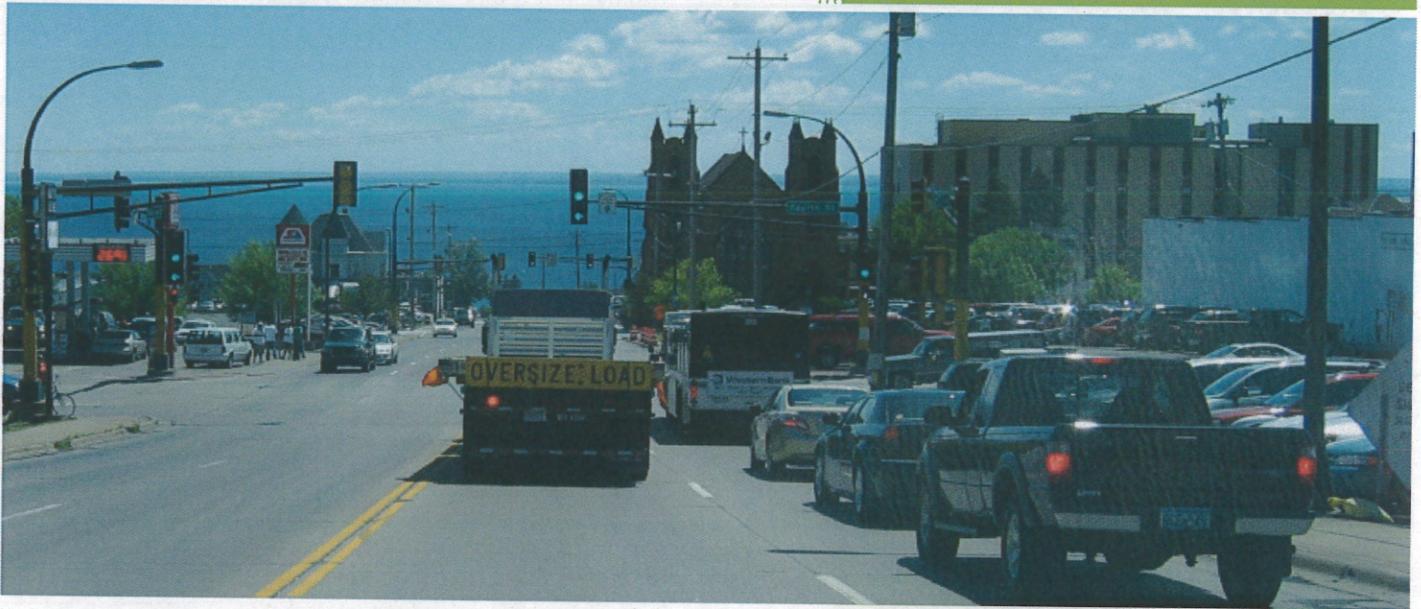


# 2011

## Sixth Avenue East Schematic Re-Design Study Report Duluth, Minnesota



Prepared by:



Public  
Solutions  
Inc.



February 1, 2011

## Table of Contents

Project Partners.....	3
Introduction and Intent of the Study .....	4
Purpose and Need of Project.....	4
Project Goals.....	7
Project Assumptions.....	8
Public Involvement.....	9
Alternatives Analysis .....	14
Preferred Alternative.....	15
Motor Vehicle Traffic Analysis.....	16
Storm Water Runoff .....	19
Cost Estimates .....	21
Funding Sources .....	22
Recommendations.....	25
Next Steps.....	28
Appendix.....	28
A. The Institute for Comprehensive Community Development Article: A Quality-of-Life “Movement” in Duluth .....	29
B. Initial Concepts: Typical Sections .....	30
C. Design Elements “Pros & Cons” .....	31
D. Preferred Design Elements Summary.....	32
E. Preferred Design Elements: Typical Sections & Plan Concept .....	33
F. MIC Location of Concern No. 4.....	34
G. Safe and Walkable Hillside coalition’s Action Plan.....	35
H. State Aid Standards .....	36
I. School Zone Speed Limits .....	37
J. Sixth Avenue E Property Ownership Map .....	38

## Project Partners

### Project Working Group

Chuck Froseth	City of Duluth Community Development
Keith Hamre	City of Duluth Community Development
Brendan Hanchen	Neighborhood Housing Services
Cliff Knettel	Neighborhood Housing Services
Mimi Stender	Fit-City Duluth
Amy Larsen	Fit City Duluth
Pam Kramer	Local Initiatives Support Corporation (LISC)

### Project Technical Advisory Group

Cari Pedersen	City of Duluth Engineering
Tom Johnson	City of Duluth Engineering
Bob Grytdahl	City of Duluth Human Rights Officer
Sharon Montgomery	City of Duluth Police Department
Andy McDonlad	MIC/ARDC
James Gittemeier	MIC/ARDC
Scott Bradley	MnDOT
Todd Campbell	MnDOT
Jesse Schomberg	MN Sea Grant
Drew Digby	MnDEED & Planning Commission
Tom Estabrooks	MnPCA
Jim Skoog	St Louis County – SHIP
Dennis Jensen	Duluth Transit Authority
Jim Heilig	Duluth Transit Authority
Kathy Bogen	Grant Community School Collaborative
Susan Koschak	Bike/Ped Coordinator
Carol Andrews	Bike/Ped Coordinator

### Professional Services Consulting Team

Kimberly Sannes	Public Solutions, Inc.
Heather Kienetz	Short Elliott Hensrickson, Inc.
Gus Blumer	Short Elliott Hensrickson, Inc.

## Introduction and Intent of the Study

The purpose of the Sixth Avenue E Schematic Re-design Project from 2<sup>nd</sup> Street to 9<sup>th</sup> Street in Duluth, Minnesota is to conduct a feasibility assessment of improvements to Sixth Avenue E. The level of study conducted provides a sufficient level of analysis for the City of Duluth to assess the merits of a preferred improvement plan identified in this study for funding allocation.

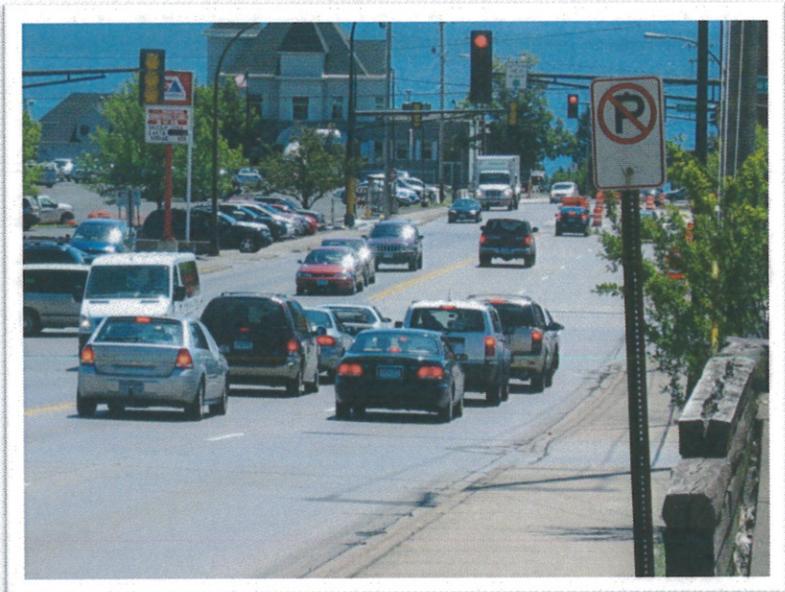
It is not the intent of this study to provide the proper level environmental assessment and engineering design for construction purposes. Rather, the study provides a conceptual evaluation and assessment for the City of Duluth to use to pursue funding from multiple sources. The implementation of environmental documents, detail design, and construction is the logical next step.

The goal of this study is to identify a preferred conceptual design alternative that meets the project goals set forth by the City of Duluth and its project partners, satisfies general solutions to stated problems, and is embraced by the community stakeholders. The preferred alternative and the project goals are outlined in this report.

## Purpose and Need of Project

The City of Duluth and its project partners, Fit-City Duluth, Local Initiatives Support Corporation (LISC), and Neighborhood Housing Services (NHS) have recognized the impediment and divide created by Sixth Avenue E for bicycle and pedestrian mobility.

The recognition of Sixth Avenue E as an issue is underscored by the Institute for Comprehensive Community Development highlighting Duluth and Sixth Avenue E in a case study. A copy of that report is in Appendix A.



Specifically, the corridor lacks walkability and non-motorized mobility for the residents and others who live, work, and obtain services in the area. The purpose of the schematic redesign project of Sixth Avenue E is an important first step to restore livability, environmental stewardship, and multi-modal transportation compatibility to the area. The study's findings establish the vision and determine the needs for Sixth Avenue E. Sixth Avenue E is a challenge not only for pedestrians, bicyclists, the disabled, children, and the elderly, but Sixth Avenue E poses a problem for the automobile, as well. As designed, all forms of transportation are struggling to use the corridor, let alone co-exist compatibly.

**Environment**

Sixth Avenue E is a four-lane, undivided, Municipal State-Aid, principal arterial that runs from East 2<sup>nd</sup> Street to East 9<sup>th</sup> Street. It is approximately one-half mile long with 66 feet of right-of-way. It is a remnant of Minnesota State Trunk Highway 194 and was turned back to the city when Interstate 35 was completed in the late 1980s. Every day, thousands of people interact with Sixth Avenue E from 2<sup>nd</sup> Street to 9<sup>th</sup> Street. About 16,000 are in cars, 3% to 4% are in trucks, many others are pedestrians, bicyclists, transit riders, and others simply trying to get from point A to B.

The surrounding environment of Sixth Avenue E includes single-family and multiplex homes alongside businesses, such as gas stations, medical supply, and shoe repair, much like any principle arterial anywhere. Sixth Avenue E is a dividing line between the two most urban and centrally located neighborhoods in the City: Central and East Hillside Neighborhoods. Central Hillside’s boundaries are approximately Mesaba Avenue to Sixth Avenue E and East Hillside is from Sixth Avenue E to 21<sup>st</sup> Ave



East. These are two of the lowest income neighborhoods in the city with poverty rates of 28% and 37%, respectively, and with owner-occupancy rates at about 20% and 35%, respectively. Two blocks either side of Sixth Avenue E, the owner-occupancy rate drops to 10 - 15%, and the college student population is increasing in the area, mostly from 7<sup>th</sup> Street down to 4<sup>th</sup> Street.

**Schools**

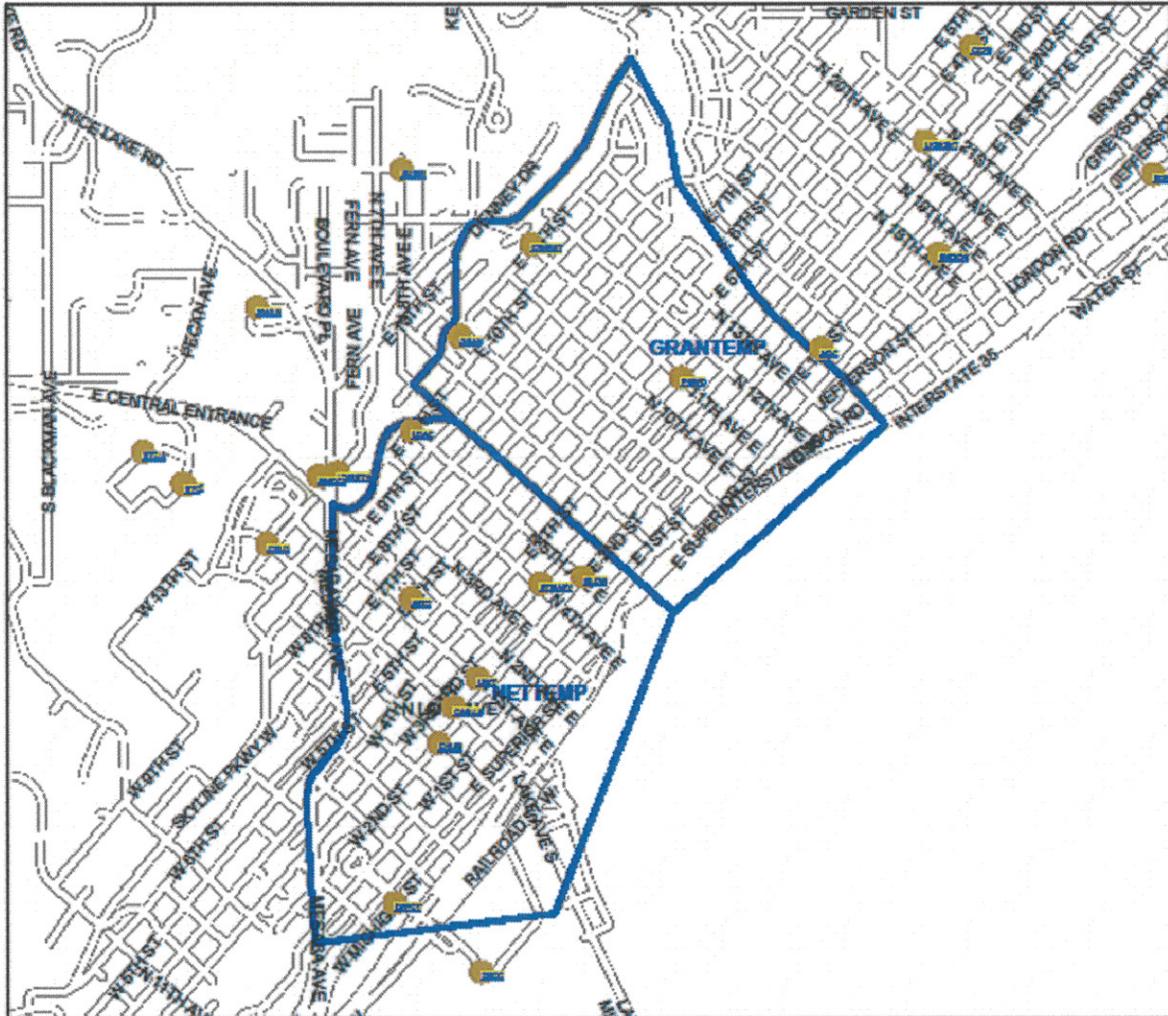
For nearly a century, the elementary children in Central Hillside attended Nettleton School located on 1<sup>st</sup> Ave E, and the East

Hillside children attended Grant Elementary school located on 8<sup>th</sup> Ave E and 10<sup>th</sup> St. Beginning with the 2010/2011 school year, the school district combined the school populations that will ultimately occupy the remodeled Grant school building. The school district intends to bus all Central Hillside students across Sixth Avenue E, as the position of the school district is that Sixth Avenue E is not safe to cross. Yet despite the cautionary plans by the school district, it is anticipated that elementary-age school children will cross Sixth Avenue E, nonetheless. Although the closing of Nettleton School was the main impetus for the study, other issues and shortcomings exist and are highlighted and discussed in this study document.

Until the reconstruction of Grant School is complete, the Central and East Hillside elementary students are attending school in the Nettleton building. In the 2010/2011 school year, 151 students attend Nettleton in the area bounded by Sixth Avenue E, Mesaba Ave, and the lake, and 139 students attend

Nettleton from the area bounded by Sixth Avenue E, 14th Ave E, and Kenwood Ave. The boundaries are illustrated on the District Map below.

**Duluth Independent School District #709  
District Map**



The multi-modal transportation challenges that exist throughout the Sixth Avenue E corridor are not new to the City of Duluth. Historically, the design problems and solutions have centered on results for motorized transportation. This study is an effort to evaluate the balance and expansion of transportation options. As such, the project partners and contributors set very specific goals from the beginning in order to obtain a true multi-modal and varied approach to resolve safe movement options for all the modes as well as address the community health benefits of a well-designed and environmentally sound built environment.

## Project Goals

Transportation projects are traditionally developed from the perspective of the person in the motorized vehicle. But not all people who travel are using the same mode. It is typically those corridors that have the greatest use by multiple modes also have the greatest range of conflicts. The needs of the pedestrian commuter are different from the needs of the car commuter and the bicycle commuter. This project is also about environmental and social enhancement, and reconnecting a divided neighborhood that is challenged in a variety of ways along, and perhaps because of Sixth Avenue E.

*Transportation improvements* have become synonymous with a road design that gives priority to the motorized vehicle at the expense of the non-motorized traveler, the neighborhood, and the community. The intent of this project is to take a fresh approach to defining the outcomes and by doing so through the lens of the pedestrian, bicyclist, and additionally, the healthy community.

Through the stated goals and a non-motorized/health lens, and stakeholder input, the project addresses the problems and desired outcomes while still incorporating the needs of motorized vehicles, not just ignoring or hindering their movement. Attention to non-motorized and mass transit safety can occur while still maintaining an acceptable level of mobility for the motorized traveler and create a system of sustainable transportation for all. A road that is perceived as safe, efficient, and comfortable for use by all people and automobiles does not have to be a mutually exclusive proposition. The “lenses” used to approach this study are established in the following project goals:

### **Environmental Stewardship**

- Increase green space
- Storm water runoff mitigation
- Beautification

### **Safety**

- Design for 30 mph, post for 30 mph.
- Slow down cars, eliminate crashes between cars and bikes/pedestrians
- Bicycle and pedestrian safety

### **Mobility for All**

- Pedestrians (seniors, children, disabled), bicycles, public transit – not just automobiles
- Accessibility for pedestrians

### **Community Engagement**

- Involve the community and the neighbors and encourage participation in the process
- Social benefits to the residents today and into the future

## Project Assumptions

The Sixth Avenue E Schematic Re-design Study had to be efficient and focused, due to time and budget constraints. The project team and partners fully understand the scope of work required for a project study, so it was necessary to set expectations. Therefore, task boundaries and assumptions were established to maintain a clearly defined project outcome. The boundaries and assumptions are:

### Purpose and outcomes

- The Sixth Avenue E Schematic Redesign Study is intended to be used primarily to pursue funding options for traffic, environmental, and detail design engineering and construction. It is understood that additional data gathering, analysis, land surveys, soil studies, preliminary design and engineering tasks will be required prior to final design and construction of the project.

