City of Bloomington

Highwood Drive Intersection & Corridor Study

SRF Consulting Group, Inc.

Engineers
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Highwood Drive Intersection and Corridor Study

Final Report

City of Bloomington, Minnesota

SRF Consulting Group, Inc. | Engineers Planners Designers

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SRF No. 8207

Table of Contents

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1.0 Study Process

1.1 Study Purpose and Approach

Construction of the US Highway 169 (US 169)/I-494 interchange was substantially completed in December of 2012. At that time, the intersection of US 169/Highwood Drive was eliminated and a cul-de-sac was constructed. These changes have resulted in a significant decrease in the daily traffic volumes along the Highwood Drive corridor. The purpose of this study was to evaluate existing and future operations along Highwood Drive to determine the future design section and intersection control needs for the corridor.

The two main study components included traffic control options for the East Bush Lake Road and West Bush Lake Road intersections and roadway options for the Highwood Drive corridor between East Bush Lake Road and the west terminus near US 169. In addition, a multi-use trail and on-street bike lanes were evaluated and considered for the corridor. These options are discussed later in the report.

1.2 Public Involvement

Public and agency participation are critical to developing near- and long-term improvements that are supported by diverse residents and agencies with potentially different interests and values. An open and fair process was used to ensure that we build credibility with the residents and stakeholder representatives. The comprehensive public involvement process, included Study Advisory Committee meetings, public open houses, a City Council study session and a City Council public hearing. Residents were well informed throughout the study process with updated information regularly posted on the City's website.

The public involvement components for the study are described below:

Study Advisory Committee

The study process included the development of a Study Advisory Committee (SAC), including representatives from Hennepin County, Three Rivers Park District and City Staff – fire, police, legal, maintenance, parks, health, and engineering. The SAC played an important role as their responsibilities were to guide the study, review materials and provide feedback on the intersection and corridor improvements.

For past traffic studies, the City has identified resident representatives to participate on the SAC. In an effort to reach more residents and allow all who have an opinion to weigh in early, the use of resident representatives were replaced with an open house early in the process and another later in the process to present transportation options for feedback. This eliminates the challenge with residents focusing on their own individual interests versus interests for the area as a whole.

Public Open Houses

Two public open houses were scheduled during our study process to solicit input from the public on study corridor and intersection issues, needs, options and impacts.

Presentation materials from the first public open house included:

- Background
- Study Goals
- Issues and Concerns
- Existing Conditions – Traffic Operations
- Existing Conditions – Crash Analysis

Presentation materials from the second public open house included:

- Corridor Options (3)
- Highwood Drive/East Bush Lake Road Options (3)
- Highwood Drive/West Bush Lake Road Options (2)

Meeting Schedule

The public involvement process included the following meetings and open houses:

- Kick-Off Meeting – August 20, 2013
- Neighborhood Open House #1 – October 15, 2013
- SAC Kick-Off Meeting – October 29, 2013
- SAC Meeting #2 – January 22, 2014
- Neighborhood Open House #2– February 10, 2014
- Hennepin County Meeting – February 25, 2014
- SAC Meeting #3 – March 7, 2014
- Bloomington City Council Study Session – April 7, 2014
- Bloomington City Council Public Hearing – June 2, 2014

Project Website

A project website was developed for the Highwood Drive Intersection and Corridor Study to provide residents and stakeholders with current information throughout the study process. With a link on the City's website, this was another opportunity to stay informed on the study's progress.

2.0 Existing Conditions

2.1 Data Collection Plan

With the recent completion of the US 169/I-494 interchange and the anticipated changes in travel routes and patterns in the area, data collection was a key component of the study. It was critical that the data collected reflects conditions following the completion of the interchange. SRF's data collection effort is summarized below:

Corridor and Intersection Data

In order to understand existing conditions along the corridor, a variety of data was collected. This included current roadway and right-of-way widths, roadway and intersection geometrics, sidewalks and trails, on-street parking, adjacent development, corridor access and speed limits.

Daily Traffic Volumes

Existing daily traffic counts were collected by City staff during the Fall of 2013. These counts reflect traffic volumes following the completion of the US 169/I-494 interchange. Historical daily traffic volumes were also reviewed and compared to existing volumes.

Peak Hour Turning Movement Counts

Turning movement counts during the a.m. and p.m. peak hours were collected by SRF during the Fall of 2013. These counts were used to evaluate the current level of service, delays and queues. Turning movement counts were collected at the East Bush Lake Road/Highwood Drive and West Bush Lake Road/Highwood Drive intersections, as well as four representative minor intersections along Highwood Drive.

Speed Data

Highwood Drive is currently posted at 35 miles per hour (mph). Speed data collected in 2013 resulted in an 85th percentile speed of 40 mph.

Crash Data

Crash data for the study corridor and intersections was obtained for the last three years (2010 to 2012) using MnDOT's Crash Management Analysis Tool (MnCMAT). The crash data was analyzed and used to identify safety issues within the study area.

Future Daily Traffic Forecasts

Future daily traffic forecasts from the City's Comprehensive Plan were used to evaluate capacity needs for the corridor in year 2030. This data was also used to develop 2030 intersection volumes for the future conditions operations analysis.

The City's Alternative Transportation Plan

The City's Alternative Transportation Plan (ATP) identifies existing and proposed trails, pedestrian-ways and on-road bikeways as important elements in the City's transportation system. The ATP was reviewed to identify existing or proposed facilities within the study area. The trail on East Bush Lake Road is identified as a Destination Trail through the intersection of Highwood Drive. The trails on West Bush Lake Road and 86th Street are identified as Core Linking Trails.

Resident Input

The first public open house was strategically scheduled early in the study process, prior to the first SAC meeting. The purpose of the first open house was to inform residents of the study and solicit feedback regarding issues and concerns in the study area. These issues and concerns were discussed at the first SAC meeting and considered during the concept development phase of the study. General feedback at the first open house reflected an even split between those wanting the corridor to stay as is and those supporting change.

2.2 Evaluation & Findings

Highwood Drive

Under current conditions, Highwood Drive is a four-lane undivided major collector roadway with a posted speed limit of 35 mph. It has a 48-foot roadway width and spans from East Bush Lake Road to the west terminus near US 169. Parking is restricted on both sides of the roadway. There is only one residential access on Highwood Drive that is shared by three residences.

There is existing sidewalk on both sides of the corridor. A pedestrian crossing sign with a continuously flashing beacon is located in each direction, one at each end of the corridor. The crossing signs warn motorists of a series of uncontrolled crosswalks. Pedestrian crosswalks are located at three intersections along the corridor, as well as at East Bush Lake Road and West Bush Lake Road.

Highwood Drive/East Bush Lake Road Intersection

The intersection of Highwood Drive/East Bush Lake Road is a T-intersection currently controlled by an old span wire traffic signal that has reached the end of its service life and is scheduled for replacement by Hennepin County in 2015. In addition to the age of the traffic signal, there are currently lane alignment issues at this intersection.

The Hyland Trail is a bituminous trail that runs along the west side of East Bush Lake Road. It is classified as a Destination Trail in the City of Bloomington's ATP.

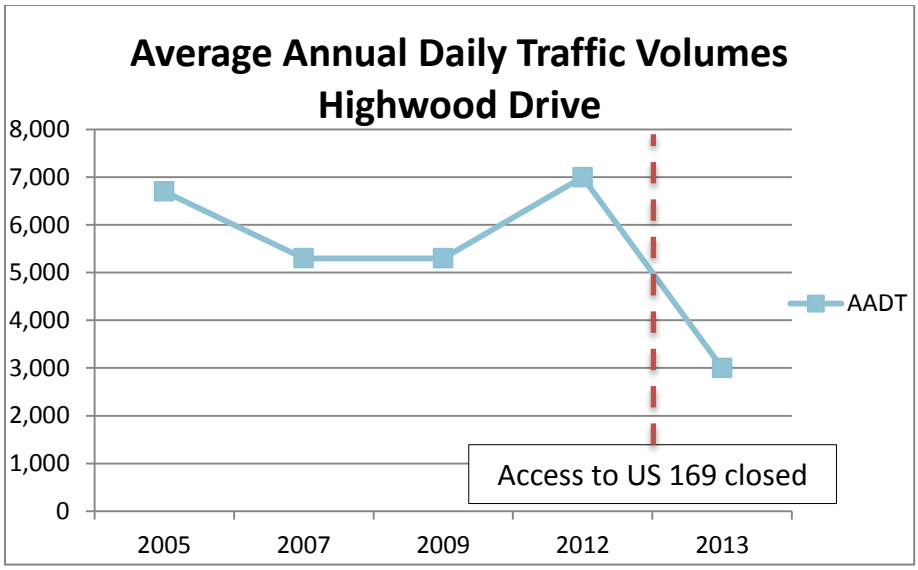
It is important to note that there are steep grades on the west side and Three Rivers Park District property on the east side of East Bush Lake Road. These constraints were considered while evaluating the possible intersection options.

Highwood Drive/ West Bush Lake Road Intersection

The intersection of Highwood Drive and West Bush Lake Road is currently all-way stop controlled. Pedestrian crossings are marked on all approaches. The west leg of this intersection terminates at a cul-de-sac located approximately 1,200 feet west of the intersection.

Segment Capacity Analysis

The Highwood Drive corridor between East Bush Lake Road and the west termini near US 169 has experienced a significant decrease in the daily traffic volumes due to the elimination of the Highwood Drive/US 169 intersection. Historically, the daily traffic volumes along the Highwood Drive corridor have ranged between 5,000 and 7,000 vehicles per day. Traffic counts completed in the Fall of 2013 indicate that the daily traffic volume is between 2,300 and 3,000 vehicles per day.



Congestion on the roadway system is known to exist when the ratio of traffic volume to roadway capacity (v/c ratio) approaches or exceeds 1.0. The volume to capacity ratio provides a measure of congestion along a segment of roadway and can help determine the number of lanes necessary to accommodate existing and future traffic volumes. As a planning-level exercise, average daily traffic capacity ranges for different facility types were used to determine the roadway design options that can be considered for the Highwood Drive corridor. As listed below, these volume ranges are based on guidance from the Highway Capacity Manual, discussion with the Metropolitan Council and professional engineering judgment.

- Two-lane undivided urban – 8,000 to 10,000 vehicles per day
- Three-lane urban – 14,000 to 17,000 vehicles per day
- Four-lane undivided urban – 18,000 to 22,000 vehicles per day

Based on the current traffic volumes ranging from 2,300 to 3,000 vehicles per day, the existing four-lane section of Highwood Drive provides more than enough capacity for acceptable operations. The City of Bloomington's Comprehensive Plan indicates that traffic volumes are expected to reach 6,000 vehicles per day by year 2030. These forecast volumes were developed prior to plans for the US 169/I-494 interchange reconstruction and do not reflect the recent change in travel patterns. If traffic volumes reach 6,000 vehicles per day by year 2030, the roadway capacity along Highwood Drive can be reduced so that it is better in line with the traffic that it serves. Since this is a planning-level exercise and does not provide a basis for determining the need for specific intersection geometrics, an operations analysis at the key intersections was conducted to determine if other proposed sections can handle future peak hour volumes. Results of this analysis are summarized in the Roadway and Intersection Layout Options section of the report.

Existing Intersection Operations Analysis

To determine how traffic is currently operating along the corridor, an operations analysis was conducted for the study intersections. The existing study intersections were analyzed using a combination of Synchro/SimTraffic (Version 8.0) and Highway Capacity Manual (HCM) software. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are ranked from LOS A through LOS F. The LOS results are based on average delay per vehicle. LOS A indicates the best traffic operation and LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through LOS D is generally considered acceptable by drivers in the study area.

The traffic operations at an unsignalized intersection with side-street stop control considers the overall intersection level of service that takes into account the total entering volume and the capability of the intersection to accommodate these volumes. It also considers the level of service on the side-street approach. Since the mainline does not have to stop at a side-street stop controlled intersection, the majority of intersection delay can be attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high levels of delay on the side-street approaches (poor levels of service), but an acceptable overall intersection level of service during the peak hour periods. However, as the side-street delay increases, motorists tend to accept smaller gaps and/or take greater risks. These eventually could lead to safety problems.

As shown in Table 2.1, the results of the analysis indicate that all study intersections currently operate at an acceptable overall level of service during the a.m. and p.m. peak hours, with existing traffic controls and geometrics.

Table 2.1 Existing Conditions – Peak Hour Capacity Analysis Level of Service Results

Highwood Drive Intersection	A.M. Peak Hour	Side-Street Delay	P.M. Peak Hour	Side-Street Delay
East Bush Lake Road	C	-	D	-
84th Street*	A/A	4	A/A	4
83rd Street*	A/A	6	A/A	7
82nd Street*	A/A	4	A/A	4
Pennsylvania Road*	A/A	5	A/A	5
Rhode Island Avenue*	A/A	4	A/A	4
Telegraph Road*	A/A	3	A/A	4
West Bush Lake Road	A	-	B	-

*Note: * Indicates the intersection is a side-street stop controlled intersection. The overall level of service is followed by the side-street approach level of service. Side-street delay is shown for the worst side-street approach.*

While the overall level of service during the a.m. and p.m. peak periods is acceptable at the East Bush Lake Road/Highwood Drive intersection, significant queues develop on northbound East Bush Lake Road during the a.m. peak hour (475 ft.) and on southbound East Bush Lake Road during the p.m. peak hour (525 ft).

Safety Analysis

Crash data was obtained for most current three years (2010 to 2012) using MnDOT's MnCMAT. Segment and intersection crash rates were calculated and compared to average crash rates at segments and intersections with similar characteristics. The results of the safety analysis are shown below.

