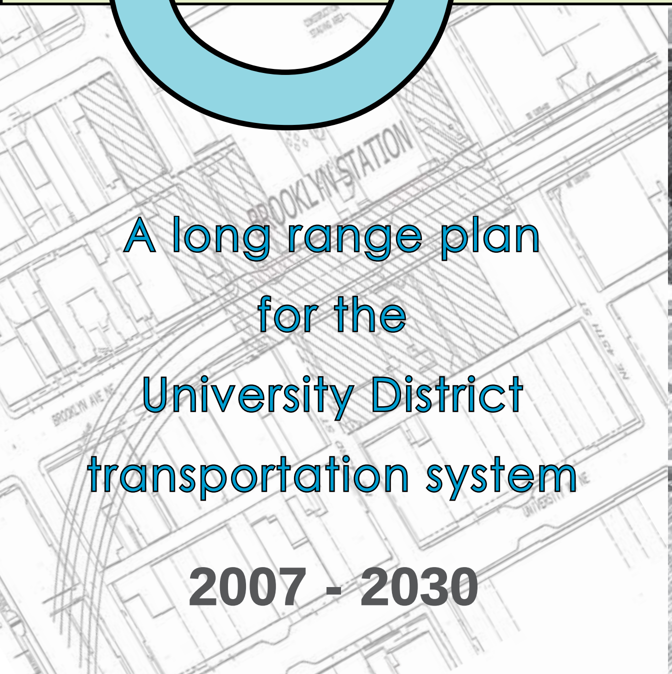
University Area Transportation Action Strategy



A long range plan
for the
University District
transportation system

2007 - 2030

SDOT
Seattle Department of Transportation

University Area
Transportation Action Strategy

2007 - 2030

Final Report
August 2008

Prepared by:

SDOT
Seattle Department of Transportation
Policy & Planning

with

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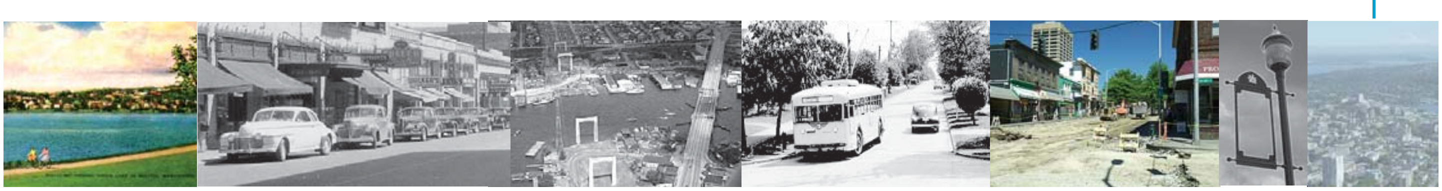
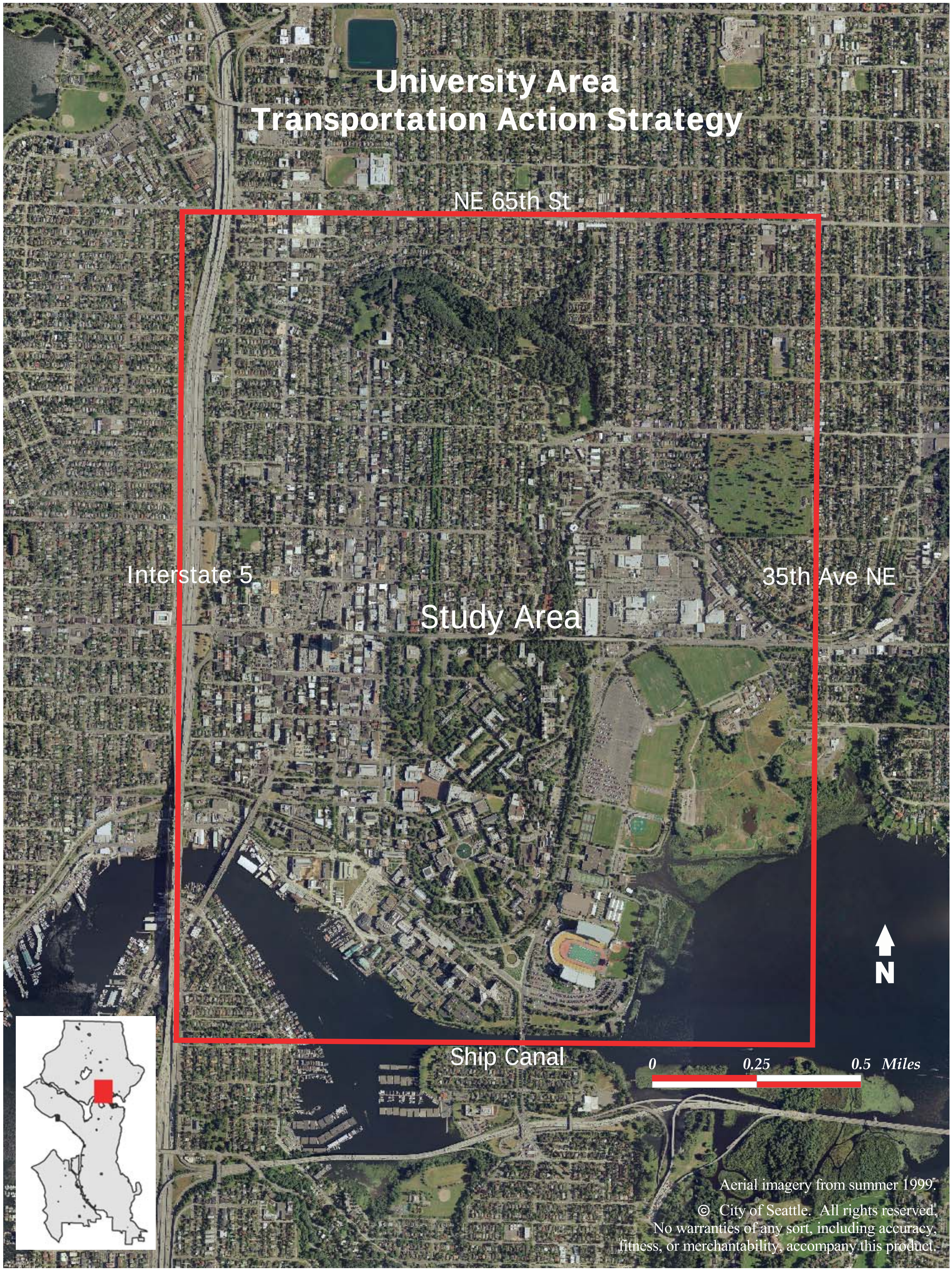
&
The Underhill Company

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Introduction

In the 1880's, the area bounded by Lake Union to the southwest, Portage Bay to the east, and Ravenna Creek to the north was primarily farmland and rugged forest. Douglas fir trees soared to almost 400 feet and wildlife such as the cougar and bear were visible neighbors. The 'transportation network' for the few who lived there consisted of horse paths, boat docks, and wherever one's own two legs could take them.

By 1891, however, the area was subdivided and annexed into the City of Seattle and the forces of transformation were set in motion. Within just a few short years, new railroad and streetcar connections brought in hundreds of new residents and jobs, and enabled the University of Washington to move its increasingly constrained campus out of downtown Seattle. By the time of the 1909 Alaska-Yukon-Pacific Exposition, the area first called Brooklyn Addition, then University Station, and now known as the University District was on its way to becoming a full-fledged city within a city.

Now more than a century later, these early development patterns and infrastructure decisions still fundamentally influence the way people and goods move about the greater University Area. From an inherited set of street alignments and widths, to a man-made ship canal that now physically separates neighborhoods to the south - most of today's transportation issues and constraints stem from a landscape established decades ago by a few key decisions.

Perhaps the most significant inheritance affecting transportation in the University Area are the Interstate 5 and State Route 520 highways. Built in the 1960's, these corridors provide the bulk of regional access and mobility for vehicles and transit, but also act as neighborhood boundaries and barriers to local circulation. In many ways, it is the physical and functional challenge of integrating these large highways with the small, relatively constrained local street environment that defines the areawide transportation system.

Adapting for the future

In looking to improve 20th century transportation infrastructure to meet the growing needs of tomorrow, there is one issue that - unlike previous generations - is a fundamental consideration for decision-makers: *climate change*. With an increased understanding of the seriousness of climate change and transportation's role as a principal source of greenhouse gas emissions, there is emerging consensus that rapid changes are needed to create more efficient and environmentally-friendly ways of getting around. Just as century-old decisions still influence us today, so too must our investments over the coming decades define a responsible transportation framework that can be inherited and sustained by future generations.

Key decisions that have shaped the University Area (from l to r): Platting of the "Brooklyn Addition" in 1891; building the Montlake Ship Canal in 1915; construction of I-5 in the 1950's.

The timing could not be more appropriate to begin re-imagining and adapting the University Area's transportation system to meet the needs of the 21st century. Together with the introduction of light rail to - and eventually through - the University Area over the coming decade, the SR 520 bridge replacement project offers a unique opportunity to enhance regional mobility and repair local connections - physical and otherwise - damaged in the 1960's. People are now asking 'What if a viable opportunity has been presented to dramatically improve not only the ways in which people and goods move around, but also the social and environmental quality of our communities?'

The questions and issues at the scale of a regional highway are indeed profound, which is why there is a large and focused planning effort between state, local, and neighborhood representatives to reach a preferred alternative on replacing SR 520. But what about other key decisions being looked at today that could potentially affect the University Area transportation system for the next 100 years? What about the kinds of gradual improvements needed to maintain livability and provide a viable transportation system for both now and in the future?

In order to answer these latter questions, and to identify a set of transportation improvements that adequately respond to the specific needs of the area, the Seattle Department of Transportation (SDOT) has developed the *University Area Transportation Action Strategy*.

Section 1

Neighborhood & Planning Context

Neighborhood & Planning Context

The University Area is composed of the University Community Urban Center, which includes the University of Washington and University District, as well as all or parts of the Roosevelt, Ravenna/Bryant, and Montlake neighborhoods. Containing an especially wide variety of land uses, this area also has a diverse array of transportation users and system demands. As housing and jobs continue to grow over the next several decades, it will take smart investments at a range of scales – from neighborhood sidewalks to regional connections – to meet these diverse needs.

There are major improvements to the University Area's transportation system that are in the works. Sound Transit is bringing light rail service from downtown to the University of Washington campus by 2016, with the expectation of additional stations extending north as funding becomes available. Meanwhile, the Washington Department of Transportation (WSDOT) has been working with regional and community stakeholders to design and construct a replacement for the SR 520 bridge, which is set to include additional HOV lanes and significant new bicycle/pedestrian connections. At the City of Seattle, proposals for improved transit service, new bicycle facilities, pedestrian safety enhancements, and major road maintenance are funded and have begun to hit the ground in 2008.

The *University Area Transportation Action Strategy* (or *Action Strategy*) is a set of project recommendations that build upon these improvements to meet the diverse and growing needs of the area. Guided by the principles of *mobility*, *sustainability*, *safety*, *access*, *and choice*, the *Action Strategy*'s aim is to sharpen the vision for a highly-functioning and responsible transportation network:

Mobility The *Action Strategy* focuses on efficiently moving people and goods, of which improving "vehicle capacity" is only one of many potential approaches.

Sustainability The *Action Strategy* considers today's needs as well as the needs and constraints of future residents, businesses, and institutions. All of the projects proposed are in support of Seattle's goals for improving the environment and building strong communities.

Safety The *Action Strategy* analyzes safety issues and promotes improvements that reduce potential for conflict and injury.

Access The *Action Strategy* recognizes that a good transportation network is not an end in itself, but a means for conducting one's daily life. Retaining and improving access to employment centers, neighborhood services, and recreational facilities plays an important role in this report's recommendations.

Choice The *Action Strategy* works to reduce the historic imbalance in transportation investment by strengthening options for bicycling, walking, and transit to create "real" alternatives to driving alone.

The principle goals of the Action Strategy have been carried over from the 2002 University Area Transportation Study (UATS):

- ***Build upon prior planning to provide a comprehensive, multi-modal plan for the area's transportation system***
- ***Serve as a blueprint for financing and prioritizing SDOT's capital investments in the University Area for the next several decades***

Updating the 2002 Plan

The *Action Strategy* is an update to the University Area Transportation Study (UATS) completed in 2002. The UATS plan was developed to guide transportation decisions in the University Area to the year 2010 and beyond. It included 47 project recommendations that built on past planning efforts and was designed to implement the vision and goals of the Seattle's Comprehensive Plan, the Transportation Strategic Plan and the University Community Urban Center Plan.

In 2005, SDOT developed the Seattle Transit Plan, which provides a decision-making framework to help prioritize and evaluate transit investments that connect the City's urban centers and urban villages. These prioritization and evaluation measures were not available in the 2002 UATS report but are included in the Action Strategy.

Most of the UATS project recommendations have not been implemented, primarily due to lack of funding from local and state sources. In an attempt to reinvigorate and refine the 2002 study, and to improve the likelihood of implementing key projects, the *Action Strategy* set out the following objectives:

- Update "existing conditions" to the year 2007
- Extend the land use and transportation forecasts to the year 2030
- Respond to new location decisions for future light rail stations and to the ongoing planning for the SR 520 Replacement Project
- Incorporate new SDOT planning tools and funding projections

- Establish a set of prioritized projects that meet City objectives and are supported by the community

Changes since 2002

In November 2006, Seattle voters approved a new levy to help finance **Bridging the Gap**, a nine-year package of transportation projects totaling more than half a billion dollars. Bridging the Gap will allow SDOT to catch up on deferred maintenance, such as paving city streets and repairing old bridges, and to fund new pedestrian, bicycle and transit projects. The levy proceeds, combined with a commercial parking tax and an "employee hours" tax, dramatically increase the potential for SDOT to fund and maintain projects associated with the new *Action Strategy*.

In addition to an improved financial picture, there have been a number of changes in the University Area since the completion of the UATS work. These include:

BRIDGINGtheGAP
Your Transportation Levy Dollars at Work
- Mayor Greg Nickels

In addition to major increases in funding for bicycle and pedestrian improvements that were not available in 2002, Bridging the Gap also provides funding now for key maintenance projects such as repaving streets and replacing aging bridges.

- Changes in location and advancements in design of Sound Transit's three stations planned for the study area
- Completion of the 2005 **Seattle Transit Plan**, which designates priority transit arterials throughout the City and develops specific targets for improving transit speed, frequency, reliability, and span of service
- Advancement towards a Preferred Alternative for the SR 520 Replacement Project
- Lifting of the University of Washington's lease 'lid' in the University District, which had restricted the purchase of land for long-term facilities off-campus. An early result of the new agreement was the sale of the Safeco Insurance tower to UW in 2006
- Completion of the **Seattle Bicycle Master Plan** which will add over 380 miles of new bicycle facilities city-wide, and the launching of the **Seattle Pedestrian Master Plan**, intended to make Seattle the most walkable city in the nation.

The new *Action Strategy* incorporates or anticipates these changes, which are reflected in project recommendations.

Planning horizon now 2030

Since the original study was completed in 2002, the Puget Sound Regional Council has prepared new demographic and transportation forecasts for the year 2030. The 2010 traffic forecasts prepared for UATS were updated to 2030, and recommended projects were evaluated based on projected traffic conditions in 2030.

Transportation Mitigation Program

Seattle has recently utilized a voluntary Transportation Mitigation Payment program as a means to help off-set the added strain placed by new development on the City's transportation system. Currently in place in South Lake Union and planned for the Northgate area, this program is intended to strategically pool contributions from developers to help fund previously identified transportation projects. By extending the transportation analysis and updating the recommended project list, the ***Action Strategy*** provides the planning framework needed to create such a program. For more information on the developer mitigation program, a Client Assistance Memo (CAM) is available at the Department of Planning & Development's website: www.seattle.gov/dpd/publications/cam/CAM243.pdf

The University Area Today

At the heart of the University Area is the University Community Urban Center, one of only five "urban center villages" designated by Seattle's Comprehensive Plan. Urban centers are intended to attract the the greatest share of Seattle's commercial and residential growth, which is reflected in their intense commercial zoning and relative lack of single-family housing. In the case of the University Urban Center, a large institution (the University of Washington) and a regional shopping mall (the University Village Shopping Center) play critical roles in supporting this capacity for urban growth. Two residential neighborhoods, however - University Park and University Heights - are also within the urban center and add significant housing variety and pockets of lower intensity uses.

Neighborhoods & Urban Villages

In addition to the urban center, the University Area also includes the southern portion of the Roosevelt Residential Urban Village, a neighborhood with a compact mix of land uses supporting transit and pedestrian activity but that is primarily residential in overall character. Together with the Ravenna/Bryant neighborhood to the east, this northern portion of the study area is predominantly single-family with small-scale retail along key arterial streets.

Mixed-use developments with housing above retail are increasingly common in the University Area, in large part to policies that direct growth to urban centers and urban villages.

There are three mixed-use 'residential urban villages' that lie just outside the study area: Green Lake to the northwest, Wallingford across I-5 to the west, and the Eastlake neighborhood to the south - all influential contributors to University Area traffic patterns and home to many University students and employees.

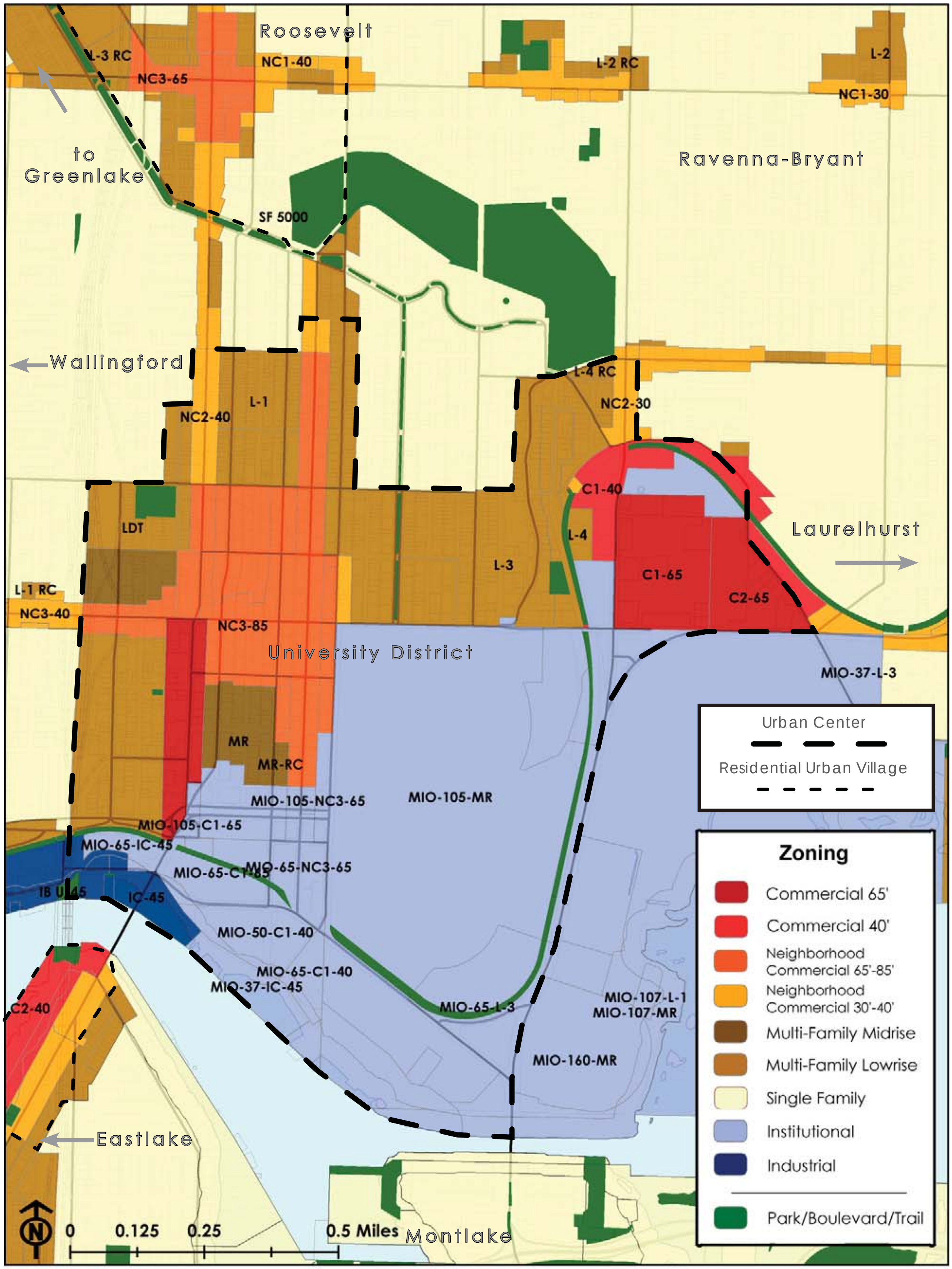
To the south and east of the study area are the single-family neighborhoods of Montlake and Laurelhurst. Both include small pockets of local retail and community services, while Laurelhurst is also home to another major institution: Children's Hospital Medical Center. With 220,000 patient visits per year, 3,600 staff, and plans for significant expansion, Children's Hospital contributes significantly to University Area traffic and activity.

Figure 1 provides a map of the study area's zoning, urban village classifications, and neighborhood locations.

Land Uses

University of Washington. Approximately one-third of the study area is taken up by the University of Washington, with 17,000 staff and an enrollment of 39,000 students. The "UW" strongly influences transportation demand throughout the study area. The City and University have worked together closely to address University-related traffic issues while ensuring that the University can grow to meet its needs. In 1983, the City and the University signed an agreement to allow development in the southeast portion of campus, with the

Figure 1: Zoning, Urban Villages and Neighborhoods



condition that no additional 'peak hour' trips crossed the Montlake Bridge. In 1992, the City's condition for approval of the University's 2001-2010 General Physical Development Plan changed the peak-hour trip requirement from a single location to address University Area-wide transportation issues.

Small-scale businesses in older 1-2 story buildings are common in the University Area, such as along Roosevelt Way at NE 64th St (above). From a transportation perspective, these buildings are notable in that most do not have parking garages or require 'curb cuts' along sidewalks - important factors in providing transit and pedestrian-friendly environments.

Business Districts are well-defined and range from regional (University Village), to local (University District), to neighborhood (Ravenna and Roosevelt), each providing a variety of retail and commercial services. Many stores and restaurants are locally-owned, with unique and diverse products and foods that attract patrons from throughout the City. The bulk of these commercial establishments are in older 1-2 story buildings that do not contain housing, although newer buildings are predominantly mixed-use and take fuller advantage of zoning and height allowances.

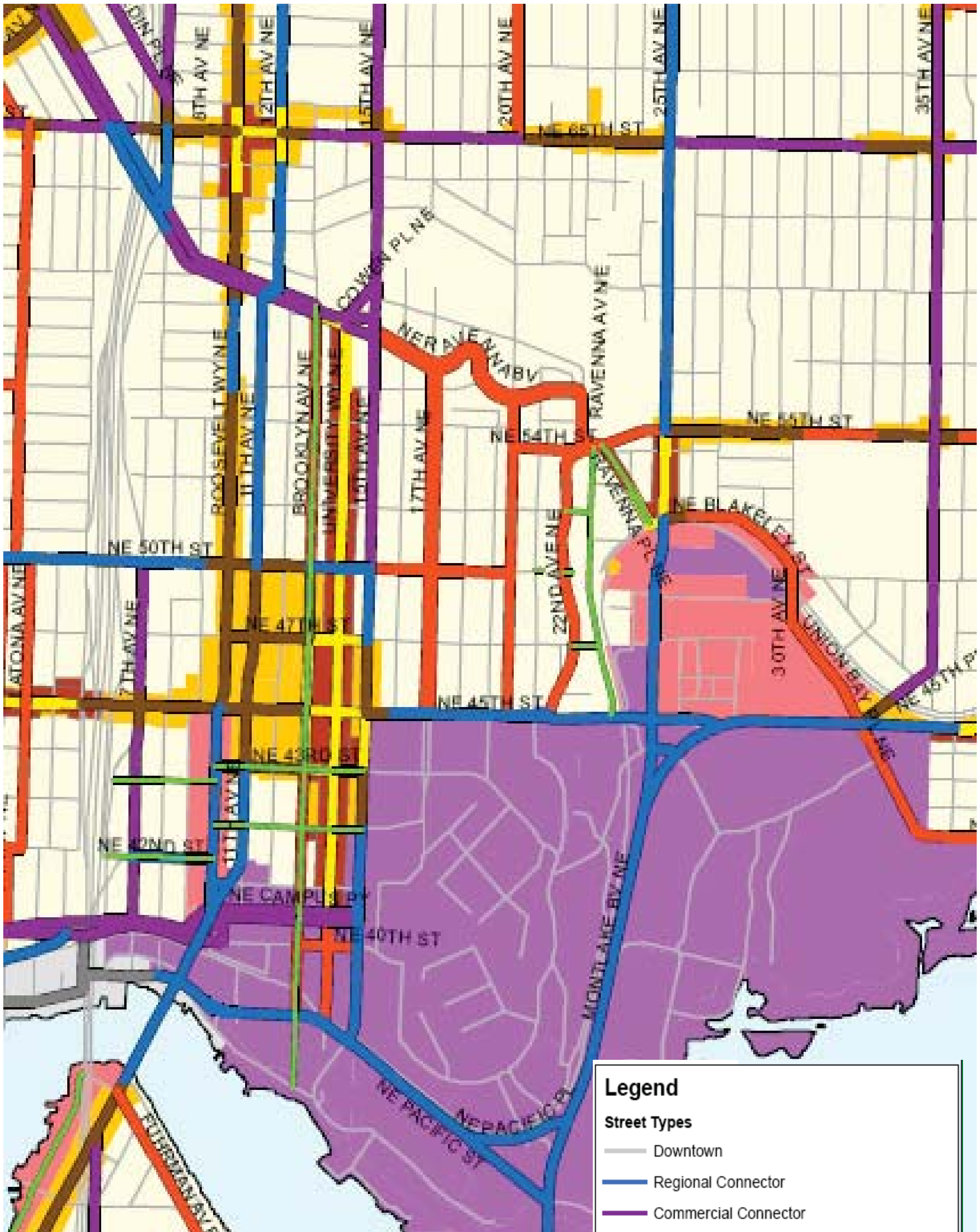
Open Spaces. The Seattle Parks Department operates 10 parks in the study area, dominated by Cowen and Ravenna Park to the north. In the heart of the University District, the University Heights Center (a former school) provides indoor meeting facilities, a community garden, and is the venue for the weekly Farmers' Market, while the University Playground (9th Ave NE/NE 50th St) provides much needed recreation space west of campus. There are a number of smaller "pocket parks" in the study area, including those at 24th Avenue NE/NE 62nd Street, 43rd Avenue NE/NE 9th Street and along the waterfront at the south edge of University campus property. In the eastern portion of the study area is the Calvary Cemetery, a 25-block open space bounded by 30th Avenue NE, NE 55th Street, 35th Avenue NE and NE 55th Street.

People

The **2000 Census** provides a "window in time" to look at the characteristics of the residents & employees of the University Area. The following is a quick summary of some of those characteristics for the University Community Urban Center:

- The University District is one of the densest in the Puget Sound region with 35 persons/acre and over 70 people & jobs/acre, while the larger University Area averages more than 18 persons/acre
- One-third (36%) of households do not own a vehicle
- People walk. More than one in three people walk to work or school while fewer than 30% drive alone
- Transit is an important component of the transportation system with about 23% of commuters traveling by bus

Figure 2: SDOT-Designated Street Types in University Area



Street "types" are an official designation within SDOT's Right-of-Way Improvements Manual that help identify the functions and performance criteria for all arterials in Seattle. By combining official arterial designations (major, minor, collector, local) with the adjacent zoning categories, street types are a good tool to help take into account the important interactions between transportation and land use. Please refer to ***Appendix A*** *for more detail on how the Action Strategy incorporates street types into its transportation analysis.*

- Students account for 71% of the residents within the University District Urban Center, with 18 to 29 year-olds comprising 80% of the overall population

- About 10% of residents are disabled within the University Urban Center, and approximately 45% of those are 65 years and older

Transportation

Getting around by vehicle in Seattle can be a challenge during commute times - and travelling through the University Area is no exception. Not only do vehicles accessing I-5 and SR 520 create significant traffic congestion at ramp locations, but the area's arterial roadway system is restricted on all sides: by I-5 to the west, the Montlake Cut and SR 520 to the south, Portage Bay to the east, and Ravenna Creek to the north. Vehicular traffic funnels to bridges and underpasses that connect across these boundaries, resulting in greater congestion and delays than if the street grid was less-restricted and could more evenly distribute traffic.

Outside of the major arterials that connect to highways and bridges,, however, the University Area transportation system works quite well. Most local streets have relatively low volumes at all times, while some arterials - such as 15th Avenue NE, 35th Avenue NE, NE 65th Street and NE Northlake Way - can operate quite well even during peak commute hours.

> ***Seven bridges in the University Area help overcome the barriers presented by water, steep slopes, and freeways:***
>
> - ***University and Montlake Bridges***
> - ***NE 45th St Viaduct***
> - ***I-5 overpasses at NE 45th and 50th St***
> - ***Bridge spans over Ravenna Creek on 15th Ave & 20th Ave NE***

The University Area's transportation system works for non-auto users as well. Most pedestrians can walk throughout the University District in relative comfort with few barriers, while many bicyclists and joggers travel along the Burke-Gilman Trail and Ravenna Boulevard for both commuting and recreation. Transit is also a viable alternative to driving a car, with frequent service to downtown. Some 51 transit routes serve the University Area, including Sound Transit and Community Transit regional bus service.

The Montlake Blvd/25th Ave NE corridor is somewhat of a dividing line between the transit and pedestrian-friendly core of the University District to the west and the more auto-oriented University Village shopping mall and single-family neighborhoods to the east. Steep grade changes limit east-west pedestrian connections between these two areas, while large reservoirs of parking and severe traffic congestion on Montlake Blvd/25th Ave NE severely limit transit service levels.

U-Pass Program

Vital to the general success of the University Area's transportation system has been the University's "U-Pass" program - which provides education, steep discounts and other incentives for transit, vanpooling, and non-motorized transportation options. The program is largely responsible for the fact that only 23% of University students and employees drive alone for their commute, and roughly 40% commute by bus. While the *Action Strategy's* recommendations will go a long way towards improving transportation facilities for all modes, the continued success and influence of the U-Pass program will be critical to offering real transportation choice and effective congestion management in the University Area well into the future.

One of the many positive effects of the U-Pass program - and of offering true transportation alternatives in general - is the reduction in parking demand (which in turn helps make those alternatives more attractive). This University dormitory located along Brooklyn Ave NE and Campus Parkway is one telling example: what was designed as a parking lot for a few vehicles is now home to dozens of bicycles as well as needed recreation space.

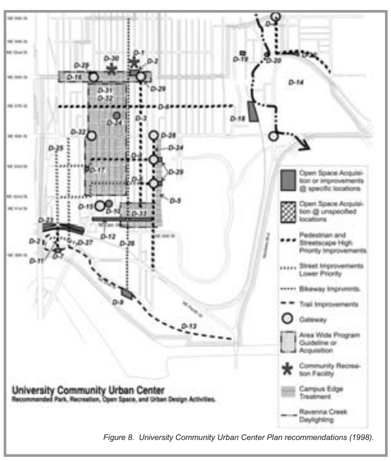
Developing the Action Strategy

The *Action Strategy* includes 47 individual projects in the University Area. While many of the projects have been carried over from the 2002 UATS plan, the *Action Strategy* also took a new look at existing and future transportation needs. Study tasks included:

- Reviewing past and current plans and the UATS recommendations
- Working with the community and key stakeholders
- Updating data on existing conditions to 2007
- Establishing performance measures and thresholds for each mode of travel
- Forecasting 2030 traffic conditions
- Identifying and evaluating system improvements
- Prioritizing recommended projects
- Estimating costs and identifying potential sources of funding

Relevant plans & studies

The 2002 UATS study built upon a host of prior planning related to land use and transportation in the University Area. The Action Strategy reviewed these previous efforts and incorporated the latest information from more recent and on-going planning efforts. The studies and plans that are key to the development of the Action Strategy include:



The Action Strategy incorporates and builds upon many recommendations from past planning efforts, including the University Community neighborhood plan

University District Transportation Planning Program (1998) includes a set of recommendations for improving vehicle and transit operations along congested corridors.

Montlake/Pacific Circulation Study (1992) has recommendations for improvements on NE Pacific Street.

University Community Urban Center Plan (1997-1998), developed through the City's Neighborhood Planning Office, recommends improvements to serve pedestrians, bicyclists and transit users.

Roosevelt Neighborhood Plan (2006), calls for the development of a compact, active, pedestrian-friendly mixed core around the light rail station, establishment of a residential parking zone, and other transportation improvements to support the neighborhood business district.

University of Washington Master Plan – Transportation Analysis (2000), analyzed the transportation impacts associated with the University's projected growth out to 2012.

Transportation Strategic Plan (TSP) (updated 2004). The City adopted the TSP in 1998 as a guide for managing the City's transportation system and for implementing the vision of the Seattle Comprehensive Plan. The TSP includes street classifications, travel data, and dozens of specific strategies for prioritizing improvements to Seattle's transportation network.

Seattle Transit Plan (2005) designates a set of arterial roadways as the Urban Village Transit Network (UVTN), which is intended to prioritize investments for providing a fast, frequent and reliable transit system between the city's urban villages and within its urban centers.

University Parks Plan (2005) highlights the character of existing parks and identifies new locations and strategies for expanding the open space system, including recommendations related to the Brooklyn Ave Neighborhood Green Street concept.

Freight Mobility Strategic Action Plan (2005) contains short and long-term recommendations for maintaining freight mobility and meeting the goals of the City's Comprehensive Plan and the TSP. In the University Area, NE Pacific Street and the Montlake Bridge are identified as part of the major truck street network.

SR 520 Bridge Replacement and HOV Project (on-going). The design of a replacement for the current SR 520 bridge and freeway connections is still in flux, particularly with regards to the location and nature of the bridge approaches. The current Preferred Alternative is a six lane facility with two general-purpose lanes and one HOV lane in each direction, plus a shared bicycle and pedestrian trail.

Sound Transit University Link & North Link. Sound Transit is fully-funded to extend its light rail transit system from downtown Seattle to the University Area with an underground station at Husky Stadium. Called the University Link, the extension is scheduled to begin service in 2016. Together with a station on Capitol Hill, the University Link is expected to increase light rail ridership by 70,000, and reduce transit times between the University of Washington and downtown to 9 minutes. As part of Sound Transit 2, the North Link phase of light rail is planning additional underground stations for Brooklyn Ave NE at NE 45th St and 12th Ave NE at NE 65th St. While not currently funded, the preferred alignment analysis, preliminary station designs, and ridership forecasts exist as part of the North Link Final Supplemental Environmental Impact Statement (FSEIS).

Seattle Streetcar Network Plan (2008). SDOT's 2008 Seattle Streetcar Network Plan includes a potential option to extend the South Lake Union Streetcar along Eastlake Ave into the University Area. From the University Bridge to Campus Parkway, the conceptual alternative includes heading south along Brooklyn Ave to the UW Medical Center area along NE Pacific St, and then back north along University Way through the heart of the University District to NE 50th St. This most recent planning effort updated earlier streetcar network planning from 2004, and a more technical analysis of route options from 2006.

Seattle Bicycle Master Plan (2007) will greatly expand bike facilities throughout the city, to increase bicycling and improve safety. A number of the plan's recommendations were considered and refined and have been included in the *Action Strategy*.

Seattle Pedestrian Master Plan (ongoing, expected final 2009). The *Action Strategy* includes a number of pedestrian improvements and pedestrian level-of-service analysis which can be rolled into the Pedestrian Master Plan's project recommendations.

Public Outreach

The original University Area Transportation Study (UATS), completed in 2002, was prepared with the help of a broad range of stakeholders representing resident, business and institutional interests, who assisted in identifying issues, and proposing and prioritizing projects. The *Action Strategy* update effort continued this public outreach, from the earliest stages of the project through to the final report, once again engaging people in identifying issues, developing project recommendations and establishing priorities.

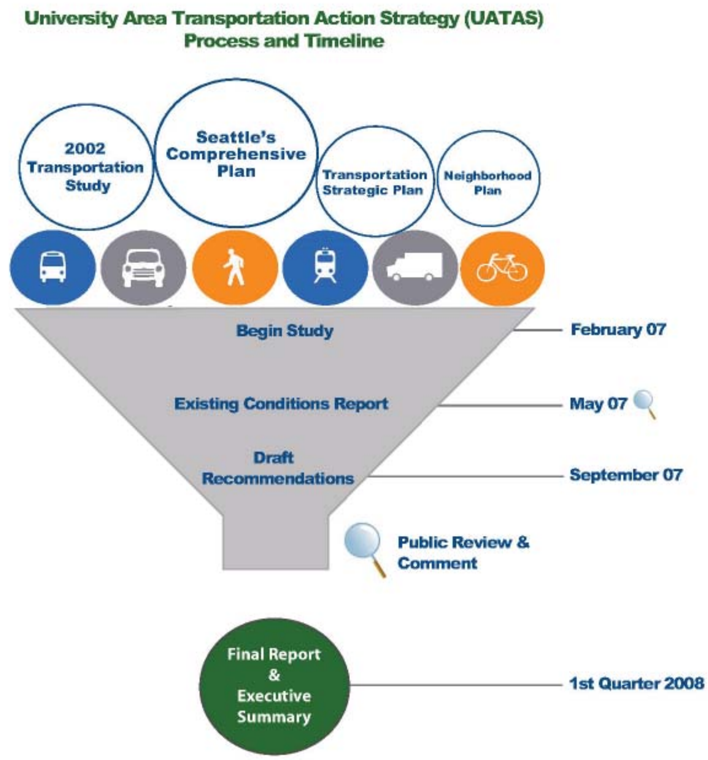
As part of Action Strategy outreach efforts, SDOT staff hosted a booth and solicited public comments for two days at the annual University District Street Fair

The **goals** of the public outreach efforts were to:

- Inform stakeholders about the study update
- Obtain input regarding key issues and proposed strategies, focusing on changes since the 2002 plan
- Build consensus for strategy recommendations.
- Manage expectations by building on the previous study and focusing on transportation projects needed to accommodate expected growth and meet the City's planning, transportation and climate change goals.

Given that the *Action Strategy* is an update, rather than a new study, outreach focused on existing, organized stakeholders groups. These included: neighborhood councils, associations and chambers of commerce; partner transportation agencies; and the

University of Washington. In addition, the general public and students in particular (most of whom would not have been living in the area five years ago) were encouraged to review and comment on proposed plans through articles in the UW Daily and North Seattle Herald, the project's website, a booth at the University Street Fair, and a public open house.



Public outreach was organized around 4 project milestones:

1. Project Kick-Off
2. Production of an Existing and Future Conditions Report
3. Draft List of Project Improvement Concepts
4. Final Report

At each of these milestones, SDOT staff and consultants contacted and/or met with community stakeholders to provide project information and solicit feedback. Refer to **Appendix J** for more details.

Existing & Future Conditions

The project team updated the UATS information about existing traffic, collisions, bus operations and transportation issues to ensure that the *Action Strategy* reflects the existing needs of the University Area. The analysis assembled a variety of available data that identified existing problem areas and changes in the transportation network that have occurred since the 2002 plan. The project team did extensive field verification from confirming sidewalk widths to reviewing vehicle queuing at particular intersections. The intent of this effort was to gain a strong understanding of the transportation system as it currently functions.

Once the City's travel demand model was updated to reflect current conditions, household and employment growth forecasts - as well as assumptions of specific future transportation investments - were added to this model to forecast future traffic conditions for 2030. In forecasting future conditions, the City assumes a SR 520 bridge replacement with two lanes of additional HOV traffic capacity but does not assume changes to the "interchange" location south of the Montlake Bridge. Model assumptions also include a 520 bridge toll and direct access ramps for HOV's. Light rail service is also assumed with three new stations at Husky Stadium, NE 43rd Street/Brooklyn Avenue and NE 65th Street/12th Avenue.

Details on the land use and employment growth forecasts, future transportation investment assumptions, and specific travel model outputs can be found in **Appendix C and G**.

Performance Measures/ Thresholds

Performance measures and thresholds were developed for pedestrians, bicyclists, transit and vehicles. These performance measures were used to evaluate existing problem areas and identify future needs. For each performance measure, an 'acceptable' threshold was defined. Where conditions fell below the threshold they were mapped by mode to highlight problem areas. A more detailed discussion of performance measures and thresholds by each mode is included in **Appendix A**.

Project Proposals

In addition to the detailed performance analyses for each mode, ideas for transportation projects were developed from a variety of sources, including suggestions from stakeholders and past planning efforts. Not all of the ideas the project team considered moved forward to become recommendations; each project was assessed with regards to costs, benefits, feasibility and partnership requirements and opportunities. Projects that were too costly, difficult to implement, or provided too little benefit fell by the wayside. The final set of recommended projects had to meet several criteria:

- Improve mobility, sustainability, safety ,access and choice
- Improve a significant problem that benefits a significant number of users
- Can realistically be implemented within the constraints of available right-of-way, adjacent land uses, and the need for coordination and cooperation with other public and private interests

Project Prioritization

Recommended projects were prioritized depending on how well the project met seven evaluation criteria, consistent with the method used by SDOT to prioritize projects citywide. The criteria are:

- Safety
- Mobility
- Preserving or Maintaining Infrastructure
- Cost Effectiveness or Cost Avoidance
- Supports Comprehensive Plan Urban Village Strategy
- Improving Environment
- Economic Development

Once scored, project staff grouped projects into 4 categories:

- **Low Cost/Early Implementation** projects that may be implemented relatively easily due to modest cost and low levels of complexity.

- **High Priority** projects that address major transportation issues and have a high benefit to the study area, but will require effort to obtain necessary funding & coordination.

- **Medium Priority** projects, that while beneficial to the area's transportation system, may not be able to compete with citywide priorities at this time or may address an anticipated - rather than existing - transportation need.

- **Partnership** projects that require coordination and cooperation with a partner agency. Many of these projects will likely need to be associated with larger actions, such as the SR 520 bridge replacement or improvements to the I-5 corridor, if they are to be implemented.

Identifying Potential Funding

The final step in developing the *Action Strategy* was to identify costs and funding sources that will be available for University Area projects. The project team looked at the amounts and types of funds that may be available citywide between now and 2030 and estimated a range of revenues that could potentially fund University *Action Strategy* project recommendations.

Section 2

Modes

Modes

Modes are the different ways that people and goods travel, including vehicles, freight, transit, bicycling & walking.

The City of Seattle's Comprehensive Plan and Transportation Strategic Plan make it clear in their goals, policies and objectives that the historic emphasis on moving cars (at the expense of improving other modes) is over. Today, the goal of Seattle's transportation professionals is to 'move people and goods,' a small but important distinction that recognizes our inability to build our way out of traffic congestion without investing in transit and non-motorized transportation.

Creating Balance

Decades of investment focused on maximizing vehicle capacity has created an imbalanced transportation system. By creating incentives for driving at the expense of transportation choices, these investments have put in place artificial barriers for walking, biking, and taking transit. Achieving a balanced transportation system will require a very strong emphasis on removing these barriers over the next several decades. Providing viable alternatives to driving alone is also critical to achieving the goals of the Mayor's Climate Action Plan and the shared vision of Seattle as a sustainable city.

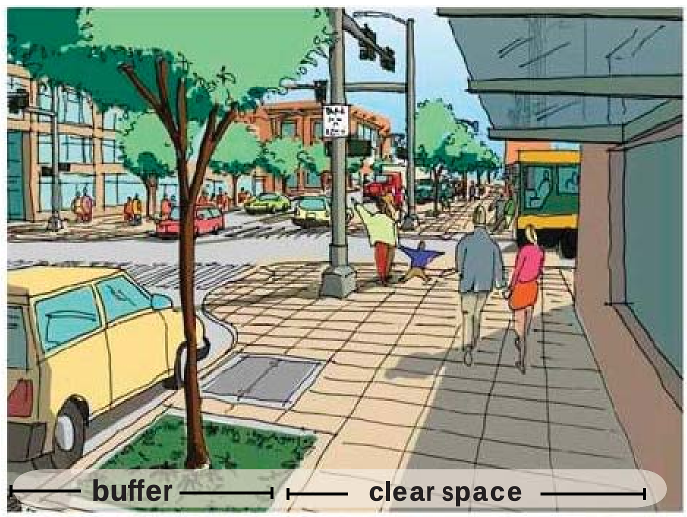
Despite current and expected growth in population and jobs within Seattle, much of the basic street infrastructure is not likely to change very much. The potential for new freeways, highways and major arterials is extremely limited, while widening existing streets is increasingly difficult, expensive, and disruptive to existing neighborhoods and businesses. The City simply will not be able to build its way out of traffic congestion. Therefore, as more Seattle residents, employees, and commerce need to get around town, the City will have to use its public rights-of-way much more efficiently than it has in the past.

There is a strong and growing desire for people in the city to rethink the ways we live, work and shop. The Comprehensive Plan introduced many new concepts when it was developed well over a decade ago, with many citizens unfamiliar with the concept of "urban villages." Now, many people whose neighborhoods weren't designated as urban villages are asking to become one - a recognition that even single-family areas can be a part of vibrant neighborhoods, places where as walk out the front door, they can run into their neighbors on the sidewalk, access important neighborhood services, or enjoy a great variety of places to go and things to see and do - all conveniently close to home.

Walking

In the University Area, walking is one of the primary ways people get around. **Of those people living in the urban center, more walk to work than drive alone** – 35% vs. 30%. Nearly one in four of all peak period trips to and from the University of Washington are made on foot.

Of the 47 projects recommended in this study, 28 are targeted to improve conditions for people who walk. These projects will widen sidewalks, add trail connections, improve street crossings, increase safety and reduce the wait at signals. Projects range from adding curb bulbs at intersections to developing a new trail connection from the University Campus to the Burke-Gilman Trail. Taken together, the projects will improve pedestrian safety, and make walking more convenient and enjoyable for more people.



Evaluating walking

This study established a set of performance measures and thresholds for pedestrians including:

- Width of the walking space (clear space)
- Distance between walkers and moving vehicles (buffer space)
- Ease of crossing the street at intersections, including how long people have to wait to cross and how many vehicles make right and left turns across the crosswalk
- Safety (collision history)

Figure 3: Pedestrian Sidewalk Deficiencies (2007)

Based on 5 factors of pedestrian safety and comfort, the University Area Transportation Action Strategy has identified various deficiencies within the pedestrian transportation network, represented above.

Walking conditions today

In general, the University Area has a relatively high-quality environment for pedestrians. Almost all streets have sidewalks on both sides and pedestrian crossings are well marked. Many corridors, such as University Way, have sidewalk widths that are appropriate to the foot traffic they serve. On the other hand, there are also many places where sidewalks don't meet 'acceptable' thresholds and where crossings could be improved. **Figure 3** shows the areas where pedestrian facilities are not adequate.

Sidewalks and traffic buffers

A good pedestrian environment includes adequate space to walk and pass as well as a separation, or buffer, from moving vehicles. Just as roads have been widened to accommodate more car traffic over the years, now Seattle's sidewalks need to be widened to encourage and serve more pedestrians. The walking space should be clear of objects and be at least six feet wide in order to be accessible, with wider sidewalks in busier areas. The areas occupied by tree pits and street furniture are not counted within the six foot minimum.

The distance between where people walk and moving traffic is the buffer space, which is generally a combination of parked cars and/or planting strips. When parking is not allowed during peak hours on busy streets, removing the parking lane and turning it into a travel lane removes an important safety buffer for pedestrians, which must be balanced against the need for more capacity for vehicles during the peak travel times.

Almost all of the heavily traveled streets in the study area provide adequate clear walking space; most, however, do not have enough buffer space, usually due to a lack of planting strips or limits to on-street parking.

Crossing the street

Delay: Walking should be convenient without unnecessary delays. If, for example, a person walking a mile catches a red light at every intersection, a 15-20 minute walk could easily lengthen into a 30-40 minute walk. Most of the signalized intersections in the study area have complete signal cycles under two minutes, meaning that the light turns green in each direction about once every minute. Where there is a separate signal phase for vehicles turning left, the total cycle time can be longer.

Overall, twelve intersections fail to meet acceptable thresholds for pedestrian delay; 5 are on Brooklyn Ave NE - a "Neighborhood Green Street" which has higher expectations for pedestrian comfort, while 4 are located along Roosevelt Way - a major north/south arterial that creates barriers for east/west pedestrian travel. While few opportunities were identified to reduce pedestrian delay at these locations, the *Action Strategy* used this analysis to help prioritize other pedestrian improvements along these corridors.

Pedestrian-vehicle conflicts: Pedestrians must use care while in a crosswalk to avoid left and right turning vehicles, even with a "walk" signal. "Pedestrian-vehicle conflict" is a measure of the number of vehicles turning across the crosswalk during the time pedestrians have a walk signal. Twelve intersections, located across the study area fail to meet conflict thresholds, which vary based on the type of street.

Safety: Compared to other urban areas in the city, the University Area is a relatively safe place to walk. Crossing the street, however, is still a challenging part of a pedestrian's journey and safety concerns are real. Between 2004 and 2006, 46 pedestrians in the study area were hit by vehicles and one was killed, all while crossing a street. More than half of the collisions (24 out of 46) occurred at busy intersections at the junction of two major roadways. About one in four collisions happened at a mid-block location rather than at an intersection. Three intersections had three collisions each:

- NE 45th St at 11th Ave NE
- NE 45th St at Roosevelt Way NE
- Roosevelt Way NE at NE 65th St

Burke-Gilman Trail

The Burke-Gilman Trail is a major transportation corridor for bicyclists and pedestrians. Volumes are particularly concentrated near the University of Washington, where the trail forms a loop around the east and south edges of the University, allowing access to many parts of the campus. Staircases, pedestrian bridges, and smaller trails connect from campus buildings to the Burke-Gilman Trail.

The evaluation of the Burke-Gilman Trail focused on identifying locations where conflicts may occur where the trail crosses a road. Another focus was identifying where there are missing or poor connections between the trail and major destinations. A potential study of Burke-Gilman Trail by the University of Washington may take a comprehensive look at trail issues and make specific recommendations for improvements to the trail.

Pedestrian Master Plan

Having completed the Seattle Bicycle Master Plan, SDOT is now in the midst of a Pedestrian Master Plan process, which will define actions to make Seattle the most walkable city in the nation. The plan will use the principles of the "5 E's", Education, Engineering, Enforcement, Encouragement and Evaluation, to:

- Get more people walking.
- Reduce the number and severity of crashes involving pedestrians.
- Engage all of Seattle in a meaningful dialogue about what is needed to create and connect walkable urban villages with important destinations.

Bicycling

Bicycle use is high throughout the study area with the highest use near the University of Washington campus and on the Burke-Gilman Trail. According to the University, **approximately 4,000 students and staff bicycle to campus**. The City recently completed the Seattle Bicycle Master Plan for the entire city. The project team used the plan's recommendations and added greater detail to key projects for the University Area.

Bicycle features are included in 23 of the recommended projects. These projects add bicycle lanes and sharrows, improve trail crossings, create better connections and increase bicyclist safety.

Evaluating bicycling

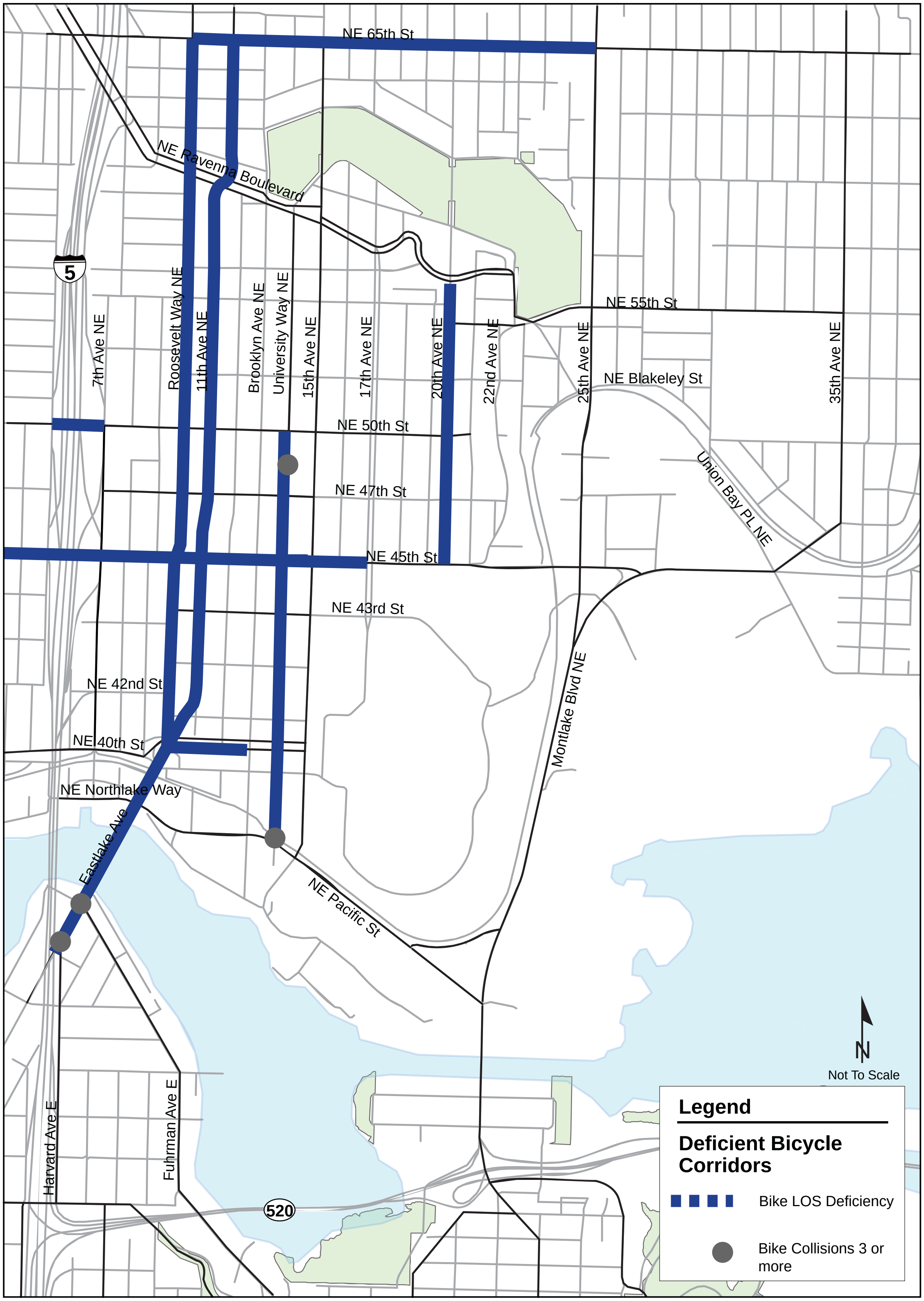
A bicyclist is more likely to ride on a street when the rider feels safe. While some experienced riders don't mind "mixing-it-up" with heavy traffic, most bicyclists prefer a street or corridor where traffic volumes and speeds are lower, and/or where space is set aside for bicycles.

The Bicycle Level of Service (BLOS) index measures the comfort level of a street for bicyclists. The BLOS includes daily traffic, speed limits, amount of on-street parking and the number and width of travel lanes. The project team applied the BLOS to each of the bicycle corridors in the study area as designated in the Seattle Bicycle Master Plan. In addition, the project team conducted a safety evaluation based on bicycle-vehicle collisions reported between 2004 and 2006.

Other than the Burke-Gilman Trail and the bicycle lanes on the University Bridge and along Ravenna Blvd NE, there are few dedicated facilities in the study area for bicyclists. While the Bicycle Master Plan will go a long way to bringing these new facilities, a bicycle 'network' that connects to the area's major destinations does not yet exist.

Figure 4 shows the bicycle corridors that fall below the acceptable BLOS, as well as locations where three or more bicycle-vehicle collisions occurred in the last three years.

Figure 4: Bicycle Network Deficiencies (2007)



Based on national Bicycle Level-of-Service (BLOS) methodology, the Action Strategy located deficiencies within the bicycle network for the University Area as designated by the Bicycle Master Plan. Facilities located on the University of Washington campus and on off-street corridors such as the Burke Gilman Trail were not analyzed.

Bicycling conditions today

With the exception of the Burke Gilman Trail, vehicles and bicycles in the University Area generally share the same roadways. Bicyclists generally ride along the edge of the roadway or along the side of a row of parked cars. About half of the study area streets commonly used by bicyclists were rated below the acceptable threshold for street adequacy. The two lowest rated streets are NE 45th Street and NE 50th Street, where there are high levels of bicyclist discomfort and high levels of bicycle-vehicle conflicts.

Street adequacy: Conflicts between vehicles and bicycles can occur where riders need to cross the stream of traffic to make left turns, where off-street pathways cross streets, where the roadway is not wide enough to comfortably accommodate both modes, or where vehicles are moving at a much higher speed than bicyclists.

Safety: City records show a concentration of bicycle-vehicle collisions occur near the intersection of Eastlake Avenue E/Fuhrman Avenue E, near the south end of the University Bridge. These collisions are related to bicyclists moving across traffic lanes to turn left onto Harvard Avenue E. Other high collision locations include the Burke-Gilman Trail crossings near the intersection of NE Pacific Street/University Way NE and at Blakeley Street/25th Avenue NE.

Bicycle Master Plan

The Seattle Bicycle Master Plan has created a vision for the University Area. The plan's major goals are to:

* Increase use of bicycling in Seattle for all trip purposes. Triple the amount of bicycling in Seattle by 2017

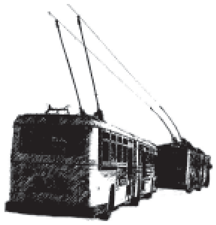
▪ Improve safety of bicyclists throughout Seattle. Reduce the rate of bicycle crashes by one-third by 2017

To achieve these goals, the Bicycle Master Plan has established a carefully planned set of projects to create a complete bicycle network throughout the city and has established policies to make bicycling more convenient, to promote bicycling and educate bicyclists, and to secure funding to implement the plan.

Figure 5: Bicycle Master Plan - Recommended Facilities

Most of the 2007 Bicycle Master Plan projects are not specifically called out in the Action Strategy: they are assumed to be "implemented" by the Action Strategy's 2030 timeframe. However, the Action Strategy does provide recommendations to refine and/or address unresolved issues and project alternatives identified by the Bicycle Master Plan, as well as other multi-modal projects that provide benefits to bicyclists.

Transit



The University Area enjoys one of the highest levels of transit ridership in the region. King County Metro, Community Transit, Sound Transit and the University of Washington collectively operate 51 transit routes within the area. The University of Washington's U-PASS program, which provides all students, faculty, and staff with a bus pass (unless they actively opt out), has increased ridership on King County Metro routes to the point where U-Pass trips account for nearly percent10% of all of Metro's riders. **Nearly 40% of students and staff commute to the UW campus by bus**.

Evaluating transit

The Seattle Transit Plan establishes five performance measures and benchmarks (or goals) for the Urban Village Transit Network (UVTN) corridors:

- **Frequency**: Every 7 to 15 minutes depending on route
- **Span of Service**: 16 to 24 hours a day
- **Passenger Loading**: Averaged over the day, most passengers should find a seat
- **Reliability**: Trips should be no more than 3 minutes late
- **Speed**: On average, busses should travel at greater than 50% of the posted speed limit

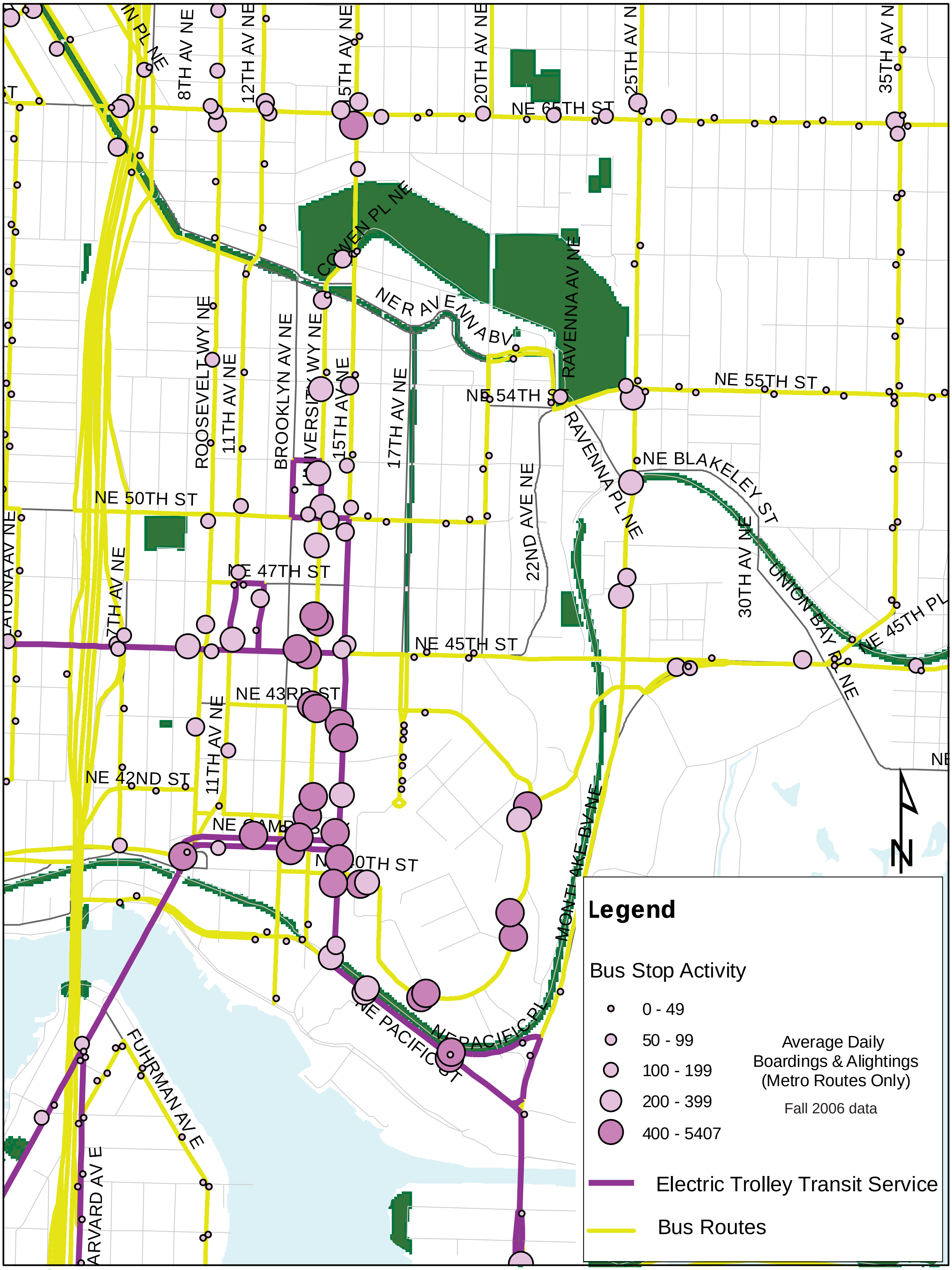
In the University Area, all bus routes currently operate on UVTN corridors. These corridors, which are identified in **Figure 6**, include:

- 15th Avenue NE
- NE Pacific Street
- University Way NE
- Eastlake Avenue
- Roosevelt Way NE
- 11th/12th Avenue NE
- 35th Avenue NE
- NE 65th Street
- NE 42nd Street
- NE Campus Parkway
- Stevens Way and Pend Oreille Rd (University of Washington campus)

Transit conditions today

Meeting the UVTN thresholds requires cooperation between the transit operators and the City. While King County Metro, Community Transit and Sound Transit are responsible for setting service hours and schedules, the ability of the buses to meet speed and reliability thresholds depends significantly on the operating conditions of city streets. Furthermore, when buses are consistently delayed in traffic, it costs more to provide frequent service as each bus takes longer to make a round trip.

Figure 6: Existing Transit Routes and Stop Activity



Speed & Reliability: The project team focused on projects to improve street operating conditions for buses that will improve transit speed and reliability. **Figure 7** show the transit corridors that fail to meet the UVTN travel speed thresholds.

When buses operate mixed with high volumes of traffic, slow speeds, plus delays while waiting to merge back into traffic, slow bus service. When buses stop to drop off and pick up passengers in the traffic lane, it speeds transit but slows other traffic, as drivers must wait behind the bus or create more congestion by changing lanes to avoid the delay.

Three primary transit corridors in the study area, NE 45th Street, NE Pacific Street and 15th Avenue NE, have very low travel speeds for buses. Other corridors with deficient speeds are Roosevelt Way NE and 11th/12th Avenue NE. Montlake Boulevard NE, although a designated UVTN corridor, has only limited transit service, so its very slow travel speeds do not affect many riders.

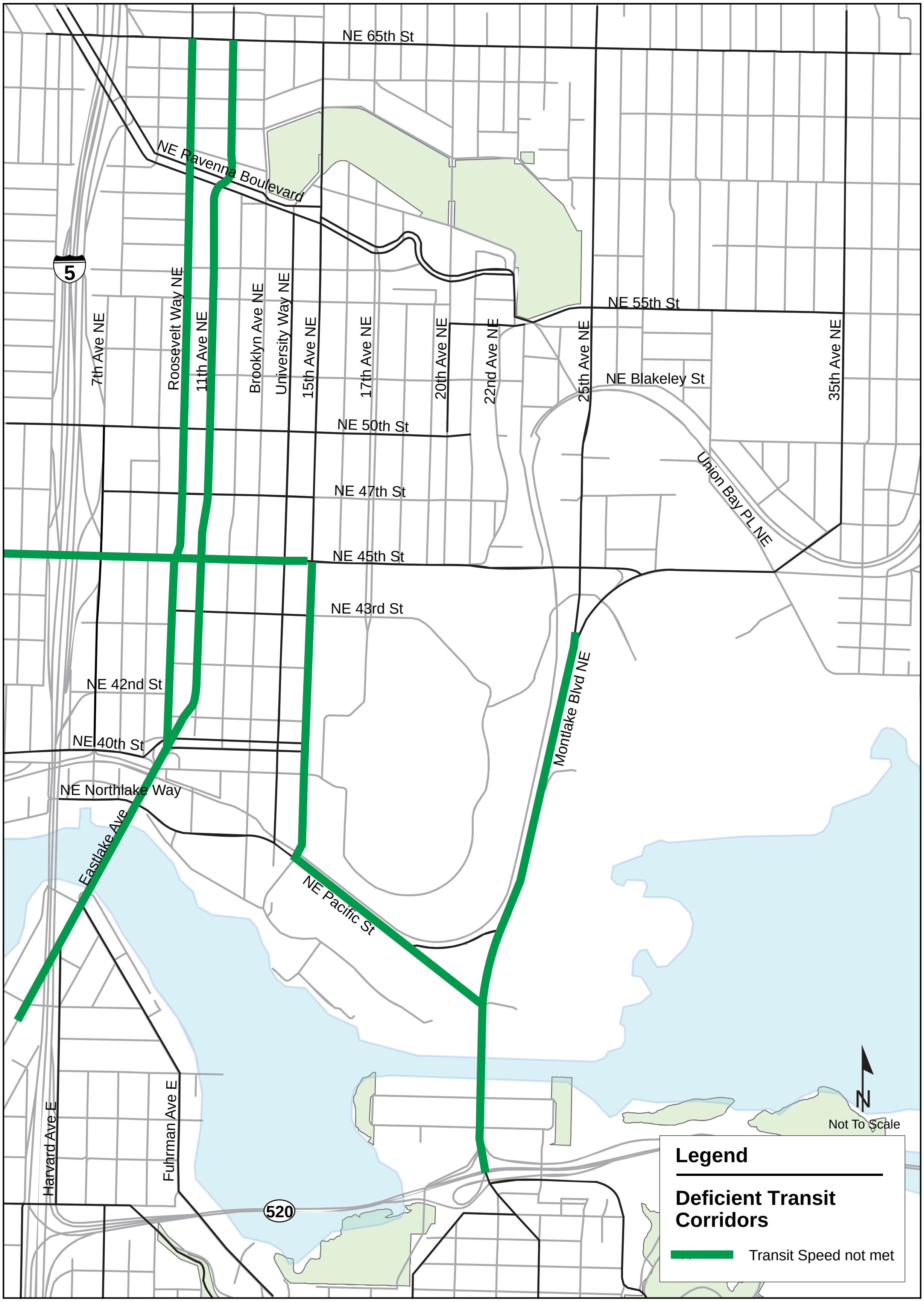
For a passenger waiting for a bus, service reliability is an important factor. To be reliable, buses should arrive within a few minutes of their posted schedule. Reliability issues are normally related traffic conditions, such as traffic congestion and crashes. In many cases, transit agencies will adjust the posted schedule to match anticipated traffic conditions. Of the UVTN corridors in the University area, nine fail to meet the transit reliability threshold. The worst corridor in terms of transit reliability is NE 45th St where traffic congestion and slow travel speeds affect the ability of buses to get to their stop locations on-time.

Future transit conditions

By 2030, the North Link Light Rail extension is expected to be constructed providing frequent, fast, reliable light rail service and the opportunity to reconfigure bus service to bring passengers to and from the three University Area stations. The North Link Final Supplemental EIS estimates a reduction in travel time between the University District and downtown Seattle from 22 minutes (currently by bus) to 8 minutes when light rail operation begins. The FSEIS also projects daily light rail boarding as 3,500 riders at the Roosevelt Station, 11,500 at the Brooklyn Station, and 21,500 at the University of Washington Station.

By 2030, however, without additional improvements, the travel speeds on roadways serving as primary bus transit corridors are projected to operate poorly, with several transit corridors having average travel speeds below 10 mph. These corridors include NE Pacific Street, NE 45th Street, 7th Avenue NE and 15th Avenue NE.

Figure 7: Transit Speed Deficiencies (2007)



The Action Strategy used the speed & reliability performance measures from the Seattle Transit Plan to analyze transit operations in the University Area.

Sound Transit

Preliminary design for the underground platform level at Husky Stadium Station.

Central Link

The first phase of development for Sound Transit's light rail system (Link) is set to begin operation from Sea-Tac airport to Westlake Station in 2009. As part of this first phase, there will be no major changes to transit (bus) routes operated by King County Metro in the greater University Area.

University Link

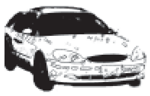
The second phase of Link light rail will bring service to the southern portion of the University Area, with new underground stations on Capitol Hill (Broadway between John St and Denny St) and at Husky Stadium (Montlake Blvd and Pacific St). Construction is set to begin in 2008 with the start of service expected in 2016.

Sound Transit 2

An extension of light rail north of Husky Stadium Station (North Link) has been planned as part of a larger "Sound Transit 2" package, which would include expanded light rail, Bus Rapid Transit (BRT), 'Sounder' commuter rail, and a new streetcar line from King Street Station to Capital Hill.

In November 2007, a proposal from Sound Transit to fund 'Sound Transit 2' was defeated as part of a larger regional transportation ballot measure known as the "Roads & Transit" package. In July 2008, Sound Transit board members approved a revised package that will go on the 2008 ballot, which still includes expanding light rail service through the University Area, with stations at Brooklyn Ave in the University District and near 65th Ave in the Roosevelt neighborhood. The *Action Strategy* assumes these light rail connections will be in place by the 2030 timeframe, with optimistic projections having service reach these areas as early as 2018.

Vehicles



Nineteen projects recommended in this plan are targeted primarily to drivers. Of these, fifteen are designed to help speed traffic and reduce delays, while four focus on safety.

The analysis of conditions for vehicles typically measures and evaluates traffic during the worst hour of the day which is normally during the evening commute (the "peak" period). During the PM peak hour, 4,900 vehicles travel on Montlake Boulevard NE; 3,200 vehicles cross the University Bridge; and 2,300 travel on NE Pacific Street. In addition to the daily congestion associated with peak travel, traffic is also particularly heavy during events such as football games and festivals.

Evaluating vehicles

There is a long-established methodology for the evaluation of vehicle traffic conditions. Traffic vehicle counts, signal timing and phasing, percentages of truck and bus traffic are all inputs into computer models which calculate the Level of Service (LOS) for arterials and at individual intersections. These LOS measures allow traffic engineers to identify existing problems and show what the effects would be of investing in roadway improvements. In addition to LOS, the project team also evaluated vehicle collisions between 2004 and 2006.

Vehicle conditions today

Along a few of the corridors in the University Area, traffic can be congested and slow-moving for many hours each day, although on others traffic moves smoothly off-peak and acceptably in the peak. Much of the congestion in the area is related to vehicles traveling to and from I-5 and SR 520. Congestion on these regional facilities can also worsen University Area traffic by backing up traffic onto city streets and diverting trips onto arterials. In the University Area, as elsewhere in the city, topography and water have limited the ability to construct a simple grid system of evenly spaced arterials, placing a larger burden on those streets that do connect across longer distances. In addition to Lake Washington, the Ship Canal, Lake Union and various small gulches, the University of Washington campus limits through routes to the edges of the campus. I-5 also creates an additional barrier, with widely spaced overpasses which tend to funnel through traffic.

Figure 8 shows the roads and intersections that fall below an acceptable LOS threshold during the evening peak hour and the locations where high numbers of vehicle collisions have occurred.

Freight Corridors: The NE Northlake Way – NE Pacific Street – Montlake Bridge Corridor is the only designated Major Truck Street in the University Area. Major Truck Streets serve as primary routes for transporting goods within the City's street system. Freight movements along this corridor are largely related to maritime industries located along the north shore of Lake Union and in Ballard. During peak hours, this is a highly congested corridor with eastbound movements on NE Pacific Street operating at 6 mph.

Safety: Intersection collisions within the University Area are well below the average compared to other areas in the City. During 2004-2006, no intersections had more than five annual collisions, suggesting that slower travel speeds may reduce the number of collisions. Mid-block collisions between intersections, however, were higher than the 5 per year threshold and are a concern. Three mid-block locations along Montlake Boulevard and two locations along NE 45th Street had five or more collisions per year.

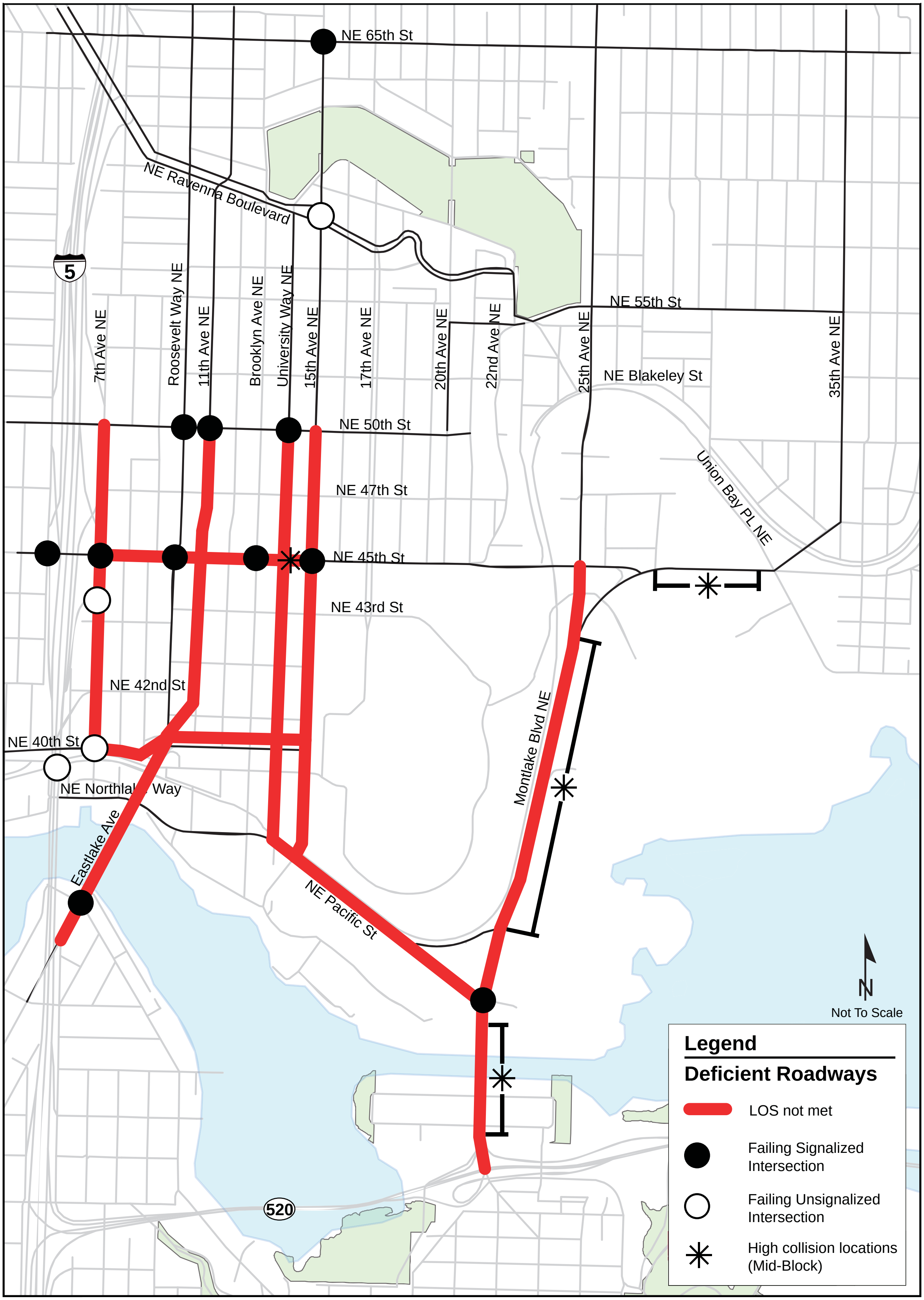
Travel Speeds: Congestion and pedestrian activity both contribute to relatively slow speeds on many streets within the study area. Montlake Boulevard in the southbound direction is the worst performing arterial with peak hour travel speeds averaging 3 mph – just under the average walking speed. In total, seven corridors operate below 10 mph in one or both directions during the evening peak hour:

- Montlake Boulevard from NE 45th Street to SR 520
- NE 40th Street from 15th Avenue NE to 7th Avenue NE
- NE Pacific St from University Way NE to Montlake Blvd
- University Way NE from NE Pacific Street to NE 50th St
- 7th Avenue NE from NE 40th Street to NE 45th St
- NE 45th Street from 7th Avenue NE to 15th Ave NE.
- 15th Avenue from NE 50th Street to NE Pacific St

Even during peak periods, 25th Avenue NE, 35th Avenue NE, NE Northlake Way and the sections of NE 45th Street east of 15th Avenue maintain an average travel speed of above 20 mph.

Intersections: Intersection operations and system-wide traffic congestion are strongly related. As the amount of traffic at an intersection increases, it becomes more difficult for an intersection to handle the traffic, to the point where the intersection "breaks down." When an intersection fails, drivers experience long delays, often waiting through two or three complete signal cycles. Impatient drivers may cut through adjacent residential areas creating neighborhood concerns. The analysis included all signalized intersections and unsignalized intersections where two arterial roadways meet. Some of the findings from the analysis of intersection operations are:

Figure 8: Vehicles Deficiencies (2007)



- Fifteen of the intersections studied operate below acceptable performance thresholds
- Five of the eight signals on NE 45th Street operate below the thresholds.
- During the PM peak hour, the all-way stop controlled intersections at NE 40th Street/7th Avenue NE and NE 40th Street/6th Avenue NE operate below thresholds
- Three out of the eight signals on NE 50th Street operate below thresholds
- The worst intersections include the signals at the I-5 ramps on NE 45th Street, Roosevelt Way/NE 45th St and the signal at NE Pacific St/Montlake Blvd NE

Future Vehicle Conditions

By using the City's traffic forecasting model, we can look ahead at future traffic conditions in 2030. The model includes changes in land use and employment and assumes Link light rail is operating and the SR 520 bridge replacement project is complete. Figure _-_ shows the University Area deficiencies in 2030.

Traffic will continue to grow within the University Area, particularly on streets that parallel corridors that operate below acceptable levels. In addition to the seven poor-performing corridors today, two additional corridors, NE Northlake Way and NE 50th St, are forecast to operate below the 10 mph threshold by 2030.

Intersection Operations

Traffic growth will continue to put pressure on intersection operations. The 2030 analysis shows nine new locations that are likely to operate below acceptable thresholds during the PM peak hour. Findings include:

- Along NE 45th St, the intersections at Union Bay Place/Mary Gates Memorial Drive and Montlake Boulevard NE will likely operate below thresholds.
- Brooklyn Ave NE will likely experience traffic growth, with deficient intersections at NE 50th St, NE 45th St, NE 43rd Street and Campus Parkway.
- Intersections at the junctions of heavily traveled streets such as NE Pacific St/15th Ave NE and NE 65th St/25th Ave NE will likely fall below thresholds.

Section

3

Projects By Location

Projects By Location

To respond to the challenges presented by existing and future transportation needs, the *Action Strategy* includes a list of projects that will provide more choices, improve mobility and safety, and will do so in a way that is sustainable to the University Area community and the City.

