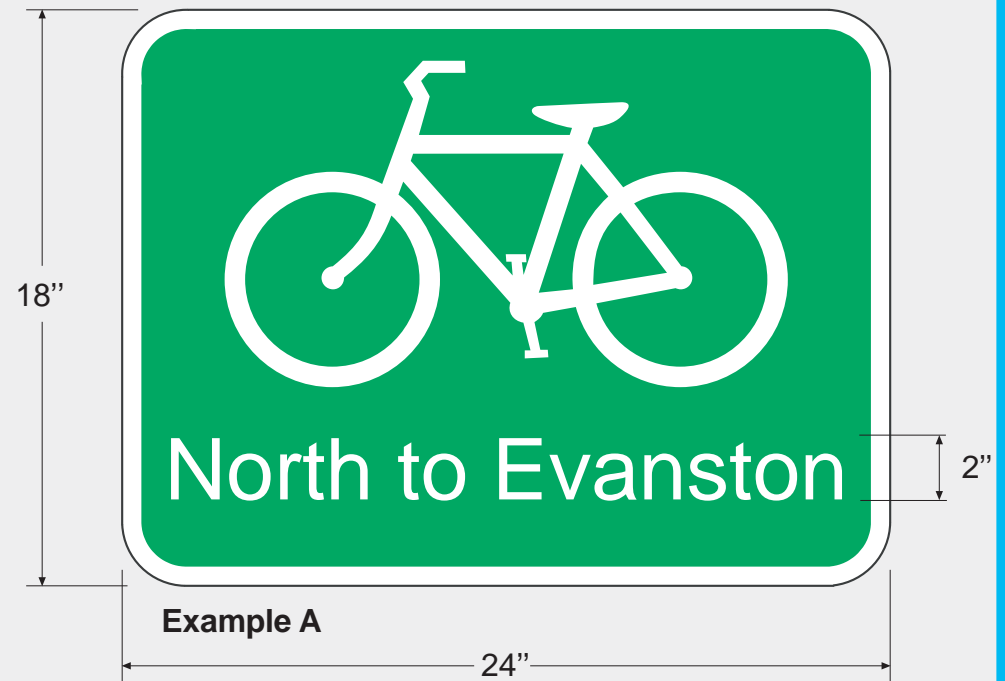
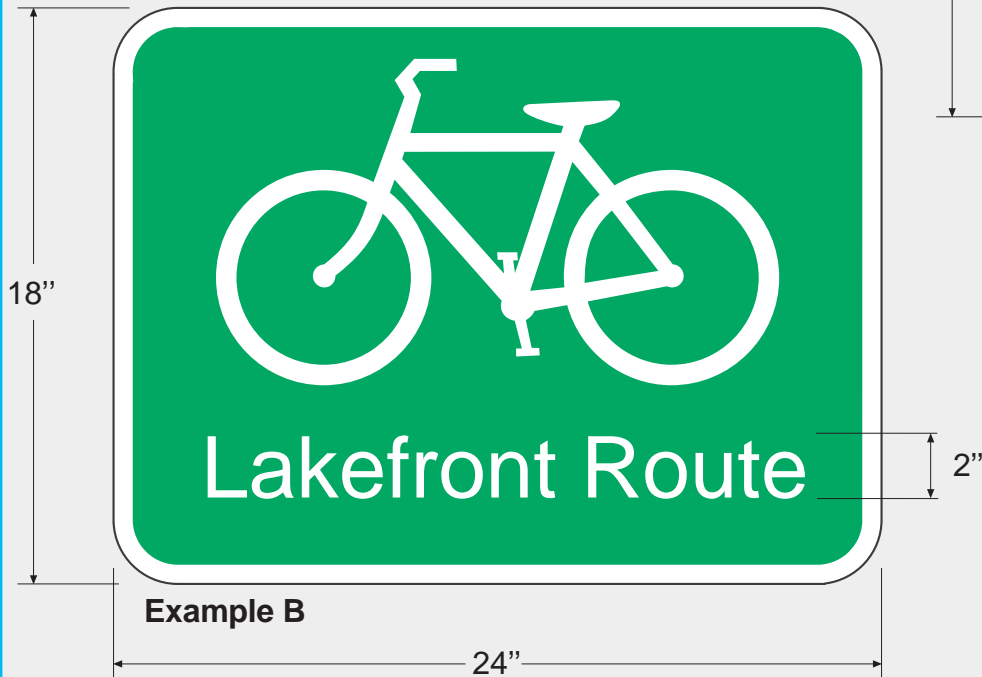
Size: 24" x 18'

Color: Legend - White (retroreflective)

Background - Green (retroreflective)

Font: 2"

Symbol: Typical (18.25" x 10.5")



C I T Y O F C H I C A G O			
<b>D11-1 Modified</b>			
REVISED	1-23-04	SCALE	1" = 6"
D11-1 Modified Destination vIDOT.FH9			

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# Request to Experiment

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## I. Background

In February of 2000 the Chicago Department of Transportation (CDOT) finalized its *Streets for Cycling Plan*. To date, 100 miles of bike lane streets have been established in Chicago and 50 additional miles are proposed for future installation. Included in the *Streets for Cycling Plan* is the proposal to establish 300 miles of signed bike routes in the City. To date, none of these signed routes have been established.