Highwood Drive Corridor

During the most recent three-year period (2010-2012), four crashes were reported on Highwood Drive between East Bush Lake Road and West Bush Lake Road. This results in a calculated segment crash rate of 0.66 crashes per million vehicle miles (MVM), which is below Hennepin County's average crash rate for similar type roadways (1.16 crashes per MVM). It is important to note, there was one crash involving a bicycle. The vehicle involved in this crash was making a left turn onto the side-street and failed to yield to the bicycle.

Highwood Drive and East Bush Lake Road Intersection

Two crashes occurred at the intersection of Highwood Drive /East Bush Lake Road between 2010-2012. This results in a calculated intersection crash rate of 0.11 crashes per million entering vehicles (MEV), which is below Hennepin County's average crash rate for similar type intersections (0.27 crashes per MEV).

Highwood Drive and West Bush Lake Road Intersection

One crash occurred at the intersection of Highwood Drive/West Bush Lake Road between 2010-2012. This results in a calculated intersection crash rate of 0.10 crashes per million entering vehicles (MEV), which is below Hennepin County's average crash rate for similar type intersections (0.25 crashes per MEV).

Other Safety Concerns

In addition to reviewing the crash data, resident input was used to identify existing safety issues. Two safety concerns were identified during the first public open house. Residents are concerned about sight-distance issues at the Highwood Drive/Telegraph Road intersection. The sight distance is limited for motorists traveling southbound on Telegraph Road and looking towards the east to enter Highwood Drive due to grades in the area. Under existing conditions, motorists on Telegraph Road will have to stop at the stop bar and then proceed slowly to the curb line to gain a better sight line of oncoming cars, which is adequate for speeds along Highwood Drive. The second concern that was identified is the lack of turn lanes at the East Bush Lake Road/86th Street intersection, most importantly for the southbound right-turn movement. These concerns were evaluated and are addressed later in the report.

3.0 Roadway & Intersection Layout Options

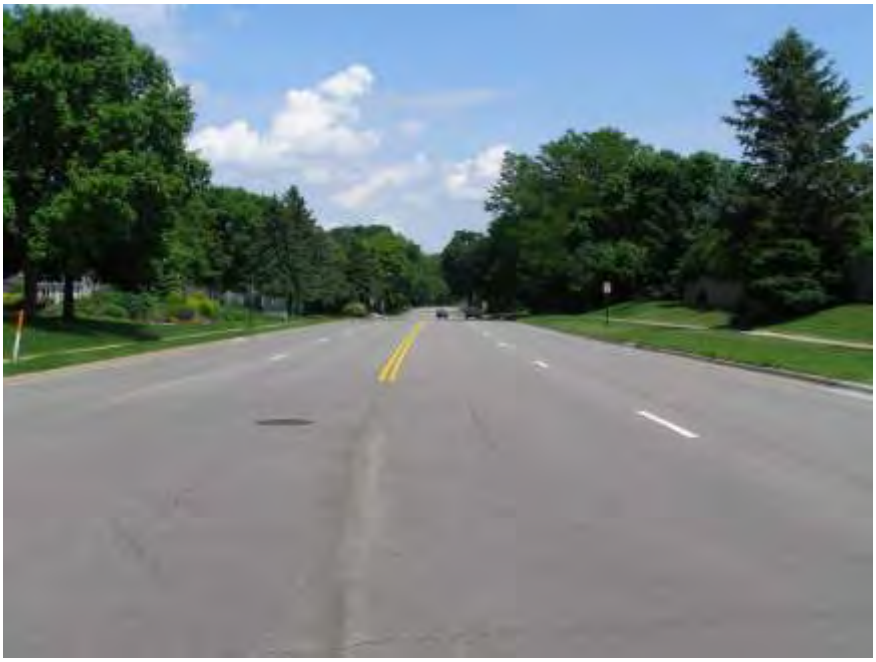
3.1 Highwood Drive Corridor

The recent completion of the US 169/I-494 interchange has resulted in changes in travel routes and patterns within the study area. These changes have provided an opportunity to reevaluate the existing roadway configuration and potentially reduce the capacity to be in line with the future traffic it serves, allowing the space to accommodate other modes with a more complete streets approach.

The corridor options that were developed considered multi-modal use, aesthetics, vehicle and pedestrian safety and traffic operations. The options were developed to fit within the existing curb lines and accommodate existing and future traffic volumes. The corridor options considered are summarized below.

Option A – Four-Lane Undivided Roadway with Multi-Use Trail on South Side

This low-cost option maintains the existing roadway width of 48 feet. The roadway striping will remain two 12-foot travel lanes in each direction. This option enhances travel for recreational bicyclists and pedestrians with a multi-use trail on the south side of the corridor, but lacks an on-street facility for commuter bicyclists. Maintaining the four-lane undivided facility provides a roadway capacity that is not in line with the traffic it serves and does not address the sight-distance issues at Telegraph Road or enhance roadway aesthetics.



Option B – Two-Lane Parkway with Left-Turn Lanes and Multi-Use Trail on South Side

This option maintains the existing roadway width of 48 feet. A 12-foot raised median will be constructed with one 18-foot travel lane in each direction, providing traffic calming benefits and the potential for reduced vehicle speeds. The raised median offers the opportunity for a variety of landscaping options that will provide a parkway setting and enhance roadway aesthetics. This option enhances travel for recreational bicyclists and pedestrians with a multi-use trail on the south side of the corridor. In addition, the 18-foot travel lanes can be reduced to 12 feet, allowing for on-street bike lanes if desired.

Left-turn lanes will be provided at all key intersections and the one driveway access. The protected left-turn bays provide a safety benefit by removing turning vehicles from the through lane of traffic. In addition, the 12-foot median results in a shorter crossing distance for pedestrians. However, this option does not address the sight-distance concerns at Telegraph Road.

Option C – Two-Lane Roadway with Left-Turn Lanes, On-Street Bike Lanes and Multi-Use Trail on South Side

This low-cost option maintains the existing roadway width of 48 feet. The roadway striping will include one 16-foot travel lane in each direction and a four-foot median, providing traffic calming benefits and the potential for reduced vehicle speeds. This option enhances travel for recreational bicyclists and pedestrians with a multi-use trail on the south side of the corridor. The additional six feet will also allow an on-street bicycle lane to enhance travel for commuter bicyclists.

Left-turn lanes will be provided at all key intersections and the one driveway access. The painted left-turn lanes provide a safety benefit by removing turning vehicles from the through lane of traffic. . In addition, the painted median results in a shorter crossing distance for pedestrians. It will also provide a sight-distance improvement at Telegraph Road, by moving the westbound travel lane six feet from the curb line.

Multi-Modal Corridor Features

As described in the three corridor options, a multi-use trail and on-street bicycle lanes were considered as stand-alone features. The multi-use trail was proposed on the south side of Highwood Drive due to fewer side-street approaches, resulting in fewer pedestrian/bicycle and vehicle conflicts. It also completes a loop with existing trails located on East Bush Lake Road, West Bush Lake Road and 86th Street. The multi-use trail can be incorporated into any of the corridor options.

In order to accommodate the growing demand for commuter bicycle facilities, on-street bicycle lanes were considered. On-street bicycle lanes were considered in addition to the multi-use trail because they accommodate a different type of user. The on-street bicycle lanes can be incorporated into Option B and Option C.

While developing the corridor layouts, crosswalk locations were reviewed for connectivity. In order to maximize pedestrian safety, the crosswalks at the Highwood Drive/83rd Street were consolidated into one crossing. The south approach was chosen because there is existing sidewalk along the south side of 83rd Street, west of the intersection. In addition to the consolidation of crossings at 83rd Street, the crosswalk at 82nd Street was removed from

the layouts. This crossing is located on a curve and pedestrians that are destined for the south side of Highwood Drive can use the crosswalks at either Pennsylvania Road or 83rd Street, which are located on tangent sections of roadway.

3.2 Highwood Drive/East Bush Lake Road Intersection

The intersection options for the Highwood Drive/East Bush Lake Road intersection were developed to reduce vehicular delay and queues, as well as replacing an outdated signal system. Minimizing impacts to the Three Rivers Park District property was a priority. The intersection options considered are summarized below.

Option 1 – New Traffic Signal with Existing Roadway

As previously discussed, the Highwood Drive/East Bush Lake Road intersection is currently controlled by an old span wire traffic signal that has reached the end of its service life and is scheduled for replacement. This option replaces the traffic signal with a new pedestal type signal and maintains the existing roadway configuration. It will fit within the existing right-of-way and will result in overall acceptable traffic operations. The new traffic signal and vehicle detection will help optimize the signal operation, resulting in less lost time per cycle. In addition, it will offer better flexibility for coordinated operations with the signal at 84th Street during off-peak hours

While the new traffic signal will result in overall acceptable traffic operations, excessive delays are expected for the Highwood Drive approach, as well as significant northbound queues during the a.m. peak hour and southbound queues during the p.m. peak hour. In addition, this option does not address the poor lane alignment through the intersection.

Option 2 – New Traffic Signal with Four Lanes

Under this option, East Bush Lake Road will be expanded to a four-lane roadway with turn-lanes. The old span wire traffic signal will be replaced with a pedestal type signal. The added capacity at the intersection addresses the excessive delays on Highwood Drive and significant queues experienced on East Bush Lake Road during the peak periods.

While this option will fit within the existing right-of-way, the trail in the northwest quadrant will need to be shifted approximately 30 feet to the west. In addition to the impacts to the trail, extensive grading and retaining walls will be required.

Option 3 – Multi-Lane Roundabout

Under this option, a multi-lane roundabout will be constructed and East Bush Lake Road will become a four-lane roadway. The added capacity at the intersection addresses the excessive delays on Highwood Drive and significant queues experienced on East Bush Lake Road during the peak periods.

This option will result in right-of-way impacts in the southwest quadrant. The trail in the northwest quadrant will also need to be shifted approximately 20 feet to the west. Extensive grading and retaining walls will be required in the southwest and northwest quadrants.

Other Intersection Options

Due to resident concerns regarding the lack of turn-lanes at the East Bush Lake Road/86th Street intersection, peak hour traffic counts were reviewed to determine if turn lanes are needed. During the p.m. peak hour, 165 vehicles were observed making a southbound right-turn onto 86th Street. Four vehicles were observed making a northbound left-turn onto 86th Street during the a.m. peak hour. Based on these peak hour volumes, a southbound right-turn lane should be considered and can be incorporated into any Highwood Drive/East Bush Lake Road intersection option. In order to provide adequate distance for right-turning vehicles to decelerate without impacting thru traffic, the minimum recommended length of the southbound right-turn lane is 150 feet with a 180-foot taper section. It is assumed that a southbound right-turn lane can be constructed without impacting the tunnel based on the aerial layout. However, this will have to be confirmed after reviewing detailed plans of the tunnel.

3.3 Highwood Drive/West Bush Lake Road Intersection

The intersection of Highwood Drive/West Bush Lake Road is currently all-way stop controlled. The intersection options considered are summarized below.

All-Way Stop Control

This low-cost option will work with any corridor option and results in overall acceptable traffic operations. It fits within the existing right-of-way. Although traffic volumes do not warrant all-way stop control, side-street stop control is not recommended due to sight distance concerns and grades in the area.

Single-Lane Roundabout

This high-cost option will work with any corridor option and results in overall acceptable traffic operations. It will result in right-of-way impacts west of West Bush Lake Road.

3.4 Intersection Operations

In order to determine how the intersection options will accommodate current and future traffic volumes, an operations analysis was conducted for the a.m. and p.m. peak hours. The results of the analysis for future 2030 conditions have been summarized in Table 3.1 (East Bush Lake Road) and Table 3.2 (West Bush Lake Road) for the options presented at the open house.

As shown below, the results of the analysis indicate that the intersection options developed are expected to operate at an overall acceptable level of service during the a.m. and p.m. peak hours. However, the operations analysis results of the new traffic signal with existing roadway option indicate that significant queues will develop at Highwood Drive on northbound East Bush Lake Road during the a.m. peak hour (750 ft.) and on southbound East Bush Lake Road during the p.m. peak hour (650 ft.) Average and maximum queue lengths for key movements of the new traffic signal with existing roadway option are shown in Appendix A.

Table 3.1 Year 2030 Highwood Drive/ East Bush Lake Road
Peak Hour Capacity Analysis
Level of Service Results

East Bush Lake Road Intersection	A.M. Peak Hour	Delay (sec.)	NB 95th % Queue	P.M. Peak Hour	Delay (sec.)	SB 95th % Queue
Option 1	C	33	750 ft	C	28	650 ft
Option 2	B	12	185 ft	B	15	285 ft
Option 3	C	17	250 ft	B	13	150 ft

Table 3.2 Year 2030 Highwood Drive/West Bush Lake Road
Peak Hour Capacity Analysis
Level of Service Results

West Bush Lake Road Intersection	A.M. Peak Hour	Delay (sec.)	P.M. Peak Hour	Delay (sec.)
Option 1	B	10	A	9
Option 2	A	4	A	3

Roundabouts can be a strong safety solution when right-angle crash trends are identified. However, there were only two intersection crashes reported between 2010 and 2012. Roundabouts can also be a strong operations improvement tool to improve the level of service. However, the results in Table 3.1 show no additional improvement over a traffic signal.

In order to determine how the design section of Highwood Drive will impact the intersections along the corridor, an operations analysis was conducted for the a.m. and p.m. peak hours under a two-lane scenario and four-lane scenario. The results of the operations analysis indicate that all intersections are expected to operate at an overall acceptable level of service. Detailed analysis results are shown in Appendix A.