Project Selection

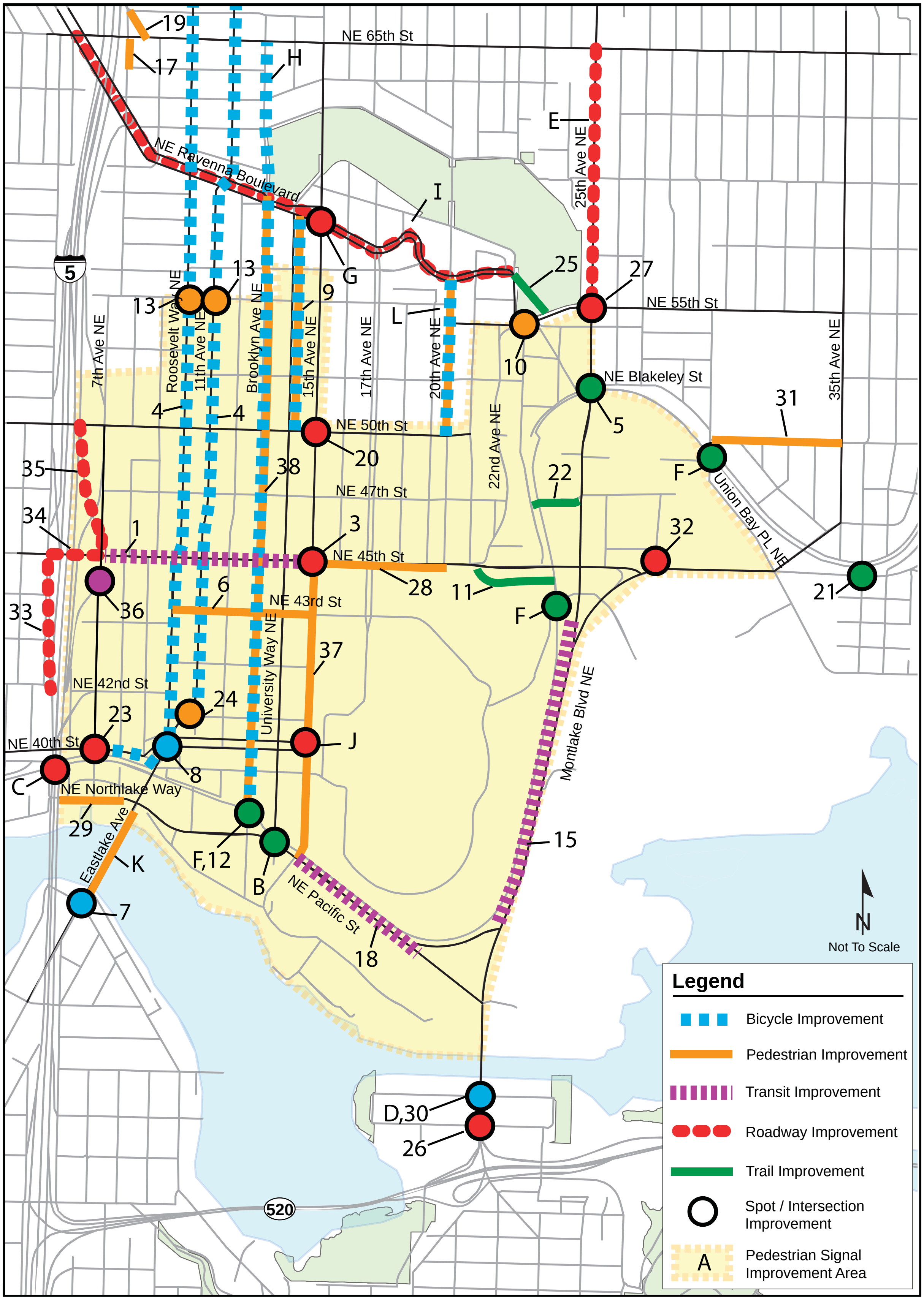
Each of the *Action Strategy* projects addresses a critical need or needs for the University Area. The recommended projects are more than a location-by-location response to the deficiencies identified by the performance measure analysis. They represent the thoughts and ideas of the community expressed during this project, as well as from past and on-going planning efforts. In some cases, identified deficiencies may not be solved by the *Action Strategy* projects, either because of high costs or competing interests. Only the best of these projects - those that meet the goals of mobility, sustainability, safety, access, and choice within reasonable constraints - were chosen for the *Action Strategy*.

The project team reviewed each proposed project based on four general criteria:

- Level of **community support**. Does the University Area community support the project?
- **Geographic equity**. Who does the project help and are overall project benefits distributed fairly across the University Area?
- Emerging **opportunities**. Does the project support a future opportunity such as the SR 520 bridge or North Link light rail?
- **Cost vs. Benefit**. Is the project important to the mobility of the University Area and can it be accomplished at a reasonable cost?

The selected projects are those that best reflected the four review criteria. Projects that were not selected may have had costs that were too high, whether in dollars or to the community, or benefits that were not deemed significant or likely. Other projects were included to meet community needs and goals that were not necessarily reflected in performance measures. All in all, the *Action Strategy* proposes a set of projects to promote a transportation system that will best meet the needs of the University Area

Figure 9 - Action Strategy Project Recommendations



The numbers and letters identifying each project correlate to the project numbers and categories that are in the projects by location description and the individual project sheets in Section 5.

and its communities. **Figure 9** shows the recommended projects for the University Area.

Project Organization

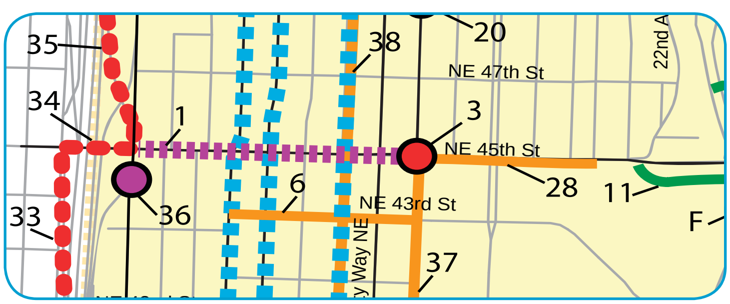
For the purposes of this report, the projects are grouped by a combination of geographic areas and corridors. The seven groupings used in this report are:

- **NE 45th St Corridor**
- **North/South Corridors**
  (Roosevelt/11th Ave, Brooklyn Ave NE, University Way NE and15th Ave NE)
- **University Bridge/Northlake Way/NE 40th St**
- **Ravenna/Roosevelt Area** (including 25th Ave NE)
- **Montlake Boulevard NE/NE Pacific St**
- **Burke-Gilman Trail**
- **Targeted Improvements**

In the following sections, the issues of the geographic areas and corridors are described, with each one followed by a list of recommended projects. In addition, other projects that affect the corridor or area are listed as Related Projects. Projects identified by letters A through K are the Early Implementation projects, that is, projects that are thought to be (relatively) easy to accomplish using existing funds. The other three categories of projects – High Priority, Medium Priority, and Partnership Projects – are identified on the individual "project sheets" in Section 4.

NE 45th Street

NE 45th Street is a critical street for moving vehicles, particularly transit vehicles moving east-west and for general purpose access to Interstate 5. Along its length, the character of the street changes considerably, from six-lanes east of 25th Ave NE, to three-lanes climbing up the viaduct at the edge of the campus, to a four-lane urban arterial through the University District.



The street is heavily congested, particularly during the evening commute when travel speeds drop to around 10 mph. By 2030 travel speeds are forecasted to be 7 mph in the westbound direction and 5 mph in the eastbound direction. The number of buses picking up and dropping off passengers will affect the amount traffic NE 45th St can handle.

Issues

Intersections operate below acceptable thresholds. Five of the eight intersections along NE 45th St between 15th Avenue NE and

I-5 operate poorly. At signalized intersections, the signals operate with a separate phase for vehicles turning left, which reduces the time available for the primary east-west and north-south flow of traffic.

The I-5 ramps and overcrossing create spillover traffic. West of the freeway, the dual turn lanes from NE 45th St to the southbound I-5 on-ramps are not efficiently used because there is only one, relatively short general purpose on-ramp available to store vehicles waiting to get on the freeway. Additionally, because the overcrossing is not wide enough to accommodate full-length left turn lanes, vehicles backup on NE 45th St blocking the through travel lanes.

Sidewalks along NE 45th St near the UW Campus are narrowed by streetlight poles, are in poor condition, and have insufficient width to accommodate pedestrian volumes and create a desirable walking environment along this important pedestrian corridor.

Project Recommendations

#1: Create a westbound lane for transit, business access and right turns only by removing left turn lanes and left turn signals and movements. The recommended project would start at University Way and end at the I-5 northbound ramps at 7th Ave NE. If additional transit travel time savings are needed, the lane could be started at 15th Ave NE. The project will benefit corridor travel times for both transit and vehicles by simplifying intersection signal operation and by separating buses and right turning movements from other traffic in the westbound direction.

#6: Widen the sidewalks and provide curb extensions along NE 43rd St in anticipation of the planned Brooklyn Station for Sound Transit light rail.

#28: ADd pedestrian refuge islands, and widen and repair the sidewalks on NE 45th St along the northern edge of the University of Washington campus.

#33: Create an additional southbound I-5 on-ramp lane to provide more vehicle storage and to gain full use of the dual left turn lanes on the NE 45th St freeway overcrossing.

#34: Expand the width of the NE 45th St overpass of I-5 to allow full length left turn lanes, bicycle lanes and improved sidewalks.

#35: Provide an additional northbound I-5 on-ramp lane to reduce traffic spillovers onto NE 45th St.

Related Projects

#36: Create a transit-only lane on 7th Ave NE to improve the crossing of the I-5 northbound off-ramps for buses and provide direct access to the NE 45th St transit facility and the I-5 northbound on-ramps.

#3: Extend the 15th Ave NE northbound-to-westbound left-turn pocket at NE 45th St and modify the signal timing to improve transit operations and reduce blocking problems for through traffic.

#11: Develop a pedestrian and bicycle path from the University of Washington campus to the Burke-Gilman Trail underneath the NE 45th St Viaduct.

#32: Install variable message signs near the junction of Montlake Boulevard and NE 45th St to better inform drivers of the relative travel times and delays in the two corridors.

Discussion: 45th St Transit Lane

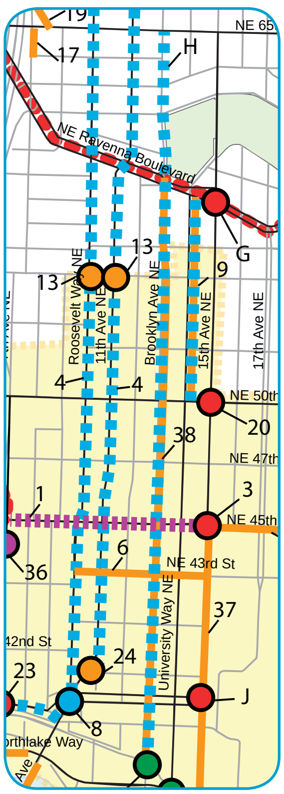
The current configuration between 7th Ave NE and University Way NE is two travel lanes in each direction, with left turn pockets at intersections. Left turns are not currently allowed at 11th Avenue NE (except for eastbound transit) and at University Way NE. The proposed change described in Project No. 1 would eliminate left turns along the corridor and create a westbound business access and transit lane. This discussion compares the advantages of the existing corridor configuration to that of the proposed project.

Current configuration: NE 45th St operates as the spine of the street network and provides access to several north-south arterials and side streets from a two-way-left turn lane (west of Roosevelt) or from striped turn pockets between Roosevelt Way NE and 11th Ave NE. If left turns are eliminated, drivers will have to find new routes to their destinations, either by making a series of right turns around the block to cross NE 45th St, or by using streets north and south of NE 45th St as primary access routes.

Transit and access lane: NE 45th St has peak hour travel speeds of 9 mph eastbound and 11 mph westbound. These speeds are a result of delays at intersections for vehicles turning left, for right turning vehicles waiting for pedestrians in the crosswalk, and buses stopped in the traffic lane to pick up and drop off passengers. The westbound transit and access lane would benefit corridor travel times for both transit and vehicles by simplifying intersection signal operation (eliminating the left turn signal phasing) and by separating vehicles turning right and buses from general westbound traffic.

Proposed Action: The benefits of the transit and access lane far outweigh the costs. The project team modeled the effect of the project on intersection and corridor operations and found that westbound vehicle travel times in 2030 would improve from 6.5 mph to 14 mph. Eastbound general lane travel times would also improve from 5 mph to 8 mph. Transit operations would also be faster, increasing the westbound transit lane travel speed to 16.0 mph. There may be increased traffic on NE 43rd St and NE 47th St from vehicles going around the block to "make" a left turn. The analysis found there is adequate capacity on these parallel streets to handle the total of about 300 trips that might be diverted from NE 45th St during the PM peak hour.

North/South Corridors



Major projects, supplemented by spot improvements, are recommended in all but one of the continuous north/south corridors in the study area. The north/south corridors evaluated in this analysis are:

- Roosevelt Way NE and 11th/12th Avenue NE
- Brooklyn Avenue NE
- University Way NE
- 15th Avenue NE

Corridor projects will add dedicated bicycle facilities, widen sidewalks and bus zones, provide high-quality urban design, and generally improve safety for all modes. Below is a list of project recommendations, the issues the projects address and, where applicable, a discussion of the relative advantages of alternative approaches for each corridor.

Roosevelt Way NE and 11th/12th Avenue NE

This corridor is a one-way 'couplet' with southbound traffic on Roosevelt Way and northbound traffic on 11th/12th Ave. Three projects address pedestrian, bicycle and transit safety, mobility and access in this corridor.

Issues

Traffic is moderate, has grown only slightly over the last decade, and operates acceptably at around 13 mph in the PM peak hour. By 2030, traffic is expected to increase by 700-900 vehicles in the PM peak hour, with peak travel speeds dropping to around 11 mph.

Parking along the street is important to businesses and residents. Parking is allowed on both sides of both streets except during commute hours when it is restricted on one side in the peak direction. North of 50th St, 11th and 12th Ave are mostly residential, but on Roosevelt Way small businesses along the length of the street rely on on-street parking for their customers.

Due to the gentle slopes and its connection to a direct route to downtown via the University Bridge, bicyclists are heavy users of the couplet. Riding on the couplet is not a comfortable experience, however, due to the volume of traffic and the lack of designated bike lanes.

When peak-hour restrictions are in effect, pedestrian crossing distances are long and uncomfortable. Particularly with many unsignallized intersections along these streets, improving east-west pedestrian safety by installing curb bulbs and pedestrian signals is a high priority.

Project Recommendations

#4: Create bicycle lanes and the opportunity for more sidewalk extensions on 11th/12th Ave NE and Roosevelt Way NE by eliminating peak period parking restrictions. At major intersections, such as NE 45th St and NE 50th St, continue to provide curbside turn lanes in order to maintain adequate vehicle capacity.

#13: Install curb extensions on the left side of Roosevelt Way and 11th Ave at NE 55th St to help pedestrians cross the street.

#24: Install a pedestrian signal and new crosswalks for people crossing 11th Ave NE at NE 41st St, to improve safety.

Related Projects

#8: Reconfigure and consolidate the northbound ramps from Eastlake Ave at the north end of the University Bridge. Construct new sidewalks along Eastlake Ave as it turns into 11th Ave NE.

Discussion: 2-way or couplet

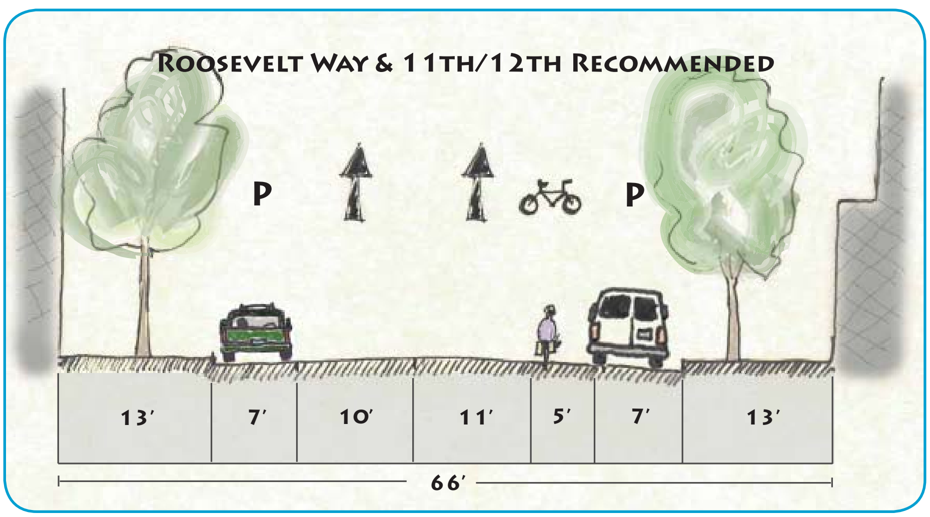
The Roosevelt Neighborhood Plan asks the City to consider eliminating the one-way couplet of Roosevelt Way and 11th/12th Ave by making both streets two-way. The intended benefit would be to improve business access for vehicles and provide a more pedestrian-friendly environment. In order to maintain vehicle capacity in the corridor, however, at least one of the two streets would need to be configured with multiple travel lanes and turn pockets to meet the expected traffic demand.

Two-way operation: Changing Roosevelt Way and 11th/12th Ave would simplify circulation patterns for drivers, particularly in the Roosevelt business district around NE 65th St; potentially calm traffic by reducing the number of through lanes; and improve street character by developing bicycle lanes and shortening pedestrian crossing distances.

The couplet: Retaining the one-way couplet would provide more vehicle capacity and faster transit times, primarily because of simpler intersection operations and the ability to make turns without opposing traffic; as well as more flexibility to configure both streets to work better for bikes and buses.

Proposed Action: Based on operational and cost-benefit analyses and public input on both options, the project team does not recommend converting these one-way streets to two-way operation. There are too many unknowns with the feasibility of two-way operation, the impact of displacing traffic, and whether the potential benefits of such a change would actually be realized.

The couplet currently is configured to move traffic with little consideration for pedestrians or bicycles. Parking is restricted during peak hours, resulting in three travel lanes in the peak direction along the length of the corridor. The third travel lane is primarily needed at major intersections such as NE 45th St and NE 50th St, where the peak traffic volumes are high. Along the remainder of the corridor, the *Action Strategy* recommends two through lanes with parking on both sides. Bicycle lanes would be striped along the outside lane of the roadway and pedestrian curb bulbs would be added to facilitate crossings. As needed at intersections, left and right turn pockets could be added now or in the future by restricting parking just prior to an intersection and not installing curb bulbs. In order to improve or maintain adequate transit speeds, in-lane bus stops could be constructed by widening sidewalks at these locations.



By allowing all-day parking on both sides of Roosevelt Way and 11th/12th Ave, a 5' bicycle lane can be added if travel lanes are slightly reconfigured. In addition to improved bicycle facilities, this project would also allow for sidewalk extensions ('curb bulbs') on both sides of the street, significantly improving pedestrian safety and comfort at key locations, including the Roosevelt Business District and at key bus stop locations.

Brooklyn Avenue NE

Brooklyn Avenue NE is a Neighborhood Green Street, a preferred biking route, and the home of a future light rail station between NE 43rd St and NE 45th St. Two projects, one short term and one long term, will help the street meet the needs of all users and function more effectively as a Green Street.

Issues

Traffic today is low, with only about 4,000-5,000 vehicles a day using the street. But the 2030 forecasts predict that there will be increased traffic which will result in a degraded pedestrian and bicycle experience along this corridor.

Many novice and local bicyclists currently use Brooklyn Ave, but there are no pavement markings or signs that designate this as an officially designated bicycle corridor.

The City has designated Brooklyn as a Neighborhood Green Street, but the width of the street may encourage speeding and the sidewalks need better protection from vehicle traffic.

Project Recommendations

H: Add bicycle sharrow pavement markings on Brooklyn to create an official bicycle corridor between Ravenna Blvd and the Burke-Gilman Trail.

#38: Develop an urban design/streetscape plan for making Brooklyn Ave a "real" Green Street, with features such as widened sidewalks, landscaping and appropriately scaled lighting.

University Way NE

"The Ave" went through a major streetscape improvement, south of NE 50th St, in early 2002. This project widened sidewalks, added street trees and low-level lighting, and improved pedestrian crossings. The northern portion of University Way NE (north of NE 50th St) was not included in this renovation.

Issues

Traffic volumes are low, with only about 3,000 vehicles a day using this stretch of University Way NE. Much of the traffic on the street is related to vehicle parking or transit.

Bicycle lanes are identified in the Bicycle Master Plan. There are no pavement markings that designate this as a bicycle corridor.

The street is a UVTN transit corridor that carries a number of heavily traveled bus routes, including the 70 series of Metro express routes to downtown.

Project Recommendations

#9 (Phase 1): Repair damaged sidewalk segments, and install pedestrian lighting and street trees along University Way north of NE 50th St. As part of this first phase, an area-wide parking study should be completed to determine the near-term and long-range parking needs.

#9 (Phase 2): Provide bicycle lanes and improve the pedestrian environment given the parking needs in the corridor. Two potential design alternatives are either a two-way sidepath along the west side of University Way, or more typical bicycle lanes along each side of the street (see discussion below).

The first phase of Project 9 would improve the streetscape by improving broken sidewalk segments and adding street trees and pedestrian lighting along the University Way corridor. A second phase would study how to improve pedestrian and bicycle facilities. The project team developed two potential alternative configurations for the bicycle lanes on the northern portion of University Way NE. Alternative 1 would stripe bicycle lanes in both directions, and Alternative 2 would create a two-way bicycle "sidepath" along the west side of the roadway between the sidewalk and the parking lane. This sidepath would create a continuous protected corridor for bicycles from Green Lake through Ravenna Boulevard to the University Heights Community Center at NE 50th St.

Discussion: Bicycle Lanes or "Sidepath"

Single lanes: Single lanes would be easily understood by bicyclists and keep bicycles moving in the direction of traffic flow, including at intersections where oncoming bicyclists would be more visible to vehicles turning left across the bicycle lane. This alternative requires only street re-striping and allows the existing curbs to remain in place.

The Sidepath: A bicycle sidepath would connect the Ravenna Boulevard bicycle lanes with a similarly significant facility, and create "something new" that could attract more novice users. It also would reduce transit-bicycle and parked vehicle-bicycle conflicts and allow for the creation of bus loading areas ("bus bulbs") and additional street plantings. The sidepath would also provide a major extension of quality "public space" adjacent to the University Heights Center and Saturday Farmers' Market.

Proposed Action: The project team is excited at the prospects of the sidepath for this corridor because of its potential to create a strong bicycle connection between Green Lake and University neighborhoods. There is a concern, however, regarding the operation at intersections, where cyclists may be less visible traveling in the same direction as turning vehicles. Additional work needs to be done to design these side street crossings in order to slow bicycle traffic and warn drivers of sidepath activity. Work is also needed to further clarify the connections at the north and south ends of the sidepath, and to study how a potential streetcar terminus at NE 50th St could work with either option. The *Action Strategy* will keep both projects as alternatives for this corridor.

University Way - Alternative 1

University Way - Alternative 2

15th Avenue NE

15th Ave NE is an important transit corridor that forms the western edge of the University of Washington campus. Two early implementation projects and three additional recommendations were identified for this corridor.

Issues

Future traffic growth on 15th Ave NE requires additional improvements to meet forecasted traffic needs. The 2030 evaluation found that the intersections at NE 65th St, Ravenna Boulevard, NE 45th St, and NE Pacific St would drop below desired performance thresholds if no improvements are provided.

In the last three years, 3 pedestrian-vehicle collisions occurred at 15th Ave NE/Campus Parkway. Review of the intersection shows the potential for conflicts between northbound vehicles making left turns and pedestrians crossing the west leg of the intersection.

The street is a primary UVTN transit corridor that carries a number of heavily traveled bus routes. Improvements are needed to reduce transit delay, particularly for northbound buses making a left turn onto NE 45th St.

There were 15 collisions at NE 50th St/15th Ave NE in the last three years, the highest total number of intersection collisions in the study area. A steep slope that produces poor sightlines for turning vehicles is likely contributing to these collisions.

Project Recommendations

G: Monitor the intersection of 15th Ave NE/NE Ravenna Boulevard to see if traffic congestion worsens to the point where a traffic signal is needed at this location.

J: Evaluate the impact of a protected northbound left-turn phase the intersection at 15th Ave NE/Campus Parkway on transit speed and reliability. If transit performance is impacted, seek implementation of an alternative that addresses vehicle and pedestrian conflicts, such as improved signage and more prominent crosswalks.

#3: Lengthen the northbound left-turn pocket at NE 45th St and modify the signal timing to improve transit operations and reduce blocking problems for through traffic.

#20: Add protected eastbound and westbound left turn phases at the NE 50th St/15th Ave NE intersection to reduce vehicle conflicts.

#37: Complete a corridor study of 15th Ave NE from NE 50th St to NE Pacific St to improve the overall design for pedestrian and transit movements.

Related Projects

#1: Create a westbound transit lane on NE 45th St by removing the center turn lane and restricting left-turns from 45th St between 7th Ave NE to 15th Ave NE.

University Bridge/NE Northlake Way/NE 40th Street Area

Projects at both ends of the University Bridge will greatly improve safety by addressing conflicts between drivers, bicyclists and pedestrians. These projects include improvements to the bridge approaches and on NE 40th St, NE Northlake Way, Eastlake Ave and Campus Parkway.

Issues

At the north end of the bridge, bicyclists must ride unprotected in the traffic lane. Two vehicle exits, one looping to lower NE 40th St and one to Campus Parkway, result in a large expanse of pavement where heavy right-turn volumes create vehicle-bicycle conflicts. For pedestrians, there is no sidewalk for those travelling north to 11th Ave NE or turning onto Campus Parkway from the north end of the University Bridge. The only pedestrian route to Campus Parkway is an informal path across a grassy area inside the NE 40th St loop ramp. New student housing anticipated along Campus Parkway will increase the need for improving these facilities and pedestrian facilities along Campus Parkway as well.

The lack of adequate pedestrian facilities (such as sidewalks) on the north end of the University Bridge is highlighted by the worn-down path that crosses the NE 40th St loop ramp. Inadequate lighting also contributes to a lack of pedestrian comfort and safety.

At the south end of the bridge, eight vehicle-bicycle crashes occurred between 2004 and 2006 on Eastlake between Fuhrman Ave E and Harvard Ave E. Bicyclists turning at Harvard Ave E, to continue up to Capitol Hill, must cross two lanes of traffic to get to the left turn lane.

Poor lighting along the bridge lowers the comfort of pedestrians and bicyclists, and makes drivers less aware of people walking and bicycling in the area.

West of the University Bridge, the intersections of 6th Ave NE/Lower NE 40th St and 7th Ave NE/NE 40th St operate below performance thresholds. Long queues often form at these intersections, particularly during peak hours.

Generally speaking, there are poor bicycle connections between the Burke-Gilman Trail and the University Bridge, two of the most important and heavily travelled bicycle corridors in the city.

Sidewalks and bicycle lanes on NE Northlake Way end suddenly west of the University Bridge. The public right-of-way is undefined and is used for haphazard parking, with parallel parking, angle parking and 90 degree parking all occurring on the same small section of roadway.

There are no bicycle lanes on either side and no sidewalks on the south side of "upper" NE 40th St between 8th Ave E and the University Bridge, the route for westbound to southbound bicyclists and pedestrians.

Many of these deficiences were identified as needing improvement in the University Community neighborhood plan.

Project Recommendations

C: Stripe left turn lanes on 6th Ave NE and westbound on Lower NE 40th St to improve intersection operation.

K: Install pedestrian lighting along the length of the University Bridge to improve the visibility of pedestrians and bicycles and to celebrate the bridge as a prominent entry into the University District.

#7: Add a southbound bicycle signal at Fuhrman Ave E to allow riders to safely cross to the left turn lanes at Harvard Ave E.

#8: Reconfigure and consolidate the northbound ramps from Eastlake Ave at the north end of the University Bridge and add bicycle lanes to reduce potential conflicts between vehicles, pedestrians, and bicyclists.

#14: Add an eastbound bicycle lane on "upper" NE 40th St between 7th Ave NE and the University Bridge.

#23: Construct a roundabout at 7th Ave NE/NE 40th St to improve traffic flow and reduce potential conflicts.

#29: Reconstruct Northlake Way by adding sidewalks, a shared-use path and improved bicycle facilities.

Related Projects

#4: Create bicycle lanes and on-street parking on 11th/12th Avenue NE and on Roosevelt Way NE.

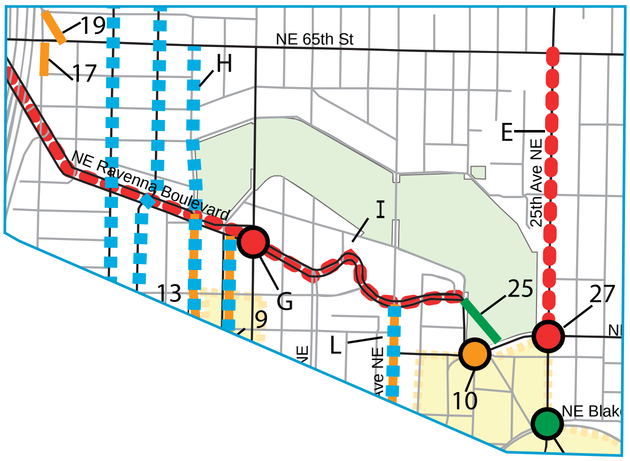
#24: Install a pedestrian signal, new crosswalk, and widen sidewalks for people crossing 11th Ave NE at NE 41st St to improve safety.

Ravenna/Roosevelt Area

Projects in the Ravenna/Roosevelt area address community issues and are focused on improving mobility for all travel modes.

Issues

The poor pavement conditions along NE Ravenna Boulevard reduce the safety and attractiveness of this important bicycle connection between Greenlake and the University Area.



Improvements are needed to the poor pedestrian walkways and an undesirable pedestrian environment along 8th Ave NE near NE 65th Street, to support the pedestrian activity related to the Green Lake park-and-ride lot and the future Sound Transit station.

The intersections of Ravenna Ave NE, Ravenna Place NE, 22nd Ave NE and NE 55th St are confusing for drivers and have long pedestrian crossing distances.

The narrow street width on Ravenna Ave NE, north of NE 55th St is inadequate for bicycles and vehicles, and the adjacent path within Ravenna Park is an inadequate alternative due to its lack of hard surface and pedestrian-scaled lighting.

Future traffic growth on 25th Ave NE may require additional improvements to meet forecasted traffic needs. The 2030 evaluation found that the intersections at NE 65th St and NE 55th St would drop below desired performance thresholds.

New development and increasing congestion on major arterials are placing additional through-traffic demand on Ravenna Blvd and 20th Ave NE to access I-5. These collector arterials within the University Park neighborhood are not designed to handle large vehicles and volumes, and are important bicycle connections within and between urban villages.

Project Recommendations

E: Restrict parking all-day (except overnight hours) on the east-side 25th Ave NE between NE 65th St and NE 55th St to improve transit and vehicle operations.

G: Monitor the intersection of 15th Ave NE/NE Ravenna Boulevard to see if traffic congestion worsens to the point where a traffic signal is needed at this location.

I: Prioritize the repair and repaving of NE Ravenna Boulevard between NE 65th Stand Ravenna Ave NE.

L: Install traffic calming measures and prioritize bicycle "sharrows" on 20th Ave NE and Ravenna Blvd to improve safety, and provide new signage to re-route large trucks away from these streets.

#10: Reconfigure NE 55th St between 22nd Ave NE and Ravenna Place NE to provide shorter pedestrian crossings, reduce vehicle speeds and improve intersection spacing and alignment.

#17: Widen the sidewalk along the east side of 8th Ave NE between NE 64th St and NE 65th St and add a curb extension at NE 64th St to enhance pedestrian crossings. The project would also stripe a northbound right turn lane to improve turning movements.

#19: Close off the north end of Weedin Place between at NE 66th St to improve pedestrian connections to the Roosevelt Business District and provide an opportunity for a "pocket" open space.

#25: Improve the off-street trail in Ravenna Park that runs parallel to Ravenna Ave NE to connect to the shared roadway corridor on NE 58th St. This will connect NE 55th St and NE Ravenna Blvd

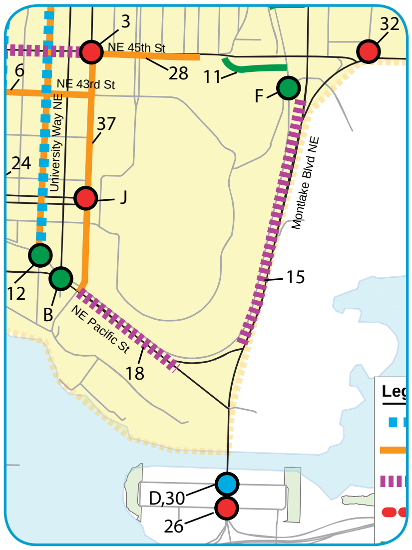
#27: Create northbound and southbound left turn pockets and protected left turn phases for 25th Ave NE/NE 55th St.

Related Projects

H: Add bicycle sharrow pavement markings on Brooklyn to create a bicycle-friendly corridor between Ravenna Blvd. and the Burke-Gilman Trail.

#4: Create bicycle lanes and improve pedestrian crossings on 11th/12th Ave NE and on Roosevelt Way NE.

Montlake Boulevard NE/ NE Pacific St



Montlake Boulevard NE and NE Pacific St carry the highest volumes of traffic within the University Area. These streets provide a connection to SR 520, I-5 and Capitol Hill to the south, and to Sand Point Way NE, Children's Hospital, Magnuson Park and other areas along Lake Washington to the northeast.

Most of the traffic congestion in the southbound direction on Montlake Blvd and eastbound on NE Pacific St, is related to the vehicle access to the SR 520 and I-5 freeways. One Early Implementation project and four additional recommendations would promote better traffic flow and bicycle safety.

Issues

Pedestrian crosswalks on E Shelby St at the south end of the Montlake Bridge are set back from the intersection. This requires pedestrians to unnecessarily walk extra distances to safely cross the intersection.

The Montlake Bridge area is a critical connection in Seattle's Urban Trails and Bikeways System, but has inadequate facilities for both pedestrians and bicyclists. While the SR 520 Bridge replacement project may provide a major opportunity for new facilities, there are some relatively minor improvements - such as removing curbed barriers and striping a bicycle lane - that could be accomplished in the meantime to significantly improve conditions.

NE Pacific St is an important UVTN transit corridor that carries a number of heavily traveled routes. This will be the primary link for future transit routes serving the future light rail station near Husky Stadium.

Bicyclists travelling from the north end of the Montlake Bridge have a difficult time accessing Lake Washington Blvd E, a key connection in the Urban Trails and Bikeways System. Lake Washington Blvd E connects with both Montlake Blvd and 24th Ave E just south of SR-520. One route from the Montlake Bridge requires bicyclists to ride down the sidewalk against traffic to gain access to E Hamlin St to access 24th Ave E to Lake Washington Blvd.

Montlake Blvd NE and NE Pacific St are the most congested corridors in the study area. Traffic volumes already exceed capacity, causing vehicle travel speed to drop to walking speed during peak hours. By 2030, Montlake Blvd will have corridor travel speeds as low as 2 mph; Pacific St speeds will be as low as 4 mph. Traffic backs up well in advance of the NE Pacific St HOV lane, limiting the potential travel time savings for buses and carpools.

Project Recommendations

D: Create a southbound bicycle lane on Montlake Boulevard from the Montlake Bridge to SR 520.

#15: Add a southbound HOV lane from NE 45th St to NE Pacific Place along the west side of Montlake Boulevard. This will improve travel speeds and potentially tie to future HOV ramps on the SR 520 bridge. The Children's Hospital has expressed support for the Montlake HOV lane and has interest in exploring a future extension to the north to improve the access to its hospital campus.

#18: Extend the existing eastbound HOV lane to provide a continuous lane from 15th Ave NE to Montlake Blvd.

#26: Extend the northbound u-turn lane on Montlake Blvd at E Hamlin St to prevent vehicles from blocking through movements.

#30: Redesign the intersection at NE Shelby St to improve bicycling and pedestrian travel routes through the area.

#32: Install variable message signs near the junction of Montlake Blvd and NE 45th St to better inform drivers of projected travel times and potential closures on the two corridors.

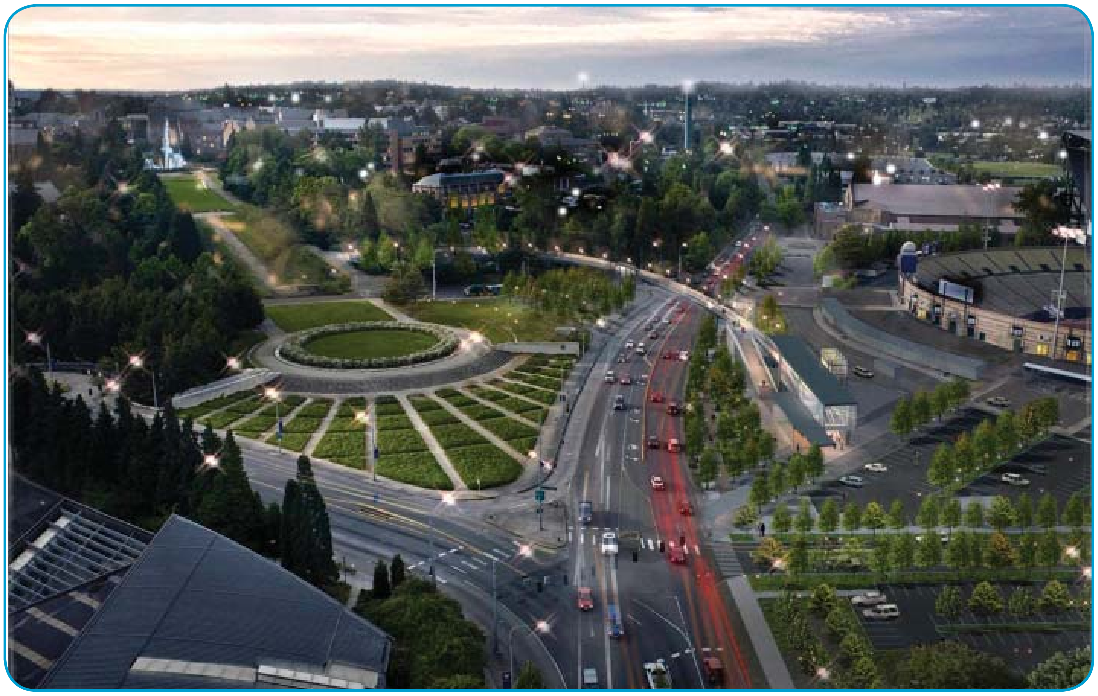
Discussion: Montlake Triangle

The "Triangle" is the area formed by Montlake Blvd, NE Pacific St and NE Pacific Place. This discussion reviews the existing operation and needs of the Triangle as compared with potential alternatives.

Existing Operations: King County Metro currently uses the Triangle to terminate a number of its transit routes, to turn vehicles around, load and drop-off passengers and for bus layover parking. Pedestrians cross the Triangle between the UW Campus and the UW Medical Center and Husky Stadium facilities. The Triangle is part of the Rainier Vista view corridor from the University of Washington.

Sound Transit Plans: As part of the Husky Stadium Station, Sound Transit has proposed a pedestrian overpass, or skybridge, that would cross Montlake Boulevard, the Triangle and Pacific Place to provide a connection to the UW main campus along the side of the Rainier Vista. This alternative would separate vehicles from pedestrians while retaining transit operations of the Triangle, and would deposit transit patrons onto and across the Burke Gilman Trail.

Depressed Pacific Place: This alternative would lower Pacific



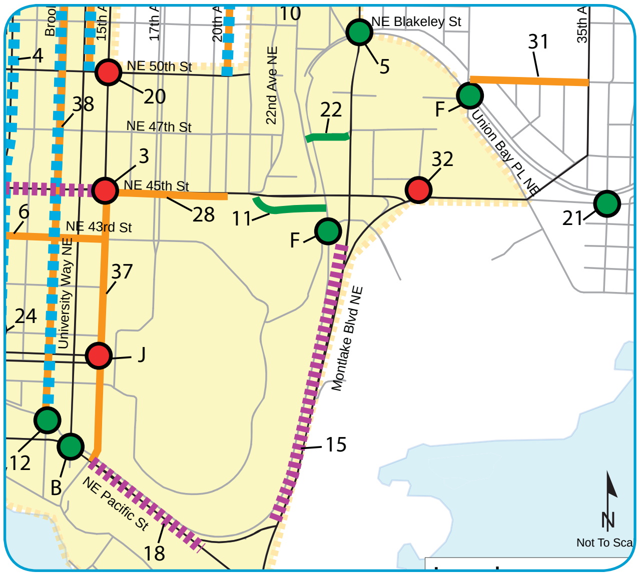
In addition to the unknown configuration and location of the SR 520 Bridge Replacement Project, there are still numerous design issues to be worked out related to Sound Transit's Husky Stadium Station and connections to the University of Washington campus. This simulated graphic shows the concept of a grade-separated pedestrian bridge over Montlake Blvd and Pacific Place as part of Sound Transit's 60% station design. The final configuration of the bridge, and whether there are other alternatives that might better accommodate transit riders, pedestrians, and bicyclists, is still to be determined.

Place to separate vehicles and trail traffic from pedestrian activity associated with the station. Transit patrons would cross Pacific Place "at grade" with a bridge or lid over the depressed Pacific Place and Burke Gilman Trail. This concept has a number of engineering issues that would require additional analysis to fully explore the feasibility of this concept. A transit-only lane would be created along Pacific Place to bypass vehicle queues from the Montlake Boulevard/Pacific Place intersection. The alternative would retain the current transit bus layover areas.

Proposed Action: The *Action Strategy* does not include specific recommendations related to the Triangle area, and recommends further analysis of the alternatives. There are a number of unknowns related to this area that, once decided, should better clarify HOV, pedestrian and transit options and needs. Further analysis of the Triangle area should be conducted once the final locations and designs of the Sound Transit light rail station, the proposed Husky Stadium rebuild/restoration and the SR 520 Bridge Replacement Project are better known.

Burke Gilman Trail

The Burke-Gilman trail is the centerpiece of the non-motorized transportation system in the University District. The trail connects to Ballard and Fremont to the west, and to northeast Seattle and the communities along Lake Washington to the east. Heavy bicycle and pedestrian use is particularly prevalent along sections that run near and through the University of Washington campus. The *Action Strategy* recommends developing new connections to the trail and improving trail crossings of roads.



Traffic controls give the right-of-way to drivers at trail crossings, but general practice is for drivers to yield to bicyclists and pedestrians.

Issues

Visibility of bicyclists at certain trail crossings is poor because of brush and shrubs. There were 4 crashes in three years at the trail crossing of University Way.

The Burke-Gilman crossing at NE Blakeley Street/25th Ave NE has had a high number of bicycle-vehicle collisions. The Bicycle Master Plan identified this intersection as needing additional study to address crossing issues.

There is no direct connection between the University of Washington Campus, the Burke-Gilman Trail and the University Village Shopping Center. University students must travel out of their way or use a steep, overgrown informal trail through a ravine to access the Burke-Gilman Trail, or cut through private property to directly access University Village.

The Ship Canal Trail, running along the east portion of the University's property, lacks a bicycle connection to the Burke-Gilman Trail near 36th Avenue NE.

Project Recommendations

B: Clear or trim trees and shrubs and add a more visible textured and colored crosswalk to better define where the Burke-Gilman Trail crosses University Way NE.

F: Coordinate with the University of Washington and the SDOT Traffic Management Division to develop a consistent set of the controls and signs at the Burke-Gilman Trail crossing at Pend Oreille Road, Brooklyn Avenue NE and Ne Blakely St (east of the University Village Shopping Center) that promotes pedestrian and bicycle movements and reflects driver behavior. At Brooklyn Ave NE, complete a traffic study to ensure that changes at the trail crossing would not impact adjacent intersections.

#5: Provide a bicycle and pedestrian "lead phase" and improve the visibility of the Burke-Gilman Trail crossing 25th Ave NE.

#11: Develop a pedestrian and bicycle path from the University of Washington campus to the Burke-Gilman Trail underneath the NE 45th St Viaduct.

#12: Realign the Burke-Gilman Trail crossing at Brooklyn Ave NE and add a raised, colored crosswalk to improve bicycle and pedestrian visibility at this location.

#21: Improve the bicycle connection between the Burke-Gilman Trail and the Portage Bay Trail/east campus area by constructing a ramp at the 36th Ave NE that connects to NE 45th St.

#22: Develop a pedestrian connection between 22nd Ave NE, the Burke-Gilman Trail, and 25th Ave NE at NE 47th Street. This would provide an east-west access from the trail along NE 47th St through the University of Washington property. The eastern portion would be designed to accommodate bicycles and would require coordination with the University to minimize conflicts with service vehicle operations.

Targeted Improvements

There are two project recommendations that fall outside the main geographic areas identified: one targets pedestrian safety improvements in a residential area just northeast of University Village, while the other would affect the entire University Community Urban Center.

Issues

Push button signals create unnecessary delay for pedestrians at intersections within the University Urban Center. Some signals require a pedestrian to push a pedestrian crossing button rather than providing a WALK phase for every signal cycle, particularly at night. Other pedestrian push buttons are inactive, but their presence creates unncessary confusion and frustration for pedestrians.

There is not a continuous sidewalk on NE 50th St between 30th Ave NE and 35th Ave NE. Cut-through traffic trying to bypass the signal at NE 45th St and Union Bay Place often exceed the desired speed limit for this residential street and contributes to pedestrian safety concerns.

Project Recommendations

A: Change the signal controls to add a pedestrian "WALK" phase at all intersections within the Urban Center at all times, eliminating the need for pedestrians to trigger a push button.

#31: Complete the sidewalk along the south side of NE 50th Street and introduces traffic calming devices to reduce vehicle speeds and improve pedestrian safety.

Section 4

Finance & Implementation

Finance & Implementation

A major challenge in moving forward with the *University Area Transportation Action Strategy* is to work to ensure that the recommended projects can be implemented by 2030. The *Action Strategy* requires approximately $20.5 million to complete all of the Early Implementation, High and Medium Priority projects; and an additional $16.5 million to complete the Montlake Blvd and Pacific St HOV Partnership projects. These figures do not include the costs of the recommended improvements to I-5, as these projects will have to be led and principally funded by WSDOT.

Prioritization & Funding

To successfully meet this financial challenge, SDOT must have a mechanism in place for moving the *Action Strategy* recommendations from the early planning stage, through project design development, and finally towards construction. This process involves two critical steps.

First, individual projects must be prioritized either within the SDOT **Capital Improvement Program (CIP)** – which typically includes the larger, more complex and costly projects - or within an individual **SDOT annual operational program** such as:

- Pedestrian and Bicycle
- Neighborhood Traffic Calming
- Arterial Streets Traffic Operations
- Parking Management

Second, funding needs to be secured for each project. Funding can come from multiple sources such as the City's General Fund, partner agencies, private development, and/or external grants. Funds from various sources may be combined to meet total project costs. For larger projects, funding may be dedicated to a project over a period of several years. Smaller, less expensive projects are often built within a one- to two-year timeframe.

To be credible, a funding strategy must: identify fiscal resources; forecast the potential and feasible funding levels available for City transportation projects; and be based on accurate project cost estimates.

Existing & Potential Funding Sources

The City of Seattle has historically funded transportation programs through gas tax revenues dedicated to transportation purposes, other local funds, grants, loans, and developer contributions. Some previous funding sources, including a Street Utility Tax and Vehicle License fees, are no longer available to the City as a funding source. **Figure 10** shows historic transportation funding sources since 1995.

Local Funds

Local revenues make up the largest part of Seattle's transportation budget and include the City's general fund, which includes sales and property taxes, the cumulative reserve fund, the City's share of the state gas tax and the recently implemented commercial parking and employee hours taxes.

Bridging the Gap Funds

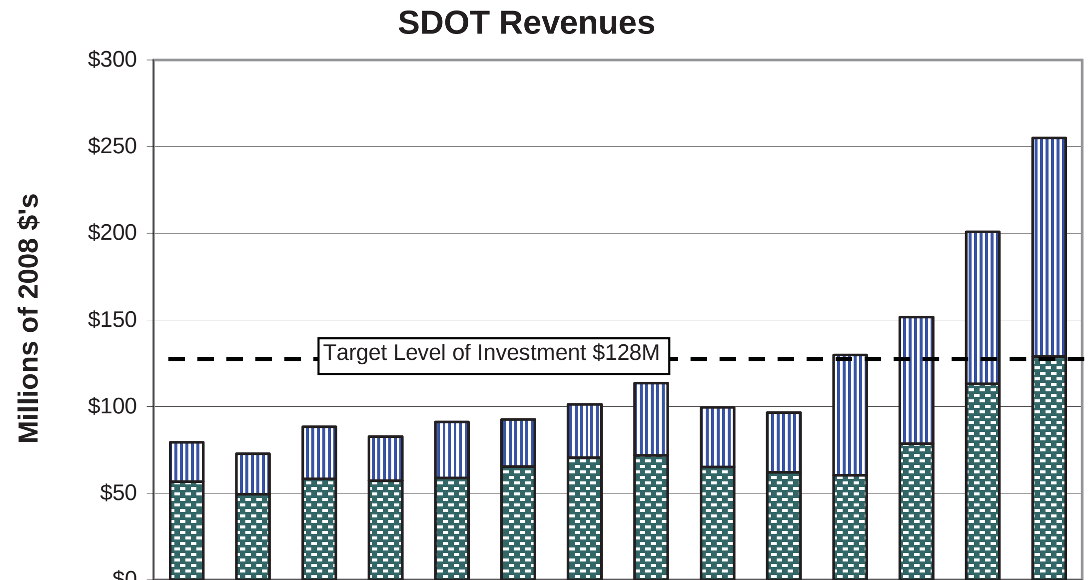
Bridging the Gap is a voter-approved nine-year funding plan for transportation maintenance, pedestrian, transit and bicycle projects. A total of over half a billion dollars will be raised through an increase in the property tax levy lid, a commercial parking tax, and a business transportation tax. Although these funds are considered to be local funds, there is a list of specific projects and programs the voters expect to be funded by the plan. In large part, Bridging the Gap makes up for the vehicle licensing fees and street utility tax revenues that are no longer collected. **Figure 11** shows the level of local transportation funds since 1995 and the effect of Bridging the Gap funds in 2007, the first year of the program.

Other Funding Sources

Grant funds are available from the Federal and State governments for the construction and maintenance of roadways. Historically, Seattle has secured between $20 million and $40 million in grant funds annually. SDOT maintains a grant match reserve fund to provide a local match for potential new grants and partnership opportunities. Projects that are candidates for grant funds must be competitive against the granting agency's criteria, which have specific areas of emphasis, such as accident reduction, pedestrian safety, etc.

Partnership funds could be used for projects that will be coordinated and partially funded through cooperation with a partnering agency. The proposed SR 520 Bridge Replacement Project may provide an opportunity to integrate the *Action Strategy*'s recommendations with the State's bridge replacement program. Projects such as the Montlake or Pacific HOV lanes could have significant benefits to the operation of transit or carpool lane on the SR 520 Bridge, which may create an opportunity for moving forward as partnership projects.

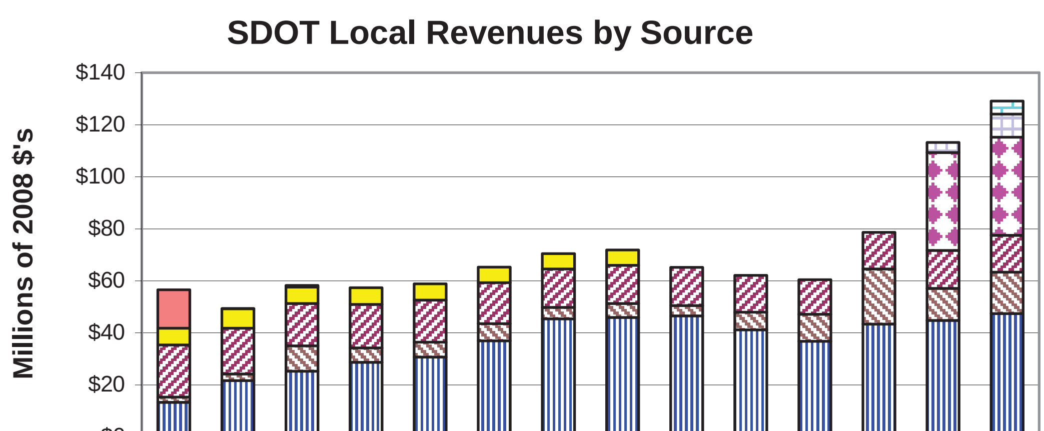
Figure 10. Local and Grant Funds



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Grants/Loans/Other	$22.7	$23.4	$30.2	$25.3	$32.3	$27.2	$30.8	$41.7	$34.4	$34.5	$69.3	$73.0	$87.7	$125.9
Local Funds	$56.6	$49.4	$58.2	$57.3	$58.9	$65.3	$70.5	$71.9	$65.2	$62.1	$60.4	$78.7	$113.2	$129.1

Target Level of Investment includes resources for O&M, Major Maintenance, Safety and Backlog

Figure 11. Local Funding Sources



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Employee Head Tax													$0.0	$5.0
Comm'l Parking Tax													$3.8	$8.9
Levy Lid Lift													$37.7	$37.7
Street Utility	$14.8	$0.1	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Veh Lic Fee	$6.4	$7.4	$6.3	$6.4	$6.2	$6.1	$5.9	$5.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Gas Tax	$20.0	$17.6	$16.3	$16.8	$16.2	$15.6	$14.8	$14.7	$14.7	$14.1	$13.2	$14.1	$14.6	$14.2
Cum Rsrv Fund	$2.0	$2.6	$9.8	$5.4	$5.6	$6.6	$4.3	$5.4	$3.9	$6.8	$10.4	$21.3	$12.4	$15.9
General Fund	$13.4	$21.7	$25.3	$28.8	$30.8	$37.0	$45.5	$46.0	$46.6	$41.2	$36.8	$43.3	$44.7	$47.4

Private Development

The *Action Strategy* includes sufficient analysis to create a voluntary **Transportation Mitigation Payment Program**. This program would give developers an option to contribute towards the construction of a set of University Area projects, in lieu of directly funding off-site improvements mitigation as part of the State Environmental Protection Act (SEPA) requirements. The Mitigation Payment Program may be attractive to developers because of its potential to simplify the permitting and mitigation process. Developers, however, would still be required to mitigate the on-site impacts of their projects by such actions as building frontage improvements (e.g. new sidewalks).

Other Potential Sources

The Washington State Legislature has approved a number of revenue sources that, with voter approval, can be used to fund transportation improvements. These revenue sources vary with regards to whether they are available on a regional, countywide or citywide basis.

Regional Transportation Improvement District funding can be a combination of sales tax, fuel tax, licensing fee or a motor vehicle excise tax that can be used to fund new projects that benefit regional mobility. It can be implemented only at a regional level. To qualify, projects of regional significance would be competitively placed into a ballot measure and submitted to the voters for approval. Of the *Action Strategy* recommendations, the partnership projects would be the most likely to be funded with this type of funding.

Local Option Fuel Tax can be implemented on a county level only and would be restricted to roadway projects. With voter approval, up to 10% of the state fuel tax could be collected.

Local Option Vehicle License Fees can be set up within a citywide or countywide Transportation Benefit District. Funds may be used for a variety of transportation projects. With voter approval, up to $100 per vehicle can be collected annually under this fee.

Transportation Impact Fees can be applied to an entire city or targeted sub-area to address the traffic impacts related to development activities.

SDOT Project Selection Process

Each year, the City updates its six-year capital budget (CIP) to identify likely funding sources for the highest priority projects and programs within forecasted revenue. While the CIP identifies potential funding over a six-year period, funding is only committed when the City Council adopts the annual budget.

Capital Improvement Program (CIP)

Within the CIP, a significant amount of funding is dedicated to annual operational programs which in turn fund the majority of small-scale projects, such as bicycle improvements or traffic calming measures. The remainder of the CIP funding is targeted to individual large-scale capital projects. SDOT uses the following multi-step process to prioritize projects for inclusion in the CIP:

Step 1. Identification of Transportation Needs. The *Action Strategy* will be one of many sources that identifies projects (and programs) to address existing and future transportation needs in Seattle. Other sources include SDOT's existing backlog of major maintenance and replacement projects, projects in the current CIP that require additional funding, projects from other planning studies, projects identified by operational program managers, and those developed in coordination with partner agencies such as WSDOT, Sound Transit, and King County Metro.

Step 2. Initial Rating of Projects. Each project is evaluated and rated on its merits using criteria that reflect the City's Comprehensive Plan goals:

- Safety
- Preserving and maintaining infrastructure
- Cost effectiveness or cost avoidance
- Mobility improvement
- Economic development
- Comprehensive Plan/Urban Village land use strategy
- Improving the environment

Action Strategy projects were evaluated using these categories to help determine how well each of the projects for the University Area meet these criteria.

Step 3. Prioritizing Projects for Implementation. After projects are rated based on their ability to further City goals, the projects' overall priority ranking is established using the following considerations:

- Funding availability
- Interagency coordination
- Geographic balance
- Constituent support

Other SDOT Programs

While the above discussion describes how individual projects are prioritized within the six-year CIP, other SDOT programs such as the Pedestrian and Bicycle Program, Traffic Signals, Neighborhood Traffic Calming, Arterial Traffic Operations, and Parking Management have also designed their own criteria and prioritization system for ranking and implementing small-scale improvements. The prioritization systems parallel the one used for the CIP in that after needs identification, they are rated on their ability to meet various City goals and then are prioritized based on a second set of considerations to maximize leveraging opportunities and ensure equity across the City. These programs will utilize appropriate project recommendations from the *Action Strategy* to develop their annual work programs.

Modal Plans

The City's **Bicycle Master Plan** will guide funding for bicycle projects throughout Seattle. The *Action Strategy* further defines recommendations from the Bicycle Master Plan and completes the analysis of projects and areas where additional analysis was called for. Bicycle elements of the *Action Strategy* will be implemented through funding opportunities identified in the Master Plan, including:

- General Fund
- Bridging the Gap funding
- Bicycle Grant Matching funds
- Bicycle Spot Improvement Program

Similarly, the Seattle **Pedestrian Master Plan** will be prepared in 2008 and will likely prioritize and set aside funding for implementing pedestrian projects throughout the city. The *Action Strategy* includes a number of pedestrian improvements which can be rolled into the plan's project recommendations.

In addition, there may be opportunities where SDOT can leverage City resources by collaborating with other area projects. For example, Seattle Public Utilities stormwater management projects or Seattle City Light's spot utility work may provide opportunities to also help complete an *Action Strategy* project.

In order to implement the full range of recommendations in the *University Area Transportation Action Strategy*, projects must be prioritized within the CIP and various City programs and a host of funding sources must be explored to move each project towards implementation.

Summary

As this section describes, there is a range of potential SDOT transportation revenues that may be available for the next 23 years. A total of $2.2 billion to $3.1 billion (2008 dollars) is projected to be available over the 2008-2030 period for constructing, operating and maintaining the City's transportation system.

Key assumptions for this analysis include:

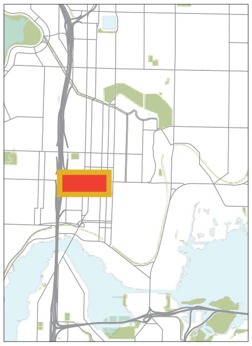
- Full implementation of Bridging the Gap funds over the next nine years. The analysis presents one scenario where Bridging the Gap is discontinued after the initial nine years ($2.2 billion) and a scenario that assumes the continuation of funding for another nine years ($3.1 billion)

- Existing funding levels for SDOT programs based on the City's 2007-2012 Capital Improvement Plan

- Continuation of grant funding and appropriations at $20 million per year

- Funding for major projects, such as the Alaskan Way Viaduct, is not included

The funding analysis included in the preceding pages estimates future revenues that are potentially available for *Action Strategy* project implementation, while at the same time acknowledging the uncertainty involved in predicting future funding levels. Revenue streams are dependent on the health of the national and local economies, renewal of current local levies such as Bridging the Gap, and national and state policy as it directs grant programs. These variables all determine the amount of funding that will ultimately be available to implement the projects recommended in the *University Area Transportation Action Strategy*.



NE 45th Street Corridor

Transit Speed & Reliability and Vehicle Congestion

Project # 1

Add westbound Business Access and Transit-only (BAT) lane by restricting left-turns to improve transit speed & reliability and reduce congestion.

Priority Rating: High
Cost Estimate: $1.04 million

Problems and Issues

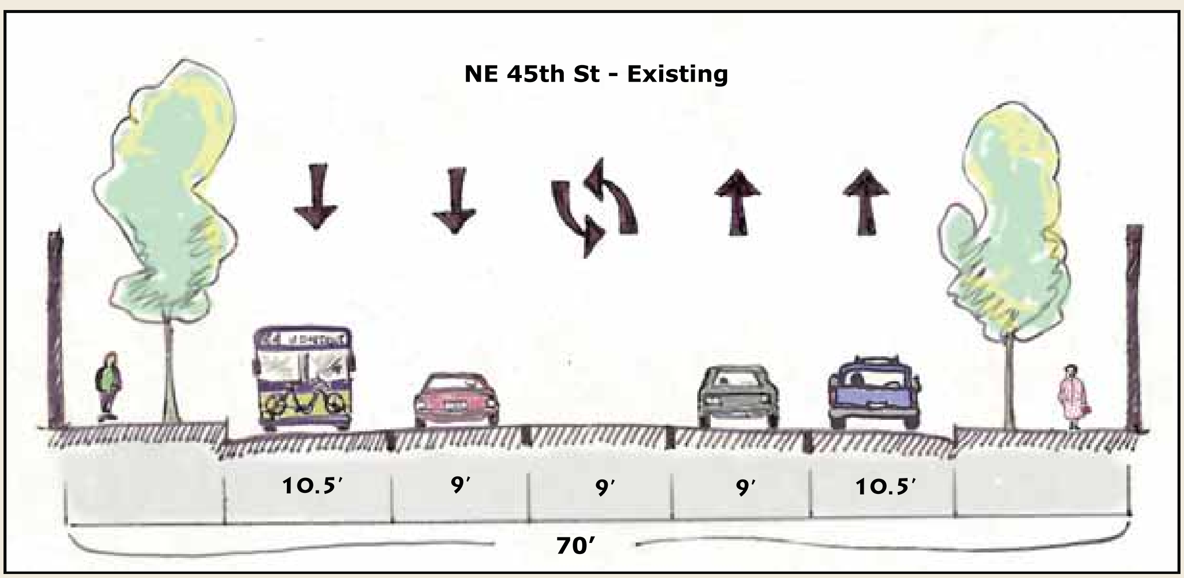
- NE 45th St is a key segment of Seattle's Urban Village Transit Network, providing the primary transit (including electric trolley) route from the University District to the Wallingford, Fremont, and Ballard urban villages. This roadway experiences severe traffic congestion during most times of day, and is one of the corridors where the City can receive additional service hours from King County Metro if transit speeds are improved by 10%.

- During the PM peak period, average vehicle speeds are 9-11 miles per hour (LOS E and F) between I-5 and 15th Ave NE. Transit vehicle speeds are substantially slower (~6 mph) due to passenger loading and operation in mixed traffic.

Existing PM Peak Travel Speeds	
Vehicle	*MPH*
Auto- Westbound	11.1
Auto- Eastbound	9.4
Transit - Westbound	6.5
Transit - Eastbound	5.8

- Excessive vehicle queues are preventing buses from easily accessing the 6 bus stops along this corridor, which together average nearly 3400 boadings and alightings each weekday.

- 288 buses per weekday (66 during PM peak) travel westbound, and 221 buses per day (44 PM peak) travel eastbound along this corridor.



NE 45th Street Corridor (Continued)

Recommended Actions

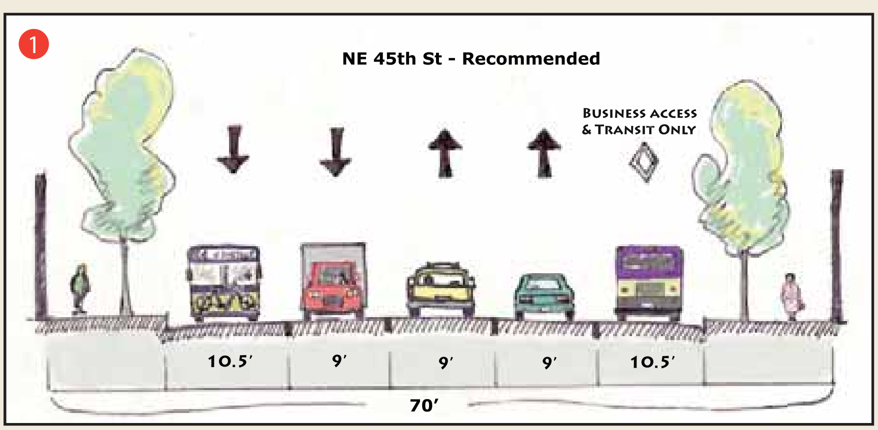
1. Provide a westbound transit and business-access only (BAT) lane from University Way NE to 7th Ave NE along the north curb lane by converting the center turn lane and prohibiting left turns off of 45th St. An extension of the BAT lane to 15th Ave NE should be considered if additional transit time savings is significant and if one general purpose lane is sufficient to handle traffic for that one block stretch of NE 45th St.

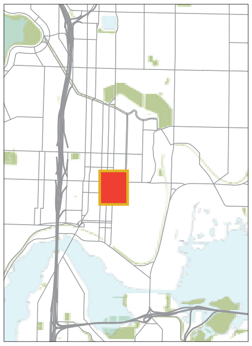
2. Accommodate key turning movements that would be restricted with implementation of the BAT lane by considering traffic signal re-timing, lengthening of certain turn pockets (e.g. left-turn to 15th Ave from NE 45th St), and directional signage at key locations to maintain business access. For example, traffic currently going westbound on 45th St to southbound on Roosevelt Way (the most common turning movement along this roadway segment) could be routed north onto 11th Ave, west on 47th St, and south onto Roosevelt Way; or could make a left at 15th Ave NE and access the University Bridge via Campus Parkway.

- Conduct outreach to affected business and property owners along the corridor to ensure access needs can be met and incorporated into the design.

- Prioritize pedestrian and bicycle improvements on NE 45th St, NE 43rd St, and NE 47th St (such as UATAS projects #6 and #28) to help mitigate impacts of additional and displaced traffic from the BAT lane. (Note: UATAS traffic demand model analysis and past experience from other cities indicate that many drivers will anticipate the turn restrictions and utilize the street grid to adjust their trip accordingly - i.e. the impact of the turn restrictions will likely be dispersed broadly across the study area.)

NE 45th St from 7th to 15th	Travel Time in Seconds		Travel Time Change	
	Existing	With BAT	Seconds	Percent
Auto – Westbound	166	98	- 68	- 41%
Auto – Eastbound	196	172	- 25	- 13%
Auto – Westbound to Southbound on Roosevelt	68	130	61	90%
Transit– Westbound	286	159	-127	- 44%
Transit – Eastbound	316	292	- 25	- 8%





University Area Transportation Action Strategy

15th Ave NE/NE 45th St

Transit Speed & Reliability; Congestion Management

Project # 3

Extend left-turn lane pocket and modify signal to move more buses through each signal cycle and increase transit speeds.

Priority Rating: High
Cost Estimate: $97,000

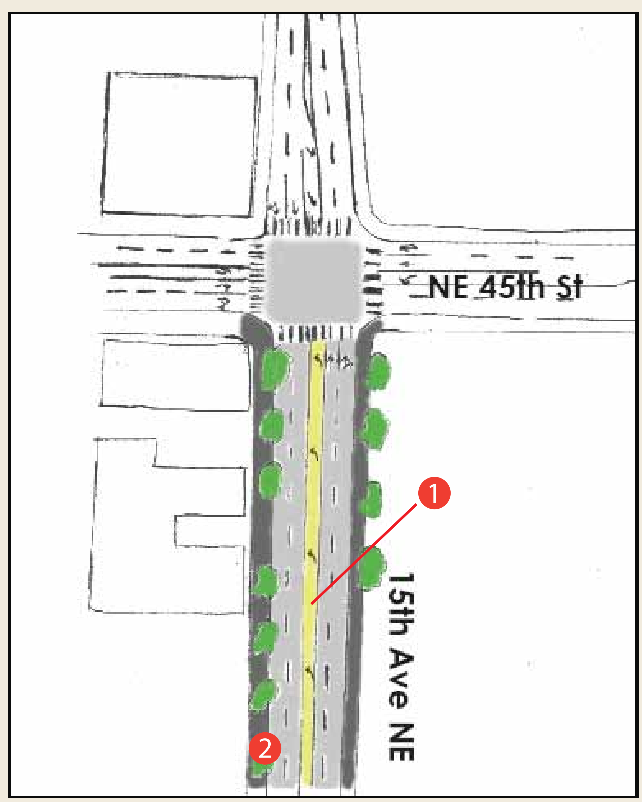
Problems and Issues

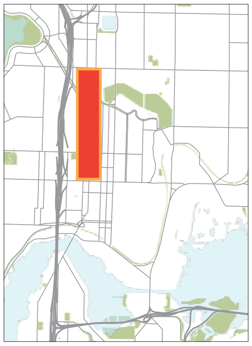
- This intersection includes an important turning movement of a primary Urban Village Transit Network (UVTN) corridor (with electric trolley service to and from Wallingford and Ballard).
- There are excessive delays at this intersection. Many northbound buses on 15th Ave turning onto NE 45th St (westbound) can't fit in the left-turn lane and/or can't make it through the intersection in one signal cycle. Buses are getting unnecessarily delayed, while northbound general purpose traffic can get blocked by vehicles waiting to enter the turn lane.
- Increased traffic volumes are projected to further reduce intersection level-of-service (and transit speed & reliability) if no action is taken.

Recommended Actions

1. Increase length of the northbound-to-westbound left turn pocket to accommodate more buses.
2. Remove several on-street parking spaces on 15th Ave near 43rd St to install longer turn lane. Maintain 2 southbound through lanes during peak periods, and work with the adjacent Malloy Apartments to accommodate their loading space needs.

- Lengthen the northbound left-turn phase to clear more buses in one signal cycle.
- Coordinate signal timing with NE 45th St/University Way intersection to minimize westbound turning queues from 15th Ave.





Roosevelt Way NE/11th Avenue NE Corridor

Bicycle and Pedestrian Mobility & Safety

Project # 4

Restore all-day parking and add bicycle lanes to increase bicycle and pedestrian safety & mobility.

Priority Rating: High
Cost Estimate: $480,000

Problems and Issues

- The right-side curb lanes on Roosevelt Way NE and 11th/12th Ave NE allow parking most of the day, except during the peak periods when parking is restricted to accommodate an additional general purpose lane. These restrictions force pedestrians to cross three lanes of traffic (substantially decreasing safety and comfort) and encourage high speeds through several growing neighborhood business districts.

1 Due to its gentle grades, directness between business districts and downtown, and relative lack of signals, this one-way couplet is a major north-south bicycle route. No bicycle facilities are provided, however, and the existing configuration (with narrow curb lanes) exposes cyclists to the "door zone" of parked cars and deters all but the hardiest of riders. The Seattle Bicycle Master Plan recommends several improvement options, although curb extensions on the left side of these streets limit feasible bike improvements to the right-side of the roadways.

- The corridor is part of the Urban Village Transit Network (UVTN), with 22 buses on Roosevelt during the AM peak period and up to 59 buses on 11th Ave during the PM peak.

- The Roosevelt Neighborhood Plan calls for the City to consider returning Roosevelt Way NE and 11th Ave NE to two-way streets. UATAS analysis indicates that such a revision is not warranted at this time.

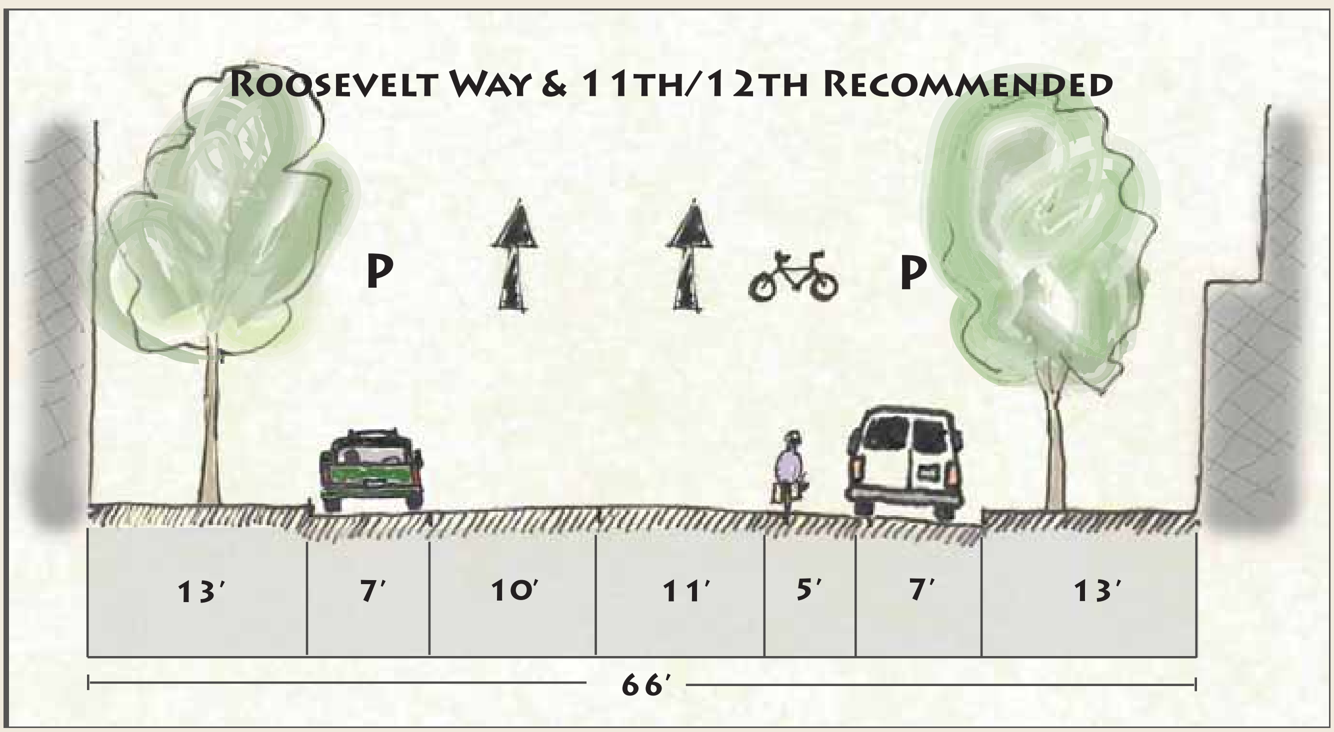
Typical lane widths for Roosevelt and 11th/12th Ave

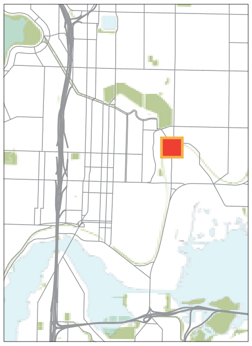

Parking not only provides access to local businesses along Roosevelt Way and 11th/12th Ave, but a buffer for pedestrians travelling on narrow sidewalks.

Roosevelt Way NE/11th Avenue NE Corridor (Continued)

Recommended Actions

- Restore all-day parking on both sides of the street by removing peak hour restrictions on the right-side curb lanes.
- Restripe roadway to provide a southbound bicycle lane on Roosevelt Way and a northbound bicycle lane on 11th/12th Ave. Work with SDOT's Ped/Bike Program to design transitions from bicycle lanes to vehicle right-turn lanes at the intersections of NE 50th St, NE 45th St, and other locations with heavy turning movements.
- Begin to allow pedestrian curb-bulbs on both sides of the street (in feasible locations) to decrease crossing distances and improve pedestrian safety and comfort. Areas of particular benefit would include the Roosevelt business district and at key crossings in the University District where pedestrian volumes are high.
- Work with King County Metro on street design concepts that include bicycle lanes and in-lane bus stops. Coordinate in-lane stops with potential increases in transit service, such as when light rail operation to Roosevelt begins.





Burke Gilman Trail/25th Ave NE

Pedestrian and Bicycle Safety

Project #
5

Modify signal timing and intersection design, and upgrade crossing to improve safety for pedestrians and bicyclists.

Priority Rating: High
Cost Estimate: $102,000

Problems and Issues

1 High volumes of pedestrians and bicycles cross this intersection as a part of the Burke Gilman Trail.

- This intersection has one of the highest rates of turning vehicle/pedestrian conflicts in the study area.
- 2 bicycle collisions were reported at this intersection between 2004-2006, and historically the intersection has been considered a high collision location.

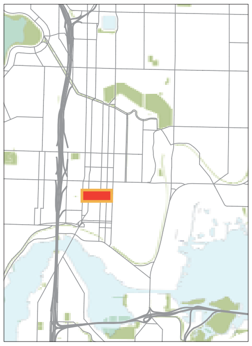
- The Bicycle Master Plan identified a need to "further study" this intersection for necessary improvements, which the UATAS study has done.

Recommended Actions

1 Provide a raised, colored crosswalk on the south leg of the intersection where the Burke Gilman Trail crosses 25th Ave NE.

2 Provide a tighter turning radius for the eastbound-to-southbound movement from Ravenna Place NE onto 25th Ave.

- Provide a 5-10 sec "lead phase" for the pedestrians and bicyclists crossing the trail.



University Area Transportation Action Strategy

NE 43rd St Corridor

Pedestrian Mobility & Safety; Transit Connections

Project #
6

Widen sidewalks and add curb extensions to improve pedestrian capacity & safety and encourage transit use.

Priority Rating: High
Cost Estimate: $930,000

Problems and Issues

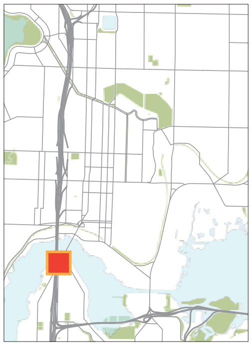
1 NE 43rd St will be the major east-west pedestrian corridor linking the University campus and neighborhood with Sound Transit's light rail station at Brooklyn Ave.

- In anticipation of light rail, the City has given a pedestrian priority designation to NE 43rd St. This street is also designated a Neighborhood Green Street by the University District Neighborhood Plan.
- All or portions of the sidewalk fail to meet both the pedestrian clear space and the pedestrian buffer space performance measures as established by UATAS analysis.
- There is currently more than enough right-of-way to widen sidewalks while maintaining adequate roadway width for vehicles.

Recommended Actions

- Widen sidewalks and place curb extensions on NE 43rd St between Roosevelt Way NE and 15th Ave NE.

SDOT



University Area Transportation Action Strategy

Eastlake Avenue E

Bicycle Mobility and Safety

Project # 7

Add bicycle signal queue jump and upgrade sidewalk access to improve bicycle safety and comfort

Priority Rating: High
Cost Estimate: $496,000

Problems and Issues

- Eastlake Ave E (University Bridge) to Harvard Ave E is a critical path for many cyclists travelling between Capitol Hill and the University District.

1. Experienced cyclists use the southbound Eastlake Ave left-turn lane to access Harvard Ave E, merging from the Fuhrman Ave intersection across 2 lanes of heavy traffic.

2. Less confident cyclists continue straight through the Fuhrman intersection and access Harvard Ave E from a signalized crosswalk farther south on Eastlake Ave, although raised curbing and sidewalk clutter (large utility and Metro poles, overgrown vegetation) make it difficult to reach the pedestrian-actuated push button on the sidewalk.

- 4 bicycle-vehicle crashes were reported on Eastlake Ave between Harvard Ave E and Fuhrman Ave E between 2004-2006.

Recommended Actions

1. Provide a southbound bicycle queue jump at Fuhrman Ave signal to allow lead time for cyclists to merge across Eastlake before general purpose southbound traffic gets the green light. This movement could be coordinated with the left-turn only signal phase for southbound vehicles turning onto Furhman Ave E.

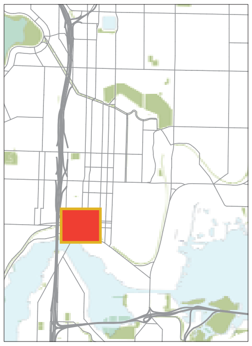
- Upgrade curb ramps on west side of Eastlake to improve bicycle access to sidewalk and the pedestrian push button farther south. Look to consolidate utility and transit poles, and widen sidewalks, when opportunities allow.

Bicycle-only signals have been effectively implemented in other cities, such as Portland and Berkeley.

Eastlake Ave and Campus Parkway

Bicycle and Pedestrian Safety & Mobility

Project # 8

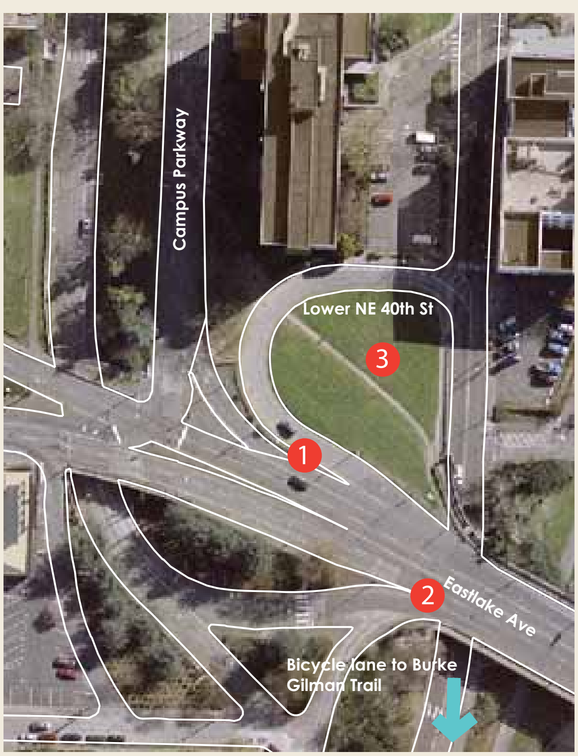


Reconfigure intersection, and add bicycle lanes and sidewalks, to reduce conflicts between modes and improve safety.

