COUNTY STATE AID HIGHWAY 32

EXTENSION STUDY

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STUDY PURPOSE AND NEED

Extending County State Aid Highway (CSAH) 32 east of Rich Valley Boulevard to TH 52 has been noted by many governmental agencies in previous planning documents. One of the primary goals of this extension is to provide better east-west continuity across Dakota County. This would provide more options for east-west flow and reduce pressure on other critical east-west routes such as CSAH 42. The *CSAH 32 Extension Study* was initiated to provide a more detailed investigation of traffic and planning issues, to identify potential alternatives and impacts, and to seek public and agency input on potential alternatives to extend CSAH 32.

Trunk Highway 52 is a significant factor in the study because of its importance as a regional connection between the Twin Cities and the Rochester metropolitan areas. This facility was designated as a High-Priority Interregional Corridor and Mn/DOT's long-term goal is to transition this highway to a freeway-type facility. As a result, the CSAH 32 study needs to consider how an improved east-west facility will connect to TH 52 and how it can support the long-term plan to reduce existing access along TH 52.

STUDY BACKGROUND

Dakota County, the City of Inver Grove Heights and the Metropolitan Council have all noted a lack of east-west arterial roadways in the northern portion of Dakota County between County State Aid Highway (CSAH) 26 in the cities of Eagan and Inver Grove Heights and CSAH 42 in the City of Rosemount. The gap between these roadways is approximately seven and one-half miles representing a large area not currently served by an east-west arterial roadway. To address this shortage of east-west arterials, Dakota County, the City of Inver Grove Heights and the Minnesota Department of Transportation (Mn/DOT) came together as partners to identify potential solutions to this problem, to analyze impacts of alternative solutions and to recommend a preferred means of providing for improved east-west traffic movement.

Proposed improvements to TH 52, both within the study corridor as well as outside it, were another factor prompting this study. The vision for TH 52, as described in the *Highway 52 Corridor Study and Management Plan* is to transition to a fully access-controlled, freeway facility. Existing at-grade access points onto TH 52 in the study area would have to be eliminated over time in order for this vision to be achieved. The implementation of this vision for TH 52 is ongoing, but a portion of it will be developed with construction of an interchange at 117th Street and TH 52 in 2003. With this significant investment, examining other traffic and system issues in the area seemed prudent.

This study examines three different build alternatives, as well as a No Build alternative proposed as a baseline in order to weigh the benefits and impacts of the build alternatives. The No Build alternative assumes no additional improvements to CSAH 32 or other east-west links and it does not assume changes in access to TH 52 beyond the proposed changes being made with the TH 52/117th Street Interchange project. As a result, the No-Build alternative is inconsistent with the long-term *Highway 52 Corridor Study and Management Plan*, which identifies TH 52 as a controlled-access freeway. On the other hand, the build alternatives provide improved east-west connectivity and also remove local access points on TH 52 between 117th Street and the Concord Boulevard Interchange.

Study Area

The study area is located in the southern portion of the City of Inver Grove Heights, near the border of the City of Rosemount. It is bounded to the north by the Concord Boulevard interchange with TH 52 and to the south by 117th Street. To the west, it is bounded by Akron Avenue (County Road 73) and to the east by the Mississippi River (see Figure 1). The study area was defined based on the existing east-west alignment of Cliff Road and physical constraints, such as residential development, railroad facilities, landfills and other infrastructure. The terrain in the study area is gently rolling with steep bluff lands lining the banks of the Mississippi River.

Study Methodology

Although the study methodology did not conform to National Environmental Policy Act (NEPA) statute requirements, it was designed to be consistent with the decision-making and methodology employed for a NEPA-type study. Such guidance was laid out in the National Cooperative Highway Research Program (NCHRP) Report, "Guidebook for Transportation Corridor Studies" (1999). Early corridor studies analyzing a range of types of improvements, but not necessarily bound by NEPA-statute methodology, should still be guided by information that will be critical in making later determinations of social, economic and environmental project impacts. In so doing, the process of transportation planning, engineering and construction will be streamlined and early coordination and decision-making will pay off later in the planning process. As a result, the *County State Aid Highway 32 Extension Study* inventoried cultural and historic resources, identified threatened and endangered species, wetlands and contaminated sites, evaluated transportation purpose and need, and solicited input from affected agencies and groups. What this meant in the development of future study area improvements was that alternatives could be developed to avoid and/or minimize potential impacts to important resources. Other factors critical to refining future improvements included impacts to existing properties and major utilities. Transportation factors were also considered in the early development of alternatives. These factors included spacing between interchanges, geometric design standards, access, local transportation connections and regional plans.