4.0 Public Open Houses

Two public open houses were scheduled during the study process to solicit input from the public. The first open house took place on October 15, 2013 at the Richardson Nature Center. The objective of the open house was to inform residents of the study and gather input regarding issues and concerns in the study area. A total of 83 residents from 65 residences attended. Forty-two comment cards were received at the open house and eight additional comments were received by mail, fax and email following the open house, based on the virtual open house found on the City's website. A summary of the comments received can be found in Appendix B.

The second open house took place on February 10, 2014 at Peace Lutheran Church. A total of 84 residents from 72 residences attended, including seven residents from Friendship Village. At this open house, corridor and intersection options were presented and staff was available to answer questions. Once presented, residents were asked to rank the corridor and intersection options. In addition, an online survey was setup on the City's website to collect responses from residents who were unable to attend the open house. A summary of the comments received can be found in Appendix B. Voting results from the open house and via the website are shown below.

Table 4.1 Highwood Drive Corridor Results

Option	Ranked #1	Ranked #2	Ranked #3
A – Four-Lane Undivided Roadway	28 (40%)	7 (18%)	27 (35%)
B – Two-Lane Parkway with Left-Turn Lanes	20 (29%)	17 (42%)	29 (37%)
C – Two-Lane Roadway with Left-Turn Lanes	22 (31%)	16 (40%)	22 (28%)

Table 4.2 Highwood Drive/East Bush Lake Road Intersection Results

Option	Ranked #1	Ranked #2	Ranked #3
1 – New Traffic Signal with Existing Roadway	30 (43%)	15 (33%)	16 (24%)
2 – New Traffic Signal with Four Lanes	20 (28%)	24 (54%)	17 (26%)
3 – Multi-Lane Roundabout	20 (28%)	6 (13%)	33 (50%)

Table 4.3 Highwood Drive/ West Bush Lake Road Intersection Results

Option	Ranked #1	Ranked #2
1 – All-Way Stop Control	38 (58%)	22 (41%)
2 – Single-Lane Roundabout	28 (42%)	32 (59%)

In addition to ranking the corridor and intersection options, residents were asked to comment on two multi-modal features that were presented. They were asked if a multi-use trail or on-street bike lanes add value to the neighborhood. The results are shown below.

Table 4.4 Multi-Modal Results

Feature	Yes	No	No Answer
Multi-Use Trail	22 (31%)	22 (31%)	27 (38%)
On-Street Bike Lanes	24 (34%)	19 (27%)	26 (39%)

5.0 Study Advisory Committee Recommendations

5.1 Study Advisory Committee Recommendations

The SAC met on March 7, 2014 following the second public open house to develop near- and long-term recommendations for the study corridor and intersections. In addition to traffic operations and safety, the SAC took into consideration resident feedback, stakeholder input, maintenance and emergency vehicle operations and additional cost versus added value while developing the recommendations. The SAC's near- and long-term recommendations are summarized below.

5.2 Near-Term Recommendations

SAC near-term recommendations include:

Highwood Drive Corridor

- Option C – Two-Lane Roadway with Left-Turn Lanes at Key Intersections and On-Street Bike Lanes
- Multi-use trail on the south side of Highwood Drive
- Removal of the flashing pedestrian beacons

Highwood Drive/East Bush Lake Road Intersection

- Option 1 – New Traffic Signal with Existing Roadway
- Construct a southbound right-turn lane on East Bush Lake Road at 86th Street

Highwood Drive/West Bush Lake Road Intersection

- Option 1 – All-Way Stop Control

5.3 Long-Term Recommendations

SAC long-term recommendations include:

Highwood Drive Corridor

- Consider Option B – Two-Lane Parkway with Left-Turn Lanes at Key Intersections

Highwood Drive/East Bush Lake Road Intersection

- Option 2 – New Traffic Signal with Four Lanes when a four-lane section can be constructed between Chalet Road and Highwood Drive

6.0 City Council Approval

6.1 City Council – June 2, 2014

The study results along with the SAC recommendations were presented at the City Council Public Hearing on June 2, 2014. The Council approved the following near-term recommendations:

Highwood Drive Corridor

- Corridor Option C – Two-Lane Roadway with Left-Turn Lanes at Key Intersections
- On-Street Bicycle Lanes

East Bush Lake Road/Highwood Drive Intersection

- Option 1 – New Traffic Signal with Existing Roadway
- Construct a southbound right-turn lane on East Bush Lake Road at 86th Street

West Bush Lake Road/Highwood Drive Intersection

- Option 1 – All-Way Stop Control

With the opportunity for concerned residents to speak, the majority of the residents that spoke were opposed to the construction of a multi-use trail due to the impacts along the corridor. Therefore, the Council did not adopt the recommendation for the multi-use trail. In addition to the opposition of the multi-use trail, residents were not in favor of removing the continuous flashing beacons located on Highwood Drive. They will remain in place until they need replacement or are studied for removal or replacement.

In addition, the Council did not adopt the recommendations for the long-term improvements at this time. The long-term recommendations were not objected by the Council, but they would like the opportunity to address them at a later date.

Appendix A. Traffic Operations Analysis Results

Highwood Drive Study

Intersection Operations Analysis

East Bush Lake Road/Highwood Drive Operations Analysis

Scenario	A.M. Peak			P.M. Peak		
	LOS	Delay (sec.)	NB 95th % Queue	LOS	Delay (sec.)	SB 95th % Queue
Existing	C	24	475 ft	C	21	525 ft
Year 2030 – Option 1(1)	C	33	750 ft	C	28	650 ft
Year 2030 - Option 2(2)	B	12	185 ft	B	15	285 ft
Year 2030 – Option 3(3)	C	17	250 ft	B	13	150 ft

(1) Option 1 – New Traffic Signal with Existing Roadway

(2) Option 2 – New Traffic Signal with Four Lanes

(3) Option 3 - Multi-Lane Roundabout

East Bush Lake Road/Highwood Drive Operations Analysis

Scenario	A.M. Peak – Highwood Drive Approach			P.M. Peak – Highwood Drive Approach		
	LOS	Delay (sec.)	95th % Queue	LOS	Delay (sec.)	95th % Queue
Existing	D	51	340 ft	E	64	290 ft
Year 2030 – Option 1(1)	D	53	390 ft	E	68	340 ft
Year 2030 - Option 2(2)	C	27	270 ft	C	25	190 ft
Year 2030 – Option 3(3)	A	7	50 ft	C	17	75 ft

(1) Option 1 – New Traffic Signal with Existing Roadway

(2) Option 2 – New Traffic Signal with Four Lanes

(3) Option 3 - Multi-Lane Roundabout

West Bush Lake Road/Highwood Drive Operations Analysis

Scenario	A.M. Peak		P.M. Peak	
	LOS	Delay (sec.)	LOS	Delay (sec.)
Existing	A	6	A	8
Year 2030 No Build	A	9	A	9
Year 2030 – Option 1(1)	B	10	A	9
Year 2030 – Option 2(2)	A	4	A	3

(1) Option 1 – All-Way Stop Control

(2) Option 2 – Single-Lane Roundabout

Highwood Drive Operations Analysis

Scenario	Highwood Drive/ Telegraph Road				Highwood Drive/ Rhode Island Avenue				Highwood Drive/ Pennsylvania Road				Highwood Drive/ 82nd Street				Highwood Drive/ 83rd Street				Highwood Drive/ 84th Street			
	A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak		A.M. Peak		P.M. Peak	
	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Existing Conditions	A/A	3	A/A	4	A/A	4	A/A	4	A/A	5	A/A	5	A/A	4	A/A	4	A/A	6	A/A	7	A/B	4	A/A	4
Year 2030 Four-lane Conditions	A/A	4	A/A	4	A/A	5	A/A	4	A/A	5	A/A	5	A/A	5	A/A	4	A/A	6	A/A	7	A/A	5	A/A	4
Year 2030 Two-lane Conditions	A/A	4	A/A	4	A/A	5	A/A	4	A/A	5	A/A	5	A/A	5	A/A	4	A/A	6	A/A	6	A/A	5	A/A	4

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst approach LOS/Delay

East Bush Lake Road and Highwood Drive Intersection Analysis

Year 2030 Option 1 - New Traffic Signal with Existing Roadway

Queuing Results

Intersection/Movement	AM Peak Hour				PM Peak Hour			
	Left Turn		Right Turn		Left Turn		Right Turn	
	Average Queue (ft)	Maximum Queue (ft)	Average Queue (ft)	Maximum Queue (ft)	Average Queue (ft)	Maximum Queue (ft)	Average Queue (ft)	Maximum Queue (ft)
Northbound East Bush Lake Road at Highwood Drive	10	40	N/A	N/A	10	110	N/A	N/A
Southbound East Bush Lake Road at Highwood Drive	N/A	N/A	20	85	N/A	N/A	110	225
Eastbound Highwood Drive at East Bush Lake Road	255	415	10	125	220	400	30	90

Appendix B. Public Involvement

Public Open House Comments - October 15, 2013

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Roger Corbin	7985 Lea Circle	x			Need 2 lanes northbound on EBLR for a.m. traffic that backs up to the beach. The bike trail should not be on the hill - it uses ROW that should be for added lanes, switch back to sidewalk for the peds and require bikes to walk this section (the bikes that do use it are going too fast down the hill to be mixed with peds and end up walking if going uphill). Not enough notice given for open house (rcvd 10/7 for 10/15 open house)- however, would not have been able to attend even with longer notice.
Steve Goddard	6817 W. 83rd Street		x		See attached letter.
Bob Riley	8439 Pennsylvania Road		x		As a resident in a condo on Pennsylvania, I find the traffic signals at the intersection of Highwood and EBLR to be usually frustrating. You can wait on Highwood up to 5 minutes during rush hours to get on to north EBLR. The cut-thru traffic that uses EBLR as an alternative to 169 or Normandale gets the preference over the residents who live off Highwood and have no alternative to head east or north. And during the quieter times of the day, the signal gives preference to EBLR even if there is no traffic on it. I haven't seen this kind of signal disproportion anywhere else in Bloomington. And I've been a Bloomington resident for 41 years.
Julie Carr	Pennsylvania	x			Current concerns: Pedestrian safety at crosswalks (drivers not stopping), safety of kids at the school bus stops on Highwood (3) and drivers not stopping for stop bar, speeding - especially cars westbound that come around the corner of southbound EBLR to westbound Highwood. Would like to see a 2-lane cross section that could accommodate bikes.
Mike Wenner	8011 Tierneys Woods Road			x	Concerns about excessive speeds on Marth Rd (frontage rd). Close calls with pedestrians at stoplight at right turn onto WBLR. Also excessive speeds on WBLR between Highwood and 86th St.
Smith's	8034 Pennsylvania Road			x	Spending money where problems don't exist! NO BIKE LANES! The problem is on EBLR, not Highwood. Your focus is on the wrong area!
Joanne and Dan Morgan	6972 W. 84th St. Circle			x	If it ain't broken-Don't fix it!!
Barbara Wilson	8033 Telegraph Road			x	The hill by Telegraph Road is very slippery and is slanted the wrong way on the curve. It is also dangerous to get onto Highwood because cars gain speed down the hill. Finally, most bikers have to walk their bikes up due to the steepness of the hill.
Dixie Vella	8600 Lakeview Road			x	There needs to be a turn lane on EBLR onto 86th Street. On EBLR- it would be good to have wider lanes at Highwood intersection so traffic can flow around cars that are turning.
Anonymous				x	When turning up EBLR from the ski jump, the right-turn lanes should be able to handle more cars-should be longer.

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Gretchen Wilhelm	8106 Highwood Drive Y126			x	Please use at least the south lane of Highwood from WBLR west to and west of the cul-de-sac for on-street parking (maybe the north lane as well). Will you be considering roundabouts at the EBLR and WBLR Intersections?
Paul Goodwin	8139 Pennsylvania Circle			x	Only 2 issues I am concerned: 1. Speeds on Highwood are over 35 mph. 2. Access to EBLR during rush hour-Too long to wait.
Dan and Carol Forby	8158 Utah Avenue S			x	Please no bike lanes on Highwood! Eliminate 18 wheelers and semi trucks on this quiet residential corridor. Thanks.
V. Stachura	8100 Lea Road			x	Speed control on Highwood (and on EBLR) westbound traffic on Highwood feels too close to sidewalk-especially near Pennsylvania-feels risky to walk there-the traffic is so fast!
Marilyn Clark	7123 Oak Pointe Curve			x	Would be nice to see a solution to traffic coming from the south up EBLR in the winter. Often a car can't make it up the hill on a snowy day and it can be hours at rush time for a car to make it to the stop light. Any thought to cutting down the hill. Thanks for listening. Secondarly, widen the walking paths along Highwood. Hard to walk side by side in paths of the walk. Nice plants incorporated will give a good feel to the ride.
Mary Curry	8246 Maryland Road			x	Replace traffic light at corner of Highwood and EBLR. Possible light at Highwood and WBLR. Better signage at Highwood and WBLR for access to 494 and 169.
Peter Haberstick	8149 Pennsylvania Circle			x	If a problem exists on EBLR, why isn't Hennepin County staff involved? Why have you not posed solutions? Is this a solution looking for a problem?
Jay Biedny	6909 W. 82nd Street			x	We like your idea of one lane in each direction with center turn lane and bike lanes on both sides. It will slow traffic.
Todd Bordson	7717 Highwood Drive			x	Reduce Highwood to 3 lanes with bike lanes in either direction. No change to the 4-way stop at Highwood and WBLR. Add a berm between 169 and truncated Highwood Drive to reduce road noise from 169 northbound.
Guy Parsons	8214 Oregon Circle			x	With 2 lanes of traffic, individuals drive too fast in right lane making it dangerous when I mow the grass. Would like 2 lanes only with bike lanes on curbs. Would like better intersection at EBLR, would help if only 2 lanes as it would allow better merging. Also fix left turn to make it wider.
Mike Luke	8208 Kinslee Road			x	Highwood should be 3 lane (2 lanes, 1 left common turn lane, 2 bike lanes). NO EXPANSION, we want traffic calming! Please have lane contraction on EBLR, 84th Streets and EBLR ramp from 494. Better yield signs in roundabouts. Also like one right-turn lane off northbound 169 to Highwood (easy, safe).
Charlene Luke	8208 Kinslee Road			x	I have 2 thoughts. 1. Leave the current configuration alone, no change. 2. The only change that is acceptable to me, if one needs to be made, would be go to a 3 lane configuration with expanded bike and pedestrian access. 1. is my priority.