Priority Rating: High
Cost Estimate: $1.17 million

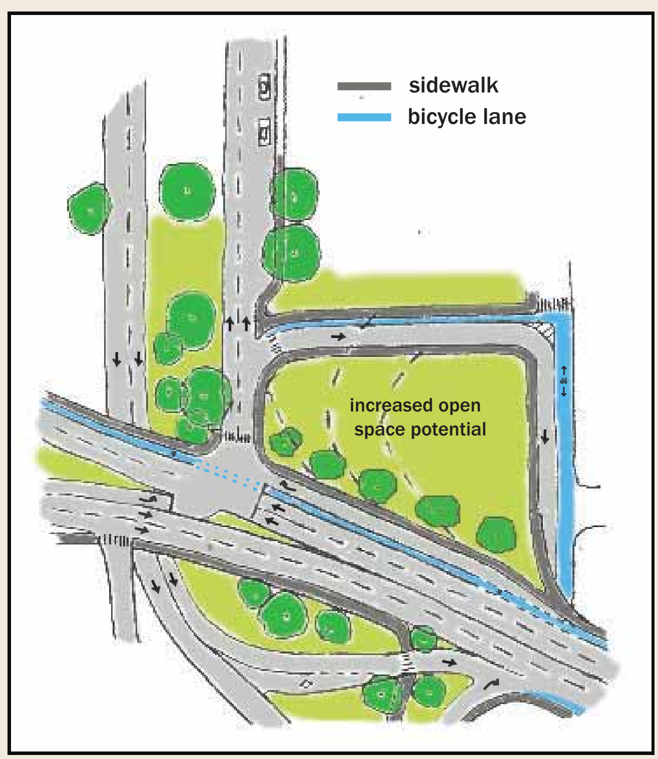
Problems and Issues

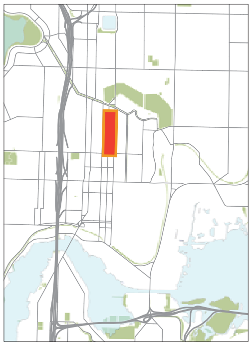
1. Multiple conflict points between right-turning vehicles and cyclists are a significant problem at the north end of the University Bridge:
   - Northbound to westbound vehicles turning onto the NE 40th St loop ramp travelling at excessive speeds.
   - Eastbound vehicles turning onto Campus Parkway.
   - Heavy bicycle demand for both right-turn movements as well as for continuation northbound.
2. Bicycle lanes currently do not extend to the north of the bridge, even though this segment is critical to the Urban Trails and Bikeways System and the planned Lake Union Loop Trail, and is a heavily-utilized connector to the Burke Gilman Trail.
3. Sidewalks are missing or in poor condition throughout the project area, and an informal trail across the grass between the bridge and Campus Parkway indicates demand for improved facilities.



Recommended Actions

- Consolidate right-turns by relocating the westbound loop ramp from Eastlake Ave to Campus Parkway. Create a single right-turn pocket for vehicles and cyclists travelling to Campus Parkway and the loop ramp.
- Add/improve sidewalks along Eastlake Ave and the NE 40th St ramp.
- Add continuous northbound bike lanes on Eastlake Ave E between the University Bridge and 11th Ave NE.
- This action implements a "key corridor recommendation" in the Bicycle Master Plan and a "gateway treatment" recommendation from the neighborhood plan.





University Way NE from NE 50th St to 15th Ave NE

Pedestrian & Bicycle Mobility, Urban Design

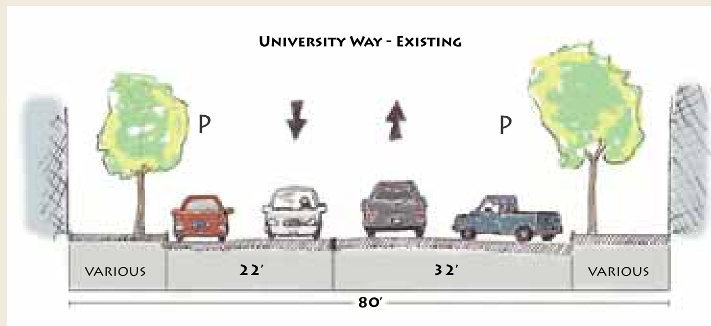
Project # 9

Reconfigure University Way to provide dedicated bicycle facilities, wider side-walks, and improved urban design.

Priority Rating: High
Cost Estimate: $2.7 million

Problems and Issues

- University Way is the "main street" of the University District and Urban Center, and a designated bicycle route. Several years ago it was upgraded south of NE 50th St.



- North of 50th St the roadway is wider, although sidewalk widths and pedestrian "buffer" spaces are inadequate and no bicycle facility is provided. The Bicycle Master Plan recommends full bicycle lanes along this segment.

- University Way is a major transit route, with direct service to downtown. Access to bus waiting areas and their general quality should be improved as housing density and commercial activity increase over time.

Recommended Actions - Phase 1

- In the near term, repair broken sidewalk segments and tree pits, and install pe-destrian lighting and banner poles, to improve the pedestrian environment of "The Ave" north of NE 50th St.

- As the area redevelops, prohibit new curb cuts and prioritize vehicular access from the alleys in order to maintain and/or improve the pedestrian environment.

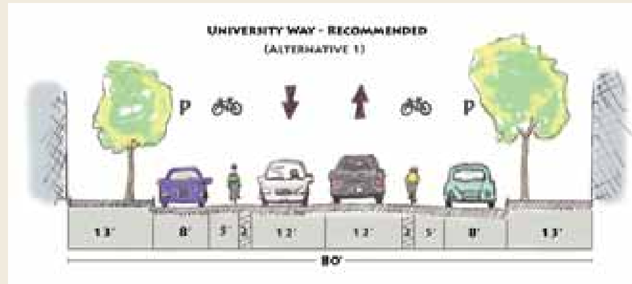
- By 2012, undertake a parking analysis to identify parking needs and key issues.

Increased road width and the University Heights Center/Farmers' Market (above) provide many urban design opportunities for University Way north of NE 50th St.

University Way NE (Continued)

Recommended Actions - Phase 2

- Reconstruct University Way NE from NE 50th St to 15th Ave NE with the following elements:
  - Wider sidewalks at key locations
  - Pedestrian-scaled lighting
  - Dedicated bicycle facilities
  - Bicycle parking
  - Additional street trees & landscaping
  - High-amenity transit stops



Phase 2 - Alternative 1

- **Street Design - Alternative 1**

  Install extra-wide, or "buffered," bicycle lanes to encourage bicycling and improve bicycle safety. Where feasible, install in-lane transit stops to improve transit speed and transit waiting areas.

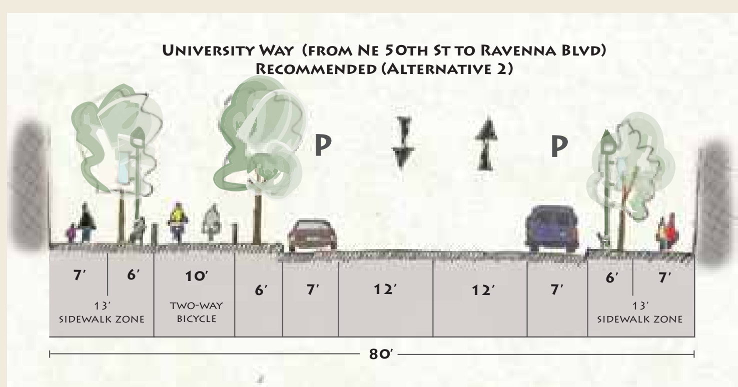
  (This alternative would allow the existing curb-to-curb roadway width to remain as it is.)

- **Street Design - Alternative 2**

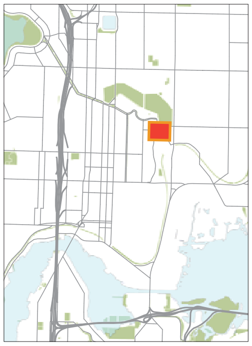
  Reconstruct University Way NE from NE 50th St to 15th Ave NE to provide a dedicated two-way, 10-ft wide bicycle "sidepath" in addition to wider sidewalks, pedestrian lighting, and improved urban design. The "sidepath" would be on the west side of NE 50th St from the University Heights Center to Ravenna Blvd, which would provide a high-quality, dedicated bicycle facility from the heart of the University District to Greenlake without forcing users into mixed traffic.

  Provide in-lane transit stops to improve transit speed, reliability and comfort. With this alternative, there would be no conflict with bicycles and buses.

  (This alternative would require significant reconstruction of University Way due to the reconfiguration of roadway width.)



Phase 2 - Alternative 2



University Area Transportation Action Strategy

Ravenna Ave NE/NE 55th St Corridor

Traffic, Pedestrian & Bicycle Safety

Project # 10

Reconfigure corridor to provide curbs, gutters and sidewalks, and to delineate street corners to improve safety

Priority Rating: High
Cost Estimate: $1.2 million

Problems and Issues

- Where Ravenna Ave NE, NE 55th St, NE 54th St, 22nd Ave NE, and Ravenna Place NE come together is an awkward and confusing series of intersections.
- Poorly-defined street corners confuse some drivers and encourage others to speed.
- Long crossing distances and a lack of sidewalks create an extremely poor pedestrian environment and a gap in the bicycle network. The Bicycle Master Plan calls for improved connections to the adjacent off-street trail within Ravenna Park.

- NE Ravenna Place is designated as a Neighborhood Green Street.

Recommended Actions

- Reconstruct the geometries of the Ravenna Ave NE, NE 54th/55th St, 22nd Ave NE, & Ravenna Pl NE corridor with more regularized intersections and tighter corners, while maintaining sufficient curb radii for turning buses.
- Add new curbs, sidewalks, landscaping, and crosswalks to improve and delineate pedestrian facilities, and improve access for cyclists to and from the off-street, multi-use park trail at Ravenna Park.

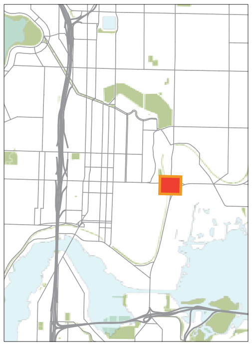
1. If phasing is needed, prioritize the narrowing/landscaping of NE Ravenna Pl at 55th St to help reduce the speeds and volume of right-turning vehicles headed southbound for 25th Ave. Consider angled back-in parking on Ravenna Place as an additional traffic calming measure.

University Area Transportation Action Strategy

NE 45th St Corridor & Burke Gilman Trail

Pedestrian and Bicycle Mobility & Safety

Project # 11



Construct a pedestrian and bicycle trail connection between NE 45th St and the Burke Gilman Trail to improve mobility and safety.

Priority Rating:	High
Cost Estimate:	$2.26 million

Problems and Issues

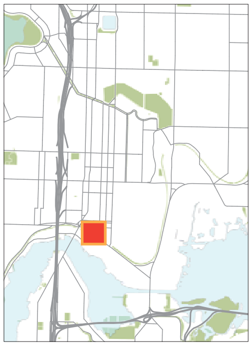
- The extremely long, narrow and uncomfortable environment along the NE 45th St viaduct is the only direct pedestrian or bicycle connection from the University campus and the heart of the University District to the University Village area.
- 1 An informal pedestrian trail currently exists under the viaduct, hinting there is a "latent demand" for improving pedestrian and neighborhood connections. Thick vegetation, steep grades, and public safety concerns, however, limit the widespread use and functionality of this area.
- Visual access to the natural area known as Kincaid Ravine and the potential for natural drainage enhancements make this area a "place-making" opportunity as well as a transportation opportunity.

Looking east towards the NE 45th St viaduct with Kincaid Ravine on the right.

Recommended Actions

- 1 Construct a pedestrian path and bicycle trail under the NE 45th St viaduct to provide a direct connection between the UW Campus and business district along 45th St with the Burke Gilman Trail.
- Work with Seattle Public Utilities, the University of Washington, and perhaps the Parks Department on the design and funding of this project.
- Seek partnership with SDOT's partial replacement of the NE 45th St viaduct set for 2010 as a way to meet SDOT's adopted "Complete Streets" policy.

Draft concept of what an improved pedestrian and bicycle connection might look like.



Burke-Gilman Trail Crossing at Brooklyn Avenue NE

Pedestrian and Bicycle Safety

Project # 12

Realign trail and add a raised, colored crosswalk to improve safety.

Priority Rating: High
Cost Estimate: $340,000

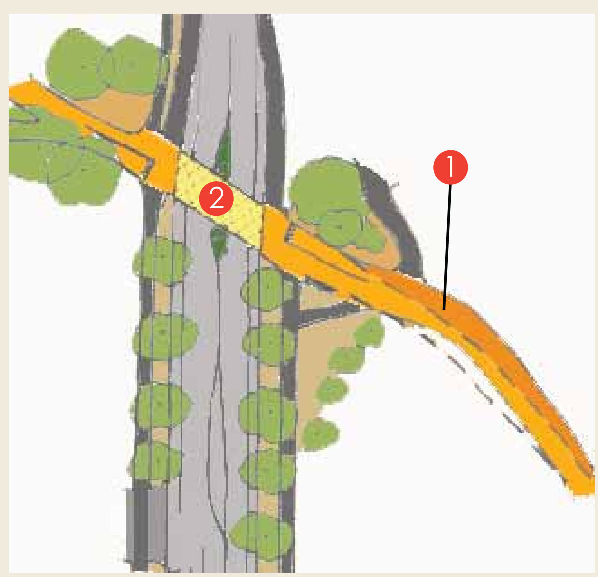
Problems and Issues

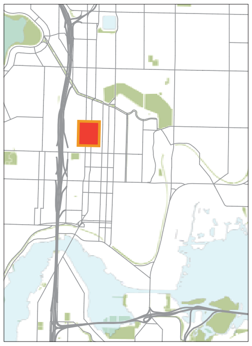
- The Burke Gilman Trail approaches Brooklyn Ave midblock at an angle, limiting sight distances and increasing the potential for bicycle/vehicle conflicts.
- Current safety warnings consist of a pedestrian crossing sign and a regularly striped crosswalk, which do not adequately indicate to drivers the importance of this is a heavily-used trail crossing.
- Brooklyn Ave is designated as a Neighborhood Green Street, which means that pedestrians and bicycles are given higher priority in street design and operations.

Recommended Actions

1. Modify the angle of the Burke Gilman Trail crossing and square off to Brooklyn Ave as much as possible to improve visibility and reduce crossing distances.
2. Add raised and colored crosswalk, roadway medians, specialized trail crossing signs, and pedestrian-scaled lighting to properly distinguish and improve the trail crossing.

- This project should be considered in conjunction with UATAS Project F, which could reprioritize traffic control to give trail users the right-of-way at the crossing with Brooklyn Ave.





Roosevelt Way/11th Ave NE & NE 55th St

Pedestrian Mobility & Safety

Project #
13

Install curb extensions to improve pedestrian safety.

Priority Rating: High
Cost Estimate: $43,000

Problems and Issues

- Traffic speeds are high for most of the day along the Roosevelt Way NE and 11th Ave NE one-way couplet in this area. Due to peak period parking restrictions, pedestrians are often forced to cross three lanes of traffic, increasing their potential exposure to moving vehicles.

1 11th Ave NE at 55th St

1. Many pedestrians currently walk along the side of the road and jaywalk when a gap in traffic presents itself, or have to walk out of their way to reach a fully signalized intersection. These uncomfortable crossings limit pedestrian accessibility to a growing set of businesses along Roosevelt Way near NE 55th St.

- Implementation of UATAS Project #4 (bike lanes) will allow curb extensions on both sides of 11th/12th Ave and Roosevelt Way in the University District and Roosevelt business districts.

Recommended Actions

1. Install curb extensions along (at least) the left-sides of Roosevelt Way NE and 11th Ave NE at NE 55th St to shorten pedestrian crossing distances and improve safety.

Roosevelt Way NE at 55th St

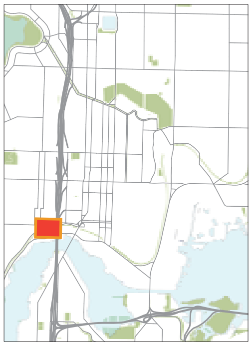
- If peak period parking restrictions are removed along this corridor, prioritize additional curb extensions (especially with redevelopment) at other key crossing locations, including NE 43rd St, NE 47th St, NE 52nd and 53rd St (school zone), Ravenna Blvd, NE 64th St, and NE 66th St near the future light rail station.

University Area Transportation Action Strategy

Burke Gilman Trail/NE 40th St to University Bridge

Bicycle Mobility & Safety

Project #
14



Improve connection from Burke Gilman Trail to the University Bridge by constructing bicycle lanes along Upper NE 40th St.

Priority Rating: High
Cost Estimate: $437,000

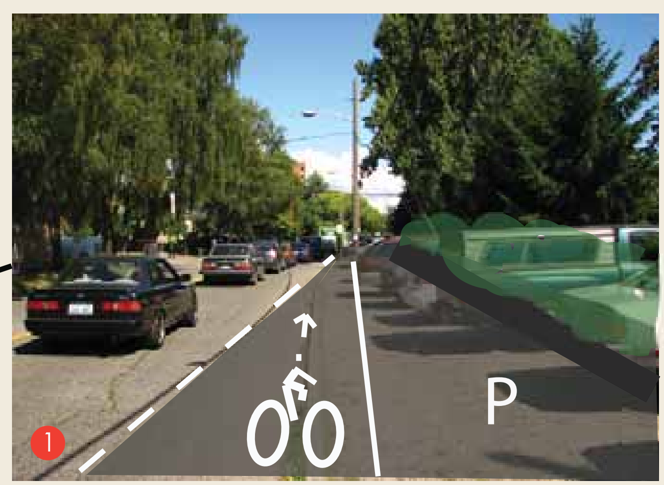
Problems and Issues

- The Burke Gilman Trail and the University Bridge are two of the most heavily utilized corridors for bicyclists, and critical components of the Urban Trails and Bikeways Network and the Lake Union Loop Trail.
- A poorly defined path of travel, various curbed barriers, and gravel shoulders with 90 degree parking on Upper NE 40th St create significant gaps in these trail systems.
- Eastbound to southbound bicyclists using the BG Trail and University Bridge must first mix with traffic along Upper 40th St and are then required to make an unprotected merge onto the bridge. The bicycle lane doesn't begin until much farther south on the bridge.

Recommended Actions

1. Add eastbound bike lane on NE 40th between University Bridge (Eastlake Avenue E) and 7th Avenue NE by reconfiguring 90-degree parking to parallel.

- Extend bicycle lane on west side of University Bridge northward to the intersection with NE 40th St to improve the safety and comfort of eastbound cyclists merging southbound onto the bridge.
- Reconstruct the crosswalk on lower NE 40th St to the east of the 7th Ave intersection; provide curb ramps with wide flares and improved geometries from the Burke Gilman Trail to upper NE 40th St.

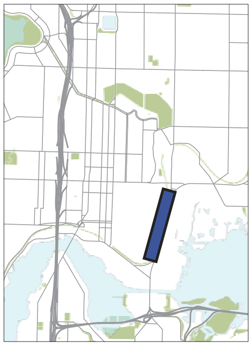


Upper NE 40th St to University Bridge with bike lane concept.

Montlake Boulevard NE

Transit and HOV Speed & Reliability

15



Extend HOV lane on southbound Montlake Blvd from NE Pacific Pl to 25th Ave NE to increase speeds of high-occupancy vehicles and encourage new transit service.

Partnership Project
Cost Estimate: $11.5 million

Problems and Issues

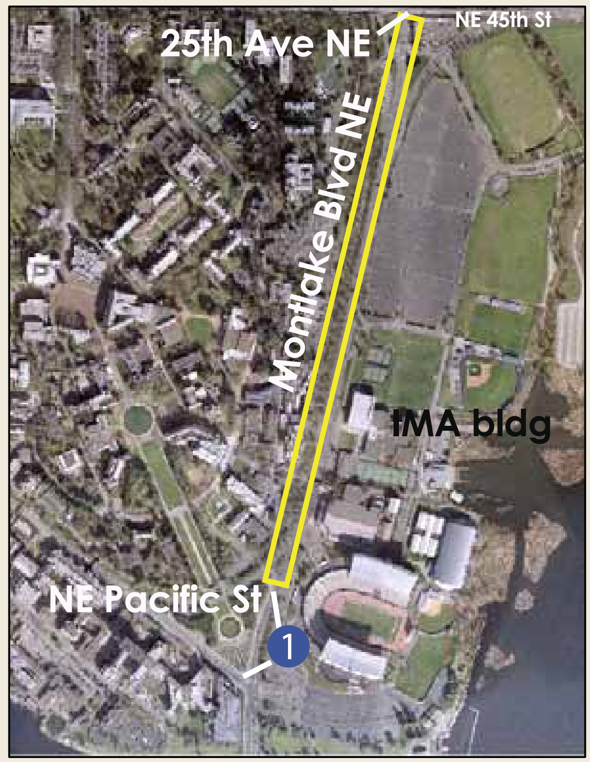
1. An HOV lane on Montlake Blvd southbound is provided for the short block between NE Pacific Pl and NE Pacific St to facilitate bus turns around the Rainier Vista triangle.

- Montlake Blvd (a state roadway) is highly congested; ***the average speed for southbound vehicles during the PM peak period is 3 miles per hour***.

- Due to traffic congestion, King County Metro cannot provide adequate transit service. Poor transit access to the University's Intramural Activities Building and the University Village was one of the most common complaints during the UATAS outreach process.

- Adding an HOV lane would require reconstruction of the existing pedestrian overpasses on Montlake Blvd, although at least one has been flagged as structurally deficient and needs replacement.

- Sound Transit's Husky Stadium Station and the planned HOV improvements to the SR 520 Bridge will only increase the value of HOV facilities in this area.



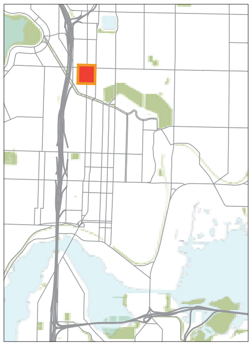
Recommended Actions

- Work with WSDOT and the UW to construct a southbound HOV lane from Pacific Pl. to 25th Ave NE to allow transit and high-occupancy vehicles to bypass general purpose congestion. Convert the existing short HOV segment to "Transit Only" to ensure HOV traffic does not impede bus turn-arounds.

- Reconstruct pedestrian overpasses connecting the main campus with the east side of Montlake Blvd.

- Work with Metro and the UW to introduce transit service along the Montlake Blvd corridor. Ensure additional service enhances, not degrades, transit access to the University's main campus.

Constructing an HOV lane on Montlake Blvd would be an opportunity to replace aging infrastructure like this pedestrian bridge to the UW's IMA.



8th Ave NE between NE 64th and 65th St

Pedestrian Safety; Congestion Management

Project # 17

Construct curb extension, widen sidewalk, and provide northbound right-turn pocket to improve safety for pedestrians and vehicles.

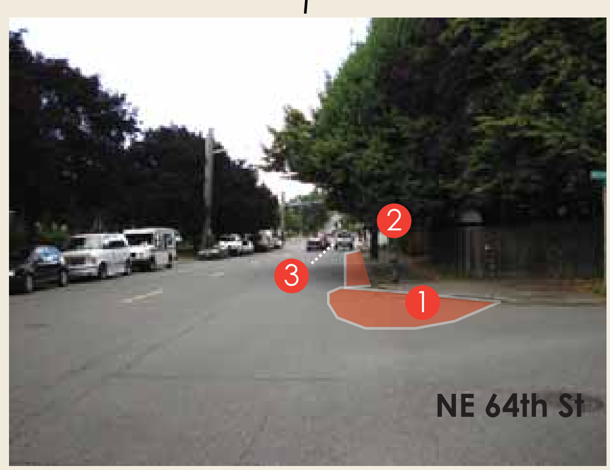
Priority Rating: High
Cost Estimate: $154,000

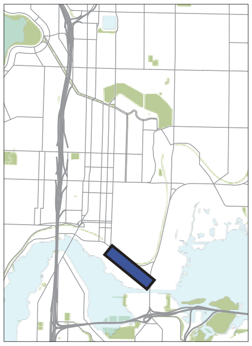
Problems and Issues

- 8th Ave NE is a wide two-lane arterial connecting the I-5 off ramp with NE 65th St. Pedestrians must cross the equivalent of 3 lanes of traffic.
- There is a large park-n-ride lot west of 8th Ave that generates a significant number of pedestrian crossings. This pedestrian connection will increase in volume and importance when Sound Transit's Roosevelt light rail station begins operation.
- Narrow sidewalks on the east side of 8th Ave limit pedestrian mobility and access to an adjacent bus stop.
- The lack of a delineated turning lane on 8th Ave may be hindering its full utilization by vehicles.

Recommended Actions

1. Construct a curb bulb at the 8th Ave NE /NE 64th St intersection.
2. Widen sidewalks on the east side of NE 8th Ave between NE 64th St and NE 65th St.
3. Re-stripe 8th Ave approach to NE 65th St to provide a northbound right-turn pocket.





NE Pacific St Corridor

Transit Speed & Reliability; Corridor Planning

Extend existing eastbound HOV lane to 15th Avenue NE and widen Burke-Gilman Trail.

Partnership Project
Cost Estimate: $4.9 million

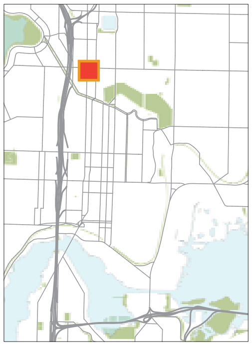
Problems and Issues

- Pacific Street is a major east-west transit corridor serving the University of Washington's south campus and health sciences facilities. About 92 buses travel eastbound on NE Pacific Street during the PM peak in the existing HOV lane.
- When Sound Transit completes the light rail station at Husky Stadium, and when additional HOV facilities are provided on the SR 520 Bridge, bus volumes and transfers on this street will increase.
- ***Vehicles on eastbound NE Pacific Street travel at an average of 6 mph during the PM peak hour, which is LOS F***.
- This project would provide an opportunity to widen and improve the Burke Gilman Trail, which may need additional person capacity with the opening of Sound Transit's Husky Stadium light rail station.

Recommended Actions

- Extend the HOV lane on eastbound NE Pacific Street from the existing end of the HOV lane at Pacific Place to 15th Avenue NE.

1. Pacific Street needs to be widened toward the north side to add the HOV lane. This will require the reconstruction of retaining walls and several small bridge spans related to the Burke Gilman Trail, providing an opportunity to widen and significantly improve both facilities.



Weedin Pl/8th Ave NE/NE 65th St

Pedestrian Mobility; Open Space & Urban Design

Project # 19

Close north end of Weedin Place to traffic and provide landscaping and other pedestrian amenities to encourage walking.

Priority Rating:	High
Cost Estimate:	$178,000

Problems and Issues

- This section of Weedin Place is a stop-controlled, diagonal street that connects NE 65th St to NE 66th St. It's function is somewhat redundant as turns from NE 65th St to 8th Ave are possible.

1. The City has discouraged use of Weedin Place by painting a wide curb bulb at the NE 66th St corner and limiting traffic to one lane.

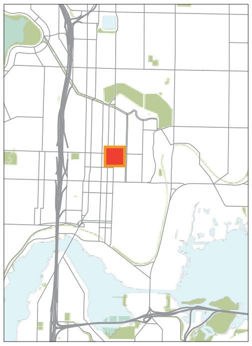
- Weedin Place creates extra gaps in the sidewalk network along NE 65th and NE 66th St, & slices through several commercially-zoned parcels limiting their potential to redevelop. It is also a cost-effective opportunity to implement recommendations from the Roosevelt Neighborhood Plan, including R-EDS3: "Coordinate and support the creation and maintenance of consistent, signature street treatments within the commercial core and at gateway entry points to the neighborhood."

Recommended Actions

2. Close Weedin Place to vehicles where it meets 8th Ave NE at NE 66th St. Provide new sidewalks, landscaping, benches, and public art to create a pocket park and neighborhood gateway.

- Consider vacating the remaining portion of Weedin Pl between 65th and 66th St if redevelopment opportunities come forward. Ensure any alternative design proposals maintain proportional quality of public space(s).

- If partial closure cannot be supported, construct a landscaped curb bulb to replace the pedestrian striping at 66th St.



NE 50th St/15th Ave NE

Vehicle Safety

Project #
20

Provide left-turn pockets and/or modify signal operations, and restrict parking to improve safety.

Priority Rating:	High
Cost Estimate:	$172,000

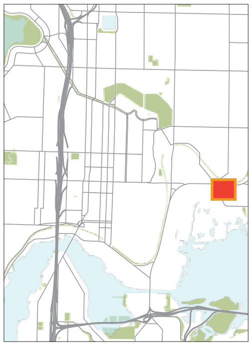
Problems and Issues

- This intersection has the highest collision rate in the study area,* based on number of collisions vs. traffic volumes over a 3-year period.
- Left-turning vehicles from NE 50th St do not have a "protected" signal phase, and due to the steep slope of the roadway drivers may be failing to see on-coming vehicles.
- Because parking is allowed close to the 15th Ave intersection, drivers trying to bypass left-turning vehicles are potentially making unsafe maneuvers through tight spaces.

* While the highest in the study area, the overall number of crashes and rate remain relatively low compared to numbers citywide.

Recommended Actions

1. Add left-turn pockets, provide exclusive left-turn phase, or eliminate left-turns for eastbound and westbound vehicles on NE 50th St.
2. Extend no parking zones for longer distances from the corners of the 15th Ave NE/ NE 50th St intersection.



36th Ave NE/Burke Gilman Trail

Bicycle & Pedestrian Mobility

Project # 21

Create new ramp connection between 36th Ave NE at NE 45th St with Burke Gilman Trail to improve bicycle mobility.

Priority Rating:	High
Cost Estimate:	$ 82,000

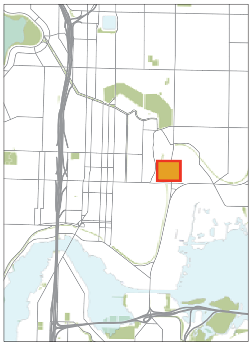
Problems and Issues

- The Bicycle Master Plan's Recommendations for Key Corridor and Focus Areas includes the following (#5): "Identify best connection between trail on east side of UW Campus and Burke-Gilman Trail (across Union Bay Place NE)." This connection will improve access to and from the waterfront/Ship Canal Trail and will be increasingly important as the area continues to grow.
- The elevation of the trail adjacent to Union Bay Place NE and the long signal cycle at the 5-way intersection with NE 45th St limit the feasibility of a worthwhile trail connection at Union Bay Place NE.
- NE 36th Ave at NE 45th St is a signalized intersection and has enough surplus right-of-way to construct a bicycle ramp adjacent to the existing set of stairs.

Recommended Actions

1. Provide a new bicycle ramp with access to the Burke Gilman Trail from the 36th Ave NE street end.

- Include signage connecting the Burke Gilman Trail to the Ship Canal Trail via NE 36th Ave and NE 41st St.



Burke Gilman Trail/NE 47th St/University Village

Bicycle and Pedestrian Mobility & Safety

Project #
22

Create new pedestrian connections along the NE 47th St right-of-way, and realign intersections along 25th Ave, to improve mobility for all modes.

Priority Rating:	Medium
Cost Estimate:	$895,000

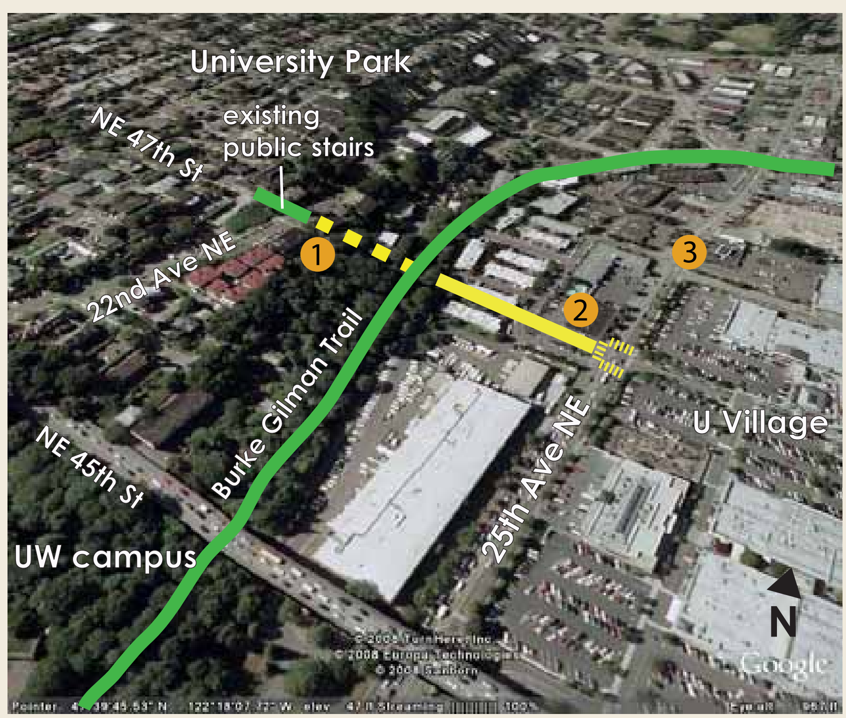
Problems and Issues

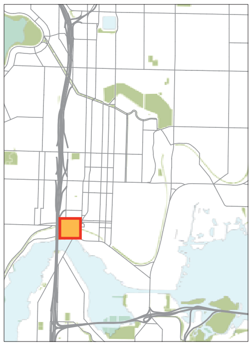
- A steep hillside separates the University Park neighborhood from the University Village shopping area. Neither the Burke Gilman Trail nor existing public stairs provide a direct pedestrian connection.
- The major access 'roads' to/from the University Village are not aligned with NE 47th and NE 49th Streets across from 25th Ave NE. This increases traffic congestion and reduces pedestrian comfort and safety.
- The area between the Burke Gilman Trail and 25th Ave NE is projected to intensely redevelop by 2030. A plan that improves trail connections and simplifies vehicle circulation patterns is needed.

Currently, trail users cannot directly access NE 47th St and the University Village due to a guardrail, University parking facilities, and the lack of a paved connection.

Recommended Actions

1. Create a new pedestrian connection from 22nd Ave NE to the Burke Gilman Trail. Upgrade the existing public stairs along NE 47th St to provide a direct pedestrian connection from University Park to the Burke Gilman Trail.
2. Work with the University and other adjacent property owners to realign NE 47th St with the University Village entrance on 25th Ave NE; create a 4-way signalized intersection with crosswalks.
3. Pursue additional opportunities to consolidate curb cuts and simplify intersections along 25th Ave NE, such as at NE 49th St where there are multiple retail entrances.





Project #
23

7th Ave NE and NE 40th St

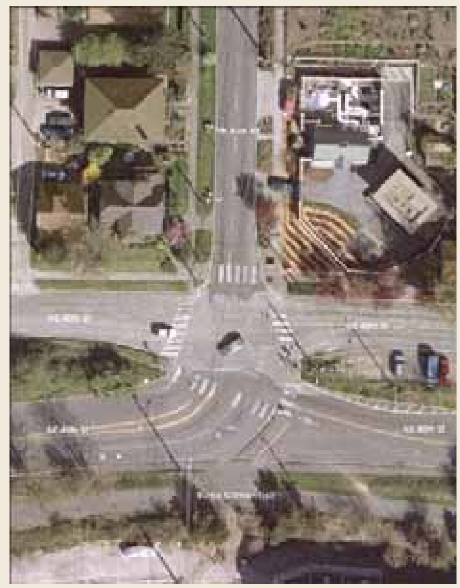
Congestion Management & Safety for All Modes

Construct a roundabout to improve traffic flow and reduce conflicts for all modes.

Priority Rating:	Medium
Cost Estimate:	$1.13 million

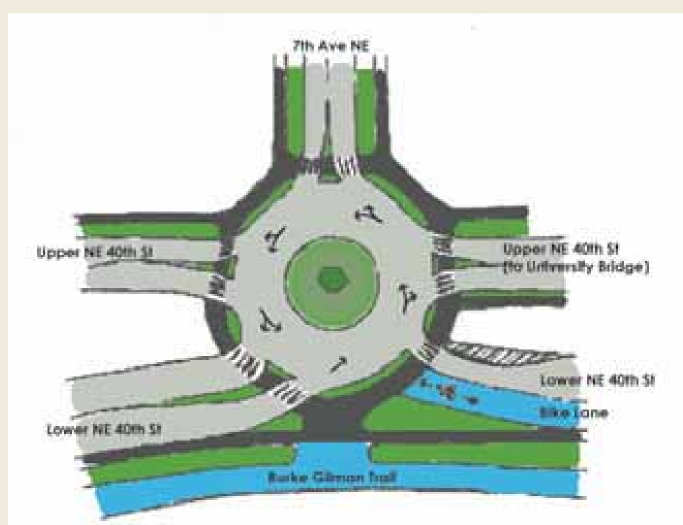
Problems and Issues

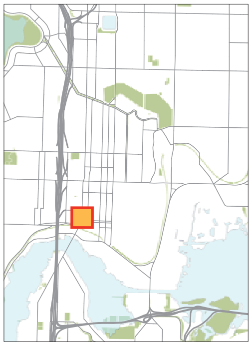
- This is a 5-legged intersection with all-way stops for traffic control. Lower NE 40th St is one-way west-bound, with the other lane a dedicated two-way bicycle facility.
- During the PM peak, this intersection is operating at level of service (LOS) F with an average 93 sec delay. Vehicles from westbound lower NE 40th St experience the longest delays.
- It is projected that this intersection without improve-ments would operate at LOS F with an average 152 seconds of delay in 2030.
- At a juncture between the University Bridge and Burke Gilman Trail, bicycle and pedestrian improvements at this intersection would greatly contribute to the Urban Trails and Bikeways Network.



Recommended Actions

- Construct a roundabout and improve the approach roadways at the 7th Ave NE/NE 40th St intersection. Ensure that the design accommodates bus turning movements.
- Together with UATAS project #14, which focuses on improved connections between the Burke Gilman Trail and the University Bridge, this project would provide a compre-hensive, multi-modal upgrade to the west University Bridge approach.





11th Ave NE/Eastlake Ave and NE 41st St

Pedestrian Safety

Project #
24

Install pedestrian-actuated signal, and upgrade sidewalks and crosswalks to improve safety.

Priority Rating: Medium
Cost Estimate: $242,000

Problems and Issues

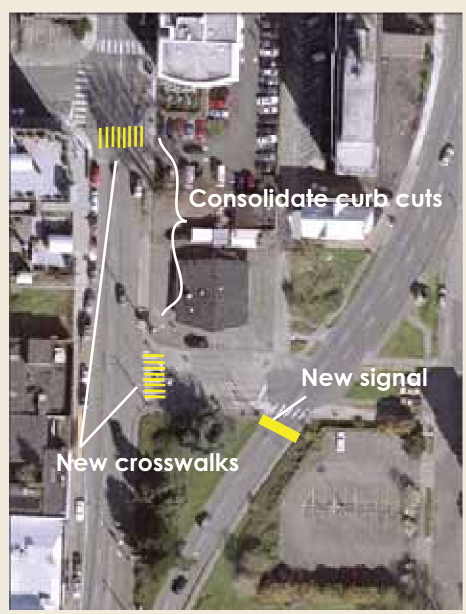
1. A marked crosswalk without traffic control is provided at the crossing of 11th Ave NE/Eastlake Ave at NE 41st St.

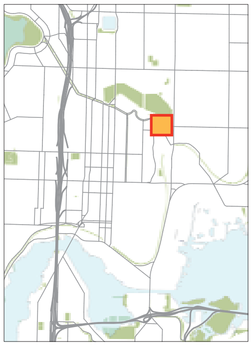
- Many pedestrians do not feel safe crossing this unsignalized intersection due to high speeds and volumes of northbound traffic. The curving of the road which marks the transition from Eastlake Ave E to 11th Ave NE also reduces the visibility for pedestrians.

2. Full pedestrian crossing of the Roosevelt Way/11th Ave NE couplet includes needing to use the north leg of the NE 42nd Street/Roosevelt Way intersection, which is a signalized "T" intersection.

Recommended Actions

- Install a pedestrian-actuated signal at the intersection of 11th Ave NE and NE 41st St to stop traffic for crossing pedestrians.
- Provide upgrades to adjacent sidewalks and wayfinding to help navigate the full crossing of the Roosevelt Way/11th Ave couplet.
- Consider adding a crosswalk to the south leg of the NE 42nd St/Roosevelt Way NE when adjacent property to the east redevelops.





Ravenna Ave NE/55th Ave/Ravenna Park

Bicycle and Pedestrian Mobility & Safety

Project #
25

Improve off-street mutli-use trail parallel to Ravenna Ave NE to improve pedestrian & bicycle mobility and safety.

Priority Rating: Medium
Cost Estimate: $423,000

Problems and Issues

1. Ravenna Ave to the Burke Gilman Trail is a popular bicycle connection that lacks adequate facilities. The Bicycle Master Plan recommends constructing a northbound bicycle climbing lane.

- There is not sufficient roadway width to provide 2 traffic lanes and a 5-foot climbing lane. The BMP recommendation would require roadway widening and could be prohibitively expensive.

2. An effective, less expensive solution is to provide a trail within Ravenna Park that runs parallel to Ravenna Ave NE.

Recommended Actions

1. Provide off-street bicycle and pedestrian trail at Ravenna Park from 55th Ave NE to Ravenna Blvd with improved surfacing, lighting, and signage. This will likely involve working with the Parks Department on cost-sharing and maintenance strategies.

2. Upgrade crosswalks and sidewalks that connect the off-street trail to the street network.

- Together with UATAS project #10, this project provides a comprehensive, multi-modal upgrade to the street network.

University Area Transportation Action Strategy

Montlake Boulevard E and E Hamlin St

Congestion Management & Vehicle Safety

Project #
26

Extend northbound left/U-turn lane at E Hamlin St to reduce congestion on Montlake Boulevard.

Priority Rating:	Medium
Cost Estimate:	$72,000

Problems and Issues

- The existing U-turn lane on Montlake Blvd is the principle turn for northbound vehicles accessing State Route 520.

1 The turn lane is currently not long enough to store the vehicles wanting to access SR 520. Vehicles regularly spill back into the through-lane and block northbound traffic.

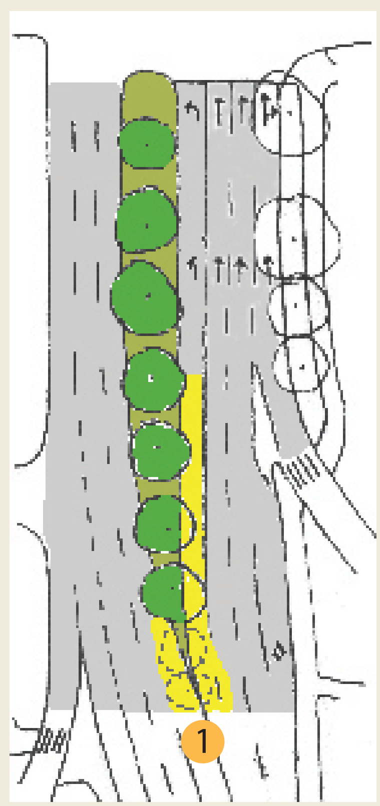
- While the replacement of the 520 Bridge is expected to cause major road revisions in the near future, there are low-cost improvements that can and should be done now to improve traffic flow.

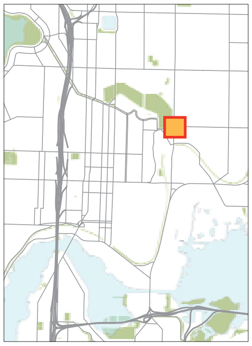
Recommended Actions

1 Add vehicle storage capacity to the existing northbound left/U-turn on Montlake Blvd at E Hamlin St by removing part of the median.

- Work with the Washington State DOT to gain approvals for this project, which is technically in state-owned right-of-way.

- Additional congestion management can be achieved along Montlake Blvd by asking WSDOT to add a sign on SR-520 directing westbound-to-southbound drivers to utilize the Lake Washington Blvd exit, which is a more direct route than using Montlake Blvd.





Project #

27

25th Ave NE/NE 55th St

Congestion Management & Safety for All Modes

Provide northbound and southbound left-turn pockets to reduce congestion and improve safety.

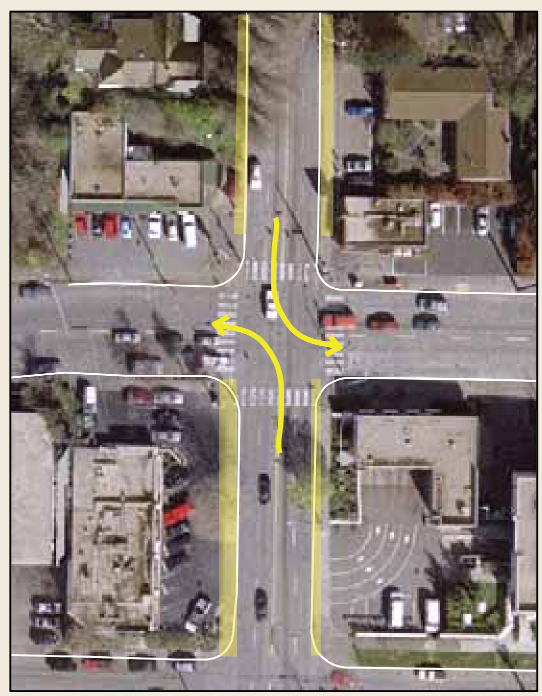
Priority Rating:	Medium
Cost Estimate:	$849,000

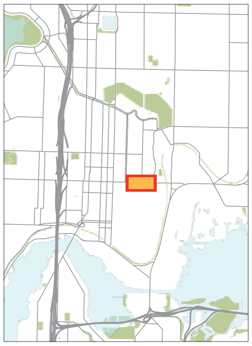
Problems and Issues

- This intersection has one of the highest collision rates of the study area, based on number of crashes and traffic volume.
- There is high demand for northbound and southbound left turns but they are not currently "protected."
- Making this intersection more attractive to drivers travelling to and from Ravenna Blvd could help reduce traffic (and thus vehicle/bicycle/ped conflicts) at the Burke Gilman Trail crossing at NE Blakely St/25th Ave NE.

Recommended Actions

- Provide left-turn pockets on 25th Ave NE at NE 55th St; 25th Ave will need to be widened near the intersection to provide enough room.





University Area Transportation Action Strategy

NE 45th St from 18th to 22nd Ave NE

Pedestrian Mobility & Safety

Project # 28

Widen sidewalks and install landscaped pedestrian refuge islands to improve pedestrian capacity and safety

Priority Rating:	Medium
Cost Estimate:	$1.4 million

Problems and Issues

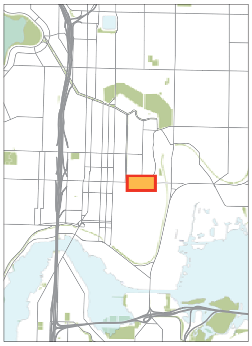
- NE 45th St is a principal arterial connecting the north University campus area with the business district and the east campus. Pedestrian volumes are high, especially north-south.
- This section of NE 45th St has narrow sidewalks, particularly on the north side, and fails pedestrian performance measures for width (LOS F) as established by UATAS.
- Sidewalks on both sides of the street are narrow. However, right-of-way constraints - and the potential for an improved pedestrian connection from the south side of NE 45th St underneath the NE 45th St Viaduct (see UATAS Project #11) - make focusing on the south side of the street (and connections to it) the most feasible and appropriate option for improving pedestrian safety and connectivity.

Recommended Actions

1. Widen sidewalks on south side of NE 45th St from 18th Ave NE to 22nd Ave NE. This improvement will be particularly valuable if a new pedestrian connection is established from NE 45th St to the Burke Gilman Trail as part of the NE 45th St Viaduct replacement project slated for 2009-2010.
2. Install landscaped pedestrian refuges on NE 45th St at 18th Ave and 20th Ave by replacing the 'dead spaces' where center turn lanes are not needed.

- When parcels redevelop on either side of 45th St, the City should require additonal setbacks for wider sidewalks.

SDOT



NE 45th St from 18th to 22nd Ave NE

Pedestrian Mobility & Safety

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Recommended Actions

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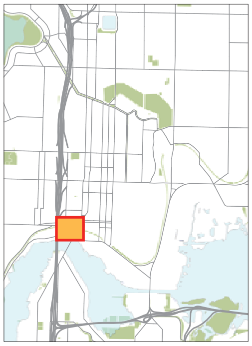
- When parcels redevelop on either side of 45th St, the City should require additonal setbacks for wider sidewalks.

University Area Transportation Action Strategy

Northlake Way Corridor

Pedestrian, Bicycle and Transit Mobility & Safety

Project # 29



Reconstruct Northlake Way; add sidewalks and landscaping, upgrade bus stops, and provide off-street shared use path to improve mobility and safety

Priority Rating:	Medium
Cost Estimate:	$1.62 million

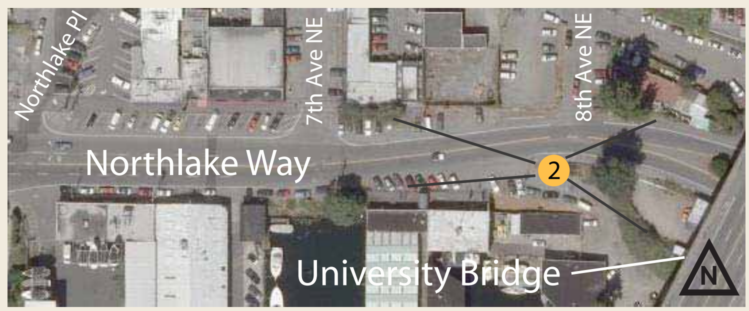
Problems and Issues

- Community plans call for new sidewalks and street trees in this area. Northlake Way is also a key section of the proposed Lake Union loop trail, which is in the Bicycle Master Plan and the Parks Foundation's 'Bands of Green' report.

1. This area currently lacks continuous sidewalks and well-defined pedestrian and bicycle facilities.

2. Underutilized and/or unregulated public rights-of-way provide ample opportunities to improve all modes, introduce more sustainable infrastructure, and activate the waterfront edge.

- Northlake Way is classified as a major truck street, and many adjacent properties are currently zoned for industrial use.



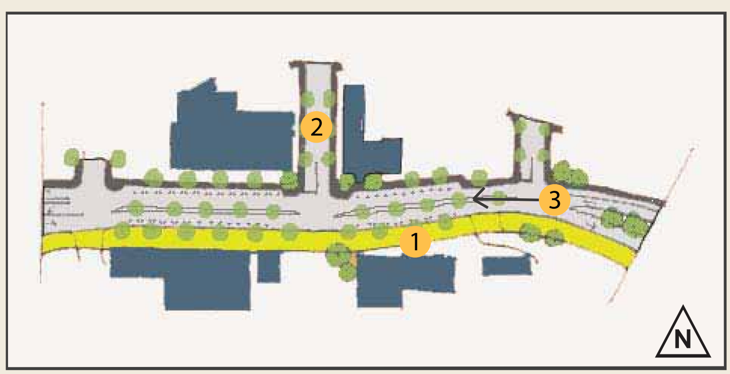
Recommended Actions

1. Reconstruct Northlake Way from University Bridge to 6th Ave NE. Shift roadway configuration to the north to provide an off-street shared-use trail from NE Boat St westward along the waterfront side.

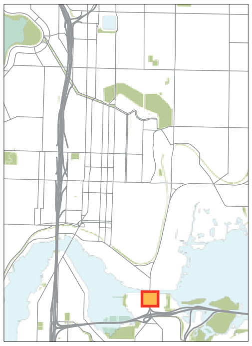
2. Provide continuous sidewalks with street trees on the north side of Northlake Way, and along 7th and 8th Ave NE to Northlake Place.

3. Remove 90-degree parking to allow for an extension of the current landscaped center median on NE Pacific St to Northlake Way. Develop a comprehensive plan to manage parking by 2012.

- Maintain freight and business access. Consider potential impacts and/or changes to industrial lands as area is improved.



- Upgrade bus stops (covered seating, lighting, in-lane stops, etc.), and consider east-west transit improvements such as additional service hours and new connections as area develops and light rail operation begins.



Montlake Boulevard NE / NE Shelby St

Pedestrian & Bicycle Mobility, Safety for All Modes

Project # 30

Narrow intersection, add bike lanes and widen sidewalks to improve safety. (Phase 2 of 2 - see Project #D)

Priority Rating:	Medium
Cost Estimate:	$785,000

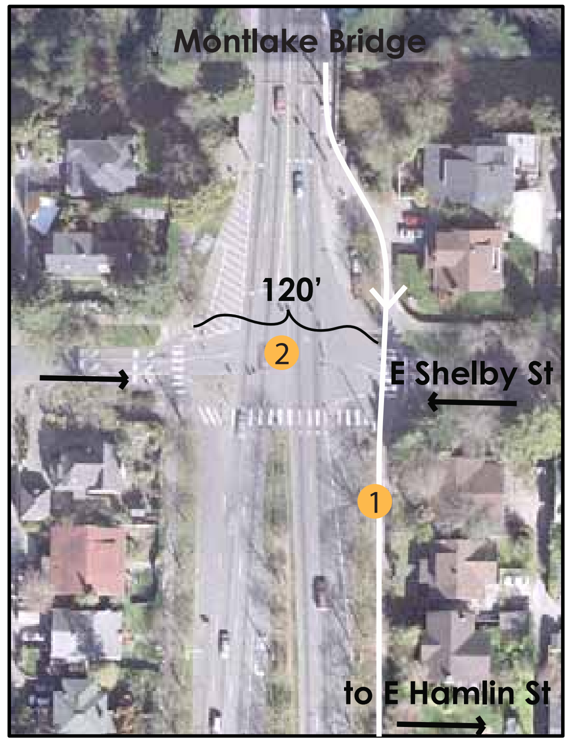
Problems and Issues

- This intersection is a key connection in the designated Urban Trails and Bikeways Network, providing access over the Montlake Bridge from several major bicycle corridors.

1. E Shelby St and E Hamlin St are a one-way couplet. The majority of cyclists from Montlake Bridge are heading to Lake Washington Blvd from the east side of the bridge, and are forced onto the sidewalk for a full block before accessing Hamlin St, the signed eastbound route.

2. The intersection is wide with some painted stripes to reduce perceived width. Sidewalks are narrow, curb ramps are non-compliant, nighttime visibility is poor, and no bicycle facilities are provided.

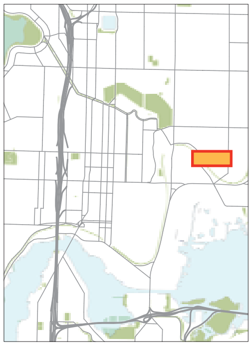
- Whichever design is chosen, the 520 Bridge Replacement Project will provide an opportunity to redesign this intersection.



Recommended Actions

- Reconstruct intersection with tighter curb radii, wider sidewalks, and bicycle-friendly ramps.
- Provide a southbound bike lane from Montlake Bridge to SR 520.
- Improve the southbound bicycle connection from the east side of Montlake Bridge. Provide contra-flow bicycle lane or shared-use path to Hamlin St, or consider reversing direction of one-way couplet.
- Add pedestrian-scaled lighting to improve night-time visibility.

A more detailed design concept including the recommended actions should be completed when the SR 520 interchange location is decided as part of the WSDOT 520 Bridge Replacement Project.



NE 50th St / 30th Ave to 35th Ave NE

Pedestrian Safety

Project # 31

Complete sidewalk along south side of roadway and provide traffic calming devices to reduce vehicle speeds and improve pedestrian safety.

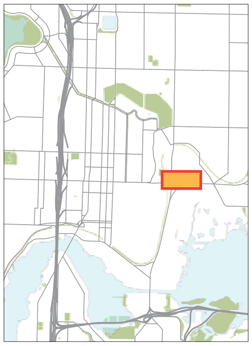
Priority Rating: Medium
Cost Estimate: $390,000

Problems and Issues

- NE 50th St between 30th and 35th Ave NE is a non-arterial residential street, bordered for most of its north side by a cemetary. Drivers often cut-through to avoid congested NE 45th St and travel at excessive speeds.
- Gaps in the sidewalk exist for several blocks along the south side of the street, while the north side is an unimproved shoulder with an earth embankment and parking toward the cemetary corners.

Recommended Actions

- Extend sidewalks along south side of street to provide a continuous off-street pedestrian path.
- Prioritize NE 50th St for the installation of traffic calming devices such as chicanes, speed humps, and "woonerf"-style alternating on-street parking.



Project #

32

Montlake Blvd/NE 45th St Corridors

Congestion Management

Install variable message signs and cameras in the vicinity of the Montlake Blvd/NE 45th St intersection to relay real-time traffic information.

Priority Rating: Medium
Cost Estimate: $1,310,000

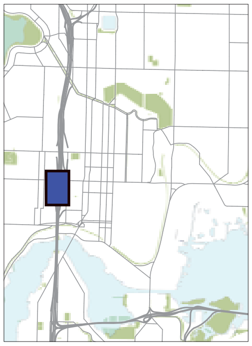
Problems and Issues

- Traffic on Montlake Blvd southbound and on NE 45th St eastbound during peak periods is heavily-congested; drivers generally expect long delays. On the shoulders of the peak, and during off-peak hours, however, drivers may be unsure which route is faster to get to Interstate-5 and other destinations.
- Traffic cameras in this area linked to the internet are consistently the most-viewed cameras from SDOT's webpage, indicating a strong demand for real-time information.
- Better information can reduce vehicle trip times, improve safety around construction zones, and more efficiently distribute vehicles over the roadway system.

A rare moment of calm looking south along Montlake Blvd. But what will it look like up ahead?

Recommended Actions

- Install variable message signs before Montlake Blvd on southbound 25th Ave NE and westbound NE 45th St to inform drivers of heavy delays and average trip times.
- Real-time signs and additional CCTV cameras viewable from the internet could play a big role in alerting drivers to delays and re-routings related to the SR 520 Bridge Replacement Project and Sound Transit station construction.



I-5/NE 45th St Interchange

Congestion Management

Project #
33

Provide additional lane on southbound I-5 on-ramp at NE 45th St to reduce vehicle delay.

Partnership Project
Cost Estimate: TBD

Problems and Issues

- The lack of adequate vehicle storage capacity on the I-5 on-ramp causes significant delays to traffic on NE 45th St.
1. Because there is only one general purpose lane on the I-5 on-ramp, single-occupant drivers do not use both westbound left turn lanes onto I-5 from NE 45th St. When they do, they turn into the HOV bypass lane and must merge left, blocking the lane for carpoolers.
- There is sufficient right-of-way so that an additional on-ramp lane can be added relatively easily.

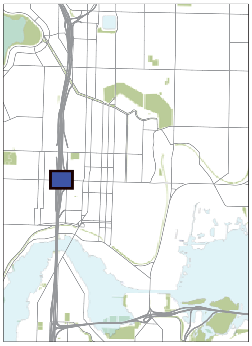
Recommended Actions

2. Add a lane to the southbound I-5 on-ramp from NE 45th St. This would provide two general prupose on-ramp lanes and an HOV bypass lane.
- Modify the ramp meter to accommodate the 2 general purpose lane approach.

Project # 34

I-5/NE 45th St Overpass

Pedestrian & Bicycle Mobility; Congestion Mangement

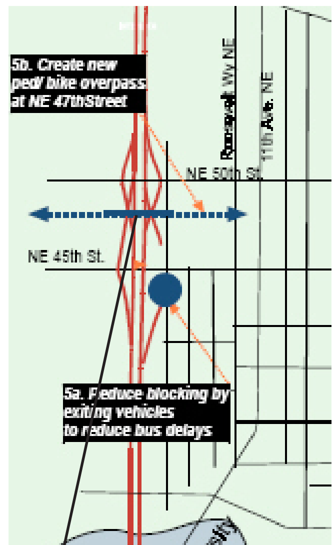


Widen NE 45th St/I-5 overpass to reduce vehicle delays and incorporate better sidewalks and bike lanes

Partnership Project
Cost Estimate: TBD

Problems and Issues

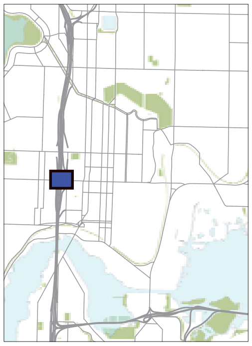
- The lack of adequate westbound-to-southbound left-turning vehicle storage capacity causes significant delay to east-west traffic movements on NE 45th St.
- The existing overpass does not provide adequate pedestrian and bicycle connections across I-5.
- 1 The Bicycle Master Plan, the 2002 UATS report, and adjacent neighborhood plans call for a new shared-use over-pass at NE 47th St. Such an action may be prohibitively expensive.



Recommended Actions

- Widen NE 45th St/I-5 overpass to accommodate lengthened left-turn lanes towards on-ramp, widened sidewalks with landscaping, and bike lanes. Consider as part of any major I-5 reconstruction efforts.

1 The need to improve east-west pedestrian and bicycle connectivity over I-5 has been a long-standing concern of the area. The 2002 University Area Transportation Study (top) and the 2007 Bicycle Master Plan (above) both call for a new I-5 overpass at NE 47th St. If such a project is not considered feasible due to cost concerns, WSDOT must consider a widening and enhancement to the NE 45th St overpass as part of any major new project on I-5.



University Area Transportation Action Strategy

I-5/NE 45th St Interchange

Congestion Management

Project #
35

Provide additional northbound on-ramp from 7th Ave NE to reduce vehicle delay.

Partnership Project
Cost Estimate: TBD

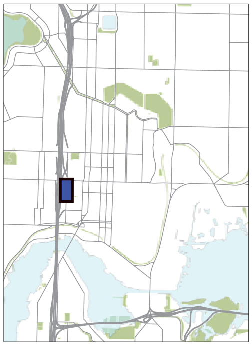
Problems and Issues

- NE 45th St, a key east-west vehicle and transit corridor, is heavily-congested during most of the day. A significant source of delay are vehicles looking to access Interstate 5.
- Inadequate vehicle storage capacity of the I-5 northbound on-ramp forces traffic spillovers back onto NE 45th St. Vehicles waiting to access I-5 from the westbound 45th St curb lane often slow east-west through traffic.
- There is sufficient right-of-way to provide additional storage capacity for the north-bound I-5 on-ramp, which would reduce spillovers onto NE 45th St and improve levels-of-service.

Recommended Actions

1. Add a lane to the northbound I-5 on-ramp from NE 45th St.

- Modify ramp meter to accommodate a two-lane ramp approach.



7th Ave NE/I-5 off-ramp at NE 45th St

Transit Speed & Reliability

Project # 36

Provide transit queue bypass lane to improve transit speeds & reliability.

Partnership Project
Cost Estimate: TBD

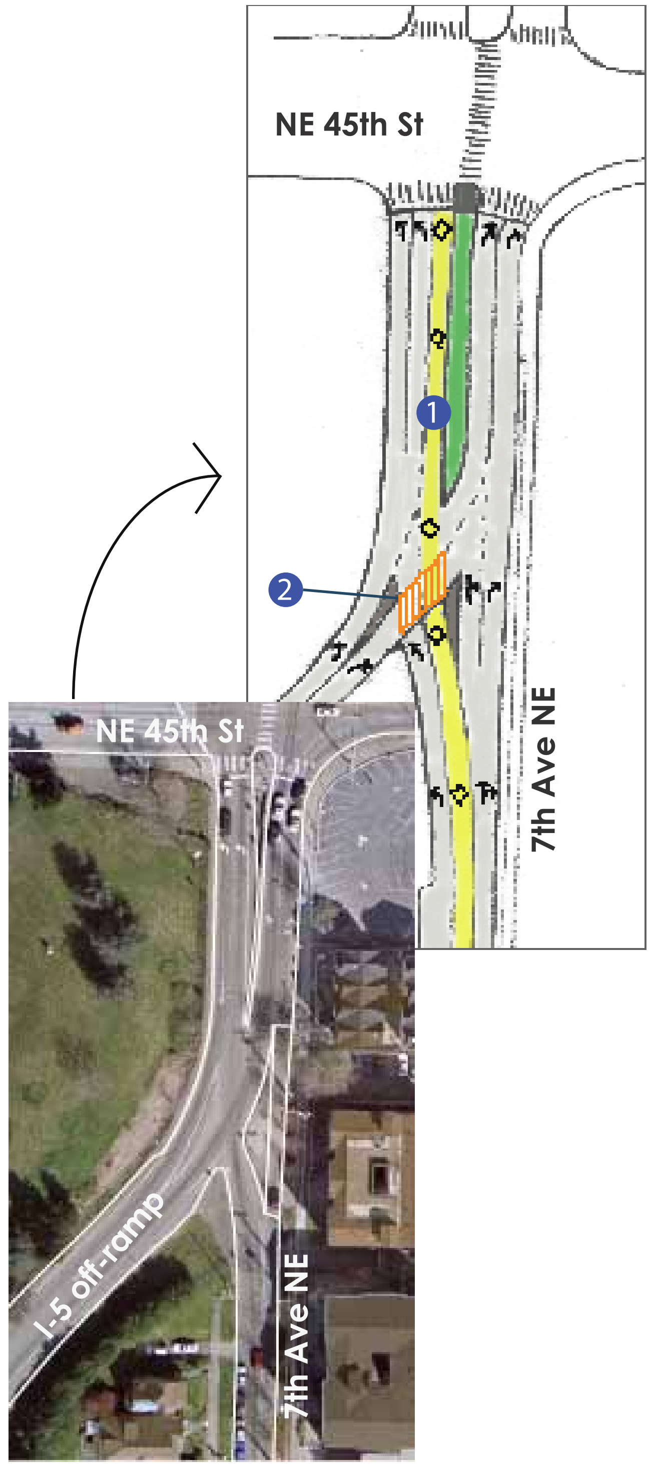
Problems and Issues

- 7th Ave NE is a northbound one-way arterial street. The I-5 northbound off-ramp approaching NE 45th St is not signalized as it crosses 7th Ave, while 7th Ave is controlled by a stop sign. This intersection performs poorly in the peak periods.
- Traffic backups on the NE 45th St I-5 off-ramp sometimes block the intersection with 7th Ave.
- Transit vehicles (28 buses in the AM peak and 22 in the PM peak) experience severe delays getting through this intersection and the intersection at NE 45th St.

Recommended Actions

1. Construct a transit queue bypass lane on northbound 7th Ave NE south of NE 45th St.
2. Create a clearly delineated intersection with the I-5 northbound off-ramp, improving pavement markings and signage that indicate to drivers not to block the intersection.

- This project will provide significant time savings to peak period transit. Potential negative impacts include increased I-5 off-ramp congestion and some parking removal along 7th Ave.
- The need for this project will greatly diminish once light rail service is established to and from Northgate. WSDOT and the City should prioritize the implementation of this project in order to maximize the accrued benefit to existing transit service.



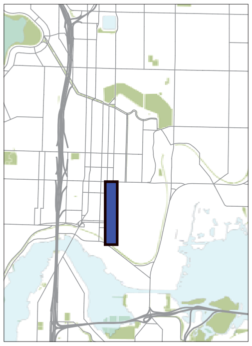
SDOT

University Area Transportation Action Strategy

15th Ave NE Corridor

Multi-Modal Corridor Planning; Urban Design

Project # 37



Conduct a corridor study in cooperation with the UW and King County Metro to improve pedestrian and transit facilities, manage congestion, & improve urban design.

Partnership Project
Cost Estimate: TBD

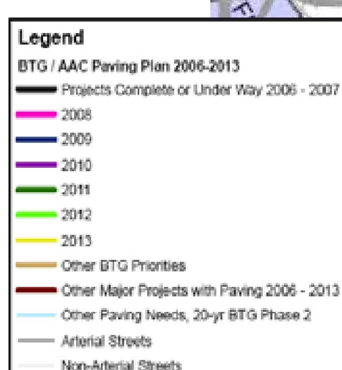
Problems and Issues

- 15th Ave NE carries a high volume of pedestrian, transit, and vehicle traffic - all of which are forecasted to increase.
- Existing pedestrian facilities are generally substandard, particularly the sidewalk and connection with campus on the east side of the street.
- The lifting of the University 'lease lid' and expected development of light rail at Brooklyn Ave, as well as increased employment and housing densities, all contribute to the importance of improving east-west connections across 15th Ave.
- Forecasted increases in north-south vehicle and transit volumes - especially if an interchange north of Montlake is chosen for the 520 Bridge Replacement Project - will only heighten the need to comprehensively manage all of the demands placed on 15th Ave NE.

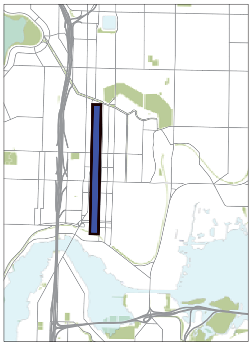
Forecasted increases in transit and new development, such as the William Gates Hall Law Center (above), will only continue to place pressure for improving 15th Ave NE for all modes.

Recommended Actions

- Conduct a corridor study in conjunction with the University of Washington and King County Metro to develop improvement concepts and implementation strategies for 15th Ave NE. Focus particularly on the east side of the street where the roadway and west campus edge intersect.
- Improvement concepts developed by this study should be considered in conjunction with SDOT reconstruction of 15th Ave NE scheduled for 2013 or for mitigation related to the SR 520 Bridge Replacement Project.



Thanks to Bridging the Gap funds, 15th Ave will be reconstructed in 2013, providing an incredible opportunity to address the design, safety, and performance of this important corridor in a comprehensive way.



University Area Transportation Action Strategy

Brooklyn Ave NE Corridor

Multi-Modal Corridor Planning; Streetscape Design

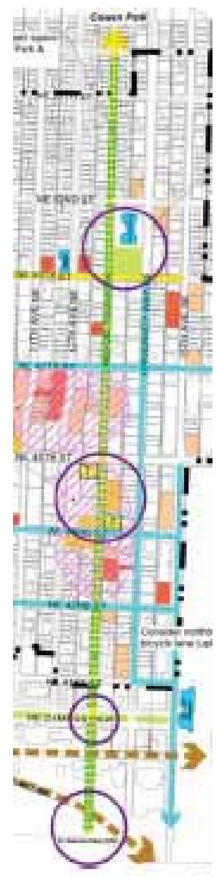
Project # 38

Develop a streetscape concept plan and implementation strategy to encourage coordinated urban design/sustainable infrastructure, and to leverage development activities.

Partnership Project
Cost Estimate: TBD

Problems and Issues

- Brooklyn Ave from Ravenna Park to NE Boat St is designated as a Neighborhood Green Street and has long been considered a key bicycle route. UATAS analysis has identified adding bicycle sharrows and widening sidewalks north of 50th St as recommended projects.
- More than adequate right-of-way provides implementation opportunities for sustainable and pedestrian-friendly improvements: the curb-to-curb distance is about 40 ft.
- Aging and substandard infrastructure, such as the pavement and utlility poles/street lighting, indicate that new infrastructure investments will be needed in the foreseeable future.
- New investments are expected along Brooklyn Ave by SDOT, Sound Transit, the University of Washington, (potentially) the Parks Department, and private development. In order to facilitate coordinated construction, good urban design and the leveraging of opportunities, SDOT and the Department of Planning & Development should promote stakeholder participation in - and funding of - a concept streetscape plan for this corridor.



The 2005 University District Parks Plan is "anchored" around the development and planning associated with Brooklyn Ave.

Recommended Actions

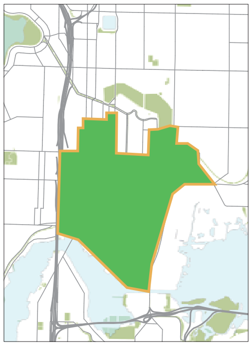
- Develop Green Street design concept for Brooklyn Ave from Ravenna Park to NE Boat St in cooperation with DPD, Sound Transit, the UW, the Parks Department, and neighborhood property-owners and stakeholders.
- Officially designate Brooklyn Ave as a bicycle route and add shared-lane markings (sharrows).
- Prioritize pedestrian improvements, such as wider sidewalks, street trees, better trail connections, and shorter signal cycles.

University Area Urban Center

Pedestrian Mobility

Project #

A



Automatically activate pedestrian signals at all times in Urban Center. Remove push buttons to avoid confusion.

Low Capital Cost, Early Implementation Project

Cost Estimate: $52,000

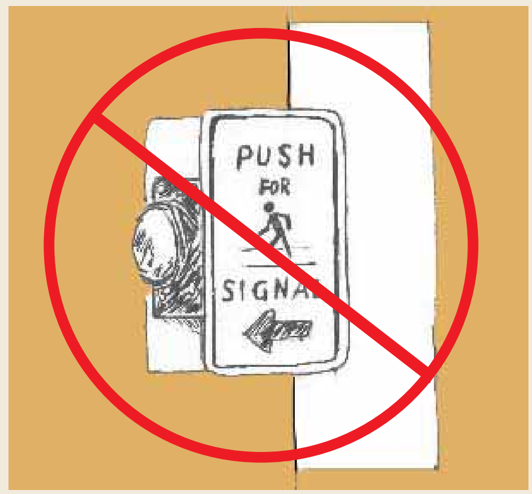
Problems and Issues

Burke Gilman Trail Crossing at 25th Ave NE

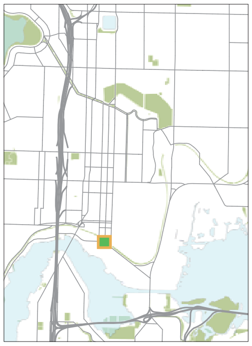
- Most signalized intersections operate with autmoatic pedestrian phases from 7am-11pm, and are pedestrian-actuated from 11pm-7am.
- Many pedestrians do not understand this push button operating practice, often resulting in user confustion and frustration.
- SDOT's current push button policy is not fully consistent with many other City and SDOT policies that aggressively promote pedestrian-friendly urban centers and modal shifts away from the automobile.*
- Any changes to the policy must be approved by the Seattle City Council.

* Current SDOT push button policy is full automation if pedestrians are persent at the main street crossing for 75% or more of the cycles for 12 hours of the day; and partial automation/partial user-activation if pedestrians are present for 50% of cycles.

Recommended Actions



- Include within the scope of the Pedestrian Master Plan a task to examine the current SDOT policy regarding pedestrian crossing push buttons. Consider removal of pedestrian push buttons at all fully-signalized intersections within an Urban Center such as the University District Urban Center. Automatically activate the pedestrian crossing signal with every green cycle 24-hours per day.



University Way NE and NE Pacific St

Bicycle Safety

Project # B

Remove vegetation and add raised, colored crosswalks at Burke-Gilman Trail crossing to improve visibility & safety.

Low Capital Cost, Early Implementation Project

Cost Estimate: $50,000

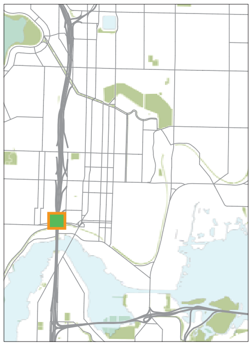
Problems and Issues

- The Burke-Gilman Trail crosses University Way on the north leg of the intersection with NE Pacific Street. Drivers approaching the intersection often fail to recognize the trail crossing and pay sufficient attention to the crosswalk.
- (1) The existing vegetation planted along both sides of University Way reduces or blocks the sightlines of bicyclists traveling on the trail.
- 4 bicycle-vehicle collisions were reported here in the last three years.

Recommended Actions

- Clear where appropriate the trees and shrubs located near the Burke-Gilman trail on the northeast and northwest corners of the intersection to increase sight distances between roadway and trail.
- Provide a raised, colored crosswalk on the north leg of the University Way NE and Pacific Street NE intersection where it crosses the trail.
- Prioritize this intersection for signage improvements as recommended in the Seattle Bicycle Master Plan to improve trail visibility.

A crosswalk similar to this one above should be installed at the crossing of University Way to improve safety and visibility of the Burke Gilman Trail.



6th Ave NE and Lower NE 40th St

Congestion Management

Project # C

Add left turn lanes to improve traffic flow.

Low Capital Cost, Early Implementation Project
Cost Estimate: $8,000

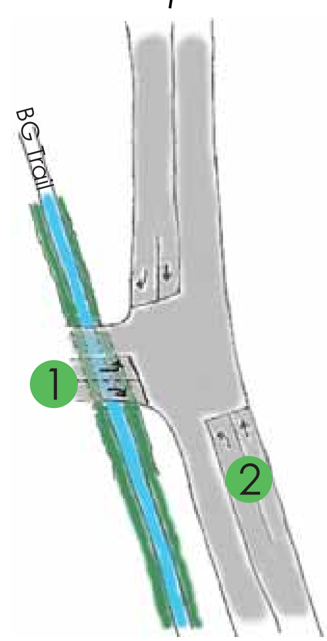
Problems and Issues

- The intersection of 6th Ave NE and Lower NE 40th St (under I-5) is a three legged, "T"-intersection controlled by all-way stops.
- The intersection currently operates at level-of-service (LOS) F with 127 seconds of delay. In 2030, it is forecasted to operate at LOS F with an average 152 seconds of delay if actions are not taken.
- There is sufficient roadway width to accommodate turn lanes, although no striping is currently provided.

Recommended Actions

1. Stripe a northbound left-turn lane on 6th Ave NE.
2. Stripe a westbound left-turn lane on Lower NE 40th Street to improve traffic flow.

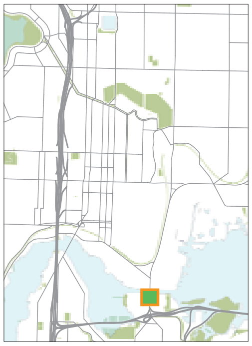
- Ensure that changes to channelization can safely accommodate buses from eastbound NE 40th St turning to southbound 6th Ave NE.



Montlake Blvd E and E Shelby St

Bicycle Mobility & Safety

Project #
D



Modify traffic island and add a bike lane to improve safety (Phase 1 of 2 - see Project #30)

Low Capital Cost, Early Implementation Project

Cost Estimate: $22,000

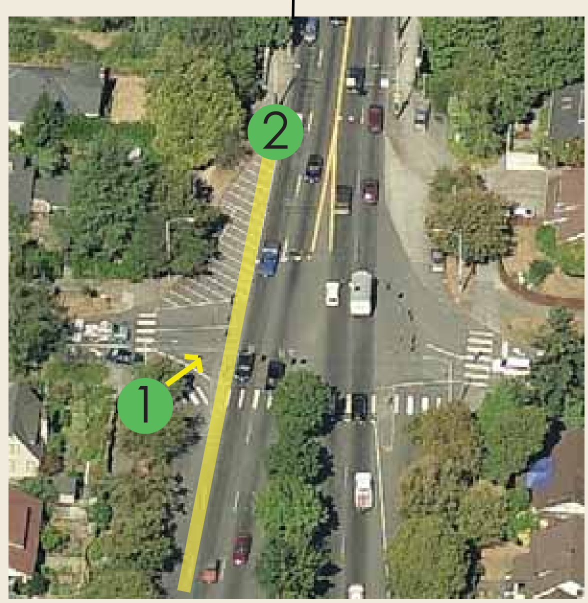
Problems and Issues

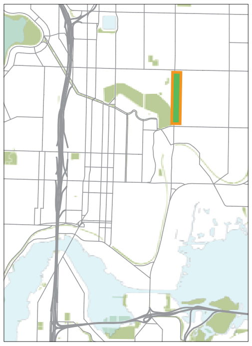
- Montlake Blvd E is an important connection in the Urban Trails and Bikeways System, linking the UW cmpus and Burke Gilman Trail with major bicycle corridors to the south.
- The traffic island on the west leg of the intersection of Montlake Boulevard and NE Shelby Street prevents bicyclists from comfortably merging from the sidewalk on the Montlake Bridge to southbound Montlake Boulevard.
- The island is a barrier that increases cyclist discomfort and the potential for vehicle/bicycle conflicts along Montlake Blvd.
- There is no bicycle facility provided at this intersection.

Recommended Actions

1. Remove a portion of the traffic island on the west side of Montlake Boulevard NE at the intersection with NE Shelby Street to help cyclists get into the southbound general traffic lane from the sidewalk on the Montlake Bridge.
2. Stripe a bike lane on southbound Montlake Blvd E south of the Montlake Bridge to SR 520.

- Look to reconstruct entire intersection when the 520 Bridge Replacement Project moves forward (See Phase 2, Project #30).





25th Ave NE Corridor

Congestion Management

Project # E

Extend peak-hour parking restrictions to all-day to reduce off-peak congestion.

Low Capital Cost, Early Implementation Project

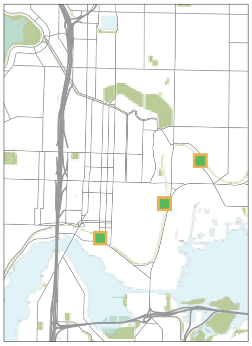
Cost Estimate: $78,000

Problems and Issues

- During the PM peak period parking on the east side of 25th Avenue NE is prohibited and two northbound through lanes are provided. As a result, the 25th Avenue NE/ NE 65th Street intersection operates at an acceptable level-of-service (LOS).
- At times when on-street parking is allowed – after 6 PM weekdays and all-day weekends – northbound vehicles approaching this intersection encounter excessive delays.

Recommended Actions

- Allow late PM and overnight parking only on the east side of 25th Avenue NE between NE 55th Street and NE 65th Street to reduce northbound traffic congestion during the off-peak period and on weekend days.



University Area Transportation Action Strategy

Burke Gilman Trail at Pend Oreille Rd, Brooklyn Ave NE, and NE Blakely St

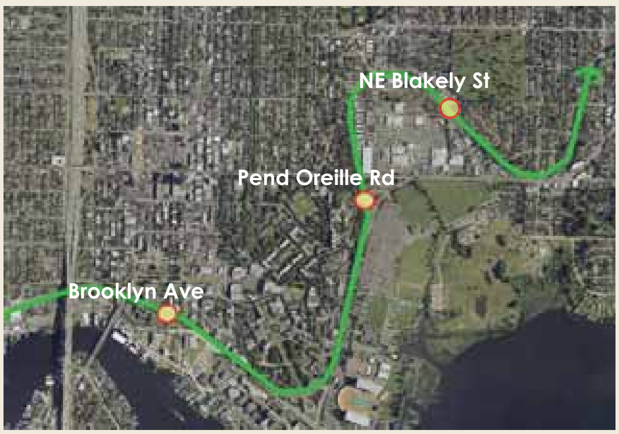
Bicycle and Pedestrian Mobility & Safety

Project # F

Add raised, colored trail crossings, and consider traffic control modifications at key mid-block intersections, to improve safety.

Low Capital Cost, Early Implementation Project
Cost Estimate: $29,000

Problems and Issues



- These mid-block trail crossings are considered high accident & conflict locations. Current traffic control provides stop signs for the trail and uncontrolled right-of-way for vehicles.
- Driver and trail user behavior often do not reflect the traffic control: many drivers yield to trail traffic (which for pedestrians is state law), and many trail users (including bicyclists) have come to anticipate yielding vehicles and fail to stop along the trail.