Community, Agency and Public Involvement

The *County State Aid Highway 32 Extension Study* was a collaborative effort by all of the affected communities and agencies in the study area including Dakota County, the City of Inver Grove Heights and the Minnesota Department of Transportation. The effort was led by Dakota County in their role as jurisdictional authority for CSAH 32.

The public involvement process provided for:

- Early coordination with regulatory and resource agencies
- Continuous involvement of Dakota County, the City of Inver Grove Heights and Mn/DOT through a Technical Advisory Committee
- Opportunities for public input through a project newsletter, and a public open house with comment forms provided for written input.
- Refinement and evaluation of alternatives based on public and agency input
- Presentations at city council meetings, county board meetings, and community meetings.

Figure 1
Study Area

EXISTING CONDITIONS

Analyzing and assessing existing conditions in the study area, specifically land uses, population growth trends, and the existing transportation system, establishes a baseline on which to project future traffic volumes and development trends. In so doing, present issues can be set in context with future needs and potential solutions can be developed to address both short-term and long-term needs.

Growth Trends

In the past twenty years (1980 – 2000), the City of Inver Grove Heights has grown by over 12,000 persons, increasing by 73 percent from its 1980 population of 17,171 to its 2000 population of 29,751. The State Demographer anticipates that this growth will continue in the future, as more and more persons move to the suburban fringe communities surrounding the Twin Cities Metropolitan Area. By the year 2020, Inver Grove Heights is projected to have a population of 44,000, representing a 48 percent increase from 2000 population. The study area is referred to in the Metropolitan Council's *Regional Blueprint (1996)* as within the "urban reserve" and will be entirely within the 2040 MUSA.

Land Use

Existing land use in the study area is characterized by rural residential development, industrial uses, and vacant/undeveloped land (see Figure 2). The Koch refinery in the City of Rosemount dominates the landscape in the southern portion of the study area, located near the intersection of TH 52 and TH 55. In addition to the refinery site, Koch owns a significant amount of undeveloped property surrounding the refinery. They have indicated that this property was purchased in order to establish a buffer area between residential development in the City of Inver Grove Heights and the site of their refinery operations. Future land use for the majority of the undeveloped land within the study area is guided for industrial or low-density residential use. However, given the significant amount of residential land already purchased by Koch Industries and their interest in letting this land remain undeveloped, it is uncertain whether residential land use in the study area will expand appreciably.

Some commercial uses are clustered along TH 52 within the study area, most notably a truck stop at the intersection of TH 52 and 117th Street. Some additional commercial development has been proposed in proximity to 117th Street along Clark Road including a gas station, industrial, office and warehouse uses. These uses were included in the traffic projections and analysis of traffic impacts resulting from them was completed as part of this study. (TH 52/117th Street Traffic Analysis – Appendix B).

Figure 2
Land Use

Study Area Roadways

When analyzing a transportation problem, it is important to set it in the context of the larger transportation system. Each roadway facility in the area plays a specific role. It is instructive to analyze each facility's role, identifying whether this role is appropriate to the function it is actually serving and establishing whether it is achieving the type of performance that would be expected, based on its role. Five key roadways were identified in the study area and are summarized as follows:

State Roadways

Trunk Highway 52: TH 52 is a four-lane, divided principal arterial highway in the state of Minnesota and is part of the National Highway System. It typically consists of two, 12-foot directional lanes with 10-foot outside and 4-foot inside shoulders and an 84-foot, center median. Mn/DOT's Interregional Corridor (IRC) Study identified TH 52 as a High-Priority Interregional Corridor. These classifications reinforce its role as a roadway whose principal function is to provide high levels of mobility and limited access to adjoining properties and businesses. One of the challenges facing TH 52 is how to balance the need to provide access to the growing communities and expanding businesses located nearby while continuing to provide a high-mobility service for people and goods traveling on it. In the study area, TH 52 has 12 at-grade access points serving a combination of private businesses and local streets. It also has one at-grade rail crossing (Union Pacific spur line). The at-grade intersection of TH 52 and 117th Street is a notable one in the study area due to the high volumes of trucks using this intersection, coming to and going from the Koch Refinery.