### Right of way

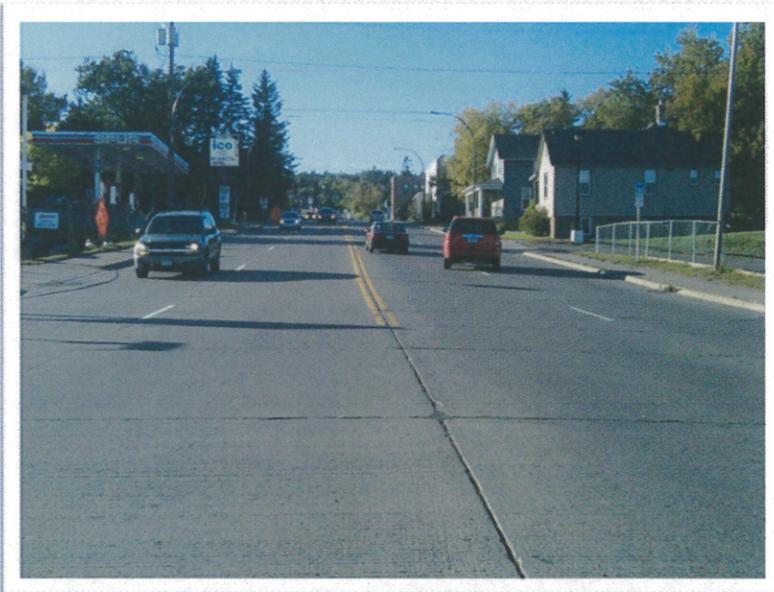
- The schematic design presented in this report was created within the existing platted right-of-way boundaries of the City of Duluth.

### Functional classification

- Sixth Avenue E is classified as a principal arterial roadway.

### The Design Standards

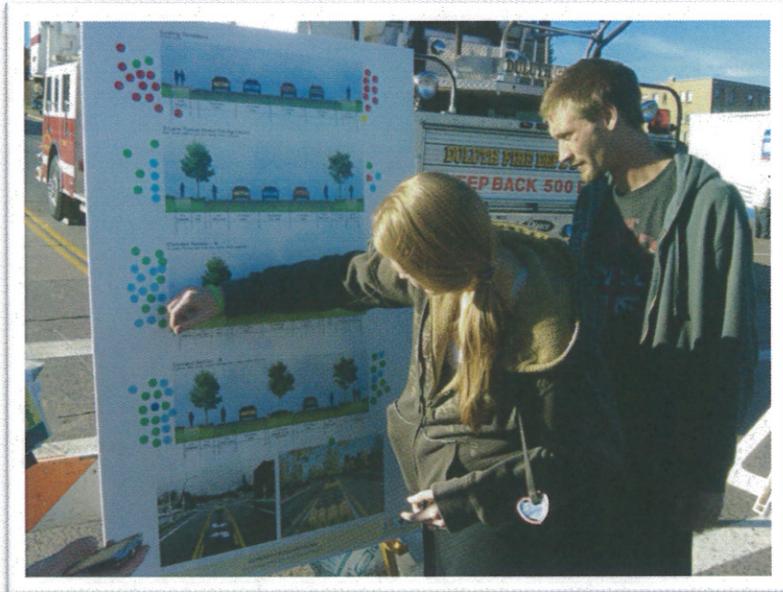
- Sixth Avenue E is on the Minnesota State Aid Highway system, and as such, must address the standards set forth in Minnesota State Statute. The approach of the study begins with the established goals and non-motorized user priorities and ends with the standards, instead of the other way around. The solutions and design alternatives reveal how the standards are incorporated and if not, which exceptions or variances might be required. It is important to note that the existing road design of Sixth Avenue E does not meet the current state aid standards; it does not have the required lane width for curb reaction.



## Public Involvement

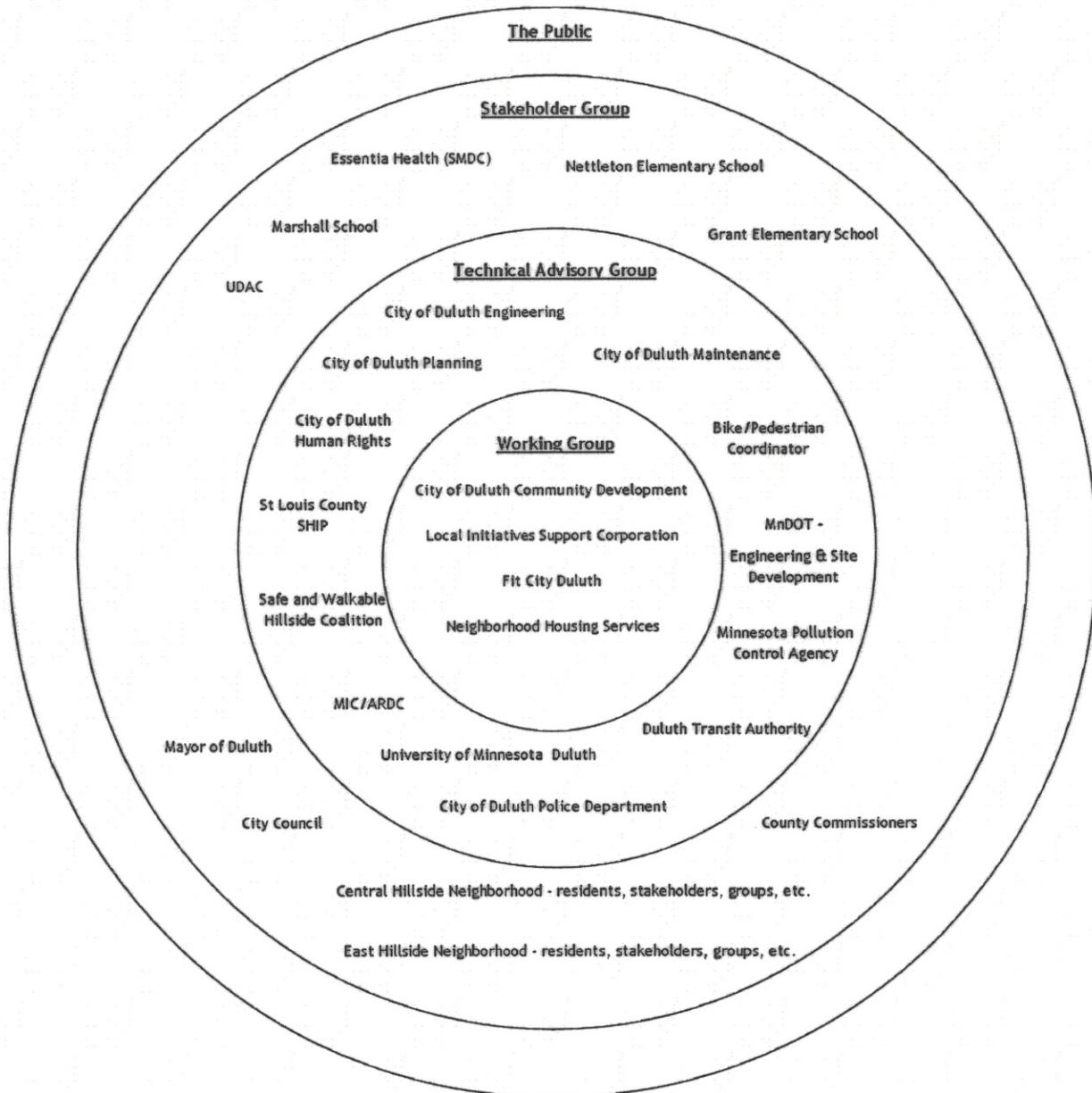
The Sixth Avenue E Schematic Redesign Project established and met its goal of extensive public outreach and engagement. This study addressed the wide range of users and stakeholders who will benefit and be affected by changes to Sixth Avenue E – residents, businesses, community and religious groups, pedestrian, bicycle, motorized travelers, transit users, children, and others.

The study took place from August 2010 through January 2011. In that time, three public outreach events took place; two public open houses/meetings were held, as well as eight meetings with the project partners, technical advisors, and stakeholders. Many opinions, thoughts, and ideas were collected and tabulated. Existing facts, data, and other measurable information were gathered and incorporated into the schematic design process.



### Who Participated?

The Public Involvement was organized to work through a concentric circles approach. The core of the project was the Working Group, supported by the Technical Advisory Group, and then assessed by the Stakeholder Group and ultimately the General Public. The information flowed in and out and through the groups to resolve the re-design of Sixth Avenue E. The groups consisted of the following representatives:



**How Did We Invite Participation?**

Participation was encouraged and invited through an intentional approach and interest in what the community had to say. The project team specifically stated at the beginning of the project that the transportation solutions would not be pre-determined and the stakeholders would not be convinced that any solution was correct. The approach was to first listen to what the stakeholders considered the problems and then find the range of solutions that would best resolve those problems. This was accomplished using the following tools:

**Question and Comment Boards**

*Asking stakeholders questions to hear the array of opinions about the project.*

**Alternatives**

*Sharing a wide range of design options to stimulate ideas and get reactions to specific elements from the stakeholders.*

**Voting Dots**

*Providing an opportunity to have tangible involvement in the process and the outcome.*

**Follow-up and On-going**

**Contact**

*Inviting stakeholders to stay in touch with the project via e-mail updates and information.*



**How did the Stakeholders Participate?**

The Sixth Avenue E Schematic Redesign Project established an extensive public outreach and engagement process. This study involved the wide range of users and stakeholders listed above who interacted regularly during the project timeline at the following meetings and public outreach events:

- September 9, 2010..... Project kick off
- September 16, 2010..... Project planning meeting
- September 18, 2010..... Hillfest Hillside Neighborhood Festival
- September 29, 2010..... Project planning meeting
- October 2, 2010..... LISC/At Home in Duluth Connect the Dots
- October 25, 2010..... Technical Advisory Group meeting #1
- November 3, 2010..... Open House #1
- November 10, 2010..... Project planning meeting
- November 23, 2010..... Technical Advisory Group meeting #2

- November 29, 2010..... Project planning meeting
- December 2, 2010..... Open House #2
- December 14, 2010..... Project meeting with Essentia Health
- December 21, 2010..... Technical Advisory Group meeting #3

**Who Attended the Public Events & Open Houses?**

Hundreds of individuals from participating agencies, representative groups, citizens, and neighbors attended the various outreach events and meetings. The project partners are listed on page 3 of this report. Many other individual participants shared with the project team how they identify themselves or their interaction with Sixth Avenue E, which is summarized in the following list:

- Neighborhood resident
- Employee of an area business
- Commuters traveling from up the hill to downtown
- Commuters traveling from an eastern neighborhood to get up the hill
- Student – at Nettleton/Grant
- Student – at UMD, St Scholastica
- Senior citizen
- Disabled and mobility challenged
- Transit user
- Biker
- Always drive
- Visitor/Work in Duluth-live out of town
- Walker
- Landlord/Property owner
- Duluth Resident
- Only travel 6th Ave occasionally/grew up in Hillside



### What Did Participants Say?

Through the various efforts to invite stakeholder participation, much information, many opinions, and a variety of feedback was obtained. It is summarized in the following list of comments:

- Nettleton School to close – children could be encouraged to walk the five to ten blocks if Sixth Avenue E proved to be more safe and suitable for that activity.
- Right now, all the children are bussed because the school district does not want them crossing Sixth Avenue E. It is viewed as unsafe. The school district and parents are afraid to let their children walk to school.
- Sixth Avenue E was designed as a former MN State Trunk Highway and still behaves that way
- The principal arterial splits the Hillside Neighborhoods
- Two of the lowest income neighborhoods in Duluth
- Speeding is a problem here
- Drivers don't stop for pedestrians at cross walks
- Congestion along Sixth Avenue E is hard for pedestrians and bicyclists
- Snow pushed onto sidewalks by plows clearing the street – nowhere to walk in the wintertime
- Need bike lanes – the Bike Plan designates Sixth Avenue E as a Bike Route on the Bike plan. Additionally, the Connect Duluth Survey revealed that bicyclists would definitely use Sixth Ave east if it were safe to do so
- Large volumes of storm water runoff
- Steep grades – In the winter, cars have a difficult time travelling up the hill.
- Not accessible for the disabled
- Need more time to cross and it's hard to cross Sixth Avenue E
- We need more police presence
- Urban Blight

Several community participants wrote comments about Sixth Ave E and a few quotes, verbatim are provided below:

*“Unsafe and too difficult to cross... I cringe when see folks running across Sixth Avenue E... Not enough opportunities to stop cars... No green space... Does not represent the pride of the neighborhood... Too noisy... Too busy... Bad for business... Too many vacant lots/parking lots... More shelter for bus stops/no bus lane... Ugly.”*

The comments offered and public opinion received directly correlates to and reinforces the Goal established by the Project partners: to advance environmental stewardship, safety, mobility for all, and invite community engagement.

## Alternatives Analysis

A broad range of concepts were sketched, discussed, and tweaked early and throughout the study and public process. Since the approach of the study process is primarily through the lens of the bicyclists, pedestrians, and health advocacy with a goal of creating the built environment to encourage behaviors that improve health, much less emphasis is placed on moving motorized traffic quickly. Playing with concepts that completely challenge established standards of design, such as creating a design that uses a nine-foot driving lane, or eliminating intersection access except at 9<sup>th</sup>, 4<sup>th</sup>, and 2<sup>nd</sup> Streets, or considering a future light rail system as part of the road design were left on the cutting room floor, but may become more appropriate at a future time.

Three conceptual alternatives were developed early in the process for public comment, and an illustration of these concepts can be found in Appendix B. The concepts show four typical sections:

1. Existing
2. Three-Lane Section with bike lanes, boulevard and sidewalks on both sides of the road.
3. One lane in each direction with median and turn lanes at intersections, with bike lanes, boulevards, and sidewalks on both sides of the road.
4. One lane in each direction with median and turn lanes at intersections, boulevards and then bike path adjacent to sidewalk on both sides of the road.

Comments received from the various committee groups and the public suggested concepts that were both retained and rejected. The various groups walked through a “Pro & Con” process that evaluated the merits of each design element. The result of this thorough group discussion and analysis is shown in an illustration in Appendix C. The analysis focused on sidewalks and placement, medians, bike lanes, mass transit, cross sections, and storm water runoff and retention. A summary illustration entitled Preferred Elements is provided in Appendix D.

## Rejected Concepts

- Use 5<sup>th</sup> Avenue and 7<sup>th</sup> Avenue for the on-street bike lanes and keep bike lanes off of 6<sup>th</sup> Avenue E – The need and demand is for all the modes to use the same corridor, as it is the place where the businesses are located and it is the through corridor with connections to Central Entrance and beyond.
- Locate trees in the median - Trees in median would have the benefit of absorbing a lot of water that was directed to the median, but the trees may also cause a visual obstruction, as well as block the vista of the lake as travelers are descending Sixth Avenue E, which is one of the most positive features of the road. Further harsh conditions would hamper tree growth in the median. Additional information is provided in the Storm Water section, below.
- Overpass for pedestrians – It is well documented and understood that when crossing at grade is possible for pedestrians (i.e. no barriers such as chain link fencing); people will take the shortest possible distance between two points. Additionally, additional right-of-way would be necessary to construct the ramps to the required slope. It was therefore decided that the benefits of such a structure would not come close to outweighing the costs.

## Retained Concepts

- Recommend using 10-foot lane width or perhaps a 10.5-foot lane width and pursue a state aid variance – The discussion suggested that changes are presently being discussed surrounding the State-Aid standards and where flexibility can be obtained. So given the present state of potential flux, it was decided to use 11-foot lanes on the illustrations, but to add the information in the recommendation section of this report. Further, the benefits of traffic calming were discussed and a specific mention that slowing traffic down might encourage travelers to visit neighborhood businesses more.
- Wider median width – Four feet is the minimum width when it comes to planting boulevard trees, however, this width does not work for snow storage on streets wider than a standard residential street. On a street like Sixth Avenue E, an appropriate width would be a minimum of 8 feet. Ten feet would be even better.

## Preferred Alternative

Based on the screening process documented above and weighing and modifying or incorporating thoughts and ideas that were presented throughout the project process, it was decided that the preferred concept solutions for the study area would be as follows and the illustrations can be found in the Appendix:

### Typical Section

Two typical sections were developed: the section from 2<sup>nd</sup> Street to 4<sup>th</sup> Street and the section from 5<sup>th</sup> Street to 9<sup>th</sup> Street as described below and shown in Appendix E.

### 2nd Street to 4th Street

Three-lane urban section with a bike lane on the uphill (east) side of the road and a four-foot shoulder on the downhill (west) side of the road with a continuous center left-turn lane and right turn lanes and transit stops where needed; a boulevard and sidewalks on both sides of the road. Further data collection and its analysis will be required, and the more detailed recommendations can be found in the Motor Vehicle Traffic Analysis section.