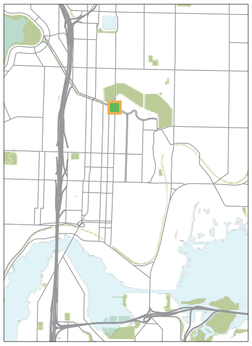
1. The UW police recently placed additional warning signs along the trail at Brooklyn and Pend Oreille as a stop-gap safety measure.

- These streets have relatively light traffic volumes, while this is the most heavily used segment of the Burke Gilman Trail. Considering these specific locations and the comparison of vehicular/trail volumes, the current traffic control and signage can be considered inconsistent with City and SDOT policies that aggressively promote non-motorized transportation and sustainability.
- For more detailed discussion of SDOT's current policy related to assigning right-of-way at mid-block trail crossings, see Appendix H of the Bicycle Master Plan.

New trail signage at Pend Oreille Rd and Brooklyn Ave.

Recommended Actions

- The University of Washington may conduct a comprehensive study of the Burke Gilman Trail along campus property. Work with their transportation office to consider revising the current traffic control and signage at Pend Oreille Rd and Brookyln Ave, and replicate these modifications at the crossing of NE Blakely St to maintain consistency.
- Add raised, colored and/or patterned crosswalks to distinguish Burke Gilman Trail crossings and reduce potential conflicts with motorists.



15th Ave NE/Ravenna Blvd

Vehicle Congestion

Project #
G

Monitor traffic congestion to determine if and when a signal needs to be installed to reduce delay.

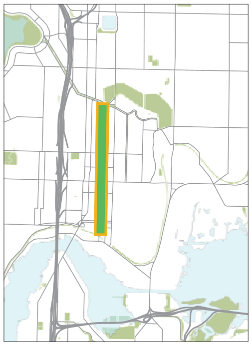
Low Capital Cost, Early Implementation Project
Cost Estimate: N/A

Problems and Issues

- This intersection was converted to a 4-way stop several years ago.
- The intersection is currently operating at an acceptable level of service.
- Due to forecasted increases in traffic volumes on 15th Ave NE, future delays during the PM peak hour may require the installation of a signal.

Recommended Actions

- Monitor traffic periodically and evaluate the need for a signal at the 4-way stop intersection.



University Area Transportation Action Strategy

Brooklyn Ave NE from Ravenna Blvd to the Burke Gilman Trail

Bicycle Mobility & Safety

Project # H

Install bicycle sharrows and signage to improve mobility and safety.

Low Capital Cost, Early Implementation Project

Cost Estimate: $39,000

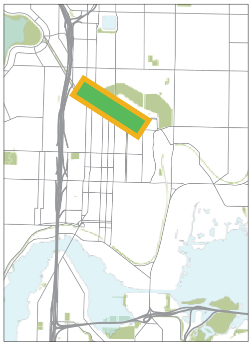
Problems and Issues

- Brooklyn Avenue is a designated Neighborhood Green Street and has long been considered a preferred north-south bicycle route.
- The need to improve north-south bicycle facilities in the University District has been recognized by the University District Neighborhood Plan, UW Campus Master Plan, 2005 Parks Plan, Bicycle Master Plan, and consistently by community members in UATAS outreach.

Recommended Actions

- Provide shared lane markings (bicycle sharrows) along Brooklyn Avenue from the Burke-Gilman Trail (NE Pacific Street) to Ravenna Blvd.
- Designate Brooklyn Ave as a bike route and provide wayfinding from adjacent trails and bicycle facilities.

The recently completed Seattle Bicycle Master Plan, while suggesting that Brooklyn Ave could see improvements in the future, fell short of fully designating Brooklyn Ave in the bicycle facilities network. Active neighborhood support, however, and Brooklyn Ave's low traffic volumes and strong connections to other parks and trails make installation of sharrows or other bicycle improvements a priority for the area.



Ravenna Boulevard

Bicycle Safety

Project #
I

Prioritize funding the repaving of Ravenna Blvd from NE 65th St to Ravenna Ave NE to improve safety.

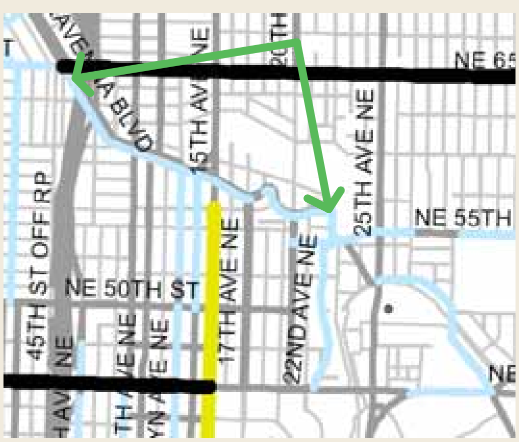
Low Capital Cost, Early Implementation Project
Cost Estimate: $2.5 million*
*not including drainage

Problems and Issues


Ravenna Blvd at 8th Ave NE

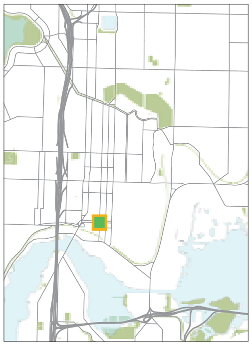
- Ravenna Blvd is a critical link in Seattle's Urban Trails and Bikeways System, both systemwide and for the Green Lake, Roosevelt, Ravenna, and University District neighborhoods. It is also a prominent Olmstead legacy park facility.
- The existing pavement on Ravenna Blvd is rough and hazardous for cyclists. SDOT Street Maintenance has identified Ravenna Blvd as needing major maintenance, although it has not been prioritized or scheduled for improvement.
- While the pavement on Ravenna Blvd is in need of repair, the street carries less vehicle traffic volume than other Seattle streets that have also been identified for resurfacing.

Recommended Actions



- As new information becomes available to SDOT concerning recently enacted drainage regulations and their cost impacts, consider prioritizing Ravenna Boulevard from NE 65th St to Ravenna Ave NE.
- Work with SDOT's Bicycle Program, Seattle Public Utilities, and Seattle Parks and Recreation Department to identify grant and other partnership opportunities to help fund this project.

Draft 9-Year Paving Plan (left):
Recently completed paving projects
15th Ave NE scheduled for 2013
Needs maintenance (potential Bridging the Gap 20-year project)



15th Ave NE and NE Campus Parkway

Pedestrian & Vehicle Safety

Project #
J

Add protected left-turn phase to signal timing to improve safety.

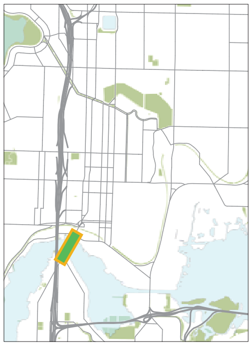
Low Capital Cost, Early Implementation Project
Cost Estimate: $245,000

Problems and Issues

- 3 pedestrian-vehicle collisions have occurred at this intersection in the last three years.
- 1 Because of the wide median on Campus Parkway, it takes a long time for pedestrians to cross the street.
- Northbound vehicles on 15th Avenue NE can turn left at any time during the green phase; this turning movement presents a hazard to pedestrians crossing Campus Parkway.

Recommended Actions

- Modify signal operation to provide protected northbound left-turn phase. Pedestrians would not be permitted to cross the street when vehicles are turning left across the crosswalk.



Project #
K

University Bridge

Pedestrian & Bicycle Safety; Urban Design

Install pedestrian lighting fixtures to existing poles along the University Bridge to improve safety.

Low Capital Cost, Early Implementation Project
Cost Estimate: $ 125,000

Problems and Issues

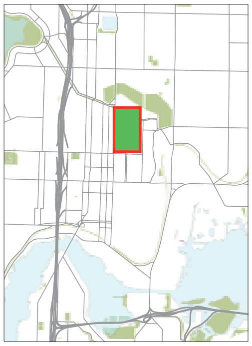
- The University Bridge is a critical link in the Urban Trails and Bikeways System, is part of the South Lake Union Loop Trail, and is a highly visible facility from many neighborhoods and waterways.
- While architectural flood lighting exists on the draw-bridge structure, the roadway lights on the remaining bridge span are sparse and do not provide sufficient pedestrian or bicycle safety and comfort.
- KC Metro has evenly-spaced trolley-wire poles that should be able to accommodate pedestrian lighting fixtures over the sidewalks and bike lanes.

Recommended Actions

- Install pedestrian luminaires (type Lumec Z-40 dark green) to the existing KC Metro and roadway lighting poles.
- The improved lighting should help increase the visibility of pedestrians and bicyclists along the bridge and reduce potential vehicle conflicts at the NE Fuhrman and NE 40th intersections.
- SDOT must seek approval from KC Metro to utilize the trolley poles.

Z40

Because of the even-spacing of the existing transit poles, new pedestrian fixtures will provide a distinctive and "rhythmic" quality to the bridge in addition to increasing safety.



20th Ave NE/Ravenna Boulevard

Pedestrian & Bicycle Safety, Traffic Calming

Project #
L

Prioritize pedestrian and bicycle facilities to calm traffic and improve safety, and add new signage to prohibit oversized vehicles.

Low Capital Cost/ Early Implementation Project
Cost Estimate: N/A

Problems and Issues

- Ravenna Blvd and 20th Ave NE are Local Connector street types in this area, which means they should be designed to "emphasize walking, bicycling, and access over mobility" according to adopted City policies. Currently, however, large trucks tend to try and maneuver through the narrow, winding Ravenna Blvd to/from I-5, while 20th Ave to NE 50th St is becoming an increasingly popular east-west through route for traffic avoiding more congested parallel arterials.

- 20th Ave NE between NE 50th St and Ravenna Blvd is 15 feet wider than it is south of 50th St. While this room helps accommodate transit and on-street parking, it also encourages speeding and does not currently provide adequate sidewalks in many locations (see Appendix B). 20th Ave is also a critical ped/bike connection over Ravenna Ravine and is part of the signed bicycle network, although no bicycle facilities currently exist.

- New development and major construction activities in the area will increase the need to discourage cut-through traffic.

NE 50th St to 20th Ave NE is a popular route for cut-through traffic headed between the University District and University Village/neighborhoods to the east. Opportunities exist to improve pedestrian and bicycle safety and to accommodate - but calm - vehicular traffic.

Recommended Actions

1. Consider traffic calming needs as a balancing factor when prioritizing Bicycle Master Plan projects for implementation. Particularly for 20th Ave NE, installing shared lane markings, or "sharrows," and a white line to delineate parking will help to visually narrow the roadway and keep vehicle speeds low.

- Explore traffic calming opportunities for 20th Ave NE, such as a raised crosswalk at NE 52st St and pedestrian enhancements at NE 50th St and Ravenna Blvd. Encourage wider sidewalks and curb extensions at intersections as redevelopment occurs.

- Upgrade existing signage at the intersection of Ravenna Ave and NE 55th St to better direct truck traffic away from Ravenna Blvd towards 22nd Ave NE/NE 45th St. Install new signage at 20th Ave and 15th Ave along Ravenna Blvd to divert trucks from the narrow curve in Ravenna Blvd to more appropriate arterials.

Bicycle Master Plan

University Area Transportation Action Strategy
Appendices

A. Performances Measure Memorandum

University Area Transportation Action Strategies

Performance Measures and Thresholds

Prepared for

Seattle Department of Transportation

Prepared by

Mirai Transportation Planning and Engineering

April 2007

University Area Transportation Action Strategies

Performance Measures and Thresholds

This report describes the transportation system performance measures and thresholds that will be applied to the University Area Transportation Action Strategy (UATAS). These performance measures and thresholds will be used to identify data needs, evaluate the existing deficiencies and identify the future transportation facility and service needs.

The performance measures and thresholds described in this report should be regarded as an initial set. As information is assembled throughout the duration of the UATAS study, these measures and thresholds may be adjusted.

Mirai will evaluate the University Area transportation system using the measures and benchmarks categorized by the following transportation modes:

- Transportation system for pedestrians
- Transportation system for bicyclists
- Transit system
- Transportation system for vehicles

Transportation System for Pedestrians

Mirai will evaluate the University area for pedestrian safety, the adequacy of space for pedestrians and the ease of pedestrians to cross streets. The level of service will be defined for each pedestrian corridor based on the pedestrian facilities and their relationship to the street and adjacent land uses. Specific thresholds will be set for each performance measure. Since it is not practical to evaluate pedestrian conditions on all streets in the study area, the study will focus on pedestrian corridors, most of which are classified arterials and/or the street types defined in Seattle's *Right-of-Way Improvement Manual.*

Pedestrian Corridors

The pedestrian corridors for the study area include:

North-south Corridors

- 25th Avenue NE from NE 45th Street to NE 65th Street
  (Principal Arterial - Regional Connector, Main Street)
- 22nd Avenue NE from NE 45th Street to Ravenna Boulevard
  (Collector Arterial - Local connector)

- 20th Avenue NE from NE 45th Street to Ravenna Boulevard
  (Collector Arterial - Local connector)
- 17th Avenue NE from NE 45th Street to Ravenna Boulevard
  (Collector Arterial - Local connector)
- 15th Avenue NE from NE Pacific Street to NE 50th Street
  (Principal Arterial - Regional connecter, Mixed Use Street, Main Street)
- 15th Avenue NE from NE 50th Street to NE 65th Street
  (Minor Arterial -Commercial connecter)
- University Way NE from NE Pacific Street to NE 50th Street
  (Collector Arterial - Main St, Local connecter from Pacific to Campus Parkway)
- University Way NE from NE 50th Street to Ravenna Boulevard
  (Collector Arterial - Main Street)
- Brooklyn Avenue NE from Pacific Street to NE 50th Street
  (Collector Arterial - Green Street)
- Brooklyn Avenue NE from NE 50th Street to Ravenna Boulevard
  (Collector Arterial - Green Street)
- Eastlake Avenue from Harvard Avenue E to Campus Parkway
  (Principal Arterial - Regional connecter)
- 11th Avenue NE from Campus Parkway to NE 50th Street
  (Principal Arterial - Regional Connector to 43rd, Mixed Use Street to 50th)
- 11th Avenue NE from NE 50th Street to Ravenna Boulevard
  (Principal Arterial - Regional Connector)
- 12th Ave NE from Ravenna Bouldevard to NE 65th St
  (Principal Arterial - Regional Connector, Main Street)
- Roosevelt Way NE from Campus Parkway to NE 45th Street
  (Principal Arterial - Regional Connector)
- Roosevelt Way NE from NE 45th Street to NE 65th Street
  (Principal Arterial - Mixed Use Street, Regional Connector, Main Street)
- 7th Avenue NE from NE 40th Street to NE 50th Street
  (Minor Arterial -Commercial Connector)
- 8th Avenue NE from NE Ravenna Boulevard to NE 65th Street
  (Principal Arterial – Regional Connector)
- Montlake Boulevard from SR-520 to NE 45th Street, or to Blakely

East-west Corridors

- NE Northlake Way/NE Pacific Street from 6th Avenue NE to University Way NE (Principal Arterial - Industrial Access St, Regional Connector)
- NE Pacific Street from University Way to Montlake Boulevard NE
  (Principal Arterial - Regional Connector)
- NE 40th Street/Campus Parkway from 7th Avenue NE to 15th Avenue NE
  (Minor Arterial - Commercial Connector)

- NE 42nd Street from 7th Avenue NE to Roosevelt Way NE
  (Principal Arterial - Green Street)
- NE 42nd Street from Roosevelt Way NE to 15th Avenue NE (Green Street)
- NE 43rd Street from Roosevelt Way NE to 15th Avenue NE
  (Collector Arterial - Green Street)
- NE 43rd from Roosevelt Way NE to 7th Avenue NE
  (Collector Arterial - Green Street)
- NE 45th Street from Southbound I-5 ramps to 15th Avenue NE
  (Principal Arterial - Mixed Use Street, Main Street)
- NE 45th Street from 15th Ave NE to 35th Ave NE
  (Principal Arterial - Regional Connector)
- NE 47th Street from Roosevelt Way NE to 15th Avenue NE
  (Collector Arterial - Mixed Use St, Main St)
- NE 50th Street from Southbound I-5 ramps to 15th Avenue NE
  (Principal Arterial - Regional Connector, Mixed Use Street)
- NE 50th Street from 15th Avenue NE to 20th Avenue NE
  (Collector Arterial - Local Connector)
- Ravenna Boulevard from 8th Avenue NE to 15th Avenue NE
  (Minor Arterial - Commercial Connector)
- Ravenna Boulevard from 15th Avenue NE to 25th Avenue NE
  (Collector Arterial - Local Connector)
- Blakeley/Union Bay Street from 25th Ave NE to NE 45th Street
  (Collector Arterial - Local Connector)
- NE 55th Street from 25th Avenue NE to 35th Avenue NE
  (Collector Arterial - Mixed Use Street)
- NE 65th Street from 8th Avenue NE to 15th Avenue NE
  (Minor Arterial - Mixed Use Street, Main St, partially Commercial Connector)
- NE 65th Street from NE 15th Avenue NE to 35th Avenue NE
  (Minor Arterial - Mixed Use Street, Commercial Connector)

The arterial street classification for the study area, adopted in the Transportation Element of the Seattle Comprehensive Plan, is shown in **Figure 1**. The street types in the *Right-of-Way Improvement Manual* are shown in **Figure 2**. Street types also include those designated as Green Streets. Where a street segment is designated as one of the street types, as well as a Green Street, the Green Street designation is shown in the map.

Figure 1. Street Classification Map

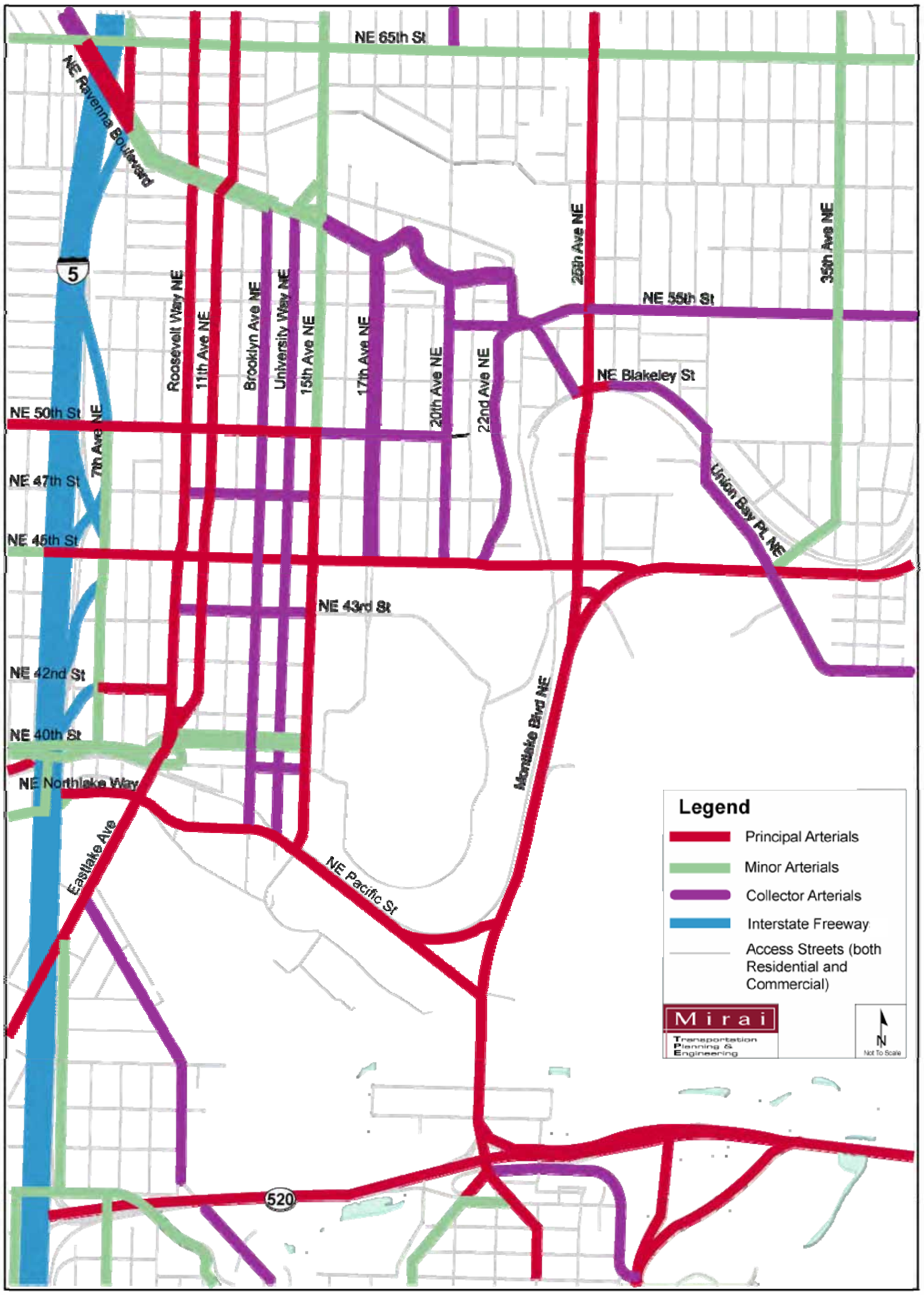
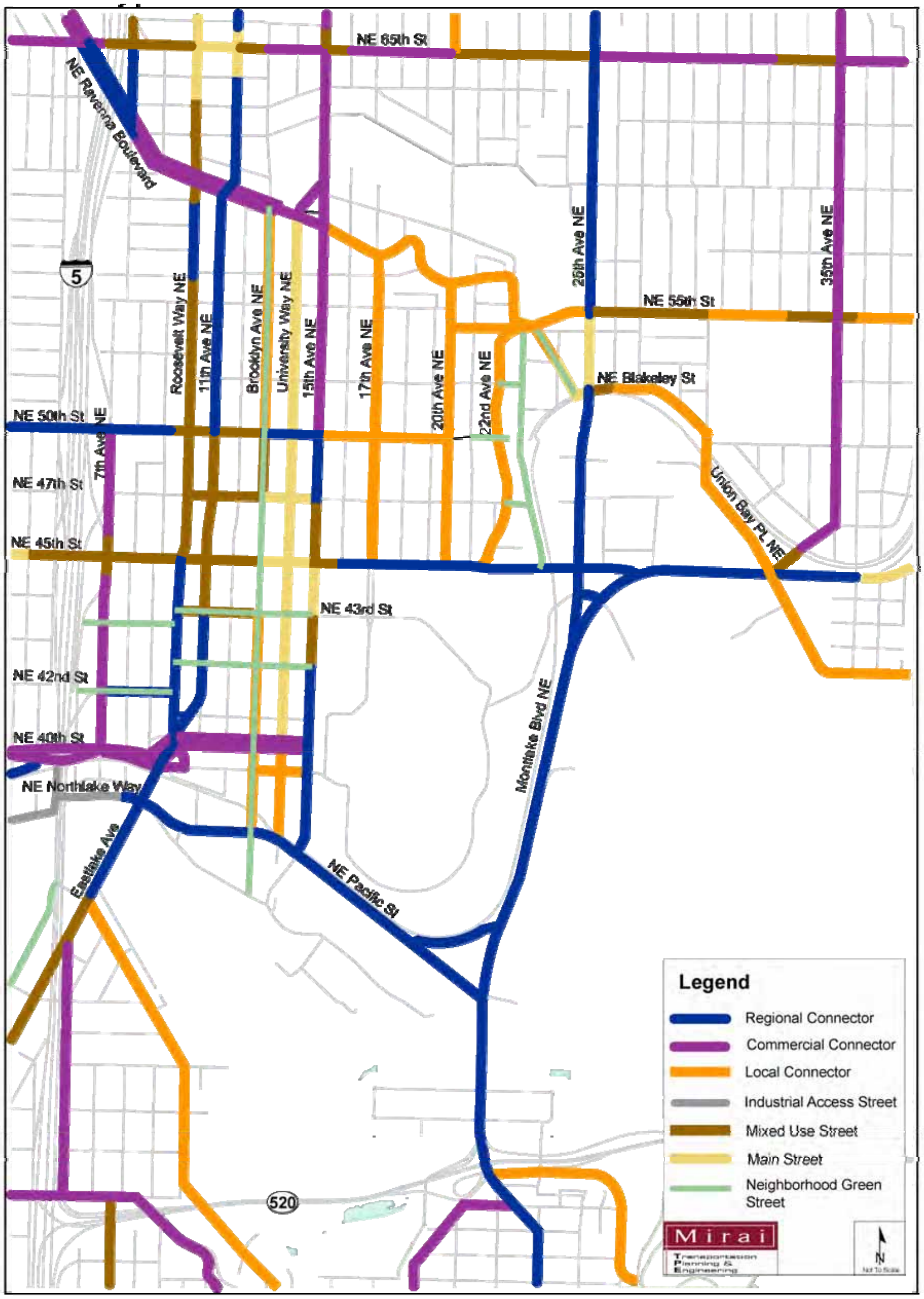


Figure 2. Street Types Defined by the Right-of-Way Improvement Manual



Performance Measures

To evaluate the pedestrian system, the following performance measures will be used:

- Pedestrian walking space: The percentage of pedestrian facilities (sidewalk only) along a designated pedestrian corridor that meets the minimum width as described by the Right-of-Way Improvement Manual.
- Pedestrian facilities: The percentage of pedestrian facilities along a pedestrian corridor that meets the Right-of-Way Improvement Manual guidelines for sidewalk, planting strip and spaces that separate moving vehicles and pedestrians such as on-street parking, and bike lanes.
- Ease of street crossings at intersections: Two measures will be used: 1) The number of vehicles conflicting with pedestrians, such as right-turning and left-turning vehicles in a permissible signal phase , and 2) the length of the traffic signal cycles.

Level of Service to Evaluate the Adequacy of the Walking Space

The minimum sidewalk width required by *Right–of-Way Improvement Manual* (Chapter 4.11 Sidewalks) is 6 feet. The performance measure will calculate the percentage of the pedestrian corridor having sidewalks greater than the minimum 6-foot sidewalk width. For each corridor, the following formula will be used to calculate the percentage of the adequacy of walking space:

Percent Adequate Walking Space = SUM (the length of the block face having average sidewalk width equal to or greater than 6 feet) / (the length of pedestrian corridor) X 100.

The following level of service definitions are proposed. As the proposed performance measure is unique for the UATAS, and no data has been collected, we will need to re-visit the level of service definitions and the threshold when we complete the sidewalk width inventory.

Proposed Definition of the Level of Service for Adequacy of Walking Space

AWS-LOS A: 95 to 100 percent

AWS -LOS B: 90 to 95 percent

AWS -LOS C: 85 to 90 percent

AWS -LOS D: 80 to 85 percent

AWS -LOS E: 70 to 60 percent

AWS -LOS F: less than 60 percent

Thresholds

- LOS B for Regional Connector, Commercial Connector, Main Street/Mixed Use and Green Street

- LOS C for Local Connector

Level of Service to Evaluate Adequacy of Pedestrian Facilities

The adequacy of the space between pedestrians and moving vehicles will be a performance measure. This measures the ease for the pedestrians to walk along the street and will be measured by the identifying the separation between the pedestrians and the traffic lane. The spatial separation in this report refers to the *pedestrian facilities*, which include sidewalks, planting strips, adjacent on-street parking, and bicycle lanes. To evaluate the percentage of compliance, the study will measure the widths of pedestrian facilities along a corridor and compare these to the described characteristics of the Street Type hierarchy as described by the *City's Right–of-Way Improvement Manual* (Chapter 4.2 Design Criteria). The following table (**Table 1**) shows the minimum widths needed to satisfy the Manual's guidelines for pedestrian facilities.

Table 1. Minimum Spaces for Pedestrian Facilities Recommended in the Right-of-Way Manual

Street Type	Sidewalk	Planting	Parking/Bike	Total (Minimum)
Regional Connector	6 feet	4 feet	0 feet	10 feet
Commercial Connector	6 feet	4 feet	8 feet	18 feet
Local Connector	6 feet	6 feet	6 feet	18 feet
Green Street	8 feet	10 feet	0 feet	18 feet
Main Street/ Mixed Use Street	8 feet	6 feet	8 feet	22 feet

The study will measure the length of the pedestrian corridor that meets the minimum pedestrian facilities for the street type. For example, the Regional Connector needs a minimum of 10 feet between the traffic lane and the face of a building. Mirai will measure the length of the corridor where adequate pedestrian facilities are provided. On-street parking will be measured based on midday availability, since the majority of peak pedestrian activity generally occurs during the traditional "off-peak" period for vehicles. The study assumes that the pedestrian activities in the University District are similar to the other typical activities areas. The following formula will be used to calculate the percentage of the pedestrian corridor having adequate pedestrian facilities:

Percent Adequate Pedestrian Facilities = SUM (the length of the block face having adequate pedestrian facilities based on the street types) / (the length of pedestrian corridor) X 100.

The following definitions are proposed for the level of service for this performance measure.

Proposed Level of Service for Adequacy of Pedestrian Facilities

PF -LOS A: 90 to 100 percent

PF -LOS B: 80 to 90 percent

PF -LOS C: 70 to 80 percent

PF -LOS D: 50 to 70 percent

PF -LOS E: 40 to 50 percent

PF -LOS F: less than 40 percent

Mirai will review the results of the inventory data before we set the threshold for this performance measure. At this time, we tentatively set one threshold level for all pedestrian corridors regardless of the street type. However, we may revise the threshold and set the threshold for each street type after reviewing the field data.

Threshold

PF-LOS D

Level of Service to Evaluate Ease of Pedestrian Street Crossings

Pedestrian crossings at intersections are hampered by conflicts with turning vehicles and pedestrians experience frustration when faced with long signal cycles. One way to measure this is to identify the total (left-turning and right-turning) volumes that conflict with the pedestrian movements at each intersection. Another measure is the length of the traffic signal cycle.

The level of service for vehicle-pedestrian conflicts is defined below. We will total the right-turning vehicles and left-turning vehicles that conflict with pedestrians crossing the streets during the PM peak hour. We will add all vehicles that conflict with pedestrians crossing the streets (the four legs) at each signalized intersection. We have tentatively set a level of service based on limited data. We will review this level of service definition and thresholds after more comprehensive field data is obtained.

A. Proposed Definition of Level of Service for Vehicle-Pedestrian Conflicts (PM Peak Hour)

VP-LOS A: fewer than 200 vehicles

VP-LOS B: 200 to 400 vehicles

VP-LOS C: 400 to 600 vehicles

VP-LOS D: 600 to 800 vehicles

VP-LOS E: 800 to 1000 vehicles

VP-LOS F: greater than 1000 vehicles

Thresholds

VP-LOS B for intersections on Green Streets, Main Streets and Local Connectors

VP-LOS C for intersections on Mixed Use Streets and Commercial Connectors

VP-LOS D for intersections on Regional Connectors

The performance measure related to traffic signal cycle length is straightforward. We will measure the length of a traffic signal cycle during the PM peak hour at each signalized intersection. The following defines the level of service and thresholds for the signal cycle length related to pedestrian street crossing experience.

Proposed Definition of Level of Service for Signal Cycle Length (PM Peak Hour)

SCL-LOS A: less than 60 seconds

SCL-LOS B: 60 to 75 seconds

SCL-LOS C: 75 to 100 seconds

SCL-LOS D: 100 to 120 seconds

SCL-LOS E: 120to 130 seconds

SCL-LOS F: greater than 130 seconds

Benchmarks

LOS C for intersections on Green Streets

LOS D for intersections on Main Streets, Mixed Use Streets, Local Connectors

LOS E for intersections on Commercial and Regional Connectors

Transportation System for Bicyclists

Level of Service for Bicycles

The adequacy of bicycle facilities on designated bicycle corridors in the UATAS study area will be evaluated using the concept of bike level of service (BLOS) as defined by the *Federal Highway Administration's Bicycle Compatibility Index and Updates.* It is a measure of on-road conditions and cannot be applied to multi-purpose trails or other off-road facilities. Therefore, Mirai will only apply the evaluation of bicycle facilities to bicycle lanes and shared-use lanes (wider curb lanes).

The bicycle level of service attempts to indicate the bicyclist's comfort level for specific roadway geometries and traffic conditions. Each of the indicators listed below are weighted according to a mathematical equation. From this computation, scores will be obtained.

The factors used to define the bicycle level of service are:

- Traffic conditions (average daily volumes, posted speed limits, percent of heavy vehicles, on-street parking)
- Roadway design (number of lanes, speed limits, width of outside lane, availability of shoulder)
- Roadway surface conditions

Bicycle Corridors

The UATAS study will evaluate all bicycle corridors identified on the City's *Bicycle Master Plan* (Draft – April 2007) as identified below:

North-south Corridors

- Ravenna Place NE from NE Blakely to NE 55th Street (Sharrow)
- 22nd Avenue NE from NE 45th Street to Ravenna Boulevard (Shared Roadway)
- 20th Avenue NE from NE 45th Street to Ravenna Boulevard (Sharrow, Bike Boulevard, Multi-use Trail)
- 17th Avenue NE from NE 45th Street to NE 47th Street (Shared Roadway)
- University Way NE from NE Pacific Street to NE 50th Street (Sharrow)
- University Way NE from NE 50th Street to Ravenna Boulevard (Bike Lane)
- Brooklyn Avenue NE from NE Boat Street to NE 40th Street (Bike Lane)
- Eastlake Avenue from Harvard Avenue E to Campus Parkway (Bike Lane)
- 11th Avenue NE from Campus Parkway to Ravenna Boulevard (Bike Lane)
- 12th Ave NE from Ravenna Bouldevard to NE 65th Street (Bike Lane)
- Roosevelt Way NE from Campus Parkway to NE 65th Street (Bike Lane)
- 7th Avenue NE from NE 45th Street to NE 50th Street (Bike Lane)

East-west Corridors

- NE Northlake Way/NE Pacific Street from University Bridge to Brooklyn Avenue NE (Bike Lane)
- NE 40th Street from University Bridge to 15th Avenue NE (Bike Lane, Shared Roadway)
- NE Campus Parkway from 11th Avenue NE to Brooklyn Avenue NE (Sharrow, Bike Lane)
- NE 41st Street from 11th Avenue NE to Brooklyn Avenue NE (Bike Lane)
- NE 45th Street from Southbound I-5 ramps to 17th Avenue NE (Bike Lane)
- NE 47th Street from I-5 Bridge to 22nd Avenue NE (Share Roadway)
- NE 50th Street from Southbound I-5 ramps to Northbound I-5 ramps (Shared Roadway)
- Ravenna Boulevard from NE 65th Street to Brooklyn Avenue NE (Bike Lane)

- Ravenna Boulevard from Brooklyn Avenue NE 55th Street (Sharrow, Climbing Lane)
- NE 65th Street from Ravenna Boulevard to 20th Avenue NE (Climbing Lane)
- NE 65th Street from NE 20th Avenue NE to 35th Avenue NE (Sharrow)

Figure 3 shows the bicycle corridors, with recommended improvements, that are identified in the Draft *Bicycle Master Plan* for the UATAS study area.

Definition of Bicycle Level of Service (BLOS)

Level of service for bicycles will be defined using a range of scores. The table below (**Table 2**) describes the relationship between the score and the general conditions. For example, a BLOS B is defined with a score between 1.51 and 2.50, and BLOS C is a score between 2.51 and 3.5. The LOS threshold is set as LOS C for the bicycle corridors.

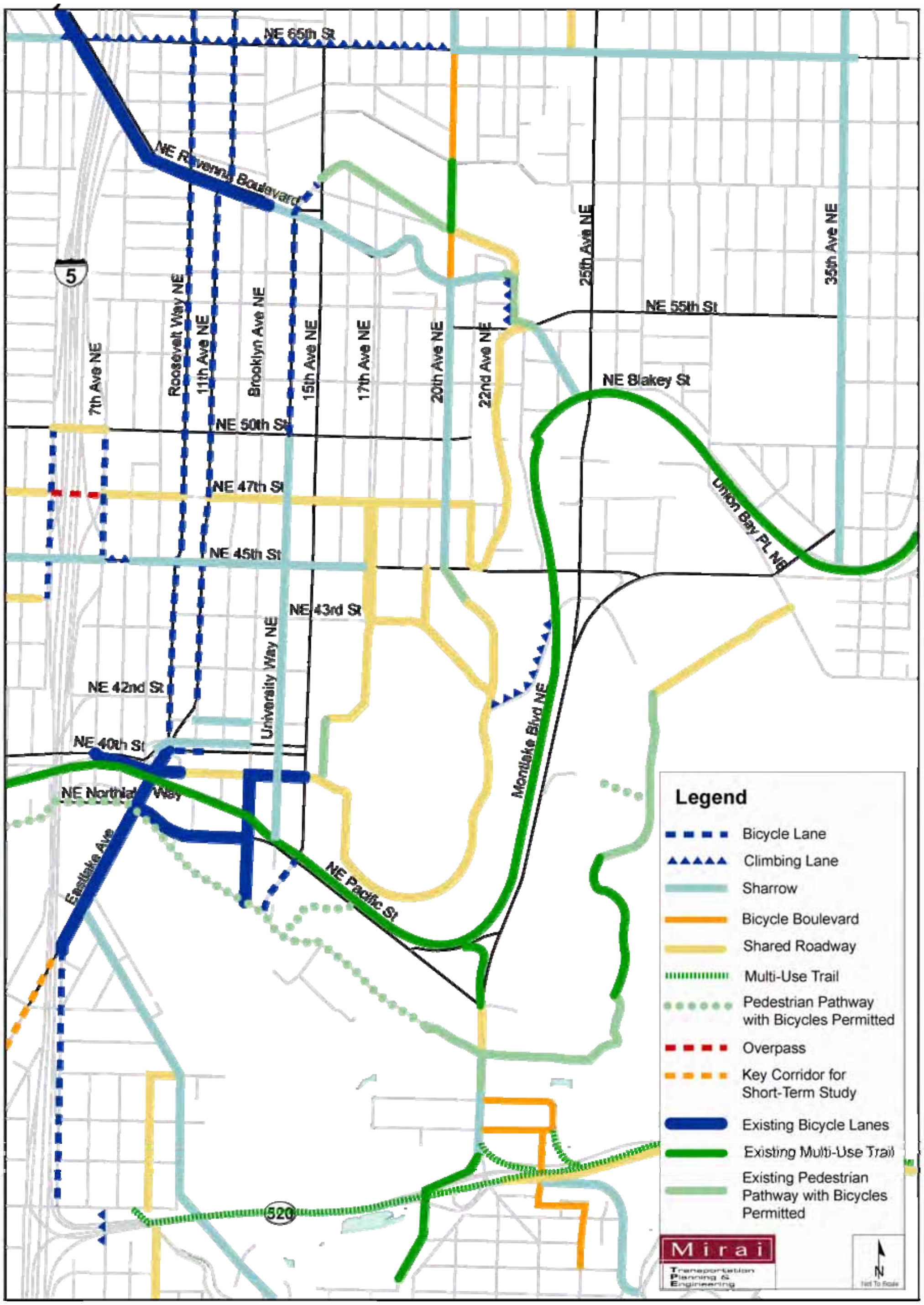
Table 2. Definition of Bicycle Level of Service and Descriptions of Operating Conditions

LOS	Score	Descriptions of Level of Service Operations
A	≤ 1.5	Highest cyclist comfort. Little or no vehicular conflicts. Supportive infrastructure in place and/or very low vehicular volumes.
B	< 1.5 – 2.5	High degree of cyclist comfort. Little vehicular conflict. Some form of supportive infrastructure and/or low vehicular volumes.
C	< 2.5 – 3.5	Acceptable level of cyclist comfort. Some vehicular conflict. Some form of supportive infrastructure and/or lower vehicular volumes.
D	< 3.5 – 4.5	Some cyclist discomfort. More vehicular conflicts. Some form of supportive infrastructure with higher vehicular volumes.
E	< 4.5 – 5.5	High level of cyclist discomfort. Notable vehicular conflicts. Little or no supportive infrastructure with high vehicular volumes.
F	> 5.5	Highest level of cyclist discomfort. No supportive infrastructure with high vehicular volumes and possible high percentage of heavy vehicles.

Thresholds

LOS B for all bicycle corridors in the study area

Figure 3. Bicycle Corridors Identified in the Bicycle Master Plan (Draft)



Transit System

For the UATAS we will use two kinds of transit performance measures: the Urban Village Transit Network (UVTN), and the adequacy of bus shelters. The UVTN is a series of performance measures developed for the *Seattle Transit Plan* in order to assess the adequacy of transit within the city-designated Urban Villages. The *Seattle Transit Plan* designates the city streets used by transit. **Figure 4** shows the transit corridors in the UATAS study area as designated by the *Seattle Transit Plan*. The transit streets are designated with the following definitions:

- Transit Way**:** Provides frequent, high speed, high capacity and intermediate capacity service
- Principal Transit Street: Provides for high-volume transit service, often for regional or citywide trips
- Major Transit Street: Provides concentrated transit service to connect and reinforce major activity centers and residential areas
- Minor Transit Street: Provides local and neighborhood transit service
- Local Transit Street: Provides local and neighborhood transit service (Not part of the UVTN)

The second performance standard will use King County Metro's measure for identifying locations for bus shelters and the County's boarding and alighting database to determine adequacy.

Level of Service Indicators and Thresholds for Urban Village Transit Network (UVTN)

The transit routes designated in the Urban Village Transit Network are evaluated based on the following indicators:

- Frequency
- Span of service (Operating Hours)
- Loading
- Reliability
- Transit vehicle speed

Table 3 shows the threshold that was identified in the *Seattle Transit Plan* for each indicator.

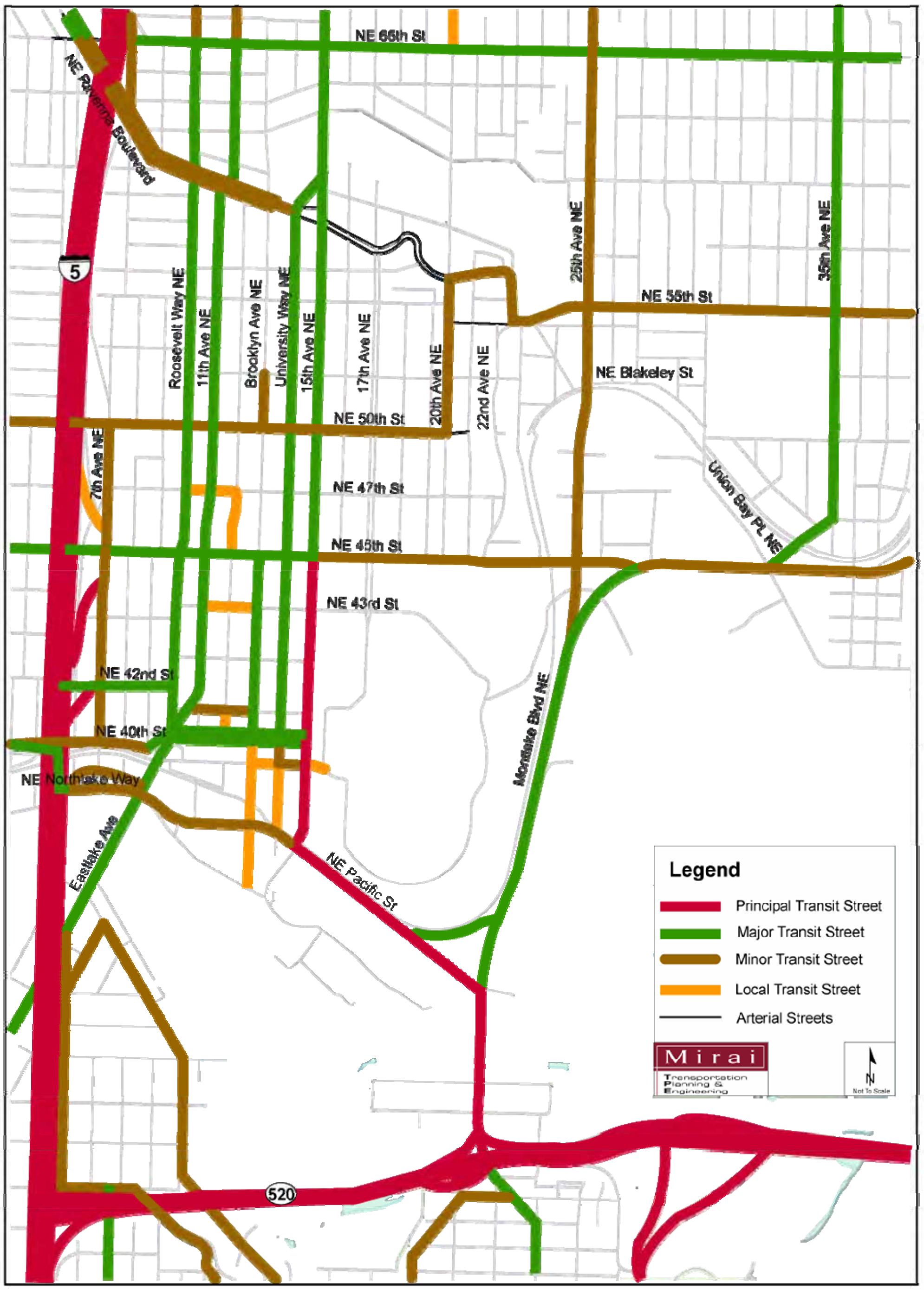
Table 3. Transit System Performance Indicators and Thresholds in the Urban Village Transit Network

Indicator	Threshold
Frequency (per UVTN Report)	15 minutes or less
Span of service (per UVTN Report)	18 hours or more
Loading	Less than 90% of seated capacity
Reliability (per UVTN Report)	Greater than 60% services running less than 1 minute late
Transit vehicle speed	Greater than 30% of the posted speed limit

Level of Service Adequacy of Bus Shelters

The UATAS will adopt King County Metro's bus shelter standard that is used to evaluate whether a bus shelter is needed at each bus stop location. The current standard is 50 or more passengers boarding per day.

Figure 5. Transit Street Classification Defined in the Seattle Transit Plan



Transportation System for Vehicles

The performance measures for vehicles will be traffic safety, arterial corridor level of service, and arterial intersection level of service.

Traffic Safety

Traffic safety will be measured by the number of collisions and traffic collision rates. The rates for intersections will be defined as the average annual collisions per million vehicles: mid-block locations will be derived from the last five years of traffic collision records maintained by the City.

Performance measures and thresholds:

- Average number of collisions for signalized intersections: 10 per year
- Average number of collisions for unsignalized intersections: 5 per year
- Average number of collisions for mid-block locations: 5 per year
- Collision rates for signalized intersections: 1.5 per million annual vehicles entering (The collision rate threshold is based on the experience for the Northgate CTIP)
- Collision severity (total economic cost per year): exceed $100,000 per year for two years out of a three-year available data.

Arterial Corridors

Mirai will measure the performance of the arterial corridors in terms of the average vehicle speeds during the PM peak period. The *Highway Capacity Manual (HCM) 2000* method will be applied. The following arterials (also shown in **Figure 1**) will be selected for this analysis:

North-south Corridors

- 25th Avenue NE from NE 45th Street to NE 65th Street (Principal)
- 15th Avenue NE from NE Pacific Street to NE 50th Street (Principal)
- 15th Avenue NE from NE 50th Street to NE 65th Street (Minor)
- University Way NE from NE Pacific Street to NE 50th Street (Collector)
- University Way NE from NE 50th Street to 15th Avenue NE (Collector)
- Eastlake Avenue/11th Avenue NE from Harvard Avenue E to NE 50th Street (Principal)
- 11th Avenue NE from NE 50th Street to NE 65th Street (Principal)
- Roosevelt Way NE from Campus Parkway to NE 65th Street (Principal)
- 7th Avenue NE from NE 40th Street to NE 50th Street (Minor)

East-west Corridors

- NE Northlake Way/NE Pacific Street from 6th Avenue NE to University Way NE (Principal)
- NE Pacific Street from University Way to Montlake Boulevard NE (Principal)
- NE 40th Street/Campus Parkway from 7th Avenue NE to 15th Avenue NE (Minor)
- NE 45th Street from Southbound I-5 ramps to 15th Avenue NE (Principal)
- NE 45th Street from 15th Avenue NE to 35th Avenue NE (Principal)
- NE 50th Street from Southbound I-5 ramps to 20th Avenue NE (Principal/Minor)
- NE 65th Street from 8th Avenue NE to 15th Avenue NE (Minor)
- NE 65th Street from NE 15th Avenue NE to 35th Avenue NE (Minor)

Level of Service for Arterials Corridors

For the UATAS we will use the arterial corridor level of service concept described in the *2000 Highway Capacity Manual*. The arterial corridor level of service is defined for each street class by average travel speeds. We will evaluate PM peak hour arterial corridor levels of service on the streets designated as the arterial corridors and identified previously. **Table 4** shows the definitions of arterial corridor level of service for each arterial class. (Please note that Class I is not shown because it is for state routes and they are not applicable to the streets in the UATAS study area.)

Table 4. Definitions of Arterial Corridor Levels of Service

Urban Street Class	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
	Average Speed (miles per hour)					
II (Principal Arterials)	more than 35	28-35	22-28	17-22	13-17	less than13
III (Minor Arterials)	more than 30	24-30	18-24	14-18	10-14	less than10
IV (Collector Arterials)	more than 25	19-25	13-19	9-13	7-9	less than7

Threshold

LOS F

Level of Service for Signalized Intersections

Mirai will evaluate the performance of signalized intersections on the arterials using the intersection delay method (HCM 2000). Average vehicle delay at each arterial intersection will be calculated with Synchro for the PM peak hour. Instead of focusing on the individual intersections, the performance of the intersections may be evaluated based on averaged intersection delay within key arterial corridors. **Table 5** shows the definition of intersection level of service.

Table 5. Definition of Level of Service for Signalized Intersections

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Average Intersection Delay (seconds)	Less than 10	between 10 and 20	between 20 and 35	between 35 and 55	between 55 and 80	greater than 80

<u>**Threshold**</u>

LOS E

Level of Service for Unsignalized Intersections

The performance of stop-sign controlled intersections (two-ways) is measured for the worst movement of the intersection. Where the delay exceeds the threshold, we will conduct further investigation. At four-way stop controlled intersections, the approach vehicle delays will be averaged to determine the level of service. The threshold for either case is set the same. **Table 6** shows the definition of level of service for unsignalized intersections.

Table 6. Definition of Level of Service for Unsignalized Intersections

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Stop Sign Control Delay (Seconds)	Less than 10	between 10 and 15	between 15 and 25	between 25 and 35	between 35 and 50	greater than 50

<u>**Threshold**</u>

LOS E

B. Existing Conditions Memorandum

University Area Transportation Action Strategy

Existing Conditions Summary

Prepared for:

Seattle Department of Transportation

700 Fifth Avenue, Suite 3900
Seattle, Washington

Prepared by:

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January 2008

SUMMARY OF FINDINGS

The Existing Condition analysis updates and develops the UATS baseline information. The following provides an overview of the findings found in this analysis:

Pedestrian Conditions

- Walking conditions were evaluated on four factors:
  1. the width of sidewalks;
  2. the buffer space between pedestrians on the sidewalk and moving traffic;
  3. the time people must wait to cross the street; and
  4. the level of conflict between turning vehicles and people in the crosswalk.
- Sidewalks generally provide adequate width but few meet the desired width standards described in the City's *Right of Way Improvement Manual*.
- Sidewalks that meet the *Right of Way Improvement Manual* do so by having parking areas that separate them from traffic during off-peak hours.
- Turning vehicles create major conflicts with pedestrians crossing the street at about one in five intersections. At one intersection, in the peak hour alone, nearly 700 vehicles drive through the crosswalk while people are crossing the street.
- At some intersections, long signal cycles result in delays for pedestrians. Twelve of the study intersections failed to meet the cycle length standard of the associated street type classification.

Bicyclist Conditions

- Bike-Level-of-Service (BLOS) is measured based on a combination of roadway design and traffic conditions.
- More than half of the bicycle corridors analyzed failed to meet the Bike-Level-of-Service standard.
- Of the corridors identified in the Bicycle Master Plan, the worst locations for bicyclists are NE 45th Street from I-5 all the way to the 17th Avenue NE entrance to the University of Washington and NE 50th Street crossing I-5. Other corridors that fail to meet the BLOS include: NE 65th Street, Roosevelt Way NE, the Eastlake/11th/12th corridor and

20th Avenue NE. These corridors will require improvements, such as those suggested by the Bicycle Master Plan, to improve the appropriateness and comfort of bicyclists.

- There were 39 bike-vehicle collisions in the last three years, twelve of which occurred at only 3 locations. At one location, all three collisions were between right-turning vehicles and bicyclists at a street-crossing of the Burke-Gilman Trail.

Transit Conditions

- The City's Urban Village Transit Network establishes five performance standards for bus service relating to:
    1. frequency
    2. hours of service
    3. travel speed
    4. on-time performance (reliability)
    5. crowding
- Of the ten designated transit corridors in the study area all failed at least one of the UVTN performances standards, and six failed three or more.
- King County Metro standards call for a bus shelter at any stop serving 50 or more boarding passengers a day; 19 stops in the study area failed this standard including two that serve over 400 bus riders a day.

Traffic Conditions

- For the most part, traffic in the study area has remained flat or in some corridors decreased slightly over the last 16 years.
- Of 35 corridors analyzed, only 11 achieve PM peak speeds of 18 mph or faster while 20 operate at 14 mph or slower; Montlake is the slowest corridor with PM peak speeds of 3 mph, slower than a person can walk.
- Of 80 intersections studied, 11 had PM peak hour average delays of a minute or longer.
- All of the signalized intersections studied met safety standards with regards to vehicle collisions, but five midblock locations failed the safety standards.

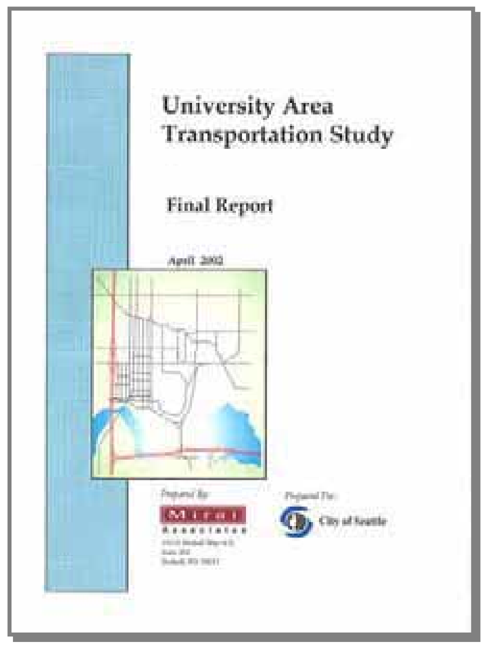
EXISTING CONDITIONS

This chapter updates the existing conditions section of the 2002 University Area Transportation Study (UATS) to identify the transportation conditions, issues and performance for the study area. The study area is bounded by NE 65th Street on the north; the Ship Canal on the south; Interstate 5 on the west and 35th Avenue NE on the east.

This section reviews and updates the data from the UATS study and evaluates the data against a set of performance measures that help identify problems and opportunities for the area. The performance measures are presented by transportation mode (pedestrian, bicycle, transit and auto) and each measure evaluates how well an existing roadway or intersection serves that mode's needs.

Background

The 2002 University Area Transportation Study (UATS) drew upon a rich history of prior planning, programs and projects to help identify existing transportation conditions and problems. It developed future traffic forecasts for 2010 and 2020 and Level of Service (LOS) analysis for 2010 in order to measure anticipated congestion and delay. The UATS also developed a prioritized list of transportation projects and program improvements across all modes including travel demand reduction strategies. In addition, the UATS developed cost estimates for the recommended improvements and identified possible funding sources – both local and outside the City – that might be available for transportation improvements.



The UATS was based around two primary goals:

- Provide a comprehensive multimodal transportation plan for the University area
- Serve as a blueprint for financing and programming transportation improvements in the University area over the next decade

Since completion of the UATS, very few of the recommendations have been implemented due, in part, to the statewide reduction in funding for transportation. The notable exception is the University Avenue Improvement Project which includes new sidewalks, repaving, traffic signal upgrades, art features and pedestrian improvements. This project was programmed prior to the UATS and completed in 2004.

Changing Conditions Necessitate Plan Update

Other issues which complicated the plan implementation were the uncertainties related to the feasibility and locations of the proposed light rail stations within the study area and the choice of the Preferred Alternative for the SR 520 Replacement Project. While Sound Transit is now committed to three stations within the study area – near Husky Stadium, at Brooklyn Avenue/between NE 43rd and 45th Street and at Roosevelt Avenue/NE 65th Street – funding is currently available for the Husky Stadium station only. Voter approval will be needed to extend the rail alignment beyond the south campus and on to Northgate.

The SR 520 Replacement Project has faced considerable challenges in its attempt to balance Seattle and Eastside interests and the concerns of the Seattle communities most impacted by the new freeway.

Two other relevant events occurred in the University Area in 2006. The City ended the 25-year old lease lid in the U-District, a move which is expected to stimulate new development, and Safeco Insurance sold its headquarters building on 45th Street and adjacent properties to the University of Washington.

Purpose of the Plan Update

The purpose of the University Area Transportation Action Strategy (UATAS) is to review, refine and update the 2002 University Area Transportation Study. To achieve these goals, the UATAS includes an updated existing conditions report, a new forecast of future traffic demand to a horizon year of 2030 and an updated and comprehensive set of transportation improvement projects and programs to manage the growth anticipated to occur between 2006 and 2030.

The UATAS recommendations will also provide the basis for a voluntary developer fee mitigation program that will assign an appropriate share of the cost of transportation improvements to new growth. Consistent with the Seattle Comprehensive Plan and Transportation Strategic Plan, the UATAS emphasizes the movement of *people and goods* rather than taking the more traditional vehicle focus.

Coordination with Other Plans

The UATAS builds upon the 2002 UATS for source material. In addition, the UATAS coordinates and maintains consistency with the following planning projects:

- SR 520 Bridge Replacement and HOV Project
- Link Light Rail North Alignment
- University of Washington Master Plan
- Bicycle Master Plan
- Pedestrian Master Plans (upcoming)
- Seattle Transit Plan
- Freight Mobility Action Plan

PEDESTRIAN SYSTEM

The University Area transportation network is characterized by high levels of pedestrian activity throughout, with intense areas of pedestrian activity in the proximity of the University of Washington, the retail areas along University Way NE and NE 65th Street, the connecting and crossing facilities to the Burke-Gilman Trail, parks and schools, and along transit routes.

Pedestrian Study Streets

Since it is not practical to evaluate pedestrian conditions on all streets in the study area, the study focused on the pedestrian facilities located on the six street type classifications defined in Seattle's *Right-of-Way Improvement Manual*, and on Green Streets. **Table 1** lists the street type classifications which combine the street's classification and the surrounding land use.

Table 1. Street Type Classification

Name of Street Type	Street Classification	Adjacent Land Use
Regional Connector	Principal Arterial	Industrial, Commercial, Residential
Commercial Connector	Minor Arterial	Commercial, Residential
Local Connector	Collector Arterial	Residential, Institutional (community service)
Main Street	Arterial—all	Neighborhood commercial with a pedestrian designation
Mixed Use Street	Arterial—all	Neighborhood commercial
Industrial Access Street	Arterial—all, non-arterials in commercial areas	Industrial, Maritime
Green Street	Non-arterial in Downtown Seattle	Residential
Neighborhood Green Street	Non-arterial outside of Downtown Seattle	Residential

The street types from the *Right-of-Way Improvement Manual* are shown in **Figure 1**. Street types also include those designated as Green Streets. Where a street segment is designated as one of the street types, as well as a Green Street, the Green Street designation is shown on the map.

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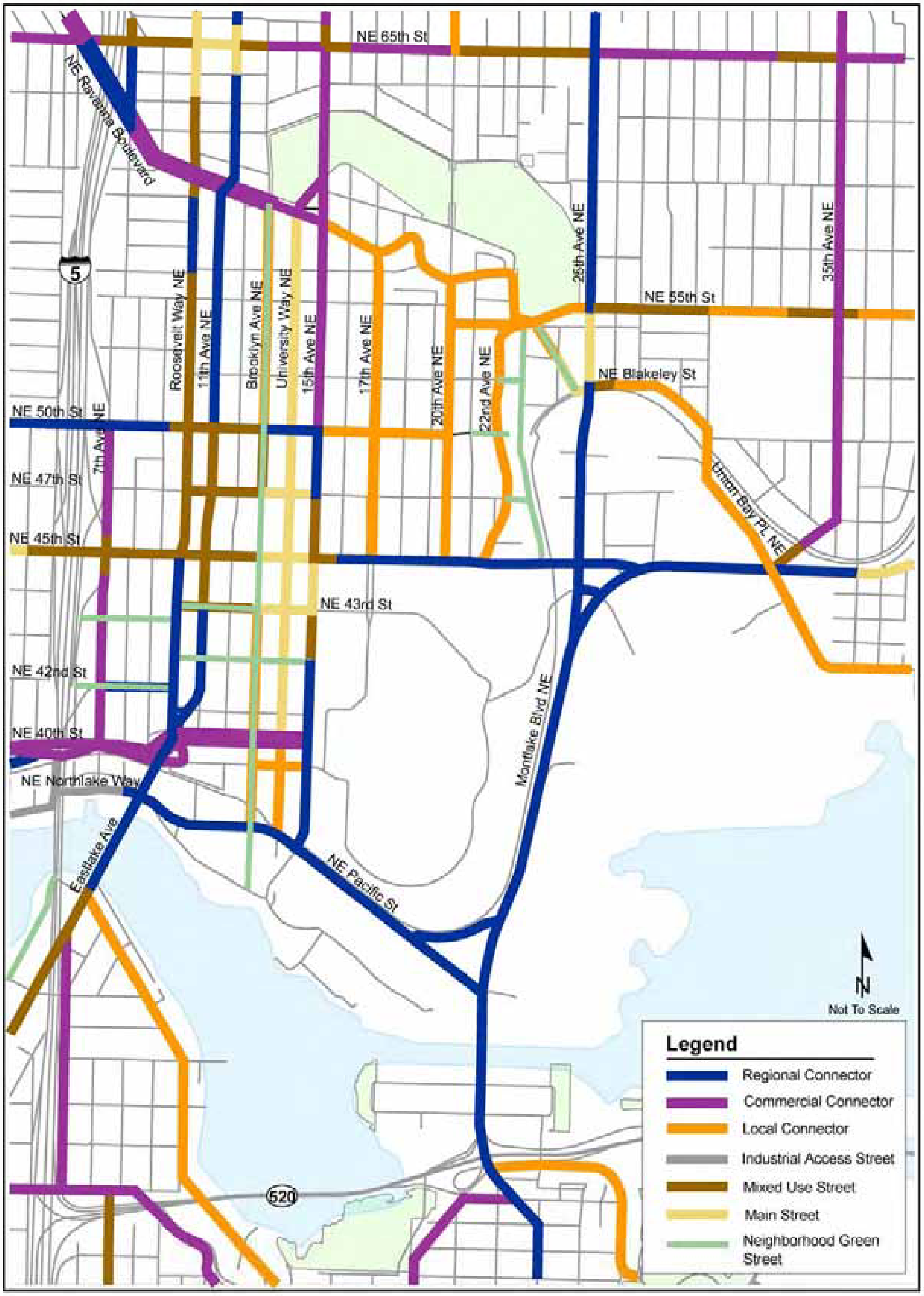
Figure 1. Street Type Classifications



Pedestrian Collisions

Collisions between vehicles and pedestrians are due to a wide variety of factors that can be difficult to predict or correct. Historical collision data can provide an understanding of the location and frequency of pedestrian collisions. Based on the City's database from 2004 to 2006, the data indicate high pedestrian collisions generally occur in areas where there are high levels of pedestrian activity coupled with high traffic volumes. Between 2004 and 2006, one fatality occurred where the Burke-Gilman Trail crosses Pend-Oreille Road within the University of Washington campus. **Figure 2** summarizes the pedestrian collisions at intersections and at mid-block locations.

Detailed review of police records found that most collisions were a result of drivers being unable to see pedestrians (weather/darkness) and inattention of drivers. Also, vehicles making left turns fail to look for pedestrians while waiting for a gap in the opposing vehicle traffic flow.

Findings – Pedestrian Collisions

- Forty-six pedestrians were hit by vehicles in the last three years.
- One pedestrian was killed, where the Burke-Gilman Trail crosses Pend-Oreille Road on the University of Washington Campus.
- The 46 pedestrian collisions occurred at 34 different locations.
- Two intersections, 15th Avenue NE/NE Campus Parkway (westbound) and Roosevelt Way NE/NE 65th Street, had three pedestrian/vehicle collisions in the last three years, compared to only one vehicle/vehicle collision in the same time period.
- About one of every four pedestrian collisions occurred at mid-block locations.

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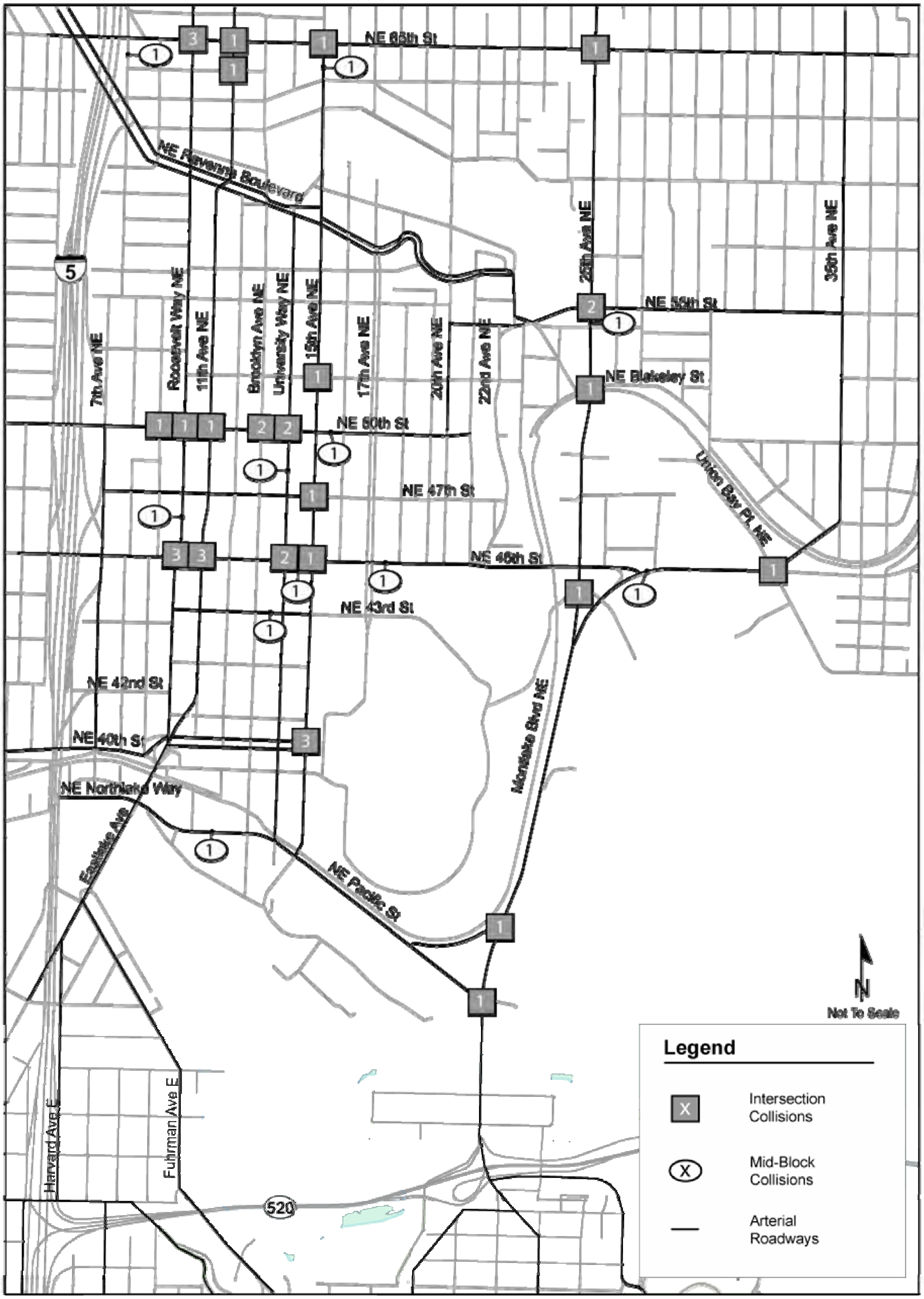
Figure 2. Three-Year Pedestrian-Auto Collision Total (2004-2006)



Pedestrian System Performance

The evaluation of the pedestrian system in the University area focused on the provision of sidewalk facilities, the adequacy of space between the pedestrian facilities and adjacent vehicle traffic and the degree of ease for pedestrians to cross streets at signalized intersections. Performance measures for pedestrian facilities were defined based on their relationship to the street and adjacent land uses. Specific thresholds, tied to the adjacent land uses were set for each performance measure. To evaluate the pedestrian system, the analysis applied the following performance measures:

- Pedestrian walking space: The percentage of pedestrian facilities (sidewalk only) that meets the minimum width as described by the Right-of-Way Improvement Manual.
- Pedestrian facilities: The percentage of pedestrian facilities that meets the Right-of-Way Improvement Manual guidelines for sidewalk, planting strip and other spaces that separate moving vehicles and pedestrians such as on-street parking, and bike lanes.
- Ease of street crossings at intersections: Two measures are used: 1) The number of vehicles conflicting with pedestrians, such as right-turning and left-turning vehicles in a permissible signal phase, and 2) the length of the traffic signal cycles.

Pedestrian Walking Space

The basic facilities for pedestrian travel within an urban environment are sidewalk and crosswalks. The minimum sidewalk width required by *Right–of-Way Improvement Manual* (Chapter 4.11 Sidewalks) is 6 feet. The performance measure calculates, by street type, the percentage of the sidewalks that are greater than the minimum 6-foot sidewalk width. The following formula was used to calculate the percentage of the adequacy of walking space:

Percent Adequate Walking Space = SUM (the length of the block face having averaged sidewalk width greater than 6 feet) / (the length of pedestrian segment) X 100.

This level of service indicator provides an overall view about the adequacy of sidewalks within the UATAS study area. **Table 2** defines the LOS and thresholds for adequacy of sidewalks. The thresholds vary based upon the street type classifications. For Local Connector streets, a threshold of LOS B is required. All other street types have a LOS C threshold.

Table 2. Level of Service for Adequacy of Walking Space (AWS-LOS)

Level of Service	Percent Meeting Threshold
AWS-LOS A	95 to 100 percent
AWS -LOS B	90 to 95 percent
AWS -LOS C	85 to 90 percent
AWS -LOS D	80 to 85 percent
AWS -LOS E	70 to 80 percent
AWS -LOS F	less than 70 percent
Thresholds LOS B for Regional Connector, Commercial Connector, Main Street/Mixed Use and Green Street LOS C for Local Connector	

Higher levels of service (LOS A or B) indicate adequate sidewalks. Lower levels of service may require improvements to correct substandard facilities. This indicator addresses pedestrian facilities at a macro-scale level, and does not address important issues such as compliance with the Americans with Disability Act (curb ramps), sidewalk maintenance or other facility issues. **Figure 3** shows the sidewalk widths along individual segments (blocks) of University area street types. **Figure 4** displays these segments relative to meeting the threshold standards for each street type.

Figure 3. Existing Walking Space Widths

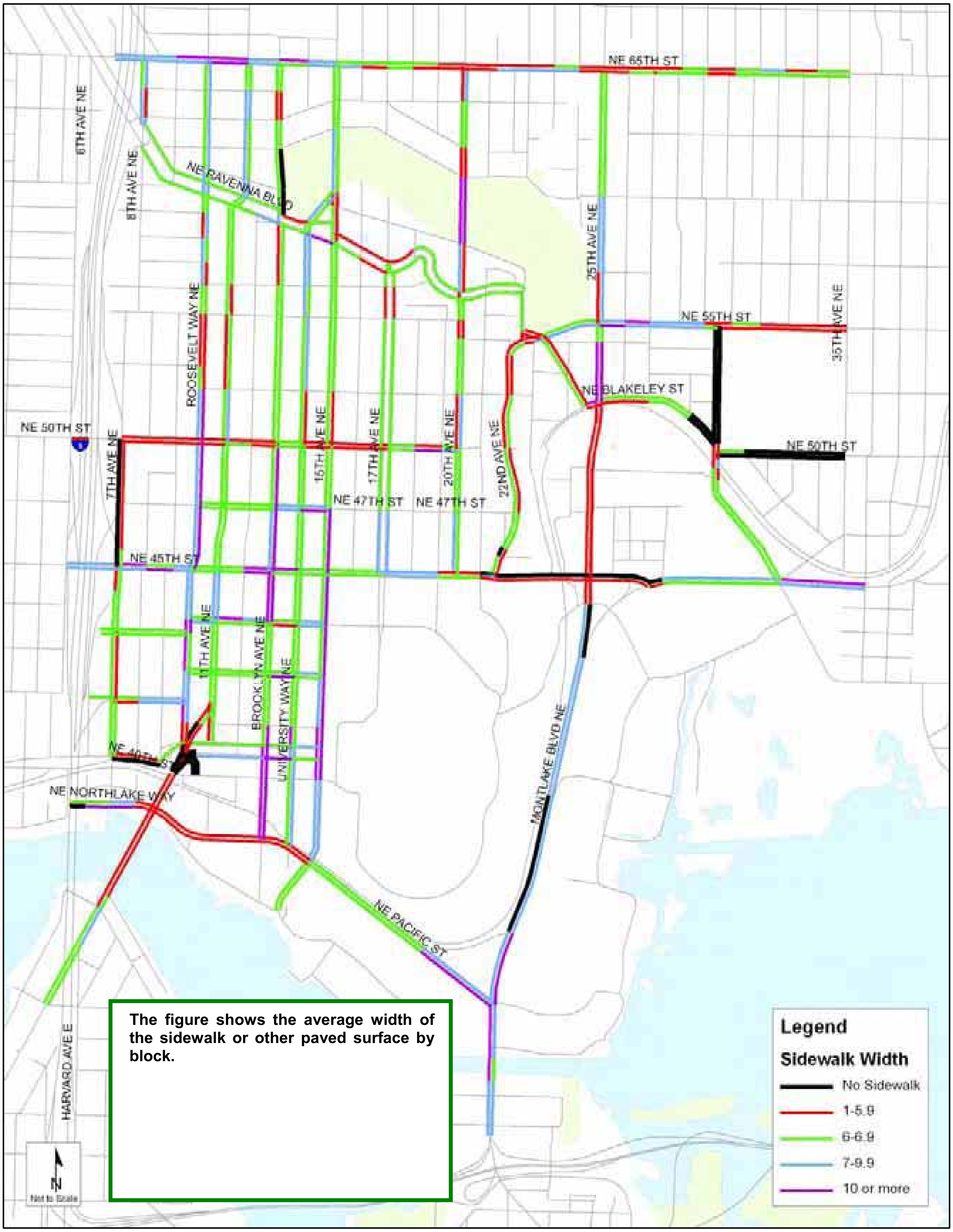
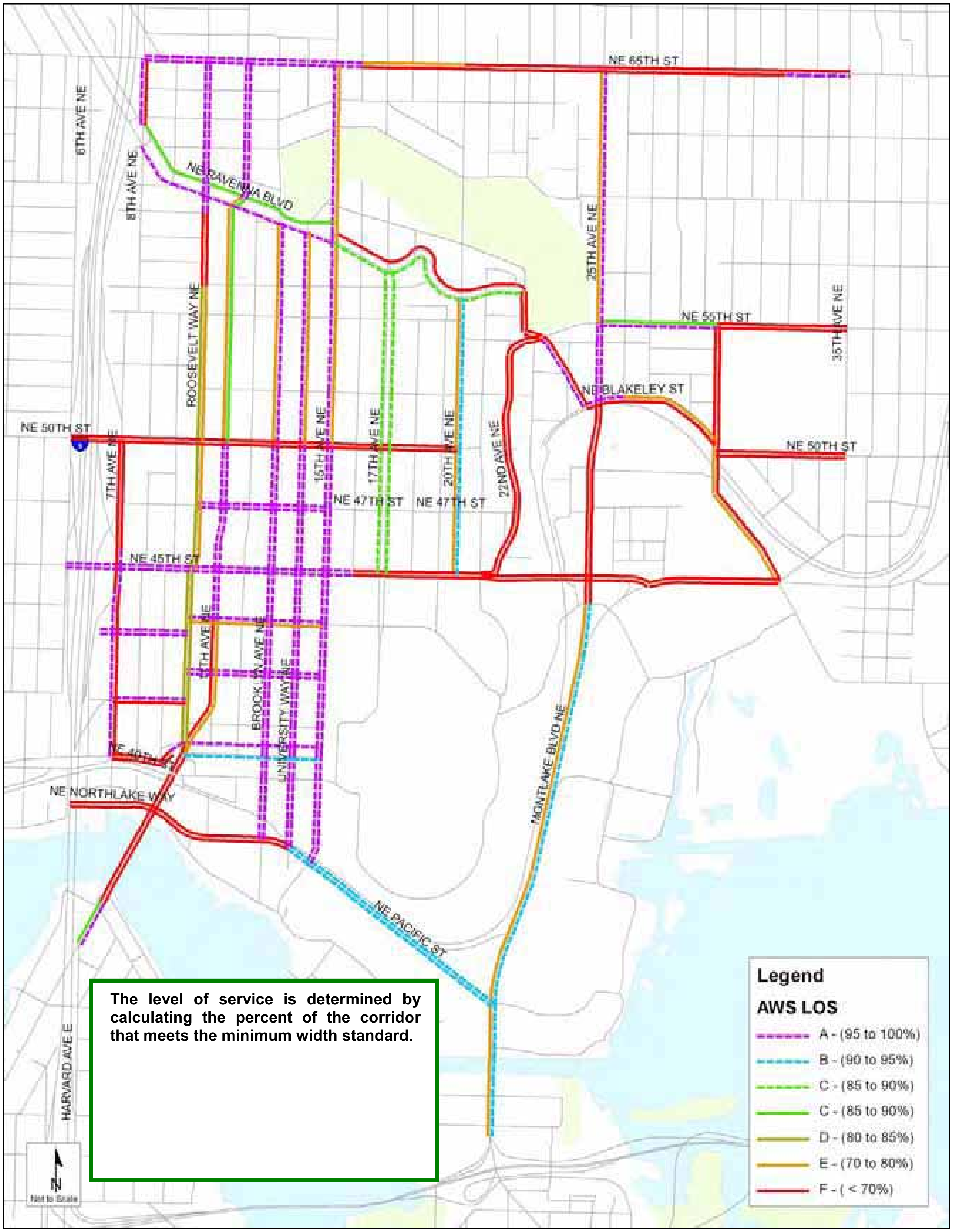


Figure 4. Level of Service for Walking Space Width



The level of service is determined by calculating the percent of the corridor that meets the minimum width standard.

Findings – Walking Space Adequacy

- Almost all the sidewalks within the University District commercial area provide adequate walking space.
- Portions of six streets in the study area lack sidewalks altogether, on one or both sides.
  - NE 40th Street (south side) between 7th Avenue NE and Eastlake Avenue E.
  - 30th Avenue NE (both sides) between NE 55th Street and NE Blakeley Street. (Note: City has a planned improvement for the west side).
  - Brooklyn Avenue NE (east side) between NE Ravenna Boulevard and NE 62nd Street
  - Ravenna Avenue NE (east side) between NE Ravenna Boulevard and NE 54th Street
  - NE 45th Street (Viaduct – north side) between 22nd Avenue NE and University Village Entrance
  - NE 50th Street between 30th Avenue NE and 35th Avenue NE.
- Portions of six streets in the study area have sidewalks that are inadequate.
  - *NE 50th Street* between 5th Avenue NE and Roosevelt Way NE
  - *NE Northlake Way* (south side) between 6th Avenue NE and the University Bridge
  - *University Bridge* (west side) from Furhman Avenue E to NE 40th Street
  - *Montlake Boulevard* (west side) from SR 520 to NE 44th Street
  - *NE 45th Street* (both sides) east of 16th Avenue NE
  - *25th Avenue NE* (both sides) from NE 45th Street to NE Blakely Street

Adequacy of Pedestrian Facilities

The quality of the pedestrian experience is more than presence of a sidewalk. For pedestrian comfort, a facility should be designed with features that enhance the walking experience and separate the pedestrian from the flow of traffic.

For this analysis, the space between pedestrians and moving vehicles is included as a performance measure. This measures the ease for pedestrians to walk along the street by identifying the separation between the pedestrians and vehicle traffic. The spatial separation defined in this report is the entire width of sidewalks, planting strips, adjacent on-street parking and bicycle lanes. A score is generated for each street type segment, comparing the spatial separation to the design characteristics of the Street Type hierarchy as described by the *City's Right–of-Way Improvement Manual* (Chapter 4.2 Design Criteria). **Table 3** shows the minimum widths needed to satisfy the Manual's guidelines for pedestrian facilities.

Table 3. Minimum Width for Pedestrian Facilities Recommended in the Right-of-Way Manual

Street Type	Sidewalk	Planting	Parking/Bike	Total (Minimum)
Regional Connector	6 feet	4 feet	0 feet	10 feet
Commercial Connector	6 feet	4 feet	8 feet	18 feet
Local Connector	6 feet	6 feet	6 feet	18 feet
Green Street	8 feet	10 feet	0 feet	18 feet
Main Street/ Mixed Use Street	8 feet	6 feet	8 feet	22 feet

The study measured the length of the street type segment and determined the length that meets the minimum width. For example, a Regional Connector needs a minimum of 10 feet between the traffic lane and the face of a building. On-street parking was measured based on midday conditions, not taking into account peak period parking restrictions, since the majority of peak pedestrian activity generally occurs during the traditional "off-peak" period for vehicles. The study assumes that the pedestrian activities in the University District are similar to the other typical activities areas. The following formula was used to calculate the percentage having adequate pedestrian facilities:

Percent Adequate Pedestrian Facilities = SUM (the length of the block face having adequate pedestrian facilities based on the street type) / (the total length) X 100.

Table 4 lists the performance measure definitions for adequate pedestrian facilities.