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Paul Dahl	8201 Kentucky Avenue S			x	Corner of Highwood and 82nd-There is a crosswalk but no ramp on the Highwood side. Re-time traffic lights in morning and afternoon rush to better allow Highwood traffic to merge onto EBLR.
Judy Stump	8252 Maryland Road			x	Less highway sounds great!
Mark Stump	8252 Maryland Road			x	Improve pedestrian and bike crossing across Highwood at EBLR. DANGEROUS.
Glenn Craft	7701 Highwood Drive			x	I have the only private driveway on Highwood and am keenly interested in seeing the 2 lane, multi-use approach be implemented. A quite attractive resident-friendly "boulevard" would have sustaining value for all.
Tim McDaniels	7914 Wyoming Avenue S			x	Highwood is an excellent road. Visibility is good. The aesthetics are nice. The intersection with EBLR needs work. Other than the EBLR intersection, don't spend taxpayer money to change the road. According to all available data that was presented, everything is fine. Restricting the lanes will cause drivers to apply their brakes for cars in front of them rather than having the option to change lanes. Accidents are already low on the road. Slowing movement through traffic calming is counterproductive. An increase of one minute per trip segment costs each person 12 hours per year! (Including the return trip). For a family of 4, this could easily be 90 hours per year. If speeding is a problem, increase enforcement. Save taxpayer money.
Arthur Schunk	8288 Kentucky Avenue S			x	Heading north on EBLR turning onto Highwood is sometimes difficult due to traffic flow. Turning east onto Highwood from 83rd (north side of 83rd) is sometimes difficult due to traffic from EBLR going too fast. Bicycle riders do not always follow safe procedures: running red lights, crossing intersections without looking; using road lanes as opposed to bike lane.
Peter Nee	7310 Autumn Chace Drive			x	Improvements at Highwood and EBLR would be appreciated but leave the lane configuration alone.
Marilyn Wallick	6769 W. 82nd Street			x	Good presentation-sorry that my neighbors seem to be fearful, cranky and unable to follow direction. Thanks for doing the study-look forward to seeing the options :).
Marie Leisenheimer	7900 Lea Road			x	1. Please leave Highwood and EBLR intersection as is! 2. If new stop lights are necessary then update only them.
Sandy Rask	8170 Pennsylvania Road			x	I enjoy the 4 lanes so I can go around left and right turning vehicles. It seems to be working exceptionally well the way it is so why change it?!
April Nareisse	8140 Rhode Island Circle			x	I would like to see no semi-trucks allowed on Highwood.
Art Morgan	8108 Telegraph Road			x	With almost 50% of accidents occurring at Highwood/Telegraph intersection, the combination of a hill crest less than one block to the east and a semi-blind circle less than one block west, combined with sometimes excessive speed, this intersection is another accident waiting to happen. What can be done to mitigate this possibility. Speaking from one who has had more than one close call at least once a year.

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Jim McCabe	6809 W. 83rd Terrace			x	You must make an effort to reduce the large volume of truck (semi-18 wheeler) that use EBLR to bypass 494 and 169. These trucks are short stopping 494 and 169 to later go south on 169 at Old Shakopee Road. Noise, stench and gear grinding to name some of the noises!
Susan and Reggie Boyle	6840 W. 83rd Street Terrrace			x	We chose our neighborhood due to its rural nature. EBLR is only crowded twice a day, and all neighborhoods know this. Eastbound Highwood is crowded only in the morning, mostly, and at rush hour. Those of us living in this area, and working elsewhere are willing to endure a few minutes of delay in order to preserve the natural setting of the area in question! Changing the existing roadway to make better use of the space (i.e. bike lanes) is a good idea. As a 20 year user of Highwood/EBLR interchange, both directions every day. I do not feel that any major improvement is necessary. I am very comfortable with current wait times at the light and do NOT want to see any expansion/extension of the roadway. Thank you.
Susan Hulbert	8524 Park Knoll Circle			x	Start meeting on time. Don't enable late comers. Traffic counts are less therefore queue is shorter-this is good. No changes necessary. Idea: Roundabout at EBLR + Highwood. Current sidewalks are good and sufficient.
Kevin Curry	8246 Maryland Road			x	1. New light at Highwood and EBLR. 2. Signage for 494. 3. Whatever is decided-maintain bushes/trees/vegetation so 2 people can walk abreast on sidewalk and anyone over 6 feet tall can walk without getting hit in the head/eyes by overhead branches!
Arnie McDaniels	7914 Wyoming Avenue S			x	If it's not broken-don't fix it. We have better ways to spend our tax dollars. If anything the biggest issue is Highwood and EBLR. Use speed enforcement.
Lynn Van Ornum	8151 Pennsylvania Circle			x	Please consider slowing traffic down. We have been behind turning Highwood into a 2 lane road with turning lanes. The road is heavily used by walkers as well as crossing street. Thanks for holding event.
Alan Abramson/Barbara Wilson	8033 Telegraph Road			x	The intersection of Telegraph Rd and Highwood is problematic, and with snow and ice-dangerous. Furthermore, removing the access to Marth Rd has created problems for Telegraph Rd residents who must travel uphill in snow to leave. Plowing and sanding on Highwood and Telegraph is unreliable during critical storms. This creates many stuck vehicles trying to go uphill on both roads. Many residents have taken turns flagging down motorists to avoid multi-car accidents during ice storms. Please consider re-opening access to Marth Rd from Telegraph. With much lower traffic volumes, the probability of non-residents using Telegraph as a shortcut to WBLR is much reduced.
Cynthia Egli	8288 Kentucky Avenue S			x	My only concern is the EBLR/Highwood intersection. There are very long waits turning left from Highwood, especially during rush hours. Otherwise I am interested in what you come up with.

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Kenneth Viken	7100 W. 83rd Street			x	Highwood Dr. is a safe and scenic corridor-It should be a model as what a street should be! The traffic back-ups can be improved by readjusting the timing/sensitivity of the traffic light loops (sensors). What needs to be improved is pedestrians around the Highwood/EBLR intersection. Improve traffic flow with timings and sensing of existing traffic light plus widen sidewalks on north and south sides to accommodate walkers and bikers access to trails.
Duane E. Blanchard	8050 Kentucky Avenue S			x	1. Consider access to Hyland Park at the Highwood/EBLR intersection. Provide a cul-de-sac for a few cars and bike access. 2. Increase the length of the right-turn lane on EBLR for access to Highwood. This will help reduce the need to stop on the hill when it is icy! 3. Consider a stop sign at Pennsylvania if the speed on Highwood is a problem. 4. Move 30 mph sign on E.BLR (southbound) to the top of the hill where the curve begins.
Anne Heller	8409 Xylon Circle			x	The only "problem" is at the EBL.R/ Highwood Dr. intersection during morning and afternoon peak times but it isn't unduly long wait time. Would not like roundabouts at any other intersection or less lanes.
Gail Hoffmann	6816 W. 82nd Street			x	Side issues: Request better snow removal on EBLR, zipper lanes at EBLR and Chalet/84th are dangerous due to motorists who don't yield. Would it even be considered to open the northbound 169 and Marth Road exit-to open Highwood Drive access there?
Connie Kashmark	8100 Kentucky Avenue S		x		During the meeting earlier this week, proposed changes to Highwood Dr. were discussed and one of the ideas was to change the corridor to allow more space for bikers in lanes that now are mainly for cars. If the traffic analysis post-494/169 changes holds true and traffic on Highwood remains low, I would not object to the changes. However, the analysis post change is not for a significant period of time and the focus of the postcard announcement of the meeting stressed the intersections. The intersection of Highwood and EBLR gets congested during high traffic periods and at any time of day the bikers are not very observant of traffic rules and courtesy. If no changes would occur in the intersection when/if the new bike lanes are implemented, it would cause frustration and potential hazards. The changes demand a closer look at the whole situation including the intersections.

RESIDENT	ADDRESS	PHONE	EMAIL	OPEN HOUSE	COMMENT
Tom and Julie Nardone	8294 Kingslee Road		x		Not sure this is feasible but the left turn lane from northbound EBLR to westbound Highwood Drive is short and narrow and the left turn is dangerous, widen this stretch (not sure there's anywhere to widen to). Speeding is a concern but we are not in favor of adding additional stop signs along Highwood to solve the problem. Highwood and WBLR, although during rush hour the four way stop is much busier than it used to be we are not in favor of placing semi-fore here. The eastbound congestion at Highwood and EBLR is a minor concern. Finally we have concerns about the sidewalks on both sides of Highwood Drive. Poorly maintained in winter, we would rather see one well plowed sidewalk as opposed to two poorly plowed sidewalks, if it were up to us we would eliminate plowing the sidewalk on the south side of Highwood Drive and improve the quality of maintenance on the north side, may not be an option for the city. Portions of the sourth side sidewalk are overgrown and impassable.
Krystal Brandes			x		We missed the presentation. This seems like a solution in search of a problem. We live off 82nd Street. When I travel this road at 6:45 a.m. and 5:30 p.m., and the weekends, I have no difficulty at the Highwoiod and West Bush Lake Road intersection. The only control that may be necessary is a yellow flashing light. Most motorists are conscientious. All neighborhood residents are aware of the slow down at rush hour and can plan acoordingly. Please do NOT consider a twho lane solution versus a 4 lane. Highwood is very slippery when snow covered and both lanes are needed to pass stuck vehicles. If you consider any improvements, repair the sidewalk that had been under repair at Telegraph Road and Highwood for months.
Dave Owens			x		Suggestion for East Bush :ake intersection. As most of the traffic on the intersection is northbound on East Bush Lake in themorning and south in the evening, I suggest you install a tunnel and roundabout system. See attached PDF.

Public Open House Comments - February 10, 2014

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
1	Alan Rindels	8150 Rhode Islane Ave		x			x	3	2	1	No	Yes	3	2	1	2	1	Thanks for taking my input, the pedestrian crossing at East Bush Lake Road and Highwood is a mess and needs improvement. I am in favor of the roundabout projects, regretfully, Bloomington residents may not be in favor. It would be nice if the City recognized the bicycle commuters, and would start installing more bike lanes as in Edina. The intersections are always an issue for bicyclist on trails. They do not get the same treatment as a pedestrian in a crosswalk as a pedestrian does in a crosswalk, and it is confusing to the motorist. There are bicycle commuters using this corridor to West Bush Lake Road to EP and Edina. There are commuters who use this route, West Bush Lake Road to W78th Street to Gleason, to Vernon to Blake Road and then to the Cedar Lake Trail. Please keep this mind as you are developing your trails and roads.
2	Harry W. Woelfle	8400 Pennsylvania Rd #219					x	1	2	3		No	3	2	1	2	1	None
3	Howard Goltz	8201 Kingslee Rd					x	1	3	2	No		1	2	3	2	1	With less traffic on Highwood than prior to 169 changes, I see no need to spend (my) money to upgrade Highwood. I experience NO problems at either E or W Bush Lake intersections - absolutely NO problems. Therefore, maintain existing roadway. (This person also wrote in "(1) Leave as is. Stop Signs" for W Bush Lake Rd question directly before the comments, as in no change is his first pick).
4	Jensen	8127 Pennsylvania Cir					x	1	3	3			1	2	3	2	1	None
5	Frank Kopish	8135 Pennsylvania Circle					x	3	1	3			3	3	1		1	Bike ?s: I walk daily on Highwood. As long as no interference from bike traffic, ok. Comments: Like the use of round abouts to keep traffic moving.
6	William Kimberly	8046 Pennsylvania Rd					x	2	1	3		Yes	2	1	3	1	2	None
7	Judy Jones	10221 Cairel (Cavel?) Circle					x	3	2	1		Yes	2	3	1	2	1	As a cylcing Commuter, I am concerned about safe alternatives going non [existant?] on Buch Lake. Having the space on road to handle the speeds going down the hill and merging with traffic.
8	Mark Stump	8252 Maryland Rd					x	3	1	2			1	3	2	1	2	On steet Bike lane: Sure. If they'll use it, but kids sure won't - and shouldn't W Bush Lake Roundabout: Waste of money at this intersection Comments: Costs? Timing?
9	J. V. Biedny	6909 West 82nd St					x	3	2	1	No	Yes	2	1	3	1	2	Corridor Option B: very difficult snow removal, plows will beat this to hell Corridor Option C: Slows traffic nicely and accomodates real bikers MultiUse trail: Sidewalks are fine. No need for bigger trail. Put bikes in road as in "C" W Bush Lake roundabout: coming down hill to the circle would be dangerous Comments: I know roundabouts are trendy right now. It may even work well most of the time, but at morning and evening rush, people on Highwood will NOT gain access to the constant traffic up and down Bush Lake. PLease, please, please don't gift us with a roundabout in either location. Esp. bike/crash issues.
10	Sue Knauff	8222 Oregon Road					x	1	3	2	No		2	1	3	1	2	Multi-Use Trail: Ok for one side but not both E Bush Lake Option 3: Horrible (arrow to comments) W Bush Lake Option 2: Unnecessary, why spend the $ for this if not needed Comments: with a roundabout at EBL Rd we will NEVER be able to get out of our neighborhood at peak times. You're supposed to yield to left traffic and it will be impossible to get into the roundabout, much less get over to the correct lane to go north. Please, please, please, please don't do this.
11	Jerry Jessen	8043 Tiereys Woods Carve					x	1	3	3	No	No	2	1	3	1	3	EBL Rd option 2: Waste of Money if it is not four lanes all the way EBL Rd option 3: people can't handle a 2 lane traffic circle WBL Rd option 1: Maybe 2 way stop

