



25TH STREET/64TH AVENUE SOUTH CORRIDOR STUDY

CITY OF FARGO, NORTH DAKOTA

OCTOBER 2008



25TH STREET AND 64TH AVENUE SOUTH CORRIDOR STUDIES

FINAL REPORT

**Prepared for
the City of Fargo**

**PREPARED BY
SRF CONSULTING GROUP, INC.**

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1.0 BACKGROUND AND STUDY PURPOSE

Both 25th Street and 64th Avenue South within the study area are located on section lines and are classified as future arterial roadways.



The City of Fargo is planning for future improvements and right of way needs for the 25th Street corridor from 52nd to 100th Avenue South and the 64th Avenue South corridor from 57th Street to South University Drive. This corridor study provides the basis for future environmental documentation necessary to secure federal funding for future corridor improvements.

1.1 Corridor Study Purpose and Study Area

Both 25th Street and 64th Avenue South within the study area are located on section lines and are classified as future arterial roadways. The 25th Street corridor is a north/south arterial roadway within the City of Fargo and is currently paved from 12th Avenue North to 58th Avenue South at which point it becomes a 2-lane gravel roadway to 100th Avenue South. The 64th Avenue South corridor is currently an east/west gravel rural roadway from west of 57th Street to 38th Street (the west I-29 frontage road) and from 36th Street (the east I-29 frontage road) to University Drive. There is currently no crossing of I-29 at 64th Avenue South. This study includes a detailed examination of the traffic patterns and effects of either a grade separated crossing or a full interchange at 64th Avenue South and I-29. The study focuses on the following key intersections:

- 25th Street and 52nd Avenue South
- 25th Street and 58th Avenue South
- 25th Street and 64th Avenue South
- 25th Street and 70th Avenue South
- 25th Street and 76th Avenue South
- 64th Avenue South and 57th Street
- 64th Avenue South and 45th Street South
- 64th Avenue South and 40th Street South
- 64th Avenue South and 32nd Street (Maple Valley Drive)
- 64th Avenue South and I-29 West Ramps
- 64th Avenue South and I-29 East Ramps
- 64th Avenue South and University Drive

The key corridor study objectives include:

- Involving affected agencies, stakeholders and the public throughout the study process to build an understanding of the issues, project alternatives, impacts and potential solutions.
- Analyzing existing conditions through a comprehensive review of existing traffic and transportation information and a thorough examination and analysis of issues.
- Developing a range of alternatives that provide creative yet feasible solutions. These alternatives include a combination of safety, geometric, access management, capacity and aesthetic

The key corridor study objectives include Developing a range of alternatives that provide creative yet feasible solutions. These alternatives include a combination of safety, geometric, access management, capacity and aesthetic improvements. These alternatives will include roadway capacity improvements to address corridor congestion, future grade separation and interchange options and the impact that new development will have on the study corridors.

improvements. These alternatives will include roadway capacity improvements to address corridor congestion, future grade separation and interchange options and the impact that new development will have on the study corridors. The alternatives will also coincide with the 2006 FM COG Bicycle & Pedestrian Plan.

- Completing a detailed analysis comparing the relative impacts of a grade separation or interchange at 64th Avenue South and I-29.
- Creating a matrix for all of the proposed alternatives that evaluates the physical, social, environmental and technical aspects of the proposed alternatives. The evaluation matrix will aid the involved agencies in choosing a preferred alternative.
- Identifying a preliminary financial plan and implementation strategies.
- Providing the basis for future development of an environmental document necessary to secure federal funding for corridor improvements.

The study corridors are shown in Figure 1.





Study Area

25th Street South and 64th Avenue South Traffic Study
City of Fargo, North Dakota

2.0 PUBLIC INVOLVEMENT

Public involvement was an important part of the study process. Various methods were used to obtain public input, including a Study Review Committee, public input meetings, and meetings with individual landowners.

Public involvement was an important part of the study process. Various methods were used to obtain public input, including a Study Review Committee, public input meetings, and meetings with individual landowners. The study team also presented the draft study findings to the City of Fargo Planning Commission and the Fargo City Commission.

2.1 Study Review Committee

The Study Review Committee (SRC) included representatives from the North Dakota Department of Transportation (NDDOT), City of Fargo, Cass County, Metro COG, Fargo School District, Fargo Parks, Stanley Township, City of Briarwood, and the City of Horace. The purpose of the SRC was to guide the study process, provide input, review alternatives, and assist in refining concepts.

The SRC met five times during the study process. The agendas and meetings minutes are presented in Appendix A.

2.2 Public Meetings

The study team conducted three public input meetings: one at the beginning of the study process, one in the middle of the project and the other at the end of the project. Each meeting used an open house format with a formal presentation. At the first meeting, the study team presented the study background and purpose. Participants were asked to provide input on existing conditions and concerns about the study corridors. The purpose of the second open house was to seek input on the proposed alternatives and explain the technical analysis used to develop the alternatives. The purpose of the third public meeting was to present the findings of the draft report including project issues, future traffic projections, future traffic operations, alternatives considered, and the preferred alternative for each corridor. The public was asked to comment on the information presented to them at each of the three meetings. Appendix B includes a public meeting summary, sign-in sheets and comments from each of the public meetings.

2.3 Planning Commission and City Commission Meetings

Upon preparation of the study report, SRF and City of Fargo staff presented the corridor study to the City of Fargo Planning Commission on September 10, 2008; and to the City of Fargo Public Works Project Evaluation Committee (PWPEC) on September 17, 2008. Both the City of Fargo Planning Commission and PWPEC recommended approval of the preferred alternative to the Fargo City Commission. Information from these meetings is presented in Appendix C.

SRF and City of Fargo staff met with the Fargo City Commission on October 6, 2008; to present the study findings and recommendations. The Fargo City Commission received the corridor study and authorized city staff to implement the study recommendations. Information from this meeting is presented in Appendix C.



3.0 EXISTING CONDITIONS & NEEDS ASSESSMENT

Several studies, plans and development projects have been adopted or approved that affect the future development of the study area.

3.1 Data Collection

Table 1 displays data that was collected to analyze existing and future conditions within the study area.

Table 1: Data Collection Completed for the 25th Street & 64th Avenue South Corridors

Data Collected	Data Collection Source or Method
Existing AADT Volumes	2005 AADT's from Metro COG
Existing Geometrics	SRF Field Review
Existing Access Inventory	SRF Field Review
Existing Peak Hour Turning Movements at Key Intersections	The City of Fargo provided peak hour traffic counts at three of the existing key intersections.
Existing Signal Timing for temporary signal at 25th Street & 52nd Avenue South	City of Fargo Traffic Engineering Department
GIS Data & Digital Aerial Photos	Downloaded from the Cass County and City of Fargo Websites
Existing & Future Land Use & Zoning	City of Fargo Planning Department
Pedestrian/Bicycle Facility Plans	Metro COG Bicycle & Pedestrian Plan
Crash Data	NDDOT Accident Data Base
52nd Avenue South Corridor Final Decisions Document (including Drain 53 Plans and 52nd Avenue/25th Street intersection design and traffic analysis.)	City of Fargo Engineering Department

3.2 Related Planning Studies and Projects

Several studies, plans and development projects have been adopted or approved that affect the future development of the study area. To date, they include the following:

- 2006 Metropolitan Bicycle and Pedestrian Plan – Continue with the plan's recommendations within the study area.
- 2004 Metropolitan Transportation Plan – This plan was used to identify existing traffic volumes. Some of the proposed improvements have already been included in this plan. The recommendations of this study, once adopted, should be included in the next plan.
- 52nd Avenue South PCR and design plans
- City of Fargo's Future Land Use Plan
- Fargo School District plans for a future high school south of 70th Avenue South and east of 25th Street.
- South Side Flood Protection Plan
- Maple Valley Addition

The results of the crash analysis found lower than average crash rates at all of the intersections and segments within the study area.

3.3 Crash Data Analysis

Three years of accident information within the project study area (August 1, 2004 to July 31, 2007) were obtained from the NDDOT Accident Database. Accident data was requested for the key intersections and segments along 25th Street between 52nd Avenue and 100th Avenue South and along 64th Avenue South between 57th Street and University Drive. The results of the crash analysis are shown in Table 2 below. The accidents that are shown to occur within an intersection include the intersection itself and the first 50-foot back along each leg of the intersection. The severity of the accidents was divided into three categories: fatal, injury and property damage only.

The actual crash rates of the intersections and segments were calculated using the crash rate method formulas found in the 2006 American Traffic Safety Service Association (ATSSA) publication Low Cost Local Road Safety Solutions. The crash rates were compared to average crash rates for similar types of intersections and segments found in the Traffic Safety Fundamentals Handbook by MnDOT Office of Traffic Engineering, April 2001. A system wide average crash rate was not computed since the nature of the two corridors and volumes throughout the project area change significantly. Part of the project area is urbanized with high traffic volumes and part of the project area is a rural gravel road with very low traffic volumes.

The results of the crash analysis found lower than average crash rates at all of the intersections and segments within the study area. A majority of the accidents within the rural portion of the study area were due to losing control on gravel roads.

Table 2: Crash Analysis Results

Intersections	Number of Accidents			Calculated Crash Rate Per MEV*	Average Crash Rate Per MEV*	High or Low Rate
	Fatal	Injury	Property Damage			
25th Street and 52nd Avenue South	0	1	6	0.65	0.8	LOW
Segments	Number of Accidents			Calculated Crash Rate Per MEV*	Average Crash Rate Per MEV*	High or Low Rate
	Fatal	Injury	Property Damage			
25th Street from 58th Avenue to 64th Avenue South	0	1	0	0.001	0.5	LOW
25th Street from 64th Avenue to 76th Avenue South	0	2	0	0.002	0.5	LOW
64th Avenue from 25th Street to 36th Street	0	1	0	0.001	0.5	LOW

* MEV = Million Entering Vehicles

An existing access inventory was completed along both study corridors.

3.4 Traffic Counts

Morning and afternoon peak hour traffic counts were carried out at the following key intersections:

- 25th Street and 58th Avenue South
- 25th Street and 64th Avenue South
- 64th Avenue South and University Drive

The counts were taken mid week in early September of 2007. The morning counts were taken from 7:00 a.m. to 8:30 a.m. with the peak hour occurring from 7:00 a.m. to 8:00 a.m. The afternoon peak hour counts were taken from 4:00 p.m. to 6:00 p.m. with the peak hour occurring from 4:30 p.m. to 5:30 p.m. The counts were completed by the City of Fargo.

3.5 Existing intersections and Accesses

An existing access inventory was completed along both study corridors. This information was used during the development of alternatives, since future roadway design must consider and accommodate existing accesses and intersections in one form or another. The results of the access inventory are shown in Table 3.

Table 3: Existing Intersection and Access Inventory

25th Street Segments	Street Intersection	Private Residential or Field Access	Commercial or Public Institution	Length of Segment	Access Points Per Mile	Max # of Access Points Per Mile
52nd to 64th Ave S	4	6	3	5280	13	7
64th to 76th Ave S	1	2	0	5280	3	
76th to 88th Ave S	1	5	0	5280	6	
88th to 100th Ave S	1	3	0	3860	4.1*	
64th Avenue Segments	Street Intersection	Private Residential or Field Access	Commercial or Public Institution	Length of Segment	Access Points Per Mile	
57th to 45th Street	1	2	0	4230	3.7*	
45th to 38th Street	2	1	0	4730	3.3*	
36th to 25th Street	3	13	1	5280	17	
25th Street to University Drive	4	12	0	5280	16	

*Segment is not equal to one mile. This rate was calculated to have an equal comparison.

In addition to the number of access points along the study corridors, the close proximity of some of the existing development will be an issue for widening the roadways.

An operations analysis was conducted for the a.m. and p.m. peak hours at the key intersections to determine how traffic currently operates in the study area.



The City of Fargo has developed a set of access management guidelines in the 2004 Fargo Land Development Code. The guidelines are based on the functional classification of the road. Both 25th Street and 64th Avenue South are classified as future arterial roadways. The guidelines that apply for arterial roadways include the following: shared driveways required wherever possible and a minimum spacing of 600 feet between driveways and intersections. This equates to a maximum of seven intersections or access points per mile, not including the mile line intersections.

In addition to the number of access points along the study corridors, the close proximity of some of the existing development will be an issue for widening the roadways. In particular, driveways and homes at the following locations are very closely spaced to each other and within close proximity to major intersections:

- South side of 64th Avenue and west of 25th Street
- West side of 25th Street and north of 64th Avenue
- South side of 64th Avenue and west of University Drive

3.6 Existing Traffic Operations Analysis

To determine how traffic is currently operating in the study area, traffic operations for existing conditions were analyzed at the following key intersections:

- 25th Street and 52nd Avenue South
- 25th Street and 58th Avenue South
- 25th Street and 64th Avenue South
- 64th Avenue South and University Drive

The intersection of 52nd Avenue South with 25th Street is signalized. The intersections of 25th Street/58th Avenue, 25th Street/64th Avenue, and University Drive/64th Avenue have side-street stop control. Current a.m. and p.m. peak hour turning movement counts (September, 2007) for the key intersections were completed by the City of Fargo. Existing ADT, geometrics, traffic controls, peak hour traffic volumes, and LOS results for the key intersections are shown in Figure 2.

An operations analysis was conducted for the a.m. and p.m. peak hours at the key intersections to determine how traffic currently operates in the study area. Signalized intersections were analyzed using the Synchro/SimTraffic software, while unsignalized intersections were analyzed using the highway capacity manual (HCM). Capacity analysis results identify a Level of Service (LOS) which indicates the quality of traffic flow through an intersection. Intersections are given a ranking from LOS A through LOS F. The LOS results are based on average delay per vehicle. The delay threshold values are shown in Table 4. LOS A indicates the best traffic operation, with vehicles experiencing minimal delays. LOS F indicates an intersection where demand exceeds capacity, resulting in a breakdown of traffic flow.

LOS A through D are generally considered acceptable by drivers.

LOS A through D are generally considered acceptable by drivers. LOS E indicates that an intersection is operating at, or very near its capacity and that vehicles experience substantial delays. Capacity analysis for unsignalized intersections identify the overall intersection LOS followed by the LOS of the worst approach.

Table 4: Level of Service Criteria for Signalized and Unsignalized Intersections

LOS Designation	Signalized Intersection Average Control Delay/Vehicle (seconds)	Unsignalized Intersection Average Control Delay/Vehicle (seconds)
A	<10	<10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	80<	50<

Source: Highway Capacity Manual 2000

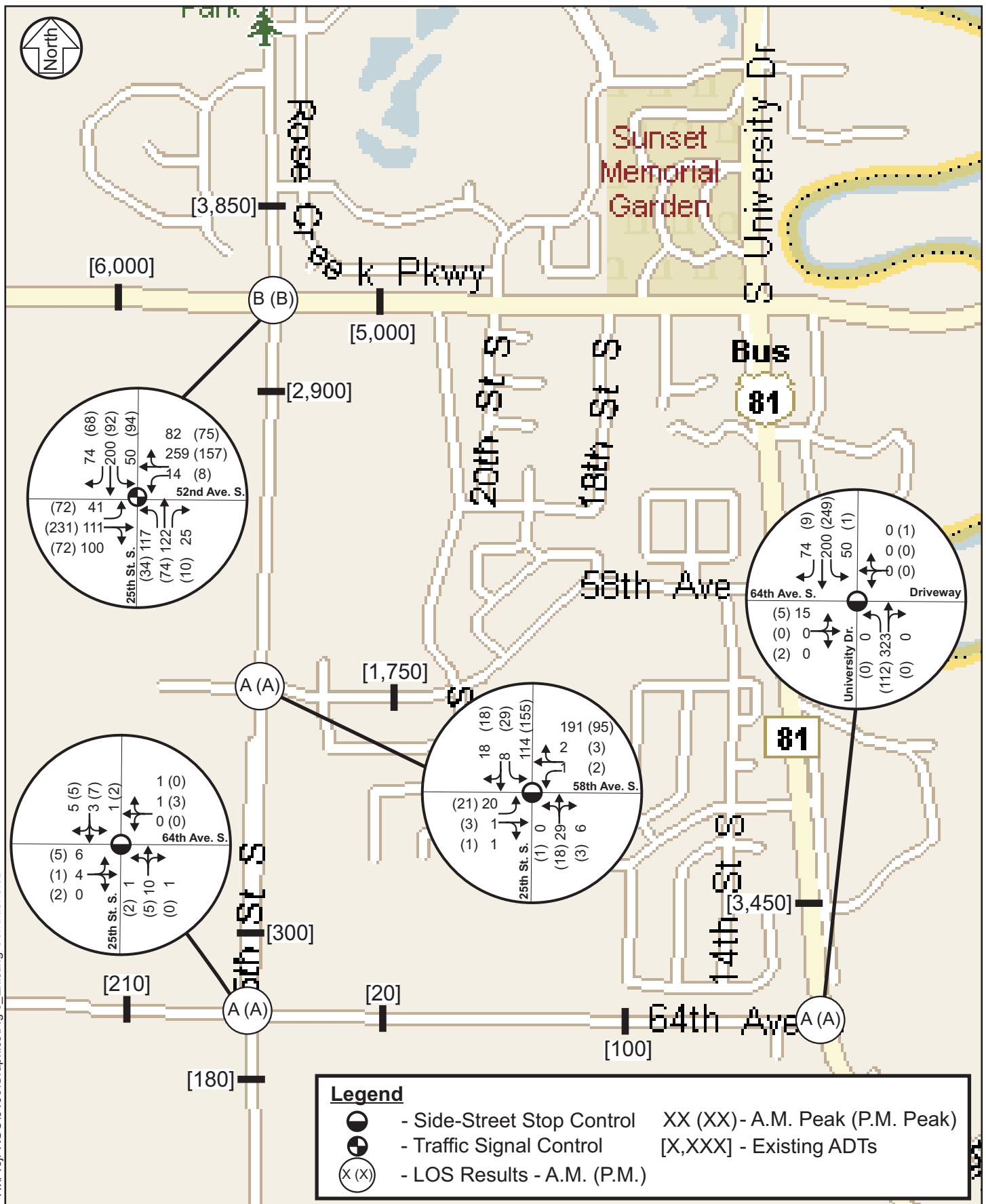
Results of the analysis shown in Table 5 indicate that the key intersection at 52nd Avenue South with 25th Street currently operates at LOS B during the a.m. and p.m. peak hours. All of the other intersections along 25th Street as well as the intersection of 64th Avenue South with University Drive, operate at an overall LOS A during the a.m. and p.m. peak hours. The LOS analysis results showing the delay time for each leg of the intersection is shown in Appendix D.