Table 4. Level of Service for Adequacy of Pedestrian Facilities (PF-LOS)

Level of Service	Definition
PF -LOS A	90 to 100 percent
PF -LOS B	80 to 90 percent
PF -LOS C	70 to 80 percent
PF -LOS D	50 to 70 percent
PF -LOS E	40 to 50 percent
PF -LOS F	less than 40 percent
Threshold =PF-LOS D	

Figure 5 shows the width of pedestrian space for each of the block faces. **Figure 6** shows the adequacy of the pedestrian facilities by street type classification.

Findings – Adequacy of Overall Pedestrian Space

- Most of the streets in the study area do not provide adequate space between pedestrians and moving traffic.
- On-street parking is an important buffer for pedestrians between the sidewalk and moving traffic.

Vehicle-Pedestrian Conflicts

Pedestrian crossings at intersections are hampered by conflicts with turning vehicles. One approach to measure the degree of risk is to identify the total (left and right) turning volumes that conflict with the pedestrian movements at each intersection.

The level of service for vehicle-pedestrian conflicts is defined in **Table 5**. The total right-turning vehicles and left-turning vehicles that conflict with pedestrians crossing the streets during the PM peak hour define the level of service. This measure represents the vehicles that conflict with pedestrians crossing the streets (the four legs) at each signalized intersection. For intersections with fewer than 200 vehicle turns (total of left and right), the intersection is defined at LOS A. For intersections with more than 1000 turning vehicles during the PM peak hour, the level of service is F.

The threshold for vehicle-pedestrian conflicts is defined by the Street Type classification. A LOS B or betters is required for green streets, main streets and local connectors, while regional connections may operate at LOS D.

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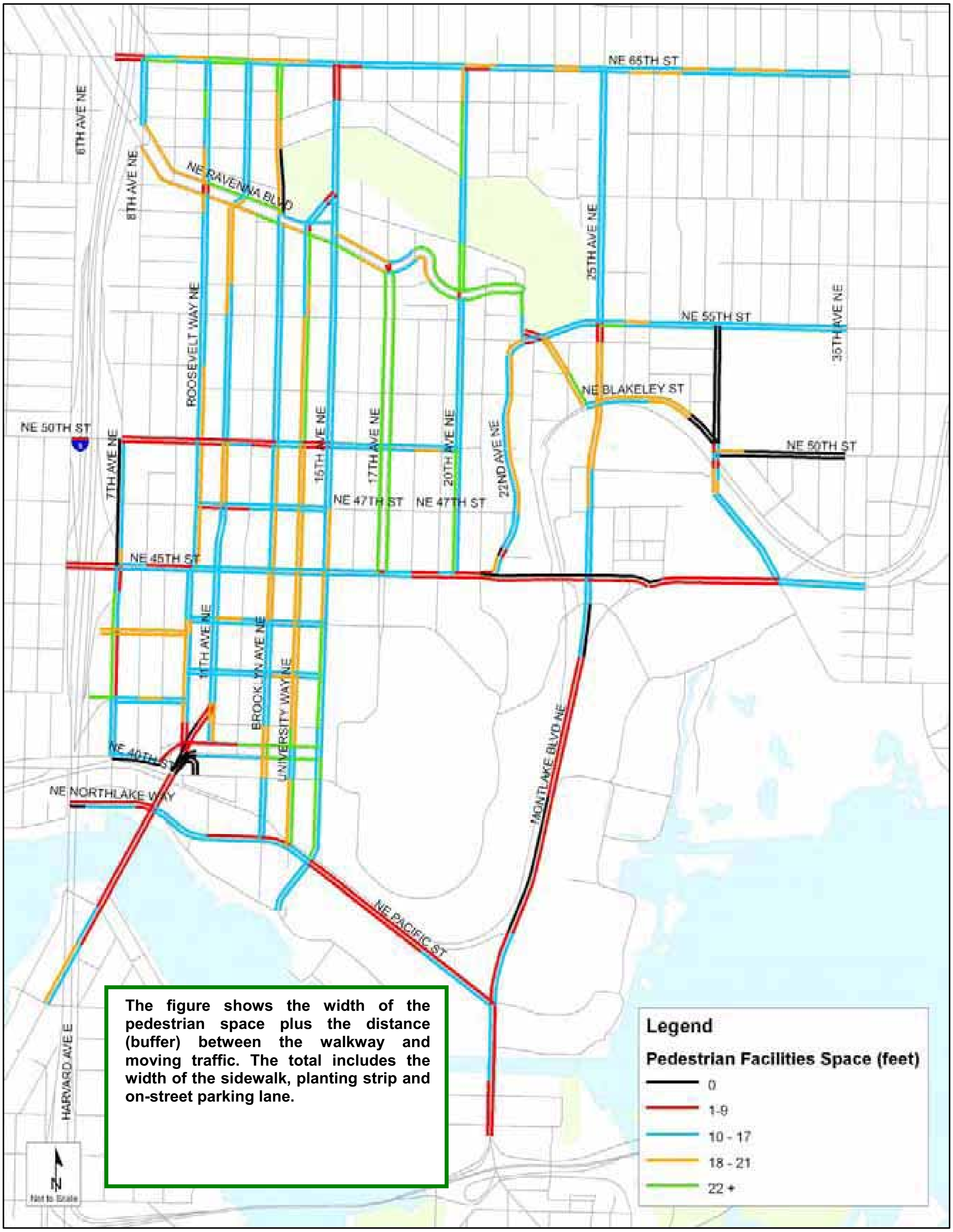
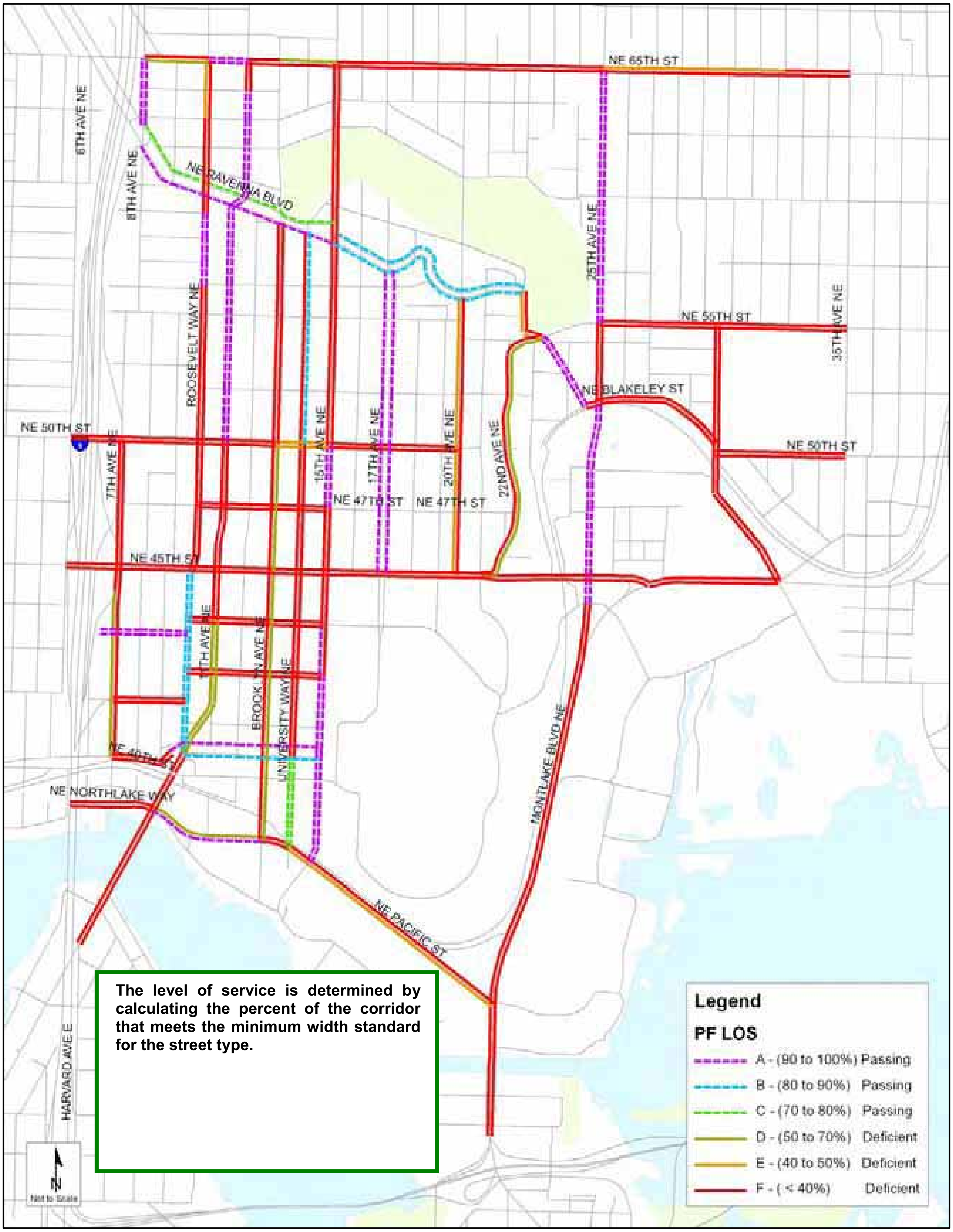
Figure 5. Pedestrian Facility Width by Block Face



The figure shows the width of the pedestrian space plus the distance (buffer) between the walkway and moving traffic. The total includes the width of the sidewalk, planting strip and on-street parking lane.

Figure 6. Level of Service for Pedestrian Facilities



The level of service is determined by calculating the percent of the corridor that meets the minimum width standard for the street type.

Table 5. Level of Service for PM Peak Hour Vehicle-Pedestrian Conflicts (VP-LOS)

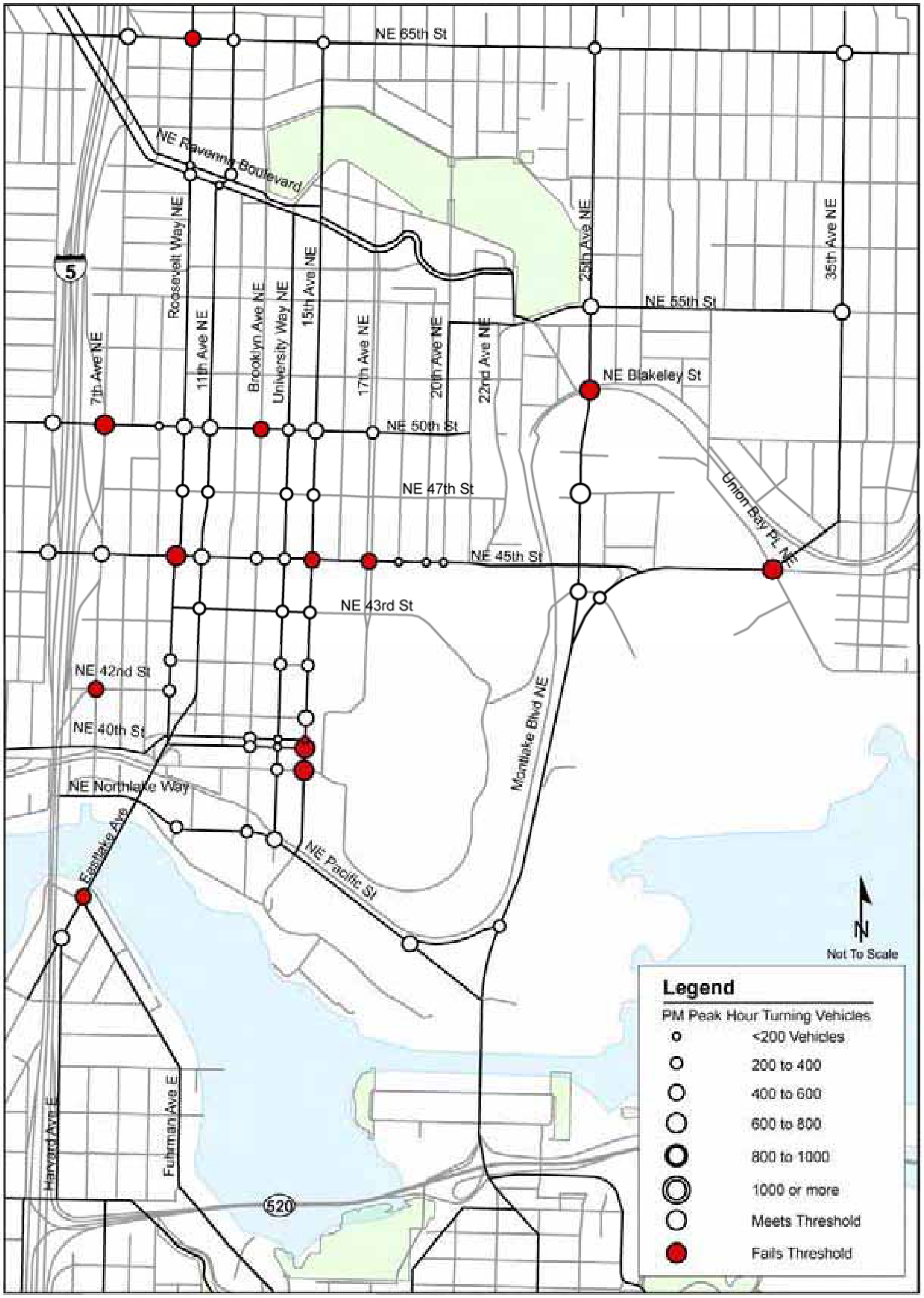
Level of Service	Definition
VP-LOS A	fewer than 200 vehicles
VP-LOS B	200 to 400 vehicles
VP-LOS C	400 to 600 vehicles
VP-LOS D	600 to 800 vehicles
VP-LOS E	800 to 1000 vehicles
VP-LOS F	greater than 1000 vehicles
Thresholds VP-LOS B for intersections on Green Streets, Main Streets and Local Connectors VP-LOS C for intersections on Mixed Use Streets and Commercial Connectors VP-LOS D for intersections on Regional Connectors	

The intersections that fall below the level of service threshold for vehicle pedestrian conflicts are shown in **Figure 7** .

Findings – Conflicts between Pedestrians and Left- and Right-Turning Vehicles

- The six highest locations for turning conflicts are:
  - NE 50th Street/7th Avenue NE
  - NE 45th Street/35 Avenue NE
  - NE Blakeley Street/25th Avenue NE
  - NE 45th Street/Roosevelt Way NE
  - NE 40th Street /15 Avenue NE
  - NE Campus S Pkwy/15 Avenue NE
- In all, fourteen intersections, about one in five, experience very heavy conflicts between turning vehicles and pedestrians in the crosswalk.

Figure 7. Level of Service for Vehicle-Pedestrian Conflicting Volumes



Signal Cycle Length

Another measure of pedestrian mobility is the total cycle length of a signal. "Cycle length" is defined as the total time for all phases of signal to change, or in other words, for all users of the intersection to get a "turn". The amount of delay experienced by pedestrians depends on the length of the "WALK" phase for pedestrians, the number of signal phases and the total signal cycle length. Pedestrians crossing at intersections experience frustration when faced with long signal cycles and may be more likely to not obey the signal. The performance measure uses the length of a traffic signal cycle during the PM peak hour at signalized intersection. By definition, stop-controlled intersections are LOS A. **Table 6** defines the level of service and thresholds for the signal cycle length related to pedestrian street-crossing experience.

Table 6. Level of Service for Signal Cycle Length (PM Peak Hour)

Level of Service	Definition
SCL-LOS A	less than 60 seconds
SCL-LOS B	60 to 75 seconds
SCL-LOS C	75 to 100 seconds
SCL-LOS D	100 to 120 seconds
SCL-LOS E	120to 130 seconds
SCL-LOS F	greater than 130 seconds
SCL- Thresholds LOS C for intersections on Green Streets LOS D for intersections on Main Streets, Mixed Use Streets, Local Connectors LOS E for intersections on Commercial and Regional Connectors	

Figure 8 displays the signal cycle length in seconds and the whether the intersection meets the threshold for the street type classification.

Findings – Signal Cycle Length

- Within the University commercial district most intersections have cycle lengths of 100 seconds or less. For a typical intersection with a 100 second cycle length, the pedestrian delay is approximately 43 seconds.
- Seven intersections fail to meet the signal cycle length thresholds for their street type; five of the seven are on Brooklyn where the threshold is 100-120 seconds.

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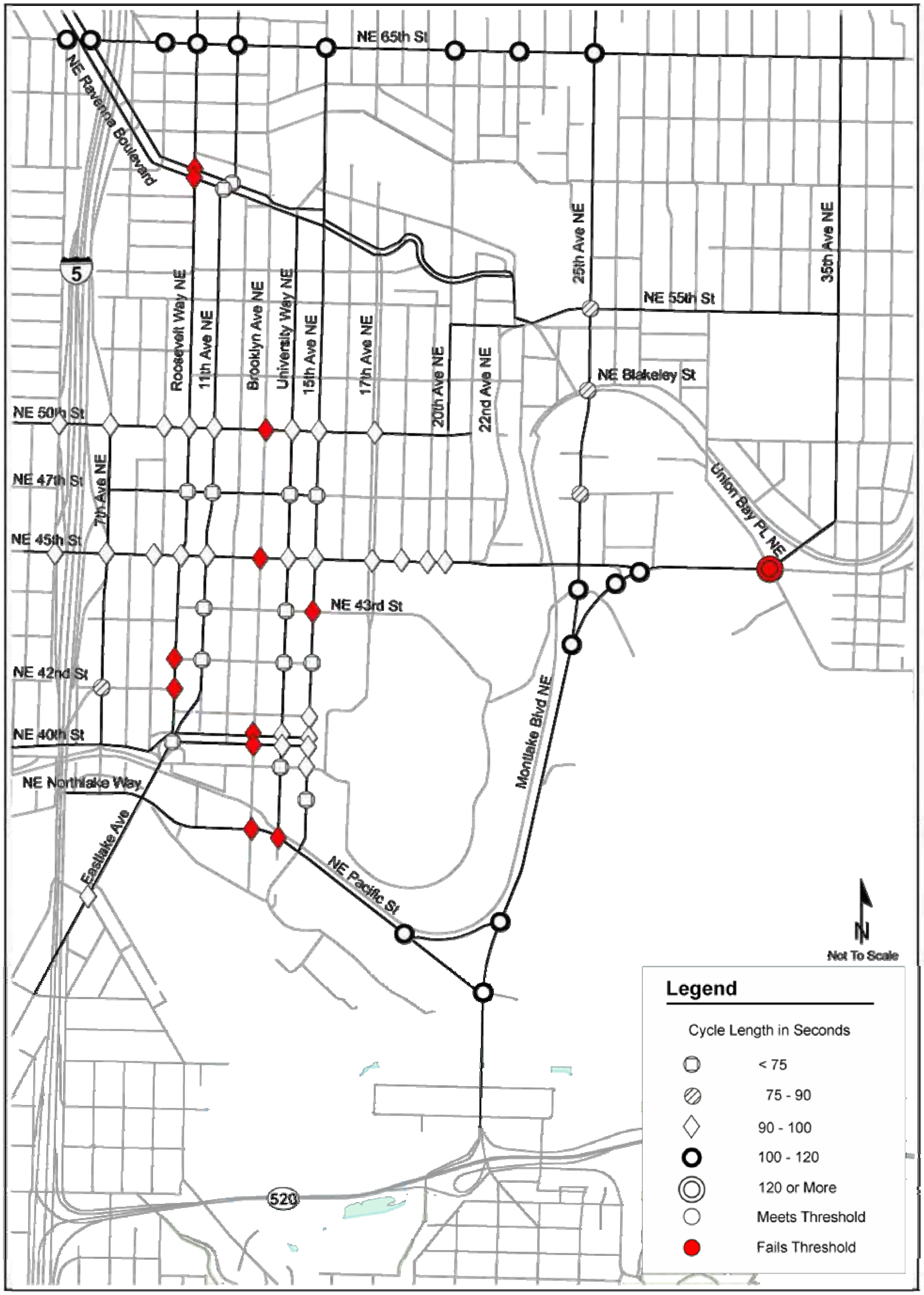
Figure 8. Signal Cycle Lengths



BICYCLE SYSTEM

Bicycle use is high throughout the UATAS study area with the highest use near the University of Washington campus and the Burke-Gilman Trail. The City of Seattle is in the process of developing a *Bicycle Master Plan* for the entire city. The UATAS incorporated the draft recommendations (April 2007) for the University area and evaluates the corridors using performance measures.

BICYCLE CORRIDORS

The UATAS study evaluates all bicycle corridors identified on the City's *Bicycle Master Plan* (Draft – April 2007). **Figure 9** shows the bicycle corridors, with recommended improvements, that are identified in the Draft *Bicycle Master Plan* for the UATAS study area.

Bicycle Collisions

For the most part, vehicles and cyclists must share the same roadway. Conflicts between the two modes can occur where cyclists need to cross the stream of traffic to turn onto side streets, where the roadway is not wide enough to comfortably accommodate both modes, or where vehicles are moving at a much higher speed than bicyclists. City records of bicycle-vehicle collisions were reviewed for the period between 2004 and 2006. **Figure 10** shows the location and number of collisions that occurred during the three years.

Findings: Bicycle Collisions

- Thirty-nine collisions occurred between bicycles and vehicles in the last three years.
- Three locations had four collisions each:
- Eastlake Avenue E and Fuhrman Avenue E, and half a block south on Eastlake, midblock between Fuhrman Avenue E and Harvard Avenue E; both of these locations are just south of the University Bridge.
- University Way NE/NE Pacific Street at the Burke-Gilman Trail; all four involved bicyclists using the trail.
- There were three collisions on University Way NE, midblock

Review of the City's collision diagrams and police department reports found that bicycle vehicle collisions on Eastlake Avenue E/Fuhrman Avenue E were related to left turning vehicles not observing an on-coming cyclist and vehicles not aware of the presence of cyclists on the street when opening the doors of their parked vehicles or pulling into traffic from a parking space. Another problem location is University Way/Pacific Street/Burke-Gilman Trail crossing. The four collisions at this location occurred between a cyclist traveling eastbound on the Burke-Gilman Trail and a southbound vehicle making a right turn on red.

Figure 9. Bicycle Study Corridors and Draft Recommendations From the Bicycle Master Plan

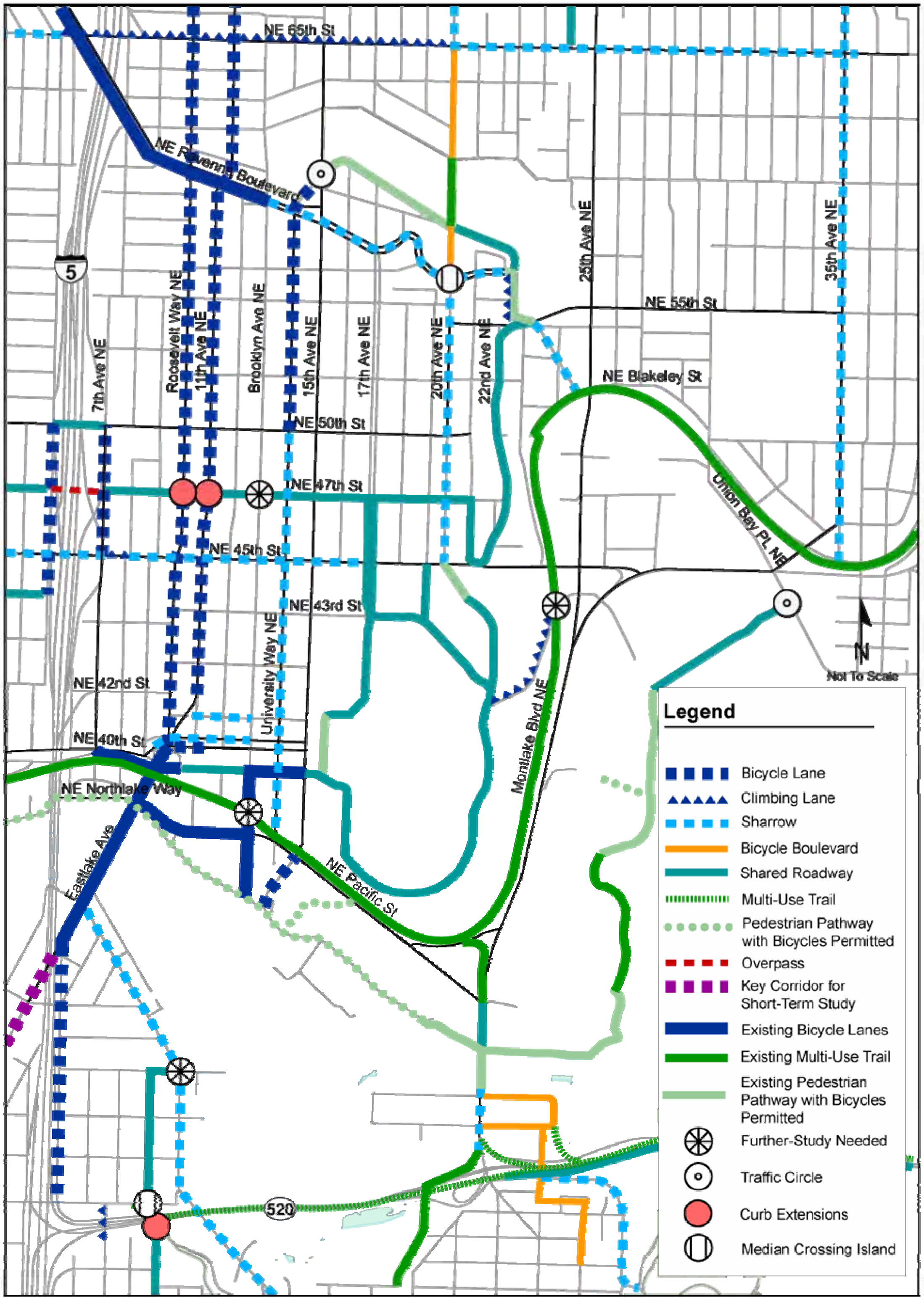


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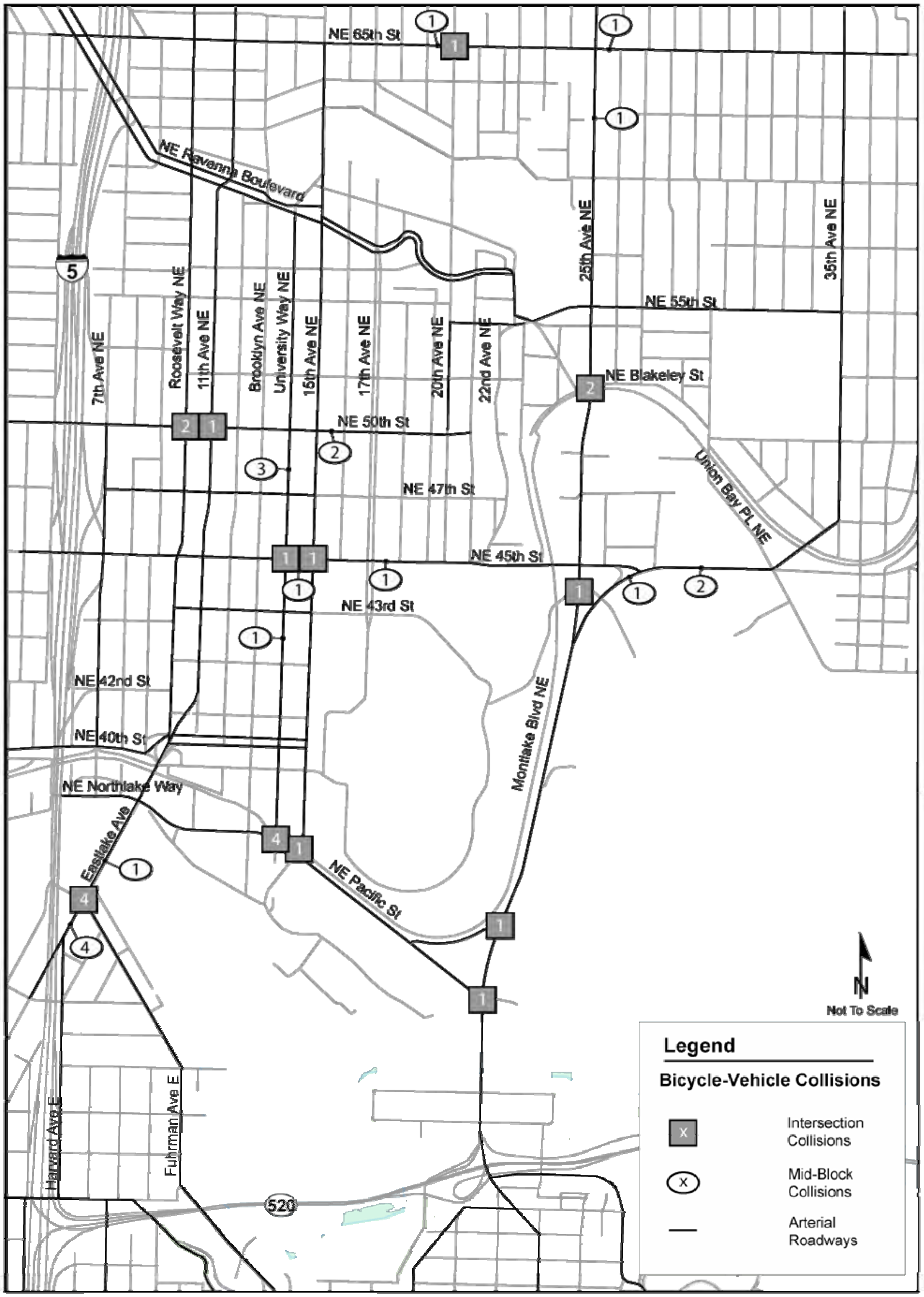
Figure 10. Three-Year Bicycle-Vehicle Collision Totals (2004-2006)



Bicycle System Performance

The adequacy of bicycle facilities on designated bicycle corridors in the UATAS study area was evaluated using the concept of bicycle compatibility index and bike level of service (BLOS) as defined by the *Federal Highway Administration's Bicycle Compatibility Index and Updates.* The index indicates the bicyclist's comfort level for specific roadway geometries and traffic conditions. Traffic and roadway design factors are used to compute a score for each analyzed facility.

The factors used to define the bicycle level of service are:

- Traffic conditions (average daily volumes, posted speed limits, percent of heavy vehicles, on-street parking)
- Roadway design (number of lanes, speed limits, width of outside lane, availability of shoulder)

This evaluation provides an indication of existing cyclist comfort on the bicycle corridors. Appropriate improvements, such as suggested by the City's Bicycle Master Plan, would be expected to improve the BLOS.

Level of service for bicycles will be defined using a range of scores. **Table 7** describes the relationship between the score and the general conditions. For example, a BLOS B is defined with a score between 1.51 and 2.50, and BLOS C is a score between 2.51 and 3.5. The LOS threshold is set as LOS B for the bicycle corridors.

Table 7. Definition of Bicycle Level of Service

LOS	Score	Descriptions of Level of Service Operations
A	< 1.5	Highest bicyclist comfort. Little or no vehicular conflicts. Supportive infrastructure in place and/or very low vehicular volumes.
B	< 1.5 – 2.5	High degree of bicyclist comfort. Little vehicular conflict. Some form of supportive infrastructure and/or low vehicular volumes.
C	< 2.5 – 3.5	Acceptable level of bicyclist comfort. Some vehicular conflict. Some form of supportive infrastructure and/or lower vehicular volumes.
D	< 3.5 – 4.5	Some bicyclist discomfort. More vehicular conflicts. Some form of supportive infrastructure with higher vehicular volumes.
E	< 4.5 – 5.5	High level of bicyclist discomfort. Notable vehicular conflicts. Little or no supportive infrastructure with high vehicular volumes.
F	> 5.5	Highest level of bicyclist discomfort. No supportive infrastructure with high vehicular volumes and possible high percentage of heavy vehicles.
BLOS Threshold = B		

Figure 11 shows the results for the BLOS. Corridors that fail to meet the BLOS threshold are not suitable for bicycle travel in their current configuration. Improvements, such as restriping, could improve bicyclist comfort on the corridor.

Findings: Bicycle Level of Service

- More than half of the bicycle corridors fail to meet Bike-Level-of-Service standards.
- The worst location in the study area for bicyclists is NE 45th Street from the southbound I-5 ramp to 17th Avenue NE.
- The second worst location is NE 50th Street crossing I-5.
- Six additional major corridors that fail to meet the Bike Level of Service threshold are:
- The University Bridge
- Both legs of the Roosevelt NE / 11th Avenue NE couplet from the University Bridge to NE 65th
- Campus Parkway (south side) from the University Bridge to Brooklyn
- 20th Avenue NE from NE 45th to Ravenna Blvd.
- NE 65th between Roosevelt and 25th.

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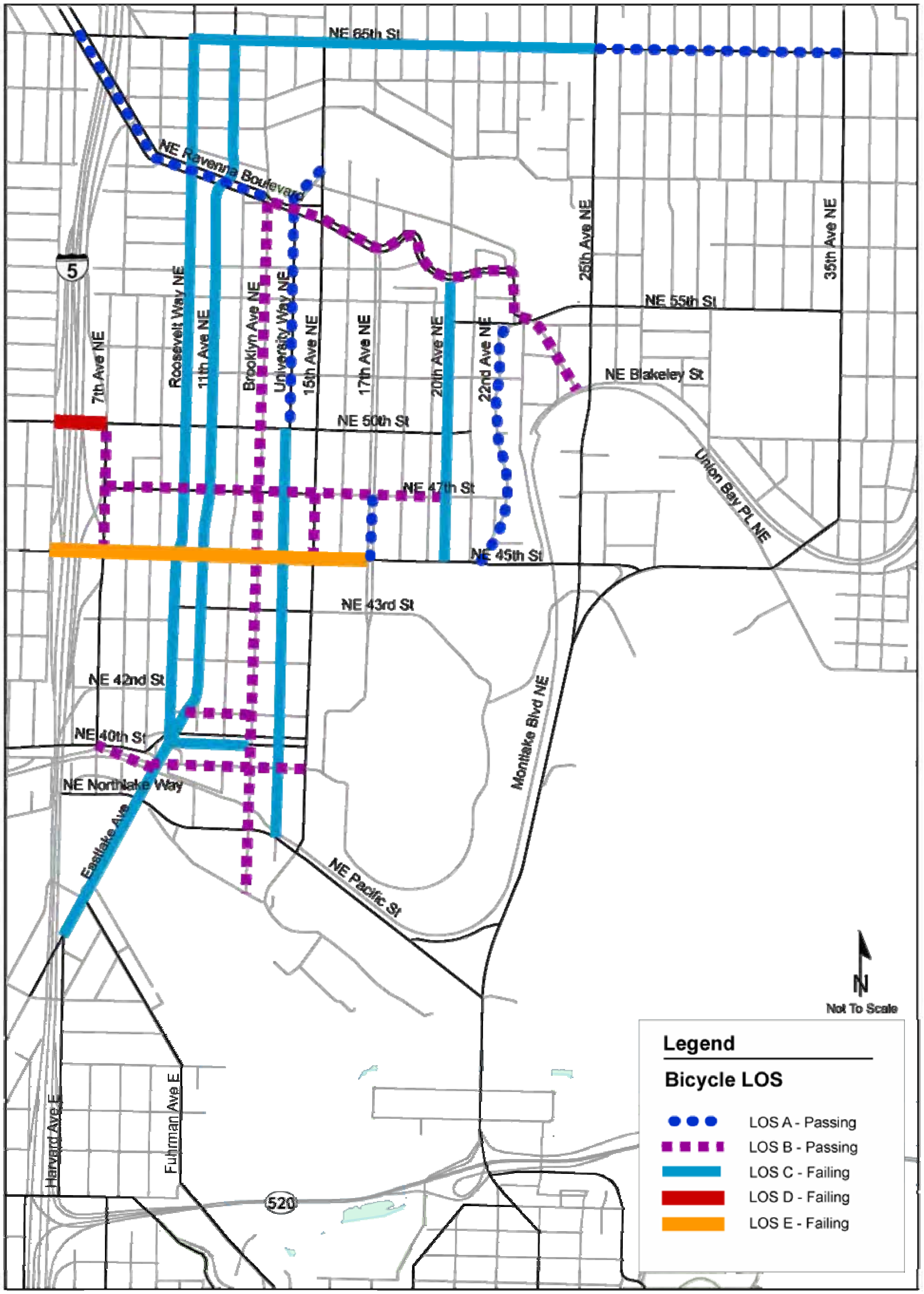
Figure 11. Bicycle Level of Service Results



TRANSIT SYSTEMS

Transit in the UATAS study area is an important part of the transportation system. King County Metro, Community Transit, Sound Transit and the University of Washington all provide transit services within the area.

In 2005, the City of Seattle developed the *Seattle Transit Plan*, to provide a vision of the future transit system within Seattle and a strategy to better connect urban villages and major activity centers. The purpose of the plan is to help the City plan and coordinate transit service improvements and to commit to developing arterial streets to maintain transit speed and reliability. A key component was the designation of a transit street classification and Urban Village Transit Network (UVTN) corridors. **Figure 12** shows the transit classification of the roadway network as designated by the *Seattle Transit Plan*. The transit streets are designated with the following definitions:

- Transit Way: Provides frequent, high speed, high capacity and intermediate capacity service.
- Principal Transit Street: Provides for high-volume transit service, often for regional or citywide trips.
- Major Transit Street: Provides concentrated transit service to connect and reinforce major activity centers and residential areas.
- Minor Transit Street: Provides local and neighborhood transit service.
- Local Transit Street: Provides local and neighborhood transit service.

Transit System Performance

For the UATAS, two kinds of transit performance measures are used: The Urban Village Transit Network (UVTN) and the adequacy of bus shelters. The UVTN is a series of performance measures developed for the *Seattle Transit Plan* in order to assess the adequacy of transit within the city-designated Urban Villages. The bus shelter measure uses King County Metro's standard for provision of bus shelters at locations with 50 or more boardings.

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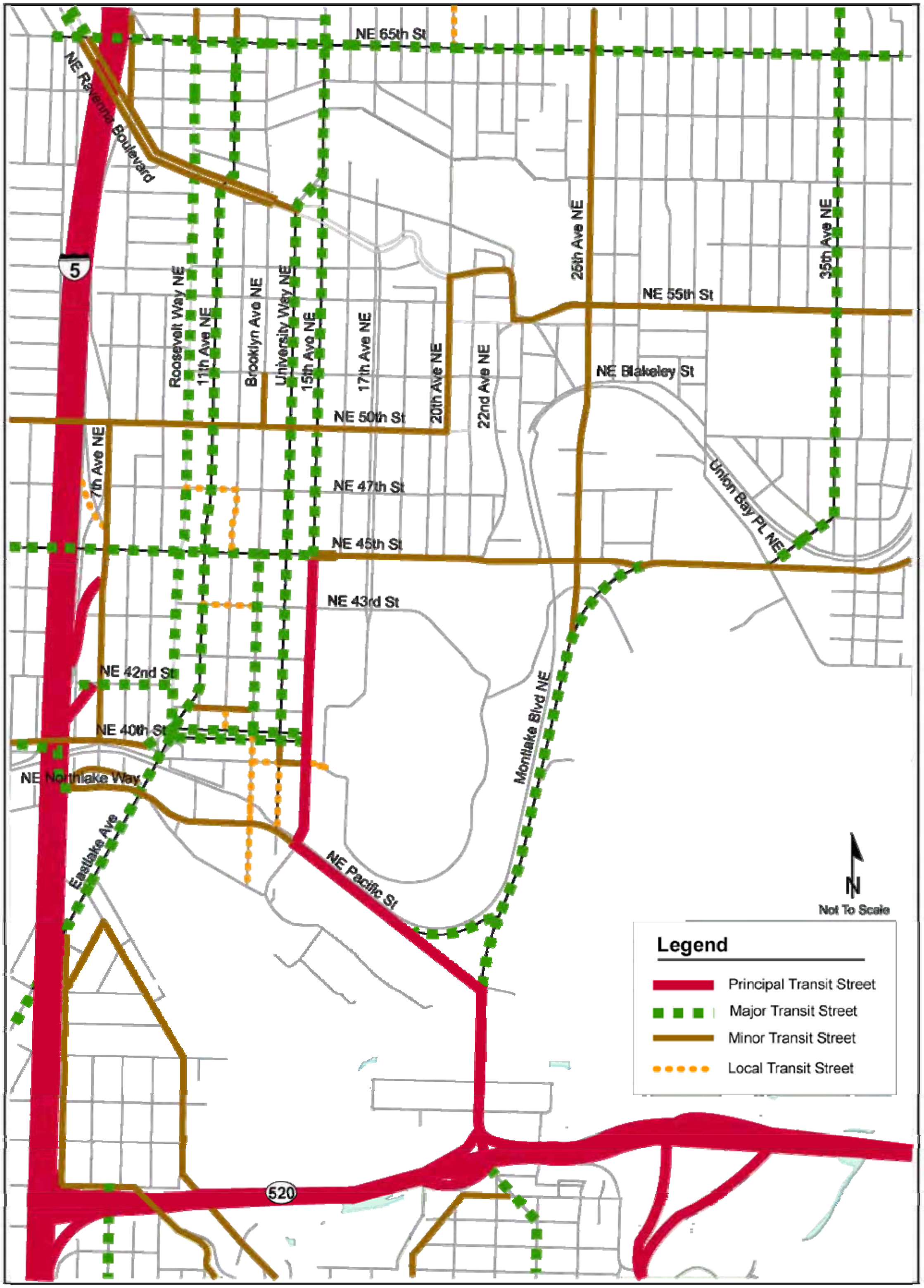
Figure 12. Transit Street Classification



UVTN Performance Measure

The *Seattle Transit Plan* established performance criteria for the evaluation of the UVTN transit services based on key dimensions of transit quality: frequency, span of service, speed, reliability and passenger loading. The *UVTN Monitoring Project* (February 2007) used available monitoring data to provided a status report of the designated transit corridors. In some cases, the report modified the calculation methodology of the performance criteria to match available data. In addition, the report set an interim threshold for the "Span of Service" standard of 12 hours to provide an indication of the progress towards the meeting the ultimate goal of 18 hours. For the UATS report, we used the 18-hour service goal set in the *Seattle Transit Plan.* **Table 8** defines each of the performance measures and provides the UVTN threshold for evaluation.

Table 8. UVTN Criteria and Thresholds for Transit Corridors

UVTN Criteria	Definition	Threshold
Frequency of Service	The length of time in minutes between scheduled transit arrivals	15 minutes or less
Span of Service	The number of hours that service operates at 15 minutes or less headways	18 hours or more
Speed	The percent of the average operating speed is to the posted speed limit	30% of the posted speed limit
Reliability	The actual travel time compared to the base travel time using an index	0.4 or less
Loading	The passenger load as a percent of seat capacity	90% of seated capacity

The *UVTN Monitoring Project* report evaluated the performance measurements of the designated transit corridors. **Figures 13 through 17** indicate the results of the five performance criteria. **Table 9** summarizes the UVTN findings.

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Figure 13. Transit Frequency – Maximum Headways during Mid-day Hours

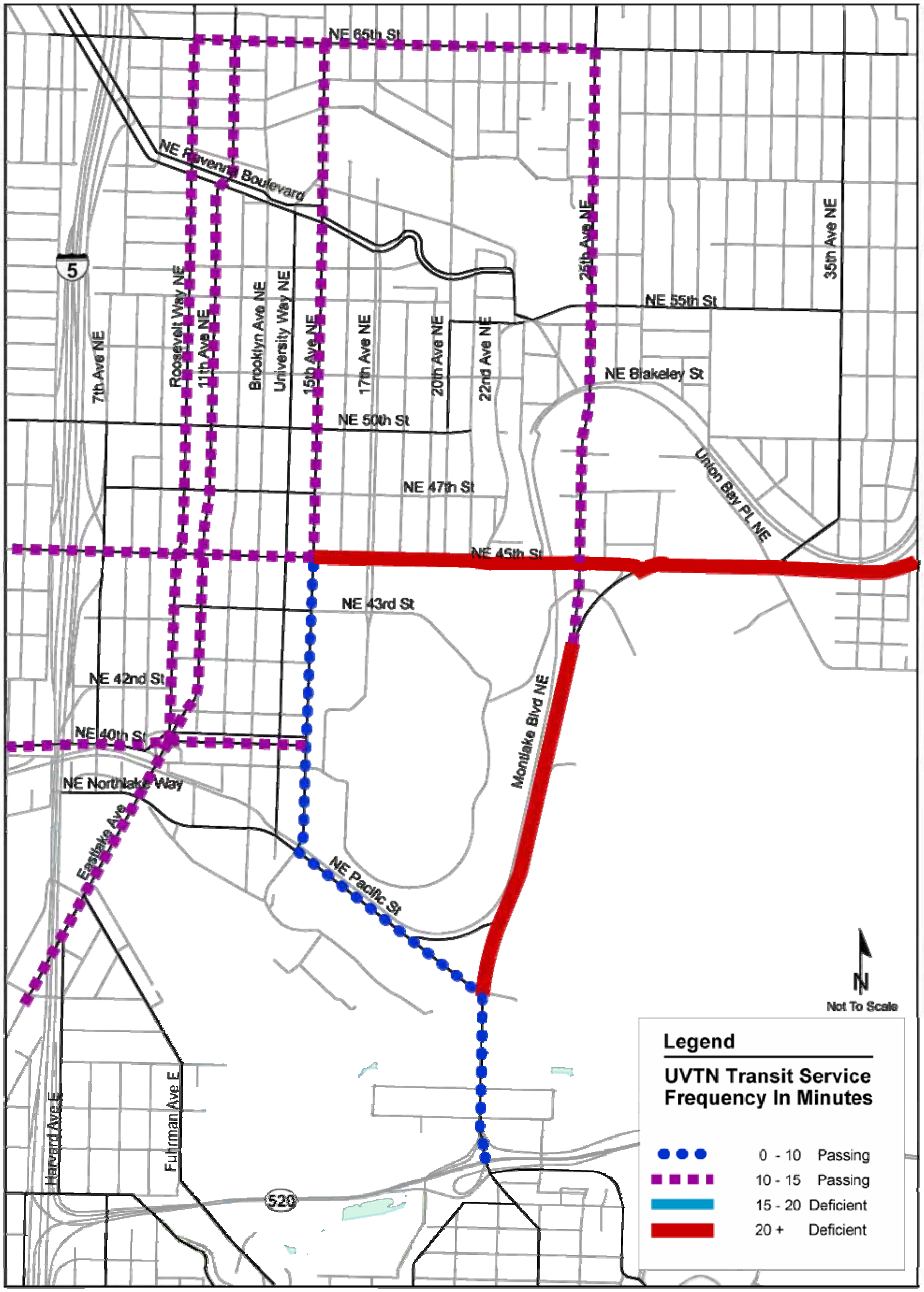

Figure 14. UVTN Span of Service (Hours operating at 15 minute Headways)

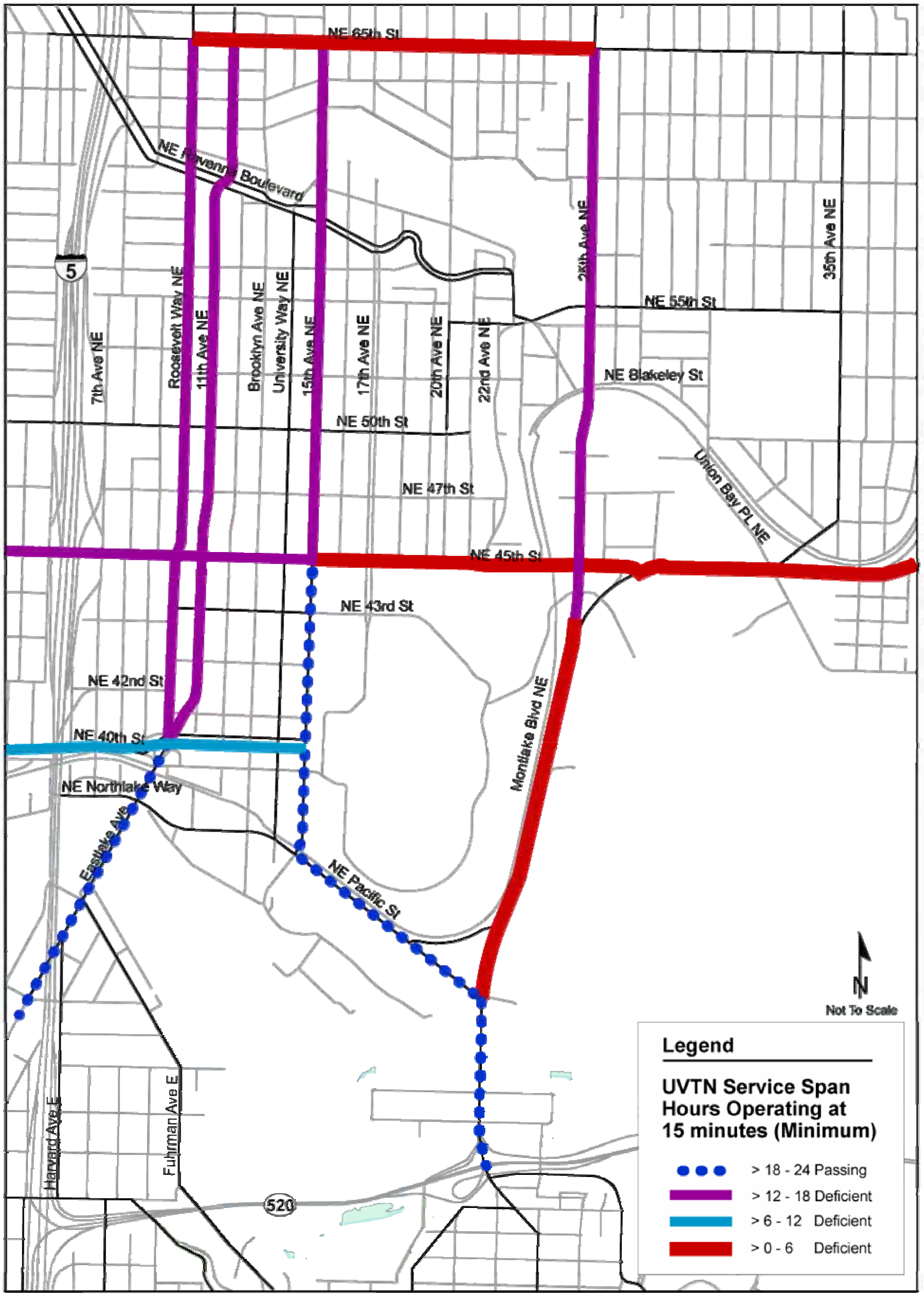

Figure 15. Average Travel Speed to Posted Speed

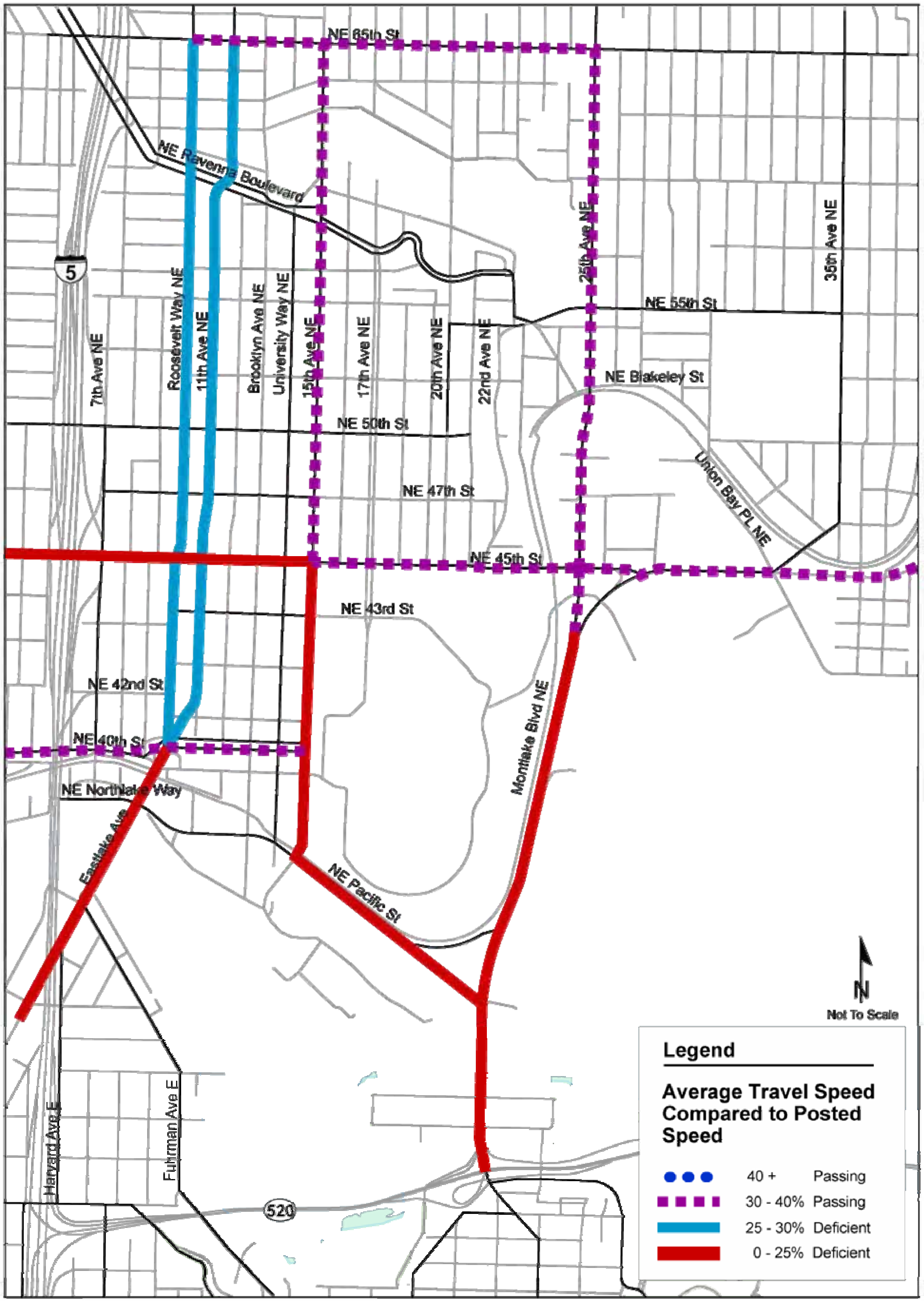

Figure 16. UVTN Service Reliability Index

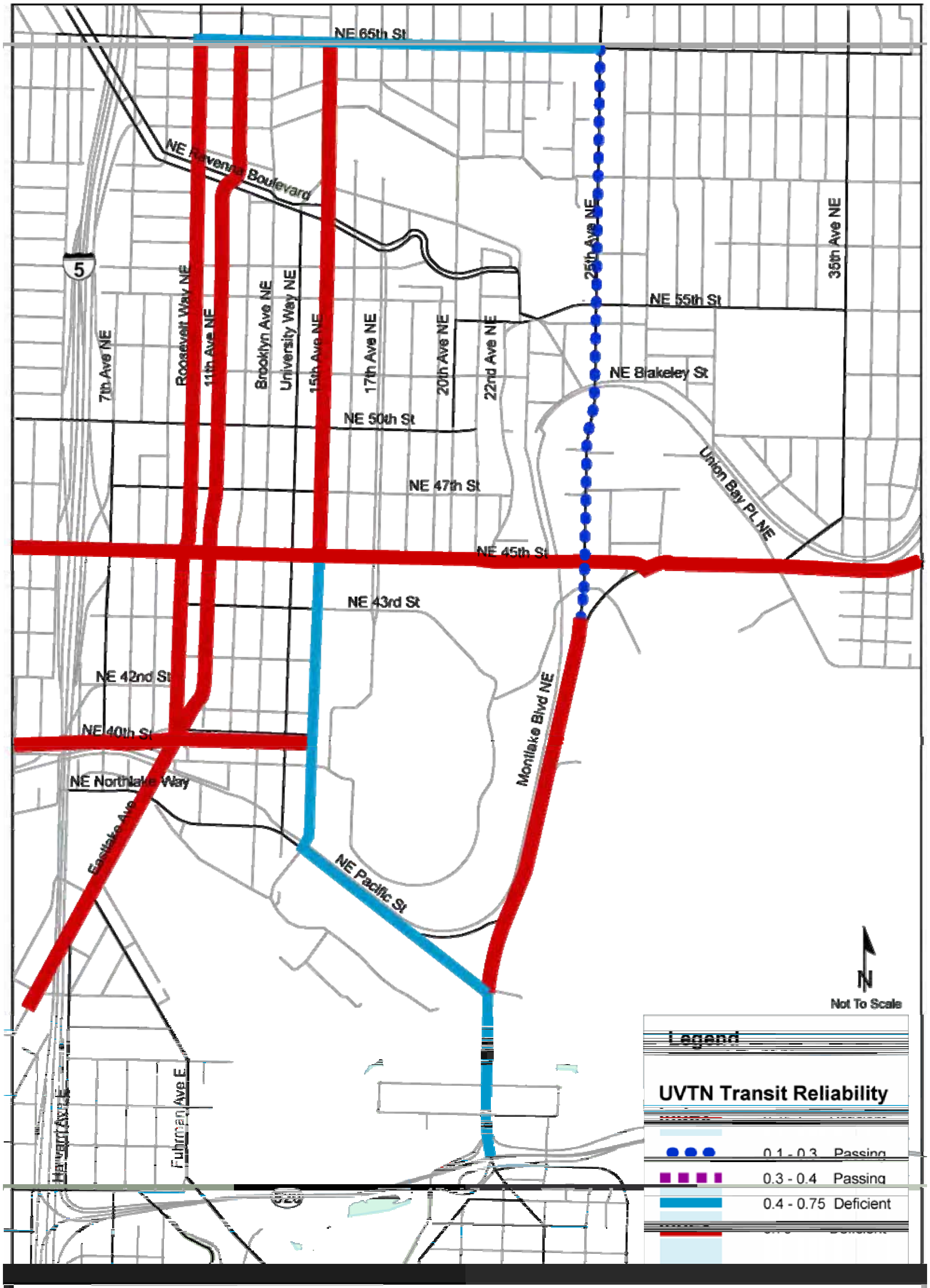

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Figure 17. UVTN Passenger Loading (Maximum)

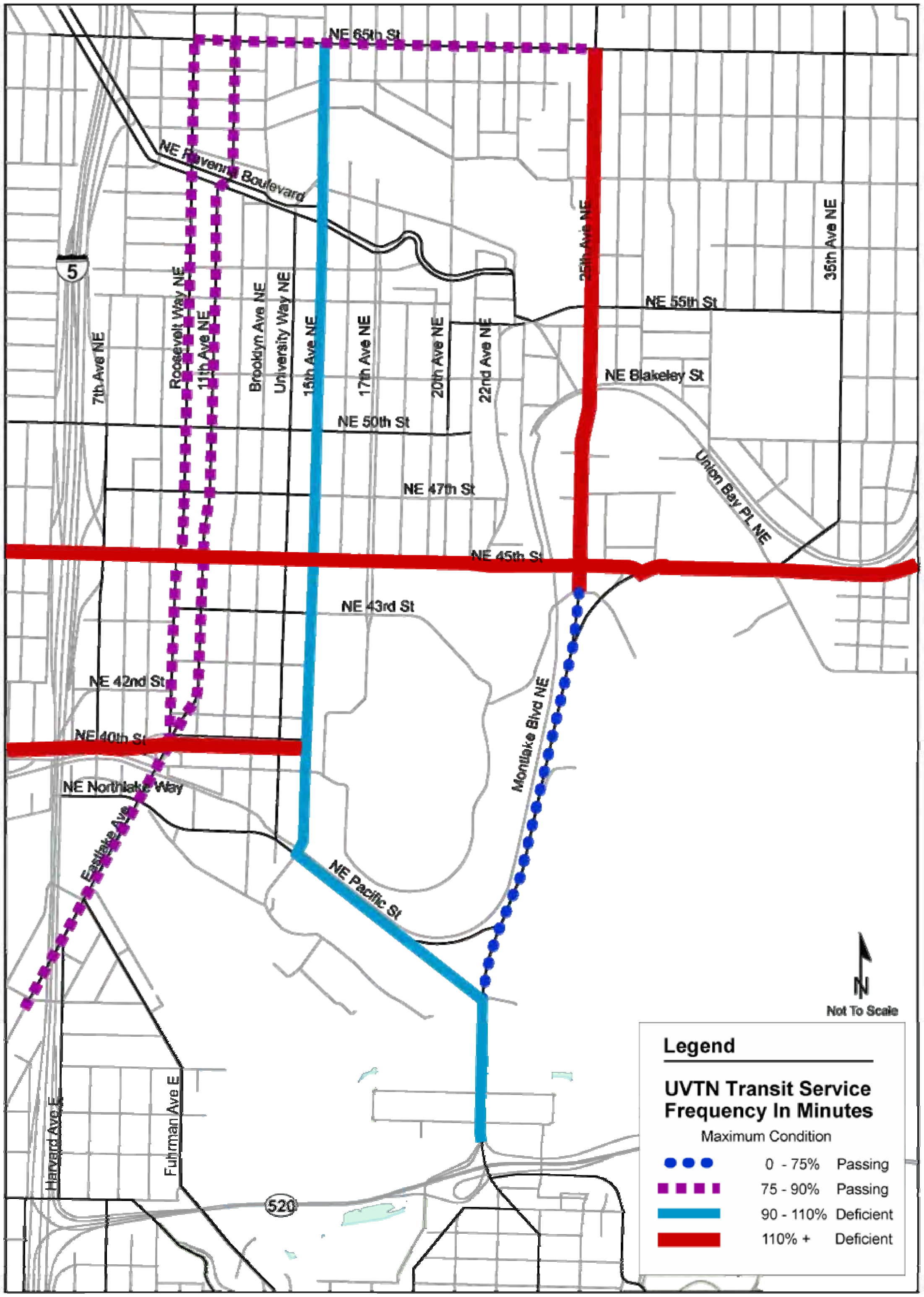

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Table 9. UVTN Monitoring Results

ID	Primary Street of Corridor Segment	Limits		Frequency (MAX)	Span (MIN)	Speed (AVG)	Reliability (MAX)	Load (MAX)
1	Fairview/Eastlake	Stewart St	Campus Pkwy	15.0 Pass	18 Pass	24% Fail	1.87 Fail	89% Pass
20	N/NE 45th St	Stone Way N	15th Av NE	15.0 Pass	14 Fail	22% Fail	2.20 Fail	113% Fail
23	N/NE 40th St	Stone Way N	15th Av NE	15.0 Pass	10 Fail	37% Pass	0.92 Fail	127% Fail
26	15th Ave NE	NE 45th St	NE 65th St	15.0 Pass	13 Fail	31% Pass	0.86 Fail	103% Fail
28	25th Ave NE	NE 45th St	NE 65th St	14.6 Pass	12 Fail	37% Pass	0.14 Pass	140% Fail
30	Montlake Blvd NE	NE Pacific St	NE 45th St	N/A Fail	0 Fail	21% Fail	0.79 Fail	36% Pass
31	NE 45th St, Sand Point	15th Av NE	Sand Point Way NE	60.0 Fail	4 Fail	31% Pass	2.20 Fail	113% Fail
32	NE 65th St	Roosevelt Way NE	25th Ave NE	30.0 Fail	5 Fail	32% Pass	0.46 Fail	80% Pass
33	NE Pacific St	Montlake Blvd NE	NE 45th St	4.8 Pass	19 Fail	21% Fail	0.72 Fail	103% Fail
60	11th Ave NE, Roosevelt Wy	NE 40th St	NE 65th St	15.0 Pass	14 Fail	26% Fail	1.11 Fail	79% Pass
MAX based on the highest data point along the corridor MIN based on the lowest data point along the corridor AVG based on the average of data points of the corridor								

Findings: UVTN Performance

- Of the ten UVTN corridors analyzed:
- 70% have adequate frequency of bus service
- Only two have buses operating at least 18 hours a day
- 50% maintain adequate speeds, but 50% do not
- Only one of the ten maintains adequate reliability (on-time performance)
- 60% are overloaded.

Transit Shelters

King County Metro's standards call for the agency to provide transit shelters at bus stops that have 50 or more boardings per day. There is high transit use and activity throughout the University area. **Table 10** lists the stop locations with 50 or more boardings that do not have a bus shelter in the University area in 2006.

Table 10. Bus Stops without a Shelter with 50 or more Daily Boardings

Stop Reference	Direction	Street	Cross-Street	Daily Boarding (Weekday)
35720	East	NE Campus Pkwy	University Way NE	457
7941	North	25th Avenue NE	NE Blakely Street	416
82155	North	University Way NE	NE 55th Street	227
35741	South	NE Campus Pkwy	11th Avenue NE	156
7912	North	25th Avenue NE	NE 55th Street	138
26860	North	15th Avenue NE	NE 45th Street	128
9900	South	12th Avenue NE	NE 47th Street	117
37670	West	15th Avenue NE	NE 65th Street	101
7880	North	25th Avenue NE	NE 65th Street	88
6652	West	11th Avenue NE	NE 42nd Street	88
24950	South	15th Avenue NE	NE 55th Street	88
28080	South	15th Avenue NE	NE 50th Street	85
38700	North	Roosevelt Way NE	NE 50th Street	75
29429	East	NE 65th Street	15th Avenue NE	73
9575	East	12th Avenue NE	NE 45th Street	72
29140	West	NE 47th Street	11th Avenue NE	62
18040	South	Brooklyn Avenue NE	NE 50th Street	57
25960	North	15th Avenue NE	NE 52nd Street	56
9130	North	11th Avenue NE	NE 50th Street	55

Findings – Bus Shelters

Nineteen bus stops, where there are 50 or more passengers a day, do not have bus shelters.

At Campus Parkway/University Way bus stop, over 450 passengers board the bus each day, but there is no shelter.

The stop at 25th Avenue NE/NE Blakely Street serves over 400 passengers a day, without a shelter.

VEHICLE SYSTEM

The roadway system of the UATAS study area is bordered and restricted on three sides by Interstate 5 to the west, SR 520 to the south and Lake Washington to the east. Bridges and overpasses provide the main connections to the west and south, while traffic continuing to the east side of Lake Washington must funnel south across the Montlake Bridge or travel west to access I-5 to cross on SR 520.

Street Classification

The City of Seattle classifies its streets according the function and purpose of the roadway. Within the UATAS study area, some streets emphasize the movement of traffic while others are focused on providing access to property. **Figure 18** shows the street classification of the arterial roadways within the UATAS study area, which are defined as follows:

Freeways and Highways: Roadways that provide the highest capacity and least impeded traffic flow for longer vehicle trips. Interstate 5 and State Route 520 circulate traffic to and around the UATAS study area.

Principal Arterials: Roadways that serve as the primary routes for moving traffic through the city connecting urban centers and urban villages to one another, or to the regional transportation network. Montlake Boulevard, NE 45th Street, Eastlake Avenue, 11th Avenue NE, 12th Avenue NE, 25th Avenue NE and portions of NE 50th Street and 15th Avenue NE are classified as principal arterials.

Minor Arterials: Roadways that distribute traffic from principal arterials to collector arterials and access streets. NE 65th Street, NE Ravenna Boulevard, NE 40th Street/Campus Parkway, 15th Avenue NE (north of NE 50th Street) and 35th Avenue NE are all examples of minor arterials within the UATAS area.

Collector Arterials: Roadways that collect and distribute traffic from principal and minor arterials to local access streets or provide direct access to destinations. NE Ravenna Boulevard, NE 55th Street, University Way NE, Brooklyn Avenue NE and 20th Avenue NE are examples of collector arterial streets within the UATAS study area.

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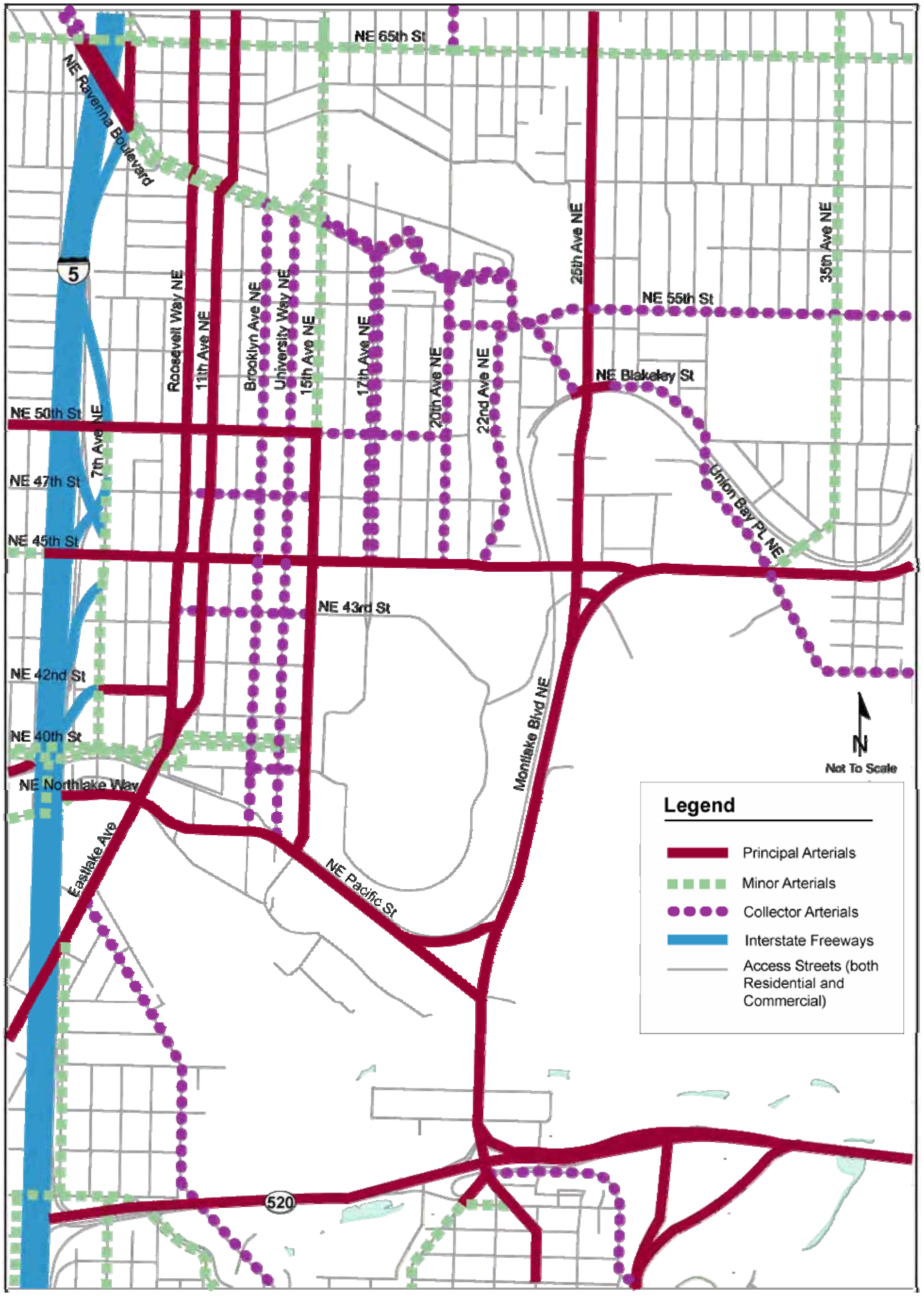
Figure 18. Street Classification



Traffic Volumes

The principal arterials carry high volumes of daily and peak hour traffic through the study area. For north-south arterials, Montlake Boulevard NE carries over 45,000 daily trips and over 3,000 trips during the PM peak hour. The Roosevelt Way-11th/12th Avenue couplet carries 22,000 daily trips and 1,700 PM peak hour trips. 25th Avenue NE also carries 18,000 daily trips and 1,300 PM peak hour trips. For east-west arterials, NE 45th Street carries the highest daily (36,000) and peak hour (2,300) traffic, followed by NE Pacific Street (27,000 daily and 2,300 peak). **Figure 19** shows the total average daily trips and **Figure 20** shows PM peak hour volumes by direction on the arterial system.

Traffic Growth Trends

Traffic volumes on roadways within the UATAS area generally have remained level or decreased over the last 16 years. This section describes the daily (1991-2006) and the PM peak hour (2000-2006) traffic trends on north-south and east-west arterial roadways and bridges.

North-South Arterials

The north-south arterial system provides local access to the University area and distributes traffic from the University Bridge and Montlake Bridge (**Figure 21**). To see how volumes have changed over time, 15th Avenue NE, 25th Avenue NE, 35th Avenue NE, Roosevelt Way NE and 12th Avenue NE were reviewed to see changes in volumes during daily and peak travel hours. Traffic volumes have generally been stable or slightly decreasing along north-south arterial roadways. **Figures 22** to **23** show the daily and PM peak hour volume trends.

East-West Arterials

The east-west arterial system provides access to and from Interstate 5 from the University area. Locations along NE 45th Street, NE 50th Street, NE 65th Street and NE Pacific Street were reviewed for changes in volumes during daily and peak travel hours. Over the period, traffic volumes have generally been stable or slightly decreasing along north-south arterial roadways. **Figures 24** to **25** show the daily and PM peak hour volume trends for east-west arterial streets.

Findings – Traffic Volumes

- Over the last 16 years, traffic in major corridors generally remained level or decreased.
- Traffic on both the Montlake and University bridges decreased slightly between 1991 and 2006.