### 5th Street to 9th Street

Two-lane urban section with a center vegetated median with left-turn lanes at 7<sup>th</sup> and 5<sup>th</sup> Streets, a bike lane on the uphill (east) side of the road and a four-foot shoulder on the downhill (west) side of the road with a continuous center left-turn lane and right turn lanes and transit stops where needed; a boulevard and sidewalks on both sides of the road.

### Preferred Concept Plan

The plan view provides a view of the entire project using the typical sections described above and is also illustrated in Appendix E.

### Other Concepts

Other concept details that were noted and could be further analyzed as the project moves into the environmental and detail design phases:

- Add a pedestrian cross walk (and possible zebra stripes) at 6<sup>th</sup> St. and/or 8<sup>th</sup> St. – Provide a break in the median for crossing and either add or do not add zebra stripes to the median break.
- It was noted that more people (especially children) cross at 6<sup>th</sup> Street than 7<sup>th</sup> Street. Gathering counts over time of pedestrians, bicyclists, and other non-motorized users of the roadway would be beneficial as the project progresses.
- Add a signal system to the 7<sup>th</sup> Street intersection. Studying this concept was not part of this study, it was agreed that evaluating adding a signal system at 7<sup>th</sup> Street may prove beneficial to traffic operations, as well as a benefit to pedestrians, especially those who want to cross at 6<sup>th</sup> and 8<sup>th</sup> Streets.

## Motor Vehicle Traffic Analysis

A preliminary review of motor vehicle traffic operations of the Sixth Avenue E corridor between 2<sup>nd</sup> Street and 4th Street was completed during this study. Below is a summary of the results and recommendations. The traffic operations analysis software package Synchro/SimTraffic was used for the review. Data provided as outlined below were used:

- Traffic Volume Data
  - 2007 Turning Movement Counts from ARDC Study
- Traffic Signal Timing Data
  - Current timings post two-way modification between 2nd and 4th Street

Based on the limited amount of data available for this study, the following operations review findings should be further investigated and used as a preliminary starting point for additional analysis rather than final results from which to determine the appropriate geometric configuration for the Sixth Avenue E Corridor.

### Traffic Operations Review Results

The traffic operations review was conducted for the study intersections to determine the level of service (LOS), delay, and queuing information during the PM peak hour. LOS is a quantitative rating system used to describe the efficiency of traffic operations at an intersection. Six LOS are defined, designated by letters A through F. LOS A represents the best operating conditions (no congestion, free flow) and LOS F represents the worst operating conditions (severe congestion).





### Existing Analysis

- Completed by others in 2007 – prior to two-way modification between 2nd and 3rd Streets.
- Acceptable operations with LOS C at 4th Street and Sixth Avenue E and LOS B and C at 3rd Street and Sixth Avenue E.

### Three-lane Conditions

- Modified traffic volumes to reflect two-way modification between 2nd and 3rd Streets.
- Operations decline – LOS E at 4th Street and LOS F at 3rd Street.
- Demand volumes at the 4th Street intersection require more lanes.
- Westbound (WB) 3rd Street unable to make right turn onto northbound (NB) 6th Avenue due to queues and short storage between 3rd Street and 4th Street.

### Three-lane with northbound (NB) right turn lane at 4th Street

- Operations improved – LOS D at 4th Street and LOS C at 3rd Street.
- Demand volumes at the 4th Street intersection require more lanes to resolve operations issues at all approaches.
- Westbound (WB) 3rd Street still unable to make right turn onto northbound (NB) 6th Avenue due to queues and short storage between 3rd Street and 4th Street.

### Three-lane with full length northbound (NB) right turn lane at 4th Street

- Operations improved – LOS C at 4th Street and LOS B at 3rd Street.
- Traffic Signal timing optimization could improve operations for the eastbound lane (EBL) at 4th Street.
- Westbound (WB) 3rd Street is able to proceed.
- This option creates a trap lane which is not typically preferred but is sometimes done on case by case basis.

### Three-lane with two northbound turn (NBT) lanes at 4th Street (L, T, T/R)

- Operations further improved – LOS C at 4th Street and LOS B at 3rd Street
- Traffic Signal timing optimization could further improve operations for all approaches at 4th Street.
- This requires less signal time for 6th Avenue E, thus giving additional time to the 4th Street approaches and improving the operations.
- Westbound (WB) 3rd Street is able to proceed.
- This option creates a lane drop north of 4th Street which is not typically preferred but is sometimes done on case by case basis.

### Traffic Recommendations

1. This operations review was only conducted for 2007 traffic volumes of a past configuration. Updated current turning movement traffic volumes for the AM and PM peak periods need to be obtained during school year for a more thorough operations analysis. Obtain vehicle and pedestrian counts for 6th Avenue E intersections with:

- 2nd Street
  - 3rd Street
  - 4th Street
  - 6th Street
  - 7th Street
  - 9th Street
  - And any additional locations for which access modification might be proposed.
2. The turning movement volumes should be forecasted 20-years into the future based upon an agreed upon reasonable growth rate for the corridor and a thorough operations analysis should be conducted for the forecast turning movement volumes.
  3. Hourly tube count data should be obtained to understand the hourly distribution of traffic volumes along the corridor.
  4. This analysis should be part of a greater study and documented with a study report and concepts of recommended cross sections outlining potential impacts to right-of-way.
  5. Study concepts should seek to meet the safety and operational needs of all corridor users – transit, pedestrian, bicycle and automobile.
  6. Consider innovative treatments for pedestrian crossings such as the HAWK beacon, medians for two-stage crossings and durable pavement crosswalk markings.
  7. Consider innovative treatments for bicycle facilities such as colored conflict zones, bike boxes and the provision of a wider climbing lane (northbound) than descent lane (southbound).
  8. The locations of transit stops should be further reviewed and refined to strategically locate stops to meet user needs and to provide transit and other users with optimal operational and safety benefit.

**Other Items for Consideration**

- Duluth Comprehensive Land Use Plan – projected ADT is 18,000 – Which reflects a higher than typical growth rate than experienced elsewhere in the City and is higher than shown by historical Average Daily Traffic counts.
- Essentia Health as a major traffic generator – Continue to coordinate with Essentia regarding their Hospital and medical campus traffic circulation plan.
- Busses – 4 per hour plus riders in wheelchairs
- Crashes – In the MIC’s 2007 Transportation Systems Management Assessment, the Sixth Avenue E/4<sup>th</sup> Street intersection was ranked fourth in the list of intersections of concern. The TSM Assessment is provided in Appendix F.
- Minor improvements such as pedestrian countdown timers should be considered and installed at signalized intersections.
- Optimization of traffic signal coordination should be performed.
- Length of the left and right turn lanes should provide sufficient storage for demand vehicles.

## Storm Water Runoff

Water from rainfall and snow melting, otherwise known as storm water, is a critical component of the environment. When collected and treated properly, it can be a fantastic resource. When left untreated, it can pollute rivers, kill vegetation, and add contaminated sediments to stream and lake beds. A goal for this project is to study the options available for collecting and treating storm water in this corridor.

The forces and issues affecting the storm water in the Sixth Avenue E corridor are listed here. With each one inch rainfall event, over 110 thousand gallons of untreated rainwater run directly into Lake Superior. And that is the amount only within the right-of-way limits.

### Forces and Issues

- During a one inch rainfall event, over 110 thousand gallons of untreated rainwater run directly into Lake Superior from the corridor right-of-way limits alone.
- Storm water is not currently being collected and treated where it falls. Runoff from residences, surface parking lots, and commercial buildings contribute to the corridor storm water volume.
- Pollutants from automobiles along with sand and chemicals associated with snow & ice removal will end up in the storm water treatment system and will need to be separated.
- Controlling sedimentation in median is critical to making natural treatment systems function properly.
- The storm water treatment system will need to utilize natural processes and add to the aesthetics of the corridor.
- The corridor slope/grade is quite severe
- The existing right-of-way limits the amount of space available for natural treatment systems is limited.



### Storm Water Treatment Systems

The mantra for storm water treatment the last 50 plus years has been to “collect, conduct, and dispose” of water as fast as possible, which meant funneling water to one place, putting it into a pipe, and

directing it to the nearest river or lake. Storm water ponds have been added to help control sediment and slow the movement of water. The problem with these systems is they do not utilize the natural process in the hydrologic cycle such as infiltration and evapotranspiration (evaporation from surface water as well as from plant leaves). Pipes are costly and ponds end up with large amounts of contaminated sediments in them that need to be disposed of properly. The local aquifers do not get recharged (water is removed faster than nature can replenish it) when water is placed in a pipe or impeded by impervious surfaces because the water cannot infiltrate into the ground. Currently, the transportation corridor plant materials, specifically trees, have stunted growth due to a lack of water and compaction of soils for impermeable pavement bases.

New thinking about the treatment of storm water attempts keep water and treat water where it falls. Designers look to use natural, vegetated swales, trees, weirs with small temporary holding areas, and permeable pavements to hold water long enough to separate the sediments, and allow plants to take up and evapotranspire the water. Permeable pavements allow the water to be infiltrated and treated on the spot.

### **Storm Water Recommendations**

The following are potential solutions for collecting storm water and treating it in the Sixth Avenue E Corridor. These options will need more thorough investigation with regard to soils, slope/grades, volumes, and maintenance. Storm Water discussion will evolve and should be on-going as more solutions and ideas will arise between now and the detail design phase of the project.

- Boulevards – 5 to 7 feet wide, depressed with trees and native plants to create bio-swales
- Median – 10 feet wide, but not continuous through the corridor. Trees are not encouraged due to pollutant levels and harsh winter conditions. Depressed with weirs to create pockets for storm water infiltration
- Curb cuts for storm water routing to infiltration areas; combine with sediment capture measures
- Innovative sediment capture – removable baskets, sediment cleanout channels, permeable walls/curbs separating water and sediment so street sweepers could pick up. Consider short and long term maintenance
- Permeable concrete sidewalks – Last longer than standard concrete, minimum soil compaction required, allows infiltration, promotes healthy tree growth
- Reclaimed land at south end where free right turn is removed – Plans are in the works to make this area a rain garden
- City owned parcels and tax forfeit property along the corridor – can be used as rain gardens, infiltration opportunities, and alternative snow storage options
- Neighborhood Storm Water Education Plan – Give people ideas and options for changing how much water runs off their property by educating them about rain gardens, rain barrels, and permeable pavements
- Implement stricter codes and ordinances for treating storm water where it falls
- Consider using alternative environmentally friendly deicers rather than sand for snow and ice removal

**Storm Water and Beautification**

Due to the limited right-of-way of transportation facilities, it is critical for storm water systems to be integrated at every opportunity into the infrastructure and aesthetic of the corridor. Boulevards and medians, as discussed in this corridor, will not only serve natural storm water systems, but will also provide opportunities to choose plant materials that will create patterns and help shape the identity of the corridor and as well as the places along it.

**Cost Estimates**

Planning level cost estimate methodology has been used to develop an opinion of cost for the preferred Sixth Avenue E schematic preferred alternative. The concept level construction costs include pavement related infrastructure (sidewalks, road, grading and base, curb and gutter, and medians) and assume a full reconstruction project within the existing right-of-way limits. Property acquisition estimates are not included in this estimate. The storm sewer system cost estimate is provided as a range, and will depend on the ultimate solutions. The cost estimates are provided for the purpose of pursuing funding.

**Cost Estimates**

*Environmental Studies and Detail Design (Engineering)*  
 \$300,000 - \$450,000

*Construction*

Reconstruction of Sixth Avenue E from 2<sup>nd</sup> Street to 9<sup>th</sup> Street – approximately 2,800 feet  
 Road (grading and base), curb and gutter, medians and boulevards with vegetation  
 and/or turf, and sidewalks

\$1,800,000 - \$2,250,000

Storm Sewer System

\$600,000 - \$900,000

Signal System

\$350,000 - \$450,000

*Total project Cost Estimate*

\$3,050,000 - \$4,050,000

## Funding Sources

The following list is provided as examples of various funding sources that could be pursued in order to rebuild Sixth Avenue E to reflect the findings and communities desires within this study document.

1. Federal Transportation Funding (Federal Highway Administration)
  - **Nonmotorized Transportation Pilot Program (NTPP)** (S-LU Sec. 1807) – To demonstrate the extent to which bicycling and walking can carry a significant part of the transportation load, and represent a major portion of the transportation solution, within 4 identified communities (Marin County, CA; Sheboygan County, WI; Columbia, MO; and Minneapolis-St Paul, MN).
  - **Transportation, Community, and System Preservation Program (TCSP)** (S-LU Sec. 1117, formerly TEA-21 Sec. 1221) – Provides funding for a comprehensive program including planning grants, implementation grants, and research to investigate and address the relationships among transportation and community and system preservation plans and practices and examine private sector based initiatives.
  - **Congestion Mitigation and Air Quality Improvement Program (CMAQ)** (23 USC 149) - Construction of pedestrian walkways and bicycle transportation facilities; nonconstruction projects for safe bicycle use. Projects do not have to be within the right-of-way of a Federal-aid highway, but must demonstrate an air quality benefit.
  - **Surface Transportation Program Transportation Enhancements Set-aside (TE)** (23 USC 133(d)(2)) – Twelve specific activities included in the definition of Transportation Enhancement Activities in 23 USC 101(a)(35). Three of the 12 eligible categories are pedestrian and bicycle facilities, safety and education for pedestrians and bicyclists, and rail-trails.
  - **Safe Routes to Schools (SRTS)** (S-LU Sec. 1404) – To enable and encourage children, including those with disabilities, to walk and bicycle to school; to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and **to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.** Collaboration and support from Mn/DOT will be required.
  
2. State-Aid Funding (State Transportation Improvement Program)
  - Money in these funds is allocated to counties and municipalities with populations greater than 5,000 based on statutorily defined apportionment formulas. For the Municipal State Aid Street (MSAS) Fund, the municipalities' respective shares are based on monetary needs (50%) and population (50%).
  
3. U.S. Department of Housing and Urban Development Grants include:
  - **Community Development Block Grants/Entitlement Grants** The objective of this program is to develop viable urban communities, by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for persons of low and moderate income. Recipients may undertake a wide range of activities directed toward

neighborhood revitalization, economic development and provision of improved community facilities and services.

4. U.S. Environmental Protection Agency Grants include:

- **The Environmental Justice Small Grants Program** provides financial assistance to eligible organizations to build collaborative partnerships, to identify the local environmental and/or public health issues, and to envision solutions and empower the community through education, training, and outreach.
- **The Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program** provides financial assistance to eligible organizations working on or planning to work on projects to address local environmental and/or public health issues in their communities, using EPA's "Environmental Justice Collaborative Problem-Solving Model."
- **The State Environmental Justice Cooperative Agreements Program** provides funding so that eligible entities may work collaboratively with affected communities to understand, promote and integrate approaches to provide meaningful and measurable improvements to the public health and/or environment in the communities.
- **The Environmental Justice Showcase Communities Project** provides EPA Regional office funding to bring together governmental and non-governmental organizations to pool their collective resources and expertise on the best ways to achieve real results in communities. The successes and lessons learned in these demonstration projects will be used to help guide the design and implementation of future Environmental Justice projects and will help EPA increase its ability to address local environmental challenges in more effective, efficient, and sustainable ways.
- **Environmental Education Grants** supports environmental education projects that enhance the public's awareness, knowledge, and skills to help people make informed decisions that affect environmental quality. EPA awards grants each year based on funding appropriated by Congress. Annual funding for the program ranges between \$2 and \$3 million.
- **Coastal Program** Focus on storm water could create additional funding opportunities

5. Minnesota Pollution Control Agency Grants include:

- **Minnesota Watershed Project Funding System** – The Watershed Project Funding System is designed to provide funding for water protection and restoration projects around the state. Information sharing among internal and external groups is critical to the success of this system.
- **Clean Water Revolving Fund** – The Clean Water Revolving Fund, also known as the State Revolving Fund (SRF) was established by the federal Clean Water Act to replace the federal Construction Grants Program. One of the MPCA's primary responsibilities is to score and rank proposed wastewater construction projects in accordance with the environmental criteria contained in Minn. R. 7077.0117 to 7077.0119.
- **Clean Water Revolving Fund - Wastewater and Storm water** – The Clean Water Revolving Fund, also known as the Clean Water State Revolving Fund or simply SRF, is established under the Federal Clean Water Act and state law to make loans to for both point source (wastewater and storm water) and nonpoint source water pollution control projects. The

PFA prepares an annual Intended Use Plan (IUP) based on a Project Priority List developed by the MPCA.

6. Partners on Funding Applications

- Fit City Duluth
- LISC
- Neighborhood Housing Services
- Public/Private Partnerships – Essentia Health

7. And Just Plain Clever Ideas

- Project Groundwork (<http://projectgroundwork.org/index.htm>) is designed to make our communities cleaner, healthier, and more environmentally, socially, and economically sustainable. Like the Metropolitan Sewer District of Cincinnati, Ohio. Their example: Sustainable infrastructure can be "gray" infrastructure, "green" infrastructure, or a blend of the two. Gray infrastructure, such as new sewers, upgraded treatment plants, and storm water storage structures, helps manage or control the volume of sewage and storm water in our sewers. Green infrastructure, such as pervious paving, bioretention basins, and stream separations, helps keep storm water out of the sewers.