Performance guidelines have been established for High-Priority Interregional Corridors by Mn/DOT calling for the ability to maintain average traveler speeds of at least 60 mph. Within the study area, TH 52 has been identified as a corridor "at-risk" of not meeting these performance standards in the future. The 117th Street intersection is one of only three signalized intersections on TH 52 from I-494 to the Rochester city limits. Due to concerns regarding future highway performance and traveler safety, a grade-separated interchange replacing this traffic signal is scheduled for construction in 2004.

County Roadways

County State Aid Highway 32 (Cliff Road): CSAH 32 (Cliff Road) extends from I-35W in the City of Burnsville, east to CSAH 71 (Rich Valley Boulevard) in the City of Inver Grove Heights. It runs due east-west with few curves in the roadway and is classified as an "A" minor arterial route for much of its length due to its east-west connectivity and its spacing with other major east-west routes. A short portion of it, between TH 13 and I-35E is classified as a principal arterial highway. From I-35 W to Lexington Avenue, CSAH 32 is a four-lane, divided roadway; from east of Lexington Avenue to its terminus at CSAH 71, it is a two-lane, undivided roadway.

"A" minor arterials interconnect with and augment the principal arterial system and provide service for moderate-length trips. Routes in this category generally offer a lower level of mobility than routes like TH 52; however, the amount of direct access is limited in order to ensure that its role of augmenting principal arterial mobility is not compromised. Spacing of minor arterial streets can be as far as two to three miles in suburban fringe areas. In urban and developing areas they are usually spaced one to two miles from each other.

County State Aid Highway 73 (Barnes Avenue): CSAH 73 (Barnes Avenue) is a two-lane, county highway also classified as an "A" minor arterial from its southern terminus with CSAH 71 (Rich Valley Boulevard) north to CR 28, and a County Collector Road from CR 28 to the highway's terminus at the northern County border. This road has numerous curves and limited sight distance and winds gently through the rural residential development that predominates in the northern portion of the study area. It currently provides a somewhat circuitous connection with TH 52, connection provided by way of a south frontage road to access the Concord Boulevard interchange with TH 52.

County State Aid Highway 71 (Rich Valley Boulevard): CSAH 71 (Rich Valley Boulevard) is a two-lane, county state aid highway classified as an "A" minor arterial from its southern terminus at CSAH 42 in Rosemount to its intersection with CSAH 73. It is a B-minor arterial from CSAH 73 north to TH 3, and a County Collector Road from TH 3 to its northern terminus at TH 149.

Local Roadways

117th Street: 117th Street is a local street in the City of Inver Grove Heights. The street provides essential access to TH 52 for the Koch refinery, the Pine Bend Landfill and local area businesses. The Koch refinery and the Pine Bend Landfill are located on the western side of TH 52 and a truck stop and distribution center are located east of TH 52. Due to their proximity to the highway, the at-grade intersection of 117th Street with TH 52 handles a significant amount of truck traffic. This intersection is currently controlled by a traffic signal; however, this signal is planned for replacement with a grade-separated highway interchange. This study builds from information and data gathered for an analysis of traffic operations of the 117th Street interchange planning process. The extension of CSAH 32 was viewed as a logical extension of the 117th Street interchange study, all study constraints and alternatives were developed if the 117th Street interchange was in place.

STUDY AREA TRAFFIC

Study area traffic issues were analyzed and documented in a technical memorandum prepared February 11, 2001 by SRF Consulting Group, Inc. as part of the 117th Street Interchange project. A traffic operations analysis was conducted for the a.m. and p.m. peak hours at the key intersections to determine how traffic currently operates within the study area. Unsignalized and signalized intersections were analyzed using Synchro, a traffic simulation preprocessor and signal optimization program, and SimTraffic, a traffic simulation program.

Traffic projections for 2025 were developed based on a combination of historic growth trends, information from the Metropolitan Council's Regional Model, 2020 forecasts from the Dakota County model and site specific developments likely to occur by the year 2025, specifically a development proposed along Clark Road north of 117th Street. Traffic projections were done for a "worst case" scenario defined as 117th Street interchange access only with no new highway interchange constructed as part of an extension of CSAH 32. Existing study area traffic volumes, future volumes and existing highway access is shown in Figure 3. Figure 3A depicts existing a.m. and p.m. peak turning movement counts in addition to existing levels of service (LOS) at key intersections. Turning movement counts at CSAH 32/71 and at TH 52 and 117th Street suggest a fairly even split between traffic going to the north and traffic going to the south. A traffic operations analysis of these intersections indicates that all key intersections presently operate at an overall LOS A (best operations possible).