Table 5: Existing Peak Hour Capacity Analysis Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
25th Street and 52nd Avenue South	B	15.1	B	14.4
25th Street and 58th Avenue South ⁽¹⁾	A/C ⁽²⁾	7.7/15.3	A/B ⁽²⁾	7.0/14.2
25th Street and 64th Avenue South ⁽¹⁾	A/A ⁽²⁾	3.7/8.9	A/A ⁽²⁾	3.9/9.2
64th Avenue South and University Dr ⁽¹⁾	A/B ⁽²⁾	0.4/12.0	A/B ⁽²⁾	0.2/11.0

⁽¹⁾ Indicates an intersection with side-street stop control.

⁽²⁾ Shows overall intersection LOS followed by the worst approach.



Existing Conditions

25th Street South and 64th Avenue South Traffic Study
City of Fargo, North Dakota

Figure 2

The City of Fargo continues to experience a demand for southerly urban growth. This is one of Fargo's primary growth areas because the city is bound by the Red River to the east and the cities of West Fargo and Horace to the west.



3.7 Traffic Forecasts

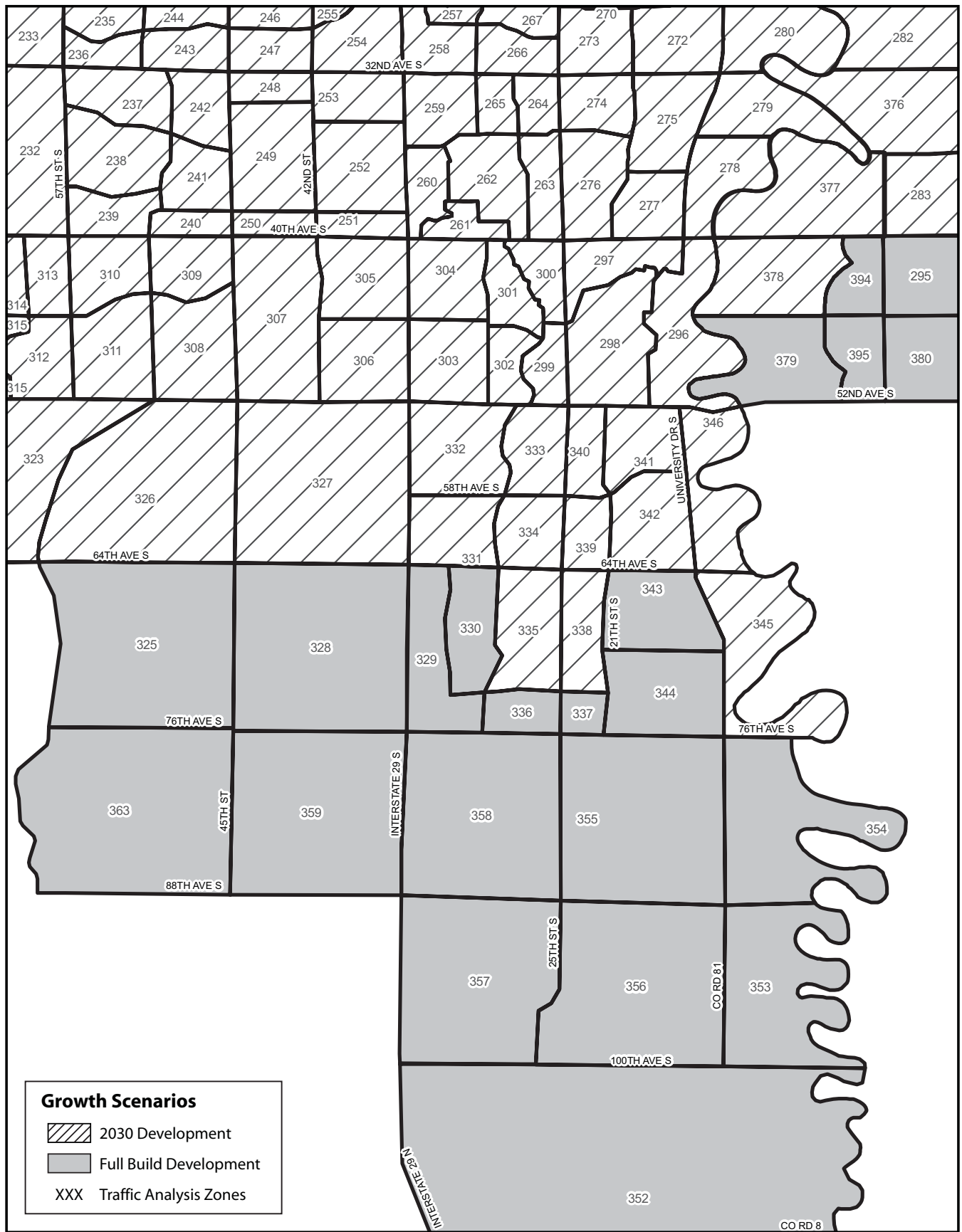
The City of Fargo continues to experience a demand for southerly urban growth. This is one of Fargo's primary growth areas because the city is bound by the Red River to the east and the cities of West Fargo and Horace to the west. The 64th Avenue South and 25th Street corridors have experienced some rural non-farm development. The Fargo School District has anticipated the need for an additional high school and has acquired land for this facility east of 25th Street and south of 70th Avenue South. Zoning and subdivisions have been approved along 64th Avenue for residential and commercial development. A series of traffic networks were developed by FM Metro COG to represent the future roadway network in the study area for the year 2030 and full build out of the study area as far south as 112th Avenue South.

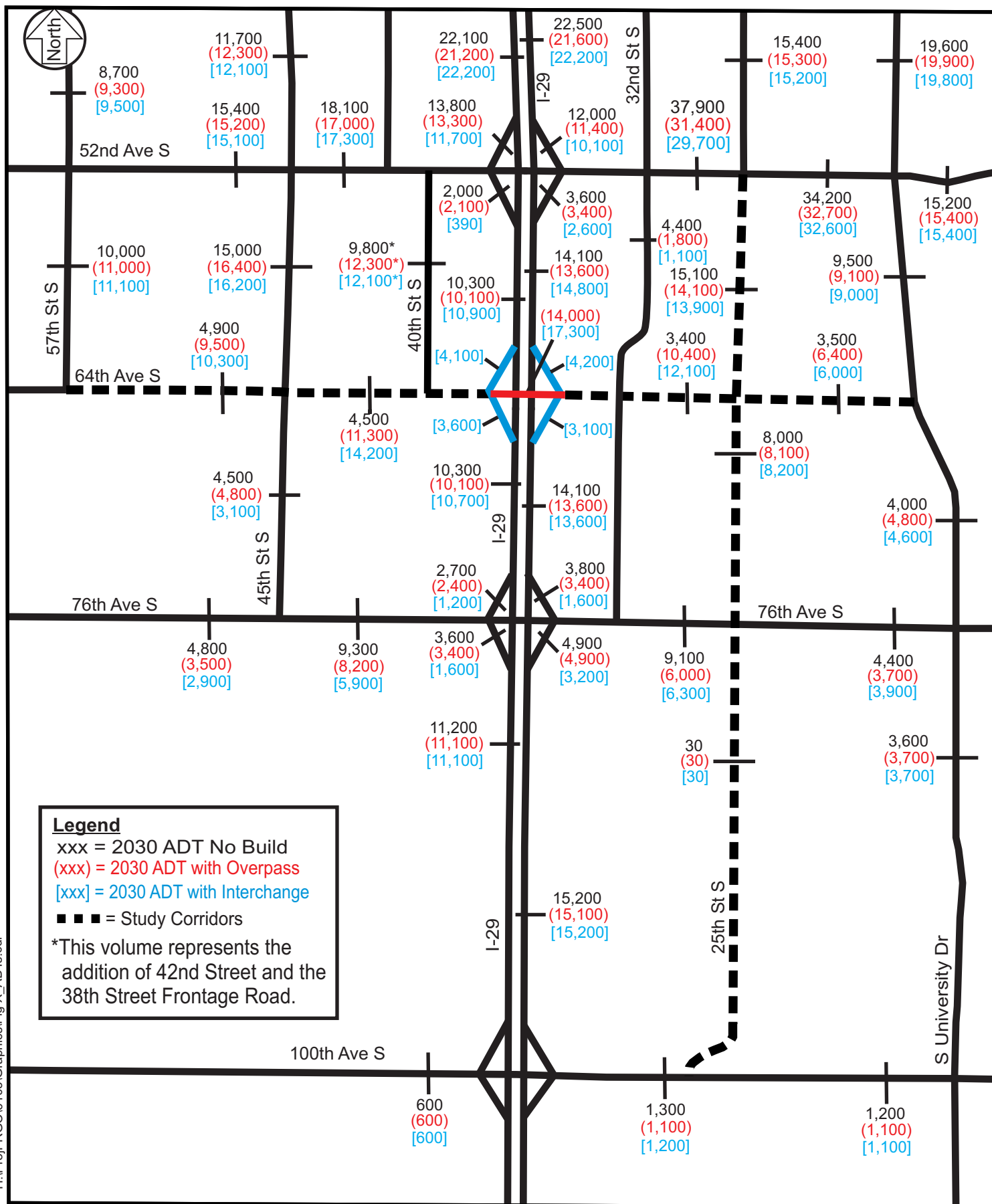
In order to develop alternatives for the future needs of the arterial roadways, traffic forecasts (with updated socio-economic data and recommended network configuration developed by FM Metro COG) were provided by the Advanced Traffic Analysis Center (ATAC) for year 2030 and full build conditions. The socioeconomic growth associated with the base 2030 traffic model includes growth used in recent Fargo area traffic studies, growth in Moorhead's interim year model (from the TH 75 and 20th Street Corridor Study), and a bridge crossing analysis of the Red River at 76th Avenue South in Fargo. The full build model includes full development in Fargo between University Drive and I-29 to 112th Avenue South and between I-29 and 57th Street to 88th Avenue South. The full build model includes full development to 60th Avenue South in Moorhead (52nd Avenue South in Fargo). The full build traffic model also includes a bridge crossing of the Red River at 76th Avenue South in Fargo. The year 2030 and full build socioeconomic growth areas are shown in Figure 3.

Three roadway network scenarios were completed for the year 2030 and two scenarios were completed for the full build traffic network. The five scenarios are described below:

- Scenario 1 – 2030 with no grade crossing of I-29 at 64th Avenue South
- Scenario 2 – 2030 with a grade separated crossing of I-29 at 64th Avenue South
- Scenario 3 – 2030 with a full interchange at I-29 and 64th Avenue South
- Full Build with a grade separated crossing of I-29 at 64th Avenue South
- Full Build with a full interchange at I-29 and 64th Avenue South

The year 2030 projected volumes were used to determine preliminary design recommendations for the corridors. The full build projected volumes were used to determine right of way recommendations for the study corridors. The average daily traffic (ADT) volumes within the study area for the 2030 traffic scenarios with no build at I-29/64th Avenue South, grade separation only, and a full interchange at I-29/64th Avenue South are shown in Figure 4.





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January 2008

Year 2030 Volumes No Build, Grade Separation & Interchange at I-29/64th Ave S

25th Street South and 64th Avenue South Traffic Study

City of Fargo, North Dakota

Figure 4

A number of issues have been identified along the study corridors based on the results of the traffic operations analysis at key intersections for the existing and interim volumes, traffic observations, crash data analysis, existing access management review, review of related planning studies and public input.



3.8 Identification of Issues

A number of issues have been identified along the study corridors based on the results of the traffic operations analysis at key intersections for the existing and interim volumes, traffic observations, crash data analysis, existing access management review, review of related planning studies and public input.

25th Street South Corridor

- Key intersections should be designed with appropriate capacity and traffic control to accommodate Year 2030 traffic volumes and beyond.
- 52nd Ave & 25th Street intersection geometrics are set by 52nd Avenue South Final Design Plans.
- Capacity expansion for 25th Street affects the frontage road along the west side of the corridor if it remains on its existing alignment.
- Consider access management for both existing and future private accesses and street intersections along the corridor. Some existing access points may need to be closed or relocated.
- Coordinate access needs onto 25th Street for the future Fargo High School to be located in the southwest quadrant of the 25th Street and 70th Avenue South intersection.
- 25th Street alignment is planned to shift west before it intersects with 100th Avenue South due to the presence of the Wild Rice River in this portion of the corridor.
- Should bike path be on-road, separated multi-use shared paths or both?
- Future South Side Flood Control Plan may impact future roadway plans.
- Existing and future utilities may conflict with future roadway plans.
- Future right of way preservation should be based on full build scenario volumes.
- Determine if future planned land use adjacent to the corridor should be changed based on recommended roadway improvements or alignment changes.

64th Avenue South Corridor

- Key intersections should be designed with appropriate capacity and traffic control to accommodate Year 2030 traffic volumes and beyond.
- Capacity expansion for 64th Avenue South on its existing alignment has potential effects to properties adjacent to the corridor.
- Determine the need for either an interchange or grade separated crossing at I-29.
- Develop a preliminary bridge type for 64th Avenue over Drain 53 including design for the bike path along Drain 53.

The 25th Street corridor is vital to the north/south flow of traffic in Fargo. Located one mile east of I-29, the corridor is the first continuous surface street east of the interstate highway. It currently provides a parallel route to I-29 for six miles through an area of continuous urban environment, and will continue to extend to the south as the city's growth continues.



- Consider access management for both existing and future private accesses and street intersections along the corridor. Some existing access points may need to be closed or relocated.
- Should bike path be on-road, separated multi-use shared paths or both?
- Existing and future utilities may conflict with future roadway plans.
- Future right of way preservation should be based on full build scenario volumes
- Determine if future planned land use adjacent to the corridor should be changed based on recommended roadway improvements or alignment changes.

Surrounding Networks

- Future Red River Bridge Corridor may be at either 70th Avenue or 76th Avenue South.
- Should bike paths be on-road, separated multi-use shared paths or both?
- Determine the impacts that different alternatives with projected Year 2030 traffic volumes would have on adjacent and parallel roadways within the project area.
- Determine which north/south collector and arterial roadways the City of Fargo plans to extend south into the project area.
- Identify impacts the Southside Flood Projection Plan alternatives would have on future roadway plans.

3.9 Purpose and Need

As the City of Fargo continues to grow to the south, the City has identified the need to plan for future urban growth along 25th Street South from 52nd Avenue South to 100th Avenue South and along 64th Avenue South between 57th Street and University Drive.

3.9.1 NEED FOR THE PROJECT

The 25th Street corridor is vital to the north/south flow of traffic in Fargo. Located one mile east of I-29, the corridor is the first continuous surface street east of the interstate highway. It currently provides a parallel route to I-29 for six miles through an area of continuous urban environment, and will continue to extend to the south as the city's growth continues. In fact, 25th Street South currently supports urban growth as far as 64th Avenue South. Up to this point, the traffic generated by this growth has been oriented to and from the north, which is the location of schools, jobs, and shopping. However, as orderly growth continues to fill in the remaining green fields between 52nd Avenue South and 64th Avenue South, and as new areas of development begin to occur south of 64th Avenue South, the demands on these two corridors will increase profoundly. Some of this urban expansion is currently in the process of being planned and designed.

The Fargo School District has identified their next Fargo High School site at the southwest quadrant of 25th Street and 70th Avenue South.

The Fargo School District has identified their next Fargo High School site at the southwest quadrant of 25th Street and 70th Avenue South. The school district is planning for the school to be functional by the fall of 2011. The school district has also stated that an elementary school may be located at the west end of their parcel. The extension of city services to the school site will open up the potential for other urban growth in this area. This will create the need for expanding and paving 25th Street to approximately 76th Avenue South. A preliminary layout of the future Davies High School site is shown in Appendix A, as part of the minutes from the Fourth SRC Meeting.

In the area between University Drive and I-29, the City of Fargo has either experienced urban growth or has approved the zoning and subdivisions that will lead to urban growth of all land north of 64th Avenue South. Martens Way Addition and Legacy Addition occupy the area between University Drive and 25th Street South. Silver Leaf Addition and Maple Valley Addition occupy the land between 25th Street and I-29. Additional zoning requests for commercial districts have been made on land south of 64th Avenue South and developers are currently in discussions with the City regarding the optimal timing of further residential and commercial development in this area.

