Executive Summary

Kane County Transportation Planning Area Study

Sugar Grove, Aurora, Montgomery Planning Area Transportation Improvement Plan

CH2M HILL

April 2004
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Introduction

In October 2000, the Kane County Division of Transportation and CH2M HILL began a planning study to develop a recommended set of transportation improvements for areas within the County. The project consists of two phases; first, a countywide assessment of existing and future conditions, and then a more detailed study of transportation issues within a designated planning area. This report describes the results of the areawide planning process and presents a recommended plan for the Sugar Grove, Aurora, Montgomery (SAM) area.

Analysis of Existing and Future Conditions

Performance of the existing Kane County highway system was evaluated in three categories: (1) traffic service, (2) congestion, and (3) safety. In examining traffic performance, it was found that principal arterials account for approximately one-quarter of the lane miles, but carry the bulk of traffic (approximately 50 percent) and account for an even larger proportion of delay encountered by motorists (approximately 55 percent). Under existing conditions, 14 percent of the route miles in Kane County were judged congested. Fifteen intersections and 15 route miles of county roads were classified in the highest priority category for safety.

Population of Kane County is expected to grow from 317,000 in 1990 to 552,000 in 2020 and employment is expected to increase from 174,000 to 211,000 during the same period. Future travel demand was determined based on increased population and employment. Areas with the largest anticipated traffic growth would be Sugar Grove, West Geneva/West Batavia, Elgin, and West Upper Fox.

Between 1997 and 2020, vehicle miles traveled within the county is expected to grow by 93 percent. Delay encountered by motorists will increase more than sevenfold. By 2020, it is anticipated that 56 percent of the lane miles of highway within the county will be congested compared with just 14 percent in 1997.

The final step in the analysis of the existing and future transportation conditions was to delineate and prioritize planning areas in Kane County. Clusters of performance problems were delineated to define the planning areas and then compared to one another to prioritize the order of study. Figure 1 illustrates the four planning areas identified as having immediate need for further study. The Sugar Grove, Aurora, Montgomery area is the subject of the remainder of this document.

Figure 1: Planning Areas Selected for Immediate Study
Sugar Grove, Aurora, Montgomery (SAM) Planning Area

Development Trends

Previous 2020 travel forecasts for Kane County were based on population and employment projections by the Northeastern Illinois Planning Commission (NIPC) and did not fully account for some of the residential and commercial developments planned in the SAM area. The NIPC estimates of dwelling units, population and employment were adjusted, therefore, in the areas indicated in Figure 2. In adjusting the Kane County travel forecasting model, 9,660 households were added in the SAM area, creating an increase in population of approximately 26,800 over the prior estimate. The prior employment forecast was increased by 480 workers.

Growth of Travel Demand

The largest traffic increase by 2020 would occur on the Illinois Tollway (I-88), particularly in the section east of the merge with IL 56. Other highways that would experience heavy traffic growth would be Orchard Road, Randall Road, and IL 56, and to a lesser degree, IL 47/U.S. 30, and IL 47. See Figure 3.

Future System Performance

Performance of transportation facilities in the SAM area under future conditions (2020) was measured to identify roadways that would operate poorly. Considering all roadways, 74 percent of the lane-miles would be congested. The average speed on the roadway network would be 41 mph. Roadways that would experience extreme congestion (LOS F) are shown in Figure 4.

SAM Area Transportation Improvement Program

Objectives and Constraints

A planning framework was established to assist in development and evaluation of a transportation improvement plan for the SAM area. Five objectives, as follows, were set up to guide development of a transportation improvement plan:

- Enhance connectivity
- Reduce delay
- Reduce congestion
- Be proactive towards development related to infrastructure improvements
- Distribute trips to appropriate facility types.

Figure 2: Traffic Analysis Zones with Changes to NIPC Socio-Economic Estimates

Figure 3: Change in Average Daily Traffic by Segment, 1997-2020

Figure 4: Projected 2020 Congested Roadway Segments
Previously Planned Transportation Improvements

Roadways

Planned roadways improvements in the SAM area were obtained from multiple sources including the Chicago Area Transportation Study and the local municipalities. The planned improvements include widening existing arterials and the development of a new collector road system.

Public Transit, Bike, and Pedestrian Facilities

The county and other agencies have planned improvements to the area’s transit, bike and pedestrian facilities.

Plan Development Strategies

The development of a transportation improvement plan for the SAM area was accomplished using a toolbox approach. The basic implements in such a toolbox would be arterial improvements, new collector roads, regional connections, transit enhancements, bike and pedestrian paths, and access management strategies.