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
12	Niel Christenson	8260 Kingslee Rd					x	3	1	2	Yes	No	3	2	1	2	1	I prefer the two lane approach for better traffic (something) and (something). Multi Purpose trail would be a good addition for accessing Hyland Trail. Presenter did a very good job!!
13	Bob and Jackie Elliott	8116 Rhode island Circle					x		1		Yes	No		1			1	On street bike lane: Seems dangerous - Comments: We feel a parkway approach would be a beautiful addition to the area. A roundabout on the west end would also be quite nice. Thanks for the oppurtunity to share our opinion.
14	Dawn Martens	8107 Tierneys Wood Crv					x						1	2	3	1		Corridor Option C: Would this be confusing to the many area senior citizens? WBL Rd option 2: As a resident of the Tierneys Wood neighborhood I would urge the city to side with what is in place. I have children who will someday cross WBL and it seems much safer to have stop signs vs a roundabout system where people will not need to come to a true stop. If it's not broken why change it? Thanks
15	Patty Biedny	6909 W. 82nd St					x	3	2	1	Yes	Yes	2	1	3		1	None
16	Marie Leisenheimer	7900 Lea Rd					x	1	3	2			1	2	3	1	2	WBL option 1: Leave the same Comments: Would rather just leave everything as it is. No Roundabouts! No medians and No Multi-Use trails. Need *better* snow and Ice removal on the Highwood and East Bush Lake hills! (Can not get up the hills with a 2 lane road way)
17	Hans Jones	10221 Cavell Cir					x	3	2	1	No	Yes	2	3	1	2	1	EBL Rd Option 2: Poor planning for merge issues and conflicts Comments: Sounds like most of the audience objection relates to driver behavior -- speed and staying in lane. If these don't change it doesn't improve safety and congestion! Bicycle communters find off road trail less efficient and friendly and only used as a route of last resort.
18	Bill Staebell	8309 W Bush Lake Rd					x	3	2	1						2	1	Roundabouts are better than stop lights
19							x	2	3	1	Yes	Yes	3	1	2	1	2	None
20	Joan Fisher	7231 Oak Pointe Curve					x	1	3	3			1	3	3	1	2	EBL Rd option 3: Please NO more roundabouts! Dangerous Comments: if there is a multi-Use trail on the south side, who maintains it? At the present time there are side walks that are not taken car of, difficult to walk. Lots of branhes and untrimmed trees.
21	Tom Nardone	8294 Kingslee Rd					x	3	1	2	Yes	No	2	1	3			2 Lane highwood - In Favor Multi-Use Trail - In favor
22	Marlynne Clark	7123 Oak Point Curve					x	3	2	1	No	Yes	2	1	3	2	1	None
23	Pat Squires	8128 Rhode Island Cr					x	1	3	2	No		1	2	3	1	2	Get rid of the potholes on highwood. Have police enforce speeding/ Get a new signal at E. Bush and highwood that works by responding to waiting traffic. (Sensor in street). The rest works just fine.
24	James Farrell	8153 Pennsylvania Circle					x	3	1	2	No	No	1	3	3	1	2	(1) Two Lane roundabouts not feasible in winter or the skill level and cell phone distraction of minnesota drivers (2) Not multi-use trails. Only need sidewalks (3) No on-lane bike paths on highwood drive
25	Shelby Foerster	8274 Rhode Island					x	1	3	3		No	1	2	3	1	2	EBL Rd roundabout: NO Comments, re EBL Option 3: Please no roundabout. It is really impossible to come eastbound on the frontage road of 494 (south side). The washington ave roundabout is clogged and virtually at a stand still making entry a nightmare. I go many miles out of my way to avoid that roundabout. I would hope you would have highwood 4 lane to make possible easy access to friendshy village and the neighborhood for emergency vehicles. We are an aging population!
26	Barbara Wilson	8033 Telegraph Rd					x	1	3	1	No	Yes	1	2	3	1	2	No Multi-Use Trail Corridor Option C: We need visibility on telegraph.
27	Art Morgan	8108 Telegraph Rd					x	3	1	2	Yes	No	3	2	1	2	1	Still have a concern over having to exit telegraph with fast moving highwood traffic and limited eight (?) lanes both east and west too many close cases, including tonight.
28	Orey Beam	6976 W 84th St Cir					x	1	3	3	No	No	1			1		Multi-Use Trail: Bicycles don't yield for pedestrians on multi-use trail, so we would lose pedestrian travel on South Side.
29	Dave Hutton	8133 Utah Ave S					x	3	2	1	Yes	Yes	3	2	1	2	1	None
30	Micheal Hutton	8133 Utah Ave S					x	3	2	1	Yes	Yes	3	2	1	2	1	None
31	Paul Wilson	7204 Lakeview Cir					x	3	2	1	No	Yes	3	2	1	2	1	EBL Rd option 2 (roundabout): This makes perfect sense Comments: Bike Trails are great.

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
32	Richard J. Thomas	8400 Pennsylvania Rd					x	1	2	3	No	No	3	2	1	2	1	On street Bike Lane: Dangerous - See Wooddale Ave - Edina Comments: Good work. Keep true roundabouts. Don't follow the goat to design roadway.
33	Jenny Weber	7601 West 101st St #109					x	3	1	3	Yes		3	1	3	1	2	I don't think roundabouts are good.
34	Lynn VanOrrum	8151 Pennsylvania Circle					x	3	2	1		Yes	2	1	3	1	2	None
35	Dan Magan (?)	6972 W 84th St					x	1	3	3			1	1	3	1	2	None
36	Johanna Magan (?)	6972 W 84th St Cir					x	1	3	3			1	1	3	1	2	None
37	Lisa Beam	6976 W 84th St Cir					x	1	3	3			1	1	3	1	2	None
38	Dan and Carol Forby	8158 Utah Ave SO					x	1	3	3	No	No		1		1		Keep Bicyclists off road, they don't obey traffic signs! No roundabout on West Bush Lake Road and Highwood Drive -- people don't know how to operate them correctly.
39	Bob Janssen	8349 Virginia Ave S					x	1	2	3			2	1	3	2	1	None
40	Len and Barb Mitsch	8220 Kentucky Circle					x	3	2	1			2	1	3		1	Good Presentation
41	Dick Neighbor	7325 W 83rd Street					x	1	3	1			1	3	3	1	2	None
42	Matt Bohrnstedt	8425 Virginia Rd					x	2	1	3	Yes	No	3	1	2	2	1	Do NOT add 2nd lane going down hill on EBL toward ski jump! There is an existing issue at the base of the hill when going up where 2 lanes merge into one lane and during peak hours it is not fun as continual "pissing matches" play out since people connot peacefully merge. That area should be re-worked as part of the project.
43	Charles Sweningsen	Friendship Village					x		1				1			1		The general direction of Highwood is north-south, where is its south side?
44	George Kraynick	8212 Oregon Circle					x	3	1	2	Yes	Yes	3	2	1	1	2	Multi-Use Trail: It adds value but I would like consideration to be made for existing trees which are in the purposed trail zone, specifically the large red oak behind 8212 oregon circle. Comments: Please choose option B. This would enhance property value and safety for the neighborhood. Option A will still allow excessive speeding on highwood. Option C will still allow aggressive drivers to pass and potentially put at risk unaware pedestrians and cyclists.
45	Warren Fritz	8240 Pennsylvania Rd					x	1	3	3	Yes	No						Multi-Use Trail: The multi-use trail on the south side is a good idea. One concern is the expense to retain the hill west and south of telegraph rd. Comments: Road way does not work well now -- except for people not stopping at crosswalks. Pedestrians should [be] a little more aggressive.
46	Dona Clark	8400 Pennsylvania Rd					x	3	1					1	2		2	No bikes in auto lanes
47	Carol Fritz	8240 Pennsylvania Rd					x	1	3	3			1	2	3	1	2	None
48	Peter Seidman	8016 Telegraph Rd					x	1	3	3			1	3	3	1	2	On front at top: *IF* (!) you have to do something Comments: Leave Highwood 4 lane. In spite of your statistics it still takes 2-4 min to get out Telegraph to Highwood. If you made it 1 lane it will be terrible for us. You already blocked us getting out the other end . . .
49	Bill Allard	8145 Pennsylvania Circle					x	1	3	3	No	No	1	3	3	1	2	Corridor Option A: This remains the best option - Do nothing to lanes the exist Comments: Roundabouts at drive times will make residents time elongate, won't be able to get onto E Bush at all.
50	Kristine Allard	8145 Pennsylvania Circle					x	1	3	3	No	No	1	2		1	2	We do *not* need a roundabout at East Bush Lake Rd and Highwood. This is major traffic and needs lights. Why are we needing to spend money except for Highwood and E Bush Lake needs lights, NO roundabout.
51	Anne Heller	8409 Xylon Cir S					x	1	3	2	Yes	Yes	1	3	2	1	2	Bike Lane: Would be nice but not at the expence of a lane of motor vehicle traffic. Bicyclists could and should follow the rules of the road with motor vehicles; wait their turn! Comments: Roundabouts at 169 and 494 area gets backed up and traffic from one direction does not get an opportunity to enter the roundabout and the other direction blocks the roundabout so drivers cannot get to the opposite side (ie from Marth Rd to go to Eden Prairie)

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
52	Glenn and Cheryl Craft	7701 Highwood Drive/ House with private drive on Highwood					x	3	2	1	No	Yes	1	2	3	1	2	(This person is also concerned about a trails effect on nearby trees) Comments: The width of a multi-use trail makes for a real problem if the curbing isn't changed. If all of the space required for this is as I understand it (18' beyond the curb), then it is not a workable solution for anyone whose home is on Highwood or backs up to it. The multi-use trail is really single use if bike lanes are on the roadway. That is what sidewalks are for. Thank You.
53	Brian Comeau	8517 Virgina Rd					x	2	3	1	No	Yes	2	3	1	2	1	I think the options were well documented and presented. Good job.
54	Todd Bordson	7717 Highwood Drive					x			1	No	Yes	2	3	1	1	2	I am not in favor of the off road multi-use bike trail due to the impact to the vegetation (tree loss and earth moving). I am in favor of a two-lane roadway with on-road bike lane. Keep existing south side sidewalk.
55	April and James Percich	8140 Rhode Island Circle (PO box 385437 - Mail here)					x	2	3	1	Yes	Yes	3	2	1	2	1	Option #3 is my #1; however! I have a major concern of how I would travel east on Highwood and turn left (or North) on E Bush Lake during peak rush hour. I think it would be very difficult to get in the roundabout because people on EBL will not want to yield to me once I'm in the roundabout. There would be a lot of accidents there. Also another concern is will people truly BLEND down to 2 lanes from 4 and still keep traffic moving - without accidents.
56	Kenneth Viken	7100 West 83rd St.					x	2	3	1	Yes	Yes	1	2	3	1	2	WBL Rd Option 1: Seems to work pretty well as it is WBL Rd Option 2: NO WAY Rose!
57							x	3	3	1	No	Yes	1	3	3	1	2	Simply repaint the lanes to one in each direction and save money! Bike lanes must be on street to be safe from cross traffic. Don't need a new multi-use trail, use existing sidewalks.
58	Ken Nordlie	7600 W 84th St					x	1	3	2	No	No	1	2	3	2	1	E BL Rd. A roundabout makes no sense here. Adding short 4 lanes sections will only cause a massive backup and low down at the merge during rush hours. Highwood. Except for a roundabout at Highwood and WBL Rd, leave Highwood alone it works very well as is. Don't solve a problem that doesn't exist!
59	Sandra Shaus	10548 Penn Ave So					x	3	1	2	Yes	Yes	2	3	1	2	1	The multi-use trail and Caisid (?) median would be an excellent opportunity to create more value to real estate holdings and bring young up and coming adults to Bloomington. Cannot keep with all seniors. Really need the young to move here! Option B is a prefect solution.
60	John Ahaus	10548 Penn-So BLM					x	3	2	1	Yes	Yes	3	3	1	2	1	Great oppurtunity to connect our towns bike trails for bike and walkers to use parks and streets.
61	E. A. Traficante	7329 Autumn Chace Cir					x	1	3	2			1	3	2	1	2	Please! No more roundabouts! Leave it as is! Change light timing at Highwood and E Bush Lake at rush hour and off time or allow left turn on red for Highwood during non-peak hours.
62	Bob Meehl	8131 Tierneys Woods Curve		x					1						1		1	
63	Edwin Kelly	8430 Pennsylvania Rd, Apt 202			x			3	1	2	Yes	DNO	3	2	1	2	1	Having grown up in Australia where roundabouts are common and understanding their efficiancy in aiding traffic flow and reducing accidents, I strongly support the roundabout option
64	John R. Larson	8208 Oregon Rd			x			3	1	2	Yes	No	1	3	3	1	2	Don't like having 4 lanes and then merge on hill. Don't want 4 lane on hill someday (Know not option now) The delay North/South is acceptable and better than was before - when Highwood had more traffic.
65	Nancy Larson	8208 Oregon Rd			x			2	1	3	Yes	No	1	2	3	1	2	