In general, traffic volume estimates for Alternative One and Two do not change significantly from No-Build alternative because traffic is currently using these facilities. However for Alternative Three (new link), future traffic volumes will be split between 117th Street and the potential extension of CSAH 32. This is denoted as Build Alternative Three in Figure 3. The magnitude of the daily volumes for the extension suggests a high-level two-lane facility with turn lanes at major intersections.

DEVELOPMENT OF STUDY AREA IMPROVEMENT ALTERNATIVES

The development of a reasonable range of improvement alternatives in a transportation study is always constrained by the need to balance two critical factors: meeting the identified project need and minimizing potential project impacts, whether these impacts be construction costs, environmental impacts or others. In the case of the *County State Aid Highway 32 Extension Study,* the identified constraints and/or issues included wetlands, threatened and endangered species, historic and cultural resources, landfills, developed property, roadway and interchange spacing, existing access locations, railroad crossings, changes in elevation and projected traffic volumes. The identified project issue is a lack of east-west major arterial routes providing for adequate local and regional mobility within Dakota County. The improvement alternatives described below were developed to provide a range of alternatives for consideration and analysis. Four basic alternatives were identified. They include the following:

Alternative One: Improved connection to 117th Street Interchange.

Alternative Two: Improved connection to Concord Boulevard Interchange.

Alternative Three: New connection and interchange at Inver Grove Trail.

Alternative Four: No Build (no significant changes to system)

Figure 3
Existing and Future Traffic/Existing Access

Figure 3A
Traffic Turning Movement Counts

Alternatives One, Two, and Four all will maintain the basic traffic patterns, while Alternative Three provides a new east-west facility and therefore, will significantly reduce volumes from 117th Street. The details of each of the alternatives are described below and are summarized in Table 1.

Alternative 1A
117th Street Connection with Highway Overpass at 105th Street

This alternative would reconstruct the connection of CSAH 32 to Rich Valley Boulevard (CSAH 71), making through movement on CSAH 32 the dominant move and providing a connection to 117th Street and the new highway interchange with TH 52 (see Figure 4). CSAH 71 is designated an "A" minor arterial from CSAH 42 in Rosemount to its intersection with Barnes Avenue (CSAH 73) in Inver Grove Heights. Although this alternative would alter the present traffic pattern on CSAH 71 by forcing north-south traffic through a T-intersection, the overall impacts are anticipated to be slight and larger east-west movements are favored. However, this enhancement to east-west connectivity is not expected to bring a significant amount of new trips into the area or to significantly shift east-west travel patterns. This alternative would also enhance local connectivity with the construction of a highway overpass at 105th Street. This overpass would connect to a new system of frontage and supporting roads assumed necessary as TH 52 transitions to a freeway facility.

This alternative provides an opportunity to use existing roadways and interchanges thereby minimizing the impacts to local residents and businesses. Future (2025) traffic volumes on 117th Street are anticipated to be 8,000 AADT (see Figure 3). By facilitating the dominant through movement of traffic from CSAH 32 to the planned highway interchange on 117th Street, these future volumes can be more safely accommodated. The existing two-lane section on 117th Street will be upgraded under this alternative to provide turn lanes, where appropriate, to accommodate anticipated future traffic.

Disadvantages to this improvement alternative include placing higher volumes of traffic at at-grade railroad crossings (Union Pacific Railroad Mainline and Spur Line) and commingling auto traffic with the high volumes of truck traffic that use 117th Street for access onto TH 52. However, the Union Pacific Railroad Mainline crossing could be grade-separated at this location, and intersections could have turn lanes and acceleration/deceleration lanes for trucks to mitigate potential negative impacts arising through the mingling of truck and auto traffic. While the analysis of this alternative indicated acceptable levels of service at all intersections, this alternative has significantly less excess capacity in 2025 than Alternative Three within the TH 52 interchange area.