Roadway improvements are identified in the area both through existing plans and determination of system deficiencies. New roads are classified either as a collector road or an arterial, and may include the realignment of existing facilities. The process followed in developing a transportation plan in the SAM area was to first address a system of collector roads, and then augment this with improved arterials. New roads proposed as part of the SAM plan are shown in Figure 5.

Collector Road Improvements

Collector roads serve a dual function of providing for mobility as well as access to abutting land uses. An efficient and continuous collector road network would be effective in removing local traffic from the arterial roads, thereby providing for enhanced mobility on the arterials. Collector roads would provide safe access to abutting residential areas and would help to control access onto the arterials.

Each collector road would provide two through lanes (one in each direction), with turn lanes as required and appropriate access control. It was also assumed that the collector road system would be continuous. A partial collector road network would not have the same impact as one fully developed. If any of these conditions were compromised, traffic diversion from the arterials would diminish.

The collector-based plan would improve local connectivity by adding an in-fill network to link land uses throughout the area, but the addition of collector roads alone would do little to improve the regional connectivity. Daily system-wide vehicle hours of delay (VHD) per lane mile would be reduced from 4 VHD/lane mile for the base system to 3 VHD/lane mile for the collector-based system. The weighted percentage of congested lane miles would improve from 70 percent to 36 percent. The proposed collector-based plan would also assist in establishing roads to connect future developments, and may even be partially constructed by the developers. The augmented collector road system would account for 54 percent of the area’s lane-miles of roadway. The collectors would carry 20 percent of daily vehicle miles of travel (VMT) and would experience 17 percent of the daily VHD on the highway system.

Arterial Improvements

Once the collector road network had been established, modeled arterial improvements were added to create a network having sufficient capacity to meet anticipated traffic demand. The steps involved in defining arterial improvements are as follows:

- Identify potential arterial improvements
- Determine effectiveness of each individual improvement project
- Estimate the cost of each improvement project
- Summarize performance of the improvement projects

In addition, secondary roadway enhancements were considered including realignment of Prairie Street at various locations, a connection between Dugan Road and Ashe Road, Ashe Road realigned to McCannon Road, Dugan Road realignment around the airport, and an extension of Indian Trail Road to Hankes Road.

The candidate roadway improvements were stratified into categories of major and secondary projects and cost estimates were determined for each of the individual improvements.
**Recommended Plan**

The recommended plan for the SAM area would encompass a full range of transportation solutions. Improvements would be made to both the collector and arterial systems to create a complete roadway network. The cost of the improvements would be distributed among the state, county, and municipal agencies as well as to future development, creating a joint effort to improve transportation performance. Transit and pedestrian/bike trail improvements are also planned for the area. Additionally, the recommended plan would incorporate access management. The plan would recognize the importance of regional connectivity by incorporating improvements with a more regional scope.

**Roadways**

The foundation for the recommended plan is the establishment of an in-fill collector road network, which affords several distinct advantages in the area of Kane County. Since the collector network would distribute traffic demand more evenly among the area’s roadways, the existing arterial highways would be capable of functioning adequately over a longer time span. The implementation of a collector system would also provide an opportunity to shift some of the financial burden to developers and/or local governing bodies.

In developing the recommended plan, the arterial improvement performance was summarized using the stepwise method described above. The projects to be included are listed in Table 1. Collector and arterial roadway improvements incorporated in the recommended plan are shown in Figure 6, on next page.

It is envisioned that along with the major improvements, as listed in Table 1, other enhancements such as intersection capacity improvements would occur in preparation of or in conjunction with the proposed widening of the arterials and collectors.

The proposed Prairie Parkway, a north/south expressway connecting I-80 and I-88 would be a regional improvement affecting the SAM area. Currently, the proposed Prairie Parkway is in the environmental review process and the alignment is under study. This plan creates a working solution for the SAM area with projects that have a local significance and can be shaped and implemented by local governments in cooperation with the state as needed. When a preferred alignment of the Prairie Parkway has been selected, the SAM transportation plan should be reevaluated to address changes in land use and traffic patterns.

As the recommended improvement projects are added to the base network, there would be significant improvements in each of the measures of effectiveness, as shown in Table 2, on page 6.