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
66	Steve Goddard	6817 W 83rd St		x				1						1		1		needed. I understand that since the 494/169 interchange completion, traffic levels are reduced. But honestly, sometimes at rush hour it does not seem like it. Reducing vehicle lanes for the sake of creating bicycle lanes with even less volume would be a tremendous inefficient use of real estate. Again, the serious bike riders are not on Highwood, they are are the new trails. The casual rider would benefit by the southside multi-use trail. There are a lot of people who walk the existing sidewalks. Investing money in landscaped islands, etc. just seems like a waste of money and in my opinion, cause safety concerns by limiting views of the road. Just invest the money in maintaining the road surface, painting and updated crosswalk control. East Bush Lake Rd = Option 2 Love it. There has to be technolology available to allow traffic to flow smoother even during rush hour. It seems Hennepin County is greatly biased towards Bush Lake Road at the expense of Highwood. My opinion has been to just fix the light. It can't be that difficult. Using 4 lanes through the intersection would greatly help, although I am somewhat concerned about the merges that must happen. It is stll "fun" working the merge at the bottom of the hill where East Bush Lake road turns to come up the hill. There needs to be signage and guidance as to how to yield and merge. I have seen a lot of "death races" there to see who can get out front first. By-the-way, Option 3 with a roundabout = COMPLETE DISASTER. How would Highwood to Southbound East Bush Lake Rd work at rush hour? We might as turn around and go home. Also, I am not sure they considered that there can be significant sun-blindness there at certain times of the year. Trying to go through a roundabout while fighting the sun would not be good.
67	Ted Paulfranz	8157 Telegraph		x							Yes	No						He thinks the biggest problem with the sight distance concern at Telegraph is the speeds of vehicles coming WB (down the hill) at this location. Anything to address the speeding (reduce speed limit, enforcement, etc.) will help.
68	Susan Hulbert	8524 Park Knoll				x			3		Yes						2	Option B - Would Ped & bike traffic volume be too hight? Dangerous? Option C - How many bikers do you anticipate using bike lanes? Option 2 - EBLR from north - 4 lane to 2 lane to 4 lane to 2 lane. Too much change in short distance Option 3 - EBLR same concern about lane adds and drops. concerned about bottleneck in a.m. foing north on EBLR from all the left turners on Highwood.
69	Dr. George E. Fischer	7231 Oak Pointe Curve			x								1			1		
70	Jerry Raley	6800 W 82nd Street	x					1					1			1		
71	Car Bennetsen	8249 Maryland Road		x					1		No	Yes						All options(A,B, and C) show a 10 foot wide Multi-Use Trail on the South Side plus a 10 foot green space between the trail and the street, for a total of 16 feet from the street. I think the Two-Lane Parkway Option C with bike paths would be excellent, but without the unnecessary Multi-Use Trail on the South Side. The Multi-Use Trail requiring 16 feet of space from the street is certainly within the City-s 10 foot easement from 1 to 2 feet to the lot side of the current sidewal (easement per City Building Dept). However, the Century telephone and Comcast buried cable is in this easement (within the proposed Mulit-Use Trail), and would have to be relocated.
72	Greg Youtz	8261 Kentucky Circle		x					1						1		1	In general I like the greenway and roudabout option. They make good sense to me.
73	Cindy Corner	6968 W 84th Street		x							Yes	Yes						I am a resident of the Oak Point Townhomes on Highwood and 84th St. and want to show my support for the proposed walk/bike lane along Highwood Drive. My husband and I are avid bikers and walkers and feel that this is needed for safety along this corridor. We will be at the council meeting on June 2nd to show our support for the project.

	RESIDENT	ADDRESS	PHONE	EMAIL	Mail	Fax	OPEN HOUSE	Corridor Options			Multi-Moadal		East Bush Lake Road			West Bush Lake Road		Comments
								Option A	Option B	Option C	Multi-Use Trail	On-Street Bike Lanes	Option 1	Option 2	Option 3	Option 1	Option 2	
74	Judy Sigvertsen	6956 West 84th Street		x							No							I find the idea of cutting down healthy trees/bushes and replacing them with 5 feet of cement to be deplorable. In addition to serving as a noise barrier, these trees and bushes help protect our homes from pollution created by the traffic on Highwood Drive. Furthermore, their removal would undoubtedly have a detrimental effect on property values. We lose enough trees to the vagaries of nature - we should not be cutting them down just because we can. I"m aware that putting in traffic circles is the current trend among city planners, but several studies have shown that traffic circles have little effect on traffic volume or speed. Their effect is not presently quantifiable due to many factors such as size of the circle, the distance from the circle at which speeds are measured, and the presence or absence of additional obstructions at the intersection. Professional statements regarding their effectiveness have been largely subjective, and in some cases biased toward a particular viewpoint. The case for circles as a volume and/or speed reducer is certainly not clear Traffic circles or roundabouts are not the only solution to a traffic problem and they tend to create additional complications and issues of their own. I believe a stop light at this intersection is a more viable option.
75	Barb Miller	6925 W 82nd Street	x															In support of steps to make the entire corridor have balanced safety for pedestrians, cyclists and vehicle drivers. Please consider reducing speed limit to closer to 20 mph (as is being done/considered in Wayzata) and consider improving the lighting on the curves. There were two crashes in recent years at curves on the roadway, one into her house (in the last two years) and one into a tree and fence (2 weeks ago) - the one into her home involved high speeds that wouldn't likely have been eliminated by reducing the speed limit, but she feels more lighting would enhance the curve.

- Comments received after City Council Study Meeting on April 7, 2014

Greg Beam
7028 W 84th Street Cir
Bloomington, MN 55438
March 25, 2014

Jack Baloga
Bloomington City Council District III
7123 Oak Pointe Curve
Bloomington, MN 55438
jbaloga@BloomingtonMN.gov

Amy Marohn, PE
Civil Engineer – Traffic
1700 W 98th Street
amarohn@BloomingtonMN.gov

Dear Jack and Amy:

Sincerely,

Oak Pointe Townhomes is a townhome community consisting of 28 units. The property borders the southern side of Highwood Drive towards the east end of Highwood Drive. We are concerned about the proposals presented during the "Virtual" Open House #2.

Our primary concern is the idea of widening the sidewalk by 5 feet on the south side of Highwood Drive to convert it into a "multi-use trail way." We understand that this would be accomplished be extending the southern edge of the existing sidewalk by 5 feet. Losing the trees and bushes in this area would significantly diminish the appearance of our property from Highwood Drive and expose the units adjacent to Highwood Drive to more road noise and would reduce the attractiveness of their view towards Highwood Drive.

Neither are of the other options are desirable either. There are very few bicycles on Highwood, certainly not enough to justify creating two bicycle lanes that would interfere with on traffic flow.

Finally, concerning the intersection of Highwood Drive and East Bush Lake Road, we believe that either of the traffic circle options would be dominated by north-bound traffic on East Bush Lake Road creating a dangerous situation for Highwood Drive traffic attempting to go north-bound on East Bush Lake Road. We believe the new traffic light would be preferable.
Thank you for your consideration.

Greg Beam
President
Oak Pointe Townhome Association

Highwood Drive Study

Study Advisory Committee Meeting Minutes

October 29, 2013

Attendees:
Shelly Pederson, City of Bloomington
Amy Marohn, City of Bloomington
Paul Jarvis, City of Bloomington
John Barten, Three Rivers Park District
Jason Pieper, Hennepin County
Jay Forster, City of Bloomington Fire
Scott Anderson, City of Bloomington
Randy Quale, City of Bloomington Parks
Matthew Lepke, City of Bloomington Planning
Amy Larson, City of Bloomington Legal
Marie Cote, SRF Consulting Group

1. **Introductions** – Amy Marohn started the meeting with a few opening comments, followed by SAC member introductions.

2. **Background Information, Study Goals, and Existing Conditions** – Marie Cote shared a presentation with the group outlining background information, historical traffic volumes and existing conditions related to traffic and safety. In addition, study goals were also identified.

   Jason Pieper indicated that the traffic signal at the intersection of East Bush Lake Road and Highwood Drive is owned and operated by Hennepin County. He commented that since the wheelage tax was approved, there is a proposal to use some of these dollars to upgrade the County's temporary span wire traffic signals. A decision will be made in January 2014. This intersection is on the list. Jason also provided signal timing information and traffic counts.

   One member asked if bicycle counts were available for Highwood Drive. The City does not have this type of data.

   Shelly Pederson commented that current and potential council members are interested in this study, as it relates to how dollars are being spent in the City.

3. **Study Schedule** – The study schedule was discussed. The next time the SAC will meet is in early January 2014, followed by our next open house.

4. **Open House Attendance and Feedback** - An open house was held on October 15, 2013. The sign-in sheet identified 65 signatures (18 couples) for a total of 83 attendees. All comments received from two phones message, six e-mails and 42 open house comments were distributed to the group. It was agreed that feedback to leave the roadway as is or make changes was a 50/50 split. Main concerns were related to the intersections, with the need to improve the East Bush Lake Road and Highwood Drive intersection as a high priority. City staff acknowledged that safety concerns related to winter driving conditions was a higher concern than expected.

   A discussion took place regarding the attendance, presentation and general comments on the logistics of the open house. There was strong representation from the older community, while one resident felt that the younger families were not represented well. Possible changes to consider for the next open house include:
   - Open house from 4:00 to 7:00 p.m. (earlier meeting time)
   - Two presentations given
   - Online broadcast to provide live meeting
   - Staff could respond to questions during live broadcast

5. **Potential Roadway and Intersection Options** – The next step in the study process will include the development and analysis of roadway and intersection options. These options will be presented at the second open house, including a No Build (Do Nothing) alternative. The group discussed different build alternatives that could be considered, including any preliminary feedback on pros and cons. A summary of this discussion included:
   - A three-lane (one lane in each direction with a two-way center left-turn lane) design does not seem to fit the roadway characteristics of Highwood Drive, since there is only one direct access residential driveway along the study segment.
   - A variety of two-lane options will be developed, incorporating turn lanes and shoulders, on-street bike lanes, landscaped median (parkway), and trail on north side/sidewalk on south side.
   - The design of any roundabouts should be able to accommodate fire trucks.
   - Carefully consider where planted medians are located, for safety reasons.
   - The ATP will be updated in January. A trail along the corridor should be considered, since it will be connecting to regional trails.
   - No public transit, although school bus stops are on the corridor.
   - Evaluate whether all-way stop at West Bush Lake Road could be two-way stop.
   - Reducing the amount of asphalt pavement is a positive.
   - Improvements at the East Bush Lake Road intersection cannot require moving the roadway to the east, impacting the park reserve.
   - Consider safety improvements at the Telegraph Road intersection.

A question was asked regarding the funding of future improvements and assessments. With the reconstruction of Highwood Drive, only corner lots can be assessed. Therefore, an improvement district is being considered as a funding tool to assess costs district wide.

6. **Next Steps**
    - Preparation and Analysis of Options
    - Next SAC meeting early January 2014

Highwood Drive Study

Study Advisory Committee Meeting Minutes

January 22, 2014

Attendees:
Amy Marohn, City of Bloomington
Paul Jarvis, City of Bloomington
Kirk Roberts, City of Bloomington
Jason Pieper, Hennepin County
Ofc. Bret Anderberg, City of Bloomington Police
Jay Forster, City of Bloomington Fire
Scott Anderson, City of Bloomington
Randy Quale, City of Bloomington Parks
Elizabeth Lazzara, City of Bloomington Planning
Amy Larson, City of Bloomington Legal
Marie Cote, SRF Consulting Group
Matt Knight, SRF Consulting Group
Mike Mohs, SRF Consulting Group

1. **Meeting Purpose** – Marie Cote started the meeting informing the group that we will be presenting corridor and intersection options. We will need feedback on these options prior to the open house.

2. **Corridor Options** – Mike Mohs presented the layouts for the corridor options that have been developed. SAC member comments are summarized below.

   Option A - Four-Lane Undivided Roadway

   - A layout was not presented, but this is existing conditions with a multi-use trail on the south side.

   Option B - Two-Lane Roadway with Left-Turn Lanes at Key Intersections and a Landscaped Median and Multi-Use Trail on the South Side

   - Emergency response members indicated a concern regarding the 16-ft lane widths. SRF is going to review lane widths under this scenario in order to assure that the lanes will accommodate emergency response vehicles. They indicated a preference of 14 to 16 feet to pass. One possible solution that was discussed was the use of mountable curbs.

- Are there maintenance problems with a landscaped parkway? It is not an issue, other than the cost to maintain.

Option C – Two-Lane Roadway with Left-Turn Lanes and an On-Street Bike Lane

- Maintenance staff commented that this option will be easier to plow than the parkway option.
- Randy Quale indicated that the multi-use trail should be shown under this scenario because it accommodates a different type of user than the on-street bike lane.
- The bike symbol should be shown on the layout.
- Need to make sure that the comment card asks for feedback on the multi-use trail.
- Will this option work well as an interim improvement? Based on future volumes, we do not see the need for more than a two-lane roadway. However, this option does not preclude future improvements to the corridor.

Option D – Two-Lane Roadway with Left-Turn Lanes and Shoulders

- No parking on all options.
- This option can be eliminated.

3. **Intersection Options** – Mike Mohs presented the layouts for the intersection options that have been developed.

East Bush Lake Road

Option 1 – Traffic Signal

- Replace traffic signal.

Option 2 –Traffic Signal with Four Lanes

- The multi-purpose trail should be shown on this layout along the south side of Highwood Drive. SRF is going to update the layout to include the trail.
- The location of the lane drop in relation to 86th Street south of Highwood Drive was discussed and whether or not turn lanes are needed at this

intersection. The City of Bloomington is going to provide SRF with traffic counts. SRF will analyze the intersection to determine if a southbound right-turn lane or northbound left-turn lane is warranted. The layout will be updated to include any improvements to the 86th Street intersection.