Signed bike routes are a necessary part of the overall plan in order to provide total connectivity. They will also help to increase the number of bicyclists and increase the user friendliness of Chicago's streets for bicycling. In addition, the City wishes to include destination information along all bike routes, to provide users with a method of navigating the City's streets without the need of a map. CDOT has federal CMAQ funding to establish the first 100 miles of the 300-mile system of Chicago bike routes.

## II. The Nature of the Problem

Upon reviewing the application of this on-street route signage system to Chicago, CDOT found that the requirements set in the current MUTCD (2003 edition) do not best address the needs of Chicago streets. The current MUTCD route signage system works well in areas where only one bicycle route exists (See Attachment 1A: MUTCD Figure 9B-6). Chicago, however, frequently has locations where 2 or 3 routes intersect. When multiple routes intersect, the MUTCD signage system can result in both sign clutter at an intersection and higher construction costs for the project. Attachment 2A provides an example of the MUTCD signage system with three on-street routes at the same intersection.

To address this concern, CDOT proposes the following changes to the MUTCD signage system:

- 1) Using the current MUTCD D1-1b Guide Sign as a bike route wayfinding sign for the on-street signage system
- 2) A minor design modification to the MUTCD D1-11 Bike Route Sign

## III. Proposed Changes

### 1) D1-1b BICYCLE GUIDE SIGN

CDOT proposes to include the MUTCD D1-1b Bicycle Guide Sign as part of the Chicago on-street bike route signage system, as discussed in the following sign design and placement descriptions:

### a) Sign Design (Attachment 3)

Although the Bicycle Guide Sign design proposed by CDOT varies from the D1-1b Bicycle Guide Sign illustrated in section 9B.20 of the MUTCD, it is consistent with MUTCD guidelines.

? The Bicycle Guide Sign design proposed by CDOT includes a bicycle symbol added to the principle legend. This is allowed under section 2D.07 of the MUTCD.

? The Bicycle Guide Sign design proposed by CDOT includes a combination of lower-case letters with initial upper-case letters. This is allowed under section 2A.14 of the MUTCD. (Note that section 9B.02 of the MUTCD states: “Except for size, the design of signs for bicycle facilities should be identical to that specified in this Manual for vehicular travel.” Chapter 2 can thereby be applied to the Bicycle Guide Sign. See Figure 2D-1 of the MUTCD for an example of a destination guide sign with a symbol added to the principle legend.)

### b) Sign Placement

CDOT proposes to use the D1-1b Bicycle Guide Sign in place of the D11-1, D1-1, M7-1 sign assembly shown in the MUTCD (see Attachment 1B). Using the D1-1b sign will decrease costs and sign clutter at the intersection because all pertinent user information is located on one sign instead of three. This allows the user to quickly comprehend the sign information and then return focus to the roadway.

Because the D1-1b Bicycle Guide Sign is a destination guide sign covered under Chapter 2 of the MUTCD, this sign can be used by itself without a D11-1 sign. Chapter 2D illustrates the use of destination guide signs. Destination signs can be used as separate and distinct signs (see MUTCD, Sections 2D.34 and 2D.35). No requirement is made for the use of destination guide signs in conjunction with other signs.

Currently, this use of the D1-1b sign is under review by the National Committee on Uniform Traffic Devices (NCUTCD) Bicycle Technical Committee.

### c) Current Examples

The proposed D1-1b Bicycle Guide Sign is modeled after bikeway sign systems that are in place around the world. Most notable are the signs used throughout the United Kingdom, Germany, and the Netherlands (see

Attachment 5). These signs all incorporate a bike symbol, destination, distance, and direction into one sign.

## **2) D11-1 MODIFIED BIKE ROUTE SIGN**

CDOT proposes to modify the D1-11 Bike Route sign design as part of the Chicago bikeway system.

### **a) Sign Design (Attachment 4)**

The proposed D11-1 Modified sign (Attachment 4) removes the text “BIKE ROUTE” and replaces it with specific destination information. Adding the text “Bike Route” to the D11-1 bike route sign is redundant. By replacing the “Bike Route” text with specific destination information, the Modified D11-1 will replace the D11-1 and D1-1 sign assembly. This reduces sign clutter and cost. It may also increase user comprehension of the sign by reducing the amount of text and incorporating all messages into one sign instead of two.

This sign consolidation proposal is in the spirit of the MUTCD. Currently, the proposed D11-1 Modified sign is also under review by the NCUTCD Bicycle Technical Committee for future inclusion in the MUTCD.

### **b) Placement**

The proposed D11-1 Modified will be placed as specified by Part 9 of the MUTCD for the D11-1 and D1-1 sign assembly (see attachment 1A).