Estimated total cost of the recommended transportation improvements (construction and right-of-way) in the SAM area would amount to approximately $325 million. This includes $165 million for development of the collector road network. Widening the arterials, as opposed to full

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Location</th>
<th>Length (route-miles)</th>
<th>Type</th>
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<tbody>
<tr>
<td>U.S. 30</td>
<td>IL 47 to IL 31</td>
<td>4.7</td>
<td>4 – Lanes</td>
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<td>Base Line Road to 4-Lane Section</td>
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<td>4 – Lanes</td>
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<td>4-Lane Section to Main St.</td>
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<td>Galena Road</td>
<td>IL 47 to Orchard Road</td>
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</tr>
<tr>
<td>Bliss Road</td>
<td>IL 47 to Healy Road</td>
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<td>3 – Lanes</td>
</tr>
<tr>
<td>Jericho Road</td>
<td>IL 47 to Orchard Road</td>
<td>1.3</td>
<td>3 – Lanes</td>
</tr>
<tr>
<td>Gordon Road &amp; Extension*</td>
<td>U.S. 30 to Galena Road</td>
<td>2.7</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>I-88/IL 47</td>
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<td></td>
<td>Complete Interchange</td>
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<tr>
<td>IL 56/ Hankes Road</td>
<td></td>
<td></td>
<td>New Partial Interchange</td>
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<tr>
<td>Collectors**</td>
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<tr>
<td>Realignments**</td>
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<td>4.2</td>
<td>2 – Lanes</td>
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</table>

* Gordon Road is partially complete
** Only includes alignments within planning area – others are shown to demonstrate connectivity
reconstruction would save $60 million, for a total construction cost of $265 million. The cost estimate excludes the cost of regional connections, transit, and bike/pedestrian facilities.

**Public Transit and Bike/Pedestrian Facilities**

The recommended public transit plan incorporates improvements already planned by Metra and Pace. A south extension of the BNSF line to Oswego is incorporated into the recommended plan as a planned improvement with a station at U.S. 30 in the Village of Montgomery named the Avaya Station. The west extension to Sugar Grove is incorporated into the recommended plan as a suggested improvement with a proposed station at Gordon Road. See Figure 7. Park and ride lots are being planned in Oswego and Montgomery. Additional express bus service is proposed along IL 56, I-88, and Orchard Road. Other general recommendations for improvements to Pace bus service include bus pullouts and bus prioritization. In addition, on-demand paratransit bus service has been proposed for the SAM area.

Bicycle/pedestrian trail improvements incorporate all previously planned improvements as well as paths along newly developed collector roadways. The proposed bike trails would be consistent with the recommendations of the countywide bicycle and pedestrian plan. See Figure 7.

**Access Management**

In order to achieve maximum benefit, transportation improvements in Kane County should be accompanied by an access management plan. The access management plan would consist of an access control policy and the provision of intersection capacity enhancements at critical locations throughout the study area. The county’s access control regulations specify the techniques and policies of access control to be applied in the following areas:
The recommended plan has been formulated to evolve in conjunction with land development in the SAM area. The intent of the planning process was to anticipate the amount and location of future developments in order to provide for construction of infrastructure improvements concurrently with development. Given the current travel patterns and existing development pressure in the southern sections of the SAM area, improvements to IL 47 and U.S. 30 should be a priority. The need for roadway improvements will have to be reevaluated if changes in development patterns result in a change in density for certain areas. As the recommended improvement projects are added to the base network, there would be significant improvements in each of the measures of effectiveness, as shown in Table 2.

**TABLE 2**

Comparison of Transportation Performance – Base Network to Recommended Plan

<table>
<thead>
<tr>
<th>Measure of Effectiveness (MOE)</th>
<th>Base Network</th>
<th>Recommended Plan</th>
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</thead>
<tbody>
<tr>
<td>Vehicle-Hours of Delay (VHD)/Lane Mile</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Percentage of Lane Miles at LOS F</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Weighted Percentage of Lane Miles Congested</td>
<td>70</td>
<td>26</td>
</tr>
<tr>
<td>Percentage of VMT on Freeways/Arterials/Collectors</td>
<td>34 / 51 / 15</td>
<td>41 / 46 / 14</td>
</tr>
<tr>
<td>Estimated Cost</td>
<td>N/A</td>
<td>$260 – 320 Million*</td>
</tr>
</tbody>
</table>

* Does not include cost outside the planning area boundary such as improvements in North Aurora or the regional connections.

- Location of Access Points
- Number of Access Points
- Internal Circulation
- Intersection Spacing and Application of Access Control Guidelines
- Turn Lane Improvements
- Intersection Signalization and Street Lighting
- Abutting Land Use and Site Development Characteristics
- Design Requirements

**Implementation**

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