Option 3 – Traffic Signal with a Continuous Green for Northbound East Bush Lake Road

- Maintenance and emergency response staff indicated concerns regarding this option not having enough room for emergency vehicles. This option will be presented to the City Council with the recommendation that it not be carried forward to the public open house.

Option 4 – Multi-Lane Roundabout

- This option includes slight right of way impacts in the southwest quadrant.
- Need to make sure we have warning signs to slow down motorists prior to the roundabout
- The changes made to the 86th Street intersection are going to be included in this layout.

West Bush Lake Road

Option 1 – Stop Controlled

- A SAC member commented about sight distance issues under side-street stop control. SRF is going to check sight distances. It may be important to keep all-way stop as an option, due to roadway grades approaching the intersection.
- Randy Quale indicated that a multi-use trail is planned for the west side of West Bush Lake Road. SRF is going to include the trail on the West Bush Lake Road layouts.

Option 2 – Single-Lane Roundabout

- No Comments

4. **Traffic Operations Analysis** – Matt Knight presented year 2030 traffic volumes along with a summary of the traffic operations analysis.

5. **Visualizations** – Matt Knight presented the visualizations for the intersection and corridor options. The visualizations are going to be placed on the layouts for the public open house

6. **Cost Estimates –** Marie Cote explained that the cost estimates are planning-level estimates. The cost estimates will not be presented at the public open house, but will be discussed at our next SAC meeting

7. **Other Comments**

    - Highwood Drive overlay project in 2014. Minor changes can be made.

    - East Bush Lake Road signal redesign and overlay in 2015.

8. **Next Steps**
    - CMI Memo to present to City Council
    - Public Open House scheduled for February 10, 2014

Highwood Drive Study

Study Advisory Committee Meeting Minutes

March 7, 2014

Attendees:
Amy Marohn, City of Bloomington
Shelly Pederson, City of Bloomington
Kirk Roberts, City of Bloomington
Jason Pieper, Hennepin County
Chad Ellos, Hennepin County
Scott Anderson, City of Bloomington
Randy Quale, City of Bloomington Parks
Elizabeth Lazzara, City of Bloomington Planning
Amy Larson, City of Bloomington Legal
Marie Cote, SRF Consulting Group
Matt Knight, SRF Consulting Group

1. **Meeting Purpose** – Marie Cote started the meeting informing the group that the purpose of the meeting is to determine recommended corridor and intersection options for the City Council as well as the need for a multi-use trail or on-street bike lanes.

2. **Corridor Option Updates** – Matt Knight presented the changes that have been made to the corridor options based on feedback from the last SAC meeting. These changes were reflected in the open house boards and include:

   Option A – Four-Lane Roadway with Multi-Use Trail on South Side
   - No Changes

   Option B – Two-Lane Parkway with Left-Turn Lanes at Key Intersections and Multi-Use Trail on South Side
   - The lane width has been increased from 16 feet to 18 feet in order to better accommodate emergency response vehicles

   Option C – Two Lane Roadway with Left-Turn Lanes at Key Intersections, On-Street Bike Lanes and Multi-Use Trail on South Side.
   - The multi-use trail has been added to this layout because the trail accommodates a different type of user than the on-street bike lanes

3. **Intersection Option Updates** – Matt Knight presented the changes that have been made to the intersection options based on feedback from the last SAC meeting. These changes were reflected in the open house boards and include:

   East Bush Lake Road

   Option 1 – New Traffic Signal with Existing Roadway
   - No Changes

   Option 2 – New Traffic Signal with Four Lanes
   - The multi-use trail has been included along the south side of Highwood Drive
   - A southbound right-turn lane at 86th Street has been added to the layout

   Option 3 – Multi-Lane Roundabout
   - The multi-use trail has been included along the south side of Highwood Drive
   - A southbound right-turn lane at 86th Street has been added to the layout

   West Bush Lake Road

   Option 1 – All-Way Stop Control
   - This option now specifies all-way stop control due to safety concerns with grades and sight distance
   - A multi-use trail on the west side of West Bush Lake Road has been added to the layout

   Option 2 – Single-Lane Roundabout
   - A multi-use trail on the west side of West Bush Lake Road has been added to the layout

4. **Open House Attendance and Feedback** – Marie Cote presented the results from the public open house held on February 10, 2014. The number of attendees from Friendship Village is going to be presented to the City Council and documented in the study report.

5. **Cost Estimates and Construction Impacts** – Matt Knight presented the cost estimates and construction impacts. The following updates are going to be made to the cost estimates:

General Updates

- An 18 percent engineering design fee is going to be added to the estimates.
- Legal and administration costs are going to be included in the right-of-way estimates. A cost per property impacted will be provided by the City of Bloomington.

Corridor Updates

Option A – Four-Lane Roadway with Multi-Use Trail on South Side

- This option will be added to the cost estimates with a note indicating that the costs are included in the baseline assumptions.

Option B – Two-Lane Parkway with Left-Turn Lanes at Key Intersections and Multi-Use Trail on South Side

- A range of costs will be included for the landscaped median. The low-end cost will include sod only and the high-end cost will include a variety of landscaped options.
- Irrigation costs will be added.
- An annual maintenance costs will be added.

Option C – Two Lane Roadway with Left-Turn Lanes at Key Intersections, On-Street Bike Lanes and Multi-Use Trail on South Side.

- This option will be added to the cost estimates with a note indicating that the costs are included in the baseline assumptions.

Intersection Updates

East Bush Lake Road

Option 1 – New Traffic Signal with Existing Roadway

- This option will be added to the cost estimates. The signal cost estimate will be $200,000 based on Hennepin County's budget.
- A note will be added that indicates cost sharing may apply.

Option 2 – New Traffic Signal with Four Lanes

- The cost estimate for a signal at East Bush Lake Road will be updated to $200,000 based on Hennepin County's budget.
- A note will be added that indicates that this option includes a southbound right-turn lane at 86th Street.
- A note will be added that indicates cost sharing may apply.

Option 3 – Multi-Lane Roundabout

- A note will be added that indicates that this option includes a southbound right-turn lane at 86th Street.
- A note will be added that indicates cost sharing may apply.

6. **Recommendations –** The Study Advisory Committee agreed that the following will be recommended to the City Council:

   Highwood Drive Corridor – The Study Advisory Committee's Recommendation is *Option C – Two Lane Roadway with Left-Turn Lanes at Key Intersections, On-Street Bike Lanes and Multi-Use Trail on South Side*. City Council can decide on a landscaped median or striped turn lanes. In addition, removing the flashing beacons is recommended.

   East Bush Lake Road/Highwood Drive Intersection – The Study Advisory Committee's near-term recommendation is *Option 1 - New Traffic Signal with Existing Roadway*. In addition, Hennepin County will fix the alignment issue with their overlay project planned this summer. The location of the traffic signals will be considered to accommodate a future four-lane roadway, if possible. The committee recommends that *Option 2 – New Traffic Signal with Four Lanes* is considered as a long-term improvement when a four-lane section can be constructed between Chalet Road and Highwood Drive.

   West Bush Lake Road/Highwood Drive Intersection – The Study Advisory Committee's recommendation is *Option 1 – All-Way Stop*. SRF will check whether the southbound left-turn volume has changed, if old volumes are available.

7. **Next Steps**
   - Present study findings and recommendations to City Council
   - Study Report

Appendix C. Cost Estimates

Highwood Drive Intersection and Corridor Study
Concept Level Cost Estimate

Highwood Drive Corridor Options	Additional Roadway Cost	Multi-Use Trail Cost	Annual Maintenance Cost
Option A – Four-Lane Undivided Roadway with Multi-Use Trail on South Side	$0	$570,000	-
Option B – Two-Lane Parkway with Left-Turn Lanes at Key Intersections and Multi-Use Trail on South Side	$600,000-$1,000,000	$570,000	$35,000
Option C – Two-Lane Roadway with Left-Turn Lanes, On-Street Bike Lanes and Multi-Use Trail on South Side	$0	$570,000	-

East Bush Lake Road Intersection Options	Additional Cost	Right-Turn Lane Cost
Option 1 – New Traffic Signal with Existing Roadway	$200,000	$60,000
Option 2 – New Traffic Signal with Four Lanes	$1,210,000	-
Option 3 – Multi-Lane Roundabout	$1,870,000	-

West Bush Lake Road Intersection Options	Additional Cost
Option 1 – All-Way Stop Control	$0
Option 2 – Single-Lane Roundabout	$680,000

Appendix D. Study Figures

Friendship Village

Average Daily Traffic
Year 2012: 4,000 vpd

Average Daily Traffic
Year 2013: 2,300 vpd*
Year 2012: 4,000 vpd
Year 2009: 3,850 vpd
Year 2007: 4,200 vpd
Year 2005: 4,500 vpd
*Collected September, 2013

Posted Speed Limit
35 mph

85th percentile speed is 40 mph

Highwood Drive and East Bush Lake Road
- Older span-wire signal
- Long cycle length (180 seconds)
- Long EB delays at Highwood Dr/EBLR

Access to US169 has been closed and a cul-de-sac has been constructed.

Pedestrian Crossing Sign with Continuous Flashing Beacon

Residential Driveway

Anderson Lakes Park Reserve

Average Daily Traffic
Year 2012: 4,600 vpd

Posted Speed Limit
35 mph

Average Daily Traffic
Year 2013: 3,000 vpd*
Year 2012: 7,000 vpd
Year 2009: 5,300 vpd
Year 2007: 5,300 vpd
Year 2005: 6,700 vpd
*Collected September, 2013

Reynolds Park

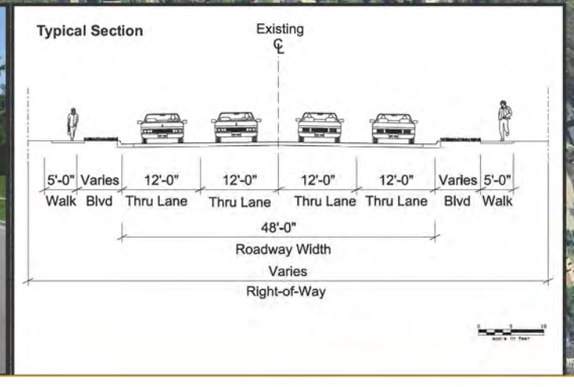
Pedestrian Crossing Sign with Continuous Flashing Beacon

Significant Grade ~ 9 percent

Average Daily Traffic
Year 2011: 12,500 vpd

Hyland Lake Park Reserve

Regional Bike Trail



Existing Conditions
Roadway Characteristics, Traffic Volumes and Traffic Control

CITY OF BLOOMINGTON MINNESOTA

Highwood Drive Study

SRF Consulting Group, Inc.

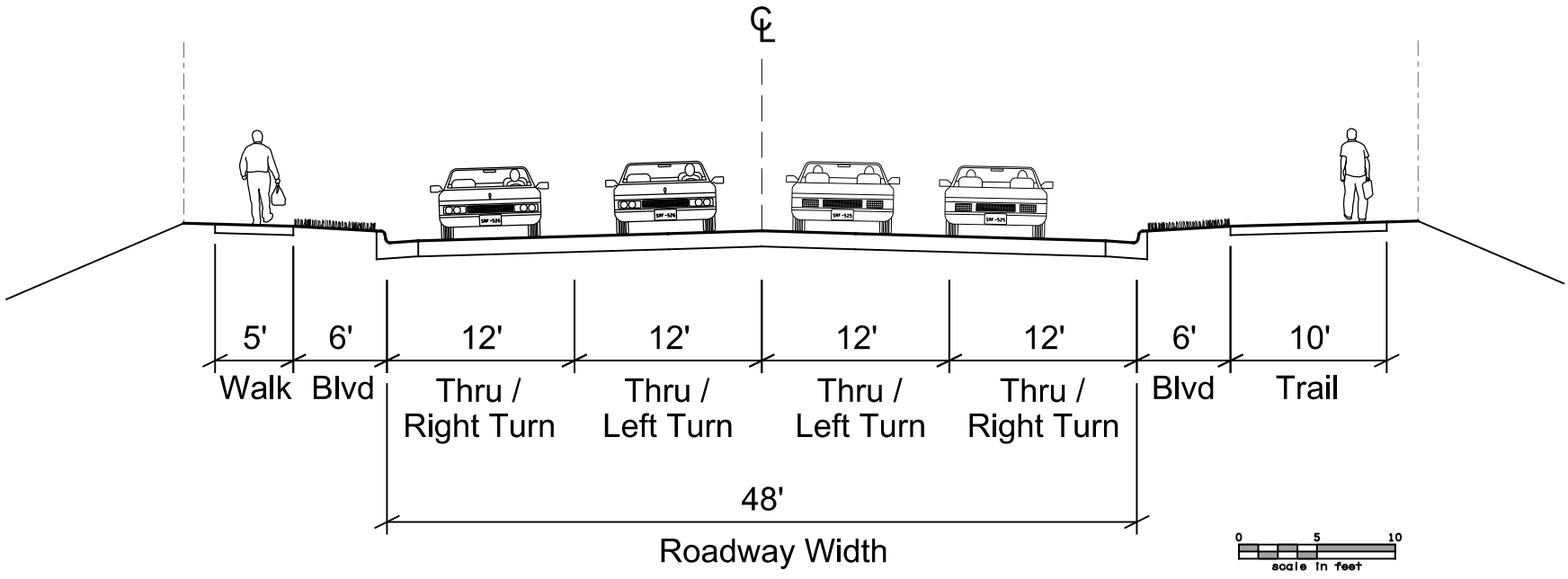
Existing Conditions
Operations and Crash Analysis