## Recommendations

As discussed previously in this report, the intent of this study has been to conduct a schematic redesign of Sixth Avenue E from 2<sup>nd</sup> Street to 9<sup>th</sup> Street in Duluth, Minnesota. Due to the preliminary and macroscopic nature of the study, additional data collection, analysis, and environmental review are required and will be necessary to ensure a detailed design construction of the best solution. Throughout the study report, many of the recommendations were mentioned. Below is a summary of the recommendations:

### Project Partners

- Continue conversations with Hospitals, especially Essentia Health to coordinate project goals, construction compatibility, improved operational and visual outcomes.
- Essentia Health as a major traffic generator – Continue to coordinate with Essentia regarding their Hospital and medical campus development plan, emergency vehicle needs, and traffic circulation plan.
- Seek opportunities for partnerships in order to address the surface lots issues.
- Seek opportunities for additional conversations and partnerships to establish Sixth Avenue E as a Gateway to the City.
- Continue the engagement with the Safe and Walkable Hillside Coalition, a very active and successful grass roots coalition lead by St Louis County Statewide Health Improvement Program (SHIP); the Coalition’s “Action Plan” is provided in Appendix G.

### Health Impacts

- Seek opportunities to partner with the State/County Health Improvement Program to conduct a Health Impact Assessment using Sixth Avenue E to illustrate the main issues affecting health and the impacts of the built environment on health goals and outcomes.

### Design Alternatives

- Recommend using 10-foot lane width or perhaps a 10.5-foot lane width and pursue a state aid variance – The discussion suggested that changes are presently being discussed surrounding the State-Aid standards (see Appendix H) and where flexibility can be obtained. So given the present state of potential flux, it was decided to use 11-foot lanes on the illustrations, but to add the information in the recommendation section of this report. Further, the benefits of traffic calming were discussed and a specific mention that slowing traffic down might encourage travelers to visit neighborhood businesses more.
- Wider median width – Four feet wide is the minimum width when it comes to planting boulevard trees, however, this width does not work for snow storage on streets wider than a standard residential street. On a street like Sixth Avenue E, an appropriate width would be a minimum of 8 feet. Ten feet would be even better.
- Add a signal system to the 7th Street intersection. Studying this concept was not part of this study, it was agreed that evaluating adding a signal system at 7th Street may prove beneficial to traffic operations, as well as a benefit to pedestrians, especially those who want to cross at 6th and 8th Streets.

- Evaluate other alternatives to resolve the 3<sup>rd</sup> and 4<sup>th</sup> St intersection issues, such as a roundabout at 4<sup>th</sup> Street.

### **Pedestrian/Bicyclists/Transit**

- Add a pedestrian cross walk (and possible zebra stripes) at 6th St. and/or 8th St. – Provide a break in the median for crossing, and either add or do not add zebra stripes to the median break.
- It was noted that more people (especially children) cross at 6th Street than 7th Street. Gathering counts over time of pedestrians, bicyclists, and other non-motorized users of the roadway would be beneficial as the project progresses.
- Study concepts should seek to meet the safety and operational needs of all corridor users – transit, pedestrian, bicycle and automobile.
- Consider innovative treatments for pedestrian crossings such as the HAWK beacon, medians for two-stage crossings and durable pavement crosswalk markings.
- Consider innovative treatments for bicycle facilities such as colored conflict zones, bike boxes and the provision of a wider climbing lane (northbound) than descent lane (southbound).
- The locations of transit stops should be further reviewed and refined to strategically locate stops to meet user needs and to provide transit and other users with optimal operational and safety benefit.

### **Traffic**

- Updated current turning movement traffic volumes for the AM and PM peak periods need to be obtained during school year for a more thorough operations analysis. Obtain vehicle and pedestrian counts for 6th Avenue E intersections with:
  - 2nd Street
  - 3rd Street
  - 4th Street
  - 6th Street
  - 7th Street
  - 9th Street
  - And any additional locations for which access modification might be proposed.
- The turning movement volumes should be forecasted 20-years into the future based upon an agreed upon reasonable growth rate for the corridor and a thorough operations analysis should be conducted for the forecast turning movement volumes.
- Hourly tube count data should be obtained to understand the hourly distribution of traffic volumes along the corridor.
- This analysis should be part of a greater study and documented with a study report and concepts of recommended cross sections outlining potential impacts to right-of-way.
- The crash frequency and severity data (for both motorized and non-motorized users) should be obtained to understand the operational outcomes of the corridor.
- Crashes – MIC's 2007 Transportation Systems Management Assessment ranked intersection of 6th & 4th as #4 intersection of concern

- Perform a Traffic Investigation of Sixth Avenue E as a designated School Zone per Mn/DOT and MN statute (see Appendix I).
- Minor improvements such as pedestrian countdown timers should be added at signalized intersections.
- Optimization of traffic signal coordination should be performed.
- Length of the left and right turn lanes should provide sufficient storage for demand vehicles.

### **Storm Water**

- Boulevards – 5 to 7 feet wide, depressed with trees and native plants to create bio-swales
- Median – 10 feet wide, but not continuous through the corridor. Trees are not encouraged due to pollutant levels and harsh winter conditions. Depressed with weirs to create pockets for storm water infiltration
- Curb cuts for storm water routing to infiltration areas; combine with sediment capture measures
- Innovative sediment capture – removable baskets, sediment cleanout channels, permeable walls/curbs separating water and sediment so street sweepers could pick up. Consider short and long term maintenance
- Permeable concrete sidewalks – Last longer than standard concrete, minimum soil compaction required, allows infiltration, promotes healthy tree growth
- Reclaimed land at south end where free right turn is removed – Plans are in the works to make this area a rain garden
- City owned parcels and tax forfeit property along the corridor – can be used as rain gardens, infiltration opportunities, and alternative snow storage options (see Appendix J)
- Neighborhood Storm Water Education Plan – Give people ideas and options for changing how much water runs off their property by educating them about rain gardens, rain barrels, and permeable pavements
- Implement stricter codes and ordinances for treating storm water where it falls
- Consider using alternative environmentally friendly deicers rather than sand for snow and ice removal

### **Other Recommendations**

- Add art to open spaces – especially to serve as a city gateway/community entrance

## Next Steps

As reflected in the long list of recommendations, much work remains to implement the goals and vision of Sixth Avenue East, but project partners and community organizations are engaged and excited about the possibilities for the corridor. Suggested next steps are:

1. Select an agency and partners to act as the project lead and champion
2. Pursue funding to implement the environmental documents and engineering
3. St Louis County (just before completion of this study) received a grant to perform a Health Impact Assessment of the Sixth Ave E corridor. This assessment will continue the work of the Sixth Avenue E study.

## Appendix

- A. The Institute for Comprehensive Community Development
  - a. Article: *A Quality-of-Life "Movement" in Duluth*
- B. Initial Concepts
  - a. Typical Sections
- C. Design Elements "Pros & Cons"
- D. Preferred Design Elements Summary
- E. Preferred Design Elements
  - a. Typical Sections
  - b. Plan Concept
- F. TSM Assessment of MIC Roadways in MN – 2007
  - a. Location of Concern No. 4 – E 4<sup>th</sup> St & 6<sup>th</sup> Ave E
- G. Safe and Walkable Hillside Coalition's Action Plan
- H. State Aid Standards
- I. School Zone Speed Limits
- J. Sixth Avenue E Property Ownership Map



## **A. The Institute for Comprehensive Community Development Article: A Quality-of-Life “Movement” in Duluth**



## A Quality-of-Life "Movement" in Duluth

By Patrick T. Reardon

Published: May 26, 2010

Sixth Avenue East – with its four lanes of traffic barreling up and down an 800-foot bluff – has long been a dividing line in the city of Duluth.

It's divided the Central Hillside neighborhood from the East Hillside neighborhood. And the east side of Duluth from the west side of Duluth. With few traffic signals, it's been difficult to cross, whether in a car or on foot. Although the speed limit is 30 miles an hour, cars and trucks routinely rush past at 45 or 50.

But come September 18, Sixth Avenue will serve a new function – as a unifier.

Plans are to close a two-block section of the street for the day and deck it out as the site of the first annual Hillfest celebration, a community party featuring live music, food vendors, arts and crafts, and even a Hillside Olympics. The goal is to bring the residents of the two neighborhoods together in an informal setting where they can share their many common concerns.

In fact, those concerns are so common that, already, people on both sides of the avenue have begun talking about their single neighborhood – the Hillside.



East Hillside is characterized by wood-frame houses built for the city's industrial workers.

Photo courtesy of Duluth LISC

### "A much healthier environment"

When Pam Kramer, executive director of [Local Initiatives Support Corporation's \(LISC\) Duluth office](#), describes what's happening in her city of 85,000 people, she characterizes it as a "movement."

That word brings to mind the revolutionary efforts of those who worked for civil rights and women's liberation. And it seems apt for what's going on in Duluth.

The bitter neighborhood divisions of the past are easing. Attempts at trying to improve neighborhoods by simply attacking a single issue are fading. Instead, partnerships are the rule – partnerships within neighborhoods and across neighborhood lines, partnerships of those working on bricks-and-mortar projects with those working to help people out of poverty.

Quality of life is the name of the game now, and Duluth LISC is given high marks for its work in helping bring this change about.

"There's a tremendous energy and civic engagement in Duluth. It needs constant direction into positive activism," says Mayor Don Ness. "Without the leadership of LISC, there's the possibility of that energy devolving into neighborhood rivalries or neighborhood competitions."

In the past, says Gary Eckenberg, an activist in the Lincoln Park neighborhood, communities would battle fang-and-claw for the city's Community Development Block Grant (CDBG) monies. "It was very contentious," he says. "These neighborhoods were not at all interested in helping each other. It was a cut-throat process."

Now, neighborhoods are joining together to file joint applications for state and city funds. "It's a much healthier environment," says Eckenberg, who is also a county official.

### "Doing more"

In 2007, Duluth was one of 10 LISC offices selected to take part in National LISC's [Sustainable Communities](#) initiative, aimed at comprehensive community development.

But even before then, Kramer says, the At Home in Duluth collaborative, a group of housing advocates, had begun to realize that new and renovated homes weren't enough to revitalize a neighborhood.

"One aha-moment came," she says, "when some beautiful affordable homes were put up in one of our neighborhoods, and they were not able to sell them. In another neighborhood, a beautiful house was built, and we were working with renters to try to find someone to buy it. Very few of the residents in that neighborhood could afford the 'affordable' house.

"We realized that we couldn't just build nice homes for people to be poor in. If people were going to profit from the work we were doing, we needed to be doing more, to broaden and deepen our effort."

That meant somehow coordinating housing efforts with job training, economic development, education, environment, transportation and health, while also working closely with neighborhood activists to determine priorities.

When Duluth LISC got its \$100,000 Sustainable Communities seed grant to begin a comprehensive community development effort in five low-income communities (Central Hillside, East Hillside, Lincoln Park, Morgan Park and West Duluth), it hit the ground running.

And quickly came to a halt.



Police and neighbors are working together in the West Duluth neighborhood.

Photo courtesy of Duluth LISC

Working with Jim Capraro, a National LISC consultant, Kramer recognized that, before charging ahead, more grassroots preparation was needed to draw in partners, to broaden the range of ideas for making the neighborhoods better and to foster a widespread commitment for working together to make changes.

"There were people involved, but there were a lot of people who weren't," she recalls. Among them: important local foundations, renters, young people and faith-based organizations.

So, throughout the spring of 2007, Duluth LISC held focus group meetings and one-to-one conversations with a wide range of community leaders, eliciting their ideas and involvement in the creation of quality-of-life plans for each of the five neighborhoods.

**Developing these sorts of partnerships** came easily to Kramer, Capraro says. "In Duluth, LISC was so small that they had no way to do it but the right way," he says. "LISC couldn't drive the agenda. It could only guide the agenda."

Although the fourth largest city in Minnesota, Duluth is still a relatively compact place, notes Joel Bookman, another LISC consultant. "It's enough of a small town that everybody knows everybody," he says. "Pam's created a sense of identity – that we're all in this together."

### **"A very thoughtful planning process"**

The culmination of that effort came in October, 2007, when some 500 people, including the mayor, attended the first annual Connecting the Dots Neighborhood Showcase and Assembly.

Revitalization plans for three of the target neighborhoods were presented at that meeting, and similar improvement blueprints for the other two communities were finished within the next few months.



Neighbors gather for a safety meeting at the Heritage Sports Center in the former Clyde Iron Works.

Photo courtesy of Duluth LISC.

Since then, these plans have served as touchstones for improvement efforts in the five communities.

"Most everything we talk about goes back to the neighborhood plans," says Debbie Isabell Nelson, who is the coordinator for the Morgan Park neighborhood for **Neighborhood Housing Services Duluth**. "The neighborhood plans are kind of our workbooks."

Mayor Ness says the plans also serve as guides for him and other city officials. It's much smarter, he says, to target spending in the neighborhoods "on projects that have emerged from a very thoughtful planning process rather than the projects that emerge because someone with

political influence says, 'That's a project I want to see.' "

He's also a big fan of the Connecting the Dots assemblies, which have been held in each of the last three falls. The fourth is scheduled for this October. The assemblies, he says, "highlight the successes of the neighborhoods, and allow neighborhoods to learn from one another, and inspire greater cooperation between neighborhoods."

One example of communities working together is the joint application by East Hillside and Central Hillside for a CDBG grant, approved by the City Council in December.

The goal: Find some way to make it easier to cross Sixth Avenue East.

"This won't address all of the community's needs," said Kramer. "But we gain more traction each time we work across neighborhood lines and bring people together. We're a lot further along than we used to be, and I call that progress."

[See related story about redevelopment of the Clyde Iron Works into a hockey and sports center.](#)

[« Return to Duluth](#)

INSTITUTE FOR COMPREHENSIVE COMMUNITY DEVELOPMENT

135 S. LaSalle St., Suite 2230 Chicago, IL 60603 Phone: 312-422-9568 Fax: 312-422-0802

[A Venture of Local Initiatives Support Corporation](#) | [Contact us](#) | [Terms of service](#) | [Sign in](#)

© 2011 Copyright [Local Initiatives Support Corporation](#). All rights reserved.

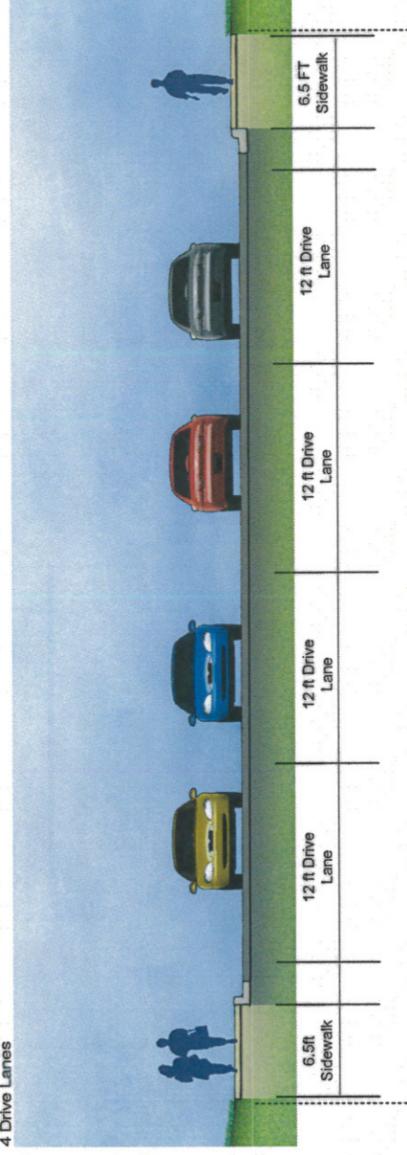
[Mobile site](#)

Web site designed by [Webitects](#)



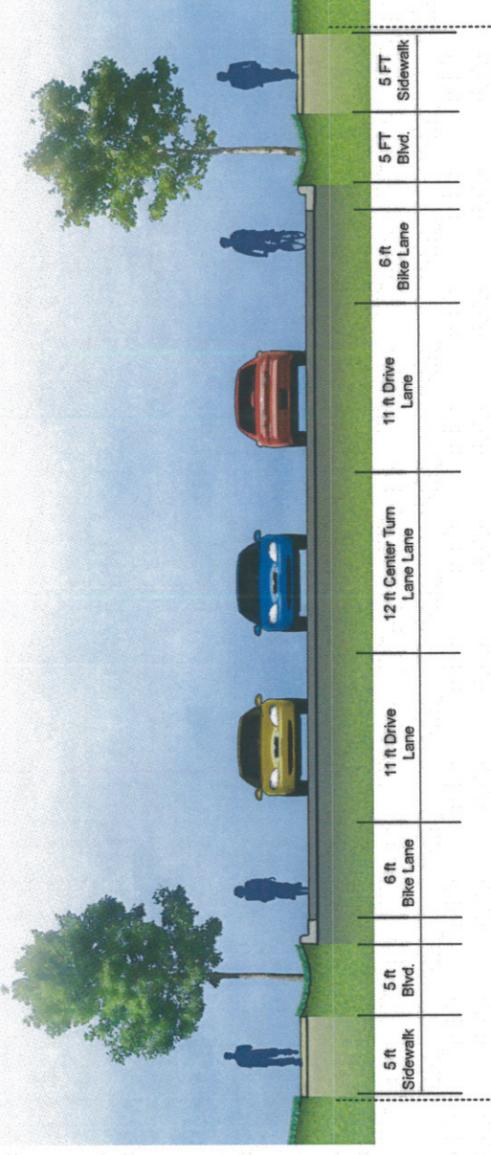
## B. Initial Concepts: Typical Sections