The estimated construction cost for this alternative is $6 million. However, $3.5 million of this cost is for developing frontage roads and removing access to TH 52. The main east-west upgrade to 117th Street could be accommodated with an improved two-lane section, costing $2.5 million.

Table 1
Alternatives Evaluation Matrix

Figure 4
Alternative 1A (117th Street Connection with an Overpass at 105th Street)

Alternative 1B
117th Street Connection

This alternative is identical to Alternative 1A, as described above, except under this alternative, no highway overpass over TH 52 would be constructed (see Figure 5). Eliminating the highway overpass has the advantage of minimizing potential residential acquisitions. This would also eliminate potential neighborhood concerns of increased through traffic that may use this route. Disadvantages to eliminating the highway overpass include the need to construct greater miles of frontage roads, including continuous north and south highway frontage roads, in addition to three bridges over the Union Pacific Railroad. This would entail higher amounts of right-of-way acquisition. Other advantages and disadvantages to this alternative are described under Alternative 1A (see page 14). The estimated construction cost for this alternative is $7.5 million. However, $4.5 million of this cost is for developing frontage roads and removing access to TH 52. The main east-west upgrade to 117th Street could be accommodated with an improved two-lane section costing $2.5 million.

Alternative 2A
CSAH 73 (Barnes Avenue) Connection with an Overpass at 105th Street

Under this alternative, CSAH 73 (Barnes Avenue) would be used as the primary connection to TH 52, using the existing interchange at Concord Boulevard and extending CSAH 32 northwards from its current terminus at Rich Valley Boulevard to connect to CSAH 73 (see Figure 6). This alternative has a number of issues/problems. First, the current turning movement counts taken at local intersections, indicate that traffic patterns are currently evenly split between travelers using CSAH 73 to the north and those using 117th Street to the south. The orientation of this route east of CSAH 71 is more north-south and therefore movements going to the south would still use 117th Street. Therefore, alternative would not serve 50 percent of the movements that are occurring today. Second, access to TH 52 is very circuitous. Travelers looking to access TH 52, after traveling north, have to backtrack south and east along highway frontage roads to the Concord Boulevard interchange with TH 52. This is not a very logical connection and would not attract many trips. Third, the current design of CSAH 73, which has limited sight distance due to hilly terrain and a significant amount of direct access, is not conducive to making this a high-volume arterial route (route would either have safety concerns or significant costs would be incurred to upgrade facility). An upgrade of this facility will have impacts on the residential areas in close proximity to CSAH 73. As a result, this alternative is not expected to significantly change overall study area traffic patterns or meet the objective of improving east-west flow and route continuity.

The estimated construction cost for this alternative is $5 million, although this cost does not include any upgrades to CSAH 73. The majority of these costs are for frontage road costs of $3.5 million. The remaining costs are for the new CSAH 32 connections.

Figure 5
Alternative 1B (117th Street Connection)

Figure 6
Alternative 2A (Barnes Avenue Connection with an Overpass at 105th Street)

Alternative 2B
CSAH 73 (Barnes Avenue) Connection

This alternative is identical to Alternative 2A, as described above, except under this alternative, no TH 52 highway overpass would be constructed (see Figure 7). This alternative is not expected to change traffic patterns since little advantage is provided for east-west flow. The estimated construction cost for this alternative is $6.5 million although this cost estimate does not include an upgrade to CSAH 73. In addition, approximately $5.0 million of this cost is a result of TH 52 frontage road costs. Eliminating the highway overpass has the advantage of minimizing some potential property acquisitions that would be necessary if the overpass were constructed. Disadvantages to eliminating the highway overpass include the need to construct greater miles of frontage roads and loss of connectivity across TH 52 for local residents. Other advantages and disadvantages to this alternative are described under Alternative 2A (see page 19).

Alternative 3A
CSAH 32 (Cliff Road) Extension,
New Highway Interchange (folded-diamond south)

This alternative provides similar connectivity to Alternative One by constructing an extension of CSAH 32 to the east and north and building a new highway interchange with TH 52 (see Figure 8). Two sub-alignment options were identified for the CSAH 32 extension: a "north sub-option" and a "south sub-option" allowing for slightly different alignment alternatives, but essentially providing identical types of system connections. Frontage roads would also be constructed to the south along TH 52 on both the east and west sides of the highway to replace direct highway access to TH 52.