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Figure 19. Average Daily Weekday Traffic

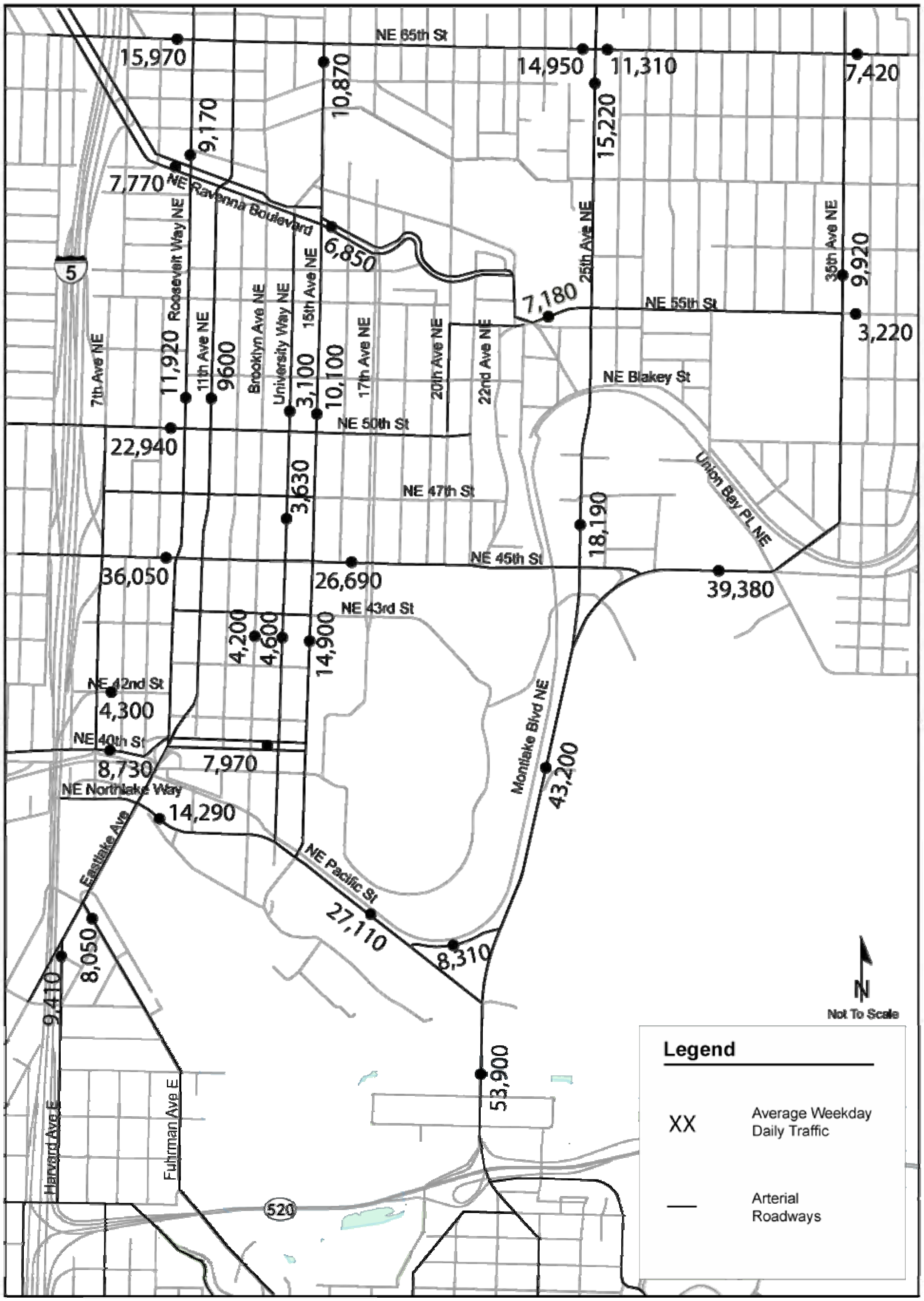


Figure 20. PM Peak Hour Volumes by Direction

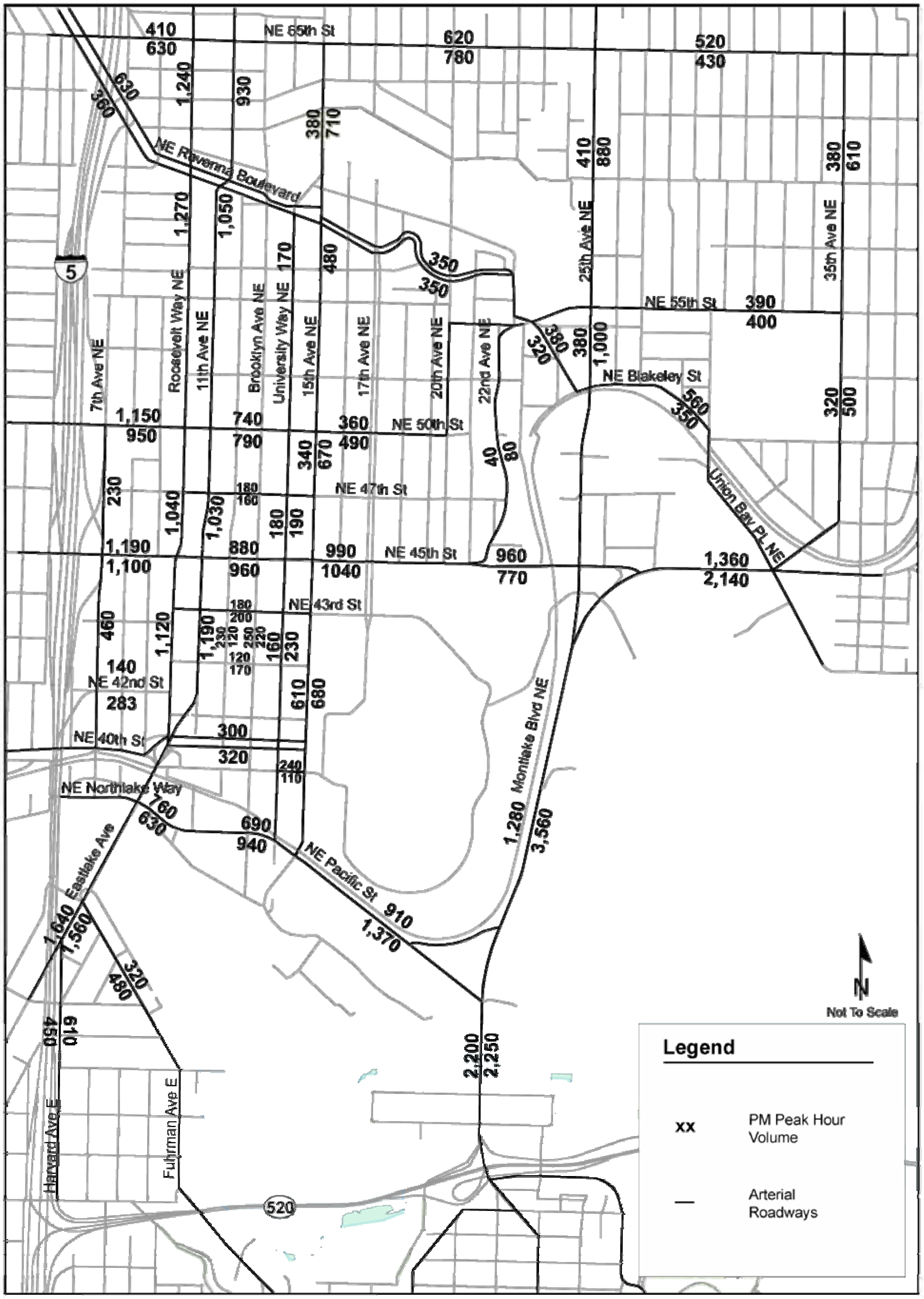


Figure 21. Average Weekday Volumes for Montlake and University Bridges

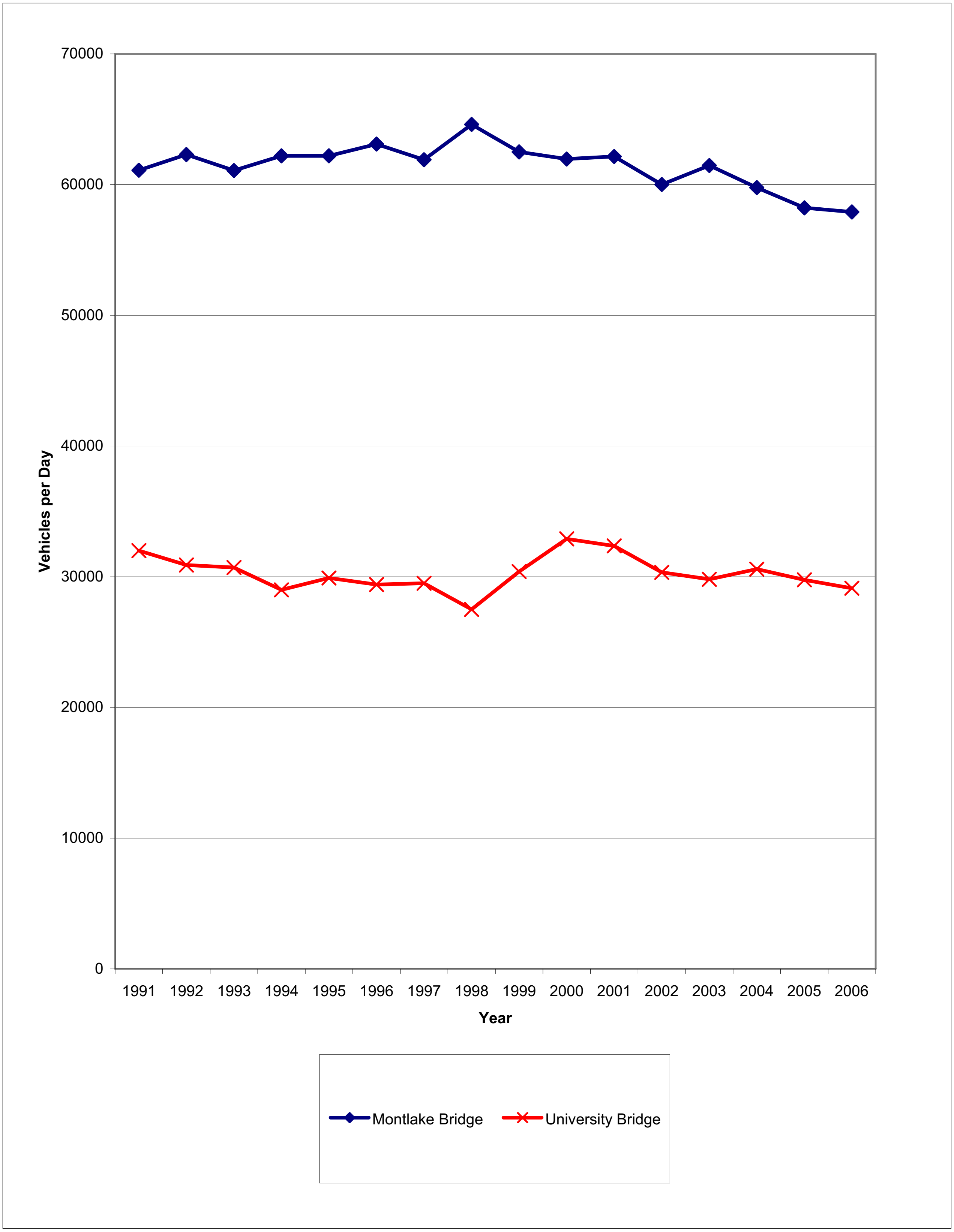


Figure 22. Average Weekday Volumes for North-South Corridors 1991-2006

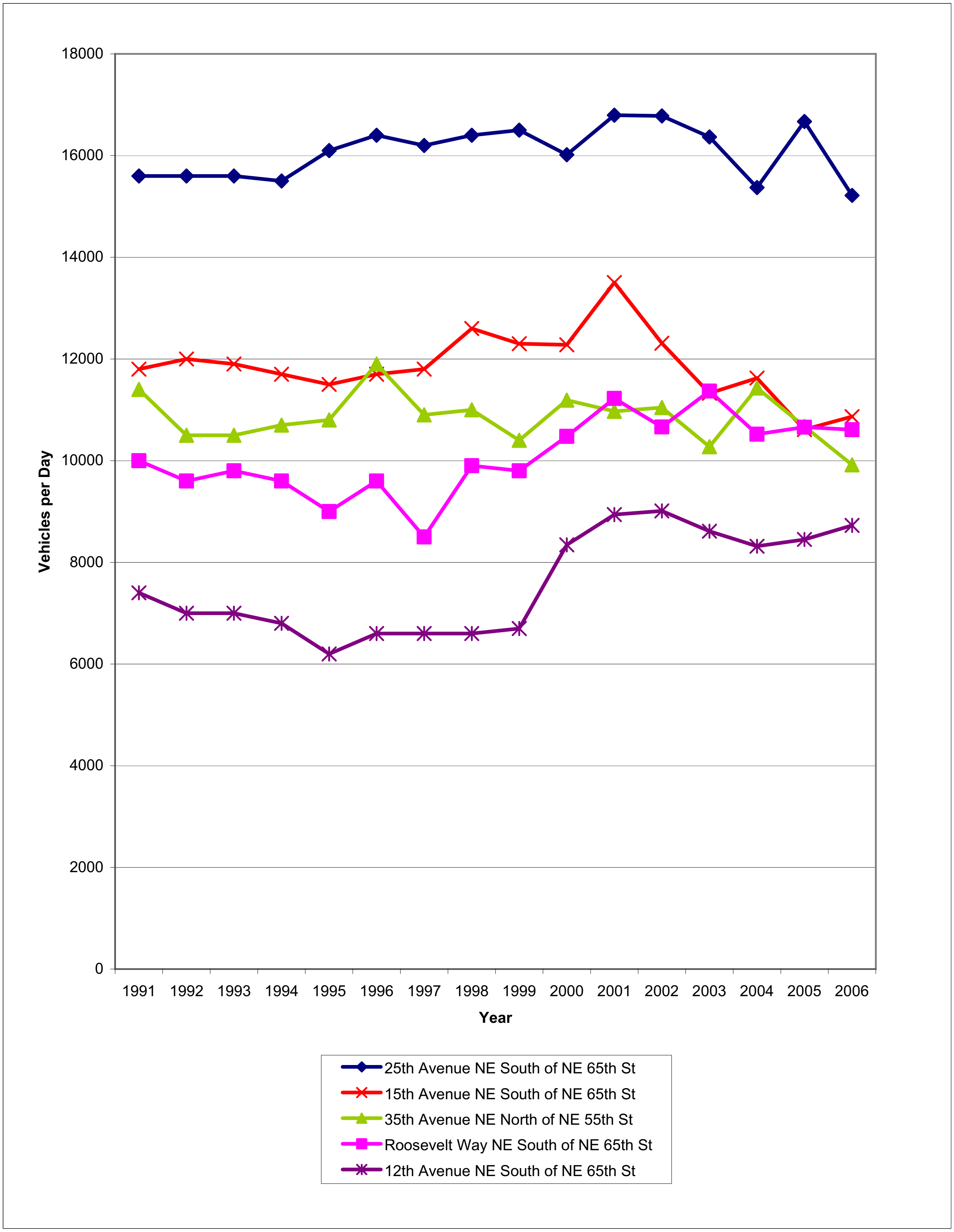


Figure 23. PM Peak Hour Volumes for North-South Corridors 2000-2006

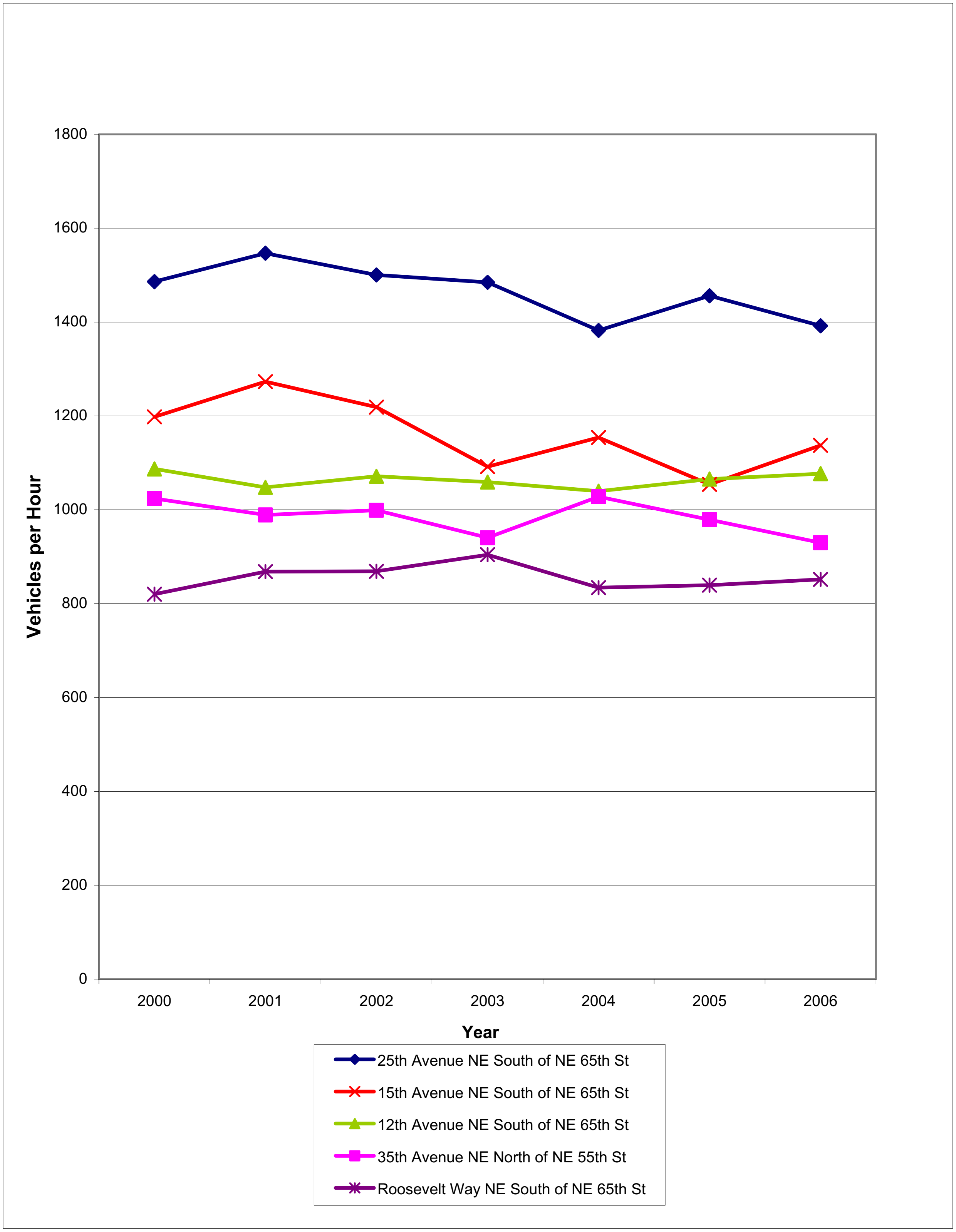


Figure 24. Average Weekday Volumes for East-West Corridors 1991-2006

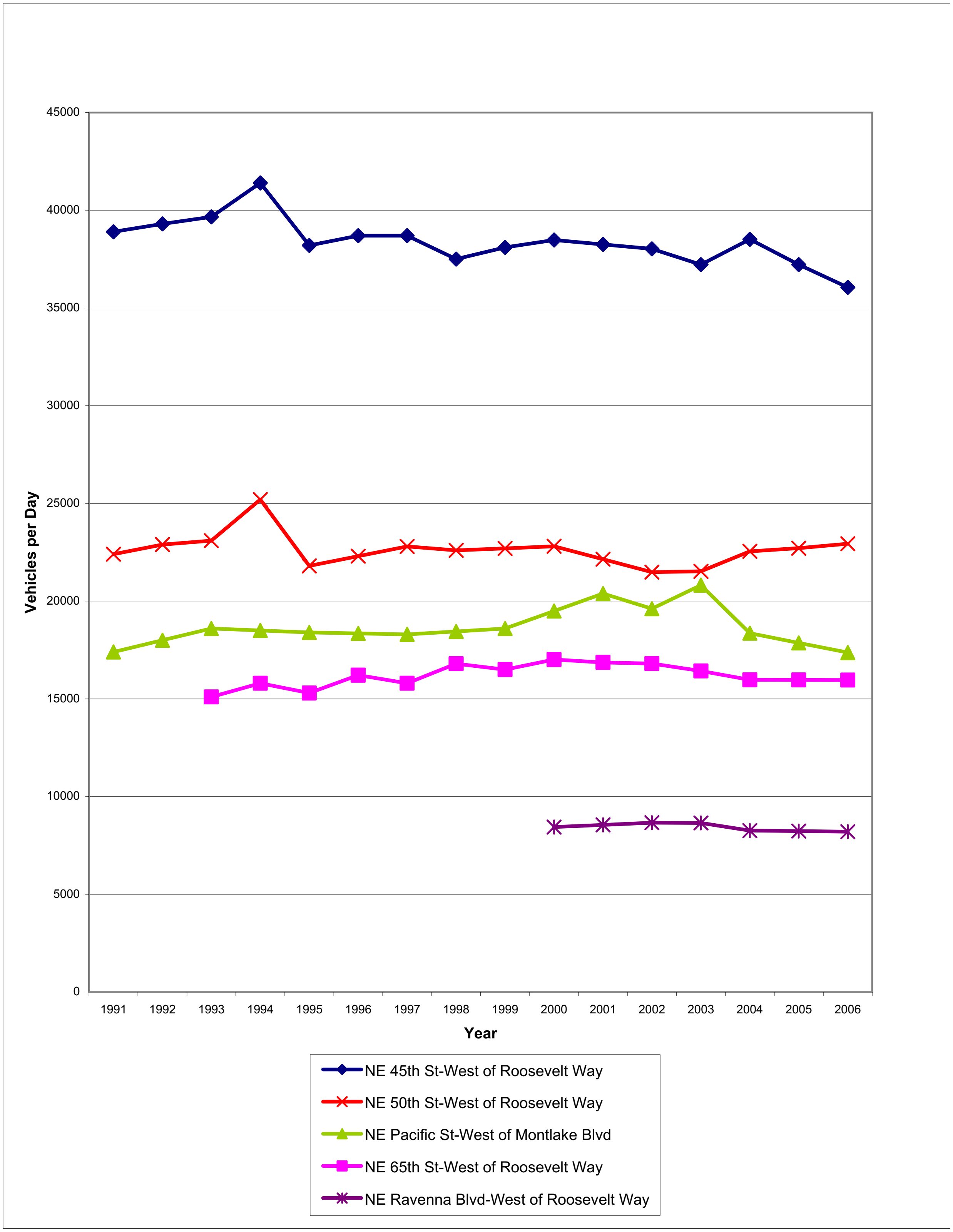
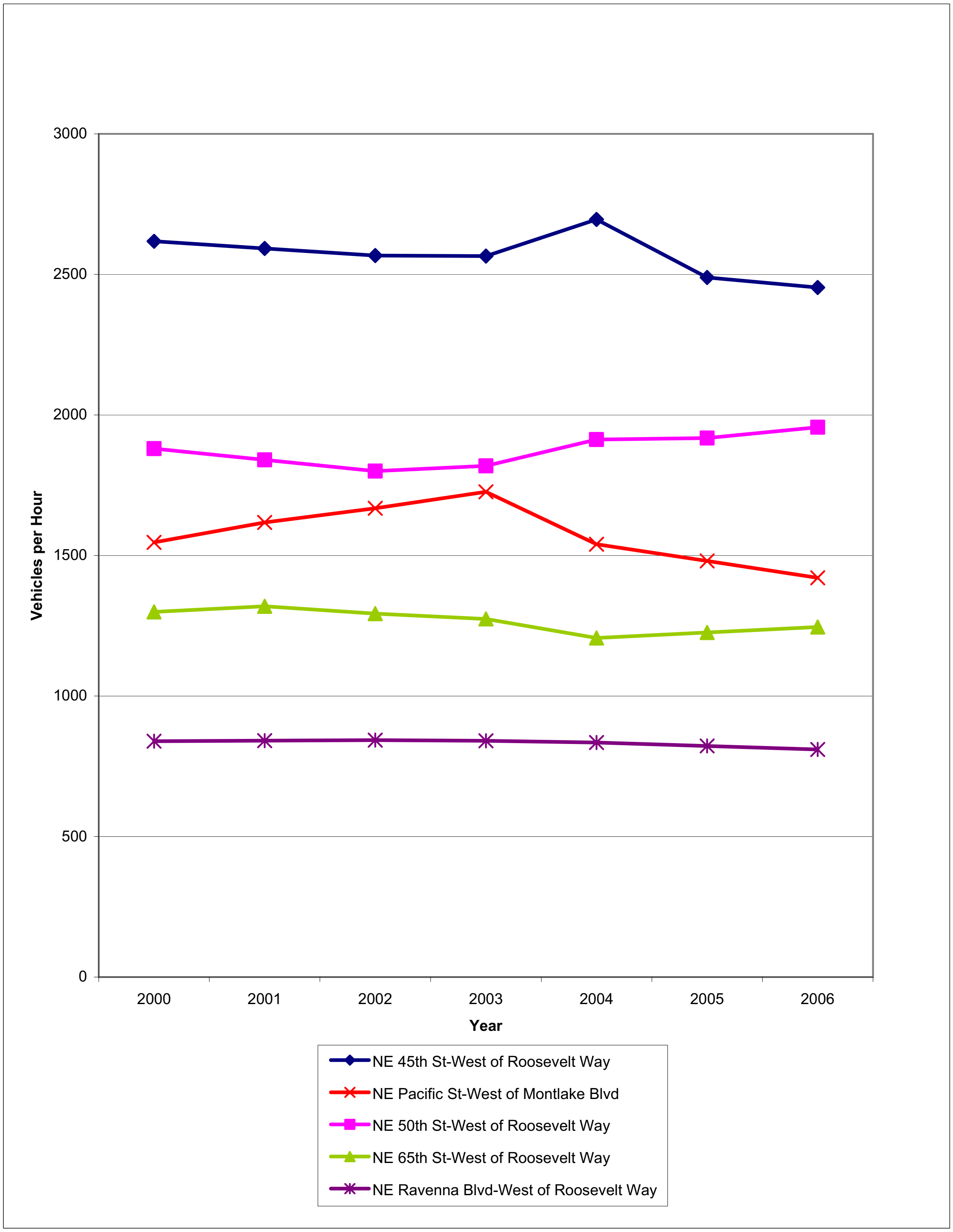


Figure 25. PM Peak Hour Volumes for East-West Corridors 2000-2006



Vehicle System Performance

The UATAS study uses four categories of performance measures to evaluate the roadway network: traffic safety, level of service for arterial corridors, level of service for signalized intersections and level of service for unsignalized intersections.

Traffic Safety

The number of traffic collisions and collision rates are the predominant measures of traffic safety. The following performance measure thresholds are used to evaluate signalized and unsignalized collisions.

- Average number of collisions for signalized intersections: 10 per year
- Average number of collisions for unsignalized intersections: 5 per year
- Average number of collisions for mid-block locations: 5 per year
- Collision rates for signalized intersections: 1.5 per million annual vehicles (The collision rate threshold is based on the experience for the Northgate CTIP)

Figure 26 reviews the 2004-2006 collision data provided by the city for intersection and mid-block locations. **Figure 27** displays the collision rates per million annual vehicles.

Findings – Traffic Safety

- All of the intersections reviewed met the safety thresholds for average number of collisions.
- Five mid-block locations failed the safety thresholds for average number of collisions:
  - NE 45th Street between Montlake Boulevard NE and 45th Place NE
  - NE 45th Street between University Way and 15th Avenue NE
  - Montlake Boulevard between NE Pacific Street and NE 45th Street
  - Montlake Boulevard between Montlake Bridge and NE Pacific Street
  - Montlake Boulevard south of the Montlake Bridge

Figure 26. Average Annual Collisions 2004-2006

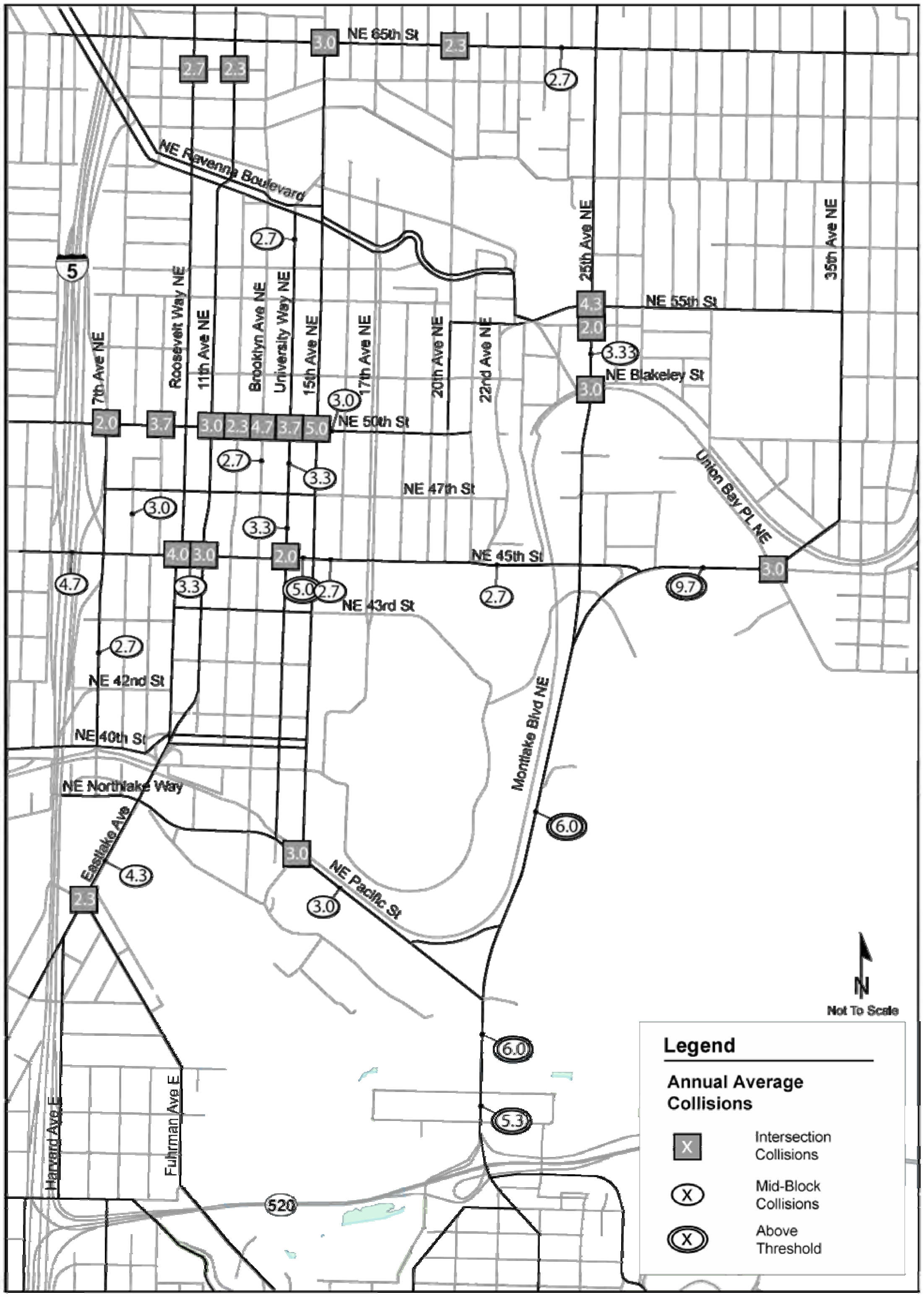


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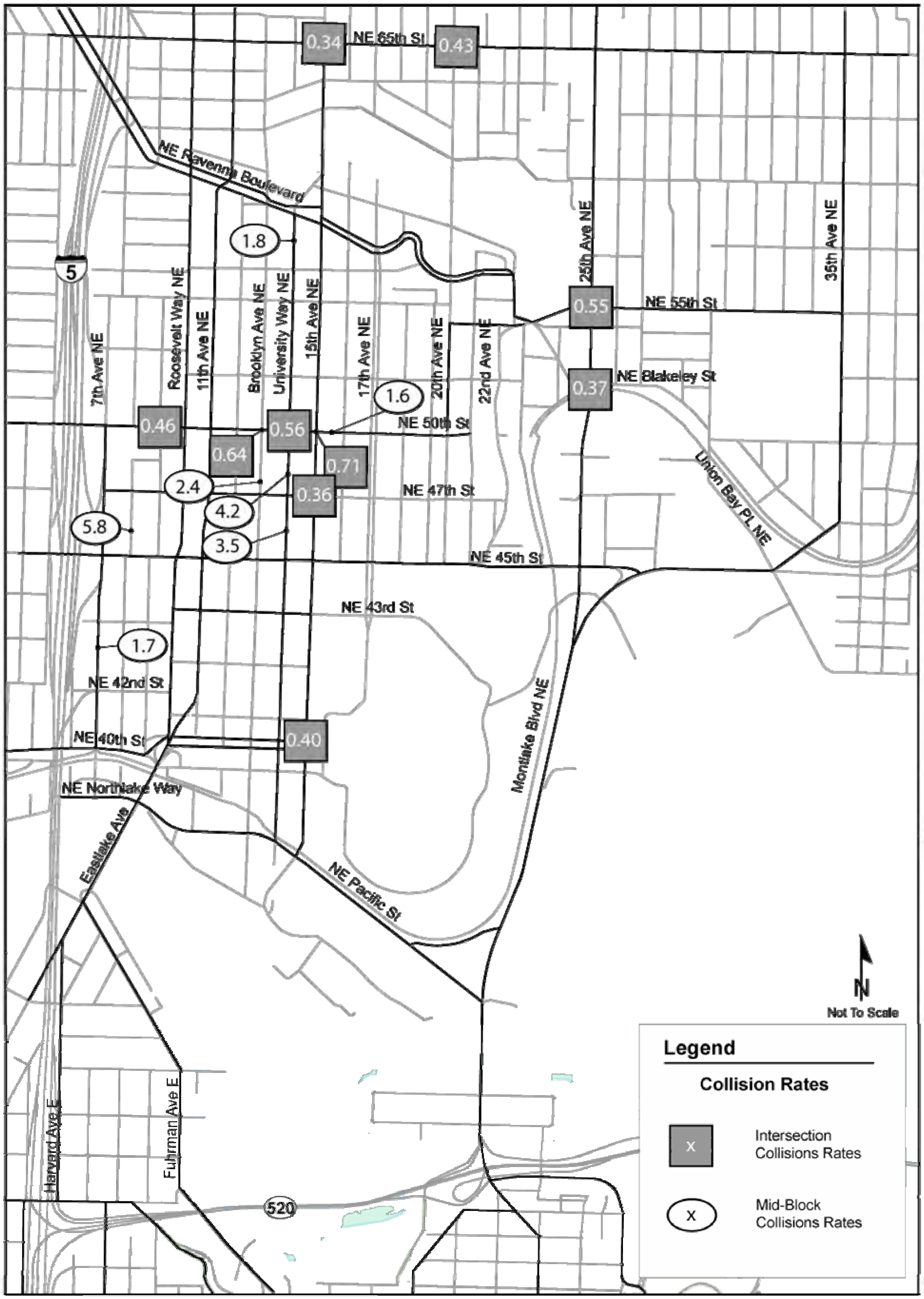
Figure 27. Collisions Rate (Collisions per Million Annual Vehicles)



Level of Service for Arterials Corridors

An arterial corridor's performance is measured by the average travel speed for through-traveling vehicles along an urban street. The average travel speed is influenced by the delay experienced at signals and speeds obtained between intersections. **Figure 28** and **Figure 29** shows the travel times and level of service for the north-south and east-west corridors.

The performance of the roadway arterial system is based on the corridor level of service concept described in the *2000 Highway Capacity Manual*. **Table 11** shows the definitions of arterial corridor level of service.

Table 11. Definitions of Arterial Corridor Levels of Service

LOS	Average Travel Speed (mph)
A	> 30
B	>24-30
C	>18-24
D	>14-18
E	>10-14
F	10 or less
Threshold = Arterial LOS F	

As corridors become more congested the average speed decreases. Corridors with average travel speeds of 10 mph or less (LOF F) fail to meet the threshold.

Findings – Travel Time

- Seven corridors operate below 10 mph in one or both direction in the PM peak hour.
  - Montlake Boulevard (3 mph – below walking speed)
  - University Way (9 mph)
  - Pacific Street (6 mph)
  - 7th Avenue (9 mph)
  - 15th Avenue (9 mph)
  - NE 40th Street (6 mph)
- Twelve additional corridors operate between 10 and 14 mph in the PM peak hour.
- Only two East/West corridors achieve LOS C or above in both directions, and three North/South corridors do so.

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Figure 28. Travel Times and Level of Service for North-South Corridors

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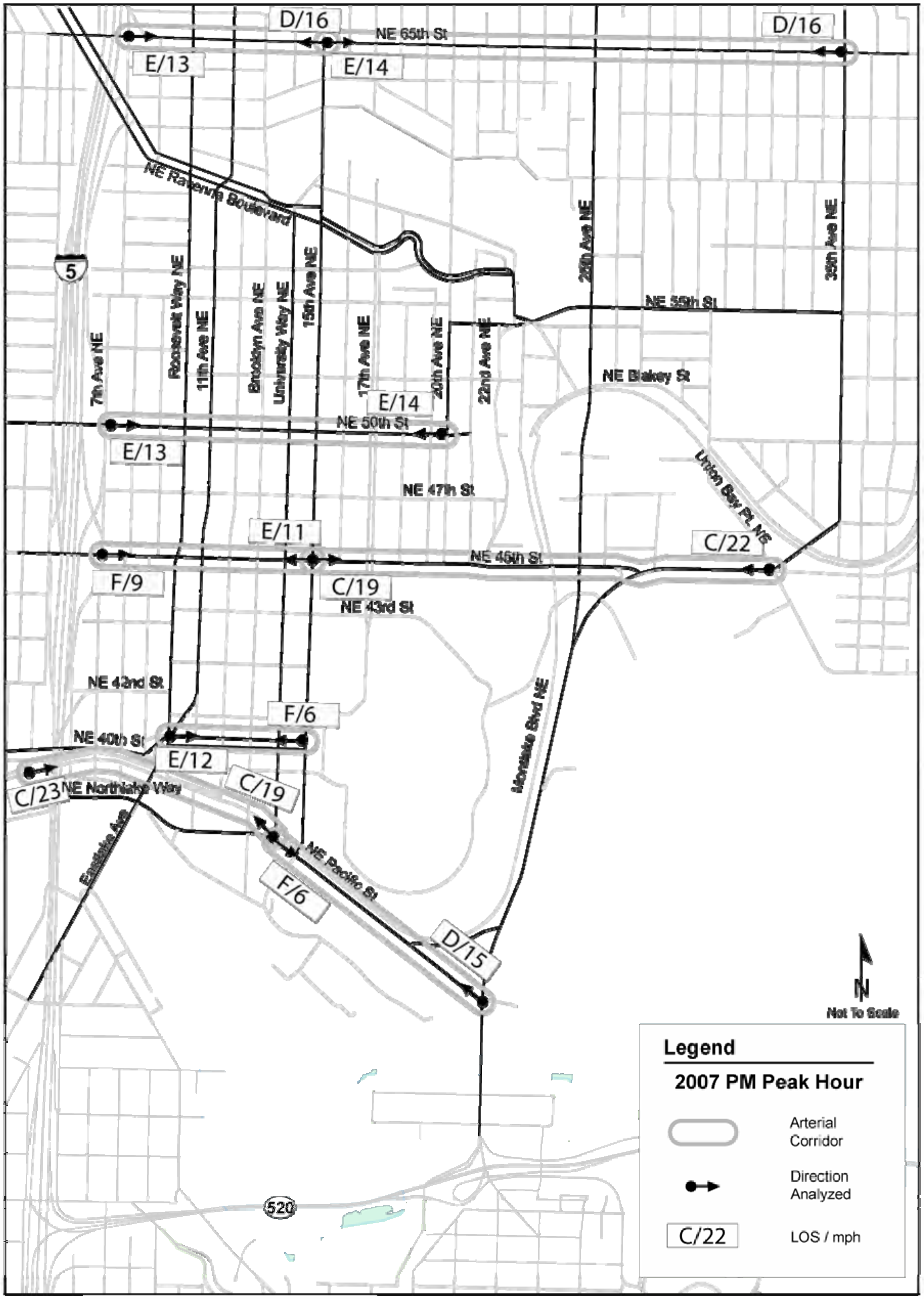
Figure 29. Travel Times and Level of Service for East-West Corridors



Level of Service for Signalized Intersections

Traffic signals allow the organized flow of through and turning traffic through intersections. The performance of the intersection uses the Highway Capacity Manual (HCM) 2000 to estimate the average vehicle delay during the PM peak hour. The HCM 2000 analysis focuses on the operation of traffic at a single intersection, but does not include the interactions between intersections along a corridor.

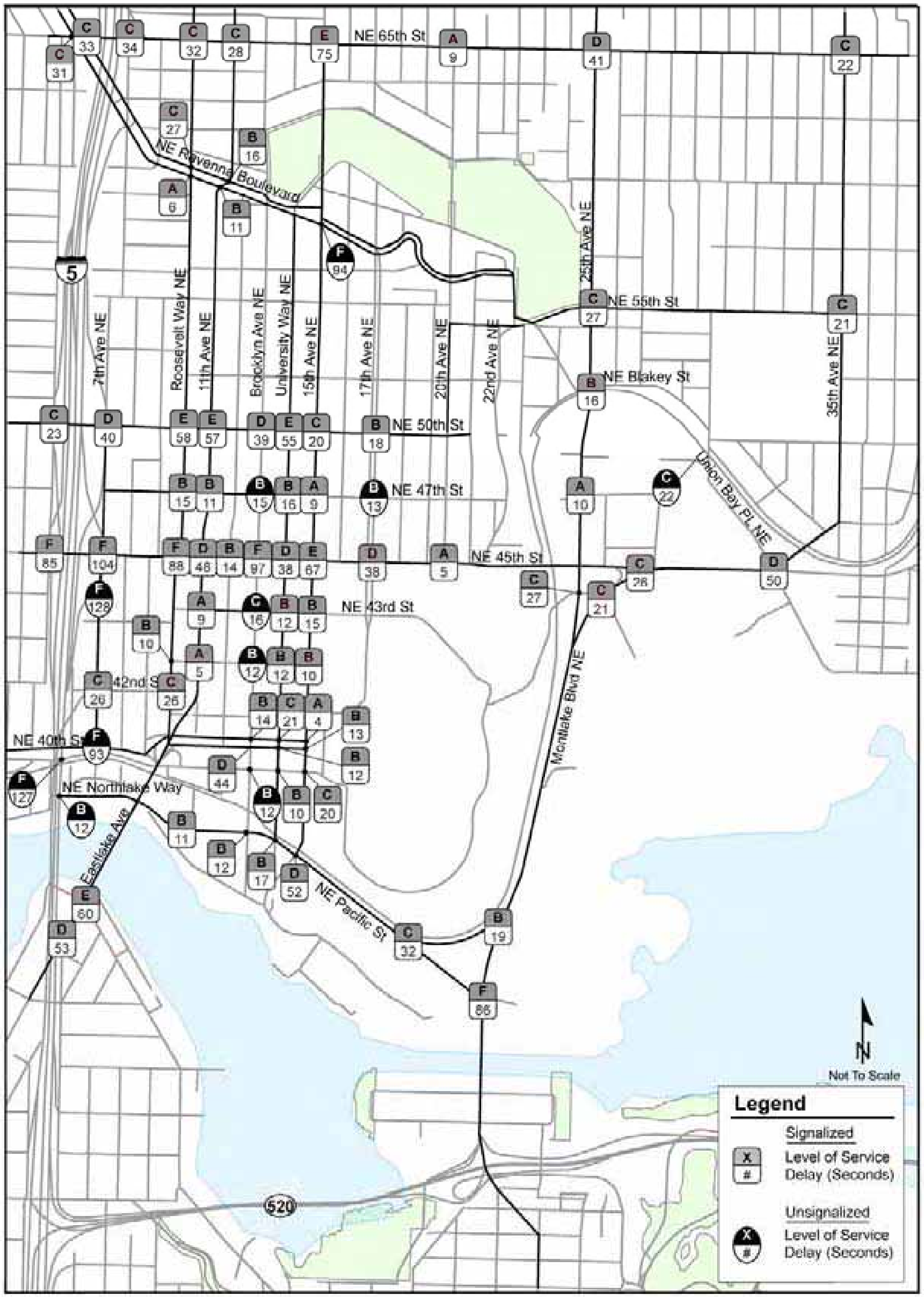
For the performance measure, the performance of the intersections is evaluated based on the averaged intersection delay of the approaches. **Table 12** shows the definition of intersection level of service.

Table 12. Definition of Level of Service for Signalized Intersections

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Averaged Intersection Delay (seconds)	Less than 10	between 10 and 20	between 20 and 35	between 35 and 55	between 55 and 80	greater than 80
Threshold = LOS E						

Congested conditions at intersections occur along corridors with high levels of signal delay, backups from highway and freeway ramps and along corridors where arterials intersect. These intersections are characterized as having vehicle queues and high levels of delay. **Figure 30** shows the LOS and average delay at each intersection within the study area.

Figure 30. PM Peak Hour Intersection Level of Service



Results – Signalized Intersection Level of Service

- Of 69 signalized intersections evaluated, only 5 operate at LOS F during the PM peak hour; 4 of these are on NE 45th and the fifth is at Montlake/Pacific.
- NE 45th Street/7th Avenue NE (I-5 ramps northbound) had the highest PM peak hour average delay at a signalized intersection: 104 seconds per vehicle.

Level of Service for Unsignalized Intersections

The performance of a minor street stop-sign controlled intersection is measured for the worst movement of the intersection. At all-way stop-sign controlled intersections, the approach vehicle delays are averaged to determine the level of service. Unsignalized intersections are evaluated individually rather than for a corridor; the performance threshold is LOS E. **Table 13** show the definition of level of service for unsignalized intersections.

Table 13. Definition of Level of Service for Unsignalized Intersections

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Stop Sign Control Delay (Seconds)	Less than 10	between 10 and 15	between 15 and 25	between 25 and 35	between 35 and 50	greater than 50
Threshold = E						

Results of the LOS analysis found five unsignalized intersections that operate at LOS E or worse: NE 40th St/6th Ave NE; NE 40th St/7th Ave NE; NE 50th St/12th Ave NE; and I-5 off-ramp/7th Ave NE. Where the approach volumes are relatively light, there may be less need to make changes and accept the poor operating conditions. **Figure 30** shows the LOS and average delay for the worst movement of the unsignalized intersections.

Findings – Unsignalized Intersection LOS

- Four of the 11 unsignalized intersections evaluated operate at LOS F during the PM peak hour, including two with the longest delays in the study area: the I-5 off-ramp/7th Avenue, and NE 40th Street/6th Avenue, both of which exceed two minute delays.

C. Future Conditions Memorandum

University Area Transportation Action Strategy

Future Conditions Summary

Prepared for:

Seattle Department of Transportation

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January 2008

REPORT SUMMARY

The Future Conditions analysis describes the 2030 operating conditions for vehicle traffic on the arterial roadways within the University Area, both without the implementation of the Action Strategy recommendations ("No Action") and with the improvement projects in-place. The University Area is made up of the University District, Roosevelt, Montlake and Ravenna neighborhoods. The analysis identifies traffic and vehicle operating conditions with and without the proposed Action Strategy projects and identifies the important elements of the Action Strategy recommendations.

Households and Employment Growth

Growth is expected to continue within the University Area with a 28 percent increase in households, 33 percent increase in employment and a 19 percent increase in students. These increases will result in worse traffic conditions and the need to improve transit, bicycle, pedestrian and roadway facilities.

Traffic Growth

By 2030, peak direction traffic volumes will increase by 13% to 18% on Roosevelt Way NE, 47% to 69% on 11th Avenue NE, 14% to 53% on NE 50th Street and 10% to 40% on NE Pacific Street. Signalized intersection performance will decline and travel speeds will drop below 10 mph on many key corridors.

Pedestrian Growth

Pedestrian activity is expected to grow due to increases in housing and employment in the University Area.

Bicycle Activity

The implementation of the Bicycle Master Plan will increase the facilities for bicyclist throughout the University Area.

Transit Activities

The extension of light rail to the University Area will provide an important new service for the residents, students and employees. Light rail trains would operate at four-to-five minute intervals during the peak periods and eight-to-nine minute intervals during off-peak. Sound Transit projects as many as 27,000 daily boarding at the Husky Stadium station by 2030.

FUTURE CONDITIONS

Forecasting future conditions within the University Area, allows us to anticipate changes in travel demand and to envision potential solutions. By combining the City of Seattle's travel demand forecasting model with King County and Sound Transit information, we can predict the likely changes in traffic and travel patterns in the University area. For this study, we developed a forecast of the 2030 traffic volumes in order to identify the transportation needs of the University area.

Household and Employment Assumptions

The City's travel demand forecast model includes household and employment forecasts derived from the anticipated land uses for the study area. **Table 1** reflects the 2005 and 2030 household, employment and student growth assumptions for the University area. These growth assumptions, within the context of the city-wide model, form the foundation for projecting future travel demand. Details of the land use and employment forecasts and their assignment to the model's traffic analysis zones are found in Appendix A.

Within the University area, an additional 4,400 households are expected by 2030. The greatest growth in households is anticipated within the University District core, with nearly 40 percent of the future households located in the area bounded by NE 65th Street, Roosevelt Way, 15th Avenue NE and NE 40th Street. The University of Washington will continue to be the major employer in the University area, accounting for nearly 60 percent of the area's employment. The growth of employment will be larger than the household growth, meaning a greater share of the future trips to the University area will be related to employment activities.

Table 1. 2005 and 2030 Household, Employment and Student Assumptions

Year	Household	Employment	Students
2005	15,840	44,300	39,520
2030	20,240	58,910	47,210
Growth 2030-2005 (% growth)	4,400 27.8%	14,610 33.0%	7,690 19.5%

Arterial and Transit Network Assumptions

The primary street system within the University area is assumed to remain unchanged for the foreseeable future. The major forces affecting the arterial system will include changes to

SR 520 bridge access and construction of three Sound Transit light rail stations. The following changes are assumed in the 2030 network assumptions:

- SR 520 Bridge will be replaced with a four-lane general traffic facility with two additional lanes for High Occupancy Vehicle (HOV) travel. The model used for this study includes an assumed bridge toll and direct access ramps for HOVs.
- Light rail service will be implemented by Sound Transit with stations at Husky Stadium (University of Washington), Brooklyn Avenue/NE 43rd Street and Roosevelt.

Future Traffic Conditions

The forecast traffic volumes for 2030 from the City of Seattle travel demand model were adjusted against existing traffic counts. **Figure 1** shows the directional 2030 PM peak hour traffic volumes on the study area arterials.

Figure 2 shows the 2030 levels of service and delay for each of the study intersections. **Figures 3 and 4** identify the 2030 arterial corridor levels of service (LOS) and average speed. From the 2030 data, the analysis finds the following:

- Traffic volumes within the University area will continue to increase. For example, traffic volumes in the peak direction will increase by 13% to 18% on Roosevelt Way NE, 47% to 69% on 11th Avenue NE, 14% to 53% on NE 50th Street and 10% to 40% on NE Pacific Street.
- Signalized intersection performance will decline between 2007 and 2030, with the number of intersections operating at LOS E or LOS F increasing from 13 in 2007 to 28 in 2030.
- Of the unsignalized intersections included in the analysis, several will operate at LOS E or LOS F on one or more of the stop approaches, including: NE Ravenna Boulevard/15th Avenue NE, NE 40th Street/7th Avenue NE, I-5 off-ramps/7th Avenue NE, NE 43rd Street/Brooklyn Avenue NE and NE 40th Street/6th Avenue NE.
- Average speeds on most arterials will decrease from 2007 levels. The following corridors are forecast to have travel speeds below 10 mph (LOS F) in 2030 in at least one direction: NE Northlake Way, NE Pacific Street, Campus Parkway, NE 45th Street (I-5 to 15th Avenue NE), NE 50th Street, Montlake Boulevard NE, Roosevelt Avenue NE, 11th Avenue NE, University Way NE (south of NE 50th Street) and 15th Avenue NE (south of NE 45th Street).

Figure 1. 2030 PM Peak Hour Traffic Volumes by Direction

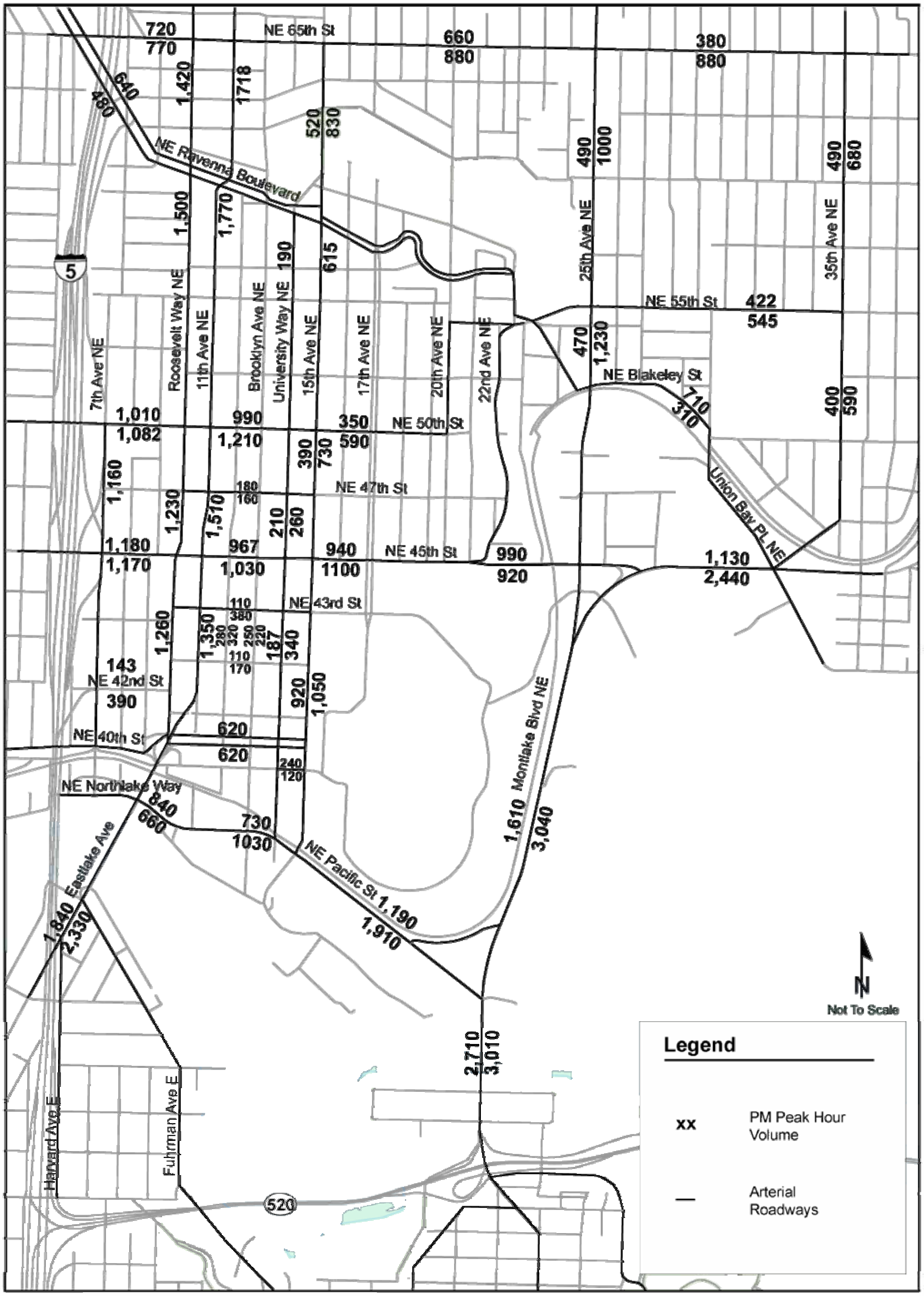

Figure 2. 2030 PM Peak Hour Intersection Levels of Service Under "No Action"

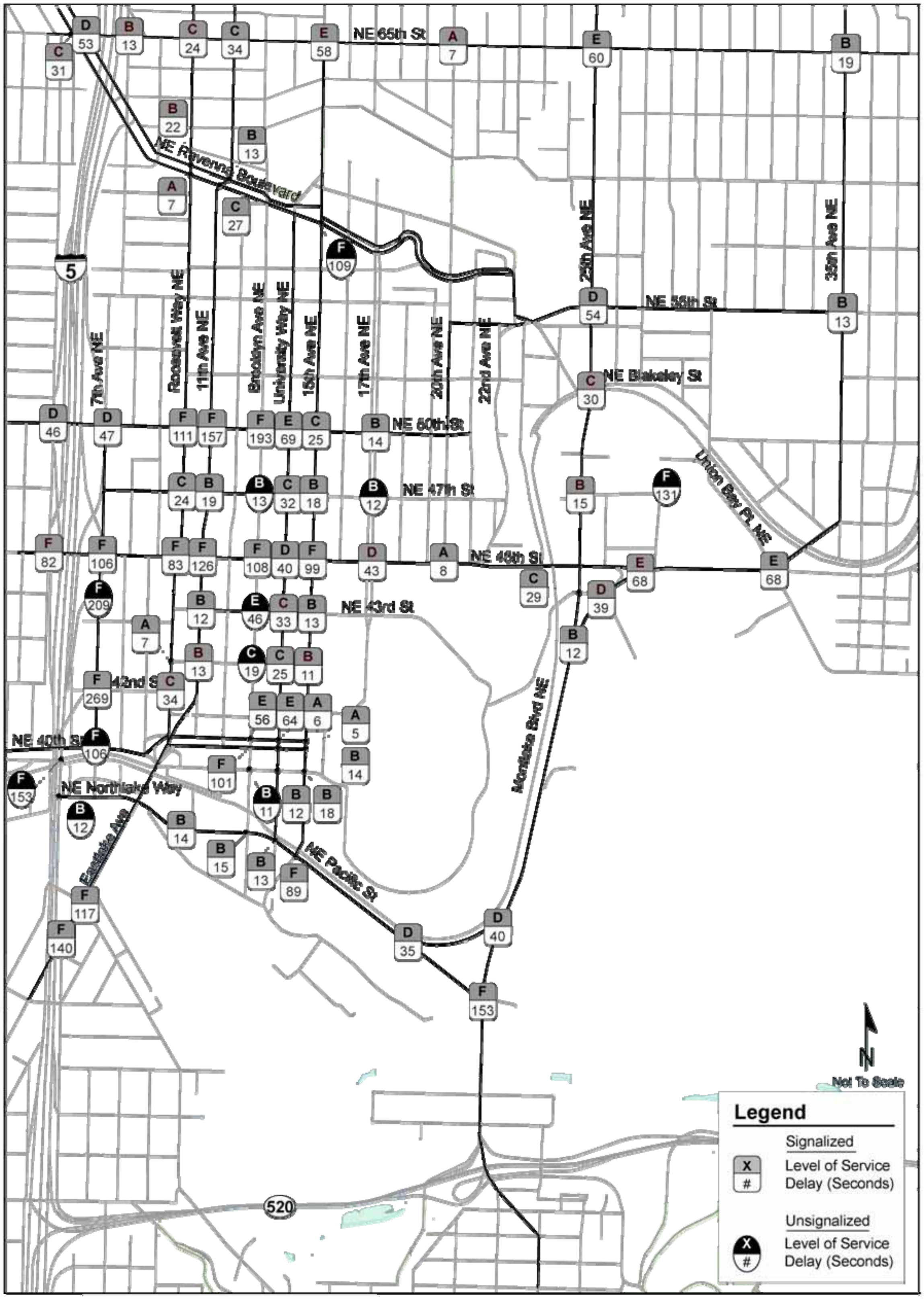

Figure 3. 2030 Arterial Levels of Service Under "No Action" – East-West Corridors

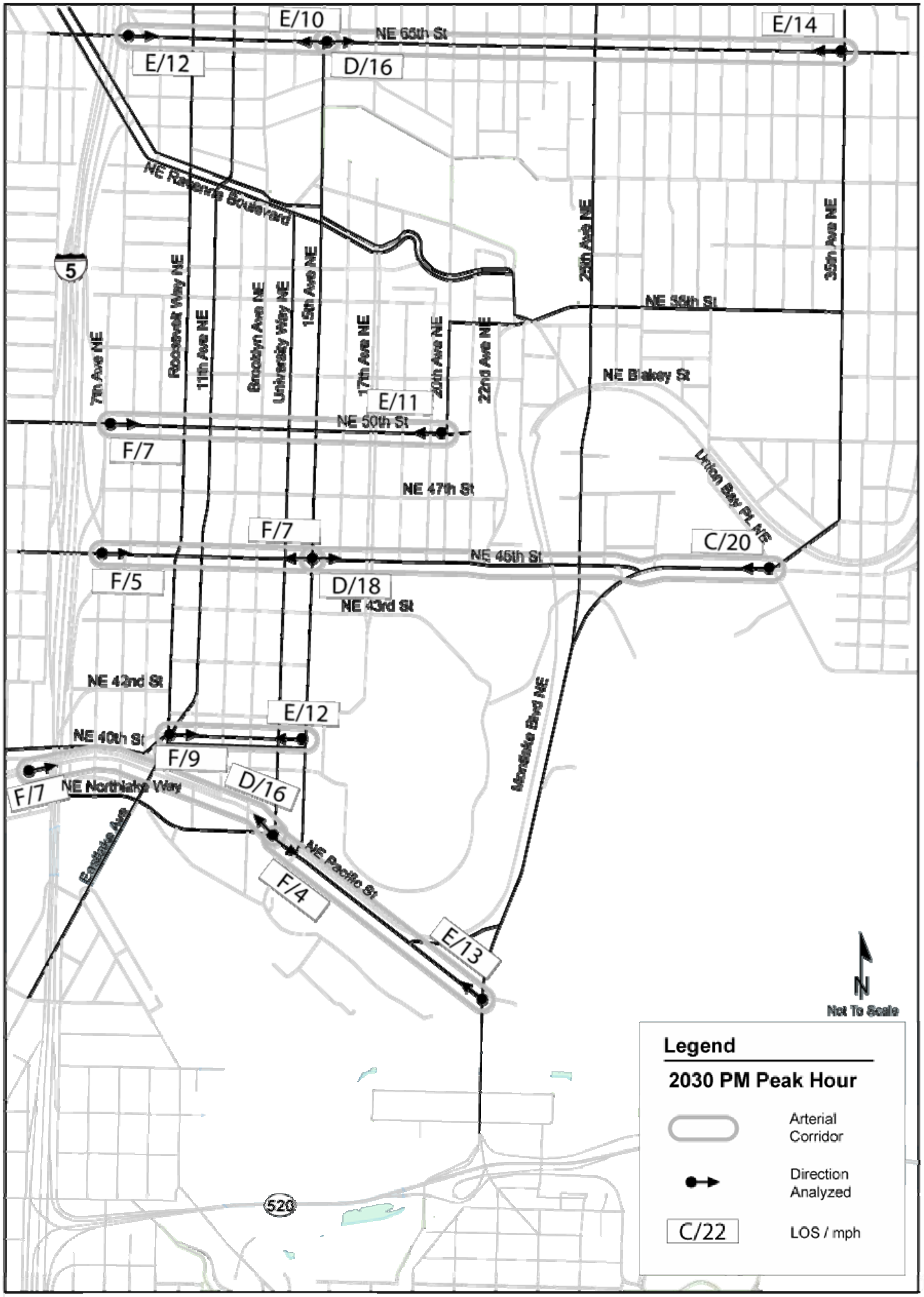

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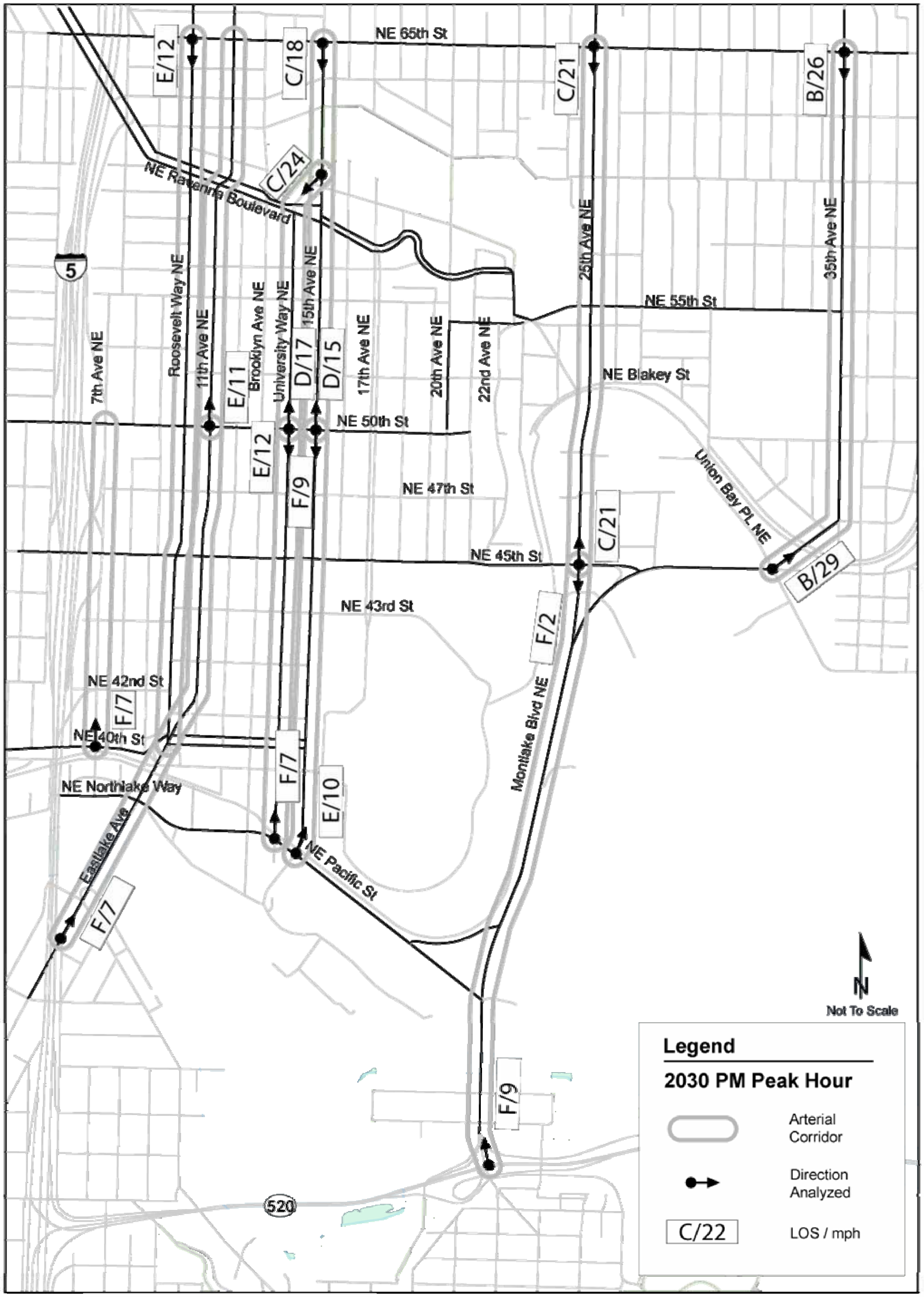
Figure 4. 2030 Arterial Levels of Service Under "No Action" – North-South Corridors



Future Pedestrian Conditions

Pedestrian activity will continue to be an important travel mode within the University area, especially for trips within a one-half mile radius from primary pedestrian destinations such as the University of Washington campus, neighborhood commercial areas and primary transit facilities. New housing within 1,000 feet of the University of Washington campus and other major retail and employment destinations will maximize the level of pedestrian travel.

Pedestrian activity will also increase in areas near the proposed Sound Transit light rail stations. As shown in **Figure 5**, Sound Transit identified three station locations near the University area as part of its 2003 *North Link Final SEIS* preferred alternative:

- The University of Washington (Montlake) Station would provide access to the UW Medical Center and Husky Stadium as well as the main campus. Sound Transit estimates 23,000 daily boardings would occur at this station by 2030. The Sound Transit station development plan includes grade-separated pedestrian facilities to provide direct access to the main campus.
- The Brooklyn Station (NE 43rd Street) would provide access to the University retail district as well as service to north and western portions of the UW campus. Sound Transit estimates 12,000 daily boardings would occur at this station by 2030.
- The Roosevelt Station (NE 65th Street), located near Roosevelt High School, would serve the commercial areas of the Roosevelt area and the surrounding neighborhoods. The 2030 estimated daily boarding would be approximately 4,000 in 2030.

These transit stations would draw pedestrians from as much as one-third of a mile to the station entrances and the potential residential and commercial development would further increase pedestrian activity. To support the forecasted ridership, high-quality pedestrian facilities should be developed adjacent to the stations and along corridors that connect the stations to major area destinations.

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Figure 5. Proposed Link Light Rail Stations

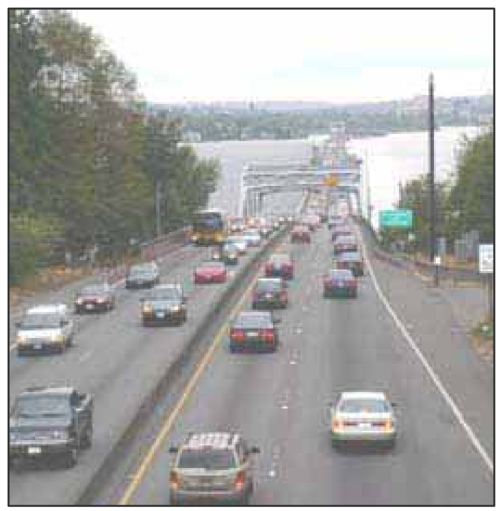
Future Bicycle Conditions

Bicycle use will be an important component to trips within the University area. The City of Seattle developed the *Bicycle Master Plan,* which specifies how to connect the University area to adjacent neighborhoods and enhance greater cycling opportunities throughout the city. Key components of the plan for the University area include:

- An elevated non-motorized crossing (NE 47th Street) of the I-5 freeway.
- Options for bicycle lanes on Roosevelt Avenue NE and 11th/12th Avenue NE and University Way (north of NE 50th Street).
- Shared roadway facilities (sharrows) including NE 45th Street, University Way NE, 20th Avenue NE and NE 65th Street.
- Climbing lanes on roadways with topographic challenges, such as NE 65th Street.
- Non-motorized improvements at intersections such as NE 47th Street/Roosevelt Avenue NE, NE 47th Street/11th Avenue NE and NE Ravenna Boulevard/20th Avenue NE.
- A bicycle/pedestrian facility connecting the University area to the eastside of Lake Washington as part of the SR 520 bridge replacement project.

Future Transit Conditions

The University area has high levels of transit service and will continue to do so in the future. The completion of the Sound Transit light rail system and the completion of HOV lanes on the SR 520 bridge will provide high-quality transit service with frequent service and reduced transit travel times to eastside destinations. This new investment will change transit operations in the University area, including:


WSDOT

- Light rail trains would operate at four-to-five minute intervals during the peak periods and eight-to-nine minute intervals during off-peak.
- Bus routes that duplicate the light rail service, such as certain express services to downtown, may have hours reallocated to other routes.
- Bus routes that "feed" the light rail stations may see increased service frequency and extended hours.
- New bus routes may be developed that best utilize available transit hours and serve the light rail stations.
- The improved HOV facilities on SR 520 would potentially increase demand on cross-lake routes.

ACTION STRATEGY IMPROVEMENTS

The Action Strategy promotes a variety of improvements to enhance the mobility of people throughout the area. Projects for the Action Strategy took a multimodal look at how the transportation systems of the University area work together and identified where future improvements would be needed.

Project Selection

Each of the Action Strategy projects addresses a critical need or needs for the University Area. The recommended projects are more than a location-by-location response to the deficiencies identified by the performance measure analysis. They also represent the thoughts and ideas of the community expressed during this project, as well as from past and on-going planning efforts. In some cases, identified deficiencies may not be solved by the Action Strategy projects, either because of high costs or competing interests. The best of these projects - those that best reflect the goals of sustainability, safety, mobility and choice - were chosen for the Action Strategy.

The project team reviewed each proposed project based on four general criteria:

- *Level of community support.* Does the University Area community support the project?
- *Geographic equity.* Who does the project help and are overall project benefits weighted fairly across the University Area?
- *Emerging opportunities.* Does the project support a future opportunity such as the SR 520 bridge or North Link light rail?
- *Benefits vs. cost.* Is the project important to the mobility of the University Area and can it be accomplished at a reasonable cost?

The selected Action Strategies are those projects that best reflected the four review criteria. Projects that were not selected may have had costs, whether in dollars or the cost to the community, that were too high. Other projects were included to meet community needs and goals not necessarily reflected in performance measures. All in all, the Action Strategy proposes a set of projects to promote a transportation system that will best meet the needs of the University Area and its community.

Prioritization

Many of the project recommendations are responses to detailed transportation needs identified by the Action Strategy's performance evaluation measures and the analysis prepared for each mode. Other recommendations include projects that were considered and recommended to address more complex issues not easily quantifiable, as well as projects that were generated from previous neighborhood plans and requests from community members. Faced with the reality of environmental and financial constraints, however, not every identified need is associated with a project. Ultimately, each recommendation had to withstand a generalized cost-benefit analysis and a "consistency" test with City and regional plans and policies.

The projects that remain – those that best reflect the goals of sustainability, safety, mobility and choice within reasonable and real constraints – are the ones presented in the Action Strategy report. SDOT's standard project ranking criteria was used to assess the potential priority of each of the projects and to provide a comparison of the relative merits of each of the projects. The following criteria and weighting were used to prioritize the project list.

- Safety (20 points)
- Mobility Improvements (15 points)
- Preserving and Maintaining Infrastructure (15 points)
- Cost Effectiveness or Cost Avoidance (15 points)
- Comprehensive Plan/ Urban Village Land Use Strategy (15 points)
- Improving Environment (10 points)
- Economic Development (10 points)

The analysis also considered other factors such as community stakeholder and partner agency feedback, and the potential to leverage existing or planned projects and opportunities in the final listing of the projects. In the end, projects were categorized into three priority levels, as defined below:

- Early Implementation – These are projects that can be implemented quickly and will provide a high level of benefits at a relatively low cost. Completion of these projects will act as a signal of positive progress towards implementing the Action Strategy.
- High Priority – These are projects that scored high on the City's standard project ranking criteria. These projects represent the major trust of the Action Strategy.
- Medium Priority – These project recommendations will most likely occur at a later date, because the project has difficulty competing with citywide priorities or the impact addresses an anticipated future, rather than existing, transportation need.
- Partnership – These projects are those that must be designed, coordinated and funded in cooperation with another agency, such as the Washington State Department of Transportation (WSDOT), Sound Transit or other agency.

Projects by Mode

Figure 6 identifies the projects by transportation mode. The numbers and letters reference the project's location**.** Projects identified with letters distinguish the Early Implementation projects. The Action Strategy includes 13 pedestrian projects, eight bicycle projects, six trail projects, six transit and 11 auto projects. **Table 2** lists the projects by transportation mode.

Figure 6. Action Strategy Projects by Mode

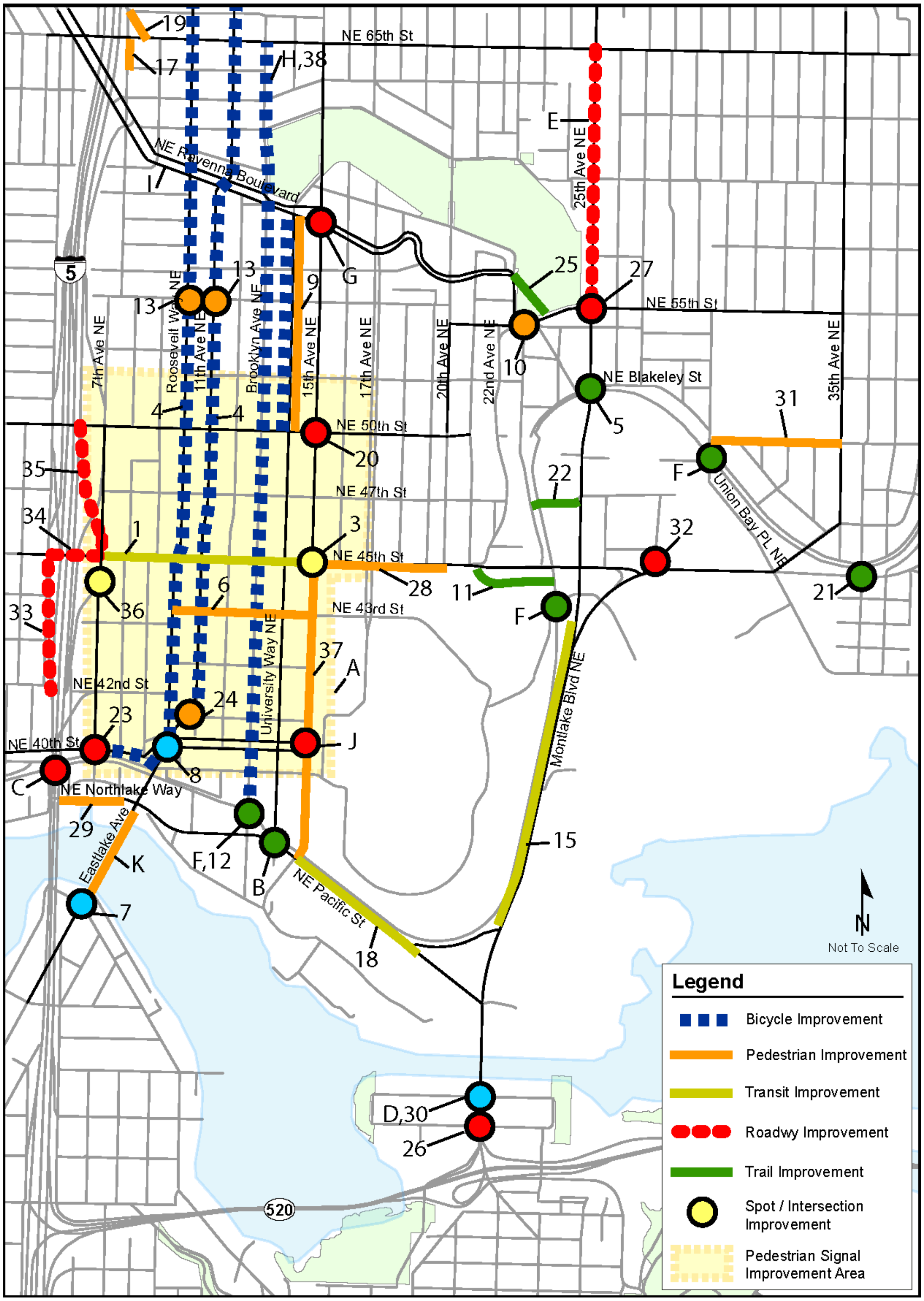


Table 2. Recommended Actions by Transportation Mode

PEDESTRIAN

No. 6: Widens the sidewalks and provides curb extensions along NE 43rd Street.
No. 10: Reconfigures NE 55th Street between 22nd Avenue NE and Ravenna Place NE.
No. 13: Installs curb extensions on the left side of Roosevelt and 11th at NE 55th Street.
No. 17: Widens the sidewalk along the east side of 8th Avenue NE between NE 64th Street and NE 65th Street and adds a curb extension.
No. 19: Closes off the north end of Weedin Place between NE 65th Street and NE 66th Street.
No. 24: Installs a pedestrian signal, new crosswalk, and widen sidewalks for people crossing 11th Avenue NE at NE 41st Street.
No. 28: Widens the sidewalks along the northern edge of the University of Washington campus adjacent to NE 45th Street.
No. 29: Reconstructs Northlake Way by adding sidewalks, a shared-use path and improved bicycle facilities.
No. 31: Completes the sidewalk along the south side of the NE 50th Street and introduces traffic calming devices.
No. 37: Completes a corridor study of 15th Avenue NE.
No. 38: Develops an urban design/streetscape plan for making Brooklyn Avenue NE.
No. A: Adds a pedestrian "WALK" phase at all intersections within the Urban Center.
No. K: Installs pedestrian lighting along the length of the University Bridge.

AUTO

No. 20: Adds northbound and southbound left turn pockets and protected left turn phases at 15th Avenue NE/NE 50th Street.
No. 26: Extends the northbound U-turn lane at E Hamlin Street to prevent vehicles from blocking through movements.
No. 27: Creates northbound and southbound left turn pockets and protected left turn phases for 25th Avenue NE/NE 55th
No. 32: Installs a variable message sign near the junction of Montlake Boulevard and NE 45th Street.
No. 33: Creates an additional southbound I-5 on-ramp lane at NE 45th Street.
No. 34: Expands the width of the I-5 overcrossing to allow full length turn lanes, bicycle lanes and improved sidewalks.
No. 35: Provides an additional northbound I-5 on-ramp to reduce traffic spillovers onto NE 45th Street.
No. C: Stripes northbound and westbound left turn lanes at the intersection of 6th Avenue NE/Lower NE 40th Street .
No. E: Expands the parking restrictions from peak period to all-day (except overnight hours) to improve transit and vehicle
No. G: Monitors the intersection of 15th Avenue NE/NE Ravenna Boulevard.
No. J: Modifies the intersection at 15th Avenue NE/Campus Parkway to include a protected northbound left-turn phase.

BICYCLE

No. 4: Creates bicycle lane and on-street parking on Roosevelt Way NE and 11th/12th Avenues.
No. 7: Adds a southbound bicycle signal at Furhman Avenue E to allow riders to safely cross to the left turn lanes at Harvard Avenue
No. 8: Reconfigures the lanes and vehicle exits at north end of the University Bridge.
No. 9: Improves the character of University Way for bicycles and pedestrians.
No. 30: Redesigns the intersection at NE Shelby Street for bicycles and pedestrians.
No. D: Creates a southbound bicycle lane on Montlake Boulevard from the Montlake Bridge to SR 520.
No. H: Adds bicycle sharrow signage to Brooklyn Avenue between Ravenna Blvd. and the Burke-Gilman Trail.
No. I: Prioritizes the repair and repaving of NE Ravenna Boulevard between NE 65th Street and Ravenna Avenue NE.

TRAIL

No. 5: Provides a bicycle and pedestrian "lead phase" and improve the visibility of the Burke-Gilman crossing.
No. 11: Develops a pedestrian and bicycle path from the UW campus to the Burke-Gilman Trail underneath the NE 45th Street Viaduct.
No. 21: Creates a new bicycle connection between 36th Avenue NE and the Burke-Gilman Trail.
No. 22: Develops a bicycle-pedestrian connection between the Burke-Gilman Trail and 25th Avenue NE at NE 47th Street.
No. 25: Improves the off-street trail that runs parallel to Ravenna Avenue NE to connect to the shared roadway corridor NE 58th Street.
No. B: Clears or trims trees and shrubs and adds a more visible crosswalk to better define where the Burke-Gilman Trail crosses University Way NE.
No. F: Apply trail crossing modifications at Pend Oreille Road and Brooklyn Avenue NE.

TRANSIT

No. 1: Adds a westbound transit lane by removing left turn lanes and movements.
No. 3: Extends the northbound left-turn pocket and modify the signal timing.
No. 15: Adds a southbound HOV lane from NE 45th Street to NE Pacific Place along the west side of Montlake Boulevard.
No. 18: Extends the existing eastbound HOV lane to provide a continuous lane from 15th Avenue NE to Montlake Boulevard.
No. 36: Creates a transit lane on 7th Avenue NE that improves the crossing of the I-5 northbound off-ramps for buses.

Future Conditions With Recommended Action Strategy

The addition of the improvements identified in the Action Strategy will enhance travel throughout the University Area. Some of the projects "balance" a roadway, favoring non-motorized and transit use over auto-oriented improvements. The final result is a strategy which enhances key corridors and promotes mobility between modes.

Pedestrian

The Action Strategy will improve pedestrian safety and mobility and identify new travel corridors to address missing connections. Projects include modification of traffic signals in the University District Urban Center to provide walk-phases (removal of pedestrian-buttons), adding a pedestrian crossing at NE 41st Street/11th Avenue NE and installing pedestrian lighting on the University Bridge.

Bicycle

The Action Strategy, building upon the recommendations of the Bicycle Master Plan, will develop primary bicycle facilities on key bicycle corridors. Projects include development of bicycle lanes on Roosevelt Way and 11th/12th Avenues, a bicycle signal to facilitate bicycle movements from the University Bridge to Harvard Avenue and prioritizing the repair of pavement on Ravenna Boulevard.

Trail

The Action Strategy will look to improve the safety and function of the Burke-Gilman Trail by improving trail crossing locations, creating a new connection at 36th Avenue NE and creating a new trail from the UW campus to the Burke-Gilman Trail below the NE 45th Street Viaduct.

Transit

The Action Strategy will improve transit operations throughout the University Area. Improvements for transit operation include the creation of a westbound business access and transit lane on NE 45th Street, extending the NE Pacific HOV lane to 15th Avenue NE and creating an improved bus crossing of the I-5 northbound off-ramps at NE 45th Street.

Auto

The Action Strategy will enhance auto mobility by adding capacity at key locations along the corridor. Projects include building left turn pockets at NE 55th Street/25th Avenue NE, adding a travel lane for the southbound I-5 on-ramps at NE 45th Street and creating a roundabout at NE 40th Street/7th Avenue NE. **Figure 7** shows the resulting intersection LOS at the study intersections with the Action Strategy projects. **Figures 8 and 9** show the corridor travel speeds with the Action Strategies in place.

While the intersection and corridor levels of service generally improve with the addition of the Action Strategy projects, some would continue to be congested such as NE 50th Street and Montlake Boulevard. Following the implementation of the Action Strategy recommendations, additional traffic analysis of intersections and corridors should be done to review the changes in travel patterns and to identify where additional improvements may be needed.

Figure 7. 2030 PM Peak Hour Intersection Levels of Service with the Action Strategy Projects.