Further south along 25th Street and west along 64th Avenue South, property owners continue to pressure the city for non-farm rural development in various types. As evidenced by the development currently existing along both study corridors, this premature development has resulted in driveway locations and building locations that are not compatible with the needs of an expanding urban area. Establishing the future corridor design and right of way needs will help to prevent this situation in the future.

The 64th Avenue South corridor has been designated as a future City of Fargo arterial and currently lies on a section line. It has been the City of Fargo's policy and practice to have at least one grade separated crossing of I-29 every mile. There is currently a grade separated crossing with an interchange one mile north at 52nd Avenue South. The increase in traffic volumes that occur with southerly development on both the east and west sides of I-29 will require either a grade separated crossing or interchange at I-29.

Roadway improvements will be necessary to accommodate more capacity as development continues as well as creating routes for emergency vehicles. All emergency vehicles such as ambulance and fire trucks will need a safe roadway to travel to future developed areas such as the proposed future Fargo High School and possible elementary school.



4.0 ALTERNATIVE DEVELOPMENT & ANALYSIS

Design alternatives are intended to reduce crash rates, address pedestrian/bicycle safety and system continuity, identify transit enhancement opportunities, offer corridor landscape concepts to enhance the corridors' aesthetics, consolidate existing driveways and intersections, identify future access and intersection locations that are consistent with the city's access management provisions, and preserve right of way for future transportation needs.

Alternatives developed to improve the 25th Street and 64th Avenue South corridors are based on the issues identified in the previous section. The main objectives are to provide roadway capacity and traffic control that will ensure LOS C or better given the 2030 traffic projections. In addition design alternatives are intended to reduce crash rates, address pedestrian/bicycle safety and system continuity, identify transit enhancement opportunities, offer corridor landscape concepts to enhance the corridors' aesthetics, consolidate existing driveways and intersections, identify future access and intersection locations that are consistent with the city's access management provisions, and preserve right of way for future transportation needs.

4.1 64th Avenue South Corridor Improvement Alternatives

Alternatives for the future 64th Avenue South Corridor are discussed in this section and are shown in Appendix E.

4.1.1 TRAFFIC OPERATIONS ANALYSIS

To determine how traffic will operate in the study area under 2030 build conditions, traffic operations were analyzed at the following key intersections using the applicable scenarios for future growth and roadway network:

- 64th Avenue South and University Drive – All Scenarios
- 64th Avenue South and 57th Street – Scenarios 2 and 3 only
- 64th Avenue South and 45th Street South – Scenarios 2 and 3 only
- 64th Avenue South and 40th Street South – Scenarios 2 and 3 only
- 64th Avenue South and 32nd Street (Maple Valley Drive) – Scenarios 2 and 3 only
- 64th Avenue South and I-29 West Ramps – Scenario 3 only
- 64th Avenue South and I-29 East Ramps – Scenario 3 only

Results of the analysis shown in Table 6 indicate that under the 2030 Scenario 1 conditions, all key intersections will operate at an acceptable LOS A during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario. It should be noted that the average delay for each approach is provided in Appendix F.



Table 6: 2030 Build Conditions - Scenario 1 Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
64th Avenue South and 25th Street ⁽¹⁾	A/B	<10	A/C	<10
64th Avenue South and University Drive ⁽¹⁾	A/C	<10	A/B	<10

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach.

Results of the analysis shown in Table 7 indicate that under the 2030 Scenario 2 conditions, all key intersections will operate at an acceptable overall LOS B or better during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario.

Table 7: 2030 Build Conditions - Scenario 2 Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
64th Avenue South and 57th Street ⁽¹⁾	A/B	<10	A/C	<10
64th Avenue South and 45th Street	B	14	B	12
64th Avenue South and 40th Street	B	11	B	12
64th Avenue South and 32nd Street	A	8	A	7
64th Avenue South and 25th Street	B	13	B	13
64th Avenue South and University Dr ⁽¹⁾	A/C	<10	A/B	<10

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach

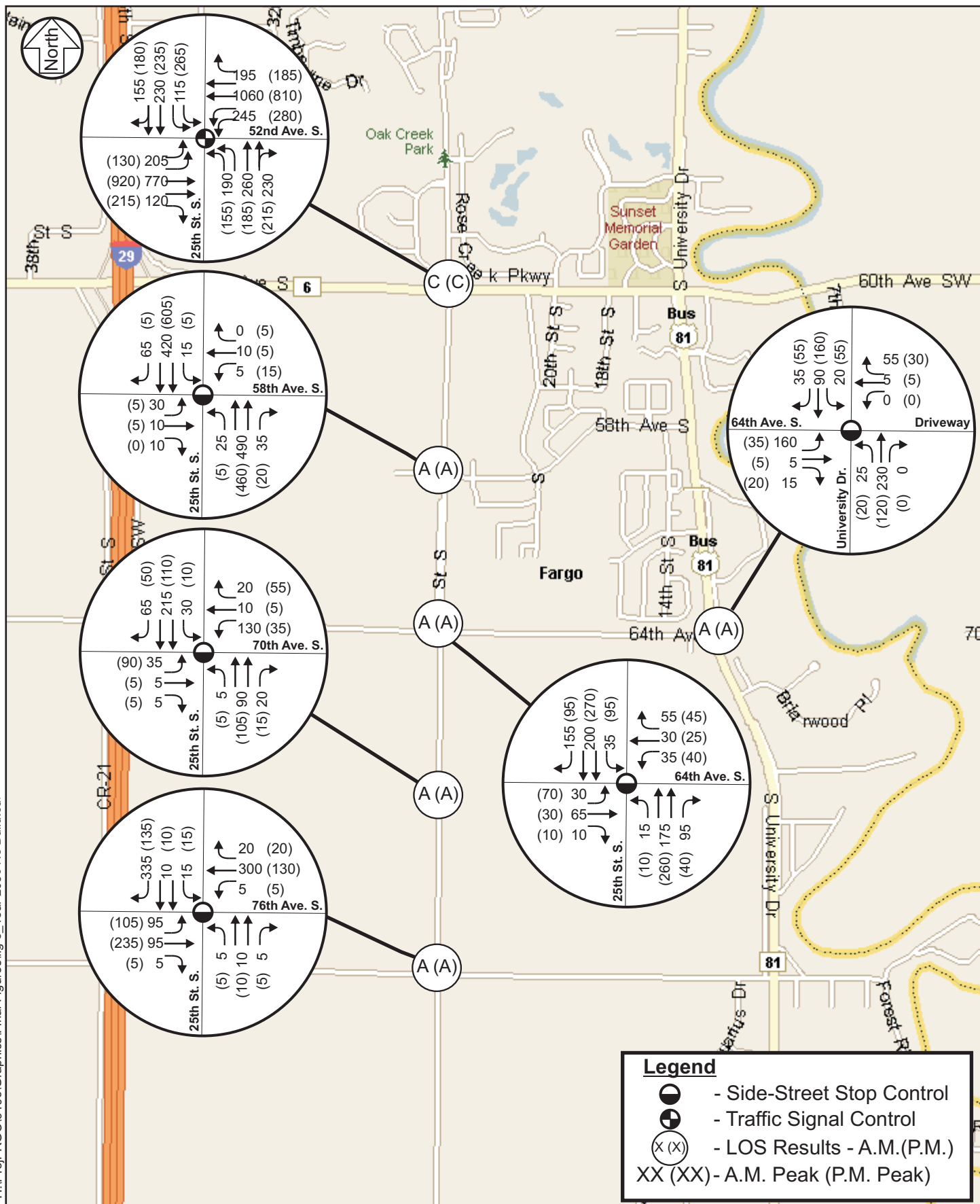
Results of the analysis shown in Table 8 indicate that under the 2030 Scenario 3 conditions, all key intersections will operate at an acceptable overall LOS B or better during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario.

Table 8: 2030 Build Conditions - Scenario 3 Level of Service Results

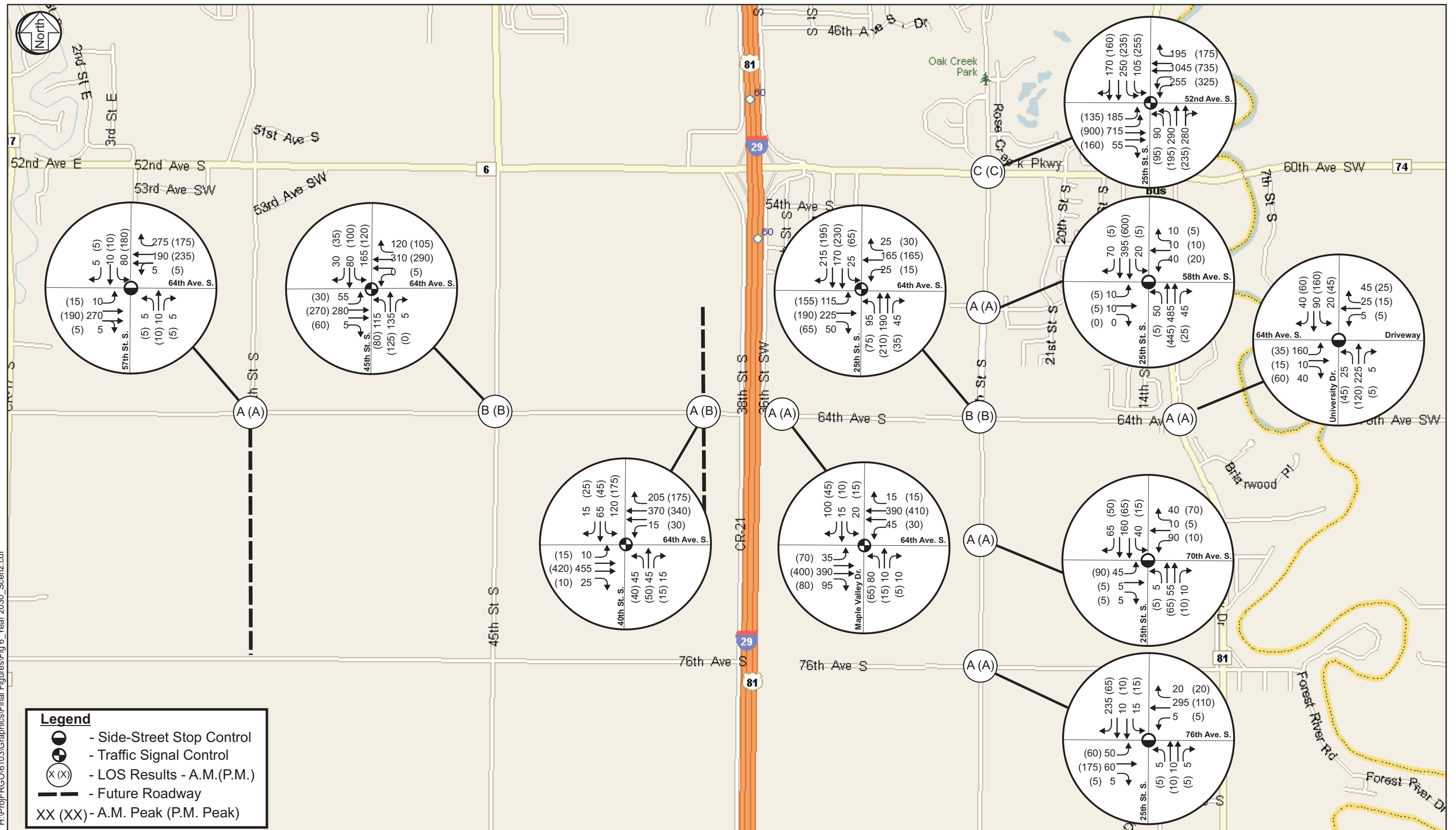
Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
64th Avenue South and 57th Street ⁽¹⁾	A/B	<10	A/C	<10
64th Avenue South and 45th Street	B	13	B	11
64th Avenue South and 40th Street	A	<10	A	<10
64th Avenue South and 25th Street	B	14	B	11
64th Avenue South and I-94 West Ramps	A	<10	B	14

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach.

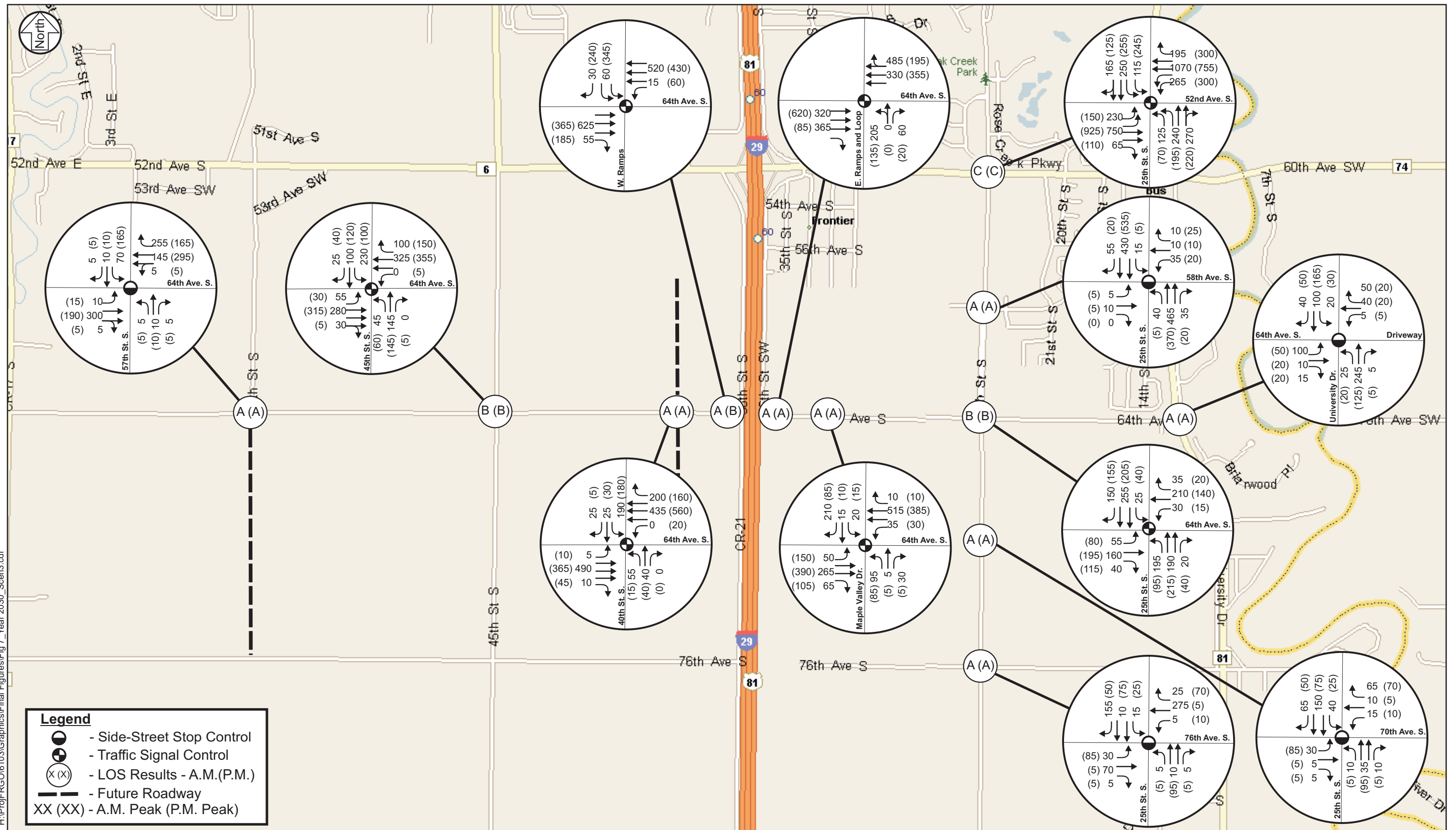
The proposed geometrics, traffic controls, year 2030 a.m. and p.m. peak hour traffic volumes, and LOS results at each key intersection for Scenarios 1, 2 and 3 are shown in Figure 5, 6 and 7 respectively.



H:\Proj\FRGO\6103\Graphics\Final Figures\Fig 6_Year 2030_Scen2.cdr



H:\Proj\FRGO\6103\Graphics\Final Figures\Fig 7_Year 2030_Scen3.cdr



The 2030 traffic forecasts for the 64th Avenue South corridor vary for each of the three scenarios reviewed.

4.1.2 ROADWAY NETWORK NEEDS

The previous analysis discussed individual intersection operations and the subsequent traffic controls and geometrics needed in order for the intersections to operate at acceptable levels of service. The recommended geometrics are identified for each intersection approach, which are an indicator of the capacity needs of the roadway segments. An alternative method for determining the capacity needs of the roadway segments involves an analysis of the ADT volumes. The capacity of a road is primarily determined by its facility type, number of lanes and design speed.

Table 9 provides a method to evaluate roadway capacity. For each facility type, the typical planning level average daily traffic (ADT) capacity ranges are listed. These volume ranges are based upon guidance from the Highway Capacity Manual and professional engineering judgment. A range is used since the maximum capacity of any roadway design ($v/c = 1$) is a theoretical measure that can be affected by its functional classification, traffic peaking characteristics, access spacing, speed, and other roadway characteristics. Furthermore, to define a facility's "daily capacity," it is recommended that the upper end of each facility type's volume range be used. This allows for capacity improvements that can be achieved by roadway enhancements.