This alternative provides similar east-west connectivity to Alternative One; however it is expected to have much less truck traffic since it does not extend through the main portion of the industrial area (Pine Bend Landfill and Koch Refinery etc.). Because this alternative adds a new east-west route, it will significantly reduce future volumes on 117th Street, thereby providing an abundance of capacity for the additional land uses. Many comments made during the public open house indicated that they thought two interchanges were not needed to serve existing, low-density land uses that are in the City's Comprehensive Plan.

This alternative would require a significant amount of right-of-way acquisition to accommodate construction of the new highway and interchange. This alternative also requires the greatest amount of new highway construction through relatively "undisturbed" areas, thus having a higher potential for impacts to archeological resources and wetlands. Finally, the estimated cost of construction of $17 million is nearly twice those of the next closest alternative.

Figure 7
Alternative 2B (Barnes Avenue Connection)

Figure 8
Alternative 3A
(Cliff Road Extension, New Highway Interchange [(folded-diamond south])

Alternative 3B
CSAH 32 (Cliff Road) Extension (folded-diamond north)

This alternative provides identical system connections to those described in Alternative 3A (see Figure 9). The major difference is in the design of the new interchange with TH 52. In this instance, the interchange would be folded to the north versus folded to the south in Alternative 3A. Advantages are identical to this described under Alternative 3A (see page 16). Disadvantages include those described in Alternative 3A, plus a higher potential for impacts to a residential neighborhood near interchange east of TH 52. The cost for this alternative is estimated at $17 million.

Alternative 3C
CSAH 32 (Cliff Road) Extension (rail spur alignment)

This alternative provides identical levels of system connectivity to that described under Alternatives 3A and 3B (see Figure 10). This alternative proposes to utilize existing Union Pacific railroad right-of-way and embankment (spur line) to provide the foundation of a new highway interchange. This reduces the estimated cost from $17 million to $15.5 million and assumes no new bridges for TH 52. This use of railroad right-of-way minimizes impacts to developed property west of TH 52; however, impacts to developed property east of TH 52 would be similar in magnitude to the other Alternative 3 variations. The potential for cultural resource impacts with the extension of CSAH 32 would be similar to Alternatives 3A and 3B. Perhaps the most significant disadvantage to this alternative is the changes required to the Union Pacific Railroad mainline and spur operations. Changes would require new connections from mainline to spur and abandonment of the spur line north of 117th Street. Costs for any railroad improvements were not included in Table 1. These costs are likely to be prohibitive, and any benefits realized in using existing railroad rights-of-way for highway infrastructure may be outweighed by the additional railroad costs.

Alternative 4
No Build

Alternative Four is the No Build alternative. The No Build alternative was proposed to establish a baseline against which to measure the impacts of doing nothing against the impacts of other proposed improvement alternatives (see Figure 11). The advantage to this alternative is that little capital costs are incurred and the impacts of right-of-way acquisition, business and residential relocation, and other impacts associated with roadway construction are not incurred. However, the disadvantage to this alternative is that it does not address the stated project need of providing improved east-west system connectivity and it makes no provision for transitioning TH 52 to a freeway facility by providing the system of frontage and supporting roads assumed in all the build alternatives as described above.

Figure 9
Alternative 3B (Cliff Road Extension [folded-diamond north])

Figure 10
Alternative 3C (Cliff Road Extension [rail spur alignment])

Figure 11
Alternative 4 (No Build)

STUDY FINDINGS, PREFERRED ALTERNATIVE, AND NEXT STEPS

Study Findings

1. Dakota County is located in the southern portion of the rapidly growing Twin Cities Metropolitan area. The county added 161,625 persons during the time period from 1980 to 2000 (U.S. Census) representing an increase of approximately 84 percent and making Dakota County one of the five fastest-growing counties in the State. This rate of growth is expected to slow in the next 20 years, from 2000 to 2020, with an anticipated increase in population of 104,960 representing a growth rate of 30 percent (MN Planning). However, this rate of growth still places the county in the ranks of the fastest-growing Minnesota counties.