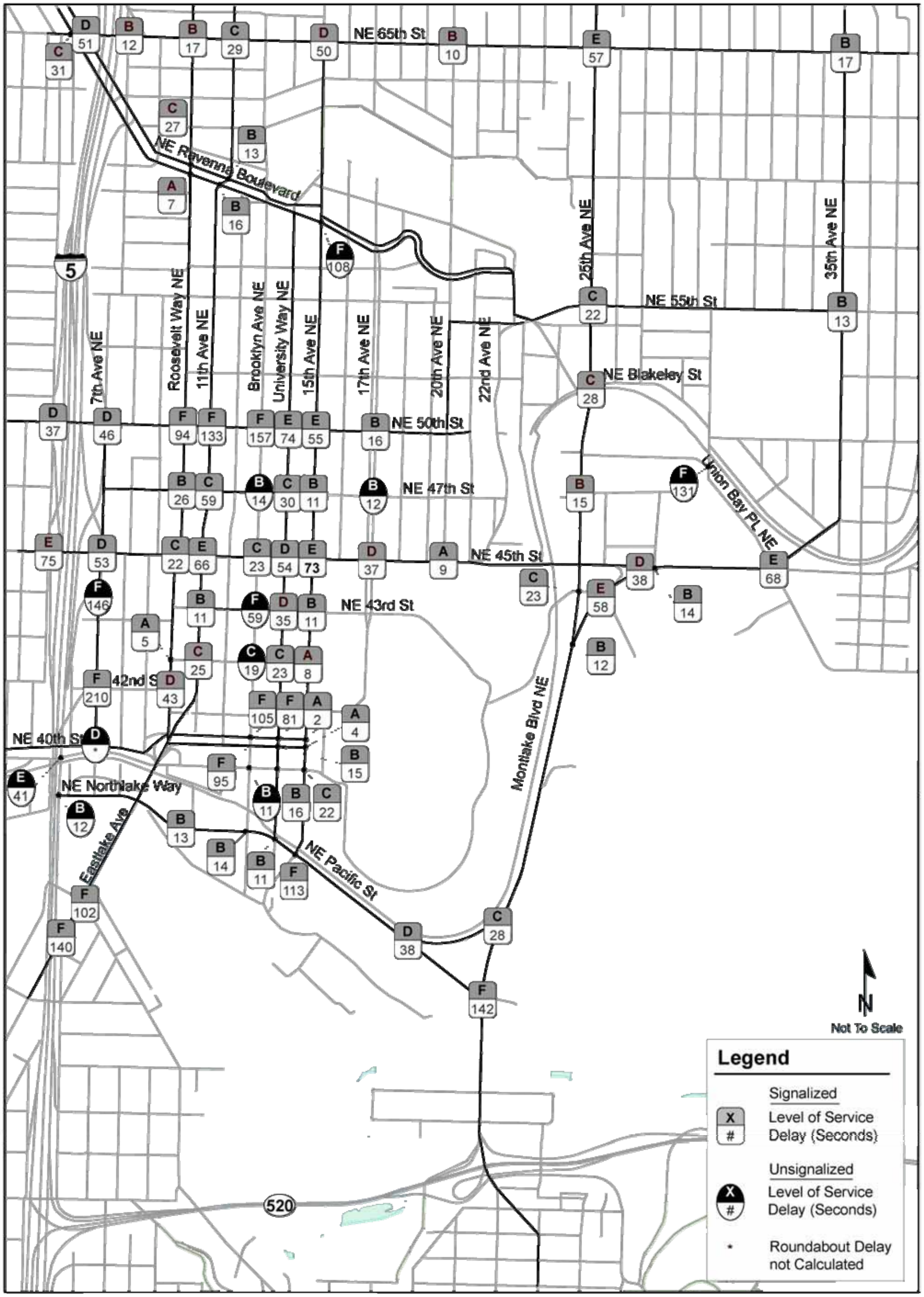


Figure 8. 2030 Arterial Levels of Service with Action Strategy Projects – East-West Corridors

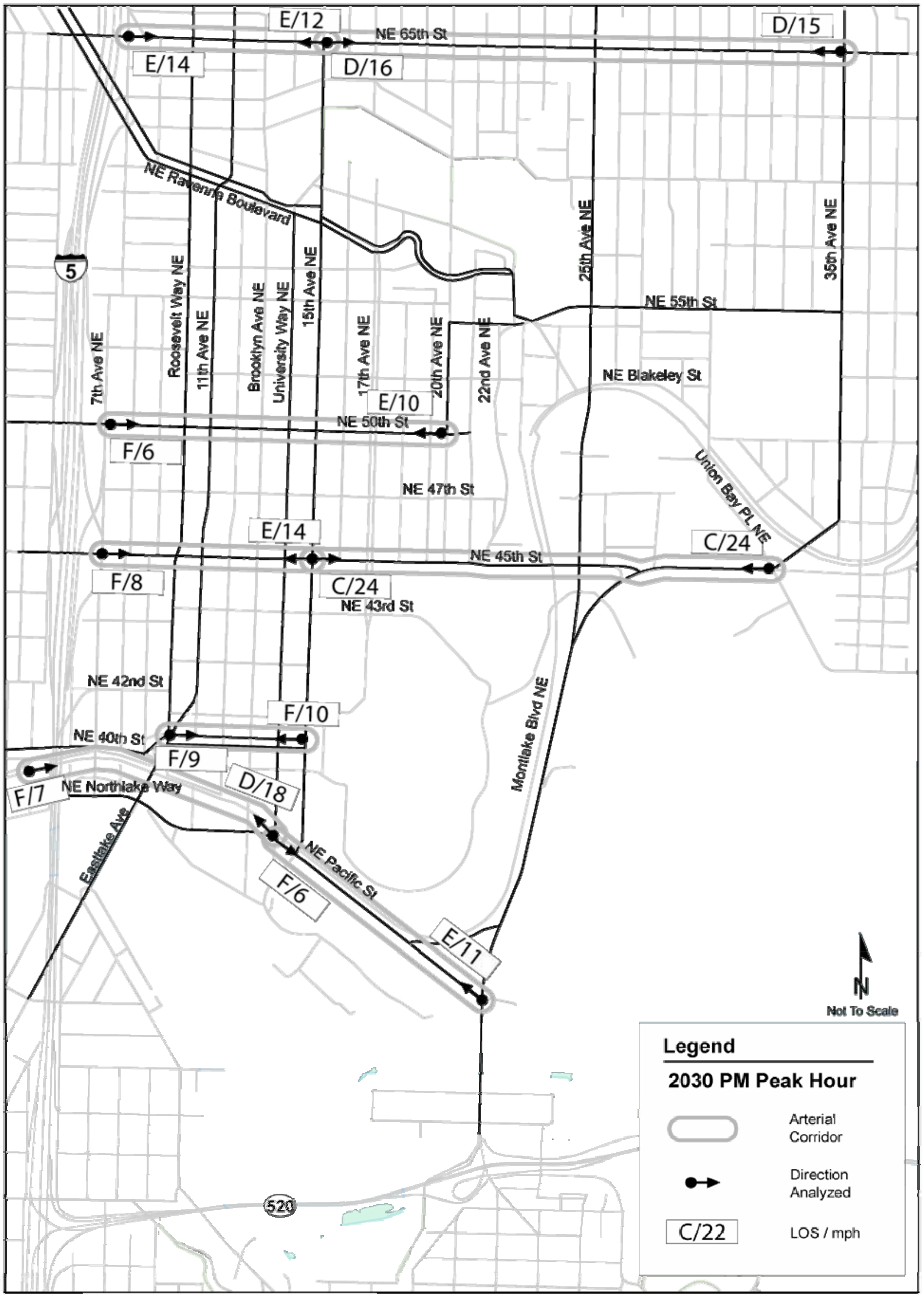


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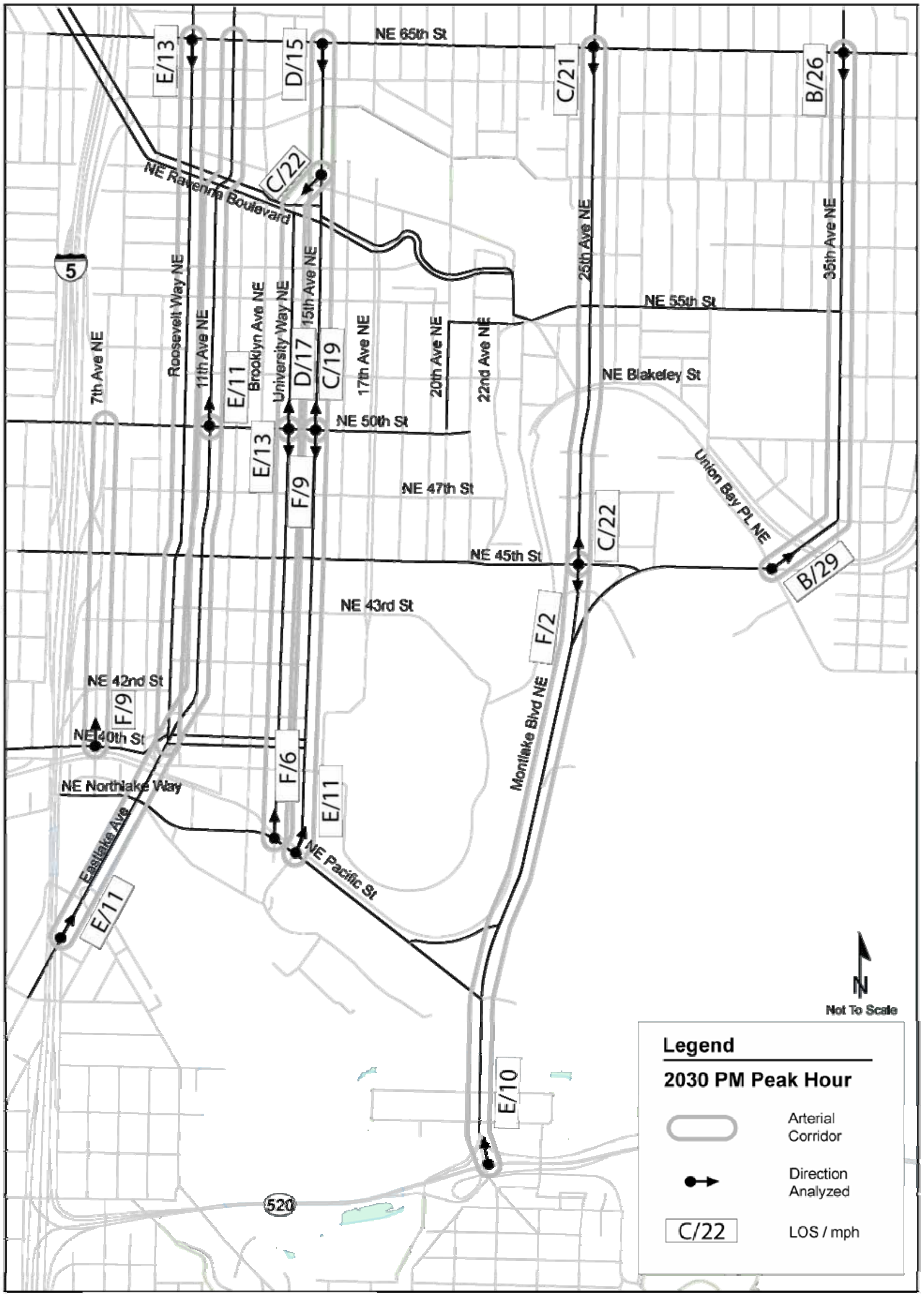
Figure 9. 2030 Arterial Levels of Service with Action Strategy Projects – North-South Corridors



D. Prioritization Memorandum

University Area Transportation Action Strategy

Prioritization Memorandum

Prepared for:

Seattle Department of Transportation

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January 2008

SUMMARY

This memorandum reviews the prioritization process used to evaluate the UATAS projects. Much of the information contained is from the City of Seattle's Department of Transportation Project Prioritization Criteria. The Early Implementation and Partnership projects were not included in the prioritization process.

PRIORITIZATION CRITERIA

The SDOT Project Prioritization Criteria uses seven criteria to evaluate transportation projects for the TIP. Each category is given a number of points with the sum of these projects equaling 100 points. The categories are as follows:

- Safety (20 points)
- Mobility Improvements (15 points)
- Preserving and Maintaining Infrastructure (15 points)
- Cost Effectiveness or Cost Avoidance (15 points)
- Comprehensive Plan/ Urban Village Land Use Strategy (15 points)
- Improving Environment (10 points)
- Economic Development (10 points)

For the Action Strategy, each of the proposed projects were reviewed based upon the criteria above. The results of the analysis were used to identify whether a project was a High or Medium priority project. The prioritization process was not applied to the early implementation or partnership projects.

CRITERIA DEFINITIONS

Establishing a particular score for an individual criterion requires a consistent definition of what the criterion is measuring and how the criterion is applied. The following definitions were used to guide the scoring of the Action Strategy recommendations.

Safety – 20 pts max

- To what extent does this project reduce an identified safety problem?
- To what extent does this project address a high collision intersection or corridor?
- To what extent does this project improve personal safety or security?
- To what extent does this project reduce hazards from a natural or other disaster?
- To what extent does this project reduce potential future safety problems?
- To what extent does this project reduce risk and potential liability to the City?

High (15-20 pts) - Project eliminates or reduces an identified existing safety problem which is causing fatalities, severe injuries or a high level of minor injuries or property damage.

Project addresses an intersection or corridor which is on the current list of High Accident Locations (HAL), High Accident Corridors (HAC), Pedestrian Accident Locations (PAL) or Bicycle Accident Locations (BAL). Project addresses risk to high number of individuals. Project addresses security risks on critical pieces of transportation infrastructure.

Medium (6-14 pts) - Project eliminates or reduces an identified existing safety problem which is causing a moderate amount of minor injuries and/or property damage. Project addresses catastrophic risk to moderate number of individuals. Project addresses risk to moderate number of individuals. Project addresses security risks for transportation infrastructure on arterial network.

Low (1-5 pts) – Project eliminates or reduces an existing safety problem which is causing some amount of minor injuries and/or property damage or addresses potential future safety problem. Project addresses security risks on non-arterial network.

Mobility improvement – 15 pts max

- How much does the project improve overall mobility?
- How much does it help reduce reliance on the automobile?
- Does the project benefit more than one non-auto mode?
- How much does it improve mobility for pedestrians?
- How much does it improve mobility for bicyclists?
- How much does it improve mobility for transit?
- How much does it improve mobility for freight?
- Does the project increase access and mobility for special needs populations?
- Does this project improve the information SDOT gives travelers about using the transportation system?

High (11-15pts) – Project adds person carrying capacity or reduces travel time, improving mobility. Project includes elements which significantly reduce congestion and improve the flow of traffic. Project improves access and mobility for multiple modes including transit, pedestrians and freight mobility. Project area serves a large number of system users. Project is a Major Truck route and/or Major Transit Route.

Medium (5-10 pts) – Project reduces congestion or travel time primarily for general traffic or provides traveler information. Project helps provide safe and convenient alternative to SOV travel. Project area serves a moderate number of system users.

Low (1-4 pts) – Project addresses potential future congestion problems. Project maintains current levels of congestion or access for freight, transit, pedestrian or bicycles. Project area serves a low number of system users.

Preserving and maintaining infrastructure – 15 pts max

- To what extent does the project address one or more major maintenance items?
- To what extent does the project reduce the backlog of deferred maintenance?

- To what extent does the project maintain or improve the reliability of the transportation system?
- To what extent does the project extend the service life of the affected portions of the transportation system?

High (11-15pts) – Project extends the service life of one or more major infrastructure elements for a significant length of time, removes those elements from the backlog list and/or provides a substantial service level improvement.

Medium (5-10pts) – Porject extends the service life of one or more moderate infrastructure elements for a moderate length of time, removes those elements from the backlog list and/or provides a service level improvement.

Low (1-4 pts) – Project extends the short-term service life of one or more infrastructure elements, and/or provides some service level improvement.

Cost effectiveness or cost avoidance – 15 pts max

- To what extent do the benefits of this project outweight costs?
- To what extent does this project reduce the City's exposure to financial risk?
- To what extent does this project reduce relative life-cycle costs?
- To what extent does this project reduce the need for new infrastructure investment?
- To what extent can this project generate new funding?
- To what extent does this project leverage spending by other City departments or funding from other agencies?

To what extent does this improve the efficiency of the transportation system?

High (11-15 pts) - Project provides a high level of benefit at a low cost. Project leverages high level of funding from other City departments, other agencies or private development. Project completes a current phase where a significant amount of funds have already been spent. Project utilizes a low cost alternative.

Medium (5-10 pts) – Project begins a subsequent phase (ie Phase II, when Phase I has already been completed) Project uses a moderate level of innovative techniques or low cost alternatives. Project has a moderate commitment of partnership funds from other departments, agencies or private development.

Low (1-4 pts) – Project is high cost with low benefit to reducing life-cycle costs and exposure to financial risk. Project has limited outside funding commitments.

Comprehensive Plan/Urban Village land use strategy – 15 pts max

- To what extent does the project support the Comprehensive Plan goals for transportation?
- To what extent does the project support the Transportation Strategic Plan?
- To what extent does the project support growth in Urban Villages or Manufacturing and Industrial Centers?

- Is this project a priority in a Council-adopted Neighborhood Plan?
- Does this project address race & social justice needs?

High (11-15pts) – Project is located in an Urban Center, supports the Comp Plan and Transportation Strategic Plan goals and also includes one or more high-priority elements from a Council-adopted Neighborhood Plan. Project facilitates movement into or between Urban Centers, Villages and/or Manufacturing and Industrial Centers along major corridors. Project facilitates travel by alternative modes between Urban Centers, Villages and/or Manufacturing and Industrial Centers.

Medium (5-10 pts) – Project is on a roadway or corridor which connects or provides access into Urban Centers, Urban Villages, or Manufacturing and Industrial Centers. Project includes medium priority Neighborhood Plan elements or supports Neighborhood Plan objectives. The project is in a low income or underserved area.

Low (1-4 pts) – Project support for Comp Plan goals, the Urban Village concept or Neighborhood Plans, is lacking or very indirect.

Improving the Environment – 10 pts max

- To what extent does the project promote healthy neighborhoods with a transportation system that protects and improves environmental quality?
- To what extent does the project reduce or mitigate air, water and noise pollution?
- To what extent does the project promote energy-efficient transportation?

High (8-10 pts) – Project includes a high level of ped/bike/transit improvements which would improve environmental quality. Project supports reduction in air, water and/or noise pollution from motor vehicles and promotes energy efficient transportation.

Medium (4-7 pts) – Project has a moderately positive effect on the quality of the environment by improving transit/ped/bike facilities or traffic flow, minimizing stop and go traffic and idling.

Low (1-3 pts) – Project has a low effect on the quality of the environment.

Economic development – 10 pts max

- To what extent does the project support community and economic development in major development areas (areas of focus may change with time)?
- To what extent does the project support business functionality?
- To what extent does this project support creation or retention of employment opportunities?

High (8-10 pts) – Project provides access crucial to a major business center. Project provides infrastructure essential to development that will create substantial new jobs.

Medium (4-7 pts) – Project facilitates access to a major business center. Project provides or restores infrastructure important to development that will create significant new jobs. Project provides infrastructure important to the retention of businesses and jobs.

Low (1-3 pts) – Project provides access that is incidental to business activities. Project supports little or no job creation.

FINAL SCORING

The analysis assigned the point for the prioritization criteria for each of the projects and then the total score was determined. Projects that scored above 45 points were defined high priority and projects below 45 points were defined as medium priority. **Table 1** summarizes the scoring for the individual UATAS projects. Note that Early Implementation and Partnership Projects were not included in the prioritization.

Table 1. UATAS Project Prioritization Table

Project #	Project Title/Description	Safety	Mobility Improvement	Preserving and Maintaining Infrastructure	Cost Effectiveness or Cost Avoidance	Comprehensive Plan/Urban Village Land Use Strategy	Improving Environment	Economic Development	Total
		Evaluation Criteria							
		20	**15**	**15**	**15**	**15**	**10**	**10**	**100**
High Priority Projects									
1	Stripe the westbound curb lane as transit/right-turn only lane on NE 45th St from 15th Ave NE to 7th Ave NE; convert center left-turn lane to a through-lane	20	15	1	15	15	9	4	79
3*	Extend the northbound left-turn pocket at the 15th Ave NE/NE 45th St intersection; modify signal to improve bus movements on NE 45th St corridor	12	15	1	15	13	6	6	68
4	Remove right-side peak-period parking restrictions on Roosevelt Way and 11th/12th Ave NE; restripe roadway with bicycle lanes on one-way couplet	17	15	1	14	14	6	1	68
5	Improve Burke Gilman Trail crossing at 25th Ave NE/NE Blakely St intersection	20	14	1	10	10	6	1	62
6	Widen sidewalks and place curb extensions on NE 43rd St between Roosevelt Way and 15th Ave NE	13	15	1	6	13	9	5	62
7	Provide southound bicycle queue jump signal at University Bridge and Fuhrman Ave E	16	5	5	15	13	6	1	61
8	Reconfigure intersection of Eastlake Ave E and Campus Parkway/NE 40th St; add bike lanes and sidewalks to improve safety	18	13	1	5	15	8	1	61
9	Reconfigure University Way NE between NE 50th St and Ravenna Blvd with new bicycle facilities, widened sidewalks, and improved urban design	10	14	1	5	15	6	10	61
10	Reconfigure Ravenna Place NE/Ravenna Ave NE/NE 54th and 55th St with curb, gutter, and new sidewalks	19	14	1	14	8	4	1	61
11	Construct pedestrian and bicycle trail under and alongside the NE 45th St Viaduct to provide hill-climb assist and Burke Gilman Trail connection	8	14	1	8	14	9	5	59
12	Improve Burke Gilman Trail crossing at Brooklyn Ave	18	6	1	13	13	6	1	58
13	Install curb extensions at NE 55th St intersections of Roosevelt Way and 11th Ave NE	14	8	1	13	7	5	5	53
14	Provide continuous bicycle connection from Burke Gilman Trail at 7th Ave E to University Bridge; add bicycle lane and sidewalk to south side of NE 40th St	15	14	1	1	14	5	2	52
17*	Construct curb bulb and wider sidewalk on east side of NE 8th Ave between NE 64th St and 65th St; stripe a right-turn pocket for accessing NE 65th St	8	10	1	10	12	6	2	49
19	Close Weedin Place between NE 65th St and 8th Ave NE; provide pocket park or other gateway-oriented public improvements	4	6	1	11	12	8	7	49
20	Provide left-turn pockets/protected signal phase on NE 50th St at 15th Ave NE	19	8	1	14	2	2	1	47
21	Create bicycle connection from Burke Gilman Trail to Sand Point Way at 36th Ave NE	10	12	1	10	7	4	1	45

* Project #2 was removed from consideration after public outreach; #16 was combined with Project F; Projects #15 and #18 have been re-categorized as Partnership Projects and are not prioritize

Table 1. (cont.) UATAS Project Prioritization Table

		Evaluation Criteria							
Project #	Project Title/Description	Safety	Mobility Improvement	Preserving and Maintaining Infrastructure	Cost Effectiveness or Cost Avoidance	Comprehensive Plan/Urban Village Land Use Strategy	Improving Environment	Economic Development	Total
		20	**15**	**15**	**15**	**15**	**10**	**10**	**100**
Medium Priority Projects									
22	Create pedestrian/bicycle connection from Burke Gilman Trail and University Village entrance along NE 47th St; form a four-way intersection with 25th Ave/Ne 47th St	15	10	1	7	7	2	2	44
23	Construct roundabout at NE 7th Ave and NE 40th St	8	15	1	7	5	5	2	43
24	Install pedestrian signal at NE 41st St and 11th Ave NE; new crosswalk at Roosevelt Way and NE 42nd St	17	8	1	8	3	3	2	42
25	Provide off-street pedestrian/bicycle trail in Ravenna Park parallel to Ravenna Ave NE from NE 55th ST to Ravenna Blvd	11	7	7	7	3	6	1	42
26	Extend northbound left-turn/u-turn lane at Hamlin St on Montlake Blvd	10	8	1	13	2	2	1	37
27	Provide northbound and southound left-turn pockets at the 25th AveNE/NE 55th St intersection	20	7	1	5	2	1	1	37
28	Widen sidewalks on NE 45th St; install pedestrian refuge islands at crossings of 18th Ave and 20th Ave NE	10	8	1	2	8	6	1	36
29	Reconstruct Northlake Way; add curb and sidewalks, landsacaping, and shared use path on south side of street	3	5	5	7	2	2	7	31
30	Provide pedestrian and bicycle improvements to Montlake Blvd/NE Shelby St intersection (Phase 2)	6	7	1	7	2	4	1	28
31	Install sidewalk and traffic calming devices on NE 50th St between 30th Ave NE and 35th Ave NE	6	8	1	2	5	4	1	27
32	Install variable message sign in the vicinity of the Montlake Blvd/NE 45th St/Sand Point Way area	4	5	1	8	2	5	1	26

E. Cost Estimates Memorandum

University Area Transportation Action Strategy

Cost Estimates Memorandum

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SUMMARY

This memorandum summarizes the cost estimation process used to evaluate the UATAS projects. These estimates provide a planning-level cost of a proposed project in 2007 dollars. Detailed estimates, which consider specific factors observed in the field, will be developed as part of the Plans, Specification and Estimate (PS&E) process. Cost estimates were not prepared for Partnership Projects.

COST ELEMENTS

The cost estimates developed for the UATAS provide an initial analysis of the cost of a particular improvement or action. All costs were coordinated and reviewed by SDOT staff to reflect the costs similar projects within Seattle.

The cost estimates are broken down into three main components: Construction Costs, Right of Way Costs and Engineering/Management Costs.

Construction Costs

Construction costs are those costs that are associated with the materials and labor related to building the project. These include earthwork, utilities, storm drainage, pavement materials, lighting, traffic control signals, signing and striping and landscaping costs. Also included are the costs to mobilize the project (12 percent of construction costs) for temporary traffic control (10 percent of construction costs) and a 30 percent construction contingency.

Right of Way Costs

For projects that require the purchase of land, buildings or easements, right of way costs are included. Additional costs include settlement costs on purchases and the cost for administration of right of way.

Engineering/Management Costs

Engineering and Management costs include the preliminary design and survey costs (20 percent of construction costs) and construction inspection costs (15 percent of construction costs).

SUMMARY OF UATAS PROJECT COSTS

Cost estimates were developed for each of the early implementation, high priority and medium priority projects identified from the prioritization process. **Table 1** summarizes the project cost estimates for the UATAS.

INDIVIDUAL PROJECT SHEETS

Each of the project cost estimates is included in this appendix. The projects are listed in the same order as they appear in Table 1.

Table 1. Summary Cost of UATAS Projects

Project #	Project Description	Construction Cost	R-O-W Cost	Engineering	Total
A	Activation of pedestrian signal phase at all signals in the urban center. Remove push buttons to avoid confusions	$57,900	$0	$20,300	$78,200
B	University Way/Pacific Street vegetation removal	$18,200	$0	$6,400	$24,600
C	6th Avenue NE/Lower NE 40th Street intersection striping	$5,900	$0	$2,100	$8,000
D	Montlake Boulevard/NE Shelby traffic island-striping	$16,400	$0	$5,700	$22,100
E	25th Avenue NE off-peak parking control	$57,900	$0	$20,300	$78,200
F	Burke-Gilman crossing at Pend Oreille, Brooklyn, Blakely	$21,400	$0	$7,500	$28,900
G	15th Avenue/Ravenna Blvd monitoring	$0	$0	$0	$0
H	Brooklyn Avenue Sharrows	$28,500	$0	$10,000	$38,500
I	Ravenna Bicycle Safety: Repaving Project	$0	$0	$0	$0
J	15th Avenue NE and NE Campus Parkway left turn protected phase	$182,000	$0	$63,700	$245,700
K	University Bridge Lighting	$306,500	$0	$107,300	$413,800
1	NE 45th Street Corridor westbound BAT lane; transit speed and reliability	$637,500	$0	$223,100	$860,600
3	15th Avenue NE/NE 45th Street northbound left turn lane extension	$71,800	$0	$25,100	$96,900
4	Roosevelt Way NE/11th Avenue NE Corridors; Peak period bicycle and transit lanes	$210,100	$0	$73,600	$283,700
5	25th Avenue NE Burke-Gilman Trail crossing	$75,200	$0	$26,300	$101,500
6	NE 43rd Street sidewalk widening and curb extensions	$689,600	$0	$241,400	$931,000
7	Eastlake Avenue E; Bicycle queue jump	$367,600	$0	$128,600	$496,200
8	Eastlake Avenue E and Campus Parkway: Modify loop ramps	$869,000	$0	$304,200	$1,173,200
9	University Way NE; Urban design, pedestrian and bicycle access	$2,004,700	$0	$701,600	$2,706,300
10	Ravenna Boulevard/NE 55th St corridor	$886,700	$22,000	$310,300	$1,219,000
11	NE 45th St Trail to Burke-Gilman	$1,679,700	$0	$587,900	$2,267,600
12	Burke-Gilman Trail crossing at Brooklyn Ave	$251,500	$0	$88,000	$339,500
13	Roosevelt Way and 11th Avenue NE pedestrian improvements: curb bulbs at NE 55th St	$31,600	$0	$11,000	$42,600
14	Burke Gilman Trail/NE 40th St bicycle connection	$323,900	$0	$113,400	$437,300
16	Burke Gilman Trail crossing University Way/Pacific Street	$32,800	$0	$11,500	$44,300
17	8th Avenue NE between NE 64th and NE 65th Streets curb bulbs	$114,300	$0	$40,000	$154,300
19	Weedin Place closure at NE 66th Street	$131,800	$0	$46,100	$177,900
20	NE 50th Street/15th Avenue NE left turn pockets (EB/WB)	$127,300	$0	$44,500	$171,800
21	Burke-Gilman Trail connection at 36th Avenue NE	$34,000	$36,500	$11,900	$82,400
22	Burke-Gilman Trail and University Village at 25th/47th Connection	$499,700	$220,000	$174,900	$894,600
23	7th Avenue NE/NE 40th Street roundabout	$826,500	$16,400	$289,300	$1,132,200
24	11th Avenue NE/Eastlake Avenue/NE 41st Street pedestrian signal	$179,600	$0	$62,900	$242,500
25	Ravenna Ave NE Corridor from NE 55th Street to NE Ravenna Blvd Off-Street Bike Facility	$313,600	$0	$109,700	$423,300
26	Montlake Boulevard/Hamlin Street - Extend u-turn lane	$53,600	$0	$18,800	$72,400
27	25th Avenue NE/NE 55th Street NB/SB left turn pockets	$458,200	$230,500	$160,400	$849,100
28	NE 45th Corridor from 15th to 20th sidewalk	$978,000	$80,500	$342,300	$1,400,800
29	Northlake Way reconstruction	$748,000	$0	$261,800	$1,009,800
30	Montlake Boulevard NE and NE Shelby Street	$581,600	$0	$203,600	$785,200
31	NE 50th Street traffic calming from 30th Ave NE to 35th Ave NE	$288,900	$0	$101,100	$390,000
32	Montlake Blvd/NE 45th Corridor variable sign	$539,200	$0	$188,700	$727,900

Project Estimate
Name: Project A - Activation of pedestrian signal phase at all signals in the urban center. Remove push buttons to avoid confusion.

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 4,380	$ 4,380
Traffic Control (10% of Const. Subtotal)	1	LS	$ 3,650	$ 3,650
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	250	LF	$ 50	$ 12,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	48	EA	$ 500	$ 24,000
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 36,500
SUBTOTAL				$ 44,530
CONTINGENCY			30%	$ 13,359
TOTAL CONSTRUCTION COST				**$ 57,889**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Adminstration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 11,578
Construction, Inspection (15%)	$ 8,683
TOTAL ENGINEERING / MANAGEMENT COST	**$ 20,261**

TOTAL CONSTRUCTION COST	$ 57,889
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 20,261
TOTAL PROJECT COSTS	**$ 78,150**

Notes: $500 per intersection includes removal of unit, cover plate, installation, reprogramming
48 signalized intersections estimated for Urban core. Unclear how many have push buttons.

Project Estimate
Name: Project B - University Way/Pacific Vegetation Removal

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	1,500	$	1,500
Traffic Control (10% of Const. Subtotal)	0	LS	$	1,250	$	-
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	0	LF	$	50	$	-
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	0	LF	$	80	$	-
Asphalt Concrete Pavement	0	TON	$	65	$	-
Curb and Gutter	0	LF	$	15	$	-
Sidewalk	0	SY	$	55	$	-
Curb Ramps	0	EA	$	1,500	$	-
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	0	LF	$	15	$	-
Landscaping / Irrigation - Planters & Restoration	100	LF	$	125	$	12,500
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	12,500
SUBTOTAL					$	14,000
CONTINGENCY				30%	$	4,200
TOTAL CONSTRUCTION COST					**$**	**18,200**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	3,640
Construction, Inspection (15%)					$	2,730
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**6,370**
TOTAL CONSTRUCTION COST					$	18,200
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	6,370
TOTAL PROJECT COSTS					**$**	**24,570**

Notes: ~3300 feet study corridor
12 foot wide lanes

Project Estimate
Name: Project C - 6th Avenue NE/Lower NE 40th Street Intersection Striping

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 450	$ 450
Traffic Control (10% of Const. Subtotal)	1	LS	$ 375	$ 375
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	250	LF	$ 15	$ 3,750
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 3,750
SUBTOTAL				$ 4,575
CONTINGENCY			30%	$ 1,373
TOTAL CONSTRUCTION COST				**$ 5,948**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 1,190
Construction, Inspection (15%)	$ 892
TOTAL ENGINEERING / MANAGEMENT COST	**$ 2,082**

TOTAL CONSTRUCTION COST	$ 5,948
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 2,082
TOTAL PROJECT COSTS	**$ 8,029**

Notes: ~125 feet per direction for striping

Project Estimate
Name: Project D - Montlake Boulevard/NE Shelby Traffic Island-Striping

Description	Quantity	Unit	Unit Cost	Total
CONSTRUCTION COST ESTIMATE				
Mobilization (12% of Const. Subtotal)	1	LS	$ 1,243	$ 1,243
Traffic Control (10% of Const. Subtotal)	1	LS	$ 1,036	$ 1,036
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	50	LF	$ 50	$ 2,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	17	TON	$ 65	$ 1,105
Curb and Gutter	50	LF	$ 15	$ 750
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	1	EA	$ 1,500	$ 1,500
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	300	LF	$ 15	$ 4,500
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 10,355
SUBTOTAL				$ 12,633
CONTINGENCY			30%	$ 3,790
TOTAL CONSTRUCTION COST				**$ 16,423**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 3,285
Construction, Inspection (15%)				$ 2,463
TOTAL ENGINEERING / MANAGEMENT COST				**$ 5,748**
TOTAL CONSTRUCTION COST				$ 16,423
TOTAL RIGHT OF WAY COST				$ -
TOTAL ENGINEERING / MANAGEMENT COST				$ 5,748
TOTAL PROJECT COSTS				**$ 22,171**

Notes: ~300 feet study corridor
stripe bike lane, rebuild curb, add ramp, remove portion of island.
assume no need to modify or relocate signal.
assume no storm or utilities affected.

Project Estimate
Name: Project E - 25th Avenue NE Off-Peak parking control

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 4,770	$ 4,770
Traffic Control (10% of Const. Subtotal)	0	LS	$ 3,975	$ -
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	2650	LF	$ 15	$ 39,750
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 39,750
SUBTOTAL				$ 44,520
CONTINGENCY			30%	$ 13,356
TOTAL CONSTRUCTION COST				**$ 57,876**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ 11,575
Construction, Inspection (15%)	$ 8,681
TOTAL ENGINEERING / MANAGEMENT COST	**$ 20,257**

TOTAL CONSTRUCTION COST	$ 57,876
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 20,257
TOTAL PROJECT COSTS	**$ 78,133**

Notes: ~3300 feet study corridor
12 foot wide lanes

Project Estimate
Name: Project F - Burke-Gilman crossing at Pend Oreille, Brooklyn, Blakely

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 1,620	$ 1,620
Traffic Control (10% of Const. Subtotal)	1	LS	$ 1,350	$ 1,350
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	900	LF	$ 15	$ 13,500
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 13,500
SUBTOTAL				$ 16,470
CONTINGENCY			30%	$ 4,941
TOTAL CONSTRUCTION COST				**$ 21,411**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 4,282
Construction, Inspection (15%)	$ 3,212
TOTAL ENGINEERING / MANAGEMENT COST	**$ 7,494**

TOTAL CONSTRUCTION COST	$ 21,411
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 7,494
TOTAL PROJECT COSTS	**$ 28,905**

Notes: 3 locations with ~60 feet study corridor
Equivalent of x5 striping to account for special paving design.

Project Estimate
Name: Project G - 15th Avenue/Ravenna Monitoring

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	0	LS	$ -	$ -
Traffic Control (10% of Const. Subtotal)	0	LS	$ -	$ -
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ -
SUBTOTAL				$ -
CONTINGENCY			30%	$ -
TOTAL CONSTRUCTION COST				**$ -**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ -
Construction, Inspection (15%)	$ -
TOTAL ENGINEERING / MANAGEMENT COST	**$ -**

TOTAL CONSTRUCTION COST	$ -
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ -
TOTAL PROJECT COSTS	**$ -**

Notes: ~3300 feet study corridor
12 foot wide lanes

Project Estimate
Name: Project H - Brooklyn Avenue Sharrows

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 2,160	$ 2,160
Traffic Control (10% of Const. Subtotal)	1	LS	$ 1,800	$ 1,800
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	1200	LF	$ 15	$ 18,000
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 18,000
SUBTOTAL				$ 21,960
CONTINGENCY			30%	$ 6,588
TOTAL CONSTRUCTION COST				**$ 28,548**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 5,710
Construction, Inspection (15%)	$ 4,282
TOTAL ENGINEERING / MANAGEMENT COST	**$ 9,992**

TOTAL CONSTRUCTION COST	$ 28,548
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 9,992
TOTAL PROJECT COSTS	**$ 38,540**

Notes: ~8000 feet study corridor
Sharrows = 15% of striping cost

Project Estimate
Name: Project I - Ravenna Bicycle Safety: Repaving Project

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	0	LS	$ -	$ -
Traffic Control (10% of Const. Subtotal)	0	LS	$ -	$ -
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ -
SUBTOTAL				$ -
CONTINGENCY			30%	$ -
TOTAL CONSTRUCTION COST				**$ -**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ -
Construction, Inspection (15%)	$ -
TOTAL ENGINEERING / MANAGEMENT COST	**$ -**

TOTAL CONSTRUCTION COST	$ -
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ -
TOTAL PROJECT COSTS	**$ -**

Mirai
Transportation Planning & Engineering

Project Estimate
Name: Project J - 15th Avenue NE and NE Campus Parkway left turn protected phase

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	13,770	$	13,770
Traffic Control (10% of Const. Subtotal)	1	LS	$	11,475	$	11,475
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	0	LF	$	50	$	-
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	0	LF	$	80	$	-
Asphalt Concrete Pavement	0	TON	$	65	$	-
Curb and Gutter	0	LF	$	15	$	-
Sidewalk	0	SY	$	55	$	-
Curb Ramps	0	EA	$	1,500	$	-
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0.5	EA	$	225,000	$	112,500
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	150	LF	$	15	$	2,250
Landscaping / Irrigation - Planters & Restoration	0	LF	$	125	$	-
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	114,750
SUBTOTAL					$	139,995
CONTINGENCY				30%	$	41,999
TOTAL CONSTRUCTION COST					**$**	**181,994**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Adminstration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	36,399
Construction, Inspection (15%)					$	27,299
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**63,698**
TOTAL CONSTRUCTION COST					$	181,994
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	63,698
TOTAL PROJECT COSTS					**$**	**245,691**

Notes: Requires two new signal masts
Signal is currently runs off of the median. Project will create similar signal config as Univ. or Brooklyn
Assume need one new standard for left turns by ped bridge.

Project Estimate
Name: Project K - University Bridge Lighting

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 23,188	$ 23,188
Traffic Control (10% of Const. Subtotal)	1	LS	$ 19,323	$ 19,323
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	3100	LF	$ 69	$ 193,233
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 193,233
SUBTOTAL				$ 235,745
CONTINGENCY			30%	$ 70,723
TOTAL CONSTRUCTION COST				**$ 306,468**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Adminstration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 61,294
Construction, Inspection (15%)	$ 45,970
TOTAL ENGINEERING / MANAGEMENT COST	**$ 107,264**

TOTAL CONSTRUCTION COST	$ 306,468
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 107,264
TOTAL PROJECT COSTS	**$ 413,732**

Notes:
Assumes installation of signal on existing trolley poles across bridge.
Lighting cost estimate is 60% of standard (Pole) Decorative.
Total distance at 3100 ft

Project Estimate
Name: Project 1 - NE 45th Street Corridor BAT lane; Transit Speed and Reliability

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 48,234	$ 48,234
Traffic Control (10% of Const. Subtotal)	1	LS	$ 40,195	$ 40,195
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	250	LF	$ 50	$ 12,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	100	LF	$ 80	$ 8,000
Asphalt Concrete Pavement	30	TON	$ 65	$ 1,950
Curb and Gutter	100	LF	$ 15	$ 1,500
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	5	EA	$ 75,000	$ 375,000
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	100	LF	$ 30	$ 3,000
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 401,950
SUBTOTAL				$ 490,379
CONTINGENCY			30%	$ 147,114
TOTAL CONSTRUCTION COST				**$ 637,493**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 127,499
Construction, Inspection (15%)	$ 95,624
TOTAL ENGINEERING / MANAGEMENT COST	**$ 223,122**

TOTAL CONSTRUCTION COST	$ 637,493
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 223,122
TOTAL PROJECT COSTS	**$ 860,615**

Notes:
Widening required at 7th Avenue for transition back to existing lane configuration
Assume keeping EB left turn pocket at 15th Ave NE
corridor length ~2100 ft

Project Estimate
Name: Project 3 - 15th Avenue NE/NE 45th Street northbound left turn lane extension.

Description	Quantity	Unit	Unit Cost	Total
CONSTRUCTION COST ESTIMATE				
Mobilization (12% of Const. Subtotal)	1	LS	$ 5,436	$ 5,436
Traffic Control (10% of Const. Subtotal)	1	LS	$ 4,530	$ 4,530
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0.5	EA	$ 75,000	$ 37,500
Signing and Striping	520	LF	$ 15	$ 7,800
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 45,300
SUBTOTAL				$ 55,266
CONTINGENCY			30%	$ 16,580
TOTAL CONSTRUCTION COST				**$ 71,846**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 14,369
Construction, Inspection (15%)				$ 10,777
TOTAL ENGINEERING / MANAGEMENT COST				**$ 25,146**
TOTAL CONSTRUCTION COST				$ 71,846
TOTAL RIGHT OF WAY COST				$ -
TOTAL ENGINEERING / MANAGEMENT COST				$ 25,146
TOTAL PROJECT COSTS				**$ 96,992**

Notes:
Corridor length ~520 feet. 0.5 signal mod for retiming and cooridination
restripe south of NE 45th. Create transition aftern NE 43rd St.

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Project Estimate
Name: Project 4 - Roosevelt Way NE/11th Avenue NE Corridors; Bicycle and Transit Access and Safety

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	15,900	$	15,900
Traffic Control (10% of Const. Subtotal)	1	LS	$	13,250	$	13,250
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	250	LF	$	50	$	12,500
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	0	LF	$	80	$	-
Asphalt Concrete Pavement	0	TON	$	65	$	-
Curb and Gutter	100	LF	$	15	$	1,500
Sidewalk	0	SY	$	55	$	-
Curb Ramps	6	EA	$	1,500	$	9,000
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	7300	LF	$	15	$	109,500
Landscaping / Irrigation - Planters & Restoration	0	LF	$	125	$	-
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	132,500
SUBTOTAL					$	161,650
CONTINGENCY				30%	$	48,495
TOTAL CONSTRUCTION COST					**$**	**210,145**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Adminstration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	42,029
Construction, Inspection (15%)					$	31,522
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**73,551**
TOTAL CONSTRUCTION COST					$	210,145
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	73,551
TOTAL PROJECT COSTS					**$**	**283,696**

Notes:
Corridor length 6900 and 7000 feet
removals for curb bulbs to create turn lane

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Project Estimate
Name: Project 5 -25th Avenue NE Burke-Gilman Crossing

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	5,690	$	5,690
Traffic Control (10% of Const. Subtotal)	1	LS	$	4,742	$	4,742
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	60	LF	$	65	$	3,900
Utility Undergrounding	0	LF	$	200	$	-
Removals	60	LF	$	50	$	3,000
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	0	LF	$	80	$	-
Asphalt Concrete Pavement	28	TON	$	65	$	1,820
Curb and Gutter	0	LF	$	15	$	-
Sidewalk	0	SY	$	55	$	-
Curb Ramps	0	EA	$	1,500	$	-
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0.5	EA	$	75,000	$	37,500
Signing and Striping	80	LF	$	15	$	1,200
Landscaping / Irrigation - Planters & Restoration	0	LF	$	125	$	-
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	47,420
SUBTOTAL					$	57,852
CONTINGENCY				30%	$	17,356
TOTAL CONSTRUCTION COST					**$**	**75,208**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	15,042
Construction, Inspection (15%)					$	11,281
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**26,323**
TOTAL CONSTRUCTION COST					$	75,208
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	26,323
TOTAL PROJECT COSTS					**$**	**101,531**

Notes: restriping, bicycle signal timing modification (.5 signal mod)

Project Estimate
Name: Project 6 - NE 43rd Street sidewalk widening and curb extensions

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 52,176	$ 52,176
Traffic Control (10% of Const. Subtotal)	1	LS	$ 43,480	$ 43,480
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	2800	LF	$ 50	$ 140,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	1400	LF	$ 80	$ 112,000
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	2800	LF	$ 15	$ 42,000
Sidewalk	1900	SY	$ 55	$ 104,500
Curb Ramps	20	EA	$ 1,500	$ 30,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	420	LF	$ 15	$ 6,300
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 434,800
SUBTOTAL				$ 530,456
CONTINGENCY			30%	$ 159,137
TOTAL CONSTRUCTION COST				**$ 689,593**

RIGHT OF WAY COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Description	Total
Preliminary, Design, Survey (20%)	$ 137,919
Construction, Inspection (15%)	$ 103,439
TOTAL ENGINEERING / MANAGEMENT COST	**$ 241,357**

Description	Total
TOTAL CONSTRUCTION COST	$ 689,593
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 241,357
TOTAL PROJECT COSTS	**$ 930,950**

Notes:1400' project area

Project Estimate
Name: Project 7 - Eastlake Avenue E; Bicycle Access and Safety

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	27,810	$	27,810
Traffic Control (10% of Const. Subtotal)	1	LS	$	23,175	$	23,175
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	250	LF	$	50	$	12,500
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	0	LF	$	80	$	-
Asphalt Concrete Pavement	0	TON	$	65	$	-
Curb and Gutter	0	LF	$	15	$	-
Sidewalk	0	SY	$	55	$	-
Curb Ramps	2	EA	$	1,500	$	3,000
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	250	LF	$	115	$	28,750
Interconnect	0	LF	$	20	$	-
New Signal	0.5	EA	$	225,000	$	112,500
Modify Signal	1	EA	$	75,000	$	75,000
Signing and Striping	0	LF	$	15	$	-
Landscaping / Irrigation - Planters & Restoration	0	LF	$	125	$	-
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	231,750
SUBTOTAL					$	282,735
CONTINGENCY				30%	$	84,821
TOTAL CONSTRUCTION COST					**$**	**367,556**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	73,511
Construction, Inspection (15%)					$	55,133
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**128,644**
TOTAL CONSTRUCTION COST					$	367,556
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	128,644
TOTAL PROJECT COSTS					**$**	**496,200**

Notes: restriping, bicycle signal main costs (0.5 new signal), push button (1 signal mod)

Project Estimate
Name: Project 8 - Eastlake Avenue E and Campus Parkway Loop Ramp

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 65,754	$ 65,754
Traffic Control (10% of Const. Subtotal)	1	LS	$ 54,795	$ 54,795
Earthwork High	600	LF	$ 115	$ 69,000
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	600	LF	$ 50	$ 30,000
Storm Drainage - New	600	LF	$ 130	$ 78,000
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	200	TON	$ 65	$ 13,000
Curb and Gutter	4400	LF	$ 15	$ 66,000
Sidewalk	890	SY	$ 55	$ 48,950
Curb Ramps	4	EA	$ 1,500	$ 6,000
Lighting (cobra head)	600	LF	$ 65	$ 39,000
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	1	EA	$ 75,000	$ 75,000
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	400	LF	$ 125	$ 50,000
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	200	LF	$ 30	$ 6,000
Fence	200	LF	$ 35	$ 7,000
Railing	0	LF	$ 55	$ -
Urban Design Features	6	LS	$ 10,000	$ 60,000
SUBTOTAL (w/o mobilization and traffic control)				$ 547,950
SUBTOTAL				$ 668,499
CONTINGENCY			30%	$ 200,550
TOTAL CONSTRUCTION COST				**$ 869,049**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 173,810
Construction, Inspection (15%)	$ 130,357
TOTAL ENGINEERING / MANAGEMENT COST	**$ 304,167**

TOTAL CONSTRUCTION COST	$ 869,049
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 304,167
TOTAL PROJECT COSTS	**$ 1,173,216**

Notes: corridor 2200 feet

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Project Estimate
Name: Project 9 - University Way NE; Urban Design, Pedestrian and Bicycle Access

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 151,680	$ 151,680
Traffic Control (10% of Const. Subtotal)	1	LS	$ 126,400	$ 126,400
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	4400	LF	$ 90	$ 396,000
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	250	LF	$ 50	$ 12,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	4400	LF	$ 80	$ 352,000
Asphalt Concrete Pavement	200	TON	$ 65	$ 13,000
Curb and Gutter	4400	LF	$ 15	$ 66,000
Sidewalk	500	SY	$ 55	$ 27,500
Curb Ramps	20	EA	$ 1,500	$ 30,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	1	EA	$ 75,000	$ 75,000
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	800	LF	$ 125	$ 100,000
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	4400	LF	$ 30	$ 132,000
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	6	LS	$ 10,000	$ 60,000
SUBTOTAL (w/o mobilization and traffic control)				**$ 1,264,000**
SUBTOTAL				**$ 1,542,080**
CONTINGENCY			30%	$ 462,624
TOTAL CONSTRUCTION COST				**$ 2,004,704**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 400,941
Construction, Inspection (15%)	$ 300,706
TOTAL ENGINEERING / MANAGEMENT COST	**$ 701,646**

TOTAL CONSTRUCTION COST	$ 2,004,704
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 701,646
TOTAL PROJECT COSTS	**$ 2,706,350**

Notes: corridor 2200 feet

Project Estimate
Name: Project 10 - Ravenna Boulevard/NE 55th St Corridor

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 67,086	$ 67,086
Traffic Control (10% of Const. Subtotal)	1	LS	$ 55,905	$ 55,905
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	1100	LF	$ 65	$ 71,500
Utility Undergrounding	0	LF	$ 200	$ -
Removals	1100	LF	$ 50	$ 55,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	1100	LF	$ 80	$ 88,000
Asphalt Concrete Pavement	550	TON	$ 65	$ 35,750
Curb and Gutter	2200	LF	$ 15	$ 33,000
Sidewalk	1500	SY	$ 55	$ 82,500
Curb Ramps	8	EA	$ 1,500	$ 12,000
Lighting (cobra head)	420	LF	$ 65	$ 27,300
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	1100	LF	$ 15	$ 16,500
Landscaping / Irrigation - Planters & Restoration	1100	LF	$ 125	$ 137,500
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 559,050
SUBTOTAL				$ 682,041
CONTINGENCY			30%	$ 204,612
TOTAL CONSTRUCTION COST				**$ 886,653**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	70	SF	$ 50	$ 3,500
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	3	EA	$ 2,000	$ 6,000
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 22,000**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 177,331
Construction, Inspection (15%)	$ 132,998
TOTAL ENGINEERING / MANAGEMENT COST	**$ 310,329**

TOTAL CONSTRUCTION COST	$ 886,653
TOTAL RIGHT OF WAY COST	$ 22,000
TOTAL ENGINEERING / MANAGEMENT COST	$ 310,329
TOTAL PROJECT COSTS	**$ 1,218,982**

Notes: Based on UATS 6C estimate except lowered amount of concrete

Project Estimate
Name: Project 11 - NE 45th St Trail to Burke-Gilman Trail

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 127,093	$ 127,093
Traffic Control (10% of Const. Subtotal)	1	LS	$ 105,911	$ 105,911
Earthwork High	600	LF	$ 115	$ 69,000
Earthwork Medium	600	LF	$ 90	$ 54,000
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	1200	LF	$ 130	$ 156,000
Storm Drainage - Modify	0	LF	$ 80	$ -
Storm Drainage - Containment	1200	LF	$ 80	$ 96,000
Asphalt Concrete Pavement	250	TON	$ 65	$ 16,250
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	1200	LF	$ 115	$ 138,000
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	500	LF	$ 125	$ 62,500
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	680	LF	$ 30	$ 20,400
Retailing Walls	3600	SF	$ 120	$ 432,000
Railing	272	LF	$ 55	$ 14,960
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 1,059,110
SUBTOTAL				$ 1,292,114
CONTINGENCY			30%	$ 387,634
TOTAL CONSTRUCTION COST				**$ 1,679,748**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ 335,950
Construction, Inspection (15%)	$ 251,962
TOTAL ENGINEERING / MANAGEMENT COST	**$ 587,912**

TOTAL CONSTRUCTION COST	$ 1,679,748
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 587,912
TOTAL PROJECT COSTS	**$ 2,267,660**

Project Estimate
Name: Project 12 - Burke-Gilman Trail crossing at Brooklyn Ave

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 19,032	$ 19,032
Traffic Control (10% of Const. Subtotal)	1	LS	$ 15,860	$ 15,860
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	250	LF	$ 90	$ 22,500
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	250	LF	$ 50	$ 12,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	75	LF	$ 80	$ 6,000
Asphalt Concrete Pavement	140	TON	$ 65	$ 9,100
Curb and Gutter	200	LF	$ 15	$ 3,000
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	2	EA	$ 1,500	$ 3,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	200	LF	$ 115	$ 23,000
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	250	LF	$ 30	$ 7,500
Retailing Wall	600	SF	$ 120	$ 72,000
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 158,600
SUBTOTAL				$ 193,492
CONTINGENCY			30%	$ 58,048
TOTAL CONSTRUCTION COST				**$ 251,540**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 50,308
Construction, Inspection (15%)	$ 37,731
TOTAL ENGINEERING / MANAGEMENT COST	**$ 88,039**

TOTAL CONSTRUCTION COST	$ 251,540
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 88,039
TOTAL PROJECT COSTS	**$ 339,578**

Notes: 250 feet of improvements

Project Estimate
Name: Project 13 - Roosevelt Way and 11th Avenue NE Pedestrian Improvements curb bulbs at NE 55th St

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 2,388	$ 2,388
Traffic Control (10% of Const. Subtotal)	1	LS	$ 1,990	$ 1,990
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	90	LF	$ 50	$ 4,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	90	LF	$ 80	$ 7,200
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	90	LF	$ 15	$ 1,350
Sidewalk	70	SY	$ 55	$ 3,850
Curb Ramps	2	EA	$ 1,500	$ 3,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 19,900
SUBTOTAL				$ 24,278
CONTINGENCY			30%	$ 7,283
TOTAL CONSTRUCTION COST				**$ 31,561**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 6,312
Construction, Inspection (15%)	$ 4,734
TOTAL ENGINEERING / MANAGEMENT COST	**$ 11,046**

TOTAL CONSTRUCTION COST	$ 31,561
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 11,046
TOTAL PROJECT COSTS	**$ 42,608**

Notes: 670 feet of improvements
Assume mix of low and medium grading
Erosion control

Project Estimate
Name: Project 14 - Burke Gilman Trail/NE 40th St bicycle connection

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	24,504	$	24,504
Traffic Control (10% of Const. Subtotal)	1	LS	$	20,420	$	20,420
Earthwork High	280	LF	$	115	$	32,200
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	0	LF	$	50	$	-
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	280	LF	$	80	$	22,400
Asphalt Concrete Pavement	80	TON	$	65	$	5,200
Curb and Gutter	560	LF	$	15	$	8,400
Sidewalk	0	SY	$	55	$	-
Curb Ramps	2	EA	$	1,500	$	3,000
Lighting (cobra head)	560	LF	$	65	$	36,400
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	560	LF	$	15	$	8,400
Landscaping / Irrigation - Planters & Restoration	560	LF	$	125	$	70,000
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	280	LF	$	30	$	8,400
Fence	280	LF	$	35	$	9,800
Railing	0	LF	$	55	$	-
Urban Design Features		LS	$	-	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	204,200
SUBTOTAL					$	249,124
CONTINGENCY				30%	$	74,737
TOTAL CONSTRUCTION COST					**$**	**323,861**
RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**
ENGINEERING / MANAGEMENT COST ESTIMATE						
Preliminary, Design, Survey (20%)					$	64,772
Construction, Inspection (15%)					$	48,579
TOTAL ENGINEERING / MANAGEMENT COST					**$**	**113,351**
TOTAL CONSTRUCTION COST					$	323,861
TOTAL RIGHT OF WAY COST					$	-
TOTAL ENGINEERING / MANAGEMENT COST					$	113,351
TOTAL PROJECT COSTS					**$**	**437,213**

Notes:
Corridor length 6900 and 7000 feet
removals for curb bulbs to create turn lane

Project Estimate
Name: Project 15 -Montelake Blvd NE HOV Lane

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 554,160	$ 554,160
Traffic Control (10% of Const. Subtotal)	1	LS	$ 461,800	$ 461,800
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	2600	LF	$ 90	$ 234,000
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	1000	LF	$ 50	$ 50,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	2600	LF	$ 80	$ 208,000
Storm Drainage - Containment	2600	LF	$ 80	$ 208,000
Asphalt Concrete Pavement	3000	TON	$ 65	$ 195,000
Curb and Gutter	2600	LF	$ 15	$ 39,000
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	2600	LF	$ 65	$ 169,000
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	2600	LF	$ 15	$ 39,000
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Landscaping /Restoration	2600	LF	$ 30	$ 78,000
Temporary Erosion Control	2600	LF	$ 30	$ 78,000
Retailing Walls	11000	SF	$ 120	$ 1,320,000
Pedestrian Bridges	2	EA	$ 1,000,000	$ 2,000,000
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 4,618,000
SUBTOTAL				$ 5,633,960
CONTINGENCY			30%	$ 1,690,188
TOTAL CONSTRUCTION COST				**$ 7,324,148**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	31200	SF	$ 50	$ 1,560,000
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	1	EA	$ 2,000	$ 2,000
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 1,574,500**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 1,464,830
Construction, Inspection (15%)				$ 1,098,622
TOTAL ENGINEERING / MANAGEMENT COST				**$ 2,563,452**
TOTAL CONSTRUCTION COST				$ 7,324,148
TOTAL RIGHT OF WAY COST				$ 1,574,500
TOTAL ENGINEERING / MANAGEMENT COST				$ 2,563,452
TOTAL PROJECT COSTS				**$ 11,462,100**

Note: 2600' project area. Based on UATS 2F estimate quantities

Project Estimate
Name: Project 16 - Burke Gilman Trail crossing at University Way/Pacific Street

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 2,478	$ 2,478
Traffic Control (10% of Const. Subtotal)	1	LS	$ 2,065	$ 2,065
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	60	LF	$ 90	$ 5,400
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	60	LF	$ 50	$ 3,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	40	TON	$ 65	$ 2,600
Curb and Gutter	60	LF	$ 15	$ 900
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	2	EA	$ 1,500	$ 3,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	50	LF	$ 115	$ 5,750
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 20,650
SUBTOTAL				$ 25,193
CONTINGENCY			30%	$ 7,558
TOTAL CONSTRUCTION COST				**$ 32,751**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ 6,550
Construction, Inspection (15%)	$ 4,913
TOTAL ENGINEERING / MANAGEMENT COST	**$ 11,463**

TOTAL CONSTRUCTION COST	$ 32,751
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 11,463
TOTAL PROJECT COSTS	**$ 44,214**

Notes:1400' project area

Project Estimate
Name: Project 17 - 8th Avenue NE between NE 64th and NE 65th Streets curb bulbs

Description	Quantity	Unit	Unit Cost	Total
CONSTRUCTION COST ESTIMATE				
Mobilization (12% of Const. Subtotal)	1	LS	$ 8,649	$ 8,649
Traffic Control (10% of Const. Subtotal)	1	LS	$ 7,208	$ 7,208
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	375	LF	$ 65	$ 24,375
Utility Undergrounding	0	LF	$ 200	$ -
Removals	375	LF	$ 50	$ 18,750
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	375	LF	$ 15	$ 5,625
Sidewalk	315	SY	$ 55	$ 17,325
Curb Ramps	4	EA	$ 1,500	$ 6,000
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 72,075
SUBTOTAL				$ 87,932
CONTINGENCY			30%	$ 26,379
TOTAL CONSTRUCTION COST				**$ 114,311**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Adminstration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 22,862
Construction, Inspection (15%)				$ 17,147
TOTAL ENGINEERING / MANAGEMENT COST				**$ 40,009**
TOTAL CONSTRUCTION COST				$ 114,311
TOTAL RIGHT OF WAY COST				$ -
TOTAL ENGINEERING / MANAGEMENT COST				$ 40,009
TOTAL PROJECT COSTS				**$ 154,320**

Notes: restriping, bicycle signal main costs (0.5 new signal), push button (1 signal mod)

Project Estimate
Name: Project 18 - NE Pacific Street HOV Lane

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 244,350	$ 244,350
Traffic Control (10% of Const. Subtotal)	1	LS	$ 203,625	$ 203,625
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	950	LF	$ 90	$ 85,500
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	950	LF	$ 50	$ 47,500
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	950	LF	$ 80	$ 76,000
Storm Drainage - Containment	950	LF	$ 80	$ 76,000
Asphalt Concrete Pavement	1100	TON	$ 65	$ 71,500
Curb and Gutter	950	LF	$ 15	$ 14,250
Sidewalk	950	SY	$ 55	$ 52,250
Curb Ramps	2	EA	$ 1,500	$ 3,000
Lighting (cobra head)	950	LF	$ 65	$ 61,750
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	1	EA	$ 75,000	$ 75,000
Signing and Striping	950	LF	$ 15	$ 14,250
Landscaping / Irrigation - Planters & Restoration	950	LF	$ 125	$ 118,750
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	950	LF	$ 30	$ 28,500
Retailing Walls	2600	SF	$ 120	$ 312,000
Pedestrian Bridges	1	EA	$ 1,000,000	$ 1,000,000
Urban Design Features	0	LS	$ 10,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 2,036,250
SUBTOTAL				$ 2,484,225
CONTINGENCY			30%	$ 745,268
TOTAL CONSTRUCTION COST				**$ 3,229,493**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	11400	SF	$ 50	$ 570,000
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	1	EA	$ 2,000	$ 2,000
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 584,500**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 645,899
Construction, Inspection (15%)	$ 484,424
TOTAL ENGINEERING / MANAGEMENT COST	**$ 1,130,322**

TOTAL CONSTRUCTION COST	$ 3,229,493
TOTAL RIGHT OF WAY COST	$ 584,500
TOTAL ENGINEERING / MANAGEMENT COST	$ 1,130,322
TOTAL PROJECT COSTS	**$ 4,944,315**

Notes: corridor 950 ft. Used modified estimate from UATS.

Project Estimate
Name: Project 19 - Weedin Place/NE 65th Street; Pedestrian

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	9,972	$	9,972
Traffic Control (10% of Const. Subtotal)	1	LS	$	8,310	$	8,310
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	250	LF	$	50	$	12,500
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	250	LF	$	80	$	20,000
Asphalt Concrete Pavement	0	TON	$	65	$	-
Curb and Gutter	150	LF	$	15	$	2,250
Sidewalk	120	SY	$	55	$	6,600
Curb Ramps	2	EA	$	1,500	$	3,000
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	250	LF	$	115	$	28,750
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	0	LF	$	15	$	-
Landscaping / Irrigation - Planters & Restoration	0	LF	$	125	$	-
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Fence	0	LF	$	35	$	-
Railing	0	LF	$	55	$	-
Urban Design Features	1	LS	$	10,000	$	10,000
SUBTOTAL (w/o mobilization and traffic control)					$	83,100
SUBTOTAL					$	101,382
CONTINGENCY				30%	$	30,415
TOTAL CONSTRUCTION COST					**$**	**131,797**

RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**

ENGINEERING / MANAGEMENT COST ESTIMATE		
Preliminary, Design, Survey (20%)	$	26,359
Construction, Inspection (15%)	$	19,769
TOTAL ENGINEERING / MANAGEMENT COST	**$**	**46,129**

TOTAL CONSTRUCTION COST	$	131,797
TOTAL RIGHT OF WAY COST	$	-
TOTAL ENGINEERING / MANAGEMENT COST	$	46,129
TOTAL PROJECT COSTS	**$**	**177,925**

Notes: corridor 2200 feet

Project Estimate
Name: Project 20 -NE 50th Street/15th Avenue NE left turn pockets (EB/WB)

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 9,630	$ 9,630
Traffic Control (10% of Const. Subtotal)	1	LS	$ 8,025	$ 8,025
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	1	EA	$ 75,000	$ 75,000
Signing and Striping	350	LF	$ 15	$ 5,250
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 80,250
SUBTOTAL				$ 97,905
CONTINGENCY			30%	$ 29,372
TOTAL CONSTRUCTION COST				**$ 127,277**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Adminstration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 25,455
Construction, Inspection (15%)	$ 19,091
TOTAL ENGINEERING / MANAGEMENT COST	**$ 44,547**

TOTAL CONSTRUCTION COST	$ 127,277
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 44,547
TOTAL PROJECT COSTS	**$ 171,823**

Notes: EB/WB working within existing ROW no widening

Project Estimate
Name: Project 21 - Burke-Gilman Trail connection at 36th Avenue NE

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 2,574	$ 2,574
Traffic Control (10% of Const. Subtotal)	1	LS	$ 2,145	$ 2,145
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	240	SY	$ 55	$ 13,200
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	550	LF	$ 15	$ 8,250
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 21,450
SUBTOTAL				$ 26,169
CONTINGENCY			30%	$ 7,851
TOTAL CONSTRUCTION COST				**$ 34,020**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	480	SF	$ 50	$ 24,000
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 36,500**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 6,804
Construction, Inspection (15%)	$ 5,103
TOTAL ENGINEERING / MANAGEMENT COST	**$ 11,907**

TOTAL CONSTRUCTION COST	$ 34,020
TOTAL RIGHT OF WAY COST	$ 36,500
TOTAL ENGINEERING / MANAGEMENT COST	$ 11,907
TOTAL PROJECT COSTS	**$ 82,427**

Notes: Improvement of NE 44th St connection from University housing and build connection to B-G trail off of NE 45th

Project Estimate
Name: Project 22 - Burke-Gilman Trail and University Village at 25th Ave /NE 47th St connection

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 37,809	$ 37,809
Traffic Control (10% of Const. Subtotal)	1	LS	$ 31,508	$ 31,508
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	220	LF	$ 90	$ 19,800
Earthwork Low	270	LF	$ 65	$ 17,550
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	490	LF	$ 80	$ 39,200
Asphalt Concrete Pavement	200	TON	$ 65	$ 13,000
Curb and Gutter	410	LF	$ 15	$ 6,150
Sidewalk	325	SY	$ 55	$ 17,875
Curb Ramps	4	EA	$ 1,500	$ 6,000
Lighting (cobra head)	270	LF	$ 65	$ 17,550
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	270	LF	$ 15	$ 4,050
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	490	LF	$ 30	$ 14,700
Retailing Walls	1280	SF	$ 120	$ 153,600
Fence	160	LF	$ 35	$ 5,600
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 315,075
SUBTOTAL				$ 384,392
CONTINGENCY			30%	$ 115,317
TOTAL CONSTRUCTION COST				**$ 499,709**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	4150	SF	$ 50	$ 207,500
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 220,000**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 99,942
Construction, Inspection (15%)				$ 74,956
TOTAL ENGINEERING / MANAGEMENT COST				**$ 174,898**
TOTAL CONSTRUCTION COST				$ 499,709
TOTAL RIGHT OF WAY COST				$ 220,000
TOTAL ENGINEERING / MANAGEMENT COST				$ 174,898
TOTAL PROJECT COSTS				**$ 894,607**

Notes: Used 6A from UATS

Project Estimate
Name: Project 23 - 7th Avenue NE/NE 40th Street roundabout

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 62,532	$ 62,532
Traffic Control (10% of Const. Subtotal)	1	LS	$ 52,110	$ 52,110
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	400	LF	$ 65	$ 26,000
Utility Undergrounding	0	LF	$ 200	$ -
Removals	800	LF	$ 50	$ 40,000
Storm Drainage - New	600	LF	$ 130	$ 78,000
Storm Drainage - Modify	800	LF	$ 80	$ 64,000
Storm Drainage - Containment	1400	LF	$ 80	$ 112,000
Asphalt Concrete Pavement	1200	TON	$ 65	$ 78,000
Curb and Gutter	1600	LF	$ 15	$ 24,000
Sidewalk	120	SY	$ 55	$ 6,600
Curb Ramps	18	EA	$ 1,500	$ 27,000
Lighting (cobra head)	300	LF	$ 65	$ 19,500
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	600	LF	$ 15	$ 9,000
Landscaping / Irrigation - Planters & Restoration	200	LF	$ 125	$ 25,000
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	400	LF	$ 30	$ 12,000
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 521,100
SUBTOTAL				$ 635,742
CONTINGENCY			30%	$ 190,723
TOTAL CONSTRUCTION COST				**$ 826,465**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	112.5	SF	$ 35	$ 3,938
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 16,438**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 165,293
Construction, Inspection (15%)	$ 123,970
TOTAL ENGINEERING / MANAGEMENT COST	**$ 289,263**

TOTAL CONSTRUCTION COST	$ 826,465
TOTAL RIGHT OF WAY COST	$ 16,438
TOTAL ENGINEERING / MANAGEMENT COST	$ 289,263
TOTAL PROJECT COSTS	**$ 1,132,165**

Project Estimate
Name: Project 24 - 11th Avenue NE/Eastlake Avenue/NE 41st Street pedestrian signal

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 13,590	$ 13,590
Traffic Control (10% of Const. Subtotal)	1	LS	$ 11,325	$ 11,325
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0.5	EA	$ 225,000	$ 112,500
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	50	LF	$ 15	$ 750
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 113,250
SUBTOTAL				$ 138,165
CONTINGENCY			30%	$ 41,450
TOTAL CONSTRUCTION COST				**$ 179,615**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 35,923
Construction, Inspection (15%)	$ 26,942
TOTAL ENGINEERING / MANAGEMENT COST	**$ 62,865**

TOTAL CONSTRUCTION COST	$ 179,615
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 62,865
TOTAL PROJECT COSTS	**$ 242,480**

Notes: EB/WB working within existing ROW no widening

Project Estimate
Name: Project 25 - Ravenna Ave NE Corridor from NE 55th Street to NE Ravenna Blvd: Off-street bike facility

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 23,724	$ 23,724
Traffic Control (10% of Const. Subtotal)	1	LS	$ 19,770	$ 19,770
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	600	LF	$ 65	$ 39,000
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	600	LF	$ 130	$ 78,000
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	180	TON	$ 65	$ 11,700
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	600	LF	$ 115	$ 69,000
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 197,700
SUBTOTAL				$ 241,194
CONTINGENCY			30%	$ 72,358
TOTAL CONSTRUCTION COST				**$ 313,552**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ 62,710
Construction, Inspection (15%)	$ 47,033
TOTAL ENGINEERING / MANAGEMENT COST	**$ 109,743**

TOTAL CONSTRUCTION COST	$ 313,552
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 109,743
TOTAL PROJECT COSTS	**$ 423,295**

Notes: Assumes repaving of existing trail or creation of new trail for ~600 lf

Project Estimate
Name: Project 26 - Montlake Boulevard/Hamlin Street - Extend U-turn lane

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 4,059	$ 4,059
Traffic Control (10% of Const. Subtotal)	1	LS	$ 3,383	$ 3,383
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	175	LF	$ 65	$ 11,375
Utility Undergrounding	0	LF	$ 200	$ -
Removals	175	LF	$ 50	$ 8,750
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	50	TON	$ 65	$ 3,250
Curb and Gutter	175	LF	$ 15	$ 2,625
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	80	LF	$ 65	$ 5,200
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	175	LF	$ 15	$ 2,625
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 33,825
SUBTOTAL				$ 41,267
CONTINGENCY			30%	$ 12,380
TOTAL CONSTRUCTION COST				**$ 53,646**

RIGHT OF WAY COST ESTIMATE

Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE

Preliminary, Design, Survey (20%)	$ 10,729
Construction, Inspection (15%)	$ 8,047
TOTAL ENGINEERING / MANAGEMENT COST	**$ 18,776**

TOTAL CONSTRUCTION COST	$ 53,646
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 18,776
TOTAL PROJECT COSTS	**$ 72,423**

Project Estimate
Name: Project 27 -25th Avenue NE/NE 55th Street NB/SB left turn pockets

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 34,668	$ 34,668
Traffic Control (10% of Const. Subtotal)	1	LS	$ 28,890	$ 28,890
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	140	LF	$ 65	$ 9,100
Utility Undergrounding	0	LF	$ 200	$ -
Removals	220	LF	$ 50	$ 11,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	360	LF	$ 80	$ 28,800
Storm Drainage - Containment	360	LF	$ 80	$ 28,800
Asphalt Concrete Pavement	120	TON	$ 65	$ 7,800
Curb and Gutter	360	LF	$ 15	$ 5,400
Sidewalk	240	SY	$ 55	$ 13,200
Curb Ramps	4	EA	$ 1,500	$ 6,000
Lighting (cobra head)	360	LF	$ 65	$ 23,400
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	2	EA	$ 75,000	$ 150,000
Signing and Striping	360	LF	$ 15	$ 5,400
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Fence	0	LF	$ 35	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 288,900
SUBTOTAL				$ 352,458
CONTINGENCY			30%	$ 105,737
TOTAL CONSTRUCTION COST				**$ 458,195**
RIGHT OF WAY COST ESTIMATE				
Land - Commercial	4320	SF	$ 50	$ 216,000
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	1	EA	$ 2,000	$ 2,000
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 230,500**
ENGINEERING / MANAGEMENT COST ESTIMATE				
Preliminary, Design, Survey (20%)				$ 91,639
Construction, Inspection (15%)				$ 68,729
TOTAL ENGINEERING / MANAGEMENT COST				**$ 160,368**
TOTAL CONSTRUCTION COST				$ 458,195
TOTAL RIGHT OF WAY COST				$ 230,500
TOTAL ENGINEERING / MANAGEMENT COST				$ 160,368
TOTAL PROJECT COSTS				**$ 849,064**

Notes: Need 12 ft from west side of roadway. This project is difficult.

Project Estimate
Name: Project 28 - NE 45th Corridor from 15th Ave to 20th Ave

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 73,998	$ 73,998
Traffic Control (10% of Const. Subtotal)	1	LS	$ 61,665	$ 61,665
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	1320	LF	$ 50	$ 66,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	1320	LF	$ 80	$ 105,600
Storm Drainage - Containment	1320	LF	$ 80	$ 105,600
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	1320	LF	$ 15	$ 19,800
Sidewalk	1170	SY	$ 55	$ 64,350
Curb Ramps	3	EA	$ 1,500	$ 4,500
Lighting (cobra head)	1320	LF	$ 65	$ 85,800
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	1320	LF	$ 125	$ 165,000
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 616,650
SUBTOTAL				$ 752,313
CONTINGENCY			30%	$ 225,694
TOTAL CONSTRUCTION COST				**$ 978,007**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	1320	SF	$ 50	$ 66,000
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	1	EA	$ 2,000	$ 2,000
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	1	LS	$ 2,000	$ 2,000
ROW Administration	1	LS	$ 10,500	$ 10,500
TOTAL RIGHT OF WAY COST				**$ 80,500**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 195,601
Construction, Inspection (15%)	$ 146,701
TOTAL ENGINEERING / MANAGEMENT COST	**$ 342,302**

TOTAL CONSTRUCTION COST	$ 978,007
TOTAL RIGHT OF WAY COST	$ 80,500
TOTAL ENGINEERING / MANAGEMENT COST	$ 342,302
TOTAL PROJECT COSTS	**$ 1,400,809**

Notes: 12 foot sidewalk with landscaping

Project Estimate
Name: Project 29 - Northlake Way reconstruction

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 56,598	$ 56,598
Traffic Control (10% of Const. Subtotal)	1	LS	$ 47,165	$ 47,165
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	1020	LF	$ 50	$ 51,000
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	1020	LF	$ 80	$ 81,600
Asphalt Concrete Pavement	350	TON	$ 65	$ 22,750
Curb and Gutter	1820	LF	$ 15	$ 27,300
Sidewalk	1300	SY	$ 55	$ 71,500
Curb Ramps	8	EA	$ 1,500	$ 12,000
Lighting (cobra head)	1020	LF	$ 65	$ 66,300
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	780	LF	$ 15	$ 11,700
Landscaping / Irrigation - Planters & Restoration	1020	LF	$ 125	$ 127,500
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Retailing Walls	0	SF	$ 120	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features	0	LS	$ 50,000	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 471,650
SUBTOTAL				$ 575,413
CONTINGENCY			30%	$ 172,624
TOTAL CONSTRUCTION COST				**$ 748,037**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 149,607
Construction, Inspection (15%)	$ 112,206
TOTAL ENGINEERING / MANAGEMENT COST	**$ 261,813**

TOTAL CONSTRUCTION COST	$ 748,037
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 261,813
TOTAL PROJECT COSTS	**$ 1,009,850**

Notes:

Project Estimate
Name: Project 30 - Montlake Bouelvard NE and NE Shelby Street

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 44,007	$ 44,007
Traffic Control (10% of Const. Subtotal)	1	LS	$ 36,673	$ 36,673
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	705	LF	$ 80	$ 56,400
Storm Drainage - Containment	705	LF	$ 80	$ 56,400
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	705	LF	$ 15	$ 10,575
Sidewalk	630	SY	$ 55	$ 34,650
Curb Ramps	6	EA	$ 1,500	$ 9,000
Lighting (cobra head)	400	LF	$ 65	$ 26,000
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	1	EA	$ 75,000	$ 75,000
Signing and Striping	705	LF	$ 15	$ 10,575
Landscaping / Irrigation - Planters & Restoration	705	LF	$ 125	$ 88,125
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Urban Design Features		LS	$ -	$ -
SUBTOTAL (w/o mobilization and traffic control)				$ 366,725
SUBTOTAL				$ 447,405
CONTINGENCY			30%	$ 134,221
TOTAL CONSTRUCTION COST				**$ 581,626**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 116,325
Construction, Inspection (15%)	$ 87,244
TOTAL ENGINEERING / MANAGEMENT COST	**$ 203,569**

TOTAL CONSTRUCTION COST	$ 581,626
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 203,569
TOTAL PROJECT COSTS	**$ 785,195**

Notes: EB/WB working within existing ROW no widening

Project Estimate
Name: Project 31 - NE 50th Street traffic calming from 30th Ave NE to 35th Ave NE

CONSTRUCTION COST ESTIMATE						
Description	Quantity	Unit	Unit Cost		Total	
Mobilization (12% of Const. Subtotal)	1	LS	$	21,858	$	21,858
Traffic Control (10% of Const. Subtotal)	1	LS	$	18,215	$	18,215
Earthwork High	0	LF	$	115	$	-
Earthwork Medium	0	LF	$	90	$	-
Earthwork Low	0	LF	$	65	$	-
Utility Undergrounding	0	LF	$	200	$	-
Removals	0	LF	$	50	$	-
Storm Drainage - New	0	LF	$	130	$	-
Storm Drainage - Modify	1290	LF	$	80	$	103,200
Asphalt Concrete Pavement	150	TON	$	65	$	9,750
Curb and Gutter	1290	LF	$	15	$	19,350
Sidewalk	0	SY	$	55	$	-
Curb Ramps	2	EA	$	1,500	$	3,000
Lighting (cobra head)	0	LF	$	65	$	-
Lighting (decorative)	0	LF	$	115	$	-
Interconnect	0	LF	$	20	$	-
New Signal	0	EA	$	225,000	$	-
Modify Signal	0	EA	$	75,000	$	-
Signing and Striping	1290	LF	$	15	$	19,350
Landscaping / Irrigation - Planters & Restoration	220	LF	$	125	$	27,500
Miscellaneous Utilities	0	LF	$	30	$	-
Temporary Erosion Control	0	LF	$	30	$	-
Retailing Walls	0	SF	$	120	$	-
Railing	0	LF	$	55	$	-
Urban Design Features	0	LS	$	50,000	$	-
SUBTOTAL (w/o mobilization and traffic control)					$	182,150
SUBTOTAL					$	222,223
CONTINGENCY				30%	$	66,667
TOTAL CONSTRUCTION COST					**$**	**288,890**

RIGHT OF WAY COST ESTIMATE						
Land - Commercial	0	SF	$	50	$	-
Land - Residential	0	SF	$	35	$	-
Temporary Easement	0	EA	$	2,000	$	-
Building(s)	0	LS	$	-	$	-
Parking / Damages	0	EA	$	-	$	-
Settlement Costs	0	LS	$	2,000	$	-
ROW Administration	0	LS	$	10,500	$	-
TOTAL RIGHT OF WAY COST					**$**	**-**

ENGINEERING / MANAGEMENT COST ESTIMATE		
Preliminary, Design, Survey (20%)	$	57,778
Construction, Inspection (15%)	$	43,333
TOTAL ENGINEERING / MANAGEMENT COST	**$**	**101,111**

TOTAL CONSTRUCTION COST	$	288,890
TOTAL RIGHT OF WAY COST	$	-
TOTAL ENGINEERING / MANAGEMENT COST	$	101,111
TOTAL PROJECT COSTS	**$**	**390,001**

Notes: Assumes repaving of existing trail or creation of new trail for ~600 lf

Project Estimate
Name: Project 32 - Montlake Blvd/NE 45th corridor variable sign

See next page for updated cost estimate

CONSTRUCTION COST ESTIMATE				
Description	Quantity	Unit	Unit Cost	Total
Mobilization (12% of Const. Subtotal)	1	LS	$ 40,800	$ 40,800
Traffic Control (10% of Const. Subtotal)	1	LS	$ 34,000	$ 34,000
Earthwork High	0	LF	$ 115	$ -
Earthwork Medium	0	LF	$ 90	$ -
Earthwork Low	0	LF	$ 65	$ -
Utility Undergrounding	0	LF	$ 200	$ -
Removals	0	LF	$ 50	$ -
Storm Drainage - New	0	LF	$ 130	$ -
Storm Drainage - Modify	0	LF	$ 80	$ -
Asphalt Concrete Pavement	0	TON	$ 65	$ -
Curb and Gutter	0	LF	$ 15	$ -
Sidewalk	0	SY	$ 55	$ -
Curb Ramps	0	EA	$ 1,500	$ -
Lighting (cobra head)	0	LF	$ 65	$ -
Lighting (decorative)	0	LF	$ 115	$ -
Interconnect	0	LF	$ 20	$ -
New Signal	0	EA	$ 225,000	$ -
Modify Signal	0	EA	$ 75,000	$ -
Signing and Striping	0	LF	$ 15	$ -
Landscaping / Irrigation - Planters & Restoration	0	LF	$ 125	$ -
Miscellaneous Utilities	0	LF	$ 30	$ -
Temporary Erosion Control	0	LF	$ 30	$ -
Fence	0	LF	$ 35	$ -
Railing	0	LF	$ 55	$ -
Variable Sign	2	LS	$ 170,000	$ 340,000
SUBTOTAL (w/o mobilization and traffic control)				$ 340,000
SUBTOTAL				$ 414,800
CONTINGENCY			30%	$ 124,440
TOTAL CONSTRUCTION COST				**$ 539,240**

RIGHT OF WAY COST ESTIMATE				
Land - Commercial	0	SF	$ 50	$ -
Land - Residential	0	SF	$ 35	$ -
Temporary Easement	0	EA	$ 2,000	$ -
Building(s)	0	LS	$ -	$ -
Parking / Damages	0	EA	$ -	$ -
Settlement Costs	0	LS	$ 2,000	$ -
ROW Administration	0	LS	$ 10,500	$ -
TOTAL RIGHT OF WAY COST				**$ -**

ENGINEERING / MANAGEMENT COST ESTIMATE	
Preliminary, Design, Survey (20%)	$ 107,848
Construction, Inspection (15%)	$ 80,886
TOTAL ENGINEERING / MANAGEMENT COST	**$ 188,734**

TOTAL CONSTRUCTION COST	$ 539,240
TOTAL RIGHT OF WAY COST	$ -
TOTAL ENGINEERING / MANAGEMENT COST	$ 188,734
TOTAL PROJECT COSTS	**$ 727,974**

Notes: WSDOT had a bid for $120K for Kennewick + bracket + pole

Option 1:A) Two VMS signs linked to a detection system to measure congestion along SB Montlake Blvd. 4 CCTV cameras installed, two as surveillance only, and two as surveillance/ CCTV sign verificaton. (B) same as (A) except using wireless communication.

A

Description	**Quantity**	**Cost (ea.)**	**Total**
VMS sign, cabinet, software	2	$ 98,000.00	$ 196,000.00
CCTV cameras, cabinets, poles	4	$ 35,000.00	$ 140,000.00
Detection zones using loops	5	$ 2,200.00	$ 11,000.00
Detection zone cabinets	2	$ 5,000.00	$ 10,000.00
System Communication			
fiber: on 25th Ave. N.E.	1	$ 32,000.00	$ 32,000.00
on Montlake Blvd. N.E.	1	$ 74,000.00	$ 74,000.00
on N.E. 45th St.	1	$ 14,000.00	$ 14,000.00
wireless from viaduct	1	$ 8,000.00	$ 8,000.00
Electronics	1	$ 15,000.00	$ 15,000.00
Power	1	$ 10,000.00	$ 10,000.00
Integration Software	1	$ 50,000.00	$ 50,000.00
		subtotal:	$ 560,000.00
PS&E	1	1.34X	$ 750,400.00
		Total:	**$ 1,310,400.00**

B

Description	**Quantity**	**Cost (ea.)**	**Total**
VMS sign, cabinet, software	2	$98,000.00	$ 196,000.00
CCTV cameras, cabinets, poles	4	$35,000.00	$ 140,000.00
Detection zones using loops	5	$ 2,200.00	$ 11,000.00
Detection zone cabinets	2	$ 5,000.00	$ 10,000.00
System Commumication			
Wireless Detector system	1	$25,000.00	$ 25,000.00
Wireless Video System	1	$30,000.00	$ 30,000.00
wireless from viaduct	1	$ 8,000.00	$ 8,000.00
Electronics	1	$15,000.00	$ 15,000.00
Power	1	$10,000.00	$ 10,000.00
Integration Software	1	$50,000.00	$ 50,000.00
			$ 495,000.00
PS&E	1	1.34X	$ 663,300.00
		Total:	**$1,158,300.00**

Option #2: Two VMS signs only, with fiber connection to UW backbone.