Table 9: Planning - Level Roadway Capacities by Facility Type

Facility Type	Daily Capacity Ranges (ADT)
Two-lane undivided urban	8,000-10,000
Two-lane undivided rural	14,000-15,000
Three-lane urban (two-lane divided with turn lanes)	14,000-17,000
Four-lane undivided urban	18,000-22,000
Five-lane urban (four-lane divided with turn lanes)	28,000-32,000
Four-lane divided rural	35,000-38,000

** Derived from the Highway Capacity Manual 2000*

The 2030 traffic forecasts for the 64th Avenue South corridor vary for each of the three scenarios reviewed. Year 2030 traffic forecasts for Scenario 1 (no grade separated crossing at I-29 and 64th Avenue South) indicate there are approximately 3,000 to 5,000 vehicles per day (vpd) on 64th Avenue South between 57th Street and University Drive. Based on the data presented in Table 9, this indicates the need for a two-lane undivided urban roadway. If this scenario were selected as the preferred alternative, the study committee would recommend that 64th Avenue South between 57th Street and University Drive be designed as a three-lane urban roadway, with one lane in each direction and a shared center left-turn lane. However, due to the location of this roadway (on the section line), Scenario 1 is inconsistent with the City's plan to maintain grade separated crossings of I-29 at approximately one-mile intervals (unless additional crossing locations are determined

Past experience in the Fargo-Moorhead metropolitan area has shown that interstate highway grade separation spacing of greater than one mile is not adequate to accommodate the traffic generated by the expanding urban growth area, resulting in higher levels of delay and higher vehicle miles traveled (vmt).



necessary). Past experience in the Fargo-Moorhead metropolitan area has shown that interstate highway grade separation spacing of greater than one mile is not adequate to accommodate the traffic generated by the expanding urban growth area, resulting in higher levels of delay and higher vehicle miles traveled (vmt). Therefore, it is important to examine the alternatives for a grade separation and interchange at 64th Avenue South and I-29.

The year 2030 traffic forecasts for Scenario 2 (grade separated crossing of I-29 at 64th Avenue South) result in the following volumes along 64th Avenue South:

- 57th Street to 45th Street – 9,500 vpd
- 45th Street to 40th Street – 11,300 vpd
- Across the I-29 grade separation – 14,000 vpd
- 32nd Street to 25th Street – 10,400 vpd
- 25th Street and University Drive – 6,400 vpd

Based on the data presented in Table 9, this indicates the need for a three-lane urban roadway between 57th Street and 25th Street and a two-lane undivided urban roadway between 25th Street and University Drive. Once again the study committee anticipates additional growth in the southern portion of the City and is recommending a four-lane divided urban roadway from 57th Street to approximately one-quarter mile east of 32nd Street and a three-lane urban roadway from this point to University Drive.

The year 2030 traffic forecasts for Scenario 3 (full interchange at I-29 and 64th Avenue South) result in the following volumes along 64th Avenue South:

- 57th Street to 45th Street – 10,300 vpd
- 45th Street to 40th Street – 14,200 vpd
- Across the I-29 grade separation – 17,300 vpd
- 32nd Street to 25th Street – 12,100 vpd
- 25th Street and University Drive – 6,000 vpd

Based on the data presented in Table 9, this indicates the need for a four-lane urban roadway between 57th Street and 25th Street and a two-lane undivided urban roadway between 25th Street and University Drive. The study committee is recommending a four-lane divided urban roadway from 57th Street to 45th Street, a six-lane divided urban roadway from 45th Street to 32nd Street (also known as Maple Valley Drive), a four-lane divided urban roadway from 32nd Street to approximately one-quarter mile east of 32nd Street and a three-lane urban roadway from this point to University Drive.

In addition to the recommended overall roadway facility type for 64th Avenue South, intersection capacity alternatives were analyzed to determine the capacity needed for optimal future traffic operations. All recommended intersection improvements are outlined in Table 10.

Table 10: Year 2030 Recommended Intersection Capacity Improvements

4.0 ALTERNATIVE DEVELOPMENT & ANALYSIS

INTERSECTION SCENARIO		RECOMMENDED INTERSECTION GEOMETRY												INTERSECTION CONTROL					
Major Streets	Cross Streets	Northbound				Southbound				Eastbound				Westbound				Traffic Signal	Stop Control
		Left Only	Shared Left/Thru	Thru Only	Shared Right/Thru	Right Only	Left Only	Shared Left/Thru	Thru Only	Shared Right/Thru	Right Only	Left Only	Shared Left/Thru	Thru Only	Shared Right/Thru	Right Only			
25th Street (all scenarios)	52nd Avenue South	2		1	1	2	1	1	2	2	2	2	2	2		1	1	X	Stop Control
	58th Avenue South	1		2		1	2		1	1	1	1	1	1		1		X	
	64th Avenue South	1		2		1	2		1	1*	1	1	1	1*		1		X	
	70th Avenue South	1		2		1	2		1	1	1	1	1	1		1		X	
	76th Avenue South	1		2		1	2		1	1	1	1	1	1		1		X	
64th Avenue South (Scenario 1)	57th Street	1		1	1	1	1	1	1	1	1	1	1	1		1		X	
	45th Street	1		1	1	1	1	1	1	1	1	1	1	1		1		X	
	40th Street	1		1	1	1	1	1	1	1	1	1	1	1		1		X	
	32nd Street	1		1	1	1	1	1	1	1	1	1	1	1		1		X	
	25th Street	1		2	1	1	2	1	1	1	1	1	1	1		1		X	
64th Avenue South (Scenario 2)	University Drive	1		1	1	1	1	1	1	1	1	1	1	1		1		X	
	57th Street	1		1	1	1	1	1	1	1	1	1	1	1	2	1		X	
	45th Street	1		1	1	1	1	1	1	1	1	1	1	1	2	1	X		
	40th Street	1		1	1	1	1	1	1	1	1	1	1	1	2	1	X		
	32nd Street	1		1	1	1	1	1	1	1	1	1	1	1	2	1	X		
64th Avenue South (Scenario 3)	25th Street	1		2	1	1	2	1	1	1*	1	1	1	1*	1	1		X	
	University Drive	1		1	1	1	1	1	1	1	1	1	1	1	1	1		X	
	57th Street	1		1	1	1	1	1	1	1	1	1	1	1	2	1	X		
	45th Street	1		1	1	1	1	1	1	2	1	1	1	1	2	1	X		
	40th Street	1		1	1	1	1	1	1	3	1	1	1	3	1	1	X		
64th Avenue South (Scenario 3)	I-29 West Ramps					1	1			3		1	3				X		
	I-29 East Ramps		1		1					3			2				X		
	32nd Street	1		1	1	1	1	1	1	2	1	1	1	2	1	1	X		
	25th Street	1		2	1	1	2	1	1	1*	1	1	1	1*	1	1	X		
	University Drive	1		1	1	1	1	1	1	1	1	1	1	1	1	1	X		

* If the alignment of the intersection of 25th Street and 64th Avenue South is shifted to the south, 64th Avenue South should become a five-lane section with two eastbound and westbound thru lanes in each direction.

Three alternative alignments were prepared for the portion of the corridor to the east of I-29. The first would remain on the existing alignment, the second would shift the alignment 1/8 mile south of the section line and the third alternative would shift the alignment 1/4 mile south of the section line.



4.1.3 CORRIDOR ALTERNATIVES

Using the recommended 64th Avenue South corridor capacity described above, alternatives were created to minimize impacts and improve safety in various locations along the study corridor. To minimize impacts to existing development along 64th Avenue South, three alternative alignments were prepared for the portion of the corridor to the east of I-29. The first would remain on the existing alignment, the second would shift the alignment 1/8 mile south of the section line and the third alternative would shift the alignment 1/4 mile south of the section line.

The other major alternatives for this corridor are either grade separation or an interchange at I-29. The pros and cons of either grade separation or an interchange are discussed later in this report. Traffic projections increase on some segments of 64th Avenue South with an interchange at I-29, which changes the necessary capacity on the corridor. The alternatives below describe the corridor for each of the three 64th Avenue South alignment alternatives both with grade separation and an interchange at I-29.

Alternative I – 64th Avenue South on Existing Alignment

- Reduces the amount of right-of-way to be purchased since it remains on the existing alignment.
- The recommended roadway sections for grade separation and interchange alternatives were described in the previous section.
- The on-alignment alternative proposes a 3-lane section between the bridge over County Drain 53 and 25th Street. A five-lane section is physically feasible, but reduces the necessary turning radii between the 64th Avenue through lanes and the frontage road, nor would it allow space for a boulevard between these two roadways.
- Between 25th Street and I-29 there are several residences that have direct access onto 64th Avenue South. Either shared driveways or special frontage roads would need to be installed to minimize the amount of direct access onto 64th Avenue South.
- The 64th Avenue South alignment would need to slightly shift to the north between Maple Valley Drive and east of 25th Street to accommodate a frontage road on the south side of 64th Avenue South.
- The frontage road south of 64th Avenue South and west of 25th Street impacts two properties (2616 64th Avenue South and 2704 64th Avenue South) where the frontage road connects into 64th Avenue at 27th Street. The frontage road turns south and parallels 25th Street to the west where it connects into a platted east/west roadway approximately 500 feet south of 64th Avenue. This connection would impact four properties (2506 64th Avenue South, 2512 64th Avenue South, and two undeveloped parcels owned by Ryland Development Corporation).

Alignment Alternative 2 and 3 would both need approximately 8,000 linear feet of roadway platted for their new alignment.



- Between 25th Street and University Drive, the projected traffic volumes remain fairly low, so all of the direct access onto 64th Avenue South will remain with the exception of one residence (1648 64th Avenue) which currently has two access points. At this residence the driveway on the west would be closed.

Alternative II - 64th Avenue South 1/8 Mile South of Existing Alignment

- Proposed alignment shift begins approximately 1,000 feet east of I-29 and connects into 25th Street approximately 800 feet south of 64th Avenue South.
- The alignment shifts further to the south just west of University Drive to avoid a Western Power Association transmission tower, and to create a perpendicular intersection with University Drive directly across from an existing Briarwood city street intersection with University Drive.
- Approximately 8,000 linear feet of roadway would need new right of way platted for the new alignment.
- The recommended roadway sections for grade separation and interchange alternatives are described in the previous section and do not change as a result of this alignment.
- The shifted alignment allows the roadway section between the bridge over County Drain 53 and 25th Street to be a 4-lane divided roadway with turn lanes, since the realignment eliminates impacts to existing housing along 64th Avenue.
- A local street would remain at the current 64th Avenue South location and would have full access with 25th Street. This local street would not have a crossing of County Drain 53.

Alternative III - 64th Avenue South 1/4 Mile South of Existing Alignment

- Proposed alignment shift begins approximately 1,000 feet east of I-29 and connects into 25th Street approximately 1,250 feet south of 64th Avenue South.
- The alignment curves to the north as it approaches University Drive to create a perpendicular intersection across from a Briarwood city street intersection with University Drive.
- Approximately 8,000 linear feet of roadway would need new right of way platted for the new alignment.
- The recommended roadway sections for grade separation and interchange alternatives are described in the previous section.
- The shifted alignment allows the roadway section between the bridge over County Drain 53 and 25th Street to be a 4-lane divided roadway since the realignment eliminates impacts to existing housing along 64th Avenue.
- A local street would remain at the current 64th Avenue South location and would have full access with 25th Street. This local street would not have a crossing of County Drain 53.

A paved roadway along with increased capacity, geometric improvements and appropriate traffic control along the corridor is expected to increase traffic safety as traffic volumes rise.

Alternative 1, which keeps 64th Avenue South on its existing alignment, includes a frontage road to the south of 64th Avenue South just west of 25th Street. Eight homes which now have direct access onto 64th Avenue South would have access onto the frontage road instead, minimizing the amount of direct access to 64th Avenue South and keeping a minimum of 600 feet between access points.



4.1.4 SAFETY IMPROVEMENTS

Only one accident was reported on the 64th Avenue South corridor within the past three years and was reported as driver error. However, an increased traffic volume could also increase the number of reported crashes. A paved roadway along with increased capacity, geometric improvements and appropriate traffic control along the corridor is expected to increase traffic safety as traffic volumes rise. Well planned pedestrian facilities, including grade separated pedestrian trails, should increase pedestrian safety along the corridor as well.

4.1.5 ACCESS MANAGEMENT

The alternatives have been developed to for consistency with the City of Fargo's 2004 Land Development Code (LCD). The code specifies access management guidelines for arterial roadways, stating that arterial roadways should include shared driveways wherever possible and a minimum spacing of 600 feet between driveways and intersections. This equates to a maximum of seven intersections or access points per mile, not including the intersections with section line roadways.

Alternative 1, which keeps 64th Avenue South on its existing alignment, includes a frontage road to the south of 64th Avenue South just west of 25th Street. Eight homes which now have direct access onto 64th Avenue South would have access onto the frontage road instead, minimizing the amount of direct access to 64th Avenue South and keeping a minimum of 600 feet between access points. The current frontage road along the west side of 25th Street, just north of 64th Avenue, has an access that connects into 64th Avenue South only about 50 feet west of 25th Street. This alternative would propose making the 25th Street frontage road a cul-de-sac, which would eliminate that access point onto 64th Avenue. The majority of the 64th Avenue South corridor for Alternative 1 maintains 600 feet between access points, with the exception of a roadway segment approximately 1/4 mile in length west of University Drive. At this location, there are nine direct access points onto the south side of 64th Avenue including driveways and city streets. One access closure is proposed for the residence at 1648 64th Avenue South which currently has two driveways. Even if right of way were widened in this segment of 64th Avenue South to create space for a frontage road, several of the existing homes are too close to 64th Avenue South to make this feasible. Furthermore the traffic volumes greatly decrease along this portion of 64th Avenue South making it reasonable to leave these intersections and driveways in place.

Alternatives 2 and 3, which take 64th Avenue south of its existing alignment, would allow the city to maintain the minimum 600 foot spacing between intersections along the entire study corridor as specified in the LDC. The roadway that would remain on the 64th Avenue existing alignment would have several access points, but it would serve as a local or collector roadway with much lower traffic volumes.

The 64th Avenue South median provides space for a streetscape with a moderate level of landscaping and aesthetic treatment.



4.1.6 PEDESTRIAN/BICYCLE SAFETY AND CONTINUITY

The 2006 FCMCOG Bicycle & Pedestrian Plan shows the 64th Avenue South corridor between the Red River and CR 17 as the location of a Future Class I bikeway. There are also several locations where the plan shows a Future Class I bikeway that runs north/south crossing 64th Avenue South within the study area. All recommended bikeways from the plan are incorporated into the design concepts presented in this study.

It is important to maintain a safe and convenient pedestrian/bicycle trail along the 64th Avenue South corridor as the traffic volumes continue to increase. The following alternatives have been developed to improve pedestrian/bicycle safety:

- Provide a 4.5-foot sidewalk along the entire south side of the 64th Avenue South corridor.
- Provide a 12-foot shared use path along the entire north side of the 64th Avenue South corridor with the exception of narrowing the path to 10-feet between 40th Street and Maple Valley Drive to reduce the width of the path over the I-29 Bridge.
- Consider a 6-foot shoulder striped as an on-road bike trail for more experienced bicycle riders to use.
- Maintain a grade separated bike trail between 64th Avenue South and the Milwaukee bike trail located between 16th and 18th Street South.
- Maintain a grade separated bike trail that runs under the County Drain 53 structure and loops to connect back to the 64th Avenue South trail system.
- Maintain a sidewalk and shared path along the north and south side of the bridge over I-29.
- If the interchange option is chosen, connect the interchange ramps to 64th Avenue South at right angles to provide safe pedestrian crossings at the ramps.
- Provide safe crossings that either grade separated or are signalized, properly signed and properly marked.

4.1.7 CORRIDOR AESTHETICS

The preliminary design concept for the 64th Avenue South corridor features a wide 31'-0" median from 57th Street to Maple Valley Drive. The boulevards in the 64th Avenue streetscape are designed with trees planted in the center of boulevards which are less than 35'-0" in width. In boulevards over 35'-0" wide, trees are placed 10'-0" back from the back of curb. The street lights selected for the 64th Avenue South corridor are the Lumec Renaissance Fixture atop a 26-foot Millerbernd pole.

The 64th Avenue South median provides space for a streetscape with a moderate level of landscaping and aesthetic treatment. The cross-section showing 64th Avenue from 57th Street to 45th Street features a simple grass median with staggered double row of deciduous canopy

Preserving adequate right of way for future transportation needs can reduce project costs and impacts to adjacent properties.

trees, set back 7'-0" from the back of curb. A 2'-0" wide concrete maintenance strip is an aesthetic enhancement as well as improving maintenance of the turf edge along the median. The cross-section showing 64th Avenue from 45th Street to Maple Valley Drive features a higher level of landscaping and amenities. The maintenance strip is increased to 4' along the edge of the median. Bollards at the median noses tie into the architectural aesthetic character of the preliminary design concept for the bridge over the drainage channel. The plantings on the median consist of a staggered double row of ornamental trees, with low growing shrubs and ornamental grasses. The selected plants should be hardy, low maintenance species with seasonal color. Ornamental trees are also used in the boulevards, set back 7'-0" from the trail or sidewalk. The seasonal color and fragrant spring flowers of the ornamental trees provide additional interest for pedestrians. Deciduous canopy trees may also be planted adjacent to the trail and sidewalk. An informal, naturalistic arrangement of both types of trees is preferred. Cross section drawings showing these streetscape concepts along 64th Avenue South are provided in Appendix G.