2. Study area growth is constrained by factors as discussed in the Existing Conditions section of this report (specifically, the purchase of large amounts of undeveloped land by the Koch refinery and their stated intention of keeping this land undeveloped for residential use as a buffer for their refinery operations), growth to the north and west of the study area is anticipated to affect the level of traffic on key roadways in the study area. Should the Koch Refinery choose to develop land they own within the study area with compatible, commercial/industrial uses, this could have impacts on study area traffic operations. The analysis of future year traffic operations for this study assumed some future development by Koch and development consistent with Inver Grove Heights Comprehensive Plan. The Koch Refinery has also discussed the possibility of intensifying freight operations at their rail transfer facility. The impact of rail transfer activities on study area traffic issues was factored into the analysis of future traffic operations discussed in this study, and attached as Appendix B.

3. Regional growth, specifically in the cities of Red Wing, Hastings and Rochester, is expected to lead to increased traffic volumes, particularly on CSAH 42, TH 52 and TH 55.

4. Key study area intersections, with the exception of the TH 52/117th Street intersection, are operating at acceptable levels of service and are expected to do so well into the future (2020). However, uncontrolled at-grade intersections with TH 52 are experiencing higher mainline volumes traveling at high speeds. This makes it increasingly difficult to find gaps in traffic to merge safely and to make selected turning movements. The number of gaps will continue to decrease as mainline volumes rise.

5. The vision for TH 52, established in the March 2000 *Highway 52 Corridor Study and Management Plan* envisions an eventual transition of the highway to a freeway facility with all access limited to grade-separated interchanges. In so doing, traveler safety can be maintained while enhancing local and regional mobility.

6. Lack of east-west system continuity and connectivity has been identified in previous planning documents as shortfalls of Dakota County's transportation system. Dakota County's *Transportation Policy Plan* identifies the extension of CSAH 32 to TH 52 as a means of addressing east-west continuity. The City of Eagan in their *Comprehensive Plan* references the planned extension of CSAH 32 in Inver Grove Heights. The City of Inver Grove Heights has also included this extension as a recommendation of their *Comprehensive Plan*. Current system spacing between continuous east-west "A" minor arterial routes in the study area is seven and one-half miles between CSAH 26 (Lone Oak Road) and CSAH 42. The desired spacing is one to two miles. See Figure 12 for a depiction of east-west arterial spacing in Dakota County.

Figure 12
Roadway Spacing

7. The No Build Alternative would result in unacceptable traffic operations for intersections along TH 52 and would not enhance east-west continuity and connectivity. Nor does this alternative implement the TH 52 corridor vision of transitioning to a freeway facility (see Appendix B). Under this scenario, study area safety would be compromised by not providing alternatives to the existing at-grade highway access with TH 52. These access points will become increasingly problematic as TH 52 traffic volumes continue to grow over time.

8. Alternative 1A or 1B can provide improved east-west connectivity and continuity enhancing Dakota County's transportation system while minimizing impacts to area residents and businesses. Furthermore, this alternative will implement the TH 52 vision of transitioning to a freeway facility.

9. 117th Street is a local street in the City of Inver Grove Heights. The street provides essential access to TH 52 for the Koch refinery, the Pine Bend Landfill and local area businesses. This road is a rural-section, two-lane roadway with narrow shoulders and limited provision of turn lanes. Approximately 3,400 vehicles per day travel on 117th Street. Given the high volumes of truck traffic on this road, the lack of provision of turn lanes and adequate shoulders is a concern. In addition, an at-grade railroad crossing further adds to safety concerns.

10. Traffic issues analyzed as part of the 117th Street Interchange study process indicate that CSAH 32 improvements as shown in Alternative One can be safely accommodated with appropriate design of the new interchange at 117th Street. Specific recommendations for accommodating the projected 2025 traffic volumes include constructing a five-lane interchange bridge with access modifications along TH 52.

11. Future traffic volumes forecast for Build Alternatives One and Two indicate that the volumes of traffic using 117th Street as a connection to TH 52 do not change significantly. Since people are currently using 117th Street as a connection to TH 52, and will be anticipated to do so in the future, upgrades to this road are warranted to prepare it for the future volumes (8,000 ADT) of traffic anticipated to use it.

12. A traffic operations analysis of key study area intersections was done for future (2025) conditions at key intersections identified under Alternative One (CSAH 32/CSAH 71 and CSAH 71/117th Street). The two intersections analyzed are anticipated to operate at acceptable levels of service with no geometric improvements or other modifications (such as signal installation) necessary. (See Appendix A for a depiction of 2025 intersection turning movement counts in addition to worst approach level of service.)

