

Dakota County Bikeway Mapping Final Report

Date of Report: July 31, 2000 - LCMR Final Report
Date of Work Program Approval: June 16, 1999
Project Completion Date : June 30, 2000

LCMR Work Program 1999

I. PROJECT TITLE: L25 Dakota County Bikeway Mapping

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Total Project Budget:

\$LCMR:	\$15,000.00	\$Match	\$	0
-LCMR amount spent:	\$15,000.00	-Match amount spent		0
	0			0

A. Legal Citation: ML 1999, Chap. 231, Sec. 16, Subd. 4e

Appropriation Language: \$15,000 is from the future resources fund to the Metropolitan Council for an agreement with Dakota county to cost share the integration of digital elevation information in the Dakota county geographic information system database with trail and bikeway routes and develop maps for trail and bikeway users.

B. Status of Match Requirement: No match required

II. PROJECT SUMMARY AND RESULTS: The objective of this project is to integrate digital elevation and related information in the Dakota County Geographic Information System database with Dakota County bikeway and trail routes to develop maps displaying trail difficulty ratings for trail and bikeway users.

The specific results of this project will include:

1. Development of a classification system for trails by degree of difficulty, measured in terms of slope and length of slope.

2. Integration of digital information in the Dakota County Geographic Information System with existing and pending bicycle and trail routes in Dakota County and the determination of slope characteristics for all trail segments.
3. Application of the selected classification system to the findings of the slope characteristics analysis and preparation of bikeway and trail maps for Dakota County that display difficulty ratings for trail and bikeway users, using GIS mapping technology.
4. Preparation of bike and trail maps for Dakota County.
5. Documentation of the methodology and the transferability of the technology.
6. Dissemination of approximately 15,000 maps.

III. SUMMARY OF PROJECT PROGRESS:

PROJECT PROGRESS REPORT: July 1, 1999 to June 30, 2000

Project Need:

The enhanced trail and bikeway map is a response to making trails more user-friendly, thereby encouraging increased use. By providing potential trail users with better information about how available trail and bike routes fit their requirements and abilities, potential users will be able to effectively select facilities that will increase the quality of their experience and increase the overall use of the trails and bikeways. Increased trail use provides a range of significant benefits, from the societal benefits (e.g., increased fitness, resulting in lower health care costs) to economic benefits (e.g., more cost-effective facility investments).

Result 1. Trail classification system

Task A. Planning Associate will research maps from around the country via the inter-net to determine the appropriate trail classification system.

Status: This result has been accomplished. Bike maps were collected via the internet from municipalities such as: Tucson, Arizona – Santa Clara County, California – The Portland Area – The Oregon Coast – New York – Rhode Island – Illinois – Idaho – the United Kingdom – Using these maps as a guide, classification systems were developed.

Result 2. Integration of digital information with GIS data

Task A. Inventory and creation of digital information for the many layers of information that will be displayed on the maps (e.g., bikeways, schools, parks, water bodies, roads)

Task B. Creation of a topographic surface and the integration of the surface data to the trail segments in order to derive a slope rating for the bike trails.

Status: Inventory and creation of primary map elements has been completed. The digital surface has been completed along with basic procedures for integrating it with the existing bike trail network. Final assignment of the surface elevations to the trail network has occurred, and a slope rating has been determined for all bike trails in the County.

Result 3. Application of the classification system to the slope characteristics of bicycle routes and trails

Task A. Symbolize the slope rating system along with the many other map elements to create a map product that conveys information clearly and accurately.

Status: Symbols have been prepared for both the slope rating system and the other map elements. These symbols are presented on the map in the form of a clear and easy to use legend.

Result 4. Prepare bike and trail maps for Dakota County

Task A. Create final output for offset printing process.

Status: A final map layout for both sides of the map has been created in ArcView, and then exported to files that can be used by an offset printing process to produce the final output maps.

Result 5. Documentation of the methodology and transferability of the technology

Task A. Creation of the final report to the LCMR

Status: Documentation has been occurring throughout the project. This final report has been created for presentation to the LCMR, and the final documentation of all procedures is found in the next section entitled Outline of Project Results.

Result 6. Dissemination of map products

Status: Dissemination of the final map products to trail and bikeway users has begun.

Map products will be disseminated to Dakota County bikeway users through outlets such as County libraries and service centers, County park facilities, city municipal buildings, bike shops, special events of local jurisdiction, and direct request. In addition the Dakota County Bikeways map will also be viewable as well as printed off the Internet at <http://www.co.dakota.mn.us/planning>.

IV. OUTLINE OF PROJECT RESULTS:

[NOTE: No match is required for this project. County contributions are estimates of in-kind contributions.]

Result 1. Trail classification system.