**Existing Conditions**  
4 Drive Lanes



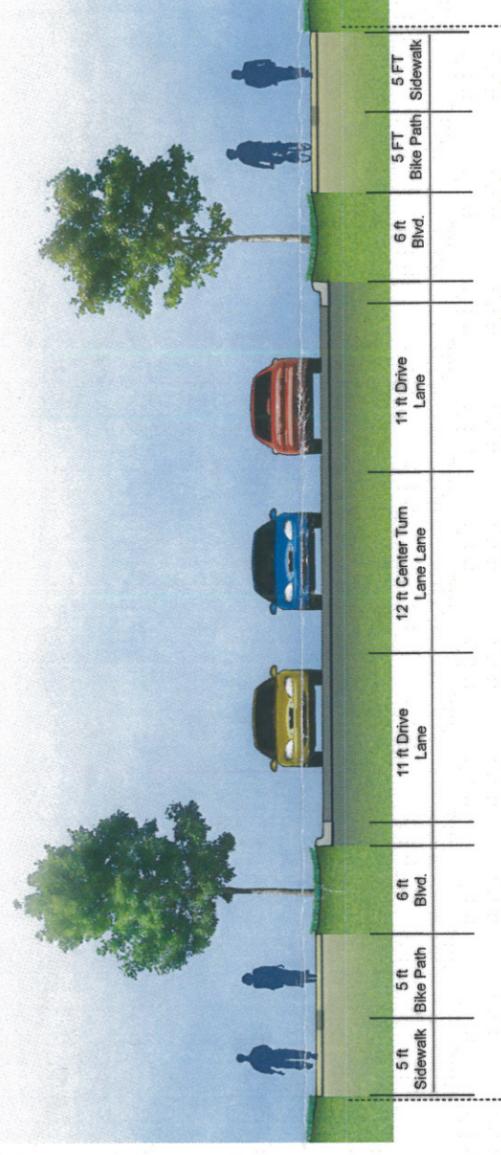
**3-Lane Typical Street Configuration**

Bike Lanes, Right & Left Turn Lanes where required



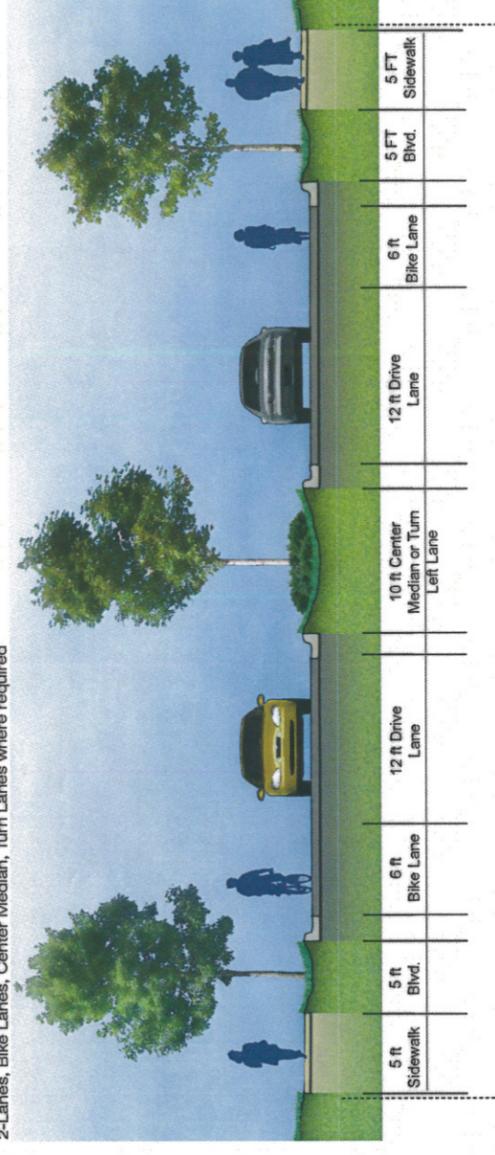
**Concept Section - A**

3-Lanes, Divided Bike-way, Turn Lanes where required



**Concept Section - B**

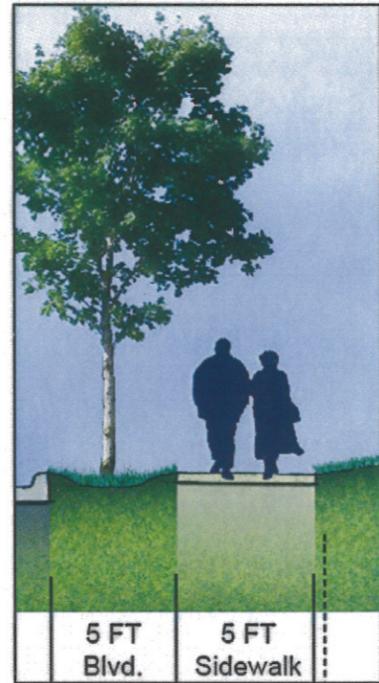
2-Lanes, Bike Lanes, Center Median, Turn Lanes where required





## C. Design Elements “Pros & Cons”

## Sidewalks and Placement



5' boulevard—Walk

- Pros:**
- Boulevard creates a buffer to properties
  - Noise reduction
  - Snow storage
  - Neighborhood friendly
  - Combination of blvd and trees = traffic calming
  - Prefer 8' min blvd

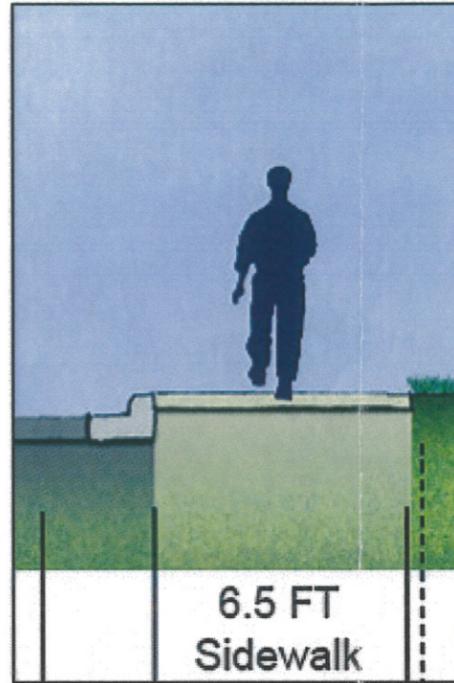
- Cons:**
- Property owners are responsible to clear their walk in the winter
  - 5' not wide enough blvd for vegetation/trees
  - Wider walk if lots of wheelchair traffic
  - Where will the bikes go?



6' boulevard—Bike path—Walk

- Pros:**
- Less experienced bikers may feel more comfortable
  - Larger buffer from travel lane
  - 6 ft boulevard is better, but 8-10' boulevard would be best
  - Would require snowplow plan
  - Feel safer
  - Would make road width narrower

- Cons:**
- Bikes have to stop at every intersection
  - Determination of winter maintenance responsibilities
  - Encouraging more conflicts
  - Additional impervious surface
  - How interacts with bus stops and the passengers
  - Furthers unfavorable message that bikes don't belong on streets

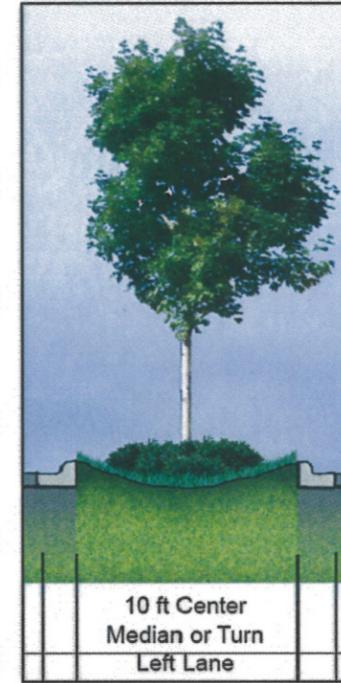


Walk at back of curb

- Pros:**
- Fits better in right-of-way
  - May help with sidewalk clearing vs. each property owner being responsible

- Cons:**
- No snow storage
  - Snow from road goes on walk and right up to some buildings
  - In winter, people walk on the road
  - Form does not match neighborhood
  - Like a highway
  - Uncomfortable to walk behind curb
  - Worse for ADA

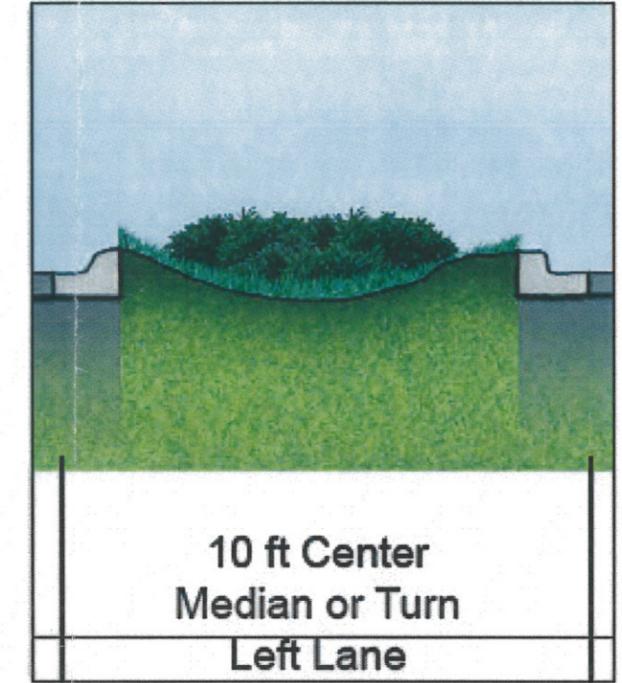
## Medians



Median with trees

- Pros:**
- Adds more green space, vertically
  - Increases traffic calming
  - Adds pervious surface
  - Pedestrian refuge
  - Trees take up a lot of water
  - More opportunities for stormwater treatment

- Cons:**
- Trees may find the environment too hostile to survive
  - Median may collect trash
  - Increased maintenance
  - Interrupts view-shed
  - Could be problem for sight distance with snow on median
  - Min opportunity for success to grow trees
  - May be left with dead trees in the median

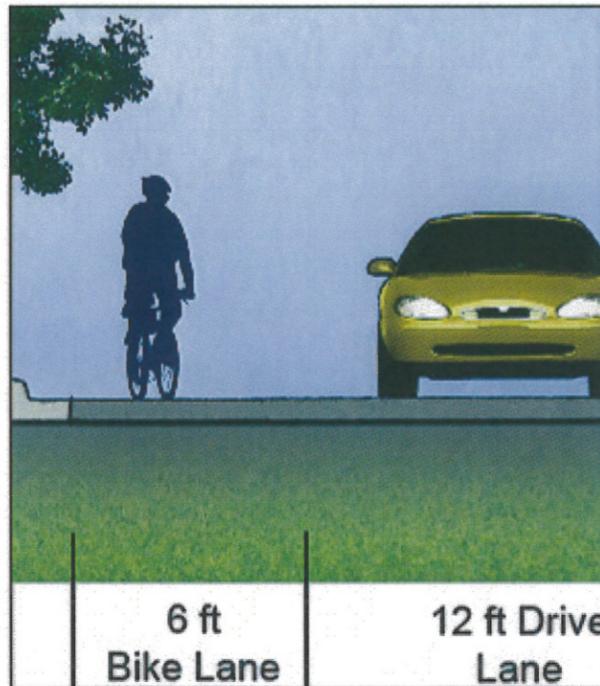


Median without trees

- Pros:**
- Adds pervious surface
  - Pedestrian refuge
  - Possible to create infiltration basins/rain garden in median
  - Adds green while maintaining vista
  - Could median edges have bricks/hard surface to allow emergency vehicles to pass?
  -

- Cons:**
- The hills and clay soils make trapping water on-site difficult
  - Now piling too high would have to be removed for sight distance

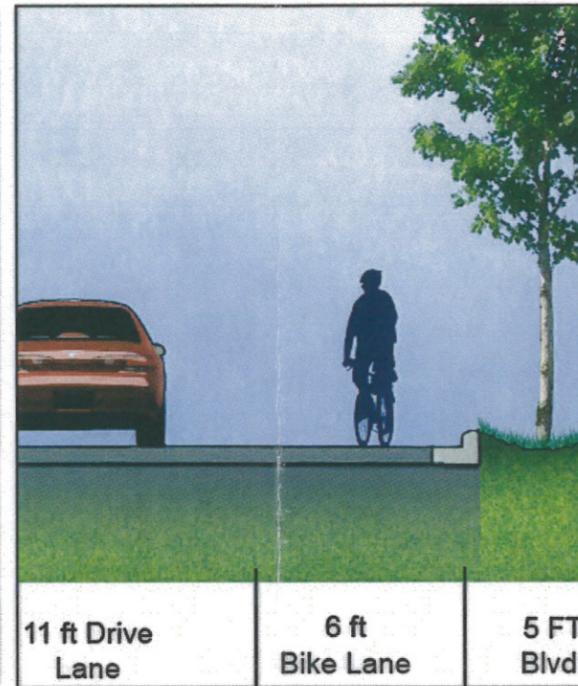
## Bike Lanes



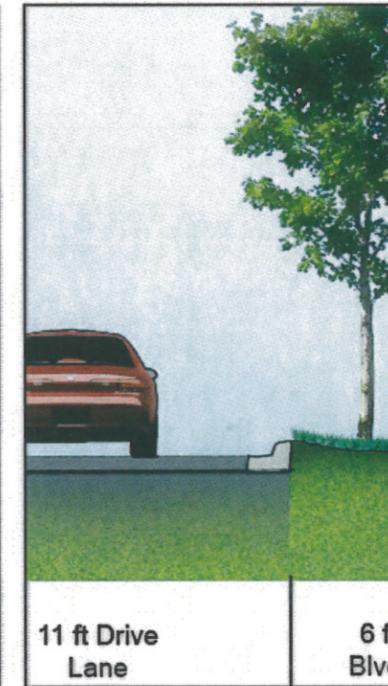
Bike lane on street—both sides



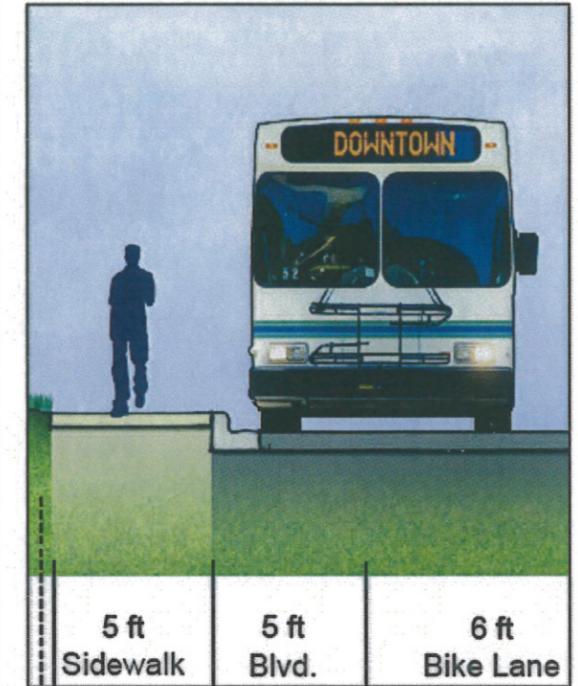
Bike lane off street—both sides



Bike lane on street—uphill side only



No bike lane on 6th Ave E



Bus pull-off area

### Pros:

- Bikes on street with cars
- Provides a “shoulder” for cars in event of an emergency/can be used for buses
- Bike lanes increase safety for cyclists
- Traffic calming increased
- Separating bikes/walk is safer
- Down bound can keep up with cars
- Look of bike lane needs to be different/need to create a visual difference
- Design bike width for volume

### Cons:

- May feel intimidating for less experienced bicyclists
- Traffic calming decreased—road more open
- Bikes = potential conflict with buses
- Could bike lane go to narrower, like 5', so blvd could be increased?

### Pros:

- Provides a safe place to travel for less experienced bikers

### Cons:

- Bicyclists will have to stop at every intersection—they lose on-road right-of-way

### Pros:

- Traffic calming increases
- Provides cyclists separation while climbing hill
- Sharrow could be added
- Could provide for wider blvds/sidewalks
- Less conflict with buses
- Downhill side could have shoulder for bike but not a marked bike lane

### Cons:

- Buses lose downhill space to pull over at stops
- Confusing/inconsistent
- How many people feel uncomfortable riding downhill at 30 mph on a bike?