Additional hardscape features such as bollards, ornamental fencing, decorative pavement, and planters may be incorporated into the streetscape design at key intersections along the corridor. Most of the land uses in the area are a form of residential use, and a soft approach consisting mostly of tree plantings and turf in the streetscape is appropriate. However, the intersection at 64th Avenue and 25th Street and the streetscape adjacent to the 64th Avenue South bridges over I-29 and Drain 53 would benefit from an enhanced level of treatment including hardscape features.

Some suggestions for boulevard tree plantings include the following:

- Spacing between trees should be a minimum of 30 feet and should not be planted closer than 40 feet from any intersection.
- Trees should not be planted closer than 20 feet from street lights.
- Trees should not be planted closer than 8 feet from water lines or fire hydrants.
- Suggested tree plantings for the boulevards include Dutch Elm Disease (DED) resistant Elms, Common Hackberry, Honey Locust (Northern Acclaim), Freeman Maple Hybrids, and Bur Oak.

4.1.8 RIGHT OF WAY PRESERVATION

Right of way preservation is an important part of the planning process. Preserving adequate right of way for future transportation needs can reduce project costs and impacts to adjacent properties. Right of way recommendations have been made based on full build traffic projections. The right of way needs vary depending on which alignment alternative is chosen and whether a grade separation or interchange is chosen at I-29. The right of way needs for each alternative are described below:



Right of way for pedestrian and bike trails has been identified for all project alternative.



Alternative 1 – 64th Avenue South on Existing Alignment

- Maintain a minimum 200-foot right of way with the proposed future 64th Avenue South alignment centered between 57th Street and Maple Valley Drive.
- Proposed right of way varies between Maple Valley Drive and 25th Street, starting out at 200 feet on the east side of Maple Valley Drive and narrowing down to 135 feet west of the County Drain 53 structure. At this point, the right of way widens to a minimum of 200 feet across the County Drain 53 structure, including additional right of way to accommodate the pedestrian loop ramp at the bridge. East of the County Drain 53 structure to 25th Street, the proposed right of way drops back to approximately 141 feet, with some additional right of way needed to accommodate for alignment shifts in the frontage road on the south side of 64th Avenue.
- Maintain 175 feet of right of way east of 25th Street for approximately 800 feet decreasing to a 150 feet right of way to the Milwaukee Bike Trail.
- Maintain approximately 115 feet of right of way between the Milwaukee Bike Trail and University Drive.

Alternative 2 – 64th Avenue South 1/8 Mile South of Existing Alignment

- Maintain a minimum 200-foot right of way between 57th Street and Maple Valley Drive. The roadway should be centered within the right of way.
- The alignment shift, 1/8 mile south, begins at approximately Maple Valley Drive. Maintain a minimum 150-foot right of way between Maple Valley Drive and University Drive. The roadway should be centered within the right of way.
- Additional right of way will be needed for the pedestrian loop ramp at the County Drain 53 Bridge.
- Additional right of way will be needed for the Milwaukee Bike Trail underpass and connection to the multi-use path along 64th Avenue South.
- Additional right of way will be needed for local street connections and cul-de-sacs for the local roadway system that will remain on the existing 64th Avenue South alignment.

Alternative 3 – 64th Avenue South 1/4 Mile South of Existing Alignment

- Maintain a minimum 200-foot right of way between 57th Street and Maple Valley Drive. The roadway should be centered within the right of way.
- The alignment shift to 1/4 mile south of the existing corridor begins at approximately Maple Valley Drive. Maintain a minimum 150-foot right of way between Maple Valley Drive and University Drive. The roadway should be centered within the right of way.
- Additional right of way will be needed for the pedestrian loop ramp at the County Drain 53 Bridge.

The southern end of the 5-year fixed boundary for south Fargo is 52nd Avenue South with some response zones in the area of Bennett Elementary School.

- Additional right of way will be needed for the Milwaukee Bike Trail underpass and connection to the multi-use path.
- Additional right of way will be needed for local street connections and cul-de-sacs for the local roadway system that will remain on the existing 64th Avenue South alignment.
- The total amount of right of way that would be needed for each alternative including the I-29 grade separation and interchange alternatives is presented below in Table 11.

Table 11: 64th Avenue South Right of Way Needs

64th Avenue South Corridor	Interchange at 64th & I-29 (ROW in Acres)			Grade Separation at 64th & I-29 (ROW in Acres)		
	Alternative 1	Alternative 2	Alternative 3	Alternative 1	Alternative 2	Alternative 3
25th Street and 52nd Avenue South	31.15	31.15	31.15	29.02	29.02	29.02
25th Street from 58th Avenue to 64th Avenue South	3.43	3.43	3.43	1.58	1.58	1.58
25th Street from 64th Avenue to 76th Avenue South	7.27	15.47	16.25	8.17	13.97	14.43
64th Avenue from 25th Street to 36th Street	3.74	15.63	15.47	2.81	15.63	15.47
TOTAL	45.59	65.68	66.3	41.58	60.2	60.5

* MEV = Million Entering Vehicles

4.1.9 TRANSIT ENHANCEMENT OPPORTUNITIES

Enhancing public transit may encourage more people to choose it as their daily means of travel. More people utilizing the public transit system would decrease the amount of daily traffic volumes on the study corridors. As part of the on-going Southwest Transit Study, Metro Area Transit (MAT) has developed a preliminary 5-year fixed transit route service boundary with demand response zones outside of the fixed boundary. The southern end of the 5-year fixed boundary for south Fargo is 52nd Avenue South with some response zones in the area of Bennett Elementary School. The study is on-going and may be subject to change. Despite the fact that transit service is not imminent on 64th Avenue South, it is still important that roadway design, pedestrian facilities, and traffic control features take transit vehicles and transit patrons into consideration. Eventually transit service will be provided in this area, especially given the anticipated 2010 completion of the future high school along 70th Avenue South and the urban growth that may follow. Furthermore, a significant amount of commercial land use along the I-29 corridor within a mile of 64th Avenue South will also spur the need for eventual transit service.

Preliminary design has been completed to develop alternatives that would improve the 25th Street corridor.

4.2 25th Street Corridor Improvement Alternatives

Preliminary design has been completed to develop alternatives that would improve the 25th Street corridor. Alternatives for the 25th Street corridor are discussed in this section and are shown in Appendix E.

4.2.1 TRAFFIC OPERATIONS ANALYSIS

To determine how traffic will operate in the study area under year 2030 build conditions, traffic operations were analyzed for Scenarios 1, 2 and 3 at the following key intersections:

- 25th Street and 52nd Avenue South – All Scenarios
- 25th Street and 58th Avenue South – All Scenarios
- 25th Street and 64th Avenue South – All Scenarios
- 25th Street and 70th Avenue South – All Scenarios
- 25th Street and 76th Avenue South – All Scenarios

Results of the analysis shown in Table 12 indicate that under the 2030 Scenario 1 conditions, all key intersections will operate at an acceptable overall LOS C or better during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario. The details of this analysis including the average delay for each approach is provided in Appendix F.

Table 12: 2030 Build Conditions - Scenario 1 Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
25th Street and 52nd Avenue South	C	33	C	30
25th Street and 58th Avenue South ⁽¹⁾	A/D	<10	A/E	<10
25th Street and 64th Avenue South ⁽¹⁾	A/B	<10	A/C	<10
25th Street and 70th Avenue South ⁽¹⁾	A/B	<10	A/B	<10
25th Street and 76th Avenue South ⁽¹⁾	A/C	<10	A/B	<10

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach

Results of the analysis shown in Table 13 indicate that under the 2030 Scenario 2 conditions, all key intersections will operate at an acceptable overall LOS C or better during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario.

Table 13: 2030 Build Conditions - Scenario 2 Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
25th Street and 52nd Avenue South	C	31	C	31
25th Street and 58th Avenue South ⁽¹⁾	A/D	<10	A/E	<10
25th Street and 64th Avenue South	B	13	B	13
25th Street and 70th Avenue South ⁽¹⁾	A/B	<10	A/B	<10
25th Street and 76th Avenue South ⁽¹⁾	A/B	<10	A/B	<10

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach.

Results of the analysis shown in Table 14 indicate that under the 2030 Scenario 3 conditions, all key intersections will operate at an acceptable overall LOS C or better during the a.m. and p.m. peak hours with the proposed geometry and traffic controls of this scenario.

Table 14: 2030 Build Conditions - Scenario 3 Level of Service Results

Intersections	AM Peak		PM Peak	
	LOS	Delay (seconds)	LOS	Delay (seconds)
25th Street and 52nd Avenue South	C	34	C	31
25th Street and 58th Avenue South ⁽¹⁾	A/D	<10	A/D	<10
25th Street and 64th Avenue South	B	14	B	11
25th Street and 70th Avenue South ⁽¹⁾	A/B	<10	A/B	<10
25th Street and 76th Avenue South ⁽¹⁾	A/B	<10	A/B	<10

(1) Indicates an intersection with side-street stop control. LOS is reported by overall LOS followed by the worst approach.

The proposed geometrics, traffic controls, 2030 a.m. and p.m. peak hour traffic volumes, and LOS results at each key intersection for Scenarios 1, 2 and 3 are shown in Figure 5, 6 and 7 respectively.

Due to a recent history of unprecedented growth in the southern portions of the City of Fargo and plans for a future elementary and high school along 25th Street just south of 70th Avenue South, it is possible that 2030 growth could outpace what is currently forecast in the F-M Metro COG 2030 Metropolitan Transportation Plan.



4.2.2 ROADWAY NETWORK NEEDS

Based on our review of the year 2030 traffic forecasts, the forecast ADT volumes along the 25th Street corridor are approximately:

- 52nd Avenue to 64th Avenue South – 14,000 to 15,000 vehicles per day (vpd)
- 64th Avenue to 76th Avenue South – 8,000 vpd
- 76th Avenue to 100th Avenue South – less than 50 vpd

Based on the data presented in Table 9, this indicates the need for a three-lane urban roadway (two-lanes with a shared center left-turn lane) between 52nd Avenue South and 64th Avenue South and a two-lane undivided urban roadway south of 64th Avenue South. As shown in Figure 3, the 2030 growth area extends south to approximately 64th Avenue South with urban growth anticipated in a few traffic analysis zones south of 64th directly along the 25th Street corridor.

Due to a recent history of unprecedented growth in the southern portions of the City of Fargo and plans for a future elementary and high school along 25th Street just south of 70th Avenue South, it is possible that 2030 growth could outpace what is currently forecast in the F-M Metro COG 2030 Metropolitan Transportation Plan. Therefore, the study committee has recommended that 25th Street between 52nd Avenue South and 100th Avenue South be designed as a five-lane urban roadway, with two lanes in each direction and a continuous center left-turn lane.

In addition to the recommended overall roadway facility type for 25th Street, alternatives for intersection capacity improvements were developed to analyze future traffic operations. Based on that analysis, the recommended intersection improvements for 25th Street are outlined in Table 10. It should be noted that the improvements at the intersection of 25th Street and 52nd Avenue South have already been designed under a separate project and were assumed for this traffic analysis.

4.2.3 CORRIDOR ALTERNATIVES

Using the recommended corridor capacity described above, alternatives were created to minimize impacts to adjacent properties and improve safety in various locations along the study corridors. The corridor alternatives are described below:

25th Street Alternative I - 25th Street on Existing Alignment

- The recommended roadway sections are described in the previous section.
- Widening of the roadway creates impacts to the frontage road between 58th and 64th Avenue South. It requires the frontage road to be rebuilt further to the west with a cul-de-sac at the south end of the frontage road (just north of 64th Avenue South.) The cul-de-sac is required due to access management restrictions onto

This alternative would shift the 25th Street alignment approximately 45 feet to the east from 60th Avenue South to approximately 66th Avenue South. The alignment shift would require purchasing right-of-way to the east of 25th Street from undeveloped parcels.

The alignment shift allows more space for the frontage road between 58th and 64th Avenue South and changes the design for the cul-de-sac on the south end of the frontage road. The new cul-de-sac design reduces (but does not eliminate) impacts to two properties (2505 64th Avenue and 6305 25th Street).



both 25th Street and 64th Avenue South. The cul-de-sac at the south end of the frontage road would impact two properties (2505 64th Avenue and 6305 25th Street).

25th Street Alternative II - 25th Street Slightly Shifted to the East

- This alternative would shift the 25th Street alignment approximately 45 feet to the east from 60th Avenue South to approximately 66th Avenue South. The alignment shift would require purchasing right-of-way to the east of 25th Street from undeveloped parcels.
- The alignment shift allows more space for the frontage road between 58th and 64th Avenue South and changes the design for the cul-de-sac on the south end of the frontage road. The new cul-de-sac design reduces (but does not eliminate) impacts to two properties (2505 64th Avenue and 6305 25th Street).

25th Street Frontage Road Connection to 62nd Avenue South Sub Alternative I

- The frontage road would curve to the west through a vacant property located at 6209 25th Street and curve again to the north and intersect with 62nd Avenue at 27th Street. The purpose of shifting the frontage road to the west is to provide greater distance between the 25th Street and 62nd Avenue South intersection the the 62nd Avenue South and frontage road intersection. This option would impact a total of three properties (6209 25th Street, 2611 64th Avenue and 6210 27th Street).

25th Street Frontage Road Connection to 62nd Avenue South Sub Alternative II

- This alternative is a direct frontage road connection to 62nd Avenue South with the minimum required distance between the 62nd Avenue/Frontage Road intersection and the 62nd Avenue/25th Street intersection.
- If this frontage road connection is chosen in conjunction with 25th Street Alternative 1 (on existing alignment) it will impact a small portion of two properties (6205 25th Street and Moravian Church at 6151 25th Street).

4.2.4 SAFETY IMPROVEMENTS

Increased capacity and geometric improvements at the intersections are expected to increase traffic safety and prevent the increase in the number of crashes along the corridor as traffic volumes increase. Other alternatives being considered to prevent higher crash rates along the corridor include:

- Improvements at the intersection of 25th Street and 52nd Avenue South have been designed under a separate project which should result in a reduction of crashes.

Paved roadways with appropriate pavement markings and posted speed limits are expected to increase safety and help to control speeds along 25th Street.

- Paved roadways with appropriate pavement markings and posted speed limits are expected to increase safety and help to control speeds along 25th Street.
- The proposed signal at 64th Avenue South will improve safety while future volumes increase.

4.2.5 ACCESS MANAGEMENT

According to the Fargo-Moorhead Metropolitan Short and Long Range Transportation Plan, 25th Street is designated as a future arterial roadway. The access management guidelines that apply for arterial roadways per the City of Fargo LDC include the following: shared driveways required wherever possible and a minimum spacing of 600 feet between driveways and intersections. This equates to a maximum of seven intersections or access points per mile, not including the intersections with section line roadways. The following alternatives were developed for consideration to improve access management along the 25th Street corridor.

- Construct a roadway and cul-de-sac between 88th Avenue South and 82nd Avenue South to consolidate three residential accesses. This will allow the closure of a residential access north of 88th Avenue South and another residential access south of 82nd Avenue South.
- Signalization at 64th Avenue South
- Closure of a residential access south of 64th Avenue South. Reconfigure access to proposed 64th Avenue South frontage road.
- Reconfigure the frontage road between 58th Avenue South and 64th Avenue South and construct a cul-de-sac in place of the current frontage road connection to 64th Avenue South.

4.2.6 PEDESTRIAN/BICYCLE SAFETY AND CONTINUITY

The 2006 FMCOG Bicycle & Pedestrian Plan shows the 25th Street corridor between 58th Avenue South and 112th Avenue South as a location for a Future Class I bikeway. There are also several locations where the plan shows a Future Class I bikeway that runs east/west crossing 25th Street within the study area. All recommended bikeways from the plan should be incorporated as part of this study.

It is important to maintain a safe and convenient pedestrian/bicycle trail along the 25th Street corridor as the traffic volumes continue to increase. The following alternatives have been developed to provide for pedestrian/bicycle travel:

- Provide a 4.5-foot sidewalk along the entire west side of the 25th Street South corridor between 25th Street and the frontage road.
- Provide a 12-foot shared use path along the entire east side of the 25th Street South corridor.
- Consider a 4 to 6-foot shoulder striped on-road bike trail for use by more experienced bicycle riders.
- Provide safe crossings that are signalized, properly signed and properly marked.



There are no medians proposed for 25th Street. The standard boulevard streetscape approach is to center a single street tree in the grass boulevard space when the boulevard is less than 30'-0" in width. In boulevards greater than 30'-0" wide, street trees are placed 10'-0" back from the back of curb and a second row of trees is placed 10'-0" back from the trail or sidewalk.



4.2.7 CORRIDOR AESTHETICS

The 25th Street corridor features boulevards of up to 56'-0". There are no medians proposed for 25th Street. The standard boulevard streetscape approach is to center a single street tree in the grass boulevard space when the boulevard is less than 30'-0" in width. In boulevards greater than 30'-0" wide, street trees are placed 10'-0" back from the back of curb and a second row of trees is placed 10'-0" back from the trail or sidewalk. The street lights selected for both the 25th Street and 64th Street corridors are the Lumec Renaissance Fixture atop a 26' Millerbernd pole.

The cross-section of 25th Street from 58th Avenue to 64th Avenue shows a narrower 11'-0" boulevard that is planted with an ornamental tree rather than a deciduous canopy tree. The cross-section of 25th Street from 64th Avenue to 100th Avenue shows a wider boulevard in which a deciduous canopy tree may be used. Cross section drawings showing these streetscape concepts along 64th Avenue South are provided in Appendix G.