## **IV. Development**

### **1) Previous Review and Preliminary Approval**

The CDOT proposed sign design and placement systems have already been through various stages of review. Several members of the NCUTCD Bicycle Technical Committee have informally reviewed and commented on the proposed signs. Their comments have been incorporated into the proposed signs and placement system.

The proposed signs and placement system have also been reviewed and commented on by the Illinois Department of Transportation (IDOT) in Springfield, the IDOT-District 1 Bureau of Design and Engineering, and the CDOT Bureau of Traffic. All of these agencies provided preliminary approval of the Modified D11-1 sign and inclusion of the D1-1b Bicycle Guide Sign for Chicago’s Bike Route System. Their final approval is contingent upon FHWA approval.

## 2) Cost Evaluation

The CDOT proposed signage system reduces the number of signs necessary for the route system, thereby reducing sign clutter and construction costs. Under the CDOT proposed sign system, the number of signs is reduced by 35 to 55 percent, and the monetary savings for manufacturing and installing signs ranges anywhere from 45 to 54 percent when compared to those systems illustrated in the MUTCD (see table). These costs do not include poles, bases, hardware, and on-going maintenance.

	Sign	Number of signs per mile	ft <sup>2</sup> per sign	Total ft <sup>2</sup> per mile	Estimated Cost per mile*
<b>Proposed Sign System</b>	D11-1 Modified	8	3	24	\$378.00
	D1-1b	18	1.5 (estimate)	13.5	\$212.63
	<b>Total</b>	<b>26</b>		<b>37.5</b>	<b>\$590.63</b>
<b>MUTCD Option A**</b>	D11-1	14	3	42	\$661.50
	D1-1b	18	1	18	\$283.50
	D1-1c	8	1	8	\$126.00
	<b>Total</b>	<b>40</b>		<b>68</b>	<b>\$1071.00</b>
<b>MUTCD Option B**</b>	D11-1	14	3	42	\$661.50
	D1-1c	26	1	26	\$409.50
	M7-1,2,...,7	18	0.75	13.5	\$212.63
	<b>Total</b>	<b>58</b>		<b>81.5</b>	<b>\$1283.63</b>

\* Based on a cost of \$15.75/ft<sup>2</sup>. Estimate does not include the cost of poles, bases, and hardware.

\*\*Option B is the system illustrated in attachment 1 (MUTCD Figure 9B-6). Option A is the same system as option B, but the D11-1, D1-1c, and M7-1 sign array is replaced with a D11-1 and D1-1b sign array.

## V. Timeline

- a. Spring 2004—CDOT issues initial survey to Chicago cycling community
- b. Late Summer/Early Fall 2004—CDOT installs signs
- c. Fall 2004—CDOT issues second survey to Chicago cycling community
- d. Fall 2004—CDOT provides first semiannual report to FHWA
- e. Spring 2005—CDOT provides semiannual report to FHWA, if needed
- f. Fall 2005—CDOT issues final survey to Chicago cycling community
- g. Fall 2005—CDOT provides semiannual report to FHWA
- h. Winter 2005—CDOT compiles all survey data and writes final report on experiment
- i. Spring 2006—CDOT provides FHWA with final report

## **VI. Location**

The proposed bike route signs are to be installed on approximately 100 miles of on-street bike routes within the City of Chicago.

## **VII. Analysis: User Survey**

CDOT proposes to issue surveys to the members of the Chicagoland Bicycle Federation for the required analysis. The Chicagoland Bicycle Federation is a Chicago area bicycle organization with over 4,000 members. The Chicagoland Bicycle Federation has agreed to assist in issuing surveys to its members.

An initial survey will be issued before installation of the proposed bike route sign system. Questions will focus on how bicyclists navigate the City's streets. Topics covered by the survey questions will include:

- (1) How bicyclists navigate the City's bike routes before signage
- (2) How bicyclists get from point A to point B
- (3) How bicyclists determine which streets are good for bicycling

Following the initial survey, two more surveys will be issued—one during the experiment and one year following the completion of the experiment. These surveys will focus on the proposed bike route sign system. Topics covered by the survey questions will include:

- (4) User comprehension
- (5) Visibility
- (6) Ease of use and navigability

Following the completion of the experiment, CDOT will compile all returned surveys and evaluate the results. Results of the surveys will then be provided to the FHWA in a detailed report and evaluation of the experiment.

## **VIII. Conclusion**

With the use of the proposed Modified D11-1 sign and D1-1b Bicycle Guide sign in Chicago's bike route system, Chicago seeks to create a user-friendly and clearly comprehensive signage system. By drawing from the requirements of the MUTCD for route signs, Chicago has developed a bike route system that fits the needs of the urban environment where multiple bike routes can intersect at a given intersection. There are no anticipated adverse effects on safety with the proposed modifications to the MUTCD, and the proposed system will both reduce sign clutter and construction costs.