### Pros:

- Maintains existing traffic flow depends on what is happening on 5th &/or 7th
- Can't have everything on 6th—would give room for wider blvds/walks or other
- Lane could be a little wider for buses

### Cons:

- The bike study revealed a pent-up demand by bikers to use 6th Ave E
- No change from today
- Lane not wide enough for buses
- 5th and 7th don't take you to the same place—bikes want to go same place cars go
- Not connecting
- Bikers like steady grade up & down

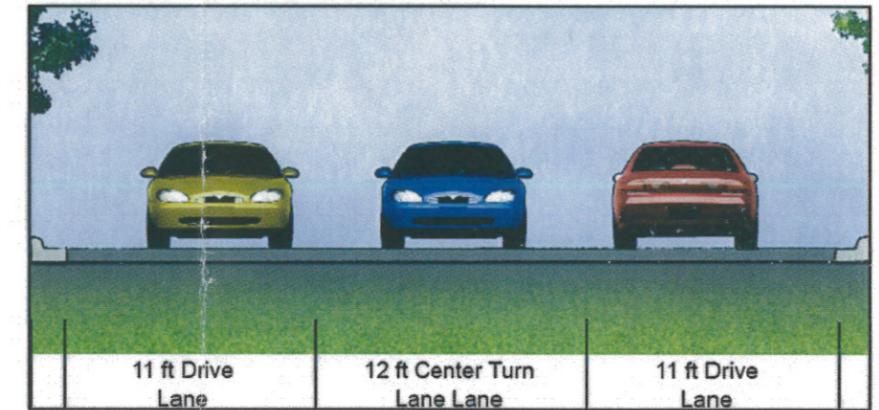
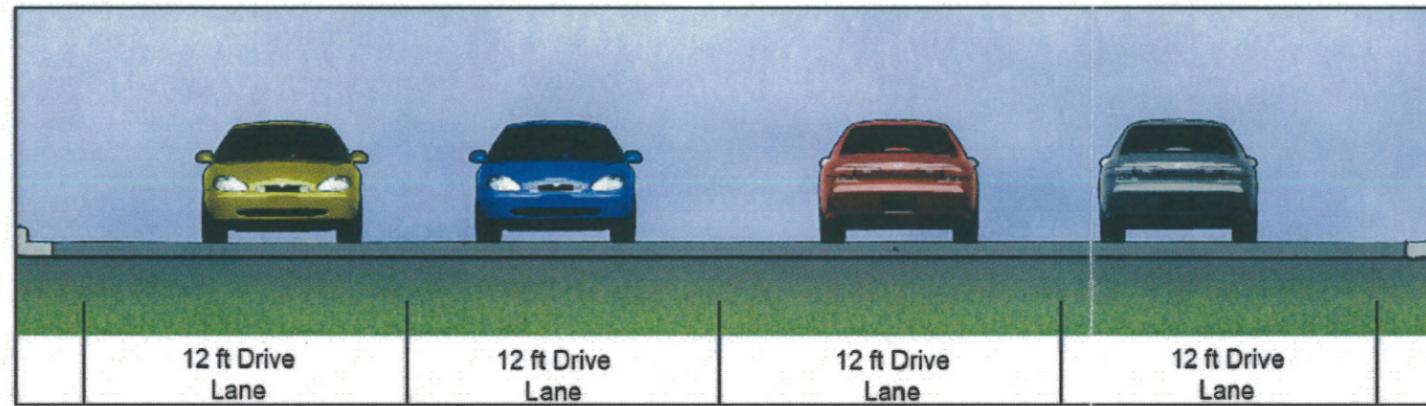
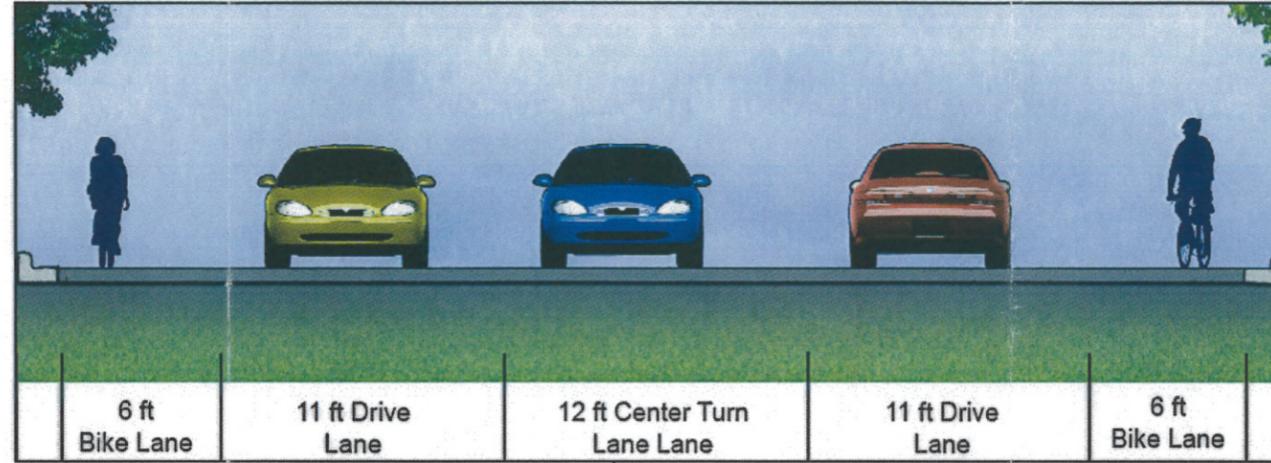
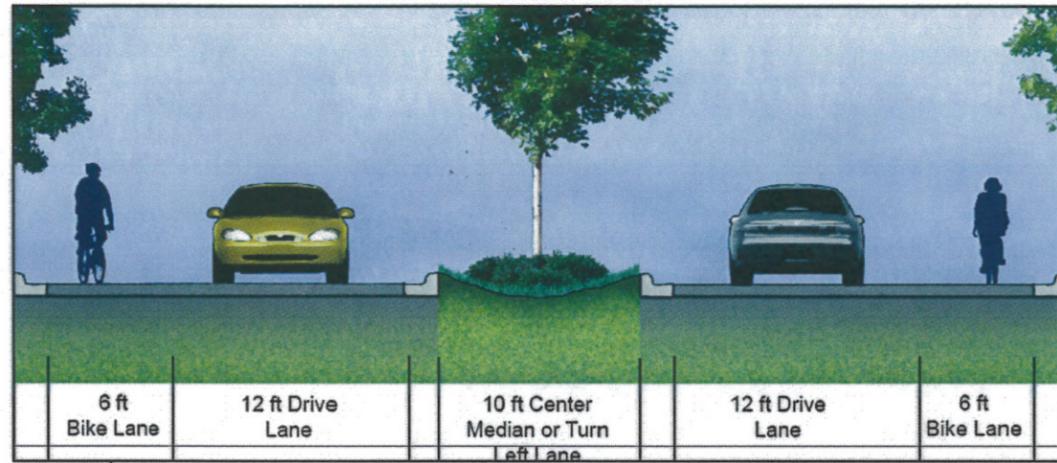
### Pros:

- Removes buses from the travel lanes
- Puts passengers right onto a sidewalk
- Would like bus pull-out in all situations

### Cons:

- Buses must use bike lane while pulling over
- Buses stop at every cross street
- Min width = 8'
- Bus/bike conflict

# Cross Sections



## Pros:

- Adds more green space—reduces impervious
- Provides left turn lanes to get traffic out of travel lanes
- Better to collect rainwater runoff & some snow—capture where it falls
- More snow storage—yes and no
- Increases traffic calming/slows speeds
- Shorter crossing distance for pedestrians & refuge
- Trees would take up a lot of water
- Bike lanes are on street & could be shoulder when needed
- Would not necessarily reduce vehicle capacity
- Can close intersection crossing onto 6th—better traffic flow

## Cons:

- Could turn bike lane into shoulder when needed
- Could this option put traffic on other roads?
- How would this option affect the system?
- Does 6th Ave E have enough capacity for motorized vehicle volume with 3-lane section?
- Would congestion be an issue at times?

## Pros:

- It is what people are used to
- Allows space for cars to get around other cars, for example those that are having difficulty getting up the hill in the winter

## Cons:

- No left turn lanes—backs up traffic
- Very difficult for pedestrians to cross
- Unsafe to cross due to multiple threat at uncontrolled locations
- Cars have to go around buses at bus stops
- Encourages speed
- Too noisy
- Safety to cars themselves—already has high crash rate

## Pros:

- Bike lanes on street
- Provides left turn lanes to get traffic out of travel lanes
- Allows space for cars to get around disabled vehicles
- Allows space for cars to pull over for emergency vehicles
- Could eliminate turns by closing some movements off
- Could allow for reversible lane

## Cons:

- Cars would have to pull into bike lane for emergency vehicles
- Buses would have to use bike lane at bus stops
- Still wide for pedestrians to cross, but better with only three car lanes
- Won't this cause more congestion?
- Still ignores crossing difficulties
- Cars would still drive fast
- Reverse lane loses turning lane

## Pros:

- Shorter crossing distance for pedestrians
- Emergency vehicles would use center lane
- Meets some goals but not all goals

## Cons:

- No place to locate transit stops—thru lane cars will use turn lane to get around buses at stops
- Need to add bus pull outs
- No place for cars to pull over from emergency vehicles
- Where do cars go when buses stop?
- Won't this cause more congestion?
- Does not meet all goals

# Storm Water Runoff & Retention



Medians



- Pros:**
- Captures stormwater
  - Plants filter stormwater
  - Aesthetic enhancements

- Cons:**
- Maintenance



Permeable Pavement



- Pros:**
- Captures rain where it falls
  - Trees take up a lot of water
  - Pavement life extended—fewer freeze/thaw issues

- Cons:**
- Requires different maintenance
  - Limited infiltration on a hill



Boulevards



- Pros:**
- Captures stormwater
  - Plants filter stormwater
  - Aesthetic enhancements
  - Opportunities for public/private vegetation teaming

- Cons:**
- Maintenance



Vegetated Swales



- Pros:**
- Captures stormwater
  - Plants filter stormwater
  - Aesthetic enhancements
  - Look can be more natively subtle

- Cons:**
- Maintenance



Infiltration Basins—Curb Cuts



- Pros:**
- Captures stormwater
  - Plants filter stormwater
  - Aesthetic enhancements
  - Opportunities for public/private vegetation teaming
  - Works well in urban setting

- Cons:**
- Benching required on hills



Rain Gardens—Pocket Parks

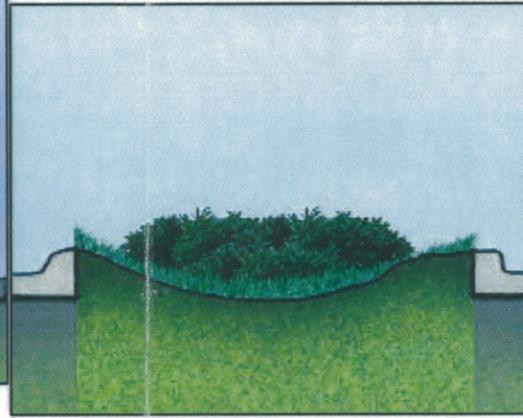
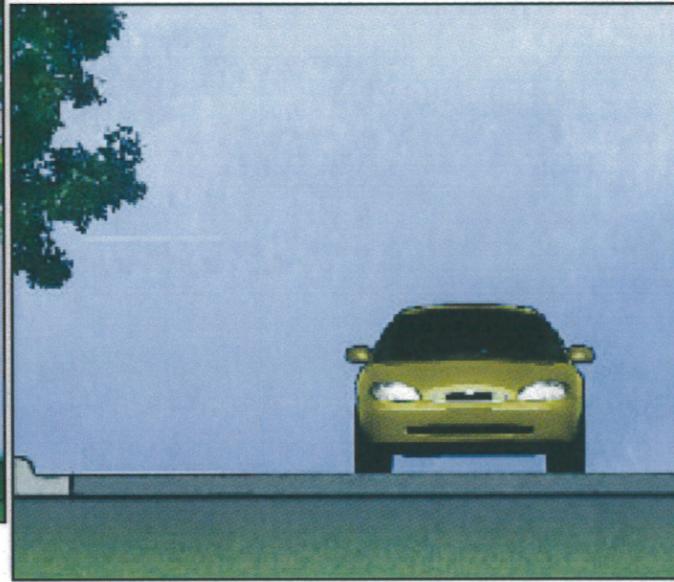
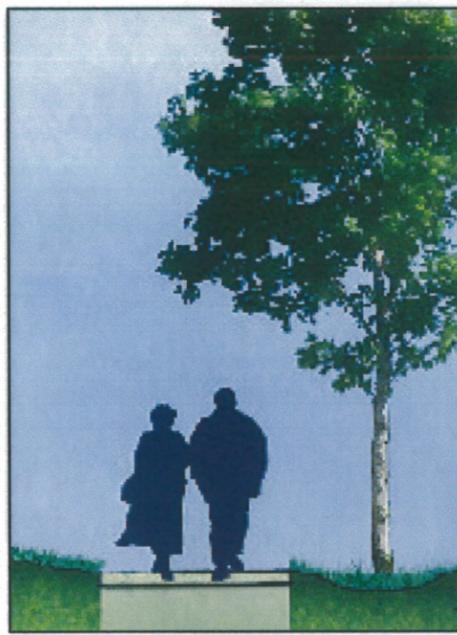


- Pros:**
- City owned property is available
  - Helps collect the rain water
  - Creates additional green space
  - Is it possible to have the creek resurface?

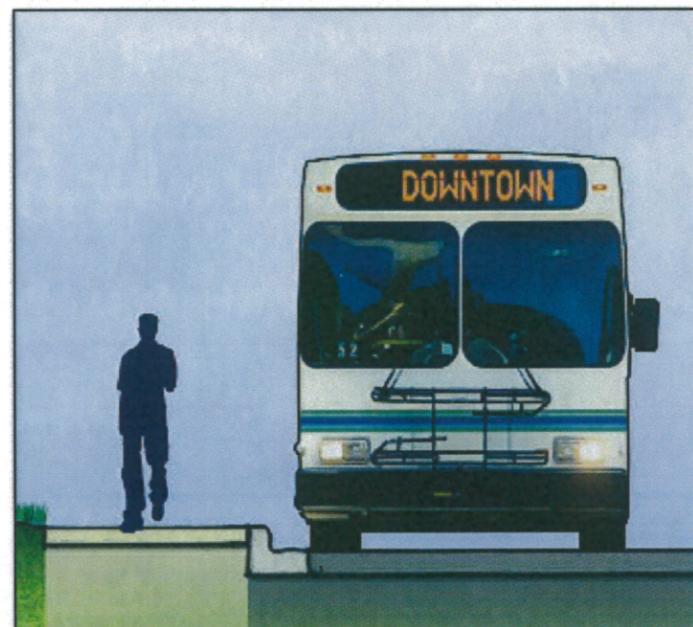
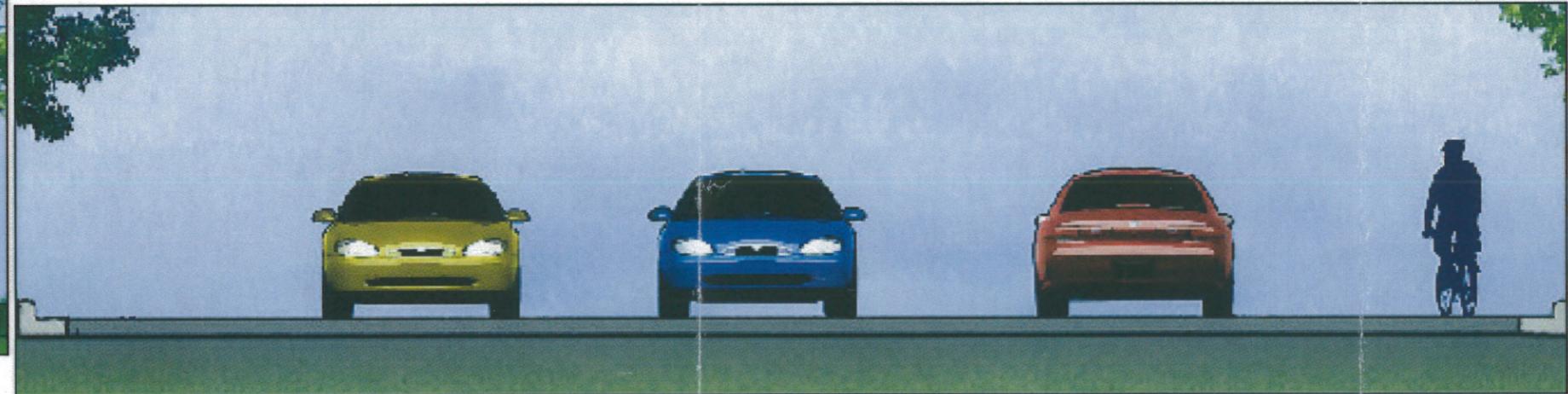
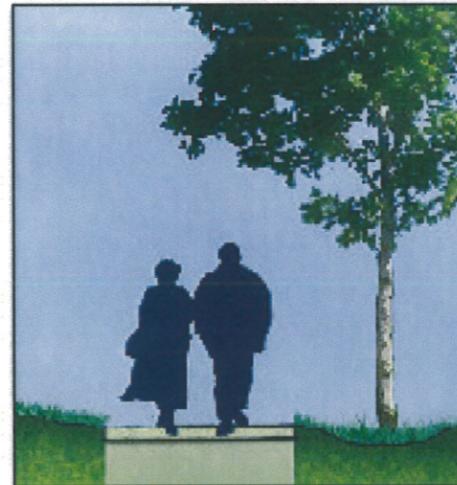
- Cons:**
- Maintenance responsibilities