Additional hardscape features such as bollards, ornamental fencing, decorative pavement, and planters may be incorporated into the streetscape design at key intersections along the corridor. Most of the land uses in the area are a form of residential use, and a soft approach consisting mostly of tree plantings and turf in the streetscape is appropriate. However, the intersections of 25th Street with 64th Avenue and 76th Avenue South would benefit from an enhanced level of treatment including hardscape features.

Some suggestions for boulevard tree plantings include the following:

- Spacing between trees should be a minimum of 30 feet.
- Trees should not be planted closer than 40 feet from any intersection.
- Trees should not be planted closer than 20 feet from street lights.
- Trees should not be planted closer than 8 feet from water lines or fire hydrants.
- Suggested tree plantings for the boulevards include Dutch Elm Disease (DED) resistant Elms, Common Hackberry, Honey Locust (Northern Acclaim), Freeman Maple Hybrids, and Bur Oak.

4.2.8 RIGHT OF WAY PRESERVATION

Right of way preservation is an important part of the planning process. Preserving adequate right of way for future transportation needs can reduce project costs and impacts. The following is a list of right of way needs that are associated with the previously discussed alternatives:

- Preserve existing right of way from 850 feet south of 52nd Avenue South to 58th Avenue South to allow for future full build road sections.

Enhancing public transit may encourage more people to choose it as their daily means of travel.

- Preserve existing right of way and obtain additional right of way from 58th Avenue South to 64th Avenue South to allow for future full build road sections and reconstruction of frontage road.
- Obtain additional right of way along the east and west sides of the 25th Street corridor between 64th and 100th Avenue South to provide a 200-foot right of way to accommodate future full build volumes.

Table 15: 25th Street South Right of Way Needs

64th Avenue South Corridor	Alternative 1 (ROW in Acres)	Alternative 2 (ROW in Acres)
25th Street South to 76th Avenue South*	15.32	17.83
76th Avenue South to 100 Avenue South*	30.03	30.03
TOTAL	45.35	47.86

*Areas were calculated assuming Frontage Road Sub Alternative 2. Frontage Road Sub Alternative 1 would require additional right of way.

4.2.9 TRANSIT ENHANCEMENT OPPORTUNITIES

Enhancing public transit may encourage more people to choose it as their daily means of travel. More people utilizing the public transit system would decrease the amount of daily traffic volumes on the study corridors. As part of the on-going Southwest Transit Study, MAT has developed a preliminary 5-year fixed transit route service boundary with demand response zones outside of the fixed boundary. The southern end of the 5-year fixed boundary for south Fargo is 52nd Avenue South with some response zones in the area of Bennett Elementary School. The study is on-going and may be subject to change. Despite the fact that transit service is not imminent on 25th Street south of 58th Avenue South, it is still important that roadway design, pedestrian facilities, and traffic control features take transit vehicles and transit patrons into consideration. Eventually transit service will be provided in this area, especially given the anticipated 2010 completion of the future high school along 70th Avenue South and the urban growth that may follow.

4.3 64th Avenue South Structure over County Drain 53

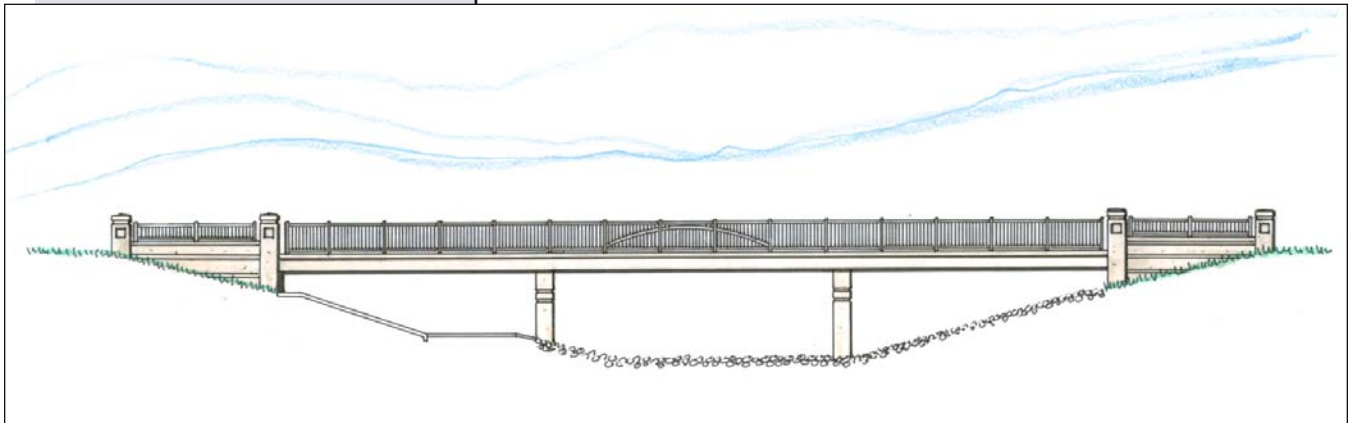
Preliminary design was completed for a 64th Avenue South bridge over County Drain 53. The design standards for the structure were based on the assumptions that the elevation of the roadway, elevation of the channel and the width of the channel would be the same as the recently designed 52nd Avenue South bridge over Drain 53. Hydraulic data from the Southside Flood Protection Plan shows flows under both the 52nd Avenue South and 64th Avenue South structures to be approximately the same. When final design is being completed for the 64th Avenue South structure, a survey should be completed to

Preliminary aesthetic design concepts were also completed for the 64th Avenue South Bridge over Drain 53.

determine the actual elevations of the roadway and the channel. The preliminary design of the 64th Avenue South Bridge over County Drain 53 is a three span structure with integral abutments and each pier on a single row of pile. The structure will require 21" x 36" box girder beams. The preliminary design for the bridge is 127 feet long and 91.5 feet wide. The typical section of the bridge includes an 8.5 foot walkway on the south side, 67 feet of roadway and a 12 foot multi-use bath on the north side. A bike trail underpass is provided along the west bank of the storm drain. A preliminary design plan sheet of the bridge can be found in Appendix H.

Preliminary aesthetic design concepts were also completed for the 64th Avenue South Bridge over Drain 53. The bridge will be constructed of concrete box girders, concrete piers and abutments. Architectural detailing enhances these bridge elements while visually unifying the concrete bridge. The concrete surfaces will receive a warm gray or buff coloration throughout. Architectural detailing includes horizontal reveal lines on the bridge abutments and piers. Bridgehead columns (posts) visually "announce" the crossing for pedestrians and motorists. The railing design will be of dark-painted steel rails and vertical pickets. The railing is accented with a shallow arc design within the mid-span panels. Railing and bridgehead detailing will be repeated on the street side and outside elevations of the bridge so that it is visible to pedestrians, motorists and nearby residents. A conceptual drawing of the proposed bridge enhancements is shown in Figure 8.

Figure 8: Conceptual Drawing of the 64th Ave South Bridge over County Drain 53



5.0 64TH AVENUE SOUTH GRADE SEPARATION & INTERCHANGE ALTERNATIVES & IMPACTS

One of the key elements of this study is to analyze the impacts and provide preliminary design of both grade separation and an interchange at 64th Avenue South and I-29.



One of the key elements of this study is to analyze the impacts and provide preliminary design of both grade separation and an interchange at 64th Avenue South and I-29. The analysis includes a review and analysis of the traffic projections derived from Fargo-Moorhead traffic projection model as provided by Metro COG and ATAC for the 2030 network for both the overpass and interchange options. The resulting traffic projections on the study corridors as well as on I-29, other adjacent arterial roadways and collector/local roads within the study area were then compared. The analysis also took into account right of way needs, preliminary cost estimates, performance measures, and the FHWA Access Modification Request Guidelines.

5.1 Grade Separation Alternative

The 64th Avenue South grade separation alternative is a four lane grade separated bridge over Interstate Highway 29. It includes signalization of both intersections on either side of the bridge, a pedestrian walk on the south side, and a shared use path on the north side of the bridge over I-29. Preliminary Design of the grade separation alternative is provided in the corridor layouts in Appendix E.

5.2 Interchange Alternative

The 64th Avenue South and I-29 interchange alternative includes ramps in all four quadrants and a loop ramp in the southeast quadrant. It includes signalization of both ramp intersections with 64th Avenue South, a pedestrian walk on the south side, and a shared use path on the north side of the bridge over I-29. The preliminary interchange design was completed under a separate project to obtain right of way in the northeast quadrant for a potential future interchange. The bridge over the interstate has been designed for six lanes with turn lanes. The southbound off ramp includes a left turn lane, a shared thru-left turn lane and a right turn lane. The northbound off ramp includes a shared thru-left turn lane and a right turn lane. The loop ramp in the southeast quadrant was designed to relieve the heavy eastbound to northbound left turn movement that was projected to occur during the morning peak hour. Preliminary design of the interchange alternative is provided in the corridor layouts in Appendix E.

5.3 Grade Separation vs. Interchange Alternative

5.3.1 TRAFFIC PROJECTIONS

The analysis included modeling traffic for the future 2030 network for both the overpass and interchange options. Each alternative was then compared to determine how it would affect the traffic volumes on the 64th Avenue South corridor as well as Interstate 29, other arterial roadways, and collector and local streets within the project area.

Applying the cost per mile of \$0.19 (the IRS rate for standard mileage reimbursement for personal mileage) and the average hourly wage in Fargo of \$16.76 (according to Job Service of North Dakota) to the VMT and VHT differential, the interchange scenario saves \$4,043 per day when compared to the grade separated scenario.



The results of this analysis are described below:

- 64th Avenue South over I-29 experiences less traffic volume by approximately 3,000 vpd with the overpass scenario in comparison to the interchange scenario.
- The interchange scenario relieves traffic volumes at other interchanges by taking approximately 2,000 vpd from the 52nd Avenue South/I-29 interchange and takes approximately 1,000 vpd from the 76th Avenue South/I-29 Interchange
- The interchange scenario provides a significant reduction in traffic on the north/south routes including 22nd Street, 25th Street, 28th Street and 32nd Street between 52nd and 64th Avenue South
- The interchange scenario provides a reduction of traffic volumes on 76th Avenue South west of I-29.
- The interchange traffic volumes show a slight increase of approximately 1,000 vpd in both the north and south directions on I-29 between 52nd and 64th Avenue South under the interchange scenario.

5.3.2 RIGHT OF WAY IMPACTS AND PRELIMINARY COST ESTIMATES

Early analysis of right of way necessary for both the interchange and overpass alternatives indicates that the overpass alternative would require approximately 69,000 square feet of right of way to be acquired and the interchange alternative would require approximately 150,000 square feet of right of way to be acquired. Preliminary cost estimates indicate that the interchange alternative would cost approximately \$13.1 million dollars and the overpass alternative would cost approximately \$5.8 million dollars.

5.3.3 PERFORMANCE MEASURES

As part of the traffic network analysis for traffic volumes on the roadways for the grade separation and interchange alternatives, performance measures information for the total vehicle miles traveled (VMT) and vehicle hours traveled (VHT) per day were collected for the entire roadway network. The results of this analysis are summarized below:

- The total Vehicle Miles Traveled (VMT) per day is 1,125 miles more for the interchange scenario than the grade separated scenario.
- The total Vehicle Hours Traveled (VHT) per day is 254 hours less for the interchange scenario than the grade separated scenario.
- Applying the cost per mile of \$0.19 (the IRS rate for standard mileage reimbursement for personal mileage) and the average hourly wage in Fargo of \$16.76 (according to Job Service of North Dakota) to the VMT and VHT differential, the interchange scenario saves \$4,043 per day when compared to the grade separated scenario.

Access to I-29 is currently provided by 52nd Avenue South to the north and 100th Avenue to the South. However, a future interchange with I-29 at 76th Avenue South has been included in the Long Range Transportation Plan and is included in the 2030 traffic model.



5.3.4 FHWA ACCESS MODIFICATION REQUEST GUIDELINES

FHWA has eight guidelines that must be reviewed and satisfied prior to allowing a new access or interchange onto a federal highway or interstate. As a form of early review, the eight guidelines have been addressed as part of this study.

Guideline Number 1 – The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design-year traffic demands while at the same time providing the access intended by the proposal.

Access to I-29 is currently provided by 52nd Avenue South to the north and 100th Avenue to the South. However, a future interchange with I-29 at 76th Avenue South has been included in the Long Range Transportation Plan and is included in the 2030 traffic model. The interchange with I-29 and 52nd Avenue South is currently undergoing reconstruction during the spring of 2008.

Estimated 2030 volumes indicate that an interchange at 64th Avenue South and I-29 will result in a reduction in volumes at the I-29 interchanges with 52nd Avenue South and 76th Avenue South. The volume reduction varies from 800 to 1800 fewer daily trips on the 52nd and 76th Avenue South interchange ramps. A LOS analysis was not completed at the 52nd Avenue and 76th Avenue South and I-29 ramp intersections as part of this project.

The 2030 volumes also show a reduction in traffic on most parts of the 52nd Avenue and 76th Avenue South corridors. This is especially important for 52nd Avenue South. 52nd Avenue South is currently being reconstructed as a new 4-lane with roadway with turn lanes and has little to no room for future expansion. The roadway will be nearing capacity by 2030 as a 5-lane facility. Further widening of 52nd Avenue will result in the need to purchase residential properties. Therefore, it will be important to move some of the traffic to 64th Avenue South.

Guideline Number 2 – All reasonable alternatives for design options, location and transportation system management type improvements (such as ramp metering, mass transit, and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.

Alternative locations are not viable given established and planned land use patterns and the established and planned transportation network. Continuity of the one mile grid system of arterials is critical to supporting the transportation network planned for the Fargo area. Further, the location of an interchange at 64th Avenue South is appropriate given the location of the existing and planned adjacent interchanges (one mile either side).

Consideration of transportation management system improvements has been limited to improvements in the local transit system. Ramp metering and HOV facilities are not planned to be implemented the Fargo-Moorhead area. Metropolitan Area Transit (MAT) provides service to the Fargo area. Currently MAT is working with Metro COG on the Southwest Transit Study. As part of this study MAT has developed a 5-year fixed transit route service boundary with demand

Conceptual design for the interchange has been designed to meet AASHTO standards and is a full diamond with a loop ramp in the southeast quadrant and will provide for all traffic movements.



response zones outside of the fixed boundary. The southern end of the 5-year fixed boundary for south Fargo is 52nd Avenue South with some response zones in the area of Bennett Elementary School. Historically, transit use in the Fargo-Moorhead area has not been high enough to result in a significant reduction in traffic on the local street system. Development patterns in the metro area tend to be low density, resulting in fewer potential transit users per acre of urban growth area. While the City is striving to increase overall average density, it is not anticipated that the effects of those efforts will have a significant effect on the roadway capacity needs of the metro area.

Guideline Number 3 – The proposed access point does not have a significant adverse impact on the safety and operation for the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in an urbanized area, include an analysis of sections of Interstate to and including at least the first adjacent existing or proposed interchange on either side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with the new or revised access point.

An interstate operations analysis has not been completed at this time. However, the 2030 traffic projections show that with an interchange at 64th Avenue South, volumes on the interstate increase up to 1,000 vpd in both the northbound and southbound directions between 52nd Avenue South and 76th Avenue South. North of 52nd Avenue and south of 76th Avenue, the volume remains approximately the same as it would if the interchange were not built. Metro COG is currently working with local jurisdictions to conduct an I-94 and I-29 traffic operations analysis. This analysis should be structured to analyze the impacts of possible future interchanges, such as 64th Avenue South on the overall system.

Guideline Number 4 – The proposed access connects to a public road only and will provide for all traffic movements. Less than “full interchanges” for special purpose access for transit vehicles, for HOV’s, or into park-and-ride lots may be considered on a case-by-case bases. The proposed access will be designed to meet or exceed current standards for Federal Aid projects on the Interstate system.

The proposed access would connect I-29 to 64th Avenue South which is a public facility designated as a future arterial roadway that provides system continuity from west of CR 17 in Cass County to University Drive (Hwy 81) in Fargo. Conceptual design for the interchange has been designed to meet AASHTO standards and is a full diamond with a loop ramp in the southeast quadrant and will provide for all traffic movements.

Guideline Number 5 – The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must be consistent with the metropolitan and/or statewide transportation plan, as appropriate, the applicable provisions of 23 CFR part 450 and the transportation conformity requirements of 40 CFR parts 51 and 93.

The proposed interchange is not currently shown in the Fargo Growth Plan. However, the transportation element of the plan and the surrounding future land use plans may be updated based on the outcome of this corridor study. The 2004 Fargo-Moorhead Short and

A separate right of way preservation study for a potential interchange at I-29 and 64th Avenue South has made provisions for the preservation of right-of-way and access restrictions necessary to preserve the intended capacity of 64th Avenue South as a future arterial roadway.



Long-Term Transportation Plan shows a grade separated crossing at 64th Avenue South with I-29. In 2006, the City of Fargo initiated a study to preserve right-of-way in the northeast quadrant of I-29 and 64th Avenue South for a potential future interchange. The study was initiated since a development proposal was submitted that would preclude ramp construction if approved. The location of the proposed interchange would meet City of Fargo standards with interchanges located at one-mile spacing on the arterial roadways, and would be consistent with current NDDOT practices in metro areas.

The project is not currently included in the State Transportation Improvement Plan (STIP) as funding for the project has not been identified.