CITY OF BLOOMINGTON MINNESOTA

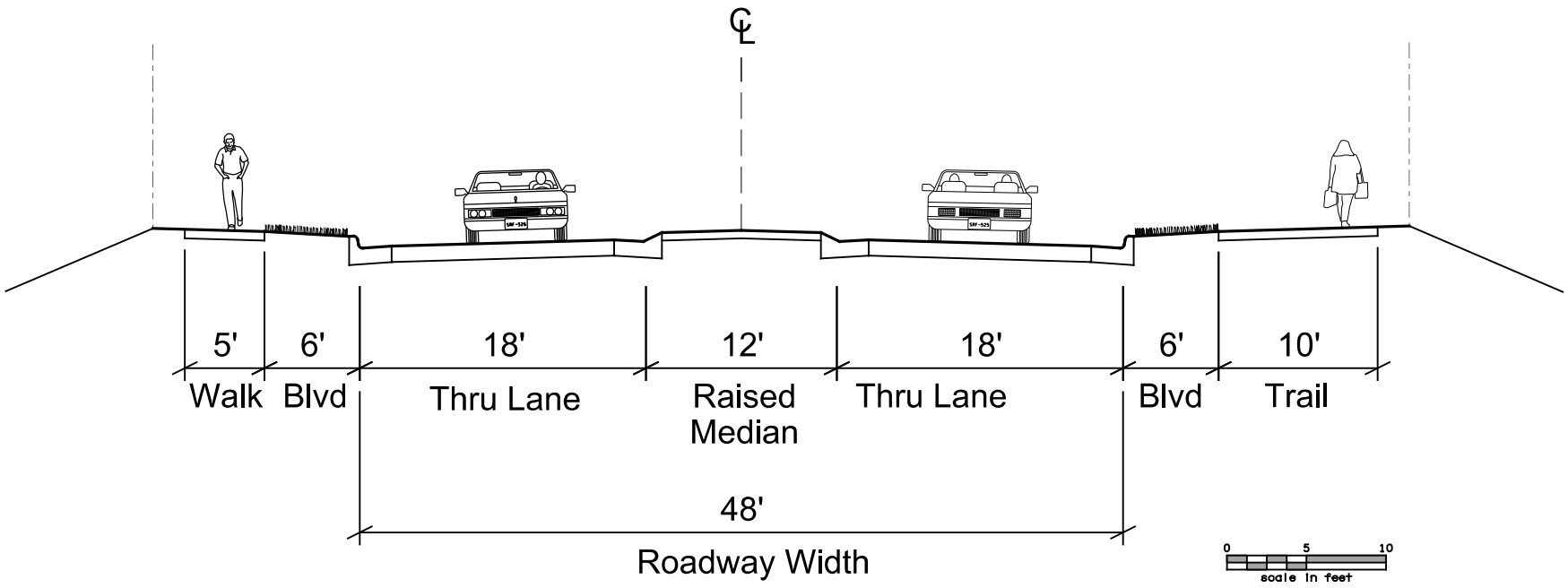
Highwood Drive Study

SRF Consulting Group, Inc.

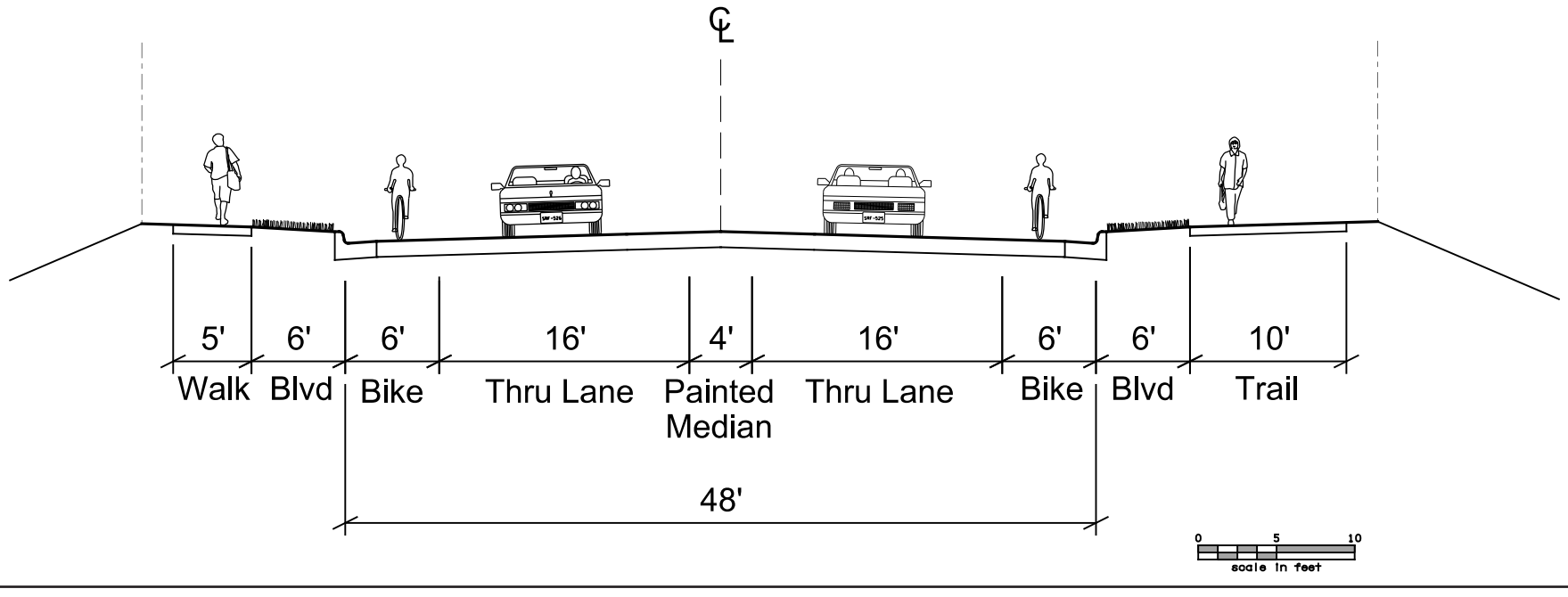
Option A - Four-Lane Undivided Roadway with Multi-Use Trail on South Side



Option B - Two-Lane Parkway with Left-Turn Lanes at Key Intersections and Multi-Use Trail on South Side



Option C - Two-Lane Roadway with Left-Turn Lanes at Key Intersections and Multi-Use Trail on South Side



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0138207
February 2014

Corridor Options

Highwood Drive Intersection and Corridor Study
City of Bloomington

East Bush Lake Road/Highwood Drive Intersection

Option 1: New Traffic Signal with Existing Roadway

- Two-Lane Section with Turn-Lanes
- Acceptable Overall Traffic Operations
- Excessive Delay on Highwood Drive Approach
- Long Northbound Queues in the A.M. Peak Period
- Long Southbound Queues in the P.M. Peak Period

EAST BUSH LAKE ROAD - SECTION A-A
DESIGN SPEED = 45 MPH

DRAFT

2/7/2014

0 60 120
scale in feet

SRF Consulting Group, Inc.

LEGEND

- PAVED ROADWAY
- CONCRETE TRUCK APRON
- RAISED MEDIANS & CURBS
- LANDSCAPED MEDIAN
- BITUMINOUS SHARED USE TRAILS
- CONCRETE SIDEWALKS
- PROPOSED TRAFFIC SIGNAL
- EXISTING RIGHT OF WAY
- VISUALIZATION LOCATION

VISUALIZATION - EXISTING CONDITIONS

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East Bush Lake Road/Highwood Drive Intersection

Option 2: New Traffic Signal with Four Lanes

- Four-Lane Section with Turn-Lanes
- Fits within Existing Right-of-Way
- Acceptable Traffic Operations
- Southbound Right-Turn Lane at 86th Street

EAST BUSH LAKE ROAD - SECTION A-A
DESIGN SPEED = 45 MPH

DRAFT

2/3/2014

0 60 120
scale in feet

SRF Consulting Group, Inc.

LEGEND

- PAVED ROADWAY
- CONCRETE TRUCK APRON
- RAISED MEDIANS & CURBS
- LANDSCAPED MEDIAN
- BITUMINOUS SHARED USE TRAILS
- CONCRETE SIDEWALKS
- PROPOSED TRAFFIC SIGNAL
- EXISTING RIGHT OF WAY
- VISUALIZATION LOCATION

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East Bush Lake Road/Highwood Drive Intersection

Option 3: Multi-Lane Roundabout

- Four-Lane Section
- Minimal Right-of-Way Impacts in Southwest Quadrant
- Acceptable Traffic Operation
- Southbound Right-Turn Lane at 86th Street

83RD ST W

83RD ST TERRACE

83RD ST TERRACE

EAST BUSH LAKE RD

KINGSL

MATCHLINE

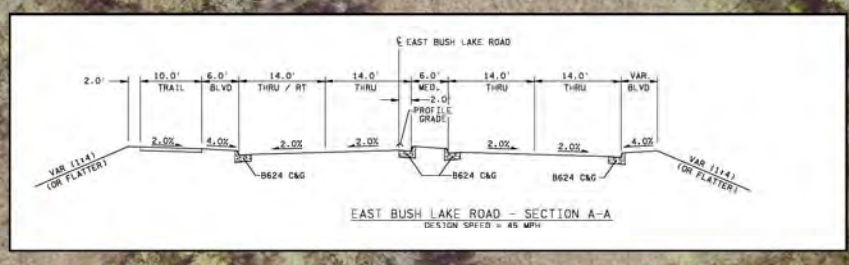
84TH ST W

86TH ST W

EAST BUSH LAKE RD

A

A



EAST BUSH LAKE ROAD - SECTION A-A

DESIGN SPEED = 45 MPH

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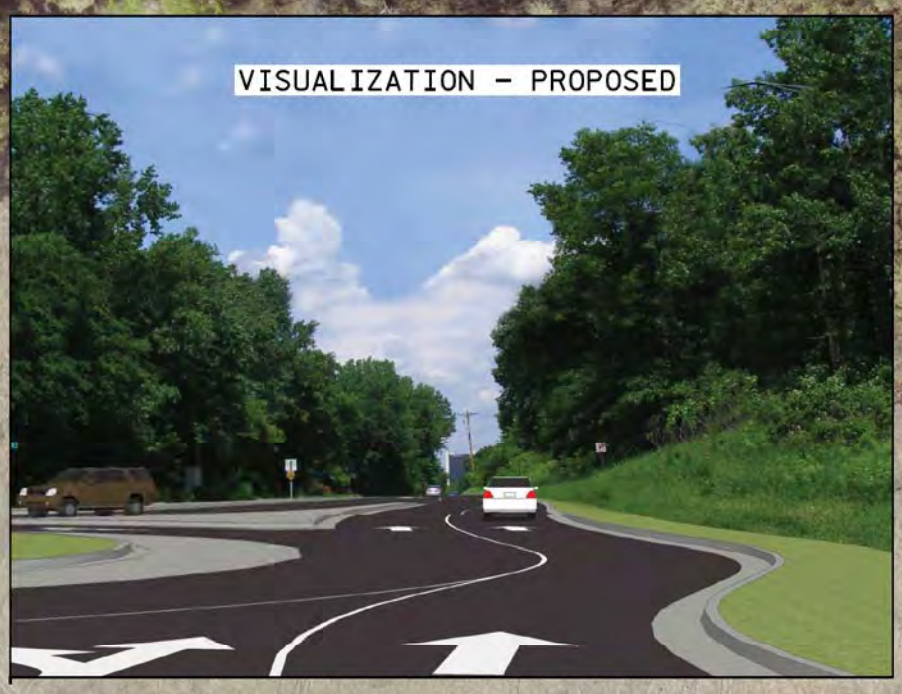
scale in feet

SRF Consulting Group, Inc.

LEGEND

- PAVED ROADWAY
- CONCRETE TRUCK APRON
- RAISED MEDIANS & CURBS
- LANDSCAPED MEDIAN
- BITUMINOUS SHARED USE TRAILS
- CONCRETE SIDEWALKS
- PROPOSED TRAFFIC SIGNAL
- EXISTING RIGHT OF WAY
- VISUALIZATION LOCATION



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West Bush Lake Road/Highwood Drive Intersection

Option 1: All-Way Stop Control

- Works with any Corridor Option
- Fits within Existing Right-of-Way
- Acceptable Traffic Operations

VISUALIZATION

CURVE

UTAH AVE S

WEST BUSH LAKE ROAD

83RD ST W

DRAFT
2/3/2014

LEGEND
- PAVED ROADWAY
- CONCRETE TRUCK APRON
- RAISED MEDIANS & CURBS
- LANDSCAPED MEDIAN
- BITUMINOUS SHARED USE TRAILS
- CONCRETE SIDEWALKS
- PROPOSED TRAFFIC SIGNAL
- EXISTING RIGHT OF WAY
- VISUALIZATION LOCATION

0 60 120
scale in feet

SRF Consulting Group, Inc.

West Bush Lake Road/Highwood Drive Intersection

Option 2: Single-Lane Roundabout

- Works with any Corridor Option
- Minimal Right-of-Way Impacts
- Acceptable Traffic Operations

VISUALIZATION

CURVE

UTAH AVE S

WEST BUSH LAKE ROAD

83RD ST W

DRAFT
2/3/2014

LEGEND
- PAVED ROADWAY
- CONCRETE TRUCK APRON
- RAISED MEDIANS & CURBS
- LANDSCAPED MEDIAN
- BITUMINOUS SHARED USE TRAILS
- CONCRETE SIDEWALKS
- PROPOSED TRAFFIC SIGNAL
- EXISTING RIGHT OF WAY
- VISUALIZATION LOCATION

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scale in feet

SRF Consulting Group, Inc.

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