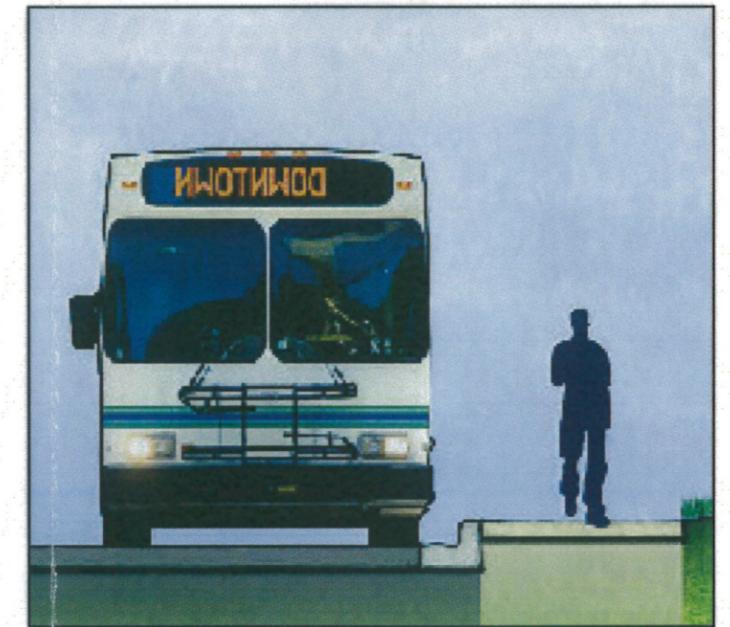
## D. Preferred Design Elements Summary



**Bike lane on street—uphill side only**

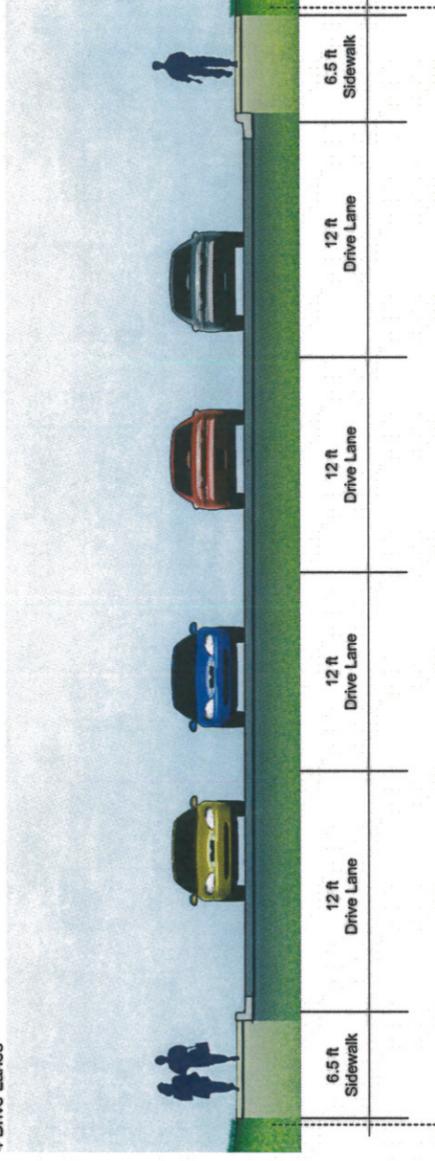


## **Preferred Design Elements 6th Avenue E**



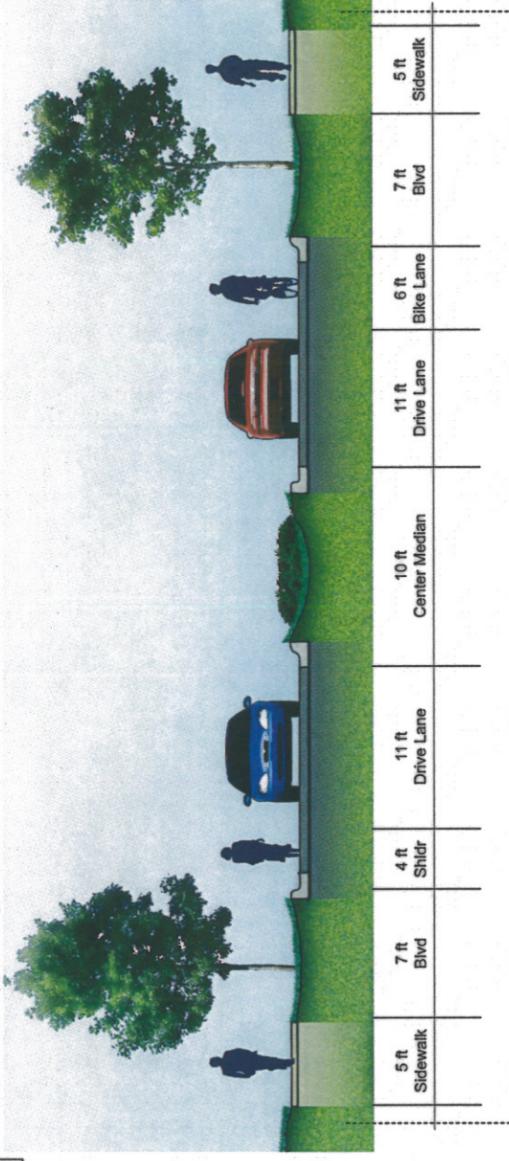
## **E. Preferred Design Elements: Typical Sections & Plan Concept**

**Existing Conditions**  
4 Drive Lanes



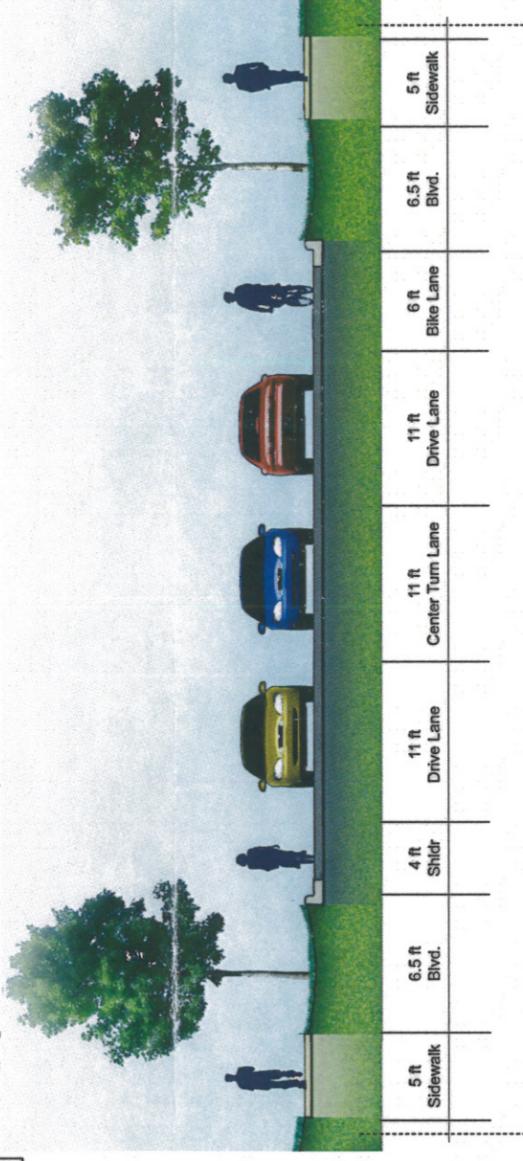
**A**

**Preferred Concept Section - At Median**  
2-Lanes, Bike Lane (up-hill only, Downhill Shldr), Center Median, Turn Lanes where required



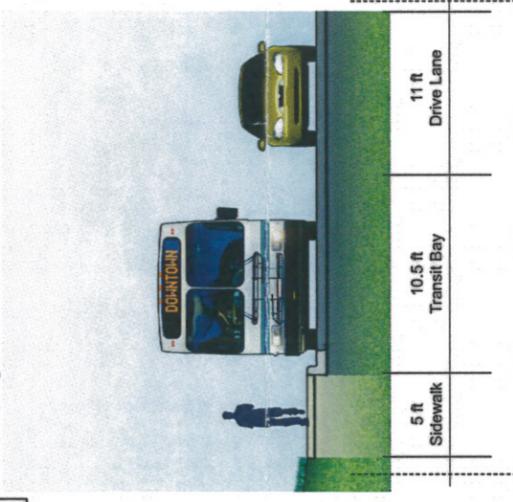
**B**

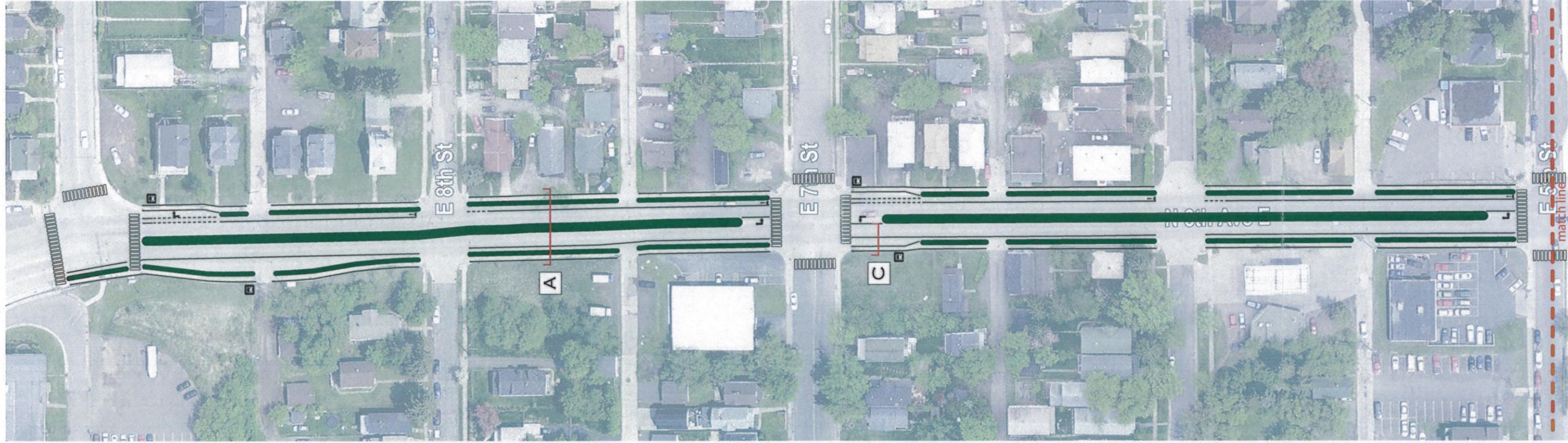
**Preferred Concept Section - At Center Turn Lane**  
Bike Lanes, Right & Left Turn Lanes where required



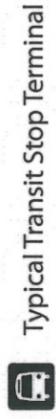
**C**

**Preferred Concept Section - At Transit Stop**  
Bike Lanes, Right & Left Turn Lanes where required





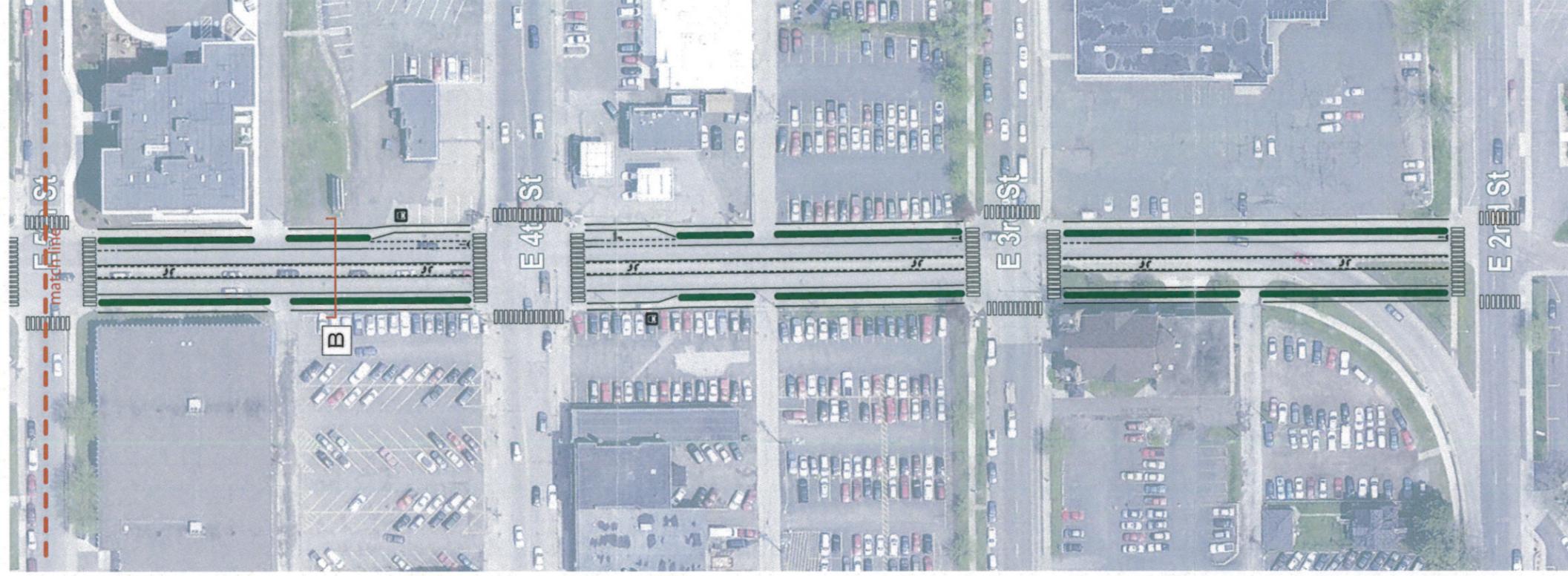
**Legend**



Typical Transit Stop Terminal



Bike Lane

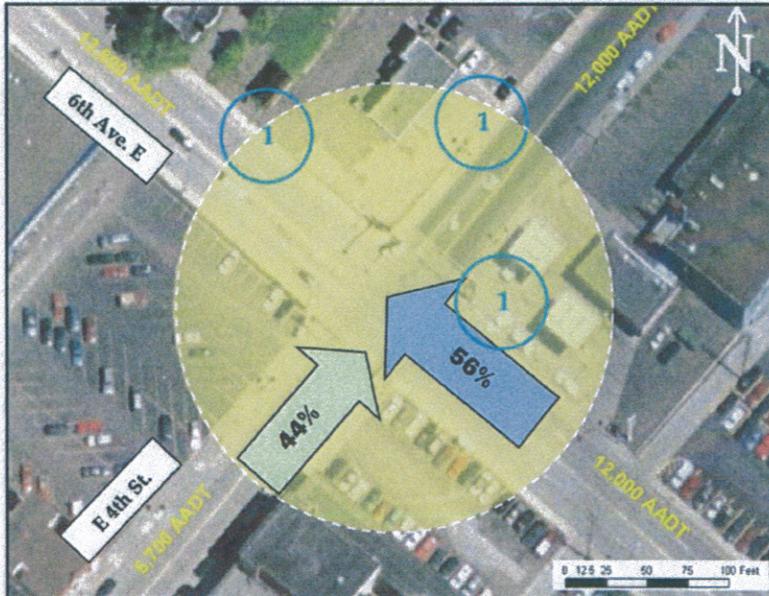




## F. MIC Location of Concern No. 4

### 3. Locations of Concern - 2007

#### 4. E 4th St. & 6th Ave. E



#### High speeds at a busy intersection

An absence of turn signals on 4th St. seems to be the cause for poor LOS at this intersection, but high speeds on 6th Ave. make it a potentially hazardous location as well. Vehicles traveling NW on 6th Ave. have a tendency to speed up in order to “beat” the light. The city has made recent signal adjustments to mitigate this. However, numerous turning movements combined with numerous pedestrian crossings make this area potentially problematic in terms of both safety and capacity.

#### Recommendations:

- Add L-turn signal to E 4th St.
- Continue to monitor signal coordination.
- Extend no-parking zone along E 4th St.
- Paint durable-marking crosswalks.