Description	**Quantity**	**Cost (ea.)**	**Total**
VMS sign, cabinet, software	2	$ 98,000.00	$ 196,000.00
CCTV cameras, cabinets, poles	4	$ 35,000.00	$ 140,000.00
System Communication			
on Montlake Blvd. N.E.	1	$ 74,000.00	$ 74,000.00
Power	1	$ 10,000.00	$ 10,000.00
Integration Software	1	$ 50,000.00	$ 50,000.00
		subtotal	$ 470,000.00
PS&E	1	1.34X	$ 629,800.00
		Total:	**$ 1,099,800.00**

Option #3: Two Fixed Signs with Flashers, activated by bridge operator.

Description	**Quantity**	**Cost (ea.)**	**Total**
Fixed message sign w/ flashers	2	$10,000.00	$ 20,000.00
Communication system	1	$10,000.00	$ 10,000.00
		subtotal	$ 30,000.00
PS&E	1	1.34X	$ 40,200.00
		Total:	**$ 70,200.00**

F. Project list UATS/UATAS comparison

The projects recommended in the University Area Action Strategies that came from the 2002 UATS recommendations

2002 UATS Recommended Projects		Is the UATS recommended project included in the 2007 Action Strategy?
Group 1. Early Action		
Eastlake Avenue E/Campus Parkway/NE 40th Street Corridors		
1-c	Install bike lanes on north and south-bound travel lanes on the north end of the University Bridge.	Yes
1-e	Install ramp for bicyclists to access push button at Eastlake Avenue E/Harvard Avenue E crosswalk.	Yes. This project is slightly modified to include other elements
1-h	Restrict unregulated parking in the areas around Northlake Way and southwest of UW campus.	Yes. This will be a part of the Northlake study.
Montlake Boulevard NE/NE Pacific Street Corridors		
2-c	Modify traffic island at Montlake Boulevard/NE Shelby Street for on-street bike traffic.	Yes
2-d	Trim landscaping along Montlake Boulevard from SR 520 to Pacific Place NE.	This is completed.
2-l	Reduce width of driveway entrance at Husky Stadium south lot entrance on Montlake Boulevard.	No. The ST station project will affect this area.
Major East-West Access Corridors		
3-a	Stripe left turn lane at major arterial intersections on NE 65th Street and on 25th Avenue NE at NE 65th Street.	No
3-b	Shorten signal cycles at the NE 45th Street/I-5 ramp intersections.	This is completed.
Major North-South Access Corridors		
4-a	Create bike way on 20th Avenue NE from NE 65th Street to NE 45th Street.	This is included in Seattle Bike Master Plan.
4-b	Create bike way on Brooklyn Avenue NE from NE 65th Street to Pacific Street.	Yes. The project description is modified.
University Village Area Access		
6-b	Improve Burke-Gilman Trail crossing safety at 25th Avenue NE.	Yes

6-f	Consider pedestrian crossing improvements and protected vehicle left turns at Pend Oreille Road/25th Avenue NE.	No
6-j	Restrict unregulated parking in City's right-of-way in the areas surrounding University Village.	The City RPZ program is in place.
Small Scale Improvements		
7-e	Remove parking to provide two southbound through lanes and adequate northbound left vehicle storage and add green signal time on 15th Avenue NE south of NE 45th Street.	Yes
7-h	Install bicycle parking facilities.	Bike lockers have been provided at SR 520 and Montlake Blvd.
7-j	Add left turn pockets at 25th Avenue NE and NE 55th Street and modify signal for left turns.	Yes
7-l	Add curb extensions on NE 43rd Street at 11th Avenue NE.	No
7-m	Install traffic circles at selected locations.	No
Traffic Signal Modification		
9-a	Consider removing pedestrian push buttons at selected locations, especially along north-south corridors.	Yes
9-c	Evaluate east-west signal operation on University Way at NE 42nd Street and NE 43rd Street.	No
Areawide Strategies		
10-a	Develop Transportation Management Plan Guidebook for new development in the University Area.	No
10-g	Evaluate adjustments to Residential Parking Zone (RPZ) permit programs.	No
Group 2. High Priority		
Montlake Boulevard NE/NE Pacific Street Corridors		
2-e	Improve Pacific Place crosswalk visibility at Rainier Vista.	This project has been discussed as a part of the pedestrian access from the UW campus to the ST station at the Stadium.
2-g	Extend HOV lane on eastbound Pacific Street.	Yes
2-h	Construct bicycle/pedestrian underpass under Montlake Boulevard at NE Pacific Place.	No

2-i	Provide navigation strategies for bicyclists between the University-District, the Burke-Gilman Trail, and the area south of SR 520.	No
2-k	Installation of a variable message sign on Montlake Boulevard near NE 45th Street for southbound traffic to indicate traffic back-up locations.	Yes
2-m	Improve the bicycle/pedestrian underpass at the SR 520 freeway station.	No. It will not be feasible to do this because SR 520 will be widened to included HOV lanes.
Major East-West Access Corridors		
3-c	Implementation study of east-west transit improvement project to better connect Ballard to the University District.	Yes
University Village Area Access		
6-a	Create new pedestrian/bike trail connecting Burke-Gilman trail with U-Village at NE 47th Street.	Yes
6-c	Construct curb bulbs and other small area improvements at Ravenna Boulevard NE/ NE 55th Street.	Yes
6-e	Install signal and safety improvements at Burke-Gilman trail crossing with 30th Avenue NE/ NE Blakely Street.	The issue to address this problem is addressed.
6-g	Build sidewalks on the west side of 30th Avenue NE from Union Bay Place NE to NE 55th Street.	This project has been programmed by the City.
6-i	Create bicycle trail along the southern edge of Ravenna Park from the end of Ravenna bicycle lanes to NE 55th Street and connecting to the Burke-Gilman Trail.	No
Small Scale Improvements		
7-g	Install traffic signal at the 15th Avenue NE and Ravenna Boulevard intersection.	Yes. Four-way stops have been installed.
Transit HOV Access		
7-k	Construct HOV queue bypass lane on SR 520 WB off-ramp at Montlake Boulevard.	No
Areawide Strategies		
10-b	Add "Area FlexPass" bus pass to Access Package.	No
10-c	Pursue parking cash-out for buildings in the University Area.	No
10-d	Create a Transportation Management Association (TMA) in the University Area.	No
10-e	Expand U-District Access Package to include carpool and vanpool programs.	No

10-f	Promote shared use parking with garages and lots on nights and weekends.	No
10-i	Create pedestrian and bicycle safety education, training, and awareness programs.	No
10-j	Conduct wayfinding study for pedestrians, bicyclists and transit riders.	No
10-k	Consider requiring the posting of Transportation Management Program requirements in the buildings conditioned by the City of Seattle.	No
Freeway Ramp Storage Expansion (SR 520, I-5)		
11-b	Construct additional queue lane on I-5 northbound on-ramp at NE 45th Street.	Yes
11-c	Construct additional queue lane on I-5 southbound on-ramp at NE 45th Street.	Yes
11-d	Extend northbound U-turn lane at Hamlin Street on Montlake Boulevard.	Yes
Group 3. Medium priority		
Eastlake Avenue/Campus Parkway/NE 40th Street Corridors		
1-a	Create new Transit Hub/Center on Campus Parkway.	No
1-b	Reconfigure loop ramps at Eastlake Ave/Campus Parkway/NE 40th Street.	Yes
1-d	Pursue area-wide transportation facility improvements in the area bounded by Northlake Way area, Lower 40th St, I-5, and the University Bridge.	Yes
1-f	Install pedestrian actuated signal on 11th Avenue NE at NE 41st Street.	Yes
1-g	Make new bicycle connection from Lower 40th Street to Eastlake Avenue E.	No
Montlake Boulevard NE/NE Pacific Street Corridors		
2-a	Redirect HOV, UW hospital traffic and make through traffic improvements in the area of Montlake Boulevard NE/Pacific Street NE/Pacific Place NE.	No
2-b	Build pedestrian overpass/underpass at Montlake Boulevard NE/NE Pacific Street.	This issue has been discussed between Sound Transit and UW.
2-f	Extend HOV lane on southbound Montlake Boulevard.	Yes
I-5 Crossing Improvements		
5-a	Add "do not block" striping to area. Construct queue bypass lane on northbound 7th Avenue NE south of NE 45th Street.	Yes

5-b	Create new pedestrian/bike-only overpass at NE 47th Street over I-5.	This project is a part of the Bike Master Plan
University Village Area Access		
6-d	Build curbs, gutters, and sidewalks on NE Blakely Street/30th Avenue NE/Union Bay Place from 25th Avenue NE to NE 45th Street.	Most of the section has been improved as developments occurred.
6-h	Build sidewalks on the south side of NE 50th Street from 30th Avenue NE to 35th Avenue NE.	Yes
6-k	Consolidate access at the Office Depot and University Village driveways.	No
Transit HOV Access		
7-a	Install HOV ramp (bus-only) connecting NE 40th Street with the I-5 express lanes.	No
7-c	Make improvements for bus priority streets on Upper NE 40th Street and Lower NE 40th Street from I-5 to Eastlake Avenue NE (Campus Parkway).	No
Small Scale Improvements		
7-f	Upgrade unused ramp over SR-520 for pedestrian and bicycle use.	No. This ramp will be removed as SR 520 is improved.
Light Rail Station Area Improvements		
8-a	Install wider sidewalks on 15th Avenue NE between NE 50th street and NE Pacific Street.	Urban design study is recommended.
8-b	Install specialized at-grade crossing at the intersection of 15th Avenue NE and NE 43rd Street.	Urban design study is recommended.
8-c	Install specialized at-grade crossing of 15th Avenue NE near north entrance of Pacific Street Station.	Urban design study is recommended.
8-d	Install street and sidewalk improvements between Roosevelt Way NE and light rail station on NE 43rd Street.	Yes
8-e	Install street and sidewalk improvements between Roosevelt Ave NE and 20th Avenue NE on NE 45th Street.	NE 45th St between 15th Ave NE and 17th Ave included.
8-f	Improve pedestrian access from transit stops to stations on University Way N.E.	This station location is moved.
8-g	Create walkway through parking lot from University Way NE to north Pacific Station entrance.	This station location is moved.
8-h	Construct sidewalks along south side of NE Pacific Street and east side of University Way.	This station location is moved.
8-i	Add bicycle parking spaces/facilities at light rail stations.	No

Traffic Signal Modification		
9-b	Consider a "scramble signal" (4-way pedestrian crossing at same time) at NE 43rd street and University Way.	No
Freeway Ramp Storage Expansion (SR 520, I-5)		
11-a	Extend SR 520 eastbound on-ramp.	No. The SR 520 improvement project will address this issue.
11-e	Install I-5 southbound off-ramp on the right side to enter eastbound SR 520.	No

F. Project list UATS/UATAS comparison

The projects recommended in the University Area Action Strategies that came from the 2002 UATS recommendations

2002 UATS Recommended Projects		Is the UATS recommended project included in the 2007 Action Strategy?
Group 1. Early Action		
Eastlake Avenue E/Campus Parkway/NE 40th Street Corridors		
1-c	Install bike lanes on north and south-bound travel lanes on the north end of the University Bridge.	Yes
1-e	Install ramp for bicyclists to access push button at Eastlake Avenue E/Harvard Avenue E crosswalk.	Yes. This project is slightly modified to include other elements
1-h	Restrict unregulated parking in the areas around Northlake Way and southwest of UW campus.	Yes. This will be a part of the Northlake study.
Montlake Boulevard NE/NE Pacific Street Corridors		
2-c	Modify traffic island at Montlake Boulevard/NE Shelby Street for on-street bike traffic.	Yes
2-d	Trim landscaping along Montlake Boulevard from SR 520 to Pacific Place NE.	This is completed.
2-l	Reduce width of driveway entrance at Husky Stadium south lot entrance on Montlake Boulevard.	No. The ST station project will affect this area.
Major East-West Access Corridors		
3-a	Stripe left turn lane at major arterial intersections on NE 65th Street and on 25th Avenue NE at NE 65th Street.	No
3-b	Shorten signal cycles at the NE 45th Street/I-5 ramp intersections.	This is completed.
Major North-South Access Corridors		
4-a	Create bike way on 20th Avenue NE from NE 65th Street to NE 45th Street.	This is included in Seattle Bike Master Plan.
4-b	Create bike way on Brooklyn Avenue NE from NE 65th Street to Pacific Street.	Yes. The project description is modified.
University Village Area Access		
6-b	Improve Burke-Gilman Trail crossing safety at 25th Avenue NE.	Yes

6-f	Consider pedestrian crossing improvements and protected vehicle left turns at Pend Oreille Road/25th Avenue NE.	No
6-j	Restrict unregulated parking in City's right-of-way in the areas surrounding University Village.	The City RPZ program is in place.
Small Scale Improvements		
7-e	Remove parking to provide two southbound through lanes and adequate northbound left vehicle storage and add green signal time on 15th Avenue NE south of NE 45th Street.	Yes
7-h	Install bicycle parking facilities.	Bike lockers have been provided at SR 520 and Montlake Blvd.
7-j	Add left turn pockets at 25th Avenue NE and NE 55th Street and modify signal for left turns.	Yes
7-l	Add curb extensions on NE 43rd Street at 11th Avenue NE.	No
7-m	Install traffic circles at selected locations.	No
Traffic Signal Modification		
9-a	Consider removing pedestrian push buttons at selected locations, especially along north-south corridors.	Yes
9-c	Evaluate east-west signal operation on University Way at NE 42nd Street and NE 43rd Street.	No
Areawide Strategies		
10-a	Develop Transportation Management Plan Guidebook for new development in the University Area.	No
10-g	Evaluate adjustments to Residential Parking Zone (RPZ) permit programs.	No
Group 2. High Priority		
Montlake Boulevard NE/NE Pacific Street Corridors		
2-e	Improve Pacific Place crosswalk visibility at Rainier Vista.	This project has been discussed as a part of the pedestrian access from the UW campus to the ST station at the Stadium.
2-g	Extend HOV lane on eastbound Pacific Street.	Yes
2-h	Construct bicycle/pedestrian underpass under Montlake Boulevard at NE Pacific Place.	No

2-i	Provide navigation strategies for bicyclists between the University-District, the Burke-Gilman Trail, and the area south of SR 520.	No
2-k	Installation of a variable message sign on Montlake Boulevard near NE 45th Street for southbound traffic to indicate traffic back-up locations.	Yes
2-m	Improve the bicycle/pedestrian underpass at the SR 520 freeway station.	No. It will not be feasible to do this because SR 520 will be widened to included HOV lanes.
Major East-West Access Corridors		
3-c	Implementation study of east-west transit improvement project to better connect Ballard to the University District.	Yes
University Village Area Access		
6-a	Create new pedestrian/bike trail connecting Burke-Gilman trail with U-Village at NE 47th Street.	Yes
6-c	Construct curb bulbs and other small area improvements at Ravenna Boulevard NE/ NE 55th Street.	Yes
6-e	Install signal and safety improvements at Burke-Gilman trail crossing with 30th Avenue NE/ NE Blakely Street.	The issue to address this problem is addressed.
6-g	Build sidewalks on the west side of 30th Avenue NE from Union Bay Place NE to NE 55th Street.	This project has been programmed by the City.
6-i	Create bicycle trail along the southern edge of Ravenna Park from the end of Ravenna bicycle lanes to NE 55th Street and connecting to the Burke-Gilman Trail.	No
Small Scale Improvements		
7-g	Install traffic signal at the 15th Avenue NE and Ravenna Boulevard intersection.	Yes. Four-way stops have been installed.
Transit HOV Access		
7-k	Construct HOV queue bypass lane on SR 520 WB off-ramp at Montlake Boulevard.	No
Areawide Strategies		
10-b	Add "Area FlexPass" bus pass to Access Package.	No
10-c	Pursue parking cash-out for buildings in the University Area.	No
10-d	Create a Transportation Management Association (TMA) in the University Area.	No
10-e	Expand U-District Access Package to include carpool and vanpool programs.	No

10-f	Promote shared use parking with garages and lots on nights and weekends.	No
10-i	Create pedestrian and bicycle safety education, training, and awareness programs.	No
10-j	Conduct wayfinding study for pedestrians, bicyclists and transit riders.	No
10-k	Consider requiring the posting of Transportation Management Program requirements in the buildings conditioned by the City of Seattle.	No
Freeway Ramp Storage Expansion (SR 520, I-5)		
11-b	Construct additional queue lane on I-5 northbound on-ramp at NE 45th Street.	Yes
11-c	Construct additional queue lane on I-5 southbound on-ramp at NE 45th Street.	Yes
11-d	Extend northbound U-turn lane at Hamlin Street on Montlake Boulevard.	Yes
Group 3. Medium priority		
Eastlake Avenue/Campus Parkway/NE 40th Street Corridors		
1-a	Create new Transit Hub/Center on Campus Parkway.	No
1-b	Reconfigure loop ramps at Eastlake Ave/Campus Parkway/NE 40th Street.	Yes
1-d	Pursue area-wide transportation facility improvements in the area bounded by Northlake Way area, Lower 40th St, I-5, and the University Bridge.	Yes
1-f	Install pedestrian actuated signal on 11th Avenue NE at NE 41st Street.	Yes
1-g	Make new bicycle connection from Lower 40th Street to Eastlake Avenue E.	No
Montlake Boulevard NE/NE Pacific Street Corridors		
2-a	Redirect HOV, UW hospital traffic and make through traffic improvements in the area of Montlake Boulevard NE/Pacific Street NE/Pacific Place NE.	No
2-b	Build pedestrian overpass/underpass at Montlake Boulevard NE/NE Pacific Street.	This issue has been discussed between Sound Transit and UW.
2-f	Extend HOV lane on southbound Montlake Boulevard.	Yes
I-5 Crossing Improvements		
5-a	Add "do not block" striping to area. Construct queue bypass lane on northbound 7th Avenue NE south of NE 45th Street.	Yes

5-b	Create new pedestrian/bike-only overpass at NE 47th Street over I-5.	This project is a part of the Bike Master Plan
University Village Area Access		
6-d	Build curbs, gutters, and sidewalks on NE Blakely Street/30th Avenue NE/Union Bay Place from 25th Avenue NE to NE 45th Street.	Most of the section has been improved as developments occurred.
6-h	Build sidewalks on the south side of NE 50th Street from 30th Avenue NE to 35th Avenue NE.	Yes
6-k	Consolidate access at the Office Depot and University Village driveways.	No
Transit HOV Access		
7-a	Install HOV ramp (bus-only) connecting NE 40th Street with the I-5 express lanes.	No
7-c	Make improvements for bus priority streets on Upper NE 40th Street and Lower NE 40th Street from I-5 to Eastlake Avenue NE (Campus Parkway).	No
Small Scale Improvements		
7-f	Upgrade unused ramp over SR-520 for pedestrian and bicycle use.	No. This ramp will be removed as SR 520 is improved.
Light Rail Station Area Improvements		
8-a	Install wider sidewalks on 15th Avenue NE between NE 50th street and NE Pacific Street.	Urban design study is recommended.
8-b	Install specialized at-grade crossing at the intersection of 15th Avenue NE and NE 43rd Street.	Urban design study is recommended.
8-c	Install specialized at-grade crossing of 15th Avenue NE near north entrance of Pacific Street Station.	Urban design study is recommended.
8-d	Install street and sidewalk improvements between Roosevelt Way NE and light rail station on NE 43rd Street.	Yes
8-e	Install street and sidewalk improvements between Roosevelt Ave NE and 20th Avenue NE on NE 45th Street.	NE 45th St between 15th Ave NE and 17th Ave included.
8-f	Improve pedestrian access from transit stops to stations on University Way N.E.	This station location is moved.
8-g	Create walkway through parking lot from University Way NE to north Pacific Station entrance.	This station location is moved.
8-h	Construct sidewalks along south side of NE Pacific Street and east side of University Way.	This station location is moved.
8-i	Add bicycle parking spaces/facilities at light rail stations.	No

Traffic Signal Modification		
9-b	Consider a "scramble signal" (4-way pedestrian crossing at same time) at NE 43rd street and University Way.	No
Freeway Ramp Storage Expansion (SR 520, I-5)		
11-a	Extend SR 520 eastbound on-ramp.	No. The SR 520 improvement project will address this issue.
11-e	Install I-5 southbound off-ramp on the right side to enter eastbound SR 520.	No

G. Land Use Assumption Table

University Area Transportation Action Strategy

Land Use Assumption Memorandum

Prepared for:

Seattle Department of Transportation

700 Fifth Avenue, Suite 3900
Seattle, Washington

Prepared by:

Mirai Transportation Planning and Engineering

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January 2008

SUMMARY

This memorandum documents the land use assumptions for the 2005 and 2030 traffic modeling forecast. The land use data was provided by the City of Seattle and adjusted to reflect existing and expected growth within the University Area.

LAND USE DATA

The UATAS model used data from 37 traffic analysis zones (TAZ) that define the University Area. **Figure 1** shows the TAZ structure. For 2005 and 2025, the following categories are inputs into the traffic inputs:

- HHLD – Number of households
- RETAIL – Retail jobs
- FIRES -- Finance, Insurance, Real Estate jobs
- GOV – Government jobs
- EDUC – Education jobs
- WTCU – Warehouse, Transportation, Communications and Utilities jobs
- MANU – Manufacturing jobs
- FTE UNIV – Full time equivalent students

For the Action Strategy, each of the land use categories were carefully considered and adjusted to reflect existing or expected conditions.

USE OF DATA

The land use data is used to estimate the number of trips generated from or attracted to a particular zone. The forecasting model uses these data to estimate future travel within the University Area.

2005 Data

There are approximately 16,000 households and 44,000 jobs within the University Area. There are more than 35,000 university students within the land use data set. Table 1 shows the 2005 land use assumptions by category.

2030 Data

The forecasts for 2030 is based on the citywide transportation model. The model assumes a growth in households to more than 20,000 households and nearly 59,000 jobs by 2030. The university student population is expected to increase to more than 47,000 students. Table 2 shows the 2030 land use assumptions by category.

Figure 1. Transportation Analysis Zone Map

Mirai Transportation Planning & Engineering

Table 1. 2005 Land Use

2005

STAZ	HHLD	RETAIL	FIRES	GOV	EDUC	WTCU	MANU	FTE UNIV
131	213	147	378	0	0	1	2	0
136	699	22	155	0	1	33	0	0
137	506	0	40	0	107	11	0	0
138	373	90	122	0	0	2	21	0
139	155	0	4272	0	0	0	0	0
140	254	0	76	0	39	0	0	0
141	204	74	193	0	0	10	2	0
142	621	2	82	5	0	10	4	0
143	719	2	80	31	0	0	0	0
144	585	120	107	0	0	17	0	0
145	648	12	52	0	0	41	0	0
146	149	29	264	0	0	0	67	0
147	434	52	55	0	0	15	2	0
148	549	52	105	17	45	88	0	0
149	416	87	20	0	0	1	0	0
150	523	89	95	0	0	34	1	0
151	796	0	110	0	0	0	0	0
152	509	94	164	0	0	4	0	0
153	518	1949	379	8	0	161	4	0
154	386	25	24	23	0	0	1	0
155	581	787	135	0	9	83	0	0
156	987	338	297	21	8	25	4	0
157	498	0	63	0	0	2	0	0
158	218	43	49	0	0	0	0	0
161	137	30	41	14	91	1	0	0
187	319	181	210	0	0	2	16	0
189	951	158	125	0	0	13	0	0
190	326	53	85	0	0	22	18	0
191	601	780	714	*168*	0	32	36	*0*
192	1314	914	2214	*73*	0	45	5	*0*
193	438	6	265	*0*	44	0	0	*0*
194	196	59	14	*820*	0	0	0	*1286*
195	17	0	5	*820*	0	0	0	*1286*
196	0	69	124	*3983*	0	8	6	*6246*
197	0	14	97	*8777*	29	0	3	*13764*
198	0	0	0	*10728*	0	0	0	*16823*
199	1	25	2	*76*	0	1	0	*119*
Total	15840	6302	11211	25565	372	663	192	39524

Table 2. 2030 Land Use Data

2030

STAZ	HHLD	RETAIL	FIRES	GOV	EDUC	WTCU	MANU	FTE UNIV
131	379	216	435	105		1	2	0
136	723	22	112	1		23	0	0
137	529	0	29	85		8	0	0
138	442	236	138	21		2	15	0
139	159	0	4571	0		0	0	0
140	250	0	55	31		0	0	0
141	282	133	159	9		7	2	0
142	619	2	59	4		7	3	0
143	941	2	58	25		0	0	0
144	953	311	142	28		12	0	0
145	805	74	59	9		29	0	0
146	173	109	218	12		0	48	0
147	439	73	47	3		11	1	0
148	575	107	94	57		63	0	0
149	482	87	35	2		2	0	0
150	583	87	105	1		46	1	0
151	914	0	110	0		0	0	0
152	609	100	236	10		6	0	0
153	761	1786	1875	227		179	3	0
154	532	24	25	24		0	1	0
155	889	777	244	24		111	0	0
156	1294	351	476	54		33	3	0
157	654	0	63	0		3	0	0
158	315	45	72	3		0	0	0
161	165	32	60	108		1	0	0
187	462	173	342	23		2	10	0
189	1080	180	337	30		17	0	0
190	462	59	142	8		30	13	0
191	1047	836	1829	171		39	24	0
192	1724	950	2719	145		59	4	0
193	656	7	278	46		0	0	0
194	326	123	58	1112		0	0	1536
195	17	52	43	1112		0	0	1536
196	0	134	126	5400		2	5	7460
197	0	70	103	11901		0	3	16440
198	0	0	0	14546		0	0	20094
199	0	25	1	102		0	0	142
Total	20243	7183	15453	35440	0	694	138	47208

H. 45th BAT Lane Memorandum

Mirai
Transportation Planning & Engineering

MEMORANDUM

To: Tony Mazzella, SDOT

From: John Davies and Howard Wu

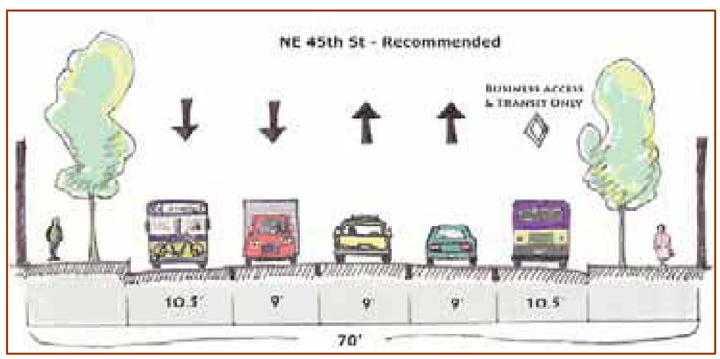
Subject: NE 45th Street BAT Westbound Lanes

Date: January 4, 2008

The City of Seattle is considering creating a westbound business access/transit (BAT) lane on NE 45th Street as part of the University Area Transportation Action Strategy (UATAS). This memo reviews the issues related to the BAT lane configuration and the implications on traffic operation.

Westbound BAT Concept

The proposed BAT lane concept envisioned in the UATAS Action strategy provides a westbound BAT lane starting west of the intersection of University Way/NE 45th Street and ending at the current bus pullout, west of the 7th Avenue NE/NE 45th Street intersection. The purpose of the BAT lane is to improve transit operations along the NE 45th Street corridor by providing for a transit and right turn lane in the westbound direction.



The choice of the westbound direction for the BAT lane reflects the peak direction of bus service during the PM peak hour. King County Metro, Community Transit and Sound Transit all provide peak hour service from the University of Washington during the PM peak hour. The BAT lane would extend along NE 45th Street from University Way NE to 7th Avenue NE (Northbound I-5 Ramps). The concept would provide a westbound BAT lane in addition to two eastbound lanes and two westbound lanes. The BAT lane would be restricted to buses and vehicles turning right at intersections. Left turns would be eliminated along the corridor at all intersections. Special routes and wayfinding signs could be integrated into the concept such as a route to the University Bridge that sends vehicles north on 11th Avenue NE, west on NE 47th Street and south on Roosevelt Way NE.

Some of the benefits of the project include:

- Transit, right-turn and business access lane for westbound travel is consistent with the City's goals to improve travel times and speeds.
- Simpler signal phasing by eliminating left turn phasing would result in better intersection and corridor performance.
- Right turning vehicles would no longer share through lanes increasing corridor capacity for moving through trips.

Existing Conditions

NE 45th Street is the major east-west arterial through the University District connecting Laurelhurst to the east and Wallingford to the west. During an average weekday, the corridor carries between 26,700 (east of 15th Avenue NE) to close to 36,000 (west of Roosevelt Way NE). It also provides a connection to I-5, a regional facility, and runs through the commercial center of the University District. In addition, NE 45th Street is a major transit corridor serving riders to and from the University of Washington and the business district, with stops located every other block along NE 45th Street.

Within the University District, the roadway is striped with two lanes in each direction with a center two-way, left-turn lane or left-turn pockets at most cross streets. The right-of-way is narrow with nine-foot center and travel lanes, ten-foot curb lanes. Signals are provided at all cross streets from I-5 to 15th Avenue NE except at 8th and 9th Avenue NE. There are left-turn restrictions for the eastbound direction at 11th Avenue NE/NE 45th Street and for all directions at the intersection of University Way NE/NE 45th Street.

Existing Traffic Operations

During the peak periods, the traffic along NE 45th Street is highly congested. In the AM period, traffic is heavy on both directions of NE 45th Street with westbound volumes of approximately 900 vehicles per hour and eastbound volumes of approximately 1,000 vehicles per hour. However, the overall congestion is worse in the PM peak period when volumes on NE 45th Street are between 900 and 1,200 vehicles per hour per direction. There is considerable "friction" along the corridor, with buses stopping within the travel lanes, and through traffic sharing the curb lane with right turning vehicles. In addition, congestion on NE 45th Street can be aggravated by congestion on I-5 or events at the University. Historic traffic data collected by SDOT indicates that traffic volumes have remained fairly stable on NE 45th Street since 1991.

A study of the travel times along NE 45th Street between 7th and 15th Avenue NE indicated that the average speed in the eastbound direction during the PM peak hour is less than 10 mph and approximately 11 mph in the westbound direction.

BAT Lane Analysis

Using the existing volumes for the NE 45th Street corridor, the analysis estimated the impact of the BAT lane for autos and transit. Using the intersection delays as calculated by the Synchro traffic analysis program, we estimated the corridor travel times and speeds with and without the BAT lanes. Results were post-processed to field-observed travel time data collected in April 2007.

Traffic Shifts

The completion of the BAT lane would likely cause some shifts in traffic flows due to the left turn restriction. Based on existing counts, the proposed project would impact 242 westbound and 154 eastbound left-turning vehicles during the PM peak hour. To evaluate the shifts, the City of Seattle's Traffic Model was used to evaluate the changes in link volumes caused by the left-turn restrictions on NE 45th Street. Post-processing of model volumes were made to account for travel patterns and model loading points. **Figure 1** shows the redistribution of PM peak hour traffic as a result of the BAT lane.

With the left-turn restrictions along NE 45th Street, some traffic would be diverted off the corridor. Most of the PM peak hour eastbound traffic on NE 45th Street would most likely loop around a block to cross NE 45th Street. For diverted westbound traffic, the most significant movement occurred on 11th Avenue NE and Roosevelt Way NE. Traffic that would normally make westbound left-turns off NE 45th Street on to Roosevelt Way NE would now make a right on to 11th Avenue NE, left on to NE 47th Street and finally a left on to Roosevelt Way NE.

The highest increases in traffic were on 11th Avenue NE, NE 47th Street, Roosevelt Way NE as a result of traffic looping back towards the University Bridge. A signed route would be desirable to encourage this route. During the PM peak hour, less than 100 vehicles per hour shifts occurred on NE 50th Street, NE 43rd Street, Brooklyn Avenue NE and 15th Avenue NE.

Travel Times

With the BAT lane, transit travel times are reduced by more than one minute in the westbound direction during the PM peak hour. There are also benefits for eastbound and westbound auto traffic. **Table 1** compares auto and transit travel times for existing conditions and with the BAT lane.

Table 1. PM Peak Hour Travel Times for Existing Conditions and with BAT Lane

	Travel Time in Seconds		Travel Time Change	
	Existing	With BAT	Seconds	Percent
Auto – Westbound	166	114	-52	-31%
Auto – Eastbound	196	179	-17	-9%
Transit – Westbound	166	98	-67	-41%
Transit – Eastbound	196	179	-17	-9%

Travel Speeds

Average travel speeds along the corridor are also expected to improve for both autos and transit vehicles. The move elimination of left turn signal phases and the separation of right turns and bus traffic from the through lanes will increase the capacity of the road, improving travel speeds for westbound traffic by 5 mph during the PM peak hour. For transit, the BAT lane will increase the average travel speed by nearly 70 percent. Eastbound vehicles will also see improved PM peak hour travel speeds along the corridor by about 8 percent. **Table 3** shows the change in PM peak hour travel speeds between existing and the with BAT lane options.

Table 2. PM Peak Hour Travel Speeds for Existing Conditions and with BAT Lane

	Mile per Hour		Change	
	Existing	With BAT	MPH	Percent
Auto – Westbound	11.1	16.1	5.0	45%
Auto – Eastbound	9.4	10.2	0.8	8%
Transit – Westbound	11.1	18.8	7.7	69%
Transit – Eastbound	9.4	10.2	0.8	8%

Intersections Operation

Using the HCM Level of Service (LOS) methodology for arterial units, the analysis calculated that the corridor intersection operations would improve with the BAT lane concept due to the elimination of left-turns and separation of right turn movements from through movements. With the BAT lane, intersection delay would improve at all intersections except for 15th Avenue NE/NE 45th Street which would experience an increase of delay associated with increased eastbound and westbound left turn movements.

Table 3. Intersection PM Peak Hour Levels of Service and Average Intersection Delay for Existing Conditions and with BAT Lane

	Existing		With BAT	
	LOS	Delay	LOS	Delay
7th Ave NE/NE 45th St	F	92	D	39
Roosevelt Way NE/NE 45th St	D	52	C	24
11th Ave NE/NE 45th St	D	37	C	29
12th Ave NE/NE 45th St	A	8	A	5
Brooklyn Ave NE/NE 45th St	D	49	C	26
University Way NE/NE 45th St	C	17	C	24
15th Ave NE/NE 45th St	E	60	E	71

2030 Traffic Operations

A similar analysis of future travel conditions was completed using the Seattle Model's forecast of 2030 traffic conditions. Results of the analysis found future average speeds between 5 and 7 mph along NE 45th Street without the BAT lane. **Tables 4-6** show the results of the 2030 analysis. The addition of the BAT lane would:

- Improve westbound general purpose traffic operation from 7 mph to 14 mph. Transit travel times would improve to 16 mph.
- Increase eastbound travel speeds from 5 mph to 8 mph during the PM peak hour with the BAT lane.
- Improves the LOS operation at NE 45th Street intersections during the PM peak hour with no intersection operating at worse than LOS E.

Areas for Further Work

This analysis was focused on identifying the likely impact of the NE 45th Street concept promoted by UATAS. SDOT's transit speed and reliability concept applied for under the Bridging the Gap funding promotes a similar corridor except that the BAT lane would start at 15th Avenue NE (rather than University Way NE). Further analysis would need to be conducted to investigate the advantages and disadvantages of extending the BAT lane which would preclude the eastbound left turn lane at 15th Avenue NE/NE 45th Street.

Conclusions

The concept of a westbound BAT lane using existing right-of-way appears to an inexpensive way to benefit transit and overall NE 45th Street corridor traffic operation. The BAT lane would improve the PM peak hour travel times and speeds for both east and westbound traffic by separating out the westbound bus and right turn movements out of the main flow of traffic and by eliminating the delay caused by left turn signal phases. The concept would support the City's goals for improving transit speed and reliability.


NE 53rd St
NE 52th St
NE 50th St
NE 47th St
NE 45th St
NE 43rd St
NE 43rd St
NE 42nd St
NE 42nd St
NE 41st St
NE 40th St
Campus Parkway
7th Ave NE
8th Ave NE
9th Ave NE
Roosevelt Way NE
11th Ave NE
12th Ave NE
Brooklyn Ave NE
University Way NE
15th Ave NE
5
Not To Scale
N
Legend
Negative Change
Positive Change

Table 4. PM Peak Hour Travel Times for 2030 No Action and with BAT Lane

	Travel Time in Seconds		Travel Time Change	
	No Action	With BAT	Seconds	Percent
Auto – Westbound	278	130	-148	-53%
Auto – Eastbound	364	227	-137	-38%
Transit – Westbound	278	115	-163	-59%
Transit – Eastbound	364	227	-137	-38%

Table 5. PM Peak Hour Travel Speeds for 2030 No Action and with BAT Lane

	Mile per Hour		Change	
	No Action	With BAT	MPH	Percent
Auto – Westbound	6.6	14.1	7.5	113%
Auto – Eastbound	5.0	8.1	3.1	62%
Transit – Westbound	6.6	15.9	9.3	141%
Transit – Eastbound	5.0	8.1	3.1	62%

Table 6. Intersection PM Peak Hour Levels of Service and Average Intersection Delay for 2030 No Action and with BAT Lane

	No Action		With BAT	
	LOS	Delay	LOS	Delay
7th Ave NE/NE 45th St	F	106	D	53
Roosevelt Way NE/NE 45th St	F	83	C	22
11th Ave NE/NE 45th St	F	126	E	66
12th Ave NE/NE 45th St	A	0	A	0
Brooklyn Ave NE/NE 45th St	F	108	C	23
University Way NE/NE 45th St	D	39	D	54
15th Ave NE/NE 45th St	F	99	E	73

I. Roosevelt/11th Couplet Memorandum

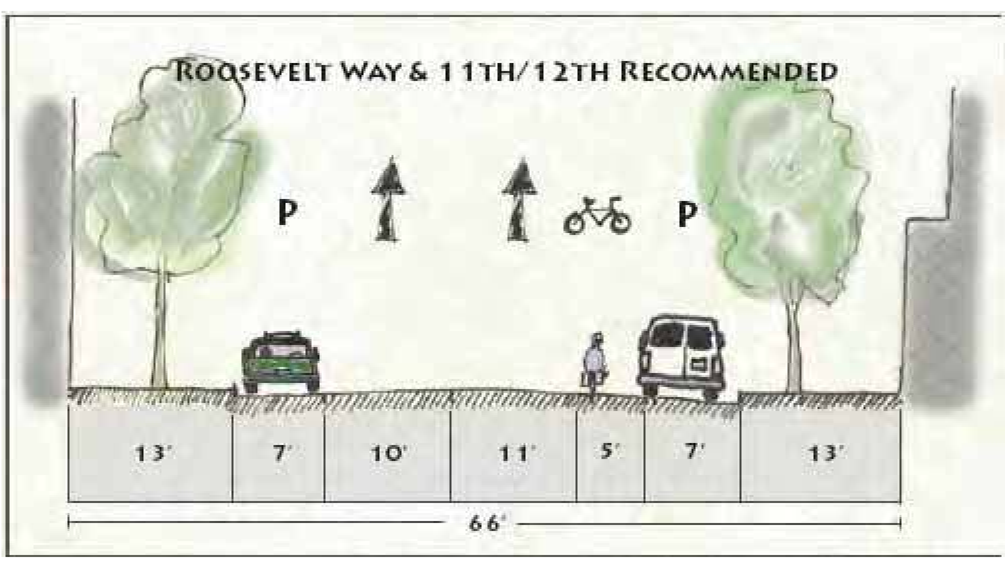
MIRAI
Transportation
Planning &
Engineering

MEMORANDUM

To:	Eric Widstrand, Traffic Operations Manager, SDOT
From:	Tom Noguchi and John Davies
Subject:	UATAS Roosevelt Way/11th Avenue Couplet Recommendation
Date:	December 20, 2007 (Revised January 7, 2008)

This memorandum summarizes the traffic analysis of the University Area Transportation Action Strategy recommendation for the Roosevelt Way/11th Avenue Couplet. The proposed change to the configuration would be to eliminate the peak hour lanes in both directions and to add on-street parking and bicycle lanes. The proposed limits would be from NE 41st Street to NE 65th Street on Roosevelt Way and NE 11th/12th Street. At the major intersections of NE 45th Street and NE 50th Street, instead of the bicycle lane and on-street parking, three through travel lanes would be provided, which would then transition back to two lanes on the far side of the intersection. **Figure 1** shows a typical cross-section.

Figure 1. Proposed 11th Avenue and Roosevelt Way Cross-Section



Existing Conditions Analysis

The 2007 data collected for the UATAS indicate that the proposed configuration would provide adequate capacity for vehicle movements during the PM peak hour. To assess the AM peak hour, older turning count data obtained from SDOT was used to assess the AM peak hour. **Table 1** shows the AM and PM peak hour turning movement volumes used in this analysis.

The bicycle and parking lanes would extend the length of the corridor, except at NE 45th Street and NE 50th Street where up to three through lanes would be available for vehicle movements. While the current peak hour configuration is preferred for the NE 45th Street/Roosevelt Way and NE 45th Street/11th Avenue NE, the following intersection channelization is recommended at NE 50th Street:

- NE 50th Street/Roosevelt Way – Adds a left turn lane by changing the existing configuration (LT|T|TR) to a left turn lane, two through lanes and a right turn lane (L|T|T|R).
- NE 50th Street/11th Avenue NE – Changes the existing configuration (LT|T|TR) by adding a left turn lane (L|T|T|TR).

Table 2 compares the peak hour levels of service with and without the recommended action and describes the assumed channelization changes assumed in the analysis. For northbound traffic, the table describes the PM peak hour and for the southbound traffic the AM peak hour.

Areas for further study

The limited street width (39 to 40 feet) limits the ability to carry the bicycle lane through the major intersection of NE 45th Street and NE 50th Street. A sharrow indication along with special signage or other pavement marking may be required to safely indicate the end of the bicycle lane and the path which bicycles must follow.

Other areas of concern include the removal of curb bulbs on NE 50th Street and the need sizing of the parking lane to avoid door swings issues between parked vehicles and bicycles.

Table 1. AM and PM Peak Hour Volumes

AM PEAK HOUR

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
NE 65nd St & Roosevelt Way NE				106	1298	97		366	54	140	556	
NE Ravenna Blvd WB & Roosevelt Way NE												
NE Ravenna Blvd EB & Roosevelt Way NE												
NE 50th St & Roosevelt Way NE				70	1108	107		649	172	78	349	
NE 47th St & Roosevelt Way NE				75	1204	14		46	53	40	10	
NE 45th St & Roosevelt Way NE				90	1297	76		769	246	258	773	
NE 43rd St & Roosevelt Way NE				88	1900					53		
NE 42nd St & Roosevelt Way NE				96	1857					96		
NE 42nd S St & Roosevelt Way NE					1673	263			50			

PM PEAK HOUR

Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
NE 42nd St & 11th Av NE	22	1164	104				64	85			70	53
NE 43rd St & 11th Av NE	26	1230	55				30	36			147	89
NE 45th St & 11th Av NE	295	816	146					963			839	47
NE 47th Street & 11th Av NE	70	892	72				78	111			213	113
NE 50th St & 11th Av NE	221	758	107				140	692			839	44
NE Ravenna Blvd EB & 12th Ave NE		1047	36				34	338				
NE Ravenna Blvd WB & 12th Av NE	90	991									522	124
NE 65nd St & 12th Av NE	95	828	94				149	470			463	84

Table 2. Peak Hour Level of Service (PM Peak Hour – Northbound and AM Peak Hour – Southbound)

		2007 Existing Configuration		2007 Proposed Configuration		
		LOS	Delay	LOS	Delay	Change in NB/SB Lane Configuration
Northbound (11th Avenue NE) PM Peak Hour						
NE 42nd St	11th Ave NE	A	5	A	7	
NE 43rd St	11th Ave NE	A	9	D	48	
NE 45th St	11th Ave NE	D	46	D	48	
NE 47th St	11th Ave NE	B	11	B	15	
NE 50th St	11th Ave NE	E	57	D	43	Add left turn lane (L|T|T|TR for NB leg)
NE Ravenna Blvd	11th Ave NE	B	11	C	14	
NE Ravenna Blvd	12th Ave NE	B	16	B	13	
NE 65th St	12th Ave NE	C	28	C	28	
Southbound (Roosevelt) AM Peak Hour						
NE 65th St	Roosevelt Way	D	36	E	67	
NE Ravenna Blvd	Roosevelt Way	No data				
NE Ravenna Blvd	Roosevelt Way	No data				
NE 50th St	Roosevelt Way	D	37	C	35	Add left turn lane (L|T|T|R for SB leg)
NE 47th St	Roosevelt Way	B	11	B	11	
NE 45th St	Roosevelt Way	C	30	D	52	
NE 42nd St	Roosevelt Way	B	13	B	11	
NE 42nd St	Roosevelt Way	A	8	A	9	

J. Public Involvement Memorandum

University Area Transportation Action Strategy

Public Outreach Memorandum

Prepared for:

Seattle Department of Transportation

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January 2008

Introduction

The University Area Transportation Action Strategy (Action Strategy) is an update of the 2002 University Area Transportation Study (UATS). The earlier UATS study was supported by a vigorous public outreach program.

The goals of the public involvement activities for the 2007 Action Strategy were to:

- Inform stakeholders about the update.
- Obtain stakeholder input regarding key issues and conditions that they believe have changed since the 2002 plan.
- Build consensus for strategy recommendations
- Identify key issues to consider/resolve before implementation of Action Strategy projects

These goals were accomplished through a comprehensive program of public outreach that included activities such as meetings with organized community groups, a half-day open house, informational materials including hand outs and displays, media contacts, and a project website where interested citizens could log comments and communicate with the project team.

Updating the 2002 Study

The primary purposes of the Action Strategy are to update the UATS work with a horizon year of 2030 (versus 2010), to respond to the new locations for the light rail stations and the continued planning on the SR 520 Replacement Project, and to establish a set of prioritized projects to support a voluntary transportation mitigation payment program.

Public Involvement in the 2002 Study

UATS was supported by five primary public involvement methods. These were:

- Monthly two-hour meetings with the **Project Advisory Committee**, comprised of representatives from the University of Washington, Community Transit, King County Metro, Seattle's Department of Transportation and Strategic Planning Office.
- Monthly working sessions with the **Pedestrian-Bicycle Working Group**, a citizen's committee with a strong interest in walking and biking.
- Monthly meetings with the **UATS Advisory Group**, which was initially the University Community Urban Center (UCUC) Sounding Board. Midway through the study the Sounding Board discontinued its regular meetings but the group continued to meet as the UATS Advisory Group.

- Two **Public Open Houses**, attended by more than 50 people each) preceded by two Project Newsletters, used to inform citizens about the project and announce the open houses.

- A **Web Site** where all the key products of the study were posted.

These methods formed a starting framework for the Action Strategy outreach activities.

Involving Stakeholders in the Action Strategy

Given that the Action Strategy is an update, rather than a new study, public outreach was primarily concentrated on existing, organized stakeholders.. The project team focused on existing groups, councils, associations and partner agencies and institutions. Interested individuals were also able to communicate with the project team through the project web site, and attendance at project meetings with target groups. Additional, limited outreach also focused on new University of Washington students, as well as several broader public meetings.

Population Characteristics

A review of the census data for the University District Urban Center showed that the population was overwhelmingly (72%) between 18 and 29 years of age, with only 13% over 35. While 40% of households were below the poverty level, this almost certainly represented primarily students, although poverty is reported by household composition, not age. Of the 18,800 people living in the urban center, only 3.5% were considered linguistically isolated, that is they self-reported that they speak English less than "well"; it's likely that a significant proportion of these individuals were students as well, although language is also reported only in three groups, under 18, between 18 and 64, and over 65. Targeting outreach to the student population was one way to ensure that area residents who were not likely to be otherwise represented by organized neighborhood groups, would also be reached.

Neighborhood Councils, Associations, Chambers of Commerce

The Department of Neighborhoods University District Neighborhood Coordinator supplied a list of all of the community groups in the study area, and helped the project team in making contact with individual groups and working with them. Project staff attended regularly scheduled meetings of several groups, made presentations about the study, distributed materials and invited ideas, questions and comments.

Other External Stakeholders

In addition to community organizations, the project team involved the University of Washington through its Office of Regional Affairs as well as the City/University Community Advisory Committee (CUCAC); King County Metro and Sound Transit through meetings with staff, and a broad range of city staff from different divisions within SDOT as well as the Department of Planning and Development. Outreach to the broader University of Washington community, including students and staff, was accomplished through media coverage and emails that included contact information for the project team.

Internal Stakeholders

Internal stakeholders included the City of Seattle Transportation and Planning departments. Project staff met with internal stakeholders in large and small group meetings and individually to work through project issues and recommendations as the work progressed.

Internal Technical Team

The role of the Technical Team was to:

- Provide input on critical issues at the beginning of the project, including goals and assumptions
- Assist in developing performance measures and evaluation criteria
- Assist in developing and reviewing existing and future conditions
- Assist in developing recommended improvements and establishing priorities
- Provide formal technical review of key work products

The Technical Team met with staff individually and in small groups on an as-needed basis as the work progresses, and as a larger group at key milestones.
Members were:

- Allen , Dave: SDOT Major Projects, liaison to WSDOT
- Bender, Jeff: SDOT Transit Planning, Liaison to King County Metro
- Blanco, Reiner: SDOT Traffic Management
- Chow, Calvin: SDOT Major Projects, liaison to Sound Transit
- Emery, Adiam and Garcia, Enrique: SDOT Traffic Signals
- Gotterer, Liz: King County Metro
- Hennelly, Barry: SDOT Transit Project Development
- Hoyt, Megan: SDOT Pedestrian/Bike program
- Korpi, Luke: SDOT Neighborhood Traffic Engineering
- Krawczyk ,Tracy: SDOT Planning Program Manager
- Shaw, John: DPD Development Review
- Vijarro, David: SDOT Roadway Design

Core Policy Team

The role of the core policy team was to provide high level policy, outreach, budget direction and oversight. The team met at major milestones.
Members were:

- Krawczyk ,Tracy: Planning Program Manager
- Northey, Lise: Resource Development Manager
- Sanchez, Susan: Policy and Planning Division Manager
- Wentz, Wayne: City Traffic Engineer

Figure 1.1 Handout for Initial Meetings, page 1 of 3

SDOT
Seattle Department of Transportation

UNIVERSITY AREA TRANSPORTATION ACTION STRATEGY

Q AND A

WHAT IS THE TRANSPORTATION ACTION STRATEGY?

SDOT is undertaking a 12-month transportation planning study to update the 2002 University Area Transportation Study (UATS), which will be called ***University Area Transportation Action Strategy***.

The *Transportation Action Strategy* will adopt the ***Goals*** established in the UATS:

- To build on existing planning to provide a comprehensive, multimodal transportation plan for the area, and
- To serve as a blueprint for financing and prioritizing capital improvements in the University Area for the next 25 years.

WHAT ARE THE BOUNDARIES OF THE STUDY AREA?

The study area covers neighborhoods commonly referred to as University District, Montlake, University Heights and Ravenna.

WHY AN UPDATE?

The UATS was a pilot study and the recommended projects were evaluated against 2010 and 2020 growth forecasts. Reasons for an update include:

- The need to extend the planning timeframe to the year 2030 in order to create a development mitigation payment program, which will assist in implementation of identified capital projects.
- Sound Transit preferred alignment for North Link light rail has two stations in the University District, which are different from those assumed in the original UATS.
- The Washington State Department of Transportation has made additional progress toward selecting a preferred alternative for the SR 520 Bridge Replacement and HOV Project.

Figure 1.2 Handout for Initial Meetings, page 2 of 3

WHAT MAJOR ISSUES WERE IDENTIFIED IN THE INITIAL STUDY?

The attached map summarizes the transportation problems identified in the University Area.

Following are some of the public comments received during the UATS study:

- Add a continuous turn lane to 65th; drivers currently try to operate like there are two lanes in each direction.
- Improving the north end of the U Bridge is great. Keep thinking, you are not done yet.
- Fixing the bus flow on NE 45th Street is an excellent idea.
- Increasing mobility, convenience and safety for pedestrians and bikes is highest priority.
- A bike lane and traffic calming on 20th Ave between NE 50th and Ravenna Boulevard is vital. The current traffic situation is hazardous and nearly untenable for bikes.
- Connecting Burke Gilman to the U Village via NE 47th Street is good but makes much more sense if a stairwell is built along NE 47th Street right-of-way up to 21st Ave NE.
- Pedestrian and bike access over I-5 is needed; widen NE 50th Street.

The UATS report is on-line at: www.seattle.gov/transportation/ppmp_uats_home.htm

A link to the new website for the UATAS, currently under construction, will be available shortly from the address above.

WHAT NEXT?

The work starting now (January 2007), will update the 'Existing Conditions' report to reflect new data and already completed projects, prepare new travel forecasts for the year 2030, review the transportation problems and proposed solutions previously identified. Upon review and comment by the community, SDOT will prepare an updated project list, establish priorities and explore funding options.

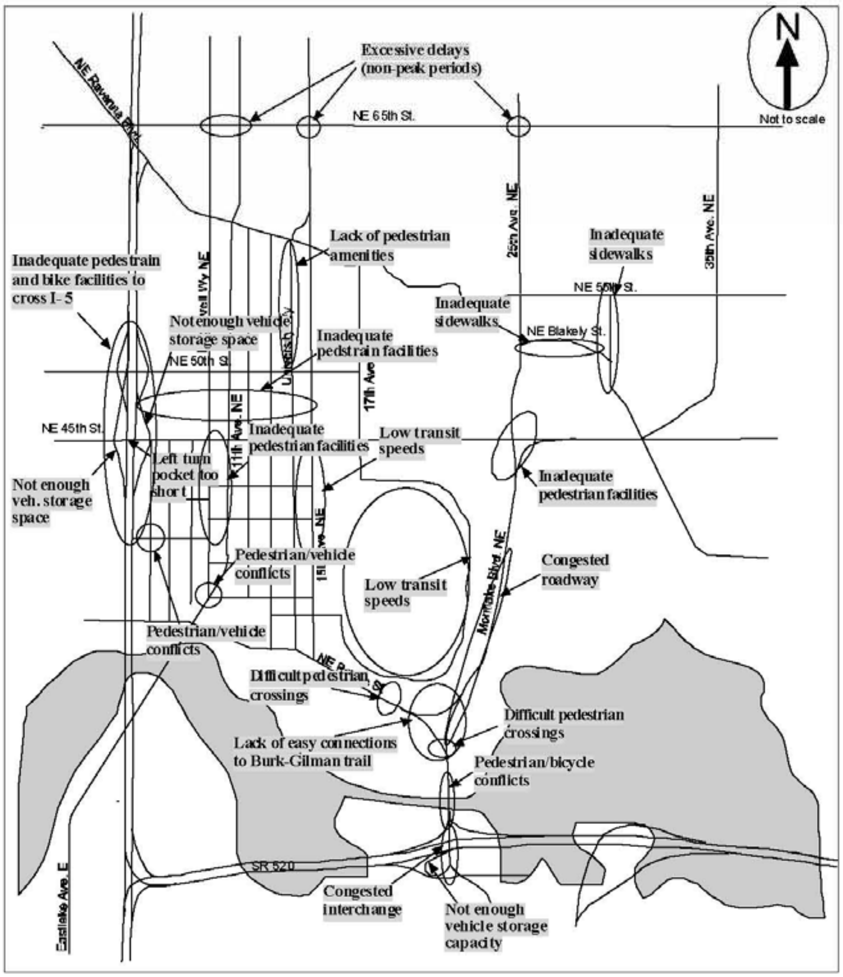
HOW CAN I BE INVOLVED?

Please contact Casey Hildreth at casey.hildreth@seattle.gov (or telephone 206/233-3780) to be added to the project mailing list or to request a presentation to your group.

STUDY TEAM

Tracy Krawczyk, SDOT Planning Manager, 733-9329
Tony Mazzella, SDOT UATAS project manager, 684-0811, Tony.Mazella@seattle.gov
Casey Hildreth, SDOT UATAS assistant project manager, 233-3780
Tom Noguchi, Mirai Transportation Planning & Engineering, 425-820-0100
Mary Jo Porter, The Underhill Company, 206-726-7906

Figure 1.3 Handout for Initial Meetings, page 3 of 3



University Area Transportation Study 2002

Transportation Problem Areas

Figure 2 Article in UW Daily

Year-long U-District study seeks community input

May 1, 2007
By Arla Shephard

The Seattle Department of Transportation (SDOT) is asking students to start thinking about the future. That is, the future of transportation in and around the University District. To leave comments for SDOT, visit its Web site, or e-mail Casey Hildreth at casey.hildreth@seattle.gov

SDOT is seeking to further improve transit in the area with the University Area Transportation Action Strategy (UATAS), a 12-month planning study of the U-District, and is asking the University community, particularly students, for their input. "Traditionally, it's hard to get students involved in the more mundane things that happen in the city," said Casey Hildreth, associate planner for the Policy and Planning division of SDOT. "They're [at school] for four years and move on, but the student population itself will always be there, and they represent a huge portion of who uses the transportation in the area." Students, more so than any other community in Seattle, ride bikes, walk to school or take the bus, Hildreth said. "In this unique way, their perspective is more important than anyone else in the city," he said.

SDOT is beginning the process of updating their 2002 University Area Transportation Study (UATS), to reflect the changes made in the last five years and to better sketch out a "comprehensive, multimodal transportation plan for the area," that will hopefully serve as an outline for any changes that will be made over the next 25 years, according to the UATAS Web site.

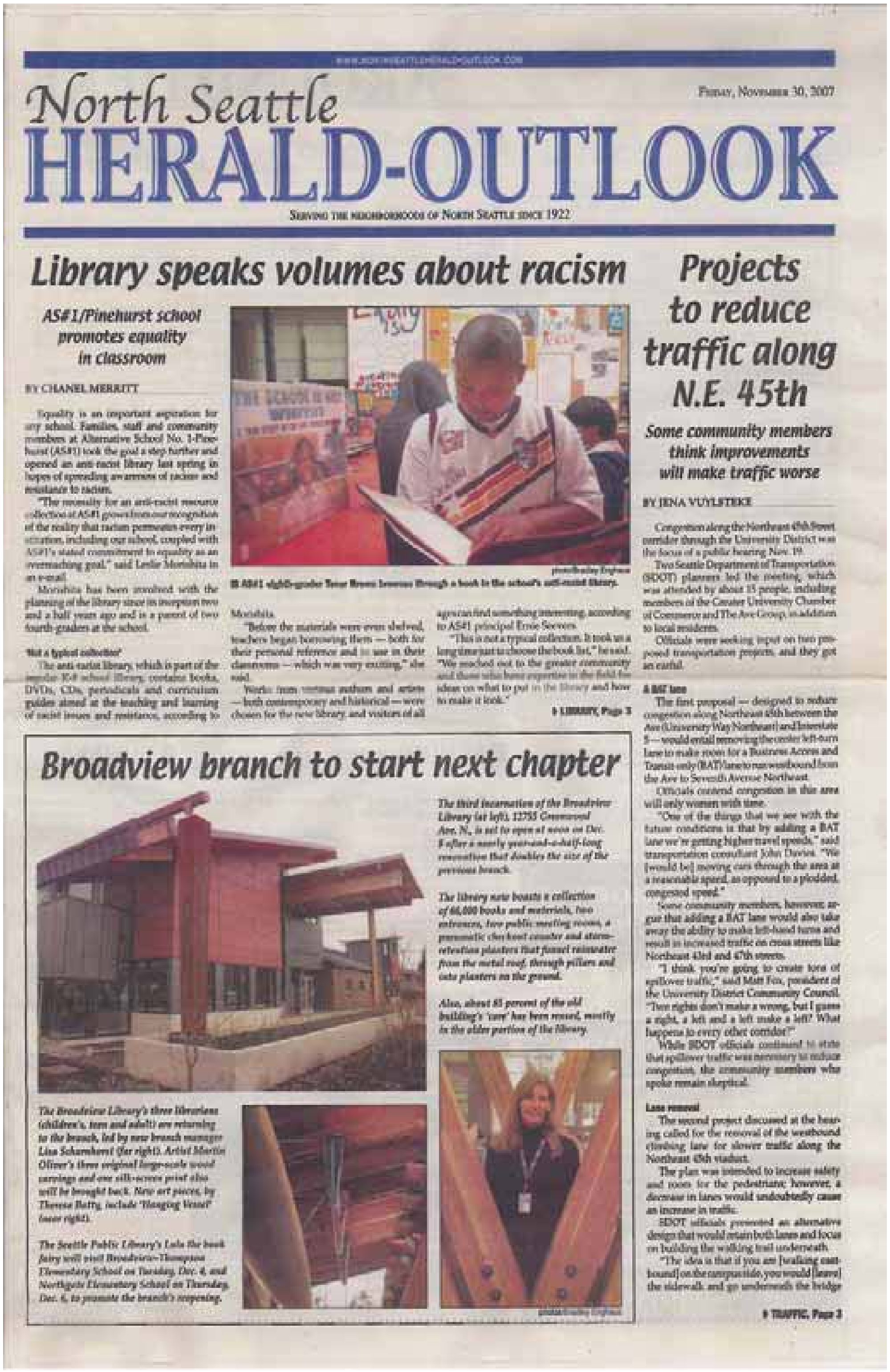
Specifically, the new plan will be updated to account for the alignment of the proposed University Link, a mass transit light rail system that will have stations in Capitol Hill and at the UW near Husky Stadium. The link is scheduled to be finished in the year 2030. The original 2002 plan outlined the need for improvements to bicycle and pedestrian paths as well as roadways, including improving bus flow in certain areas and adding more High-Occupancy Vehicle (HOV) lanes. This movement toward greener modes of transportation will continue in the new study, as Seattle Mayor Greg Nickels has called for greater city-wide awareness of global climate issues.

"The reality of global climate change is urgent," Nickels said in a press release last year. "The stakes are high — locally and globally — and we need to act. As a city government, we've already cut our greenhouse gas emissions by more than 60 percent, compared to 1990 levels. But it's not enough — we need to work together as a community to set responsible limits on global warming pollution."

Senior Hannah Dewey, a member of the UW's Earth Club and a bicycle commuter from Lake City, agreed that changes need to be made to make way for a cleaner Seattle, including the addition of more bike lanes and improvements to Seattle's mass transit system. "Cars are the second-leading producer of CO_2 emissions and, as a daily commuter and someone who has drastically limited my car usage, I can say I feel unsafe daily biking to and from school due to the lack of bike lanes," Dewey said in an e-mail. Dewey also cited personal experience with the dangers of cycling. "I personally have been hit twice by a car and many of my friends have been hospitalized from being hit by cars while biking," she said. "It is crucial to Seattle's development towards being a green city to add more bike lanes and transform our citizens into fit people who we can use as a leading force [for] larger issues, like renewable energy and sustainable food systems." Comments like Dewey's are what Hildreth and SDOT want to hear.

"Even if it's something simple like 'I have a hard time getting to the IMA' or 'I commute from Ballard on a bus and it's impossible to get to school,' we want to hear it," Hildreth said. "We're talking about a larger legacy to leave behind for future generations. If we don't hear from students who walk to school or those who bike, we'll only get more of the status quo."

Figure 3 Article in North Seattle Herald



North Seattle
HERALD-OUTLOOK

Friday, November 30, 2007

Serving the neighborhoods of North Seattle since 1922

Library speaks volumes about racism

AS#1/Pinehurst school promotes equality in classroom

BY CHANEL MERRITT

Equality is an important aspiration for any school. Families, staff and community members at Alternative School No. 1-Pinehurst (AS#1) took the goal a step further and opened an anti-racist library last spring in hopes of spreading awareness of racism and resistance to racism.

"The necessity for an anti-racist resource collection at AS#1 grows from our recognition of the reality that racism permeates every institution, including our school, coupled with AS#1's stated commitment to equality as an overarching goal," said Leslie Morishita in an e-mail.

Morishita has been involved with the planning of the library since its inception two and a half years ago and is a parent of two fourth-graders at the school.

'Not a typical collection'

The anti-racist library, which is part of the regular K-8 school library, contains books, DVDs, CDs, periodicals and curriculum guides aimed at the teaching and learning of racist issues and resistance, according to Morishita.

"Before the materials were even shelved, teachers began borrowing them — both for their personal reference and to use in their classrooms — which was very exciting," she said.

Works from various authors and artists — both contemporary and historical — were chosen for the new library and visitors of all ages can find something interesting, according to AS#1 principal Ernie Seevers.

"This is not a typical collection. It took us a long time just to choose the book list," he said. "We reached out to the greater community and those who have expertise in the field for ideas on what to put in the library and how to make it look."

▶ LIBRARY, Page 3

Projects to reduce traffic along N.E. 45th

Some community members think improvements will make traffic worse

BY JENA VUYLSTEKE

Congestion along the Northeast 45th Street corridor through the University District was the focus of a public hearing Nov. 19.

Two Seattle Department of Transportation (SDOT) planners led the meeting, which was attended by about 15 people, including members of the Greater University Chamber of Commerce and The Ave Group, in addition to local residents.

Officials were seeking input on two proposed transportation projects, and they got an earful.

A BAT lane

The first proposal — designed to reduce congestion along Northeast 45th between the Ave (University Way Northeast) and Interstate 5 — would entail removing the center left-turn lane to make room for a Business Access and Transit-only (BAT) lane to run westbound from the Ave to Seventh Avenue Northeast.

Officials contend congestion in this area will only worsen with time.

"One of the things that we see with the future conditions is that by adding a BAT lane we're getting higher travel speeds," said transportation consultant John Davies. "We [would be] moving cars through the area at a reasonable speed, as opposed to a plodded, congested speed."

Some community members, however, argue that adding a BAT lane would also take away the ability to make left-hand turns and result in increased traffic on cross streets like Northeast 43rd and 47th streets.

"I think you're going to create tons of spillover traffic," said Matt Fox, president of the University District Community Council. "Two rights don't make a wrong, but I guess a right, a left and a left make a left? What happens to every other corridor?"

While SDOT officials continued to state that spillover traffic was necessary to reduce congestion, the community members who spoke remain skeptical.

Lane removal

The second project discussed at the hearing called for the removal of the westbound climbing lane for slower traffic along the Northeast 45th viaduct.

The plan was intended to increase safety and room for the pedestrians; however, a decrease in lanes would undoubtedly cause an increase in traffic.

SDOT officials presented an alternative design that would retain both lanes and focus on building the walking trail underneath.

"The idea is that if you are [walking eastbound] on the campus side, you would [leave] the sidewalk and go underneath the bridge

▶ TRAFFIC, Page 3

Broadview branch to start next chapter

The third incarnation of the Broadview Library (at left), 12755 Greenwood Ave. N., is set to open at noon on Dec. 8 after a nearly year-and-a-half-long renovation that doubles the size of the previous branch.

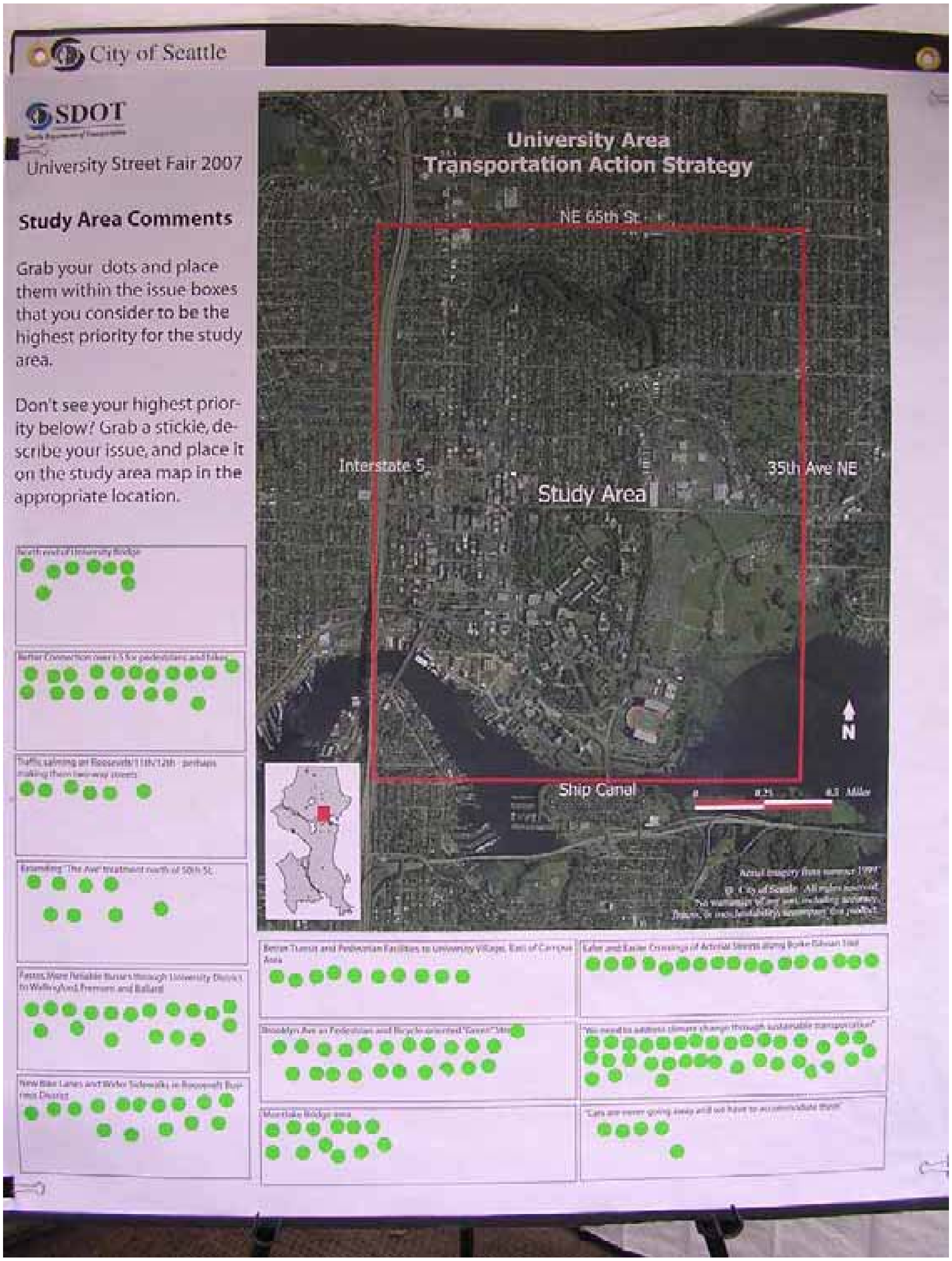
The library now boasts a collection of 60,000 books and materials, two entrances, two public meeting rooms, a [illegible] checkout counter and storm-retention planters that funnel rainwater from the metal roof, through pillars and into planters on the ground.

Also, about 85 percent of the old building's 'core' has been reused, mostly in the older portion of the library.

The Broadview Library's three librarians (children's, teen and adult) are returning to the branch, led by new branch manager Lisa Scharnhorst (far right). Artist Martin Oliver's three original large-scale wood carvings and one silk-screen print also will be brought back. New art pieces, by Theresa Batty, include 'Hanging Vessel' (lower right).

The Seattle Public Library's Lulu the book fairy will visit Broadview-Thompson Elementary School on Tuesday, Dec. 4, and Northgate Elementary School on Thursday, Dec. 6, to promote the branch's reopening.

Figure 4 Materials for University District Street Fair



First Round of Questions

The first round of outreach focused on a set of questions designed to elicit comments regarding transportation issues, past successes, current problems, implementation issues, and communications.

Study Background – Previous Work

- Are you familiar with the University Area Transportation Study that was completed in 2002? And if so, do you have any general comments you'd like to make about it, what worked, what didn't work in either the process or the results?

Transportation Issues in the University Area

- Off the top of your head, what are the most critical transportation problems in the University area?

- Thinking about new projects in the last several years, where do you think they're working well and where are they not? Then prompt with a list:
    - Improvements on the Ave; Repaving NE 50th; Repaving NE 65th; 4-way stop at 15th and Ravenna.

- Are there other projects like this you'd like to see

- Thinking about different modes, what's working well and where are there problems?
    - Pedestrians; Cyclists; Transit; Freight; Cars; Parking

- Thinking about different places, what's working well and where are there problems? Use a map and go through different areas.

- Are there transportation hot spots or projects you think the update should stay away from? Examples: Changes to the Montlake Bridge

Implementing projects

- In planning, designing and implementing projects, the City will be working with WSDOT, Metro and Sound Transit. Do you have any comments on the plans and projects of these other agencies and where or on what, specifically, the City needs to work with them?

- Some projects will be implemented in cooperation with developers, specifically by requiring new developments to incorporate transportation improvements. Do you have any comments or ideas about how best to work with developers and what their role should be?

Consulting the community

- Who or which groups do you think need to be consulted during the plan update? What do you think are the best ways to involve them?
    - Meeting of community groups; One-on-one conversations; Website, mailings, other

- What's the best way to stay in touch with you and what kind of information would you like to see, would you like to meet again, do you need any briefings on specific issues… and so on.

First Round Results

Community members, business owners, partner agency staff, and internal staff responded to the initial outreach with a broad range of perspectives, ideas, comments and recommendations.

Community Groups were focused strongly on bikes and pedestrians. They want safe routes for walking and biking within the study area and connections over the University Bridge to downtown. They want bike lanes, bike streets, and bike priority. They want wider sidewalks, more trees, and safe crossings. They love the idea of a bike/ped bridge over I-5. They commented that the study area is affected by through traffic from adjacent areas, including from Sand Point Way with Children's Hospital and Magnuson Park, and from Wallingford. They're interested in the Link stations and want good access to and from the stations, without more traffic. Particular hot spots mentioned repeatedly were the north end of the University Bridge and 45th from I-5 all the way to Sand Point Way.

University of Washington: The University's biggest concern was how circulation will work around the Montlake/Pacific/Pacific Place intersection once the Link station is built, with the added complications of a possible SR-520 interchange. UW was looking for major improvements or changes that move cars and buses, provide room for bus layover, provide a completely protected crossing for pedestrians between the station and the campus, all without interfering with cyclists on the Burke Gilman trail. UW suggested changes in Pacific Place and would like to see the street lowered to create a level plaza for pedestrians. UW staff feel that the UW's transportation management program is working extremely well, with drive alone trips well below the caps. Parking lot utilization is also down, but the University needs more parking in some areas while there is a surplus east of Montlake.

Sound Transit: Like the UW, Sound Transit was focused on ways to make the Montlake/Pacific/Pacific Place intersection work, and how to get people safely between the station, the main campus and the medical center. They also discussed options for Pacific Place but noted the complications of the grade changes and the clearance height needed for trolley bus wires. They would like to see the parking lot entrance/exit that functions as one leg of the intersection at Pacific Place and Montlake closed.

King County Metro: Metro's future service plans are not expected to change a great deal until the Brooklyn light rail station opens. Then, Metro may truncate routes going downtown, add new service focused on the stations, and close some bus stops while possibly preserving the curb space for layovers. Metro will not operate any significant service along Montlake as its configured now 'because the buses just sit there.'

SDOT staff highlighted the major problem areas which include:

- NE 45th between I-5 and Sand Point Way, including congestion and ROW limitations affecting all modes.
- NE 45th, 7th and I-5 and the impossible conditions for peds, bikes and cars.
- NE 50th, traffic congestion.

- Burke Gilman trail: capacity, bike/ped conflicts, speeding bikes, and dangerous street crossings.
- North end of University Bridge, conflicts for all modes.
- Roosevelt/12th: one-way couplet vs. 2-way, vis-a-vis bikes, peds, business district and traffic capacity.
- Ballard to U. District BUDTI project (bus improvements).
- Transit speed and reliability throughout the study area and bus layover space.
- Parking, code changes, and perception vs. reality regarding parking availability.
- Pacific, Montlake and Pacific Place: issues for all modes, 21,000 station users, possible SR-520 interchange.
- 55th and Ravenna crossing conflicts.
- University Village area, future expansion impacts, and particularly problems on Blakely and on 25th.
- "Lower" 40th and "upper" 40th.
- Integrating bike, ped and transit improvements from modal plans into subarea plans.

Improvement Concepts and Draft Prioritized Concept List

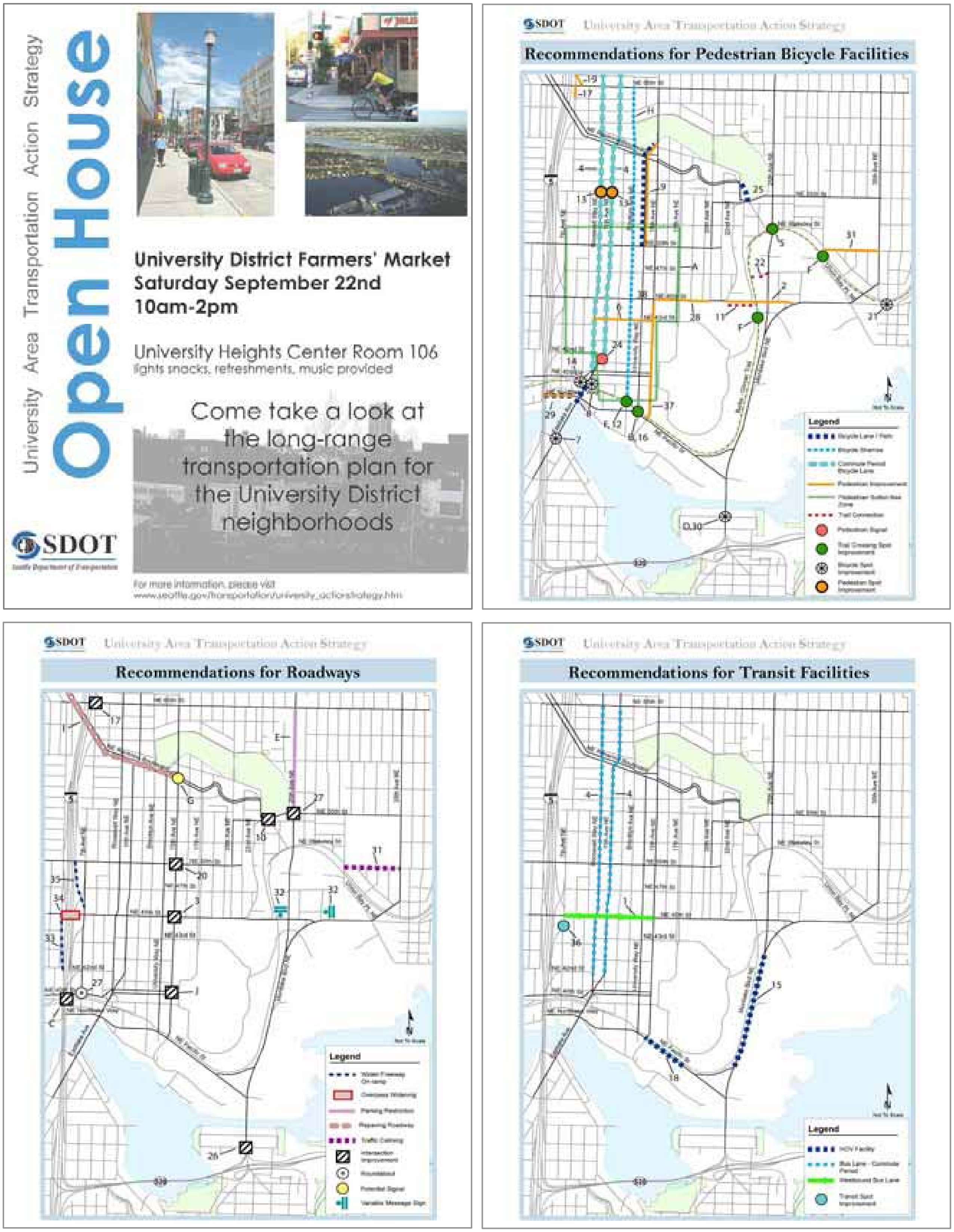
As improvement concepts for the Action Strategy were developed and prioritized, the study team continued to work with both internal and external stakeholders issue-by-issue and project-by-project where appropriate, and with broader outreach as appropriate. Groups that had been contacted earlier were contacted again with emails and phone calls; project staff met with those stakeholders who desired it.

Community Open House
In addition to the ongoing outreach to identified stakeholders, a public open house was held to ensure that individuals from the broadest community, whether they were affiliated with a group or simply interested citizens, had a chance to review the project work and comment on draft improvements concepts. The Open House was held on Saturday, September 22, 2007, from 10:00 am to 2:00 pm at the University Heights Center, adjacent to the University District Farmer's Market which operated on that day.

Notification was accomplished via the website, emails with flyers to identified stakeholders, and phone calls. On the day of the open house, flyers were handed out at the entrances to the farmer's market and people were encouraged to drop into the open house.

Materials: Materials at the open house included display boards, a handout with an overview of the Action Strategy, draft project sheets available for reference use, and response forms/surveys attendees were asked to complete and leave behind.

Figure 5. Boards from the September 2007 Open House



Project Website

The project website was developed early in the project, and maintained throughout. The website provided an introduction to the study and posted study documents including the project sheets for the proposed actions. Visitors to the website were invited to comment, and many did so. Those who submitted an email address were added to the electronic mailing list.

Website Comments

Walking and Bicycling: More walking/bike paths completely separated from traffic. Riders don't feel safe in traffic and would like traffic-separated bike routes. Convert some north/south and east/west streets to ped/bike only to create a network, with parking lots at the entrances for residents of those streets, and more plantings to reduce run-off. Brooklyn, 15^{th}, Montlake, Boyer need marked bike lanes. Sidewalks in the business district are too narrow for the volumes of pedestrians. There needs to be mid-block pathways and better night lighting. Green lights need to be longer for pedestrians north/south across Pacific. Remove walk buttons on signals and give pedestrians the walk signal with every light. The Burke-Gilman Trail should be widened and vehicles better controlled where the trail crosses streets.

Transit: UW's athletic center needs better transit connections. Better bus connections to the new Husky Stadium light rail station. Better bus connections to U. Village. Close University Way to cars and keep it for buses and bikes/ped only.

Vehicles: Many streets are in poor repair, as they are elsewhere in the city. Charge tolls to drive.