The 1990 Clean Air Act Amendments and final rules require states to develop State Implementation Plans (SIPs) for air quality to demonstrate how federal air quality standards will be met in non-attainment and maintenance areas (i.e., demonstrate conformity with air quality standards). The State of North Dakota has no non-attainment or maintenance areas, and is in compliance with federal air quality standards, therefore the requirements for demonstrating transportation conformity (40 CFR 51 and 40 CFR 93) are met.

Guideline Number 6 – In the areas where the potential exists for future multiple interchange additions all requests for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan.

Metro COG is currently working on an interstate operations study in which they are analyzing all of the interchanges within the Fargo Metropolitan area for both I-29 and I-94. The results of this study will identify alternative locations for an interstate bypass and recommended interstate and interchange improvements. It is assumed that the results of the interstate operations study will be added to the next Long Range Transportation Plan.

Guideline Number 7 – The request for a new or revised access generated by a new or expanded development demonstrates appropriate coordination between the development and related or otherwise transportation system improvements.

This access request has not been generated by any specific development proposal, but rather, was performed in anticipation of development of large extraterritorial areas under the jurisdiction of the Cities of Fargo, Horace, and West Fargo. A separate right of way preservation study for a potential interchange at I-29 and 64th Avenue South has made provisions for the preservation of right-of-way and access restrictions necessary to preserve the intended capacity of 64th Avenue South as a future arterial roadway.

The proposed access will be taken to the local and regional planning authorities for adoption under this study. If the study is adopted with the 64th Avenue South interchange as the recommended alternative, it can then be added to the Metropolitan Transportation Plan.

Guideline Number 8 – The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal.

The proposed access will be taken to the local and regional planning authorities for adoption under this study. If the study is adopted with the 64th Avenue South interchange as the recommended alternative, it can then be added to the Metropolitan Transportation Plan. Funding for the proposed interchange has not been identified. If federal funding is used, it is anticipated that an Environmental Assessment prepared under 23 CFR 771 and 40 CFR 1500-1508 will be required. An environmental documentation section has been completed as part of this study which includes SOV letters that were sent out to 42 agencies along with a one-call to utilities to provide information on utilities within the project area.



6.0 ENVIRONMENTAL DOCUMENTATION

A solicitation of views letter was sent to 42 agencies and utility companies to solicit input about potential effects of developing the study corridors.

A solicitation of views letter was sent to 42 agencies and utility companies to solicit input about potential effects of developing the study corridors. A summary of the responses that were received are shown in Table 16. A copy of the original letter, the list of agencies to which it was sent, and all responses are provided in Appendix I.

Table 16: Environmental Review Agency Comments

Organization	Name	Comment
Qwest	Bill Reisenauer	We received a map of the fiber and copper lines within the project study area. Qwest has a Fiber Optic Line along 57th Street that runs both north and south of 64th Avenue South. Qwest has a Copper Line that runs along 64th Avenue South between 57th Street and 45th Street and along 45th Street for about a mile south of 64th Avenue. Bill noted that he is the contact for Qwest west of I-29 and that Dave Buen will be the contact for Qwest east of I-29.
USDOT Federal Aviation Administration	Patricia L. Dressler	The Bismarck Airports District Office has no objections to the proposed corridor study and improvements identified in the SOV letter provided the following: The FAA be notified of construction or alterations as required by FAR, Part 77, Objects Affecting Navigable Airspace; the FAA technical operations are contacted to identify any possible impacts to aircraft navigation and/or communication equipments; and the design construction and operation of the project improvements do not create a hazardous wildlife attractant to the surrounding airports.
North Dakota Environmental Health Section	L. David Glatt	The ND Environmental Health Section believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. Take care by bodies of water and return disturbed areas back to original conditions as soon as possible after work is completed. Take caution to prevent spills of oil and grease from equipment. Attached are guidelines for minimizing degradation to waterways. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area.
Western Area Power Administration	Gerald T. Paulson	Western has a few concerns that they would like addressed during the planning process. Maintaining separation between the roads and transmission line structures, maintaining access to the transmission line and its structures, not altering the ground elevation to the extent that it would significantly impact vertical clearance to the conductors (wires), and not installing high profile objects (traffic lights and/or street lights) on the right-of-way.
National Resources Conservation Service	J.R. Flores	NRCS has determined this project is located in an area of urban development where FPPA does not apply, therefore, no further action is required.
Bureau of Indian Affairs	Robert Duffy	The Bureau of Indian Affairs has no environmental objections to this action and finds that the listed action will not affect cultural resources on tribal or individual landholdings.
Department of the Air Force	Wayne A. Koop	Grand Forks AFB owns no property in or adjacent to the proposed project area and has no pertinent information or comments to contribute to your environmental assessment.
Department of the Army	Daniel E. Cimarosti	Corps regulatory offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. If this project requires a permit for these acts, please complete and submit the enclosed Corps of Engineers permit application.
North Dakota Geological Survey	Fred J. Anderson	The NDGS has no specific comments related to the proposed project as described in your letter.
U.S. Fish and Wildlife Service	Jeffrey K. Tower	The Service has no property interests or planned development in the vicinity of this study area. The construction activities being considered to improve the transportation system can be completed without impacts to fish and wildlife resources or their habitat.
North Dakota Parks and Recreation	Jesse Hanson	The project does not affect state park lands that ND Parks and Recreation manages or Land and Water Conservation Fund recreation projects that they coordinate. Based on the review of the ND Natural Heritage biological conservation database, there are no known occurrences of plant or animal species of concern within or adjacent to the project area.
NDDOT	Bob Christensen	Requested a form be completed and additional information provided. Form was provided and a response was received that no properties are affected.
North Dakota Game and Fish	Michael G. McKenna	The ND Game and Fish Department has no objections to this project provided any unavoidable wetland impacts are replaced in kind, and steps are taken to protect the Wild Rice River, a Class II fishery. This could include minimizing run-off and erosion into the stream, avoiding any necessary work within the waterway from April 15 to June 1, and making no alterations to the channel.
North Dakota State Water Commission	Larry Knudtson	Prior to construction in the floodplain apply for a non-building floodplain development permit. All waste material associated with the project must be disposed of properly and not place in identified floodway areas. No sole-source aquifers have been designated in ND.
Northern Border Pipeline Company	Ken Miller	Northern Border Pipeline has no facilities in the area, so there will be no impact on our operations.

The future expansion and roadway improvements to 25th Street are not anticipated until such time as urban development is creating the demand for the roadway improvements. Therefore, the development will drive the change from agricultural land to other types of land uses and improvements to the roadway will follow.



6.1 Natural Resource Impacts

6.1.1 SOILS, WETLANDS, WILDLIFE HABITAT, ENDANGERED SPECIES AND WATER QUALITY

The Solicitation of Views Letters were sent to agencies that typically review environmental documents for the purpose of identifying any potential concerns or impacts associated with natural resources such as soils, wetlands, wildlife habitat, endangered species and water quality. Responses regarding natural resource impacts were received from the North Dakota Environmental Health Section, Natural Resources Conservation Service, U.S. Fish and Wildlife Service, ND Parks and Recreation, ND Game and Fish, and ND State Water Commission. No major concerns were expressed at this time. Their responses are summarized in Table 16 above and the response letters can be found in Appendix I.

6.1.2 AGRICULTURAL LAND

Farmland in the Red River Valley is considered prime farmland. Future improvements to 25th Street south of 64th Avenue would have some impact on prime farmland where the existing right-of-way is proposed to be expanded from 66 feet to 200 feet wide. The right-of-way needed would be approximately 43.6 acres. Other recommended improvements to 25th Street do not require additional roadway right-of-way in areas that are currently farmland. The future expansion and roadway improvements to 25th Street are not anticipated until such time as urban development is creating the demand for the roadway improvements. Therefore, the development will drive the change from agricultural land to other types of land uses and improvements to the roadway will follow.

Improvements to 64th Avenue South west of Maple Valley Drive to 57th Street will have some impact on prime farmland where the existing right of way is proposed to be expanded from 66 feet to 200 feet wide. The right of way needed for the expansion would be approximately 30.6 acres. Building an interchange at 64th Avenue South and I-29 would require approximately an additional 1.9 acres of right of way on prime farmland. Alternative 1 keeping 64th Avenue South on its existing alignment east of Maple Valley Drive to University Drive, would not require additional right-of-way in areas that are currently farmland. However, Alternatives 2 or 3 where the 64th Avenue alignment shifts 1/8 or 1/4 mile to the south east of Maple Valley Drive to University Drive would require additional right of way through prime farmland. The right of way need for 64th Avenue east of Maple Valley Drive to University Drive for Alternatives 2 and 3 would be approximately 29.6 acres and 29.9 acres respectively. Once again future expansion and roadway improvements to 64th Avenue South are not anticipated until such time as urban development is creating the demand for the roadway improvements. Therefore, development will drive the change from agricultural land to other types of land uses and improvements to the roadway will follow.

Rural drainage ditches exist along both 25th Street and 64th Avenue South. As development occurs and the roadway improvements are made, utilities will be extended to these areas and the new roads will be designed with urban curb & gutter storm sewer systems.

6.1.3 BOULEVARD TREES AND GROUND COVER

Most of the project area is undeveloped, so large numbers of boulevard trees will not be impacted. In the areas where development exists and boulevard trees are impacted by construction, they should be replaced at a ratio of 2:1 with trees that have been identified as part of the aesthetic design concepts. The preliminary design concepts have been developed to include as much boulevard separation as possible between the new roadways and existing residences. Sections 4.1.7 and 4.2.7 of this report describe aesthetic design concepts that have been developed for both study corridors.

6.2 Drainage Impacts

Rural drainage ditches exist along both 25th Street and 64th Avenue South. As development occurs and the roadway improvements are made, utilities will be extended to these areas and the new roads will be designed with urban curb & gutter storm sewer systems.

As discussed in Section 4.3, a 64th Avenue South bridge will be constructed over County Drain 53. Construction of this structure will replace the existing culverts that are currently under the existing 64th Avenue South roadway.

Several alternatives have been developed by the City of Fargo for a South Side Flood Protection Plan. Depending on which of the South Side Flood Protection Plan alternative is chosen will impact design considerations for both the 25th Street and 64th Avenue South corridors. Table 17 shows how the different alternatives affect design considerations for the two study corridors.

Table 17: Southside Flood Control Matrix

25th Street & 64th Avenue Design Considerations	Wild Rice River Levee Alternative	Wild Rice River Diversion Alternative	Wild Rice River Bypass Alternative	70th Avenue South Outlet Alternative	Rose Coulee Outlet Alternative
64th Avenue levee crossing at University Drive	X	A	X	X	X
64th Avenue Bridge at University Drive		B,C			
64th Avenue Diversion Channel Bridge at County Drain 53					X
25th Street Bridge at 70th Avenue				X	
25th Street "Road Raise" at 88th Avenue	X			X	X
25th Street Bridge between 94 Avenue and 100th Avenue				X	X
25th Street Alignment to be determined with proposed improvements from 88th to 100th Avenue	X	X		X	X

Notes: "X" Denotes design consideration for all 25th Street & 64th Avenue South Alternatives.

"A" Denotes design consideration for Alternative 1 – 64th Avenue South on existing alignment.

"B" Denotes design consideration for Alternative 2 – 64th Avenue South shifted 1/8 mile south.

"C" Denotes design consideration for Alternative 3 – 64th Avenue South shifted 1/4 mile south.

A North Dakota One Call was made on February 14, 2008. There are several utilities that exist within the project area.



6.3 Utility Impacts

- A North Dakota One Call was made on February 14, 2008. A request was made for electronic or paper plans of any utilities within the project area including both 25th Street and 64th Avenue South. A spreadsheet in Appendix I shows utilities that were contacted by North Dakota One Call along with their responses. There are several utilities that exist within the project area. Some utilities would require relocation or accommodation for either of the alternatives. The utilities in the project area and their approximate locations are described below:
- Cass County Rural Water has several water lines throughout the project area. Several PVC water lines run along both 25th Street and 64th Avenue South within the proposed right of way as well as several crossing of the road. Drawings were received of the Cass Rural Water line and a one call should be completed prior to survey for design and again before construction occurs.
- McLeod USA has a fiber optic line that runs along the east side of 25th Street from 52nd Avenue to 58th Avenue South. The fiber cable is believed to then run east along 58th Avenue South to Bennett Elementary School.
- 702 Communications has a line that runs along the east side of 25th Street from 52nd Avenue South to 58th Avenue South.
- Red River Rural Telephone has a buried fiber optic line that crossed 64th Avenue South along the east side of 38th Street.
- Qwest Communications has several lines on both sides of 25th Street with multiple crossings of 25th Street between 52nd and south of 88th Avenue South. Lines also run along 64th Avenue South from University Drive across the interstate and west of 57th Street.
- Midcontinent Communications has a line that runs from the southwest quadrant of University Drive and 64th Avenue South to the west to 36th Street. The line has several crossings of 64th Avenue.
- Excel Energy has a line east of 25th Street from 52nd Avenue to south of 58th Avenue where it crosses 25th Street to the east. A line also crosses 25th Street just north of 88th Avenue South and continues to the south along the east side of 25th Street until the jog in the 25th Street alignment. A line runs along the north side of 64th Avenue from University Drive for approximately 1,000 feet, with multiple crossings of 64th Avenue. A line running north/south also crosses 64th Avenue at approximately 38th Street.
- Cable One has two lines that run along the east side of 25th Street from 52nd Avenue to 64th Avenue South with multiple crossing of 25th Street. Lines run along the north and south side of 64th Avenue to the west for approximately 2,200 feet. A line runs along the south side of 64th Avenue approximately 1,400 feet west of University Drive.

Disproportionately high and adverse human health or environmental effect on minority and low-income populations are not anticipated as a result of either alternative. Information published by the Fargo-Moorhead Metropolitan Council of Governments indicates that there are no low-income or minority concentrations within the project area.



- Western Area Power Administration has a main transmission line that runs from the northwest to the southeast through the project area. During the planning and design process, Western Area Power has asked to maintain separation between the roads and transmission line structures, maintain access to the transmission line and its structures, not alter ground elevation to the extent that it would impact vertical clearance to the conductors, and not install high profile objects such as traffic lights within the transmission line right of way.

6.4 Environmental Justice and Neighborhood Impacts

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that environmental justice be addressed in all federal planning and programming activities. The purpose of Executive Order 12898 is to identify, address and avoid disproportionately high and adverse human health environmental effects on minority and low-income populations.

Disproportionately high and adverse human health or environmental effect on minority and low-income populations are not anticipated as a result of either alternative. Information published by the Fargo-Moorhead Metropolitan Council of Governments indicates that there are no low-income or minority concentrations within the project area.

6.5 Modal Impacts

Currently a shared use pedestrian/bike path exists along the east side of 25th Street between 52nd and 58th Avenue South. This is the only pedestrian accommodation that exists within the study corridors. This facility will be maintained or replaced as it is one of the designated routes for the Safe Route to School for Bennett Elementary.

The 2006 Metro COG Bicycle and Pedestrian Plan was used as a reference to make recommendations for the bicycle and pedestrian proposed improvements. All of the future proposed improvements that were in the 2006 Metro COG Bicycle and Pedestrian Plan were carried forward as recommendation in this corridor study along with some additional recommendations. A future elementary school may be located to the east of 25th Street and south of 70th Avenue South, just east of the proposed new high school. Recommended pedestrian facilities with this study may be able to be used as routes for a safe route to school to this new facility. However, a separate study should be completed to identify the safe routes to school for the new elementary.

The study had received a public comment to consider on-road bike paths in addition to the Class 1 shared use paths. Current standards required that on-road bike paths be designed 4 to 6-feet in width. The study committee did feel that it is important to consider bicycles as a mode of transportation and accommodate to their needs. However some issues were discussed that would need to be resolved prior to including the on-road striped bike paths as part of the project design.

No relocation of houses or businesses would be required for any of the previously described alternatives.

These issues include the following:

- The City of Fargo would still want the Class 1 shared use path along the arterial roadways regardless if an on-road striped bike path is constructed.
- A preliminary cost estimate was completed and the on-road bike paths would add a cost of approximately \$110,000 to \$165,000 per mile for a 4 to 6-foot wide bike lane in one direction.
- North Dakota law states that a bicycle is required to use a side path if it is provided. However, the City of Fargo has deleted this from their City Bicycle Ordinance under Home Rule Charter.
- NDDOT is not in favor of an on-road bike path through an interchange. NDDOT would not be able to provide funding for both a separated shared use path and on-road bike path at the same location.
- The study committee felt that this should potentially be a policy decision that would set a precedent for future City projects. The committee decided that this issue would need to be resolved during the final design phase.

A memorandum including all of the discussions regarding the on-road bike path is attached in Appendix A.

No transit (bus) routes currently operate on 25th Street or 64th Avenue South within the project limits, therefore no transit routes would be impacted by any of the alternatives. The alternatives would facilitate the capability for expansion of bus routes into the project area.

6.6 Disruption/Displacement Impacts

No relocation of houses or businesses would be required for any of the previously described alternatives. Two homeowners that live south of 64th Avenue South and west of 25th Street have a proposed cul de sac for the frontage road that would require acquisition of a portion of their properties. Both homeowners have indicated that they may pursue being bought out due to the impacts on their property by the location of the cul de sac.

There are also two alternatives that involve the frontage road just west of 25th Street and north of 64th Avenue. For both alternatives, a cul-de-sac is proposed at the very southern property which would impact much of the properties front yard. It would not require the homeowners to relocate, however they have expressed concerns that it may impact the value of their property.