#### ROADWAYS:

- MSAS 132 (6th Ave - NW)
- CSAH 9 (4th St. - NE)
- MSAS 132 (4th St. - SW)
- MSAS 192 (6th Ave. - SE)

#### JURISDICTIONS:

- St. Louis County
- City of Duluth

#### CAPACITY (LOS):

- 6th Ave E. = A-B
- E 4th St. = C

#### CRASH STATISTICS:

- 5yr total = 18
- 5yr crash rate = 0.45
- **\* Avg. change = 0.34**
- Avg. severity = 2.20

#### CRASH TYPES:

- Turning = 5 (28%)
- Run-thru = 7 (38%)
- Rear-end = 5 (28%)
- Side-swipe = 1 (6%)
- Bike = 1 (6%)

#### DIRECTIONAL

##### INVOLVEMENT:

- NW = 11 (61%)
- SE = 6 (33%)
- NE = 6 (33%)
- SW = 8 (44%)
- Unknown = 2 (11%)



## **G. Safe and Walkable Hillside coalition's Action Plan**

# "Safe and Walkable Hillside Coalition's" Action Plan

## Adopted February 24, 2010

Already in Progress	Short-term	Medium-term	Long-term
---------------------	------------	-------------	-----------

### Goal One: A Safe and Walkable Hillside is Created for Everyone

Action Items	Implementation Steps / Current Progress	Implementation Timeframe	Agencies Involved (* = Lead Agency)	Contact Person
<p>1.1 Encourage enactment of a city-wide Complete Streets policy that applies to new construction and reconstruction on all streets within Duluth</p>	<p>Currently determining content of policy to present to city council for approval; if passed, help to implement</p>	<p>March 2010 - Resolution to council. Later 2010, ordinance to council.</p>	<p>Complete Streets Task Force: City of Duluth*, Fit City Duluth, MIC, St. Louis County</p>	<p>Drew Digby, co-chair (218) 723-4775 Tony Cuneo, co-chair tonykuneo@gmail.com (218) 310-2192</p>
<p>1.2 Create a long term city-wide bicycle network plan to identify which roads will include designated bike lanes and signage</p>	<p>Currently working on outreach strategies for upcoming public input meetings, and also discussing bike rack priorities and locations</p>	<p>Summer 2010</p>	<p>Connecting Duluth Working Group: Fit City Duluth*, MIC, LISC</p>	<p>Codie Leseman lesem002@umn.edu (218) 940-3186</p>
<p>1.3 Conduct a sidewalk assessment to determine the need for snow removal, safety railings, wheelchair accessibility, and controlling brush overgrowth</p>	<ol style="list-style-type: none"> <li>1. Review city ordinances for snow removal, brush removal, and water/ice runoff enforcement.</li> <li>2. Determine routes to remove snow from on one side of street to facilitate winter walking in Hillside neighborhoods. Include in Complete Streets ordinance. Consider one side parking in winter, not alternate side parking.</li> <li>3. Execute additional "best practices" research. Look at other model communities' snow removal laws/processes that work. Investigate water collection systems and other practices to control runoff.</li> <li>4. Bring "best practices" research to the city, and work with them to find solutions for problematic areas</li> </ol>	<p>Winter 2011</p>	<p>CHCC, EHCC, 4th Street Business Group, NHS, City Planning &amp; Engineering, Public Works &amp; Utilities, DTA, Senior Citizens Groups, Fit City Duluth, Human Rights Office, 3CP (Citizens for a Cleaner Community Program), Law Enforcement, Parks and Rec, City Maintenance-Tom Kasper &amp; Barb C.(?)</p>	<p>Jim Skoog skoogj@co.st-louis.mn.us (218) 725-5240 Short-term Hillside task force</p>

	<p>5. Propose re-writing ordinance to include all property/business owners, not simply residents. Include alternative porous paving materials, sidewalk edging, brush overhang removal, snow removal, freezing water run-off mitigation, and enforcement provisions. (see 2.6)</p>			
<p>1.4 Create access to the Lakewalk and Superior Street by installing a pedestrian/bicycle bridge over I-35 at about 6th Avenue East</p>	<p>1. Secure funding for a consultant to determine the cost of such a project 2. If feasible, secure more funding to build it</p>	<p>Determine later</p>	<p>City Planning, MIC, City Parks &amp; Rec, SMD, Fit City Duluth, NHS, CHCC, EHCC, 4th Street Business Group</p>	<p>To be determined</p>
<p>1.5 Install cable cars or other fixed public transportation to help pedestrian and bicycle travel where steep hills exist</p>	<p>1. Work with the DTA and provide support for such efforts</p>	<p>Determine later</p>	<p>DTA, City Planning, City Engineer, MIC</p>	<p>To be determined</p>

**Already in Progress**

**Short-term**

**Medium-term**

**Long-term**

**Goal Two: Hillside is cleaner, greener, and more inviting**

Action Items	Implementation Steps / Current Progress	Implementation Timeframe	Agencies Involved (* = Lead Agency)	Contact Person
<p><b>2.1</b> Hold a Hillfest Celebration for the community at the intersection of 6th Avenue East and 4th Street on September 18, 2010</p>	<p>Currently in the early planning stages; need to identify subgroups (fundraising, marketing, venue). WFCoop will participate and provide some funding. Some working sub-groups formed.</p>	<p>Sept. 2010</p>	<p>Hillfest Planning Committee  <b>NHS*</b>, Duluth LISC, 4th Street Business Group, EHCC, CHCC, City Law Enforcement, ISD 709, SMDC, St. Luke's, Whole Foods Coop, Member's Coop Credit Union</p>	<p>Brendan Hanschen                      bhanschen@nhdsduluth.org                      (218) 727-8604 x19</p>
<p><b>2.2</b> Install a "Welcome to the Hillside" gateway sign over Central Entrance Drive, just above 6th Avenue East and East Ninth St intersection. Also consider signs on W 4th St near Mesabi Ave and on East 4th St near 14th Ave East.</p>	<ol style="list-style-type: none"> <li>1. Identify and secure exact sign location(s).</li> <li>2. Develop sign design, and obtain cost estimates.</li> <li>3. Obtain funding</li> <li>4. Choose contractor and work with city to install sign(s)</li> </ol>	<p>Summer 2010</p>	<p>3CP*, CHCC, EHCC, NHS, Hillside Business Association, City Planning, 3CP, LISC, Charette Committee</p>	<p>Regina Cameron, 3CP chair                      Dan Hartman, City Councilor</p>
<p><b>2.3</b> Increase public usage of Hillside Parks (Portland Square, Central Hillside, Sport Court, Lilliput, Grant, Cascade)</p>	<ol style="list-style-type: none"> <li>1. Attend public meetings regarding the Parks and Recreation master planning</li> <li>2. Determine and implement park assessment, if necessary</li> <li>3. Prioritize findings and develop recommendations</li> <li>4. Find funding (Duluth "Adopt a Park", \$15K city funding match, DNR funding, Kaboom.org)</li> <li>5. Collaborate for improvements</li> </ol>	<p>Summer 2010</p>	<p>NHS, LISC, CHCC, EHCC, Friends of the Parks, Parks and Rec Department, Citizen patrols, Community Action Team (Vicki Goman), Parks Master Plan, CSS and UMD Community Service programs</p>	<p>To be determined</p>

<p><b>2.4</b> Encourage neighborhood businesses and SMDC to install or adopt amenities such as bus shelters, water fountains, benches, plantings, storm water rain gardens, and trash receptacles. And have pedestrian-friendly sidewalk access to main entrance.</p>	<p>1. Engage Hillside businesses and encourage them to be a part of the "Adopt a _____ Program"</p> <p>2. Identify possible amenities locations for: bus shelters, water fountains, benches, plantings, storm water rain gardens, ash trays and smaller trash cans by conducting a walking audit and mapping possible locations and designs.</p> <p>3. Review desired amenity locations with agencies involved and property-owners</p> <p>4. Determine cost for amenities and prioritize.</p> <p>5. Develop plan for funding and maintenance</p> <p>6. Implement plan</p>	<p>Walking Audit: Summer 2010</p>	<p><b>4th Street Business Group*</b>, 3CP, SMDC, St. Luke's, CHCC, EHCC, NHS, City Planning, DTA, Fit City Duluth, 3CP, LISC, Charette Committee, Downtown's Clean and Safe Team, MIC</p>	<p>To be determined (EHCC, CHCC, MIC?)</p>
<p><b>2.5</b> Add public art along the business district on East 4th Street</p>	<p>1. Collaborate with the Duluth area arts organizations and find a leader to champion this cause.</p> <p>2. Determine area and opportunities to add public art</p>	<p>Summer 2011</p>	<p>Duluth Public Arts Commission, Duluth Arts Institute, Washington Arts Coop, 4th Street Business Group, LISC, NHS, EHCC, UMD, SMDC, CHCC, City Planning, Arrowhead Regional Arts Council, Sacred Heart Music Center, MN Arts \$ thru Rep Mary Murphy,</p>	<p>Brendan Hanschen Scott Yeazle</p>
<p><b>2.6</b> Advocate for using porous surfaces on parking lots, pathways and other paved surfaces to mitigate water runoff; this could include reusing rubber material</p>	<p>1. Meet with City to understand parking surface regulations porous treatments allowed under updated Unified Development Code</p> <p>2. Determine how to promote the use of porous materials.</p> <p>3. Advocate for the use of porous materials</p>	<p>Determine later</p>	<p>UMD, SMDC, MN Pollution Control Agency, Paving Contractor?, WLSSD, Marshall School 6th grade project, Chester Creek Café</p>	<p>To be determined (Sustainable Twin Ports?)</p>
<p><b>2.7</b> Create a Historic District on East 4th Street</p>	<p>1. Identify significant building and landscapes along East 4th St</p> <p>2. Gather support for a Historic District</p> <p>3. Meet with City planning to discuss</p> <p>4. Continue with City's recommendations to create a district</p>	<p>Determine later</p>	<p>CHCC, EHCC, NHS, Duluth Preservation Alliance</p>	<p>To be determined (Sustainable Twin Ports?)</p>
<p><b>2.8</b> Convert East 4th Street into a "Ped Mall" (pedestrian-only corridor) permanently</p>	<p>1. Research Ped Mall models (Rochester, MN) and identify opportunities to pilot</p> <p>2. Coordinate conversions with City and all stakeholders and evaluate results</p>	<p>Determine later</p>	<p>4th Street Business Group, NHS, CHCC, EHCC, City Planning, Fit City Duluth, Hillfest committee</p>	<p>To be determined</p>

**Goal Three: Children can walk and bike safely to and from Grant and Nettleton Schools and neighborhood parks**

Action Items	Implementation Steps / Current Progress	Implementation Timeframe	Agencies Involved (* = Lead Agency)	Contact Person
<p><b>3.1</b> Calm traffic on 6th Avenue East, at the intersections of: 7th St/6th Ave, 8th Ave E./E. 9th St and around Grant School through incremental measures that can be implemented in the near term, such as increased driver awareness and additional signage.</p>	<p>1. Create a plan for all suggested changes, for when funding becomes available. Suggestions include: More stop signs and stop lights, no right turn on red at 6th Ave E and E 9th St, more school crossing signage at many locations, flashing warning lights above the top of 6th Ave E on the curve coming down towards the 9th St, a traffic light at 6th Ave E and E 7th St, an all-way red light for students during pre- and post-school hours at 6th Ave E and E 9th St, and a four-way stop at 8th Ave E and E 9th St.</p> <p>2. Coordinate with 6th Ave. E. re-design group</p> <p>3. Engage city planning, engineering &amp; enforcement departments</p> <p>4. Implement accepted options</p>	<p>Fall 2010</p>	<p><b>SHIP Public Health*</b>, City Engineering, MIC, City Planning, EHCC, CHCC, NHS, Fit City Duluth, Grant Elementary PTA, Grant Community School Collaborative, "Safe Routes to School", ISD 709, Johnson Controls, Nettleton PTA, UDAC, Hillside Business Association, Milkhouse, ICO, 4th St. Market</p>	<p>Jim Skoog skoogj@co.st-louis.mn.us (218) 725-5240</p>
<p><b>3.2</b> Identify and advocate for the best options to reconfigure 6th Avenue East to accommodate for pedestrian and bicycle passage (also see 1.1)</p>	<p>1. Fit City secured \$15,000 in CDBG redesign funding,</p> <p>2. Work with Fit City Duluth and the city to implement changes by advocating for a corridor plan from E. 2nd St. to Mesaba Ave.</p>	<p>2015</p>	<p><b>Fit City Duluth*</b> ARDC-MIC, City of Duluth, SHIP-Public Health, ISD 709, Community Action Duluth, UMD-MPIRG, DTA</p>	<p>Drew Digby drewdigby@me.com (218) 723-4775</p>

## H. State Aid Standards

State Aid Design Standards

Functional Classification and Projected Traffic Volume	Design Speed mph	Lane Width (a) feet	Curb Reaction (e) feet	Parking Lane feet
Collectors or Locals with ADT < 10000	30-40	(b) 11	2	8
	over 40	12	2	10
Collectors or Locals with ADT ≥ 10000 and Arterials	30-40	(b) 11	(c) 4	10
	over 40	12	(c) 4	(d) 10

(a) One-way turn lanes must be at least ten feet wide, except 11 feet is required if the design speed is over 40 mph

(b) Wherever possible, lane widths of 12 feet, rather than 11 feet, should be used.

(c) May be reduced to two feet if there are four or more traffic lanes and on one-way streets.

(d) No parking is allowed for six or more traffic lanes or when the posted speed limit exceeds 45 mph.

(e) Curb reaction must be provided only where parking is not provided.

One-way streets must have at least two through-traffic lanes.

When a median is included in the design of the two-way roadway, a one-foot reaction distance to the median is required on either side of the median. Minimum median width is four feet.

Urban design roadways must be a minimum nine tons structural design, or ten tons if needed for system continuity. Phased projects must be constructed to attain design strength within three years of completion of final grading.

Roadways not on the state-aid system are not subject to the minimum structural design strength requirements.

The minimum curb-to-curb width of a new bridge must be the required street width, but in no case less than required per Minnesota Statutes, section 165.04. HS 25 loading with AASHTO Standard Specifications or HL-93 loading with load and resistance factor design (LRFD) is required for new or reconstructed bridges and a minimum of HS 18 loading is required for all rehabilitated bridges. Where the new bridge approach roadway includes elements for the accommodation of pedestrians or bicycles, the new bridge width must also provide for pedestrians or bicycles unless pedestrians or bicycles are otherwise accommodated.

For ADT less than 150, the widths of bridges to remain must be at least the sum of the lanes. For ADT greater than or equal to 150, the widths of bridges to remain must be at least the sum of the lanes plus half the sum of the shoulders, parking lane, and curb reaction distance.

Clearance of 1.5 feet from the face of the curb to fixed objects must be provided when the posted speed is 40 to 45 mph. A ten-foot clear recovery area measured from the driving lane must be provided when the posted speed exceeds 45 mph.

For volumes greater than 15,000 projected ADT, at least four through-traffic lanes are required. Additional average daily traffic may be allowed if a capacity analysis demonstrates that level of service D or better is achieved at the higher traffic volume. If the capacity analysis demonstrates that additional lanes are required only during peak traffic hours, then each additional driving lane may be used as a parking lane during nonpeak hours.

"Level of service" has the meaning given it in the Highway Capacity Manual, Special Report 209, as revised and published by the Transportation Research Board of the National Research Council, Washington, D.C. The definition is incorporated by reference, is not subject to frequent change, and is located at the Minnesota State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., St. Paul, Minnesota 55155.



# I. School Zone Speed Limits

# School Zone Speed Limits

## SCHOOL ZONE SPEED LIMITS

Ensuring the safety of children on public streets near schools is the responsibility of parents, school officials and road authorities. Parents must provide basic training and supervision in order to develop safe behavior and serve as role models. School officials must support and encourage educational safety programs and methods for walking or biking students. Road authorities must provide a safe environment on the street by using proven traffic control methodologies that will minimize the crash probability.

## THE LAW

Each road authority may establish school zone speed limits on roads under their jurisdiction. In order to provide an objective, uniform and safe environment for walking and biking students, Minnesota law requires a traffic investigation as prescribed by the Commissioner of Transportation prior to establishing a school zone speed limit.

The school zone is legally defined as that section of road which abuts the school grounds, or where there is an established school crossing with advance school signs that define the area. If a reduced school speed limit is warranted:

- It shall not be more than 30 MPH below the establish speed limit
- The school speed limit shall not be lower than 15 MPH
- All signs erected must be in conformance to the Minnesota Manual on Uniform Traffic Control Devices. Any speeding violations of a school zone speed limit are subject to a double fine.

## SCHOOL AGE PEDESTRIAN CRASHES

While safety is emphasized near schools, pedestrian crash experience requires a broader look. A Minnesota study revealed that 88 percent of school age pedestrian crashes occurred more than one block from school. Similar studies in Idaho showed only 13 percent of school age pedestrian crashes occurred in a school zone but 31 percent occurred on the trip to school. Other states have confirmed similar results. The statistics point out that location is NOT the predominant factor, suggesting that safety education for pedestrians has the greatest potential for improvement since they can use it at all locations.

Further insights can be gathered from analysis of circumstances contributing to school age crashes.

- Most crashes occurred when the child dashed from behind parked cars
- Many crashes occur at mid-block locations
- Kindergarten through third grade pedestrians had considerable difficulty understanding traffic control devices.

In realization of these facts it is apparent that school age child safety is not a singular issue of speed limits. Real improvements in safety require a comprehensive study of the school trip and each environment must be specifically addressed.

## THE TRAFFIC INVESTIGATION

Mn/DOT developed the booklet "A Guide to Establishing Speed Limits in School Zones" that is a comprehensive safety outlook and is the prescribed method as required by MS 169.14. Three distinct components are addressed-

- The School Route Plan
- Hazard Identification
- Education.

The main objective of the **School Route Plan** is to establish walking routes that minimize the number of streets crossed and to maximize the safety of approved crossings used by children on the entire trip to school.

**Hazard Identification** addresses nine issues using the school route plan and evaluates each street for what is present as well as what can be changed to enhance the safety of the planned routes.

## A quick summary:

- 1) Roadway geometry- crossing narrower roads in straight sections with good sight distance increases the safety to pedestrians.
- 2) Traffic volume- low volume roads are safer to cross. High volume roads will require adult crossing guards for maximum safety.
- 3) Pedestrian volumes- number of pedestrians can determine signal timing or necessitate additional traffic control.
- 4) Parking- parking should be banned in the immediate area of any school crossing.
- 5) Traffic Control Devices- these should be reviewed to verify they are operating correctly and signs are not hidden by vegetation.
- 6) Sidewalks - children walking in the street is dangerous. Continuous sidewalks that do not intermittently disappear and force children into the road are the best.
- 7) Fencing-strategically placed fencing can change walking patterns and prevent dangerous mid-block crossing. At playgrounds, it prevents errant kick-balls from rolling into the street and causing children to chase them from between parked cars.
- 8) Crash History - crash investigation can reveal locations where remedial measures may not be working and pedestrians should be routed away from these areas.
- 9) Speed zones- if all other measures have been addressed and a reduced speed is still required to safely navigate the school zone, then a school zone speed limit should be considered. Trained engineering personnel should design speed limits based on the limiting criteria and arbitrary blanket values should be avoided.

As noted before, **education** is the most important. All the best efforts of engineering and planning will be lost if the pedestrian is unaware of the safe routes and safe practices. Children are rarely involved in crashes while crossing properly. Education is not the singular responsibility of one group or person, it requires a partnership and commitment from all.



## J. Sixth Avenue E Property Ownership Map