A Planning Associate, supervised by a senior-level planner, conducted a search of trail classification systems used in other jurisdictions, including an international search using the internet. Examples were collected from municipalities such as: Tucson, Arizona – Santa Clara County, California – The Portland Area – The Oregon Coast – New York – Rhode Island – Illinois – Idaho – Liverpool – The United Kingdom. An evaluation of best practices and their applicability to Dakota County was performed, and the following classification was developed for use in the county. It was decided that the simpler the classification system the better.

Off-Street Bike Path – Off-road hard surface trails 8 feet or wider.

Bike Route/Paved Shoulder – Paved shoulder suitable for biking, mixed traffic, and trails less than 8 feet wide.

Difficult Terrain – Areas containing short steep or long continuous slopes which may be difficult for less experienced riders.

-short steep slopes were defined as those greater than 5%.

-long continuous slopes were defined as slopes of less than 5% that continue over an extended distance of a ½ mile or more.

LCMR Budget:	\$ -0-	County Contribution:	\$ 2,500
Amount Spent:	\$ -0-	Contribution:	\$ 2,500
Balance:	\$ -0-	County Balance:	\$ -0-

(The County contribution is not a required match for this project. Because of reductions from the initial budget proposal, Dakota County assigned an existing Planning Associate to assist in this stage of the project, with the costs assumed by the County budget.)

Result 2. Integration of digital information with GIS data.

A Planning Associate, supervised by a senior-level planner with a GIS specialty, has integrated the digital elevation information within the Dakota County Geographic Information System database with the existing bike trails and existing and proposed regional trails. Slope characteristics were then defined for all trail segments. Result 2 also included the collection and creation of data layers for display on the map. Data layers that were collected include: parks, water bodies, bike kiosk, mountain biking facilities, swimming areas, parking areas, scenic overlooks, schools, libraries, community centers, transit facilities, and county government centers.

LCMR Budget:	\$ 10,400	County Contribution:	\$ -0-
Amount Spent:	\$ 10,400	Contribution:	\$ -0-
Balance:	\$ -0-	County Balance:	\$ -0-

Result 3. Application of the classification system to the slope characteristics of bicycle routes and trails.

A Planning Associate, supervised by a senior-level planner with a GIS specialty, applied the criteria of the selected classification system to the slope characteristics defined in Result 2. By doing this it was determined that in Dakota County there are approximately 240 miles of off-street bike paths, of which 19 miles were defined as difficult terrain, and 145 miles of bike route/paved shoulders, of which 6 miles were defined as difficult terrain. Result 3 also included the development of symbols for representation on the final map product. DNR recreation symbols were used for all point features. A solid blue line was used to designate off-street bike paths and a solid red line was used to designate a bike route/paved shoulder. A dotted line pattern was used to designate areas of difficult terrain. These symbols were then tested for clarity and understanding among bike and trail users on the County Staff.

LCMR Budget:	\$ 2,340	County Contribution:	\$ -0-
Amount Spent:	\$ 2,340	Contribution:	\$ -0-
Balance:	\$ -0-	County Balance:	\$ -0-

Result 4. Prepare bike and trail maps for Dakota County.

A Planning Associate, supervised by a senior-level planner with a GIS specialty, generated bikeway maps for Dakota County that display a difficulty rating for use by bikeway users. A small share of the LCMR budget (\$760) was for this activity.

From the master maps prepared by the Planning Associate, approximately 15,000 bikeway and regional trail maps (26" x 30" folded to 4.3" x 7.5", 4-color, 2-sides) were printed. The largest share of the printing budget was borne by Dakota County (about \$7,000), with \$1,500 of the LCMR budget for printing. In order to help justify the cost of printing, Dakota County incorporated County Park information on the back of the map.

LCMR Budget:	\$ 2,260	County Contribution:	\$ 7,000
Amount Spent:	\$ 2,260	Contribution:	\$ 7,000
Balance:	\$ -0-	County Balance:	\$ -0-

(The County is not required to match. The County contribution will be for the costs of printing of the map products to the extent that LCMR funds are not available for this purpose.)

Result 5. Documentation of the methodology and transferability of the technology.

The documentation and transferability of this project is included as a separate attached document.

LCMR Budget:	\$ -0-	County Contribution:	\$ -0-
Amount Spent:	\$ -0-	Contribution:	\$ -0-
Balance:	\$ -0-	County Balance:	\$ -0-

(Documentation is assumed to be an ongoing component of the project and is included in the budget for the Results, above.)

Result 6. Dissemination of map products.

Map products are being disseminated to Dakota County bikeway users through outlets such as County libraries and service centers, County park facilities, city municipal buildings, bike shops, special events of local jurisdiction, and direct request. In addition the Dakota County Bikeways map can also be viewed as well as printed off the Internet at <http://www.co.dakota.mn.us/planning>.

LCMR Budget:	\$ -0-	County Contribution:	\$ -0-
Amount Spent:	\$ -0-	Contribution:	\$ -0-
Balance:	\$ -0-	County Balance:	\$ -0-