7.0 ALTERNATIVE EVALUATION

Matrices were developed to aid the study committee in determining the final recommendations for the study corridors.

Matrices were developed to aid the study committee in determining the final recommendations for the study corridors. The matrices include all corridor alternatives including either grade separation or an interchange at 64th Avenue South and I-29. The alternatives were then reviewed by the study review committee members based on the following factors:

- Results of future traffic modeling and traffic operations analysis
- Right of way needs
- Preliminary cost estimates
- Environmental impacts
- Public input comments
- Comments from federal, state, and local governing agencies

The matrix for each alternative/option is shown in Tables 18 thru 20 in the following pages.

Table 18: 64th Avenue South Corridor Alternative Evaluation Matrix

7.0 ALTERNATIVE EVALUATION

64th Avenue South Roadway Section	Evaluation Criteria	Alignment Alternative 1 (on existing alignment)	Alignment Alternative 2 (shifted 1/8 mile south)	Alignment Alternative 3 (shifted 1/4 mile south)
57th Street to West of I-29	Acceptable LOS for Future Year 2030 Traffic Volumes	Yes	Yes	Yes
	2030 ADT with Interchange	14,200 vpd	14,200 vpd	14,200 vpd
	2030 ADT with Overpass	11,300 vpd	11,300 vpd	11,300 vpd
	Right of Way Needs (Acres)	29.0	29.0	29.0
	Preliminary Cost Estimates	\$11.6 M	\$11.6 M	\$11.6 M
	Environmental Impacts	No Known Impacts	No Known Impacts	No Known Impacts
	Public Feedback	Alignment is the same for this portion of the roadway for all alternatives	Alignment is the same for this portion of the roadway for all alternatives	Alignment is the same for this portion of the roadway for all alternatives
East of I-29 to 25th Street	Governing Agency Feedback	Preferred	Not Preferred	Not Preferred
	Acceptable LOS for Future Year 2030 Traffic Volumes	Yes	Yes	Yes
	2030 ADT with Interchange	12,100 vpd	12,100 vpd	12,100 vpd
	2030 ADT with Overpass	10,400 vpd	10,400 vpd	10,400 vpd
	Right of Way Needs (Acres)	8.2	14.0	14.0
	Preliminary Cost Estimates	\$7.2 M	\$7.6 M	\$7.7 M
	Environmental Impacts	Impacts Adjacent Properties - No Relocations Proposed	Greater Impacts to Prime Farmland	Greater Impacts to Prime Farmland
25th Street to University Drive	Public Feedback	Preferred by Landowner whose land would be impacted by an alignment shift	Preferred by homeowners of properties adjacent to the existing alignment	Preferred by homeowners of properties adjacent to the existing alignment
	Governing Agency Feedback	Preferred	Not Preferred	Not Preferred
	Acceptable LOS for Future Year 2030 Traffic Volumes	Yes	Yes	Yes
	2030 ADT with Interchange	6,000 vpd	6,000 vpd	6,000 vpd
	2030 ADT with Overpass	6,400 vpd	6,400 vpd	6,400 vpd
	Right of Way Needs (Acres)	2.8	15.6	15.5
	Preliminary Cost Estimates	\$2.5 M	\$3.6 M	\$3.4 M
Total Corridor**	Environmental Impacts	Impacts Adjacent Properties - No Relocations Proposed	Greater Impacts to Prime Farmland	Greater Impacts to Prime Farmland
	Public Feedback	Preferred by Landowner whose land would be impacted by an alignment shift and by the City of Bismarck	Preferred by homeowners of properties adjacent to the existing alignment	Preferred by homeowners of properties adjacent to the existing alignment
	Governing Agency Feedback	Preferred	Not Preferred	Not Preferred
	Right of Way Needs (Acres)	40.0	58.6	58.9
	Preliminary Cost Estimates	\$21.3 M	\$22.8 M	\$22.7 M
	*Note: Total corridor right of way and preliminary cost does not include an overpass or interchange at 64th Avenue and I-29.			

Table 19: 64th Avenue South & I-29 Intersection Alternative Evaluation Matrix

7.0 ALTERNATIVE EVALUATION

Evaluation Criteria	Interchange Alternative	Grade Separation Alternative
Future Year 2030 Traffic Impacts	Less traffic on nearest interchanges to the north and south; reduces traffic on adjacent north/south routes in the area. Reduces traffic volumes on portions of 52nd and 76th Avenue South	Less traffic on 64th Avenue by 3,000 vpd; less traffic on I-29 between 52nd and 76th Avenue South.
Forecast for Year 2030 ADT	17,300 vpd	14,000 vpd
Performance Measures	254 fewer Vehicle Hours Traveled (VHT) per day; comparing saving in VHT with increased VMT saves overall network approximately \$4043/day.	1,125 fewer Vehicle Miles Traveled (VMT) per day
Right of Way Needs (Acres)	3.4	1.6
Preliminary Cost Estimates	\$13.1 M	\$5.8 M
Public Feedback	The overall public seemed more favorable of this alternative if it was in conjunction with the alignment shift alternatives so that it doesn't increase traffic past their homes. Landowners did not express an opinion either way.	Some of the public expressed that they would prefer the overpass over the interchange. They would like to see the corridor similar to 17th Avenue South. Landowners did not express an opinion either way.
Governing Agency Feedback	The agencies involved would like to see right of way preserved for a future interchange at 64th Avenue South and I-29	It is expected that an overpass would be built when needed so that interchange ramps could be added in the future if/when they are needed.

Table 20: 25th Street South Corridor Alternative Evaluation Matrix

7.0 ALTERNATIVE EVALUATION

25th Street South Roadway Section	Evaluation Criteria	Alignment Alternative 1 (on existing alignment)		Alignment Alternative 2 (alignment slightly shifted to the East)
		Yes	Yes	
52nd Avenue to 76th Avenue South	Acceptable LOS for Future Year 2030 Traffic Volumes		Yes	
	2030 ADT with Interchange	13,900 vpd		13,900 vpd
	2030 ADT with Overpass	14,100 vpd		14,100 vpd
	Right of Way Needs (Acres)	15.3		17.8
	Preliminary Cost Estimates	\$10.0 M		\$10.2 M
	Environmental Impacts	Impacts 2 Properties - No Relocations Proposed		Impacts 2 Properties - No Relocations Proposed
	Public Feedback	Not preferred because there are greater impacts to the properties adjacent to the frontage road.		Preferred because it reduces impacts to the properties adjacent to the frontage road.
	Governing Agency Feedback	Not Preferred		Preferred
	Acceptable LOS for Future Year 2030 Traffic Volumes	Yes		Yes
	2030 ADT with Interchange	30 vpd		30 vpd
75th Avenue to 100th Avenue South	2030 ADT with Overpass	30 vpd		30 vpd
	Right of Way Needs (Acres)	30.0		30.0
	Preliminary Cost Estimates	\$9.7 M		\$9.7 M
	Environmental Impacts	No Known Impacts		No Known Impacts
	Public Feedback	No Comments Received on this Section of Roadway		No Comments Received on this Section of Roadway
	Governing Agency Feedback	Not Preferred		Preferred
	Proposed Alternative			
	Acceptable LOS for Future Year 2030 Traffic Volumes	Frontage road shifts to the west and connects into 62nd Avenue at 27th Street.		Frontage road is parallel north/south to 25th Street and connects into 62nd Avenue just west of 25th Street.
	Environmental Impacts	Yes		Yes
	Public Feedback	Impacts 3 Additional Properties - No Relocations Proposed		Impacts 3 Additional Properties - No Relocations Proposed
Frontage Road Connection to 62nd Avenue South	Governing Agency Feedback	No Comments Received		No Comments Received
	Governing Agency Feedback	Not Preferred		Preferred
	Right of Way Needs (Acres)	45.3		47.8
	Preliminary Cost Estimates	\$19.7 M		\$19.9 M
Total Corridor*				

8.0 SUMMARY OF RECOMMENDATIONS

The SRC selected Alternative 1 as the preferred alternative for the 64th Avenue South corridor. Alternative 1 keeps the 64th Avenue South corridor on or very close to the existing alignment between 57th Street and University Drive.



The study review committee selected preferred recommendations along both study corridors and for the 64th Avenue South and I-29 intersection. Layouts of the preferred alternatives can be found in Appendix E.

8.1 64th Avenue South Corridor

The SRC selected Alternative 1 as the preferred alternative for the 64th Avenue South corridor. A summary of the preferred alternative is described below:

- Alternative 1 keeps the 64th Avenue South corridor on or very close to the existing alignment between 57th Street and University Drive.
- Between 57th Street and 45th Street, 64th Avenue South is proposed to have 200-feet of right of way. The roadway section should be designed as a four-lane divided roadway with a 31-foot wide median and turn lanes where appropriate.
- Between 45th Street and Maple Valley Drive, 64th Avenue South is proposed to have 200-feet of right of way. The roadway section should be designed as a six-lane divided roadway with a 32-foot wide median and turn lanes where appropriate.
- Between Maple Valley Drive and 25th Street, the 64th Avenue South alignment shifts slightly to the north before it crosses the bridge over County Drain 53. The roadway tapers down to a 3-lane undivided section with one lane in each direction, a common left-turn lane, and right turn-lanes where appropriate. A frontage road has been provided on the south side of 64th Avenue between the bridge over County Drain 53 and 25th Street. The frontage road has access on its west end, access at 27th Street and it dead ends in a cul-de-sac on its east end (just west of 25th Street).
- The frontage road south of 64th Avenue South and west of 25th Street impacts two properties (2616 64th Avenue South and 2704 64th Avenue South) where the frontage road connects into 64th Avenue at 27th Street. The frontage road dead ends into a cul-de-sac on its east end and would impact one property (2506 64th Avenue South).
- Between 25th Street and just east of 21st Street, 64th Avenue South is proposed to have 150-feet of right of way. The roadway section should be a 3-lane undivided section with one lane in each direction, a common left-turn lane, and additional turn-lanes where appropriate.
- Between just east of 21st Street to University Drive, 64th Avenue South is proposed to have approximately 115-feet of right of way. The roadway section should be a 3-lane undivided section with one lane in each direction, a common left-turn lane, and additional turn lanes where appropriate. The projected traffic volumes along this section of roadway remain fairly low, so all of the direct access onto 64th Avenue South will remain with the exception of one residence (1648 64th Avenue) which currently has two access points. At this residence the driveway on the west would be closed.

The SRC selected Alternative 2 as the preferred alternative for the 25th Street South corridor. Alternative 2 shifts the 25th Street South corridor to the east approximately 45 feet between 60th Avenue South to approximately 66th Avenue South.



- All access restrictions, bicycle/pedestrian facilities and traffic control recommendations should remain as discussed in previous sections of the report.

8.2 64th Avenue South & Interstate 29

The SRC decided that they would like to continue preserving right of way for a future interchange. The committee felt that an overpass may be needed before a full interchange is needed. Therefore when funds are available for the 64th Avenue South overpass of I-29, it should be designed so that future interchange ramps can be added if or when they are needed.

8.3 25th Street South Corridor

The SRC selected Alternative 2 as the preferred alternative for the 25th Street South corridor. A summary of the preferred alternative is described below:

- Alternative 2 shifts the 25th Street South corridor to the east approximately 45 feet between 60th Avenue South to approximately 66th Avenue South. The alignment shift would require purchasing right of way to the east of 25th Street from undeveloped properties. The alignment shift allows more space for the frontage road between 58th and 64th Avenue South and changes the design for the cul-de-sac on the south end of the frontage road. The new cul-de-sac design reduces (but does not eliminate) impacts to two properties (2505 64th Avenue and 6305 25th Street).
- Between 52nd Avenue South to just south of 58th Avenue South, 25th Street is proposed to have a minimum of 120-feet of right of way. The roadway shall be designed as a 5-lane undivided section with two lanes in each direction, a common-left turn lane and additional turn lanes where appropriate.
- Between just south of 58th Avenue South to 64th Avenue South, 25th Street is proposed to have a minimum of 140-feet of right of way. The roadway shall be designed as a 5-lane undivided section with two lanes in each direction, a common-left turn lane and additional turn lanes where appropriate. A frontage road along the west side of 25th Street will serve the existing homes between 58th and 64th Avenue South.
- Between 64th Avenue South and 100th Avenue South, 25th Street is proposed to have a minimum of 200-feet of right of way. The alignment in this section is proposed to shift to the west approximately one-half mile south of 88th Avenue South. The purpose of the alignment shift is due to the location of the Red River at this location. The roadway shall be designed as a 5-lane undivided section with two lanes in each direction, a common-left turn lane and additional turn lanes where appropriate.
- All access restrictions, bicycle/pedestrian facilities and traffic control recommendations should remain as discussed in previous sections of the report.

9.0 IMPLEMENTATION PLAN

An implementation plan was developed for the selected preferred alternatives along both the 25th Street and 64th Avenue South corridors. Several of the short range projects are proposed to be completed prior the opening of Davies High School in August of 2011.

An implementation plan was developed for the selected preferred alternatives along both the 25th Street and 64th Avenue South corridors within the study area. The implementation plan splits the proposed projects into short range (0 to 5 years), mid range (5 to 10 years) and long range (10+ years) categories. The short range projects have an actual year assigned for the project to be completed. Several of the short range projects are proposed to be completed prior the opening of Davies High School in August of 2011. The study committee felt that it was important to have good, paved roadways for high school students to drive on during their commute to and from school. The implementation schedules are presented for 64th Avenue South and 25th Street in Tables 21 and 22 respectively.

Table 21: 64th Avenue South Implementation Plan

9.0 IMPLEMENTATION PLAN

IMPLEMENTATION MEASURES FOR THE 64TH AVENUE SOUTH CORRIDOR						
Corridor Section	Short Range (0-5 Years)				Mid Range (5-10 Years)	Long Range (10+ Years)
	2008	2009	2010	2011	2012	2013-2017
University Drive to 25th Street	Acquire recommended right of way along the 64th Avenue South Corridor & add proposed improvements to the update of the MTP.		(1) Construct 64th Avenue South from 25th Street to University Drive as a permanent 3-lane roadway including utilities. (\$2.5 M)			
25th Street to East of I-29 (Maple Valley Drive)	Acquire recommended right of way along 64th Avenue South Corridor & add proposed improvements to the update of the MTP.				(1) Construct 64th Avenue South from Maple Valley Drive to 25th Street as a permanent 3-lane roadway. Includes installing remaining City utilities. (\$7.2 M)	
I-29 (Maple Valley Drive to 40th Street)	Acquire recommended right of way along 64th Avenue South Corridor & add proposed improvements to the update of the MTP.				(3) Construct the 64th Avenue South overpass of I-29 as recommended and Maple Valley Drive as a permanent divided 6-lane roadway.	Construct the 64th Avenue South and I-29 interchange when traffic volumes warrant construction.
West of I-29 (40th Street) to 57th Street					(1) Construct 64th Avenue South from 40th Street to	
	Acquire recommended right of way along 64th Avenue South Corridor & add proposed improvements to the update of the MTP.				(2) Construct 64th Avenue South from 45th Street to 40th Street as a permanent 3-lane roadway.	Construct 64th Avenue South from 57th to 45th Street as development occurs.
						Expand 64th Avenue South from 57th to 40th Street when additional roadway capacity is needed.

(1) Note: Along with building the roadway, pedestrian facilities, frontage roads, bridges and landscape improvements should also be designed and constructed as proposed.

(2) Note: Design the sections for future expansion to full recommended section.

(3) Note: Construct the overpass designed for future expansion to a full interchange.

(4) Note: Preliminary cost estimates do not include utility work.

Table 22: 25th Street South Implementation Plan

9.0 IMPLEMENTATION PLAN

IMPLEMENTATION MEASURES FOR THE 25TH STREET SOUTH CORRIDOR						
Corridor Section	Short Range (0-5 Years)			2012	Mid Range (5-10 Years) 2013-2017	Long Range (10+ Years) 2018-2027
	2008	2009	2010	2011		
52nd Avenue to 76th Avenue South	Acquire recommended right of way along the 25th Street South Corridor, and add proposed improvements to the next update of the MTP.	(1) (2) Extend City utilities and construct a permanent 3-lane roadway from 58th Avenue South to 300 feet south of 64th Avenue South. (\$3.9 M)	(1) (2) Construct 25th Street and extend City utilities from 300 feet south of 64th Avenue South to 73rd Avenue South as a permanent 3-lane roadway. (\$2.9 M)		Monitor 25th Street & 64th Avenue South intersection to determine when signal warrants are met.	Expand 25th Street from 52nd to 76th Avenue South to a 5-lane section when additional roadway capacity is needed.
			If requested by the school district or developers the City will extend utilities and/or paving along 70th and 73rd Avenue South from 25th Street to the east, adjacent to the Davies High School property.		(1) (2) Construct 25th Street from 73rd to 76th Avenue South as a permanent 3-lane roadway. Construct two-lane rural paved roadway on 76th Avenue South between University Drive and 25th Street.	Construct 70th and 73rd Avenue South from Davies High School to University Drive as requested by developers.
76th Avenue to 100th Avenue South	Work with developers and land owners through the platting process to acquire necessary right of way and recommend necessary access restrictions as adjacent properties develop.					

(1) Note: Along with building the roadway, pedestrian facilities, frontage roads, bridges and landscape improvements should also be designed and constructed as proposed.

(2) Note: Design the sections for future expansion to full recommended section.

(3) Note: Construct the overpass for future addition of interchange ramps.

(4) Note: Preliminary cost estimates do not include utility work.