13. The variations of Alternative 2 (CSAH 73 Connection) do not adequately provide for east-west connectivity and therefore do not address the identified project need.

14. Alternative 3A and 3B provide east-west continuity and connectivity as well as addressing the TH 52 vision; however, these alternatives were not favored by residents based on Open House comments. When other factors such as construction costs and property impacts are factored in, these alternatives become less attractive. In addition, the study identified that east-west traffic volumes are evenly split between those going north and those going south. Because alternatives 3A, 3B and 3C require a shift of CSAH 32 to the north to gain access to TH 52 (approximately 1/2 mile) and Alternatives 1A and 1B require a slight shift to the south to gain access to TH 52 at 117th Street, these options really are quite similar in terms of east-west traffic flow.

15. Alternative 3C, which uses Union Pacific Railroad right-of-way, is assumed not to be feasible due to rail improvements and changes required in order to eliminate the spur line. This assumption is based on past experience with railroad modifications for the 117th Street Interchange.

Recommendation for a Preferred Alternative

Of the three build alternatives developed to address the stated project need, it is recommended that the 117th Street Connection (Alternative One and its variations) be carried forward as the preferred alternative. This alternative makes the best use of the state's investment in highway infrastructure improvements, specifically the 117th Street/TH 52 interchange planned for construction in 2002 and it is consistent with the city's land use plan. It also provides a system of local and supporting roads adequate to serve this interchange and to achieve the TH 52 vision of eliminating all at-grade TH 52 access in the study area (see Figure 13).

The rationale for this recommendation is as follows:

1) The traffic generated by the future land uses in the area did not support the need for an additional interchange. The existing infrastructure investment in TH 52/117th Street and the proposed modifications to TH 52/CSAH 42 provide significant capacity to accommodate future traffic demands.

2) A new interchange location north of 117th Street is inconsistent with the low-density land uses in the area. The higher density uses presently located near the proposed new interchange (commercial properties) would most likely need to be acquired in order to construct the interchange, thereby reducing the need or demand.

3) Traffic counts in the area suggest that there is a fairly even split between travelers on CSAH 32 and 117th Street going north and south. Therefore, in terms of serving the traffic demand, the 117th Street interchange location is as convenient as the location identified in Alternative Three.

4) All of the build alternatives improve safety on TH 52 by removing at-grade intersections. However, Alternative One would utilize current infrastructure to a greater extent. In addition, it could keep the heavier traffic volumes further from the residential areas.

5) The realigned portion of 117th Street could be constructed with turn lanes and other safety improvements to address the mixture of vehicle and truck movements. In addition, access control could be used to reinforce roadway functionality and safety, including measures to ensure that no access onto 117th Street would be approved without the provision of turn lanes and/or other safety improvements.

6) Comments received at the Open House indicated that the public did not perceive a need for an additional interchange in the Inver Grove Trail area (Alternative Three). Without a significant change in the city's land use plan, it is unlikely that this need would emerge.

Figure 13
Preferred Alternative

Next Steps

To implement the Study Recommendation, the following steps should be pursued:

A. Mn/DOT, in cooperation with the City of Inver Grove Heights and Dakota County, should work to develop a comprehensive system of frontage and supporting roads in anticipation of the conversion of TH 52 to a fully access-controlled, freeway facility.

B. Dakota County should review their current jurisdictional system for the southern portion of the county and consider designating 117th Street as an "A" minor arterial. They should also apply to the Screening Board to designate 117th Street as a new County State Aid Highway.

C. Access onto 117th Street and CSAH 32 should be limited in accordance with Dakota County access policies for "A" minor arterial roadways. The City of Inver Grove Heights is encouraged to limit access onto this facility consistent with these guidelines until the County can designate this facility as a CSAH route.

D. The City of Inver Grove Heights and Dakota County should work together to ensure that the integrity of the existing land use plan is maintained.

E. It is recommended that Mn/DOT, Dakota County and the City of Inver Grove Heights continue the project development process to implement these recommendations, to continue to seek public input and communicate the results of this study, and to implement the design recommendations of this study by, among other things, securing rights-of-way as necessary or as opportunities arise.

APPENDIX A

Future (2025)

Peak-Hour Key Intersection Levels of Service

APPENDIX B

TH 52/117th Street Traffic Analysis

APPENDIX C

Highway 52 Corridor Study
And
Management Plan Executive Summary